
Halt the Hydrogen Hoax Webinar

Appalachian Regional “Clean” Hydrogen Hub (ARCH2)
Buckeye Environmental Network

— January 7th, 2025 —

Goals for this webinar

- Explain what the ARCH2 Hub is.
- Discuss the health and environmental risks.
 - Dr. Randi Pokladnik
- Discuss what the economic implications are now and the future.
 - Sean O'Leary
- Provide opportunities for community involvement and next steps, including the Ohio open house.

Another Industry Pivot

The fossil fuel industry is in **decline...**

Fossil Fuels

Appalachian Economy Sees Few Gains From Natural Gas Development, Report Says

More stagnation is predicted as gas production peaks and world demand drops.

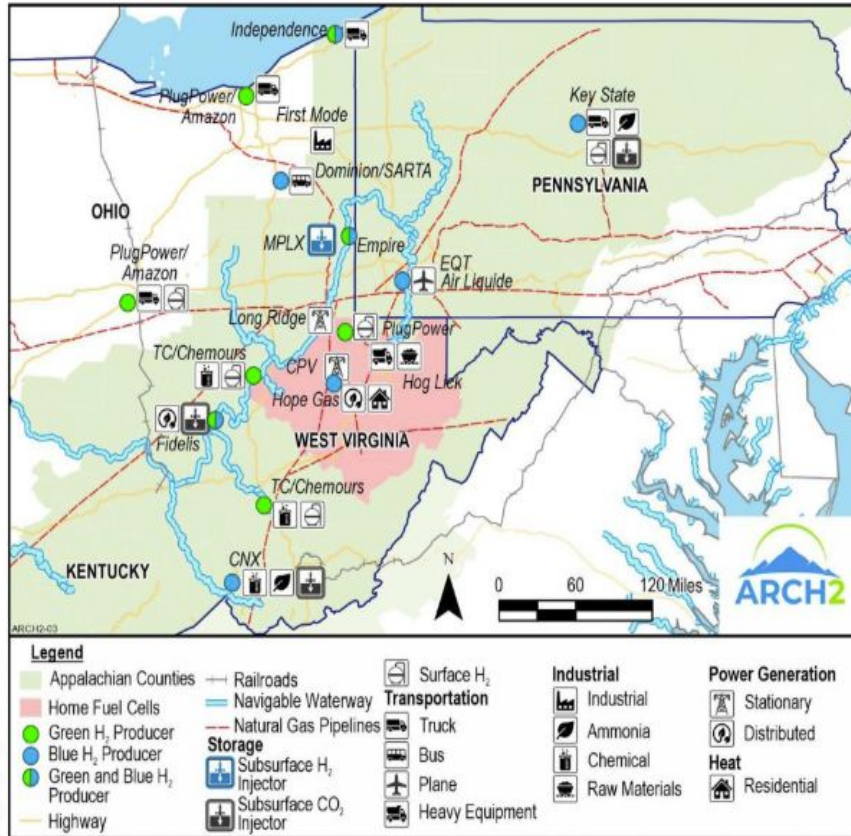
Appalachian Fracking Faces Financial Risks, Report Warns. Hopes for Petrochemical Plastics Boom 'Unlikely.'

Analysts warn that new shale gas fields in Appalachia "may not end up being profitable."

...and the petrochemical "boom" has fizzled.

Now, companies want to make **blue hydrogen** from fracked gas to keep the industry afloat.

ARCH2 Overview



PROGRAM MANAGEMENT AND TECHNICAL SUPPORT				
PROJECT DEVELOPERS				
ARCH2 ECOSYSTEM				
Executive Board				
Advisory Board				
Educational Alliance				
Transit Authorities				
Connective Infrastructure				
Community/Business Groups				

Note: Proposed project locations based on preliminary siting are subject to change during the detailed planning phase (phase 1).

The ARCH2 Appalachian Hydrogen Hub

Appalachian Hydrogen Hub

Selectee: Appalachian Regional Clean Hydrogen Hub (ARCH2)



Project Overview

Prime Applicant:
Battelle Memorial Institute

Locations:
**Ohio, Pennsylvania, and
West Virginia**

Federal Cost Share:
Up to \$925 Million*

*Pending negotiations

Production

- Thermal conversion

Midstream

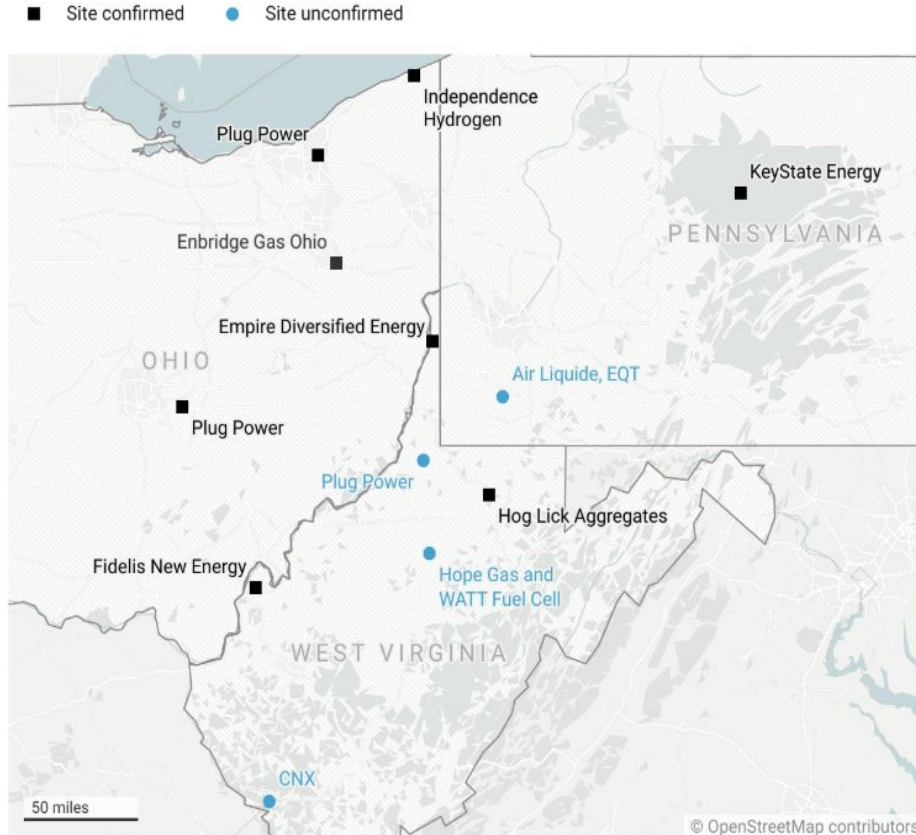
- Hydrogen pipelines
- Hydrogen fueling stations
- Permanent CO₂ storage

End Uses

- Fuel cell electric mining vehicles
- Heavy duty vehicles
- Heavy industry

ARCH2's other significant end uses include home heating and fertilizer.

Nearly all of these applications are ones for which hydrogen doesn't make economic sense.



Enbridge Gas Ohio (formerly Dominion Energy Ohio)

- Electrolytic hydrogen production, storage, and pipelines for use in regional transit
- CONFIRMED: Canton, OH, on or near SARTA

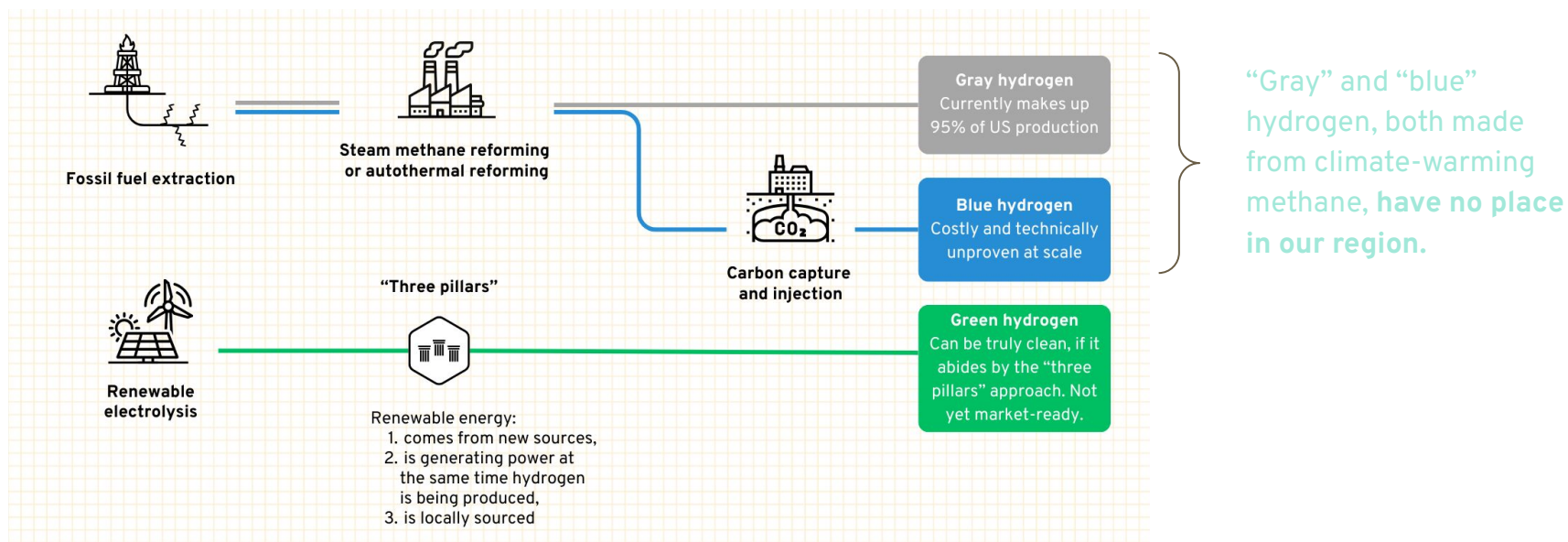
Independence Hydrogen

- Hydrogen production from industrial off gas from an existing chemical facility for heavy-duty equipment
- CONFIRMED: Ashtabula, OH

Plug Power

- Hydrogen storage (18,000 liquid gallons), refueling stations, fuel cells, backup power
- CONFIRMED: Amazon distribution centers in Etna and North Randall, OH

The Limits of Hydrogen



Hydrogen of any kind has **only niche uses** in hard-to-electrify sectors.



What could hydrogen be used for?



Heavy-duty, long-distance transportation



Cement, steel, & other industrial applications



What should hydrogen not be used for?



Passenger vehicles

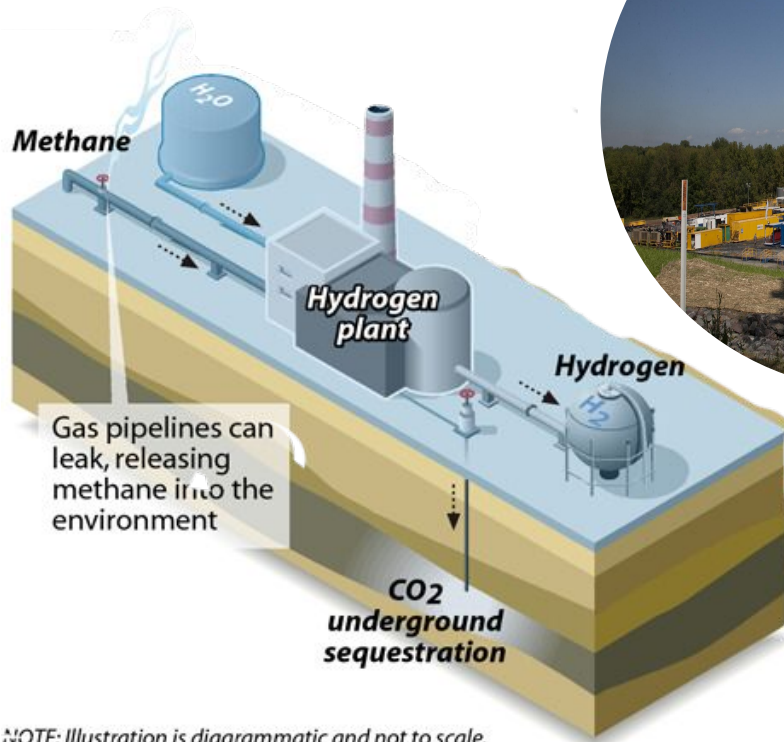


Utility-scale power generation



Heating homes & buildings

“Blue” hydrogen production



NOTE: Illustration is diagrammatic and not to scale.

The industry is attempting to create a demand for something we don't even need.

The industry is looking for ways to stay afloat so they can keep extracting gas and oil.

Clean energy is cheaper, more efficient, and more reliable than hydrogen and carbon capture and sequestration.

[Video](https://www.AppalachiaHydrogenFacts.org) - AppalachiaHydrogenFacts.org



Photo credit: Fracktracker Alliance

More fracking would be required

Health impacts from oil and gas extraction.

More radioactive fracking waste and related infrastructure.

Petroleum 238: Big Oil's Dangerous Secret and the Grassroots Fight to Stop It - Justin Nobel book discusses the fracking waste issue nationwide.

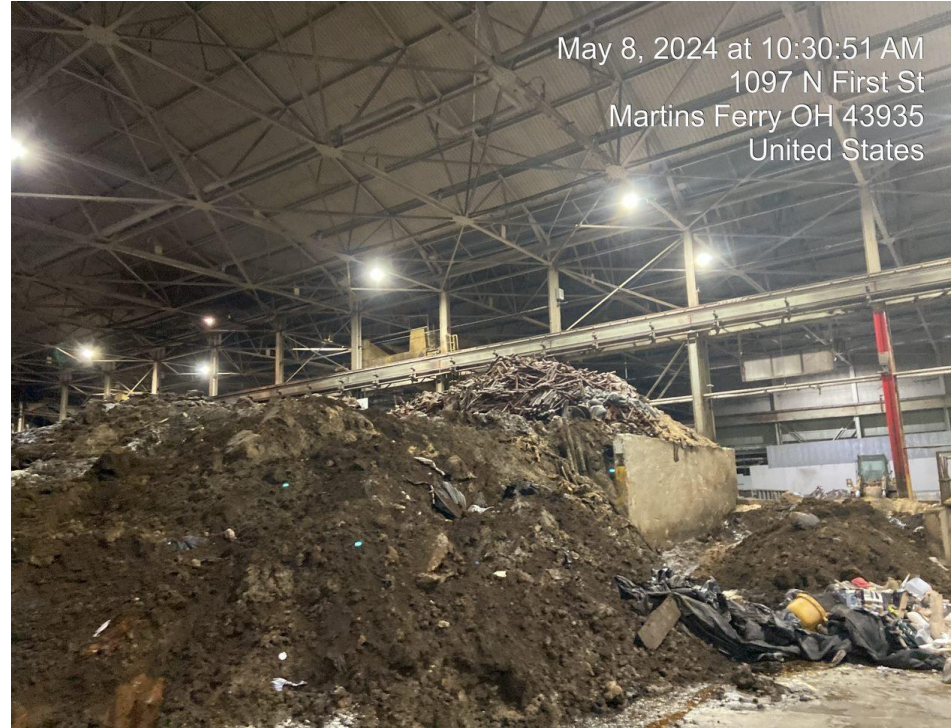


Photo of Austin Master Services, Martins Ferry, OH

The whole project depends on taxpayer dollars and government incentives.

\$925 million to ARCH2 from the Inflation Reduction Act.

45Q tax credit for carbon capture and sequestration.

45V tax credit for hydrogen production.



Misleading terminologies and lack of transparency

The hub is not “clean” at all - it would use fracked gas, which is far from clean.

ARCH2 is pushing plans through without any transparency on site activities, locations, plans, etc.

Experts are not present at community events. Technical questions are left unanswered.

Groups wanting info from the industry have to sign a non-disclosure agreement.

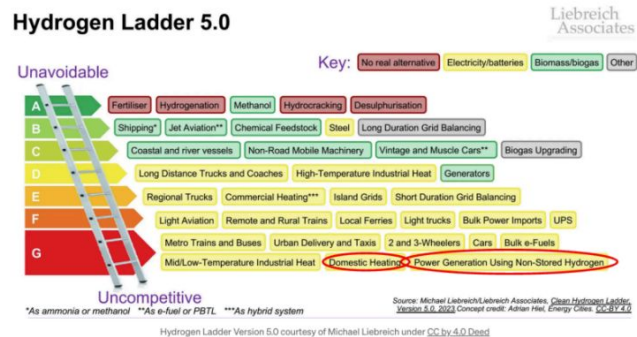


Using H2 to power homes and fuel appliances is inefficient and wasteful.

It actually takes MORE energy to create hydrogen and use it than it does to just use natural gas alone.

We should use the energy to transition off of fossil fuels.

Truly green hydrogen should be used only in niche industries like aviation, long-haul trucking, and steel and cement production.



Credit: Ohio River Valley Institute

Great Britain dropped its plans to use hydrogen to heat homes



Plans for a pilot hydrogen town have been halted (Image: PA Archive/PA Images)

NEWS

POLITICS

FOOTBALL

CELEBS

TV

STRICTLY

SHOPPING

ROYALS

Government shelves plans for pilot 'hydrogen town' heating scheme

Fuel Cell Buses are a bad idea

HYDROGEN FUEL CELL ELECTRIC BUSES

⚠️ Hydrogen fuel cell electric buses (FCEBs) are a false climate solution for which there are better and less expensive clean energy alternatives.

🏠 FCEBs are more expensive than clean energy alternatives, including battery electric buses and hybrid buses.

- The capital cost of FCEB is more than twice that of battery electric buses.¹
- Hydrogen fuel cost per mile is double that of diesel.²
- FCEBs require expensive new infrastructure to deliver and use hydrogen.
- Battery electric buses are more efficient than FCEBs.³

📌 FCEBs will increase demand for natural gas and fracking, which will worsen the economic rot eating eastern Ohio.

- Major fracking counties in eastern Ohio lead the state in job losses.⁴
- Fracking counties in eastern Ohio also lead the state in population loss.⁵
- Fracking increases pollution and harms Ohioans' health.⁶

🚫 The cost to taxpayers could be immense and will distract us from real climate change solutions.

- The availability of clean hydrogen with which to power the buses depends on federal handouts, which may be terminated by President Trump.⁷
- Even with federal handouts, the ARCH2 hydrogen hub is struggling financially and may not be able to provide clean hydrogen.⁸
- The price of hydrogen derived from natural gas may spike in coming years as demand for gas-fired electricity and liquified natural gas increases.⁹

Explosion of hydrogen vehicle raises safety worries

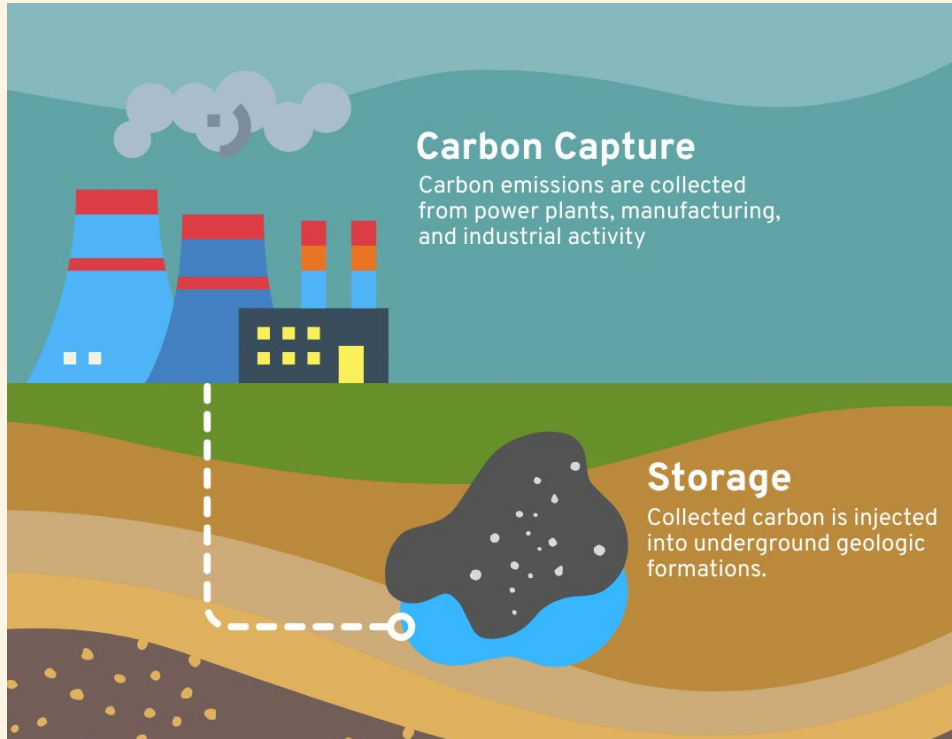


A hydrogen-powered bus exploded at a charging station in Chungju, North Chungcheong Province, Monday. Courtesy of the Chungju city government

Operations of all Chungju hydrogen buses halted after first such incident in Korea

The explosion of a hydrogen bus in Chungju, a city located in the center of Korea, has raised safety concerns about the fuel type, which is often viewed as a safe and sustainable energy source for the future of transportation.

The Dangers of Carbon Capture



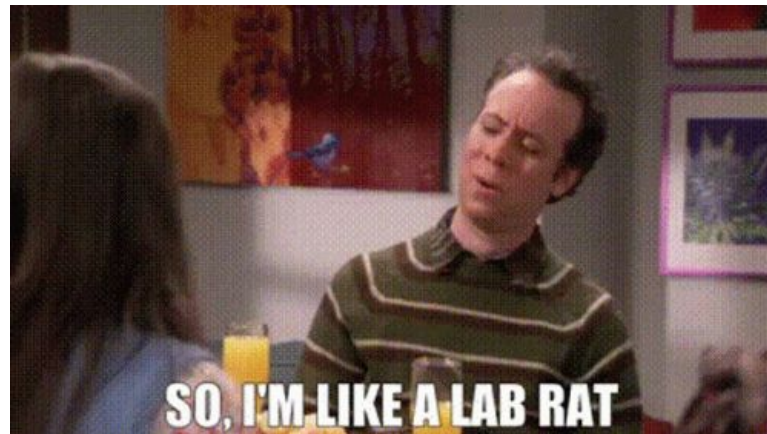
Carbon capture and storage technology, used in blue hydrogen production, is a **greenwashing tool** that poses a host of problems:

1. It's unproven at commercial scale.
2. It's really expensive.
3. It enables fossil fuels, may *increase* emissions, and endangers those who live nearby.

Hydrogen and carbon capture and sequestration are not done at mass scale yet.

There are only 839 CCS projects globally. Only 51 are operational. Most of the rest are “planned” - International Energy Agency.

CO2 projects rarely, if ever, capture 90% of the carbon emissions (Institute for Energy Economics and Financial Analysis)



Carbon capture and sequestration is experimental, unproven, and dangerous

Class 6 injection wells. Our limestones/sandstones have been drilled for 160+ years, will likely leak back out.

Migration and contamination of water sources underground risks.

Operators and regulators have little to no experience with carbon storage (class VI wells)

OHIO POLITICS

Fracking waste wells owned by an Ohio senator are leaking. The state paid \$1.3 million to clean it up

Updated: May. 04, 2024, 1:05 p.m. | Published: May. 04, 2024, 5:30 a.m.



Advertisement

A dormant natural gas production well on Jan. 24, 2021 started spraying out toxic brine at rates reaching 42 gallons per minute. The Ohio Department of Natural Resources later traced the brine back to a Class II injection well owned by Ohio Sen. Brian Chavez. (Photo via ODNR) ODNR

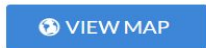
Cleveland Plain Dealer publication headline

Over the past five years, over 1,400 incidents associated with oil and gas wells occurred in Ohio.



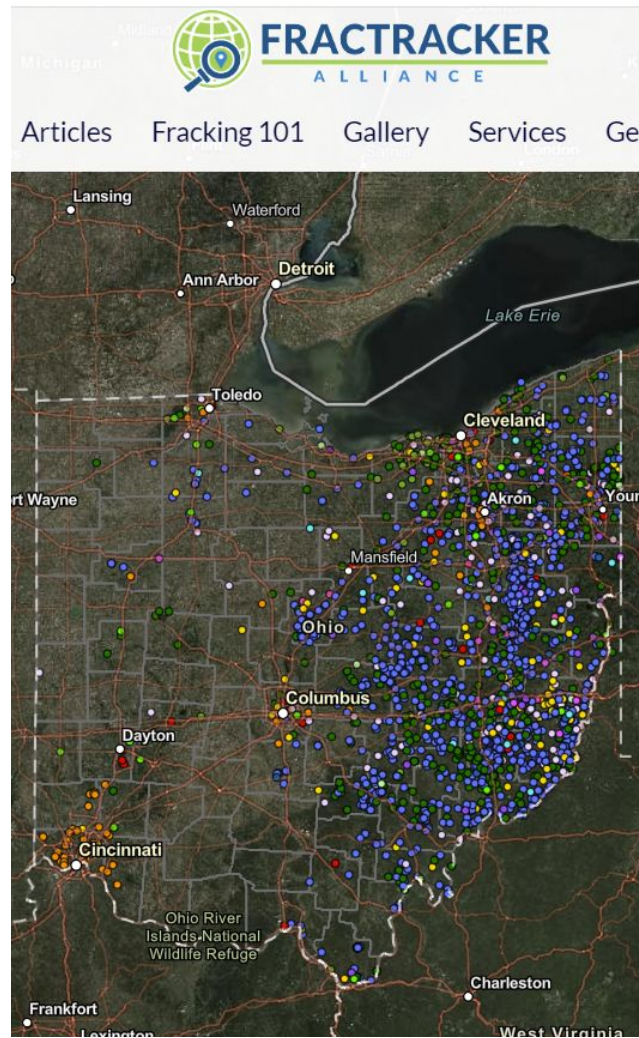
GWEN KLENKE

Midwest Program Coordinator | Published March 5, 2024



Key Findings

- Over the past five years, over 1,400 incidents associated with oil and gas wells occurred in Ohio.
- Many incidents were not accurately categorized, meaning much of the data understates the severity of records.
- Incident location data was particularly lacking.



Not good for the climate/atmosphere

Methane leaks from oil and gas extraction.

Methane is 86 x's as potent a greenhouse gas than Co2 in a 20 year time period.

Industry is not considering the methane impacts in their hydrogen production.

Hydrogen is a greenhouse gas contributor.



Flaring at a compressor station
Photo credit: Fracktracker Alliance

Upstream emissions are not considered

CO2 capture and storage does not take into account the upstream emissions from fracking and transport.

It does not address other emissions from industrial facilities, like volatile organic compounds, which come from fracking infrastructure.



It distracts us from real climate solutions.

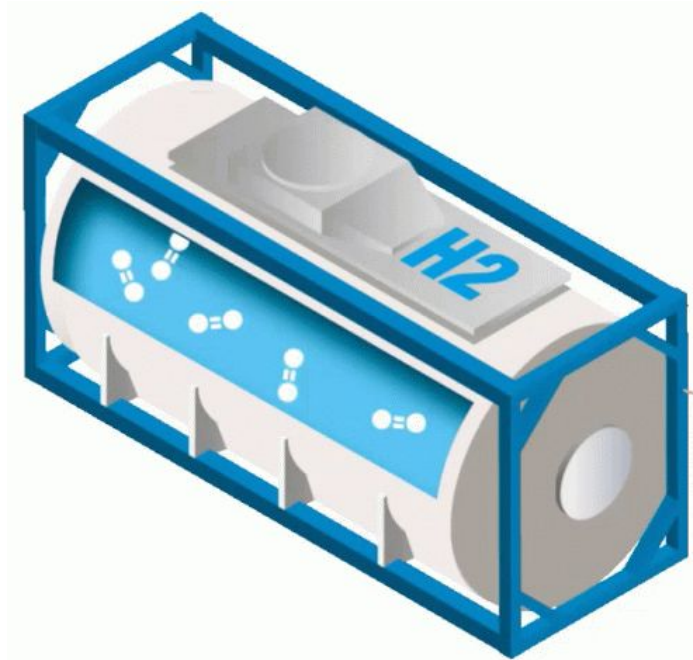
Energy, time, attention, and resources should be spent on transitioning us away from carbon-emitting sources.

This would prolong the lifespan of fracking at the time we need to transition away from it.



Hydrogen makes metal brittle

Hydrogen is the smallest molecule. The tanks containing it are heavy and expensive.



Pipelines: issues and concerns

Condensed CO₂ can corrode pipelines, particularly if exposed to water. It increases the risk of leaks, ruptures, explosions.

There was a pipeline rupture in Satartia, Mississippi in 2020 that injured dozens of people.

Hydrogen leaks easily and there is no technology to detect leaks in hydrogen pipelines for long distances.

ACE
Classifieds

Des Moines Register

s Sports Opinion Business Advertise Obituaries eNewspaper Legals

Department of Transportation's Pipeline and Hazardous Materials Safety Administration. There were no deaths.

More: [Builders vow CO₂ pipelines will be safe. Worried Iowans point to a Mississippi rupture.](#)



This photo shows the spot where a carbon dioxide pipeline ruptured in Satartia, Miss., in February 2020, leading to the evacuation of 200 residents and the hospitalization of 45 others. No one was killed. Yazoo County Emergency Management Agency / Submitted

Citizens would pay with their pocketbooks

ARCH2 would lead to higher utility bills, higher prices at the store, or citizens would pay through taxes.

Could cost \$230 billion to construct hydrogen projects.

CO2 capture projects could cost up to \$100 billion yearly and \$1 trillion over 10 years. Added to American's electric bills. An increase of 25%.

Source: Ohio River Valley Institute



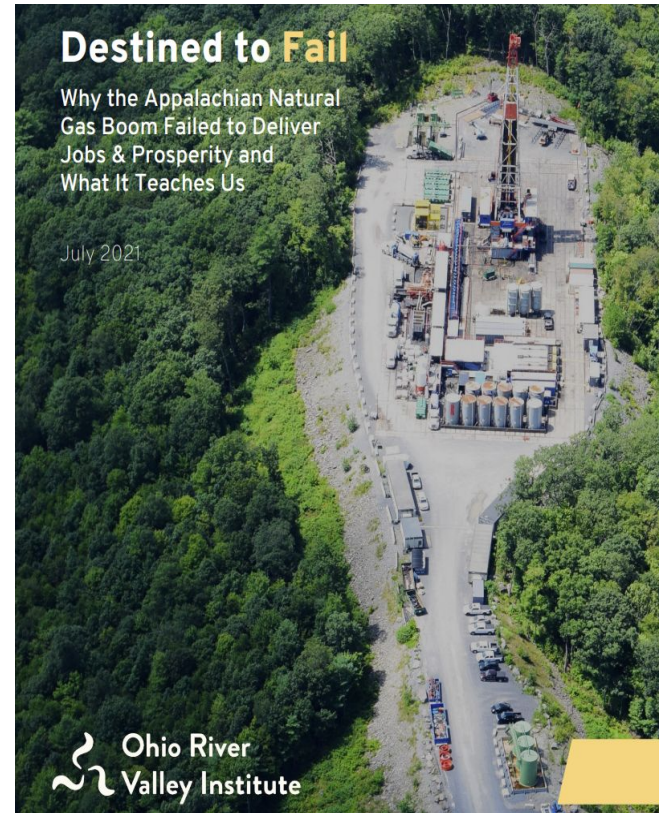
Economic stagnation - the hub wouldn't create very many jobs

The ARCH2 Hub would see employment increase of only 1% across three states of OH, WV, PA

Major fracking counties in eastern Ohio lead the state in job losses.

Fracking counties in eastern Ohio also lead the state in population loss

Source: Ohio River Valley Institute



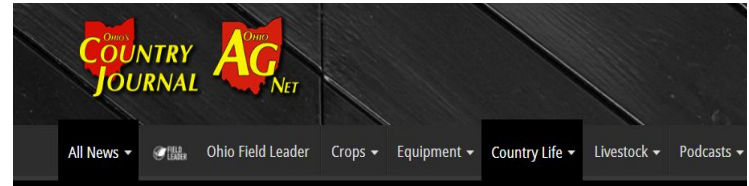
Requires a ridiculous amount of water

Fracking alone requires much water throughout the process.

Hydrogen production also uses a lot of water.

Even green H₂ uses a 9 to 1 ratio for hydrogen to water.

Droughts are becoming more common.



Home / Country Life / Ohio's farmers facing historic drought of 2024



This Pickaway County corn shows the challenges of a dry 2024 growing season.

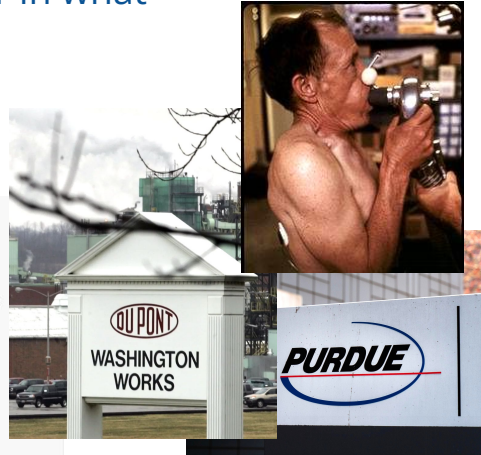
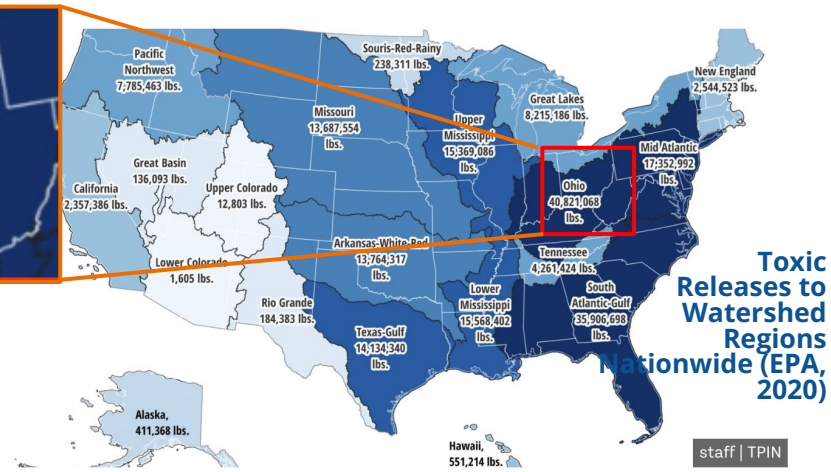
OHIO'S FARMERS FACING HISTORIC DROUGHT OF 2024

August 29, 2024 Country Life, Top Headlines 1 Comment



Environmental and Disability Justice

The proposed infrastructure for ARCH2 is just the most recent layer in what amounts to **230 years** of Extractive industrial harm In the Ohio River Valley.



Project: Appalachia: Demographic and Socioeconomic Trends

Appalachia's Residents Older, More Disabled Than Other U.S. Residents

CREATING A CULTURE OF HEALTH IN APPALACHIA
DISPARITIES AND BRIGHT SPOTS

Appalachian Disease Mortality Rates Compared to the National Rate

Heart disease	17% higher
Cancer	10% higher
Chronic Obstructive Pulmonary Disease	27% higher
Injury	33% higher
Stroke	14% higher
Diabetes	11% higher

Appalachia already has some of the **highest rates of disability in the developed world.**

- **TIMBER**
- **SALT**
- **COAL**
- **OIL**
- **NATURAL GAS**
- **BYPRODUCT***

*Fracked brine waste, coal bed methane, fly ash, hydrogen etc.

The Chair of UK Hydrogen & Fuel Cell Association stepped down from his position

...because he could no longer support blue hydrogen, which he warned could prolong fossil fuel use and damage the nation's climate agenda.

“I believe passionately that I would be betraying future generations by remaining silent on that fact that blue hydrogen is at best an expensive distraction, and at worst a lock-in for continued fossil fuel use that guarantees we will fail to meet our decarbonisation goals,” Christopher Jackson - The chair of the UK Hydrogen & Fuel Cell Association (UK HFCA),

Opportunities for citizen involvement

ARCH2 “open house”:

January 9th 6-9pm

Walsh University - Barrette Center

- 2020 East Maple St.
- North Canton, Ohio

[Link to form](#) to register to join us- you must fill this out if you want to join us at the open house.

(We will contact you after filling out the form.)

[Volunteer with us](#)

[Link](#) to volunteer form

**LTE, organizing folks,
graphic design, etc**

Stay Involved With Us!

Environmental Impact Statement Citizen Involvement

The Department of Energy is holding a public virtual meeting on January 16th. [Link to register.](#) The public can speak at the meeting.

Deadline is March 3rd to submit comments. [Link with instructions](#) to submit comments.

In-person public scoping meetings - February 2025.

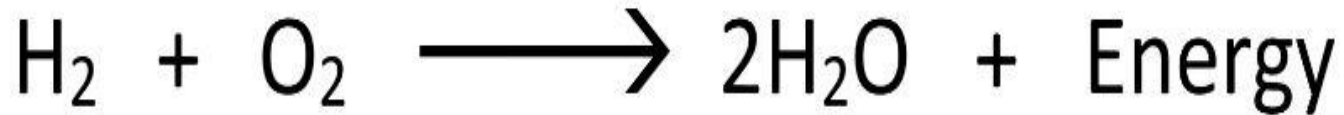
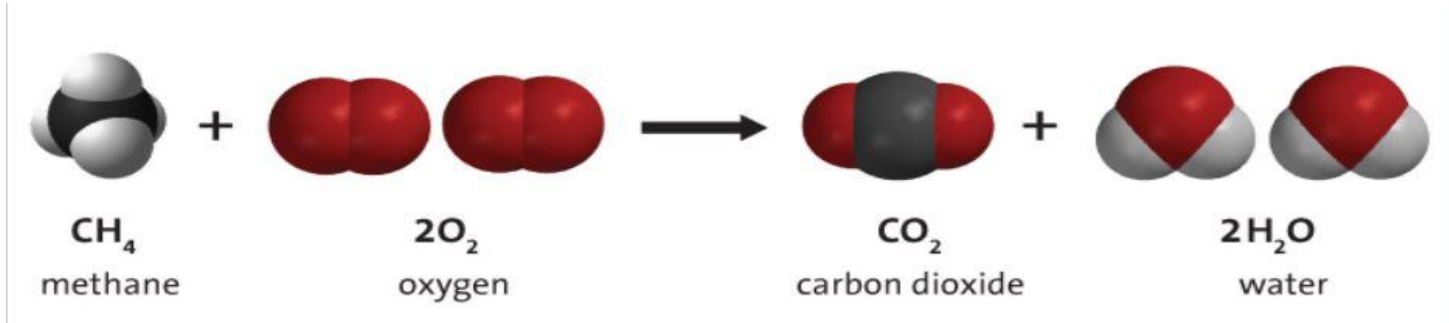
In person meetings from BEN TBA. Stay connected with us for more info.

Environmental and Health Issues Associated with Hydrogen as a Fuel Source

Randi Pokladnik, Ph.D. Environmental Studies

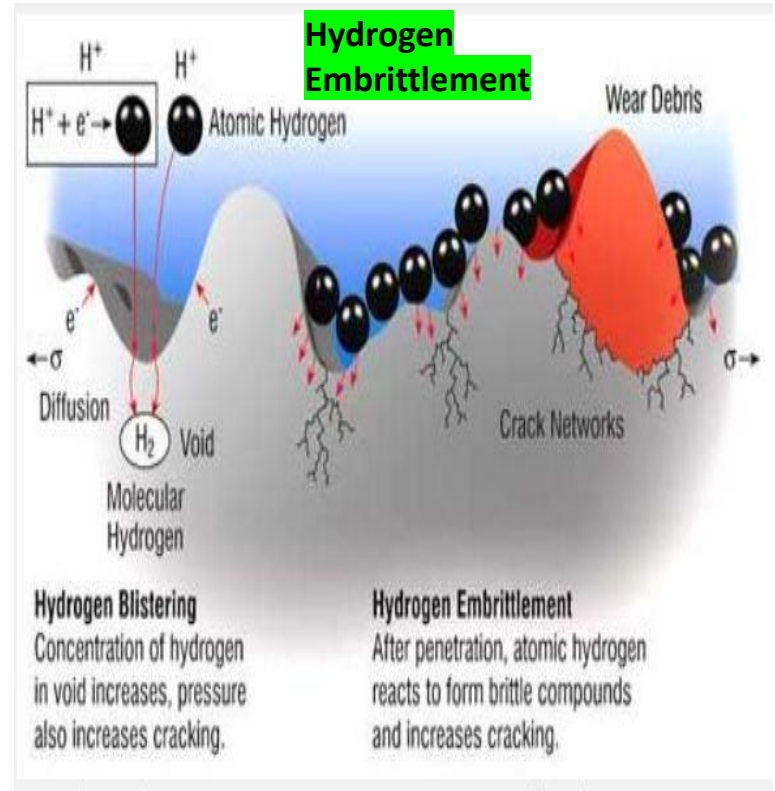
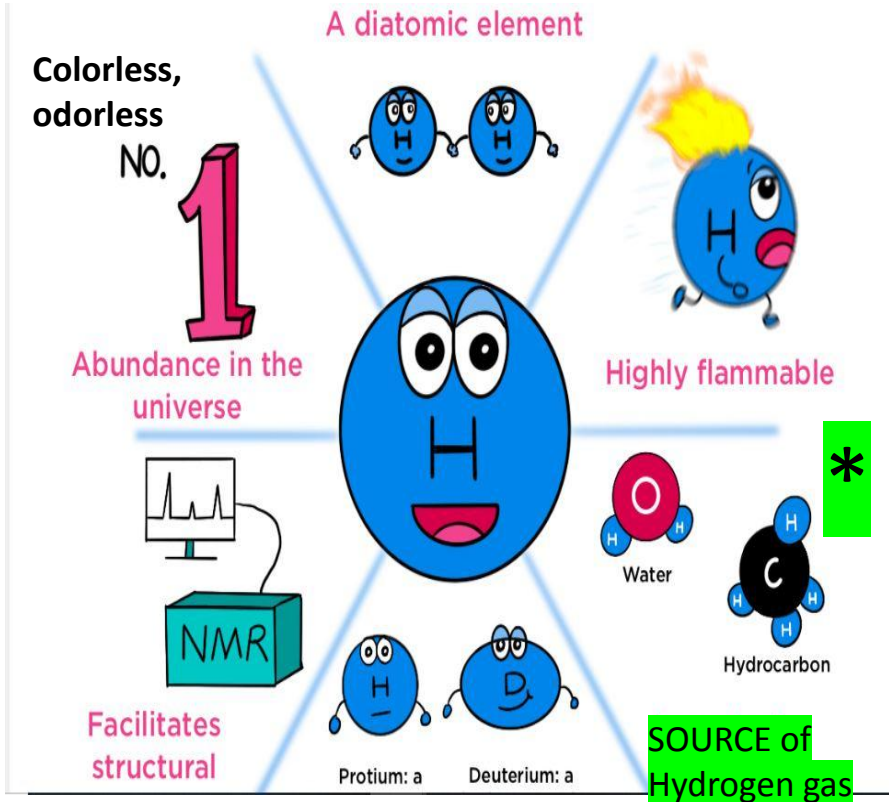
Volunteer for Faith Communities Together for a
Sustainable Future FaCT Ohio

Why Hydrogen?



Hydrogen Combustion Chemical Equation

Characteristics of Hydrogen



Safety Issues with Blended Hydrogen Gas

- CH₄ pipelines can only handle low hydrogen blends (<20%) before imposing safety risks (embrittlement).
- As little as 5% and up to 20 % hydrogen blended into existing gas pipelines can lead to unacceptably high risk of explosions in homes or urban areas.
- Hydrogen can leak through the walls of plastic pipes and mechanical joints of steel or iron pipes three times faster than methane.
- Hydrogen gas does not have an odor agent (mercaptan) to help detect leaks. Companies rely on H₂ Sensors instead.

H₂ gas is an indirect greenhouse gas

- Over a 100-year period, an emission of 1 kg of hydrogen leads to as much global warming as 4.3 kg of CO₂.
- H₂ chemical reactions change the abundances of the greenhouse gases methane, ozone, and stratospheric water vapor, as well as aerosols.

How Hydrogen Can Warm the Earth

Hydrogen interferes with the breakdown of heat-trapping methane in the atmosphere. It has other warming effects, too.



Hydroxyl radical cleans atmosphere of CH₄

Stratosphere

(upper atmosphere)

Hydrogen increases high-altitude water vapor.

Troposphere

(lower atmosphere)

Hydrogen increases ozone levels here, a greenhouse gas and key component of smog.

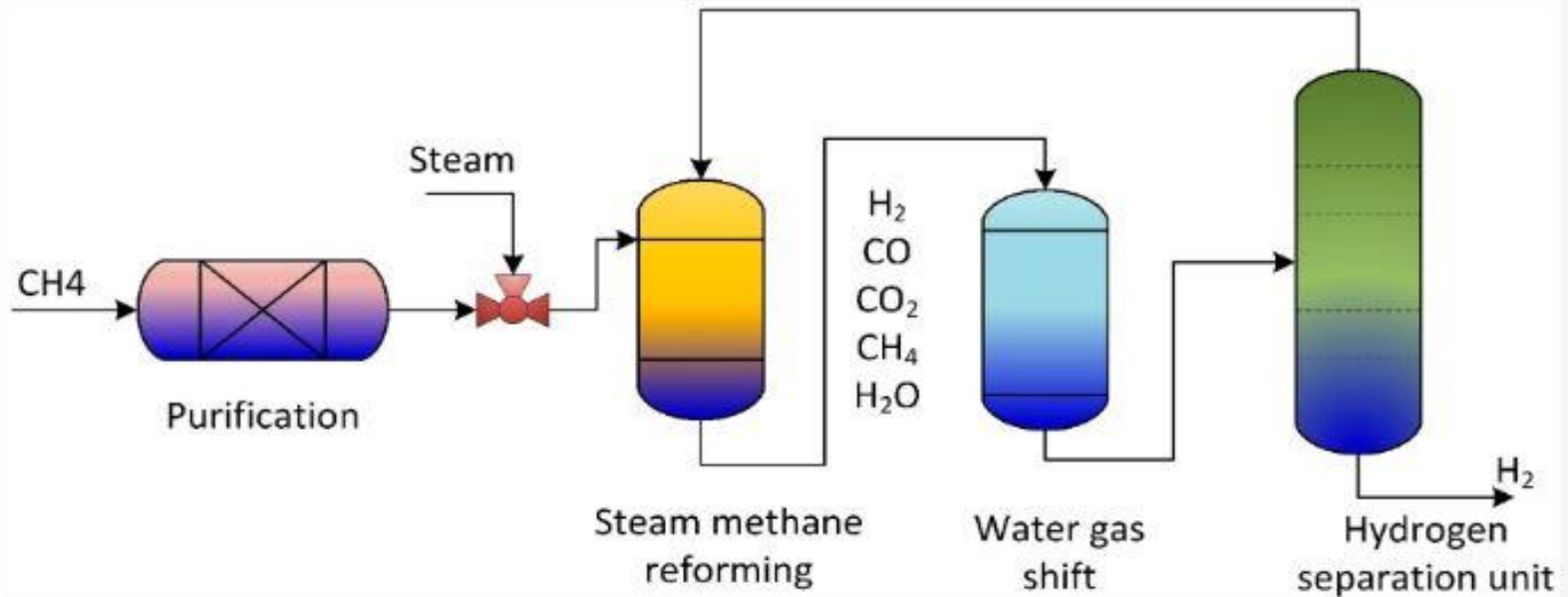


The H₂ from ARCH2 projects can come from methane or water

- Steam Methane Reforming uses water and CH₄ to generate H₂ gas
- Biogas uses anaerobic digestion to create CH₄ and then H₂ is removed (think septic tank or landfill)
- Electrolysis uses water as a source of H₂

Steam Methane Reforming

Figure 1. Schematic of traditional methane reforming unit for hydrogen production.

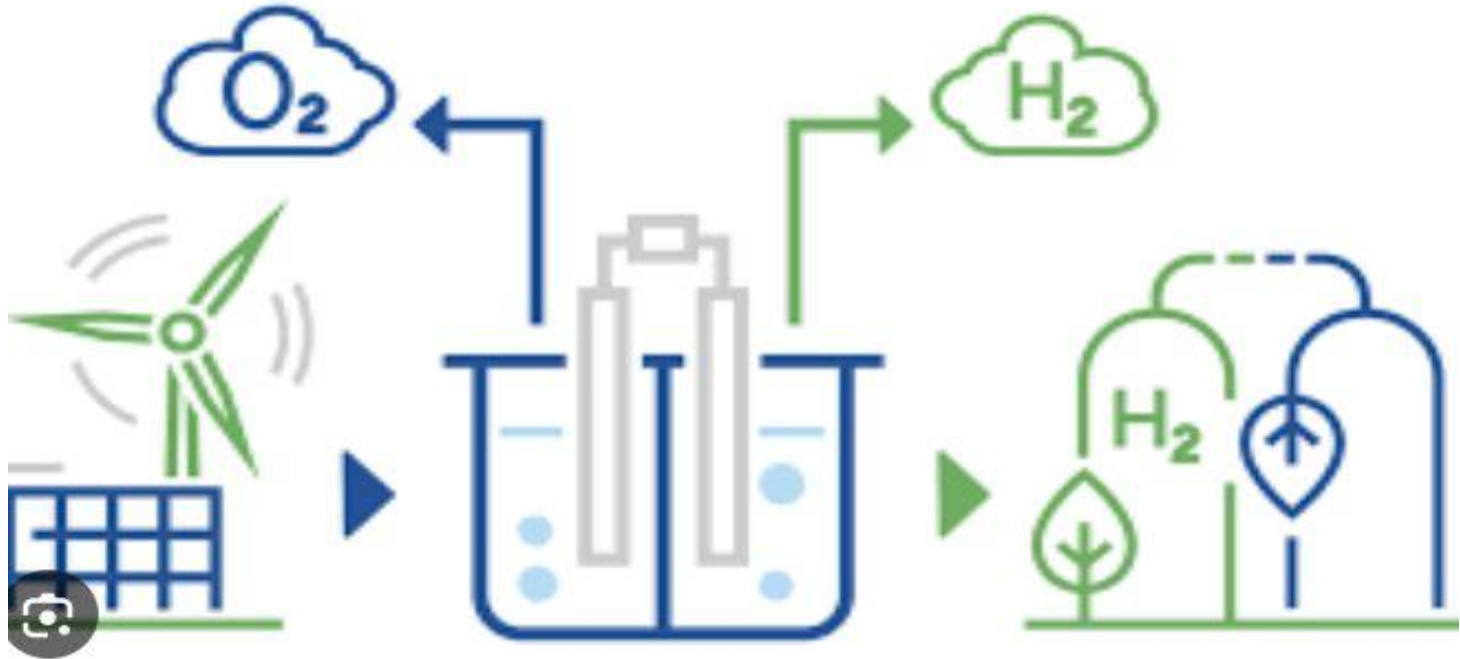


Biogas: Hydrogen is obtained from methane generated from organic wastes



Availability of feedstock, energy use and methods to separate H_2

Electrolysis using green energy NOT Fossil Fuels



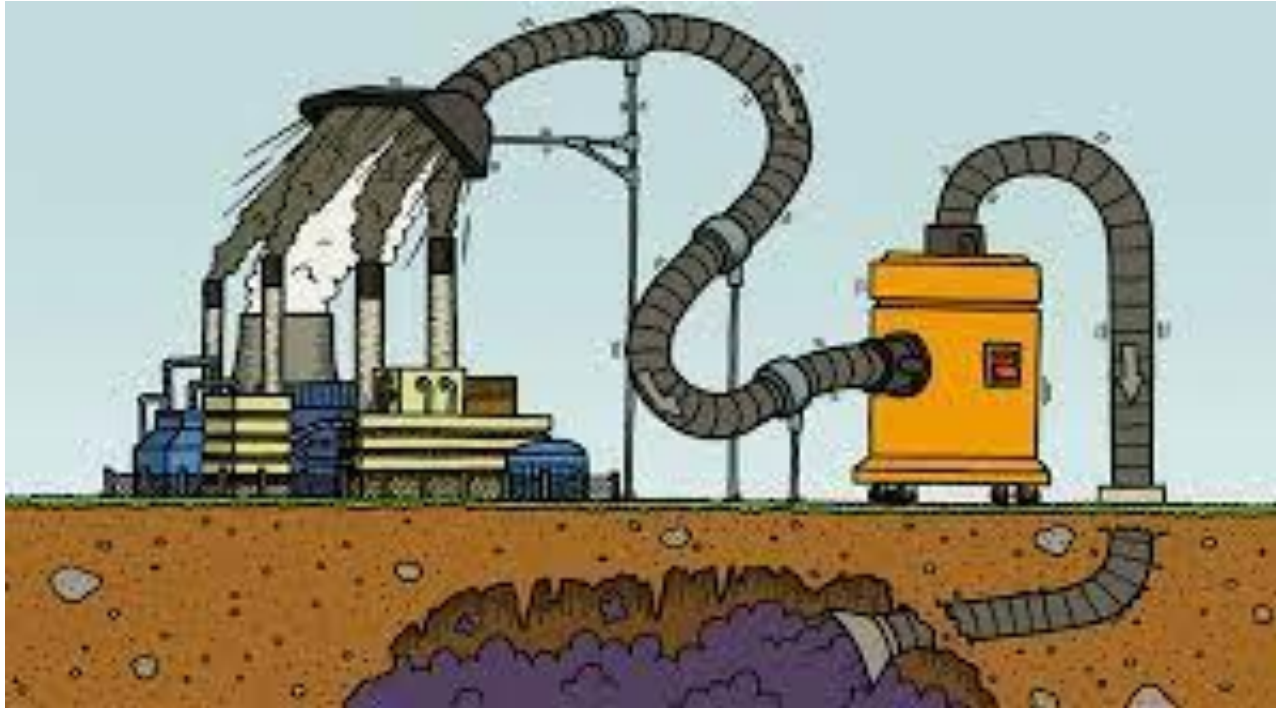
Green Hydrogen using renewable energy to create the hydrogen has issues.

- Ohio has only 4 % of its electricity with renewables, West Virginia has 7 % and Pennsylvania has 3 %.
- Electrolyzers as well as H₂ Fuel cells need PFAS ionomers for the proton exchange membrane (PEM)
- There are no federal rules or regulations for transporting hydrogen via interstate pipelines

Blue Hydrogen relies on Carbon Capture

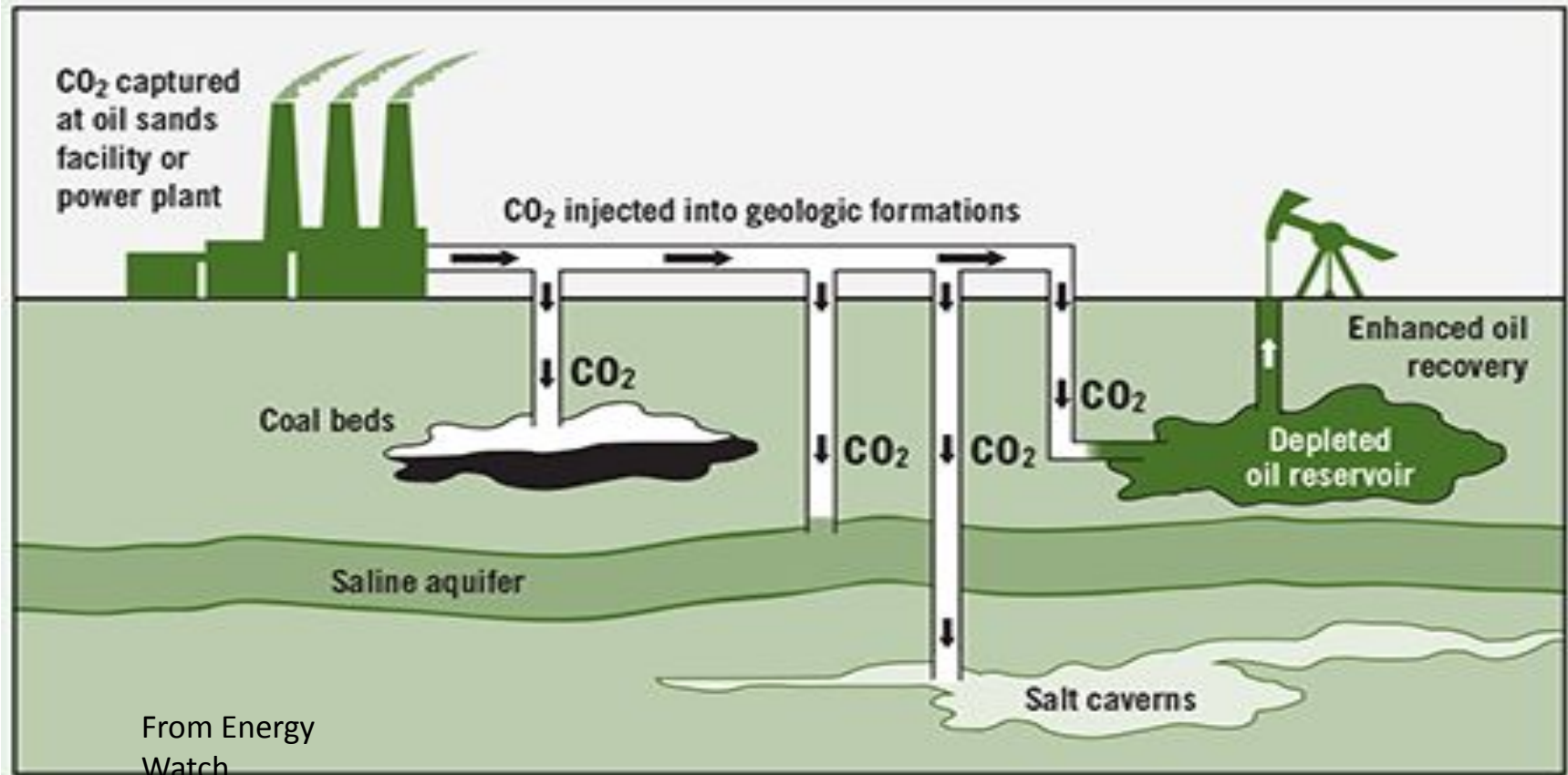
- Historical failure rate of CCS projects from 1972 to 2018 is (88%)
- There is no evidence that CO₂ injected into geological formations will remain there in the long term.
- **Inefficient, energy-hungry and costly:** only viable if tax-payer money is used to subsidize it.
- Currently, CCS projects capture around 0.1% of global emissions, or about 45 million metric tons of carbon dioxide (CO₂).

What industry wants us to think CCS looks like

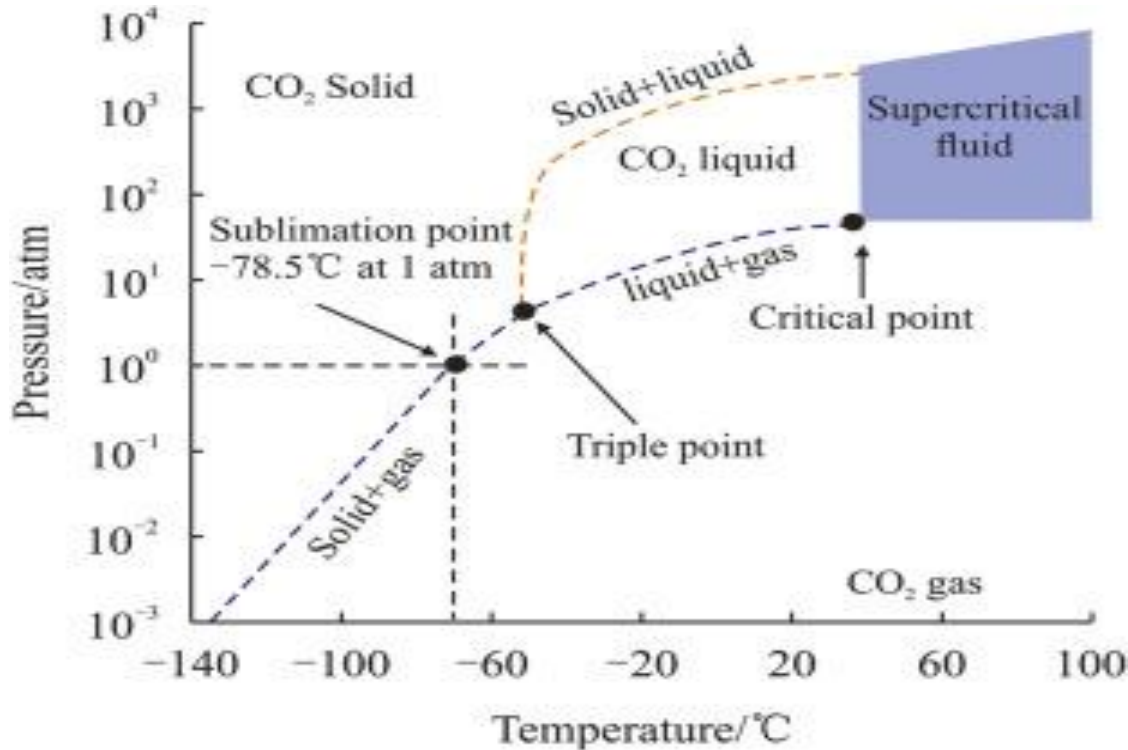


Financial

What CCS really looks like



Energy is needed to compress CO₂ into a supercritical fluid when it is injected below the surface

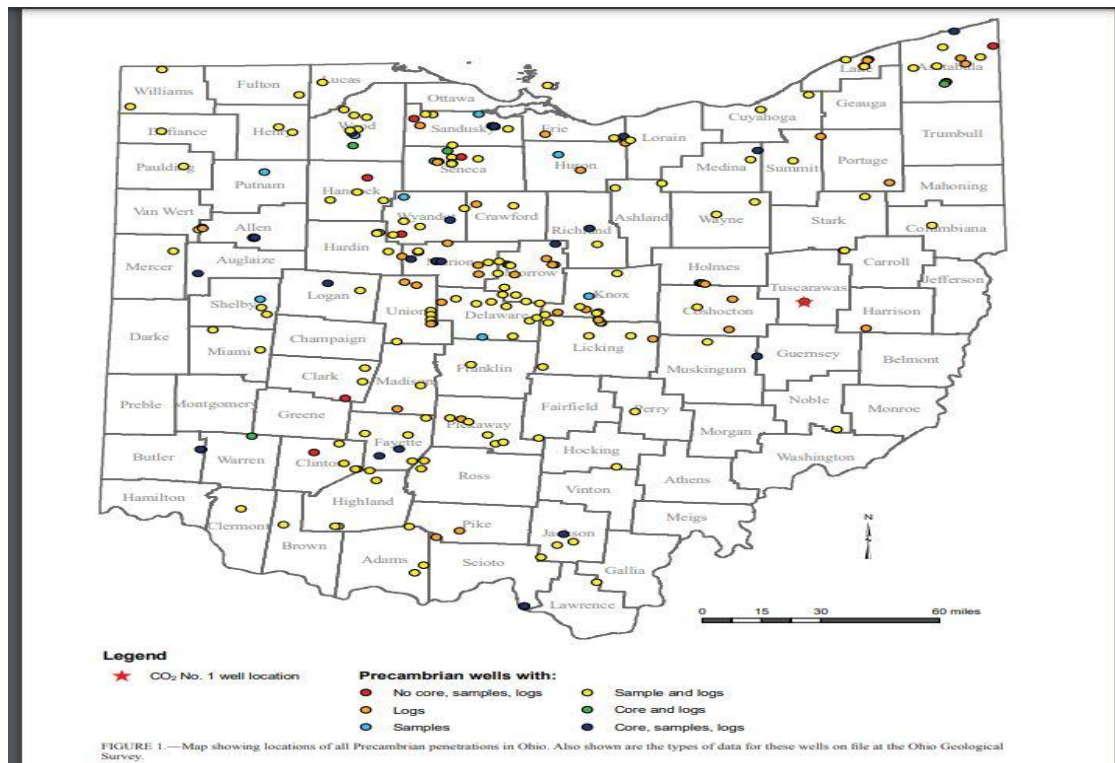


When a pipeline is ruptured the Carbon dioxide travels to the Surface and becomes a concentrated Gas again.

Tuscarawas County Test Well 2011

Only 2 Commercial Class VI Wells in Operation in

USA





R. Pokladnik Fractionator at Scio, Ohio

Blue Hydrogen Means MORE FRACKING



**Ohio River
Valley Institute**

January 7, 2025



The Appalachian Regional Hydrogen Hub
Far from a “done deal”



In September 2023, before the DOE announced the regional hydrogen hubs, ORVI said this about a prospective Appalachian hydrogen hub.

Because hydrogen and carbon capture are economic for only a few industries, which generate little demand, an Appalachian H2 & CCS Hub will either . . .

be a small affair that has disappointingly little economic and environmental impact

or

hydrogen and CCS will be force-fed into applications for which they are not economic, resulting in higher prices, higher utility bills, and higher taxes, with little or no net economic benefit.

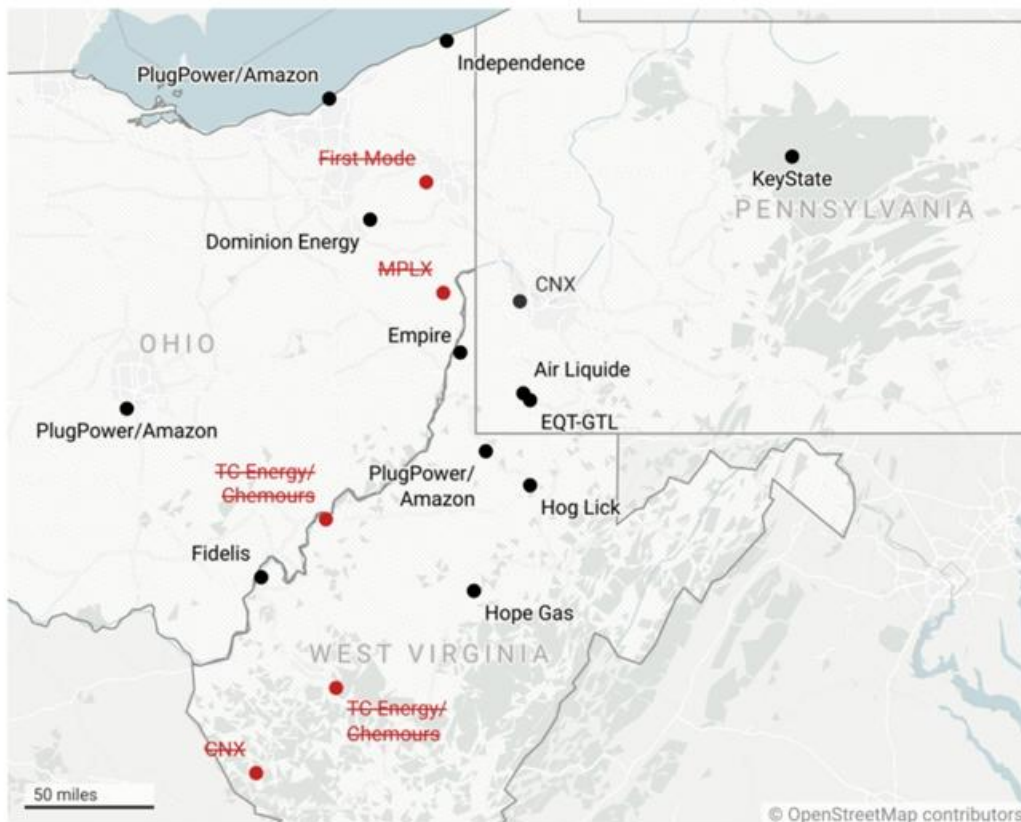
Is the ARCH2 hydrogen hub coming apart: Sure looks like it.

Many ARCH2 projects are being developed by undercapitalized, largely notional companies that have no history of successfully developing and operating large-scale industrial facilities.

- Four project development partners have left the hub,
- Five of the fifteen originally proposed projects have been scrubbed,
- Two of the remaining project development partners are in states of chronic financial crisis,
- Two more have never developed or managed a significant industrial facility,
- And two of the principal uses to which the surviving projects propose to put hydrogen are described by respected industry analysts as “[uncompetitive](#)” and “[terrible](#)”.

An overview of projects that are in and out

In losing Marathon (MPLX) and TC Energy/Chemours, ARCH2 has lost its best financed and most stable development partners



Prospects further damaged by the 45V final rule

The day the Treasury Department announced its final rule for the 45V Clean Hydrogen tax credit, CNX Resources saw its stock price plunge by 20%.

While the natural gas industry got some favors with respect to calculating methane leakage rates and the sale of carbon offsets, the rule will not allow coal mine methane and other fugitive methane to be “blended” with conventionally sourced methane for the purpose of calculating emissions impacts.

Consequently, little if any blue hydrogen will qualify for the top-tier subsidy of \$3/kg and will at most qualify for a subsidy of just \$.75/kg.



In response to its crisis, ARCH2 is recruiting new development partners

In early October, ARCH2 issued an RFI seeking new project proposals.

It seeks projects that constitute “full or partial hydrogen value chain solutions” with a preference for “projects addressing connective infrastructure”.



Appalachian Regional Clean Hydrogen Hub (ARCH2) Issues New RFI for Clean Hydrogen Projects

The Appalachian Regional Clean Hydrogen Hub (ARCH2) is excited to announce a new [Request for Information \(RFI\)](#) for potential clean hydrogen projects. We are seeking innovative proposals to add to our portfolio that demonstrate excellence in hydrogen production, processing, delivery, storage, and/or end-use. This is a great opportunity for new and existing partners to showcase transformative projects aligned with the Department of Energy's goals for a clean hydrogen economy.

Key Highlights:

- **Funding Availability:** Up to \$110 million in federal assistance for up to three projects.
- **Submission Deadline:** Friday, November 8, 2024.
- **Focus Areas:** Full or partial hydrogen value chain solutions, with preference for projects addressing connective infrastructure.

Who Should Apply?

We encourage submissions from both new entities and existing ARCH2 partners. Projects that offer additional scope beyond those already funded are also welcome. This is your chance to be a part of the growing hydrogen economy in Appalachia.

How to Apply:

- Please read the full RFI details and submit your proposal by email to ARCH2RFI@battelle.org.
- Ensure your submission follows the guidelines outlined in the RFI and includes all necessary documentation.

Contact us directly at ARCH2RFI@battelle.org with any questions. We look forward to your participation and collaboration in advancing clean energy solutions for our region.

[View RFI](#)

And many H2 projects aren't affiliated with ARCH2

In all, we know of nearly four dozen hydrogen-related projects that have been proposed, although few have yet been developed.



Dominion Energy tests blending of hydrogen into natural gas on appliances of various ages in its mini-village.

ARCH2's and DOE's "Involvement" plan



As ARCH2's development has sputtered, so has its community outreach

A series of DOE-facilitated webinars have generally been judged to have been disastrous.

ARCH2-managed events have been poorly attended by developers, short on information, and formatted in ways that discourage public dialogue.

OHIO COMMUNITY OPEN HOUSE

Date: Thursday, January 9, 2025 6:00 PM – 9:00 PM | **Location:** Barrette Center – Walsh University,
2020 E Maple St, North Canton, OH 44720



54 regional organizations concerned about ARCH2

1. 350 Pittsburgh 2. Alliance for Appalachia 3. Appalachian Voices 4. Beaver County Marcellus Awareness Community (BCMAC) 5. Better Path Coalition 6. Between the Waters 7. Black Appalachian Coalition 8. Breathe Project 9. Buckeye Environmental Network 10. Center for Coalfield Justice 11. Center for International Environmental Law 12. Citizens for a Healthy Jessup 13. Clean Air Council 14. The Climate Reality Project 15. Concerned Health Professionals of Pennsylvania 16. CREATE Lab, Carnegie Mellon University 17. Delaware Riverkeeper Network 18. Earthworks 19. Environmental Health Project 20. Fair Shake Environmental Legal Services 21. FracTracker Alliance 22. Heartwood 23. League of Women Voters of West Virginia 24. Marcellus Outreach Butler 25. Mid-Ohio Valley Climate Action 26. Mon Valley Clean Air Coalition 27. Mountain Lakes Preservation Alliance 28. Mountain Watershed Association 29. Move Past Plastic (MPP) 30. NEPA Green Coalition 31. No False Solutions PA 32. North Braddock Residents for Our Future 33. Ohio Valley Allies 34. PCUSA 35. PennEnvironment 36. PennFuture 37. People Over Petro Coalition 38. Physicians for Social Responsibility Pennsylvania 39. Pittsburghers Against Single Use Plastics (PASUP) 40. Putting Down Roots 41. Rail Pollution Protection Pittsburgh (RP3) 42. Responsible Decarbonization Alliance (RDA) 43. Rise Up WV 44. River Valley Organizing 45. Science and Environmental Health Network 46. Three Rivers Waterkeeper 47. Vote Solar 48. Watchdogs of Beaver County 49. Watchdogs of Southeastern Pennsylvania (WaSEPA) 50. Water Is Life Church 51. West Virginia Chapter of Sierra Club 52. West Virginia Environmental Council 53. West Virginia Highlands Conservancy 54. West Virginia Rivers Coalition

The petition to DOE

These organizations signed [a joint petition](#) asking DOE to:

- Disclose all the information necessary for the public to understand what the Appalachian Regional Clean Hydrogen Hub would mean for the region and its communities.
- Work with community and environmental justice stakeholders to design an engagement structure that empowers the public to exercise real decision-making.
- Suspend negotiations with the Appalachian hydrogen hub until the first two conditions can be met and the public, as promised, is meaningfully engaged in this process.

CO2 Plenary

Carolyn Raffensperger and the folks at the Science and Environmental Health Network have formed an organization called CO2 Plenary that meets occasionally and includes a message board that regularly circulates news of regional and national developments.

Participation is restricted. Reach out to Carolyn to see about participation.

Raffenspergerc@cs.com

The Trump effect

- Nominees for EPA (Lee Zeldin of NY) and DOE (Chris Wright, a fracking executive from Colorado) are supportive of fossil fuels and CCS.
- Regulatory relief for CCS and blue H2 is almost inevitable.
- Unclear how the IRA, which provides most of the funding for CCS and hydrogen, will fare.
- Not clear the Trump administration will be able to throw more money at CCS and blue H2 or how aggressively industry will continue to pursue them