THE **MIDWEST HYDROGEN** CENTER OF EXCELLENCE

A Key Initiative of the Renewable Hydrogen Fuel Cell Collaborative

April 28, 2025

Chairman Don Jones
Ohio House Natural Resources Committee
The Ohio House of Representatives
136th General Assembly
77 S. High Street; Floor 11
Columbus, Ohio 43215

Transmitted By Email to: OHRNaturalResourcesCommittee@ohiohouse.gov

Re: Comments to HR 170 Establishing Process for Carbon Capture and Geologic Sequestration Regulations in Ohio

Dear Chairman Jones, Vice Chairman Robb Blasdel, Ranking Member Rogers, and members of the House Natural Resources Committee:

The Midwest Hydrogen Center of Excellence (MHCoE) hereby submits the following comments in support of efforts to draft an enabling statute that will facilitate primacy for regulation of Class VI wells in Ohio. The MHCoE has studied the legislation proposed in HB 170 and compared it to that in other states where primacy has been granted, including Wyoming and Louisiana. The proposed HB 170 accomplishes the principal tasks that will be required for Ohio to be granted primacy by the U.S. Environmental Protection Agency, and it will enable the Ohio Department of Natural Resources to effectively manage the Class VI well injection program. It further includes language clarifying pore ownership rights and unitization strategies for Ohio, both critical to successful geologic sequestration. Both are in accordance with best practices established in other states that have been granted primacy.

The MHCoE is a hydrogen transit commercialization research and education outreach center funded by Stark Area Regional Transit Authority (SARTA), with support from the Federal Transit Administration and other grants. The MHCoE is managed for SARTA by the Energy Policy Center at the Levin College of Public Affairs at Cleveland State University. SARTA operates a fleet of 20 hydrogen fuel cell buses, together with a hydrogen refueling station at its depot in Canton, Ohio, comprising the largest U.S. hydrogen bus fleet outside of California.

SARTA obtains its hydrogen from an industrial gas company that is currently trucking it to Canton from Sarnia, Ontario, where it is made from natural gas through steam methane reforming. SARTA currently uses around 400 kg/day of H2, and expects this will go up to close to 1000 kg/day as it expands its H2 fuel cell fleet. SARTA expects to decarbonize this supply through the Department of Energy ARCH2 initiative, funded by the 2023 Bipartisan Infrastructure Bill, and led by Battelle. However, SARTA's hydrogen bus fleet is just the beginning of the hydrogen economy in Ohio. Transit, trucking, trains and other large, long haul transportation vehicles cannot economically decarbonize through battery electric technologies. Clean hydrogen will be required at scale for this. Ohio will in the coming years depend upon hydrogen refueling infrastructure throughout the state.

For Ohio, clean hydrogen at scale requires carbon sequestration. Ohio needs Class VI primacy now to begin the process of decarbonizing its transportation and industrial (and eventually its electricity and thermal) sectors. The MHCoE has studied the hydrogen demand trends in Ohio and has examined potential sources of clean hydrogen.[1] We project that by 2050, absent any decarbonization incentives, Ohio will consume about 2 million metric tons of hydrogen per year (3 million per year if the Inflation Reduction Act is not overturned). Using current growth rates experienced for the adoption of renewable or nuclear energy (used for electrolysis), we project that the vast majority the hydrogen supply will have to come from natural gas, through a process known as steam methane reformation. This supply would require around 280 billion cubic feet of gas per year, or about 12.5% of Utica production in Ohio.

Projected Supply of Hydrogen in Ohio by Source

Source	2030	2040	2050
Electrolysis via Nuclear Power	9,300	50,700	59,600
Electrolysis via Renewable Sources	86,600	112,800	135,900
Natural Gas (SMR)	341,700	490,100	1,788,400
TOTAL	**437,600**	**653,600**	**1,983,900**

Units are in metric tons

- Assumes electrolytic hydrogen production limited to 15% of power generation capacity.
- Hydrogen from natural gas is what is supplied to meet demand after accounting for hydrogen from nuclear power and renewable sources.
- 1.8 million metric tons of hydrogen supplied via SMR would require around 280 bcf of natural gas.
    - 280 bcf ≈12.5% of what Ohio shale wells produced annually.

Decarbonization of this natural gas must be accomplished through carbon capture and sequestration. Most of this sequestration will have to be in the form of geologic storage. According to a study done by the University of Michigan, the Great Lakes region has about 3 gigatons of CO2 carbon sink capacity from reforestation or concrete/construction aggregates. But it has over 50 gigatons of sink capacity for geologic storage.[2] (Battelle has independently estimated CO2 storage potential of around 20 gigatons in Eastern Ohio.)[3] With Great Lakes regional CO2 emission of 1.5 gigatons/yr, geologic storage will be necessary to

[1] Henning, Mark and Thomas, Andrew R., "Developing a Hydrogen Economy in Ohio: Challenges and Opportunities" (2022). *All Maxine Goodman Levin School of Urban Affairs Publications*. 0 1 2 3 1765. https://engagedscholarship.csuohio.edu/urban_facpub/1765

[2] Fancy, Susan; Cobb, Morgan; and Taylor, Jacqueline, "Positioning the Great Lakes Region as a Leader in the Voluntary Carbon Offset Market" (2022). *University of Michigan Global CO2 Initiative*. https://deepblue.lib.umich.edu/bitstream/handle/2027.42/174699/Carbon%20Offsets%20Report_Executive%20Summary_Pages.pdf?sequence=7&isAllowed=y

[3] Gupta, Neeraj, et al., "CO2 Storage Resource Assessment of Deep Saline Cambrian-Ordovician Formations in Eastern Ohio" (2016). *Battelle*. https://www.searchanddiscovery.com/documents/2016/80561fukai/ndx_fukai.pdf

decarbonize hydrogen and other industrial sectors. Exporting this sequestration out of Ohio would add significant operating costs to Ohio manufacturers, metals/chemical companies and transportation fleets, threatening their competitive position from states where sequestration is readily available. Ohio has the knowledge and expertise to effectively manage a Class VI well program, just as it has done for all other underground injection control (Class I-V) well programs.

The passage of the HB 170 will be an important step toward keeping Ohio's industrial manufacturers and transportation fleets competitive in the long term. It is for these reasons, the Midwest Hydrogen Center of Excellence submits these comments in support of passing HB 170.

Total Great Lakes Region Carbon Sink Potential 2022-2050

Potential Carbon Dioxide Sinks	Cumulative CO2 Removal Capacity (gigatons)
Reforestation	2.2
Aggregates for Construction and Concrete	0.79
Geologic Storage:	
Deep saline aquifers	14 - 51
Depleted oil and gas reservoirs	1.8 - 5.3

1 gigaton = 1 billion metric tons

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