



**Ohio House Energy and Natural Resources Committee**  
**The Honorable Thomas Hall, Chairman**

**Proponent Testimony**

**House Bill 358**

**Jennifer Stewart | American Petroleum Institute**

**June 12, 2024**

Chairman Hall, Vice Chairman Lear, Ranking Member Rogers, and members of the Ohio House Energy & Natural Resources Committee, thank you for the opportunity to provide proponent testimony on HB 358.

The American Petroleum Institute (API) represents all segments of America's oil and natural gas industry. Its nearly 600 members produce, process, and distribute most of the nation's energy. API represents all segments of the U.S. oil and natural gas industry, and many of API's members are investors, operators, and developers of carbon capture and storage "CCS" projects and technologies. API supports efforts to drive economic development and greenhouse gas (GHG) emission reductions through sound policies that encourage innovation and the development and deployment of viable emission reduction technologies like CCS, and our members support a comprehensive regulatory state frameworks enabling deployment of CCS technologies.

API shares Ohio's goal of supporting a robust economy by advancing both production of Ohio's vast oil and natural gas resources and its manufacturing base, while at the same time reducing emissions to the lowest levels in a generation reducing GHG emissions. The state has some of the lowest-emitting gas plants in the country due in large part to the development of Ohio and the Appalachian basin's abundant natural gas resources; Ohio generates the 6<sup>th</sup>-most electricity from natural gas in the US, and has some of the lowest emitting gas plants in the United States. Ohio's power sector led all other states in terms of CO<sub>2</sub> emissions reductions between 2005 and 2021, and CO<sub>2</sub> emissions from the power sector fell by *half* during that period. CCS will allow Ohio to continue this trajectory. To achieve all goals takes a combination of policies, innovation, voluntary initiatives and partnerships between government and private sectors and API plays a key role in convening multiple stakeholders regarding CCS infrastructure and technology.

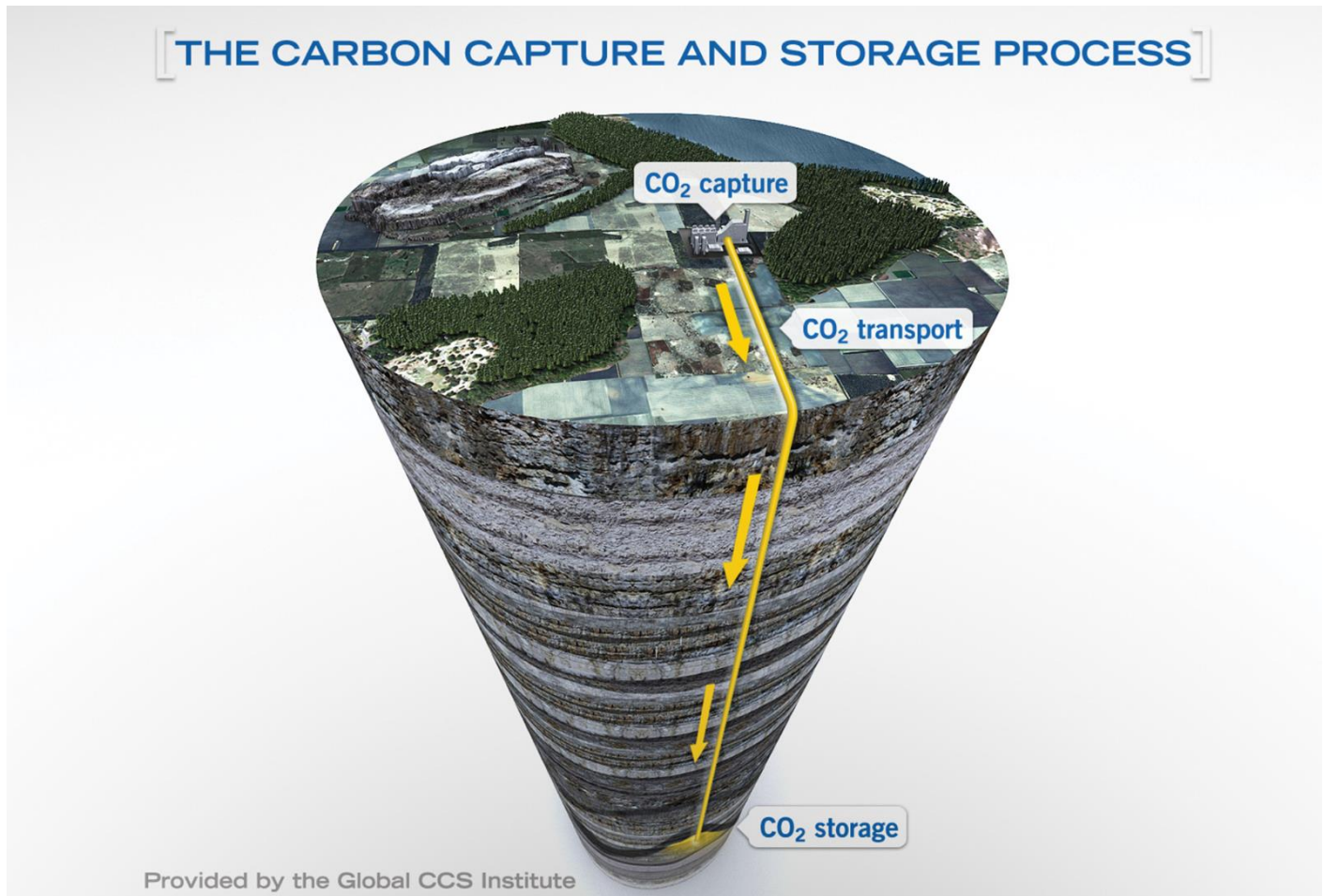
Carbon capture and storage refers to technologies that capture carbon dioxide (CO<sub>2</sub>) and store it permanently up to a mile or more underground, in what are known as Class VI wells (a designation by the Environmental Protection Agency). CCS includes both capturing CO<sub>2</sub> from large emission sources (referred to as point-source capture) and directly from the atmosphere.

Point-source capture is when a large emission source, like a cement industrial facility, is equipped with technology allowing the capture and diversion of CO<sub>2</sub> from industrial plants preventing it from being emitted. It is also possible to remove historical CO<sub>2</sub> emissions, those that are already in the atmosphere, through direct air capture (DAC). CCS can be applied across sectors vital to Ohio's economy, including cement, steel, fertilizers, power generation and natural gas processing, and can be used in the production of clean hydrogen.

***The following illustrates what a permanent CCS sequestration well looks like:***



**The representative depth of a Class VI permanent sequestration well:**



To expand let's look closer at cement, a multi-billion-dollar Ohio industry. Cement is the world's leading construction material — but it is responsible for around 8% of global CO<sub>2</sub> emissions. Carbon capture is a vital technology to decarbonize cement manufacture, as up to 70% of CO<sub>2</sub> emissions come from the chemical process of calcining calcium carbonate—which can't be achieved with other methods. CCS paves the way for the cement industry to reduce emissions in the process of calcination. Currently cement plants can only reduce direct CO<sub>2</sub> emissions using alternative fuels. Significant decarbonization cannot be accomplished without CCS. Legislation would lay a path for cement and other industries to create a system to capture the carbon from their processes and then transport it to a deep well location where CO<sub>2</sub> can be geologically stored, allowing Ohio-based industries to compete nationally and internationally.

**The below is a rendering of what a cement plant combined with CCS would look like:**



Illustration of Holcim's Kujawy CCS storage plant in Poland. *Source: Holcim Ltd.*

The International Energy Association (IEA) stated that CCS will play a major role in the global drive to reduce CO<sub>2</sub> emissions.<sup>1</sup> Policymakers recognize the need to drive CCS development and deployment forward, as evidenced by the 2021 Council on Environmental Quality (CEQ) report on CCS,<sup>2</sup> congressional passage of the Bipartisan Infrastructure Investment and Jobs Act, the Inflation Reduction Act's expansion of the 45Q tax credit for carbon storage, and efforts in many states, including Ohio, to establish the necessary legal and regulatory frameworks enabling CCS deployment. Importantly, the CEQ report found that CCS is a necessary means of reducing and removing CO<sub>2</sub> emissions, which "can reduce the costs of meeting climate goals, and maintain and create well-paying union jobs nationwide and globally."<sup>3</sup>

Despite these benefits, CCS deployment has been limited in part due to regulatory uncertainty. A lack of clarity surrounding key regulatory requirements and processes may hinder project development and limit investment into Ohio industries. CCS legislation would provide the predictability and clarity needed to support critical investment and assure project viability and success.

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<sup>1</sup> International Energy Association, "CCUS in Clean Energy Transitions," September 2020. <https://www.iea.org/reports/ccus-in-clean-energy-transition>

<sup>2</sup> Council on Environmental Quality, "Report to Congress on Carbon Capture, Utilization, and Sequestration," June 2021. <https://www.whitehouse.gov/wp-content/uploads/2021/06/CEQ-CCUS-Permitting-Report.pdf>

<sup>3</sup> *Id.* page 6.

With that backdrop, let's focus on the three main ways CCS can help drive economic opportunities for Ohio:

**First, by helping preserve the industrial base and helping provide jobs:** Ohio has robust industrial and agricultural sectors, including power generation, steel manufacturing, cement production, fertilizer production, ethanol production, and chemical processing, all of which are significant sources of carbon emissions. By deploying CCS, these industries can continue to operate competitively while at the same time reducing their environmental impact, safeguarding and creating jobs, and supporting local economies. Ohio must protect its industry workers. Without CCS, hard-to-decarbonize sectors such as those just mentioned may be vulnerable to job losses from energy transition and diversification policies despite being key employers in the Ohio River Valley.<sup>4</sup>

Implementing CCS technology requires skilled, well-paid labor creating job opportunities in engineering, construction, maintenance, and research sectors. Decarbonizing industry in Ohio could expand regional jobs in these industries while at the same time reducing CO<sub>2</sub> emissions. According to a 2021 study, "Implementing CO<sub>2</sub> transport infrastructure requires boilermakers and construction trades...pipeline workers and welders to build or repurpose the network of pipes...and subsurface engineers, welders, rig operators, and roustabouts."<sup>5</sup> Ohio is the seventh-largest ethanol-producing state in the nation and holds immense potential for carbon capture deployment in the ethanol industry. Seven of the state's ethanol facilities have the potential to create an annual average of up to 45 project jobs and 60 ongoing operations jobs while capturing two million metric tons of CO<sub>2</sub> per year; nine of the state's steel facilities have the combined ability to create an annual average of over 500 project jobs and approximately 500 ongoing operations jobs while capturing four million metric tons of CO<sub>2</sub> annually. In the power sector, four of the state's coal plants and nine gas plants can create an annual average of approximately 5,000 project jobs and 3,000 ongoing operations jobs while capturing 43 million metric tons of CO<sub>2</sub> per year.<sup>6</sup> These projections are on the low end and due to recent congressional action the job numbers may be much higher.

**Second, attracting investment and promoting Ohio's economy:** CCS helps provide economic opportunities to Ohio as companies are required by international and national law and regulations to make carbon reductions. By demonstrating a commitment to CCS deployment, Ohio can attract investment from energy companies, manufacturers, and financial institutions, driving economic growth and diversification. And Ohio is uniquely positioned to economically benefit from CCS. The Great Plains Institute calculated in 2021 that Ohio has 45 facilities that qualify for federal tax incentives, with 26 identified as feasible near-term CCS candidates with the potential to capture almost 45 million Mt of CO<sub>2</sub> annually – representing 45% of Ohio's total CO<sub>2</sub> emissions in the industrial and power sectors. Ohio is one of the top-ten coal-consuming states

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<sup>4</sup> Ohio River Valley Hydrogen and CCS Hub Market Formation Report, 2021.

<sup>5</sup> Labor Energy Partnership, Building To Net-Zero: A U.S. policy blueprint for gigaton-scale CO<sub>2</sub> transport and storage infrastructure, 2021

<sup>6</sup> Regional Carbon Capture Deployment Initiative, Jobs and Economic Impact of Carbon Capture Deployment: Ohio

and can capture up to 23 million Mt CO<sub>2</sub> annually at 4 state facilities, and it has 9 gas power plants that could capture 14 million Mt CO<sub>2</sub> annually in the near-term.<sup>7</sup>

**Finally, maintaining and increasing Ohio's role as a home as a leader in CCS academic and industry collaborations and as a partner to the Department of Energy in technology innovation.** In addition to participating in multi-state collaborations that support CCS development,<sup>8</sup> Ohio has over 20 years of CCS research experience through the Midwest Regional Carbon Sequestration Partnership. The Regional Initiative to Accelerate CCUS Deployment in the Midwestern and Northeastern USA project, led by Battelle Memorial Institute in Columbus, was [awarded](#) \$5 million of Department of Energy (DOE) funding in 2021. Ohio's colleges and universities are also leading the way: Case Western and Marietta College have active CCS technology research programs; other DOE CCS technology funding grants include Ohio University's \$2 million grant to study carbon capture;<sup>9</sup> as part of a recent \$45 million grant THE Ohio State University is partnering with Holcim and GTI Energy to develop carbon capture technology;<sup>10</sup> and finally the University of Cincinnati received a 1.8 million grant for carbon-capture technology research.<sup>11</sup>

In conclusion, carbon capture and storage offer a promising pathway for Ohio to continue to take advantage of, and even grow, Ohio's vast oil and natural gas resources and its manufacturing base, while at the same time reducing CO<sub>2</sub> emissions. Thank you for allowing API to present to this Committee.

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<sup>7</sup> *Id.*

<sup>8</sup> [ARCH2](#), the [Decarbonization Network of Appalachia](#), [TEAM](#) TriState Energy and Advanced Manufacturing Consortium, the [Tri-State Shale Coalition](#), the [Marshall Plan for Middle America](#): The Center for Sustainable Business at the University of Pittsburgh, [In-2-Market](#), and the [Roosevelt Project](#).

<sup>9</sup> <https://www.ohio.edu/news/2023/02/u-s-department-energy-awards-2-million-grant-ohio-researchers-explore-carbon>

<sup>10</sup> <https://techtransfercentral.com/2024/01/23/ohio-state-u-partners-with-gti-energy-and-holcim-us-to-develop-carbon-capture-technology/>

<sup>11</sup> <https://www.uc.edu/news/articles/2021/09/uc-to-lead-new-federal-project-that-addresses-climate-change.html>