

KEY TAKEAWAYS

- With over 20 years of carbon capture research and demonstration experience and 26 industrial and power facilities capable of capturing nearly 45 million metric tons of CO₂ annually in the near to medium term, Ohio holds immense promise for carbon capture technology.
- By developing enhanced state-level carbon capture policy, Ohio can continue essential research and demonstration projects to promote the deployment of carbon capture technology, bringing high-wage jobs and economic opportunity to communities, all while reducing CO₂ emissions.
- Near- and medium-term modeling suggests the state can utilize up to 929 miles of CO₂ transport infrastructure capable of generating over \$1.8 million in capital investment in the state.

SOURCES BY INDUSTRY & VOLUME

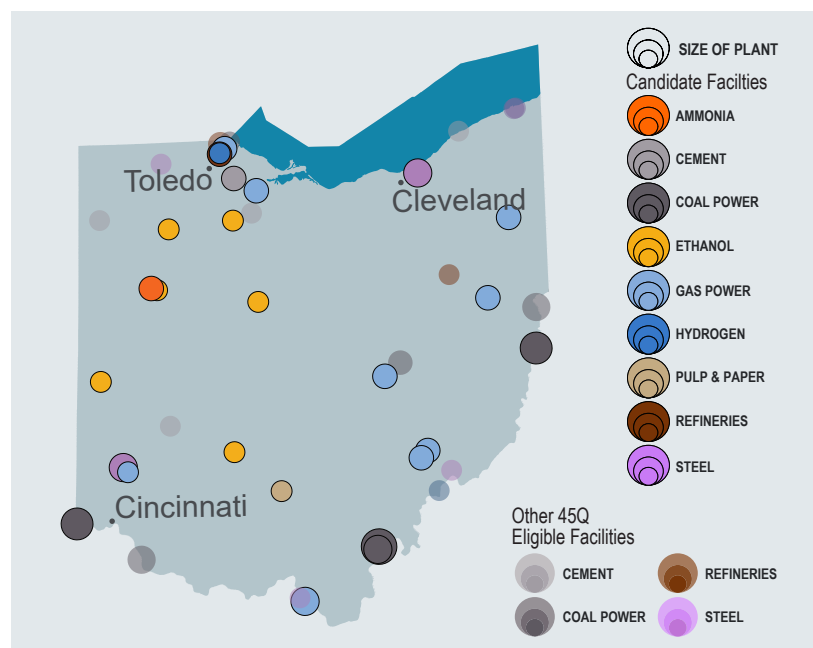


Figure 1: Ohio has several facilities large enough to qualify for the 45Q carbon capture tax credit, including ethanol, steel, cement, and power plants. Facilities identified by the Regional Carbon Capture Deployment Initiative as potential early candidates for capture retrofit based on emissions, equipment, and estimated capture cost, are shown with outlines and darker colors. Details on these facilities are listed in the table below. Source: Great Plains Institute 2021; EPA 2021.

POTENTIAL CANDIDATE FACILITIES FOR CAPTURE WITH ANNUAL EMISSIONS

Facility Name	Total Facility CO ₂ Emissions thousand tons	CO ₂ Captured Target thousand tons	Estimated Capture Cost \$/ton
4 Coal Power Plants	34,230	23,600	\$58 to \$67
9 Gas Power Plants	18,456	14,000	\$61 to \$67
2 Steel Facilities	8,480	3,700	\$71 to \$84
6 Ethanol Facilities	2,714	1,324	\$17 to \$21
1 Cement Facility	1,313	700	\$60
1 Pulp and Paper Facility	321	700	\$70
1 Refinery	1,947	500	\$66
1 Hydrogen Facility	504	280	\$51
1 Ammonia Facility	1,336	80	\$26

Table 1: The Regional Carbon Capture Deployment Initiative estimated theoretical facility capture costs based on published capture equipment costs, facility-specific operational patterns, existing equipment and level of emissions. Most states have a large number of facilities eligible for 45Q. Of those facilities, the above table lists likely economically feasible candidates based on estimated capture cost. This list is not meant to be definitive. Commercial decisions by participating companies, and policy and regulatory decisions by state governments, will ultimately determine if a project is feasible for carbon capture. Captured Emissions refers to the amount of carbon dioxide that can be expected to be captured at a facility considering relevant technological and economic constraints.

Source: GPI 2021; EPA 2021.

The **Regional Carbon Capture Deployment Initiative** brings together state officials with diverse industry, NGO, labor, and other stakeholders to promote broad scale deployment of infrastructure for carbon capture, CO₂ pipelines, enhanced oil recovery (EOR), other forms of geologic storage, and beneficial utilization of CO₂ in the Western and Midwest regions of the country.

The Initiative is staffed by the Great Plains Institute (GPI), a nonpartisan, nonprofit working to transform the energy system to benefit the economy and environment. For more information on this effort, go to carboncaptureready.org or contact Patrice Lahum at plahum@gpisd.net.

LEGISLATIVE CONTEXT

Ohio has demonstrated strong legislative support for carbon capture, most recently with the introduction of HR 115 in 2017, which urged Congress to support carbon capture projects and expand the federal Section 45Q tax credit. From 2003 to 2020, Ohio was involved in the Midwest Regional Carbon Sequestration Partnership, a project established to assess carbon capture potential, economic viability, and public acceptance of carbon storage. Through the group's effective small-scale CO₂ injection tests, the state was able to convene influential stakeholders to discuss and examine the future of carbon capture in Ohio. In 2020, Ohio began a new partnership called the Midwest Regional Carbon Initiative, where continued CCUS research and planning is currently taking place. Ohio Governor Mike DeWine has also expressed support for carbon capture as one of the solutions to creating a clean energy future in America. Enhanced state-level policy and regulatory guidance prioritizing and expanding existing research and demonstration projects for carbon capture technology in Ohio could further accelerate the deployment of emissions reducing carbon capture technology while bringing high-wage jobs and economic opportunities to communities, sustaining a thriving industrial and power sector, and reducing harmful CO₂ emissions.

CAPTURE AND STORAGE POTENTIAL

Forty-five facilities qualify for the reformed and extended 45Q tax credit in Ohio, with 26 of those facilities identified as economically feasible near-term candidates for carbon capture. These 26 facilities hold potential to capture nearly 45 million metric tons (MT) of CO₂ annually, or roughly 45% of Ohio's total industrial and power CO₂ emissions. Ohio is one of the top 10 coal-consuming states in the nation and has the opportunity to capture nearly 24 million MT of CO₂ per year at four of the state's coal power facilities. Ohio ranks fifth in the nation for natural gas production and is home to nine gas power plants that have near-term potential to capture 14 million MT of CO₂ annually. Ohio is also the eighth largest ethanol producing state in the nation, with near-term potential to capture over 1.3 million MT of CO₂ from ethanol plants each year.

The state can also garner considerable economic benefits by developing CO₂ transport infrastructure. Near- and medium-term modeling suggests up to 929 miles of CO₂ transport infrastructure capable of generating over \$1.8 million in capital investment in the state. Through the development of CO₂ transport hubs, Ohio can store 8.8 billion MT of CO₂ in saline formations and 119 million MT of CO₂ in enhanced oil recovery fields.

REGIONAL CAPTURE OPPORTUNITIES

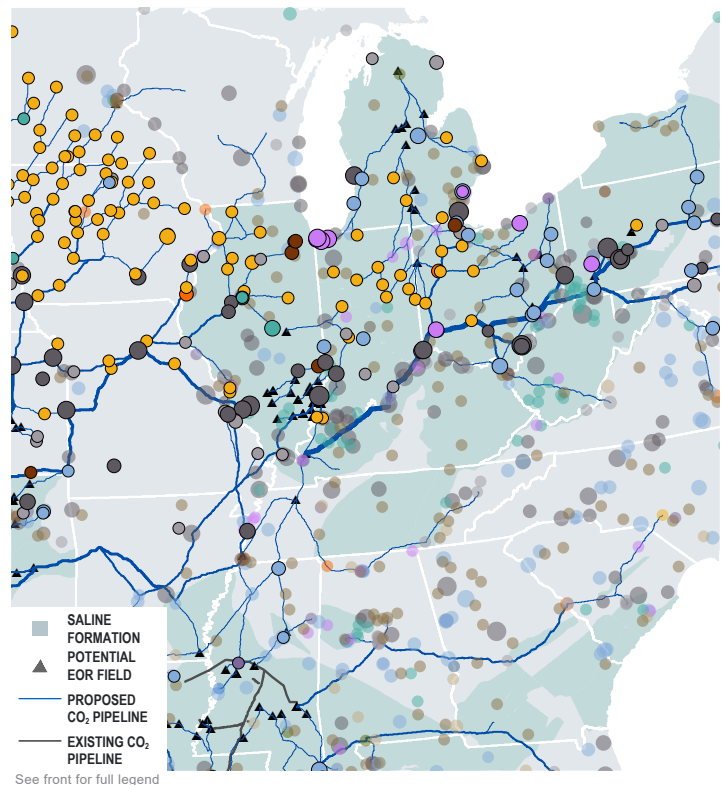
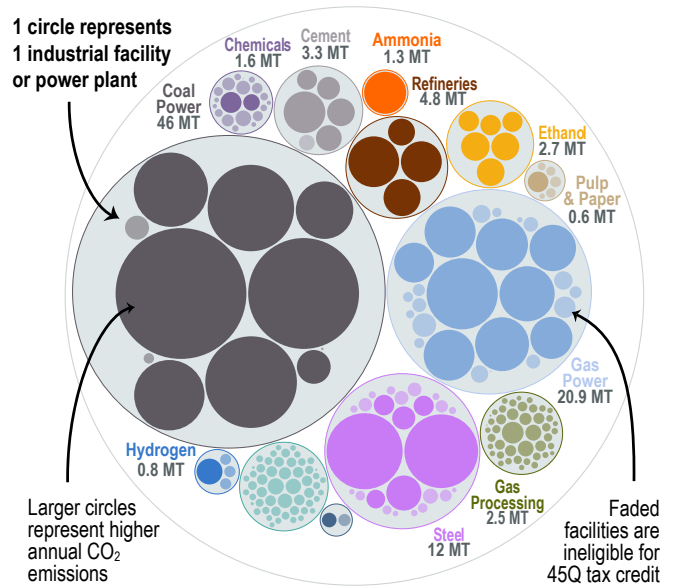


Figure 2: Potential regional CO₂ sources and pipeline corridors for transportation to utilization and storage sites as modeled by the Regional Carbon Capture Deployment Initiative.

FACILITIES AND EMISSIONS BY INDUSTRY



MT: Million metric tons CO₂

Figure 3: This bubble diagram visualizes the number of facilities and corresponding annual CO₂ emissions for each industry in Ohio. The darker large bubbles are eligible for the 45Q carbon capture tax credit, while the faded bubbles are too small to be eligible. The total amount of CO₂ emissions in Ohio is listed for each industry.

Source: GPI 2020; EPA 2021.