REGIONAL
CARBON
CAPTUREMaryland
IMPLEMENTING CARBON CAPTURE
IMPLEMENTING CARBON CAPTURE
AND STORAGE TECHNOLOGY

KEY TAKEAWAYS

- Carbon capture can deliver a 19 percent reduction of the state's total, non-biogenic CO₂ industrial and power facility emissions annually with carbon capture retrofit of three industrial and power facilities.
- Maryland has proposed legislation that includes incentives for carbon capture development and a pathway for the state to reach its greenhouse gas reduction goals while creating jobs and sustaining economic growth.
- Near- and medium-term modeling suggests up to 160 miles of CO₂ transport infrastructure capable of generating nearly \$150 million in capital investment for Maryland.

Maps and graphics within this document are based on work by the Great Plains Institute (GPI) to help the Regional Carbon Capture Deployment Initiative identify facilities that qualify for the federal 45Q tax credit and are optimal near-term investment opportunities for carbon capture for each state. For more information, visit **carboncaptureready.org**.

SOURCES BY INDUSTRY & VOLUME



Figure 1: Maryland has several facilities large enough to qualify for the 45Q carbon capture tax credit, including power plants and cement 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	Location	Industry	Total Facility CO ₂ Emissions thousand tons	CO₂ Captured Target thousand tons	Estimated Capture Cost \$/ton
Lehigh Cement Company	Union Bridge	Cement	1,837	1,632	\$48
St. Charles Energy Center	Waldorf	Gas Power Plant	1,587	800	\$68
Wildcat Point Generation	Conowingo	Gas Power Plant	1,265	800	\$68

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 2020; 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 Lahlum at plahlum@gpisd.net.

LEGISLATIVE CONTEXT

Maryland has committed to meaningful emission reduction goals through legislation such as the Greenhouse Gas Emissions Reduction Act, which requires a statewide reduction of greenhouse gas emissions by 40 percent from 2006 levels by 2030. Governor Larry Hogan fully supports innovative and bipartisan policies and programs that reduce emissions while also promoting job growth and economic opportunity. Governor Hogan has embraced a new bill, the Clean and Renewable Energy Standard (CARES) Act, which includes incentives for carbon capture development in the state. The CARES legislation expands the eligibility of clean energy credits and plans to deliver 100 percent clean electricity by 2040 - increasing previous renewable portfolio goals. With this legislation, Maryland has the opportunity to take strong environmental leadership while creating jobs and economic growth with clean energy technologies such as carbon capture.

Maryland is also a member of the Midwest Regional Carbon Sequestration Partnership that works to assess the economic and technical potential for carbon sequestration in a seven-state region that includes Indiana, Kentucky, Ohio, Pennsylvania, West Virginia, Michigan and Maryland. This is one of seven partnerships established by the Department of Energy to mitigate CO₂ emissions by using costeffective solutions.

CAPTURE AND STORAGE POTENTIAL

Eight of Maryland's industrial and power facilities could be expected to qualify for the 45Q tax credit, which provides a performance-based tax credit for carbon capture projects that securely store captured CO_2 or beneficially utilize captured CO_2 to reduce emissions. These eight facilities emit over 8.1 million metric tons of CO_2 annually, or roughly 47% of the state's total, non-biogenic CO_2 industrial and power facility emissions. Three of these facilities, one cement plant and two gas power plants, have been identified as likely economically feasible candidates for carbon capture retrofit, with the potential to capture over 3.2 million metric tons of CO_2 annually.

The state can also garner considerable economic benefits by developing CO_2 transport infrastructure. Near- and medium-term modeling suggests up to 160 miles of CO_2 transport infrastructure capable of generating nearly \$150 million in capital investment in the state.

REGIONAL CAPTURE OPPORTUNITIES



Figure 2: Potential regional CO_2 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 Maryland. 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 Maryland is listed for each industry.

Source: GPI 2020; EPA 2021.

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