

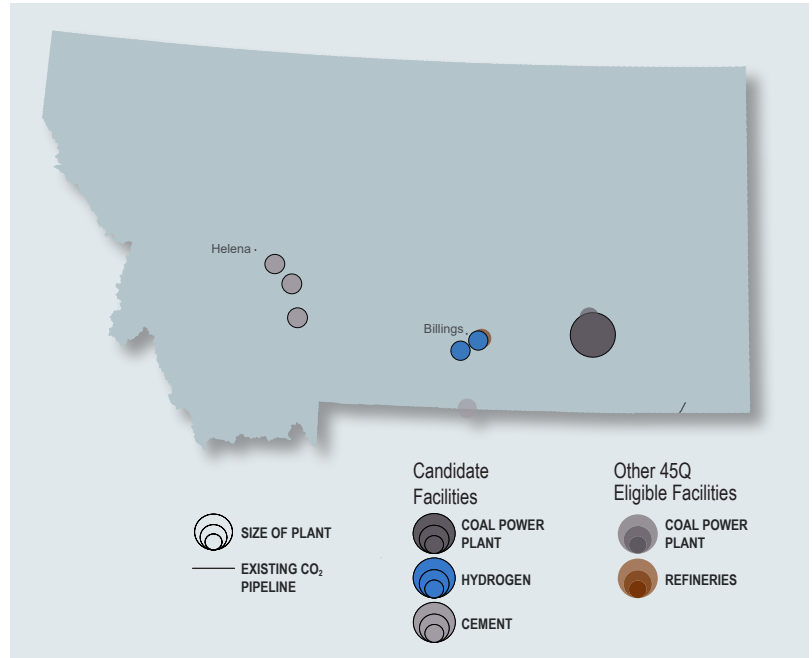
Montana

IMPLEMENTING CARBON CAPTURE AND STORAGE TECHNOLOGY

KEY TAKEAWAYS

- Montana is ahead of most states in establishing a regulatory framework for carbon management. The state passed SB 498 in 2009, which defines key issues including pore space ownership, long-term liability and management, unitization, and primacy.
- Montana is involved in several regional partnerships aimed at furthering the deployment of carbon capture technologies.
- Eight facilities in the state are eligible for the 45Q federal tax credit, six of which have been identified as potentially economically feasible near-term retrofit candidates. If retrofitted, these six facilities have the combined potential to capture 7.4 million metric tons of CO₂ per year.

SOURCES BY INDUSTRY & VOLUME



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.

Figure 1: Montana has many facilities large enough to qualify for the 45Q carbon capture tax credit, including coal power plants, cement production facilities, and petroleum refineries. 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 below.

Source: Great Plains Institute 2019; EPA 2018.

POTENTIAL CANDIDATE FACILITIES FOR CAPTURE WITH ANNUAL EMISSIONS

Facility Name	Location	Industry	Total Facility CO ₂ Emissions thousand tons	CO ₂ Captured Target thousand tons	Estimated Capture Cost \$/ton
Colstrip	Colstrip	Coal Power Plant	13,826	6,400	\$52
Ash Grove Cement Company-Montana City	Clancy	Cement	281	253	\$69
Trident	Three Forks	Cement	271	244	\$69
Graymont Western U.S. Inc. Indian Creek	Townsend	Cement	335	184	\$75
Phillips 66 Billings Refinery	Billings	Hydrogen	790	168	\$51
CHS Inc Laurel Refinery	Laurel	Hydrogen	890	162	\$51

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 2019; EPA 2018.

LEGISLATIVE CONTEXT

Montana has a solid foundation for carbon management in the state. Former Governor Bullock was a strong proponent of carbon management and was a founding member of the State Carbon Capture Work Group and the Regional Carbon Capture Deployment Initiative. In 2009, the state passed [SB 498](#), defining several key issues. It solidifies the surface owner owns the pore space and gives mineral rights primacy over carbon storage. The law also clarifies the matter of unitization and states that 60 percent of pore space owners must consent to the carbon storage project. It further says that the operator is liable for the site, and they will pay a fee for each ton of injected CO₂ which will be put into a fund for the long-term monitoring and management of the site. Thirty years after completing a project, the state can assume liability for the site. To further incentivize carbon capture in the state, new coal plants must capture **at least 50%** of their carbon emissions, and carbon capture equipment may be eligible for **property tax abatements**. Additionally, in Montana's [2020 climate plan](#), carbon capture and storage technology is framed as an emissions reduction solution for the power and industrial sector. The plan recommended seeking primacy for Class VI injection wells and identifying partners to advance carbon capture.

REGIONAL CAPTURE OPPORTUNITIES

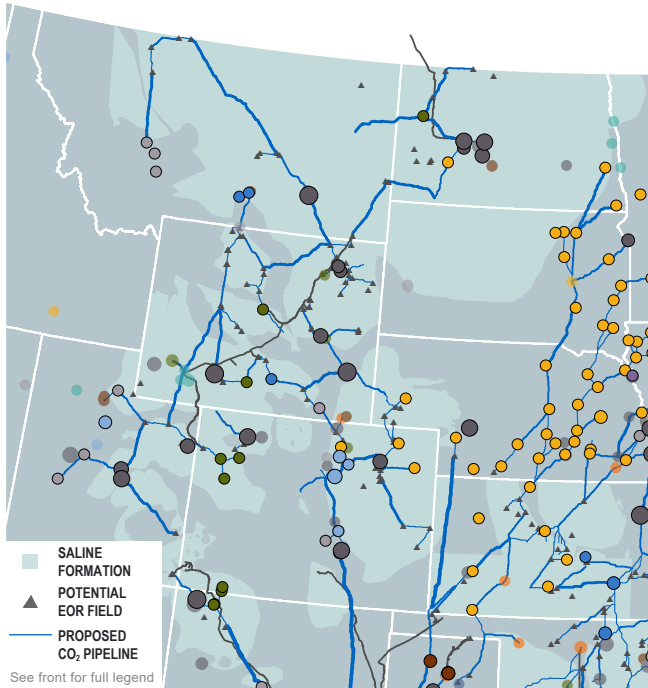
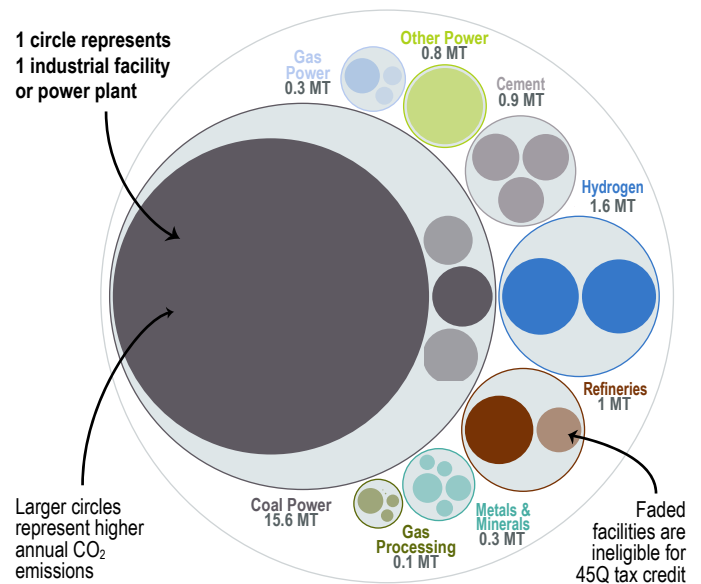


Figure 2: Potential regional CO₂ sources and pipeline corridors for transportation to utilization and storage sites as modeled by the Regional Carbon Capture Deployment Initiative.

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.

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 Montana. 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 Montana is listed for each industry. Source: GPI 2019; EPA 2018.

CAPTURE AND STORAGE POTENTIAL

With a clear regulatory framework in place, Montana is advantageously positioned to start working on carbon management projects. All four of the refineries in the state are eligible for 45Q, two of which have been identified as potentially economically feasible candidates for carbon capture retrofits with the combined potential to capture nearly 330,000 metric tons of CO₂ per year. Additionally, all three cement plants in the state have been identified as potentially economically feasible candidates. If retrofitted, these three facilities have the combined potential to capture over 681,000 metric tons of CO₂ per year, which represents 75% of their total emissions.

Montana is also a part of the **Big Sky Carbon Sequestration Partnership (BSCSP)**, encompassing South Dakota, Wyoming, Montana, Idaho, Oregon, and eastern Washington. Supported by the Department of Energy, the Partnership aims to increase regional collaboration to deploy carbon capture and storage technologies. Montana's Kevin Dome project was one of several BSCSP projects studying CO₂ storage. The project shows precedent in the state for extensive stakeholder engagement during the permitting process, bringing together landowners, tribal, local communities, and other stakeholders for informative meetings and educational events on carbon management.