

# GAO@100 Highlights

Highlights of [GAO-22-105111](#), a report to congressional committees

## Why GAO Did This Study

Key scientific assessments have underscored the urgency of reducing emissions of carbon dioxide (CO<sub>2</sub>), the most significant greenhouse gas, to help mitigate the negative effects of climate change. CCS technologies have the potential to reduce CO<sub>2</sub> emissions from sources such as coal plants and industrial facilities. Since 2009, DOE has sought to establish the viability of CCS technologies through various demonstration projects. The 2021 Infrastructure Investment and Jobs Act authorized and appropriated billions of dollars in new investments in CCS demonstration projects.

Congress included a provision in the Energy Act of 2020 for GAO to review DOE's practices, successes, failures, and any improvements in executing CCS demonstration projects. This report examines (1) the outcomes of DOE-funded CCS demonstration projects and the factors that affected them and (2) DOE management of those projects. GAO reviewed laws, regulations, guidance, funding agreements, and other project documentation, and interviewed DOE officials and project representatives.

## What GAO Recommends

GAO is making one matter for congressional consideration: that Congress consider implementing a mechanism for greater oversight and accountability of DOE CCS demonstration project funding. GAO is recommending that DOE (1) improve its project selection and negotiation processes and (2) more consistently administer projects against established scopes, schedules, and budgets. DOE neither agreed nor disagreed with the recommendations.

View [GAO-22-105111](#). For more information, contact Frank Rusco at (202) 512-3841 or [ruscof@gao.gov](mailto:ruscof@gao.gov).

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## CARBON CAPTURE AND STORAGE

### Actions Needed to Improve DOE Management of Demonstration Projects

#### What GAO Found

The Department of Energy's (DOE) investment of \$1.1 billion in carbon capture and storage (CCS) demonstration projects resulted in varying levels of success. Largely due to external factors that affected their economic viability, coal CCS projects were generally less successful than CCS projects at industrial facilities, such as chemical plants.

**Coal projects.** DOE provided nearly \$684 million to eight coal projects, resulting in one operational facility. Three projects were withdrawn—two prior to receiving funding—and one was built and entered operations, but halted operations in 2020 due to changing economic conditions. DOE terminated funding agreements with the other four projects prior to construction. Project documentation indicated and DOE officials and project representatives told GAO that economic factors—including decreased natural gas prices and uncertainty regarding carbon markets—negatively affected the economic viability of coal power plants and thus these projects.

**Industrial projects.** DOE provided approximately \$438 million to three projects designed to capture and store carbon from industrial facilities, two of which were constructed and entered operations. The third project was withdrawn when the facility onto which the project was to be incorporated was canceled.

GAO identified significant risks to DOE's management of coal CCS demonstration projects. These risks include the following:

**High-risk selection and negotiation processes.** DOE's process for selecting coal projects and negotiating funding agreements increased the risks that DOE would fund projects unlikely to succeed. Specifically, DOE fully committed to coal projects at their initial selection as opposed to allowing time for further review, as it did for selected industrial CCS projects. Additionally, according to DOE officials, the department used expedited time frames for coal project negotiations—less than 3 months as opposed to up to a year—based on DOE's desire to begin spending American Recovery and Reinvestment Act of 2009 funds quickly. These actions reduced DOE's ability to identify and mitigate technical and financial risks, a principle cited in DOE guidance.

**Bypassing of cost controls.** DOE, at the direction of senior leadership, did not adhere to cost controls designed to limit its financial exposure on funding agreements for coal projects that DOE ultimately terminated. As a result, the agency spent nearly \$472 million on the definition and design of four unbuilt facilities—almost \$300 million more than planned for those project phases. According to DOE documentation and officials, senior leadership directed actions to support projects even though they were not meeting required key milestones. DOE documentation also indicates that had Congress authorized an extension on the use of the funds, DOE might have continued funding some of these projects. By managing future CCS projects against established scopes, schedules, and budgets, DOE would be better positioned to mitigate its financial exposure if projects struggle. Additionally, absent a congressional mechanism to provide greater oversight and accountability—such as requiring regular DOE reporting on project status and funding—DOE may risk expending significant taxpayer funds on CCS demonstrations that have little likelihood of success.