Policy Framework for Carbon Management Deployment

CARBON CAPTURE COALITION

Carbon Management Policy Overview

The Carbon Capture Coalition and its 100+ members spanning companies, labor unions, and conservation and environmental policy organizations have played a central role in laying the groundwork for the necessary portfolio of federal policies to enable the nationwide, commercial-scale deployment of carbon management technologies. Carbon management technologies are crucial to balance the increasing need for affordable, reliable domestic energy with environmental stewardship. They include carbon capture from industry and power, carbon dioxide removal from the atmosphere, and transport, reuse, and storage. Thanks in large part to Coalition efforts, for the first time, there is a supportive policy framework in place for large-scale deployment of these technologies across emitting sectors (see Figure 1).

Over the past decade, the Coalition has celebrated a wide range of policy achievements, which include:

- The bipartisan reform and expansion of the federal Section 45Q tax credit, the foundational financing mechanism for carbon management projects, in the 2018 FUTURE Act.
- Historic increases in funding to retool and expand federal research, development, and demonstration (RD&D) carbon management programs.
- Groundbreaking legislation to prioritize the build-out of CO_2 transport and storage infrastructure in the bipartisan Storing CO_2 and Lowering Emissions (SCALE) Act.
- Most recently, the enhancement of the 45Q tax credit increased credit values across industry, power, and direct air capture and moved the commence-construction deadline for projects to the end of 2032.

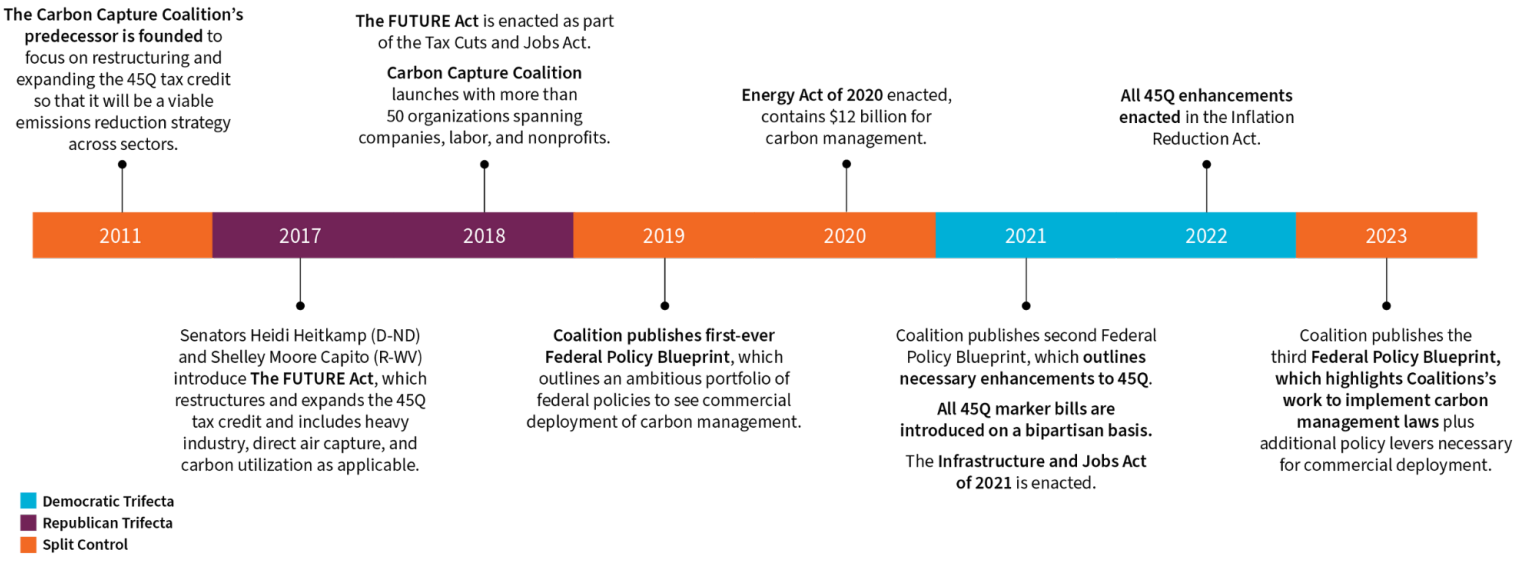
Building off this success, the 119th Congress and administration have the opportunity to reinforce the role of American leadership in developing and deploying these technologies.

Robust Resources for Developing and Deploying the Full Supply Chain of Carbon Management Technologies

In the same way that other innovative energy technologies were largely developed and commercialized through public-private partnerships, the federal government has played a key role in derisking and developing some of the first carbon capture and storage projects. While US Department of Energy funding has played a crucial role in the success of several large-scale carbon management projects, overall, carbon capture has suffered a significant lack of federal investment compared to levels of support for other innovative energy technologies throughout the last several decades.

In a recent step change, authorizations contained in the bipartisan Energy Act of 2020, and later fully funded through the enactment of the Infrastructure Investment and Jobs Act (IIJA), helped to retool and expand federal research, development, and demonstration programs for carbon management technology innovation while sustaining America's position as a world leader in the deployment of these technologies. The law provided a comprehensive and long-overdue update to federal energy programs; it serves as an essential downpayment in the demonstration and deployment of carbon management technologies.

Figure 1: Carbon Capture Coalition activities and victories in carbon management



Carbon Capture and Sequestration Tax Credit: Federal Section 45Q

Since the reform and expansion of the federal Section 45Q tax credit in 2018, policymakers have increasingly recognized the program's essential value in bolstering the nationwide adoption of carbon management technologies as a tool to secure America's global leadership position in deploying innovative and cost-effective clean energy technologies, onshore domestic industry and manufacturing production, while preserving high-wage, family-sustaining jobs that regional economies depend upon.

The 45Q tax credit is a performance-based tax credit, meaning that claimants may elect it only after they successfully demonstrate secure geologic storage or beneficial reuse of the captured carbon oxide (CO_2 or its precursor, CO). The Environmental Protection Agency (EPA) regulates and permits geologic storage projects using the Underground Injection Control Programs' Class II (Enhanced Oil Recovery) and Class VI (saline geologic storage) injection wells. Through these programs, EPA and established state primacy programs maintain a robust system of monitoring, reporting, and verification (MRV) to validate secure geologic storage, which is necessary to claim the 45Q tax credit.

Increased credit values provided to projects deployed in the industry, power, and direct air capture sectors are the cornerstone of the most recent enhancements to the 45Q program (see Figure 2). If swiftly and properly implemented, the carbon management policies and funding contained in the bipartisan Infrastructure Investment and Jobs Act (IIJA), combined with the most recent enhancements to 45Q, are projected to result in a 13-fold scale up of domestic carbon management capacity and 210 to 250 million metric tons of annual emissions reductions by 2035. This rapid scale up depends on carbon capture being a widely available technology and complementary permitting and regulatory frameworks, which are still insufficient.

	Annual Carbon Capture Thresholds (metric tons of CO_2/ CO per year)	Credit value for secure storage of CO_2 in saline or other geologic formations	Credit value for carbon reuse projects to convert CO or CO_2 into useful products	Credit value for secure geologic storage of CO_2 in oil and gas fields
Direct Air Capture Facilities	1,000 or more	$180 per ton	$130 per ton	$130 per ton
Industrial Facilities	12,500 or more	$85 per ton	$60 per ton	$60 per ton
Electric Generating Units	18,750 or more	$85 per ton	$60 per ton	$60 per ton

Figure 2: 45Q Tax Credit Structure and Eligibility Requirements as Amended by the Inflation Reduction Act of 2022

Transport and Storage Infrastructure

Similar to the build-out of other infrastructure needed to support the rising demand for clean, affordable, and reliable sources of American energy over the next several decades, scaling a national CO_2 transport and storage system is essential to ensuring carbon management technologies achieve nationwide deployment.

To meet the pace and scale of this necessary expansion, the IIJA provided foundational investments for the build-out of regional CO_2 transport and storage infrastructure with the complete inclusion of the bipartisan SCALE Act. Much like the development of other infrastructure systems, the SCALE Act positions the federal government to partner with private capital to invest in both regional and national CO_2 transport and storage infrastructure networks. Key policies enacted from the SCALE Act to enable the necessary build-out of an interconnected transport and storage network include:

- Funding for Class VI well permits at EPA, as well as grants for states to defray the costs of state agencies for permitting and monitoring Class VI injection wells.
- Grant funding for developing new or expanded commercial large-scale carbon sequestration projects and associated CO_2 transport infrastructure, including funding for the feasibility, site characterization, permitting, and construction stages of project development.
- Funding for loans to build new CO_2 transport infrastructure.

Class VI Injection Wells

Federal and state authorities are tasked with ensuring safe and permanent storage in appropriate geologic formations through the EPA's Underground Injection Control Program's Class VI well program. The Class VI program addresses the permanent storage of CO_2 and ensures that wells are appropriately sited, constructed, tested, monitored, funded, and closed once CO_2 injection activities are completed. Administered under the UIC Program as part of the Safe Drinking Water Act, which regulates the injection of materials into the subsurface to safeguard public health and underground sources of drinking water.

Class VI wells are used to inject CO_2 into deep geologic formations for the purpose of safely and permanently storing CO_2. Suitable geologic storage locations are separated from underground drinking water sources, typically one mile below the earth's surface, and occur below impermeable rock layers, ensuring CO_2 is permanently trapped in the target geologic formation and that underground sources of drinking water are protected.

Before potential storage sites are allowed to move forward, they must provide highly detailed models to federal or state regulators that demonstrate safe and permanent storage of CO_2 and ensure the pipelines around sites are continually monitored. Additionally, the EPA can grant primary enforcement authority—referred to as primacy—to individual states, territories, or Tribal nations, which then have the authority to administer certain well classes.