How funding and incentives under recent laws advance carbon capture technologies

By Pamela Wu, Esq., Morgan Lewis

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Carbon capture technologies will play an important role in achieving emissions reduction and climate goals as they can be utilized to mitigate hard-to-abate emissions sources, including power plants and industrial facilities. While carbon capture technologies exist, many remain in active development and demonstration and at a technological readiness level that may not be ripe for widespread adoption in the power and industrial sectors.

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However, several key developments have facilitated continued progress. The Bipartisan Infrastructure Law (BIL) has allocated significant funding to accelerate the development and deployment of carbon capture technologies. The Inflation Reduction Act (IRA) expanded the eligibility for tax credits for the development of carbon capture projects.

The funding and incentives from the BIL and IRA help overcome the high initial capital costs associated with carbon capture technologies and have led to increasing investment in carbon capture technologies. In addition, many companies have made commitments to reduce their emissions or to achieve specific emission reduction goals by a date certain, which necessitates continued progress towards achieving those commitments and goals.

What is carbon capture?

Carbon capture is a process that separates and captures carbon dioxide before it enters the atmosphere from sources including power plants and heavy industrial facilities. The carbon capture technologies that are currently being demonstrated and deployed perform "point source capture," i.e., they capture the carbon dioxide at the source before the carbon dioxide can be emitted into the atmosphere.

Carbon capture and storage (CCS), in turn, involves the capture of carbon dioxide emissions at its source and the transportation and storage of the captured carbon dioxide underground to prevent its release to the atmosphere. This is different from direct air capture, which captures carbon dioxide emissions that already exist in the atmosphere.

Availability of DOE funding

At the end of 2023, the U.S. Department of Energy's Office of Clean Energy Demonstrations announced the selection of three carbon capture projects to receive up to a total of $890 million in funding. These projects are being developed to demonstrate technologies designed to capture, transport, and store carbon emissions to reduce emissions from the power sector.

Specifically, they will capture carbon dioxide from natural gas combined-cycle power plants and a coal-fired power plant and will sequester, transport, and store the captured carbon dioxide in saline geologic formations. Together, these projects have the potential to prevent about 7.75 million metric tons of carbon dioxide emissions from being released from the three power plants into the atmosphere each year. This is roughly equivalent to the annual carbon dioxide emissions of 1.7 million gasoline-powered cars. The technologies that will be demonstrated through the selected projects are technologies that can be deployed at other power plants.

DOE's Office of Fossil Energy and Carbon Management also announced the selection of several projects focused on developing lower cost technologies to capture carbon dioxide from power plants as well as cement, steel, and glass industrial facilities for permanent geologic storage or for conversion into long-lasting products. Other selected projects will focus on creating carbon dioxide transportation and storage networks.

In total, the BIL allocated $2.5 billion to demonstrate commercial-scale carbon capture technologies, transportation, and storage infrastructure. Additional funding may become available in the near future to further support the research, development, demonstration, and deployment of innovative carbon capture technologies to reduce emissions from the power and industrial sectors and to

build carbon dioxide transportation infrastructure. This is consistent with DOE's prior practice of issuing multiple funding opportunity announcements instead of one announcement that makes available all allocated funds, which allows the funds to support technologies that have different maturation timelines and readiness levels.

Increased tax credits under Section 45Q

Section 45Q of the Internal Revenue Code provides for a tax credit for the sequestration of carbon dioxide. The IRA enhanced and expanded the Section 45Q tax credit by increasing the tax credit value, extending the construction deadline, and lowering the qualification threshold.

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Specifically, the IRA increased the tax credits available under Section 45Q to $85 per metric ton for captured carbon that is stored in geologic formations, $60 per metric ton for the use of captured carbon to produce low and zero carbon fuels, chemicals, building materials, and other products, and $60 per metric ton for captured carbon that is stored in oil and gas fields, all assuming the wage and apprenticeship requirements are met.

In addition to extending the date by which construction must begin by seven years to Jan. 1, 2033, the IRA significantly reduced the amount of carbon oxide (generally, carbon dioxide) that a facility must capture to be eligible for the tax credit under Section 45Q.

Previously, electricity generating facilities were required to capture at least 500,000 metric tons per year, and industrial facilities were required to capture at least 100,000 metric tons per year. The IRA reduced those thresholds to 18,750 metric tons per year and 12,500 metric tons per year, respectively. These lower thresholds may open up new opportunities for entities that were previously scaled out.

Looking ahead

As various industries continue to decarbonize their operations to achieve emissions reduction commitments (and ultimately net zero emissions), carbon capture technologies remain at the forefront of options that are being pursued and deployed. This is especially true in the hard-to-abate industries. For example, carbon capture technologies can be used with power generation that relies on fossil fuels to allow for the production of low-carbon power.

Equipping or retrofitting facilities that have been identified as high sources of emissions with carbon capture technologies can enable continued operation while lowering emissions from generation and production and while also meeting certain carbon reduction targets or commitments. Incorporating carbon capture technologies will need to account for the specifics of the power plant or industrial facility.

It will also need to account for the availability of infrastructure to transport the captured carbon dioxide from the point of capture as well as the availability of a geologic formation or other storage site to store the captured carbon dioxide.

The DOE funding opportunities, potential future funding opportunities, and increased tax incentives are expected to continue to encourage the advancement and use of carbon capture technologies and the development and deployment of carbon capture projects. Eligibility for funding and tax credits extends to carbon capture projects at both new and existing power plants and industrial facilities.

This is significant as owners and operators of facilities including natural gas combined-cycle power plants, coal-fired power plants, and industrial facilities consider options to transition and decarbonize their operations. The availability of funding and tax credits can be a big factor in the decision to invest capital to equip or retrofit an existing facility to incorporate carbon capture technologies.

Pamela Wu is a regular contributing columnist on energy and decarbonization issues for Reuters Legal News and Westlaw Today.

About the author

Pamela Wu, a partner at **Morgan Lewis**, represents companies in the energy industry in a range of matters involving rates, market rules and regulation, and energy commodity trading before the Federal Energy Regulatory Commission (FERC) and Commodity Futures Trading Commission (CFTC). She advises clients seeking to reduce their carbon footprint through new infrastructure assets, clean energy technologies, and transacting carbon credits and carbon offsets. An active member of the firm's energy commodity trading and compliance working group, hydrogen working group, electric vehicles working group, and renewables working group, she is resident in the Washington, D.C., office and can be reached at pamela.wu@morganlewis.com.

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