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INSIGHT

Carbon Dioxide (CO_2) Pipeline Development: Federal Initiatives

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Carbon dioxide (CO_2) pipelines are essential components of carbon capture and storage (CCS) systems which are proposed to reduce atmospheric emissions of man-made CO_2, a greenhouse gas. Approximately 5,000 miles of pipeline already carry CO_2 in the United States, primarily linking natural CO_2 sources to oil fields where CO_2 is used for enhanced oil recovery. However, a much larger pipeline network likely will be needed to meet national goals for greenhouse gas reduction. Developers already are seeking permits for new CO_2 pipelines. Summit Carbon Solutions, Navigator CO_2 Ventures, and Wolf Carbon Solutions are developing multistate projects in the Upper Midwest which, collectively, would comprise over 3,600 miles of new pipeline for carbon capture from ethanol plants. Along with other actions to promote CCS, the federal government has been advancing initiatives to promote such CO_2 pipeline projects, as discussed below.

Safety Regulation

The Pipelines and Hazardous Materials Safety Administration (PHMSA) within the Department of Transportation (DOT) has statutory authority over CO_2 pipeline safety. PHMSA has long regulated the construction, operation and maintenance of CO_2 pipelines (49 C.F.R. §§190, 195-199). However, a 2020 CO_2 pipeline rupture in Satartia, MS, which required a local evacuation and caused 45 people to be hospitalized, has prompted criticism from pipeline safety advocates that PHMSA's existing regulations for CO_2 pipelines are inadequate. Safety concerns also have given rise to siting opposition among some affected landowners and advocacy groups. In response to these criticisms, and findings from its own Satartia investigation, PHMSA announced on May 26, 2022, that it was initiating a rulemaking to update its CO_2 pipeline safety standards. The agency plans to publish a Notice of Proposed Rulemaking in June 2024, but has not set a date for a final rule. Some stakeholders have expressed concern that developers may begin constructing new CO_2 pipelines before a new rule is finalized.

Financial Support

The Infrastructure Investment and Jobs Act (IIJA, P.L. 117-58) Section 40304 established within the Department of Energy (DOE) a Carbon Dioxide Transportation Infrastructure Finance and Innovation

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(CIFIA) program for CO_2 pipelines. The act authorized and appropriated $2.1 billion for low-interest CIFIA loans and grants. Although CIFIA has not yet funded any pipeline projects, analysts expect that developers such as Summit Carbon Solutions would apply for CIFIA funding. President Biden's FY2024 budget request for CIFIA includes $308 million in direct loan subsidies and $25 million in grants.

The IIJA (Section 40314) also established a DOE program to support Regional Clean Hydrogen Hubs—demonstration projects involving clean hydrogen producers and consumers and the connecting infrastructure. Division J, Title III, appropriated $8 billion to support the program. In September 2022, DOE made a Funding Opportunity Announcement for a first tranche of up to $7 billion to support six to ten hub proposals that were due by April 7, 2023. DOE plans to announce the projects selected for award negotiations in fall 2023. Although DOE has not publicly released hub funding applications, several reportedly include carbon capture (e.g., from methane reforming to produce hydrogen) which could require the development of CO_2 pipelines.

The IIJA (Section 40303) also amended DOE's existing carbon capture technology program to include support for front-end engineering and design for CO_2 transport infrastructure. Division J, Title III, appropriated a total of $100 million for the period FY2022-FY2026. On May 17, 2023, DOE announced $9 million in funding for three projects "to perform detailed engineering design studies for regional CO_2 pipeline networks." The three proposed networks would be located in Wyoming, and along the Gulf Coasts of Texas and Louisiana.

Siting Authority

Currently, states have primary siting jurisdiction for CO_2 pipelines, although federal approvals may be required for certain pipeline segments (e.g., across federal lands). The USE IT Act (Section 102 of Division S of P.L. 116-260) clarified CO_2 pipeline eligibility for streamlined review of any necessary federal permits which might be required. The law also directed the Council on Environmental Quality to set guidance to expedite CO_2 pipeline development. Some analysts have asserted, however, that the absence of overall federal siting authority for CO_2 pipelines could be "a significant problem." Certain proposals would federalize interstate CO_2 pipeline siting, preempting state siting authority, akin to siting for interstate natural gas pipelines under the Federal Energy Regulatory Commission. On May 10, 2023, the Biden Administration urged Congress to "address the siting of ... carbon dioxide pipelines and storage infrastructure and provide federal siting authority for such infrastructure." Some stakeholders may object to federalization of CO_2 pipeline siting authority, however, contending that CO_2 pipeline development for CCS is relatively new and that there has not been a demonstrated need for federal preemption.

Issues for Congress

Some Members of Congress show ongoing interest in the expansion of the U.S. CO_2 pipeline network. For example, at a March 2023 hearing on pipeline safety of the House Committee on Transportation and Infrastructure, Subcommittee on Railroads, Pipelines, and Hazardous Materials, the ranking member stated, "the safe transmission of carbon dioxide to sequester locations is vital to meeting our carbon reduction goals, and I want to make sure this can be implemented without delay." In a similar vein, the Building American Energy Security Act of 2023 (S. 1399, 118th Congress) would include CO_2 transportation projects among those eligible for streamlined regulatory review and would prioritize them as projects of "strategic national importance."

Given the essential role of CO_2 pipelines in CCS systems, economic and regulatory challenges to CO_2 pipelines may limit the deployment of CCS. In particular, siting opposition due to safety concerns could prevent CO_2 pipeline development in some localities and increase development time and costs in others. How and when PHMSA will update its CO_2 pipeline safety standards might, therefore, be a key oversight issue for Congress. Congress also may evaluate whether the financial incentives it has enacted to promote

CO_2 pipeline development are attracting pipeline developers as intended. Additionally, Congress may monitor the progress of proposed CO_2 pipeline projects in securing approvals from local, state, and federal regulators to determine if further congressional action may be warranted regarding siting and permitting.

Author Information

Paul W. Parfomak
Specialist in Energy Policy

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