

# CRS Report for Congress

## Regulation of Carbon Dioxide (CO<sub>2</sub>) Sequestration Pipelines: Jurisdictional Issues

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# Regulation of Carbon Dioxide (CO<sub>2</sub>) Sequestration Pipelines: Jurisdictional Issues

## Summary

In the last few years there has been a surge in interest in carbon capture and sequestration (CCS) as a way to mitigate manmade carbon dioxide (CO<sub>2</sub>) emissions and thereby help address climate change concerns. This approach may require the transportation of captured carbon dioxide via pipeline to an underground storage reservoir with the intent of keeping it out of the atmosphere. Congress has begun to address this issue.

The recently enacted Energy Independence and Security Act of 2007 (P.L. 110-140) contains measures to promote research and development of CCS technology, to assess sequestration capacity, and to clarify the framework for issuance of CO<sub>2</sub> pipeline rights-of-way on public land. Other legislative measures, including S. 2191 and S. 2323, have also sought to encourage the development of CO<sub>2</sub> sequestration, capture, and transportation technology. Further, measures have been introduced in Congress, including the Carbon Dioxide Pipeline Study Act of 2007 (S. 2144), that would require the Secretary of Energy to study the feasibility of constructing and operating a network of CO<sub>2</sub> pipelines for CCS. If these pipelines crossed state lines, it could raise important issues concerning regulatory jurisdiction over siting and pricing.

This report discusses federal jurisdictional uncertainty over CO<sub>2</sub> pipelines under existing law, as well as potential legislative activity to address any possible regulatory “gap” in jurisdiction. It should be noted that such a potential gap does not necessarily demand federal legislative resolution. Nevertheless, some analysts, drawing on the history of oil and natural gas pipeline development, anticipate a potential need for better defined federal legislative/regulatory authority over an interstate CO<sub>2</sub> pipeline network. Accordingly, Congress may be called upon to consider whether existing federal jurisdictional disclaimers and the state-by-state regulatory structure for Enhanced Oil Recovery (EOR) pipelines is an appropriate regulatory scheme for a possible interstate CO<sub>2</sub> pipeline network in support of CCS. Congress could opt to amend existing statutes, possibly those related to the interstate pipeline jurisdiction of the Federal Energy Regulatory Commission (FERC) or the Surface Transportation Board (STB) to provide for definitive CO<sub>2</sub> pipeline rate jurisdiction by the federal government if it does not favor the existing regulatory scheme. Alternatively, Congress could establish another federal regulator of CO<sub>2</sub> pipelines or possibly other legislation to amend the existing regulatory scheme.

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# Regulation of Carbon Dioxide (CO<sub>2</sub>) Sequestration Pipelines: Jurisdictional Issues

## Introduction

In the last few years there has been a surge in interest in carbon capture and sequestration (CCS) as a way to reduce carbon dioxide (CO<sub>2</sub>) emissions, and thereby help to address concerns about climate change. The recently enacted Energy Independence and Security Act of 2007, P.L. 110-140, contains measures to promote research and development of CCS technology and assess sequestration capacity, including a measure to clarify the framework for issuance of CO<sub>2</sub> pipeline rights-of-way on public land. Other legislative proposals, including S. 2191 and S. 2323, have also sought to encourage the development of CO<sub>2</sub> sequestration, capture, and transportation technology. Further, measures have been introduced in Congress, including the Carbon Dioxide Pipeline Study Act of 2007 (S. 2144), which would require the Secretary of Energy to study the feasibility of constructing and operating a network of CO<sub>2</sub> pipelines for CCS.

If interstate CO<sub>2</sub> pipelines for carbon sequestration are ultimately developed, they could raise a variety of issues concerning jurisdiction over the siting of these pipelines and the prices they may charge for their transportation services. While jurisdiction over CO<sub>2</sub> pipeline safety resides with the Office of Pipeline Safety (a branch of the Department of Transportation), jurisdiction over hypothetical interstate CO<sub>2</sub> pipeline siting and rate decisions is not clear. Jurisdiction could fall to the Federal Energy Regulatory Commission (FERC) or to the Surface Transportation Board (STB). However, both agencies have at some point expressed a position that interstate CO<sub>2</sub> pipelines are not within their purview.

This report reviews the history of pipeline regulation, including the limited history of interstate CO<sub>2</sub> pipeline regulation, and examines the regulatory missions of FERC, the STB, and other agencies. The report discusses possible responses to perceived jurisdictional uncertainties under existing law as well as potential legislative steps intended to address any potential regulatory “gap” in interstate CO<sub>2</sub> pipeline jurisdiction.

## History and Background

The transportation of CO<sub>2</sub> via pipeline is not a hypothetical concept, nor even a recent development. For many years companies have moved CO<sub>2</sub> from one location to another for enhanced oil recovery (EOR) — a process which extends oil

production from mature oil fields. There are several EOR methods, but gas injection, dominated by CO<sub>2</sub> injection, accounts for nearly 50% of EOR production in the United States.<sup>1</sup> During this process, CO<sub>2</sub> is injected underground at an oil field, forcing more oil from the reservoir to the extraction wells, ultimately increasing the amount of oil that can be recovered from a given field.

Approximately 5,800 kilometers (3,600 miles) of CO<sub>2</sub> pipeline operate today in the United States.<sup>2</sup> The oldest long-distance CO<sub>2</sub> pipeline in the United States constructed for EOR is the 225 kilometer Canyon Reef Carriers Pipeline (in Texas), which began service in 1972.<sup>3</sup> Other large CO<sub>2</sub> pipelines constructed since then, mostly in the Western United States, have expanded the CO<sub>2</sub> pipeline network for EOR. These pipelines carry CO<sub>2</sub> from naturally occurring underground reservoirs, natural gas processing facilities, ammonia manufacturing plants, and a large coal gasification project to regional oil fields. Additional pipelines may carry CO<sub>2</sub> from other manmade sources to supply a range of industrial applications. However, with one notable exception discussed below, federal regulation of siting and rates for these pipelines has not been addressed, due in large part to the fact that many of them are intrastate and that they often transport CO<sub>2</sub> for the benefit of the pipeline's owners (so there are no rate or service disputes).

## Recent Carbon Control Activity

In recent years, the public, the press, and government officials have shown increasing concern about global climate change. Many have suggested that recent increases in the global temperature, as well as future anticipated increases, are the result, at least in part, of emissions of large quantities of CO<sub>2</sub> from manmade sources. One of the more prominent ideas to limit CO<sub>2</sub> emissions, especially CO<sub>2</sub> emissions from power plants, is carbon capture and direct sequestration (CCS). CCS is a process whereby CO<sub>2</sub> emissions are “captured” at their source and then stored (“sequestered”) either underground or elsewhere, rather than being released into the atmosphere.<sup>4</sup>

CCS science and associated technology are still in the early stages of development. Among many questions yet to be answered is whether we may ultimately see a large number of sequestration sites located geographically close to CO<sub>2</sub> source facilities, or a smaller number of more centralized, or more distant, sequestration locations.<sup>5</sup> If a widespread CCS network does develop, whether that

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<sup>1</sup> U.S. Dept. of Energy, “Enhanced Oil Recovery/CO<sub>2</sub> Injection,” web page (June 12, 2007). [<http://www.fossil.energy.gov/programs/oilgas/eor/index.html>].

<sup>2</sup> U.S. Dept. of Transportation, National Pipeline Mapping System database (June 2005). [<https://www.npms.phmsa.dot.gov>].

<sup>3</sup> Kinder Morgan CO<sub>2</sub> Company, “Canyon Reef Carriers Pipeline (CRC),” web page (2007). [[http://www.kindermorgan.com/business/co2/transport\\_canyon\\_reef.cfm](http://www.kindermorgan.com/business/co2/transport_canyon_reef.cfm)].

<sup>4</sup> For a detailed discussion of CCS, see CRS Report RL33801, *Carbon Capture and Sequestration (CCS)*, by Peter Folger.

<sup>5</sup> See, alternative views in: R.T. Dahowski, J.J. Dooley, C.L. Davidson, S. Bachu, N. Gupta, (continued...)

network features decentralized or centralized storage configurations remains to be seen; however, pipeline requirements and storage configurations are necessarily related. If sequestration is widely used and relatively centralized, a significant interstate pipeline network would likely be required to transport the CO<sub>2</sub> to the sequestration sites.

## FERC and STB Pipeline Jurisdiction

If an interstate pipeline system for CCS more extensive and elaborate than the current pipeline network for EOR is to be developed, questions arise as to who will regulate pipeline siting and the rates to be charged for the transportation of CO<sub>2</sub>. Based on their current regulatory roles, two of the more likely candidates for jurisdiction over interstate pipelines transporting CO<sub>2</sub> for purposes of CCS are the Federal Energy Regulatory Commission (FERC) and the Surface Transportation Board (STB).

The Natural Gas Act of 1938 (NGA) vests in FERC the authority to issue “certificates of public convenience and necessity” for the construction and operation of interstate natural gas pipeline facilities.<sup>6</sup> FERC is also charged with extensive regulatory authority over the siting of natural gas import and export facilities, as well as rates for transportation of natural gas and other elements of transportation service. FERC also has jurisdiction over regulation of oil pipelines pursuant to the Interstate Commerce Act (ICA).<sup>7</sup> The ICA, as amended by the Hepburn Act of 1905, provided that the Interstate Commerce Commission (ICC) was to have jurisdiction over rates and certain other activities of interstate oil pipelines, as these pipelines were considered to be “common carriers.”<sup>8</sup> This jurisdiction was transferred to FERC in the Department of Energy Organization Act of 1977.<sup>9</sup> FERC’s jurisdiction over oil pipelines is not as extensive as its jurisdiction over natural gas pipelines. FERC is not involved in the oil pipeline siting process. However, as with natural gas, FERC does regulate transportation rates and capacity allocation for oil pipelines.<sup>10</sup>

FERC is assigned jurisdiction over natural gas and oil pipelines explicitly in statutory language. Jurisdiction over rate regulation for “other” types of pipelines resides with the STB. The STB is an independent regulatory agency (administratively

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<sup>5</sup> (...continued)

and J. Gale, “A North American CO<sub>2</sub> Storage Supply Curve: Key Findings and Implications for the Cost of CCS Deployment,” *Proceedings of the Fourth Annual Conference on Carbon Capture and Sequestration* (Alexandria, VA: May 2-5, 2005); and Jennie C. Stevens and Bob Van Der Zwaan, “The Case for Carbon Capture and Storage,” *Issues in Science and Technology*, vol. XXII, no. 1 (Fall 2005): 69-76.

<sup>6</sup> 15 U.S.C. 717f(c).

<sup>7</sup> 49 App. U.S.C. §1.

<sup>8</sup> *Id.* at 1(1), 1(4), and 1(7).

<sup>9</sup> P.L. 95-224.

<sup>10</sup> Section 1801 of the Energy Policy Act of 1992 directed FERC to “promulgate regulations establishing a simplified and generally applicable ratemaking methodology” for oil pipeline transportation.

affiliated with the Department of Transportation) charged by Congress with the primary mission of resolving railroad disputes pursuant to the ICA. It is the successor agency to the ICC. Pipelines, like railroads, are “common carriers” used by more than one company for the transportation of goods. Therefore, the ICA also assigned the ICC (and thus the STB) oversight authority over pipelines transporting a commodity other than “water, gas or oil.”<sup>11</sup> It should be noted, however, that unlike FERC, the STB does not require pipeline companies to file tariffs and justify their rates. Instead, the STB acts as a forum for resolution of disputes related to pipelines within its jurisdiction. Parties who wish to challenge a rate or another aspect of a pipeline’s common carrier service may petition the STB for a hearing; there is no ongoing regulatory oversight.

Thus, there are two federal regulatory agencies that, generally speaking, have jurisdiction over interstate pipeline rate and capacity allocation matters. However, as explained below, both of these agencies appear to have explicitly rejected jurisdiction over CO<sub>2</sub> siting and rates, and there is no legislative or judicial history indicating that their rejections were improper. These decisions, the reasoning behind them, and the status of federal jurisdiction over CO<sub>2</sub> pipelines are covered in the next section.

## **Prior CO<sub>2</sub> Pipeline Regulation: Cortez Pipeline**

As mentioned above, CO<sub>2</sub> is used for enhanced oil recovery, and in some cases companies have used pipelines to transport CO<sub>2</sub> over state lines (i.e., in interstate commerce) for EOR purposes. One such pipeline of regulatory significance is the Cortez Pipeline, which runs through Colorado, New Mexico, and Texas.

**FERC Decision.** In December of 1978, the Cortez Pipeline Company (Cortez) sought a declaratory order from FERC that the construction and operation of a proposed interstate pipeline transporting a gas comprising of 98% CO<sub>2</sub> and 2% methane would not be within the Commission’s jurisdiction. Cortez argued that the gas in question was not “natural gas” as the term is defined in Section 2(5) of the NGA,<sup>12</sup> so a proposed pipeline to transport this gas was not under FERC’s NGA jurisdiction. FERC agreed with Cortez and issued a declaratory order disclaiming jurisdiction over the proposed pipeline.<sup>13</sup> In its decision, FERC explored the inherent ambiguity in the term “natural gas,” explaining that it has two very different definitions. FERC recognized that in the terminology of chemistry, “natural gas” refers to any substance that is gaseous in its natural state, including carbon dioxide.<sup>14</sup> However, according to FERC, the more common usage of the term “natural gas” refers to a gaseous mixture of hydrocarbons.<sup>15</sup> FERC held that it was this meaning of “natural gas” that applied to the term as it was used in the NGA. FERC pointed

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<sup>11</sup> 49 U.S.C. § 1-501(a)(1)(c).

<sup>12</sup> 15 U.S.C. § 717(a)(5).

<sup>13</sup> Cortez Pipeline Company, 7 FERC ¶ 61,024 (1979).

<sup>14</sup> Id. at 61,041.

<sup>15</sup> Id.

to the goals and purposes of the NGA, which are primarily to regulate a specific “natural gas” industry.<sup>16</sup> Thus, the term “natural gas” as used in the statute referred to a gaseous mixture of hydrocarbons.<sup>17</sup> As a result, FERC held that the proposed Cortez Pipeline was not within the NGA jurisdiction of the Commission.<sup>18</sup>

**ICC Decision.** In 1980, after FERC issued its CO<sub>2</sub> ruling, the owners of the proposed Cortez Pipeline went to the ICC to seek a similar declaratory order that the pipeline would not be subject to the ICC’s jurisdiction either. As the ICC recognized at the outset of its decision, there was no controversy concerning whether ICC approval was necessary for construction or expansion of pipeline facilities — the statute and previous case law plainly state that the ICC has no pipeline siting jurisdiction whatsoever.<sup>19</sup> Furthermore, the ICC noted that the U.S. Department of Transportation would exercise jurisdiction over the pipeline’s compliance with applicable safety standards.<sup>20</sup> Instead, the decision focused solely upon the ICC’s regulation of other aspects of pipeline service (i.e., rates), and whether CO<sub>2</sub> pipelines are covered by the statutory exception from ICC regulation for pipelines that transport “water, gas or oil.”<sup>21</sup>

Relying on the legislative history of previous versions of the statutory language in the ICA (which excluded “natural or artificial gas”) as well as the plain language of the current statute, the ICC concluded that Congress intended to exclude all types of gas, including CO<sub>2</sub>, from ICC regulation. The ICC recognized that its initial ruling in this matter, in concert with FERC’s order disavowing jurisdiction over the proposed Cortez Pipeline, created a regulatory gap of sorts. The ICC noted that generally, “[t]he opinion of a sister agency should be given weight, if possible, so that related statutes can be coordinated.”<sup>22</sup> However, the ICC found that “in this case the FERC decision is not helpful to us because it did not construe or interpret the terms natural and artificial gas [under the ICA]. Its decision was based on other grounds.”<sup>23</sup> Although the ICC found in this initial decision that it likely did not have jurisdiction over CO<sub>2</sub> pipelines, it did conclude that “the issue is important enough to institute a proceeding and accept comments on the petition and our view on it.”<sup>24</sup>

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<sup>16</sup> Id.

<sup>17</sup> Id.

<sup>18</sup> Id. at 61,042.

<sup>19</sup> Cortez Pipeline Company — Petition for Declaratory Order — Commission Jurisdiction Over Transportation of Carbon Dioxide by Pipeline, 45 Fed. Reg. 85177 (December 24, 1980).

<sup>20</sup> Id.

<sup>21</sup> 49 U.S.C. § 1-501(a)(1)(c).

<sup>22</sup> Cortez Pipeline Co., 45 Fed. Reg. at 85178.

<sup>23</sup> Id. at 85178.

<sup>24</sup> Id.



After the comment period the ICC confirmed its view that CO<sub>2</sub> pipelines were excluded from the ICC's jurisdiction.<sup>25</sup>

**Potential Issues Related to ICC Jurisdiction.** Notwithstanding the ICC's 1980 disclaimer of jurisdiction over CO<sub>2</sub> pipelines in the Cortez Pipeline case, other evidence indirectly suggests the possibility that interstate CO<sub>2</sub> pipelines could still be considered subject to the jurisdiction of the STB. For example, an April 1998 report by the General Accounting Office (GAO)<sup>26</sup> stated that interstate CO<sub>2</sub> pipelines, as well as pipelines transporting other gases, are subject to the board's oversight authority. The report stated that GAO had identified five products carried by 21 pipelines subject to the STB's jurisdiction.<sup>27</sup> One of the five identified products was CO<sub>2</sub>. (Another was hydrogen — also a gas). In fact, the report lists 14 different pipelines transporting CO<sub>2</sub> for purposes of EOR, including the Cortez Pipeline, which are said to be subject to the jurisdiction of the STB.<sup>28</sup> The GAO states that the STB reviewed its analysis and, presumably, did not object to this jurisdictional classification.<sup>29</sup>

It should also be noted that the Cortez Pipeline decision was issued by the ICC, not the STB. Although the STB is the successor to the now-defunct ICC, and the statutory language regarding the STB's jurisdiction is virtually identical to the language at issue in the Cortez decision, they are not the same agency. The STB conceivably could determine that its jurisdiction is not governed by the ICC's decision in the Cortez Pipeline matter. Indeed, the Supreme Court has ruled that federal agencies are not precluded from changing their positions on the issue of regulatory jurisdiction. According to the Court, "an initial agency interpretation is not instantly carved in stone. On the contrary, the agency, to engage in informed rulemaking, must consider varying interpretations and the wisdom of its policy on a continuing basis."<sup>30</sup> Accordingly, regulation of CO<sub>2</sub> pipelines for CCS purposes by the STB (or by FERC, for that matter) under existing statutes remains a possibility.

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<sup>25</sup> Cortez Pipeline Company — Petition for Declaratory Order — Commission Jurisdiction Over Transportation of Carbon Dioxide by Pipeline, 46 Fed. Reg. 18805 (March 26, 1981).

<sup>26</sup> Now known as the Government Accountability Office.

<sup>27</sup> GAO Report: SURFACE TRANSPORTATION: Issues Associated With Pipeline Regulation by the Surface Transportation Board, April 1998.

<sup>28</sup> *Id.* at 27.

<sup>29</sup> Surface Transportation Board (STB), Personal communication, (December 2007). The STB Office of Governmental and Public Affairs informed CRS that the board recognizes the conflict between this GAO report and the ICC decision (as well as the wording of 49 C.F.R. § 15301 governing STB jurisdiction over pipelines other than those transporting "water, gas or oil"). However the office did not want to state an opinion as to the current extent of STB jurisdiction over CO<sub>2</sub> pipelines and suggested that the STB would likely not act to resolve this conflict unless a CO<sub>2</sub> pipeline dispute comes before it.

<sup>30</sup> *Chevron U.S.A. v. Nat. Res. Def. Council*, 467 U.S. 837, at 863-64 (1984).

## Policy Implications of the Possible Regulatory “Gap”

If CCS technology develops to the point where interstate CO<sub>2</sub> pipelines become more common, and if FERC and the STB continue to disclaim jurisdiction over CO<sub>2</sub> pipelines, then the potential regulatory “gap” discussed above may receive attention. This gap does not necessarily demand resolution. As commenters have noted, state laws and contractual arrangements among interested parties established under the EOR model would also apply to CO<sub>2</sub> pipelines for CCS.<sup>31</sup> Interstate CO<sub>2</sub> pipelines would still be required to meet the safety requirements of the Department of Transportation. Also, although there would be no federal rate regulation, any anti-competitive behavior by the owners or operators of a CO<sub>2</sub> pipeline could be addressed by federal antitrust enforcement agencies, including the Federal Trade Commission and the antitrust division of the U.S. Department of Justice. Finally, any pipelines needing to cross federal lands would be required to obtain a right-of-way from the federal government, and so would be subject to any conditions such rights-of-way might impose.

Nevertheless, some analysts, drawing on the history of oil and natural gas pipeline development, anticipate a potential need for better defined federal regulatory authority over a potential expansive CO<sub>2</sub> pipeline network.<sup>32</sup>

The growth of these sectors and the growing importance of transportation, abuses of market power, price discrimination and other issues, including conflicts between state and federal authorities led both to preemption by the federal government and administrative regulation. As the CO<sub>2</sub> transport and storage sector grows, similar issues of regulatory frameworks and the mix of federal and state jurisdiction are likely to have to be confronted, as has been the case for all network industries in the United States. The eventual economic regulatory development for CCS will need to consider the varying approaches taken for oil and natural gas, and the serious problems that their history experienced.

Thus, Congress may ultimately be asked to consider whether the existing federal jurisdictional disclaimers and the state-by-state regulatory structure for EOR pipelines is an appropriate regulatory scheme for a potential national CO<sub>2</sub> pipeline network in support of CCS. Congress could choose to amend existing statutes to provide for definitive CO<sub>2</sub> pipeline rate jurisdiction by the federal government if it does not favor the existing regulatory scheme. FERC and the STB are two candidates for administration of such oversight. Alternatively, Congress could establish another federal regulator of CO<sub>2</sub> pipelines, or enact legislation addressing specific aspects of the existing regulatory structure for EOR.

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<sup>31</sup> See, for example, Philip M. Marston, “Doing the Deal: Legal and Regulatory Aspects of the Evolving CCS Regime in the USA,” Proceedings of the *2e Colloque International Captage et Stockage Géologique du CO<sub>2</sub>*, Paris, France (October 4-5, 2007), at: 3. [[http://www.colloqueco2.com/presentations2007/ColloqueCO2-2007\\_Session4\\_1-MARSTON.pdf](http://www.colloqueco2.com/presentations2007/ColloqueCO2-2007_Session4_1-MARSTON.pdf)].

<sup>32</sup> M.A. de Figueiredo, H.J. Herzog, P.L. Joskow, K.A. Oye, and D.M. Reiner, “Regulating Carbon Dioxide Capture and Storage,” MIT Center for Energy and Environmental Policy Research, Working Paper 07-003 (April 2007), at: 5.