

State CCS Progress Well in Front of Federal

Darrick W. Eugene

Amid the dire warnings of severe weather and rising temperatures, scientists, engineers, policy-makers, and others are searching for ways to reduce greenhouse gas emissions.¹ While no single solution exists, the development of carbon capture and sequestration (CCS) technologies may play an important role in the U.S. energy future. The development of CCS can be part of the solution to satisfying both our energy needs and our global climate-change concerns.

CCS is important to the economy and the environment. For the foreseeable future, the United States will continue to rely heavily on fossil fuels for energy and transportation needs. The United States has significant coal reserves, enough to satisfy current demand for over 200 years, and coal provides the fuel for 51 percent of U.S. electricity generation.² Under greenhouse gas limits, CCS allows the continued use of coal as a vital energy feedstock while mitigating emissions of carbon dioxide (CO₂).

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Establishing a legal and regulatory framework for CCS is necessary for widespread use of this technology. Precedents from the oil and gas industry provide a basis for a legal and regulatory framework for CCS. However, more is

needed in dealing with issues unique to CCS, including subsurface ownership and property rights issues, short- and long-term liability, classification of CO₂ and appropriate measurement, monitoring, and verification requirements. In short, whether CCS is a viable option to reduce emissions of CO₂ and other greenhouse gases and mitigate the effects of climate change depends on the legal and regulatory framework established to govern its deployment. Although the EPA is considering rule making for underground injection of CO₂, states now have the momentum for developing the legal and regulatory framework for a commercial CCS industry.

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While the federal government deliberates over CCS issues, states have taken decisive action, from passing voluntary state certification programs to adopting legislation and rules that govern CCS. Whether to avoid federal preemption or provide certainty for investors, traditional energy states like Texas, Wyoming, North Dakota, New Mexico, Kansas, California, and Pennsylvania have taken the lead in developing the legal and regulatory framework required to commercialize CCS. This is appropriate since many of the unresolved issues regarding CCS relate to state common-law issues such as ownership of subsurface pore space, ownership of emplaced CO₂, and long-term stewardship. Similarly, regional initiatives such as the Regional Greenhouse Gas Initiative (RGGI), the Western Regional Climate Action Initiative, and the Mid-West Regional Greenhouse Gas Reduction Accord have pro-

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posed policies and standards that could lead to the commercialization of CCS.

NEW MEXICO

Reflecting growing interest in CCS, New Mexico has taken the lead with its legislative and regulatory initiatives. In April 2007, New Mexico Governor Bill Richardson signed a bill promoting clean energy projects through tax credits and rate recovery from investments in infrastructure, and in June, the New Mexico Energy, Minerals, and Natural Resources Department (ENMRD) released a report, *Carbon Dioxide Sequestration: Interim Report on Identified Statutory and Regulatory Issues*. Taken together, these measures propelled the state of New Mexico into the forefront of developing the legal and regulatory framework for a commercial CCS industry.

Signed into law on April 3, 2007, the Advanced Energy Tax Credit Bill offers the first tax credit in the nation for carbon-capture technology. The bill offers up to \$60 million in tax credits for up-front spending on CCS projects. The bill sets specific capture goals for clean energy projects, requiring coal-fired power plants seeking the tax credits to meet emissions limits of 1,100 pounds of CO₂ emissions per megawatt-hour. The bill also allows utilities that invest in clean energy projects such as integrated gasification combined-cycle (IGCC) facilities or oxyfuel combustion to pass through extra costs of building these facilities to consumers through "rate recovery." Utilities allowed the clean energy projects pass-through must still act "reasonably and prudently" during development and construction of projects.

Released June 27, 2007, the ENMRD "interim" report surveys issues the state should consider in its effort to craft regulations for long-term underground storage of CO₂. The report highlights several complex questions that must be resolved to provide the regulatory certainty required to facilitate the development of a commercial CCS industry. The questions highlighted include the appropriate division of responsibilities between energy and environmental agencies, resolution of property rights issues, and the degree of environmental oversight and liability protection provided by the state. Scheduled for release in December 2007, the final report has not yet been released.

The report does not include legislative or regulatory language; however, it identifies a number

of issues that are ripe for statutory or regulatory measures. With respect to statutory changes, the report calls for providing "clear authority" for the state's Oil Conservation Division "to regulate the sequestration and accounting of anthropogenic CO₂ into all potential geologic reservoirs."³ The interim report also suggests that additional statutory language is needed to protect the interests of surface land owners, clarify ownership of pore space where CO₂ could be stored, enable joint operation of some depleted oil and gas wells that could use CO₂ to enhance energy recovery, acquire subsurface pore space and CO₂ transportation routes by eminent domain, create authority for the transfer of at least some liability related to CO₂ sequestration to the state, and allow for the imposition of sequestration "fees."⁴ The report also identifies a number of regulatory issues related to siting of storage facilities, drilling and postinjection and closure activities at GS projects.⁵

The report also wades in to the waste-or-commodity debate, suggesting that policymakers will face having to decide whether CO₂ is a waste or a commodity. The report states, "[t]he definition or characterization of CO₂ as either 1) an industrial product or commodity, or 2) a by-product for waste disposal may have significant effects on public acceptance and perception, as well as potential economic consequences affecting project feasibility and liability." To show how materials classified as waste are subject to more stringent regulation than material classified as a commodity, the report examines the EPA's Underground Injection Control (UIC) program well classifications where Class I injection wells for municipal and industrial waste have more stringent environmental requirements than Class II injection wells for hydrocarbon storage, saltwater disposal, and enhanced oil recovery (EOR).

WYOMING

On March 4, 2008, Wyoming Governor Dave Freudenthal signed into law two bills intended to resolve ownership and regulation issues associated with the underground storage of CO₂. With the governor's signature, Wyoming became the first state to enact comprehensive carbon-sequestration legislation establishing a legal framework for underground storage of carbon dioxide and other emissions from coal-fired power plants.

HB 90 authorized the Wyoming Department of Environmental Quality to regulate the underground storage of carbon dioxide. It does not require carbon sequestration; rather, it provides a framework for how sequestration could occur and attempts to make Wyoming an option for carbon sequestration. HB 89, the "Ownership of Subsurface Voids" bill, codifies the U.S. rule of subsurface ownership, where the right of ownership of the subsurface void space resides with the surface estate owner.

The "Carbon Capture and Sequestration" bill addresses a variety of issues. The bill addresses permitting and certification requirements for storage facilities, bonding requirements, project-closure requirements, and migration of injected CO₂. Following the Interstate Oil and Gas Compact Commission (IOGCC) conceptual framework, Article 2 of the bill asserts that injected CO₂ is the property of the injector, unless willfully abandoned.

In addition to legislation, Wyoming has taken other tangible initiatives to promote CCS through its Wyoming Pipeline Authority and Wyoming Infrastructure Authority, which recently announced a public-private partnership to build an IGCC plant with carbon sequestration.

CALIFORNIA

Most analysts agree that California has taken the lead in climate-change law with its pioneering AB 32. It seeks to return greenhouse gas emissions in California to 1990 levels by 2020, requiring a reduction of approximately 25 percent from current levels. The bill applies to all sources and promotes the establishment of an allowance trading system.

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To some industry and environmental groups, CCS is a critical tool to reduce future CO₂ emissions and help the state meet its climate-change mitigation goals. To that end, the state released a 147-page report on long-term geologic CO₂ sequestration strategies.⁶ The report, *Geologic Carbon Sequestration Strategies for California*, was prepared in response to a 2006 law, AB 1925. The statute requires various California state agencies to consult with environmentalists, industry groups,

and academic experts on "recommendations for how the state can develop parameters to accelerate the adoption of cost-effective geologic sequestration strategies for the long-term management of industrial carbon dioxide."⁷

The report addresses the potential for geologic storage in the state, capture technologies, site characterization, monitoring and verification, risks and risk management, remediation and mitigation, the economic impact of CCS, and regulatory and statutory issues. The report also calls for an evaluation of the potential for captured CO₂ to be used as an "enhanced oil recovery" tool. The report acknowledges that while technical challenges remain to CO₂ sequestration, the primary barriers to advancing geologic sequestration projects lie within the statutory and regulatory arena. "Demonstration projects and further technical evaluations and studies are needed, in part to guide development of regulations and statutes that are appropriate for carbon capture and sequestration," the report says.

The report addresses a number of issues in the statutory and regulatory arena. The report suggests that regulatory continuity is an important goal for any potential CO₂ sequestration framework, noting that under current state regulations, oversight of CO₂ sequestration would become blurred. "It is possible, under current regulations, for authority to become split along the lines of reservoir type and along surface and subsurface activities," the report notes. However, "[i]deally, a single authority should regulate the injection, storage, and monitoring of CO₂ into all potential geologic reservoirs."

The report does a decent job of outlining the ownership and property rights issues surrounding CCS. The report notes that the interplay among ownership interests and provisions for public good and how these diverse interests should be accommodated for the purposes of long-term geologic storage is an area of complexity. According to the report, the salient ownership issues involve property ownership and the acquisition of property rights.

A primary question to resolve for CCS is ownership of subsurface pore space in the storage reservoir. Acknowledging that there is some ambiguity in this area, the report notes that if subsurface pore space is owned by surface property owners, it is unclear whether it can be transferred via easements, decoupled from the surface estate and

purchased in the same way as mineral rights, or unitized to serve the public good. The report further discusses the extent to which property rights should be modified to recognize public interest concerns in CCS, concluding that there is “strong legal support for maintenance of common-law property rights and precedents for limiting those rights for the public’s benefit.”

Regarding property rights acquisition in the development of storage facilities, the report notes that the implementation of CCS creates potential for ownership conflicts between issues of public good, and use of eminent domain in condemnation of storage space and transportation corridors. Given the climate-change mitigation potential of CCS, there is clearly a “public-good” aspect to CCS. However, the report observes that it is unclear whether CCS projects would fall under mechanisms currently in place by which eminent domain or condemnation is asserted, noting that “the use of these authorities is very controversial and should not be taken lightly.”

Finally, the report addresses the issue of long-term stewardship, particularly concerns regarding liability during the postclosure phase of CO₂ sequestration: “For industry, the concerns associated with this open-ended liability include the consequent inability to obtain insurance for the project, the potential to incur remediation costs related to CO₂ migration and/or leakage at some point in the distant future, and the disincentive that these potential costs may have on investment today in CO₂ geologic storage.” The report notes that the current UIC program does not adequately address postclosure activities, including long-term liability, and reviews other mechanisms for handling these issues, including those employed by the FutureGen finalists Texas and Illinois.⁸

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MORE STATE INITIATIVES

Other states are waving the CCS banner as well. North Dakota is considering the Model Rules developed by the IOGCC. Texas recently passed legislation and is drafting rules that will provide tax incentives for CCS for EOR and im-

plement a state certification for geologic storage. Kansas passed a law requiring the Kansas Corporation Commission to establish rules and regulations for geologic storage by July 2008 and providing tax incentives for CCS machinery and equipment.

In addition to individual state action, three multistate coalitions have taken shape to require CO₂ emission reductions. A coalition of ten states in the Northeast has entered into a Memorandum of Understanding in support of the Regional Greenhouse Gas Initiative. The RGGI plans to commence implementation of a cap-and-trade program in 2009 for power generators within the member states, which would stabilize power plant CO₂ emissions at current levels through 2015 and then require a 10 percent reduction from those levels by 2020. The RGGI has not formally addressed CCS; but, some member states, like Maine, have adopted legislation accepting CCS as an offset mechanism.

A coalition of five Western states (California, New Mexico, Arizona, Washington, and Oregon) signed an agreement establishing the Western Regional Climate Action Initiative in February 2007 to reduce greenhouse gas emissions. To date, the initiative has not formally addressed CCS; however, CCS could be considered an offset mechanism under the market-based emissions reductions and offset protocols being designed.

Finally, ten Midwest leaders came together to sign the Midwestern Greenhouse Gas Reduction Accord and adopt the Energy Security and Climate Stewardship Platform. The platform addresses geologic sequestration calling for CO₂ management to create a regional structure for transporting and storing CO₂. 

NOTES

1. Herzog, H. J. (2001, April). What future for carbon capture and sequestration? *Environmental Science & Technology*, p. 158.
2. Gerrard, M. B. (Ed.). (2007). *Global climate change and U.S. Law 708*. Chicago, IL: American Bar Association.
3. New Mexico weighs options for first-time CO₂ sequestration rules. (2007, July 5). *Carbon Control News*.
4. *ibid.*
5. *ibid.*
6. California report may revive bill for CO₂ storage rules. (2007, September 26). *Carbon Control News*.
7. CEC Report, <http://www.energy.ca.gov/2007publications/CEC-500-2007-100/CEC-500-2007-100-SD.PDF>
8. Both Illinois and Texas passed legislation giving the state title to the injected CO₂ and, consequently, the state assumes liability. The legislation is specific to the FutureGen project and does not apply to commercial CCS projects.