



NATIONAL CONFERENCE of STATE LEGISLATURES

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Carbon Capture and Sequestration

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Carbon capture and sequestration (CCS) is a process that involves capturing carbon dioxide at its sources and storing, or sequestering, it before it is released into the atmosphere. CCS has attracted interest because it allows for the continued use of fossil fuels at power plants and other large, industrial facilities while reducing the amount of carbon dioxide emitted to the atmosphere. Challenges associated with CCS is the cost of adoption and deployment and the liability, ownership and long-term stewardship of carbon dioxide sequestered underground.

At least 21 states have enacted legislation related to carbon capture and sequestration. The table below summarizes legislative activity on this subject. Several states including California, Kentucky, New Mexico, Oklahoma, Pennsylvania and West Virginia have enacted legislation to conduct studies or prepare reports on CCS. Other states, including Kansas, Mississippi, Montana, New Mexico, North Dakota and Texas, have enacted legislation establishing tax incentives for CCS equipment, property and projects.

Several states have enacted legislation establishing state-level geological sequestration regulations for carbon dioxide. While states have taken various approaches to CCS regulations, there are several main areas addressed by legislation including liability, storage funds, pore space, unitization, carbon dioxide ownership, primacy and inter-state boundary issues.

Liability

Liability is the amount of time the operator is responsible for the site post closure. At least six states—Illinois, Kansas, Louisiana, Montana, North Dakota and Texas—have addressed the issue of long-term liability and transfer of site ownership to the state post-injection. State legislation varies based on the amount of time before the state assumes liability—for example North Dakota and Louisiana assume liability of the carbon dioxide after 10 years, while Illinois assumes liability for carbon dioxide both during the injection process and afterwards.

Storage Funds

Storage funds are funds established for the long-term management and monitoring of CCS storage sites. At least six states have passed legislation establishing storage funds including Kansas, Louisiana, Montana, North Dakota, Texas and Wyoming.

Pore Space Ownership

At least three states—Montana, Wyoming and North Dakota—have enacted legislation that establishes who owns the pore space into which the carbon dioxide is injected. All three of these states have established that the subsurface pore space belongs to the surface owner. While Montana and Wyoming allow pore space to be transferred as a separate property from the surface, North Dakota established that pore space belongs to the owner and cannot be separated from the owners of the overlying property, although it can be leased.

Carbon Dioxide Ownership

State legislation can define who owns and is responsible for the carbon dioxide after it is injected into the ground. At least six states have addressed carbon dioxide ownership after injection through state legislation: Louisiana, Montana, North Dakota, Oklahoma, Texas and Wyoming.

Unitization

Unitization refers to the percentage of the landowners that is required to agree to the project before it can proceed. At least three states—Montana, North Dakota and Wyoming—have addressed this through legislation. In Montana and North Dakota, at least 60 percent of the owners of the pore space must consent to the CCS project, while in Wyoming, at least 80 percent of pore space owners must consent to the CCS project before it can proceed.

Mineral Rights Primacy

Primacy establishes which subsurface rights are dominant. At least five states including Montana, Oklahoma, Texas, West Virginia and Wyoming have enacted legislation regarding primacy of rights with regards to CCS. All states with legislation have established that mineral rights have primacy over CCS.

Interstate Issues

At least one state, West Virginia, has enacted legislation addressing the possibility of interstate interaction in conjunction with CCS.

Legislative Activity

State	Legislation	Summary
California	AB 1925 (2006)	Required the California State Energy Resources Conservation and Development Commission to submit a report to the legislature on geologic sequestration of carbon dioxide by November 1, 2007.
Colorado	HB 1281 (2006)	Provides regulatory incentives for integrated gasification combined cycle generation facilities that sequester a portion of the project’s carbon dioxide emissions.

State	Legislation	Summary
Illinois	SB 1704 (2007), SB 1987 (2009), SB 1592 (2007), HB 3854 (2009)	SB 1704 establishes that the state assumes all liability for sequestered carbon dioxide for all FutureGen project locations in Illinois. SB 1987 requires that 25 percent of all electricity used in Illinois come from coal plants that capture and sequester carbon dioxide emissions. SB 1592 establishes funding for CCS projects and provides incentives for coal plants located in areas suitable for geologic sequestration. HB 3854 created the Carbon Capture and Sequestration Commission that was responsible for recommending CCS legislation by December 31, 2010.
Indiana	SB 22 (2006)	This bill addressed pipeline transport of carbon dioxide.
Kansas	HB 2419 (2007)	This bill directed the Kansas Corporation to establish rules for geologic storage facility permitting, established the carbon dioxide injection well and underground storage fund, and created a property tax exemption for CCS property.
Kentucky	HB 1 (2007)	This bill established a group to prepare a report and recommendations on options to manage carbon dioxide emissions from existing coal fired power plants.
Louisiana	HB 1117 (2008), HB 1220 (2008) HB 661 (2009)	HB 1117 allowed the State Mineral Board and the Commissioner of Conservation to lease state lands for geologic sequestration. HB 1220 allows the State Mineral Board to own and assume liability for geologic sequestration sites. HB 661 authorized the Department of Natural Resources to regulate the storage and transportation of carbon dioxide, granted the power of eminent domain for geologic sequestration projects, authorized the state to assume ownership of closed geologic storage facilities and released operators from liability and created a fund to pay administrative and long-term care expenses.
Massachusetts	SB 2768 (2008)	This bill required the department of energy resources to establish an alternate energy portfolio standard and states that CCS could be used to meet the standard.
Minnesota	SF 2096 (2007)	Appropriated money for a study of geologic sequestration capacity in Minnesota.
Mississippi	HB 1459 (2009)	This bill established a certain income tax rate for businesses that sell carbon dioxide for enhanced oil recovery or geologic sequestration.

State	Legislation	Summary
Montana	HB 3 (2007), HB 25 (2007), SB 498 (2009)	HB 3 provides a property tax incentive for CCS equipment. HB 25 requires that all new coal plants capture and sequester at least 50 percent of their carbon dioxide. SB 498 authorizes the Montana Board of Oil and Gas Conservation to regulate CCS, declares pore space the property of the surface owner, authorizes the state to assume liability for closed geologic storage sites, creates a geologic storage reservoir program fund, and provides for unitization for geologic storage.
New Mexico	Executive Order 69 (2006) and SB 994 (2007)	EO 69 requested a study of geologic sequestration in New Mexico. SB 994 established a tax credit for electric power plants that capture and sequester their carbon dioxide and reduce their emissions to less than 1,100 pounds per megawatt-hour. Plants must also monitor the injected carbon dioxide.
North Dakota	SB 2139 (2009), SB 2034 (2009), SB 2095 (2009)	SB 2139 establishes that pore space is the property of the surface owner. SB 2034 provides a tax exemption from the oil extraction tax for oil produced by carbon dioxide enhanced oil recovery. SB 2095 requires the Industrial Commission to write rules for geologic storage site permitting, provides for eminent domain and unitization, authorizes the state to assume liability for closed storage sites and establishes funds for administration and long-term stewardship of geologic storage sites.
Oklahoma	SB 610 (2009), SB 1765 (2008), SB 679 (2009)	SB 610 establishes permitting authority for geologic sequestration, preserves mineral rights primacy and declares injected carbon dioxide the property of the storage operator. SB 1765 created the Oklahoma Geologic Sequestration Task Force and required the task force to submit a report to the legislature and government. SB 679 extended the report deadline for the Oklahoma Geologic Sequestration Task Force.
Pennsylvania	SB 266 (2007) and HB 220 (2008)	SB 266 required a report on the economic opportunities related to CCS technologies. HB 220 required a study to investigate the feasibility of creating a state carbon dioxide sequestration network.
South Dakota	HB 1129 (2009)	HB 1129 requires the Public Utilities Commission to regulate carbon dioxide pipelines.
Texas	HB 149 (2006), HB 1796 (2009), SB 1387 (2009), HB 469 (2009)	HB 149 authorized the state to acquire title to carbon dioxide captured by the FutureGen project. HB 1796 gives the Texas Natural Resource Conservation Commission the authority to construct and operate an offshore geologic sequestration site. SB 1387

State	Legislation	Summary
		instructs the Texas Railroad Commission to create rules for geologic storage of carbon dioxide. It creates the anthropogenic carbon dioxide storage trust fund to cover long-term monitoring of geologic storage facilities and orders a study on management of geologic storage on state-owned lands. HB 469 created a sales tax exemption for CCS equipment, a franchise tax credit for certain projects and a reduction in recovered oil tax for certain projects.
Utah	SB 202 (2008)	Specifies that CCS may be used to meet the low-carbon electricity standard established by the bill and requires the Department of Environmental Quality to establish rules for sequestration.
Washington	SB 6001 (2007)	Specifies that geologic carbon sequestration may be used to meet the emissions performance standard established in the bill, and directs the Department of Ecology to adopt rules for geologic sequestration. The department of Ecology adopted rules in 2008.
West Virginia	HB 2860 (2009)	This bill authorized the West Virginia Department of Environmental Protection to regulate geologic sequestration and established a working group on sequestration.
Wyoming	HB 90 (2008), SB 1 (2008), HB 89 (2008), HB 57 (2009), HB 58 (2009), HB 80 (2009), HB 17 (2010)	HB 90 required the Wyoming Department of Environmental Quality to create rules for geologic carbon dioxide sequestration. SB 1 appropriated money to fund research on CCS technologies and for geologic evaluation of potential sequestration sites. HB 89 established that pore space is the property of the surface owner. HB 57 established that mineral estate is dominant over pore space. HB 58 established that the operator of a geologic sequestration site owns the injected carbon dioxide and is liable for any effects of geologic sequestration. HB 80 provides for unitization for geologic sequestration. HB 17 established a fund for long-term stewardship expenses and directs the Department of Environmental Quality to specify financial assurance requirements for geologic sequestration permits.

Several states are considering bills on CCS during in the 2017 session including Alabama, Illinois, Massachusetts, Montana, Oklahoma and Wyoming.

Resources

- [U.S. Department of Energy Carbon Storage FAQs](#)

- Massachusetts Institute of Technology (2013): [Regulation for Underground Storage of CO2 Passed by U.S. States](#)
- U.S. Department of Energy: [National Energy Technology Laboratory's Atlas V](#)
- Congressional Research Service: [Carbon Capture and Sequestration \(CCS\)—A Primer](#)