

# **State Regulatory Approaches to Geologic Carbon Sequestration in the Big Sky Region\***

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## **Abstract**

As technological developments and congressional action have made geologic sequestration more likely, state legislatures have responded with a variety of regulatory approaches to authorize, monitor, and regulate geologic sequestration. This presentation will evaluate and explicate different regulatory approaches concerning the following key components of regulatory frameworks: 1) primacy; 2) pore space ownership; 3) split estates; 4) unitization requirements; 5) complementary rules for CO<sub>2</sub> transportation; 6) regulatory agencies and authorities; 7) financial responsibility and release of liability; 8) fee structures; 9) area of review; and 10) constituent allowances in the CO<sub>2</sub> stream. Comments will be offered concerning likely developments and/or changes to these approaches once UIC final rules are adopted by EPA and the likelihood of large-scale commercial deployment of CCS in each state based on regulatory approaches.

# 59<sup>th</sup> Annual Rocky Mountain Section AAPG Meeting

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*CO2 Sequestration – What have we learned so far?*

## **Big Sky Region Regulatory Approaches to CCS**

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June 13-16, 2010

Fort Lewis College

Durango, CO



# The Big Sky Carbon Partnership Region



**BIGSKYCARBON**  
SEQUESTRATION PARTNERSHIP



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**MONTANA**  
STATE UNIVERSITY  
*Mountains and Minds*

# Big Sky Region Regulatory Approaches to CCS

- To date, Wyoming, Montana, Washington, and North Dakota have developed specific statutory requirements to regulate geologic sequestration of CO<sub>2</sub>.
- Oregon, South Dakota and Washington also have terrestrial sequestration statutes to establish registries and to promote carbon markets for agricultural and forestry practices.
- Oregon and Washington have focused efforts to limit GHG emissions through performance standards for stationary sources; Wyoming, Montana, and North and South Dakota currently have no restrictions.

# Geologic Sequestration

Requirements	Wyoming	Montana	North Dakota	Washington
UIC Primacy	Yes	No	No	Yes
Pore Space Owner	Surface Owner	Surface Owner	Surface Owner	State/SO
Split Estate w/ Minerals	Mineral Estate Dominant – no injection in structures with HC	Equal Standing	Equal Standing	Equal Standing
Regulating Agency	DEQ/WOGCC	MBOG/DEQ NRDC	Industrial Commission/Health Department	WDOE
Unitization Requirement	75%	60%	60%	Not Defined
Fee Structure	Application Fee	/T charge TBD	/T charge TBD	Application Fee
Financial Responsibility	Liability Policy, Surety Bond TBD	Surety Bond TBD	Surety Bond TBD	Financial Assurance Mechanism
Release of Liability to third party	None	30	10	Determined post- closure and does not terminate with permit termination
Other constituents allowed in injection stream	Yes	Yes	Yes	No
Area of Review beyond predicted plume size	1 Mile	½ Mile	¼ Mile	10 Miles
Separate Process for Research Wells	Yes	No	Yes	Yes

# State Primacy for the UIC Program

States can elect to accept primacy for the Underground Injection Control (UIC) Program of the Safe Drinking Water Act (SDWA).

Montana's adoption of new CCS statutory authority is predicated on assumption of primacy from EPA and the statute is moot until such time that EPA grants primacy.

WY, ND, and WA currently have primacy over the UIC program

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# Pore Space Ownership

Many states that harbor significant subsurface mineral and/or oil and gas deposits create a “split estate” that separates the surface estate from the mineral estate.

Within the subsurface there are pore spaces or voids that are not occupied by minerals or oil and gas and these spaces are statutorily assigned to the surface owner in WY, MT and ND independent of the mineral estate.

WA does not define nor establish ownership of the pore space specifically but can be determined through county regulations or ground water issues.

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# Dominance of Subsurface Ownership

Wyoming established dominance of the mineral estate over the pore space ownership. Geologic storage in the pore space is prohibited without the consent of the mineral estate owner. Geologic storage is prohibited in formations that contain commercial quantities of hydrocarbons. This does not apply to EOR operations.

The other states all give equal standing to the mineral estate and the pore space owner and require that neither approach can interfere with the other.

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# Regulatory Agency

For Wyoming and Montana, primary responsibility for geologic sequestration rests with the state environmental agency and the oil and gas agency. However, the environmental agency has a consultative role in MT and the oil and gas agency a consultative role in WY. ND has an arrangement similar to MT.

The Washington Department of Ecology has sole responsibility for CCS activities in that state.

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# Unitization of Pore Space

During geologic sequestration, the plume may extend across several surface owners. To facilitate cooperation among surface owners, the storage reservoir can be “unitized” to establish volumes occupied for each surface owner for pricing purposes and to require some surface owners to cooperate with the injection even though they may object to the project. As noted in the table, each state (except WA) has determined that a majority (60-75%) of affected surface owners agreeing to the occupancy of the pore space will require adjoining affected landowners to cooperate as well. This approach is similar to eminent domain.

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# Fee Structure

To protect the public from an operator that does not properly operate the site or abandons the site prior to closure, states have imposed a fee structure that places funds in a dedicated account to reimburse the state should the government have to assume responsibility for the site. This is done through application fees and annual operating fees, and through a per ton charge levied on each ton of CO<sub>2</sub> placed in the reservoir (MT and ND). The fees can also be used to administer the program and to monitor operations.

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# Financial Responsibility

Operators of geologic sequestration sites are required to maintain financial responsibility for the site, including any mitigation of leaks, contamination of ground water, etc, for the life of the injection and for a varying period of time post-closure of the site. All states accept a surety bond in an amount determined by the regulatory agency, and Washington allows for other financial assurance instruments including letters of credit, cash, and liability insurance policies.

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# Release of Financial Responsibility

Once injection ceases, each state requires a post injection monitoring period to ensure that the CO<sub>2</sub> stabilizes and that no problems arise concerning containment of the gas.

Wyoming follows UIC guidance for Class V wells and proposed Class VI wells but there is no release of financial responsibilities

Montana and ND assume responsibility for the site after 15 years and 10 years, respectively.

Washington determines release of responsibility on a year to year basis subject to monitoring of the plume.

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# CO<sub>2</sub> Purity

MT and ND require the injection stream to be of sufficient purity that it does not compromise the ability of the reservoir to store the injected CO<sub>2</sub>.

Wyoming allows the injected stream to contain CO<sub>2</sub> and “constituents.”

Washington does not allow any constituent in the stream for which there is a technology available for removing the constituent from the injection stream.

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# Area of Review

Once the areal extent of the storage reservoir has been determined, states vary in the additional area that must be characterized for abandoned wells, faults, active wells, etc. (1/4 to 10 miles). These requirements also include notification of surface owners and mineral rights owners.

Proposed UIC regulations may usurp state requirements since the area of review must include the plume and associated pressure front. State requirements can be more strict but not less strict than federal regulations.

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# Research Wells

To properly characterize a geologic sequestration site, it is often necessary to drill research wells involving the injection of small volumes of CO<sub>2</sub> to determine injectivity and capacity of the storage reservoir.

WY, ND, and Washington have established regulatory provisions that allow much easier permitting processes for research wells. MT statutes currently have no such provision.

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# Financial Incentives

- Currently, only North Dakota provides financial incentives for CCS through reduced property taxes, production tax credits, and/or accelerated depreciation for capture equipment.
- Colorado provides cost recovery mechanisms for deployment of IGCC with CCS.
- Utah allows the use of CCS as a means to meet low carbon electricity standards
- New Mexico provides a \$60MM investment tax credit for power plants with CCS

# Expected Regulatory Activities

Activity	OR	ID	WY	MT	ND	SD	WA
Emissions Reporting*	Y	Y	Y	Y	Y	N	Y
CO2 Pipelines	N	Y	Y	Y	Y	Y	N
Financial Assurance	N	N	Y	Y	Y	N	N
Liability	N	N	Y	Y	Y	N	N
Indemnification**	N	N	Y	Y	Y	N	N
Reservoir Fluid Displacement	N	N	Y	N	N	N	Y

\* Regulatory responses to draft EPA rules governing emissions for EOR and CCS

\*\* Regulatory responses to Congressional action

# Future CCS Activity Outlook

- Wyoming statutes and regulations will make CCS difficult where there is a mineral interest that is severed from the surface estate or the potential for presence of HC in the target formation
- MT and ND requirements are much more pragmatic and more easily permitted due to equal standing of the mineral and surface estates.
- WA requirements are unique and suggest siting of GS, particularly in Basalts, may require additional public and agency education.
- Proposed Texas regulations may influence BSCSP state regulations dependent upon EPA response.

# Questions, Comments and Discussion

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