Appropriate monitoring, oversight, and accountability for CCS activities are essential to ensure the integrity of CCS efforts, enable a sustainable CCS industry, and provide a strong foundation for public confidence. The PCOR Partnership is tracking regulatory implementation for early CCS projects and is playing a critical role in developing appropriate protocols for commercial CCS deployment.
The Evolution of CCS Regulations

CCS policy is taking a prominent position in the climate management debate that is occurring at national, regional, and local levels. However, because CCS is a new activity, the legal framework for it is evolving. In areas where extensive oil and gas production activities have taken place (in particular, EOR or acid gas injection), the legal framework may be relatively well advanced because of the similarity of CCS to those activities. In other jurisdictions, less of the legal framework may be in place. Government organizations—which vary by jurisdiction—may have oversight for various aspects of the CCS project, including the procedures used, health and safety, liability, protection of water supplies, and monitoring.

To that end, a U.S. Presidential Interagency Task Force on CCS was formed to develop a plan to overcome the barriers of widespread, cost-effective deployment of CCS within 10 years. EPA has promulgated rules for various aspects of carbon management and reporting; many states are moving forward with their own rules and regulations to accommodate CCS projects.

Because of the evolving nature of regulatory frameworks at various levels of government as well as daily changes in federal agency announcements, this atlas provides general overviews of select rules and policies currently under debate; this atlas can be considered to be up to date as of December 2012, unless otherwise noted.
PCOR Partnership Regulation Activities

International Involvement

Staying abreast of the latest regulatory developments is of the utmost importance for the PCOR Partnership. Participating in the Interstate Oil and Gas Compact Commission’s (IOGCC’s) Geological CO₂ Sequestration Task Force and Pipeline Transportation Task Force and the Presidential Interagency Task Force on CCS allows the PCOR Partnership to provide technical input to the regulation process. The PCOR Partnership also provides reviews and comments where appropriate on provincial, state, and federal rulemaking and reviews enacted legislation.

Regional Outreach

In order to facilitate the exchange of information, ideas, and experiences among oil and gas regulatory officials, the PCOR Partnership hosts Regulatory Roundup Meetings. The meetings inform regional regulatory officials about the current status and evolving nature of regulations that affect CO₂ capture, compression, transport, injection for CO₂ storage, or CO₂ EOR. These meetings allow for improved coordination of regulatory strategies and will ultimately enhance opportunities for CO₂ storage and CO₂ EOR in the region.

Past Regulatory Roundup Meetings

July 31, 2012
Deadwood, South Dakota

October 17, 2011
Buffalo, New York

June 29–30, 2011
Bismarck, North Dakota

November 16, 2010
Tucson, Arizona

July 21–22, 2010
Deadwood, South Dakota

June 16–17, 2009
Deadwood, South Dakota
In February 2010, an Interagency Task Force on CCS was established by U.S. President Obama. The Task Force comprises 14 executive departments and federal agencies and is cochaired by DOE and EPA. The Task Force was charged with proposing a plan to overcome the barriers of widespread, cost-effective deployment of CCS within 10 years, with a goal of bringing five to ten commercial demonstration projects online by 2016. The following are Task Force recommendations to address the legal and regulatory barriers to CCS:

Enhance Regulatory and Technical Capacity
Federal and state agencies should work together to enhance regulatory and technical capacity for safe and effective CCS deployment:

- EPA, in coordination with DOE, the U.S. Department of the Interior (DOI), and state agencies, should develop capacity-building programs for underground injection control regulators.
- EPA should leverage existing efforts of the RCSPs and identify data needs and tools to support regulatory development, permitting, and project development.

Assess Statutory Requirements
DOE and EPA should track regulatory implementation for early commercial CCS demonstration projects and consider whether additional statutory revisions are needed.

Create Federal Agency Roundtable
DOE and EPA should create a federal agency roundtable to act as a single point of contact for project developers. The roundtable should create a technical committee comprised of representatives from DOE, EPA, DOI, and DOI and other experts to conduct periodic reviews of CCS demonstration projects to track progress and identify additional research, risk management, and regulatory needs.

Work with Long-Term Stewardship Issues
Recommendations regarding long-term stewardship need further study. By early 2012, EPA, DOE, DOI, the U.S. Department of Justice, and the U.S. Department of the Treasury should provide recommendations in the context of existing and planned regulatory frameworks. Options to consider include the following:

- Reliance on the existing framework
- Adoption of substantive or procedural limitations on claims
- Creation of an industry-funded trust fund
- Transfer of liability to the federal government with certain contingencies
- No use of open-ended federal indemnification

Mandatory Greenhouse Gas Reporting Rule (MRR)
Subpart RR of the MRR refers to the injection of CO₂ for geologic storage. It covers any well or group of wells that inject CO₂ for long-term geologic storage and all wells permitted as Class VI wells. Such facilities are required to report the following:

- Source(s) of CO₂
- Mass of CO₂ received
- Mass of CO₂ produced (i.e., mixed with produced oil, gas, or other fluids)
- Mass of CO₂ emitted from surface leakage
- Mass of CO₂ equipment leaks and vented CO₂ emissions
- Mass of CO₂ stored in subsurface geologic formations

In addition, Subpart RR reporters must also develop and submit a monitoring, reporting, and verification (MRV) plan to EPA.

Underground Injection Control Program
This rule establishes federal requirements for the underground injection of CO₂ for the purpose of long-term underground storage, or geologic storage. Numerous elements of the rule deal with various aspects of permitting and operating a UIC Class VI injection well, such as the well design, underground storage, well construction and operation requirements, and postinjection site care.

Additionally, a series of guidance documents provide information and possible approaches for addressing each of these elements. These guidance documents follow the sequence of activities that an operator will perform over time at a proposed and permitted site.

In the final rule, EPA gave states a deadline of September 6, 2011, to apply for primary enforcement responsibility, or primacy, over Class VI wells. No states met this deadline, therefore, as of September 7, 2011, EPA directly implements the Class VI Program nationally. As a result, in order to permit a CO₂ geologic storage project, potential owners or operators of a CO₂ geologic storage well need to submit a permit application to the appropriate EPA regional office.

EPA is developing policies and regulation with profound effects on CCS implementation. In December 2010, EPA finalized authority to permit CO₂ long-term geologic storage wells in all 50 States under the authority of the Safe Drinking Water Act’s Underground Injection Control (UIC) Program. Additionally, EPA requires geologic storage projects to comply with the Mandatory Reporting of Greenhouse Gases Rule (40 CFR 98).
Numerous states and provinces in the region have commissioned studies to investigate the potential for CCS in their respective jurisdictions. Additionally, many states and provinces are involved in regional initiatives that are contemplating various solutions, including CCS, as a means to manage CO2 emissions.

A number of states have put laws and regulations for CCS onto the books, including Wyoming, North Dakota, Texas, and Louisiana, to name a few. However, with the publication by EPA of a final rule covering injection wells for geologic storage of CO2, and the pending publication by EPA of final guidance documents supplementing the EPA Final Rule, states now have to rewrite their legislation and rules to conform to EPA’s rule.

**British Columbia** is reviewing regulatory framework for CCS. Additional legislation may be considered for clarification purposes.

**Manitoba** does not have any legislation in place or rules adopted or under development.

**Saskatchewan’s** legislation has been passed, and rules are being developed for CCS.

**Alberta** has legislation in place for pore space issues and long-term stewardship.

**North Dakota** has legislation in place for pore space issues and long-term stewardship.

**Montana** has legislation in place for pore space issues and long-term stewardship. Rule development will begin once priority for underground injection of CO2 for storage purposes is secured from EPA.

**Wyoming** has legislation in place for pore space ownership.

**South Dakota** does not have any legislation in place or rules adopted or under development.

**Nebraska** does not have any legislation in place or rules adopted or under development.

**Iowa** does not have any legislation in place or rules adopted or under development.

**Missouri** does not have any legislation in place or rules adopted or under development.

**Wisconsin** does not have any legislation in place or rules adopted or under development.

**Minnesota** does not have any legislation in place or rules adopted or under development.

**Iowa** does not have any legislation in place or rules adopted or under development.

**South Dakota** does not have any legislation in place or rules adopted or under development.

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**Missouri** does not have any legislation in place or rules adopted or under development.

**Iowa** does not have any legislation in place or rules adopted or under development.

**Wisconsin** does not have any legislation in place or rules adopted or under development.
Carbon Markets

With increasing concerns over climate change, a momentous surge of interest in the various methods of carbon sequestration is occurring. Because of this surge, voluntary and potential future compliance-related carbon markets are rapidly developing.

Carbon markets provide an opportunity for entities looking to offset emissions and for investors to speculate on the future value of carbon credits. Without the presence of rigid regulatory oversight, the evolution of the voluntary carbon market in the United States has been largely determined by market participants and their objectives. Participants wishing to partake in the voluntary carbon market find a myriad of GHG registries, exchange platforms, and voluntary standards in which to enroll.

Carbon market trading provides a mechanism to put a monetary value on something that was previously free: the ability to release CO₂ into the air. Carbon markets were established to stabilize CO₂ in the atmosphere through emission reductions by either preventing CO₂ from getting into the atmosphere or pulling CO₂ out of the atmosphere.
Carbon Offsets

Carbon offsets are also known by a number of other names, such as carbon credits, verified emission reductions, and certified emission reductions. A carbon offset can be created by:

1. **Identifying carbon reduction projects** such as planting and conserving trees, storing CO₂, becoming more energy-efficient, or investing in renewable energy production.

2. **Quantifying the volume of carbon reduced.** One carbon offset typically represents the reduction of 1 ton of CO₂ or its equivalent in other GHGs.

3. **Verifying carbon reductions via a third-party auditor.** All trading countries maintain an inventory of emissions, and North American trading groups maintain inventories at the state level through the Climate Registry.

4. **Offering carbon credits for sale into the market** on a mandatory or voluntary basis. In a mandatory carbon market, a cap-and-trade system sets limits (caps) on the amount of CO₂ that can be emitted. If an entity cannot meet that limit, it can purchase (trade) allowances from an entity that emits less CO₂. These units can then be traded as a commodity between countries and among industries within countries. In a voluntary carbon market, an entity that typically is not subject to mandatory limitations chooses to offset its carbon emissions by purchasing carbon allowances from a third party. The third party then uses the money toward a project that reduces CO₂ in the atmosphere.

**Aggregators**

An aggregator is any company that collects, combines, completes the administrative work, and brokers the exchange of carbon credits. Because exchanges incur transaction costs when offset credits are bought and sold, aggregators prefer to buy credits from individuals and bundle the credits together before selling them in the marketplace. The Chicago Climate Exchange is a major aggregator in trading terrestrial carbon credits.