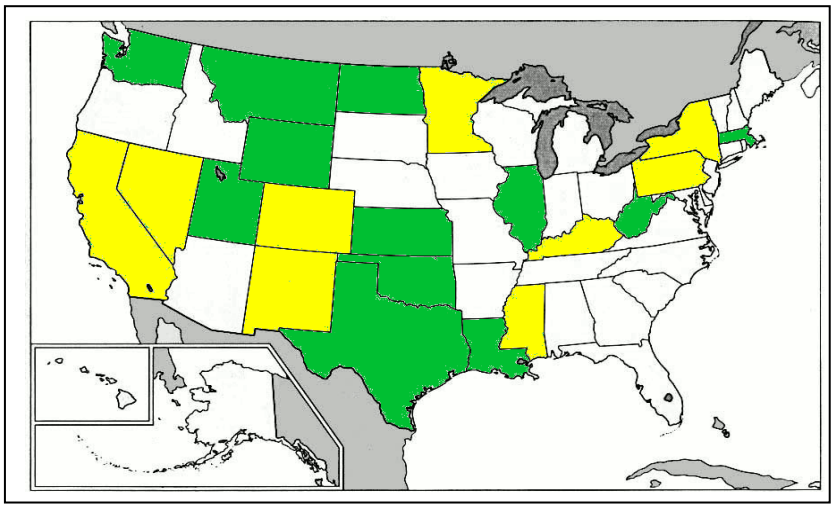
CCS REGULATORY AND STATUTORY APPROACHES IN OTHER STATES



California Carbon Capture And Storage Review Panel

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Introduction

A number of regulatory and legal ambiguities and gaps have been identified surrounding Carbon Capture and Storage (CCS) which could prove barriers to CCS becoming a viable large scale option for reducing greenhouse gas emissions.

The outstanding issues surrounding CCS generally fall into the following categories:

- Permitting
- CO2 Injection Well Operations
- Monitoring/Verification
- Mitigation/Remediation
- Well Closure
- Post-closure
- Property Rights
- Liability
- Incentives/Subsidies
- Long-term Funding/Financing/Insurance

Many of the regulatory and legal issues still confronting the application of CCS in California have either already been addressed in other states or nations by proposed or passed legislation, or have at least been the subject of serious consideration and study by a number of different legal and policy experts. For these issues confronting CCS, the question becomes should California adopt the laws and regulations proposed or enacted by others, modify them, or come up with a unique solution for California?

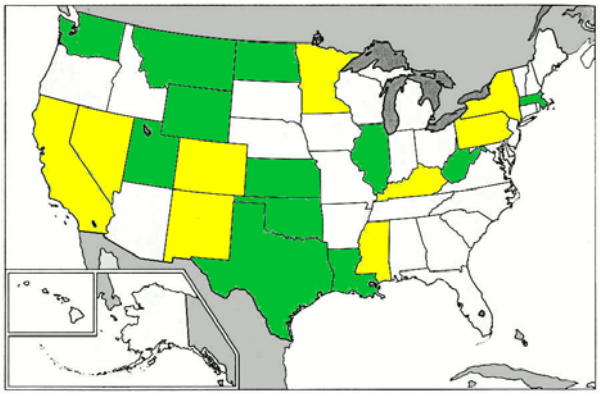

Figure 1. Yellow states have CCS incentives. Green states have CCS regulations.

Currently twenty-one US states have incentives or regulations in place for CCS. The states are shown in Figure 1, where yellow indicates states that have incentives to encourage the development of CCS and green indicates states that have passed regulations specifically directed at CCS.

Table 1 lists a sampling of some of the legislation and regulation directed at CCS that has been passed or proposed at the state, federal, and international levels. It illustrates that while most of the individual pieces of legislation do not address all of the major issues confronting CCS, all of the legislation taken together forms a patchwork that covers the issues. The availability of these legislative and regulatory examples elsewhere may help inform future legal and regulatory efforts in California.

Table 1. A sampling of CCS legislation at the state, federal, and international levels.

	Permitting	Operations	Monitoring/ Verification	Mitigation/ Remediation	Closure	Post-Closure	Property Rights	Liability	Incentives/ Subsidies	Financing/ Insurance
Illinois General Assembly: SB1704 & HB 1777	X						X	X	X	X
Kansas HB 2419 and amendment	X	X	X		X	X			X	X
Kansas KAR 82-3-1100-1120	X	X	X	X	X	X				X
Louisiana HB 1117, HB 1220, HB 661	X	X	X	X	X	X	X	X	X	X
PROPOSED EPA 40 CFR Parts 144 and 146 Approaches to GS Site Stewardship	X	X	X	X	X	X		X		X
PROPOSED S. 1502 Carbon Storage Stewardship Trust Fund Act of 2009			X		X	X		X		X
PROPOSED H.R. 2454 American Clean Energy and Security Act (Waxman-Markey)			X	X					X	X
PROPOSED H.R. 6258 Carbon Capture and Storage Early Deployment Act									X	
European Parliament Directive 2009/31/Ec 23 April 2009	X	X	X	X	X	X		X	X	X

Federal

A very important set of CCS regulations proposed at the federal level by the EPA is 40 CFR Parts 144 and 146 “Approaches to GS Site Stewardship” (GS stands for Geological Sequestration). This set of regulations proposes a new well classification - Class VI - specifically for GS of CO2. It addresses many of the main questions and concerns surrounding CCS with the notable exception of property rights, incentives and subsidies, and to a certain extent monitoring and verification. While the regulations do cover monitoring and verification of CO2 containment; it is only in the context of protecting underground water resources.

In public comments about the proposed regulations it has been argued that these proposed regulations cannot comprehensively regulate CCS because the statutory authority for the Underground Injection Control (UIC) Program derives from the Safe Drinking Water Act (SDWA). This limitation of 40 CFR Parts 144 and 146 to only protecting water resources, it is

argued, will leave the regulations unable to address some remaining key issues that will hinder or prevent commercial-scale CCS. Furthermore, there are cases where some CO2 injection wells may fall into other well classes (e.g., Class II), which could complicate regulatory efforts. Key issues that remain unaddressed by 40 CFR Parts 144 and 146 include:

- ownership of pore space
- mitigating human health or ecological impacts if carbon dioxide leaks to the surface or near-surface
- long-term liability
- greenhouse gas regulatory accounting, which will be needed to incentivize CCS
- conflicts and ambiguities when CO2 injection is done into oil and gas fields for the purpose of or following enhanced recovery operations

The proposed expansion of the Clean Air Act to include greenhouse gases in the atmosphere as a danger to public health and welfare- EPA 40 CFR Chapter 1 "Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act "- could widen the scope of EPA regulation to better address some of these outstanding issues, particularly health and environmental protection and greenhouse gas accounting, but may also create additional ambiguities in jurisdiction.

State

Legislation directed at clarifying private property issues including ownership of pore space and carbon dioxide, unitization of storage resources, eminent domain, and settling conflicts between surface, pore space, and mineral property rights, has to date primarily been limited to the state level in the US.

To date, the approaches of other states have not been consistent. For example, Wyoming (HB 57, HB 58, HB 80, HB 89, and HB 90), Montana (SB 498) and North Dakota (SB 2095 and SB 2139) were early states to address property issues through the passage of legislation. Wyoming led the way by vesting ownership of subsurface pore space to the surface owner, but allowing severance of pore space from the surface interest. North Dakota similarly vests subsurface pore space with the surface owner but expressly forbids severance of the pore space from the surface estate. Montana, however, neither allows nor forbids it. All three states maintain the dominance of the mineral estate over both surface and subsurface. The Wyoming laws also expressly allow for unitization as long as 80 percent of the parties approve of the project.

In addition to Wyoming, Montana, and North Dakota, there are other states that have passed legislation on property issues connected to CCS including:

- Illinois SB1704 & HB 1777
- Louisiana HB 1117, HB 1220 and HB 661
- Oklahoma SB 1765 and SB 610
- Texas HB 1796, SB 1387, and HB 149
- West Virginia HB 2860

Some states have also taken legislative action to address some of the liability issues connected to CCS. States have taken various approaches to the time frame for transfer of liability. Generally the liability is considered to first reside with the operator. Montana leaves the burden with the operator for 30 years after injection ends after which time liability may be transferred to the state. In Wyoming, liability remains with the operator. North Dakota leaves liability with the operator for 10 years after which it may be transferred to the state. Other states have proposed trust funds be established for this purpose.

Some states have taken legislative steps to protect human health, safety, and the environment from negative impacts of CCS. For example, in Washington a broader statutory authority for the state underground injection control (UIC) program has been established to include other underground resources beyond drinking water; and Kansas legislation addresses CCS impacts on property, environment, and human health. A related issue is defining the period of reservoir performance: EPA takes a general approach to defining the period of performance for a reservoir; Washington explicitly calls for 99% containment for at least 1000 years; Kansas frames this issue in terms of "loss of containment."

There are examples of comprehensive sets of CCS regulation addressing an array of issues that have been developed at the state level including in Kansas with HB 2419 and KAR 82-3-1100-1120, and in Louisiana with HB 1117, 1220, and 661 as shown in Table 1.

While California does not currently have any laws or regulations specifically directed at CCS, it is worth noting that CA Code of Regulations, Title 14, Division 2, Chapter 4 : "CA primacy for Class II wells" covers many areas relevant to CCS injection wells in the technologically related activity of Enhanced Oil Recovery (EOR) and particularly EOR using CO2. Currently around 25000 Class II injection wells in California are regulated under this code by the Division of Oil, Gas & Geothermal Resources (DOGGR). However, there are gaps in these regulations, including lack of jurisdiction over injection for purposes other than oil and gas production, and gaps in monitoring, verification, and accounting requirements that may be necessary to quantify GHG reduction "credits" for climate change regulators (e.g., CARB) and that are needed to qualify power plants under emissions caps such as those set by SB 1368.

International

At the international level, an example of comprehensive CCS legislation that has been enacted is European Parliament Directive 2009/31/Ec 23 April 2009. This legislation addresses all of the areas of concern surrounding CCS with the exception of property rights. Australia is another part of the globe where major legislative activity is underway concerning CCS at the state and national levels. This legislation provides examples that could further help in shaping future CCS regulation, laws and policy in California.

Legal and Policy Experts

There are a number of comprehensive reports and analyses of regulatory and legal questions surrounding CCS that have been published by groups of technical, legal, and policy experts. These reports can serve to augment the actual regulation and legislation proposed or passed at the state, federal, and international level, in helping to guide and inform the development of our own CCS laws and regulations in California.

The legal and regulatory issues confronting commercialization of CCS in California were framed in the first AB 1925 report [Burton, E., R. Myhre, L. Myer, K. Birkinshaw, *Geologic Carbon Sequestration Strategies for California, Report to the Legislature*. California Energy Commission, Systems Office. CEC-500-2007-100-CMF].

There are a number of other important reports and public comments on the regulatory and statutory issues confronting CCS; a sampling of which includes:

- CCSReg Project: *Interim report: Carbon Capture and Sequestration Framing the Issues for Regulation*; January 2009; http://www.ccsreg.org/pdf/CCSReg_3_9.pdf. The CCSReg Project is led by Carnegie Mellon University's Engineering and Public Policy Department and includes experts from the University of Minnesota, Vermont Law School, and VanNess Feldman law firm.

- Comments by the CCSReg Project on proposed EPA rule: *Federal Requirements Under the Underground Injection Control (UIC) Program for Carbon Dioxide (CO2) Geologic Sequestration (GS) Wells (73 FR 43491-43541, July 25 2008)*; http://www.ccsreg.org/pdf/CCSReg_UIC_ClassVI_comments.pdf
- EPA Federal Requirements Under the Underground Injection Control (UIC) Program for Carbon Dioxide (CO2) Geologic Sequestration (GS) Wells; *Notice of Data Availability and Request for Comment*; http://www.epa.gov/fedrgstr/EPA-WATER/2009/August/Day-31/w20920.pdf
- United State General Accounting Office: *Deep Injection Wells, EPA Needs to Involve Communities Earlier and Ensure that Financial Assurance Requirements are Adequate*, June 2003; http://www.gao.gov/new.items/d03761.pdf