

**Thoughts from the CCSReg Workshop
October 25-26, 2010
Washington, DC**

Overall Points

- 1) The context of the proposal has fundamentally shifted because of
 - a) Lack of a climate bill putting a price on carbon has diminished the market demand for CCS
 - b) BP spill:
 - i) Makes government funding of industrial disasters “political suicide”
 - ii) Shows need for pre-planning
 - c) The tight gas boom and hydraulic fracturing:
 - i) Increases surface owners’ knowledge of pore space rights
 - ii) May detrimentally effect the sequestration resource base
- 2) The proposal needs to more clearly define the requirements for a certificate of closure. The criteria should not be left wholly to agency discretion.
- 3) The proposal needs to be clearer about separation of permitting authority and closure authority.

Geological formations

- 1) CO₂ must be sequestered under a layer impermeable enough to keep the CO₂ underground, but the formation into which CO₂ is injected must be permeable enough to take the rate of planned injection.
- 2) Geology and site selection should be main focus. Selecting the correct geological site solves most issues.
- 3) Abandoned wells present problems for leakage and monitoring, but these problems are surmountable.

Adaptive regulation

- 1) Phrase of the day: “institutionalized uncertainty.”
- 2) The adaptive approach—specifically as described in the findings section of this title—gives the false and detrimental impression that CCS is extraordinarily dangerous and unknown.
- 3) The proposal needs to clarify applicability of the adaptive approach: site specific/project level vs. overall/program level.
- 4) The blanket performance-based approach may be overreacting. Perhaps some should be procedure-based to lessen burden on regulators and increase notice to those regulated.
- 5) Seven-year timetable for periodic review seems oddly prescriptive in light of overall adaptive and performance-based focus. Review should be need-based, not based on an arbitrary time schedule. Although framework does not require changes to the regulations based on the periodic review, inertia of review will likely lead to change even when not needed.
- 6) Adaptation can be accomplished through existing mechanisms:
 - a) The finalized Class VI rules will require updating of the area of review (AoR) every 5 years, followed by amendments to plans in response to the updated AoR, and technological changes can be incorporated during this re-permitting.
 - b) Existing petition for rulemaking procedures allow for change to regulations when petitioned.
- 7) Absent periodic review, regulations are more likely to be more conservative than they need to be, as opposed to more strict.
- 8) Modifiers such as “reasonable” and “significant” open the door for detrimental interpretations.
- 9) The proposal allows operator to request a change to an operating permit but does not provide guidance about how to do so.

Pore space

- 1) “Subsurface pore space ownership is fairly well-resolved.” Surface owners control the subsurface. Currently, surface owners are compensated for natural gas storage. But, permission is not sought or considered needed to inject wastewater under Florida. Under current practice, injectors only need to get permission from the surface owner whose surface is used to inject. However, it is unclear, what monitoring and accounting look like in this ownership framework. The current mineral rights framework allows you to leave residual CO₂ in the

ground during EOR. But an important distinction exists between ownership of mineral rights and right to use pore space. The mineral estate has the right to make reasonable use of pore space for purpose of getting the minerals out. Injecting *more* CO₂ than required for purpose of getting minerals is not using it for the purpose of getting minerals.

- 2) Liability becomes clearer with private ownership of subsurface. Public ownership of subsurface just complicates who is responsible for that space.
- 3) "Subsurface trespass law is fairly well-resolved." Relief for trespass is only granted for subsurface invasions if actual (not speculative) damages occur. It is unnecessary, unwise, and political suicide to preempt state trespass law. Oil Pollution Act (OPA) contains a possible analogy. OPA did not preempt state law. OPA combines strict and limited liability. Funding is provided to respond to spills.
- 4) The proposal needs a greater coordination for federal land because the U.S. is a "checker board" of state and federal lands and pore space generally does not comply with such political boundaries.
- 5) Eminent domain is "un-American" and destroys public confidence. Years of litigation will be required to determine constitutionality. Buy-in of local land owners is necessary to find and access the right geologic formations.

Long-term stewardship & liability

- 1) There are clearly two schools of thought regarding long-term liability: one school that sees management of long-term liability as a significant barrier to developing geologic sequestration, believing that government intervention is necessary, while the other that does not see long-term liability as a significant barrier nor need for government intervention in management of long-term liabilities. We would be well advised to carefully consider the arguments brought forth by both schools, including consideration of how a government program can be structured to minimize "moral hazard."
- 2) After BP oil spill, it would be political suicide to provide for taxpayer funding of long-term stewardship. Need to clarify that tax revenue will *not* be used to fund long-term stewardship. Need to eliminate the phrase "public assumption of liability" because liability is industry-funded, not publically assumed. Also need to clarify that federal government will *never* be able to reach the money in the trust fund for purposes other than long-term stewardship. Examples exist for alternatives to prevent congress from raiding the trust fund: external decommissioning fund for nuclear power plants, Presidio Trust, and Millennium Challenge Corporation.
- 3) It is too early to say that insurance will be unavailable for long term stewardship. So much may change between now and then that insurance companies may decide to offer such insurance at that time.
- 4) Fee should be based on tons "sequestered," not tons "injected" in order to account for EOR, where CO₂ is re-injected several times before it is sequestered.

Pipelines

- 1) The current gas pipeline network took a century to build and the current oil pipeline took century and a half to build. Most of this oil pipeline infrastructure was built without the need for federal eminent domain. All but one of the current CO₂ pipelines move non-anthropogenic CO₂. Most of the existing CO₂ pipelines were sited under state law.
- 2) The proposal requires pipelines to be sized to accommodate all credit worthy shippers. In reality, it is a "few to few model:" few large pipelines to few large sinks. Specialty pipelines will be dedicated to single end users. The supply of CO₂ will be from a small number of large sources.
- 3) The proposal is silent on the issue of safety because the current hazardous materials transportation regime provides an adequate framework to protect safety and environmental health.
- 4) The most important factor should be compatibility with EOR because that is the existing framework and all existing pipelines were constructed for EOR purposes.
- 5) About 15 times the existing EOR-based "sequestration" is needed to reach an 80% reduction in CO₂.
- 6) Pipelines should be able to set own standards for impurities.

Permitting

- 1) In the proposal, GS wells will be regulated in the current UIC program under SDWA. The UIC program is inadequate to address property rights, long term liability, and surface releases. UIC program balances environmental objectives but with the main focus on protection of underground sources of drinking water.

CCS has other environmental objectives, some of which are addressed in the proposal. But the proposal does not include consideration of conservation of resources. Because of the focus on drinking water, UIC regulator may not be best entity to permit GS wells.

- 2) The aquifer exemption section may be premature because we are not in a situation yet where we should be exempting GS wells to allow for contamination of drinking water.
- 3) EPA should decide appropriate level of Total Dissolved Solids, not the statute.

Accounting

- 1) Fundamental point: CCS is an emission reduction technology. The accounting title of the proposal is only meant to apply once a federal GHG reduction program is in place.
- 2) Monitoring should only be required to detect quantities that matter from sites where leakage is possible. Risk based decisions should guide both site selection and monitoring requirements. Baseline monitoring must be in place in order to get a permit.
- 3) Each site should document possible leakage scenarios and develop action plans to respond to remedy each of those scenarios. Each site must also have in place the financial resources needed to implement the plan. But, doing action plan should not be *only* consequence of leakage.
- 4) The proposal punts detection limits to the regulatory entity.
- 5) We will not be able to quantify leakage any time soon. The oil and gas industry has been trying unsuccessfully to quantify reserves for many years.