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Acquiring Carbon Storage Rights: Permitting and Land Use, Regulatory Hurdles, and NGO Opposition

I. Acquiring Carbon Storage Rights: Permitting and Land Use

One of the first obstacles to carbon storage is acquiring the appropriate legal rights to inject into the ground.

> "There was considerable interest in carbon sequestration in the early 2010s, which included several private business entities actively acquiring private and state geologic carbon sequestration easements on substantial acreage across the western United States. With … several well-publicized technical failures in CCS test projects elsewhere in the country, business interest in obtaining land rights for CCS waned, and most private CCS easements presumably lapsed."[1]

Four main methods to acquiring rights to inject carbon storage into a subsurface include:

(1) easements and surface use agreement from the owner;[2]

(2) title to the surface land (surface rights);

(3) mineral estate to the land; and

(4) acquire both surface rights and mineral estate.

Depending on which options are made available by landowners, easements may be the simplest or possibly least expensive approach to acquiring carbon storage rights in a large area. Alternatively, purchasing title to the land and subsurface would guarantee long-term storage across

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[1] Snell & Wilmer, *Who Owns Pore Space for Geologic Carbon Sequestration? Renewed Focus on Carbon Capture and Storage Likely to Bring Ownership Uncertainties on Western Split-Estate Lands Back into the Picture*, (Jan. 20, 2021), https://www.jdsupra.com/legalnews/who-owns-pore-space-for-geologic-carbon-2984045/.

[2] Austin Lee, James McAnelly, Elizabeth McGinley, & Jarrod Gamble, *The Way Forward: A Legal and Commercial Primer On Carbon Capture, Utilization, and Sequestration*, 16 TEX. J. OIL GAS & ENERGY L. 43, 59–60 (Jan. 2021).

large swaths of land. No matter which approach is taken, the operators must obtain the requisite permits from the relevant land office, either state or Federal.

A. Storage Easement and Surface Use Agreement

One approach is to acquire storage easements, which property owners may offer for a fee. An easement is the right to control land for a specific, limited purpose. Here, the easement would be set up to inject and store carbon into another property owner's subsurface deep into the ground, which is probably distinct from typical well injections in the oil & gas industry. Indeed, in the case *Chance v. BP Chems., Inc.*, 670 N.E.2d 985, 991 (Ohio 1996), the Ohio Supreme Court distinguished an easement for oil and gas extraction from a deepwell injection:

> We find that the situation before us is not analogous to those present in the oil and gas cases, around which a special body of law has arisen based on special circumstances not present here. Although the above quotation from Manziel does contain the word "inject," the injection in that case was directly related to oil and gas extraction, and was fundamentally dissimilar to the unique situation before us, which involves the injection of waste byproducts from the production of industrial chemicals.

Id. Therefore, it is important to acquire a storage easement that is specific to deep injections.

A surface use agreement could be acquired simultaneously. A surface use agreement is a common method to gain rights to inject into a subsurface. A surface use agreement is not sufficient if the injections cause the use or displacement of mineral substances in the subsurface. Therefore, it is advisable to obtain a storage easement from the mineral owner to limit exposure to claims of trespass, conversion, or any other claims from the surface or mineral estate.

B. Title to the surface land

The surface owner typically owns the pore space below and any underground reservoirs. But this may depend on the language in a statute, a deed, or at common law. So far, three states have passed legislation making the subsurface pore space the property of the surface owner (Montana, Wyoming, North Dakota). In North Dakota, the pore space can be leased separately, but it cannot be severed through title. In Wyoming and Montana, the pore space may be transferred as separate property from the surface land.

C. Mineral rights

Individuals and companies with mineral rights may have the right to reasonable use of the pore space or may own the space altogether. A mineral estate is formed when the rights to the minerals in a subsurface are severed from the real property. The owner might simply have ownership over the minerals below the surface or may have the right to use the surface to extract the minerals.

The "American Rule" provides that once the minerals are depleted, the surface owner continues to own the pore space. The minority "English Rule"—followed in Texas—provides that the mineral owner owns the pore space even after the minerals are extracted. Thus, in Texas, the owner of the mineral rights might also have rights to the space that trump the rights of the surface owner.[3] But this is not a hard and fast rule and remains to be developed further. In fact, the Fifth Circuit seems to contemplate that the surface owner has the right to the pore space: "Texas law establishes that the holder of a mineral estate has the right to exploit minerals, but does not own the subsurface mass."[4]

Either way, it is crucial to review the chain of title and ensure the mineral rights have not been severed.

II. Regulatory Hurdles

1. EPA

a. Underground Injection Control Permit: The EPA has regulations for six types of underground well injections. These are controlled by the type of fluids and the depth they are being injected.

    i. Class VI wells are used to inject CO2 for geologic sequestration. Specifically, to inject CO2 into a CCUS well, operators must acquire a Class VI Underground Injection Control permit from the EPA pursuant to the Safe Drinking Water Act.

    ii. Class VI injection wells are regulated by Federal Requirements Under the Underground Injection Control (UIC) Program for Carbon Dioxide (CO2) Geologic Sequestration (GS) Wells: Final Rule of the Environmental Protection Agency (EPA), 40 CFR (2010).[5]

        1. Class IV Permit Application: https://www.epa.gov/sites/default/files/2021-03/documents/class_vi_permit_application_outline_-_final_508_002.pdf

            a. The requirements cover siting, construction, operation, testing, monitoring, and closure.[6]

            b. Further, the type of CO2 injected is regulated based on the relative buoyancy of the CO2, subsurface mobility, corrosivity in the presence of water, and large injection volumes anticipated at GS projects.

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[3] *See* Tracy Hester & Elizabeth George, *The Top Five Legal Barriers to Carbon Capture and Sequestration in Texas*, FORBES (Nov. 19, 2019), https://www.forbes.com/sites/uhenergy/2019/11/19/the-top-five-legal-barriers-to-carbon-capture-and-sequestration-in-texas/?sh=4141b49c7508 (last visited Nov. 3, 2021).

[4] *Dunn McCampbell Royalty Interest Inc. v. National Park Service*, available at https://caselaw.findlaw.com/us-5th-circuit/1551888.html

[5] Steve Hendrickson, *Navigating The Class IV Injection Permit Process for Carbon Sequestration*, JD SUPRA (Oct. 6, 2021), https://www.jdsupra.com/legalnews/navigating-the-class-vi-injection-1955099/ (last visited Nov. 15, 2021).

[6] EPA, Class VI – Wells used for Geologic Sequestration of CO2, https://www.epa.gov/uic/class-vi-wells-used-geologic-sequestration-co2#outline (last visited Nov. 15, 2021).

iii. Meanwhile, Class II wells are used to inject fluids related to oil and gas production, including injection of CO_2 for EOR

b. Clean Air Act New Source Review preconstruction permit, which is required for any new or modified air emissions source

c. Clean Air Act Title V operating permit, which is required for any major air emissions source

d. National Pollutant Discharge Elimination System (NPDES) permit, which is required for water discharges

e. If the injection is offshore:

i. Marine Protection, Research and Sanctuaries Act (MPRSA) permit, which is required for transport, including by pipelines, and geologic sequestration in marine environments

ii. Outer Continental Shelf Lands Act (OCSLA) permit, which is for rights-of-way for offshore pipelines, lease for offshore energy and mineral resources, and/or permit for offshore injection wells. The statute has never been used to authorize permanent CO_2 storage.

2. **Department of Interior**

a. Federal public land will likely be used because the abundance of public land available with storage capacity.

b. Department of Interior (and Department of Agriculture's US Forest Service) to grant a right-of-way permit(s)

c. The National Environmental Policy Act (NEPA) requires agencies to perform environmental assessments for each action that could have a significant impact on the environment—a years-long process.

d. Also with hurdles for consideration:

i. Federal Land Policy and Management Act

ii. Forest Management Act

iii. Mineral Leasing Act

iv. Endangered Species Act

v. National Historic Preservation Act

3. **Texas**

a. Texas Railroad Commission

i. The Texas Railroad Commission received authorization to apply for primacy—or the primary enforcement—of Class VI wells with the passage of a 2021 Texas bill.[7]

1. Previously split jurisdiction with TCEQ. Signals strong support for CCUS in Texas.
2. Step towards state primacy by streamlining.

b. Texas Commission on Environmental Quality

i. Texas Pollutant Discharge Elimination System (TPDES) permit https://www.tceq.texas.gov/permitting/wastewater/pretreatment/tpdes_definition.html

ii. Air New Source Review permit https://www.tceq.texas.gov/permitting/air/newsourcereview/air_nsrpermits.html

iii. Air Operating Permits (Title V) https://www.tceq.texas.gov/permitting/air/titlev/air_oppermits_v.html

4. **New Mexico**

a. Water discharge permit, https://www.env.nm.gov/water/

b. New Source Permit, https://www.env.nm.gov/air-quality/universal-application-2-2/

c. Title V permit, https://www.env.nm.gov/air-quality/universal-application-2-2/

5. **Other States**

a. Many states have storage funds for the purpose of managing and monitoring the sites after the injections occur, including Montana, Wyoming, Texas, Kansas, North Dakota, and Louisiana. The money that goes to these funds comes from project application fees, well permitting fees, annual well operating fees, the well closure fee, and fees for the metric ton of CO2.

6. **Recent legislation**

a. Recently, numerous states have passed legislation to address underground storage. That legislation frequently addresses issues to do with liability, who monitors the storage, and who owns both the pore space and CO2. Of particular interest is who owns the pore space and how rights to the pore space can be acquired.

i. Texas

[7] Only North Dakota and Wyoming have successfully applied for and received primacy yet, although both Texas and Louisiana are now applying.

1. Texas has both onshore and offshore CCUS legislation. The most recent bill was signed by Governor Abbott in June 2021 (HB 1284, 2021) and granted the Texas Railroad Commission sole jurisdiction over Class IV Injection Wells and CCUS both onshore and offshore.
2. Onshore: The 2009 onshore bill (SB 1387, 2009) created a storage fund to cover monitoring and expenses for the storage sites, managed by the Texas Railroad Commission.
    a. $74,000 application fee
    b. $50,000 per year for each well after injection and closure
    c. $0.10 per metric ton of CO2
    d. Permits will be issued only if can show that the storage will not endanger oil, gas, or other mineral formations.
    e. CO2 is owned by the operator until the liability is transferred to the state.
3. Offshore: The offshore bill (HB 1796, 2009) has a fund to set fees through. The fund was managed by the Texas School Land Board, although it is now managed by the Railroad Commission pursuant to the 2021 legislation.
    a. The offshore bill (HB 1796, 2009) provides that the completion of an offshore project triggers the transfer of liability from the operator to the Texas School Land Board.

ii. New Mexico

1. There is currently a proposal for carbon sequestration in New Mexico from the coal-fired San Juan Generating Station. The City of Farmington is partnering with Enchant Energy to achieve this goal.
2. Enchant Energy is currently lobbying the New Mexico legislature for a new law to define ownership and conveyance of the pore space.

III. NGO Opposition

1. Background

a. If anything is as certain as death and taxes, its environmentalist opposition… (to the clean energy solution that they proposed 20 years ago…)

i. Although geo-sequestration of GHG is intended to be a solution to global climate change, it faces stiff opposition from environmental plaintiffs

b. While there are currently a number of large-scale storage R&D projects that inject CO2 solely for geologic sequestration in the United States, there are currently no such projects operating in a commercial capacity

   i. Therefore, we aren't yet seeing a significant, unified opposition

   ii. If sequestration takes off, what will the opposition target?

2. Fracking litigation playbook as guidance on what to expect in CCUS litigation

   a. Moral Risks/Hazards of CCS

      i. From environmentalist perspective, the most significant "risk" of CCS is "moral"

         1. Gives polluters longer-leash to continue emitting GHGs

         2. Takes the pressure off transition away from fossil fuels

         3. Many enviro groups are do not support net-zero rather zero-zero

   b. Policy perspective: Will this prevent us from reducing our consumption of fossil fuels? Wouldn't we be better to eliminate CO_2 production in the first place?

      i. Therefore, don't expect NGOs to have enthusiasm for tax breaks and other government incentives for sequestration

   c. Pore Space Sustainability

      i. Is there sufficient capacity in sedimentary basins worldwide to contain the large of amounts of CO2 needed to address climate change.

         1. Yes, but is it in the right places?

         2. What will be the economic and environmental costs of getting it there? Expect opposition to those intermediate projects

   d. NEPA litigation challenging permits – environmental plaintiffs will challenge myriad aspects of NEPA under various land use and wildlife protection statutes

   e. Environmental Justice

      i. Consultations, stakeholder engagement

      ii. Possible this may be incorporated into the NEPA regime

      iii. For more information: Environmental Justice Rises to the Forefront of EPA Policy, by Michael R. Leslie, Marcella Burke and Granta Nakayama, May 14, 2021, available at https://www.kslaw.com/blog-posts/environmental-justice-rises-to-the-forefront-of-epa-policy-2

3. Energy

   a. High amount of energy and resources to build and operate sequestration facilities.

i. Geological CCS technology comes with a relatively steep energy input requirement to run the equipment and costs are substantial.

1. If the energy is supplied by fossil fuel, that reduces the CDR benefits and poses other land disturbance and pollution issues.

2. If the energy is provided by renewable energy, that comes at a land disturbance cost and also increases the amount of renewable energy needed to be deployed.

3. Siting constraints given the need to place DACCS facilities close to geologic formations that can permanently sequester the CO2.

4. If they are not nearby, major pipeline infrastructure will be required.

ii. Energy Penalty

1. The extra expense involved in capturing, transporting, and injecting CO2 in the CCS process can be expressed in terms of an energy penalty, i.e., the amount of energy that must be expended above business-as-usual fossil-fuel energy use.

a. Estimates of the energy penalty for CCS vary depending on:

i. combustion process,

ii. age of facility,

iii. distance to geologic storage site,

b. Likely around 40%

iii. Except NGOs to challenge permits and rulemakings based on these issues

4. Sinks and Leaks

a. Geological sinks for CO_2 do not really need any major technological development

i. the technology has already been developed and applied by the upstream energy industry for hydrocarbon exploration and production.

ii. Deep fluid injection process is very well known and practiced widely for injection of various fluids today

iii. Reverse, production of fluids through wells such as oil, gas, and groundwater are similarly practiced widely under regulatory frameworks aimed at protecting against adverse consequences.

b. Nevertheless, the injection of large quantities of CO2 into the deep subsurface through wells is creates a disturbance to the local natural system in terms of changing the composition https://www.osti.gov/servlets/purl/1050685

c. Above and below ground leakage

i. Aboveground/ atmospheric leakage

   1. Carbon leakage from sequestration in underground formations that are not geologically suitable can plausibly create 25 Gt CO2 of additional emissions throughout the twenty-first century

ii. Underground leakage

   1. Several criteria have to be considered when evaluating the potential of a sedimentary basin for CO_2 sequestration:

      a. its tectonic setting and geology,

      b. the basin geothermal regime, the hydrodynamic regime of formation waters,

      c. the hydrocarbon potential and basin maturity,

      d. economic aspects relating to access and infrastructure and socio–political conditions.

   2. Persistent doubts about whether the CO_2 will stay in place

      a. leak out through old boreholes or other geological defects, perhaps cracks caused by earthquakes.

      b. Storing CO_2 in aquifers may be unstable because CO_2 combines with water to form carbonic acid, which can weaken rock over time.

         i. However, no CO_2 leakage has yet been observed from any of the pilot CCS sequestration projects now being conducted worldwide.

   3. leakage through transmissive faults (and associated fractures) and well penetrations could result in:

      a. Intrusion of CO_2 or brine into underground sources of drinking water.

      b. Release of CO_2 to the vadose zone and the atmosphere.

      c. Intrusion of CO_2 into buildings

   4. Sudden release of a large amount of CO_2 could be disastrous for local populations (a natural demonstration of this possibility occurred in 1986, when a large bubble of CO_2 escaped from a volcanic lake in Cameroon, Africa, killing 1,700 people by suffocation)