

The pore rights challenge for CCS projects in the US

Unlike many European Union and other nations across the globe where the rights to sequester CO₂ are held by the government, in the United States those rights are mostly privately held. By Dr. Paul Schubert, CEO, Strategic Biofuels.

Furthermore, except for land owned or controlled by state or federal governments themselves, the jurisdiction for determining who has the “pore rights” to store CO₂ underground in the “pore space” is left to the individual states. The main challenge is whether those pore rights belong to the surface owners or whether they belong to the mineral rights owners, although a range of other surface and subsurface rights may impact the ability to sequester the CO₂.

To date, only seven of the fifty states have provided the legislative framework needed to facilitate advancement of CCS projects within their borders. The individual states that have established legislation have generally vested the pore rights ownership with the surface owners. In the limited number of states there have been court cases that have ruled on which entity involved in the case owns the pore rights. However, each court’s decision is highly dependent upon the specifics of the case and therefore may not establish precedents that can be applied statewide. In several states, including Texas, which is the largest energy producer in the US, one court found for the surface owner and another for the mineral rights owner.

Why the pore rights in the US matter

The potential for carbon sequestration as a major contributor to greenhouse gas emissions reduction globally is substantial. According to the Global CCS Institute there are 29 CCS facilities around the world already capturing and storing 40 million tonnes of CO₂ per year¹. Commercial scale CCS facilities in operation span a wide range of industries including gas processing, ethanol, fertilizer, steel, and hydrogen production. According to the CO₂ Storage Resource Catalog², there are

more than 14,000 gigatonnes of CO₂ storage capacity worldwide. With 2021 energy-related CO₂ emissions estimated by the IEA³ at just 33 gigatonnes it is apparent that potential availability of storage reservoirs is not a significant challenge.

Recognizing the United States ranks second only to China in annual tonnes of greenhouse gas emissions and first on a per capital basis, co-locating CO₂ storage reservoirs with US energy production locations is important for effective CCS deployment. According to a 2021 Congressional Research Report⁴ the estimated US storage capacity for CO₂ could be as low as 2,618 gigatonnes to as high as 21,978 gigatonnes, with actual capacity dependent on a wide range of factors. Regardless of the actual capacity, the potential to sequester CO₂ in the US is enormous given the data from 2019 showing that the electricity generation sector in the US emitted just 1.6 gigatonnes⁵.

The absence of the legislative framework needed to facilitate securing the pore rights in most states severely hinders CCS project development. This is further exacerbated by the lack of the regulatory framework needed to advance projects. The US Environmental Protection Agency (EPA) only finalized the regulations for carbon sequestration wells (EPA Class VI wells) in 2018.

The EPA has a limited capacity to handle sequestration well permits and encourages the individual states to secure primacy, which is the right to issue Class VI well permits themselves. However, only two states, North Dakota and Wyoming have obtained primacy so far, with Louisiana expected to be the third. Under the primacy requirement the state’s regulations must be at least as stringent as the EPA’s for securing and operating a sequestration well. This adds another layer of uncertainty to CCS project development.

Why deciding who owns the pore rights is a problem

It is common in the US for mineral rights to be separated, or severed, from the surface rights. The mineral rights may be further divided into a range of rights which might include separate rights to extract coal, extract natural extract gas, and extract oil. These mineral rights are often fractionalized among multiple parties, often because of family inheritance. The result is that a single tract of land could be owned by hundreds of parties. Clearly, if pore rights belonged to the mineral rights owners the process and cost of securing them would be daunting.

Fortunately for CCS project development in the US, the seven states that have established pore rights ownership so far have all passed legislation stating that the surface owners own the pore rights. These states are Louisiana, Michigan, Montana, Nebraska, North Dakota, Oklahoma, and Wyoming. There are a further seven states where court findings or other legislative or actions indicate they are likely to favor the surface owner. These states are Arkansas, New Mexico, New York, Mississippi, and West Virginia.

A court case in Kentucky⁶, *Central Kentucky Natural Gas v. Smallwood*, found “the mineral owner possesses the exclusive right of production as well as the exclusive right to the storage space left after production has ceased.” Although surface owners oppose this ruling. In the absence of action by the state legislators this ruling is likely to have established the ownership question for the entire state.

As mentioned earlier, in Texas, separate court cases have decided in favor each of the potential owners. As a result, unless the state legislature establishes ownership through new laws, development of CCS projects on private land may require acquisition of both the surface and

1. Global CCS Institute, CCS Mythbusters, https://www.globalccsinstitute.com/wp-content/uploads/2022/06/MythBusters-Flyer_FINAL-5.pdf

2. CO₂ Storage Resource Catalog, <https://CO2storageresourcecatalogue.com/>

3. <https://www.iea.org/reports/global-energy-review-2021/CO2-emissions>

4. Carbon Capture and Sequestration (CCS) in the United States, <https://sgp.fas.org/crs/misc/R44902.pdf>

5. U.S. Environmental Protection Agency, Draft Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2019, p. ES-7, at <https://www.epa.gov/ghgemissions/draft-inventory-us-greenhouse-gas-emissions-and-sinks-1990-2019>

mineral rights by the developer. A similar situation exists in Kansas and Colorado. A cautious approach in these and other states where pore rights ownership are unresolved would be to acquire approval from both the surface and mineral rights owners. Obviously, this would require additional time and cost.

Project development exclusively on state and federal lands offer a different set of challenges. State lands typically include forest, rivers, and other water bottoms. Individual states' approaches to a CCS project's acquisition of pore rights may vary significantly. They may include different payment structures depending on size and location involved. For example, for reservoirs entirely or a majority of the pore space on state lands they may involve payment to the state on the basis of the tonnage of CO₂ injected. In contrast, if the percent of the spore space belonging to the state is minimal, a single payment may be made.

The Federal government recently issued guidance regarding the use of pore space on land managed by the Bureau of Land Management (BLM) or other Federal agencies when surface facilities, including injection wells, are on private or state-owned lands or lands managed by another Federal agency⁷. Thus, on federally managed lands, even if owned by the state, federal guidelines take precedence over the state's guidelines on pore rights. However, for states with Class VI well permit primacy, the state's well permitting and operating requirements must be met.

The importance of eminent domain

The use of eminent domain to acquire the pore space over which the injected CO₂ will expand over time significantly reduces the risk to CCS project development. Eminent domain, the power of the government to take private property and convert it to public use, is also known as compulsory purchase or expropriation. Some states have defined CCS as being in the public interest, and therefore granted the right to use eminent domain to acquire pore rights.

In the absence of the ability to exercise eminent domain, a CCS project could face legal challenges from individual pore rights owners. Injected CO₂ entering pore space for which the rights were not secured represent trespass. Use of eminent domain means that the CCS project cannot be blocked one or more pore

rights owners that may oppose the project or wants excessive compensation for their pore space.

The use of eminent domain requires the CCS project to make its best efforts to acquire pore rights from the owners. Owners from which the pore rights that could not be secured can be taken to court in an expropriation action. The issue the judge determines is not whether the pore rights will be transferred to the project, but rather the price that will be paid considering the established fair market value.

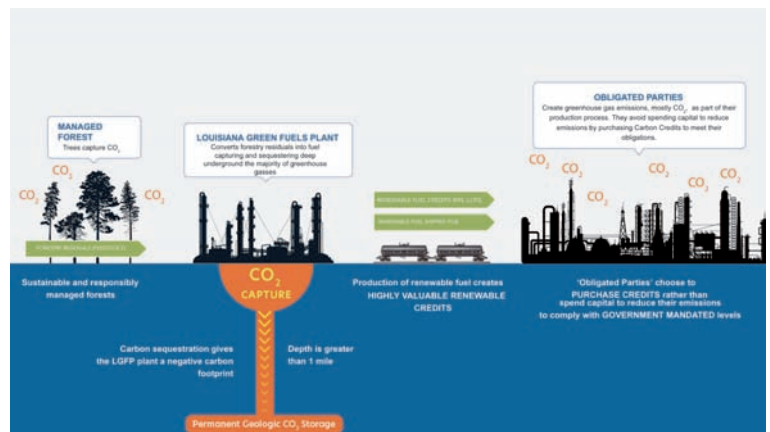
The right to use eminent domain for this purpose is dependent on the individual state. Some states have required CCS developers to acquire fifty to sixty percent of the pore rights prior to being able to exercise eminent domain. This effort also serves to establish the current market value of the pore rights. Louisiana has granted CCS project developers the use of eminent domain to acquire all the needed surface and subsurface rights after such a good faith effort at securing them has been made.

CCS project finance considerations

The economics of CCS projects in the US are highly dependent on incentives created by state and federal programs. These incentives can be substantial. The recent passage of the Inflation Reduction Act in the US increased the IRS 45Q Federal tax credit available to geologic sequestration projects from \$50 per tonne to \$85 per tonne.

Production of renewable fuels incorporating CCS can also secure significant incentives under the Federal government's Renewable Fuel Standard and the California's Low Carbon Fuel Standard Program (LCFS). Notably, the LCFS program provides increasing credits as the carbon footprint of the fuel gets lower, and CCS can substantially contribute to achieving low carbon footprints.

Strategic Biofuels' Louisiana Green Fuels



Project is a good example of the low carbon footprint that can be achieved by incorporating CCS with renewable fuel production. The project will use waste materials from the forestry industry to produce renewable diesel fuel as well as all the power the project uses. In the absence of CCS, the fuel would have a carbon intensity of about 23 gCO₂e/MJ.

With carbon capture and geologic sequestration from both the fuel and power production the carbon intensity drops to minus 294 gCO₂e/MJ. This is about a 394% reduction to the carbon intensity relative to fossil diesel. This qualifies the fuel for the Federal tax credits, Federal Renewable Fuel Standard credits, and significant quantities of LCFS credits if the fuel is delivered to California. The project has already completed the test well program needed to demonstrate the presence of the geologic features and the reservoir capacity required for sequestration. The combination of these incentives with the value of the physical fuel itself results in robust economics for the project.

The future

As is apparent from the above, expansion of carbon capture and storage projects in the US faces significant challenges. Chief among these is the development of the legislative and regulatory framework in the forty-three states without them. In the absence of this, project developers seeking to implement CCS projects in those states face the daunting challenge of securing both the surface and mineral rights to ensure the project can proceed without significant legal challenge.

More information
strategicbiofuels.com

6. "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", <https://www.jdsupra.com/legalnews/who-owns-pore-space-for-geologic-carbon-2984045/>

7. US Department of the Interior, Bureau of Land Management, June 8, 2022 <https://www.blm.gov/policy/im-2022-041>