Legal and Regulatory Considerations for Carbon Sequestration Fee Structures

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Compensation

I. Compensation to landowners

   A. Voluntary agreements

   B. Non-consenting landowners

      1. Eminent domain

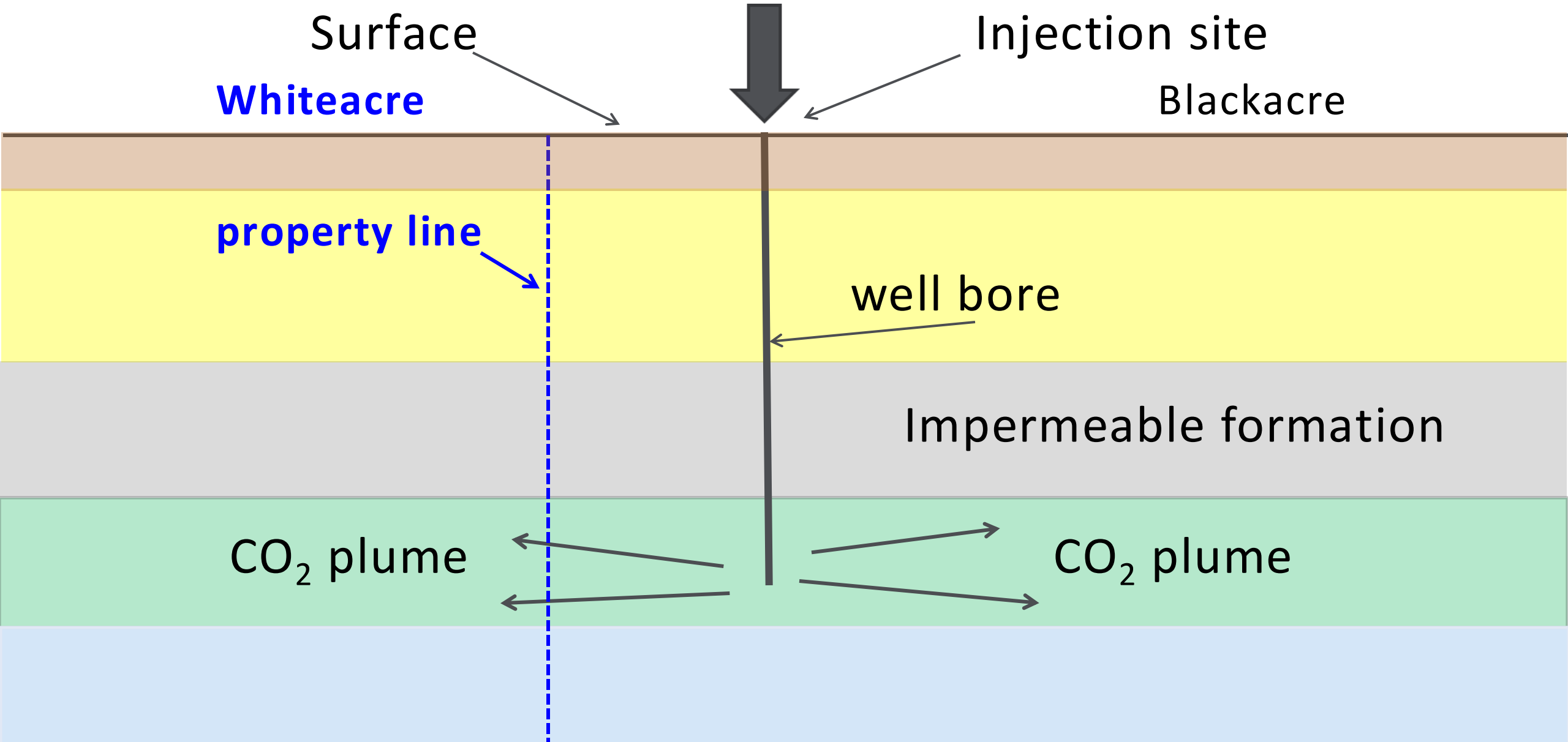
      2. Model based on pooling and/or unitization

II. Compensation to government

I. Compensation to Landowners

Why would a prospective CCS operator need to compensate landowners for pore space rights?

Does owner of Whiteacre have redress?



Civ. Code art. 490

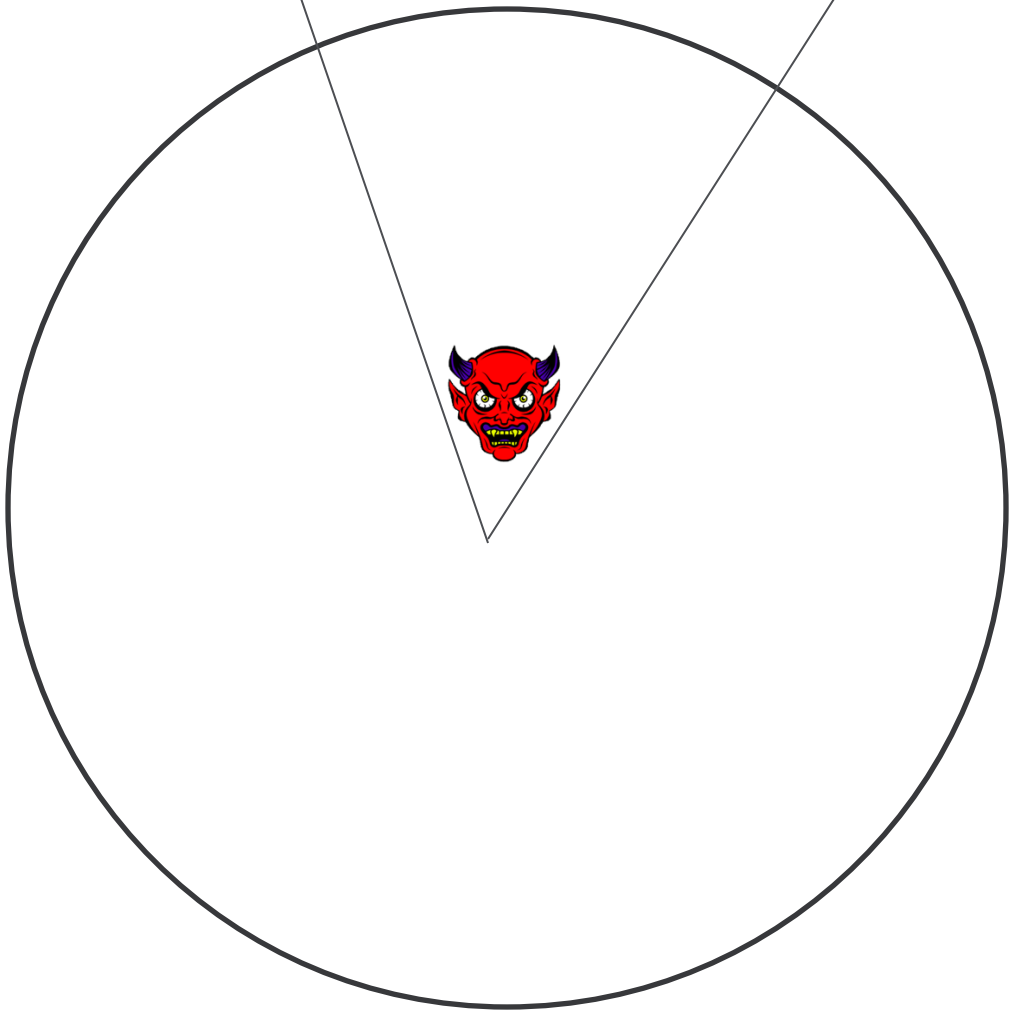
La. Civ. Code art. 490 states in part:

- “Unless otherwise provided by law, the ownership of a tract of land carries with it the ownership of everything that is directly above or under it.”

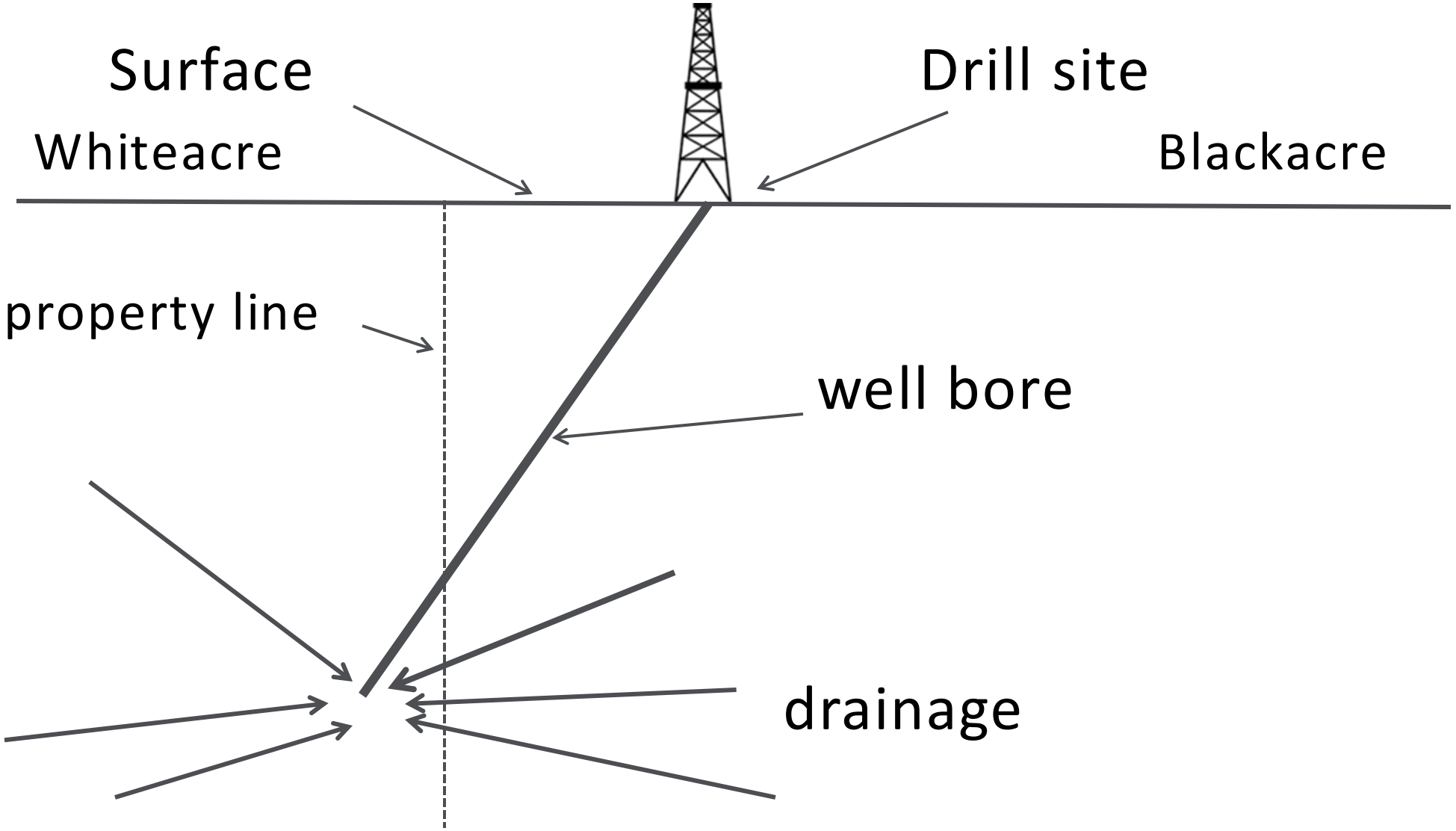
The common law's *ad coelum* doctrine

- "*cujus est solum ejus est usque ad coelum et ad inferos*"
- "For whoever owns the soil, it is theirs up to Heaven and down to Hell."

Alyce Gaines Johnson Special Trust v. El Paso E & P Co., L.P., 773 F.Supp.2d 640, 645 (W.D. La. 2011)



Subsurface trespass



Gliptis v. Fifteen Oil Co., 16 So. 2d 471 (La. 1943); *Hastings Oil Co. v. Texas Co.*, 234 S.W.2d 389 (Tex. 1950);

A. Voluntary agreements

What type of contract should be used to acquire pore space rights?

What type of contract?

- Purchase land outright? **Don’t need full ownership**
- Purchase of subsurface only? **Not allowed in La.**
- Purchase subsurface storage servitude?
- Lease of subsurface pore spaces?

How is compensation to surface owner structured?

Typical structure of compensation

- **Upfront bonus**
- Perhaps additional bonuses as CCS project meets certain milestones
- Annual rentals
- **Either an injection fee based on tons of CO_2 injected or a royalty based on revenue from CCS operations**
- An injection fee might be indexed to 45Q tax credit.

B. Non-consenting landowners

B. Non-consenting landowners

1. Eminent domain

2. Model based on pooling and/or unitization

Eminent Domain

- The federal Natural Gas Act authorizes use of eminent domain to acquire pipeline rights-of-way and subsurface storage rights

- At least two one states have authorized a prospective CCS operator to acquire subsurface rights by eminent domain

  - Ala. Code § 9-17-154

  - La. Rev. Stat. 31:1108

Pooling or unitization

Unitization-like process authorized

- Cal. Pub. Res. Code § 71460
- Ind. Code 14-39-2-4
- Ken. Rev. Stat. 353.808
- Miss. Code § 53-11-9
- Mon. Code § 82-11-204
- Neb. Rev. Stat. 57-1612
- N.D. Cent. Code § 38-22-10
- Utah Code § 40-11-10
- W. Va. Code § 22-118-19
- Wyo. Stat. §35-11-315

New in 2024

Ala. Code § 9-17-162

Colo. Rev. Stat. 34-60-141

La. Rev. Stat. 30:1104.2

32 P.S. § 696.5

Relative treatment of different tracts

- Should the relative allocation of revenue and costs be based on surface acreage?
  - A 40-acre tract would receive twice the allocation of a 20-acre tract
- Should it be based on total formation volume?
  - A 40-acre tract with avg. formation thickness of 100 ft. would receive same allocation as a 20-acre tract whose avg. formation thickness of 200 ft.
- Pore space volume?

How to structure compensation (account for costs)

a. Non-consenting landowner treated like a "carried interest"

b. Risk charge model

c. Imputed lease (non-consenting landowner receives an upfront payment plus an injection fee)

d. Similar to oil/gas pooling models that treat non-operating owners as owners of a 1/8 royalty and a 7/8 working interest that is subject to a risk charge

Publicly available pore space agreements

Publicly available agreements

- Texas has granted CCS leases, including a lease to Talos for area in Texas waters in the Gulf of Mexico. It is available by public records request from General Land Office.
- La. has granted six leases. These are publicly available at https://www.dnr.louisiana.gov/index.cfm/page/168
- Wyoming has granted a couple of leases.

II. Compensation to Government

(as government, as opposed to compensation when govt. when it happens to be the landowner)

II. Compensation to Government

A. Property taxes

B. Injection fees (analogous to severance tax)

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EXTRA SLIDES

The amount of compensation

The value of pore space rights and the market-rate compensation can vary significantly based on the characteristics of the subsurface formations to be used for CCS.

Texas Lease to Bayou Bend CCS (subsidiary of Talos)

Initial Bonus	**$4.5 million** (after executing lease; lease covers about 40,200 acres, so the bonus equates to **about $110 per acre**)
Second Bonus Payment	**$4.5 million** when CCS operator secures contracts for injection of at 4 million metric tons per year of CO_2
Third Bonus Payment	**$4.5 million** when injections begin
Royalty	• **3% of "Facility Proceeds"** during an Initial Injection Period (this equals **$2.55 per ton** if 45Q tax credit is only revenue) • **6% of Facility Proceeds** during Subsequent Injection Period (this equals **$5.10 per ton** if 45Q tax credit is only revenue)

Louisiana initial payments

1. Air Products	**$50 per acre**
2. Capio Sequestration	**$34 per acre**
3. Venture Global CCS Plaquemines	**$100 per acre**
4. Venture Global CCS Cameron	**$171 per acre**
5. High West Sequestration	**$425 per acre**
6. Castex Carbon Solutions	**$300 per acre**

Louisiana rentals

1. Air Products	**$50 per acre per year** until injections **begin**
2. Capio Sequestration	**$50 per acre per year** until injections **begin**
3. Venture Global CCS Plaquemines	**$50 per acre per year** until injections **end**
4. Venture Global CCS Cameron	**$50 per acre per year** until injections **end**
5. High West Sequestration	**$55 per acre per year** until injections **end**
6. Castex Carbon Solutions	**$60 per acre per year** until injections **end**

Louisiana injection fees

1. Air Products	**$4.65 per ton** plus 9% of any increase in 45Q tax credit, and there is a contractual minimum annual injection fee.
2. Capio Sequestration	**$3.35 per ton** plus 5% of any increase in 45Q tax credit, and there is a contractual minimum annual fee.
3. Venture Global CCS Plaquemines	**$6.50 per ton** plus 10% of any increase in 45Q tax credit, and there is a contractual minimum annual injection fee.
4. Venture Global CCS Cameron	**$6.50 per ton** plus 10% of any increase in 45Q tax credit, and there is a contractual minimum annual injection fee.
5. High West Sequestration	**$7.50 per ton** plus 10% of any increase in 45Q tax credit, and there is a contractual minimum annual injection fee.
6. Castex Carbon Solutions	**$7.50 per ton** plus 10% of any increase in 45Q tax credit, and there is a contractual minimum annual injection fee.

Geophysical exploration

Need for geophysical exploration

- Safe Drinking Water Act regulations require a person applying for a Class VI permit to provide extensive information about the subsurface.
- Applicant will need to submit information from geophysical surveys, such as seismic surveys and perhaps test well logs and/or cores.
- A mineral lessee or owner of a severed mineral estate may not like the prospective CCS operator performing geophysical surveys.

Right to conduct geophysical exploration

- Does **owner of a severed mineral estate** have exclusive right to conduct geophysical surveys?
- Mineral owner probably does have an exclusive right to conduct geophysical surveys *for the purpose of mineral exploration*.
- What if the surface owner or a CCS lessee has a legitimate purpose for geophysical surveys unrelated to mineral exploration?

Right to do geophysical exploration—*Cowden*

- In *Cowden*, U.S. 5th Circuit held that surface owner had no right to do seismic to explore for minerals, if there is severed mineral estate, because surface owner has no legitimate reason for such work.

- *Cowden* stated in dicta that, if a mineral lease is silent, mineral lessee has implied right to do seismic for purposes of mineral exploration, but this right is not exclusive. Mineral lessor's reversionary right in minerals is sufficient to give lessor legitimate reason to do seismic.

Cowden (2)

- Evaluating the subsurface for a potential CCS operation arguably constitute a legitimate reason the surface owner and prospective CCS operator to do seismic exploration.
- *Cowden* could be used to argue that the surface owner can authorize someone to do seismic exploration to evaluate the suitability of the subsurface for CCS even if there is a severed mineral estate.

Right to geophysical exploration—*Grynberg*

- In *Grynberg*, a severed mineral estate existed and the mineral owner had granted a coal lease.
- The surface owner was considering selling the land to a municipality that wanted to construct a dam and a wastewater reservoir.
- Colorado regulations required anyone applying for a permit to construct a dam and reservoir to determine whether commercial deposits of coal existed.

Grynberg (2)

- In *Grynberg*, surface owner granted the city permission to do geophysical exploration.
- The city drilled test wells to determine whether commercial deposits of coal existed.
- Thus, city was looking for commercial deposits of coal, though city's goal was not to produce coal.
- Co. S. Ct. said that city violated rights of coal lessee.

Grynberg (3)

- *Grynberg* acknowledged that, before a permit for a dam could be granted, Colorado law required surface owner to determine whether commercial quantities of coal existed.

- *Grynberg* concluded, however, that this did not give the surface owner the right to conduct geophysical exploration *for minerals*.

Grynberg (4)

What if landowner performed geophysical surveys looking for

- a permeable formation that could hold CO_2,
- impermeable formations that could serve as a seal to contain CO_2, and
- any geologic faults that might intersect the permeable and impermeable formations,
- without expressly looking for minerals?

Right to conduct geophysical exploration

- Does **mineral lessee** have exclusive right to conduct geophysical surveys?
- It likely depends on lease. If lease is silent, lessee almost certainly has a right to do geophysical surveys for purposes of mineral exploration, but this right may not be exclusive.
- If lease explicitly grants exclusive right, does the language preclude anyone else from doing geophysical surveys *for mineral exploration* or from doing geophysical surveys for any reason.

Confidentiality of geophysical surveys

If a severed mineral estate or mineral lease exists,

- **a surface owner should consider** a clause requiring the prospective CCS operator to keep geophysical data confidential and seek to have regulator treat as confidential any such data submitted in SDWA application
- **prospective CCS operator should consider** whether to seek agreement with mineral owner or mineral lessee regarding geophysical data, and perhaps also consider whether surface owner can authorize geophysical surveys

Regulation of CCS

Regulation of injections into subsurface

- CCS wells are regulated under Part C of Safe Drinking Water Act (SDWA), which is designed to protect underground sources of drinking water (USDWs).
- Pursuant to Part C, EPA has promulgated underground injection control (UIC) regulations.
- The regulations define six classes of injection wells.
- The Class VI regulations govern CCS wells.

Incentives for CCS

45Q Tax Credit

- Federal tax law in U.S. provides a tax credit for CCS.
- Credit is $85 per ton for CO_2 injected for long term storage and $60 per ton for the net amount of CO_2 injected in EOR (if certain labor standards met).
- If DAC is used, the credit can be $180/ton (if certain labor standards are met) and $130/ton for EOR.
- “Direct pay” from fed gov’t allowed if operator does not have tax liability to offset.

California's Law Carbon Fuel Standard

- California law creates a financial incentive for the sale of fuels that satisfy the state's Low Carbon Fuel Standard.

- Some manufactured biofuels can meet the Low Carbon Fuel Standard if CO_2 created during the process of making the biofuel is injected into the ground for permanent storage.

Good will

- Some businesses may be willing to spend money on CCS in order to promote themselves as doing something for the environment.

- Voluntary carbon markets

Other motivations

- Some countries may prohibit or tax imports of products based on the products' carbon footprint. CCS can be paired with manufacture of steel, ethanol, etc. to lower carbon footprint of product.

- If the U.S. ever enacts a "carbon tax" on products and activities that result in the emission of carbon dioxide, companies may have an incentive to use CCS to limit their CO_2 emissions.

Whose consent is necessary for using pore spaces—the surface owner or mineral owner?

What if there is a severed mineral estate?

- Who owns subsurface pore spaces—surface owner or mineral owner?
- No definitive answer in most states.
- For most states, consensus is that surface owner owns pore spaces.
- "Surface owner" seems to be the answer.

Lightning Oil Co. v. Anadarko E&P Onshore, LLC, 520 S.W.3d 39 (Tex. 2017)

What rights does the CCS operator need?

What rights does CCS operator need?

- **Pre-injection**: Right to conduct geophysical surveys of subsurface before seeking project permit
- **Injection operations**: Right to inject CO_2 and store it in subsurface
- **Post-injection**: Right to conduct monitoring, including monitoring for migration of CO_2 plume and for presence of CO_2 at surface, for decades after injections cease

* May also need CO_2 pipeline ROWs

What depths?

- All depths or only selected depths?

- The agreement should state depths/formations that CCS operator can use for storage.

- Some sources suggest that storage formations likely will be 2600 feet or more beneath surface

Drill-through prohibition?

- Some CCS operators negotiate for a prohibition on anyone drilling through the storage reservoir.
- Possible motivations for this
  - Cannot qualify for California Low Carbon Fuel Standard otherwise
  - Fear that drilling through could result in leakage of CO_2 (45Q tax credit must be repaid if CO_2 escapes)

Who can grant "no-drill-through rights"?

- Generally, only the person who has oil & gas drilling rights can agree to forego that right.
- Thus, if there is severed mineral estate, a CCS operator would need to get the mineral estate owner's consent to a "no-drill-through" provision.
- If there is an existing and valid oil & gas lease, the CCS operator would need to obtain the lessee's consent.

Prohibition on Fracking in Seal Rock

- Low permeability cap rock is needed above CCS storage to ensure that CO_2 does not migrate upward
- Shale formations generally have very low permeability and can serve as a good cap rock
- But some shale formations contain sufficient oil or gas that it is economical to hydraulically fracture the shale to extract hydrocarbons
- Should CCS operator bargain for no fracking of cap rock? Only mineral owner could grant such rights.

Duration of Rights

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If prospective CCS operator seeks to acquire pore space rights via lease, what should be the duration of the lease?

Duration of Rights—**pre-injection**

1. Operator will need to conduct geophysical studies to obtain info. necessary for Class VI permit application.

   - Most leases allow about 3 years, with a potential for an extension of time, to do this and submit application.

2. It will take time to obtain permit (perhaps 2 years or more), then additional time to construct well.

   - Most leases allow 3 to 4 years, with the possibility for an extension, to do this and begin injections.

Duration of Rights—**injection operations**

- Depending on rate of injection and the size of storage reservoir, the injections may continue for several years.

- Some leases provide that, once injections begin, the lease will last until there is a specified period of time (such as one year) in which no injections take place.

- Others provide for a term with a maximum number of years, such as 30 years.

Duration of Rights—**post-injection**

- Class VI regulations require that surface and subsurface monitoring be conducted for a long time after injections cease.
- Monitoring may need to be done for fifty or more years after injections cease.
- CCS operator will need to contract for monitoring rights to continue for this lengthy period.

Duration of rights

Example—Duration of **Texas** CCS agreement

- "Development Term" – up to 3 years to apply for Class VI permit (with possible extension)
- "Construction Term" – up to 3 years to begin injections (with possible extension)
- "Operations Term" – earlier of 30 years or when storage reservoir has reached limit of its capacity
- Right to conduct monitoring required by law continues after Operations Term

Example—Duration of **Louisiana** CCS agreements

- "Initial Term" – up to 3 years to apply for Class VI permit (with possible extension)
- "Permit/Construction Term" – up to 4 years to begin injections (with possible extension)
- "Operational Term" – as long as lessee continues to inject without gap of more than 1 year in injections
- Right to conduct monitoring required by law continues after the Operational Term

Other Clauses

Pooling or unitization

- If there is chance that CO_2 plume will migrate into subsurface of multiple tracts, the agreement should have the equivalent of pooling or unitization clause.

- Clause should

  - authorize operator to combine the land with other tracts

  - provide for apportionment of whatever compensation is paid for injections/revenue

Other clauses

Surface owner should bargain for

- Indemnities and defense from CCS operator
- Consider requiring operator to provide insurance
  - Perhaps making surface owner a named insured and requiring insurer to waive subrogation rights
- Bargain for a surface damages and restoration
- Information/audit rights?

Potential Disputes if a Severed Mineral Estate or a Mineral Lease Exist

Increased costs of drilling to depths beneath CCS storage reservoir

Materials of construction for CCS well

- CO_2 in water can be acidic and slightly corrosive.
- A CCS well will use different materials of construction (casing and cement) than is typically used in oil and gas drilling.
- The materials used in CCS well will be more expensive.

Materials of construction for oil & gas well

- Surface owners and mineral lessors are not supposed to interfere with ability of mineral estate owners or mineral lessees to operate.
- If oil/gas well is drilled through CCS storage reservoir, more expensive materials will be needed.
- Does subsurface CO_2 storage violate rights of mineral owner who wants to drill deep oil/gas wells?
- CCS operator should consider seeking agreement with mineral estate owner or mineral lessee.

Accommodation Doctrine

Mineral owner may have duty to accommodate surface owner's existing uses of the land if there are customary and reasonable methods of exploration and production, practiced in the industry, that would avoid interfering with the existing use.

Accommodation Doctrine (1)

- Oil & gas lessee did not have duty to accommodate surface owner by acquiring needed water offsite.

Sun Oil Co. v. Whitaker, 483 S.W.2d 808 (Tex. 1972)

Accommodation Doctrine (2)

- Fact issue as to whether mineral estate owner would have to use slant drilling from elsewhere on the tract to accommodate surface owner who decided to flood a portion of the tract for water reservoir.

Tarrant County Water Control & Imp. Dist. v. Haupt, Inc., 854 S.W.2d 909 (Tex. 1993)

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Typical oil & gas lease probably authorizes enhanced oil recovery operations that incidentally sequester CO_2.

But (not counting EOR) would an oil & gas lease be sufficient to authorize CCS?

Waste disposal authority under oil & gas leases

- Does lease expressly or implicitly allow storage of oilfield wastes?
- What about other wastes?
- Is CO_2 that CCS operator may wish to inject an oilfield waste?
- Is any waste disposal right limited to wastes generated in operations on the leased premises and land pooled therewith?