

OG Energy Education Series

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What's on the Outside Does Matter

Surface Estate Considerations for Renewable Energy and Carbon Capture Sequestration and Storage

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Overview

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- I. Introduction
 - II. Severed Estates
 - III. Dominant Estate Theory
 - IV. Accommodation Doctrine
 - V. Lyle v. Midway Solar, LLC
 - VI. Carbon Capture and Storage
 - VII. Potential Issues
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I. Introduction

- ❖ This presentation focuses on the increased importance of surface estate considerations when contemplating renewable energy developments and carbon sequestration and pore space ownership.
- ❖ We will explore issues in both contexts that may arise when the fee simple interest is severed into surface and mineral estates.
- ❖ Applicability
 - Severed Estates
 - The Dominant Estate Theory, and
 - The Accommodation Doctrine

Wind Leases

- ❖ Granting Clause
- ❖ Additional Easements
- ❖ Term
- ❖ Compensation
- ❖ Reserved Uses
- ❖ Restoration Requirements
- ❖ Mineral Issues



Solar Leases

- ❖ Granting Clause
- ❖ Additional Easements
- ❖ Term
- ❖ Compensation
- ❖ Reserved Uses
- ❖ Restoration Requirements
- ❖ Mineral Issues



Comparing Wind and Solar Leases

Wind Leases

- ❖ Require more acreage, but the actual windmills occupy very little of the project.
- ❖ Surface Owner still has the opportunity to continue limited use of the land.

Solar Leases

- ❖ Utilizes smaller amount of land, but a solar project is far more land intensive.
- ❖ Surface Owner loses most opportunities to continue using the land.

II. Severed Estates

- ❖ Ownership rights in a tract of land are often split between the surface estate and the mineral estate.
- ❖ An owner of the surface estate and the mineral estate can sell, convey, or partially convey the rights to either the surface or the mineral estate.
- ❖ New owners can then convey or partially convey their interests to new parties.
- ❖ Fractional conveyances almost always affect only the mineral estate.
 - Who wants only 1.801284% of the surface?
- ❖ In practice, multiple conveyances often create numerous fractional interests in a mineral estate.

Ownership Rights

Surface Estate Owner	Mineral Estate Owner	Executive Right Holder
<ul style="list-style-type: none">❖ The right to use and enjoy the surface, except for any surface rights that belong to the mineral owner.	<ul style="list-style-type: none">❖ Has the right to develop minerals❖ The right of ingress and egress the surface estate❖ The executive right (usually)❖ The right to bonuses, delay rentals, and royalties	<ul style="list-style-type: none">❖ The right to lease

III. Dominant Estate Theory

- ❖ Under the dominant estate theory, when a mineral estate is severed from the surface estate, the mineral estate is considered the dominant estate and the surface estate is considered the subservient estate.
- ❖ Effectively, this means that a mineral estate owner may make reasonable use of the surface in order to develop their mineral acreage without being liable for trespass.

What is Considered Reasonable?

- ❖ Reasonable use generally includes geophysical exploration, drilling, building roads, installing machinery and storage tanks, etc.
- ❖ But is this really everything?



IV. Accommodation Doctrine - Getty Oil Co. v. Jones

- ❖ **Facts:** Getty installed a pump jack to produce oil from the lessor's land. The pump jack, which extended to a height of 17 feet, interfered with his irrigation operations.
- ❖ **Held:** The court found that Getty had reasonable, low-cost alternatives to the pump jack.



Accommodation Doctrine

- ❖ The mineral owner may be required to accommodate the surface owner when:
 - There is an existing use of the surface;
 - The mineral owner's use of the surface precludes or impairs the existing use of the surface; and
 - Under the established industry practices, there are alternatives available to recover the minerals.

V. Lyle v. Midway Solar, LLC

Facts:

- ❖ A renewable company constructed a solar facility which covered 70% of the 315-acre surface estate.
- ❖ O&G had never been produced on this tract.
- ❖ Plaintiffs brought suit based on the accommodation doctrine.



Lyle v. Midway Solar, LLC (Cont.)

Plaintiff's Argument

- ❖ Plaintiffs claimed their ability to develop their mineral estate had been impaired by the construction of the solar facility.
- ❖ Accommodation Doctrine should allow them to prevent any surface use that may one day interfere with extraction of their minerals.

Defendant's Argument

- ❖ ME owners have never tried to develop their mineral estate so why bring this now? Damages are speculative.
- ❖ Also, we did leave land available for O&G development.

Lyle v. Midway Solar, LLC (Cont.)



Lyle v. Midway Solar, LLC (Cont.)

The Court's Decision:

- ❖ Until the Lyles seek to develop their minerals, Midway owes no duty to the Lyles respecting the surface usage.

Some Takeaways:

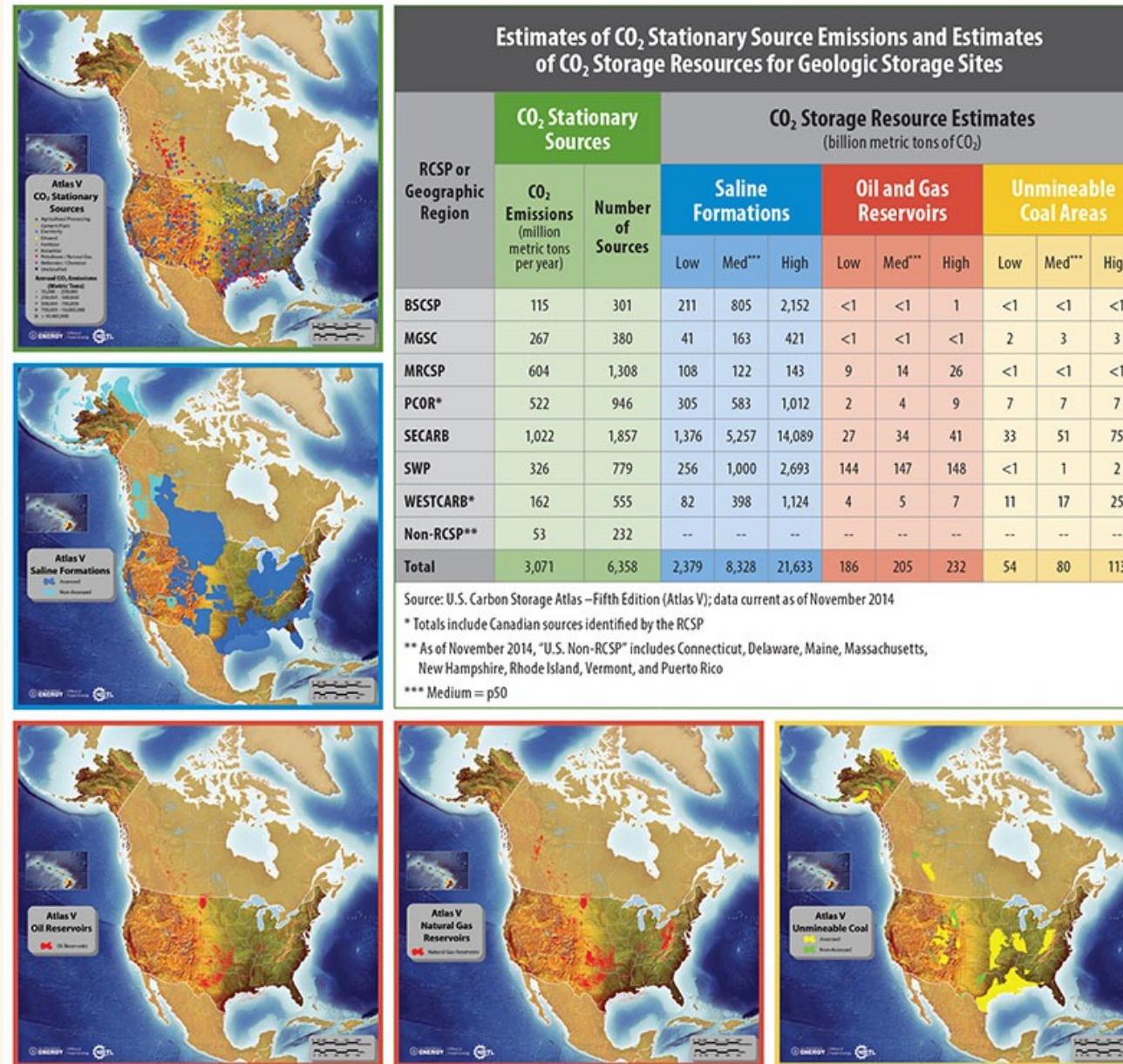
- ❖ Theory of the dominant estate doctrine is not absolute.
- ❖ The mineral estate owner cannot have the unilateral right to dictate the use of the surface.

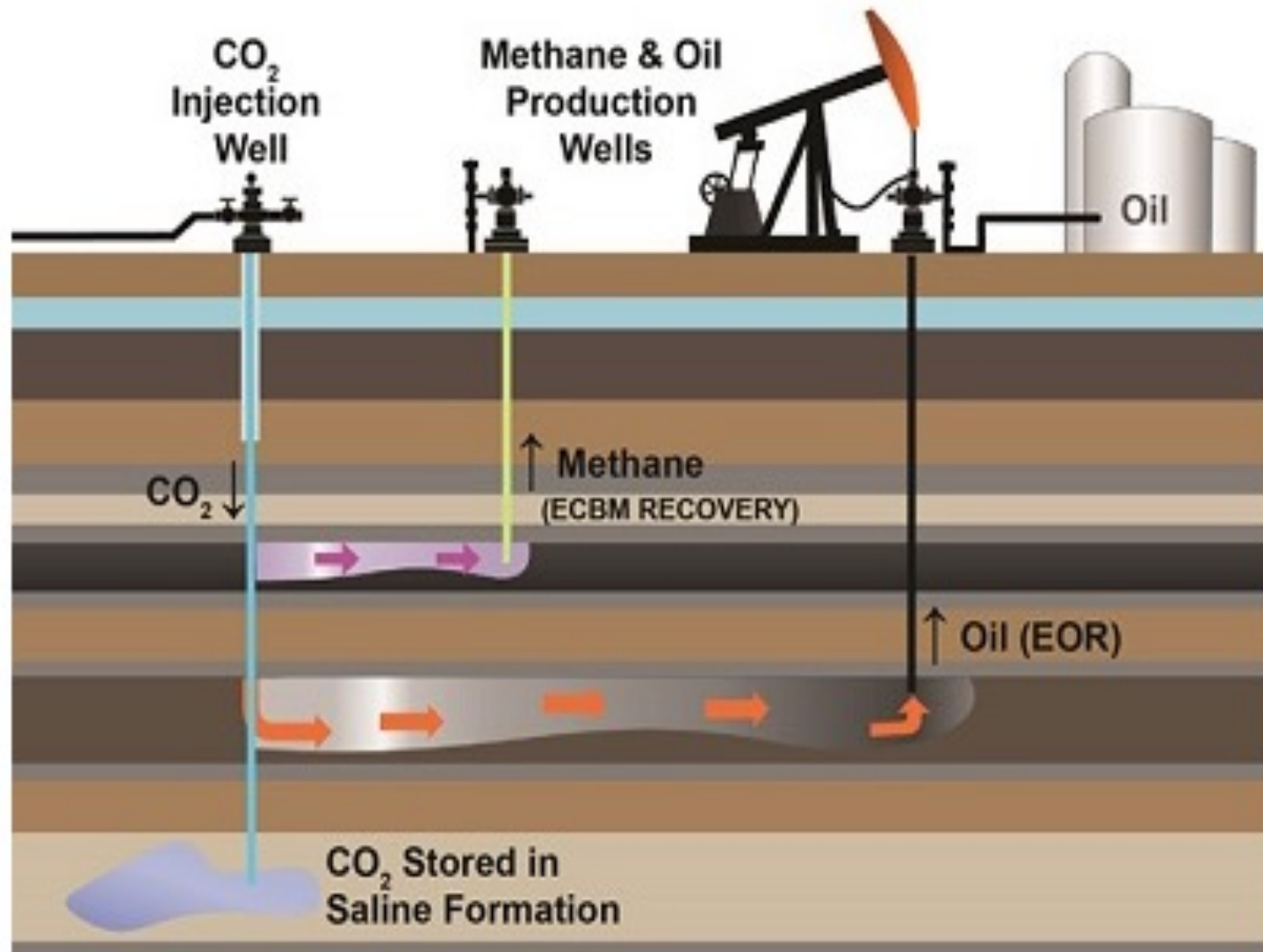
VI. Carbon Capture and Storage

What is Carbon Capture and Storage?

- ❖ Carbon Capture and Storage (“CCS”) is a process that can help eliminate carbon emissions created when burning fossil fuels.
- ❖ Generally, CCS is a three-step process:







Source: <https://netl.doe.gov/coal/carbon-storage/faqs/carbon-storage-faqs>

EPA's Underground Injection Control (UIC) Program

- ❖ The Safe Drinking Water Act (SDWA) requires EPA to *protect underground sources of drinking water* (USDW). EPA developed the UIC Program as part of this duty.
- ❖ UIC Program regulates six different classes of underground injection wells, including:
 - Class II – Enhanced Oil Recovery (EOR)
 - Class VI – geological carbon sequestration
- ❖ States may apply for primacy – *primary enforcement authority* – for each of the six classes.
 - After a state is approved for primacy for a UIC class, the state, not EPA, will oversee that class

UIC Program – *Class II vs. Class VI*

CLASS II

- Used to inject fluids associated with oil and gas production
- Includes disposal wells, hydrocarbon storage wells, and **enhanced recovery wells**
- Less extensive permitting requirements
- Lower 45Q tax credits
- Most states have primacy

CLASS VI

- Used for geologic sequestration of carbon dioxide
- Differs from CO₂-EOR because the intended purpose of Class VI is **long-term storage of CO₂**
- Extensive permitting/monitoring requirements
- Higher 45Q tax credits
- Only 2 states have primacy
- A Class II EOR project can be transitioned into a Class VI storage project after EOR is complete

UIC Program – *State Primacy*

- ❖ Most states have primacy for Class II wells (including TX and LA)
 - EPA directly regulates Class II wells in 10 states (including AZ, MN, PA, and NY)
- ❖ Currently, only 2 states have primacy for Class VI wells:
 - North Dakota and Wyoming
- ❖ Texas and Louisiana are in the process of applying for primacy for Class VI wells.
 - Louisiana submitted its application. It is currently under review by EPA. It was set to be approved by early 2022.
 - Texas is preparing to apply for Class VI primacy. RRC now has exclusive jurisdiction.

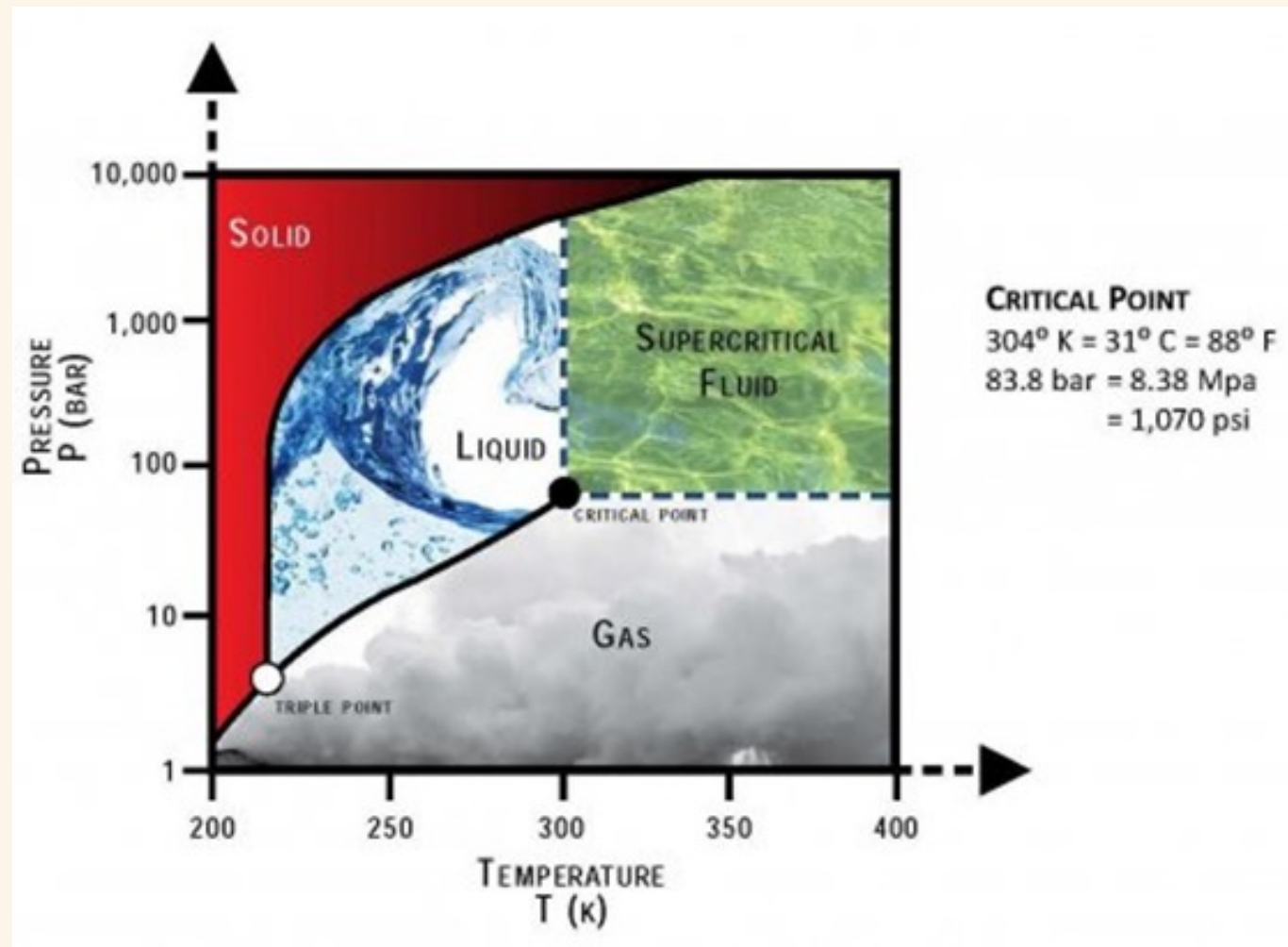
Enhanced Oil Recovery (EOR)

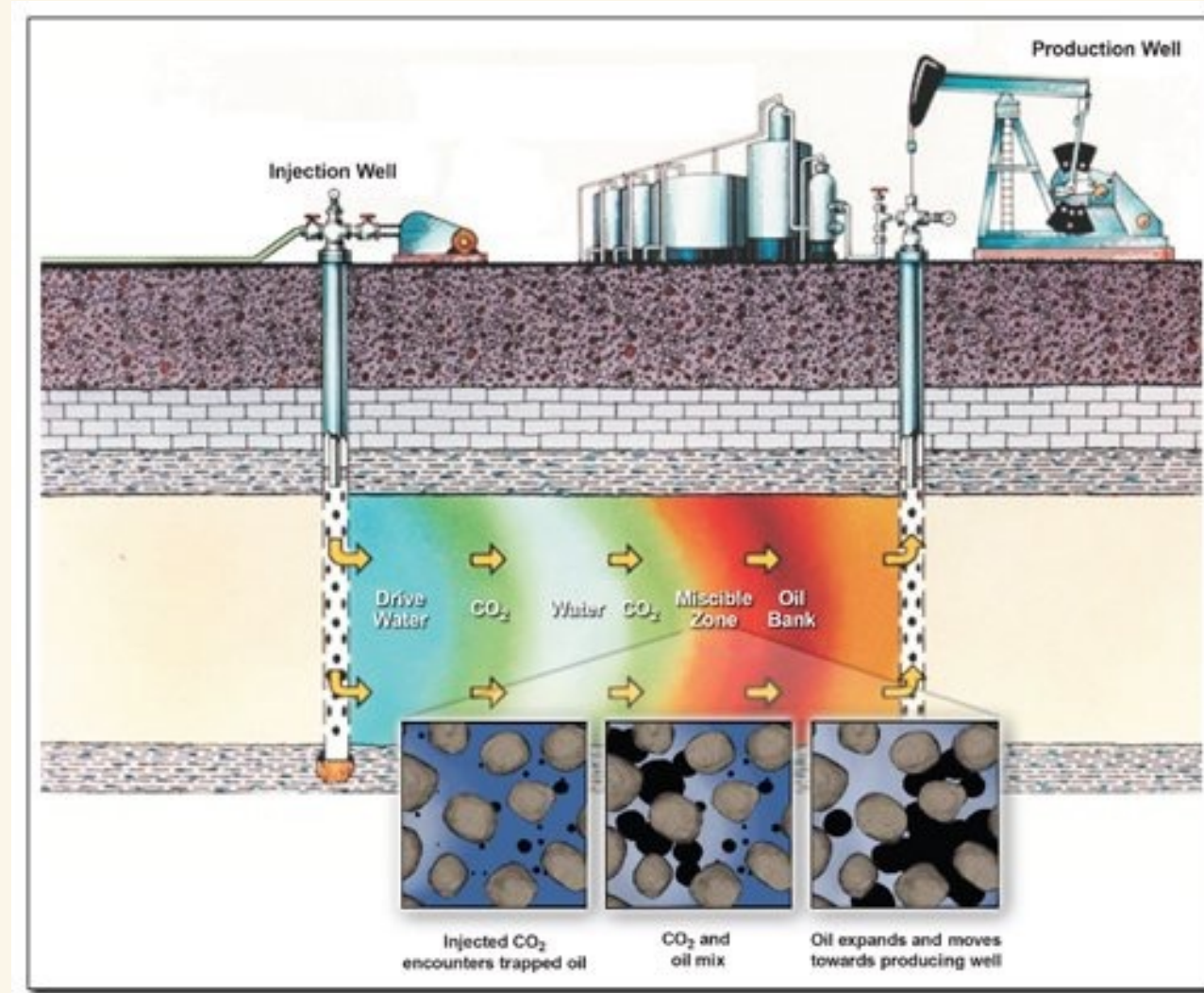
Three phases of oil and gas recovery:

- 1. Primary recovery phase** relies on the natural pressure of the reservoir
 - Accounts for only **10%** of a reservoir's original oil in place
- 2. Secondary recovery phase** relies on injection wells and water or gas to displace the remaining minerals
 - Results in recovery of **20-40%** of a reservoir's original oil in place
- 3. Tertiary recovery phase** (aka **EOR**) allows even further production via **gas injection**, thermal recovery, or chemical injection
 - EOR techniques ultimately allow an operator to produce **60%** or more of a reservoir's original oil in place

CO₂-EOR

- ❖ Gaseous carbon dioxide is turned into a supercritical state.
 - High pressure + high temperature leads to a supercritical state
 - Supercritical CO₂ is a fluid with unique properties that make it ideal for gas injection EOR
- ❖ Supercritical CO₂ is injected into an oil reservoir that has been “depleted” via primary and secondary recovery methods
- ❖ Supercritical CO₂ floods the reservoir, mixes with the remaining oil molecules, and forces additional minerals to the wellbore

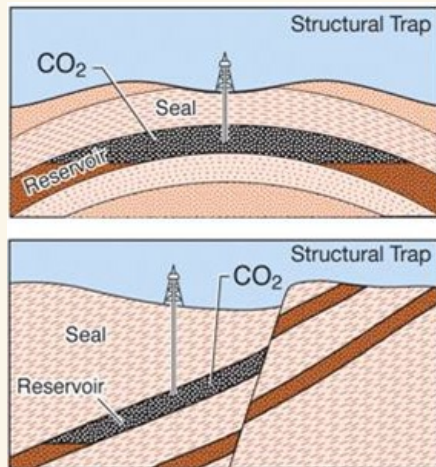




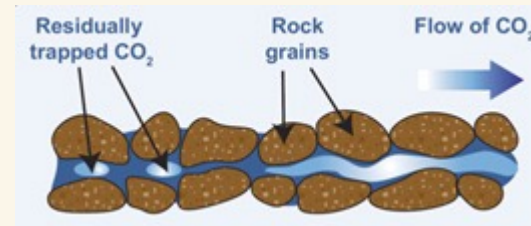
Cross-section illustrating how carbon dioxide and water can be used to flush residual oil from a subsurface rock formation between wells.

Geological Carbon Sequestration

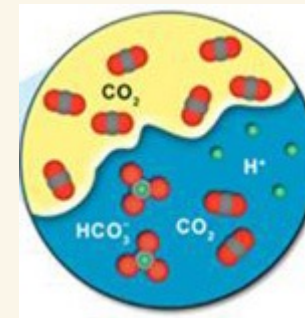
❖ Multiple processes occur underground, trapping the CO₂



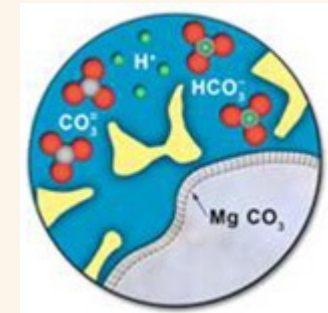
Structural Trapping



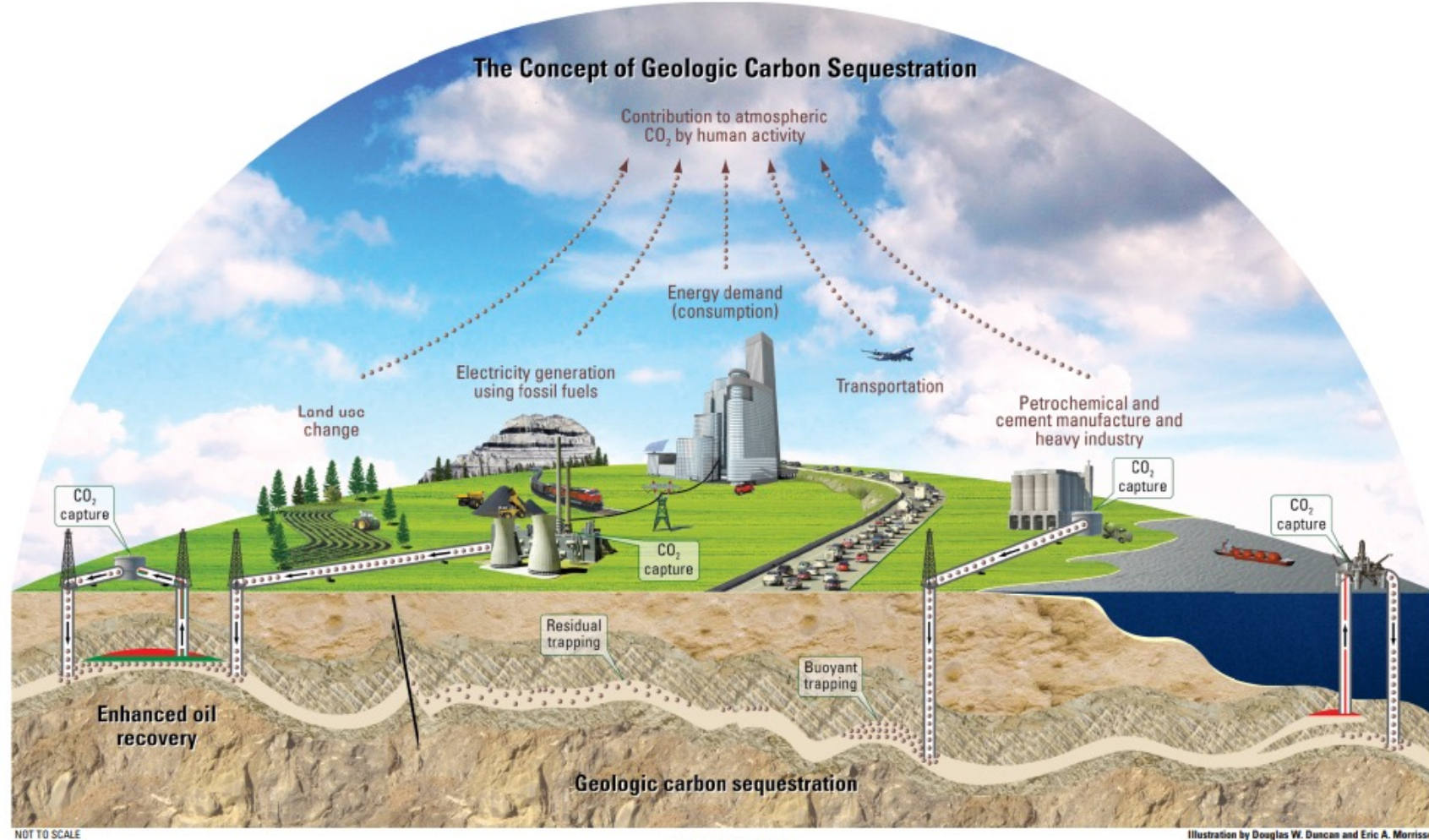
Residual Trapping



Solubility Trapping



Mineral Trapping



EXPLANATION

CO ₂ storage volume	Gas flow	Gas	Seal formation
CO ₂ flow	Oil and gas flow	Oil	Storage formation
Fault—Arrow indicates relative movement			

Tax Credits to Encourage CCS Project Development

❖ Internal Revenue Code Section 45Q tax credits

❖ The tax credit is available to:

- Operators who inject CO₂ for EOR processes
 - 2020 price: \$20.22
 - 2026 price: \$35.00
- Operators who inject CO₂ for the primary purpose of sequestering the carbon
 - 2020 price: \$31.77
 - 2026 price: \$50.00
- Note: There are additional requirements and regulatory procedures that must be followed to claim the tax credit.

Table 1. Key Elements of the Section 45Q Credit

Equipment Placed in Service Before 2/9/2018	Equipment Placed in Service on 2/9/2018 or Later
Credit Amount (per Metric Ton of CO₂)*	
<u>Geologically Sequestered CO₂</u>	
\$23.82 in 2020. Inflation-adjusted annually.	\$31.77 in 2020. Increasing to \$50 by 2026, then inflation-adjusted.
<u>Geologically Sequestered CO₂ with EOR</u>	
\$11.91 in 2020. Inflation-adjusted annually.	\$20.22 in 2020. Increasing to \$35 by 2026, then inflation-adjusted.
<u>Other Qualified Use of CO₂</u>	
None.	\$20.22 in 2020. Increasing to \$35 by 2026, then inflation-adjusted.
Claim Period	
Available until 75 million tons of CO ₂ have been captured and sequestered.	12-year period once facility is placed in service.
Qualifying Facilities	
Capture carbon after 10/3/2008.	Begin construction before 1/1/2026.
Annual Capture Requirements	
Capture at least 500,000 metric tons.	<i>Power plants:</i> capture at least 500,000 metric tons. <i>Facilities that emit no more than 500,000 metric tons per year:</i> capture at least 25,000 metric tons. <i>DAC and other capture facilities:</i> capture at least 100,000 metric tons.
Eligibility to Claim Credit	
Person who captures and physically or contractually ensures the disposal, utilization, or use as a tertiary injectant of the CO ₂ .	Person who owns the capture equipment and physically or contractually ensures the disposal, utilization, or use as a tertiary injectant of the CO ₂ .

Source: CRS analysis of IRC Section 45Q.

Source: <https://sfp.fas.org/crs/misc/IF11455.pdf>

Potential Challenges for CCS Projects

- ❖ Fluid migration and/or atmospheric leakage
- ❖ Disputed ownership of the pore space when the surface and mineral estates have been severed.
 - Who owns the empty pore space?
- ❖ To avoid potential claims (e.g., trespass, conversion, nuisance), injectors should:
 - Own the pore space,
 - Have permission from the mineral and surface owners, or
 - Have a statutory or common-law right to use the pore space

Pore Space Ownership

- ❖ **American Rule:** Mineral estate includes ownership interest in physical mineral molecules (oil, gas, etc.), but the mineral estate does not include the geological formations that contain minerals beneath the surface (MT, OK, LA, MI, NY, WV, CA)
 - In other words, the surface estate owns the pore space.
 - However, recall that the mineral estate is permitted to use the surface to the extent reasonably necessary to produce the minerals.
 - So, during EOR, the mineral estate will benefit from the surface estate and may reasonably use the pore space.

- ❖ **English Rule:** Mineral estate owns the minerals and the geological structures

Pore Space Ownership in Texas

Where does Texas stand? Contradictory case law makes it unclear.

- ❖ Mapco, Inc. v. Carter, 808 S.W.2d 262 (Tex. App. 1991) – **English Rule**
 - Mineral estate retained ownership of the underground storage capacity; however, this case involved a salt dome, the walls of which were salt (a mineral).
- ❖ Emeny v. United States, 526 F.2d 1121 (1975) – **American Rule**
- ❖ FPL Farming, Ltd. v. Texas Natural Resources Conservation Commission, 305 S.W.3d 739 (Tex. App. 2009) – **Assumed American Rule**

Avoiding Issues of Pore Space Ownership

- ❖ How to avoid disputes over the pore space? Plan ahead.
- ❖ An ideal CCS tract is large, unsevered, and is located near inactive oil and gas formations
 - Securing a large tract of land can avoid issues related to potential CO2 migration
 - Fewer competing interests if the developer owns the entirety of the surface and mineral estates
 - Projects near inactive formations are less likely to invite disputes from mineral owners
- ❖ If the mineral and surface estates are severed, or if there is active oil and gas production in the area, it is prudent to engage all surface and mineral owners
 - Get signed agreements whenever possible

Current CCS Projects

❖ Occidental Petroleum

- \$1bln DAC unit in the Permian, set to begin construction later this year.

❖ Lucid Energy

- EPA approved Lucid's Class VI MRV plan for CCS in the Permian. Lucid should be eligible for 45Q credits.

❖ Continental Resources

- \$250mil CCS project in North Dakota. Plans to capture and transport 8 million mt/yr of CO₂.

❖ Chevron

- 50% stake in CCS project offshore Texas/Gulf of Mexico. First Texas GLO Lease.

May 3, 2022	EnLink Midstream and Oxy Low Carbon Ventures Sign Letter of Intent for Mississippi River CO2 Transportation Services Agreement
April 25, 2022	Enterprise and Oxy Low Carbon Ventures Sign Letter of Intent for Gulf Coast CO2 Transportation and Sequestration Project
April 7, 2022	Occidental to Announce First Quarter Results Tuesday, May 10, 2022; Hold Conference Call Wednesday, May 11, 2022
March 29, 2022	Turning Carbon Dioxide into Sustainable Fuel: United and Oxy Low Carbon Ventures Announce Collaboration with Biotech Firm to Create New Fuel Sources
March 28, 2022	Oxy Low Carbon Ventures and Weyerhaeuser reach lease agreement for a carbon capture and sequestration project in Louisiana
March 23, 2022	Vicky A. Bailey Elected to Occidental Board of Directors
March 22, 2022	Occidental, SK Trading International sign first agreement for net-zero oil created from captured atmospheric carbon dioxide
March 17, 2022	1PointFive announces agreement with Airbus for the purchase of 400,000 tonnes of carbon removal credits



Lucid Energy Group Receives Milestone Approval from EPA, Plans to Develop the Largest Carbon Capture and Secure Storage Project in the Permian Basin

DALLAS – January 11, 2022 – Lucid Energy Group (“Lucid”), the largest privately held natural gas processor in the Permian Basin, today announced the U.S. Environmental Protection Agency (“EPA”) has approved the company’s previously submitted monitoring, reporting and verification (“MRV”) plan to sequester carbon dioxide (“CO₂”) from its Red Hills gas processing complex in Lea County, New Mexico. The plan, following subsequent approval by the Internal Revenue Service, will provide section 45Q tax credits for the sequestration and permanent storage of CO₂ in Lucid’s existing and permitted disposal wells.

chevron, talos and carbonvert announce proposed joint venture expansion to enhance the bayou bend ccs project offshore jefferson county, texas

Houston, Texas, May 3, 2022, Chevron U.S.A., Inc. (“Chevron”), through its Chevron New Energies division, Talos Energy Inc. (NYSE: TALO) (“Talos”), through its Talos Low Carbon Solutions division, and Carbonvert, Inc. (“Carbonvert”) announced today a memorandum of understanding (“MOU”) for an expanded joint venture to develop the Bayou Bend CCS offshore carbon capture and sequestration hub currently held by Talos and Carbonvert.

In 2021, a joint venture between Talos and Carbonvert (now known as Bayou Bend CCS) was the winning bidder for the Texas General Land Office’s (“GLO”) Jefferson County, Texas, carbon storage lease, located in state waters offshore Beaumont and Port Arthur, Texas. The Bayou Bend CCS project site encompasses over 40,000 gross acres and, based on Talos and Carbonvert’s preliminary estimates, could potentially sequester 225 to 275 million metric tons of carbon dioxide (CO₂) from industrial sources in the area. The Bayou Bend CCS lease is the first and only offshore lease in the U.S. dedicated to CO₂ sequestration.

The Future of CCS

- ❖ For CCS to flourish in Texas, conflicting case law needs to be clarified.
 - Remember: it is a possibility that Texas will eventually adopt the American rule, which would allocate pore space ownership to the surface estate.
- ❖ In the meantime, it is increasingly important to include the surface owner(s) in negotiations to avoid potential claims (e.g., trespass, conversion, nuisance).
 - Remember: Texas courts love freedom of contract!

VII. Potential Issues for Renewable Energy & CCS Developers

- ❖ Due to severed estates and the dominant estate theory, conflict between surface and mineral estate can lead to:
 - Delayed development of projects
 - Costly litigation
 - Forced removal or destruction of project facilities
 - Loss of investment



VIII. Best Practices for Renewable Energy & CCS Developers



Due
Diligence

Negotiate
Agreements

Alternatives

Due Diligence



Determine mineral ownership



Determine whether any regulations prohibit mineral infrastructure



Determine whether any local rules affect mineral development

Negotiate Agreements



Negotiate Waivers of Surface Rights Agreements



Negotiate Accommodation Agreements

Note: Agreements should be closely reviewed by an attorney.

6. Alternatives

❖ Cautious Site Selection

- Reserve well drill sites under the guidance of a petroleum engineer
- Collaborate with the oil and gas lessee to designate where a well will be drilled, and if necessary, participate in a public hearing pertaining to spacing requirements with the Texas RRC to request that the drill site be placed in a manner that will not interfere with the renewable energy project (TX)
- Request a drill site designation pursuant to Rule 76 (TX)
- Create drilling islands within the projects in the event O&G is discovered
- Construct renewable projects on low value acreage where no O&G has been discovered (i.e., no pipelines or plugged wells)
- Avoid tracts that have multiple severed mineral interests (difficult in Texas)

IX. Alternatives (Cont.)

- ❖ Obtain title insurance mineral endorsements (TX)
- ❖ Pursue Litigation
 - Accommodation Doctrine
- ❖ Purchase the Mineral Estate



X. Our Services

❖ Due Diligence

- Determine ownership of mineral estate
- Determine whether any regulations prohibit mineral infrastructure (i.e., 16 Tex. Admin. Code § 3.37)
- Determine whether any local rules affect mineral development
- Research and analyze other legal issues

❖ Negotiating and Drafting Agreements

- Negotiate and draft waivers of surface rights agreements with mineral estate owners
- Negotiate and draft accommodation agreements with mineral estate owners

❖ Regulatory

- Represent developers at the Texas Railroad Commission seeking a drill site designation pursuant to Statewide Rule 76

Christine Sulkis

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I focus my practice on **due diligence, complex mineral titles, pooling issues, lease analysis, joint operating agreements, surface use issues, title curative, regulatory, litigation and general upstream matters.**



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