



The Override

Every Landman Wants One!

Volume XV, Issue IV

March, 2023



LAAPL
LOS ANGELES ASSOCIATION OF PROFESSIONAL LANDMEN

Presidents Message

RICHARD MALDONADO
PRESIDENT
SPECTRUM LAND SERVICES

Welcome back to another addition of the award-winning Override. As we near the end of the 1st quarter of 2023, there are several reminders that come to my mind regarding the current state of the ever-changing California energy situation. One big reminder to all of us is the skyrocketing natural gas prices impacting California residents and businesses. I have spoken to a number of restaurant owners in the Orange County area that use a considerable amount of natural gas to cook food all day and heat their buildings. It is becoming a major struggle for businesses to stay afloat. My favorite Thai restaurant closed its doors last week due to this reason.

So why is the price per MMBtu so high right now in California?

I think it is safe to say that this is a multi-faceted problem. According to the American Gas Association, the main reason is delivery constraints that are leading to supply shortages in California. Problem #1: Pipelines that can carry natural gas from the rest of the country to California are often completely full and are often not readily available to supply enough product to the west coast. Problem #2: The west coast had much less gas in storage during the critical winter months of 2022 leading to more shortages.

With this and other financial challenges we Californians deal with, there is good news on the horizon. The U.S. Energy Information Administration's (EIA) official short-term natural gas inventories and price forecast published on March 7th of this year shows the price at SoCal Citygate in Southern California decreased [Presidents Message continued on page 2](#)



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Meeting Luncheon Speaker



As a founder of PTS Advance (Principal Technical Services – 1995), Ronald Stein has developed one of the most successful and innovative family-owned professional services firms in California. Known as the leader in delivering staffing solutions to the 12 major oil refineries in the state, the business has since transformed to support a range of staffing, consulting, project services, and business process outsourcing solutions to the wider Energy & Infrastructure, and Life Sciences industries.

During the last two decades, PTS has received many recognitions and awards, such as:

- INC 500 recognized PTS as one of the fastest growing companies in the USA
- Ernst & Young presented Ronald the Entrepreneur [Luncheon Speaker continued on page 2](#)



Opinionated Corner

JOE MUNSEY, RPL
PAST PRESIDENT
NEWSLETTER CO-CHAIR
SOUTHERN CALIFORNIA GAS COMPANY

Have you adjusted to the passage into Daylight Saving Time? No need to adapt if your body is not responding, we gain that hour back come fall.

We are the recipient of articles James R. Halloran sends along, usually thrice a week, more or less. On a few occasions he reminds us of his “Immutable Principles of Energy.” Point One of Mr. Halloran’s principles is we desire seven qualities in our energy sources:

- Affordable (cheap)
- Abundant
- Reliable
- Pure
- Universally accessible
- Environmentally friendly
- Produced and delivered in a non-disruptive manner to our lifestyle (safe).

He wraps up Point One as, “Like it or not, they cannot all occur together.”

Take the challenge of building enough battery storage which can hold, say, sixty days’ worth of on-tap stored electricity. Why sixty days you ask; well, according to Mark Mills of the Manhattan Institute, on average, economies the size of the U.S. and Europe store one or two months worth of coal, oil, or natural gas. Packing away such quantities of fossil fuels appears to be relatively easy and inexpensive, so, no worries. The industry who provides the energy source from fossil fuels has over 100 years of expertise and has made it look easy and cheap to have hanging around a sixty day on-tap source of energy.

As Mr. Mills further writes, “Advocates of the energy transition propose that building more batteries can store

excess energy from solar and wind installations.” But matching the energy value of the two months’ worth of natural gas in storage would require building \$40 trillion worth of batteries, which would take all the world’s battery factories combined about 400 years to produce. Mr. Mills has done his homework.

Already the numbers flying around just for adequate battery storage comes up against Point One of Mr. Halloran’s “Immutable Principles of Energy.”

Recall we previously described how one wraps his/her arms around the figure One trillion (1,000,000,000,000). First, convert that figure into seconds to determine how many years are in one trillion seconds. Let’s see here, re-doing the math again...one trillion seconds converted into years = 31,688.74 years.

Until the green energy boom has its green energy bust, embrace the work it will provide the land and legal profession. As such, we have secured the publishing rights from the law firm of Baker Hosteler and its thirty-two page Carbon Capture Utilization and Sequestration Regulatory Handbook. Use it as a tool to get up to speed on this facet of getting to net-zero carbon.

Get your piece of the trillions of dollars up for grabs.

Legislative Update

LIFE WITHOUT OIL

Have you ever wondered how life without the benefits of oil would be like? Aera Energy provides a glimpse of how the world we have come to know would appear when the unimaginable happens. (*Video was on WSPA website.)

<https://www.wspa.org/resource/life-without-oil/>



President’s Message \$3.17 from \$11.71/
continued from page 1 MMBtu last
Wednesday to \$8.54/MMBtu yesterday. Perhaps this is a trend that will lead to lower rates over the next several months, giving California consumers a much needed break from the seemingly endless energy price increases.

As we all want a brighter future for our children and grandchildren, let us hope that our leaders in Sacramento and Washington D.C. make sound energy decisions resulting in sustainable growth for the communities we live in. Removing unnecessary roadblocks that prevent the production and storage of natural gas resources in our own state would be a good start.

Luncheon Speaker of the Year Award .
continued from page 1

• In 2019, PTS Advance was ranked as the 11th largest Employment Agency on the 2019 Orange County Business Journal Book Of Lists.

• In 2019, the Staffing Industry Analysts (SIA) named as one of the Best Staffing Company’s to work for.

Ron was also instrumental in convincing the American Society of Civil Engineers (ASCE) that Oil was an infrastructure and achieved it by being reported on most recently in the Orange County Infrastructure Report card, which was the first time in two decades that the ASCE has acknowledged Oil as an infrastructure. The ASCE 2016 Citizen’s Guide to the 12 Infrastructure categories of Orange County can be seen at <http://www.asceoc.org/documents/2016OCIRC.pdf> (The Oil Infrastructure is summarized starting on page 33).

Over the last decade, Ron has become the private business spokesperson for the energy and infrastructure industries through his more than 60 published Op-Ed articles that provide an education for the citizens as to what and why the energy infrastructures are the primary infrastructures that truly drive our economy.

THE OVERRIDE IS, AND HAS BEEN EDITED BY JOE MUNSEY, RPL AND PUBLISHED BY RANDALL TAYLOR, RPL, SINCE SEPTEMBER OF 2006.

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Chapter Board Meetings

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We encourage all members to attend our LAAPL Board Meetings which are typically held in the same room as the luncheon immediately after the meetings are adjourned.

The LAAPL Board of Directors and Committee Members held a virtual Board meeting on January 17, 2023, led by Rich Maldonado, President. The topics discussed at the meeting were as follows:

- JR Billeaud, RPL, Education Chair, informed us that there will be a Renewables Energy Seminar by AAPL before the end of March. It will be advertised in The Override publication.
- Membership Chair, Linda Barras, is setting an example to push for more membership by inviting her Caltrans co-workers to our LAAPL meetings.
- Nominations Chair, Odysseus Chairetakis, will be searching for a new LAAPL Vice-President to take the reins next Fall.
- Randall Taylor, RPL, and Joe Munsey, RPL, Newsletter and Publications Co-chairs, have submitted the May 2022 newsletter to AAPL, hoping for yet another award.
- Rich Maldonado, President, has finalized the new LAAPL logo and completed the by-laws.

Early Bird Reminder for LAAPL Annual Dues

Jason Downs, RPL, Chapter Treasurer, will call for dues in late Spring, due by June 2023 for the 2023 – 2024 year. Cost: still a bargain at a mere \$45.00.



Treasurer's Report

JASON DOWNS, CPL
TREASURER
LAND REPRESENTATIVE
CHEVRON PIPE LINE AND POWER COMPANY

As of 1/2/2023, the LAAPL account showed a balance of

Deposits	\$ 475.20
Total Checks, Withdrawals, Transfers	\$ 400.26
Balance as of 3/9/2023	\$ 33,445.24

New Members and Transfers

LINDA BARRAS
MEMBERSHIP CHAIR
CALIFORNIA DEPARTMENT OF TRANSPORTATION

Welcome! As a Los Angeles Association of Professional Landmen member, you serve to further the education and broaden the scope of the petroleum landman and to promote effective communication between its members, government, community and industry on energy-related issues.

New Members

None to Report

Transfers

None to Report

Corrections

None to Report

Scheduled LAAPL Luncheon Topics and Dates

March 16, 2023

Ron Stein, PTS Advance
Energy Literacy and the Future of Energy

May 18, 2023

Tour of SoCalGas Hydrogen Futuristic Home
Downey, CA
Officer Elections

June 14 – 17, 2023

AAPL Annual Meeting
Huntington Beach, CA

September 14, 2023

Topic TBD

September 2023

West Coast Landmen's Institute
San Diego, CA



AAPL's Mission Statement
Our mission is to promote the highest standards and ethics of performance for all land professionals and to encourage sound stewardship of all energy and mineral resources.

AAPL Director Report

Quarterly Board Meeting

3/12/23

Colorado Springs, CO

Name: Jason Downs, CPL

Company: Chevron Pipeline & Power

Email: jasondowns@chevron.com

Local Association Name: Los Angeles Association of Professional Landmen

58	Total Local Association Members
35	Total Active ("Land Professionals") AAPL Members within your Association

Association projects/activities: SCHEDULED LAAPL LUNCHEON & EVENT DATES:

- 2023 Annual Meeting Huntington Beach, Hyatt June 14-17th, 2023.
- Luncheons
 - March 16th: Ron Stein, PTS Advance: Energy literacy and the future of energy
 - March 30th: Solar Lease Fundamentals
 - May 18th: SoCalGas' Hydrogen Home Tour
- Los Angeles passed/adopted updated Chapter by-laws, *inter alia*, re-defining membership qualification aligning with AAPL's definition of a landman and professional land work. Essentially a Los Angeles member is one primarily engaged in all facets of real property associated with or connected to energy sources.

Association requests/concerns:

- Los Angeles is currently working with the California Chapter President of the National Association of Royalty Owners ("NARO") to encourage this organization to consider having a booth at the annual meeting.
- Further, the California NARO is collaborating with the California Independent Producer Association ("CIPA") and Western States Petroleum Association ("WSPA") in the fight to overturn California Senate Bill 1137, a bill to restrict oil and gas operations within 3200 feet of residential and public places.
- Los Angeles has reached out to AAPL Executive Vice President Zeimetz, AAPL President Campbell, Past Presidents Curry and Zitkus and AAPL Annual Education Committee Chair Buchert for a possible "hot topic" slot for California NARO, CIPA and WSPA to address AAPL at Huntington Beach 2023.
- Looking forward to working with the Annual Meeting Committee for 2023 Huntington Beach planning.


*AAPL Director Report-
continued on page 5*

Local news including business activity:

- Independent work in the LA Basin is picking up need with a few Landmen options in the area. Most contractors are working site specific projects and/or quasi-in-house roles. Broker rate \$50-\$120 an hour with seasoned Landmen charging a premium. Remainder of Landmen hold in-house positions.


Bylaws & Policy suggestions:

- N/A



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AAPL's Renewable Energy Certificate Program

JOHN R. "JR" BILLEAUD, RPL, LAND MANAGER,
CALIFORNIA NATURAL RESOURCES GROUP, LLC
EDUCATION CHAIR

LAAPL's Linda Barras, a newcomer to the Los Angeles association and currently an Associate Right of Way Agent -Condemnation, State of California – Department of Transportation ("CalTrans"), recently completed AAPL's Renewable Energy Certificate program. Linda was kind enough to share her experience with the program and some of the things she learned, as follows:

- All energy producing products and processes utilize land professionals to negotiate leases, contracts, and mining options.
- Energy extracted from the sun, wind, hydro, tidal and biomass energy collections all need some type of holding mechanism to store the collected energy, such as batteries, which require rare earth minerals. There are opportunities to extract these minerals needed for energy storage here in the U.S.
- Specific processes are identified for the development of prospecting and preliminary due diligence for the energy market, and it varies widely across the U.S. The tax credits being offered for green energy development are immensely compensable and the political involvement runs deep.
- Solar and wind energy projects can use up to 50,000 acres! Wind turbines require additional governmental permits due to their height.
- Ancillary and curative documents in renewable energy title matters utilize estoppels, joinders, waivers, affidavits, and subordination agreements.
- Bitcoin Mining is volatile, and it works alongside natural gas mining to create a market for gas where none existed previously! For example, "350 MWh per bitcoin, or 3 billion cubic feet of gas is the current calculation from the models... and burning about 350 mcf per day requires about a \$1.2 million in capital deployment." (Source: Dan Jasek, 7/16/2022, GreenFlare).
- In Carbon Capture, Section 45Q, tax incentives are now being offered. The Coastal Plains region from Texas to Georgia are the hot spots right now. Plugged & Abandoned ("P&A") wells are being sought to inject CO₂ and CO into underground geological formations or concrete tanks underground to store carbon dioxide. Monitoring for leaks is required just like for idle and P&A wells.
- Global outlook on climate change. Renewable energy has been improved by only 3% in almost ten years. The world is still largely reliant on fossil fuels.

Some additional insight from Linda on what the course covered includes:

- The hotly debated discussion on the future of energy and the pros and cons of alternative forms of energy.
- Key agreements used in renewable energy Acquisitions & Divestitures as well as diligence practices custom to the industry.
- U.S. regulation and policy considerations involving renewable energy infrastructure.
- Discussion about the Texas electrical grid failure in February 2021 caused by Winter Storm Uri.
- Overview of renewable energy case law throughout the U.S. to view how different states handled renewable energy litigation.
- Overview of ethics in renewable energy.

LAAPL strongly encourages its members looking to enhance their knowledge and understanding of renewable energy to enroll in the AAPL's Renewable Energy Certificate program, which is tailored for the professional landmen. We thank Linda for taking the time to share her insights!



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BAPL President – 1985-86, 2003-04; AAPL Director – 1988-90, 2002-03, 2004-07

Case of the Month - Energy

NATURAL GAS FLARING

By BENJAMIN HOLLIDAY, ESQ., OF THE ENERGYLAWGROUP.COM

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The Holliday Energy Law Group PC is an energy law firm focused on advising exploration and production companies in their operations across the United States. We actively engage with our clients throughout all stages of a drilling program, from acquisition through drilling, and eventually to divestiture.

Natural Gas Flaring is a topic that captured everyone's attention over the past few years, and with good reason. Estimates vary, but here are a few numbers that seem to grab everyone's attention:



1. Texas flares the same amount of natural gas as it uses residentially. Restated, the amount we use in our homes and the amount that we simply burn at the end of a long pipe at the well site are basically the same.
2. Flaring amounts to ~ 1% of all man-made CO2 emissions globally.
3. Texas in particular is responsible for ~51% of the total ~1.3Bcf/day that is vented and flared in the United States.
4. Texas Railroad Commission flaring exception permits have increased 10x over the decade.

No doubt, those are some big numbers. However, as we'll see in our journey through both the process of flaring and the various regulations that govern the practice, data must be kept in context.

This article is a deeper dive into the various state and federal regulatory schemes, as well as their efficacy, but first let's start with some basics. Particularly terminology. When "flaring" is discussed, what we're generally talking about is ridding a well or gathering facility of unwanted natural gas;

why it is unwanted we will discuss later. If we are going to rid ourselves of this natural gas, however, there are two ways – we flare it, or we can vent it.

Flaring, is the controlled combustion of natural gas. Flaring is when we burn it.

Venting, on the other hand, is the direct release of natural gas into the atmosphere. Just as it sounds, when we vent, we release it into the atmosphere. Like letting the air out of a balloon. While flaring and venting occur for many reasons in many scenarios, our general focus is going to be on flaring and venting accompanying the production of oil from shale oil wells, i.e. unconventional or horizontal oil wells.

Through the production, shale oil wells produce varying amounts of "associated" or "casinghead" gas alongside oil. This associated gas is a raw mixture of volatile hydrocarbons, mostly methane. When we flare (i.e., burn) the associated gas, we are oxidizing the methane into Carbon Dioxide (CO2) and Water (H2O). This change into CO2 is why carbon sequestration holds potential promise for the flaring issue, but for now suffice that this oxidization process is how the natural gas becomes CO2.

From an ecological/environmental perspective, flaring is clearly preferable to venting, as according to the U.S. Department of Energy its impact is approximately 25X less than venting. Interestingly enough, studies quoted by the U.S. Department of Energy state that the net effect of flaring versus industrial use is largely neutral. That is, whether we flare it or use it, the environmental impact is the same. This is obviously a simplification, as variations in gas constituencies and the efficiencies of the flare in question will have large impacts on the flare's end-product. It is these inefficient flares that drive most of the environmental risk, as the failure to properly convert the methane into CO2 can result in increased concentrations of methane and NOx.

And finally, whether flaring or venting, it's just a bad look. Ideally, we don't want to be lighting our natural resources on fire because we can't figure out what else to do with them. There are many legitimate reasons – both operational and economic – to flare gas, and we'll cover those. It is my hope, however, that we will find a way to bridge the gap in well development and mid-stream build-out that allows us to make good use of these hydrocarbons.

*Case - Energy
continued on page 9*

As we know, however, the environment is not necessarily a US issue. To loosely quote David Ramsden-Wood, we're all accountable to do our best not to pee in the pool, but if someone else does it's going to find its way to us despite our best efforts. According to slightly dated data from the National Oceanic & Atmospheric Administration, the U.S. ranks 4th globally in amount of gas flared, with Russia and Iraq each roughly doubling our volumes. So even if or when we are able to meaningfully reduce our flaring, the overall impact on the global environment will be muted unless and until we get everyone on board. We're all in the same pool.

Now let's take a deeper look at why we flare or vent in the first place. Flaring and venting occurs for three primary reasons:

1. SAFETY: Pressure release in an emergency or upset situation.
2. OPERATIONS: Pressure release during drilling, flowback and pipeline maintenance.
3. ECONOMIC: Economic considerations prioritizing oil production over natural gas capture.

SAFETY: Gas is flared for pressure release during an emergency or upset situation; this is also known as emergency flaring. Flaring for emergency purposes is generally short in duration, lasting only so long as the emergency or upset situation occurs. Unlike oil, which can be stored relatively efficiently post-production when compared to natural gas, gas production depends on measured flows from the well to the plant in pressurized lines. Any situation causing a decrease in a pipeline or plant's capacity to receive the gas – fire, loss of electrical power, equipment or compressors malfunction, etc. – can result in a rapid build-up of pressure in the natural gas pipeline. In order to alleviate these potentially catastrophic sudden build-ups of pressure, natural gas gathering systems have a series of pressure-induced release points that can auto-divert the gas to flare-stacks and vents.

OPERATIONS: Outside of an emergency situation, gas may be flared for pressure release during drilling and flowback operations, or system repair. Flaring during the drilling through completions time period can occur for a wide variety of reasons. While uncommon, during drilling operations gas influx (known as kick) can occur as the well begins to encounter natural gas bearing horizons. In order to continue drilling operations through the shallow gas-bearing formation to the intended depths/reservoir, this gas kick must be diverted and disposed. The only efficient method of D&D (diversion and disposal) in this event short of venting is to flare.



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Should a well show sufficient economic potential to be completed, a certain quantity of natural gas will be produced as a by-product of the flowback operations. Similar to well testing, as the well is not at this stage capable of connection to a gathering system, this gas must be D&D'd in order to allow the completion operations to continue.

Once a well has been completed and natural gas is being produced, the gas transportation must be assisted by way of compression. These compressor stations, themselves the subject of much litigation and discussion, are subject to the needs of maintenance (routine and otherwise). In order to safely conduct maintenance operations on compressors and related equipment, the system must be de-pressurized in 'blow-down' operations. Note that venting and flaring for midstream maintenance is an infrequent occurrence.



ECONOMIC: The primary reason behind the exponential increase in gas flaring over the past decade is the tactical decision to flare associated gas to accelerate oil production. Flaring (as well as venting; note that I use the term flaring as placeholder for both flaring and venting) in a safety or operational context is infrequent. When it does occur in these situations, by its very nature the flaring is time-bound and relatively short in nature. Think days or weeks as opposed to months. Because flaring for safety or operational reasons is so short in duration and essential to production, the practice for decades has generally been a non-controversial standard industry practice. Economic based flaring of material and commercial quantities of natural gas, however, is another thing altogether.

The exponential increase in flaring for economic reasons has become the prime mover in the current natural gas flaring discussion. For instance, from 2010 to 2019 the Texas Railroad Commission reported a 20X increase in flaring permit applications, going from approximately 300 in 2010 to 7000 in 2019. Those are big numbers, but data always needs to be kept in context. As of 2019 data, there were approximately 265,000 producing wells in the State of Texas. Against this total, the 7000 looks less staggering.

Economic based flaring occurs when a well is completed that is capable of producing both oil and natural gas, and the well economics dictate that the oil production be accelerated at the expense of natural gas. Flaring in this context typically lasts months, and certain cases longer.

But how could it be economically rational to simply burn these valuable hydrocarbons? And why the 20X increase over the past decade? Let's take these in turns and start with why we have seen an exponential increase in flaring. Over the past decade, the major operational focus in Texas for new exploration has been on liquids, primarily oil. From 2010 to 2014, the bulk of this occurred in the Eagle Ford region of South Texas. Characterized by three 'windows' – Oil, Wet Gas/Condensate, and Dry Gas – Eagle Ford wells tend to produce large quantities of natural gas, which increases/decreases dependent upon their north to south orientation along the play, as this map on Page 12 shows.

While oil and gas development has occurred in South Texas for decades, the scale of Eagle Ford development immediately outpaced the midstream gathering capacity required to move these new volumes of natural gas to market. As previously mentioned, unlike oil, there is no efficient method of storing produced gas short of re-injection into a reservoir. It cannot be held in tanks or trucked in the same manner as oil. Thus, it either must be moved to market, reinjected, or burned. Note that new carbon capture technologies are changing this simple three-part choice, most if not all of which were not available or commercial in the 2010-2014 timeframe.

Much of the development in the Eagle Ford necessitating new gathering systems was occurring in areas that lacked any meaningful gas gathering infrastructure. In addition to the simple time factor in building out a midstream system, there are also significant economic decisions that must be made. For one, are the volumes of gas produced enough to support the build-out of an expensive midstream system? What about the price risk of natural gas? Recall that in the 2010 – 2014 time frame, literally everything in the oil field was slower and more expensive due to the high demand.

Faced with slow and expensive midstream buildouts to move the economically less desirable natural

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The success of Petru Corporation was featured in an episode of the *Enterprises* television show, hosted by Terry Bradshaw and Kevin Harrington, which aired on FOX Business Network. Petru is also featured in "Black Gold in California, the Story of the California Petroleum Industry", Corporate America's Business Elite, CV Magazine, ACQ5 Global Awards and Lawyers Monthly (Expert Witness Award).

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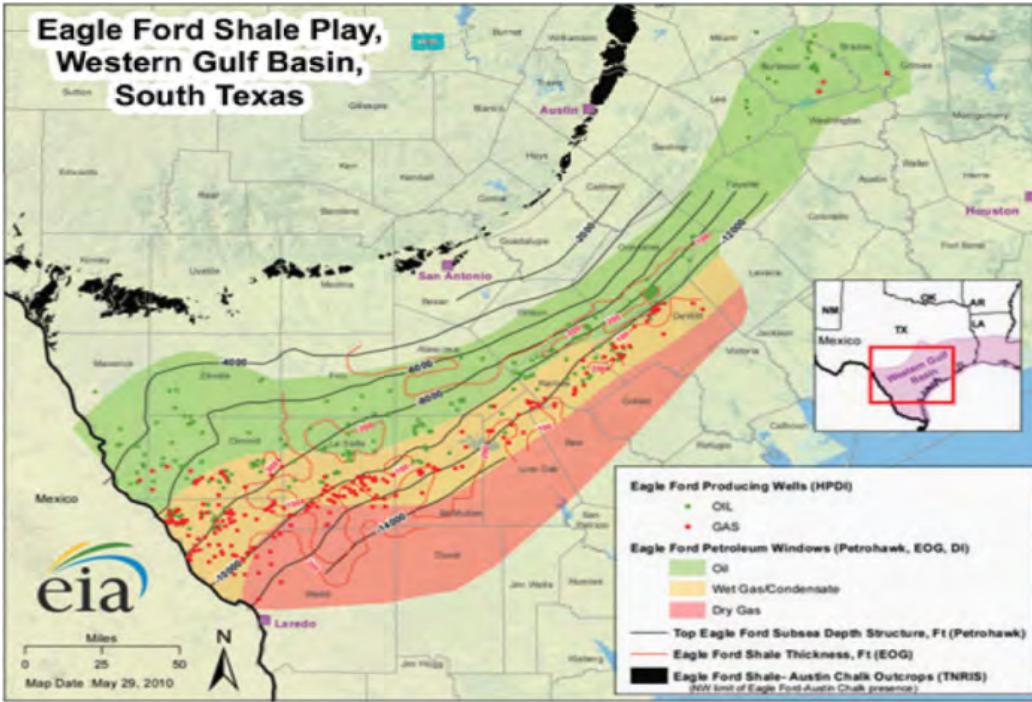
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gas to market, operators had to factor in additional complicating variables:

1. Their cost of capital, which changed radically from private equity backed companies to publicly traded ones.
2. Competition for investment among other options in their portfolio. How does this same dollar spent on Eagle Ford midstream stack up against drilling additional wells, or drilling wells in other assets outside of the Eagle Ford?
3. Cost and likelihood of acquiring the rights-of-way to build pipelines.
4. Lease terms.



Operators were forced to weigh delaying oil production in favor of expensive, slow, and at times uncertain midstream build-outs to gather the associated gas. Simply put, the economics in most cases did not support delaying oil production. That is, the economics dictated that liquids production be accelerated even when flaring 100% of natural gas production was required.

This same scenario played itself out in basins across Texas and the country, most notably in the Permian's Delaware Basin. The U.S. Department of the Interior estimates from 2019, an operator in the Delaware Basin targeting the Wolfcamp formation was

faced with an oil to gas commodity price ratio of 28:1. According to these estimates, should an operator flare 100% of all gas produced in the first year and pay landowner royalties on these volumes, the loss of gas sales revenue had only a minimal impact on overall well economics, raising the breakeven cost from \$42/bbl to \$45/bbl.

The main takeaway here is that economics drives behavior. The primary reason why we are seeing an exponential increase in flaring is due to well economics supporting the acceleration of liquids production over any delays in order to gather gas. Restated, curtailing liquids-focused operations to wait for gas takeaway can result in a net economic loss to the operator. Short of radical overhaul of the Texas flaring regime, the economics will be the key to changing behavior. With flaring on the front of everyone's mind, it is likely that we will see some regulatory/administrative movement on this front. However, note that barring legislative action, which is unlikely due to more pressing issues, the Texas Railroad Commission tends to move incrementally.

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LAAPL Education Report

March – May 2023

*John R. “JR” Billeaud, RPL, Land Manager, California Natural Resources Group, LLC
Education Chair*

March

Event	Dates	Location	Speakers	Credits
AAPL's Code of Ethics and Standards of Practice I	March 15, 2023	Live Webinar	George R. Shultz, CPL	1 CEU Ethics
2023 Mining and Land Resources Institute	March 15-16, 2023	Stateline, NV (Lake Tahoe)	Various	11.50 CEU; 1 CEU Ethics
Field Landman Seminar - Evansville, IN	March 16, 2023	Evansville, IN	TBD	3 CEU
LAAPL March Luncheon	March 16, 2023	The Grand, Long Beach, CA	Ron Stein, PTS Advance - Topic: Energy Literacy and the Future of Energy	1 CEU
Surface Use and Access	March 21, 2023	Live Webinar	George R. Shultz, CPL	5 CEU; 1 CEU Ethics
2023 Appalachian Land Institute	March 21-22, 2023	Pittsburgh, PA	Robert Stonestreet, Dan Weaver, Adam Morgan, Renee Anderson, Ben McKinney, and John Brawner	8 CEU
Field Landman Seminar - San Antonio, TX	March 23, 2023	San Antonio, TX	TBD	3 CEU
Royalty Deductions	March 28, 2023	Live Webinar	Marlin K. Brown, CPL	3 CEU
Solar Lease Fundamentals	March 30, 2023	Long Beach, CA	Phillip Guerra, CPL	3 CEU
Due Diligence	March 30, 2023	Live Webinar	A. Frank Klam, CPL	5 CEU

April

Event	Dates	Location	Speakers	Credits
Federal Geothermal Considerations	April 5, 2023	Live Webinar	TBD	1 CEU
Field Landman Seminar - Edmond, OK	April 6, 2023	Edmond, OK	TBD	3 CEU
Solar Lease Fundamentals	April 11, 2023	Live Webinar	Phillip Guerra, CPL	3 CEU

Educational Corner - continued

AAPL RPL/CPL Certification Exam Review - Denver, CO	April 12-14, 2023	Denver, CO	Roger A. Soape, CPL; Dorsey T. Roach, CPL, Thomas M. Rucker II, CPL	18 CEU (CPL); 6 CEU (RPL); 1 CEU Ethics
Understanding Petroleum Economics	April 20, 2023	Live Webinar	Dwayne Purvis, P.E.	6 CEU; 1 CEU Ethics
2023 Gulf Coast Land Institute	April 26, 2023	New Orleans, LA	TBD	9 CEU
Solar Energy	April 26, 2023	Live Webinar	TBD	1 CEU
Joint Operating Agreements	April 27, 2023	Live Webinar	Dorsey T. Roach, CPL	7 CEU

May

Event	Dates	Location	Speakers	Credits
Field Landman Seminar - Traverse City, MI	May 4, 2023	Traverse City, MI	TBD	3 CEU
AAPL RPL/CPL Certification Exam Review - Pittsburgh, PA	May 10-12, 2023	Pittsburgh, PA	Curtis D. Horne, CPL; Dorsey T. Roach, CPL, Thomas M. Rucker II, CPL	18 CEU (CPL); 6 CEU (RPL); 1 CEU Ethics
LAAPL May Luncheon (Officer Elections)	May 19, 2023	The Grand, Long Beach, CA	Tour of SoCalGas Hydrogen Futuristic Home - Downey, CA	1 CEU



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Case of the Month - Right of Way

UNDERSTANDING THE TAX IMPLICATIONS OF EMINENT DOMAIN PROCEEDS WHEN PROPERTY IS CONDEMNED

*Rick Rayl, Esq., Partner
Law Firm of Nossaman LLP*

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One of the issues that come up frequently in eminent domain is whether the proceeds a property or business owner will receive from the government is treated as ordinary income, capital gains or is exempt from federal and/or state taxes. And when eminent domain attorneys get that question, they almost always start with the

largely unhelpful response of “it depends.” But it really does depend on exactly what the money is, how the property was held, how the money will be used and whether we are talking about state or federal taxes.



Now, I could spend a lot of time trying to walk through all the scenarios and how it works, but fortunately, I do not have to do that. Instead, my partner, Douglas Schwartz, has already done all the hard work for me, creating a really helpful matrix that walks through various scenarios that typically occur. Now I’m sure Doug would tell me to tell you that this is not tax advice and that you should seek out a tax professional if you are facing condemnation (and he’d be correct, because every situation is a bit different), but hopefully you will find this helpful – and it really does cover most situations we see. In any event, here is Doug’s matrix:

(1) How are eminent domain payments taxed?	If the proceeds are for then the tax treatment is
	(a) principal or vacation residence	Long-term capital gain if held for more than 1 year (23.8% federal, up to 12.3% California)
	(b) property used for agriculture, investment, or business, and buildings	Long-term capital gain if held for more than 1 year (23.8% federal (28.8% to extent of “recapture” of prior depreciation), up to 12.3% California)
	(c) depreciable other property (fences, orchard trees, <i>etc.</i>)	Ordinary income to extent of “recapture” of prior depreciation (up to 37% federal, 12.3% California)
	(d) annual crops (nuts/ fruit on trees, “in ground”, <i>etc.</i>)	Ordinary income as if owner had harvested and sold the crops (up to 37% federal, 12.3% California)
	(e) relocation expenses	Not taxable
(2) Can I exclude (or at least defer) taxable gains or income in “(1)(a)” through “(1)(d)” above?	(a) In “(1)(a)” above, you may be able to exclude up to \$500,000 of gain for a principal residence (but not a vacation home) depending on how long you occupied it under Internal Revenue Code (“Code”) section 121	
	(b) In “(1)(b)” and “(1)(c)” above, you may be able to defer tax under Code section 1033 if you use the eminent domain proceeds to purchase replacement property used for business or investment, or “similar in use” to the property condemned, within 2 years after the year in which you received the proceeds (though you can ask the IRS for one and perhaps even two 1-year extensions)	

*Case - ROW
continued on page 17*

	(c) In “(1)(a)” or “(1)(d)” above, you may be able to defer tax under Code section 1033 if you use the eminent domain proceeds to purchase property “similar in use” to the property condemned
(3) What if part of my property is condemned, and I receive additional “severance” damages for the diminution in value of the rest?	Under IRS Revenue Ruling 83-49 , you would allocate your “basis” in the overall property (<i>i.e.</i> , original purchase cost, plus additional investment, less depreciation) to the parcel you keep and the parcel you don’t keep based on their relative fair market values; reduce the basis allocated to the property you keep (but not below zero) by the severance damages; and treat any remaining severance damages as gain. You can defer this gain under Code section 1033, under the same principles as in “(2)(b)” and “(2)(c)” above. (Revenue Ruling 83-49 gives an example of how this calculation works.)
(4) Can I keep my lower assessed value for California property tax purposes from the property I lost if I acquire replacement property??	Generally yes, provided you apply to the assessor’s office of the county where your replacement property is located and the replacement property is “similar in size, utility, and function” to the property taken. “[S]imilar in size” for this purpose means that the value of the replacement property is no more than 1.2 times the value of the property taken. For more information see California Board of Equalization (“BOE”) Rule 462.500 and sample BOE Form 68 Claim for Base Year Value Transfer – Acquisition by Public Entity (each county will have its own form)

One thing I did want to note about the matrix is the various references to [Internal Revenue Code section 1033](#). Many of you are likely familiar with the phrase “1031 exchange.” IRS Code Section 1031 is a provision that property investors can utilize to defer tax on the sale of investment property by rolling the sale proceeds into a new investment property. Section 1033 is similar, but it applies specifically in the context of property being acquired by eminent domain or under threat of condemnation, and it includes some differences from Section 1031 that can be favorable to owners, including providing owners with more time to complete the transaction.

Having said that, there are a few situations in which Section 1031 can be more advantageous than Section 1033, and a condemnee is always free to complete a “1031 exchange,” even in the context of a condemnation, if that is more favorable than a “1033 exchange.” Again, this is an area where consulting a qualified tax professional is crucially important, because one misstep can invalidate a 1031/1033 exchange with expensive tax consequences.

Hopefully this clears up most of the common questions concerning the tax implications of an eminent domain proceeding.

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HOW RESPONSIBLE LABOR AND TRADE ISSUES AFFECT THE SOLAR ENERGY INDUSTRY

By Carl A. Valenstein, Esq. Partner and Casey Weaver, Esq., Associate
of Morgan, Lewis & Bockius LLP

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The solar power industry seems to be caught in the crosshairs of competing legislative agendas. The US Inflation Reduction Act (IRA) created incentives to increase solar capacity via tax credits. The Uyghur Forced Labor Prevention Act (UFLPA) creates a rebuttable presumption that any goods that were mined, produced, or manufactured, wholly or in part, in the Xinjiang Uyghur Autonomous Region (XUAR) were made with forced labor, and bars their importation into the United States. More than 90% of the world's ingots and wafers (made from polysilicon) are produced in China, and 80% of solar panels going into both residential and commercial projects in the United States come from abroad. The push for more solar capacity is potentially hindered by supply chain-based trade restrictions, resulting in competing agendas

Forced Labor Legislation

Trade restrictions related to allegations of forced labor have been in play in the United States for some time. Section 307 of the Tariff Act of 1930 (19 USC § 1307) expanded that prohibition to include the importation of merchandise mined, produced, or manufactured, wholly or in part, by forced labor, including forced or indentured child labor. Merchandise procured by such labor is subject to exclusion from the US and seizure upon attempted entry into the US, and may lead to criminal investigation.

Forced labor concerns are not restricted to one country, though imports from China have been a target of Section 307 enforcement since the 1990s, with renewed emphasis beginning in 2016. The United States has specifically accused China of using forced labor against the Uyghur Muslim minority in the XUAR. In 2021, US Customs and Border Protection (CBP) issued a withhold release order (WRO) against Hoshine Silicon Industry Co. Ltd., a major supplier of polysilicon from XUAR, for using forced labor in its product. The Chinese government strongly opposes and categorically denies the XUAR forced labor accusations and has vowed to respond strongly to the enforcement of the UFLPA, which took effect in June 2022.

Impact of UFLPA on Solar Imports

Eliminating forced labor in the solar supply chain has been a critical focus for the industry as led by Solar Energy Industry Association (SEIA). The solar industry has proactively implemented tracing protocols to keep forced labor out of the supply chain, and is now seemingly the first industry to feel the effects of enforcement of the UFLPA.

According to a January 2023 Axios report, CBP officials have seized around \$1.3 billion worth of imports since the UFLPA went into effect in June 2022, the majority of which were solar panels. The president of SEIA said in a statement that many of the IRA's intended benefits are being undermined by legislation on forced labor and other trade issues. A SEIA report co-authored with Wood Mackenzie states that the United States saw a 17% decrease in additional solar capacity from the same quarter in 2021. The report attributes the decrease to trade barriers and ongoing supply chain constraints.

Commerce Investigation Complicates Trade Issues

An additional trade issue that impacted the solar industry in 2022 was the US Department of Commerce (Commerce) investigation into whether suppliers from four countries in Southeast Asia, some of which are using Chinese wafers, are circumventing antidumping and countervailing duty (AD/CVD) orders on certain Chinese-origin imports.

Following a 2012 investigation, Commerce issued AD/CVD Orders A-570-979 and C-570-980 (see 77 Fed. Reg. 73017-18) (the Orders), which cover crystalline silicon photovoltaic (CSPV) cells, and modules, laminates, and panels consisting of CSPV cells, whether or not they are partially or fully assembled into other products, including, but not limited to, modules, laminates, panels and building integrated materials from China.

On February 8, 2022, Auxin Solar, a US solar panel manufacturer, petitioned Commerce, alleging that manufacturers in Cambodia, Malaysia, Thailand, and Vietnam are circumventing the Orders. Commerce issued a notice on April 1, 2022, that it would be opening a country-wide circumvention investigation. At the same time, the United States has been enacting various trade measures to support increased renewable energy efforts, including by expanding and

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unburdening importation of solar panels and modules.

On June 6, 2022, President Biden issued Proclamation 10414 declaring an emergency under Section 318(a) of the Tariff Act of 1930 with respect to the threat to the availability of sufficient electricity generation capacity to meet expected customer demand and specifically related to imports of solar cells and modules from Southeast Asia.

On September 16, 2022, Commerce published a final rule to implement Biden's Proclamation, directing CBP to discontinue the suspension of liquidation and collection of cash deposits based on the circumvention inquiry.

On December 8, 2022, Commerce issued its preliminary determination that imports of certain CSPV cells exported from Cambodia, Malaysia, Thailand, or Vietnam using parts and components produced in China are circumventing the AD/CVD orders on solar cells and modules from China. The circumvention inquiry covers the following:

- CSPV cells, whether or not partially or fully assembled into other products, that were produced in Cambodia, Malaysia, Thailand, or Vietnam from wafers produced in China
- Modules, laminates, and panels consisting of CSPV cells, whether or not partially or fully assembled into other products, that were produced in Cambodia, Malaysia, Thailand, or Vietnam from wafers produced in China and where three or more of the following components in the module/laminate/panel were produced in China: silver paste; aluminum frames; glass; backsheets; ethylene vinyl acetate sheets; and junction boxes

Wafers produced outside of China with polysilicon sourced from China are not considered to be wafers produced in China for purposes of this circumvention inquiry. Commerce issued a negative circumvention determination for the four entities listed in the preliminary determination, finding that they are not circumventing the Orders. Commerce has since clarified that exports from third-party countries such as India and Korea are not covered in the anti-circumvention inquiry or under the Orders even if they include Chinese inputs.

Despite the moratorium, Commerce has now directed CBP to suspend liquidation and collect cash deposits of AD/CVD based on the affirmative preliminary determination for imports that are not entered or withdrawn from warehouse for consumption in the US before the Date of Termination (currently June 6, 2024) and for entries that entered after November 15, 2022 and are used or installed in the United States by the Utilization Expiration Date (currently December 3, 2024). The deadline for use in the United States is intended to prevent stockpiling of imported solar cells and modules.

Commerce's final determination is scheduled to be issued May 1, 2023.

What to Watch

The issue of forced labor prevention continues to have bipartisan support of the focus on competition with China. We expect to see oversight hearings and other forms of scrutiny in 2023 to explore the effectiveness of the enforcement of the UFLPA.

Solar purchasers and developers need to conduct due diligence on foreign suppliers' tracing programs, though there are significant challenges with tracing the supply of polysilicon within China. Consequently, many foreign suppliers are trying to allocate or share risk with purchasers/developers through incoterms, specific contractual import responsibilities, and the ability to adjust purchase order pricing based on trade developments with an eye on Commerce's circumvention inquiry.

Developers and lenders will see forced labor provisions in supply contracts as well as power purchase agreements trying to allocate risk among the parties. Lenders will see similar provisions in business transactions, including a push for representations that imported merchandise has not been procured by forced labor.

Commerce's final determination, expected in May 2023, will have implications for solar panels imported from Cambodia, Malaysia, Thailand, or Vietnam, particularly after expiration of the moratorium, expected in June 2024. In the interim, importers and exporters must file the required certifications or be subject to the suspension of liquidation and collection of cash deposits on imports of subject merchandise.

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Guest Article - Attacks on Gas Stoves

THOSE ATTACKS ON GAS STOVES AREN'T REALLY ABOUT HEALTH

By Steve Goreham, MS, MBA

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Ed. Note: Mr. Goreham is the Executive Director of the Climate Science Coalition of America, a non-political association of scientists, engineers, and citizens dedicated to informing Americans about the realities of climate science and energy economics

Earlier this month, the Consumer Product Safety Commission (CPSC) announced that indoor gas stoves emitted harmful pollution. Several studies claim that the use of gas can cause respiratory illness. The CPSC is considering restrictions on gas stoves, including possible bans in new residential construction. But attacks on gas stoves are based on questionable science and are largely driven by concerns not related to health.

The CPSC has reportedly been considering actions [cnn.com] on gas stoves since October. Richard Trumpka, Jr., a CPSC commissioner, stated [stltoday.com] “This is a hidden hazard. Any option is on the table. Products that can’t be made safe can be banned.” Two recent studies figure prominently in agency concerns. The first, published in January last year by Eric Lebel and others, found [pubs.acs.org] that gas stoves and ovens emit hazardous levels of methane and nitrogen dioxide (NO₂). The second, published in December last year by Talor Gruenwald and others, estimated [mdpi.com] that 12.7 percent of childhood asthma cases in the US were due to gas stove use.

Nitrous oxide (NO) is produced at combustion temperatures above 1,600°C by breaking down nitrogen molecules in air. Modern stove burner flames reach temperatures above 1,600°C, producing NO. The nitrous oxide then combines with oxygen to form nitrogen dioxide, a pollutant. But the amount of NO₂ generated by stoves is very small, only parts per billion (ppb) levels.

The Lebel study measured nitrogen dioxide levels of 100 ppb in kitchens, but this was after sealing the room in plastic—an unrealistic artificial condition. Other studies find [coeh.ph.ucla.edu] NO₂ levels to be as high as 34 ppb after several hours of stove and oven use. This level is below the 53 ppb limit of the National Ambient Air Quality Standard of the Environmental Protection Agency. The EPA states [airnow.gov] that, for NO₂ levels below 50 ppb, “No health impacts are expected for air quality in this range.” Most studies [stevegoreham.com] do not find hazardous levels of NO₂ from stove use.

Nevertheless, the Gruenwald study claims that nitrogen dioxide from gas stoves is linked to asthma in children. It used [mdpi.com] statistical analysis to find an association between stoves and childhood asthma in the US. But the study itself states that it reviewed 27 other studies connected to gas stoves and none reported “associations between gas stove use and childhood asthma.” In addition, the Centers for Disease Control reports [cdc.gov] that asthma attacks and asthma hospitalizations for US children have been declining since 2001, while US natural gas consumption rose [view.officeapps.live.com] 38 percent over the same period.

Could it be that health concerns about gas stoves are a proxy for a larger issue? For more than a decade, environmentalists have promoted “electrification” of homes. Historically, the term “electrification” meant extending the electrical grid to rural areas and homes without electricity. But the renewable energy movement redefined electrification to mean electrify everything. As they see it, electrification of homes means replacement of gas stoves, furnaces, water heaters, and even propane grills with electric appliances. They say this is needed to reduce greenhouse gas emissions and solve the problem of human-caused climate change.

Talor Gruenwald, the lead author of the study on childhood asthma in the US, is employed by the Rocky Mountain Institute, which also funded the study. For three decades, the institute has been working on programs to counter global warming. Eric Lebel is a researcher at Stanford University, with articles on methane emissions from oil and gas wells, gas water heaters, and gas stoves. His goal appears to be to counter global warming through electrification of homes by claiming harmful health effects from gas appliances.

Netherlands and the United Kingdom now urge their residents to replace gas appliances with electric appliances and heat pumps as part of programs to reach net-zero emissions. These policies were adopted even though 92 percent of homes in Netherlands use gas heat and 78 percent of homes in the UK use gas. The Netherlands aims to disconnect gas lines from eight million homes by 2050.

An electrification battle rages in the United States. Cities in seven states—California, Colorado, Massachusetts,

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New York, Oregon, Vermont, and Washington—have established [instituteeforenergyresearch.org] bans on gas appliances in new construction. But in opposition, 19 other states recently enacted [spglobal.com] laws preventing local governments from banning natural gas and propane, or “impairing a consumer’s ability to choose a utility service.” Another four states have proposed legislation that would prohibit bans by local governments.

Residents pay significantly more in utility bills with electric appliances. For example, in 2020 the average price [eia.gov] of residential natural gas in California was \$14.14 per million British Thermal Units (Btu). For a new 95-percent-efficiency natural-gas furnace or water heater, this translates to a cost of just under \$13 per million Btu. California’s 2020 residential electricity price was 20.51 cents per kWh, or a cost of \$60.11 per million Btu. California residents can pay over four times as much to operate electric stoves, water heaters, or electric baseboard heat, compared to gas appliances.

Banning gas stoves will raise homeowner costs and reduce choices, without a tangible improvement in health. On November 6, Virginia’s State Corporation Commission (SCC) regulatory agency approved a project to construct wind turbines near Virginia Beach. The plan calls for construction of turbines 27 miles off the coast, to begin operation by the end of 2020. Virginia electricity rate-payers will pay the exorbitant costs of this project.

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Bibikos' At the Well Weekly Round-up

BIBIKOS' AT THE WELL WEEKLY ROUND-UP

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Mr. Bibikos practices as GA Bibikos, LLC, an oil and gas law practice, with his office in Harrisburg, PA. He can be reached at gbibikos@gabibikos.com.

Below are various oil and gas cases recited in his blog site [gabibikos.com] *At the Well Weekly* which may be of interest for your further inquiry.

Interesting

- **Mountain Valley Pipeline.** Environmental groups asked the Fourth Circuit during oral arguments Tuesday to toss a key water permit for the Mountain Valley Pipeline, which would lead to even more delays for the \$6.2 billion project that developers aim to resume constructing this summer.

Meanwhile, Senate Energy and Natural Resources Chair Joe Manchin (D-W.Va.) and House Natural Resources Chair Bruce Westerman (R-Ark.) are discussing the path forward for the stalled permitting reform effort that would help the MVP project.

Headlines & Holdings – Appalachia

- **Ohio Court Upholds Depth Severance and Bad Faith Trespass Damages.** A court of appeals in Ohio held that a lessor reserved rights to all formations below the “formation commonly known as the Utica” and should receive damages for bad-faith trespass (value of gas produced without any offset for production expenses) against a well operator producing from the Point Pleasant interval, rejecting the operator’s argument that the Point Pleasant interval is part of the formation commonly known as the Utica for purposes of the depth severance. *Tera LLC v. Rice Drilling D LLC*, --- N.E.3d ----, No. 21 BE 0047, 2023 WL 1117966 (Ohio Ct. App. January 18, 2023).
- **Federal Court in Ohio Says “Injectate” Trespass and Conversion Claims Survive Despite Rule of Capture.** A federal court in Ohio held that, despite the rule of capture, the owner of the Point Pleasant interval below the base of the Utica Shale stated a claim for conversion based on the defendant company’s production activities in the overlying Utica shale, reasoning that the plaintiff stated enough facts that the operator of the overlying Utica formation used hydraulic fracturing to physically invade and drain the Point Pleasant and thereby converted gas to its own use. The court rejected a wellbore (slant hole) trespass claim and a related claim that merely pooling the property to produce the Marcellus and Utica, without more, is enough to constitute a trespass into the deeper Point Pleasant interval. However, the court gave the plaintiff leave to amend to state what it called an “injectate” trespass claim – i.e., one based on actually injecting proppants or fluids into the Point Pleasant. *Golden Eagle Resources II, LLC v. Rice Drilling D, LLC*, --- F. Supp. 3d ----, No. 2:22-CV-02374, 2023 WL 1927799 (S.D. Ohio Feb. 10, 2023).
- **Federal Court in PA Upholds PA Statute and O+G Lease in Challenge to Cross-Unit Wells.** A federal court in Pennsylvania upheld a PA statute known as Act 85, which authorizes the use of cross-unit drilling subject to reasonable allocation of production among the units traversed by a horizontal well as long as the lease does not prohibit the practice, concluding that the statute did not violate the Contracts Clause and further holding that various clauses in the lease support the use of cross-unit wells for purposes of exploring and producing oil and gas from multiple units. *Warner Valley Farm, LLC v. SWN Production Company, LLC*, --- F. Supp. 3d ----, No. 4:21-CV-01079, 2023 WL 373237 (M.D. Pa. Jan. 24, 2023).
- **Federal Court in PA Addresses Affiliates, Kilmer in O+G Royalty Class Action.** In a royalty class action, a federal court in Pennsylvania relied on the Pennsylvania Supreme Court’s decision in *Kilmer* and held that royalties payable on the value of gas sales to an unaffiliated third party at the well complied with a no-deducts lease despite contentions from royalty owners that the buyer paid their lessee the net value of gas sold downstream after deducting post-production costs. *Slamon v. Carizzo (Marcellus) LLC*, --- F. Supp. 3d ----, No. 3:16-CV-2187, 2023 WL 1806814 (M.D. Pa. Feb. 7, 2023).

Headlines & Holdings - Beyond Appalachia

- **Tenth Circuit Sends Back O+G Permits for Mancos Shale Operations.** The Tenth Circuit held that DOI failed to adequately examine climate change and air pollution impacts before approving oil and gas well permits in New Mexico’s Mancos Shale formation and barred the agency from issuing new permits based on its flawed analysis. *Dine Citizens Against Ruining Our Env’t v. Haaland*, No. 21-2116, 2023 WL 1430620 (10th Cir. Feb. 1, 2023).
- **Federal Court in North Dakota Declines Statutory Late Fee for Unpaid Overriding Royalties.** Interpreting a state statute providing for an 18% interest payment to mineral owners or their assignee on unpaid royalties, a federal court in North Dakota held that the statute does not apply to unpaid overriding royalty payments, reasoning that an override is not an ownership interest in the minerals themselves but a carveout of a working interest in a lease. *Sandy River Res., LLC v. Hess Bakken Invs. II, LLC*, --- F. Supp. 3d ----, No. 1:22-CV-108, 2023 WL 1801958 (D.N.D. Feb. 7, 2023).
- **Eighth Circuit Rejects Claim for Surface and Pore Space Damages.** The Eighth Circuit rejected claims that driving trucks across surface areas pursuant to pipeline agreements in connection with oil and gas

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BakerHostetler

CCUS Regulatory Handbook





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About the Author

Tom Donaho focuses his practice on complex commercial and business litigation. He has experience representing energy clients in a wide range of contract matters, business torts and real estate disputes. Tom also serves as policy lead and subject matter expert with respect to carbon capture, utilization and sequestration (CCUS) law. In that role, Tom regularly presents and publishes on emerging issues relating to CCUS regulations and incentives.

Tom also has significant experience advising and assisting clients with respect to risk management and compliance issues. As a subject matter expert on indemnity and insurance, Tom is relied upon by clients across the country to develop contracts that serve risk allocation needs through indemnity and insurance protections.



BakerHostetler's CCUS Capabilities

Energy

Members of BakerHostetler's Energy team, recognized as Energy Group of the Year by *Law360*, have extensive experience working with clients to craft comprehensive contracts for complex multi-party energy projects. The BakerHostetler Energy Team regularly drafts and reviews all manner of energy-related agreements, including master service agreements, farmout agreements, onshore and offshore drilling contracts, construction agreements, pipeline lease agreements, and other oil field service contracts.

Tax and Finance

The newly passed Inflation Reduction Act of 2022 is poised to transform the CCUS industry through significant tax credits and benefits, including through enhancements to Section 45Q of the Internal Revenue Code. BakerHostetler's Tax Group can help CCUS stakeholders navigate application for Section 45Q tax credits and other incentive programs available through state and federal legislation. Clients regularly rely on BakerHostetler's tax group in structuring tax-efficient transactions and arranging business operations to minimize compliance burdens and optimize tax synergies. Additionally, BakerHostetler's multidisciplinary Tax Credit Finance and Economic Development Incentives team provides vital assistance to clients nationwide looking to obtain nontraditional financing for their projects.

Environment

As the regulatory environment surrounding a rapidly expanding CCUS industry evolves, compliance with environmental regulations and risk management will remain paramount for CCUS project stakeholders. BakerHostetler's Environmental team, which has been recognized as national Practice Group of the Year by *Law360*, has experience on all issues relating to carbon capture and sequestration. From counseling on Class IV well applications to federal regulatory schemes, BakerHostetler has a deep bench of experts who can be relied upon at every step of the project development cycle.

Federal Policy

The CCUS industry is in its nascent stages and subject to new regulation on a yearly basis. Stakeholders in CCUS projects need to keep abreast of state and federal legislation that can materially impact developing projects. BakerHostetler's Federal Policy team is a leading provider of federal government affairs consulting and lobbying services. Our team includes two former members of Congress – one Republican, one Democrat – as well as former senior congressional and committee staff and former executive branch officials. Global corporations and startup firms alike turn to us because we provide clients with careful, competent counsel and because of our solid record of accomplishment advocating to shape policy outcomes on Capitol Hill and in the Biden administration.



I. Introduction

Carbon capture, utilization and storage (CCUS) is primed to play a crucial role in setting the global energy system on a path to net zero. Indeed, CCUS offers one of the few proven tools capable of reducing emissions in the carbon-heavy manufacturing and heavy industry sectors of the economy. As a result, the United States has endeavored to incentivize investment in large-scale CCUS projects through substantial financial incentives such as the 45Q tax credit. More recently, the Biden administration and Congress have taken steps to promote the deployment of CCUS technology through the Infrastructure Investment and Jobs Act, which allocates billions of dollars for the industry, and the Inflation Reduction Act of 2022, which further enhances the 45Q tax credit.

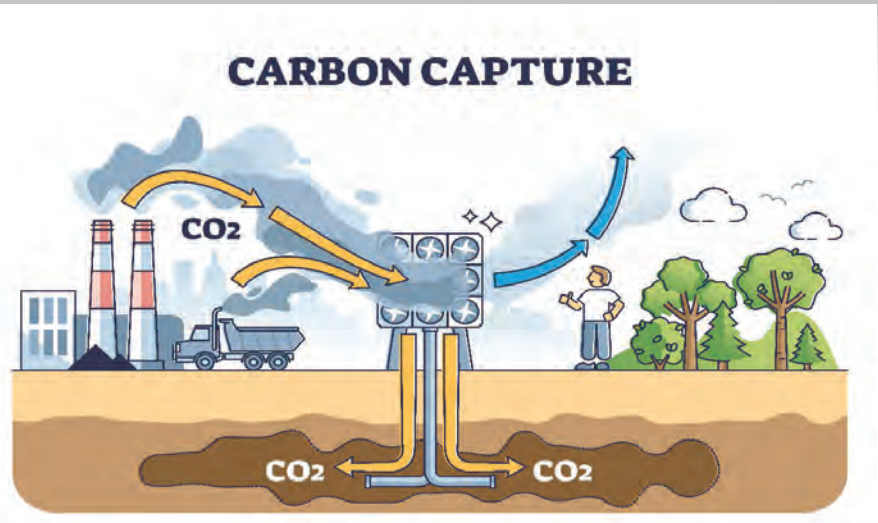
However, successful deployment of CCUS relies on the establishment of regulatory and legal frameworks that both ensure the safe deployment of CCUS technology and provide security to potential project stakeholders. As such, both the federal government and state legislatures have mobilized to create regulatory environments that incentivize deployment of capital to CCUS projects. For example, the Council on Environmental Quality (CEQ) recently issued new guidance on the responsible deployment of CCUS technologies and formed a task force to provide recommendations to the federal government on how to ensure that CCUS projects, such as carbon dioxide (CO₂) pipelines, are permitted in an efficient manner, reflect the input and needs of a wide range of stakeholders, and deliver benefits rather than harm to local communities. Additionally, numerous states have passed comprehensive CCUS legislation designed to address areas of regulatory and legal uncertainty, including CO₂ ownership, long-term liability, unitization, pore space ownership and mineral rights primacy.

This *CCUS Regulatory Handbook* is intended to serve as a resource for both CCUS project stakeholders and policymakers in navigating the rapidly-changing regulatory environment around CCUS activities.

II. CCUS Summary

What is Carbon Capture Utilization and Sequestration?

Carbon Capture Utilization and Sequestration (CCUS) is a collective



term used to describe methods and technologies employed to capture CO₂ emissions from industrial and energy-related sources and either store it permanently or utilize it. CO₂ capture and storage technology has been employed for decades to separate marketable gases during the course of industrial processes, including as an integral part of oil and gas operations. Once separated from other gases, CO₂ can be compressed, transported through pipelines or by trucks, and injected into porous rock formations for permanent storage. Emerging technologies and research suggest that CO₂ can also be stored in deep saline aquifers and in the ocean through direct release into an ocean water column or onto the deep seafloor.

However, underground sequestration of captured CO₂ is by no means the only option. Once CO₂ is captured, the opportunities for utilization are myriad. Captured CO₂ can be repurposed or converted for the creation of biological products, plastics, refrigerants, carbonated beverages, fertilizer, agricultural products, nutraceuticals, cosmetics, biofuels, and a wide variety of chemicals. In addition to using captured CO₂ for the creation of commercial products and commodities, captured CO₂ can also be recycled for use in the course of oil, gas, and ethanol production.

How Does Industrial Carbon Capture Work?

The most costly segment of a carbon capture and storage project is the development of carbon-capture infrastructure, which can account for up to 75 percent of project cost.¹ Although carbon-capture technology is changing every day, there are presently three primary methodologies for capturing carbon from large industrial

¹ National Petroleum Council (NPC), *Meeting the Dual Challenge: A Roadmap to At-Scale Deployment of Carbon Capture, Use, and Storage*, Chapter 5, July 17, 2020.



facilities: (1) post-combustion capture, (2) pre-combustion capture and (3) oxy-fuel combustion capture.²

The process of post-combustion capture involves extracting CO₂ from flue gas – the mix of gases produced that goes up the exhaust stack – following combustion of fossil fuels or biomass. Several technologies, some involving absorption using chemical solvents, can be used to capture large quantities of CO₂ from flue gases.³ The process of pre-combustion capture separates CO₂ from fuel by combining the fuel with air and/or steam to produce hydrogen for combustion and a separate CO₂ stream that can be stored.⁴ The process of oxy-fuel combustion capture uses pure oxygen instead of air for combustion and produces a flue gas that is mostly CO₂ and water, which are easily separable.⁵

What is Direct Air Capture?

Some of the most promising emerging technologies in carbon capture allow CO₂ to be captured directly from the atmosphere. Direct Air Capture (DAC) is a technology that uses chemical reactions to pull CO₂ from the atmosphere. When atmospheric air moves over or through the chemicals, the chemicals react with and trap CO₂, while allowing the other components of the air to pass through. Most DAC systems today utilize either liquid solvents or solid sorbents. Once CO₂ is captured from the atmosphere, DAC systems typically apply heat to release the CO₂ from the solution or sorbent so that they can be reused in the process. The captured CO₂ can then be injected underground for sequestration in geologic formations or used in various products or applications. This method of carbon capture is currently the most expensive, though costs of implementation are expected to decrease significantly with technological advances.

How is CO₂ Transported?

After CO₂ is captured, the gas is purified and compressed for transportation. Transport of CO₂ occurs daily throughout the United States, though transportation infrastructure remains limited. Pipelines are the most common method for transportation of CO₂ in the United States and will likely remain so into the foreseeable future. Currently, there are thousands of miles of CO₂ pipelines in the United States, though many of those pipelines terminate at oil fields. Transporting CO₂ via pipeline is similar to transporting natural gas and oil in that monitoring and protection against compromise due to overpressure is required.

² CRS R44902, *Carbon Capture and Sequestration (CCS) in the United States*, Oct. 18, 2021, pgs. 4-6..

³ Id.

⁴ Id. at 5.

⁵ Id. at 6.

Although there currently exist regional pipeline structures capable of transporting CO₂, the scale of pipeline infrastructure needed to support long-term CCUS deployment throughout the United States is significant. Transport of CO₂ by truck, rail, and ship is also possible for smaller quantities of CO₂. However, these methods of transportation can cost almost twice as much as transportation by pipeline.

Where Can CO₂ be Stored?

There are presently three types of geological formations commonly considered for underground sequestration: (1) depleted oil and natural gas reservoirs, (2) deep saline reservoirs, and (3) unmineable coal seams. CO₂ must be injected into porous rock formations in a supercritical state. Injection usually occurs into reservoirs usually occurs at depths greater than 800 meters. Capacity for CO₂ storage in the United States is significant. The Department of Energy (DOE) has estimated the total storage capacity ranges between about 2.6 trillion and 22 trillion tons of CO₂.


Estimates of the U.S. Storage Capacity for CO ₂ (in billions of metric tons) ⁶			
	Low	Medium	High
Oil and Natural Gas Reservoirs	186	205	232
Unmineable Coal	54	80	113
Saline Formations	2,379	8,328	21,633
Total	2,619	8,613	21,978

Proliferation of CCUS Projects and Regulatory Schemes

There are nearly 100 commercial CCUS facilities in development or operation within the United States and more than 200 worldwide.⁶ This represents a marked increase over the past 10 years. Much of the increased commercial commitment to CCUS derives from the 2015 Paris Agreement and resulting national commitments to develop CCUS-supportive policies in furtherance of climate change goals. To that end, the United States federal government and various states have developed both financial incentives and regulatory frameworks to facilitate the development of CCUS projects.

This *Carbon Capture Regulatory Handbook* is intended to serve

⁶ Global CCS Institute, *Facilities Database*; See Index 1; Global CCS Institute 2022 Status Report: <https://status22.globalccsinstitute.com/2022-status-report/global-status-of-ccs/>



as a resource for individuals and entities in the industry seeking updated information on a rapidly changing regulatory landscape.

III. Regulatory and Permitting Framework

CCUS projects are diverse, often combining several complex undertakings such as capture, transport and storage. Therefore, generalizing about permitting and regulatory interactions is difficult. The precise complement of permits and reviews necessary for any given project will be specific to the details of that project. Still, in most cases, numerous private, local, state, Tribal, and/or federal agencies will be involved in responding to authorizing requests for CCUS projects.

Federal Regulatory and Permitting Framework

Deployment of carbon-capture technology requires standards that both provide regulatory certainty for project stakeholders and protect the public health and environment. A much-needed regulatory framework is beginning to take shape in the United States through a combination of preexisting regulatory schemes and newly enacted review processes.

The Environmental Protection Agency (EPA) has a regulatory framework that was finalized in 2010 under the authorities of the Safe Drinking Water Act (SDWA) and the Clean Air Act (CAA) that regulates underground injection control (UIC) programs and ensures the long-term, safe geologic sequestration of CO₂. The EPA also provides guidance to support state program implementation of UIC programs.⁷ This includes minimum requirements for state UIC programs and permitting for injection wells. These requirements include standards for well construction, operation and maintenance, monitoring and testing, reporting and recordkeeping, site closure, financial responsibility, and post-injection site care. The EPA has issued regulations for six classes of underground injection wells based on type and depth of fluids injected and potential for endangerment of underground sources of drinking water (USDWs). Class II wells are used to inject fluids relating to oil and gas operations, including with respect to the injection of CO₂ for enhanced oil recovery (EOR), while Class VI wells are used for the express purpose of injecting CO₂ for geologic sequestration. However, Class II EOR wells may subsequently be permitted as Class VI wells in certain circumstances, including where there exists increased risk to USDWs.

The Consolidated Appropriations Act, enacted in December 2020, allows CCUS projects to be designated as covered projects under Title 41 of the Fixing America's Surface Transportation (FAST)

⁷ 40 C.F.R. §§144-147.

Act – a statutory program designed to improve the timeliness, predictability and transparency of the federal environmental review and authorization process for select infrastructure projects. As such, projects for the development of CCUS project infrastructure, including construction of any facility, technology, or system that captures, utilizes, or sequesters CO₂ emissions, are now covered under FAST-41. FAST-41 covered projects are subject to coordinated federal agency review and permitting supervised by the Federal Permitting Improvement Steering Council.

Additionally, the Utilizing Significant Emissions with Innovative Technologies (USE IT) Act, included in H.R. 133 (116th Congress), directs the chair of the CEQ to prepare a report on CCUS, with a particular focus on identifying and inventorying existing permitting requirements, including best practices to advance the efficient, orderly, and responsible development of CCUS projects at increased scale.⁸ Pursuant to this directive, the CEQ drafted a report with input from the EPA, the DOE, the Department of the Interior (DOI), the Department of Transportation (DOT), the Federal Permitting Improvement Steering Council (Permitting Council), and other relevant agencies, containing an inventory of existing federal statutes and regulations that could potentially apply to a CCUS project (including CO₂ pipelines).

That report, issued on June 21, 2021, and titled “Council on Environmental Quality Report to Congress on Carbon Capture, Utilization, and Sequestration,” identifies numerous permits and/or actions that may be required for the development of a CCUS project, including:⁹

- Clean Air Act New Source Review preconstruction permit (EPA)
- Clean Air Act Title V operating permit (EPA)
- Underground Injection Control (UIC) Permit (EPA) (Class II for CO₂-EOR and Class VI for geologic sequestration)
- National Pollutant Discharge Elimination System (NPDES) for water discharge (EPA)
- Marine Protection, Research and Sanctuaries Act (MPRSA) permit for marine environs (EPA)
- Outer Continental Shelf Lands Act (OCSLA) permit
- Environmental Assessment (EA) or Environmental Impact Statement (EIS) under the National Environmental Policy Act
- Permit for right of way through federal lands from secretary of governing agency
- Consultations with Fish and Wildlife Service pursuant to Endangered Species Act (ESA)

⁸ Council on Environmental Quality Report to Congress on Carbon Capture, Utilization, and Sequestration.

⁹ *Id.*, at pgs. 32-33.



- Compliance with National Historic Preservation Act (NHPA)
- Compliance with Mineral Leasing Act (MLA) for geologic sequestration
- Compliance with Pipeline and Hazardous Materials Safety Administration (PHMSA)

A more complete inventory of potentially relevant federal permits and reviews for CCUS projects, adapted from the 2021 CEQ Report, can be found at Table 1.

State Regulatory and Permitting Framework

In addition to federal permits and permissions, parties seeking to deploy CCUS projects throughout the United States must also navigate an ever-changing landscape of state regulations and laws. With the industry in its relative infancy, states are just beginning to plan for and implement the kind of comprehensive regulatory frameworks necessary to eliminate the environment of regulatory uncertainty that causes CCUS projects to be delayed or canceled. State laws and regulations concern a wide variety of issues, ranging from liability to property rights to primacy. This section will generally discuss the types of CCUS-related issues state legislatures are addressing across the country and provide an overview of relevant laws and regulations on a state-by-state basis.¹⁰

1. Liability and Financial Responsibility

One of the principal questions confronting the private sector, including potential sources of equity, is what parties or governmental entities are ultimately responsible for managing short-term and long-term environmental, health and safety risks associated with injecting billions of tons of CO₂ into the ground. The storage of CO₂ in the subsurface raises issues of potential liability should there occur a loss of CO₂ containment and subsequent harm to human health, private property, or the environment. Loss of containment may manifest in several ways, including through migration of CO₂ within the subsurface or leakage to the surface, and result in toxicological effects, environmental effects, or even induced seismicity. However, one complicating factor in constructing a statutory liability scheme to account for these potential damages is the long tail of a CCUS project. Put simply, the lifetime of private firms is much shorter than the period necessary to ensure public and environmental health protection from CCUS projects. As such, state legislators have sought to develop institutional structures that balance the need to protect against risks inherent to CCUS projects over a long period of time with the desire to support and encourage investment in CCUS projects in furtherance of climate goals. If liability is borne

¹⁰ Although many states have established minimum requirements for obtaining a permit to drill and/or establish a geologic storage facility, those requirements vary substantially by state and are not detailed in this handbook. Please contact the author if you require more information.

entirely by the private sector, the potential exposure would likely preclude widespread deployment of CCUS projects. However, if the public sector bears the brunt of financial responsibility for future leakage, operators will lack the appropriate incentives to take necessary precautions during active operations and post-closure remediation.

Many states have attempted to strike the appropriate balance by enacting liability and financial responsibility regulations. While the laws differ, each generally directs the state to assume post-closure care and long-term stewardship responsibilities for CCUS projects once they have been shut down and the operator has demonstrated that the carbon injected has been stored safely for a specific period of time. In some instances, the state has agreed to eventually take on full ownership and long-term liability after a minimum number of years have passed.

State	Minimum Number of Years Before Transfer of Liability	Statute
Montana	50 ¹¹	Mont. Code Ann. §82-11-183(3)(f)
Wyoming	20	Wyo. Stat. Ann. §35-11-319(b)
North Dakota	10	N.D. Cent. Code §38-22-17(4)
West Virginia	10	W. Va. Code §22-11B-12
Louisiana	10	La. Stat. Ann. §30:1109
California	100	Ca. Pub. Res. Code §71464
Utah	10	Utah Code §40-11-16

However, not all states are willing to accept long-term liability. Kansas, for example, has passed legislation explicitly stating that the state will not assume liability or responsibility to pay any damages resulting from the leak or discharge of CO₂ from any CO₂ injection well or the underground storage of CO₂.

2. CO₂ Ownership

One way in which states have delineated liability is by explicitly providing that the operator maintains ownership over injected CO₂ for a defined period of time and thus maintains all attendant liability exposure through said ownership interest. A transfer in liability is

¹¹ The EPA's UIC Class VI Financial Responsibility guidelines state that the post-injection site care and closure stages should last 50 years unless an alternative time frame has been approved by the UIC program director.



often concurrent with a transfer to the state of ownership rights in CO₂ injected into the subsurface. Most states that have passed comprehensive CCUS legislation, including, for example, Montana, Wyoming, and North Dakota, have specific statutory provisions that govern CO₂ ownership over time.

3. Pore Space Ownership

The sequestration of CO₂ in subsurface geological formations presents a relatively unsettled and unexplored property law issue – pore space ownership. Pore space refers to space in underground geological formations that may serve as storage reservoirs for water, natural gases and minerals, including CO₂. These underground spaces are often permeable, naturally occurring formations or underground caverns from which minerals have previously been withdrawn. The DOE has developed a Carbon Storage Atlas, whose primary purpose is to provide information on CO₂ storage potential throughout the United States.¹² The most recent atlas, published in 2015, estimates 2.618 billion metric tons to 21.978 billion metric tons in available pore space suitable for sequestration. These figures suggest that the potential for geological sequestration of CO₂ in the United States is significant and that the primary resource is widely available. But who owns these potentially valuable pore spaces? Many states follow the “American Rule” of ownership, which provides that the mineral estate holder maintains ownership interest in only underground mineral resources and not underground geological formations. Other states have adopted the “English Rule,” which extends the mineral estate ownership interest to underground pore spaces. Still other states have conflicting case law that provide mineral estate owners little guidance. When federal or state ownership is implicated, the issue is complicated further by the Stock-Raising Homestead Act (SRHA) of 1916, which expressly reserves mineral rights for the federal government for more than 50 million acres across the Western United States. However, the application of SRHA to subsurface pore spaces on federal lands is an open question.

Several Western states (e.g., Wyoming, North Dakota, and Montana) have sought to resolve confusion over pore space ownership, and potentially circumvent SRHA, by passing legislation that endorses the American Rule and vests ownership of pore space in the owner of the surface estate. However, for most states, the question of pore space ownership remains a muddle of common law, prescriptive easements, and potential federal preemption. In the absence of regulatory clarity, parties are often left to contract around pore space ownership. However, large-scale deployment of CCUS throughout the United States will require additional state legislatures to step into the regulatory void and provide certainty to project

¹² <https://www.netl.doe.gov/sites/default/files/2018-10/ATLAS-V-2015.pdf>

investors and stakeholders. Some states are doing so.

4. Unitization

States across the nation have declared it to be in the public interest to support and facilitate sequestration of captured CO₂. However, CCUS project stakeholders face a property-rights issue familiar to the oil and gas industry – what happens when property owners don’t consent to the use of their property? In the context of oil and gas exploration and development, unitization is an essential tool. The term “unitization” historically refers to the combination of separately owned mineral or leasehold interests related to a common source such as a reservoir or field to create a joint operation to maximize production and reduce costs of operation. Many states rich in hydrocarbons have passed legislation relating to unitization or can otherwise rely on a body of common law that governs the practice. In the CCUS context, the development of a geologic storage facility often requires the consent of numerous pore space owners. However, unanimous consent is often difficult to obtain. As a result, numerous states have passed legislation establishing a minimum percentage of pore space owners that must consent to a storage project before it is permitted and allowed to proceed. For example, in Montana and North Dakota, at least 60 percent of the owners of the pore space must consent to the CCUS project, while in Wyoming, at least 80 percent of pore space owners must consent to the CCUS project before it can proceed. Other states, such as Indiana, require that an operator obtain the consent of the owners of the pore space underlying a minimum percentage of the surface area above the proposed storage facility. Some states have also provided specific guidelines on compensation for nonconsenting pore space owners.

5. Storage Funds

One way in which states have attempted to ensure that private industry shoulders the financial burden of long-term management and monitoring for CCUS projects is through the creation of “storage funds.” Legislation establishing these funds often earmarks funds from the CCUS project itself, including through project application fees, permitting or operating fees, well closure fees, or even a designated contribution amount per metric ton of CO₂ injected. For example, in 2009, Texas instituted the Anthropogenic Carbon Dioxide Storage Trust Fund, an interest-bearing fund that may be used for any of the following:

- Permitting, inspecting, monitoring, investigating, recording, and reporting on geologic storage facilities and associated anthropogenic CO₂ injection wells.
- Long-term monitoring of geologic storage facilities and associated anthropogenic CO₂ injection wells.
- Remediation of mechanical problems associated with geologic



storage facilities and associated anthropogenic CO₂ injection wells.

- Repairing mechanical leaks at geologic storage facilities.
- Plugging abandoned anthropogenic CO₂ injection wells used for geologic storage.
- Training and technology transfer related to anthropogenic CO₂ injection and geologic storage.
- Compliance and enforcement activities related to geologic storage and associated anthropogenic CO₂ injection wells.¹³

Similar funds have been created to address similar costs in other states, including Louisiana, Montana, Wyoming and North Dakota. Storage funds are generally being used as a tool to ensure public and environmental health protection from CCUS projects long after those projects have been completed and their stakeholders have ceased to exist.

6. Mineral Rights Primacy

Over the decades, many states have developed bodies of law and regulations specifically pertaining to the exploration and withdrawal of mineral resources. This includes regulations and property rights relating to oil and gas. In an effort to protect long-established mineral rights, and in recognition of the importance of protecting mineral right owners' interests, some states have passed legislation that explicitly proclaims the dominance of the severed mineral estate over the pore space estate. In the same vein, some states will only issue a permit if it is shown that the injection and geologic storage of CO₂ will not endanger any oil, gas or other mineral formation.

7. Class VI Primacy

As mandated by the Safe Drinking Water Act of 1974, the EPA has promulgated regulations establishing minimum requirements, technical criteria, and standards for UIC programs to protect USDWs. On Dec. 10, 2010, the EPA finalized minimum federal requirements under the SDWA for underground injection of CO₂, establishing a new class of injection wells, Class VI. The Class VI rule is based on the UIC regulatory framework, with modifications to address the unique nature of CO₂ injection. The purpose of the Class VI rule is to ensure that the geologic storage of CO₂ is conducted in a manner that protects USDWs.

Under the SDWA, the EPA can delegate to states its authority to implement and enforce the UIC program upon the state's application to the agency. If a state's primacy application is approved, the state assumes primary enforcement authority over a class or classes of wells. This is commonly referred to as primacy. In order to be granted primacy over Class VI wells, a state must establish that its Class VI regulations are at least as stringent as the federal regulations. If a state does not seek and obtain primacy, the EPA directly implements the UIC program through its regional offices.

State primacy is common in the UIC program. More than 40 states have primacy over at least one class of injection well, including oil and gas (Class II) wells. More than 30 states hold primacy for all classes of injection wells other than Class VI. However, to date, only two states — North Dakota in 2018 and Wyoming in 2020 — have obtained primacy for Class VI wells. The process from application to approval took five years for North Dakota and nine months for Wyoming. Louisiana has had a Class VI primacy application pending since April 2021. Many states have taken legislative action to authorize their agencies to pursue Class VI primacy.

¹³ Tex. Nat. Res. Code §121.003(d).

Wyoming

Wyoming was one of the very first states to enact legislation relating to CCUS, and it has developed a comprehensive regulatory scheme that addresses issues such as pore space ownership, long-term liability, unitization, and primacy of mineral rights. Wyoming is home to both significant fossil energy production and extensive geologic reservoirs for sequestration. It also boasts substantial pipeline infrastructure to service carbon transportation needs.

Issue	Description	Authority
Regulatory Authority	The Department of Environmental Quality is authorized to establish rules, regulations, and standards relating to permits for geologic sequestration of CO ₂ .	Wyo. Stat. Ann. §35-11-313*
CO ₂ Ownership and Liability	The injector of CO ₂ shall have title to any CO ₂ injected into and stored in the underground reservoir until a certificate of project completion is issued. All CO ₂ and other substances injected into any geologic sequestration site for the purposes of geologic sequestration shall be presumed to be owned by the injector. A certificate of project completion cannot issue until at least 20 years after CO ₂ injections end.	Wyo. Stat. Ann. §35-11-318* Wyo. Stat. Ann. §34-1-153(a) Wyo. Stat. Ann. §35-11-319*
Pore Space Ownership	Ownership of all pore space is vested in the surface estate owner(s). That ownership interest can be conveyed. No owner of pore space or other person holding any right to control pore space shall be liable for the effects of injecting CO ₂ for geologic sequestration purposes.	Wyo. Stat. Ann. §34-1-152 Wyo. Stat. Ann. §34-1-153(b)
Unitization	Eighty percent of pore space owners must consent to a CCUS project before unitization. In specific circumstances and upon application, this amount can be reduced to 75 percent.	Wyo. Stat. Ann. §35-11-316*
Class VI Primacy	The EPA has approved Wyoming's application under the SDWA to implement a UIC program for Class VI injection wells. Applicants must comply with W.S. §35-11-313 and WQRR, Chapter 24.	EPA-HQ-OW-2020-0123; FRL-10013-68-OW
Mineral Rights Primacy	For purposes of determining priority of subsurface uses between severed mineral estate and pore space, the mineral estate is dominant.	Wyo. Stat. Ann. §34-1-152
Storage Fund	The Wyoming Geologic Sequestration Special Revenue Account consists of monies collected to measure, monitor, and verify Wyoming geologic sequestration sites. Fees submitted by permittees, which may include a per-ton injection fee or a closure fee, shall be deposited into the special revenue account.	Wyo. Stat. Ann. §35-11-320* Wyo. Stat. Ann. §35-11-313(f)(vi)*
EOR	The Oil & Gas Conservation Commission must certify geologic CO ₂ sequestration incidental to EOR operations.	Wyo. Stat. Ann. §30-5-502

Notable Legislation: SF 47 (2022)

*Effective July 1, 2023

North Dakota

With numerous large-scale coal power plants, gas-processing facilities, and sources of ammonia production, North Dakota provides ample opportunity for the implementation of industrial-scale CCUS projects. Many of the state's industrial facilities are located along rail lines that provide potential right-of-way benefits for expansion of existing pipeline infrastructure. Additionally, North Dakota has the capacity to store more than 100 billion metric tons of CO₂ in secure geologic formations, including within the Basal Cambrian and Mission Canyon formations. For this reason, North Dakota was one of the first states to enact carbon sequestration legislation.

Issue	Description	Authority
Regulatory Authority	The North Dakota Industrial Commission (the commission) is authorized to regulate geologic storage of CO ₂ and set forth certain permitting requirements, which are detailed in the Administrative Code.	N.D. Cent. Code §38-22-04-11 N.D. Admin. Code §43-05-01-01 <i>et seq.</i>
CO ₂ Ownership and Liability	The storage operator has title to the CO ₂ injected into and stored in a storage reservoir and holds title until the commission issues a certificate of project completion. A certificate of completion may not be issued until at least 10 years after CO ₂ injections end.	N.D. Cent. Code §38-22-16-17 N.D. Cent. Code §38-22-17
Pore Space Ownership	Title to pore space underlying the surface is vested in the owner of the overlying surface estate. That ownership interest can be conveyed. Title to pore space cannot be severed from title to the surface estate.	N.D. Cent. Code §47-31-03-04 N.D. Cent. Code §47-31-05
Unitization	Sixty percent of pore space owners must consent to a CCUS project before unitization.	N.D. Cent. Code §38-22-08(5)
Class VI Primacy	The EPA has approved North Dakota's application under the SDWA to implement a UIC program for Class VI injection wells.	EPA-HQ-OW-2013-0280; FRL-9976-92-OW
Mineral Rights Primacy	The dominance of the severed mineral estate over the pore space estate under the common law is expressly not altered by statute.	N.D. Cent. Code §47-31-08
Storage Fund	Two funds have been established for CCUS projects. The Carbon Dioxide Storage Facility Administrative Fund was created as a special fund for defraying commission expenses in processing permitting applications, regulating storage facilities, and making storage amount determinations. The Carbon Dioxide Storage Facility Trust Fund was created as a special fund for defraying expenses for long-term monitoring and managing of closed storage facilities. Storage operators pay into the fund a fee for each ton of CO ₂ injected.	N.D. Cent. Code §38-22-14-15
EOR	Enhanced oil or gas recovery projects may be converted to a storage facility project.	N.D. Cent. Code §38-22-19

Notable Legislation: S.B. 2095 (2009)

Montana

Montana was one of the first states in the nation to develop a regulatory framework for carbon management and introduced a climate plan in 2020 that identifies CCUS as an emissions reduction solution. Montana has also joined a number of regional partnerships aimed at promoting and furthering the deployment of carbon capture.

Issue	Description	Authority
Regulatory Authority	The Board of Oil and Gas Conservation is vested with the power to regulate CO ₂ wells, including through permitting and rulemaking.	Mont. Code Ann. §82-11-111(5)
CO ₂ Ownership and Liability	Until the certificate of project completion is issued and title to the stored CO ₂ and geologic storage reservoir is transferred to the state, the geologic storage operator is liable for the operation and management of the CO ₂ injection well, the geologic storage reservoir, and the injection or stored CO ₂ . The certificate of completion may not be issued until 25 years after CO ₂ injections end. After issuing a certificate, the Board of Oil and Gas Conservation shall ensure adequate monitoring for a period of 25 more years. Title may be transferred to the state after the 25-year period of monitoring and verification. The operator may elect to accept indefinite liability and not transfer title.	Mont. Code Ann. §82-11-182 Mont. Code Ann. §82-11-183
Pore Space Ownership	Ownership of the pore space is presumed to be vested in the surface estate owner(s), unless deeds or severance documents indicate otherwise.	Mont. Code Ann. §82-11-180(3)
Unitization	Owners representing 60 percent of pore space capacity must consent to a CCUS project before unitization.	Mont. Code Ann. §82-11-204(b)
Class VI Primacy	Not granted. The EPA is the primary enforcement authority.	
Mineral Rights Primacy	For purposes of determining priority of subsurface uses between severed mineral estate and pore space, the mineral estate is dominant.	Mont. Code Ann. §82-11-180(2)(a)
Storage Fund	The operator shall pay into the Geologic Storage Reservoir Program Account a fee for each ton of CO ₂ injected for storage. The fee is set by the board to approximate the actual amount required for monitoring and managing reservoirs post-closure. If an operator elects to indefinitely accept liability for a storage reservoir, it need not pay into the account.	Mont. Code Ann. §82-11-181
EOR	Wells where CO ₂ is injected for enhanced oil or gas recovery may be converted to CO ₂ injection wells.	Mont. Code Ann. §82-11-184

Notable Legislation: S.B. 498 (2009)

Louisiana

Louisiana has a long history of carbon-capture operations for enhanced oil recovery operations. As a result, the state has developed one of the most extensive networks of pipeline infrastructure in the country to meet carbon transportation needs. Louisiana is also home to numerous coal and gas power plants, gas processing facilities, petroleum refineries, chemical plants, and other industrial facilities that may be prime candidates for carbon retrofit based on emissions and estimated capture cost. To capitalize on these conditions, the Louisiana Legislature passed the Louisiana Geologic Sequestration of Carbon Dioxide Act to govern future deployment of CCUS throughout the state.

Issue	Description	Authority
Regulatory Authority	The commissioner of conservation is granted jurisdiction and authority to enforce laws relating to the geologic storage of CO ₂ and subsequent withdrawal of stored CO ₂ . Approval of a storage facility by the commissioner requires notice and public hearing.	LSA-R.S. 30:1102-1111
CO ₂ Ownership and Liability	A certificate of completion may not be issued until at least 10 years after CO ₂ injections end. Upon issuance of the certificate, the storage operator, all generators of any injected CO ₂ , all owners of CO ₂ stored in the storage facility, and all owners otherwise having any interest in the storage facility, shall be released from any and all duties, obligations, or liability.	LSA-R.S. 30:1109(A)(1)
Pore Space Ownership	Ownership of the pore space is presumed to be vested in the surface estate owner(s).	Common Law
Class VI Primacy	Not granted. The EPA is the primary enforcement authority. Once primacy is granted, the state regulations that will govern Class VI wells can be found in Statewide Order No. 29-N-6.	
Storage Fund	The Carbon Dioxide Geologic Storage Fund has been established to fund operational and long-term inspecting, testing, and monitoring of CCUS sites as well as remediation, plugging and abandoning, repairs, and general administration. The fund shall consist of fees, penalties, and bond forfeitures collected in connection with permitting, private contributions, the contents of site-specific trust accounts (to be used only for each respective site) and fees levied by the commissioner on storage operators. The amount of such fees is determined according to a formula ($F \times 144 < M$) that establishes the fee per ton of CO ₂ over the course of at least 144 months, not to exceed \$5 million.	LSA-R.S. 30:1110
EOR	Use of CO ₂ for enhanced hydrocarbon recovery requires the creation of a unit by the commissioner of conservation for the purpose of secondary or tertiary recovery. A hearing is required before permission is granted.	LSA-R.S. 30:5(C).
Eminent Domain	Storage operators and owners that obtain a certificate of public convenience and necessity from the commissioner may exercise the power of eminent domain over property to acquire surface and subsurface rights and property interests necessary for the purpose of constructing, operating, or modifying a storage facility. A certificate of public convenience and necessity may be issued only after a public hearing.	LSA-R.S. 30:1108 LSA-R.S. 30:1107

Notable Legislation: H.B. 661 (2009); H.B. 1220 (2008)

Texas

Texas is home to the energy capital of America, hundreds of large industrial emissions sources ripe for carbon-capture retrofitting, and easy access to numerous geologic formations capable of permanently storing large amounts of CO₂ safely. Moreover, Texas has the highest concentration of energy companies with institutional knowledge and experience relating to carbon capture, including with respect to projects that require capturing carbon, drilling injection wells, and deploying carbon-capture technology at scale. To capitalize on the state's head start and geographic advantages, the Texas Legislature has passed comprehensive carbon-capture legislation and taken several steps to obtain Class VI primacy from the EPA.

Issue	Description	Authority
Regulatory Authority	The Texas Railroad Commission has jurisdiction and authority to enforce laws relating to the injection and geologic storage of CO ₂ .	Tex. Admin. Code §5.201 <i>et seq.</i> ; Texas Water Code §27.047; Tex. Health & Safety Code §382.506
CO ₂ Ownership and Liability (Onshore)	Unless otherwise provided by contract or other legally binding document, or by other law, CO ₂ stored in a geologic storage facility is considered the property of the storage operator. It is not considered the property of the owner of the surface or mineral estate.	Tex. Nat. Res. Code §121.002
Pore Space Ownership	Unclear due to conflicting case law.	
Class VI Primacy	Not granted. The EPA is the primary enforcement authority. The Texas Railroad Commission has been granted authority to seek Class VI primacy.	Tex. Water Code §27.048
Mineral Rights Primacy	A permit for injection and geologic storage may be issued only if it is shown that the injection and geologic storage of CO ₂ will not endanger any oil, gas or other mineral formation.	Tex. Water Code §27.051
Storage Fund	The Anthropogenic Carbon Dioxide Storage Trust Fund is a special fund created to cover long-term monitoring and remediation of CO ₂ injection and storage sites. The fund consists of application fees (\$50,000/application), an annual fee (\$50,000/yr), and an injection fee (\$.025/ton of CO ₂). The fund is statutorily capped at \$5 million.	Tex. Nat. Res. Code §121.003; Tex. Admin. Code §5.205
EOR	Requirements and regulations relating to injection of CO ₂ for the purpose of EOR are distinct from requirements and regulations relating to injection of CO ₂ for other purposes.	Tex. Admin. Code §5.301
Permits	An operator may transfer its geologic storage facility permit to another party if specific requirements are met.	Tex. Admin. Code §5.202(c)
Offshore	The commissioner of the land office shall contract with the University of Texas Bureau of Economic Geology to identify potential locations for offshore CO ₂ repositories. The School Land Board will make the final determination on suitable location, contract for creation of suitable infrastructure, issue fees, and set rules for monitoring and verification. The School Land Board will acquire title to CO ₂ stored in CO ₂ repositories on a determination by the board that permanent storage has been verified and that the storage location has met all applicable state and federal requirements for closure of CO ₂ storage sites. On the day the permanent school fund acquires the right, title and interest in CO ₂ , the producer of the CO ₂ is relieved of liability.	Tex. Health & Safety Code §382.503-506 Tex. Health & Safety Code §382.507

Notable Legislation: H.B. No. 1796 (2009); S.B. No. 1387 (2009); H.B. No. 1284 (2021)

Nebraska

Nebraska is replete with ethanol and coal plants that provide opportunities for large-scale CCUS implementation. Centrally located, Nebraska is well positioned to serve as both a hub and a corridor for the transport of CO₂, connecting large emissions sources in the Northern United States to storage facilities as far south as the Permian Basin. To prepare the ground for CCUS development, the Nebraska Legislature passed comprehensive legislation in 2021.

Issue	Description	Authority
Regulatory Authority	The Nebraska Oil and Gas Conservation Commission has jurisdiction and authority to enforce laws relating to the geologic storage of CO ₂ and subsequent withdrawal of stored CO ₂ (the Nebraska Geologic Storage of Carbon Dioxide Act).	Neb. Rev. Stat. §57-1605
CO ₂ Ownership and Liability	The storage operator has title to the CO ₂ injected into and stored in a storage reservoir until the commission issues a certificate of project completion. While the storage operator holds title, the operator is liable for any damage the CO ₂ may cause, including damage caused by CO ₂ that escapes from the storage facility. Upon application, a certificate of project completion may be issued only after the commission has consulted with the Department of Environment and Energy and the UIC program permitting authority, and after public notice and hearing.	Neb. Rev. Stat. §57-1618 Neb. Rev. Stat. §57-1619
Pore Space Ownership	Title to any reservoir estate underlying the surface of lands and waters is vested in the owner of the overlying surface estate unless it has been severed and separately conveyed. Conveyance of the surface ownership shall be a conveyance of the reservoir estate unless ownership interest in the reservoir estate has previously been severed from the surface ownership or is explicitly excluded in the conveyance.	Neb. Rev. Stat. §57-1604 (1-2, 5)
Unitization	Sixty percent of pore space owners must consent to a CCUS project before unitization. The commission may require reservoir estates owned by nonconsenting owners to be included in a storage facility.	Neb. Rev. Stat. §57-1610 (13) Neb. Rev. Stat. §57-1612
Class VI Primacy	Not granted. The EPA is the is primary enforcement authority.	
Mineral Rights Primacy	The severed mineral estate is dominant over the reservoir estate. Issuance of a permit shall not be construed to prevent a mineral owner or mineral lessee from drilling through or near a storage reservoir to explore for and develop minerals if the drilling, production, and related activities comply with commission requirements that preserve the storage facility's integrity and protect the objectives of the act.	Neb. Rev. Stat. §57-1604 (4) Neb. Rev. Stat. §57-1615 (12)
Storage Fund	Two funds have been established: (1) the Carbon Dioxide Storage Facility Administrative Fund to defray administrative expenses (e.g., processing permit applications, regulating construction of facilities etc.) and (2) the Carbon Dioxide Storage Facility Trust Fund to defray expenses for long-term monitoring and management of a closed storage facility. For each fund, the storage operator must pay a fee for each ton of CO ₂ injected for storage to be set by the commission.	Neb. Rev. Stat. §57-1616-17

Notable Legislation: L.B. 650 (2021)



Indiana

As one of the nation's leaders in both ethanol and coal production, Indiana has long been a natural fit for the development of CCUS projects. The state's proximity and access to one of the nation's largest saline aquifers has made investment in such projects even more enticing to investors. In 2019, the Legislature passed Senate Bill 442, declaring carbon capture to be in the public interest of the state and establishing a pilot program at the West Terre Haute ammonia production facility. Since then, Indiana has taken further steps to support the development of CCUS and passed legislation establishing a comprehensive regulatory framework for carbon sequestration.

Issue	Description	Authority
Regulatory Authority	The Department of Natural Resources is granted authority to issue permits and orders in furtherance of regulations relating to the geologic storage of CO ₂ .	Ind. Code §14-39-2-1 <i>et seq.</i>
CO ₂ Ownership and Liability	A claim of subsurface trespass shall not be actionable against a storage operator unless the claimant proves that injection or migration of CO ₂ interferes with the comfortable enjoyment of life or property or has caused direct physical injury to a person, an animal or tangible property. Upon completion of a CCUS project, the storage operator may apply for a certificate of completion. Once a certificate of completion is issued, the state of Indiana assumes ownership and responsibility for the storage facility, and the storage operator and the owner of the storage facility are released from responsibility for all regulatory requirements associated with the storage facility and all potential liability associated with the storage facility.	Ind. Code §14-39-2-12 Ind. Code §14-39-2-13
Pore Space Ownership	The ownership of pore space is vested in the surface estate of real property that is divided into a surface estate and a mineral estate unless such rights are explicitly acquired by conveyance document.	Ind. Code §14-39-2-3
Unitization	The storage operator must obtain the consent of the owners of the pore space underlying at least at least 70 percent of the surface area above the proposed storage facility. If this threshold is met, the Department of Natural Resources may issue an order requiring all owners to integrate their interests.	Ind. Code §14-39-2-4
Class VI Primacy	Not granted. The EPA is the is primary enforcement authority.	
Mineral Rights Primacy	All statutory rights and requirements relating to carbon sequestration are subordinate to “rights pertaining to oil, gas and coal resources” and may not adversely affect such resources. A mineral owner or mineral lessee shall provide written notice to a storage operator at least 31 days prior to drilling a well if the mineral owner or mineral lessee wishes to drill a well not more than 330 feet from the surface location of a well pursuant to a UIC Class VI permit or 500 feet from the uppermost confining zone of a carbon sequestration facility pursuant to a UIC Class VI permit.	Ind. Code §14-39-2-1 Ind. Code §14-39-2-11
Storage Fund	The Carbon Dioxide Storage Facility Trust Fund is a special fund established to defray the costs incurred by the department for the long-term monitoring and management of a carbon sequestration project. Storage operators must provide an annual estimate of the amount of CO ₂ to be injected into a storage facility and pay into the fund a fee of 8 cents per ton of CO ₂ estimated to be injected.	Ind. Code §14-39-2-9 Ind. Code §14-39-2-10

Notable Legislation: H.B. 1209 (2022)

Utah

Utah has numerous facilities that are well suited for the deployment of carbon-capture technology, including at coal power plants that collectively emit nearly 25 metric tons of carbon each year. Moreover, Utah has large active oil fields suitable for enhanced oil recovery operations and deep saline aquifers with storage potential. To further support CCUS projects, the state of Utah has recently passed a bill that provides certainty to potential project stakeholders on issues such as permitting, liability, and pore space ownership.

Issue	Description	Authority
Regulatory Authority	Subject to granting of primacy by the EPA, the Utah Board of Oil, Gas, and Mining (“the Board”), Division of Oil, Gas, and Mining, is granted exclusive jurisdiction over Class VI wells and regulation activities relating to storage facilities in the state.	Utah Code §40-11-3 Utah Code §40-11-5
CO2 Ownership and Liability	The storage operator has title to the CO2 injected into and stored in a storage reservoir and holds title until the board issues a certificate of project completion. The storage operator is liable for any damage the stored CO2 may cause, including damage caused by escaping stored CO2, until the board issues a certificate of completion. Upon issuance of a certificate of completion, title to the CO2 and storage facility, as well as any liability relating thereto, is transferred to the state. A certificate of completion may not be issued until at least 10 years after CO2 injections end.	Utah Code §40-11-15 Utah Code §40-11-16
Pore Space Ownership	Title to pore space underlying the surface estate is vested in the owner of the surface estate.	Utah Code §40-6-20.5
Unitization	In the absence of a written agreement, the Board may enter an amalgamation order combining all interests in a contiguous pore space for development of a storage facility. The order shall provide for payment to nonconsenting owners for their share of profits and reimbursement to consenting owners for the nonconsenting owners’ share of costs of operation. An amalgamation order will only be effective after the plan for operating the storage facility is approved in writing by owners whose combined interest under the order is not less than 70 percent of the profits from operation.	Utah Code §40-11-10 Utah Code §40-11-11
Class VI Primacy	Not granted. The EPA is the is primary enforcement authority.	Utah Code §40-11-2
Mineral Rights Primacy	Utah regulations shall not prevent a mineral owner or lessee from drilling through or near a storage reservoir to explore or develop mineral resources, provided that exploration and development preserves the integrity of the storage facility.	Utah Code §40-11-14
EOR	The Board may make additional rules to allow for circumstances unique to the conversion of an enhanced oil and gas recovery project to a storage facility.	Utah Code §40-11-17
Storage Fund	The Geologic Carbon Storage Facility Administrative Fund is established to defray the division’s regulatory expenses incurred during the regulation of storage facility construction, operation, and preclosure activities. The Geologic Carbon Storage Facility Trust Fund is established to defray the expenses the division incurs in the long-term monitoring and management of a closed storage facility. The Board shall establish a fee consisting of a levied fee per ton of CO2 injected into a reservoir, and the fee is paid into the funds.	Utah Code §40-11-20 Utah Code §40-11-21

West Virginia

West Virginia is a focal point of the federal government's ongoing efforts to support development of the CCUS industry. The DOE's National Energy Technology Laboratory (NETL) operates at three sites across the nation, one of which is located in Morgantown. West Virginia is a natural fit for innovation in CCUS as the state is home to one of the country's highest concentrations of CO₂-emitting coal plants.

Issue	Description	Authority
Regulatory Authority	The Board of Oil and Gas Conservation and the secretary of the Department of Environmental Protection have the authority to establish rules relating to geologic storage of CO ₂ .	W. Va. Code §22-11B-7; W. Va. Code §22-11A-4
CO ₂ Ownership and Liability	The storage operator shall be the owner of the CO ₂ injected into and stored in a storage reservoir and shall maintain ownership and control until the secretary of the commission issues a Certificate of Underground Carbon Dioxide Storage Project Completion. While the storage operator has ownership, the operator is liable for any damage the CO ₂ may cause. The certificate of completion may not be issued until at least 10 years after CO ₂ injections end.	W. Va. Code §22-11B-11 W. Va. Code §22-11B-12 (c)
Pore Space Ownership	Title to pore space in all strata underlying the surface of lands and waters is vested in the owner of the overlying surface estate. Conveyance of title to the surface estate conveys the pore space. Title to pore space may not be severed from title to the surface of the real property. An instrument attempting to sever title to pore space from title to the surface is void and unenforceable.	W. Va. Code §22-11B-18 (a-b) W. Va. Code §22-11B-18 (c)
Unitization	A permit may not be issued to an operator unless the operator obtains consent of owners who own at least 75 percent of the storage reservoir's pore space and has begun the process of obtaining the remaining interests through the commission. If the storage operator does not obtain consent of all persons who own the storage reservoir's pore space to construction and operation of an underground CO ₂ storage facility, the commission may require the pore space owned by nonconsenting owners be included in a storage facility.	W. Va. Code §22-11B-4 W. Va. Code §22-11B-19
Class VI Primacy	Not granted. The EPA is the primary enforcement authority.	
Mineral Rights Primacy	Issuance of a permit shall not affect the lawful right of a mineral owner to drill or bore through a CO ₂ storage facility if done in accordance with the secretary's underground injection control permit rules or any other applicable legal requirements intended to protect the CO ₂ storage facility against the escape of CO ₂ .	W. Va. Code §22-11B-9; W. Va. Code §22-11A-8
Storage Fund	The Carbon Dioxide Storage Facility Administration Fund is a special revenue fund established to pay all expenses associated with processing permit and certificate applications, regulating storage facilities, and making storage amount determinations. The Carbon Dioxide Storage Facility Trust Fund is a special revenue fund established to pay expenses associated with the long-term monitoring and management of closed storage facilities.	W. Va. Code §22-11B-13 W. Va. Code §22-11B-15

Notable Legislation: H.B. 4491 (2022)



Oklahoma is well positioned to incorporate both carbon capture and geologic storage throughout numerous industrial sectors. As one of the nation’s historical leaders in EOR and home to numerous industrial facilities eligible for 45Q tax credits, Oklahoma is a fit for ongoing deployment of CCUS projects. In recognition of this opportunity, the Oklahoma Legislature has passed comprehensive legislation establishing a regulatory framework for CCUS permitting and liability through the Oklahoma Carbon Capture and Geologic Sequestration Act.

Issue	Description	Authority
Regulatory Authority	<p>The Oklahoma Corporation Commission has exclusive jurisdiction over CO₂ sequestration facilities involving, and injection of CO₂ for carbon sequestration into oil reservoirs, gas reservoirs, coal-bed methane reservoirs, and mineral brine reservoirs.</p> <p>The Department of Environmental Quality has exclusive jurisdiction over CO₂ sequestration facilities involving injection of CO₂ for carbon sequestration into all reservoirs other than those described above, which shall include, but not be limited to, deep saline formations, unmineable coal seams where methane is not produced, basalt reservoirs, salt domes, and non-mineral-bearing shales.</p>	Okla. Stat. tit. §27A-3-5-103
CO ₂ Ownership and Liability	Generally, CO ₂ injected into a CO ₂ sequestration facility is considered the personal property of the facility owner and not the property of the owner of the surface or mineral estate in the land encompassing the geographic boundary of the CO ₂ sequestration facility, or any person claiming under the owner of the surface or mineral estate.	Okla. Stat. tit. §27A-3-5-105
Pore Space Ownership	Until title to the pore space or rights, interests or estates in the pore space are separately transferred, pore space is property of the person or persons holding title to the land surface above it.	Okla. Stat. tit. §60-6
Unitization	None. In the event the state of Oklahoma establishes a unitization process, the Corporation Commission shall regulate all aspects of such process.	Okla. Stat. tit. §27A-3-5-105
Class VI Primacy	Not granted. The EPA is the primary enforcement authority.	
EOR	Nothing in the Oklahoma Carbon Capture and Geologic Sequestration Act shall alter the rights of the owners of the mineral estate or adversely affect enhanced oil or gas recovery efforts in the state.	Okla. Stat. tit. §27A-3-5-106(a)
Mineral Rights Primacy	Rights granted under the Oklahoma Carbon Capture and Geologic Sequestration Act shall be without prejudice to the rights of any surface owner or mineral owner of the land encompassed within the defined geographic boundary of the CO ₂ sequestration facility to drill or bore through the approved reservoir in a manner as shall comply with orders, rules and regulations issued for the purpose of protecting the approved reservoir against the escape of CO ₂ .	Okla. Stat. tit. §27A-3-5-106(b)
Storage Fund	The Carbon Sequestration Assessment Cash Fund shall be used by the Oklahoma Conservation Commission to carry out the Oklahoma Carbon Sequestration Enhancement Act. The state treasurer shall credit to the fund any money appropriated to the fund by the Legislature and any money received as gifts, grants, or other contributions from public or private sources obtained for the purposes of the Oklahoma Carbon Sequestration Enhancement Act.	Okla. Stat. tit. §27A-3-4-104

Notable Legislation: S.B. 610 (2009)

Mississippi

For decades, Mississippi has benefited from the geologic formation known as the Jackson Dome through enhanced oil recovery operations. The operations have traditionally involved the transportation of CO₂ from the dome by pipeline to oil fields across the South. Now the state is well positioned to utilize that same pipeline as the backbone for a thriving carbon-capture and sequestration market. Significant pore space will also bolster the state's carbon sequestration aims.

Issue	Description	Authority
Regulatory Authority	The State Oil and Gas Board (“the Board”) and the Mississippi Commission on Environmental Quality have jurisdiction and authority to enforce laws relating to the geologic storage of CO ₂ and subsequent withdrawal of stored CO ₂ (the Mississippi Geologic Sequestration of Carbon Dioxide Act).	Miss. Code Ann. §53-11-3(2); §53-11-7
CO ₂ Ownership and Liability	The state does not assume liability or responsibility, even upon issuance of a certificate of completion. No application for release of a performance bond, deposit, or other assurance will be considered before three years following issuance of a certificate of completion. The CO ₂ shall not be subject to the right of any person other than the owner of the CO ₂ . Neither injection nor an order of the Board shall affect ownership of the CO ₂ or inhibit the voluntary conveyance of title to the CO ₂ by the owner.	Miss. Code Ann. §53-11-25 and 27 Miss. Code Ann. §53-11-9.
Pore Space Ownership	Undetermined.	
Unitization	Generally, owners representing a majority of the surface interest, on the basis of and in proportion to the surface acreage content of the unit area, must consent in writing to a CCUS project before unitization. If oil or gas or both are expected to be produced in connection with operating a unit area as a geologic sequestration facility, the facility may be operated under the existing plan of unitization.	Miss. Code Ann. §53-11-11(3) Miss. Code Ann. §53-11-15(1)(d)
Class VI Primacy	Not granted. The EPA is the primary enforcement authority.	
EOR	If oil or gas, or both, are being produced as an enhanced recovery project operating under a Board order, the Board may make an order recognizing the incidental sequestration of CO ₂ that is occurring during its enhanced oil or gas recovery project without requiring the project to qualify as a geologic sequestration facility. An operator of an enhanced oil or gas recovery project utilizing injection of CO ₂ may request that the Board approve such a project as a geologic sequestration facility, but is not required to do so.	Miss. Code Ann. §53-11-15(2) Miss. Code Ann. §53-11-33.
Mineral Rights Primacy	An order by the Board approving a geologic sequestration facility will not be issued unless the correlative rights of all owners of interest in the oil, gas or other commercial minerals are protected.	Miss. Code Ann. §53-11-13
Storage Fund	The Carbon Dioxide Storage Fund has been established in order to pay the costs for oversight of geologic storage facilities after cessation of injection at the facility. The facility operator must pay a per-ton fee to be applied to enforcement and administration costs of the Board's activities. When the balance of the fund exceeds \$2.5 million per geologic sequestration facility, the Board shall abate the per-ton fee.	Miss. Code Ann. §53-11-23

Notable Legislation: S.B. 2723 (2011); H.B. 1214 (2022)



Kansas

Kansas has a mixture of industrial sectors that produce CO₂ at a commercial scale, including through ethanol plants, nitrogen fertilizer plants, cement plants, and coal power plants/refineries. Kansas oil fields also provide an opportunity for enhanced oil field recovery projects. The Carbon Dioxide Reduction Act, passed more than a decade ago, provides for regulation of CO₂ injection wells and establishes tax incentives for CCUS project stakeholders.

Issue	Description	Authority
Regulatory Authority	The authority to adopt rules and regulations is vested in the Kansas Corporation Commission. It establishes requirements, procedures and standards for the safe and secure injection of CO ₂ and maintenance of underground storage of CO ₂ .	Kan. Stat. Ann. §55-1637
CO ₂ Ownership and Liability	The state of Kansas does not assume liability or responsibility to pay any damages resulting from the leak or discharge of CO ₂ from any CO ₂ injection well or the underground storage of CO ₂ .	Kan. Stat. Ann. §55-1641
Pore Space Ownership	Undetermined.	
Class VI Primacy	Not granted. The EPA is the primary enforcement authority.	
Storage Fund	The Carbon Dioxide Injection Well and Underground Storage Fund has been established in order to pay the costs of permitting, testing, repairs, investigations, remedial actions, monitoring, inspections, mitigation, legal costs, and other administrative activities.	Kan. Stat. Ann. §55-1638

Notable Legislation: H.B. 2419 (2007); H.B. 2418 (2010)

Kentucky

As early as 2007, the state of Kentucky recognized the need for research and investment in carbon-capture prospects. In coordination with the University of Kentucky Center for Applied Energy Research and a consortium of public and private stakeholders, the state of Kentucky has supported and engaged in substantive research through pilot programs and cooperative research.

Issue	Description	Authority
Regulatory Authority	<p>The Kentucky Division of Oil and Gas within the Department for Natural Resources is authorized to seek primary jurisdiction and authority over matters relating to the geologic storage of CO₂ in Kentucky once programs have been developed at the federal level.</p> <p>The Energy and Environment Cabinet has been authorized to choose between one and five pilot projects that inject CO₂ into pore space.</p>	<p>Ky. Rev. Stat. Ann. §353.804(1)</p> <p>Ky. Rev. Stat. Ann. §353.804(2)</p>
CO ₂ Ownership and Liability	<p>The storage operator monitors the storage facility for leakage and migration for the time period and by the methods required by the permit for the carbon injection wells after completion of active injection and plugging of the carbon injection wells.</p> <p>After completion of the required period of monitoring following completion and plugging, the ownership and liability for a storage facility may be transferred to (a) the federal government if a federal program exists or (b) the Finance and Administration Cabinet if one does not exist.</p> <p>Ownership of and liability for the stored CO₂ shall remain with the storage operator until the transfer is completed.</p>	<p>Ky. Rev. Stat. Ann. §353.810</p>
Pore Space Ownership	<p>If, after good-faith negotiation, the storage operator cannot locate or cannot reach an agreement with all necessary pore space owners but has secured written consent or agreement from the owners of at least 51 percent of the interest in the pore space for the storage facility, pooling of all pore space included within the proposed storage facility shall be permitted.</p> <p>A pooling order shall authorize the long-term storage of CO₂ beneath the tract or portion. The order shall also authorize, where necessary, the location of carbon injection wells, outbuildings, roads, monitoring equipment, and access to them. The pooling order shall identify the compensation to be paid to unknown, nonlocatable, and nonconsenting pore space owners and the basis for valuation of the pooled interest.</p>	<p>Ky. Rev. Stat. Ann. §353.806</p> <p>Ky. Rev. Stat. Ann. §353.808</p>
Class VI Primacy	<p>Not granted. the EPA is the primary enforcement authority.</p>	

Notable Legislation: H.B. 259 (2011)

California

California is home to deep sedimentary formations that are ideally suited for CO₂ storage, hundreds of carbon-emitting facilities ready for implementation of emerging carbon-capture technologies, and a history of legislative leadership on climate mitigation issues. As such, California has recently passed several carbon-capture bills intended to build out a framework for regulation of carbon-capture projects within the state.

Issue	Description	Authority
Regulatory Authority	The California Air Resources Board (“state board”) is granted the authority to establish a comprehensive CCUS program that, among other things, includes regulations for a unified permit application for the construction and operation of CCUS projects, tracks the deployment of CCUS technologies, supports methods of utilization and storage, and includes regulations for financial responsibility for CCUS projects.	Cal. Health and Safety Code §39741.1-4*
CO ₂ Ownership and Liability	A CO ₂ capture, removal, or sequestration project operator shall be liable for any damages caused by the operation of the CO ₂ capture, removal, or sequestration project.	Cal. Pub. Res. Code §71462(f)*
Pore Space Ownership	Title to any geologic storage reservoir is vested in the owner of the overlying surface estate unless it has been severed and separately conveyed. A conveyance of the surface ownership of real property shall be a conveyance of any geologic storage reservoir below the surface of the real property unless the ownership interest in the geologic storage reservoir previously has been severed or is explicitly excluded in the conveyance. The ownership of a geologic storage reservoir may be conveyed in the manner provided by law for the transfer of mineral interests in real property. No agreement or instrument conveying a mineral or other interest underlying the surface shall act to convey ownership of a geologic storage reservoir unless the agreement explicitly conveys that ownership interest.	Cal. Pub. Res. Code §71462(a-b)*
Unitization	By July 1, 2025, the secretary of the Natural Resources Agency, in consultation with the state board, must publish a framework for governing agreements regarding two or more tracts of land overlying the geologic storage reservoir. The framework must include a “requirement that agreement proponents own title to at least an undivided three-fourths of the total interests subject to the proposed agreement.”	Cal. Pub. Res. Code §71461(a)(2)*
Class VI Primacy	Not granted. The EPA is the primary enforcement authority.	
Storage Fund	Rather than paying into a special purposes fund, California requires that operators maintain financial responsibility “for a period of time that is sufficiently long enough to demonstrate that the risk of CO ₂ leakage poses no material threat to public health, safety, and the environment and to achievement of net zero greenhouse gas emissions in California and that terminates no earlier than 100 years after the last date of injection of CO ₂ into a geologic storage reservoir.”	Cal. Pub. Res. Code §71464*
EOR	Operators are prohibited from injecting a concentrated CO ₂ fluid produced by a CO ₂ capture project or a CO ₂ capture and sequestration project into a Class II injection well for purposes of enhanced oil recovery, including the facilitation of enhanced oil recovery from another well.	Cal. Pub. Res. Code §3132(b)*

Notable Legislation: S.B. 905 (2022); S.B. 1314 (2022)

*Effective Jan. 1, 2023

Other States

Although many states have not yet installed a comprehensive legislative framework for regulation of CCUS projects, there are myriad laws across the country relating to carbon capture or sequestration, including laws relating to exploratory commissions, pilot programs, primacy, and carbon credit registries. Below is a mere sampling of such legislation from states not previously addressed herein.

State	Legislation	Description
Illinois	S.B. 1704 (2007)	A project-specific bill in which Illinois assumed liability associated with carbon sequestered in its pilot project.
	H.B. 165 (2021)	Establishing the Carbon Capture Utilization and Storage Legislation Task Force to provide an assessment of Illinois subsurface storage resources and necessary elements of its regulatory program.
	S.B. 1856 (2022)	Requiring the office of the secretary of Energy and Environment shall create and administer a grant program for entities utilizing sequestration of carbon captured from production of hydrogen from natural gas.
Alabama	S.B. 36 (2022)	Expanding the types of gases that can be stored in underground caverns to include CO ₂ and designating the Alabama Oil and Gas Board as the state authority that will regulate gas storage activities.
Arizona	S.B. 1396 (2022)	Establishing a committee to study carbon capture and sequestration, including the long-term liability and responsibility for sequestered carbon and the regulation of underground sequestered carbon.
Georgia	S.B. 356 (2004); HB 355 (2021)	Establishing the Georgia Carbon Sequestration Registry, which allows participants to voluntarily record carbon sequestrations and facilitates the exchange of offsets.
Hawaii	H.B. 2182 (2018)	Establishing a permanent Greenhouse Gas Sequestration Task Force.
Ohio	H.B. 175 (2022)	Requiring the Ohio Department of Natural Resources to begin the process of seeking primacy over Class VI injection wells for carbon sequestration from the EPA.
Washington	S.B. 6001 (2007)	Directing the DOE and the Energy Facility Site Evaluation Council to set rules for geologic sequestration and specifying that geologic sequestration can be used to meet greenhouse gas emissions reduction goals. S.B. 6001 was the first substantive geologic sequestration legislation in the country.
	Wash. Admin. Code §173-407-010 through 173-407-080; 173-218-010 through 173-218-130	Establishing rules in accordance with S.B. 6001 relating to geologic sequestration, including with respect to an underground injection control program.

Although not detailed in this handbook, many states have also passed legislation relating to tax incentives, subsidies, and carbon transportation. For more information on state laws concerning CCUS, please reach out to the author.



Table 1. Overview of types of permits and permissions needed for CCUS projects

Portion of the CCUS effort	Authorization	Authorities that may require permits/permissions	Type of Agency**
Utilization, Capture, Transportation, Geologic Sequestration	Land use	Local government, Federal Government (public lands)	City Council, Federal Land Manager U.S. Forest Service, Bureau of Land Management (BLM), etc.)
	Discharges to surface water	State and/or Federal Government	State Department of Environmental Quality, U.S. EPA
	Discharge of dredge or fill materials to waters of the U.S.	State and/or Federal Government	U.S. Army Corps of Engineers and/or relevant state office (Florida, Michigan and New Jersey)
	Endangered species	State and/or Federal Government	State Environmental or Natural Resources Department, U.S. Fish and Wildlife Service, National Oceanic and Atmospheric Administration (NOAA) Fisheries
	Greenhouse gas reporting	State and/or Federal Government	State Environmental Department, U.S. EPA
Utilization, Capture	Air permits	State and/or Federal Government	State Environmental Department, U.S. EPA
Transportation	CO ₂ pipeline safety	State and/or Federal Government	State and Federal Departments of Transportation
	Siting CO ₂ pipelines	Local, State, and Federal Government	State Transportation Department or Utility Commission; Federal land management agencies
Geologic Sequestration	Pore space ownership and mineral rights	Local, State, and Federal Government (if Federal lands)	Determined by state-specific laws, Federal agency managing Federal Lands to be used
	CO ₂ injection (and sequestration) permitting	State and/or Federal Government (some states have primacy for Class VI permitting)	State Environmental Department, U.S. EPA

**Federal responsibility is listed together with exemplary state and local governments (which vary depending on local context). For Tribal lands/sovereign nations, the Tribal government will have oversight.



Federal Permit or Review	Agency	Type of Project	Summary of Permitting/Review and Responsibility	Authority
Clean Air Act Title V Operating Permit	The EPA for states, territories, or tribes that do not have EPA-approved programs or delegated authority	Utilization, Capture	A Title V Operating Permit is required for any “major source” and certain other sources. A major source has actual or potential emissions at or above the major source threshold for certain air pollutants. In air quality attainment areas, the major source threshold is 100 tons/year, while lower thresholds may apply in non-attainment areas (for the pollutant that is in non- attainment). Major source thresholds for hazardous air pollutants (HAP) are 10 tons/year for a single HAP or 25 tons/year for any combination of HAP. Also, sources with a Major Source permit under the New Source Review (NSR) permitting program are required to obtain a Title V permit. The Title V operating permit generally does not add new requirements for the facility; rather, it contains emission limitations and other conditions as necessary to assure compliance with all air quality control requirements or “applicable requirements” required under the Clean Air Act (e.g., New Source Performance Standards (NSPS), National Emission Standards for Hazardous Air Pollutants (NESHAP), State Implementation Plans (SIP), and NSR), and it requires that certain procedural requirements be followed.	42 U.S.C. §7661 et seq; 40 CFR Parts 70, 71
Prevention of Significant Deterioration (PSD) / NSR	The EPA for states, territories, or tribes that do not have EPA-approved programs or delegated authority	Capture	PSD permits are required for new major stationary sources or major modifications for pollutants where the area the source is located is in attainment or unclassifiable with the National Ambient Air Quality Standards (NAAQS). Nonattainment NSR (NNSR) permits are required for new major stationary sources or major modifications in areas that do not meet one or more of the NAAQS. A minor NSR permit is required for any new or modified source of air pollutant that emits lower than the major NSR emissions thresholds and, thus, is not subject to PSD or NNSR permitting.	42 U.S.C. §§7470-7479, 42 U.S.C. §§7501-7503; 40 CFR Parts 49, 51 and 52



Federal Permit or Review	Agency	Type of Project	Summary of Permitting/Review and Responsibility	Authority
Underground Injection Control Program	The EPA for states, territories, or tribes that do not have primary enforcement authority (often called primacy)	Geologic Sequestration	Storage or disposal of water and fluids may be managed by injecting them underground using injection wells. Injection wells are regulated by the UIC program in order to protect underground sources of drinking water. Activities performed by the UIC program include maintaining well inventory, permitting injection wells, performing inspections, and ensuring compliance with permit requirements. When operators manage wells in a way that does not meet the applicable UIC requirements, the program alerts operators to issues and may assist operators in returning the wells to compliance or take enforcement action. The UIC program classifies injection wells based on the type of fluids the well receives, the purpose of the injection, and where the fluid is injected relative to underground sources of drinking water. Class II wells are used to inject fluids related to oil and gas production. Class VI wells are used to inject CO ₂ deep underground for long-term storage.	42 U.S.C. §300f et seq.; 40 CFR Parts 144-148
Resource Conservation and Recovery Act (RCRA)	The EPA for states, territories, or tribes that do not have delegated authority	Utilization, Capture, Transportation, Geologic Sequestration	The RCRA conditionally excludes CO ₂ streams from the definition of hazardous waste, provided these hazardous CO ₂ streams are captured from emissions sources, are transported in compliance with U.S. Department of Transportation requirements, are injected into UIC Class VI wells for purposes of geologic sequestration (GS), and are not mixed with, or otherwise co-injected with, any other hazardous waste. The RCRA conditional exemption exclusion does not apply to the disposition of CO ₂ other than injection into a Class VI injection well.	42 U.S.C. §6901 et seq.; 40 CFR Part 261.4(h)
National Pollutant Discharge Elimination System	The EPA for states, territories, or tribes that do not have delegated authority	Geologic Sequestration	The Clean Water Act (CWA) is the principle law governing pollution control and water quality of the nation's waterways. The CWA establishes conditions and permitting for discharges of pollutants into the waters of the United States under the NPDES — created in 1972 by the CWA. To the extent there are discharges of process wastewater or stormwater associated with CCS systems, these would be permitted by NPDES. The NPDES program has the authority to implement pollution control measures such as setting wastewater standards for industries and regulating point sources that discharge pollutants to surface waters.	33 U.S.C. §1251 et seq.



Federal Permit or Review	Agency	Type of Project	Summary of Permitting/Review and Responsibility	Authority
Clean Water Act Section 404/Section 401	Department of Defense for states, territories, or tribes that do not have delegated authority; the EPA for states, territories, or tribes that do not have delegated authority	Utilization, Capture, Transportation	Discharge of dredge or fill materials to waters of the U.S. / Federal water quality certifications	33 U.S.C. §1344/33; U.S.C. §1341
Hazardous Materials Transportation Act	Department of Transportation	Transportation,	The Hazardous Materials Transportation Act protects against the risks to life, property, and the environment that are inherent in the transportation of hazardous material in intrastate, interstate, and foreign commerce.	49 U.S.C. 5101 et seq. and 49 CFR Parts 100-185
Endangered Species Act	Department of the Interior (generally for terrestrial and freshwater species) and Department of Commerce (generally for marine species)	Transportation, Geologic Sequestration	ESA consultation must occur to prevent Federal action that may jeopardize an endangered or threatened species or result in destruction or adverse modification to critical habitat. If a Federal action “may affect” listed species, the action agency must pursue consultation with either the U.S. Fish and Wildlife Service (FWS) or NOAA Fisheries, depending on the species involved.	16 U.S.C. §1531 et seq.; 50 CFR Part 17
Fish and Wildlife Conservation Act / Fish and Wildlife Coordination Act	Department of the Interior	Utilization, Capture, Transportation, Geologic Sequestration	The Fish and Wildlife Conservation Act, 16 USC §2901 et seq., encourages Federal agencies to conserve and promote conservation of non-game fish and wildlife species and their habitats. In addition, the Fish and Wildlife Coordination Act, 16 USC §661 et seq., requires Federal agencies undertaking projects affecting water resources to consult with the Fish and Wildlife Service and the appropriate state wildlife agency.	16 U.S.C. § 2901-2912; 50 CFR Part 83; 16 U.S.C. § 661-667d
Rights-of- Way for Pipelines through Federal Lands – Federal Lands	Department of the Interior	Transportation,	Rights-of-way through any Federal lands may be granted by the Secretary of the Interior Department or the appropriate agency head for pipeline purposes for the transportation of oil, natural gas, synthetic liquid or gaseous fuels, or any refined product produced therefrom.	30 U.S.C. 185; 43 CFR Part 2880



Federal Permit or Review	Agency	Type of Project	Summary of Permitting/Review and Responsibility	Authority
Federal Land Policy and Management Act (FLPMA) – Federal Lands	Department of the Interior	Transportation, Geologic Sequestration	The FLPMA directs the BLM to adopt Resource Management Plans to provide for multiple use and sustained yields on public lands. The FLPMA also directs the BLM to prevent unnecessary or undue degradation of the land.	43 U.S.C. §§1701-1785
National Forest Management Act – Federal Lands	Department of Agriculture	Transportation, Geologic Sequestration	The National Forest Management Act directs the U.S. Forest Service to adopt Land and Resource Management Plans to provide for multiple use and sustained yields within National Forests.	16 U.S.C. §1600 et seq.
Mineral Leasing Act – Federal Lands	Department of the Interior	Transportation, Geologic Sequestration	Leases for Federal Minerals.	30 U.S.C. §181 et seq.; 30 U.S.C. §351-359; 43 CFR Part 2800
National Environmental Policy Act	Council on Environmental Quality	Utilization, Capture, Transportation, Geologic Sequestration	Establishes requirements for environmental reviews of Federal actions, including requirements for preparation of EA and EIS for major Federal actions.	42 U.S.C. §4321 et seq.; 40 CFR Parts 1500-1508
National Historic Preservation Act	Advisory Council on Historic Preservation	Utilization, Capture, Transportation, Geologic Sequestration	The National Historic Preservation Act requires Federal agencies to evaluate the impact of Federal actions on sites listed on, or eligible for, the National Register of Historic Places. Federal agencies must consult with State Historic Preservation Offices, Tribal Historic Preservation Offices, American Indian and Alaskan Native Tribes, and Native Hawaiian Organizations before taking action that may affect resources of concern to them.	54 U.S.C. § 300101 et seq.; 36 CFR Part 800.3 et seq.
Outer Continental Shelf Lands Act (OCSLA) – Offshore	Department of the Interior	Transportation, Geologic Sequestration	Under OCSLA, DOI may permit the use of CO ₂ for enhanced oil recovery (EOR) activities on existing oil and gas leases on the Outer Continental Shelf.	43 U.S.C. §1334



Federal Permit or Review	Agency	Type of Project	Summary of Permitting/Review and Responsibility	Authority
Marine Protection, Research, and Sanctuaries Act – Offshore	EPA	Transportation, Geologic Sequestration	<p>Under the MPRSA, the EPA issues permits for the transportation and ocean disposal of materials other than dredged material. The EPA may issue a permit if the disposition of material will not unreasonably degrade or endanger human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities. The statutory language is defined broadly to include “any disposition” of material but does not include the placement of a device in ocean waters or on or in the submerged land beneath such waters, for a purpose other than disposal, when such construction or such placement is otherwise regulated by Federal or State law or occurs pursuant to an authorized Federal or State program. No MPRSA permit may be issued for industrial waste, which means any solid, semisolid, or liquid waste generated by a manufacturing or processing plant. The industrial waste prohibition was enacted by Congress in 1982, prior to the widespread understanding of carbon-capture technologies to reduce carbon streams to a plasma state with some properties of a liquid and some properties of a gas. CO₂ streams prepared for storage are not solid, semisolid or liquid wastes.</p>	16 U.S.C. §1431 et seq.; 33 U.S.C. §1401 et seq.



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