

# CCUS Peer State Review

House Resources Committee

February 17, 2023





# PEER STATE REVIEW



# Peer State Review

CCUS legislation is relatively new for most jurisdictions

- ✓ Most legislation is designed to support UIC Class VI primacy and follows EPA guidance

11 states have CCUS legislation in place

- ✓ 8 states have fully developed CCUS legislation
- ✓ 5 foreign states were also reviewed

Several common legislative themes emerged from the review



# Peer State Review - Themes

Regulatory Theme Legend	Wyoming	North Dakota	Texas	Louisiana	Mississippi	Nebraska	Utah	West Virginia
	Purpose	Purpose	Purpose	Purpose	Purpose	Purpose	Purpose	Purpose
Storage Regulatory Purpose & Scope	Definitions	Definitions	Definitions	Definitions	Definitions	Definitions	Definitions	Definitions
Establishment of Authority	Authority Established	Authority Established	Jurisdiction (Authority Established)	Authority Established	Authority Established	Rights (ownership)	Authority Established	Permit Requirements
Resource Designation	Regulatory	Permit Requirements	Applicability	Regulatory	Regulatory	Authority Established	Permit Requirement	Public Participation
Fiscal Support	Enforcement	Permit Hearings	Permitting	Enforcement	Enforcement	Permit Requirements	Hearings	Permit Provisions
Permitting Process	Permit Requirements	Permit Consultations	Information required of applicant	Hearings, Rules, Emergency, Public Records	Approval of reservoir	Hearings	Findings to Issue Permit	Add Rule making authority
Liability	Permit Hearings	Permit Provisions	Fees	Underground Injection Control	Protection of Correlative Rights	UIC Authority	Permit Provisions	Environmental Protection
Operations	Permit Consultations	Amalgamating Property Interests	Letter from executive director	Certificate of completion	Unit operation	Rights	Amalgamation of Interests	Other Activities
Environmental Considerations	Permit Provisions	Certificate	Rules	Eminent domain	Permit provisions	Fee	Carbon Dioxide Storage Amalgamation Unit Establishment	Cooperative Agreements
	Environmental Protection	Environmental Protection	Consistency with federal requirements	Liability release	Permit hearings	Completion	Requirement record	carbon dioxide ownership
	Ownership & Rights	Preservation of rights	Memorandum of understanding		Compliance and enforcement	Penalties	Preservation of Rights	Certification of Completion
	Fees	Fees	Fiscal responsibility		Storage operations	Trusts	Title	Administration fund
	Administration Fees	Administration Fees	Definitions		Fees	Authorization	Certification of Project Completion	Fees
	Carbon Dioxide Trust Fund	Carbon Dioxide Trust Fund	Ownership of anthropogenic carbon dioxide		Carbon Dioxide Trust Fund		Cooperative Agreements / Contracts	Carbon Credits
	Title & Liability	Title to carbon dioxide	Anthropogenic Carbon Dioxide Storage Trust Fund		Title / Liability		Public Interests	Pore/Container Space
	Certificate of Project Completion / Release	Certificate of Project Completion / Release	Extraction of carbon dioxide		Cessation of storage operation		Adoption of Procedure	Pore Ownership
	Oil and Gas conservation Commission	Penalties			Release bond/assurance / deposit		Fees	Funds
	Enhanced Recovery	Enhanced Recovery					Trust	Judicial Review
	Ownership of materials injected	Cooperative Agreements / Contracts						
	Permit Requirements	Trusts/Monopolies						
	Unitization of geologic sequestration sites	Participation of Public Interest						
	Special revenue account (fees)	Storage Amount						
	Administration fund							
	Fund post-completion							
	Authority							

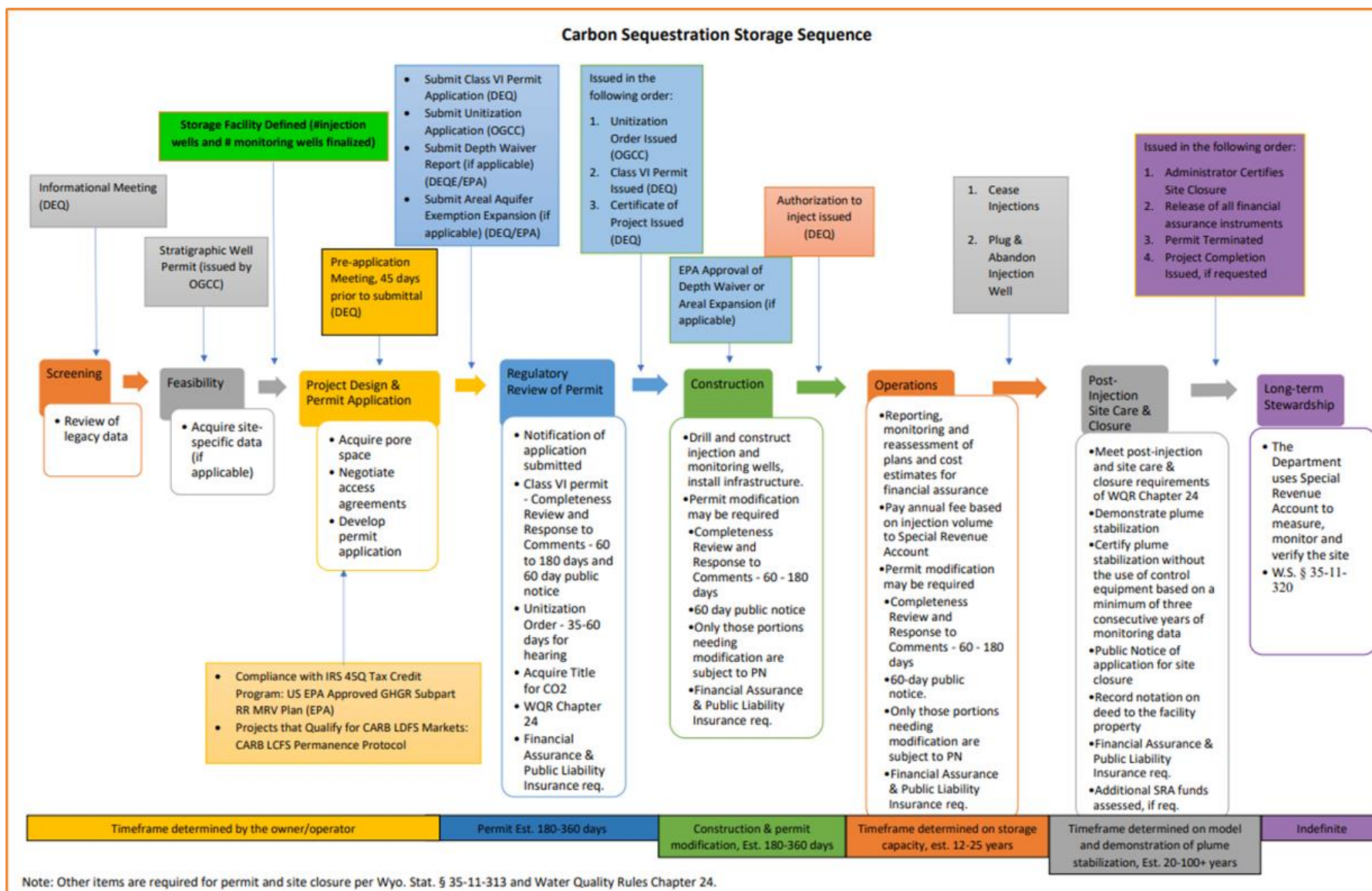


# Peer State Review – Common Themes

- ✓ Regulatory Purpose & Scope
  - ✓ Define terms
- ✓ Establishment of Authority
- ✓ Fiscal Issues
  - ✓ Tax Incentives
  - ✓ Fees
- ✓ Resource Designation
  - ✓ Pore Space Licensing
  - ✓ Mineral Ownership
  - ✓ Preservation of Existing Rights / Subordination
- ✓ Permitting Process
  - ✓ Amalgamation
- ✓ Liability
  - ✓ Funding Long-Term Liability
- ✓ Storage Operations
  - ✓ Measuring, Monitoring, and Verification
- ✓ Environmental Considerations
  - ✓ SDWA Compliance



# Example CCUS State Program - Wyoming



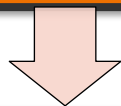




# UNDERGROUND INJECTION CONTROL

# Underground Injection Control Program

Contained within U.S. Safe Drinking Water Act (SDWA)



UIC Program designed to protect underground sources of drinking water (USDW)



EPA assigned authority to regulate underground injection of fluids for storage or disposal, including Enhanced Oil Recovery (EOR) and geologic sequestration of CO<sub>2</sub>.

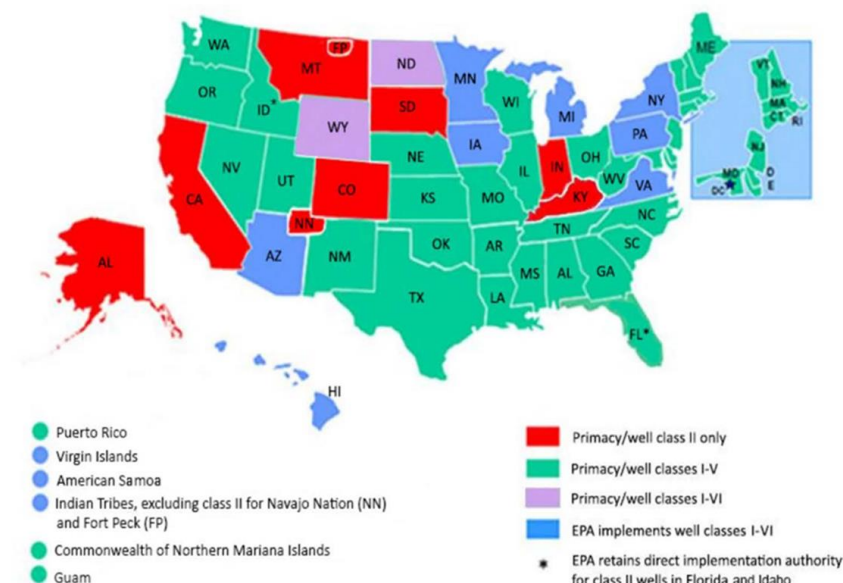
SDWA allows for primary enforcement (i.e. primacy) to states, territories, and tribes

- State must adopt and implement programs that meet federal requirements (as a minimum)

Two states granted primacy for Class VI wells

- North Dakota in 2018
- Wyoming in 2020

Ten states in application phase for Class VI primacy





# Underground Injection Control Program – Well Classes

Class I – Industrial and Municipal Waste Disposal

- Example: Brine discharge from water recycling plants

Class II – Oil and Gas Related Injection Wells

- Example: EOR (Steam, CO<sub>2</sub>), Produced Water Injection

Class III – Injection Wells for Solution Mining

- Example: Lithium & potash mining

Class IV – Shallow Hazardous and Radioactive Injection Wells (Banned)

Class V – Injection of Non-Hazardous Fluids into or Above Underground Sources of Drinking Water

- Example: Aquifer Storage and Recovery

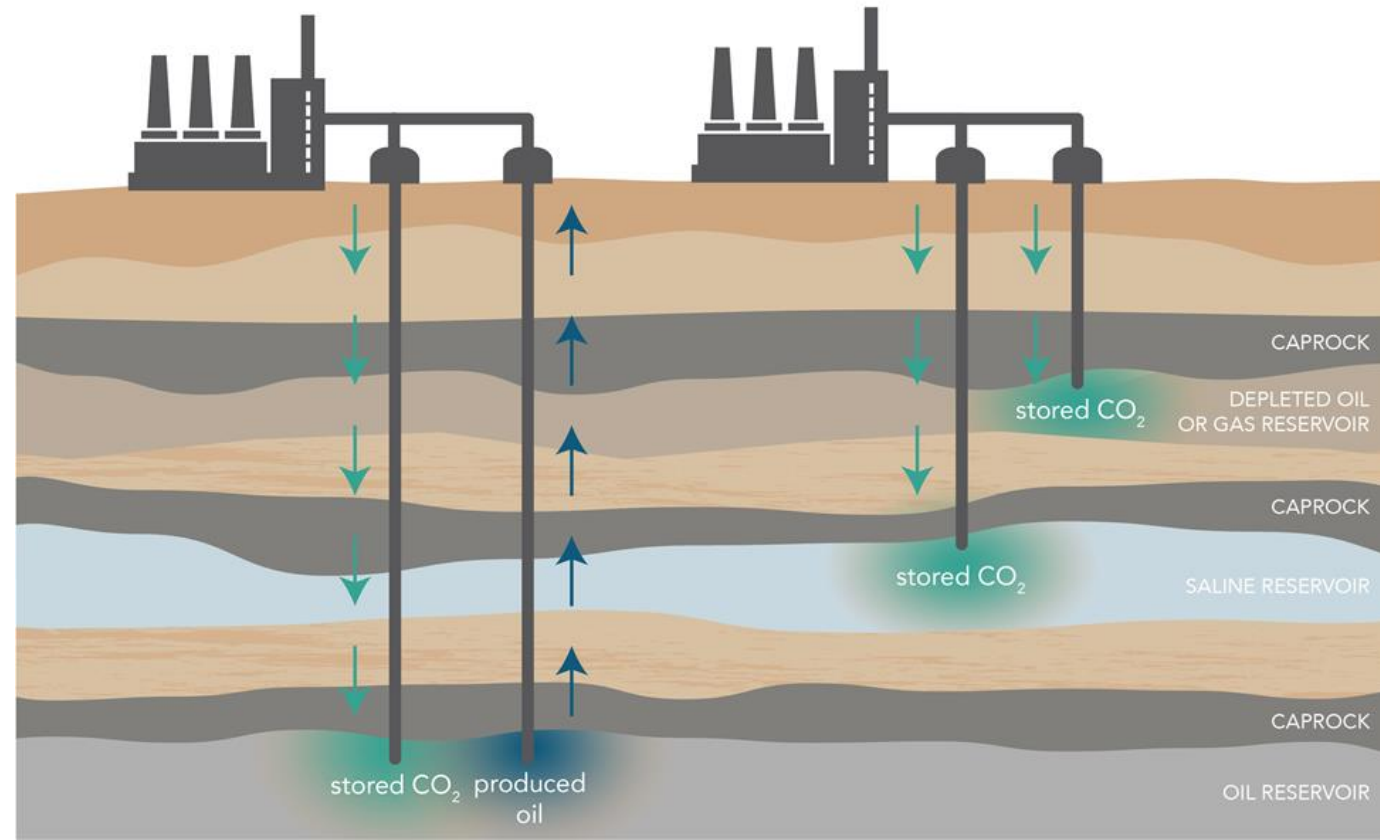
Class VI – Wells Used for Geologic Sequestration of CO<sub>2</sub>

## Class II wells

CO<sub>2</sub> driven  
enhanced oil recovery

## Class VI wells

CO<sub>2</sub> injection into deep saline formations  
& depleted oil & gas reservoirs





# Questions?

*Thank you*







# Carbon Capture, Utilization, and Sequestration – Commercial Terms Survey

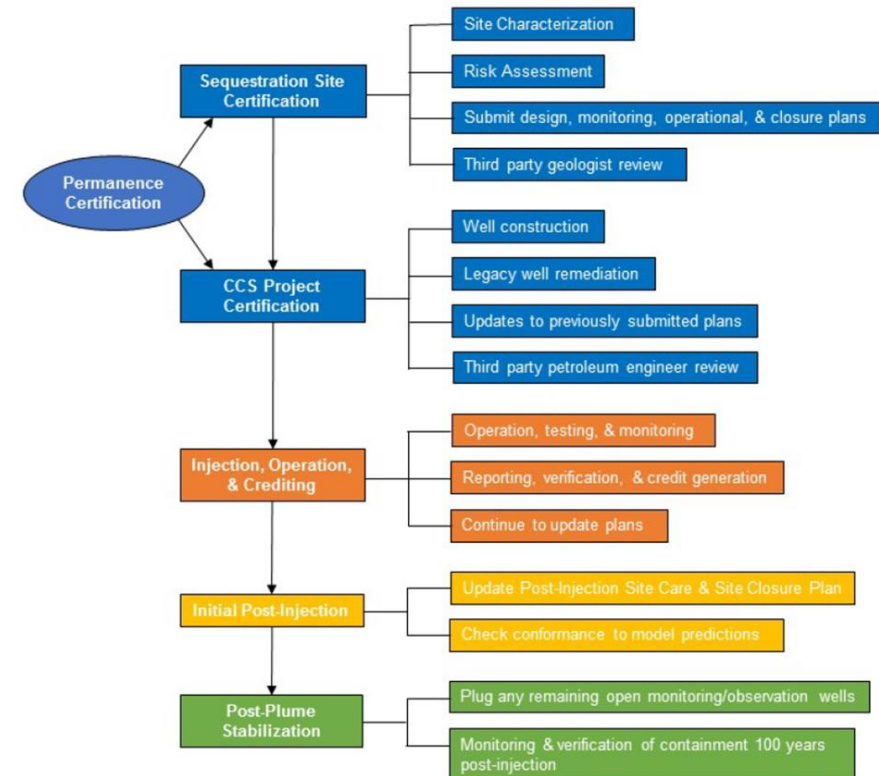
# Commercial Terms Survey – Common Themes

Limited number of lease terms available for review

- Leases for underground storage of natural gas have some similarities

- Lease Offering Methods
- Subsurface rights
  - Pore space ownership
- Royalty Rates
- Revenue Sharing
- Lease Terms
- Rental Rates & Injection Fees
- Concurrent Use
- Plume Migration & Management
- Work Commitments
- Right of First Refusal
- Financial Guarantees & Liabilities

Lease Offering Method	Description	Examples
Competitive	State puts up tracts or blocks for competitive bid.	North Sea (Norway) Alberta, Canada
Negotiated	Operator submits a proposal to the relevant regulatory agency and negotiates terms.	Louisiana (current leases) North Dakota
Nomination with Competition	State holds a licensing round to nominate lease areas, followed by competitive applications within the nominated area	North Sea (United Kingdom) Louisiana (new leases)



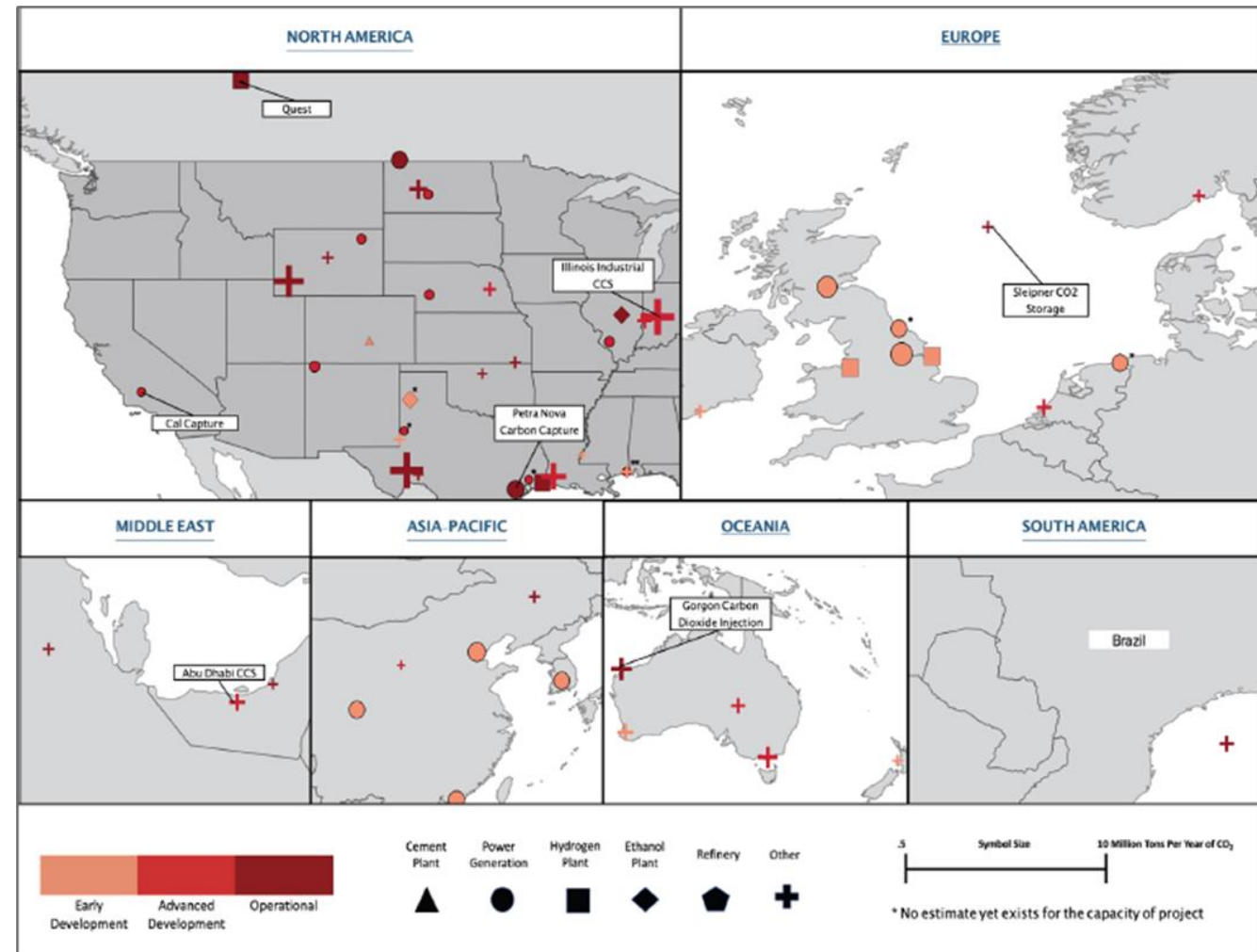




# Carbon Capture, Utilization, and Sequestration – Extra Slides

# Topics

- Underground Injection Control & Class VI Primacy
- Peer State Review







# Class VI Permitting Process

## Application

- Follow EPA Template and Guidance
- Geological Sequestration Data Tool (GSDT)
- EPA reviews applications, provides feedback

## Permit to Construct

- EPA issues public notice of draft permit
- EPA may hold public hearing
- EPA provides notice to state and local agencies
- EPA issues final permit to drill

## Well Completion Report

- Applicant submits well completion report to EPA
- EPA may request additional information on modeling or other changes

## Permit to Inject

- EPA prepares draft Permit to Inject
- Public noticing, comment, and hearing
- EPA issues final Permit to Inject

# Class VI Application Components

- Geologic Site Characterization
- Area of Review (AoR) and Corrective Action Plan
- Financial Responsibility Requirements
- Injection Well Design/Testing
- Testing and Monitoring Plan
- Well Plugging Plan
- Post-Injection Site Care and Site Closure Plan
- Emergency and Remedial Response Plan
- Injection Depth Waiver (Optional)
- Expansion of Class II Aquifer Exemption (Optional)





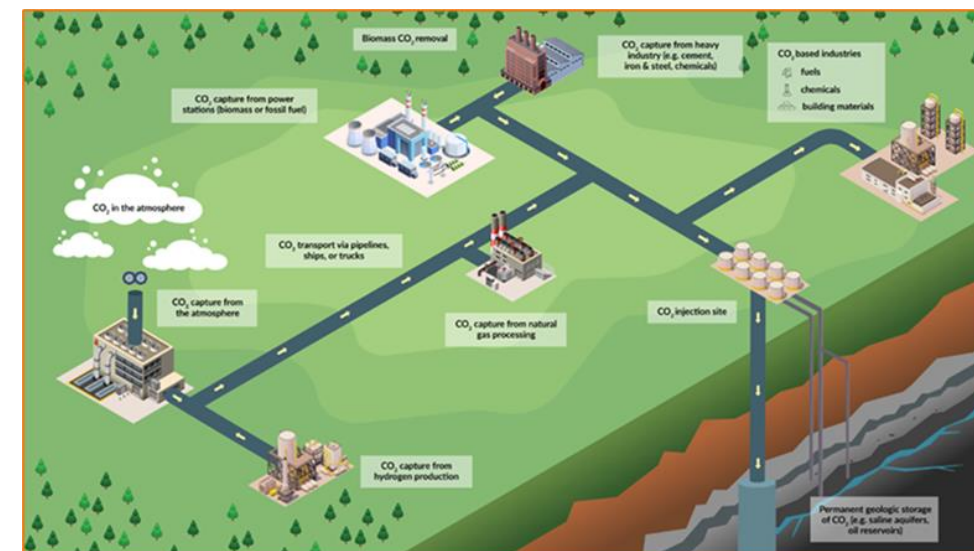
# Recent Federal Guidance

- Infrastructure Investment and Jobs Act (IIJA)
- Council on Environmental Quality – Regulatory Guidance
- EPA – Proposed Rule for CCUS permitting
- DOE – Academic training and research, Funding Opportunities for CCS-related projects

# Federal Section 45Q Tax Credits

## Internal Revenue Service Final Regulations:

- Geological storage and utilization requirements
- Qualified capture facilities and commercial use markets
- Recapture period and thresholds for carbon oxide leaks
- Tax credit transfers
- Value of credits increase linearly through 2026, then increases by inflation adjustment factor
  - Disposed carbon oxide results in higher credit value than injected or utilized
  - Intended to propel growth of carbon capture and sequestration



45Q TAX CREDIT VALUE AVAILABLE FOR DIFFERENT SOURCES AND USES OF CO<sub>2</sub>

Minimum Size of Eligible Carbon Capture Plant by Type (ktCO <sub>2</sub> /yr)				Relevant Level of Tax Credit in a Given Operational Year (\$USD/tCO <sub>2</sub> )										
Type of CO <sub>2</sub> Storage/Use	Power Plant	Other Industrial Facility	Direct Air Capture											
				2018	2019	2020	2021	2022	2023	2024	2025	2026	Beyond 2026	
Dedicated Geological Storage	500	100	100	28	31	34	36	39	42	45	47	50	Indexed to Inflation	
Storage via EOR	500	100	100	17	19	22	24	26	28	31	33	35		
Other Utilization Processes <sup>1</sup>	25	25	25	17 <sup>2</sup>	19	22	24	26	28	31	33	35		

<sup>1</sup> Each CO<sub>2</sub> source cannot be greater than 500 ktCO<sub>2</sub>/yr

<sup>2</sup> Any credit will only apply to the portion of the converted CO<sub>2</sub> that can be shown to reduce overall emissions