GLOBAL CCS INSTITUTE

InvestAlberta

AMERICAS MEMBER MEETING

AGENDA

TIME	SESSION TITLE
9:00 AM	Check In and Networking
10:00 AM	Opening Remarks
10:20 AM	Advancing CCS in Alberta
11:00 AM	Enabling U.S. Competitiveness Through Decarbonized Industry
11:40 AM	Fireside Chat: Bridging Innovation and Regulation
12:10 PM	Networking Lunch
1:10 PM	Advancing CCS In California
1:50 PM	The Role of National Wildlife Federation in Carbon Management Policy
2:05 PM	Geologic Storage with Enhanced Recovery: Strengthening Energy Security and Driving Decarbonization
2:45 PM	Comprehensive Carbon Accounting: Key to Unlocking Commercial Investment in Hard to Abate Sectors
3:00 PM	Afternoon Networking Break
3:30 PM	Leading the Way on Low Carbon Power: Glacier Phase 2 CCS Project
3:45 PM	From Policy to Prosperity: States Driving CCS Deployment
4:30 PM	Data Center Growth Outlook in the Wake of the Artificial Intelligence Boom
4:45 PM	AI Data Centers
5:25 PM	Closing Remarks
5:30 PM	Networking Reception Sponsored by California Resources Corporation (CRC)

THANK YOU SPONSORS

Program Sponsor

InvestAlberta

Reception Sponsor

CALIFORNIA RESOURCES | CARBON TERRAVAULT

HOUSEKEEPING

Wi-Fi

- Network: WestinMeetingRooms
- Password: global2025

Chatham House Rule

In order to encourage candid conversation, today's discussions are off the record. Participants are free to use the information shared, but neither the identity nor the affiliation of speakers or participants may be revealed. The Institute will prepare a high level summary for our website of the topics and themes discussed today without including identifiable details.

Safety

In case of an emergency, please follow hotel staff instructions and exit using the nearest marked route. The assembly point is Union Square Plaza, directly outside the main hotel entrance.

Restrooms

Located near the Golden Gate Room foyer — follow signs past the tower elevators.

OPENING REMARKS

GLOBAL STATUS OF CARBON CAPTURE AND STORAGE

Jarad Daniels

Chief Executive Officer
Global CCS Institute

Global Snapshot

GLOBAL CCS INSTITUTE

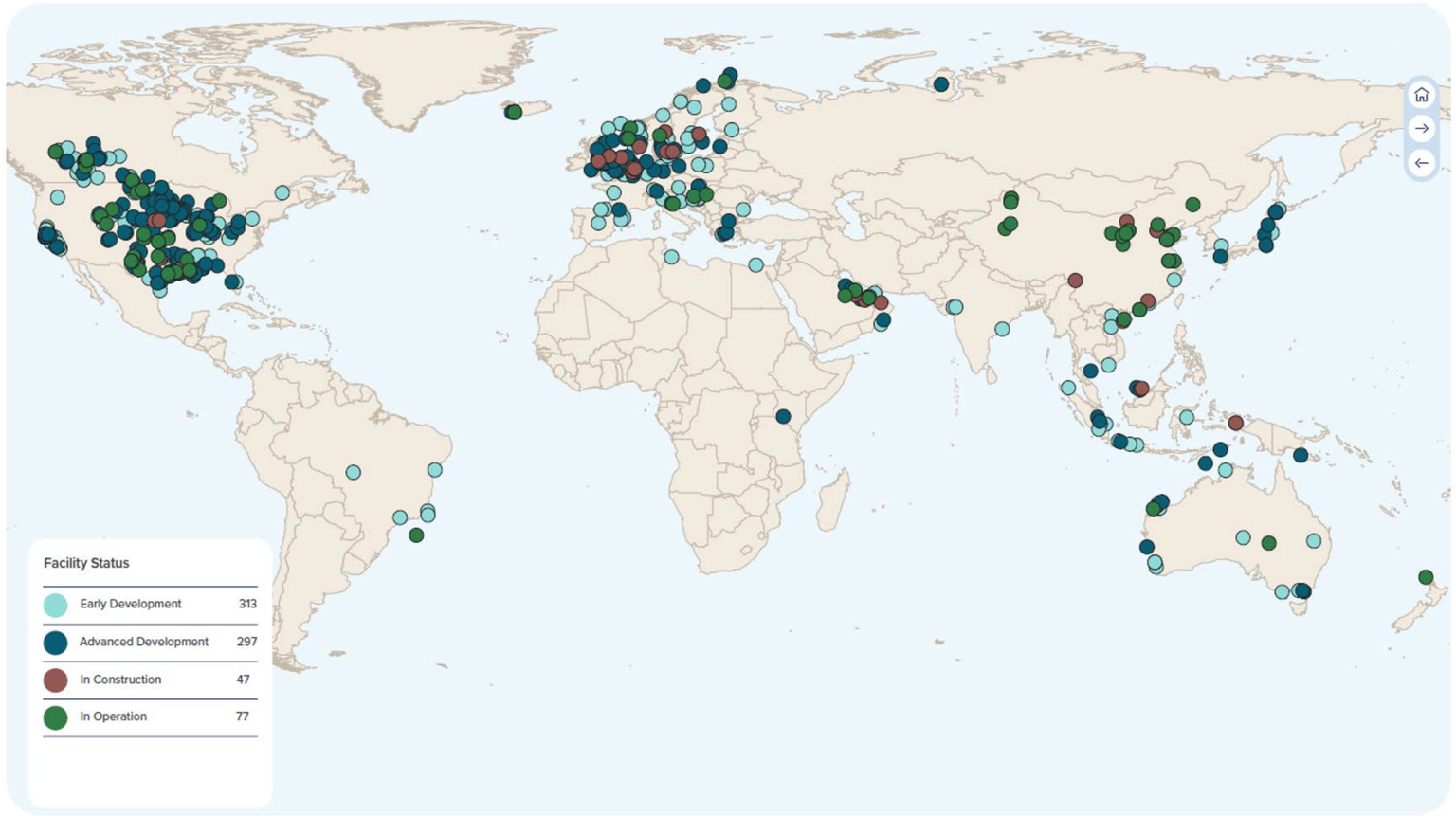
WHERE THERE'S POLICY, THERE'S PROJECTS

Notable policy advances over the past 12 months are providing greater certainty for investors

46%
Increase in the capture capacity of facilities in advanced development (FEED) from 180 to 262 Mtpa.

734
Total number of facilities rises 17% year on year

513 Mtpa
Total capture capacity rises 23% year on year



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ADVANCING CCS IN ALBERTA

Traci Rodosta

Head of Americas
Global CCS Institute
[MODERATOR]

Mark Plamondon

Executive Director
Alberta's Industrial
Heartland Association

Adrian Corless

CEO
Carbon Capture Inc.

Mac Walton

Manager, Policy and
Commercial
International CCS
Knowledge Centre

Tate Turner

Investment Advisor
Invest Alberta

ENABLING U.S. COMPETITIVENESS THROUGH DECARBONIZED INDUSTRY

Traci Rodosta

Head of Americas
Global CCS Institute
[MODERATOR]

Jonathan Flynn

Director, Clean Energy Solutions
CF Industries

Mercy Renteria

National BDM Director
Hydrogen and CCUS
Endress + Hauser

John Litynski

Head of CCUS
EQT

Lars-Erik Gaertner

Director of Sales and Business Development
Linde

FIRESIDE CHAT: BRIDGING INNOVATION AND REGULATION

Jarad Daniels

Chief Executive Officer
Global CCS Institute
[MODERATOR]

Dr. Steven Cliff

Executive Officer
California Air Resources Board
(CARB)

Francisco Leon

President and CEO
California Resources
Corporation (CRC)

NETWORKING LUNCH – 1 HOUR

Kindly sponsored by Invest Alberta

We will resume the program at 1:10 PM

ADVANCING CCS IN CALIFORNIA

Kamalpreet Kaur

Regional Manager
Americas
Global CCS Institute
[MODERATOR]

Jonathan Dethloff

Director Strategy &
Market Intelligence
California Resources
Corporation (CRC)

Vikrum Aiyer

Head of Global
Public Policy
Heirloom

Bob Slettehaugh

Director Carbon Capture
Kiewit

Sarah Saltzer

Managing Director
Stanford Center for
Carbon Storage

THE ROLE OF NATIONAL WILDLIFE FEDERATION IN CARBON MANAGEMENT POLICY

Dr. Simone H. Stewart

Senior Industrial Policy Specialist

Climate and Energy Policy

National Wildlife Federation

The Role of National Wildlife in Carbon Management

Simone H. Stewart, Ph.D.
Senior Industrial Policy Specialist
Climate & Energy | National Wildlife Federation

Global CCS Institute Americas Member Meeting
November 4, 2025

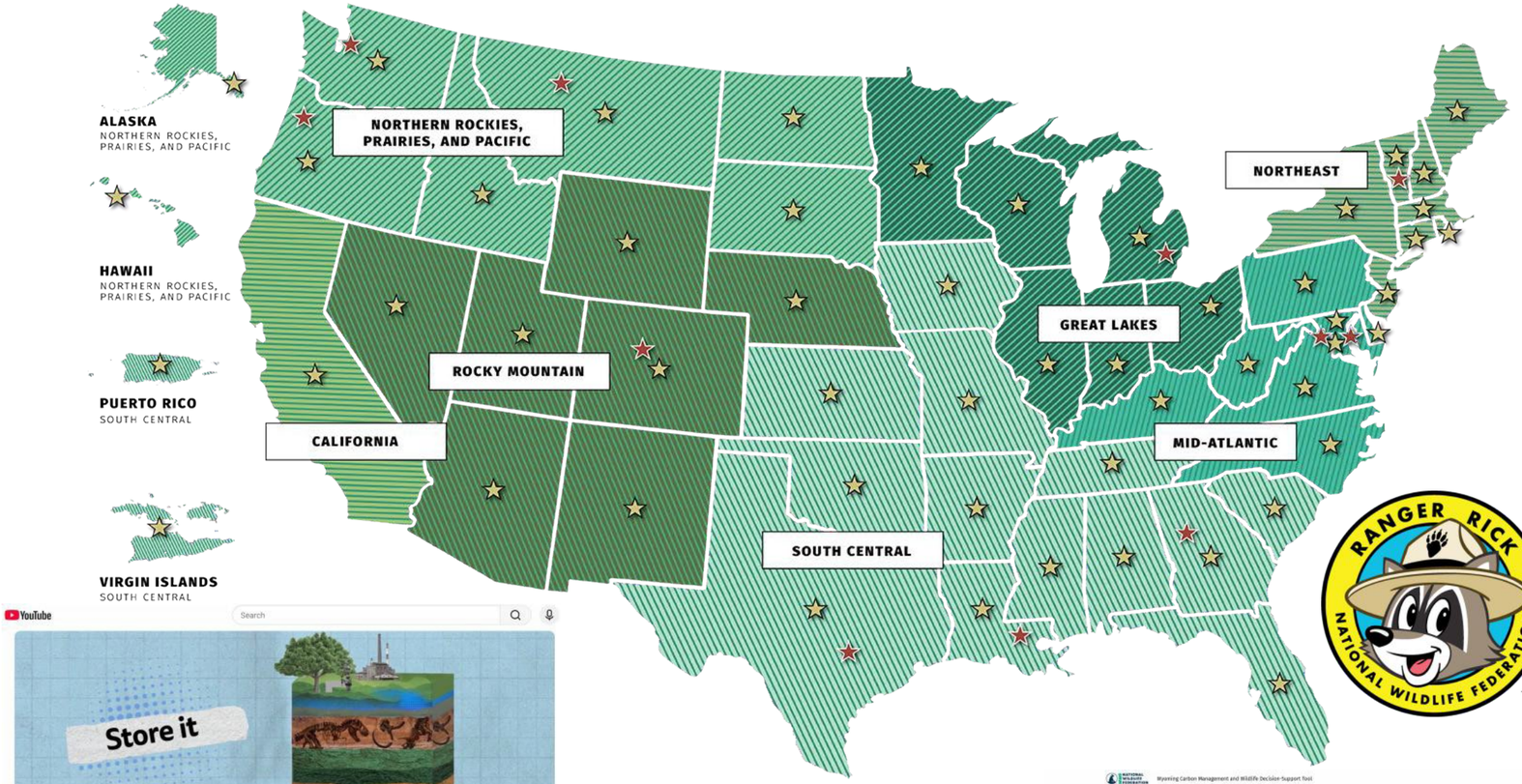
NATIONAL WILDLIFE FEDERATION

National Wildlife Federation Vision & Structure

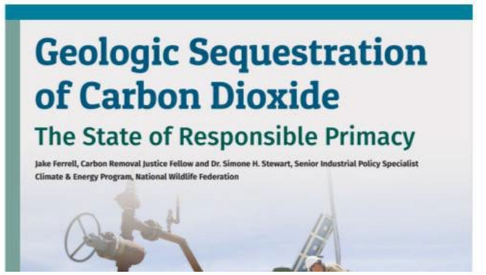
Equal Strategic Pillars:

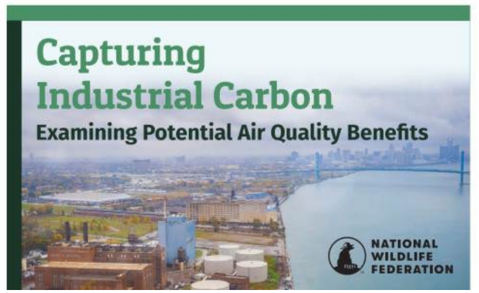
- Wildlife Recovery
- Climate Solutions
- Environmental Justice

- 52 State and Territorial Affiliates (independent organizations)
- 7 Regional Centers plus HQ in VA and DC National Advocacy Center
- ~450 staff
- 7 million members and supporters

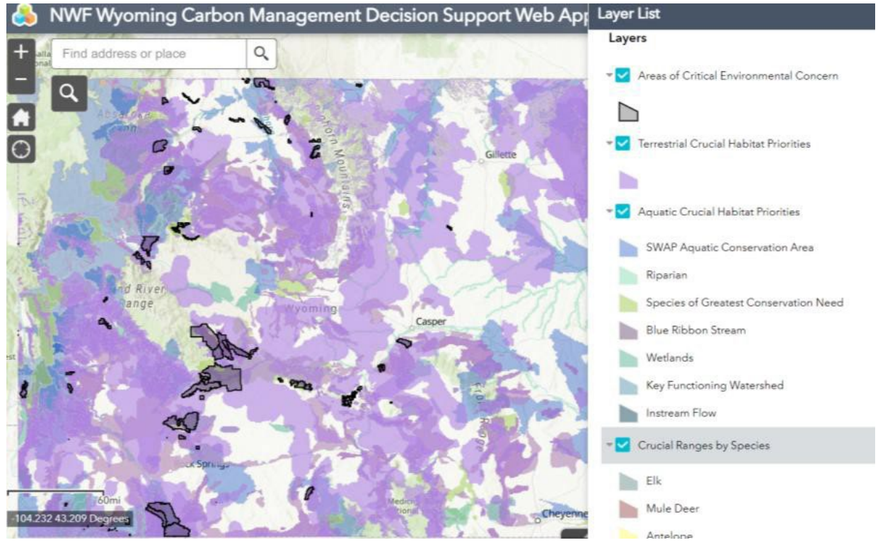


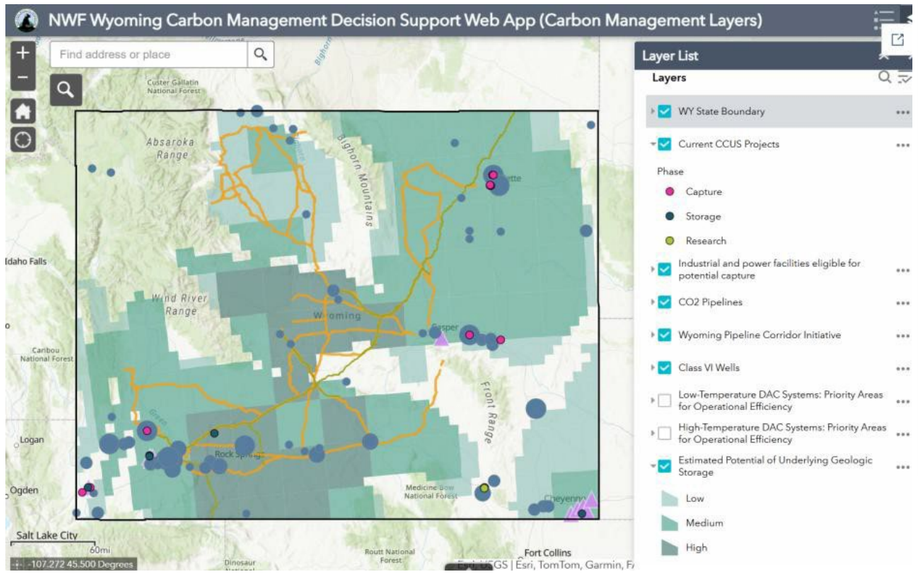
How to Store Carbon Dioxide, Permanently



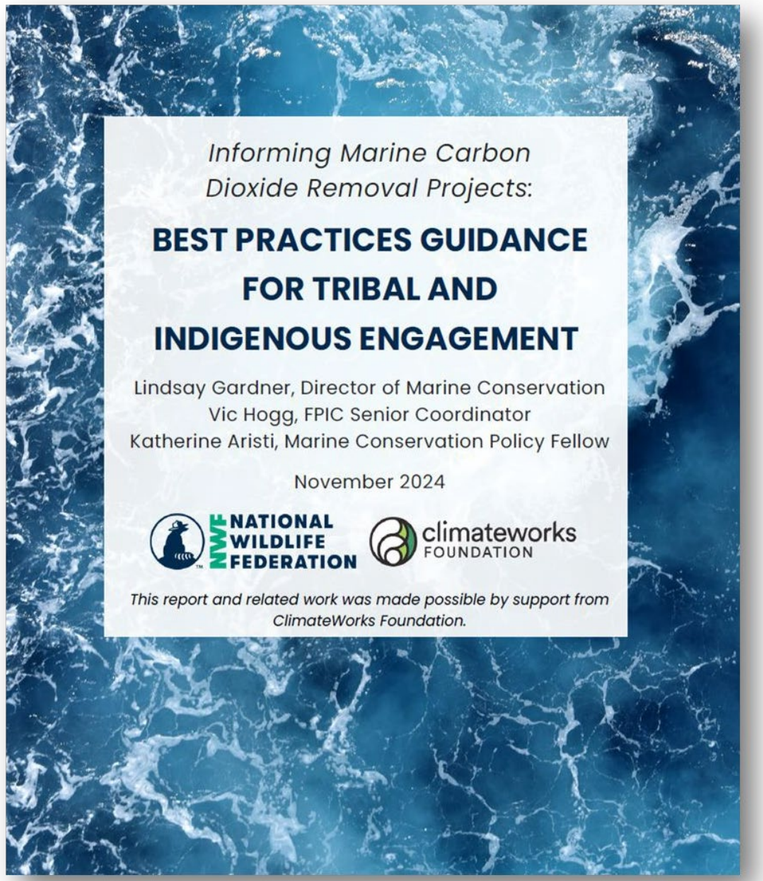


NWF works with a variety of stakeholders…





Mapping Tool was a collaboration with Carbon Solutions with review by WY Game & Fish.



Best Practices Guide includes feedback from Tribal focus groups.

CRJF Program is run in partnership with American University.

NATIONAL WILDLIFE FEDERATION

Thank you!

StewartS@nwf.org

OCTOBER 2025

CO_2 Pipeline Regulation and Policy Education Memo

By: Sarah Kallgren and Dr. Simone H. Stewart

Aerial View of Manufacturing Plant, Tom Fisk

Purpose of Memo

The Intergovernmental Panel on Climate Change (IPCC) has confirmed that to meet our climate goals, carbon capture and removal technologies at some level of commercial scale are needed.[1] These strategies use chemical filters to remove carbon dioxide (CO_2) from smokestack emissions, or from the ambient air. These technologies also require additional development of supporting infrastructure like pipelines to transport the CO_2 to its final destination. When carbon capture equipment is installed on a facility or a carbon removal project is developed, the CO_2 emissions that are captured and condensed are either stored deep underground or recycled to create other materials. Some industrial facilities have underground storage capacity on site, but not always. Sometimes the storage or utilization site may be miles away. In this case, pipelines are the industry-standard method of transporting CO_2 from where it is captured to where it will be used or stored.

[1] Hunt, Kara. "What Does the Latest IPCC Report Say about Carbon Capture?" Clean Air Task Force, April 20, 2022.

NATIONAL WILDLIFE FEDERATION

GEOLOGICAL STORAGE WITH ENHANCED RECOVERY:
STRENGTHENING ENERGY SECURITY AND DRIVING DECARBONIZATION

Poh Boon Ung

General Manager
Strategic Advocacy
Growth & Engagement
Global CCS Institute
[MODERATOR]

Matt Wallace

Senior Project Manager
Advanced Resources
International (ARI)

Ryan Edwards

Director of Policy
Oxy

Jason Baihly

Integration & Production
Solutions Manager
SLB

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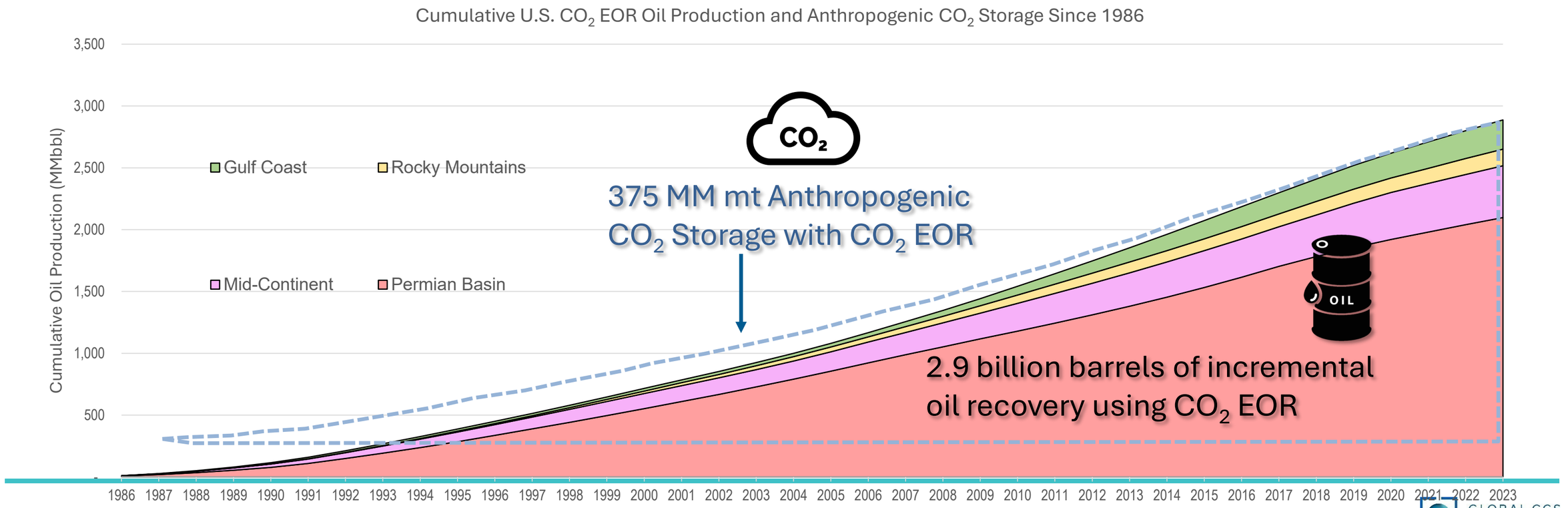
Cumulative Oil Production and CO_2 Storage with CO_2 EOR

- Since reporting began in 1986, the U.S. has produced over 2.9 billion barrels of incremental oil using CO_2 EOR.
- Over 375 MM mt of anthropogenic CO_2 has been permanently stored using CO2 EOR -- **an average of over 10 million metric tons of CO_2 per year for the last 37 years.**



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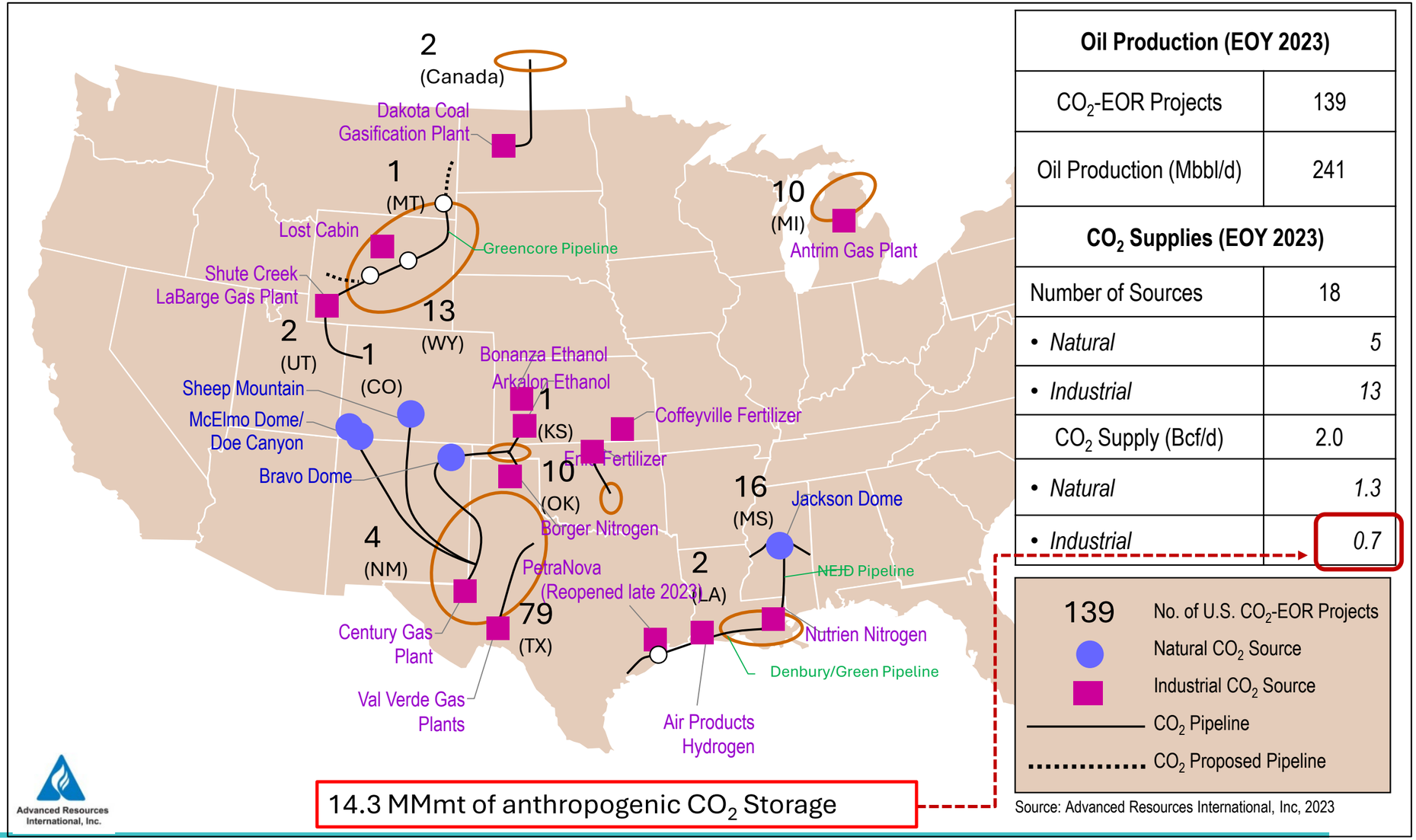
The Status of CO_2 EOR in the U.S. (EOY 2023)

- In 2023 **139 projects** produced **241,000 Mbbl/d** (87.9 MMbbl total) of incremental oil.
- **2.0 Bcf/d of CO_2** (761.7 Bcf / 40 MMmt total) was used for CO_2 EOR projects injection and permanently stored.
- This is a CO_2 utilization rate of about 8.7 Mcf/bbl (0.46 mt/bbl).



Oil Production (EOY 2023)	
CO_2-EOR Projects	139
Oil Production (Mbbl/d)	241
CO_2 Supplies (EOY 2023)	
Number of Sources	18
• *Natural*	*5*
• *Industrial*	*13*
CO_2 Supply (Bcf/d)	2.0
• *Natural*	*1.3*
• *Industrial*	*0.7*

139 No. of U.S. CO_2-EOR Projects
Natural CO_2 Source
Industrial CO_2 Source
CO_2 Pipeline
CO_2 Proposed Pipeline

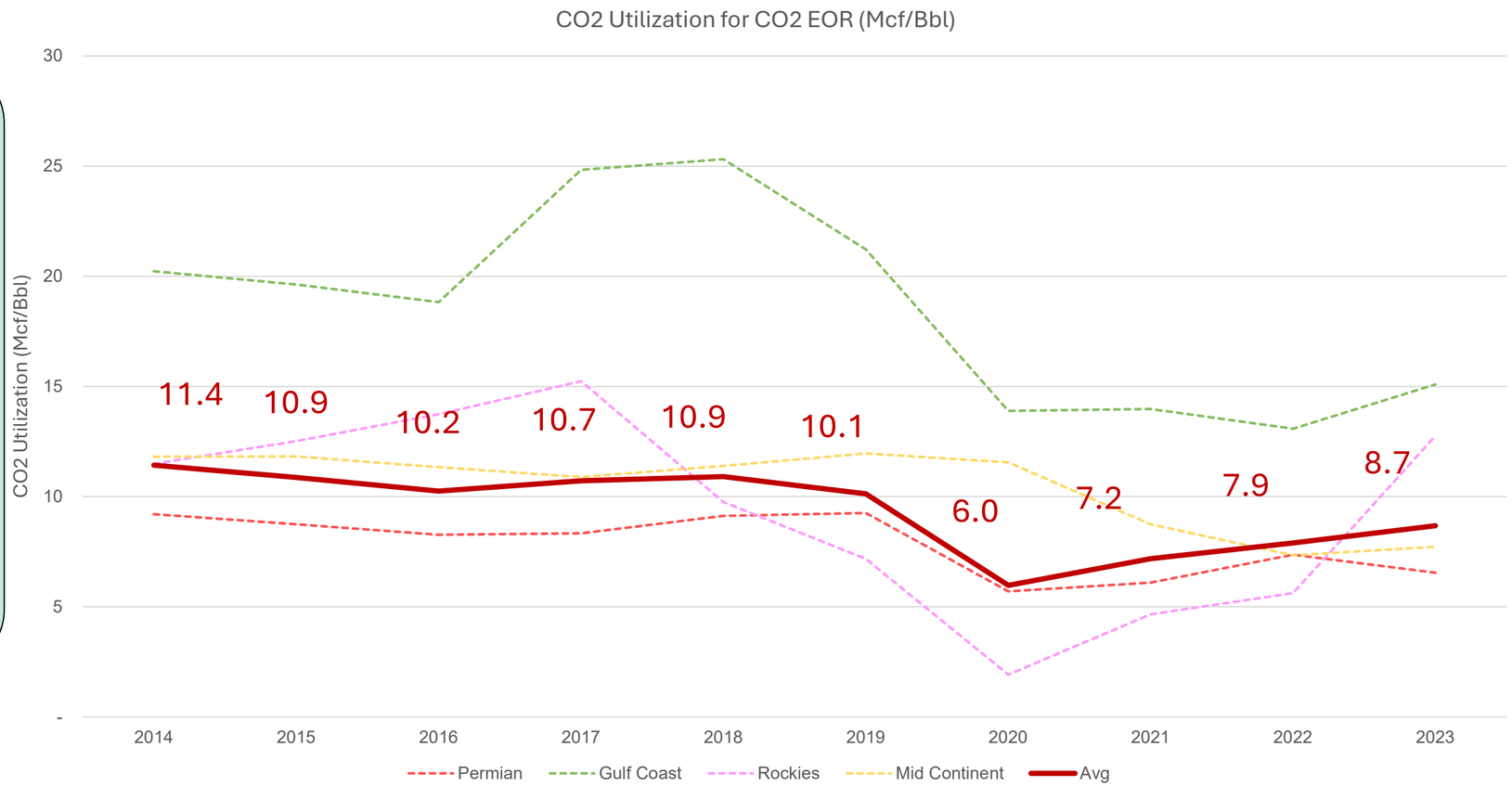
Source: Advanced Resources International, Inc, 2023

GLOBAL CCS INSTITUTE

CO_2 Utilization for CO_2 EOR in the U.S.

CO_2 Emissions Per Barrel of Produced Oil

Activity	CO_2 Emissions	
	(mt/bbl)	(Mcf/bbl)
Production	0.007	0.1
Transportation	0.004	0.1
Refining	0.024	0.5
Consumption	0.416	7.9
Total	0.451	8.6



- CO_2 utilization is the volume of CO_2 injection required to produce a barrel of oil using CO_2 EOR -- average CO_2 utilization in 2023 was 8.7 Mcf/bbl (0.46 mt/bbl).
- **CO_2 utilization above 8.6 Mcf/bbl (0.45 mt/bbl), using anthropogenic CO_2 supplies, provides a significant reduction in the carbon intensity of the produced oil.**

CO_2 Supplies for CO_2 EOR (EOY 2023)

- CO_2 supply for CO_2 EOR has declined since 2017, along with CO2 EOR oil production.
- However, anthropogenic CO_2 supply is increasing, relatively, as a larger percentage of total CO_2 supply.
- **Increased volumes of anthropogenic CO_2 for CO_2 EOR will lead to greater output of low-carbon intensity products in the U.S.**

GLOBAL CCS INSTITUTE

COMPREHENSIVE CARBON ACCOUNTING : KEY TO UNLOCKING COMMERCIAL INVESTMENT IN HARD TO ABATE SECTORS

Alex Kizer

Executive Vice President and Executive Director at H2DI
EFI Foundation

Unleashing Markets to Drive Emissions Reductions Begins with Comprehensive Carbon Accounting

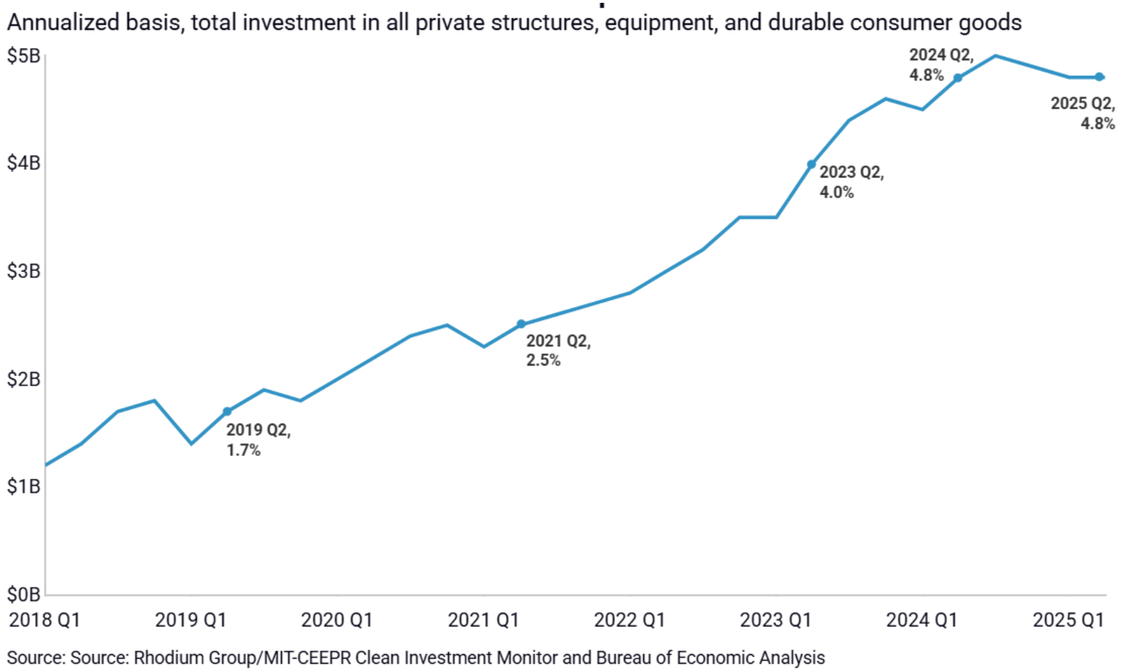
Alex Kizer, EFI Foundation

Nov 2025

Why Comprehensive Carbon Accounting is Important

- Energy demand is growing
- Supply-driven climate policies are inadequate for unlocking private investment
- Europe and China are developing new carbon standards that do not reflect America's competitive advantages
- Incumbent carbon measurement systems are not up to the task

Actual clean investment as a share of total U.S. private investment



Source: Source: Rhodium Group/MIT-CEEPR Clean Investment Monitor and Bureau of Economic Analysis

What is Comprehensive Carbon Accounting?

A new approach to quantifying and recording a business's transactions (e.g., purchase or sale of a fuel) that combines financial accounting and engineering. This enables companies to accounting for their own emissions so that all emissions are counted, only once.

Accounting

- Comprehensive Carbon Mass and Energy Balances
- Ledger-Based Accounting

Reporting

Voluntary	Compulsory
• RECs • Carbon balance • Facility GHG statements	• CBAM • Gov't inventories • GHG trading markets

How does Comprehensive Carbon Accounting Work?

EFI FOUNDATION

Principles

- Faithful Representation
- Relevance
- Comparability
- Verifiability
- Transparency

Building Blocks

Comprehensive carbon mass and energy balances

- "Gate-to-gate" boundary
- All emissions and carbon content
- Primary data; secondary data to be reconciled with primary data

Ledger-based accounting

- Interconnected ledgers across entities within supply chain
- A dual-sided ledger with a chart of accounts holds stocks and flows
- Double-entry bookkeeping of transactions as they occur

Rule book

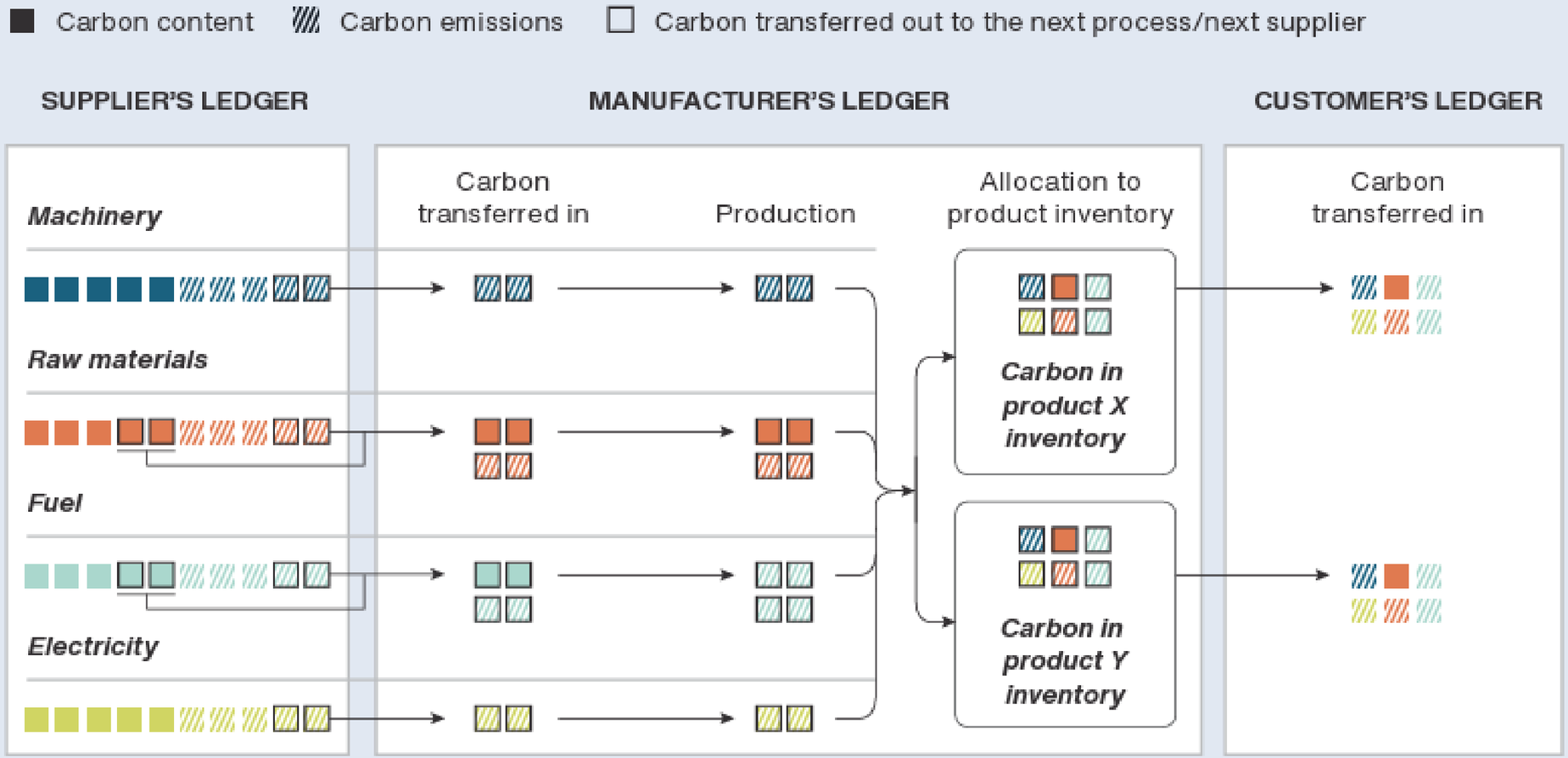
- Emissions allocation to products
- Emissions abatement within entity and offsets/credits from outside entity boundaries

Carbon accounting vs. LCAs

	Carbon Accounting	LCAs
Carbon Measurement	At its source by a single entity in control (only once by a single entity)	Anywhere by any entity (multiple counting or no counting)
Boundary	Gate-to-Gate (operations under the control of the entity)	Cradle-to-Grave (entire supply chain)
Time period	Carbon is recognized as it occurs (e.g., when direct emissions occur, when emissions transferred in with purchased materials)	Combine data from past, present, and future
Comprehensiveness	Product-level accounting aggregated to entity-level	Product-level results are not necessarily aligned with entity-level results
Data quality	Site-specific data (when feasible)	Broad averages

Combining financial accounting with energy and mass balances

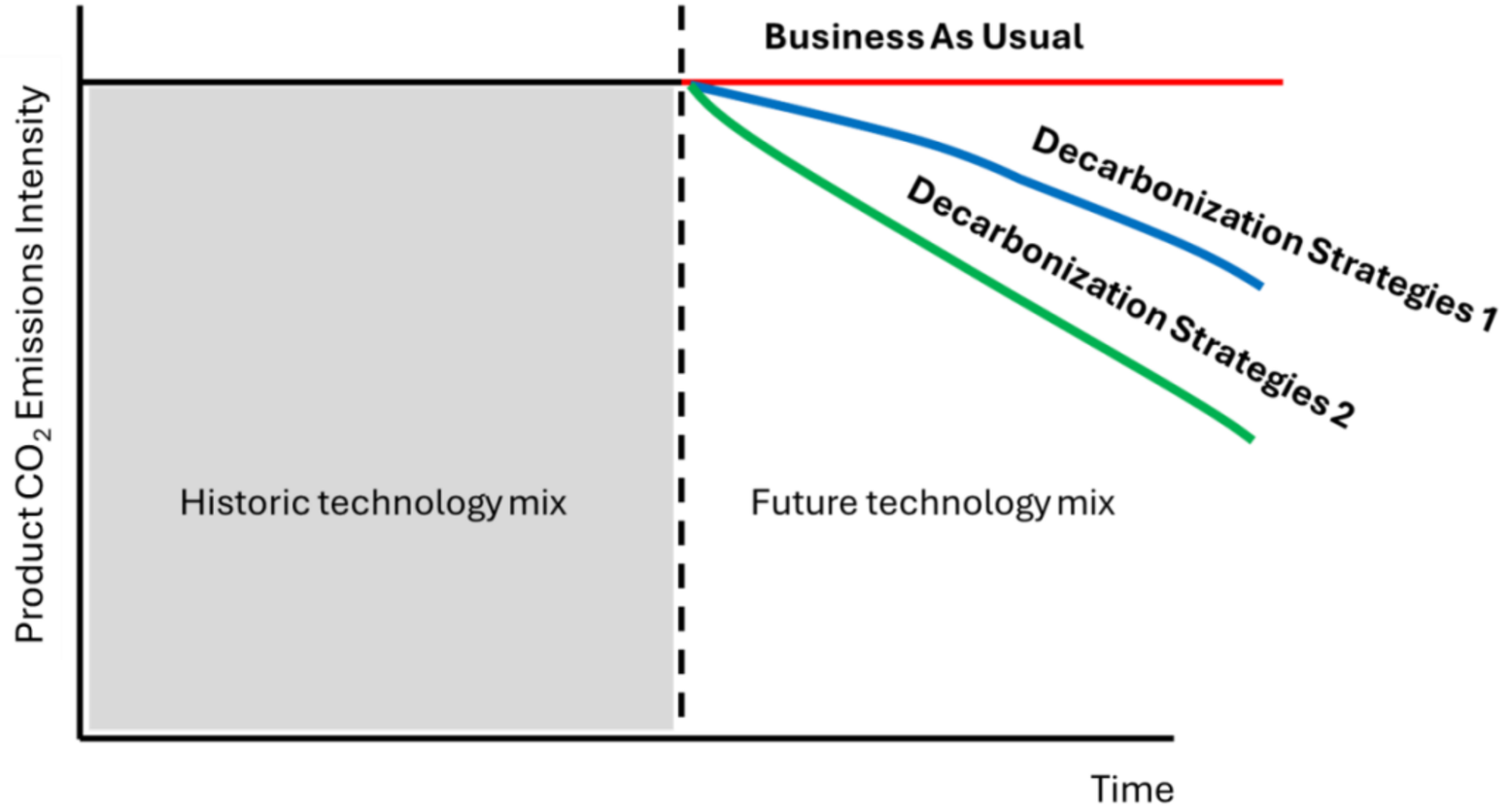
Figure ES-1. **ILLUSTRATIVE USE OF THE CARBON LEDGERS**



Source: EFI Foundation.

Where are we headed?

Comprehensive Carbon Accounting Unlocks Product Carbon Intensity Standards

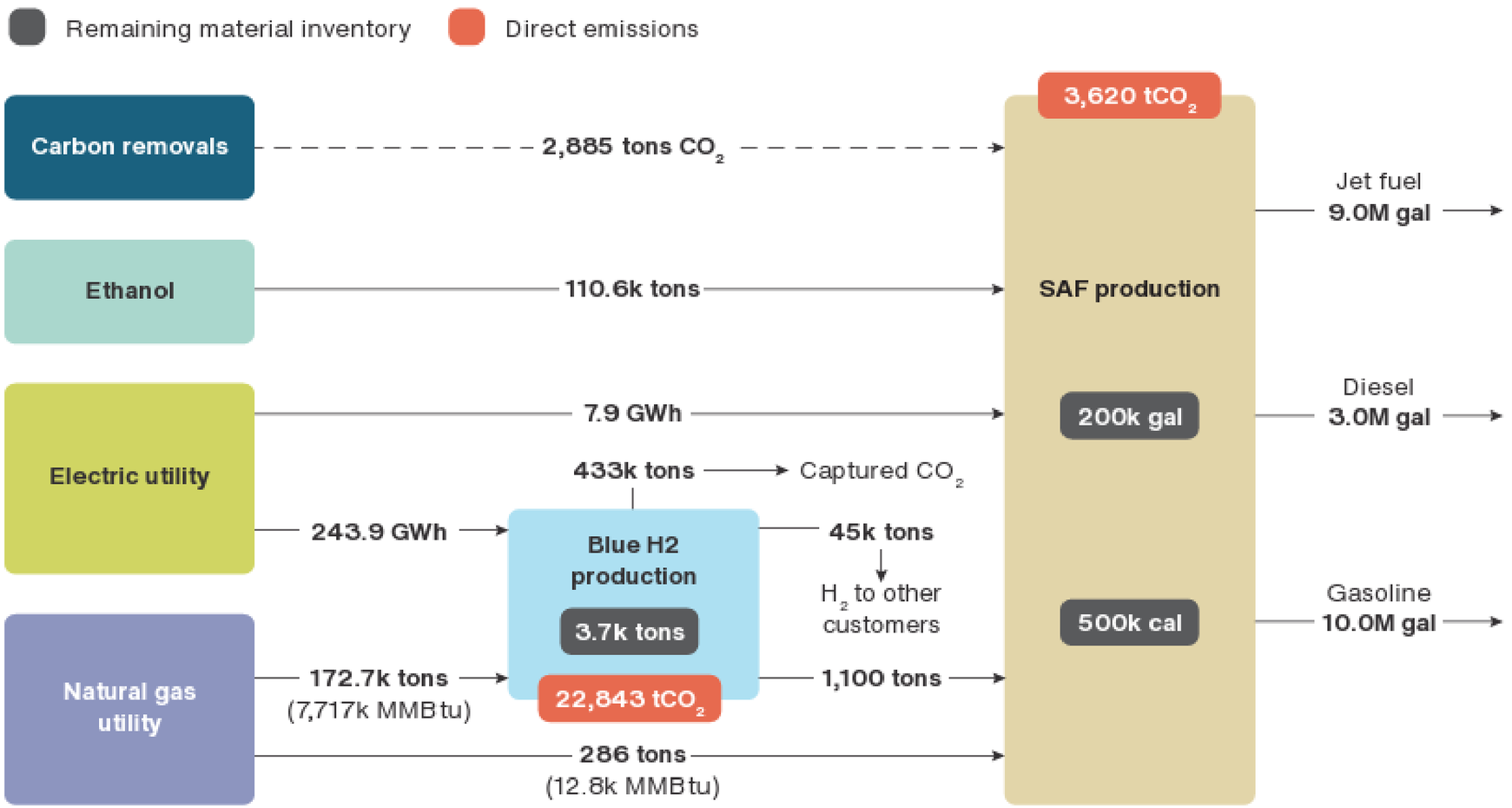


Source: EFI Foundation

Reducing Carbon Accounting to practice: A SAF Supply Chain

EFI FOUNDATION

Figure ES-2. **OVERVIEW OF MASS AND ENERGY FLOWS IN THE MODELED SAF SUPPLY CHAIN**



Note: Values shown include material inputs (black) and direct facility emissions (orange). The dashed carbon removal flow indicates reduction credit, not a physical flow. Only CO_2 emissions shown in figure for clarity. tCO_2 = ton of carbon dioxide; MMBtu = million British thermal units; GWh = gigawatt-hours; gal = gallon.
Source: Sesame Sustainability.

Product carbon intensity statement for the blue hydrogen producer

EFI FOUNDATION

Blue Hydrogen Producer
Product Carbon Emissions Intensity Statement
Q1 20XX

Blue hydrogen	CO_2 intensity *($kgCO_2/gal$)*	CH_4 intensity *(gCH_4/gal)*
Emissions from raw material production and transport	0.00	0.00
Emissions from electricity use	1.78	7.92
Emissions from fuel combustion	9.17	0.00
Emissions abated via CCS	(7.84)	0.00
Emissions from fuel production and transport	0.84	61.01
Emissions from production of equipment used	0.00	0.00
Emissions from transport of products	0.10	0.44
Emissions offsets used	0.00	0.00
Product carbon emissions intensity in blue hydrogen	**4.05**	**69.37**

Note: The statement shows product carbon emissions intensity by species, compiled directly from ledger account balances and calculated per kg of hydrogen sold.
Source: Sesame Sustainability.

Balanced ledgers promote trust and incentivize real carbon management

EFI FOUNDATION

		Sum of Detailed Columns		Debit (Tons Carbon)				Credit (Tons Carbon)			
Memo	Account	Debit	Credit	CO_2	CH_4	CO & VOC	Carbon	CO_2	CH_4	CO & VOC	Carbon
Purchase 110.6k tons ethanol	Carbon Content in Raw Materials	57,609.9	-				57,609.9				
	Attributed Emissions in Raw Materials	(27,109.9)	-	(27,441.0)	181.1	150.0					
	Carbon Content Transferred In	-	57,609.9								57,609.9
	Emissions Transferred In	-	(27,109.9)					(27,441.0)	181.1	150.0	
		30,500.0	**30,500.0**	**(27,441.0)**	**181.1**	**150.0**	**57,609.9**		**181.1**	**150.0**	**57,609.9**
Purchase 12.8k MMBtu NG	Carbon Content in Fuels	206.6	-				206.6				
	Attributed Emissions in Fuels	20.4	-	18.8	1.4	0.2					
	Carbon Content Transferred In	-	206.6								206.6
	Emissions Transferred In	-	20.4					18.8	1.4	0.2	
		227.1	227.1	18.8	1.4	0.2	206.6	18.8	1.4	0.2	206.6
Purchase 7.93 GWh electricity	Attributed Emissions in Electricity	791.8	-	787.7	3.5	0.6					
	Emissions Transferred In	-	791.8					787.7	3.5	0.6	
		791.8	**791.8**	**787.7**	**3.5**	**0.6**	**0.0**	**787.7**	**3.5**	**0.6**	**0.0**
Purchase 1.1k tons Blue H_2	Attributed Emissions in Raw Materials	1,245.4	-	1,221.1	20.9	3.4					
	Emissions Transferred In	-	**1,245.4**					1,221.1	20.9	3.4	
		1,245.4	**1,245.4**	**1,221.1**	**20.9**	**3.4**	**0.0**	**1,221.1**	**20.9**	**3.4**	**0.0**
Purchase of Carbon Removals	Carbon Removals – Offsets	-	(791.8)					(787.7)	(3.5)	(0.6)	
	Carbon Removals in WIP	(791.8)	-	(787.7)	(3.5)	(0.6)					
		(791.8)	**(791.8)**	**(787.7)**	**(3.5)**	**(0.6)**	**0.0**	**(787.7)**	**(3.5)**	**(0.6)**	**0.0**

Note: Each transaction records debits and credits to appropriate carbon accounts by species, maintaining double-entry accounting principles. Source: Sesame Sustainability.

NETWORKING BREAK – 30 MINS

Kindly sponsored by Invest Alberta

We will resume our program at 3:30 PM

LEADING THE WAY ON LOW CARBON POWER:
GLACIER PHASE 2 CCS PROJECT

Erik Petursson

Vice President, Policy and Carbon Markets

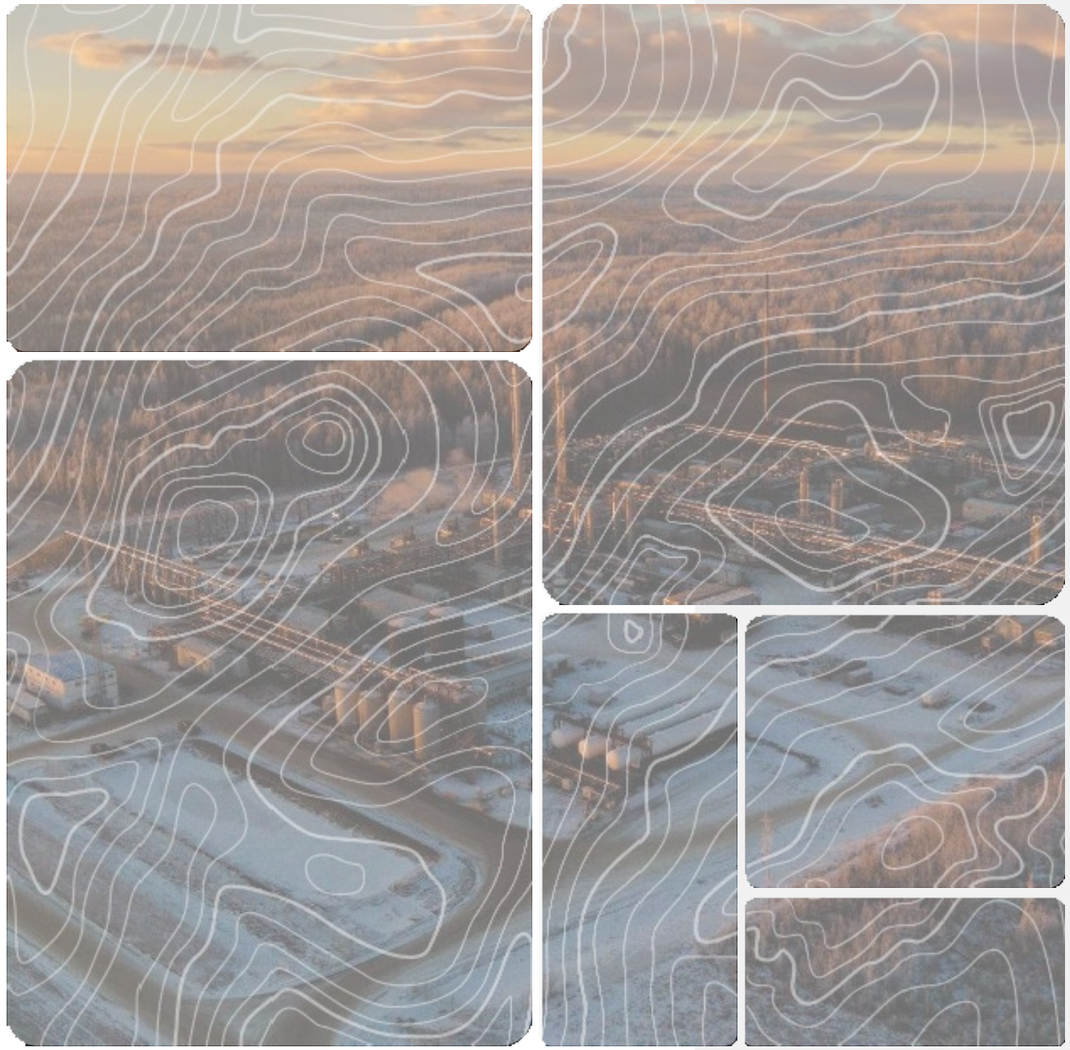
Entropy

ENTROPY

ENTROPY INC.

Leading the way on low-carbon power – Glacier Phase 2 CCS Project.

Global CCS Institute:
Member meeting November 2025



EXECUTIVE SUMMARY

Leading carbon capture & sequestration project developer

Access to Capital & Carbon Price Certainty

Capital | *Project Developer* | *Offtake/Incentives*

Brookfield
$300 Million[1]

CGF Canada Growth Fund
15-year carbon credit offtake + $200 Million Investment[2]

ENTROPY

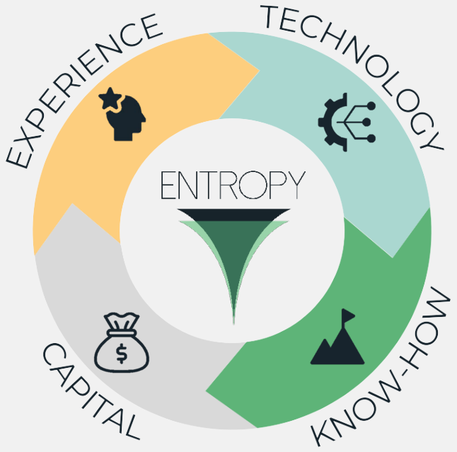
Investment Tax/Electricity Credits
Carbon Credit Offtake

Electricity sales, co-product (heat) sales, etc.

45Q/Environmental attributes
Low carbon fuel standards

Pure-Play, Full Scope CCS Developer

- Advanced carbon capture technology
- Permitting/Licensing
- Subsurface Evaluation
- Measurement, Monitoring & Verification (MMV)
- CO_2 Validation & Monetization
- **"Carbon Credit Offtake" (CCO) price guarantee**



Learning By Doing – Glacier Post-Combustion CCS (Alberta)

Operational Since
Jul 2022 (1a)
Dec 2023 (1b)

FID to Onstream
18 months

Application
iCCS Recip™

Capture Rate
90-98%

World-Class Infrastructure Project: Belle Plaine (Saskatchewan)

Transportation Infrastructure		Storage Potential		Industrial Emitters	
450	21	23	266	4.6	20
Tonnes/D	Km	Million Tonnes Approved	Million Tonnes Prospective	MTPA Emissions	Km From Lease

1. See press release – entropyinc.com. March 28, 2022.
2. See press release – entropyinc.com. December 20, 2023

MODULAR CARBON CAPTURE & STORAGE

Enabling investable CCS projects with next generation carbon capture technology

- Entropy's novel carbon capture process is an accumulation of expertise from decades of experience with amine processes
- Proprietary waste heat integration for capture process efficiency (0 GJ/T external heat)
- Modular integration on new-build or retrofit to existing infrastructure
- Adaptable to CO_2 flue gas concentrations from engines, boilers and industrial sources

Emission Sources

iCCS Engine

Reciprocating & Turbine

Onstream

Under Construction

iCCS Thermal

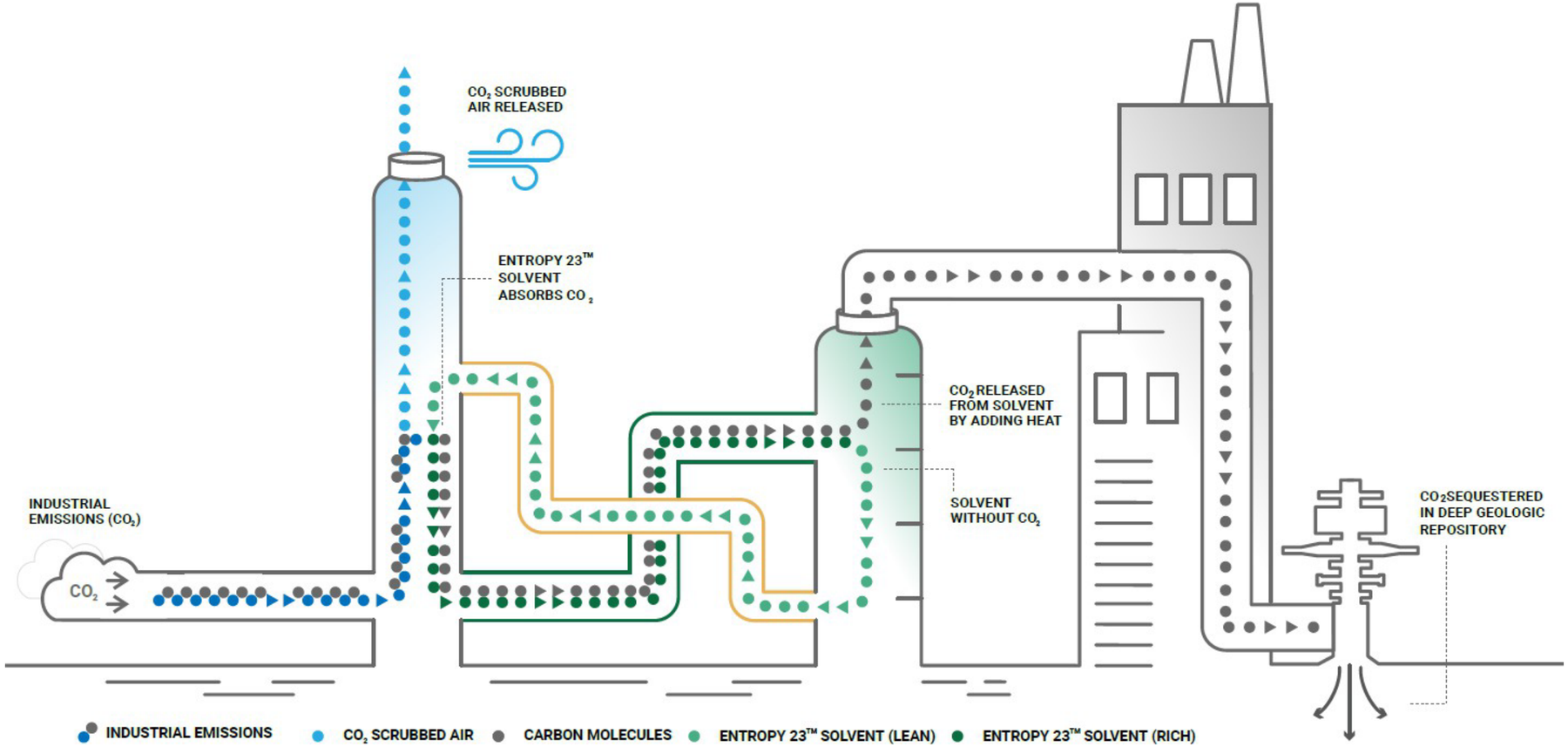
Boilers & Furnaces

Fron-tEnd Engineering & Design

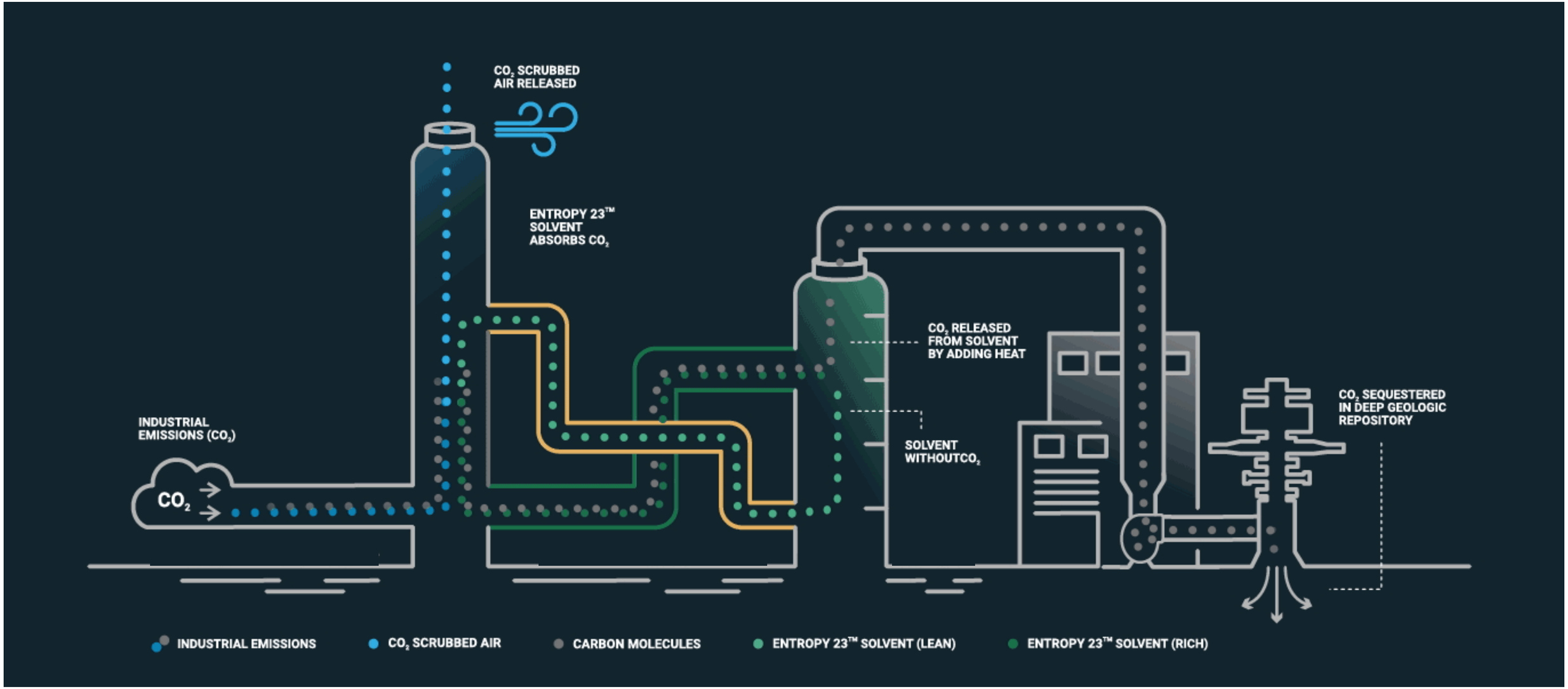
iCCS Industrial

Pre-combustion Industrial

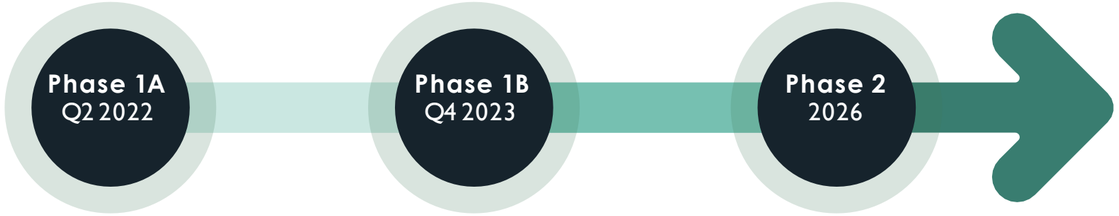
Under Construction

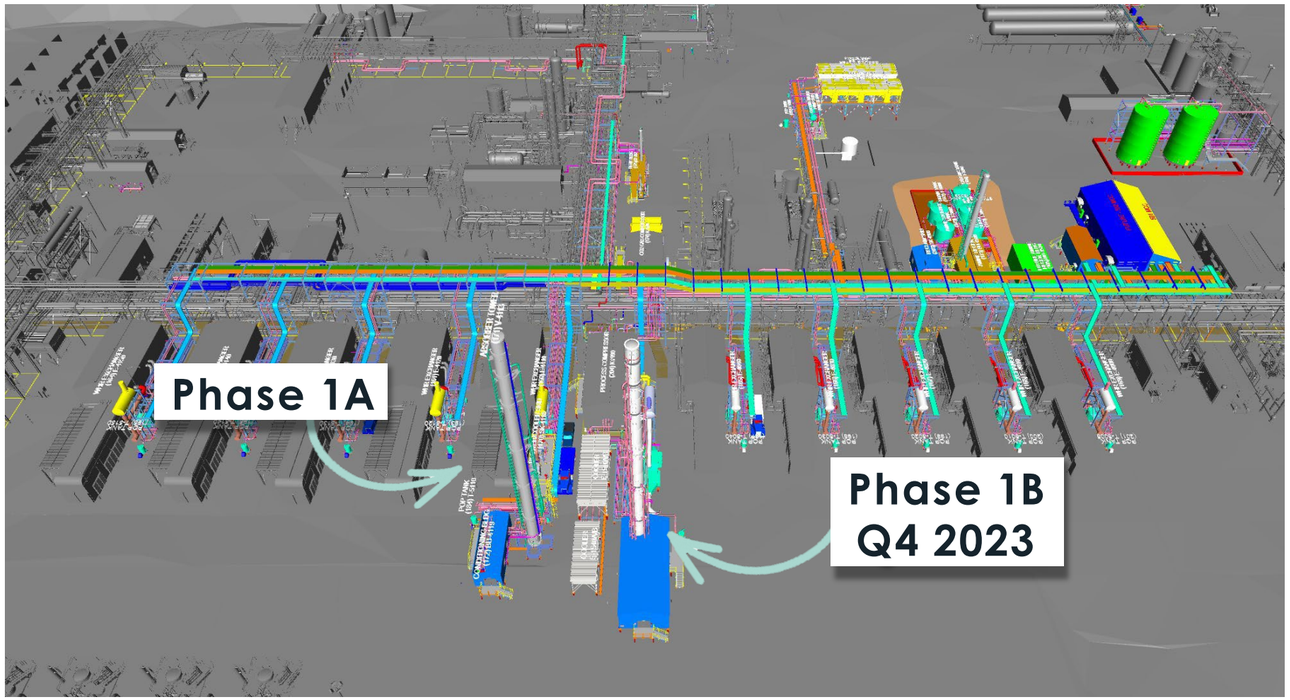


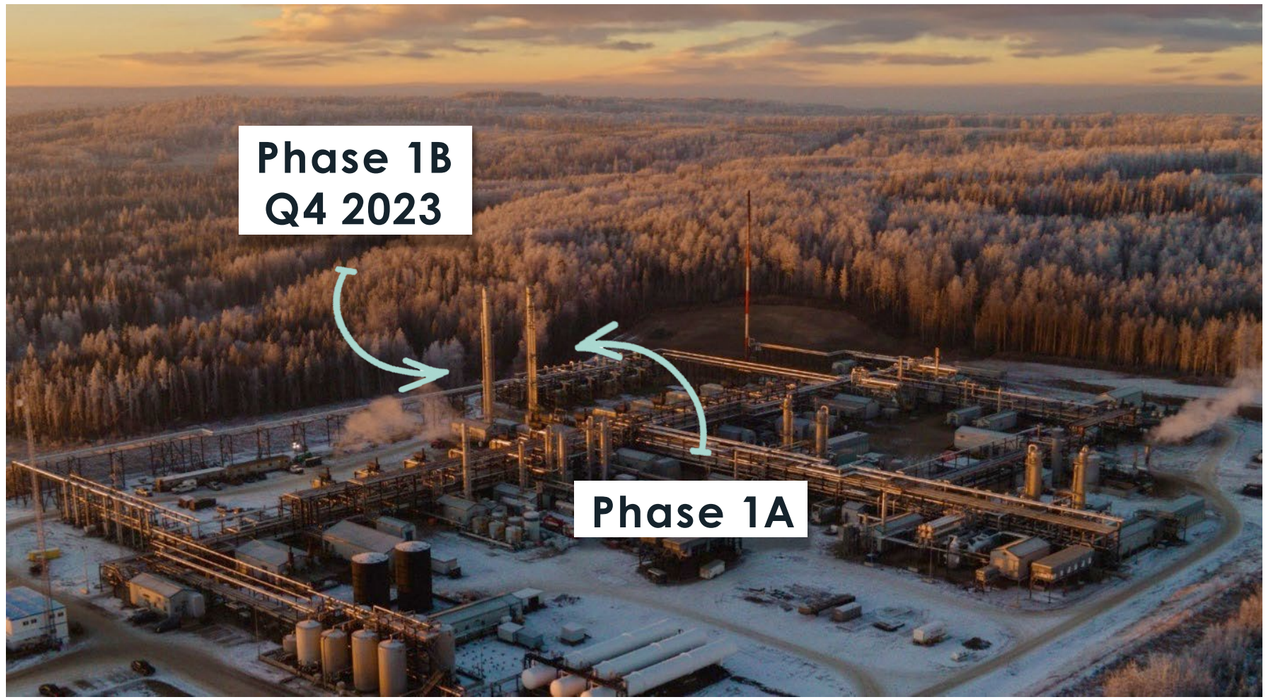
OVERVIEW OF CCS PROCESS: ENTROPY CONFIGURATION



GLACIER PHASE 1A AND 1B: TIMELINE







- Phase 1a: first modular CCS (MCCS™) project – **Q2 2022** (16,000 tpa)
- Phase 1b: first integrated CCS (iCCS™) – **Q4 2023** (16,000 tpa)
- Phase 2: capture from remaining compressors (9) and a natural gas turbine – **2026** (~160,000 tpa, 15 MW decarbonized baseload power)
- CO_2 revenue via Emission Performance Credits - Alberta's TIER program
- Revenue through Clean Power Purchase Agreement
- Guaranteed offtake via Canada Growth Fund's Carbon Credit Offtake commitment[1]

1. See press release December 20th, 2023 (link)

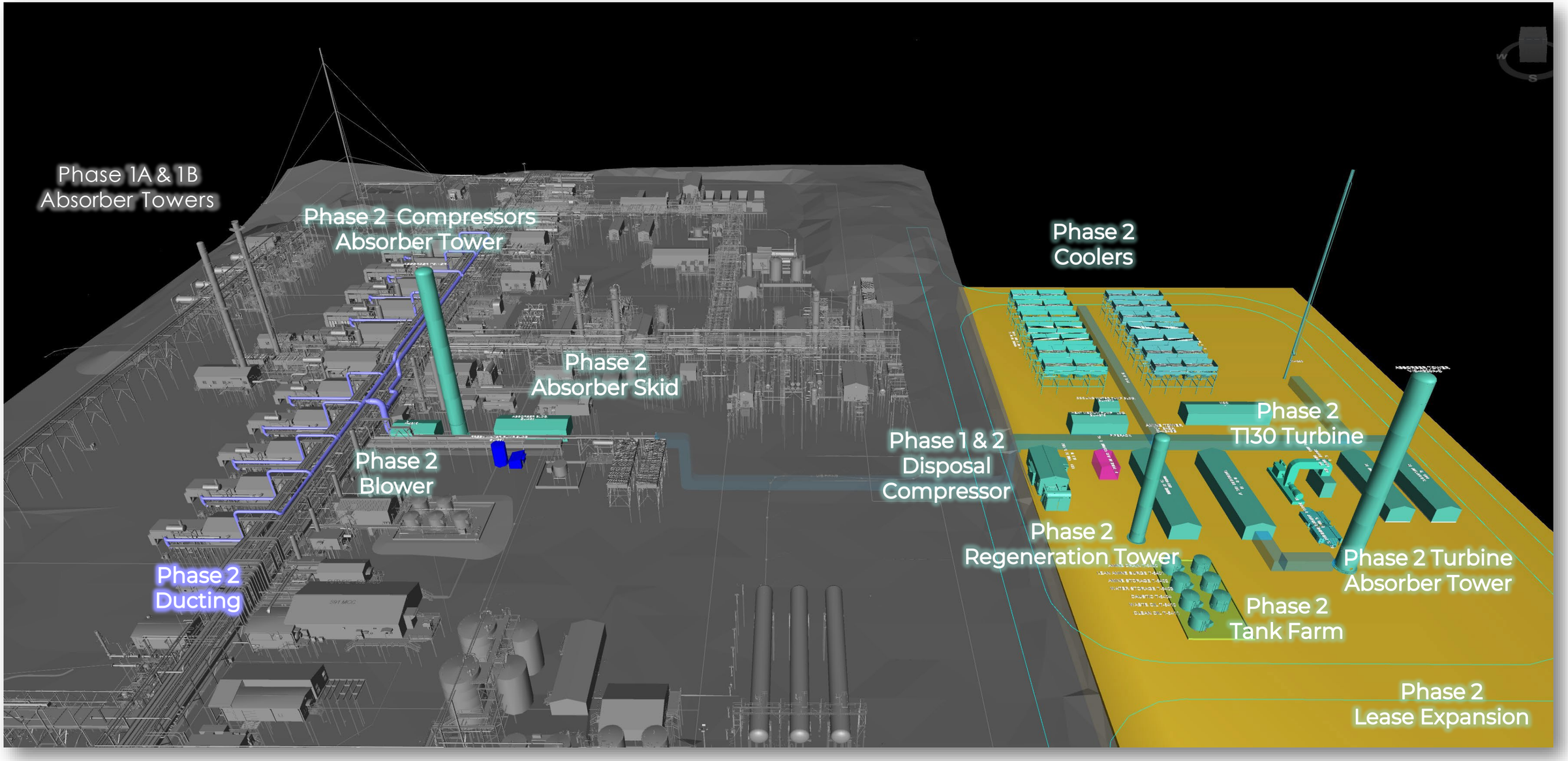
GLACIER NATURAL GAS PLANT AND CCS PROJECT PHASE 1 A+B

ENTROPY

GLACIER PHASE 2: ONSTREAM Q2 2026

Implementing the world's first decarbonized base-load power (Onstream 2026)

ENTROPY



Glacier Phase 2: Under Construction

Implementing the world's first decarbonized base-load power (onstream 2026)

ENTROPY

GLACIER PHASE 2: UNDER CONSTRUCTION

Implementing the world's first decarbonized base-load power (onstream 2026)

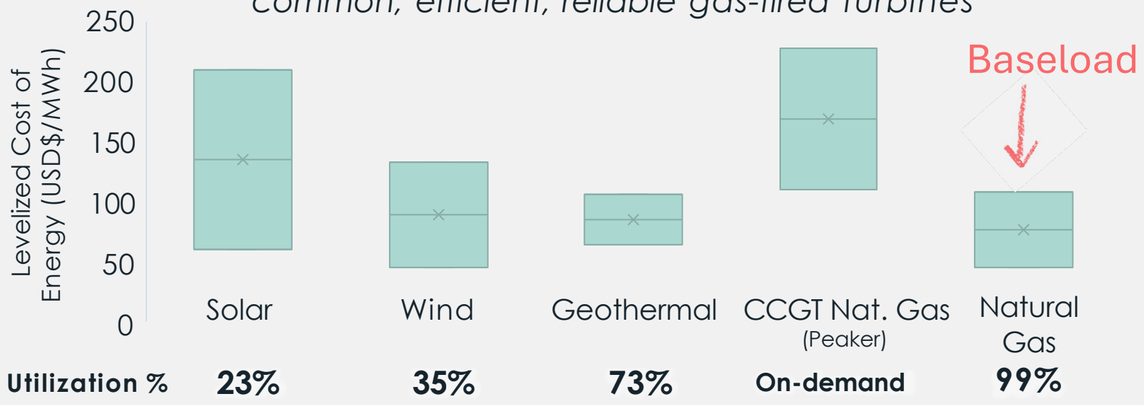
ENTROPY

ESTABLISHING A LEADING POSITION AS AN INTEGRATED CLEAN POWER PRODUCER

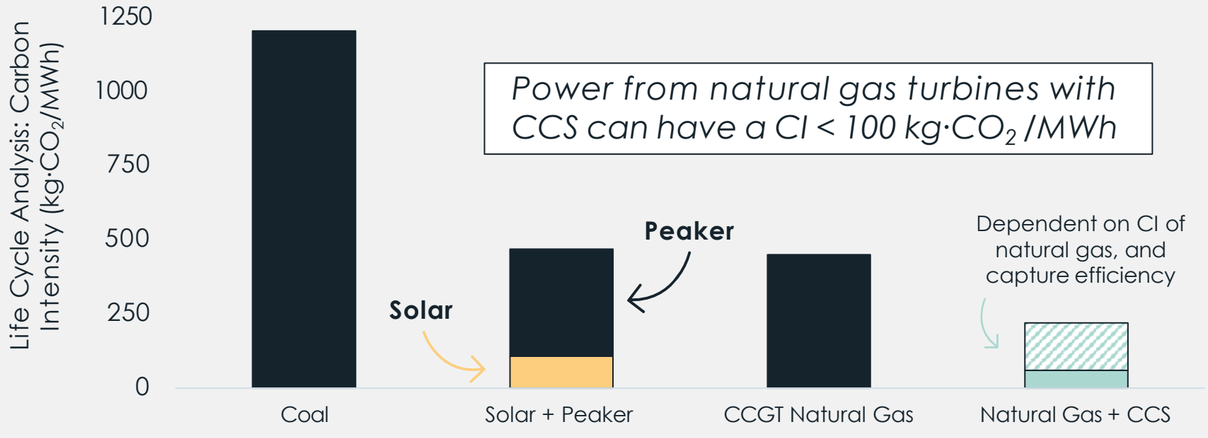
Combining affordable, reliable electricity with independently funded CCS

Affordable Baseload (Always-On) Power[1]

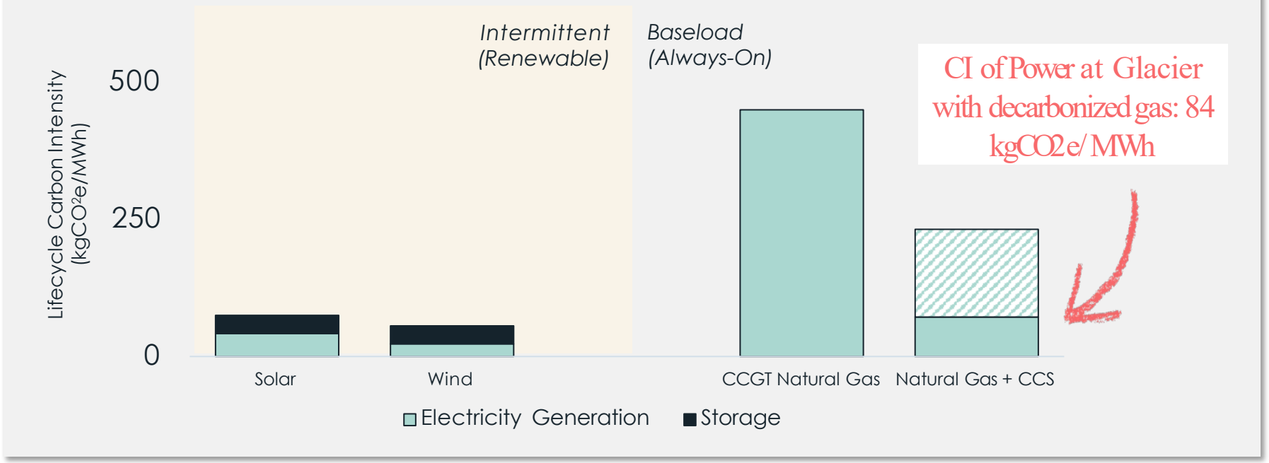
Entropy is constructing baseload power using common, efficient, reliable gas-fired turbines



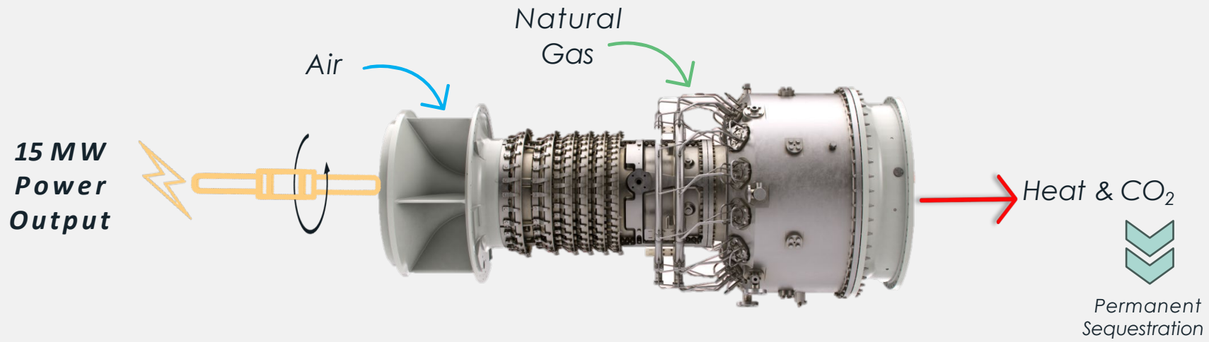
Baseload Power Carbon Intensity Comparison[2,4]



The Best Option for Climate-Aligned Power



Achieved FID and currently constructing the world's first natural gas power turbine with integrated CCS

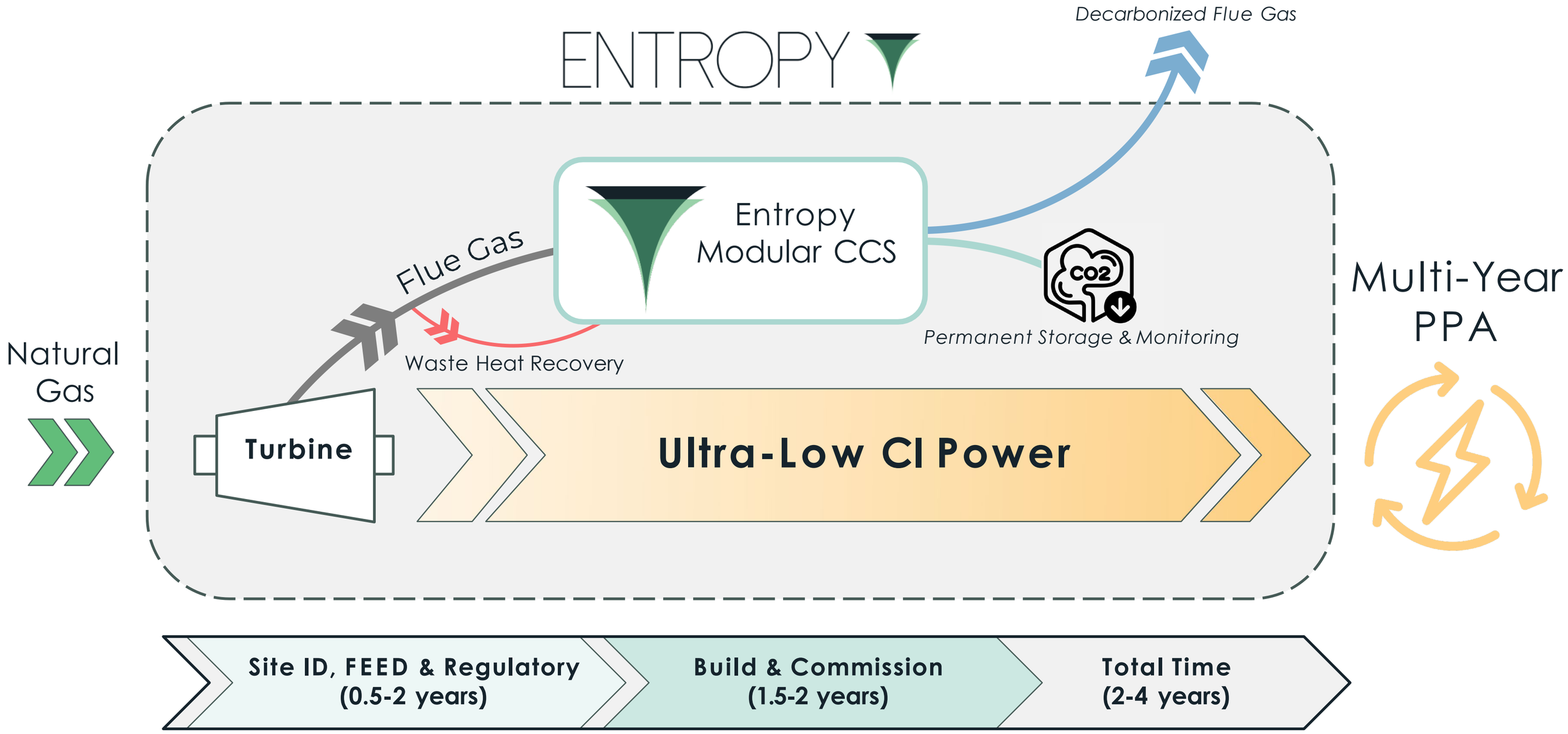


Onstream Q2 2026

(1) Lazard. Levelized Cost of Energy+. June 2024
(2) NREL. Life Cycle Greenhouse Gas Emissions from Electricity Generation. 2021
(3) See press release December 20th, 2023 (link)
(4) Assumes solar efficiency of 23%, offset by peaker power with a natural gas turbine

ENTROPY'S TECHNOLOGY DEPLOYS RAPIDLY, DELIVERING CLEAN POWER

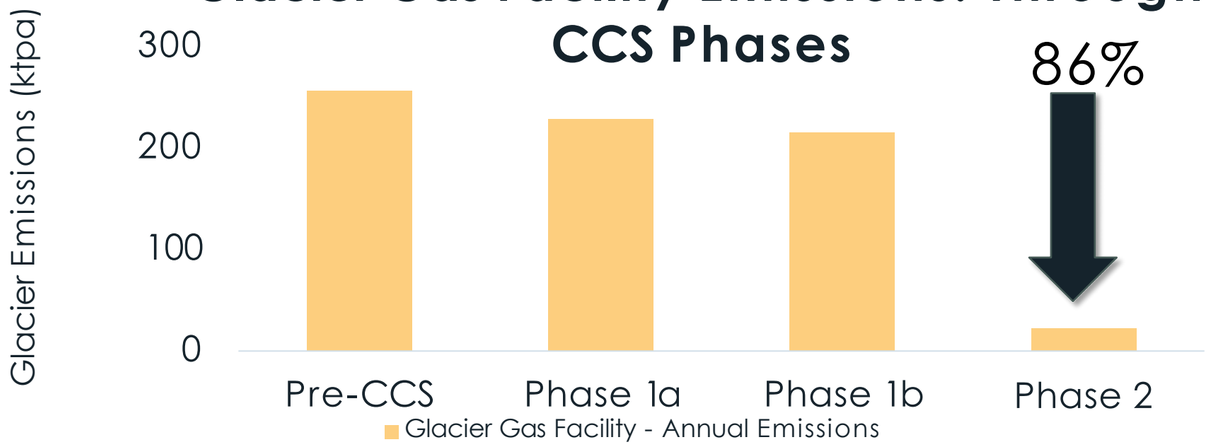
Turnkey baseload ultra -low CI power generation provided under PPA



GLACIER – EMISSIONS REDUCTION

Onstream Today –Capture from gas -fired engines

Glacier Gas Facility Emissions: Through CCS Phases



Natural Gas Carbon Intensity (Cradle to Gate)

10.3 gCO_2e/MJ

ECCC[1] Published 2024

3.7 gCO_2e/MJ

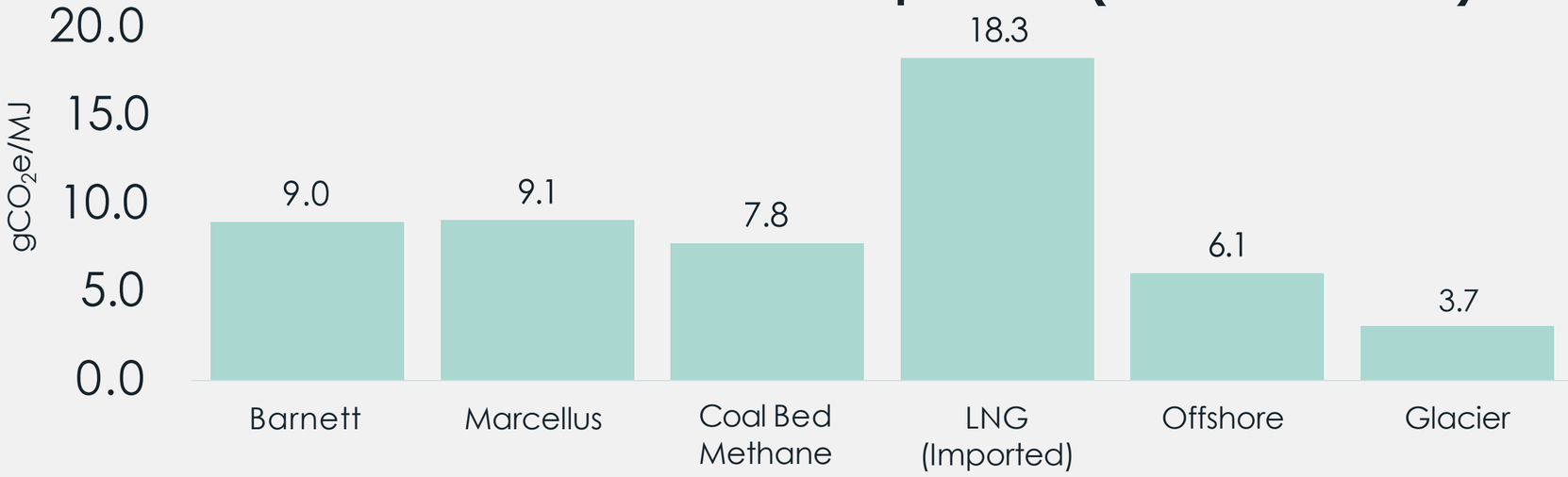
Glacier Phase 2

Electricity Carbon Intensity

577 gCO_2e/KWh

84 gCO_2e/KWh

Natural Gas CI Benchmark Comparison (Cradle to Gate)[2]



1. Environment & Climate Change Canada: Carbon: Pre-publication: Updated carbon intensity of natural gas and propane. 2023
2. US DOE – National Energy Technology Laboratory. Life Cycle Analysis of Natural Gas Extraction and Power Generation. 2014

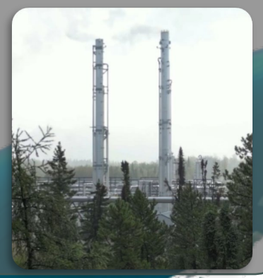
ENTROPY: HUB DEVELOPER & OWNER

Accumulating capture, infrastructure and storage projects in Canada

Glacier Post-Combustion

iCCS Recip™ (compressor engine)
iCCS Turbine™ (power and heat generation)
Partner: Advantage Energy Ltd, local disposal

- Triassic Baldonnel Formation
- Current Injecting 40 TPD
- Glacier Phase 2 –
  - Under Construction
  - Operational by 2026
  - Injecting ~160 Ktpa, plus 15 MW decarbonized baseload power



GP Net Zero Hub

Alberta Pore Space Evaluation Permit

- Partners: North River, Keyera
- Belloy Formation, 3.3 MTPA Capacity

North Battleford Hub

Saskatchewan Lease of Space (LOS)

Belle Plaine Hub

Saskatchewan Lease of Space
62 km² Saskatchewan LOS

- 179m Deadwood Formation, Up to 17% Porosity.
- 0.15 MTPA Q4 2025, 1.16 MTPA by 2028,
- 2.0 MTPA by 2029

Rolling Hills Hub

Partner: AltaGas,

- 1,379 km² Alberta Pore Space Evaluation
- Leduc Formation. Ready for Approval

Bow Valley Carbon Hub

Partner: Inter Pipeline, 853 km² Alberta Pore Space Evaluation
Pending Carbon Sequestration Agreement (expected Q4 2025)

- 210m Leduc Formation
- High Permeability
- 0.44 Gigaton Capacity
- 40 KTPA by Q2 2026 from Cochrane Extraction Plant
- Capacity for Industry along Bow Valley Corridor and Calgary

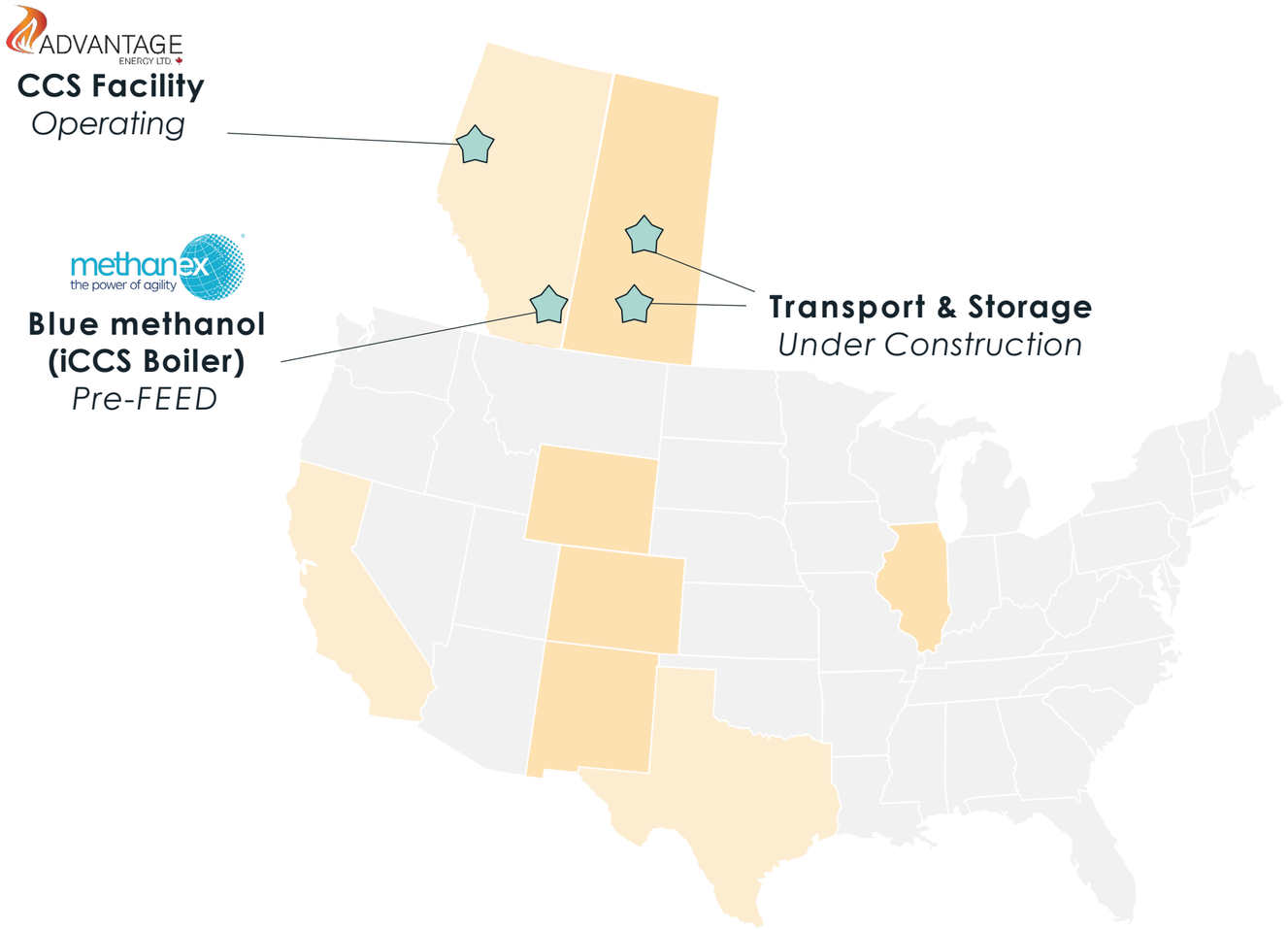
Medicine Hat Post-Combustion

iCCS Thermal, Partner: Methanex

- Status – engineering pre-FEED
- Excellent geology for local storage
- 175m combined Leduc, Beaverhill Lake, Basal Cambrian

ROBUST OPPORTUNITY SET

Build · Own · Operate & commercial value proposition



Partnership Suitability

Emitter · Policy · Subsurface

Project Development / Scoping

Post-Combustion

Thermal Oil
Data Center
Compression
Low CI Power
Methanol
Enhanced Oil Recovery

Pre-Combustion/Industrial

Ethanol
Fertilizer
Gas Processing
Steam Methane Reforming

Jurisdictions

CLOSING REMARKS & Q&A

ENTROPY

ADVISORY

All dollars and currency references in this presentation are in Canadian dollars, unless otherwise indicated.

Forward Looking Information and Statements

The information in this presentation contains certain forward-looking information and forward-looking statements (collectively, "forward-looking statements") within the meaning of applicable securities laws relating to Entropy Inc.'s ("Entropy" or the "Corporation") plans and other aspects of its anticipated future operations, management focus, strategies, financial, operating results and business opportunities. These statements relate to future events or our future intentions or performance. All statements other than statements of historical fact may be forward-looking statements. These statements have been prepared by Management to provide an outlook of the Corporation's potential activities and results and may not be appropriate for other purposes. Forward-looking statements are often, but not always, identified by the use of words such as "seek", "anticipate", "plan", "continue", "estimate", "guidance", "demonstrate", "expect", "may", "can", "will", "project", "predict", "potential", "target", "objectives", "intend", "could", "might", "should", "believe", "would" and similar expressions and include statements relating to, among other things: Entropy's position, strategy, development, and future plans and the benefits to be derived therefrom; the Corporation's expectations generally and with respect to its project development; the opportunities provided by the deployment of CCS technology; the anticipated benefits provided by Entropy's CCS technology to its host facilities; the expectations that CCS is going to play an essential role in global decarbonization; anticipated global CCS capture rates; the anticipated on-stream deployment timeline of Entropy's CCS projects; expectations that the CCO structure effectively de-risks and accelerates private CCS investment by establishing carbon price certainty for Canadian projects; the anticipated benefits to be derived from the integration of multiple technologies including MCCSTM, iCCSTM, High Performance Solvent Family and Entropy23TM, Entropy Heat CaptureTM, RESTM, and EntropyIQTM; the anticipated capital cost savings to be derived from Entropy's iCCSTM technology compared to CCS retrofit; the anticipated results of Entropy's prototype iCCSTM unit installation; the anticipated benefits to be provided by the Corporation's Entropy23TM technology, including that it will reduce energy costs, operating costs and equipment capital requirements; the anticipated benefits to be derived from the EntropyIQTM technology; the anticipated benefits to be derived from the MCCSTM technology including equipment cost reduction, maximizing recovery efficiency and minimizing operating costs; the anticipated timing of when Glacier Phase 2 will be complete and capture from remaining compressors and natural gas turbine will be onstream; the anticipated rates at which CO2 is sequestered; the anticipated Glacier Phase 2 project highlights, project scope and reduction in Glacier Gas Facility emissions; the anticipated timing of completion of construction of the world's first natural gas power turbine with integrated CCS; the expectation that a Titan 130 Turbine will power Glacier Gas Plant and provide power/heat for the CCS process; the anticipated results in replacing existing generators with iCCS TurbineTM; the expectation that U.S. electricity demand will continue to increase and coal electricity contribution will decrease; the anticipated benefits to be derived from the Grande Prairie Net Zero Hub, the Bow Valley Carbon Hub, the Rolling Hills Hub; the Belle Plaine Hub and the North Battleford Hub; the anticipated benefits to be derived from the scale up of gas plants, thermal oil production and simple/combined cycle turbines; the anticipated rate of global scale projects being advanced; anticipated global commercial CCS projects and the anticipated timing thereof; anticipated growth in the CCS market and that growth projects will be available to Entropy; anticipated global carbon price benchmarks; expectations that increases in carbon prices in North America and Europe will continue over the next decade; government initiatives, targets and policies; and estimated capacity of certain of the Corporation's storage hubs. Entropy's actual decisions, activities, results, performance or achievement could differ materially from those expressed in, or implied by, such forward-looking statements and accordingly, no assurances can be given that any of the events anticipated by the forward-looking statements will transpire or occur or, if any of them do, what benefits that Entropy will derive from them.

With respect to the forward-looking statements contained in this presentation, Entropy has made a number of material assumptions regarding, but not limited to: conditions in general economic and financial markets; effects of regulation by governmental agencies; receipt of partner, regulatory and community approvals; current or, where applicable, assumed industry conditions, laws and regulations will continue in effect or as anticipated; current and future carbon prices and royalty regimes; the price of and market for carbon credits and offsets; availability of government initiatives to Entropy; future exchange rates; future interest rates; future inflation rates; future operating costs; availability of skilled labor; availability of equipment; the impact of increasing competition; the impact of improving technologies; that Entropy's focus on scale and capital efficiency will allow it to make an impact on global carbon emissions; the capital efficiency for projects; the anticipated amount of carbon dioxide captured, stored and offset; the commercial terms to be negotiated for projects; that Entropy will have the ability to develop projects in the manner currently contemplated; the timing and amount of capital cost; that the estimates of Entropy's cost structure and the assumptions related thereto are accurate; that Entropy's conduct and results of operations will be consistent with its expectations; the impact of increasing competition; the price of and market for carbon credits and offsets; that Entropy will have sufficient cash flow, working capital, debt or equity sources or other financial resources required, at a cost of capital as contemplated, to fund its capital and operating expenditures and requirements as needed; that Entropy's conduct and results of operations will be consistent with its expectations; that Entropy will have the ability to develop projects in the manner currently contemplated; current or, where applicable, assumed industry conditions, laws and regulations will continue in effect or as anticipated; the impact of improving technologies; that Entropy will continue to have a right of access to an existing sequestration facility to complete its first full-scale commercial CCS project; that the estimates of Entropy's cost structure and the assumptions related thereto are accurate in all material respects; and that the demand for power from an AI and data-centre boom will result in an increase carbon intensity and demand for clean electricity.

ADVISORY (continued)

These statements involve substantial known and unknown risks and uncertainties, certain of which are beyond Entropy's control, including, but not limited to: conditions in general economic and financial markets; effects of regulation by governmental agencies; the price of and market for carbon credits and offsets; current and future carbon prices and royalty regimes; future interest rates; future exchange rates; future inflation rates; future operating costs; current or, where applicable, proposed assumed industry conditions, laws and regulations will continue in effect or as anticipated; Entropy's expectations generally and with respect to its project development and future plans are different than anticipated; that Entropy will have the ability to develop and deploy the projects in the manner currently contemplated; that Entropy will have sufficient cash flow, working capital, debt or equity sources or other financial resources required to fund its capital and operating expenditures and requirements as needed; the risk that the CCO structure may not de-risk and accelerate private CCS investment by establishing carbon price certainty for Canadian projects; availability of skilled labor; availability of equipment; the impact of increasing competition; timing and amount of capital cost; the impact of improving technologies; the risk that the anticipated growth in the CCS market may not occur; the risk that growth projects may not be available to Entropy; the risk that Entropy may not make an impact on global carbon emissions; the risk that the integration and performance of Entropy's MCCSTM technology, Entropy Heat Capture technology, iCCSTM technology, RESTM technology, High Performance Solvent Family technologies including Entropy23TM solvent, and EntropyIQTM technology may be different than anticipated; the risk that Entropy may not obtain patents for its patent pending and other technology; the risk that Glacier Phase 2 may not be completed or come onstream when anticipated, or at all; the risk that Glacier Phase 2 project highlights, project scope and reduction in Glacier Gas Facility emissions may not be as anticipated; the risk that a Titan 130 Turbine may not power the Glacier Gas Plant and provide power/heat for the CSS process as expected, or at all; the risk that results in replacing existing generators with iCCS TurbineTM may not be as anticipated; the risk that Entropy's existing projects may not lead to new commercial projects; the risk that each project's emissions, carbon capture efficiency and overall reduction of original emissions may be lower than anticipated; the risk that the amount of carbon dioxide captured, stored and offset may be less than anticipated; the risk that Entropy may not be positioned to realize upside on future increases in carbon prices; the risk that the demand for CCS projects may not increase; the risk that the commercial terms to be negotiated for Entropy's projects may be less favorable to Entropy than anticipated; the risk that the Corporation's storage hubs may have less capacity than anticipated; the risk that Entropy's strategic storage hubs may not provide Entropy with the benefits anticipated; the risk that global CCS rates may be less than anticipated; the risk that there may be less global commercial CCS projects than anticipated; and the risk that U.S. greenhouse gas emissions may be greater than anticipated.

Management has included the summary of assumptions and risks related to forward-looking information in order to provide shareholders with a more complete perspective on Entropy's future operations and such information may not be appropriate for other purposes. Entropy's actual results, performance or achievement could differ materially from those expressed in, or implied by, these forward-looking statements and, accordingly, no assurance can be given that any of the events anticipated by the forward-looking statements will transpire or occur, or if any of them do so, what benefits that Entropy will derive therefrom. Readers are cautioned that the foregoing lists of factors are not exhaustive. The Corporation and Management believe that the statements have been prepared on a reasonable basis, reflecting Management's best estimates and judgments. However, because this information is highly subjective and subject to numerous risks including the risks discussed above, it should not be relied on as necessarily indicative of future results. These forward-looking statements are made as of the date of this presentation and Entropy disclaims any intent or obligation to update publicly any forward-looking statements, whether as a result of new information, future events or results or otherwise, other than as required by applicable securities laws.

This presentation contains information that may be considered a financial outlook under applicable securities laws about Entropy's potential financial position, including, but not limited to, anticipated global carbon price benchmarks; and the anticipated capital cost savings to be derived from Entropy's iCCSTM technology compared to CCS retrofit, all of which are subject to numerous assumptions, risk factors, limitations and qualifications, including those set forth in the above paragraphs. The actual results of operations of Entropy and the resulting financial results will vary from the amounts set forth in this presentation and such variations may be material. This information has been provided for illustration only and with respect to future periods are based on budgets and forecasts that are speculative and are subject to a variety of contingencies and may not be appropriate for other purposes. Accordingly, these estimates are not to be relied upon as indicative of future results. Except as required by applicable securities laws, Entropy does not undertake any obligation to update such financial outlook. The financial outlook contained in this presentation was made as of the date of this presentation and was provided for the purpose of providing further information about Entropy's potential future business operations. Readers are cautioned that the financial outlook contained in this presentation is not conclusive and is subject to change.

ADVISORY (continued)

Market, Independent Third Party and Industry Data

Certain market, independent third party and industry data contained in this presentation is based upon information from government or other independent industry publications and reports or based on estimates derived from such publications and reports. Government and industry publications and reports generally indicate that they have obtained their information from sources believed to be reliable, but none of Entropy or its affiliates have conducted their own independent verification of such information. This presentation also includes certain data derived from independent third parties, including, but not limited to, global CCS and emissions statistics and saline aquifer data; the world map of active commercial CCS projects; the Western Canadian map of industrial emitters by sector; and future global carbon price benchmarks. While Entropy believes this data to be reliable, market and industry data is subject to variations and cannot be verified with complete certainty due to limits on the availability and reliability of raw data, the voluntary nature of the data gathering process and other limitations and uncertainties inherent in any statistical survey. None of Entropy or its affiliates have independently verified any of the data from independent third-party sources referred to in this presentation or ascertained the underlying assumptions relied upon by such sources.

Information Regarding Public Issuer Counterparties

Certain information contained in this presentation relating to the Corporation's public issuer counterparties and the nature of their respective businesses is taken from and based solely upon information published by such issuers. None of Entropy or its affiliates have independently verified the accuracy or completeness of any such information.

No Implied Obligation or Warranty

Entropy makes no representation or warranty of any kind, express or implied, in respect of the information contained in this presentation, including correctness, accuracy, completeness or suitability for any particular purpose, and the information provided in this presentation is provided strictly on an "as is" basis. Except as required by applicable securities laws, Entropy undertakes no obligation to update such information. The information provided in this presentation was made as of the date of this presentation and was provided for the purpose of providing further information about the Corporation's anticipated future business operations. Readers are cautioned that the information contained in this presentation should not be used for purposes other than for which it is disclosed herein.

Specified Financial Measures

Entropy discloses several financial and performance measures that do not have any standardized meaning prescribed under International Financial Reporting Standards ("IFRS" or "GAAP"). These specified financial measures should not be considered to be alternatives to, or more meaningful than measures determined in accordance with GAAP including net income, comprehensive income, cash provided by operating activities, or cash used in investing activities. Management believes that these measures provide an indication of the potential results that could be generated by the Corporation's principal business activities and provides useful supplemental information for analysis of the Corporation's potential operating performance and liquidity. Entropy's method of calculating these measures may differ from other companies, and accordingly, they may not be comparable to similar measures used by other companies.

Non-GAAP Financial Measures

Capital cost is a non-GAAP financial measure that includes expenditures to construct carbon capture, compression, transportation, and storage facilities necessary for a project, less cash receipts on government grants and incentives. Management considers this measure reflective of actual capital activity as it excludes changes in working capital related to other periods.

FROM POLICY TO PROSPERITY:
STATES DRIVING CCS DEPLOYMENT

Errol Pinto

Technical Regional Manager, Americas
Global CCS Institute
[MODERATOR]

Matthew Botill

CALIFORNIA
Division Chief
California Air Resources Board (CARB)

Dustin Davidson

LOUISIANA
Secretary
Louisiana DNR

Ruarri Day-Stirrat

OREGON
Executive Director
State Geologist
Oregon DOGAMI

Lily Barkau

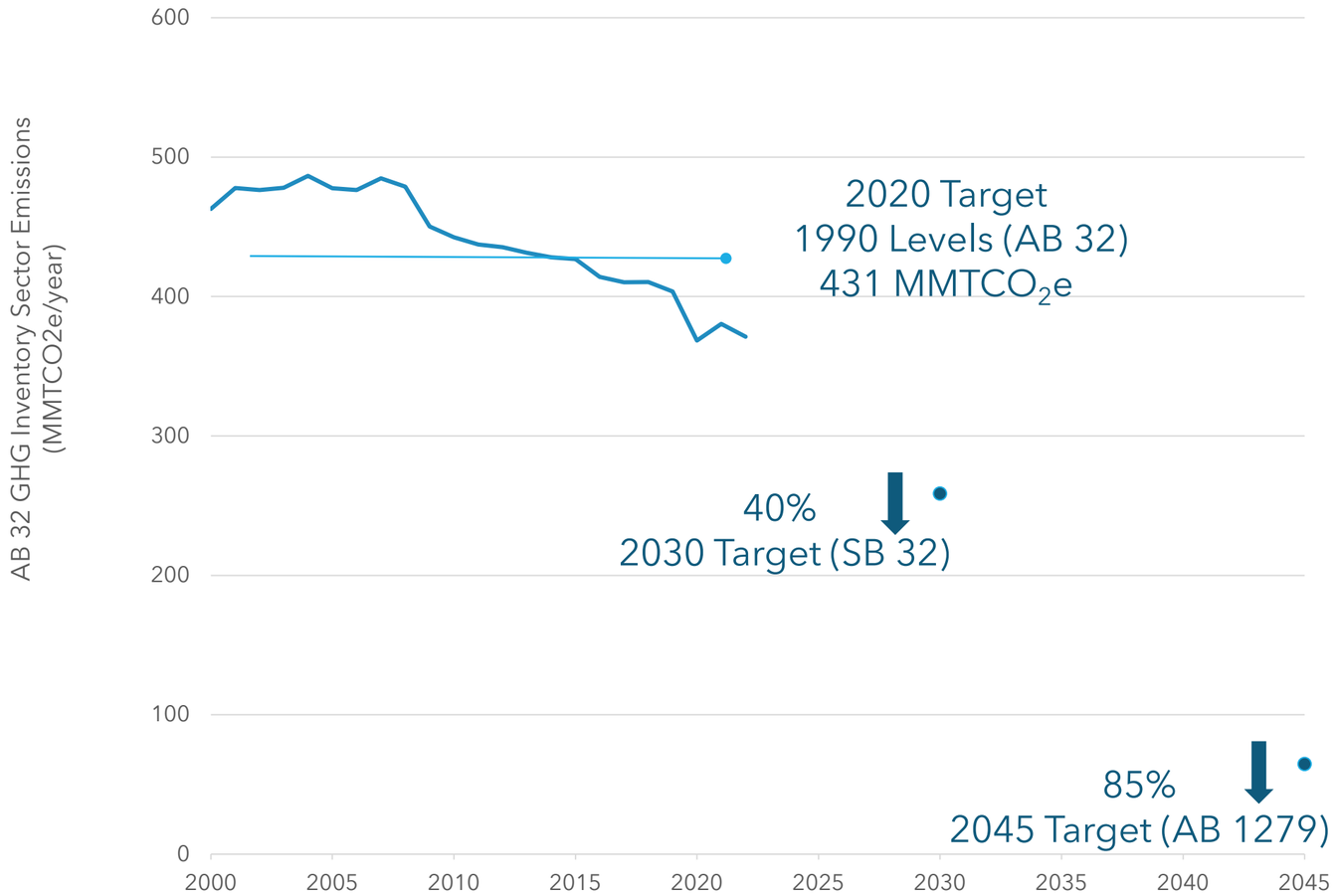
WYOMING
Groundwater Section Manager
Water Quality Division

California's Carbon Capture, Removal, Utilization, and Storage Program

Matt Botill Division Chief
Industrial Strategies Division

GHG Emissions Reduction Targets

Achieved AB 32 target in 2014 – Portfolio of Policies



ACHIEVING

CARBON

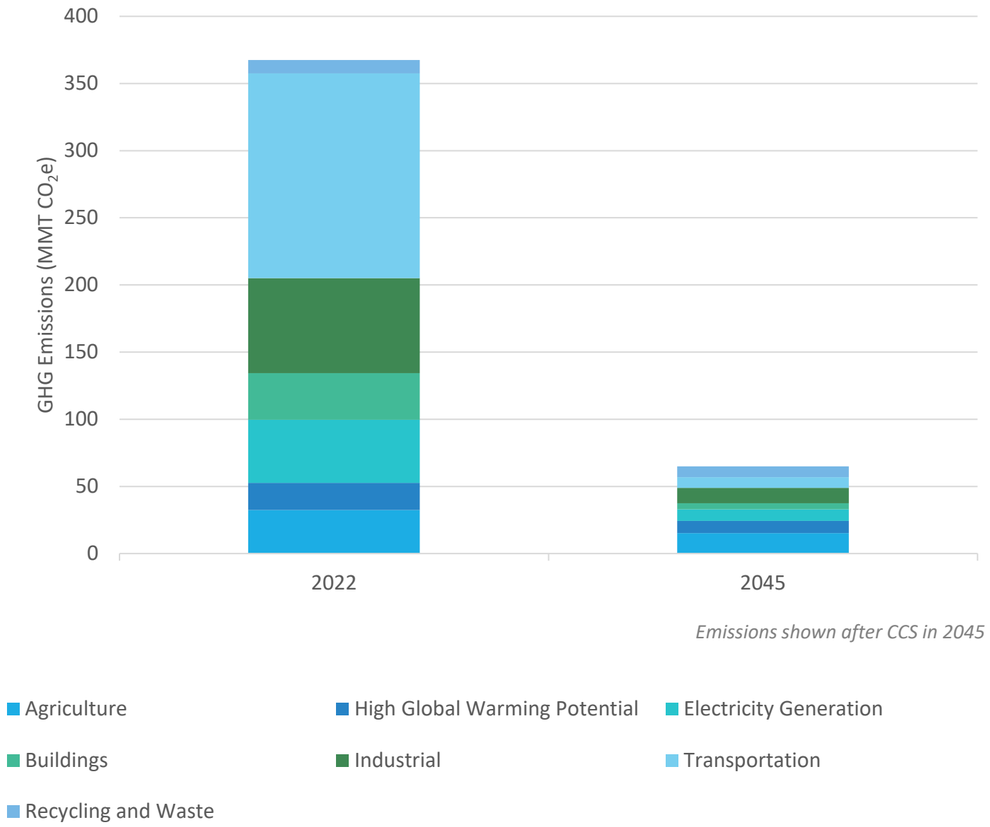
NEUTRALITY

BY **2045**

GHGs included in statute: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), nitrogen trifluoride (NF_3).

Anthropogenic GHGs
Target 2045: 85% Reduction below 1990

- Emissions remain even after significant GHG emission reductions
- Need carbon dioxide removal to compensate for residual emissions to achieve carbon neutrality
- CA Legislation on CCUS/CDR:
  - AB 1279 - Carbon Neutrality and need for CCUS/CDR
  - SB 905 – CCUS Regulations
  - SB 614 – Intrastate CO_2 pipelines



Overview of CARB SB 905 Responsibilities

- Establish a Carbon Capture, Removal, Utilization, and Storage (CCUS) Program
- Adopt protocols to support additional CCUS and CDR approaches
- Adopt CCUS/CDR regulations, including for a voluntary-use unified permit application, financial risk management, and monitoring requirements for project operators
- Support transparency, via a public database of projects and public reporting

Update on CARB's CCUS Program

- July 2025 - CARB received full permanent staffing for SB 905 positions
- August 2025 – Released pre-rulemaking SB 905 public solicitation
- October 2025 – Published informational list of projects
- Staff prioritizing implementation of:
  - Information collection to support regulatory development
  - Contract work to conduct CCUS/CDR technology reviews
  - Contract work to collect CCUS/CDR permit data requirements
  - State of California control-agency approvals for the permit portal IT project

SB 905 Public Solicitation Response

- Published public solicitation for information from Aug-Oct 2025
- Received 61 responses
- Questions posed regarding program definitions, monitoring requirements, strategies to minimize local impacts, and state actions to scale deployment

Themes of Responses:

- Overall Support for program
- Include utilization and storage approaches in rulemaking
- Important to have rigorous monitoring and strategies to reduce potential risks
- Importance of nature based strategies for carbon removal
- Need for community protections and benefits

CCUS and CDR List

Project Name	Operator	County/Tribe	State	Type	Applied for CARB LCFS Protocol Certification
Farley Nuclear DAC Project	Battelle, AirCapture LLC, Southern Co, Carbonvert	Houston	AL	Direct Air Capture	
Longleaf CCS Hub	Longleaf CCS, LLC	Mobile	AL	CO_2 Transport / Storage	
GE Gas Power CCUS (Barry Generating Plant)	GE, Southern Company, Linde, BASF, Kiewit	Mobile	AL	Power Generation - Natural Gas	
Timberland Sequestration	Blue Sky Infrastructure, Timberlands Sequestration, LLC	Monroe	AL	CO_2 Transport / Storage	
OASIS Shelby County	Southern States Energy Board	Shelby	AL	CO_2 Transport / Storage	
Pine Hills Sequestration Hub	Reliant Southwest Alabama Storage, LLC	Covington	AL	CO_2 Transport / Storage	
Gulf Coast Sequestration Hub	Denbury Carbon Solutions, Natural Resource Partners	Mobile	AL	CO_2 Transport / Storage	
Project Blue	Lapis Energy (AR Development) LP, LSB Industries	Union	AR	Hydrogen / Ammonia / Fertilizer	
Nimbus 1	Natural State Renewables Inc.	Ouachita	AR	Chemical / SAF	
Mission Creek Gas Plant	Standard Lithium, Aqualung, Mission Creek Resources	Columbia	AR	Oil and Gas	
Ash Grove Foreman Cement Plant CCS	Ash Grove/CRH, Southern States Energy Board	Little River	AR	Cement	
Southwest Regional Direct Air Capture Hub	Arizona Board of Regents on behalf of Arizona State University. Black & Veatch, Carbon Collect, CarbonCapture, Carbon Solutions, Proton Green, University of New Mexico, University of Utah, Tallgrass, and Arizona Geological Survey	Maricopa	AZ	Direct Air Capture	
Arbor Biomass Gasification Facility	Arbor	Placer	CA	Bioenergy / Ethanol	

- Nationwide list of projects
- Compiled from public sources
- Represents projects across all stages of planning, design, and deployment
- Provides information about projects that may provide valuable insight into how the technology is being developed and deployed
- 365 entries on the list

https://ww2.arb.ca.gov/ccus-and-cdr-project-list

Next Steps on CARB's 905 Work

- Release draft regulatory framework early next year and draft language next summer
- Supporting complementary legislation, like the new pipeline safety bill, and working with other agencies to streamline permitting
- Conduct additional future workshops on
- CCUS/CDR technology assessments
- Informal regulatory structure and regulatory concepts/timing

Stay informed and access SB 905 program materials

https://ww2.arb.ca.gov/our-work/programs/carbon-sequestration-carbon-capture-removal-utilization-and-storage

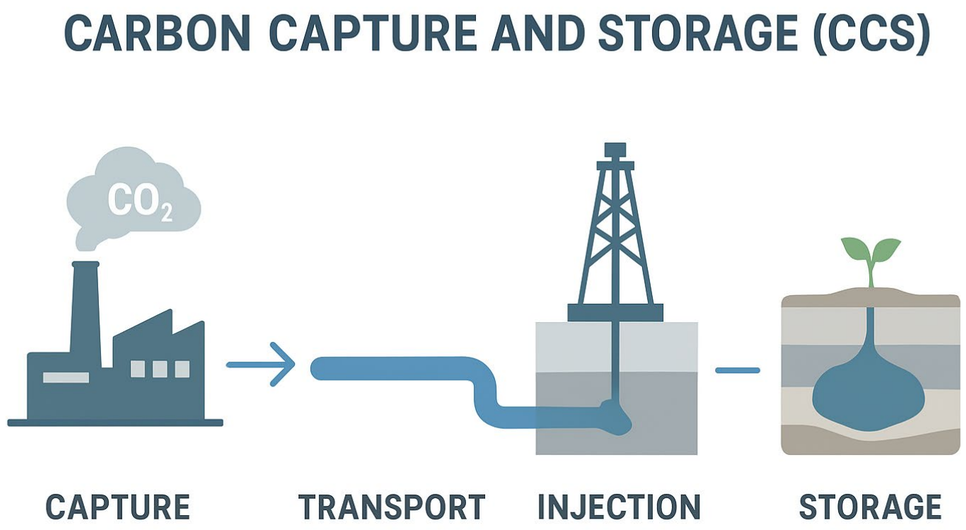
Carbon Capture and Storage (CCS) in Louisiana

LOUISIANA DEPARTMENT OF
CONSERVATION AND ENERGY

The Role of the Department of Conservation and Energy (C&E)

Louisiana: A Leader in Economic Development and Environmental Stewardship

- Class VI primacy granted in 2024, allowing the state to regulate CO_2 storage wells directly.
- Deep, thick saline formations and depleted oil and gas reservoirs—perfect for securely storing CO_2.
- Dense network of pipelines, refineries, and petrochemical plants along the Mississippi River and Gulf Coast.
- Robust framework ensures public safety, groundwater protection, and environmental integrity.
- Large volumes of CO_2, creating both the source and storage opportunity locally.



Department Guidance No. B-2025-01: Permit Application Reviews

- Issued pursuant to state authority (La. R.S. 36:354(A)(14) via Act 458 of 2025).
- Applies to all Class VI permit applications received by the department; sets application prioritization and resource allocation.
- Focus on geology, engineering, monitoring, well integrity, area of review, financial assurance, post-injection site care and long-term stewardship.
- Typical review target timeline ~2 years from submission to decision.
- Administered by the Louisiana Department of Conservation & Energy (or relevant state division) to support safe, efficient CCS development in Louisiana.

DEPARTMENT OF ENERGY AND NATURAL RESOURCES

DEPARTMENT GUIDANCE NO. B-2025-01

FROM: Tyler Gray, Secretary

DATE: August 1, 2025

SUBJECT: Department Guidance Class VI Permit Application Reviews DG-B-2025-01[1]

I. Authority

This guidance document is issued with consideration for authority granted in Act 458 of 2025 Regular Session, effective October 1, 2025. Although presently serving as guidance, this document may be converted into a directive order upon initiation by the Deputy Secretary, certification by Undersecretary, and issued pursuant to authority granted to the Secretary by La. R.S. 36:354(A)(14) (Act 458 of 2025, Regular Session), empowering the Secretary to establish immediate agency policy effective upon issuance.

II. Purpose

This Department Directive Order (DDO) is the first step in providing guidance in managing applications for Class VI wells under the Underground Injection Control (UIC) program, providing guidance for the permitting, construction, operation, and oversight of carbon capture and sequestration (CCS) projects. It aims to ensure compliance with state laws and regulations (exceeding the federal requirements), protect underground sources of drinking water (USDW), and maintain transparency for stakeholders. All CCS operators are put on notice that DENR will adhere to this guidance to ensure consistency in permitting standards statewide.

III. Timeline for Review

The following has been and will continue to be the expectations of the Department for reviewing and making final permit decisions.

Stage	Typical Duration (approx.)	Evidence
Administrative completeness review	**1–3 months**	LDENR ensures all required data are included in application and processes any confidentiality requests.
Technical review	≈ **18 months** for a complete application;	LDENR's FAQ notes that even a flawless Class VI application would take **about 18 months** from the

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PHONE: (225)342-2710 • FAX: (225)342-3790 • www.dnr.louisiana.gov
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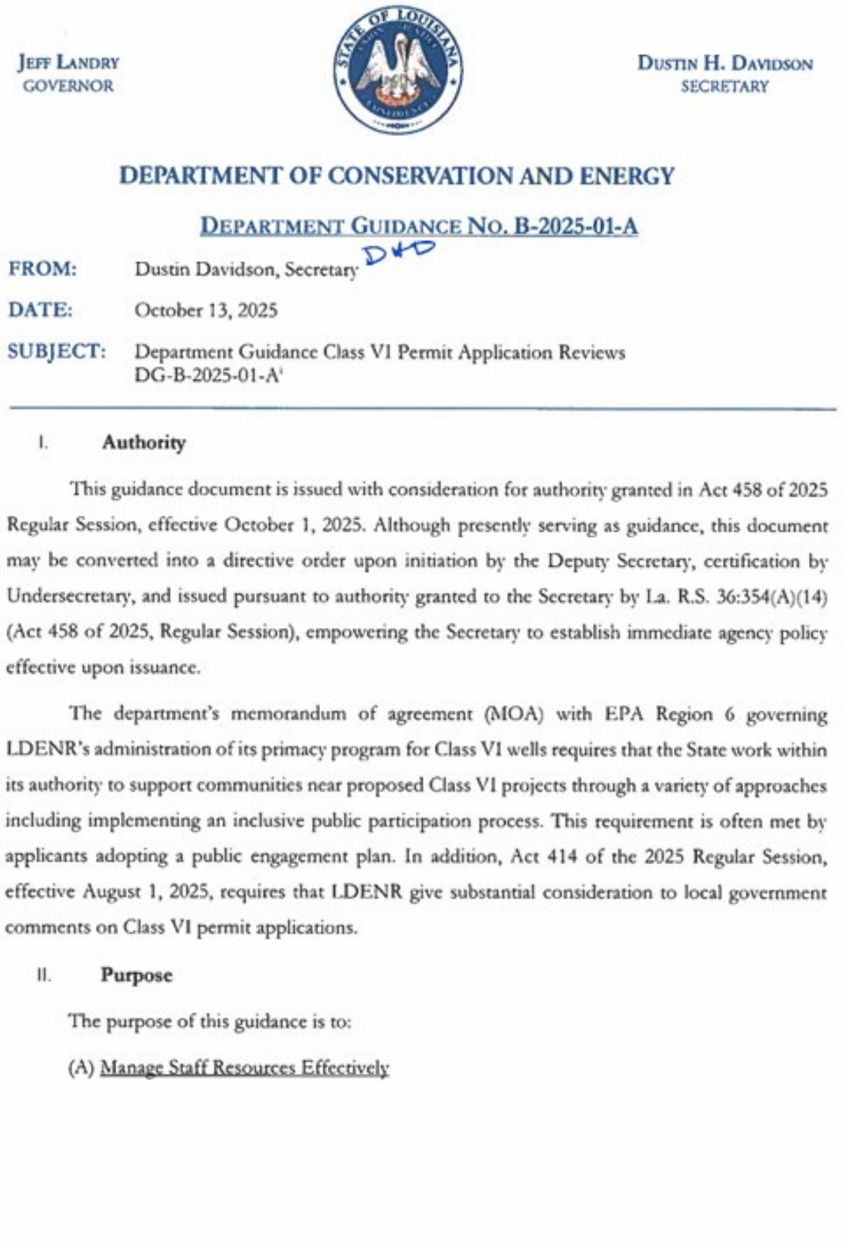
Department Guidance No. B-2025-01-A: Community Engagement

- Issued under authority of La. R.S. 36:354(A)(14) via Act 458 of 2025.
- **Unsolicited major modifications will not be tolerated.**
- Establishes expectation that applicants are responsible for technical sufficiency and communication with public.
- Establishes community engagement plans, which may be required.
- Substantial consideration to local governments.



JEFF LANDRY
GOVERNOR

DUSTIN H. DAVIDSON
SECRETARY

DEPARTMENT OF CONSERVATION AND ENERGY

DEPARTMENT GUIDANCE NO. B-2025-01-A

FROM: Dustin Davidson, Secretary DHD

DATE: October 13, 2025

SUBJECT: Department Guidance Class VI Permit Application Reviews
DG-B-2025-01-A[1]

I. **Authority**

This guidance document is issued with consideration for authority granted in Act 458 of 2025 Regular Session, effective October 1, 2025. Although presently serving as guidance, this document may be converted into a directive order upon initiation by the Deputy Secretary, certification by Undersecretary, and issued pursuant to authority granted to the Secretary by La. R.S. 36:354(A)(14) (Act 458 of 2025, Regular Session), empowering the Secretary to establish immediate agency policy effective upon issuance.

The department's memorandum of agreement (MOA) with EPA Region 6 governing LDENR's administration of its primacy program for Class VI wells requires that the State work within its authority to support communities near proposed Class VI projects through a variety of approaches including implementing an inclusive public participation process. This requirement is often met by applicants adopting a public engagement plan. In addition, Act 414 of the 2025 Regular Session, effective August 1, 2025, requires that LDENR give substantial consideration to local government comments on Class VI permit applications.

II. **Purpose**

The purpose of this guidance is to:

(A) Manage Staff Resources Effectively

Executive Order JML 25-119

- Establish balance between economic growth, environmental stewardship, and community engagement.
- Allows C&E to re-establish review process under new context.
- Focus on reality, not theory.
- Pause on reviewing new permit applications

State of Louisiana

EXECUTIVE DEPARTMENT
OFFICE OF THE GOVERNOR
EXECUTIVE ORDER NUMBER JML 25-119

CO_2 CAPTURE AND STORAGE LIMITS AND MORATORIUM

WHEREAS, on January 20, 2025, President Trump signed Executive Order 14154, titled "Unleashing American Energy," which directs all agencies to review regulations and propose deregulation through efficient permitting, specifically removing the social costs of CO_2 from calculations in any federal permitting or regulatory decision;

WHEREAS, on February 14, 2025, President Trump established the National Energy Dominance Council, through Executive Order 14213, finding it necessary to expand all forms of reliable and affordable energy production to drive down inflation, grow the economy, create good-paying jobs, reestablish American leadership in manufacturing, lead the world in artificial intelligence, and restore peace through strength by wielding commercial and diplomatic levers to end wars across the world;

WHEREAS, on April 8, 2025, President Trump signed Executive Order 14261, to reinvigorate American's clean coal industry and make it a national policy and priority to support "the domestic coal industry by removing Federal regulatory barriers that undermine coal production, encouraging the utilization of coal to meet growing domestic energy demands, increasing American coal exports, and ensuring that federal policy does not discriminate against coal production or coal-fired electricity generation;"

WHEREAS, President Trump continues to champion energy innovation by advancing technologies such as clean coal and CO_2 capture and storage, in order to secure a more sustainable, reliable, and prosperous energy future;

WHEREAS, President Trump has identified dangerous state and local energy policies as direct threats to the nation's domestic energy supply, warning that such actions jeopardize "our Nation's core national defense and security needs, and devastate the prosperity of not only local residents but the entire United States population;"

Questions?

Louisiana Department of Conservation and Energy
617 North Third Street
LaSalle Building
Baton Rouge, LA 70802
Phone: (225) 342-0510
Email: dnrinfo@la.gov

Geologic Carbon Sequestration in Oregon

Oregon Dept. of Geology and Mineral Industries &
Department of State Lands

Ruarri J. Day-Stirrat Ph.D.
Oregon State Geologist

State of Oregon Opportunities

- Governor Kotek's Executive Order 25-26
- State of Oregon decarbonization
  - Treasury decarbonization
- Economic Development
  - Non-agricultural

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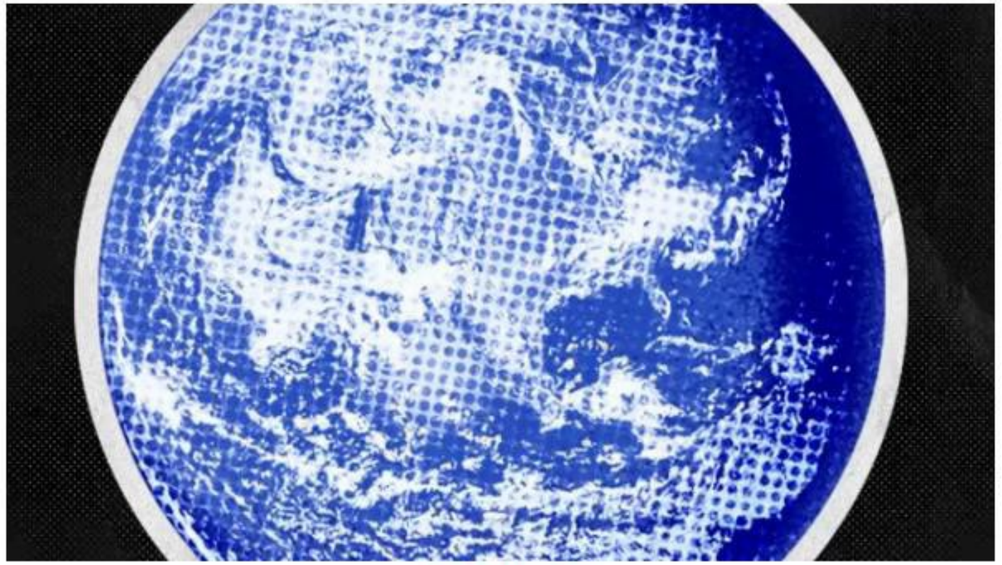
News | Carbon Dioxide | Greenhouse Gas Emissions | Greenhouse Gases | Climate Char

Oregon's Volcanic Rocks Could Unlock Major Carbon Storage Potential

Published Nov 21, 2024 at 12:16 PM EST



By Tom Howarth
Science Reporter (Nature)

FOLLOW

Geologic Carbon Sequestration in Oregon – *Project Goals (0-3 years)*

Initial community and Tribal engagement

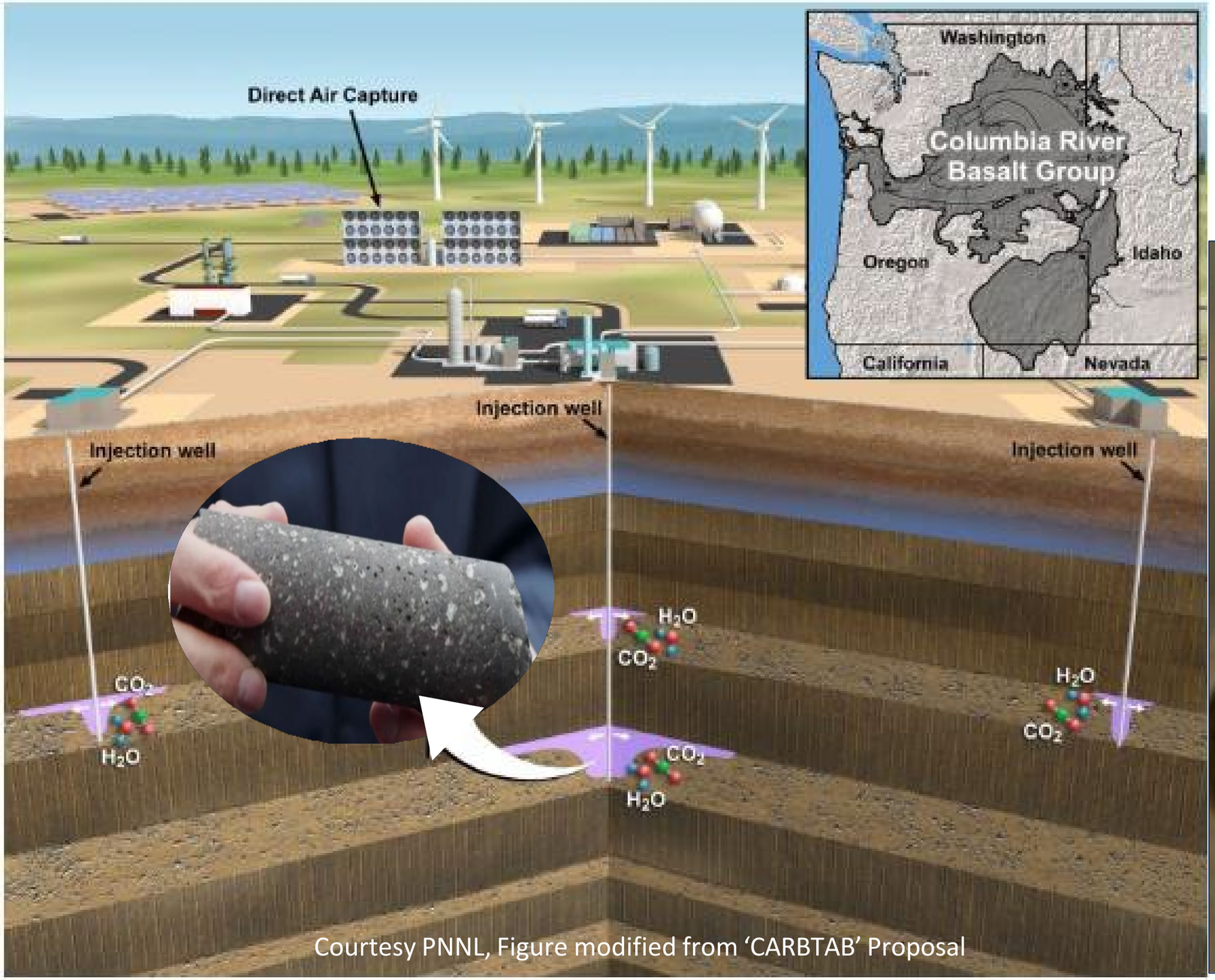
Geologic modeling and installation of research well on DSL managed land

Decision on regulatory structure

Community Engagement

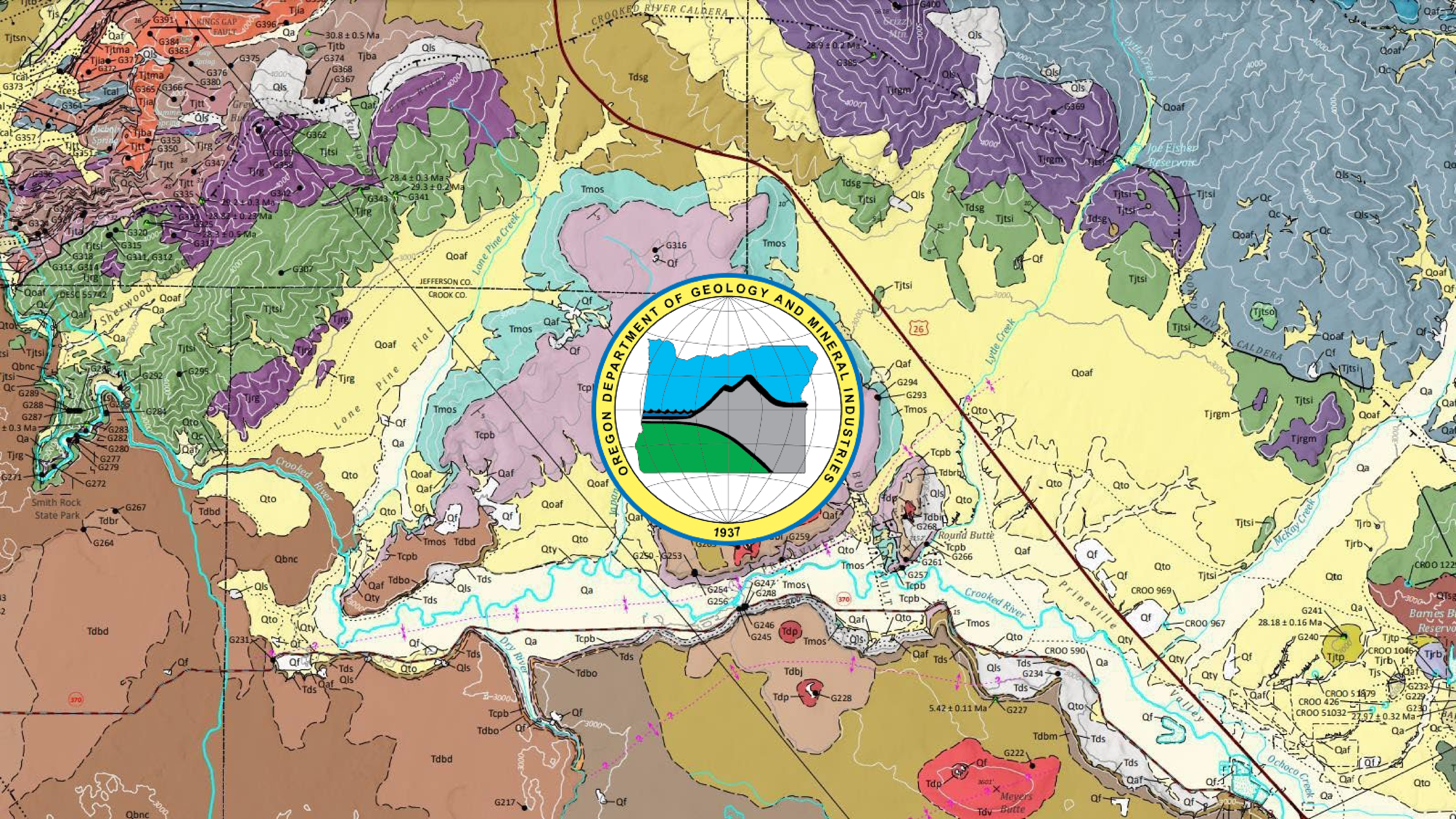
Technical Feasibility

Regulatory Structure



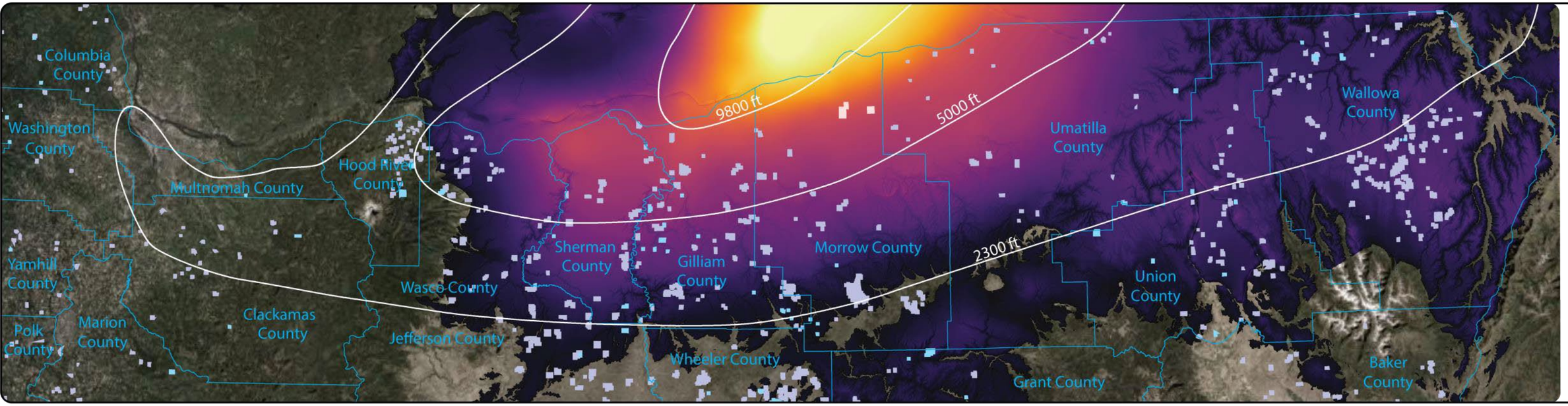
Courtesy PNNL, Figure modified from 'CARBTAB' Proposal

CO_2 Storage in Columbia River Basalt



OREGON DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES
1937
CROOKED RIVER CALDERA
KINGS GAP FAULT
Grizzly Mtn
Lytle Creek
Joe Fisher Reservoir
Lone Pine Creek
Lone Pine Flat
Sherwood
JEFFERSON CO.
CROOK CO.
Crooked River
Smith Rock State Park
Dry River
Round Butte
Prineville Valley
McKay Creek
Ochoco Creek
Barnes Butte Reservoir
Meyers Butte
26
370
30.8 ± 0.5 Ma
28.9 ± 0.2 Ma
28.4 ± 0.3 Ma
29.3 ± 0.2 Ma
28.18 ± 0.16 Ma
27.97 ± 0.32 Ma
5.42 ± 0.11 Ma
DESC 55742
CROO 969
CROO 967
CROO 590
CROO 1046
CROO 426
CROO 51032
CROO 1225
Qoaf
Qaf
Qa
Qto
Qty
Qf
Qls
Qc
Qbnc
Tdsg
Tjtsi
Tjrg
Tjrgm
Tmos
Tcpb
Tds
Tdbd
Tdbo
Tdbj
Tdbm
Tdp
Tdv
Tjtp
Tjrb
Tjtso

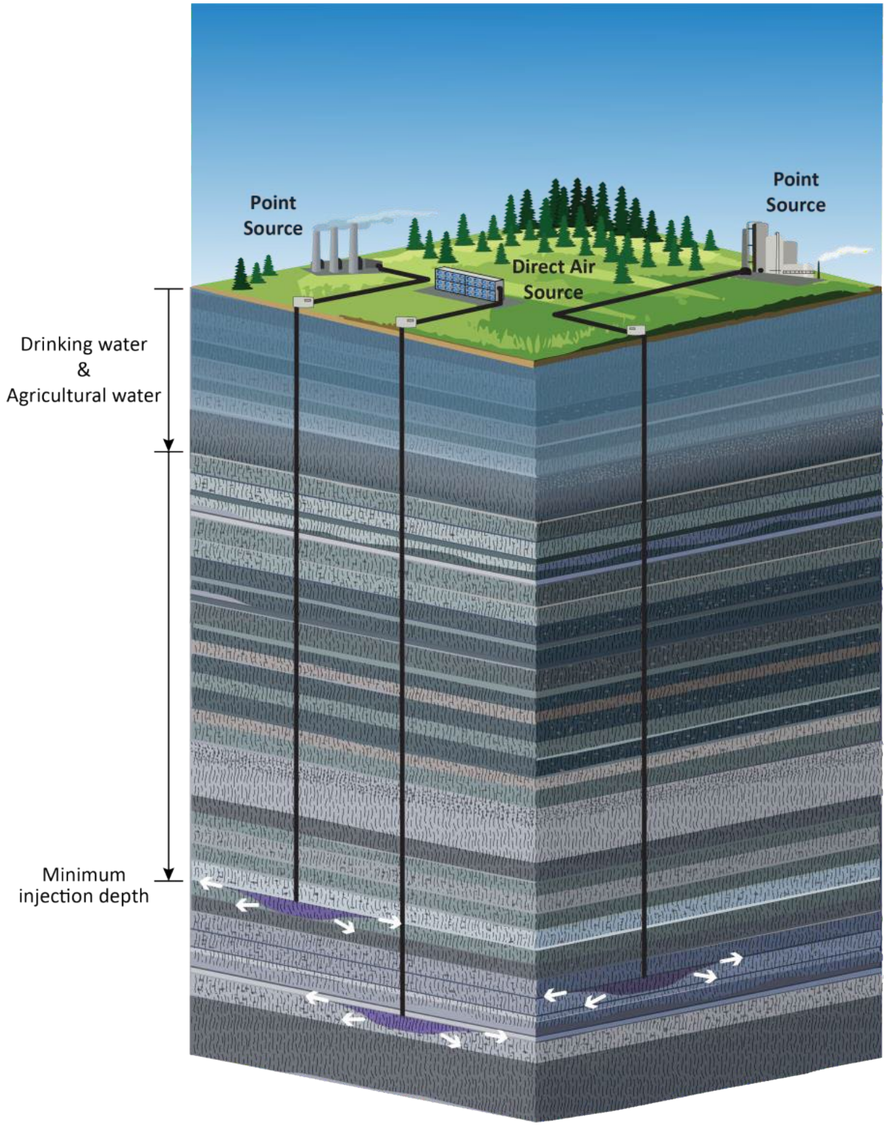
Potential for Geologic Carbon Sequestration in Oregon

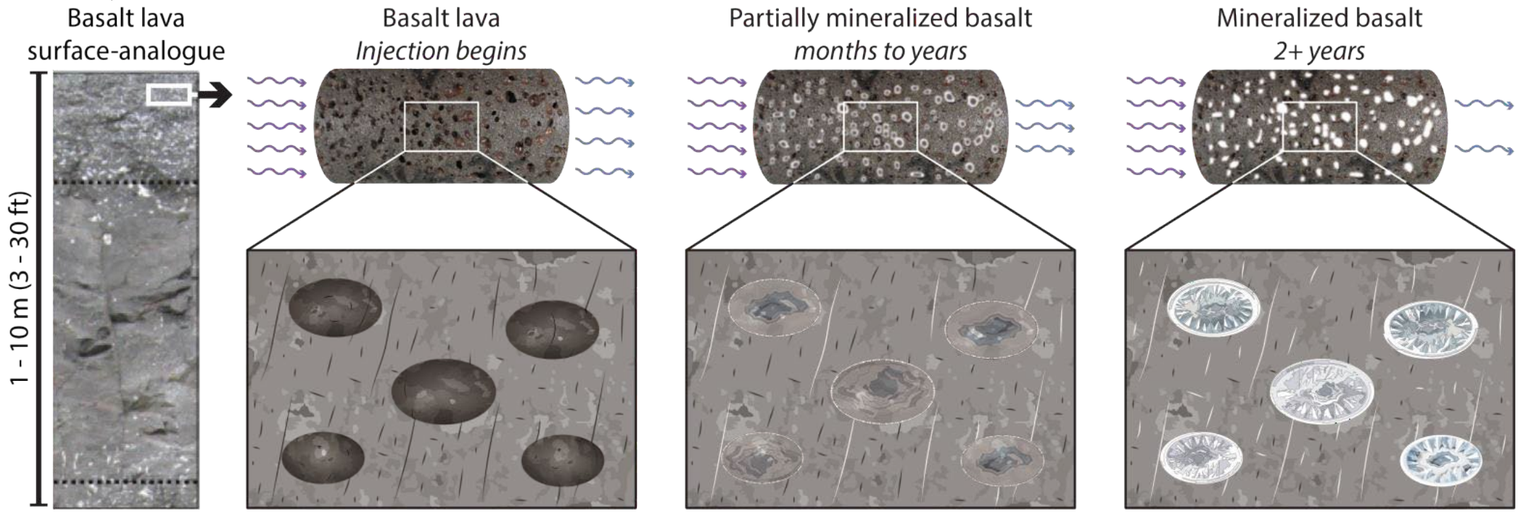


Modeled thickness of the Columbia River Basalt across the Columbia Plateau, basalt thickness of <2,600 ft

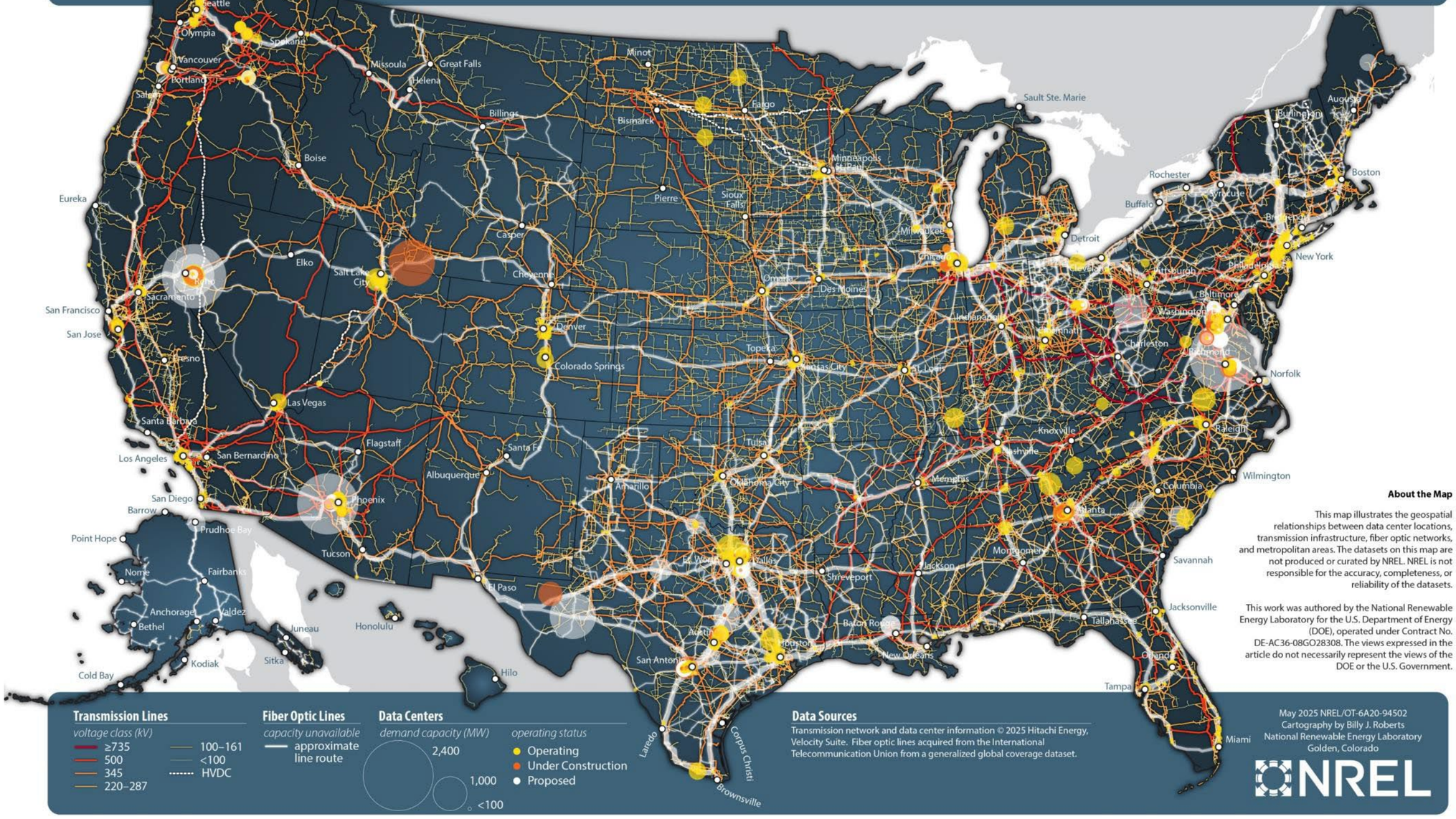
An important step is to understand the subsurface geology

Potential for Geologic Carbon Sequestration in Oregon





Data Center Infrastructure in the United States, 2025



About the Map

This map illustrates the geospatial relationships between data center locations, transmission infrastructure, fiber optic networks, and metropolitan areas. The datasets on this map are not produced or curated by NREL. NREL is not responsible for the accuracy, completeness, or reliability of the datasets.

This work was authored by the National Renewable Energy Laboratory for the U.S. Department of Energy (DOE), operated under Contract No. DE-AC36-08GO28308. The views expressed in the article do not necessarily represent the views of the DOE or the U.S. Government.

Transmission Lines

voltage class (kV)

- ≥735
- 500
- 345
- 220–287
- 100–161
- <100
- HVDC

Fiber Optic Lines

capacity unavailable

- approximate line route

Data Centers

demand capacity (MW)

- 2,400
- 1,000
- <100

operating status

- Operating
- Under Construction
- Proposed

Data Sources

Transmission network and data center information © 2025 Hitachi Energy, Velocity Suite. Fiber optic lines acquired from the International Telecommunication Union from a generalized global coverage dataset.

May 2025 NREL/OT-6A20-94502
Cartography by Billy J. Roberts
National Renewable Energy Laboratory
Golden, Colorado

NREL

FROM POLICY TO PROSPERITY: STATES DRIVING CCS DEPLOYMENT - WYOMING

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

2025 AMERICAS MEMBER MEETING

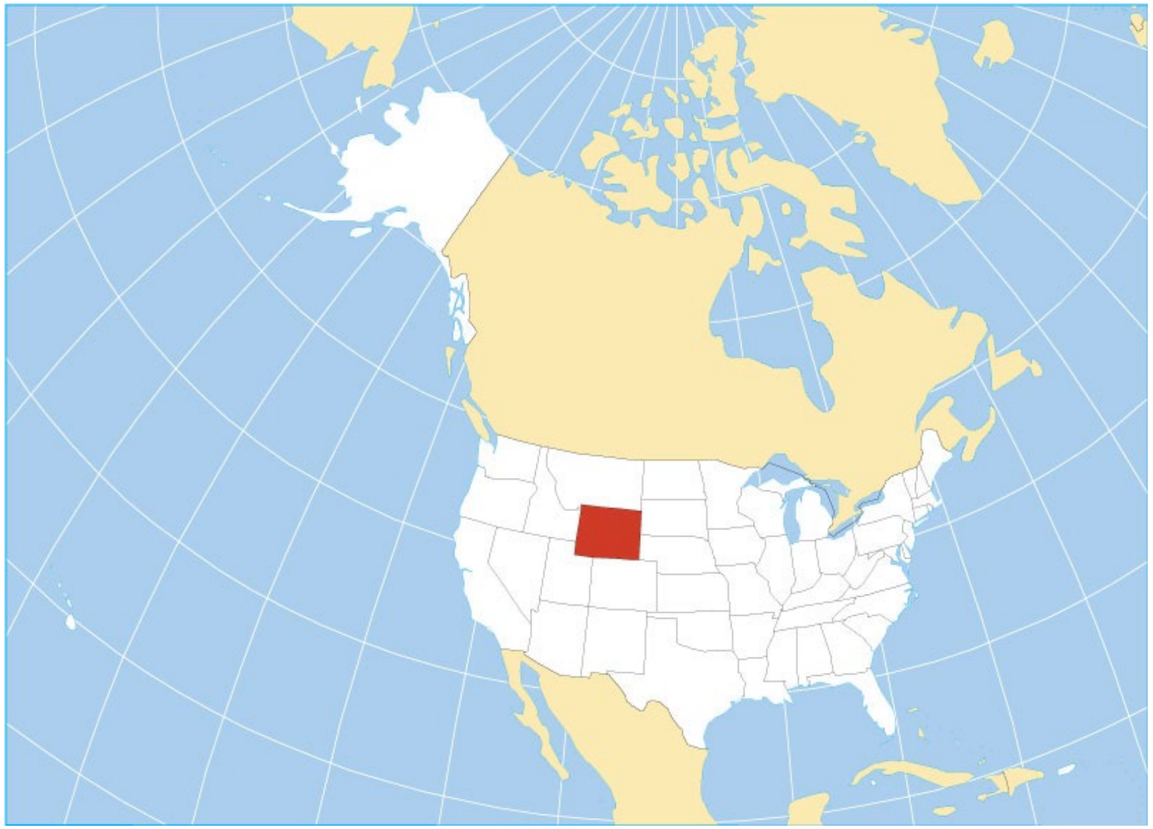
Global CCS Institute

November 4, 2025

Presented by: Lily R. Barkau, P.G., Water Quality Division, Groundwater Section Manager

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

Overview



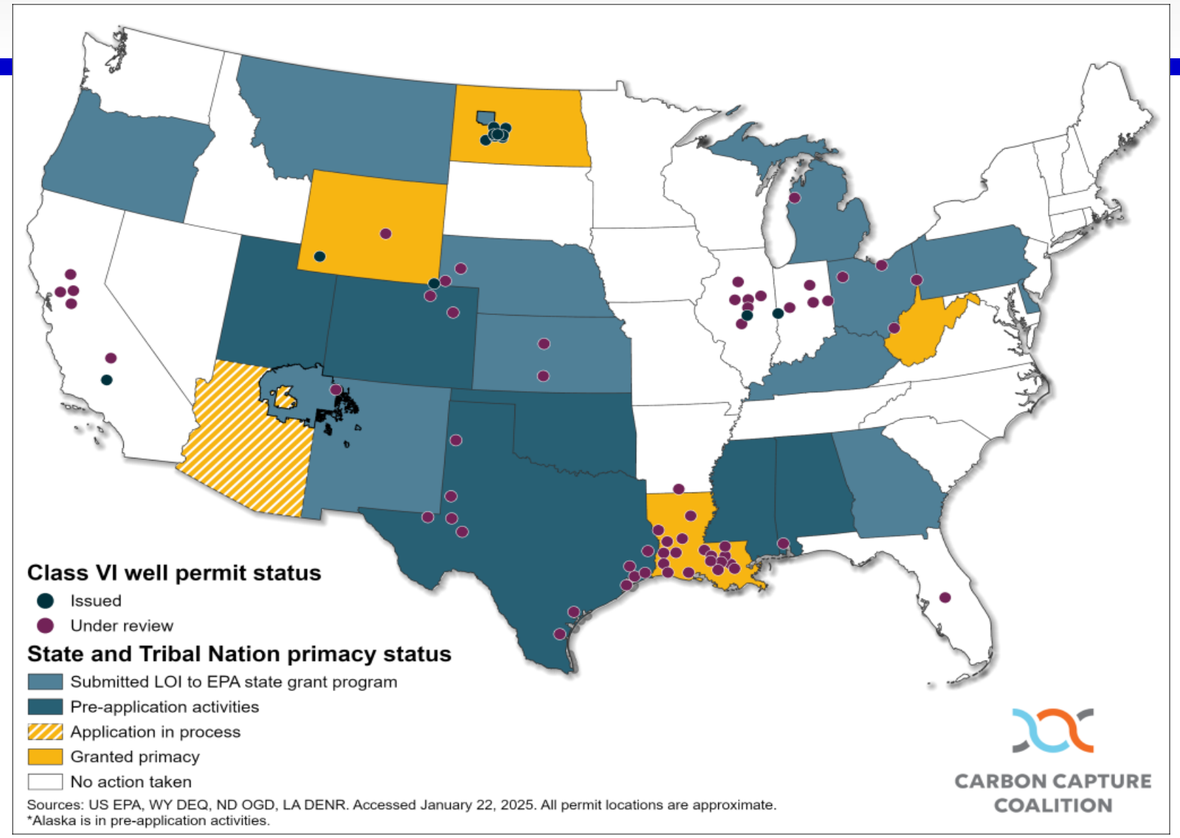
- Wyoming Carbon Sequestration History and Regulations
- Project Updates
- Lessons Learned

Wyoming's Geologic Sequestration History

- 2007 – Carbon Sequestration Working Group
- 2008 – 2023 Statutes and regulations in place for
  - Permitting
  - Unitization
  - Pore space
  - Title of CO_2
  - Long-term stewardship
  - Transfer of liability
- The Federal UIC program does not speak to unitization, pore space, the title of CO_2, long-term stewardship, and liability.

EPA UIC Program and State Primacy

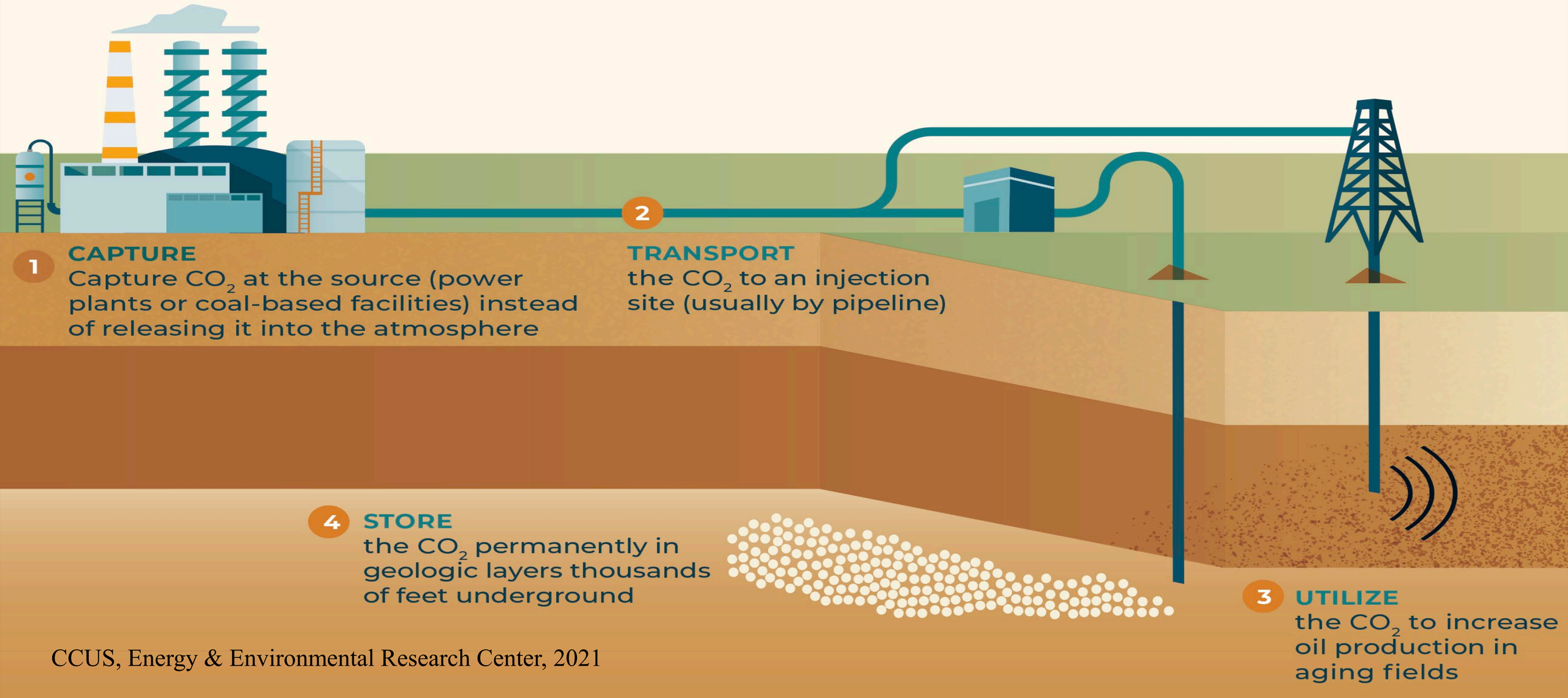
- Section 1421 of the Safe Drinking Water Act (SDWA) directs US EPA to develop UIC program requirements that protect underground sources of drinking water.
- Primacy, refers to a state, territory, or tribal responsibility associated with implementing US EPA-approved UIC programs.
- Currently 34 states have primacy over certain classes of wells of the UIC program.
- Wyoming received primacy of UIC Class I through V wells in 1983.
- Primacy of UIC Class VI wells was issued in September 2020.
- Second state to receive primacy of Class VI wells.



Carbon Capture Coalition, 2025

Carbon Capture, Utilization, and Storage

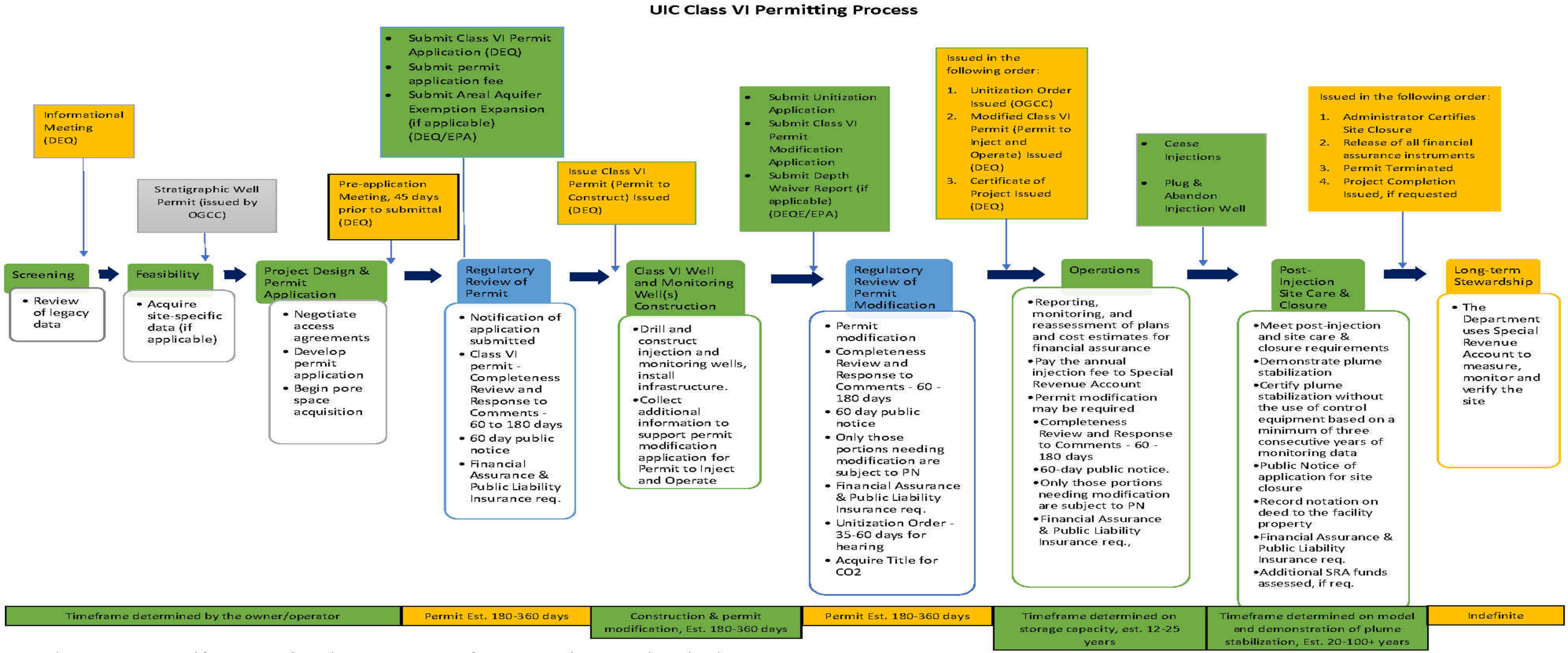
WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY



CCUS, Energy & Environmental Research Center, 2021

Wyoming Carbon Sequestration Permitting Process

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY



Note: Other items are required for permit and site closure per Wyo. Stat. § 35-11-313 and Water Quality Rules Chapter 24.

Wyoming's UIC Class VI Permitting Process

- Informational Meeting
- Pre-application Meeting
- Application (Operator Public Notice)
- Completeness/Technical Adequacy Review
- Public Notice Draft Permit
- **Permit to Construct**

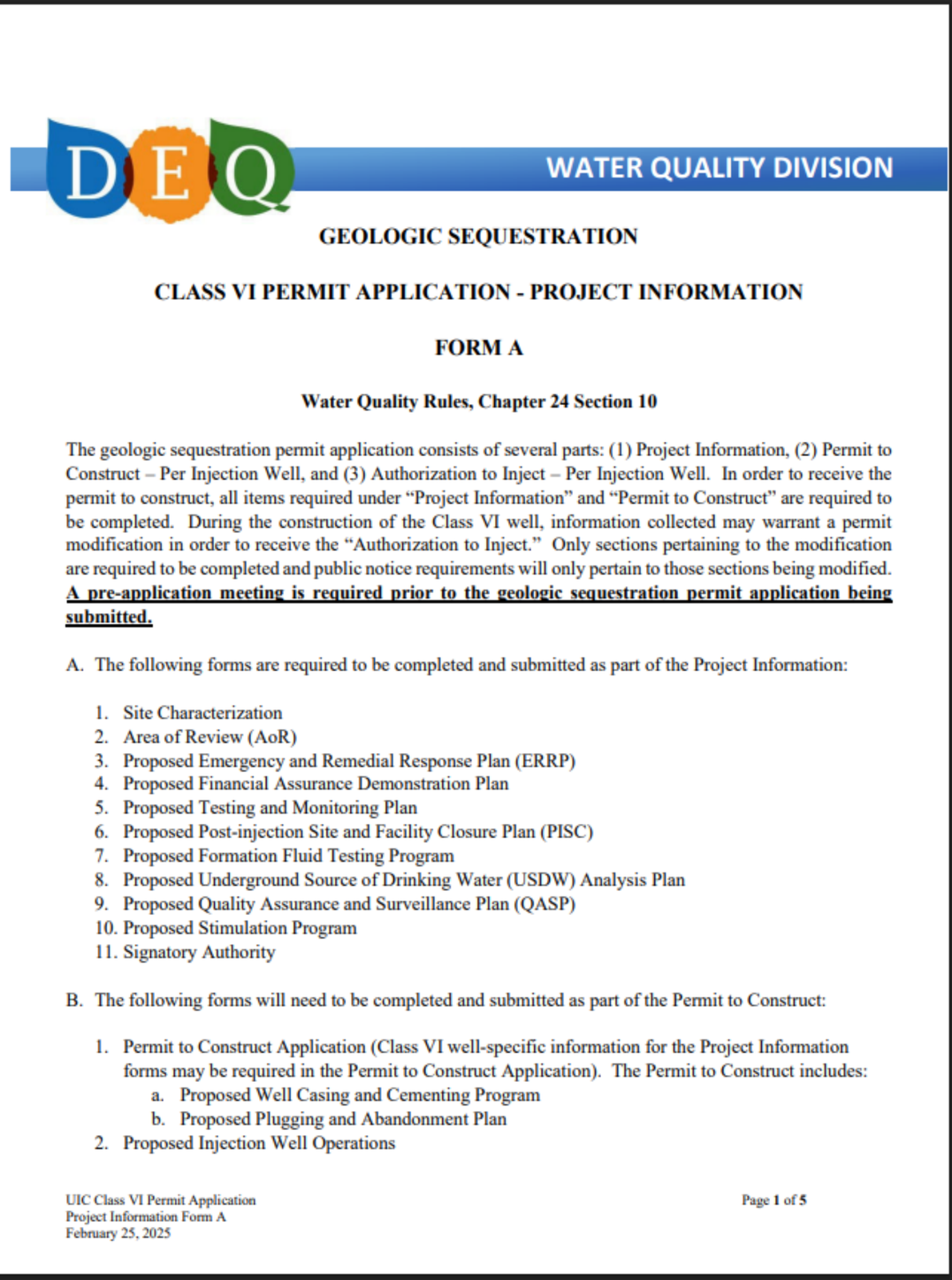
- Well Construction and Pre-injection Testing

- Authorization to Inject Request or Permit Modification Application (Major Modifications)
- Completeness/Technical Adequacy Review
- Public Notice Draft Permit (if applicable)
- Unitization Order (if applicable)
- **Permit - Authorization to Inject**

Application Forms

Project (Facility Wide) Forms:

- Form A: Project Information
  - Form A-1: Project Site Characterization
  - Form A-2: Project AoR
  - Form A-3: Project Emergency and Remedial Response Plan
  - Form A-4: Project Financial Assurance Demonstration Plan
  - Form A-5: Project Testing & Monitoring Plan
  - Form A-6: Project Post Injection Site Care and Site Closure Plan
  - Form A-7: Project Formation Fluid Testing Program
  - Form A-8: Project USDW Analysis Plan
  - Form A-9: Project Quality Assurance and Surveillance Plan
  - Form A-10: Project Stimulation Program
  - Form A-11: Signatory Authorities



DEQ WATER QUALITY DIVISION

GEOLOGIC SEQUESTRATION

CLASS VI PERMIT APPLICATION - PROJECT INFORMATION

FORM A

Water Quality Rules, Chapter 24 Section 10

The geologic sequestration permit application consists of several parts: (1) Project Information, (2) Permit to Construct – Per Injection Well, and (3) Authorization to Inject – Per Injection Well. In order to receive the permit to construct, all items required under "Project Information" and "Permit to Construct" are required to be completed. During the construction of the Class VI well, information collected may warrant a permit modification in order to receive the "Authorization to Inject." Only sections pertaining to the modification are required to be completed and public notice requirements will only pertain to those sections being modified. **A pre-application meeting is required prior to the geologic sequestration permit application being submitted.**

A. The following forms are required to be completed and submitted as part of the Project Information:

1. Site Characterization
2. Area of Review (AoR)
3. Proposed Emergency and Remedial Response Plan (ERRP)
4. Proposed Financial Assurance Demonstration Plan
5. Proposed Testing and Monitoring Plan
6. Proposed Post-injection Site and Facility Closure Plan (PISC)
7. Proposed Formation Fluid Testing Program
8. Proposed Underground Source of Drinking Water (USDW) Analysis Plan
9. Proposed Quality Assurance and Surveillance Plan (QASP)
10. Proposed Stimulation Program
11. Signatory Authority

B. The following forms will need to be completed and submitted as part of the Permit to Construct:

1. Permit to Construct Application (Class VI well-specific information for the Project Information forms may be required in the Permit to Construct Application). The Permit to Construct includes:
   a. Proposed Well Casing and Cementing Program
   b. Proposed Plugging and Abandonment Plan
2. Proposed Injection Well Operations

Application Forms (cont.)

Well Specific Forms:

- Form B: Permit to Construct Application
  - Form B-1: Proposed Injection Well Operations
  - Form Bs can reference Form As if no changes are required. If changes are required per well, that information must be updated on Form Bs

Authorization to Inject Forms:

- Form C: Authorization to Inject Application
  - Form C-1: Unitization Order
  - Form C-2: CO_2 Title

Other Forms (Project Dependent):

- Form D: Areal Expansion to Class II Aquifer Exemption
- Form E: Depth Waiver Report

be directly accessed from a public road. A map of the access route(s) to the facility shall accompany the application.

I, _____, certify under penalty of perjury that the applicant has secured and shall maintain permission for WDEQ personnel and their invitees to access the permitted facility, including (i) permission to access the land where the facility is located, (ii) permission to collect resource data as defined by Wyoming Statute § 6-3-414, and (iii) permission to enter and cross all properties necessary to access the facility if the facility cannot be directly accessed from a public road.

2.0 Class VI Well

Include a short narrative of the location of the Class VI well and the following figure(s):

- Geologic Sequestration Storage (Specific Class VI Well) Map: *Include: Injection well location, monitoring well(s) location(s), stabilized plume boundary, storage facility area, and property boundaries.*

3.0 Site Characterization Information

This information is specific to the well. If only one well or information is the same as what has been provided in the Project Site Characterization Section, the information does not need to be repeated. However, a cross-section map and cross-sections specific to the well is needed here. Other sections can reference back to the Project Site Characterization Section. **Only complete sections that are different than what has been presented in the Project Site Characterization Section.**

Include any figures/maps that will be specific to the Class VI well.

- Cross-Section Map
- Cross Sections: *Include local cross sections shall include all major and minor aquifers from the surface to Precambrian basement, the proposed injection well, stratigraphic units, confining units, faults, and injection zone(s). Cross-sections shall be to scale and constructed with well logs.*

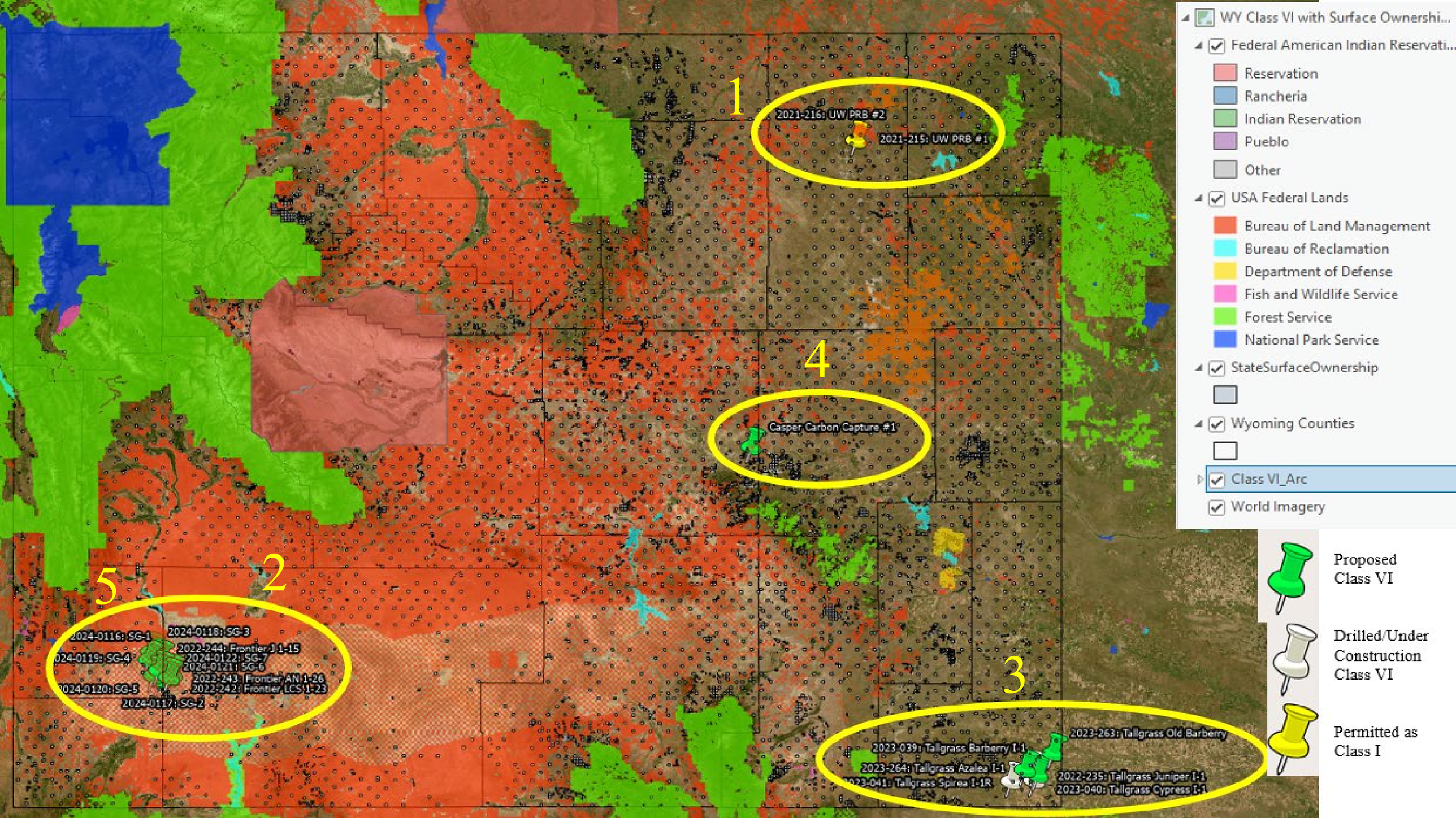
Is storage reservoir information different than what is provided in the Project Site Characterization Section?

☐Yes (complete only the applicable sections) ☐No (go to next Section 4.0)

Storage Reservoir (Injection Zone)

Characterization of the injection zone and aquifers above and below the injection zone which may be affected including applicable pressure and fluid chemistry data to describe the projected effects of the injection activities and background water quality data that will facilitate the classification of any groundwaters which may be affected by the proposed discharge.

- Provide the geologic name of the aquifer or receiver and include a lithologic description.
- Provide the lateral and vertical limits of an aquifer or receiver.
- Structure of the injection and confining zone - Provide information on the geologic structure of the injection zone(s) to demonstrate that local and regional geologic structures are conducive to GS and form an adequate confining system.


1
2021-216: UW PRB #2
2021-215: UW PRB #1
4
Casper Carbon Capture #1
5
2
2024-0116: SG-1
2024-0118: SG-3
2022-244: Frontier J 1-15
2024-0119: SG-4
2024-0122: SG-7
2024-0121: SG-6
2022-243: Frontier AN 1-26
2024-0120: SG-5
2022-242: Frontier LCS 1-23
2024-0117: SG-2
3
2023-263: Tallgrass Old Barberry
2023-039: Tallgrass Barberry I-1
2023-264: Tallgrass Azalea I-1
2022-235: Tallgrass Juniper I-1
2023-040: Tallgrass Cypress I-1
WY Class VI with Surface Ownershi...
Federal American Indian Reservati...
Reservation
Rancheria
Indian Reservation
Pueblo
Other
USA Federal Lands
Bureau of Land Management
Bureau of Reclamation
Department of Defense
Fish and Wildlife Service
Forest Service
National Park Service
StateSurfaceOwnership
Wyoming Counties
Class VI_Arc
World Imagery
Proposed Class VI
Drilled/Under Construction Class VI
Permitted as Class I

Active/Under Review Class VI Projects:

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

Map Location	Project	Proposed Storage Volume (est.)	Application Received	Permit to Construct Issued	Authorization to Inject Request/ Permit Modification
1	CarbonSAFE: Dry Forks Station - 8 additional wells proposed. - Conversion of 2 Class I wells to Class VI.	50 MMT; 30 years	4/27/2021	11/5/2021 (2 wells under Class I)	--
NA	Painter Reservoir CCS	3.75 MMT; 15 years	12/1/2021	11/30/2023 (Permit Denied)	
2	Frontier Carbon Solutions, LLC Sweetwater Carbon Storage Hub - 1 well drilled summer 2025. - Remaining 2 planned in 2026.	25.485 MMT; 20 years	9/15/2022	12/14/2023 (3 wells)	Major Permit Modification Application expected in 2026.

Active/Under Review Class VI Projects:

Map Location	Project	Proposed Storage Volume (est.)	Application Received	Permit to Construct Issued	Authorization to Inject Request/ Permit Modification
3	Tallgrass High Plains Carbon Storage, LLC Eastern Wyoming Sequestration Hub	132 MMT; 30 years	3/29/2023 (1 well) 12/2023 (5 wells)	9/11/2024 (1 well) 10/31/2024 (5 wells)	6/27/2025 (1 well) 10/31/2025 (1 well) 2 wells ATI request under review. 1 well ATI request expected late 2025
4	Casper Carbon Capture, LLC Casper Carbon Storage Hub	6 MMT; 15 years	7/1/2024 (1 well)	Under Review	--
5	Frontier Carbon Solutions, LLC Project Speed Goat - Proposed Stacked Storage	69 MMT; 40 years	2/10/2025 (7 wells)	Under Review	--

Permitting Lessons Learned

- Streamlined and standardized application forms.
- Early and often communication with applicant/operator is key.
- Early informational meetings well before application submittal helps with planning and staffing.
- Non-technical items (Financial Assurance/Insurance) may require assistance to review.
- Single review of site-wide information can reduce review times (Form A).

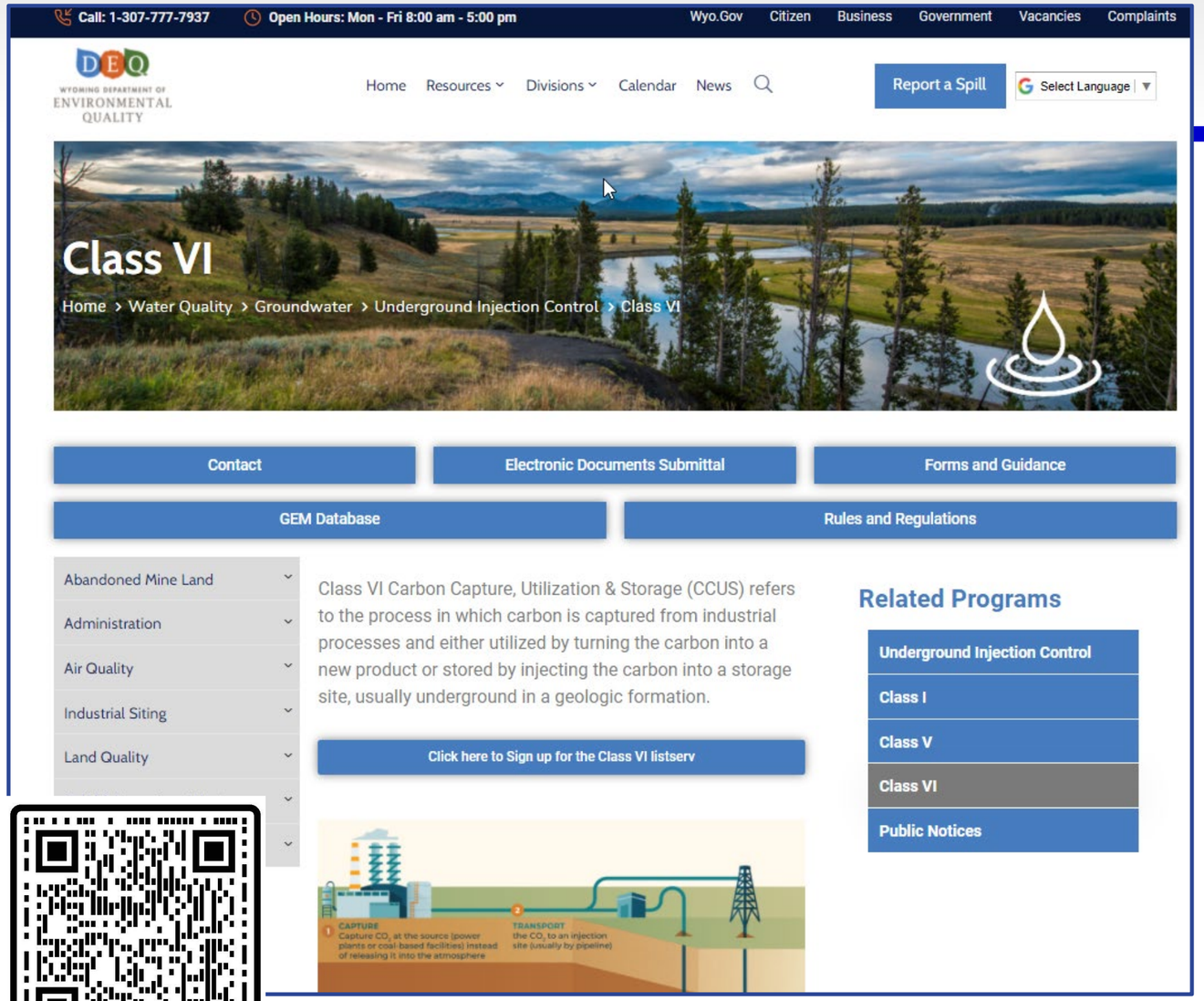
Tallgrass High Plains Carbon Storage, LLC Juniper I-1 well during initial commissioning injection test, 6/28/2025, photo by TH

Permitting Lessons Learned

- Organization, especially for multiple wells at a single facility, is key.
- Changes to plans (T&MP, ERRP, etc.) will increase review time from PTC to ATI.
- Ensure consistency across multiple submittals for a single well.
- Operators have much larger staffing resources than regulators, plan accordingly.
- Poor planning on the applicant's part does not constitute panic on the regulator's part.
- Expect the unexpected.

Tallgrass High Plains Carbon Storage, LLC Juniper I-1 wellhead and flowline/metering building prior to initial commissioning injection test, 6/28/2025, photos by TH

Thank you!



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- Tyler Harris, P.G.

  Geology Supervisor – UIC Class VI Program

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  Tyler.Harris@wyo.gov

DATA CENTER GROWTH OUTLOOK IN THE WAKE OF THE ARTIFICIAL INTELLIGENCE BOOM

Dan Thompson

Associate Director – Datacenter Services
and Infrastructure
S&P Global Commodities Insight

Sponsored by InvestAlberta

GLOBAL CCS INSTITUTE

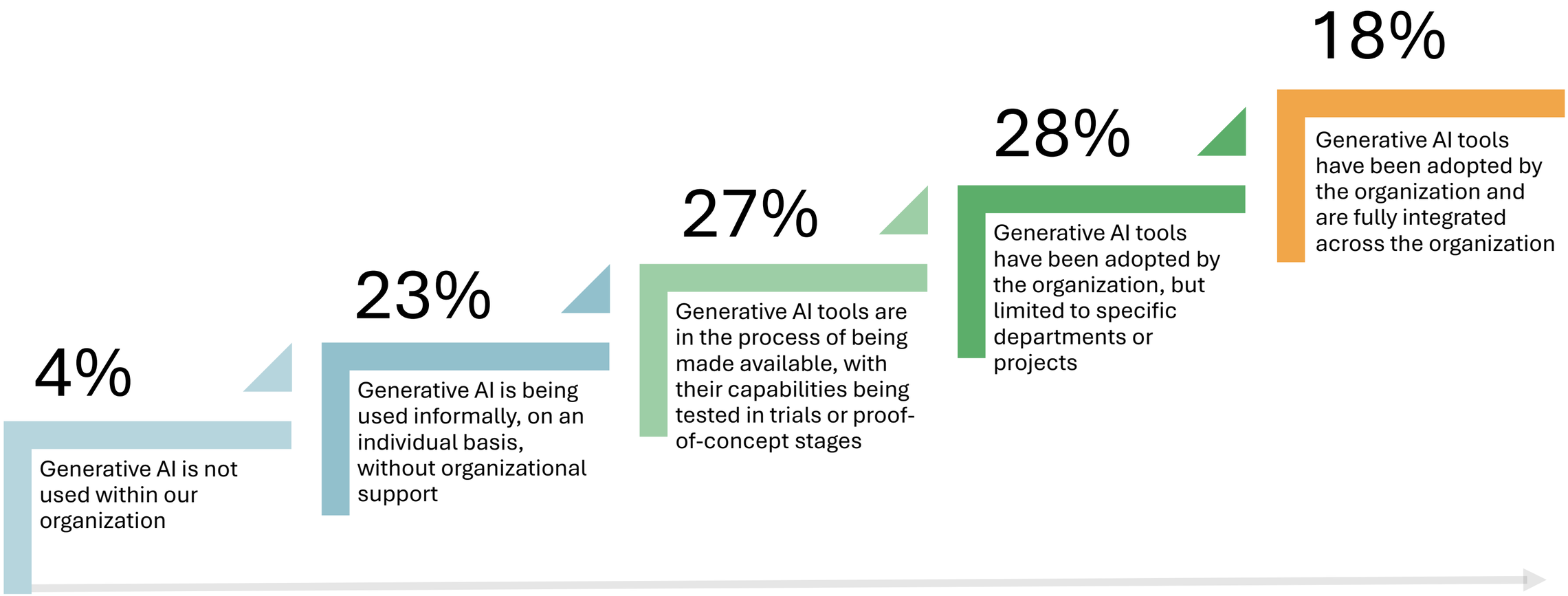
S&P Global
Commodity Insights

Data Center Growth Outlook in the Wake of the AI Boom

Agenda

- The state of AI
- Growth in Datacenters associated with AI

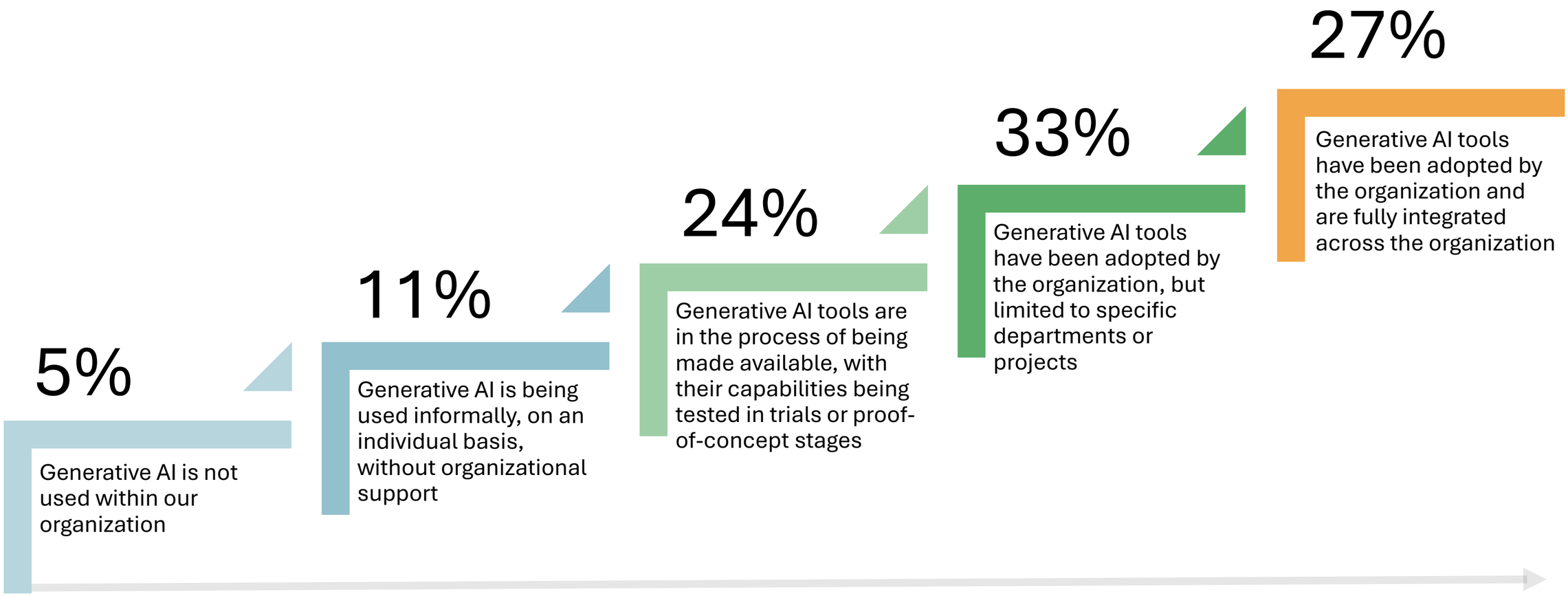
Organizations are aggressively integrating generative AI



Q. Which of these statements most accurately reflects the use of generative AI at your organization?
Base: All respondents (n=712).

Source: 451 Research's Voice of the Enterprise: AI & Machine Learning, Infrastructure 2024.

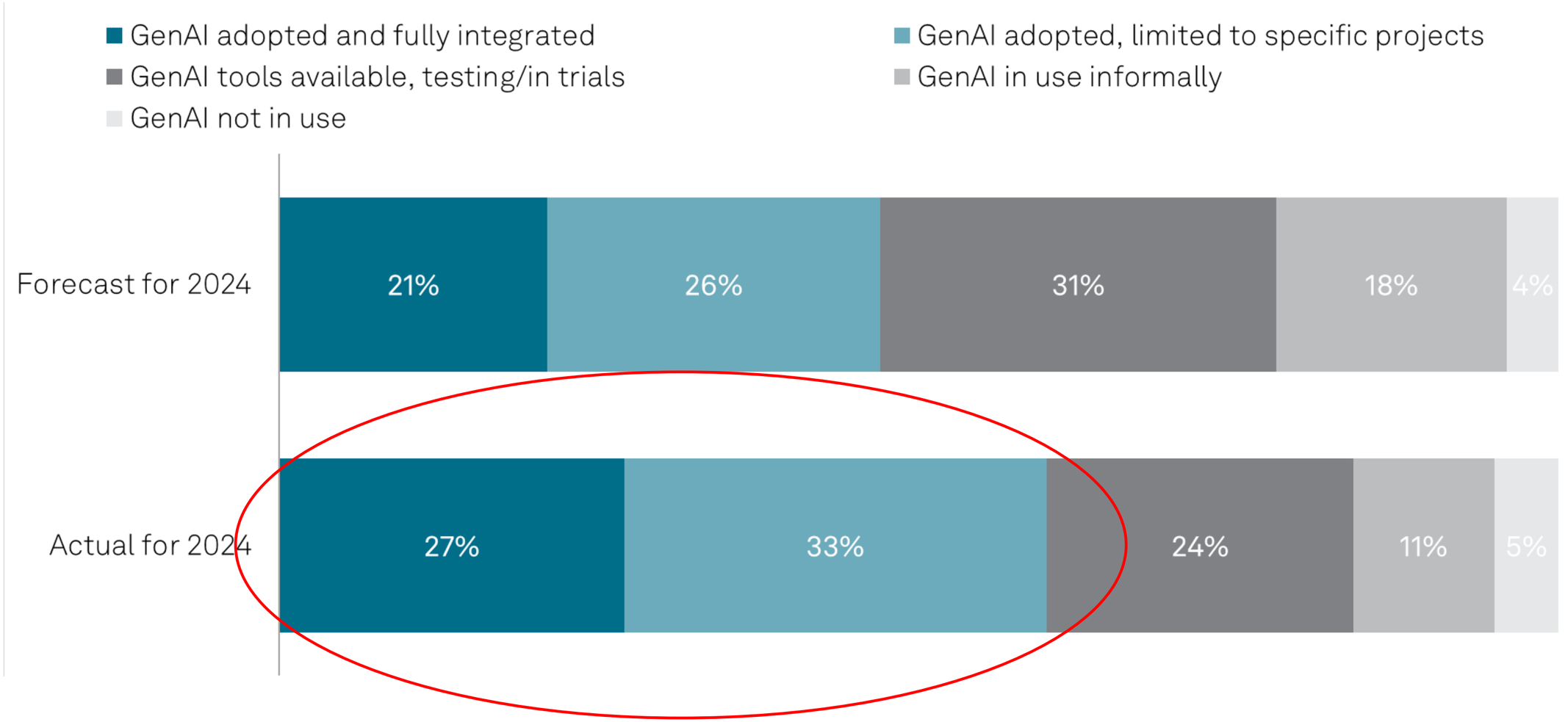
Organizations are aggressively integrating generative AI



Q. Which of these statements most accurately reflects the use of generative AI at your organization?
Base: All respondents (n=1,006).

Source: 451 Research's Voice of the Enterprise: AI & Machine Learning, Use Cases 2025.

Generative AI uptake in 2024 outstripped forecasts

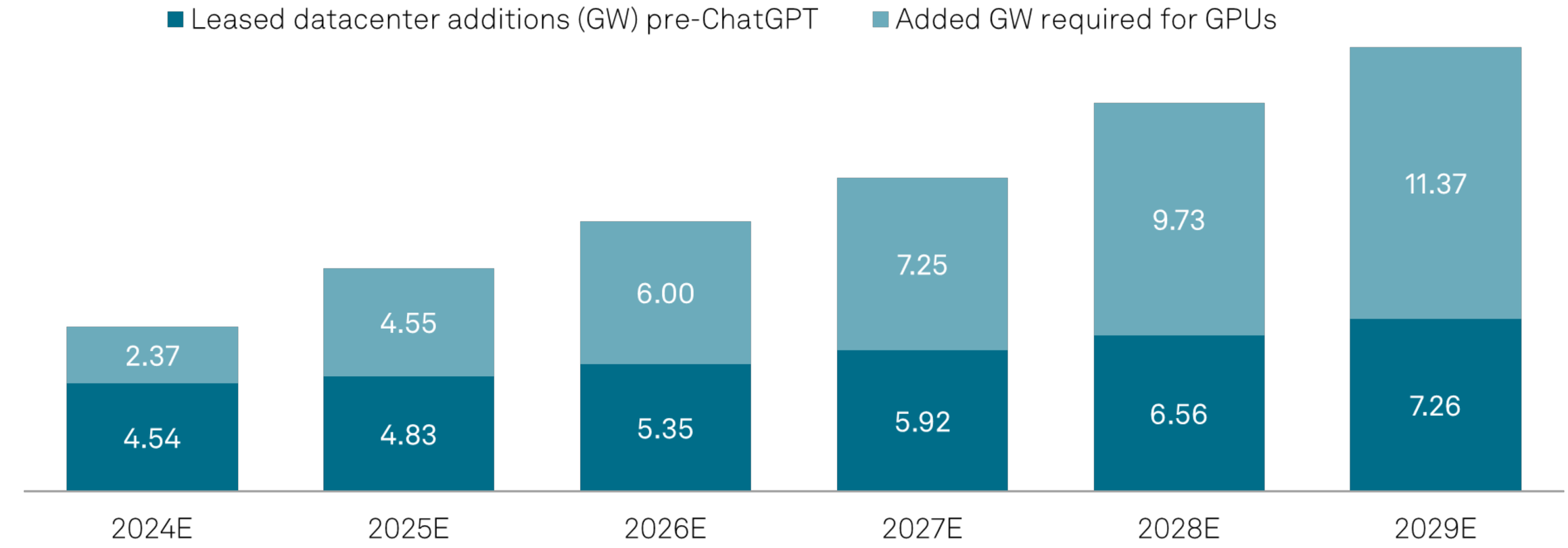


Q. Please select the appropriate level of usage for each AI type. Base: All respondents (n=1,006) Source: 451 Research's Voice of the Enterprise: AI & Machine Learning, Use Cases 2025.

Q. Which of these statements most accurately reflect where you predict the use of generative AI will be within your organization in the next 12 months? Base: All respondents (n=1,001). Source: 451 Research's Voice of the Enterprise: AI & Machine Learning, Use Cases 2024.

GenAI adding 10 GW+ per year of global demand not expected in late 2022

Net new AI capacity (GW) vs. planned supply pre-ChatGPT



Source: 451 Research's Datacenter KnowledgeBase Q3 2022 and GPU Impact on Datacenters – Market Monitor, June 2024.

Demand for Nvidia GPUs = upward revenue revisions (infrastructure perspective)

Revisions summary

		CY-2019	CY-2020	CY-2021	CY-2022	CY-2023	CY-2024	CY-2025	CY-2026	Sum CY24-26
NVDA	Change from 1/1/24					1,714	34,853	88,675	111,240	234,768
	Change from 1/1/23					29,785	91,528	158,834	193,162	443,523
	Dec 31, 2024	2,983	6,696	10,613	15,005	47,525	113,619	183,820	223,384	520,823
	Jan 2, 2024	2,983	6,696	10,613	15,005	45,811	78,766	95,145	112,143	286,055
	Jan 1, 2023	2,983	6,696	10,613	15,279	22,091	22,091	24,986	30,222	77,300

Data compiled: Feb 2025.
Sources: Visible Alpha, December 31, 2024.

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- The state of AI
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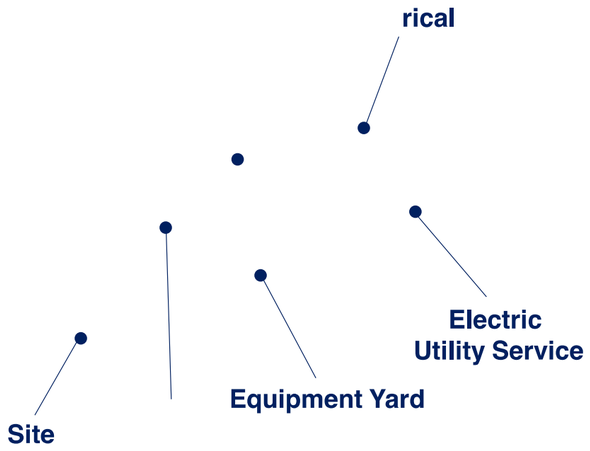
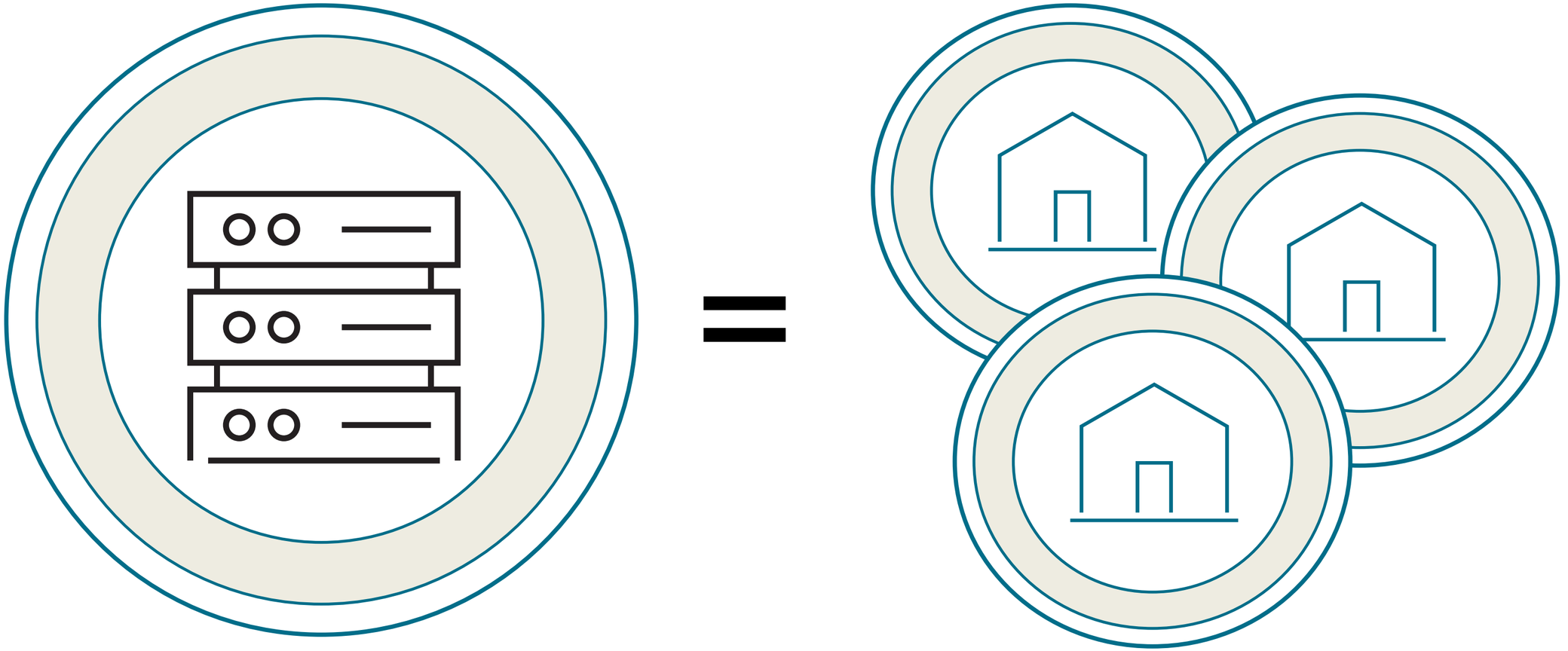
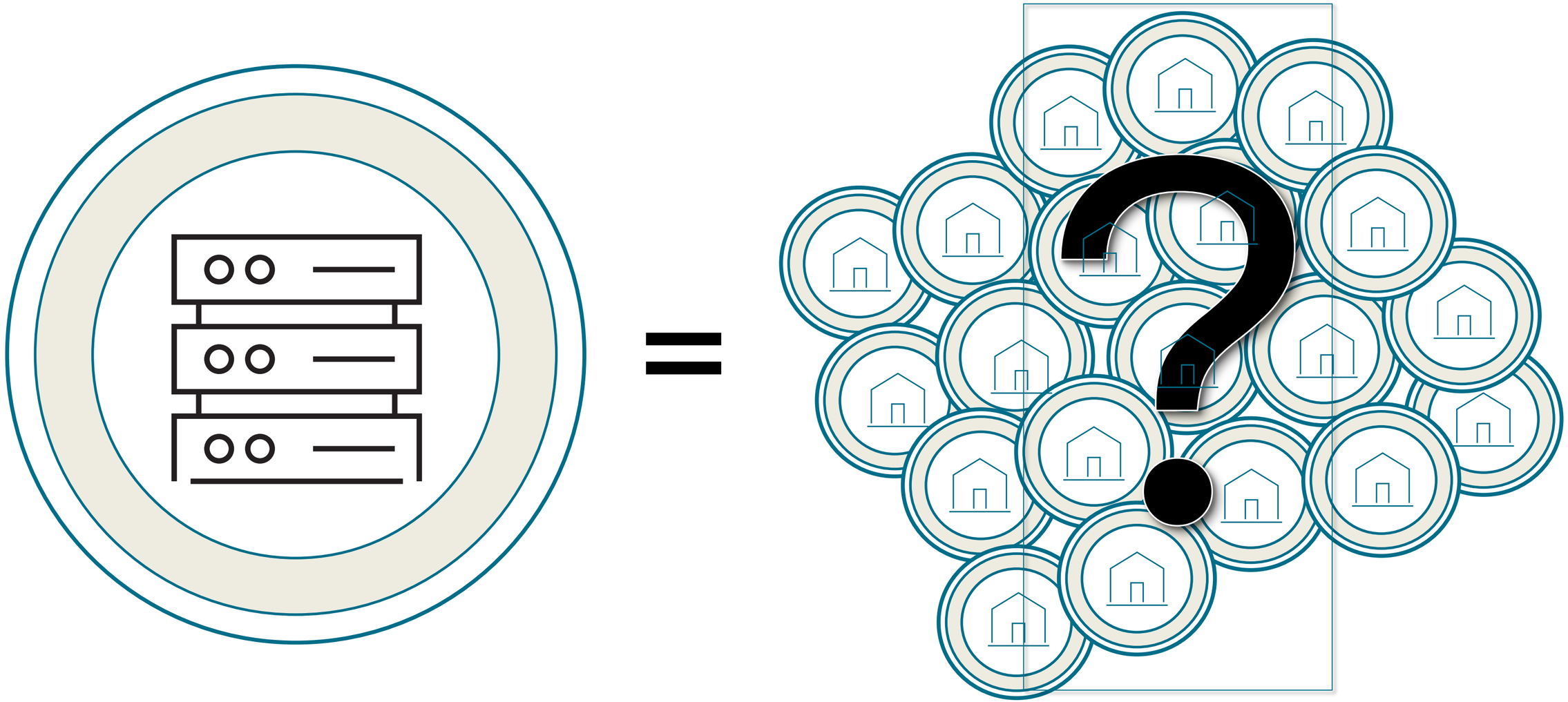
What is a datacenter? A building housing IT equipment



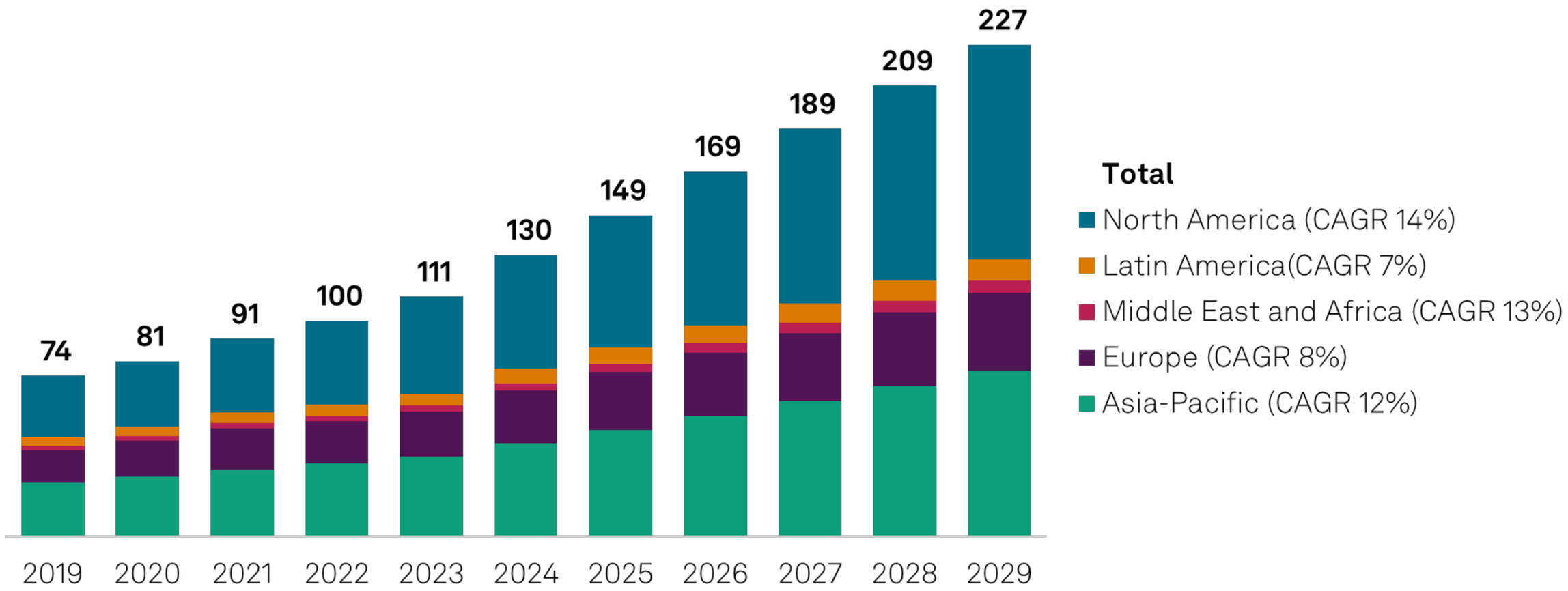
Traditional rack = 3 homes



High-density rack = 80-100 homes

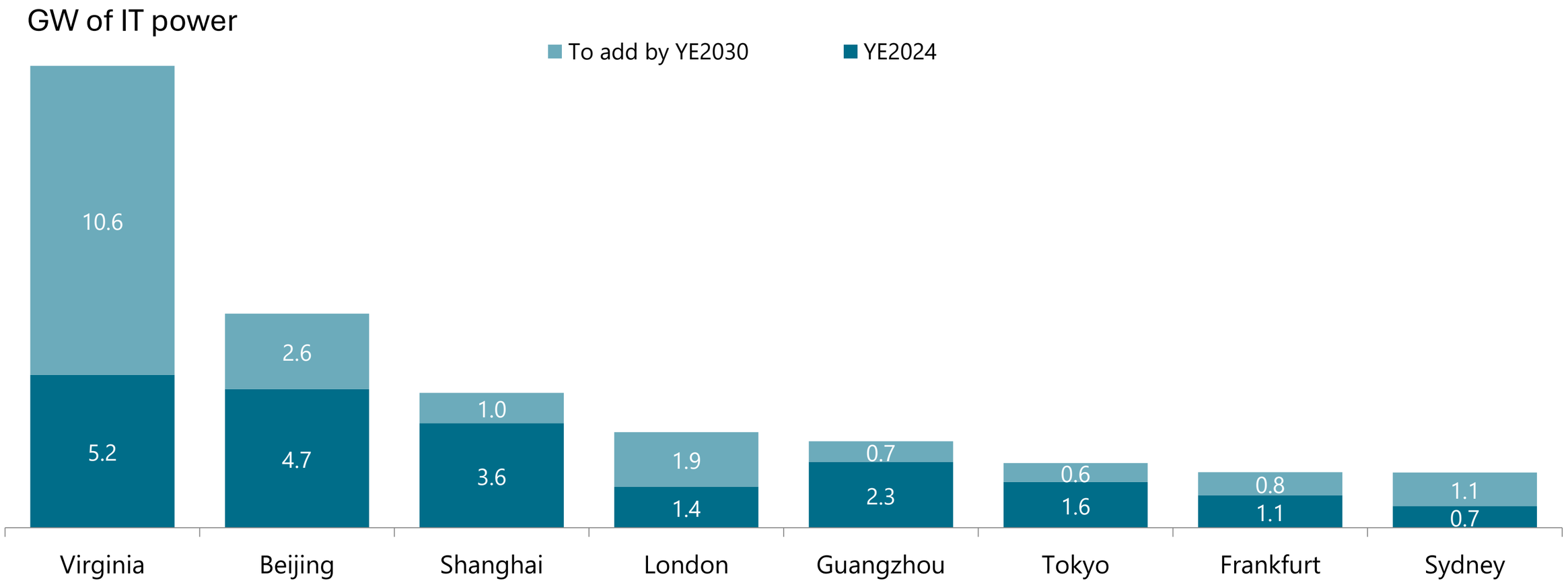


Most new demand is expected in the US (to start)



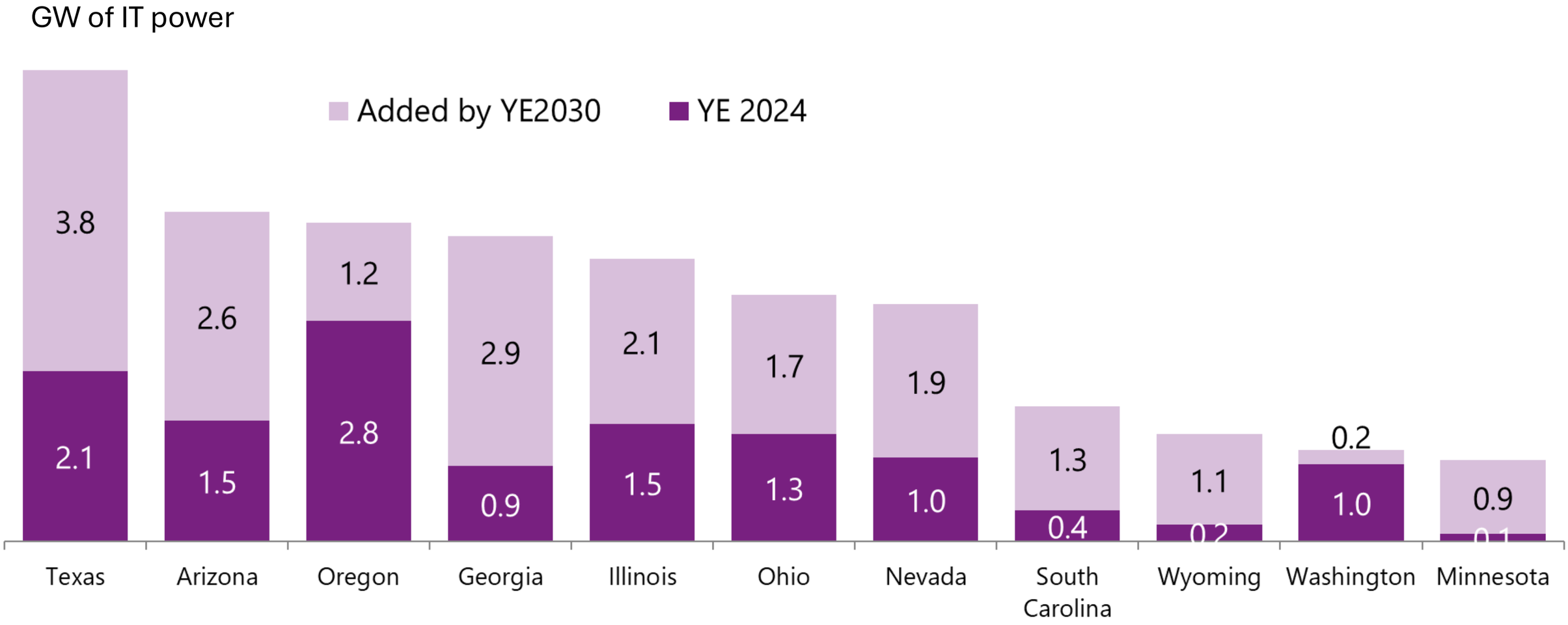
Source: 451 Research's Datacenter Services & Infrastructure Market Monitor & Forecast, March 2025.

Northern Virginia: The largest global market, due to almost triple by 2030



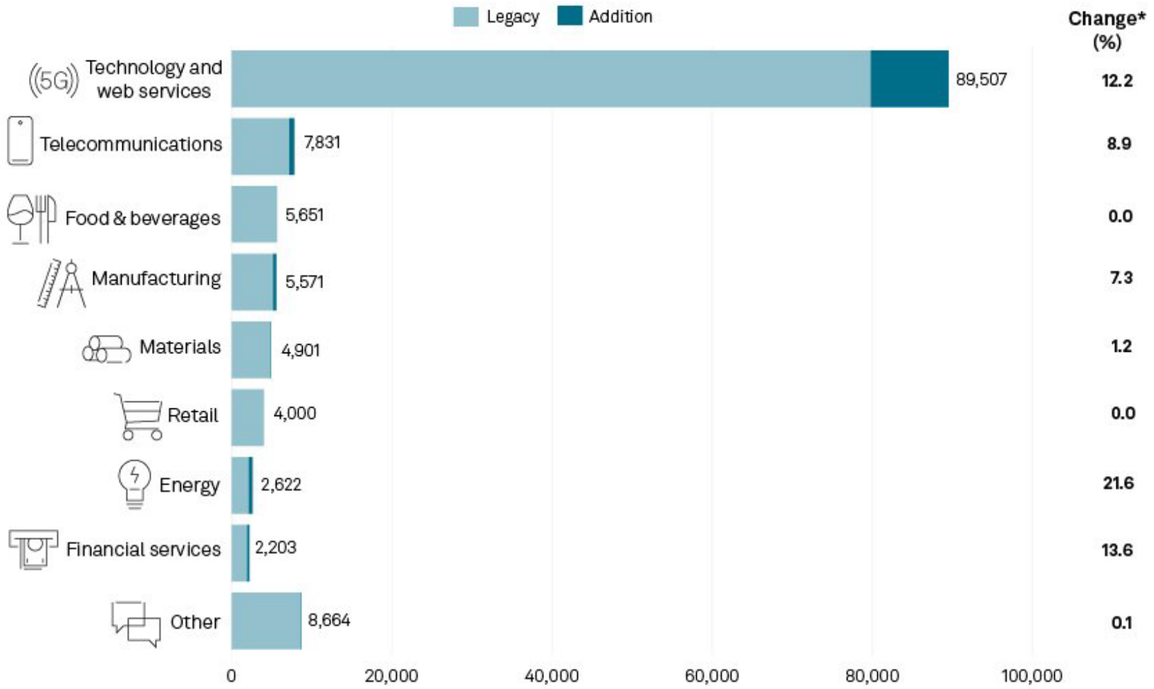
Source: 451 Research Datacenter KnowledgeBase, June 2025.

Texas also giant, but growth is everywhere



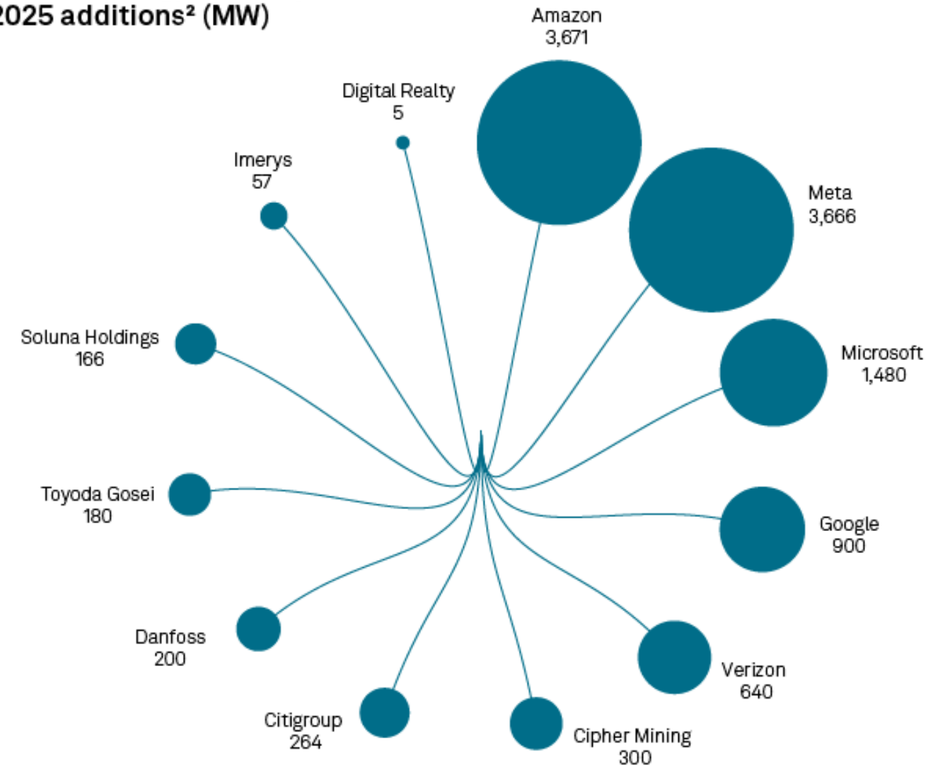
Source: 451 Research Datacenter KnowledgeBase, June 2025.

Contracted US carbon-free energy capacity by sector (MW)



As of July 10, 2025.
* From February 2025 to July 2025.
Tracked carbon-free energy capacity contracted with US projects only. Includes totality of Microsoft-Brookfield deal pending further visibility into US and Europe breakout for contracted capacity.
Cumulative capacity. All tracked deals.
Analysis does not include most on-site corporate renewable capacity, such as rooftop solar systems.
Legacy database adjusted based on availability of new information.
Sources: S&P Global Market Intelligence; public reports.

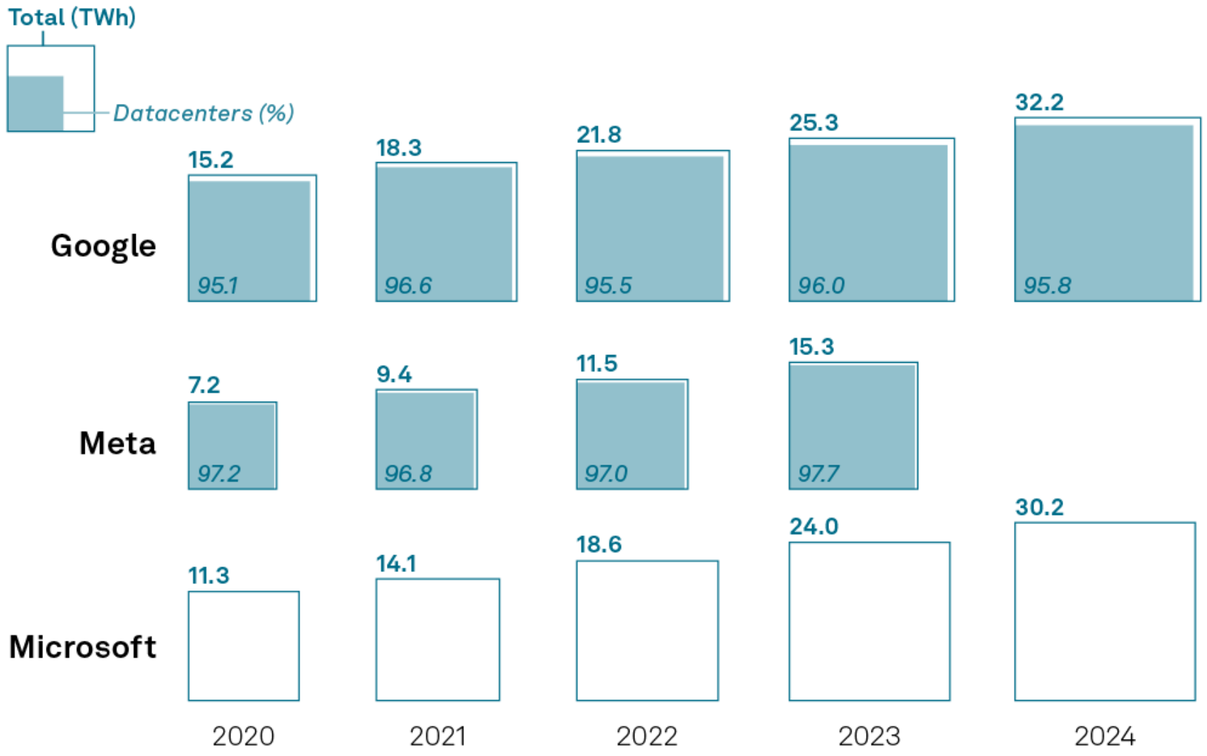
Tracked US carbon-free energy capacity[1] by company: H1 2025 additions[2] (MW)



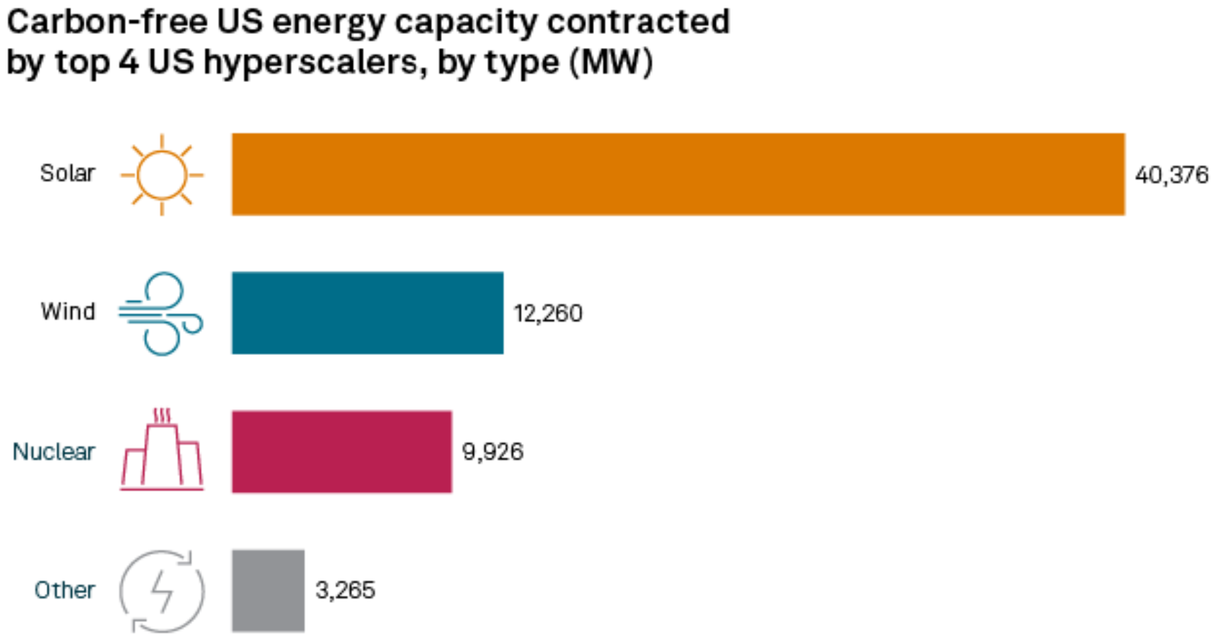
As of July 10, 2025.
[1] Reported and estimated capacity.
[2] From February 2025 to July 2025 update.
Tracked carbon-free energy capacity contracted with US projects only.
Analysis does not include most on-site corporate renewable capacity, such as rooftop solar systems.
Sources: S&P Global Market Intelligence; public reports.

Technology breakout among corporate buyers

- Solar extends lead over wind in corporate clean energy capacity in US.

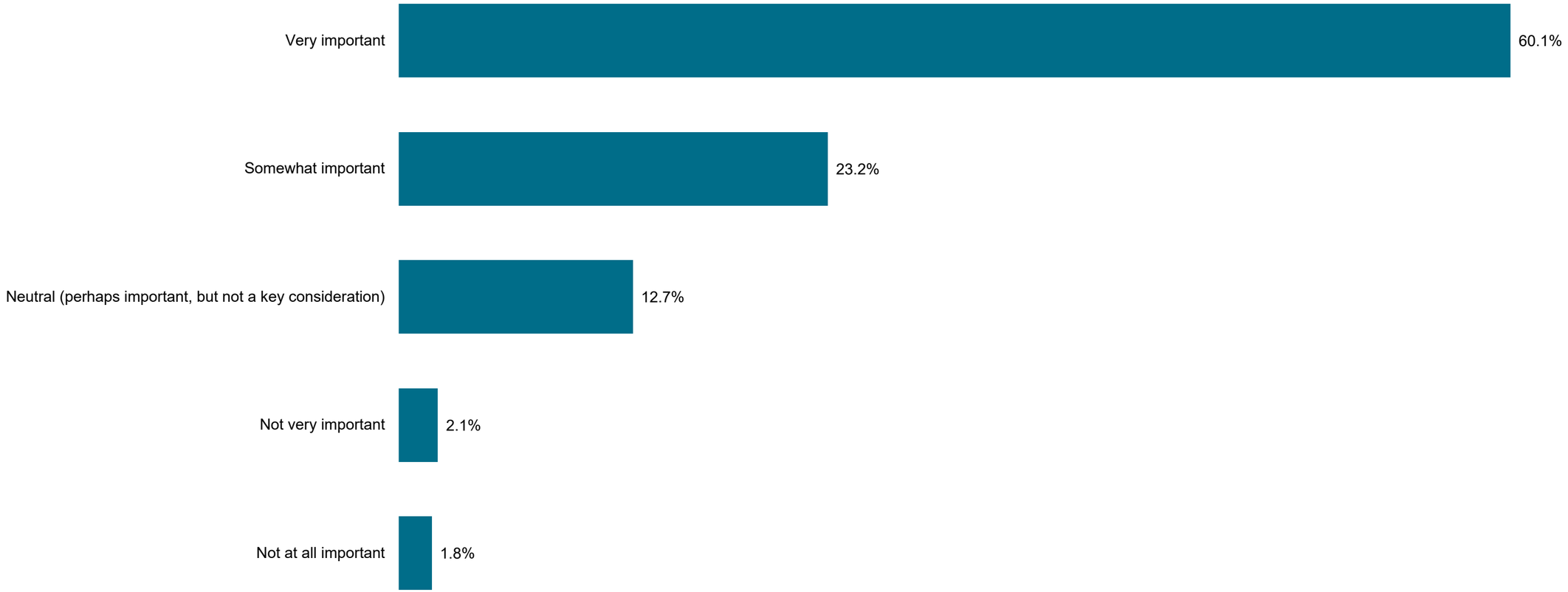


- Hyperscalers increasingly exploring firm, zero-carbon options including nuclear and hydro.



As of June 30, 2025.
US hyperscalers included: Amazon, Google, Meta and Microsoft.
Other includes geothermal and hydroelectric deals.
Includes reported and estimated cumulative contracted capacity. Only includes deals with sufficient details available.
Analysis does not include most on-site corporate renewable capacity, such as rooftop solar systems.
Sources: S&P Global Market Intelligence; public reports.

Overall, how important to your organization is the efficiency and sustainability of its datacenters, whether owned or leased?



Q. Overall, how important to your organization is the efficiency and sustainability of its datacenters, whether owned or leased?
Base: Respondents whose organizations currently own and/or operate datacenter facilities, server rooms, or use colocation and/or cloud (n=607)
Source: 451 Research's Voice of the Enterprise: Datacenters, Sustainability 2025

Contact us

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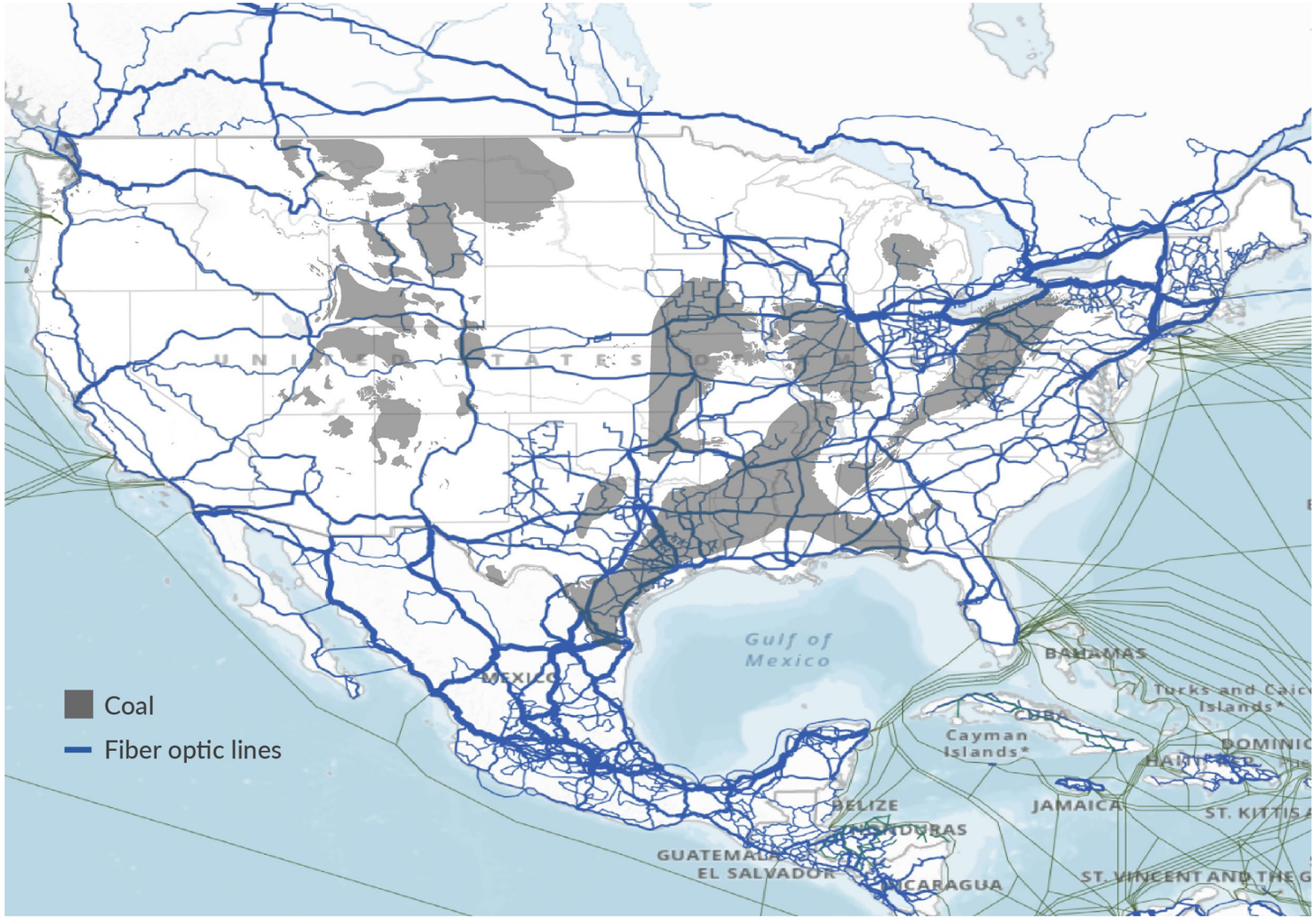
Carbon Geocapture

MAP PROVIDED BY CARBON GEOCAPTURE



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Jarad Daniels

Chief Executive Officer
Global CCS Institute

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