



**Western Interstate  
Energy Board**

# Project Update Part I: Domestic CCUS Development Efforts

---

NARUC-WIEB Carbon Capture,  
Utilization, and Storage Workshop  
**FRIDAY, OCT. 2, 2020 | 1 – 2 PM ET**

# SPEAKERS

- **William Swetra**, Senior Policy Analyst, Oxy Low Carbon Ventures
- **Lee Beck**, CCUS Policy Innovation Director, Clean Air Task Force



Western Interstate  
Energy Board



# LOW CARBON VENTURES

WIEB + NARUC Carbon Capture, Utilization & Storage Workshop Series

William Swetra

Senior Policy Analyst

Oxy Low Carbon Ventures

This confidential information presentation (the "Overview") has been prepared by or on behalf of Occidental Petroleum Corporation (the "Company") solely for informational purposes. This Overview is being furnished to the recipient in connection with assessing interest in a potential transaction involving the Company or one or more of its subsidiaries or their respective assets or businesses (the "Potential Transaction").

None of the Company, its affiliates or any of their respective employees, directors, officers, contractors, advisors, members, successors, representatives or agents makes any representation or warranty as to the accuracy or completeness of this Overview, and shall have no liability for this Overview or for any representations (expressed or implied) contained in, or for any omissions from, this Overview or any other written or oral communications transmitted to the recipient in the course of its evaluation of the Potential Transaction. This Overview does not purport to contain all of the information that may be required or desirable to evaluate all of the factors that might be relevant to a potential investor, and any recipient hereof should conduct its own due diligence investigation and analysis in order to make an independent determination of the suitability and consequences of any action, including submission of a bid, in connection with the Potential Transaction. The Company reserves the right to amend, update or replace all or part of the information in this Overview at any time, but the Company shall not be under any obligation to provide any recipient of this Overview with any amended, updated or replacement information or to correct any inaccuracies herein which may become apparent.

Portions of this presentation contain forward-looking statements and financial projections and estimates, which involve risks and uncertainties that could cause results to be materially different. None of the Company, its affiliates or any of their respective employees, directors, officers, contractors, advisors, members, successors, representatives or agents shall have any liability whatsoever with respect to any use of or reliance upon any such forward-looking statements or financial projections or estimates.

By accepting this Overview, the recipient acknowledges and agrees that all of the information contained herein is confidential and that the recipient will keep this information confidential and will not use this information for any purpose other than considering its interest in a Potential Transaction. The recipient further agrees that it will not copy or reproduce this Overview or disclose or distribute this Overview to any third party, in whole or in part. If the recipient does not wish to pursue further a Potential Transaction with the Company, such recipient shall return this Overview and all copies thereof promptly to the Company.

This Overview shall not constitute an offer, nor a solicitation of an offer, of the sale or purchase of securities, nor shall any securities of the Company be offered or sold, in any jurisdiction in which such an offer, solicitation or sale would be unlawful. The Company is free to conduct the sale process regarding the Potential Transaction as they determine in its sole-discretion (including, without limitation, negotiating with any parties and changing any procedures relating to such sales process, or terminating the sales process at any time without prior notice). Under no circumstances, and at no time, should any recipient infer or consider that the Potential Transaction has occurred, or will occur, until an agreement with the Company has been properly executed.

# Occidental's Integrated Portfolio

## Permian Unconventional

- 1.6 MM acres including premier Delaware Basin position
- Strategic infrastructure and logistics hub in place
- EOR advancements

## Permian Conventional

- 1.4 MM net acres
- Significant scale, technical capability and low-decline production
- CCUS potential for economic growth and carbon reduction strategy

## Rockies

- Leading position in the DJ Basin
- Largest position in Colorado

## Gulf of Mexico

- 10 active operated platforms

## Africa

- Positions in Algeria, Ghana

## South America

- Premium position in Colombia
- Steamflood development

## Middle East

- Positions in UAE, Oman



## OIL & GAS

Focused in world-class basins around the globe

## CHEMICALS

Leading manufacturer of basic chemicals



## MIDSTREAM

Integrated infrastructure and marketing provides access to global markets.

# Leadership Commitment

**Occidental's leadership is taking climate change seriously—taking action today to reduce emissions on a global scale.**

The Low Carbon Ventures group is a core business segment dedicated to emissions reduction and low-carbon initiatives, reporting directly to Occidental's executive leadership.



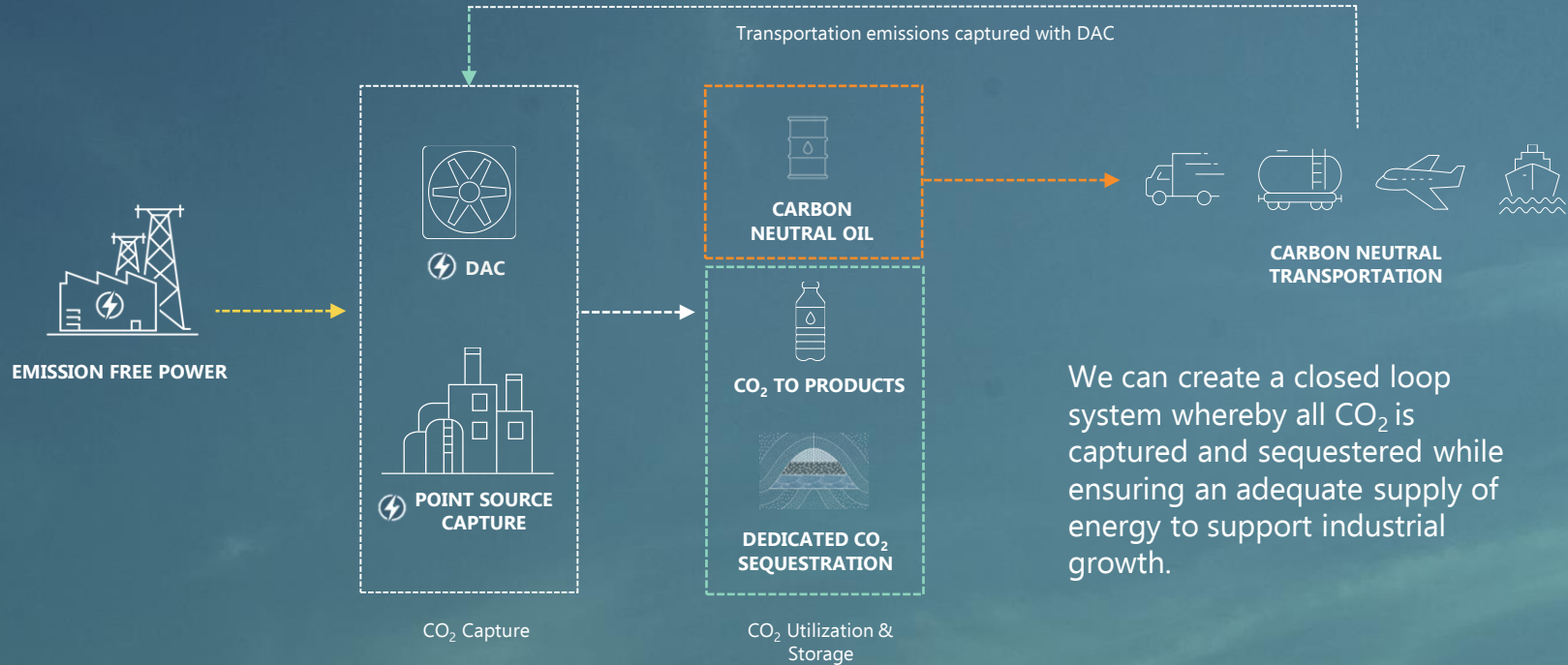
"We need to do our part as corporations. There are enough companies committed to making it happen. It needs to be a worldwide approach."

**-Vicki Hollub**

# **Our Vision for a Low-Carbon Economy**



# Low-Carbon Economy



We can create a closed loop system whereby all CO<sub>2</sub> is captured and sequestered while ensuring an adequate supply of energy to support industrial growth.

- - - - - Carbon Neutral Energy
- - - - - CO<sub>2</sub>
- - - - - Emission Free Power

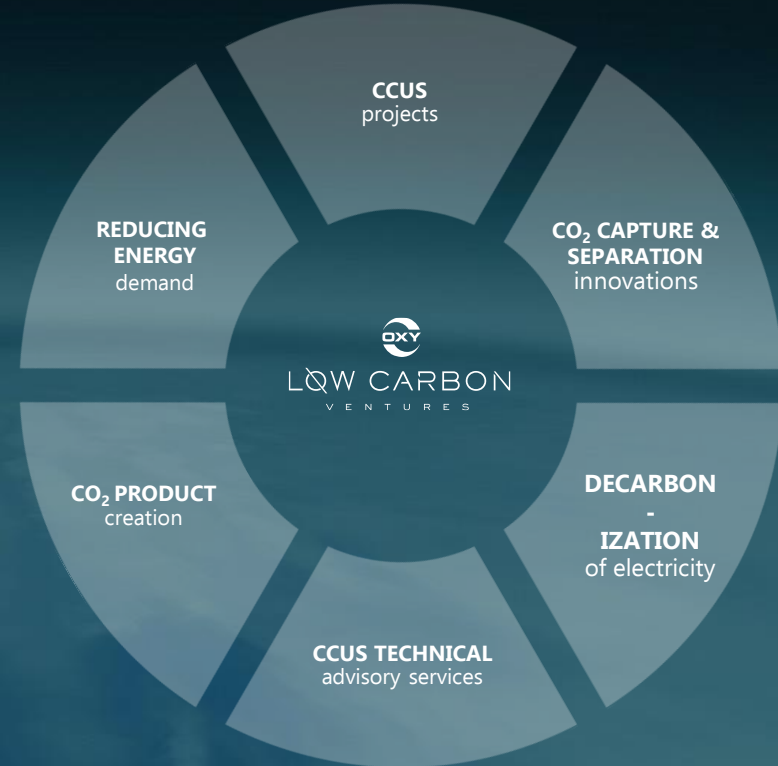


# Oxy Low Carbon Ventures

Oxy Low Carbon Ventures was formed to sustainably enhance Occidental's business, while providing impactful global emissions reduction solutions.

## This group is dedicated to:

- Global Leadership in providing low-carbon solutions and advisory services to support a sustainable energy and development future
- Leveraging our 40 years of expertise in carbon management and large-scale carbon dioxide separation, transportation, use and storage to develop CCUS projects
- Directly reducing Occidental's Scope 1-3 emissions
- Increasing energy efficiency



# Projects & Ventures

# Project Highlight

## Project Interseqt

A MODEL PROJECT FOR INDUSTRIAL CO<sub>2</sub> CAPTURE

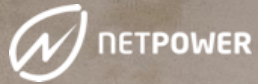
### Project Overview

- Partnership between White Energy and Oxy Low Carbon Ventures
- First announced project under the enhanced FUTURE Act (45Q tax credit)
- Develop carbon capture at White Energy's two ethanol plants in the Texas panhandle
- Expected to capture 700,000 MTPA CO<sub>2</sub>
- Transport captured CO<sub>2</sub> to Occidental's fields in the Permian Basin
- CO<sub>2</sub> stored is validated by EPA-approved monitoring, reporting and verification plan.

**White Energy** is a producer of biofuels in Texas. The company owns and operates two ethanol plants with the capacity to produce 250 million gallons per year.

# NET Power

The world's first zero-emissions  
natural gas power plant



DEMO FACILITY  
in La Porte, TX

INNOVATIVE  
CO<sub>2</sub> driven turbine

COST-EFFECTIVE  
clean power generation

WATER-FREE  
operation

RELIABLE 24/7/365  
emissions-free power

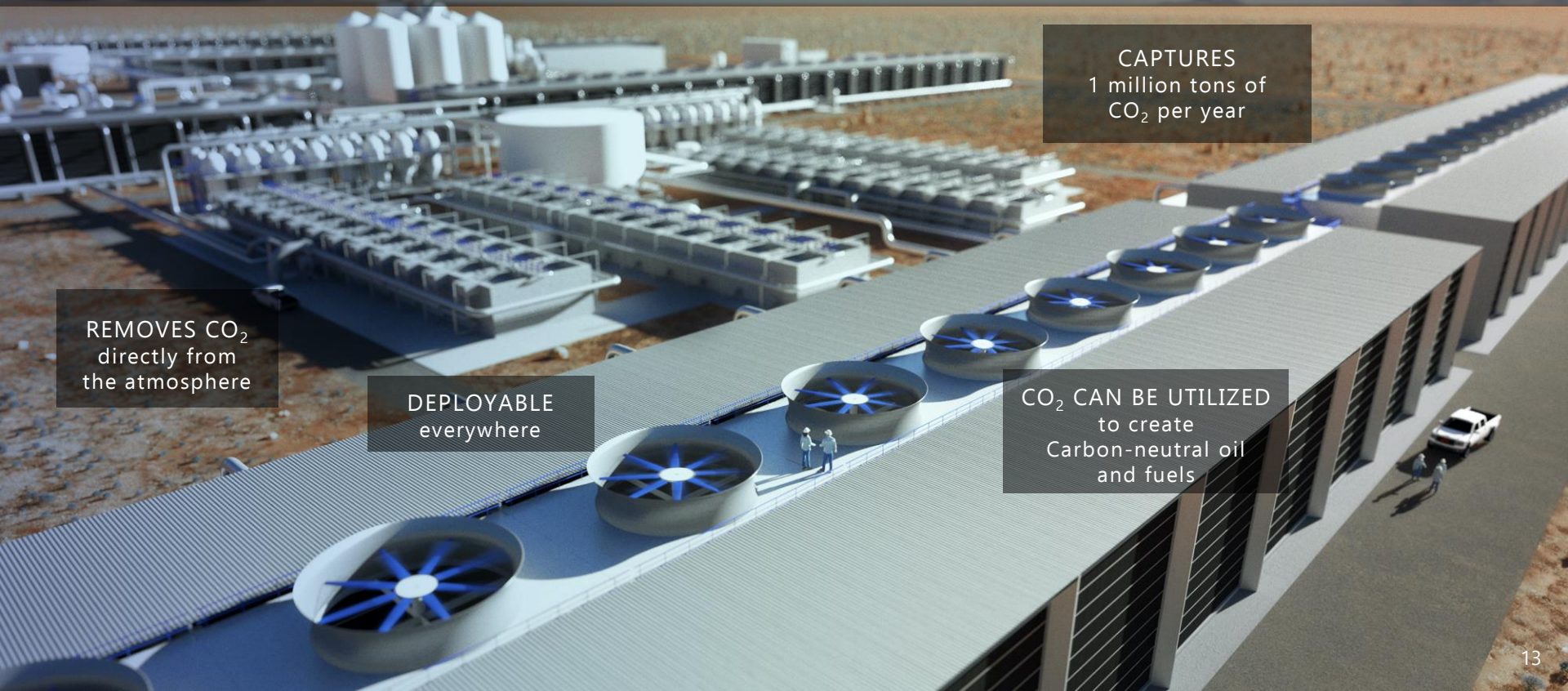




# Carbon Engineering



Direct Air Capture Technology



CAPTURES  
1 million tons of  
CO<sub>2</sub> per year

REMOVES CO<sub>2</sub>  
directly from  
the atmosphere

DEPLOYABLE  
everywhere

CO<sub>2</sub> CAN BE UTILIZED  
to create  
Carbon-neutral oil  
and fuels

# The Midwest CO<sub>2</sub> Superhighway

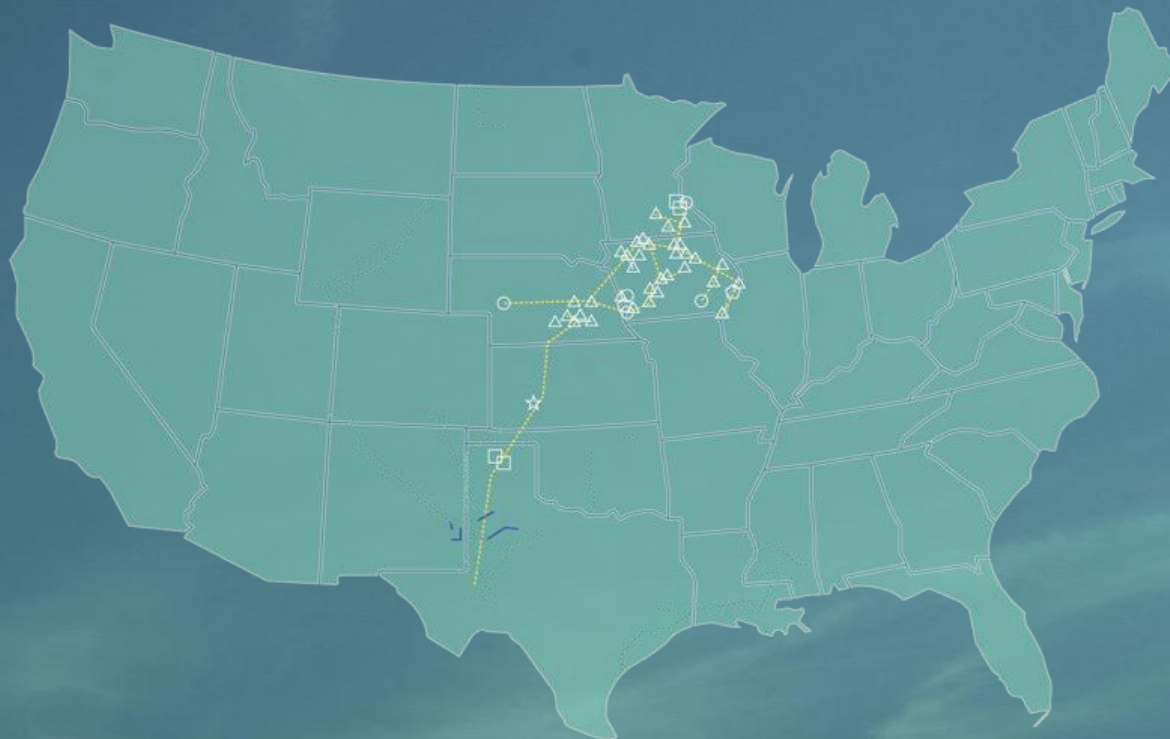
Capturing Emissions from 57 Industrial Facilities

Pipeline Spans

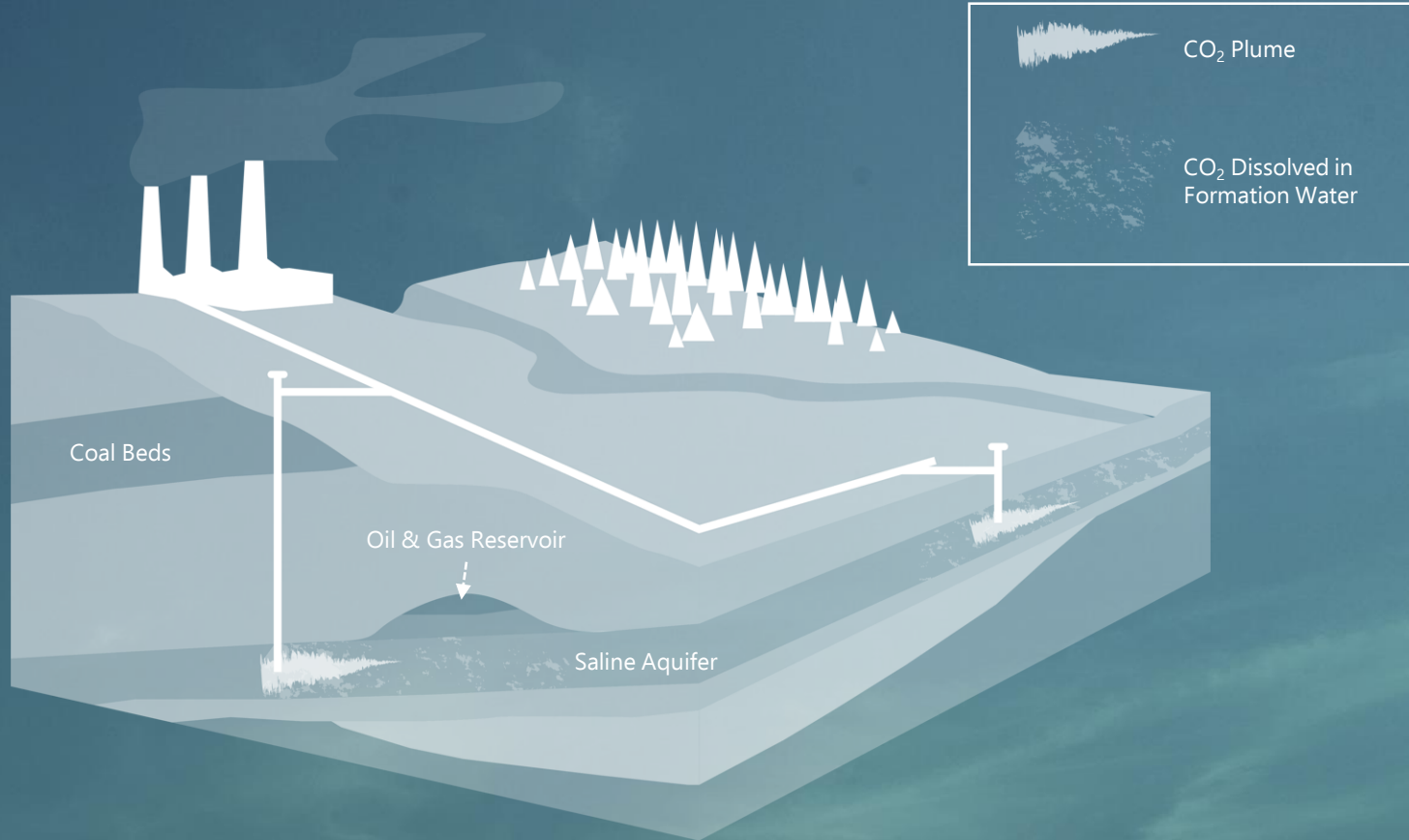
**7** STATES | **5** INDUSTRIES | **40** MM Tons

## Legend

☆	Ammonia
⬠	Cement
○	Coal
△	Ethanol
□	Refinery
⋯	Existing CO <sub>2</sub> Pipeline
⋯	Midwest Pipeline



# Dedicated Sequestration Hubs







LOW CARBON  
VENTURES

[oxylowcarbon.com](http://oxylowcarbon.com)



CLEAN AIR  
TASK FORCE

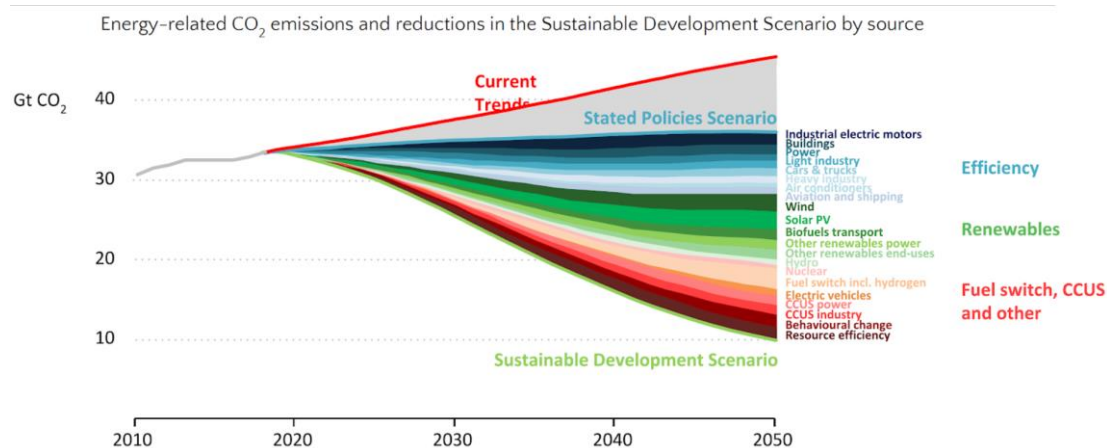
## **NARUC – WIEB CCUS Workshop: Domestic CCUS Development Efforts**

Lee Beck, CCUS Policy Innovation Director, [lbeck@catf.us](mailto:lbeck@catf.us)

October 2, 2020

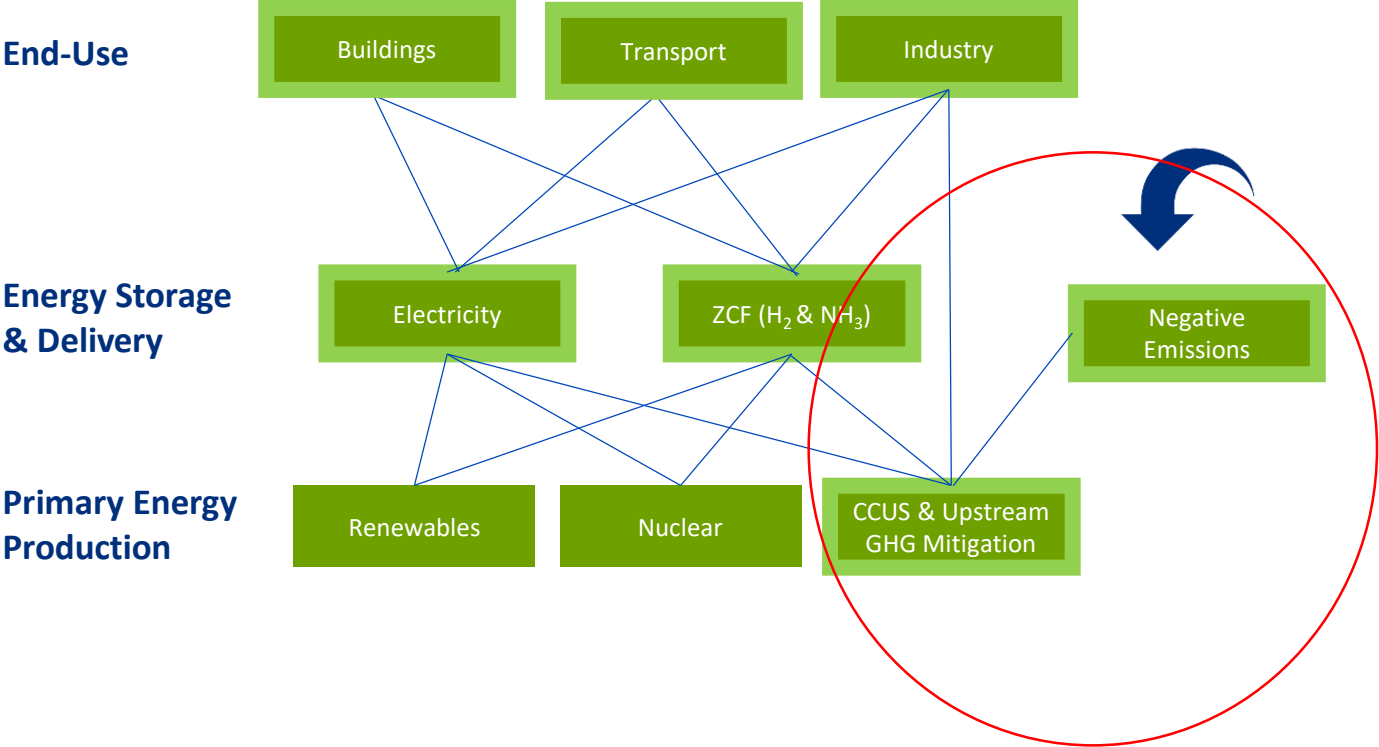
# What Is Carbon Capture?

- Carbon capture technologies capture, transport and store CO<sub>2</sub> from energy-intensive industries and the air. It hence address both the
  - Flow of CO<sub>2</sub> by capturing emissions from power plants and industrial facilities
  - Stock of CO<sub>2</sub> by capturing CO<sub>2</sub> directly from the atmosphere

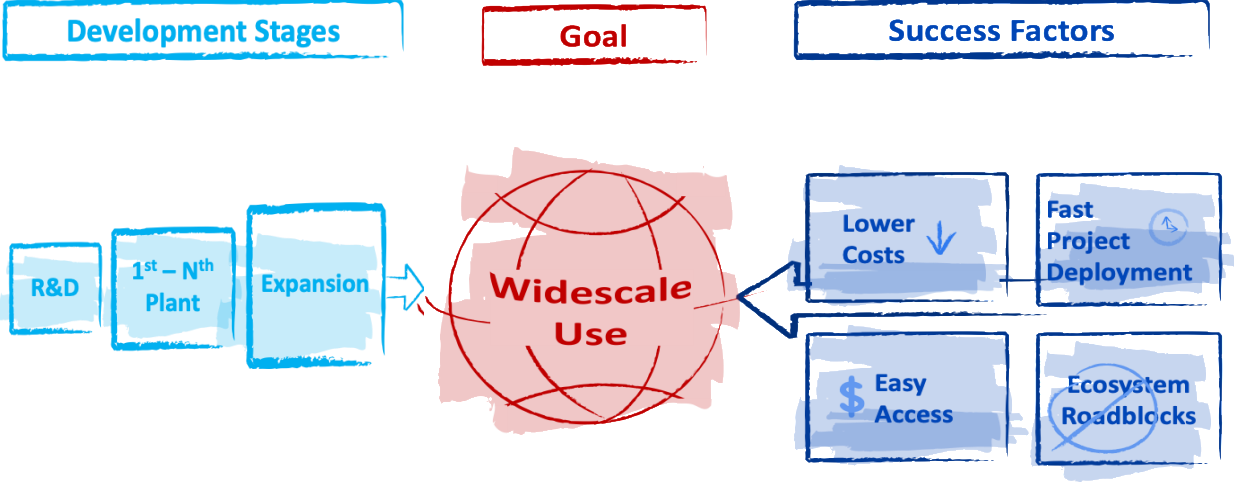


More than **2000 carbon capture facilities** are needed by 2050

# What A Net-Zero Carbon Energy System Looks Like



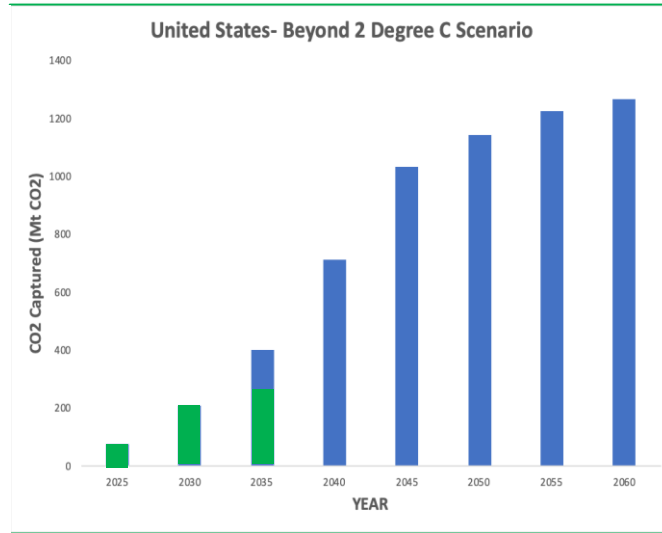
# CATF Innovation Framework



# Theory of Change: How to commercialize carbon capture?

## Innovation Policies

- R&D
- Demonstration
- Deployment
- Ecosystem



## Economywide GHG Policies

- Carbon Pricing
- Clean Electricity Standards
- Emission Limits

CCS needs **both** capture and transport/storage infrastructure to scale-up  
**Policy is key to innovation**

# The Current Policy Landscape

- The 45Q amendments create a robust business case for investment in CCS and provide the policy confidence that investors require
- The California LCFS CCS Protocol also makes carbon capture eligible for credits that reduce the lifecycle emissions from fuels or directly from the air

TYPE OF CO <sub>2</sub> STORAGE/USE	MINIMUM SIZE OF ELIGIBLE CARBON CAPTURE PLANT BY SIZE (KtCO <sub>2</sub> /YR)			RELEVANT LEVEL OF TAX CREDIT GIVEN IN OPERATIONAL YEAR (USD/tCO <sub>2</sub> )											
	POWER PLANT	OTHER INDUSTRIAL FACILITY	DIRECT AIR CAPTURE	2018	2019	2020	2021	2022	2023	2024	2025	2026	LATER		
DEDICATED GEOLOGICAL STORAGE	500	100	100	28	31	34	36	39	42	45	47	50			
STORAGE VIA EOR	500	100	100	17	19	22	24	26	28	31	33	35	INDEX LINKED		
OTHER UTILISATION PROCESSES*	25	25	25	17	19	22	24	26	28	31	33	35			

\*Each CO<sub>2</sub> source cannot be greater than 500 ktCO<sub>2</sub>/yr. Any credit will only apply to the portion of the converted CO<sub>2</sub> that can be shown to reduce overall emissions.



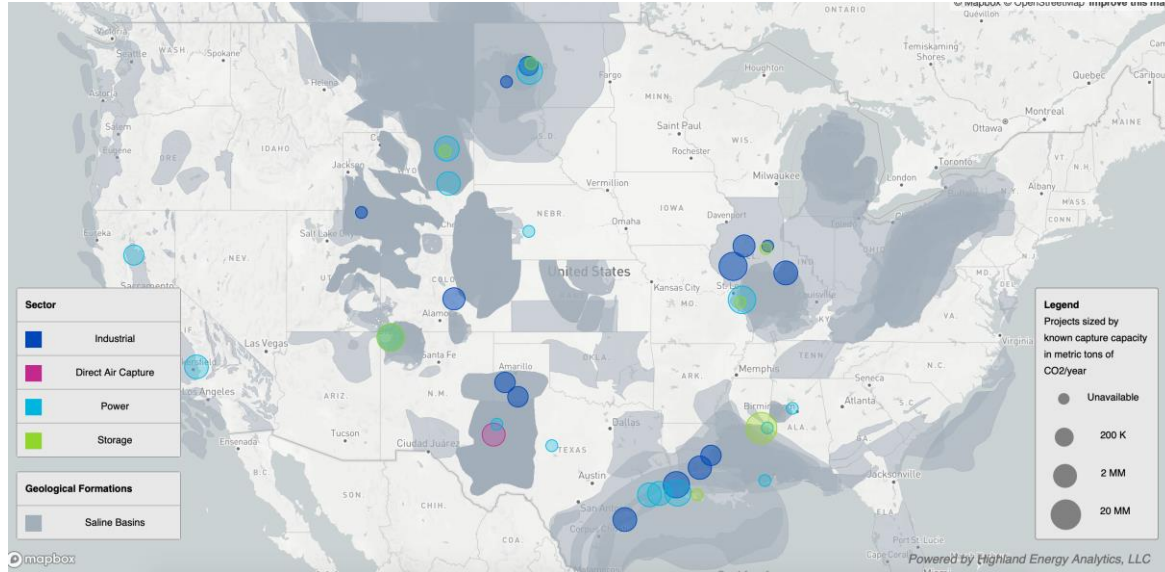
# Current Legislative Landscape

**45Q and DOE-support have led to a significant increase of carbon capture projects** in planning over the past two years, with more than **30 projects in various** stages of development through the US. To improve the chances of success for these projects and a continued, healthy growth of the project pipeline, CATF enactment of these existing legislative proposals:

- **45Q Optimization:** 10-year Extension and Direct Pay
- **Permitting:** Appropriations for Class VI Well Permits and State Primacy Applications; \$25M at Agency, \$50M for primacy, for five years
- **Commercial Demonstration (Sec.503, HB2):** \$7.5B Advanced Carbon Capture\*, \$1.25B for FEED studies, \$1.25 B for Direct Air Capture, \$2.5 B for Geologic Storage development for five years
- **R&D (FERD/EFFECT-LEADING):** \$2.15B for carbon capture, DAC, and geologic storage over five years (*reflects FERD funding levels*)
- **USE IT:** DAC concept creation prize, infrastructure permitting efficiency

\*Goal is commercial demonstration of at least three advanced carbon capture technologies through 3rd of a kind level

# US Carbon Capture Projects Map



**NEGATIVE EMISSIONS**



**INDUSTRIAL CARBON CAPTURE**



**NEW BUSINESS MODELS**



**HUBS & CLUSTERS**

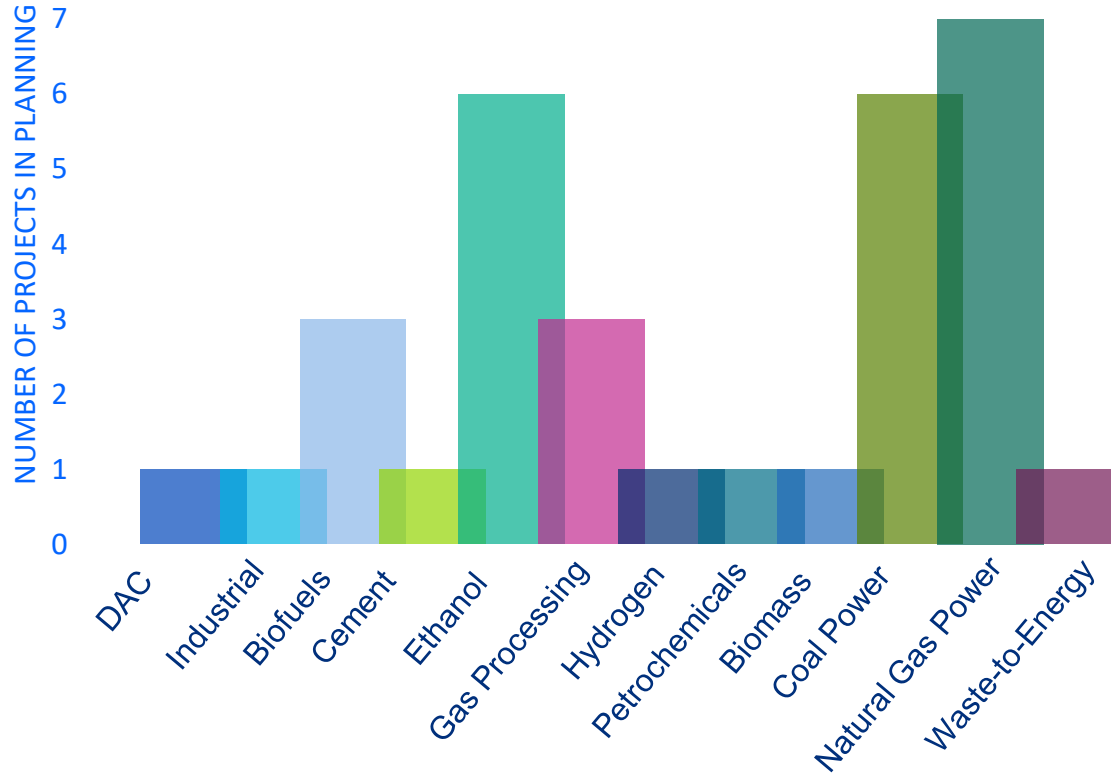


**UTILIZATION**



**NEW PARTNERSHIPS**

# Project Tracker: Diversity of Applications



# The Path Towards Commercialization

## Innovation Criteria

- Reduce cost
- Compress deployment timeline
- Affordable Financing
- Build Ecosystem (saline storage & CO<sub>2</sub> transport)



## Policies & Models

- PTC for natural gas power power
- Financing & grants for CO<sub>2</sub> transportation infrastructure
- Geologic Storage Utilities
- Geologic Storage & Storage Clusters
- Offshore Storage of CO<sub>2</sub>





CLEAN AIR  
TASK FORCE

Lee Beck

CCUS Policy Innovation Director

[lbeck@catf.us](mailto:lbeck@catf.us)

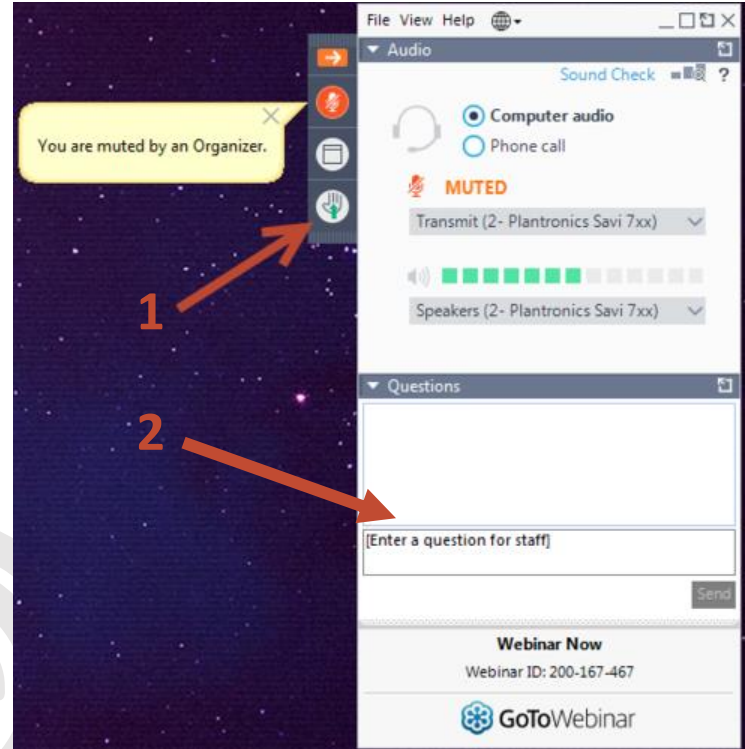
114 State Street

Boston, MA 02109

# QUESTIONS

Submit questions two ways:

1. Raise your hand and the moderator will call on you to unmute your line
2. Type a question into the question box



Western Interstate  
Energy Board



# NARUC-WIEB CCUS WORKSHOP SCHEDULE

1. Sept. 11: The Case for Carbon Capture, Utilization, and Storage
2. Sept. 18: Breaking It Down: CCUS Technologies
3. Sept. 25: Financial Incentives and Investment Efforts
4. **Oct. 2: Project Update Part I: Domestic CCUS Development Efforts**
5. Oct. 9: Project Update Part II: International CCUS Development Efforts
6. Oct. 16: Regulatory Considerations and Policy Recommendations

[Full Agenda](#) | [Registration](#)

All webinars are held from 1:00 – 2:00 pm ET



Western Interstate  
Energy Board



# UPCOMING NARUC EVENTS

## Innovation Webinars

- Oct 22, 3-4PM (ET): [Emerging Possibilities for Bulk Energy Storage](#)
- Nov 19, 3-4PM (ET): [Where the Wind Blows: Offshore Wind Outlook for State Regulators](#)

## NARUC Annual Meeting – Nov 5-6 and 9-11

- Registration open
- <https://www.naruc.org/meetings-and-events/naruc-annual-meetings/2020-annual-meeting/>



# UPCOMING WIEB EVENTS

Save-the-Dates

## Fall 2020 JOINT CREPC-WIRAB MEETING Webinar Series

Fridays: October 23, October 30, November 6, and November 13, 2020

11:00 – 12:30 PM (MT) / 10:00 – 11:30 AM (PT)

You are invited to join us on Fridays this October and November for the Fall 2020 Joint CREPC-WIRAB Meeting Webinar Series, where western electric utility policymakers and regulators, industry experts, consumer advocates, and other stakeholders will explore and discuss current and emerging electricity trends, challenges, and opportunities for the Western Interconnection.

<https://westernenergyboard.org/>

Joint CREPC-WIRAB Meetings are conducted by the Committee on Regional Electric Power Cooperation (CREPC)—a joint committee of the Western Interstate Energy Board and the Western Conference of Public Service Commissioners—and the Western Interconnection Regional Advisory Body (WIRAB).



# THANK YOU

Join us for the next webinar in the  
NARUC-WIEB CCUS Workshop

Friday, Oct 9 | 1:00 – 2:00 pm ET

[Project Update Part II: International CCUS  
Development Efforts](#)

- Jeff Erikson, General Manager, Client Engagement, Global CCS Institute
- C. Beth Hardy, Vice-President, Strategy & Stakeholder Relations, International CCS Knowledge Centre



Western Interstate  
Energy Board