



CARBON CAPTURE
COALITION

2019 Washington, DC Labor Fly-in

Accelerating Deployment of Carbon Capture Projects

Why is Carbon Capture important?

Essential to reducing global emissions and meeting midcentury climate goals.

Helps sustain our nation's domestic energy production and industrial base.

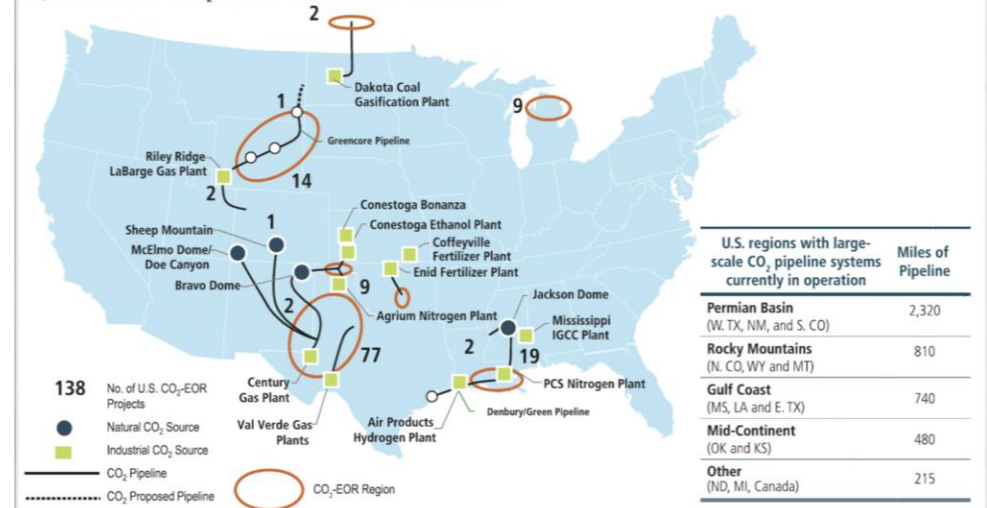
Protects and creates high-skilled, high-wage jobs in communities that depend on them.



- 1972: Val Verde Gas Processing Plants in Texas
- 1982: Koch Nitrogen Company Enid Fertilizer Plant in Oklahoma
- 1986: Exxon Shute Creek Gas Processing Facility in Wyoming
- 2000: Dakota Gasification's Great Plains Synfuels Coal Gasification Plant in North Dakota
- 2003: Core Energy/South Chester Gas Processing Plant in Michigan
- 2009: Chaparral/Conestoga Energy Partners' Arkalon Bioethanol Plant in Kansas
- 2010: Occidental Petroleum's Century gas processing plant in Texas
- 2012: Air Products Port Arthur Refinery Hydrogen Production in Texas
- 2012: Conestoga Energy Partners/PetroSantander Bonanza Bioethanol Plant in Kansas
- 2013: ConocoPhillips Lost Cabin Gas Processing Plant in Wyoming
- 2013: Chaparral/CVR Energy Coffeyville Fertilizer Gasification Plant in Kansas
- 2014: SaskPower Boundary Dam Coal Power Plant Post-Combustion Capture Retrofit in Saskatchewan
- 2015: Shell Quest hydrogen production at bitumen upgrader in Alberta
- 2016: Emirates Steel's Mussafah direct reduction iron plant in the United Arab Emirates
- 2017: NRG Petra Nova Coal Plant Post-Combustion Retrofit in Texas
- 2017: Archer Daniels Midland large-scale ethanol capture in Illinois

Carbon Capture Works: Nearly 50 Years of Commercial Experience

Figure 7-8. Current CO₂-EOR Operations and Infrastructure¹¹²



The current CO₂ pipeline system has been built to deliver CO₂ for CO₂-EOR to oil fields in the Permian Basin of west Texas and eastern New Mexico. This system spans across more than a dozen U.S. states and into Saskatchewan, Canada.

U.S. is the global leader: 13 commercial facilities capturing and transporting roughly 25 million tons of CO₂ annually, using about 5,000 miles of CO₂ pipeline infrastructure.

Carbon Capture is Essential to Meeting Mid-Century Climate Goals and Doing So Affordably

- Under IEA's scenario to limit warming to 2° C, carbon capture contributes 14% of cumulative 2015-2050 reductions and 20% annually by 2050.
- An essential strategy for industry, not just coal and gas power generation: In IEA's 2° scenario, 45% of captured CO₂ from industrial sectors.
- IPCC 5th Assessment finds that meeting the 2 degree C scenario costs 138% more, if carbon capture is excluded.



Recent IPCC modeling of 1.5 degree C scenario: Meeting this goal requires extensive deployment of carbon capture at power and industrial facilities and removal of CO₂ from the atmosphere through direct air capture and bioenergy with carbon capture.



Carbon Capture is Essential for Industrial Sectors, Not Only Power Generation

- Roughly one-third of U.S. and global carbon emissions come from the industrial sectors.
- Over half of industrial emissions occur in just three sectors: steel, cement and basic chemicals.
- Carbon capture is not optional: over half of emissions from these sectors are inherent to the chemistry of key industrial processes and cannot be eliminated through efficiency or decarbonization of energy inputs.



CARBON CAPTURE COALITION

Unprecedented National Coalition in U.S. Energy & Climate Policy

- Partnership of over 70 energy, industrial and technology companies, energy and industrial sector labor unions and conservation, clean energy and agricultural organizations.
- Climate, jobs, energy and industrial benefits unite diverse interests in a common purpose.
- Supports innovation and deployment across all energy resources and industry sectors.
- **Goal:** Achieve economywide deployment of carbon capture to reduce emissions, foster domestic energy and industrial production, and support jobs.

Participants

- Aceleergy
- AFL-CIO
- Air Liquide
- Air Products
- AK Steel
- American Carbon Registry
- ArcelorMittal
- Arch Coal
- Archer Daniels Midland Co.
- Baker Hughes, a GE Company
- Bipartisan Policy Center
- Carbon180
- Carbon Wrangler LLC
- Center for Climate and Energy Solutions
- Citizens for Responsible Energy Solutions Forum
- Clean Air Task Force
- ClearPath Foundation
- Cloud Peak Energy
- Conestoga Energy Partners
- Core Energy LLC
- EBR Development LLC
- EnergyBlue Project
- Energy Innovation Reform Project
- Glenrock Petroleum
- Great River Energy
- Greene Street Capital
- Impact Natural Resources LLC
- ION Engineering LLC
- International Brotherhood of Boilermakers
- International Brotherhood of Electrical Workers
- Jackson Hole Center for Global Affairs
- Jupiter Oxygen Corporation
- Lake Charles Methanol
- LanzaTech
- Linde LLC
- Mitsubishi Heavy Industries America, Inc.
- National Audubon Society
- National Farmers Union
- National Wildlife Federation
- NET Power
- New Steel International, Inc.
- NRG Energy
- Occidental Petroleum Corporation
- Pacific Ethanol
- Peabody
- Prairie State Generating Company
- Praxair, Inc.
- Renewable Fuels Association
- Shell
- SMART Transportation Division (of the Sheet Metal, Air, Rail and Transportation Workers)
- Summit Power Group
- Tenaska Energy
- The Nature Conservancy
- Third Way
- Thunderbolt Clean Energy LLC
- United Mine Workers of America
- United Steel Workers
- Utility Workers Union of America
- White Energy
- Wyoming Outdoor Council

Observers

- Algae Biomass Organization
- Biomass Power Association
- Carbon Engineering
- Carbon Utilization Research Council
- Cornerpost CO2 LLC
- Enhanced Oil Recovery Institute, University of Wyoming
- Environmental Defense Fund
- Growth Energy
- Institute of Clean Air Companies
- Melzer Consulting
- Tellus Operating Group
- World Resources Institute



To learn more and view our complete membership list, visit www.carboncapturecoalition.org.

Carbon Capture Coalition and Partners Marshaled Bipartisan Support for Last Year's Congressional Reform and Expansion of the 45Q Tax Credit

Key Changes to 45Q

Increases credit values to US\$ 35 and 50 per metric ton.

Expands eligibility to include other beneficial uses of captured carbon (in addition to EOR), projects that capture CO and direct air capture projects.

Creates **greater financial certainty** by lifting the credit cap and providing clear timing for eligibility

Expands eligibility to more industries by lowering the annual carbon capture threshold and expanding definitions for qualified facilities and qualified carbon.

Enables the owner of the capture equipment to transfer the credit to another party that stores the CO₂ or puts CO₂ or CO to beneficial use.

45Q Tax Credit Amount: Depends on Project Type

There is a 10-year ramp up to the following dollar per ton amounts, with the value depending on project type as shown below.

\$35/ton

for CO₂ stored geologically through EOR.

\$35/ton

for other beneficial uses of CO₂ or CO such as converting carbon emissions into fuels, chemicals, or useful products like concrete.

\$50/ton

for CO₂ stored in other geologic formations and not used in EOR.

Now that 45Q Has Passed, What More Should Congress Do to Help Advance Carbon Capture?

- Enact a broader portfolio of federal carbon capture policies to build on the 45Q tax credit;
- Make CO₂ transport infrastructure a key component of national infrastructure policy; and
- Expand and diversify federal R&D, demonstration and deployment funding for carbon capture, utilization, removal and geologic storage.

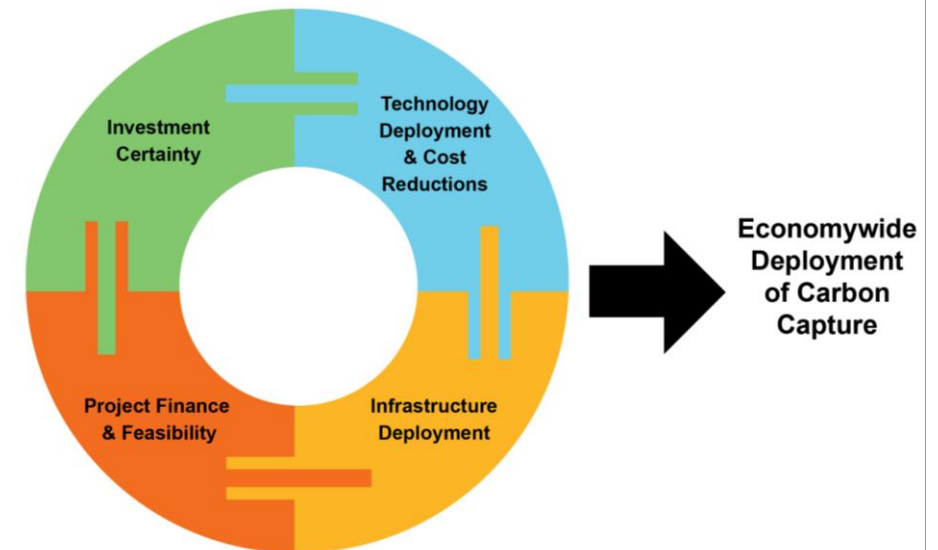
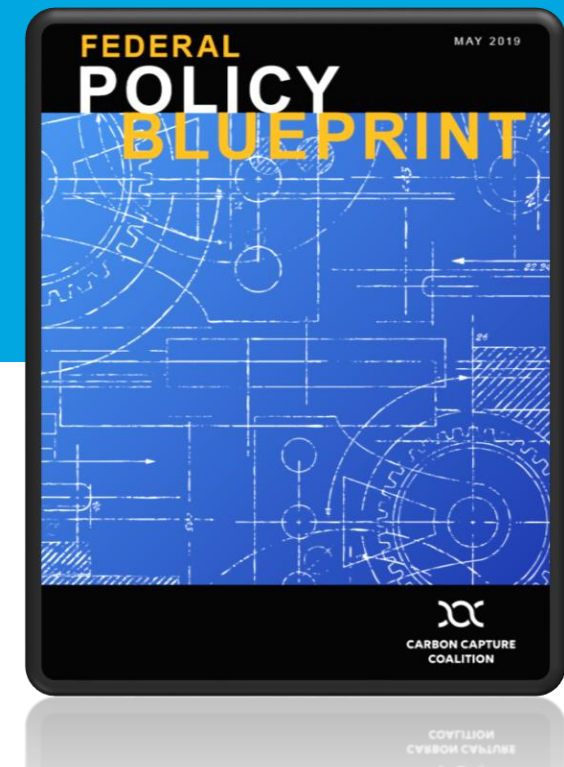


**CARBON CAPTURE
COALITION**



Carbon Capture Coalition Federal Policy Blueprint

- ✓ **First-ever policy blueprint on federal carbon capture policies.**
- ✓ **Promotes economywide deployment of carbon capture technologies.**
- ✓ **Recommends broad policy portfolio for carbon capture, similar to what has benefitted wind, solar and other low and zero-carbon technologies.**
- ✓ **Represents consensus of Coalition's 70+ companies, unions, and NGOs.**



USE IT Act

Utilizing Significant Emissions through Innovative Technologies

- Introduced by Senator John Barrasso (R-WY), Sheldon Whitehouse (D-RI), Shelley Moore Capito (R-WV) and Tammy Duckworth (D-IL).
- Helps advance next generation capture and utilization technologies to transform captured carbon captured into a beneficial resource and economic opportunity, while reducing emissions.
- Creates direct air capture technology demonstration prize, supported by a technology advisory board.
- Establishes a federal carbon utilization RD&D program.
- Facilitates planning, siting and permitting of pipeline infrastructure to transport CO₂ captured from industrial facilities and power plants to where it can be geologically stored or put to beneficial use.
- Working to get USE IT included in Defense authorization bill; negotiations stalled.



Financial Incentives

Enhanced transferability for 45Q

- Making it easier for owners of carbon capture equipment to transfer the tax credit to more investors with tax liability, thus creating a larger pool of investors.
 - Legislation expected in the Senate soon.

Fixing the Section 48A tax credit

- Removing efficiency requirements that are incompatible with carbon capture would allow access to available credits to finance retrofits of existing coal power plants with carbon capture.
 - Bipartisan Carbon Capture Modernization Act introduced in the House and Senate by Senators Hoeven (R-ND) and Smith (D-MN) and Representatives McKinley (R-WV) and Peterson (D-MN).

Financial Incentives Continued

Tax-exempt private activity bonds (PABs) are a well-accepted tool for financing private projects of benefit to the public.

- Bipartisan Carbon Capture Improvement Act in the Senate and House and would allow the use of PABs for financing of carbon capture equipment. Reintroduced by Senators Portman (R-OH) and Bennet (D-CO) and Representatives Cartwright (D-PA) and Burchett (R-TN).

Master limited partnerships (MLPs) combine the tax benefits of a partnership with a corporation's ability to raise equity in public markets to provide access to capital on more favorable terms.

- Financing Our Energy Future Act reintroduced in the Senate and House by Senators Coons (D-DE) and Moran (R-KS) and Representatives Thompson (D-CA) and Estes (R-KS) would make carbon capture projects eligible for MLPs.

Both PABs and MLPs would provide a permanent federal incentive for carbon capture, unlike tax credits which must be renewed and extended by Congress.

Outlook for Financial Incentives

- Both House Ways and Means and Senate Finance Committees are expected to consider energy tax bills later this year.
- Momentum appears to be growing to enact legislation that creates opportunities for investment in carbon capture projects.
- Growing recognition that carbon capture is critical to meeting climate goals, creating jobs and supporting domestic energy and industrial production.
- Expanding federal tax incentive policies will be crucial to achieving that goal.

Bipartisan RD&D Legislation for Carbon Capture, Use, Removal and Geologic Storage

EFFECT ACT – Enhancing Fossil
Fuel Energy Carbon Technology Act

Introduced by Senators Joe Manchin (D-WV)
and Lisa Murkowski (R-AK).

Expands DOE's fossil energy RD&D
programs for carbon capture, utilization,
storage and removal

Authorizes four sub-programs for developing
transitional technologies to improve efficiency,
effectiveness, costs and environmental
performance of coal and natural gas use

Creates Carbon Storage, Validation and
Testing, Carbon Utilization and Carbon
Removal Programs



Clean Industrial Technology Act (CITA)

- Introduced by Senators Whitehouse (D-RI) and Capito (R-WV) and Representatives Casten (D-IL) and McKinley (R-WV).
- Directs Secretary of Energy to establish Industrial Emissions Reduction Technology Development Program to develop innovative low and zero emissions technologies, including carbon capture.
- Leverages existing resources and promotes public private partnerships to carry out program.
- Establishes Industrial Technology Innovation Advisory Committee.
- Establishes technical assistance program to assist in implementation.
- Develops road map for deployment of new technologies to reduce industrial emissions.

LEADING ACT

Launching Energy Advancement and Development Through Innovations for Natural Gas

Introduced by Sens. Cornyn (R-TX), Cassidy (R-LA), Coons (D-DE) and Sinema (D-AZ) and Reps. Crenshaw (R-TX) and Cuellar (D-TX)

Incentivizes carbon capture RD&D and supports technology demonstration projects for natural gas.

LEADING Act would bolster America's competitive edge in advancing the next generation of carbon capture technologies for natural gas.

Fossil Energy Research and Development Act of 2019 (FERD)

- Introduced by Representatives Veasey (D-TX) and Schweikert (R-AZ).
- Reauthorizes and expands research, development and demonstration for carbon capture technologies for power plants and industrial sources.
- Authorizes RD&D activities in carbon storage, carbon utilization, improvements in efficiency and rare earth elements.
- Would launch new initiatives in CO₂ removal, waste gas utilization and methane leak detection and mitigation.
- Authorizes 5% annual funding increases over 5 years for fossil energy RD&D.

Opportunity

- Both the Senate and House are expected to incorporate bills into one energy innovation package.
- Bills likely to be considered by both chambers early next year.
- We need your help in making labor's voice heard—these bipartisan bills represent a real opportunity to make progress on important jobs, economic, and environmental goals!



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Thank you!