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# 45Q and the Business Case for CCUS in the US

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U.S. DEPARTMENT OF  
**ENERGY**

Fossil Energy and  
Carbon Management

# Carbon management helps with 3 core pillars of DOE's climate strategy

1

## **Decarbonized, resilient, low-cost, land-efficient power grid**

Boosting grid resilience and reducing overall system costs and pollution in high-renewable deep-decarbonization scenarios

2

## **Industrial decarbonization for net-zero economy 2050**

Reduce emissions while alternative manufacturing methods are developed over time that avoid production of CO<sub>2</sub> altogether

3

## **Carbon dioxide removal**

Offset the most expensive-to-abate GHG emissions and clean up legacy CO<sub>2</sub> pollution



# DOE aims to enable liftoff of a carbon management industry

## From (actuals)

- Emerging **CO<sub>2</sub> capture** capacity (23 Mt/yr.)
- Nascent **durable CDR** industry (<.01 Mt/yr.)
- Starting **point-source CCS** projects (17)
- Initial **CO<sub>2</sub> pipelines** (5.5K mi.)
- Growing **workforce** (~5-10K jobs)
- First permitted **Class VI storage facilities** (~8\*)

## To (2050 estimates)

- **CO<sub>2</sub> capture** at scale (~300-900 Mt/yr.)
- Meaningful **carbon removal** (~200-700 Mt/yr.)
- Established **point-source CCS** projects (~250-900)
- Strong **transportation network** (~30-96K mi.)
- Vigorous **job growth** (~1,400-2,900K jobs)
- Widespread **CO<sub>2</sub> storage** (~400-1,500 facilities)



Source: [Pathways to Commercial Liftoff: Carbon Management](#), DOE 2023; DOE analysis  
Note: \*8 projects with 18 total Class VI wells



# DOE is updating its carbon management strategy to unify all efforts under 5 pillars

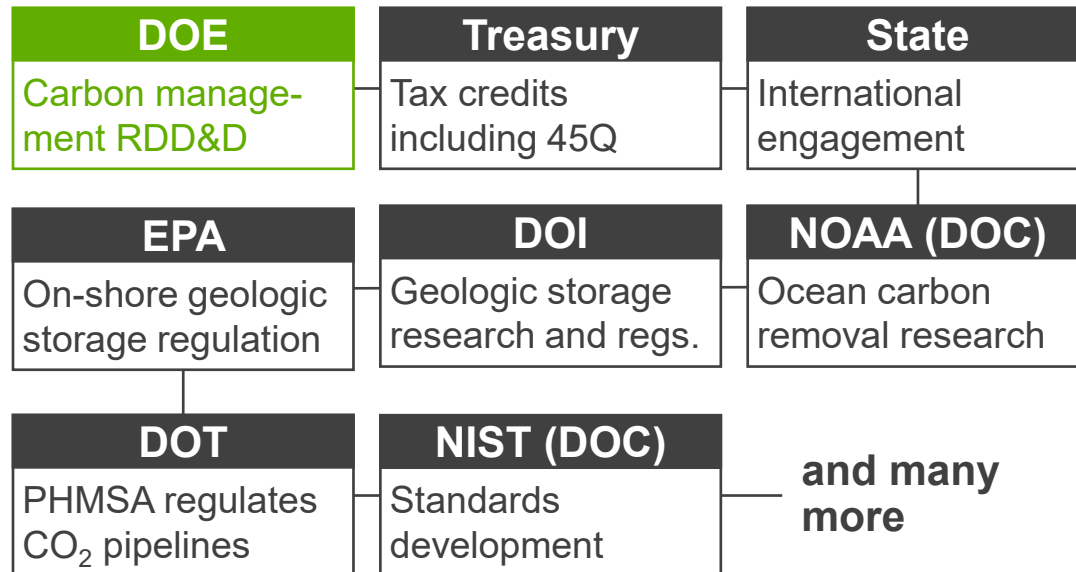
- 1 Invest **RDD&D funding** on priority use cases
- 2 Enable **transport and storage infrastructure clusters** to emerge
- 3 Support the emergence of **effective policy / regulatory frameworks**
- 4 Engage **communities and workers** to deliver benefits / mitigate risks
- 5 Leverage **climate diplomacy** to scale technology internationally

Note: RDD&D is research, development, demonstration, and deployment



# 3. Support effective policy emergence

## DOE is one of many federal agencies involved in carbon management



## DOE engages federal, state, tribal, local, and international governments

- Government partnerships have historically **enhanced DOE’s ability to successfully develop and deploy technologies**
- DOE engages the many agencies involved in carbon management
  - Primary role is **RDD&D, technical assistance to other agencies, and international engagement**
  - DOE **does not have regulatory authority** and works with others on regulations and incentives
- DOE conducts **analysis for policymakers** to inform carbon management policy

Note: EPA is Environmental Protection Agency; DOI is Department of the Interior; NOAA is National Oceanic and Atmospheric Administration; DOC is Department of Commerce; DOT is Department of Transportation; PHMSA is Pipeline and Hazardous Materials Safety Administration; NIST is National Institute for Standards and Technology



# Inflation Reduction Act – “45Q” Carbon Capture Tax Credit Modifications


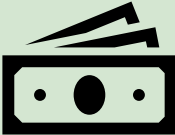

	Old	New
Commence Construction	January 1, 2026	January 1, 2033
DAC Facility	100,000 metric tons/year*	1,000 metric tons/year
Electric Generator	500,000 metric tons/year*	18,750 metric tons/year
All other facilities	100,000 metric tons/year*	12,500 metric tons/year
Saline Storage Credit	\$50/metric ton	\$85/metric ton (industry and power); \$180/metric ton (DAC)
EOR and Conversion Credit	\$35/metric ton	\$60/metric ton (industry and power); \$130/metric ton (DAC)

\* Non-EOR Conversion facilities were previously 25,000 metric tons/year regardless of facility/source.

Notes: New Modifications allows up to 5 years for direct pay (up to 12 years certain entities)

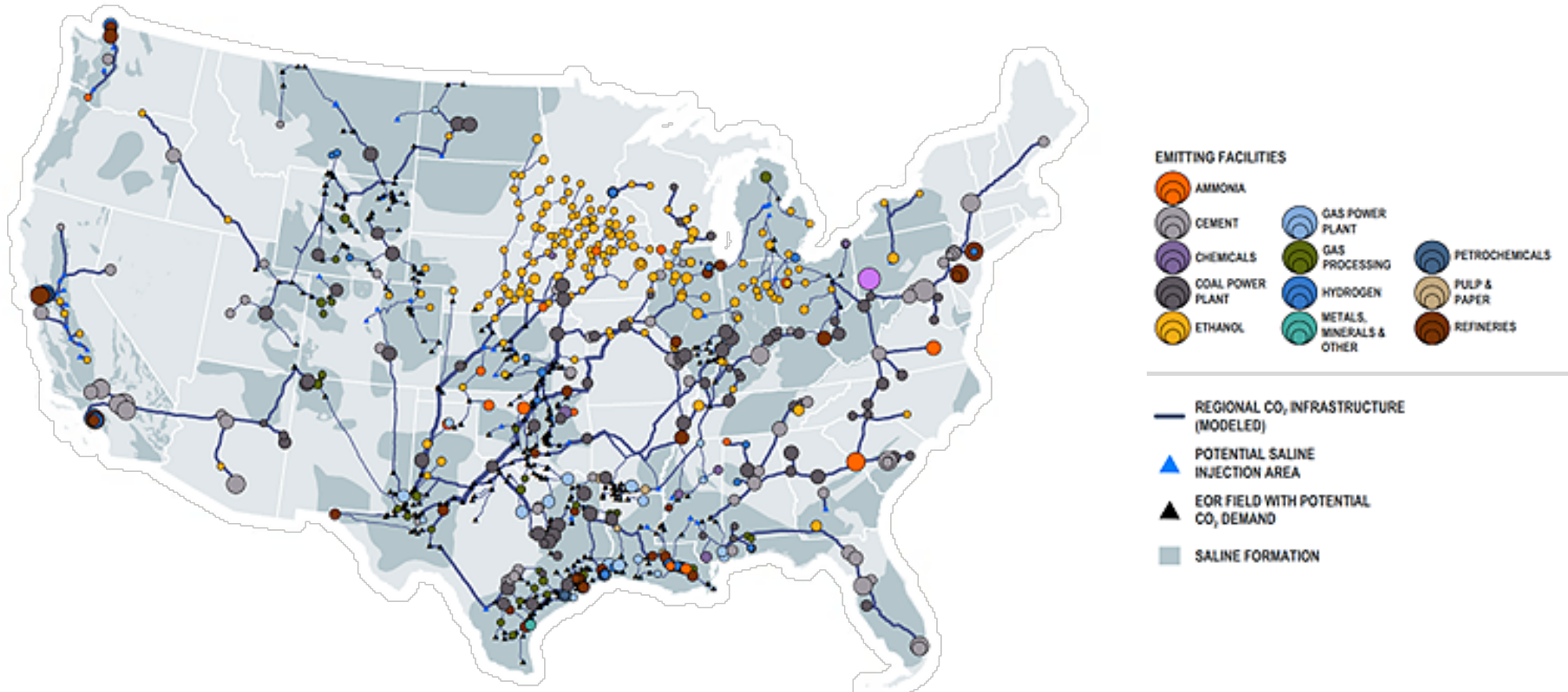


# 45Q will be main business driver moving forward

	<b>Significant Price Incentives</b>	<ul style="list-style-type: none"><li>• <b>Saline Storage Credits</b><ul style="list-style-type: none"><li>○ \$85/metric ton (industry and power)</li><li>○ \$180/metric ton (direct air capture)</li></ul></li><li>• <b>Saline Storage through EOR/Conversion Credits</b><ul style="list-style-type: none"><li>○ \$60/metric ton (industry and power)</li><li>○ \$130/metric ton (direct air capture)</li></ul></li></ul>
	<b>Easier to Finance on Credit Value</b>	<ul style="list-style-type: none"><li>• <b>Reduced facility size thresholds</b> – enables more industrial and small emitters to participate</li><li>• <b>Direct + transferability of credits</b> should make more investible</li><li>• <b>Projects must begin construction</b> - by January 1, 2033</li><li>• <b>Maximize credit if worker requirements are met</b>, e.g. minimum wage for employees</li></ul>
	<b>More Time</b>	<ul style="list-style-type: none"><li>• 10 year commence construction window</li><li>• 12 year of credit window</li><li>• Uptake might be slow, but once first of a kind projects de-risked, industry uptake could be on the order of 10Ms-100Ms tons/year</li></ul>



# Estimates of 300M+ tons CO<sub>2</sub> capture by 2035



Optimized CO<sub>2</sub> transport and storage network deployment modeling from the [Great Plains Institute](#) finds that, under 45Q, a shared, interconnected CO<sub>2</sub> transport and storage system could capture, transport and store 300 million metric tons of CO<sub>2</sub> per year by 2035 from industrial facilities and power plants.





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A collage of five images on the left side of the slide: 1. An oil rig against a blue sky. 2. Two scientists in white lab coats working in a laboratory with a beaker of blue liquid. 3. Two people in outdoor gear kneeling in a field, one using a tool on the ground. 4. A large stack of white cylindrical components, possibly turbine parts. 5. A row of yellow and red electrical outlets.

# Thank You!

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## Questions?

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