The Status of CO_2 Enhanced Oil Recovery (CO_2 EOR) in the U.S

Prepared for:
USEA Consensus Series
CCUS Demystified -- CO_2 Storage & EOR: Safe & Sound Underground

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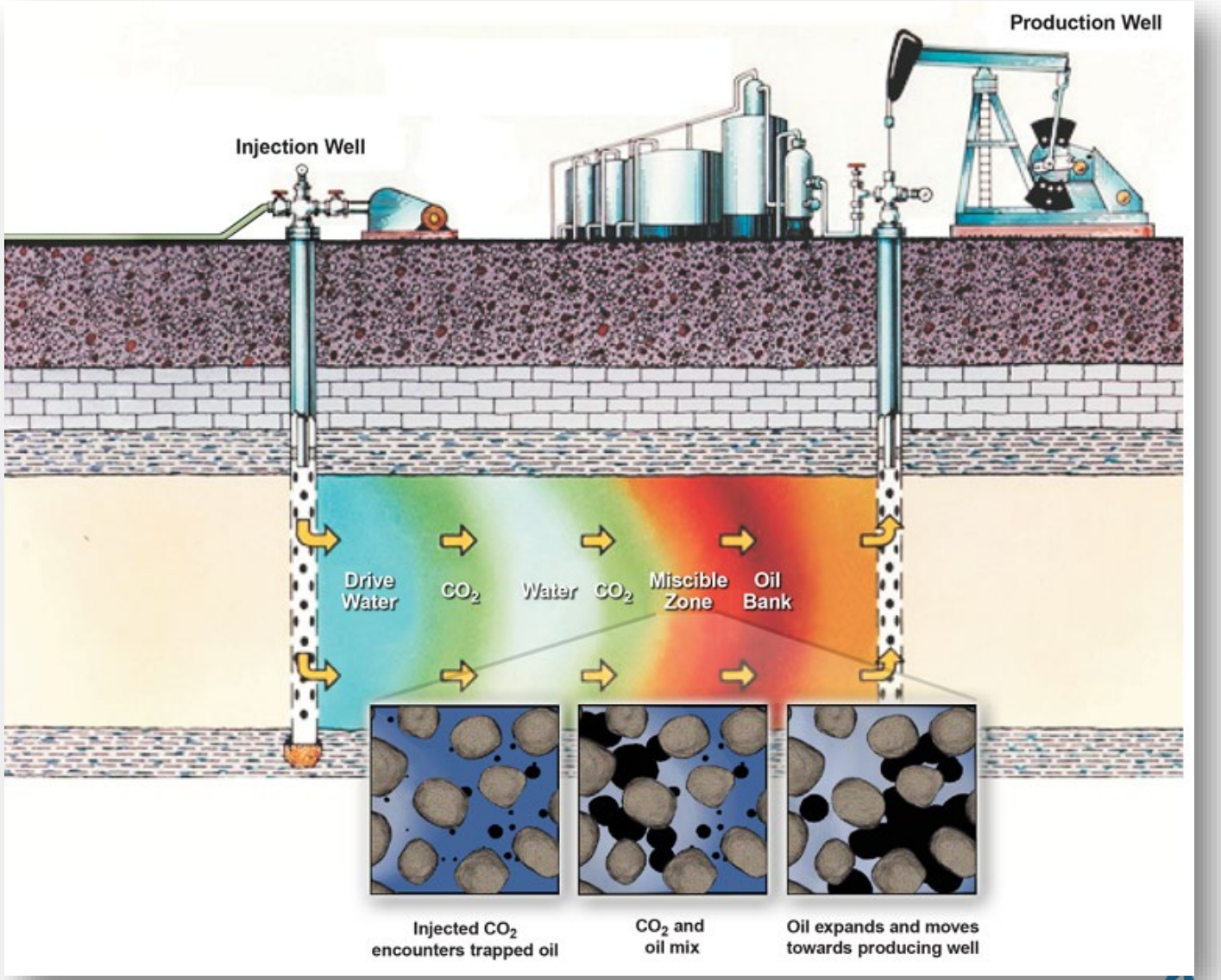
Fundamentals of the CO_2 EOR Process

- CO_2 enhanced oil recovery (CO_2 EOR) is the process of injecting supercritical CO_2 into depleted oil reservoirs to mobilize and produce incremental barrels of oil that would otherwise remain in the reservoir.
- CO_2 EOR is used in varied sandstone and carbonate reservoir settings that are generally at least ~3,000 ft deep.
- CO_2 EOR is a tertiary recovery process used to extend the life of existing fields.
- While some injected CO_2 is produced and recycled for reinjection, eventually all CO_2 purchased for CO_2 EOR will be securely stored in the oil reservoir.



*National Energy Technology Laboratory. "Carbon Dioxide Enhanced Oil Recovery", March 2010. www.netl.doe.gov. Accessed 1.9.26

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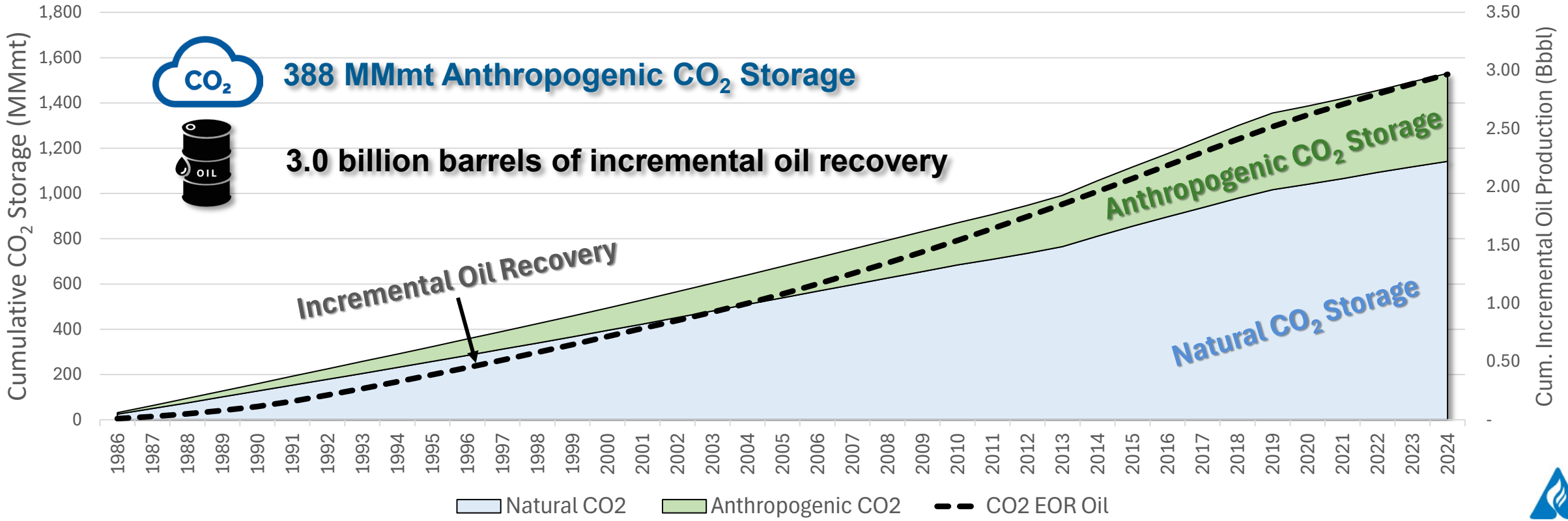
Cumulative CO_2 Storage and Oil Production with CO_2 EOR

- **CO_2 EOR is a proven, safe technology** -- since 1986, CO_2 EOR projects in the U.S. have stored nearly 390 MMmt of anthropogenic CO_2 (1.5 Bmt total) and produced 3.0 Bbbl of incremental oil.
- **This is an average of over 10 million tons of anthropogenic CO_2 storage per year for the last 38 years.**



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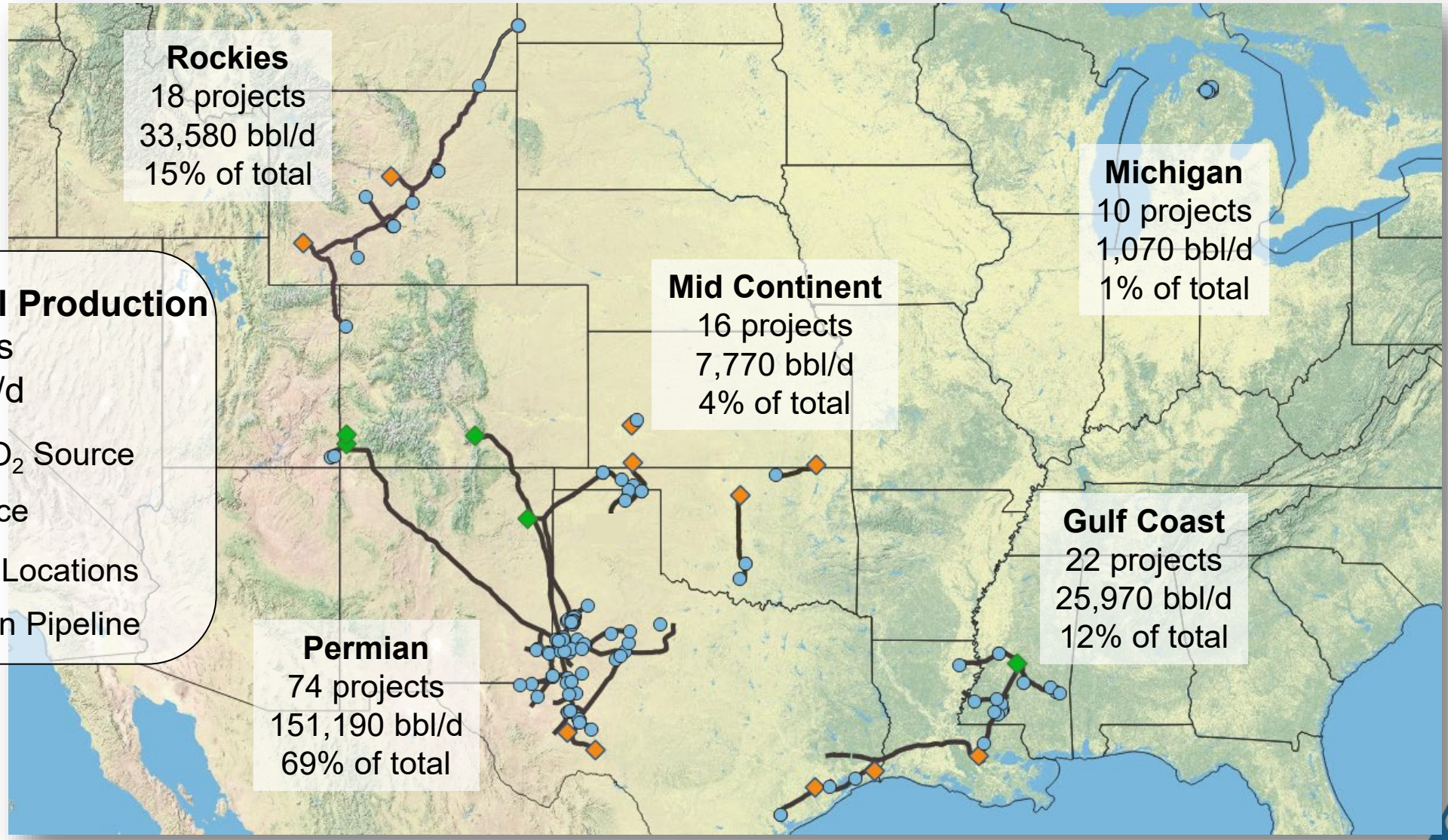
CO_2 EOR Field Locations and Enhanced Oil Production



2024 U.S. CO_2 EOR Oil Production
140 projects
219,580 bbl/d

- Anthropogenic CO_2 Source
- Natural CO_2 Source
- CO_2 EOR Project Locations
- CO_2 Transportation Pipeline

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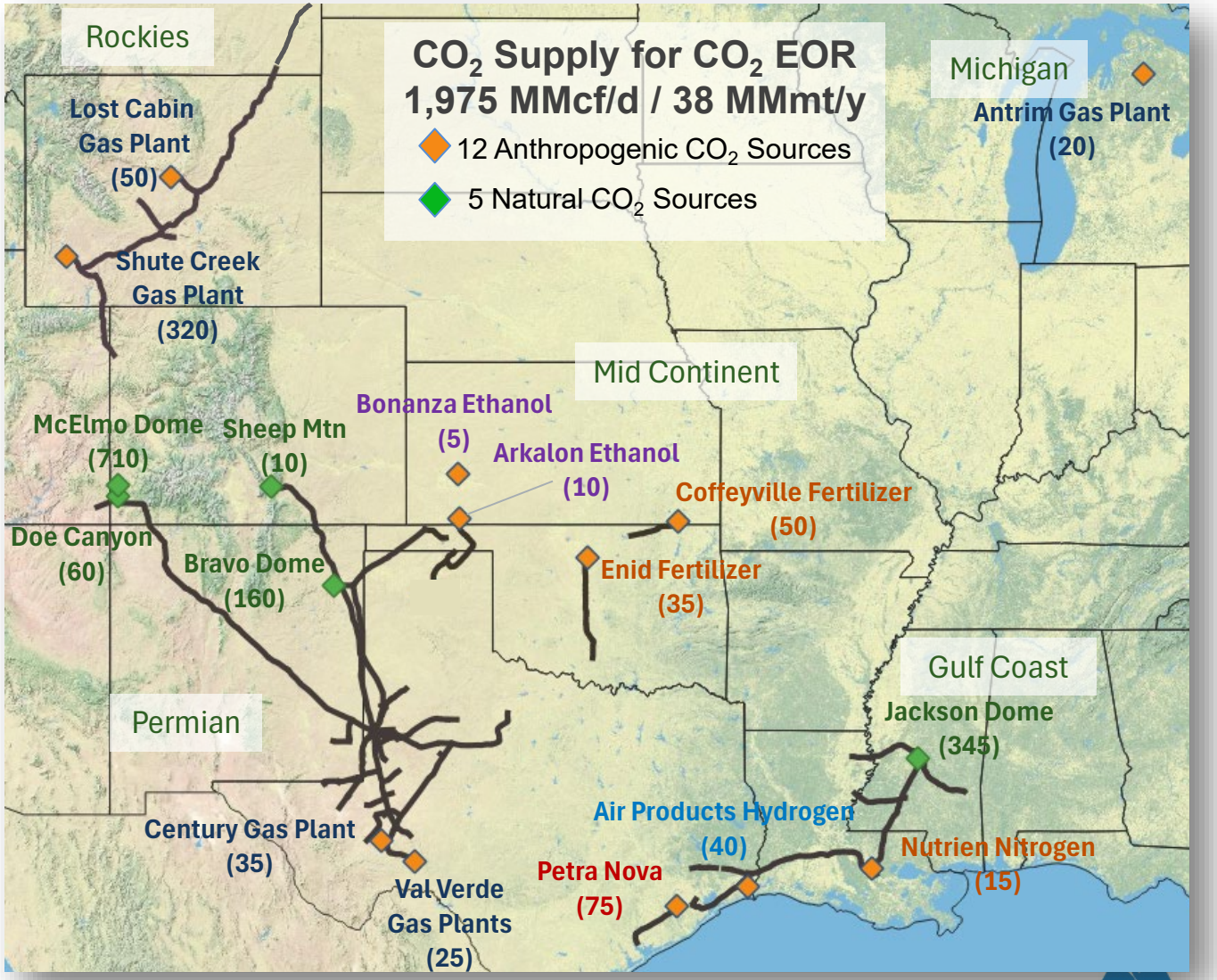
2024 CO_2 Supply for CO_2 EOR

CO_2 EOR Region	CO_2 Source Type	CO2 Supply (MMcf/d)	(Mt/y)
Permian	Natural	900	17.3
	Anthropogenic	60	1.2
	Total	960	18.4
Gulf Coast	Natural	345	6.6
	Anthropogenic	130	2.5
	Total	475	9.1
Rockies	Natural	25	0.5
	Anthropogenic	370	7.1
	Total	395	7.6
Mid Continent	Natural	25	0.4
	Anthropogenic	100	1.9
	Total	125	2.4
Michigan	Natural	-	-
	Anthropogenic	20	0.4
	Total	20	0.4
2024 Total	**Natural**	**1,295**	**24.8**
	Anthropogenic	**680**	**13.1**
	Total	**1,975**	**37.9**



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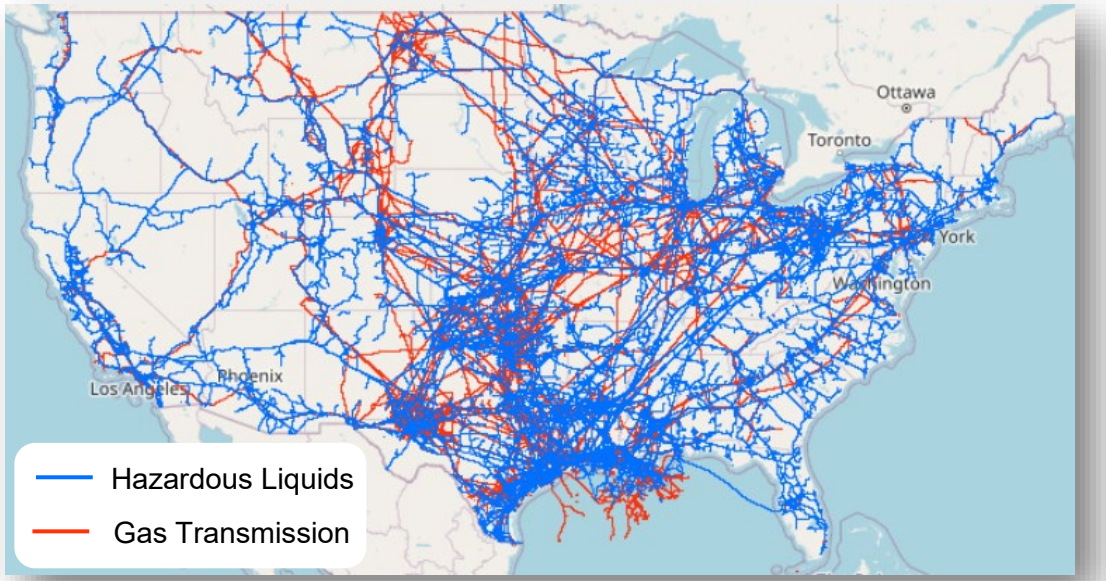
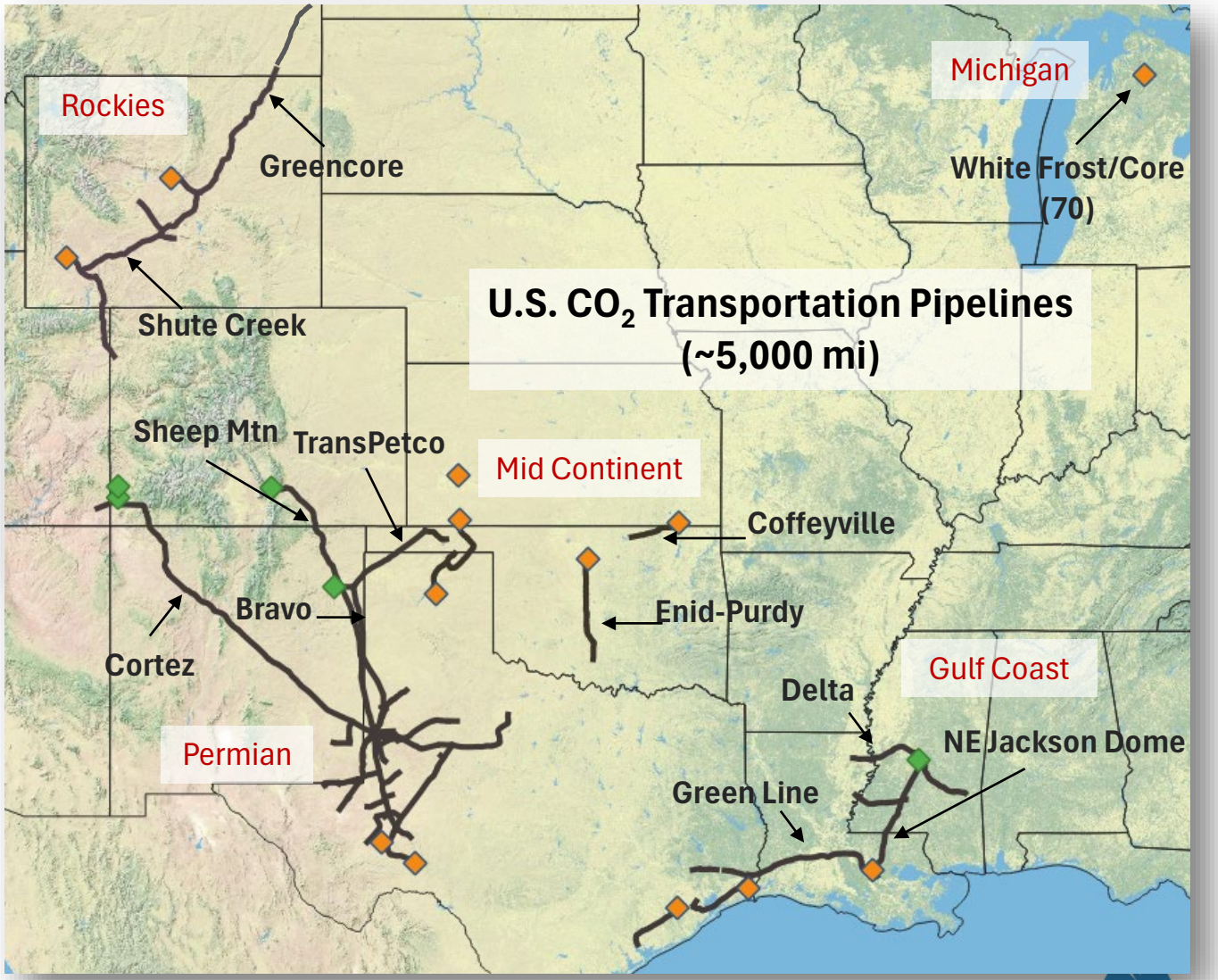
U.S. CO_2 Pipeline Infrastructure

Hazardous Liquid and Gas Transmission Pipelines



*PHMSA National Pipeline Mapping System Public Viewer 1/13/26

- There are approximately 5,000 miles of CO2 transportation pipelines in the U.S. located primarily in the Permian Basin, Gulf Coast, WY, and OK.
- By comparison, there are close to 600,000 miles of gas transmission and hazardous liquids pipelines in the L48 U.S. and offshore.

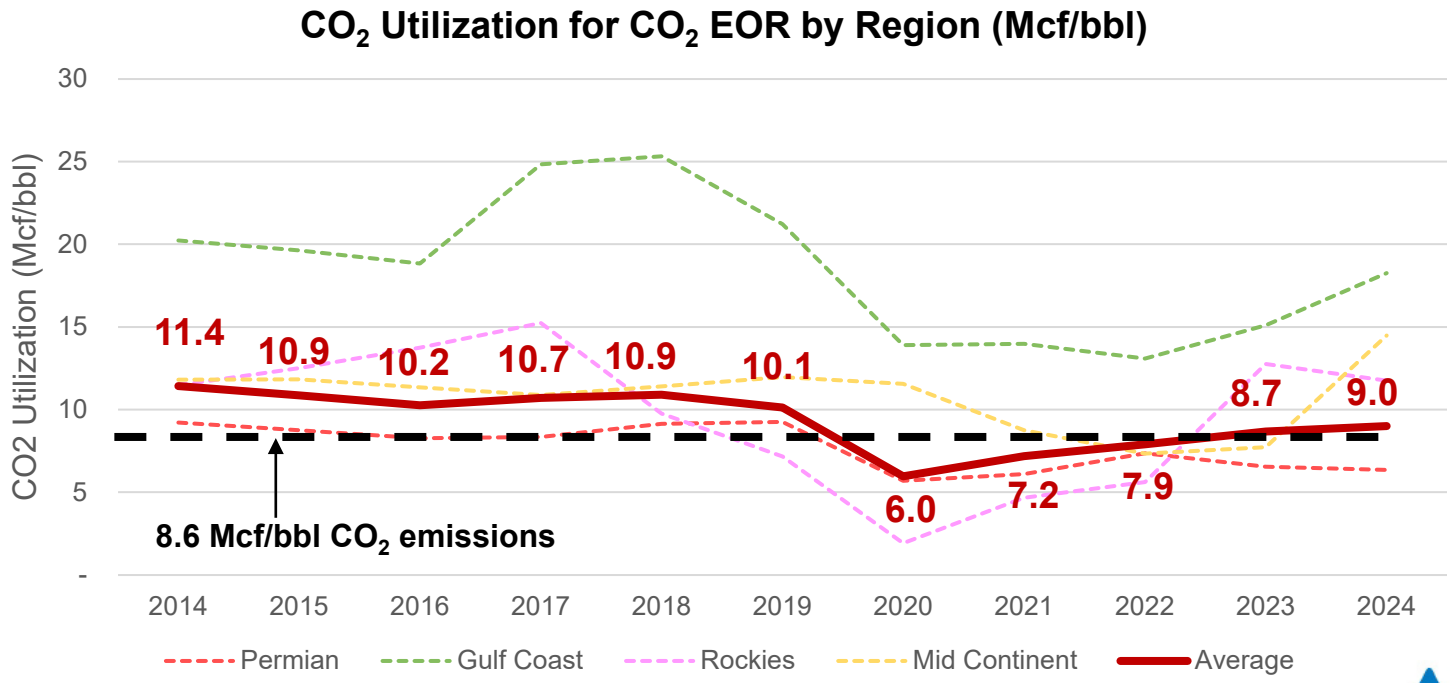


CO_2 EOR Offers a Proven Carbon Storage Solution and Low Carbon Fuel Production

- Oil produced with CO_2 EOR has a lower carbon intensity than conventional domestic or imported oil, which includes additional associated carbon emissions for transportation.
- The market for low-carbon fuels is emerging in the U.S., which will benefit from new LCA work to establish the scope and baseline for the carbon intensity of CO_2 EOR oil.

CO_2 Emissions Per Barrel of Conv. 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**



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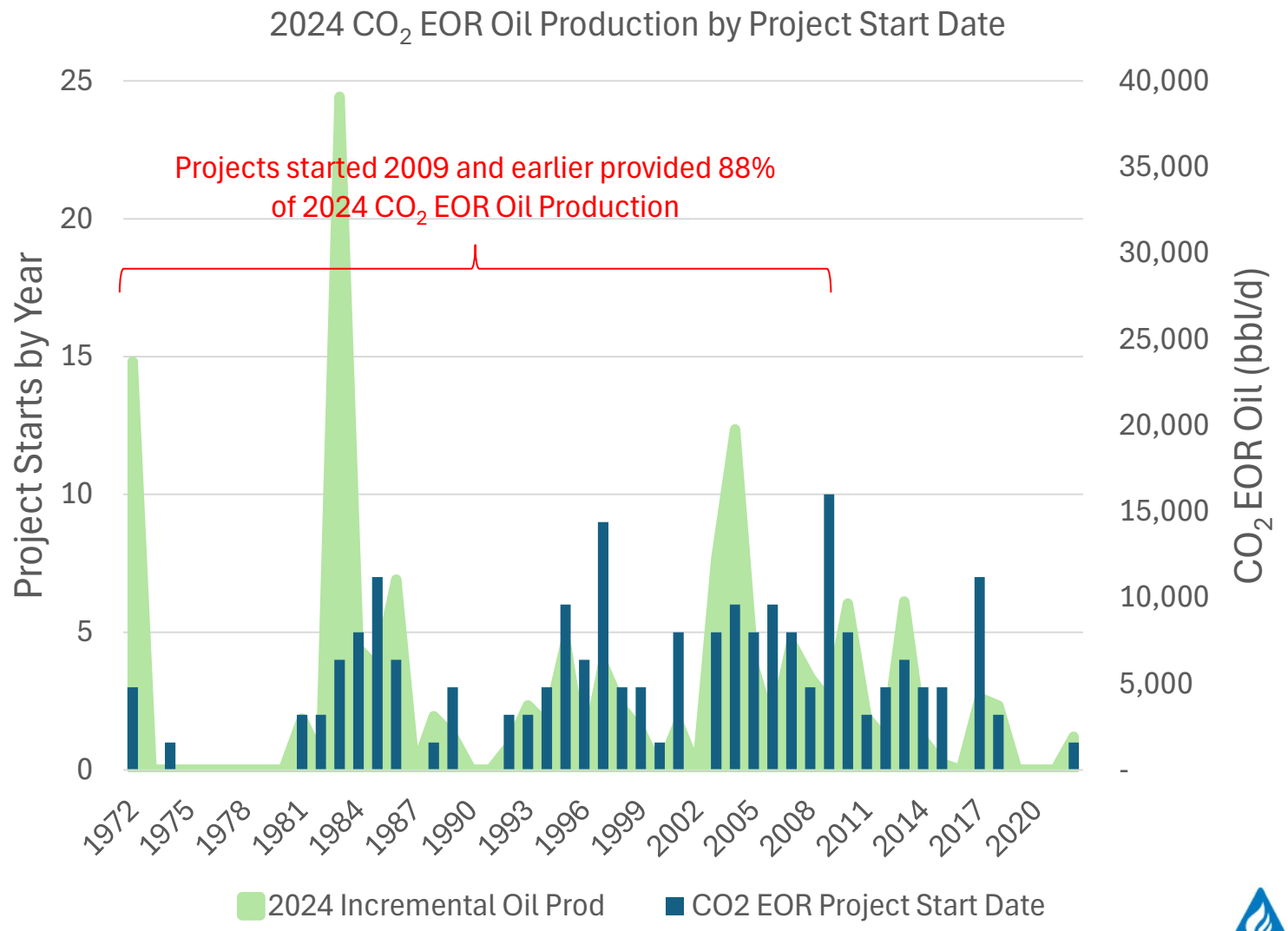
CO_2 EOR Offers Pathways to U.S. Energy Security

- Federal energy policy is shifting to focus on U.S. energy dominance and security.
- Investment in CO_2 EOR supports decades of oil production -- 88% of CO_2 EOR oil produced in 2024 came from projects between 15 and 52 years old.
- **CO_2 EOR can recover ~15% of remaining OIP without the need for additional greenfield exploration and development.**



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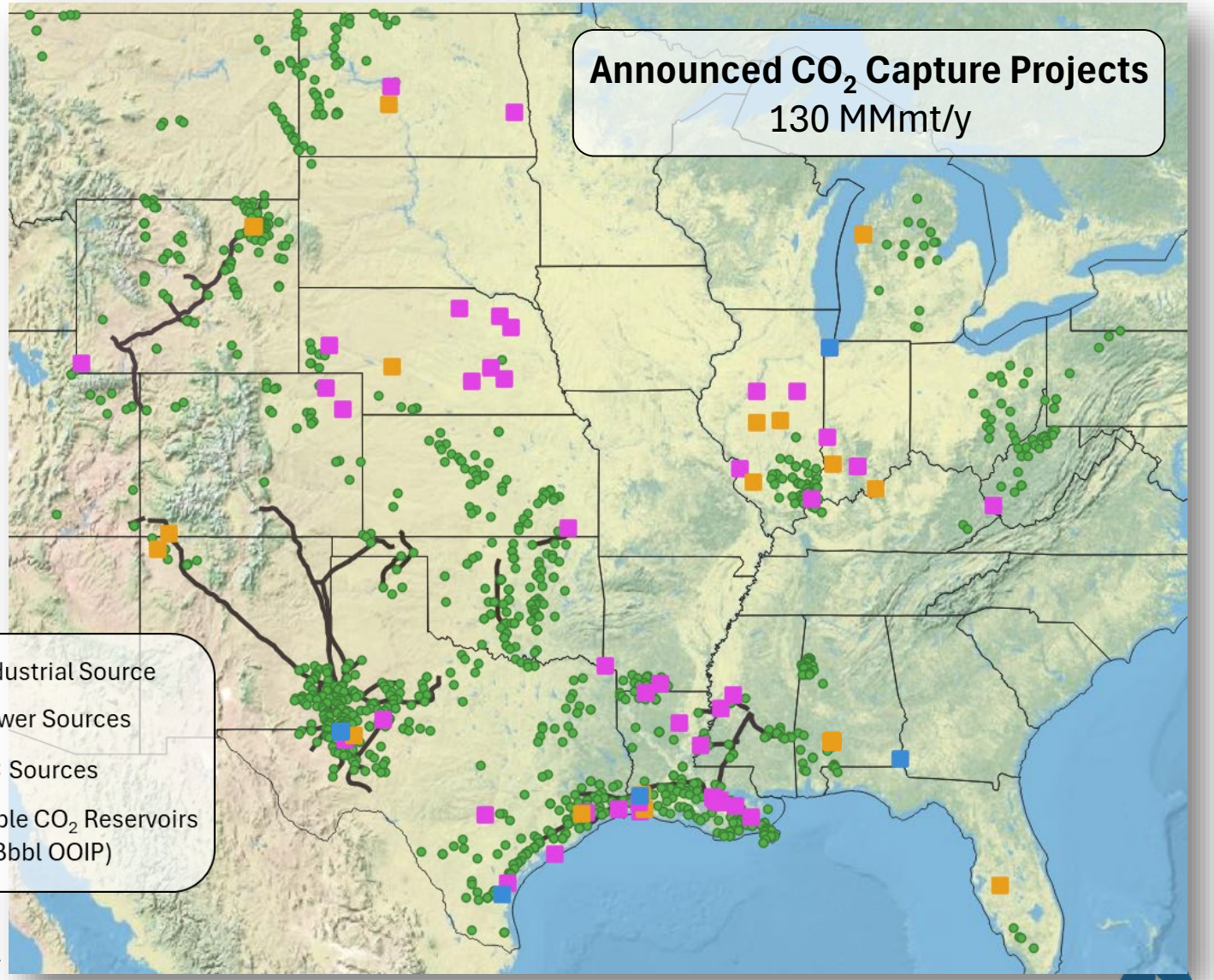
Potential for CO_2 Storage Using CO_2 EOR in the U.S.

- The map shows the locations of 71 announced CO_2 capture projects* coming online by 2031 that have total CO_2 capture capacity of 130 MMmt/y.
- The green dots are the locations of over 1,300 oil reservoirs viable for miscible CO_2 EOR that have:
  - 275 Bbbl of OOIP
  - 40+ Bbbl of incremental oil recovery potential**
  - 20+ Bmt of CO_2 storage potential**
- **CO_2 EOR offers a viable CO_2 storage option for most industrial CO_2 capture projects in the U.S.**



*Including projects with federal DOE support and commercial capture projects

**Est. 15% EUR using CO_2 EOR is 41+ BBbl, CO_2 Storage is 19 Bmt using a 9 mcf/bbl utilization factor

Thank you!

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