

CO₂ Pipelines in Minnesota:

The Fossil Fuel Industry's (Quiet) Game Plan

CO₂ Pipelines in Minnesota

- What they are
- Why they are being proposed and built
- What is being proposed in Minnesota
- Why we should be concerned
- What you can do

CO₂ Pipelines in Minnesota

Sarah Mooradian

CURE Government Relations & Policy Director



Peg Furshong

CURE No Carbon Pipelines Campaign Co-Lead



LAND & TRAUMA ACKNOWLEDGEMENT

Wherever you may be, let us acknowledge that we are all on Indigenous land. Minnesota is located on the traditional and contemporary homelands of the Anishinaabe and Dakota peoples, the original stewards of this territory. We are committed to uplifting the name of these lands and the community members from these Nations as we pursue a right path together.

We acknowledge the trauma that is deeply embedded in the foundation of this country. The land we reside on came under control of the USA, through genocide, slavery, and ongoing occupation. We recognize the deep historical, spiritual, and personal trauma that has impacted indigenous communities, communities of color, and immigrant communities. By offering this acknowledgment of trauma, we affirm the right of people to bring their whole selves and stories into this space, and we affirm our intention to promote healing, respect, and love.



CO₂ Pipelines: What They Are

A vehicle for getting captured carbon to places where it is stored.

CO2 Pipelines: What They Are

A vehicle for getting captured carbon to places where it is stored.

Carbon Capture Utilization & Storage (CCUS)

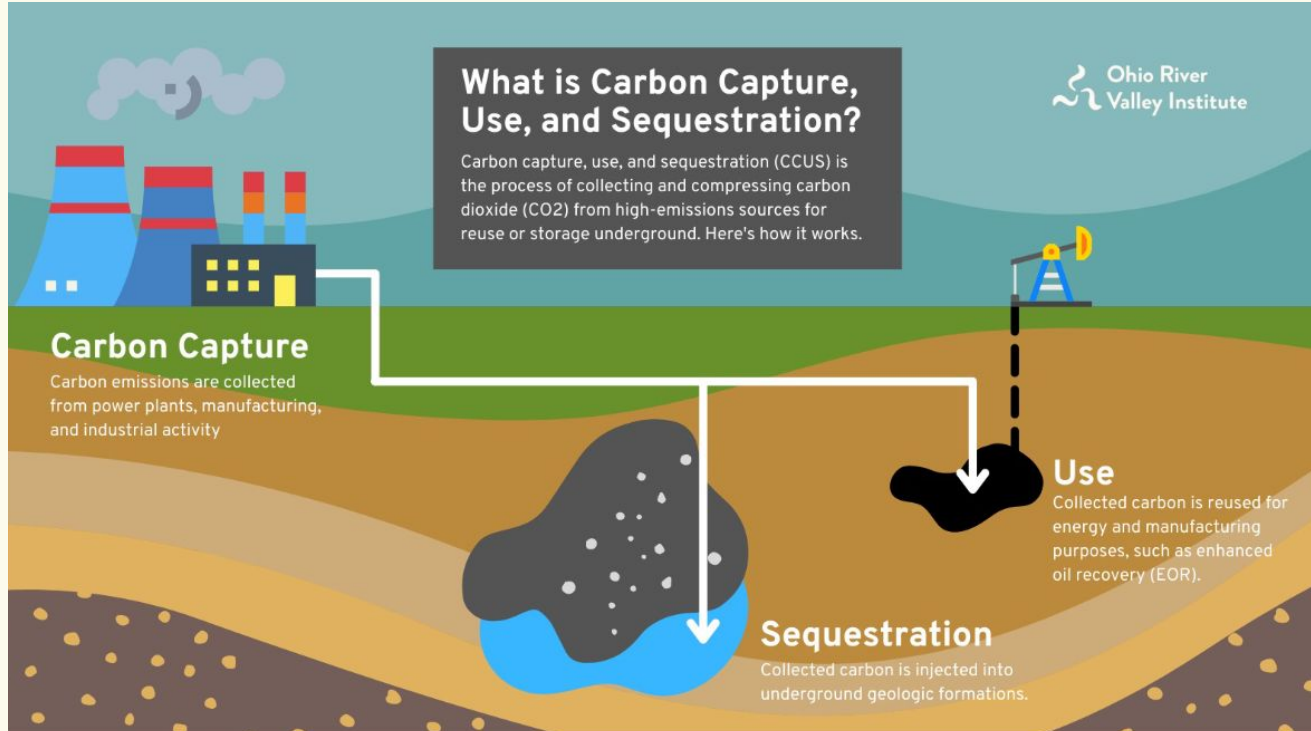
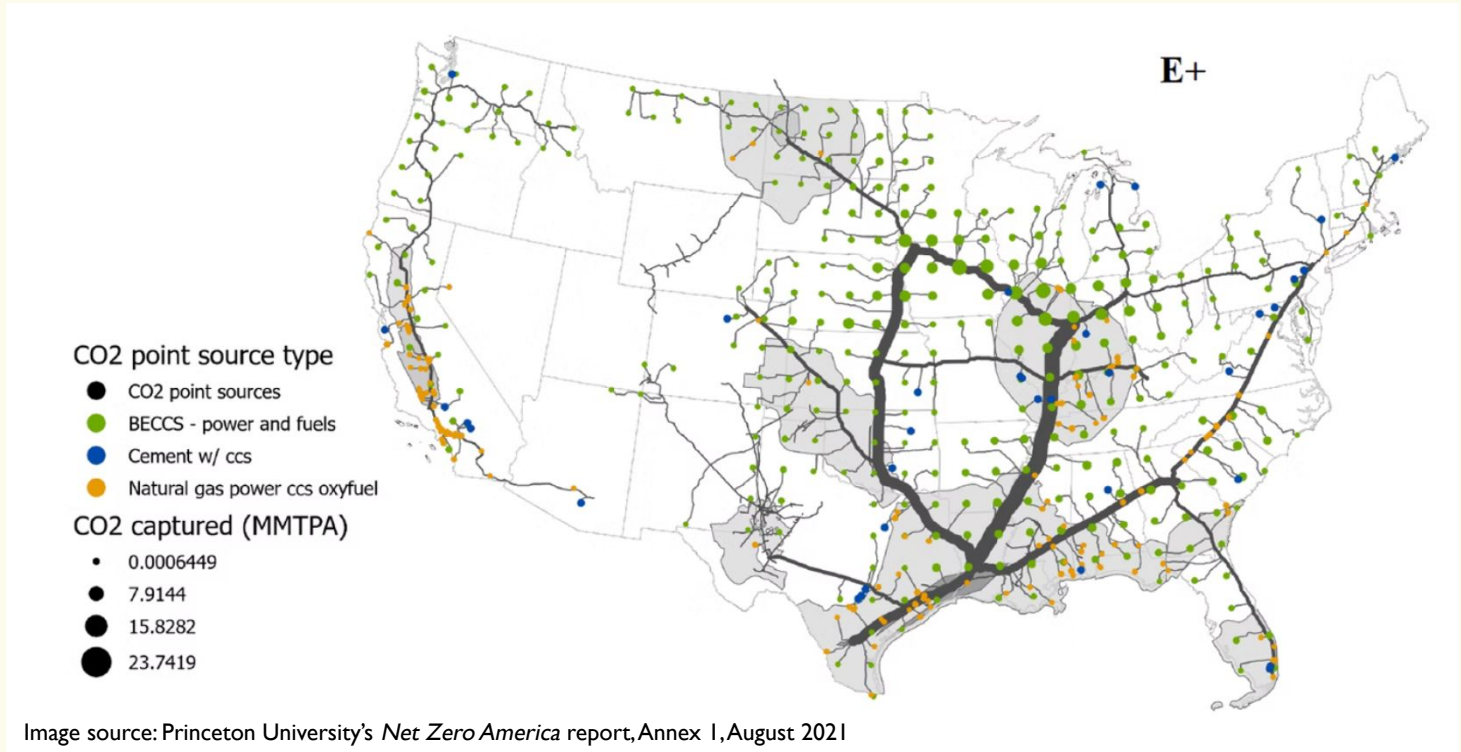


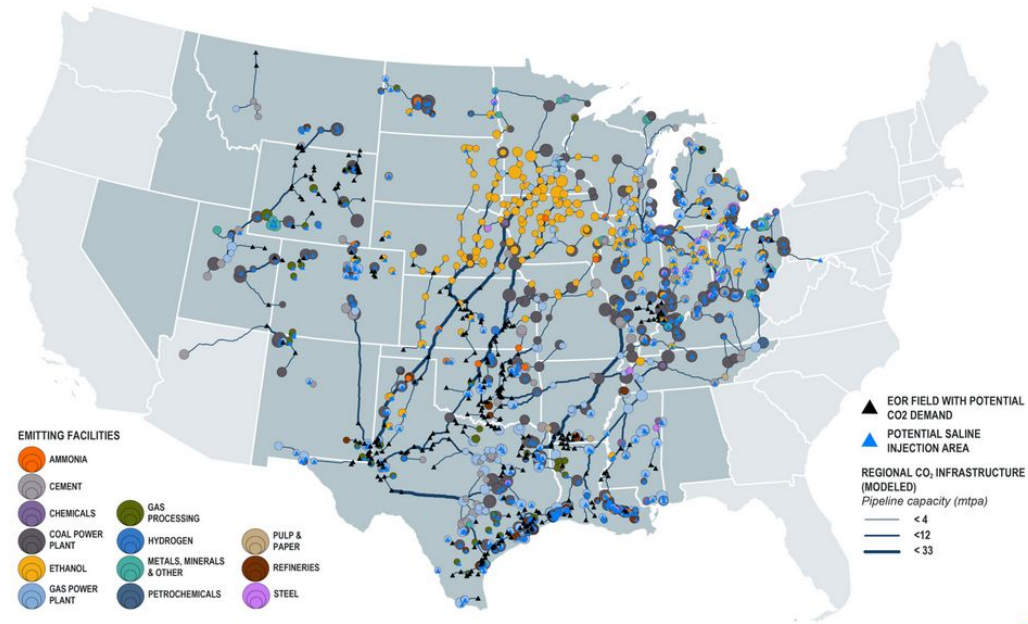
Image Source: Ohio River Valley Institute,
<https://ohiorivervalleyinstitute.org/wp-content/uploads/2021/10/CCUS-Report-FINAL-3.pdf>

CO₂ Pipeline Buildout - Model 1



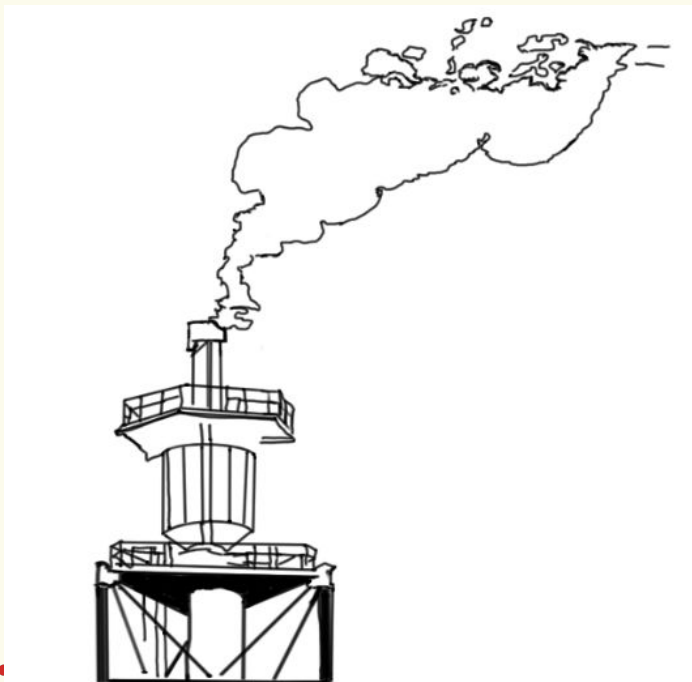
CO₂ Pipeline Buildout - Model 2

MIDCENTURY CO₂ TRANSPORT INFRASTRUCTURE: FINAL STUDY SCENARIO



CO2 Pipelines: Why??

The New Fossil Fuel Business Plan



1. **Capture CO₂** from sources that burn it.
2. **Pipelines:** Build a network of tens of thousands of miles of pipelines through the midwest to ferry the CO₂ to the ground.
3. **EOR:** Injecting that CO₂ into marginally producing oil wells to push out more oil -- something called Enhanced Oil Recovery.
4. Get taxpayers to pay for it.



**Capturing and Utilizing
CO₂ from Ethanol:
Adding Economic Value and Jobs to
Rural Economies and Communities
While Reducing Emissions**

White paper prepared by the
State CO₂-EOR Deployment Work Group

December 2017

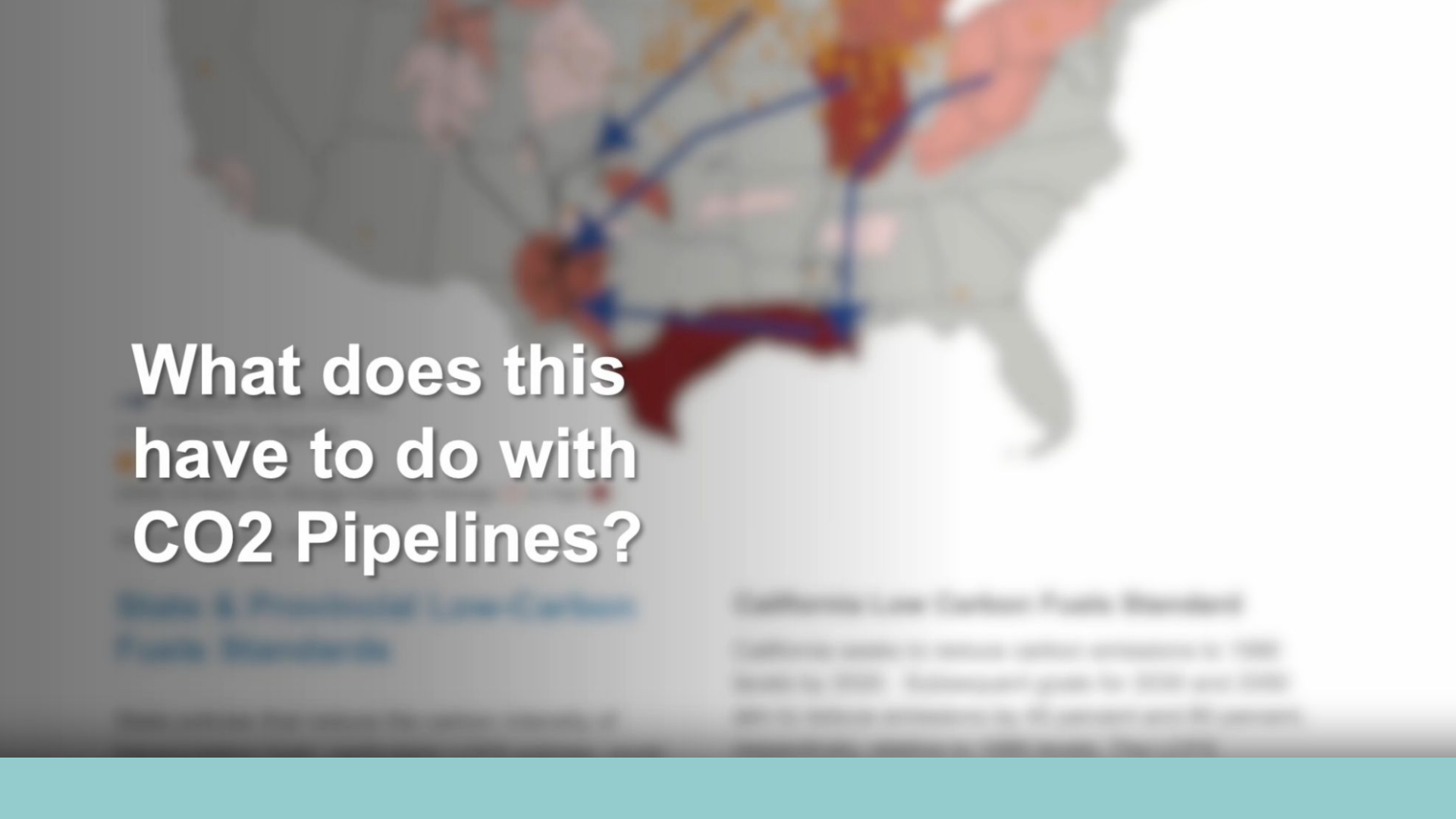
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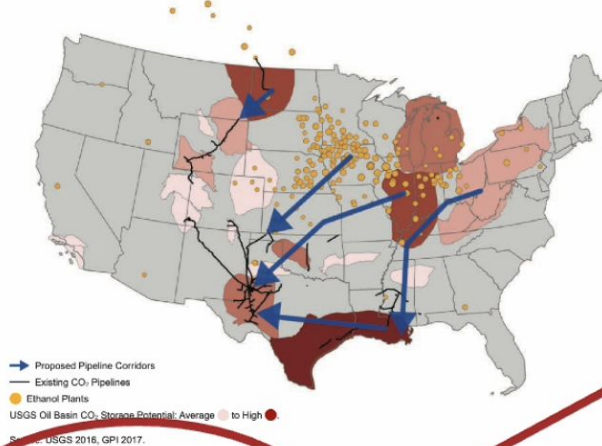
What does this have to do with CO2 Pipelines?

State & Provincial Low-Carbon
Fuel Standards

California Low Carbon Fuel Standard

California seeks to reduce carbon emissions by 10%
starting in 2010. Subsequently goals for 2015 and 2020
are to reduce emissions by 15 percent and 20 percent,
respectively.

Figure 10: CO₂ Pipeline Corridors proposed by the State CO₂-EOR
Deployment Work Group



Source: USGS 2016, GPI 2017.

State & Provincial Low-Carbon Fuels Standards

State policies that reduce the carbon intensity of transportation fuels, particularly LCFS policies, could complement federal incentives in stimulating private investment in carbon capture and CO₂ pipeline development. In some cases, such as California's LCFS, the potential value of carbon credits from that policy could drive private investment, with or without additional federal policy. In addition, California's LCFS policy and other emerging state and provincial policies could incentivize the deployment of carbon management outside those jurisdictions, especially for ethanol producers that deliver and sell their fuels into California and other markets. The relative impact and benefit of LCFS policies in California and other jurisdictions will depend on the regulatory framework that accompanies their implementation.

California Low-carbon Fuels Standard

California seeks to reduce carbon emissions to 1990 levels by 2020. Subsequent goals for 2030 and 2050 aim to reduce emissions by 40 percent and 80 percent, respectively, relative to 1990 levels. The LCFS program represents one of California's key policy tools to achieve those goals by requiring a 10 percent reduction in the carbon intensity of transportation fuels by 2020, as measured from a 2010 baseline.

The program provides credits to regulated parties that achieve average fuel carbon intensity lower than the target set by the ARB. In 2016, ethanol generated approximately 40 percent of all credits under the LCFS program. The carbon intensity of transportation fuels in the California market at the end of 2016 was 2.71 percent lower than 2010, indicating that California remains on track to achieve its 2020 target. However, accomplishing the proposed target of 18 percent by 2030 would be more challenging.

State & Provincial Low-Carbon Fuels Standards

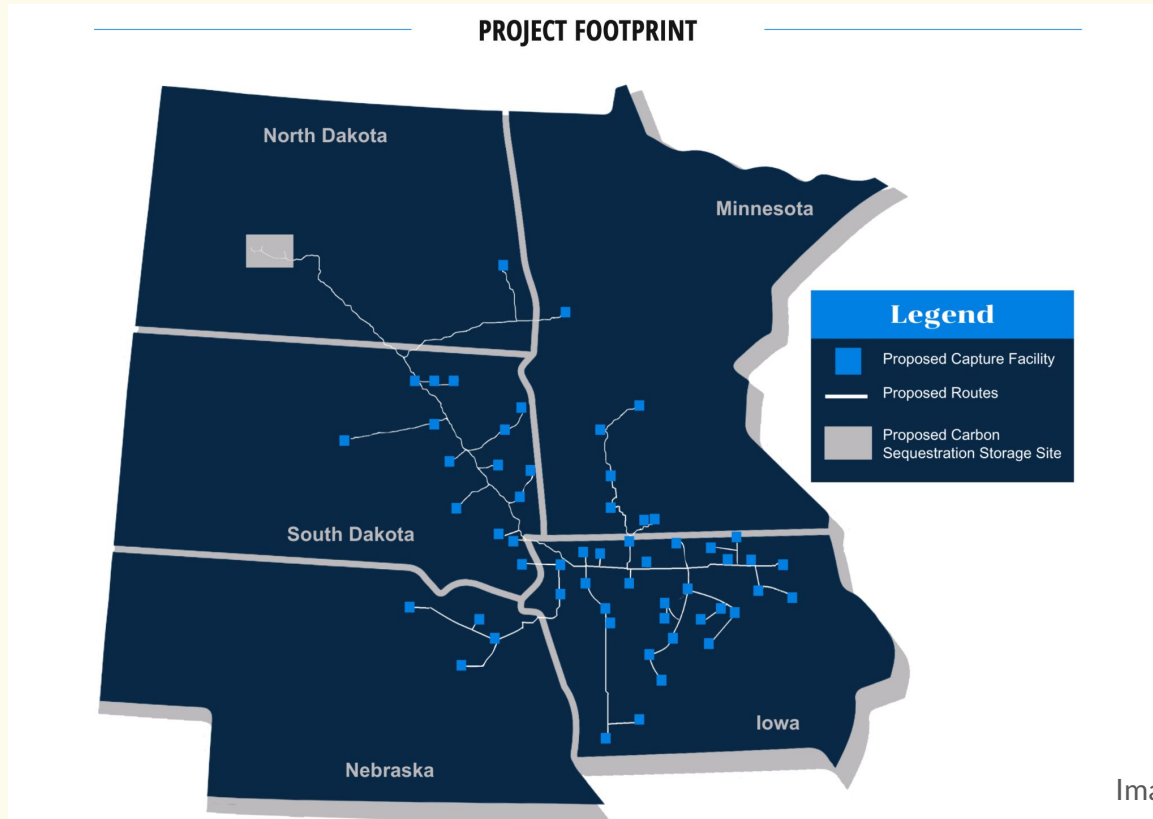
State policies that reduce the carbon intensity of transportation fuels, particularly LCFS policies, could complement federal incentives in stimulating private investment in carbon capture and CO₂ pipeline development.



CO₂ Pipelines: What is Proposed for Minnesota

- **Midwest Carbon Express** – Summit Carbon Solutions (IA)
 - 10 Minnesota Counties – 3 lateral branches and approximately 213 miles in MN
- **Heartland Greenway** – Navigator CO₂ Ventures (TX)
- **ADM** – Wolf Carbon Solutions (CO)
 - Unknown

Summit Carbon Solutions (CO₂) Pipeline



CO₂ Pipelines: Why We Should Be Concerned

1. CO₂ Pipelines are not a climate solution, they are a climate problem.
2. Pipelines are dangerous.
3. Continue current harmful systems.

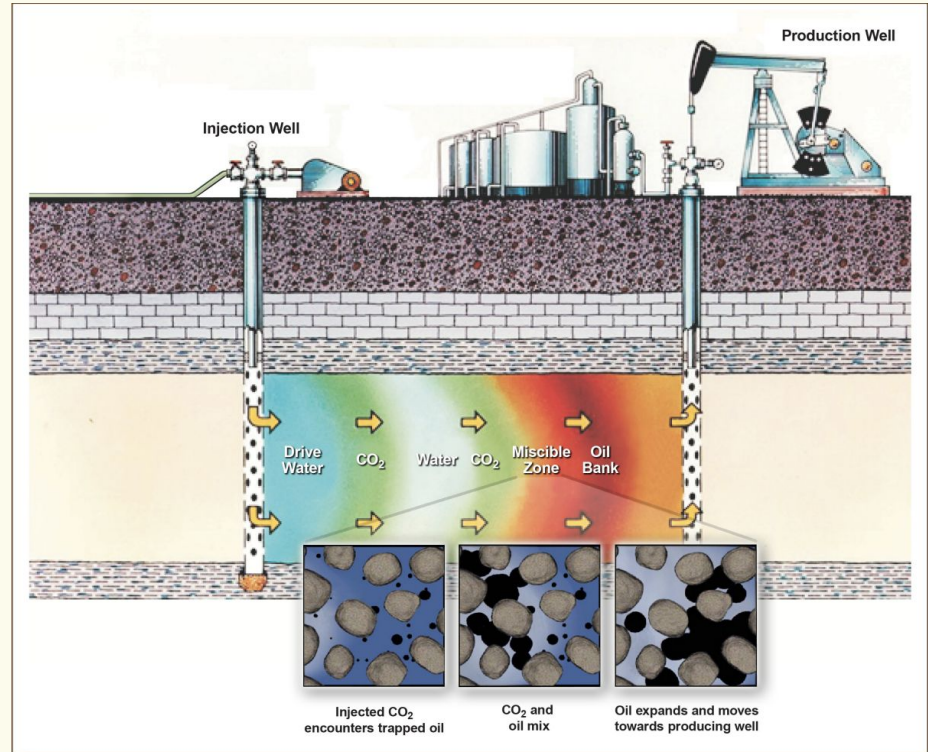
CO₂ Pipelines: Why We Should Be Concerned

1. CO₂ Pipelines are not a climate solution, they are a climate problem.

What is Enhanced Oil Recovery – or EOR?

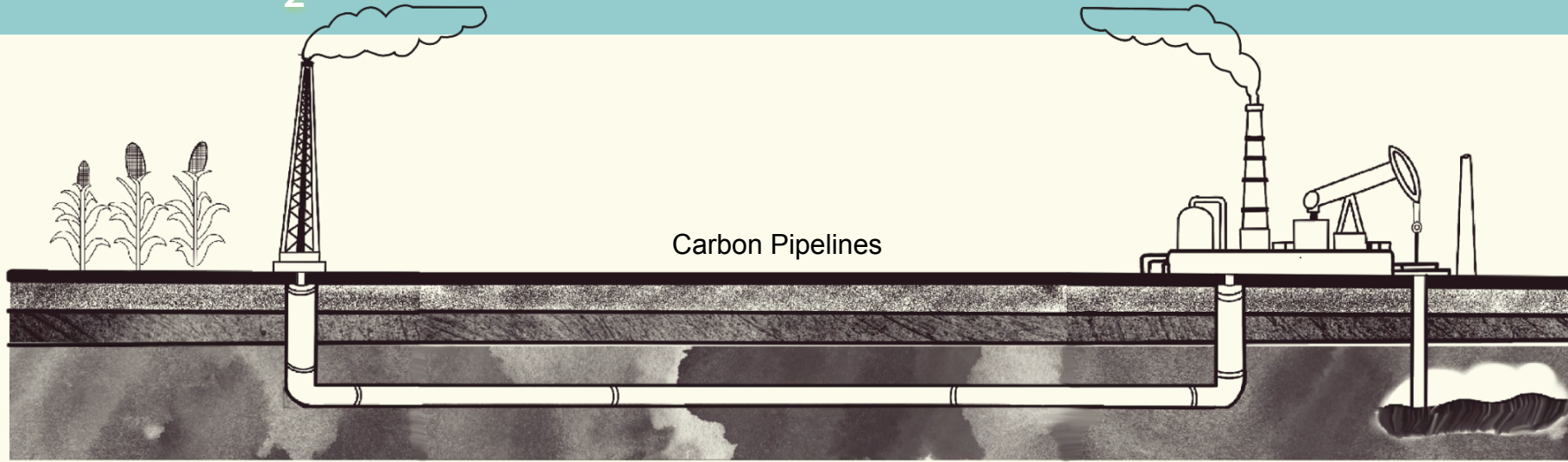
National Petroleum Council:

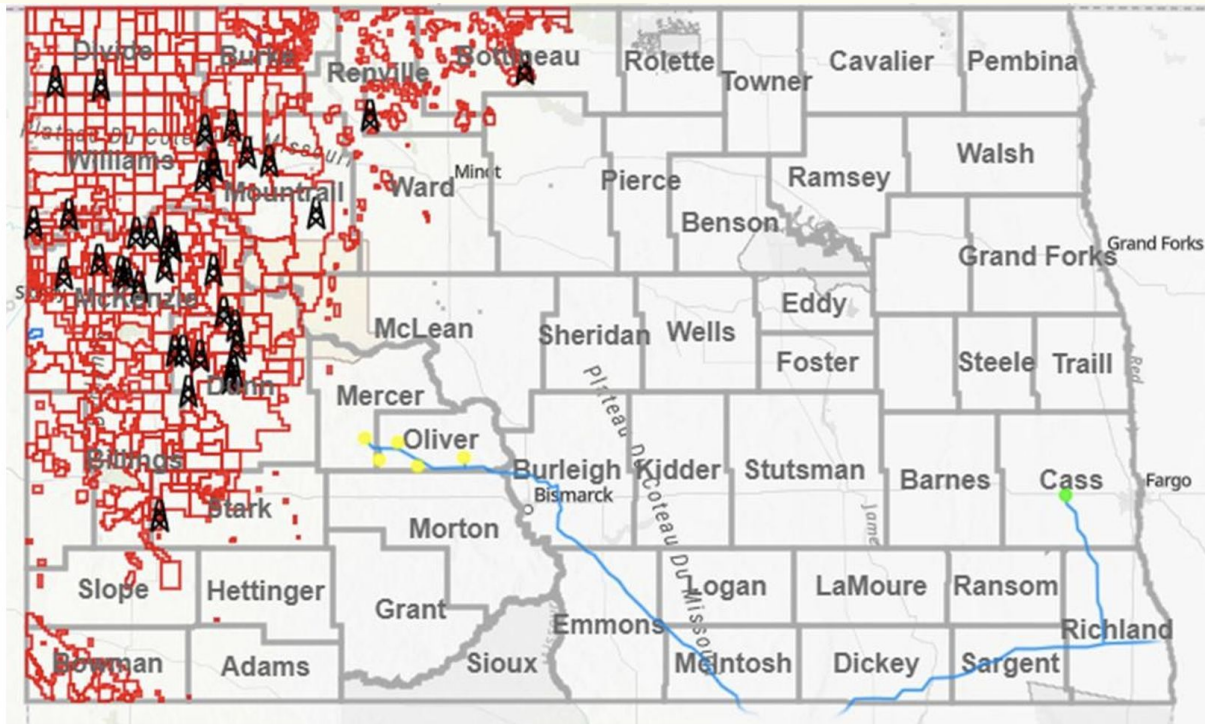
“injection of CO₂ into the reservoir rock of an existing oil field to recover more oil and natural gas **than would otherwise have been produced.**”



NETL, *Carbon Dioxide Enhanced Oil Recovery*, 2010

CO₂ Pipelines in Minnesota: Ethanol to EOR





Proposed pipeline route: 

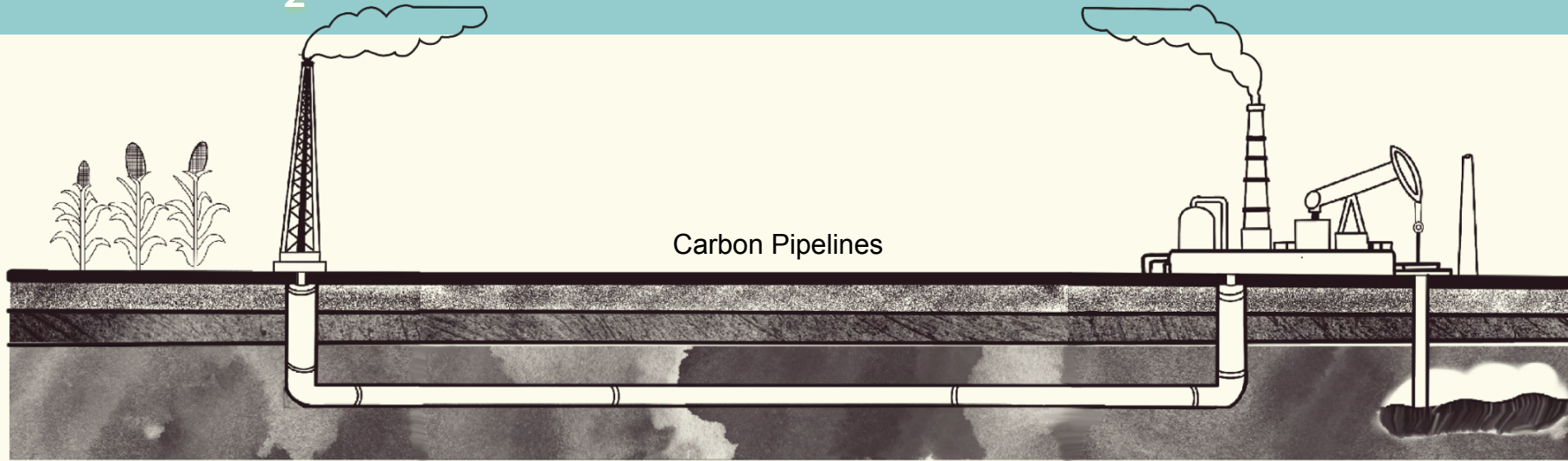
Sequestration area: 

Ethanol plant: 

Oil, gas field: 



CO₂ Pipelines in Minnesota: Ethanol to EOR



Policies Supporting This Business Model

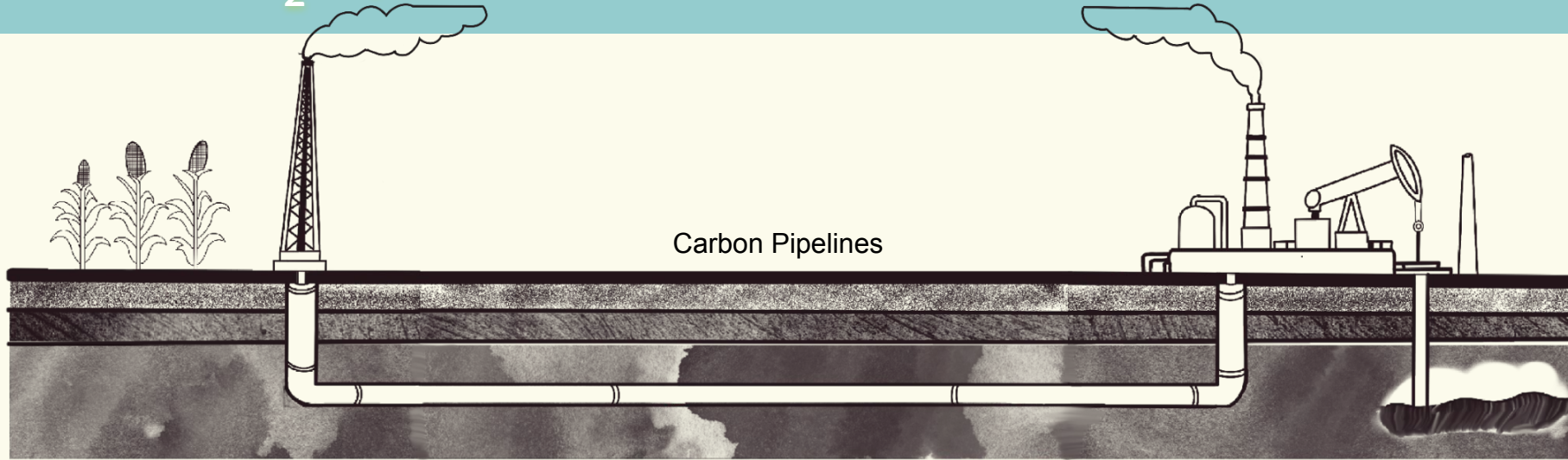
Federal Level: 45Q Tax Credit

Section 45Q provides tax credits for capture and storage of CO₂ that would otherwise be emitted.

State Level: LCFS

Low carbon fuels standards assign transportation fuels a CI (Carbon Intensity) score: higher CI-scored fuels accrue deficits which pay for credits for lower-CI scored fuels.

CO₂ Pipelines in Minnesota: Ethanol to EOR



coal

The more ethanol you burn, the more you earn.

natural gas

U.S. Dept. of Energy is Looking for Places to Store Carbon

*Projects to Stash Carbon Dioxide
Underground Get a Boost*

Biden administration invests in carbon capture, upping pressure on industry to show results

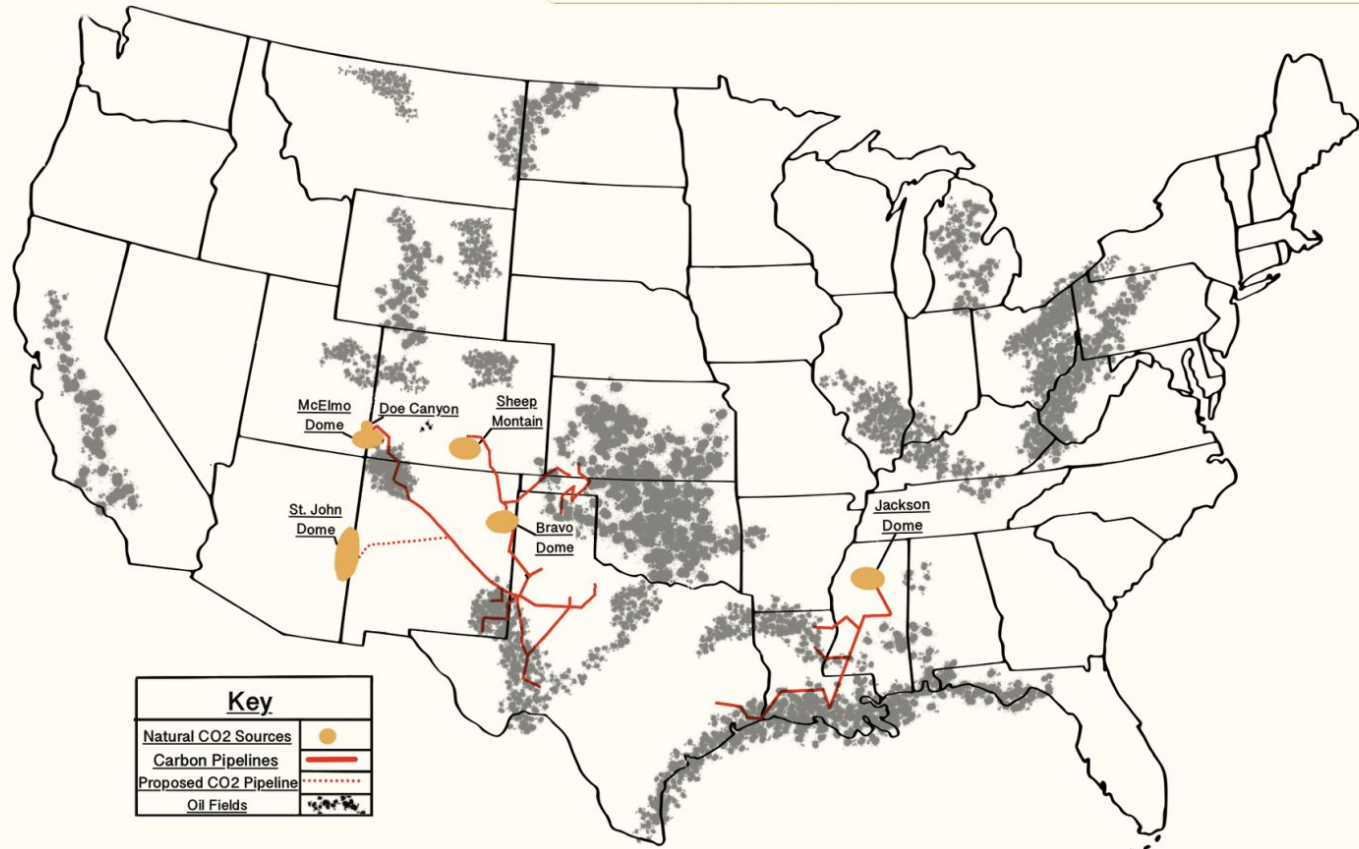
The U.S. has a controversial plan to store carbon dioxide under the nation's forests





U.S. Dept. of Energy is Looking for Places to Store Carbon

Biden administration directs \$1.2B to carbon capture projects in Louisiana, Texas

Biden Harris Administration Invests \$251 Million to Expand Infrastructure to Support CO2 Transport and Storage

Biden Administration Invests Over \$444 Million in Carbon Storage Infrastructure



Key	
Natural CO2 Sources	
Carbon Pipelines	
Proposed CO2 Pipeline	
Oil Fields	

CARBON PIPELINE NETWORKS DELIVER THE CO₂ FROM THE
NATURAL RESERVOIRS TO THE OIL FIELDS

Extending the Life of Fossil Fuels

“We believe that our direct capture technology is going to be the technology that helps to preserve our industry over time... This gives our industry a license to continue to operate for the 60, 70, 80 years that I think it’s going to be very much needed.”

- Vikki Holub, CEO of Occidental Petroleum

Direct Air Carbon Removal v. Carbon Capture at the Source

CARBON REMOVAL



"SUCKS" EXISTING CO₂
FROM AIR RATHER THAN
PREVENTING AT THE SOURCE

CARBON CAPTURE



"SCRUBS" CO₂ FROM A
POINT SOURCE LIKE
A POWER PLANT

NICOLE KELNER

“Net Zero Oil”



“There's no reason not to produce oil and gas forever.”



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CLIMATE

Oil company plans to have machines suck carbon from the sky — as it still makes oil

September 5, 2023 · 5:21 PM ET
Heard on All Things Considered

 Camila Domonoske

The American oil company Occidental Petroleum is building machines to suck carbon dioxide from the atmosphere and inject it underground. Is the technology meant to save the planet or the oil industry?

“Cancer Alley”
Louisiana



Fossil fuel and petrochemical plants line the area known as 'Cancer Alley,' near Baton Rouge, Louisiana, October 15, 2013.

© 2013 Giles Clarke/Getty Images

EOR Continues Current Harmful Systems

Air Pollution from Fossil Fuels

Harvard University and University College London researchers:

Fine particulate matter from burning fossil fuels is responsible for millions of deaths worldwide.

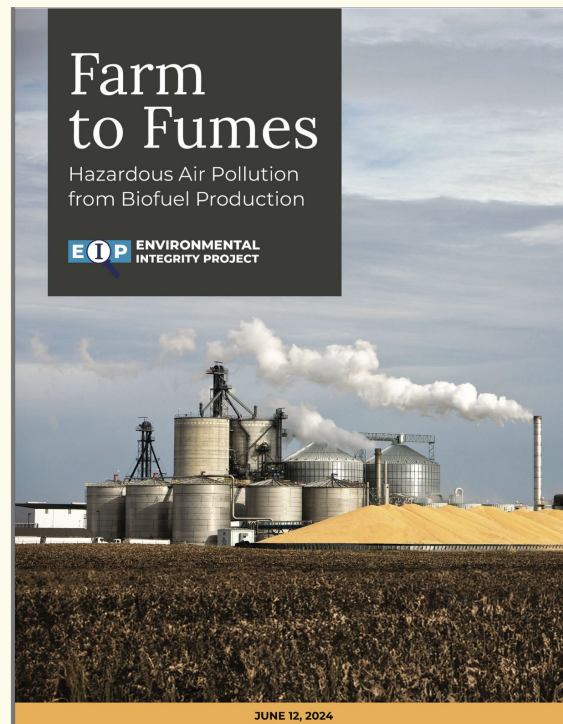
- **2018:** 1 in 5 deaths overall (8.7 million premature deaths) linked to PM2.5 pollution

EOR Continues Current Harmful Systems

Air Pollution from Biofuels in rural communities

Biofuel manufacturing plants release almost as much hazardous air pollution as oil refineries – and more of 4 dangerous pollutants:

- *Formaldehyde*
- *Acetaldehyde*
- *Hexane*
- *Acrolein*



What Does the IPCC Say About Carbon Capture?

“The Emissions reduction pathway with the best chance of keeping warming at or below 1.5 degree C makes limited to no use of engineered carbon capture technologies.

This pathway involves a rapid phaseout of fossil fuels along with limited carbon removal by natural sources such as reforestation and enhanced soil carbon uptake.”

13 out of 15 Carbon Capture Facilities were used for Enhanced Oil Recovery as of December 2023.

Name of Facility	Date CCS Operations Began	Location	Type of Production	CO ₂ Used for Enhanced Oil Recovery?	CO ₂ Capture Capacity (Millions of metric tons per year)
Terrell	1972	Texas	Natural Gas Processing	Yes	0.5
Enid Fertilizer	1982	Oklahoma	Ammonia (Fertilizer)	Yes	0.2
Shute Creek	1986	Wyoming	Natural Gas Processing	Yes	7.0
Great Plains	2000	North Dakota	Hydrogen and Ammonia (Fertilizer) ^a	Yes	3.0
Core Energy	2003	Michigan	Natural Gas Processing	Yes	0.4
Arkalon	2009	Kansas	Ethanol	Yes	0.5
Century Plant	2010	Texas	Natural Gas Processing	Yes	5.0
Bonanza BioEnergy	2012	Kansas	Ethanol	Yes	0.1
Air Products	2013	Texas	Hydrogen	Yes	0.9
Coffeyville	2013	Kansas	Hydrogen and Ammonia (Fertilizer) ^a	Yes	0.9
Lost Cabin	2013	Wyoming	Natural Gas Processing	Yes	0.9
PCS Nitrogen	2013	Louisiana	Ammonia (Fertilizer)	Yes	0.3
Petra Nova	2017 ^b	Texas	Electric Power	Yes	1.4
Illinois Industrial	2017	Illinois	Ethanol	No	1.0
Red Trail Energy	2022	North Dakota	Ethanol	No	0.2

CO₂ Pipelines: Why We Should Be Concerned

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2. Pipelines are dangerous.

CO₂ Pipeline Infrastructure

- **CO₂ is transformed into a “dense phase” state**
 - CO₂ (gas): distilled, compressed, chilled, supercritical or subcritical state (liquid-like matter)
 - It takes more energy to capture the CO₂ than it does to make the ethanol
- **Pipelines highly pressurized**
 - Natural gas: 200 to 1,400 psi
 - CO₂: 1,200 to 2,800 psi
 - Need compressors to transform carbon from gas to liquid and to pressurize the lines to transport
- **Pipeline material specifications**
 - Need insulation and/or a special coating on the inside and exterior of the pipe to reduce corrosion
 - Due to the increased pressure the walls will be thicker than standard fossil fuel pipelines
 - Segments must be shorter and welded together – how does that impact pipeline integrity?

What Are The Risks Of CO₂ Pipelines?

Building Pipelines

- Uses Lots of Groundwater
- Disturbs and Degrades All Water Sources and Ecosystems
 - Wells
 - Aquifers
 - Streams and Rivers
 - Surface Waters
 - Wetlands



What Are The Risks Of CO₂ Pipelines?

Operating Pipelines

- Rupture and leaks create long-term damage to ecosystem
- Leaks damage human and ecosystem health



What are the Risks of CO₂ Pipelines?

- **Risks to Human Health**

- Odorless, colorless and highly pressurized
- Asphyxiant
- OSHA classifies carbon dioxide as a hazardous chemical because of what it does to humans.
- Additives in the process are known to cause cancer



- 2013, United Kingdom



www.dnvgl.com/spadeadam

Dense Phase CO2

- 2013, United Kingdom

www.dnvgl.com/spadeadam
Dense Phase CO₂



- 2013, United Kingdom

www.drivingwithaspadeadam.com
Dense Phase CO₂



- 2013, United Kingdom

www.dnvgl.com/spadeadam



Pipeline Explosion: Sartartia, Mississippi - 2020

When (NOT IF) CO₂ pipelines explode, they release colorless and odorless gas for miles into surrounding communities.

Sartartia, Mississippi Carbon Pipeline Explosion: On Feb. 22, 2020, residents near a pipeline rupture witnessed a sudden white cloud burst into the sky before disappearing. Several minutes later, the gas reached residents and people began spontaneously collapsing from the mass poisoning.

- at least 45 people were hospitalized
- In following months town's residents reported mental fogginess, lung dysfunction, chronic fatigue and stomach disorders



<https://www.desmoinesregister.com/>

Pipeline Explosion: Sulphur, Louisiana - 2024

There are now about 5,300 miles of CO₂ pipelines in the U.S., but in the next few decades, that number could grow to more than 65,000 miles.

Sulphur, Louisiana CO₂ Pipeline Explosion: On April 3rd, 2024 a mere two foot wide rupture in an Exxon pipeline released 107,000 gallons of dense gas into the atmosphere, which soon travelled to the nearby rural community.

- “The pump station and pipeline aren’t equipped with alarms or other methods of alerting the nearby residents when leaks or other accidents occur.”
- CO₂ Concentrations between 2-10%: nausea, dizziness, headache, mental confusion, vomiting, increased blood pressure and respiratory rate.
- CO₂ Concentrations above 10%: suffocation and death.



Under-Regulated CO₂ Pipelines



Pipeline Safety Trust report -
<https://pstrust.org/carbon-dioxide-pipelines-dangerous-and-under-regulated/>

- Regulatory uncertainty and gaps at federal and state levels
- Safety and financial risks, unknown liabilities - lack of research and data to support effective regulation
- White House CEQ: “[N]o Federal entity is responsible for siting interstate CO₂ pipelines across Federal and non-Federal lands. **States establish the regulatory frameworks within their state boundaries, which include responsibility for siting and permitting intrastate pipelines as well as segments of interstate hazardous liquids pipelines within the state boundary.**”

CO₂ Pipelines: Why We Should Be Concerned

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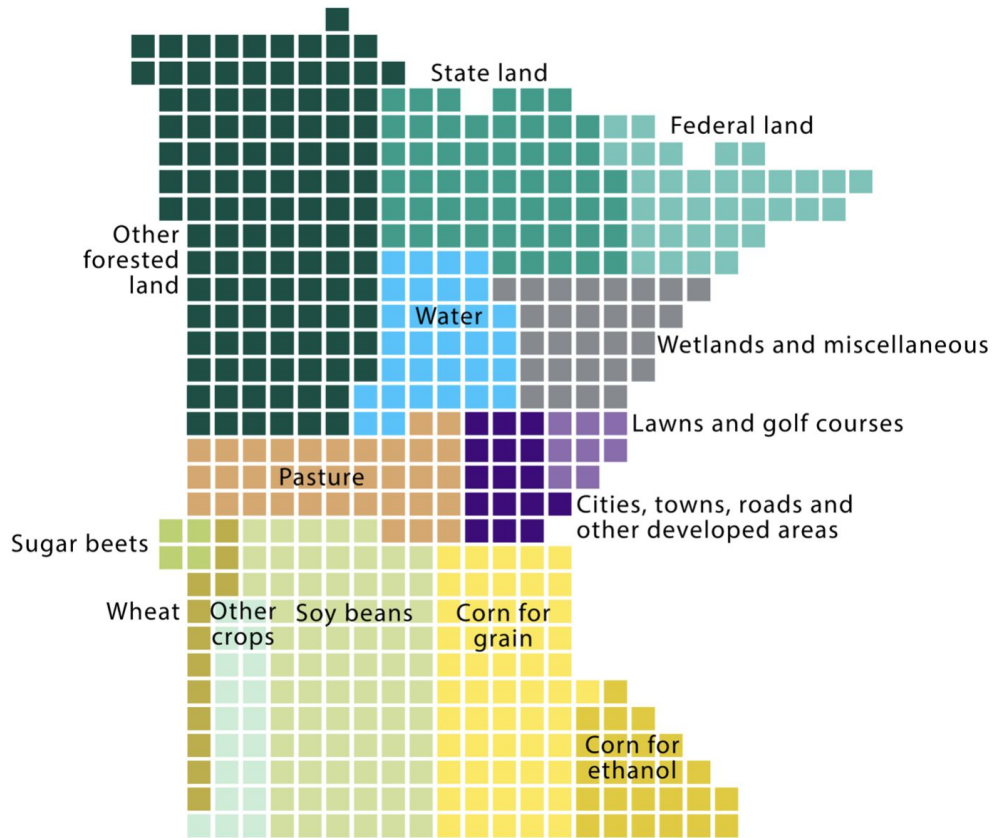
2021: 8.5 million
acres in corn

- 15% of MN's total surface area
- 31% of those acres devoted to ethanol
- = 5% of MN's total surface area



How Minnesota's land is used

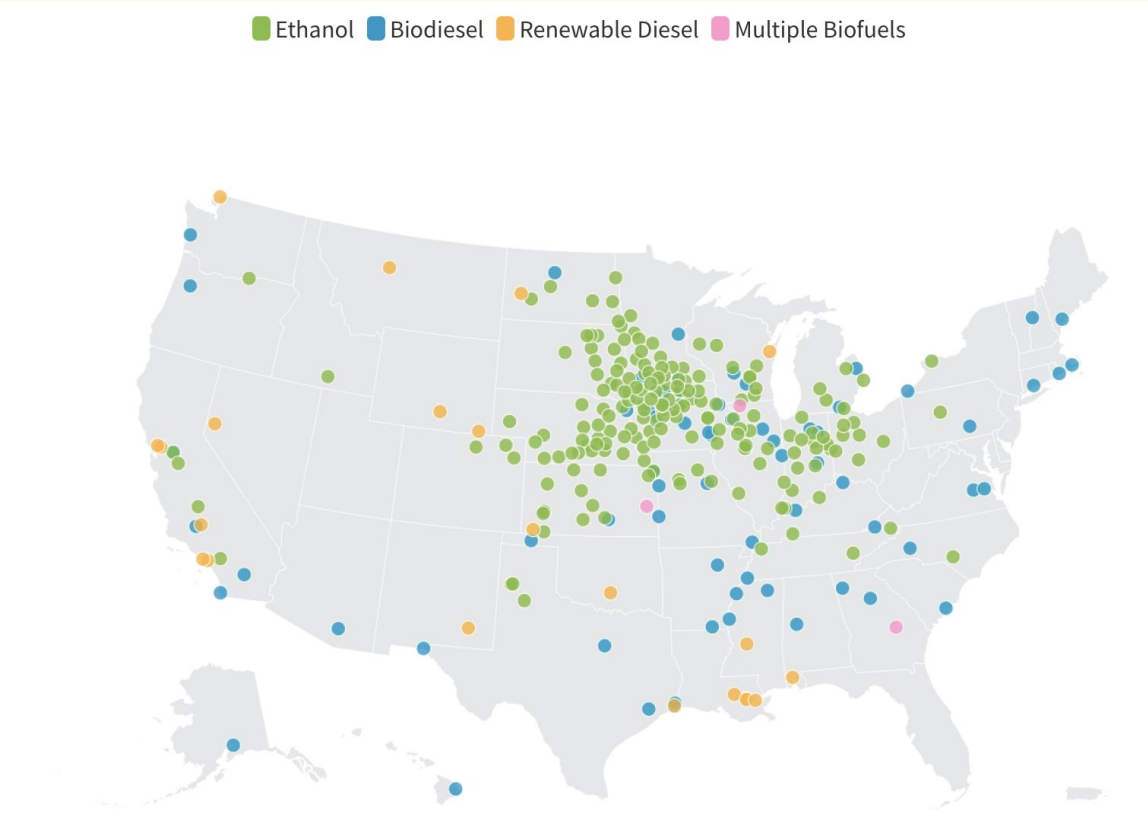
Estimated proportions of Minnesota surface area, by land cover and use



Sources: USDA, MN DNR, University of Minnesota, Milesi et al. (2005)

Minnesota Reformer

Existing Biofuel Facilities



Interactive map from the
**Environmental
Integrity Project**

Navigator cancels “Heartland Greenway” CO₂ Pipeline

Kim Junker, Butler County, Iowa Farmer, impacted by the Navigator pipeline, said:

“It’s very rare for people of so many different backgrounds and beliefs to stand together against something. We did and we son. It was clear from the start that despite their billions of dollars the power of everyday people would overcome these pipeline scams.

But the fight isn’t over, we need to remain vigilant and pass laws to make sure no other private corporation can threaten our land our legacy again.”

From:

Landowners Rejoice as Navigator CO2 Cancels Midwest Carbon Pipeline Project that Sought Eminent Domain, press release | Friday, October 20, 2023



Navigator's CO₂ Pipeline “Heartland Greenway” Shelved

Jess Mazour, Conservation Program Coordinator of Sierra Club Iowa Chapter

“Unlike many other issues, this was never a case of right vs. left. It was right vs. wrong. The people united to resist Navigator at every level in every corner of every state and we won.”

Action Steps

1. Sign up on CURE's Carbon Pipeline Action List
2. CURE/MNIPL are happy to host a webinar for your organization on the threat of CO₂ pipeline buildout
3. Consider taking an organizational position about your concerns regarding CO₂ pipelines and EOR
4. Make a comment
5. Call the governor and your state legislators
6. Write a letter to the editor

Co-Authors on the Carbon Pipeline Ban Bill

If your legislator was a co-author on the CO₂ pipeline ban bill, thank them for their action!

→ HF5485 and SF5060: Routing permits for pipelines that carry carbon dioxide issuance prohibition.

House Authors: Hassan (62B), Agbaje (59B), Jordan (60A), Noor (60B), Feist (39B), Hussein (65A), Lee, K. (67A), Reyer (52A), Acomb (45B), Coulter (51B), Curran (36B), Edelson (50A), Carroll (42A), Hornstein (61A), Rehm (48B), Hansen, R. (53B), Xiong (67B), Clardy (53A), Cha (47B), Finke (66A), Hemmingsen-Jaeger (47A), Fischer (44A), Frazier (43A)

Senate Authors: Marty (40) and McEwen (08)

THANK YOU!



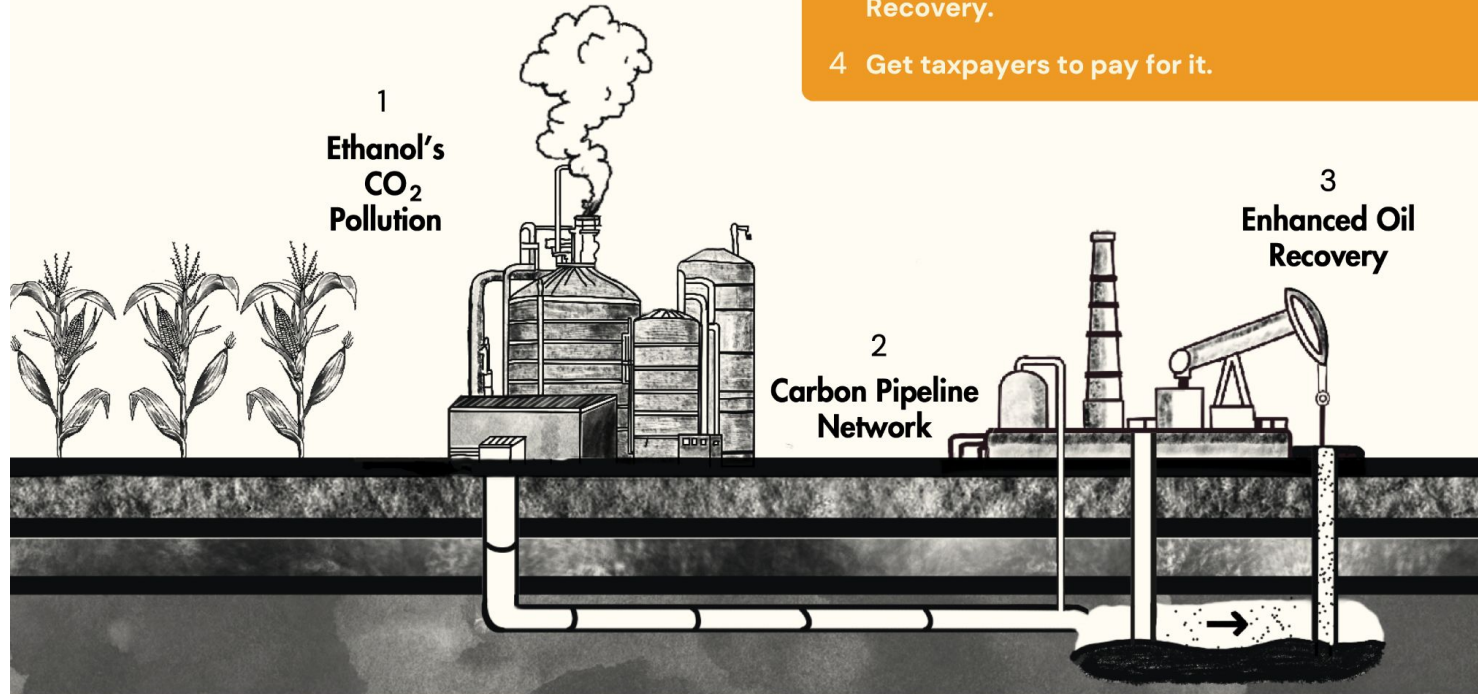
Please make a
gift to MNIPPL
today!



Fossil Fuel's Quiet Business Model

THE MORE YOU BURN THE MORE YOU EARN

- 1 Capture CO₂ from ethanol production.
- 2 Build a network of pipelines through the midwest to ferry the CO₂ through the ground.
- 3 Don't tell people you will inevitably inject that CO₂ into low-producing oil wells to push out more oil -- something called Enhanced Oil Recovery.
- 4 Get taxpayers to pay for it.



News from KFYRTV North Dakota

kfyrtv.com/2023/08/16/north-dakota-department-mineral-resources-warns-more-co2-needed-sustain-oil-production-long-term/

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North Dakota Department of Mineral Resources warns more CO2 needed to sustain oil production long-term



Click Play Here:

<https://www.kfyrtv.com/2023/08/16/north-dakota-department-mineral-resources-warns-more-co2-needed-sustain-oil-production-long-term/>

By [Michael Anthony](#)

Published: Aug. 16, 2023 at 10:20 AM CDT



BISMARCK, N.D. (KUMV) - State Department of Mineral Resources Director Lynn Helms said more carbon dioxide will be needed in order to sustain oil production for the long term. This comes following the Public Service Commission's decision to deny a permit for the Summit Carbon Solutions CO2 Pipeline.



What are our goals?

Achieve climate restoration in ways that creates a thriving planet for people and the entire web of diverse life that calls this place home.

Improve the lives of people – from the city to rural communities – no place is a sacrifice zone.

Help farmers achieve a just transition that is good for their families, their bottom line, their water, their air, their land, and their legacy.

What the Industry Says About Ethanol?

NEWS

RFA: ETHANOL SHOULD BE FRONT AND CENTER AT COP26

November 1, 2021 By Kellan Heavican Filed Under: Ag Policy, Ag Regulations, Ag transportation, Agriculture, Biofuels, Climate, Climate Change, Ethanol, News



The head of the Renewable Fuels Association (RFA) says biofuels are an immediate

Ethanol: Today's Carbon Solution

Our Pledge

Producer members of the leading trade association for America's ethanol industry have agreed upon an ambitious pathway that matches the scale of the climate problem. The objective: [Net Zero Emissions by 2050](#).

Today's At-Scale Transformative Climate Action

The use of ethanol and other biofuels under the federal Renewable Fuel Standard has reduced U.S. transportation sector GHG emissions by [980 million MT](#) since 2008. In 2021, ethanol use reduced GHG emissions by 54.5 million MT, equivalent to taking 12 million cars off the road for an entire year.

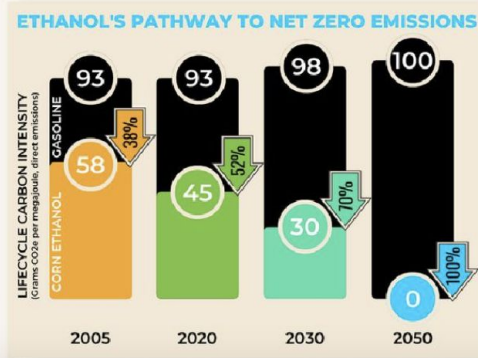
The U.S. Congress reiterated its support for low carbon renewable fuels with the 2022 passage of the Inflation Reduction Act, which includes provisions funding clean fuel production, higher biofuel blend infrastructure, and enhanced opportunities for ethanol to play a greater role in sustainable aviation fuel (SAF) and carbon capture, utilization and storage (CCUS).

In 2021, the U.S. Department of Agriculture identified ethanol as a "climate-smart" commodity and implemented the Higher Blends Infrastructure Incentive Program to build out access with new or retrofitted pumps, dispensers, and storage tanks.

Ethanol is the leading source of carbon reductions for Low Carbon Fuel Standards, cutting cumulative GHG emissions in [California by 27 million MT](#) (2011-2020) and by [2.7 million MT in Oregon](#) (2016-2020), or half of total reductions. And, Washington has forecast that ethanol will lead credit generation under the state's new Clean Fuel Standard.

Environmental justice is our cornerstone: Ethanol helps the world breathe easier by [cutting harmful tailpipe pollutants](#); it boosts the rural economy with [value-added agriculture](#) and [good-paying jobs](#); and offers access to low-cost, clean fuel choices.

Mobilizing Our Pledge into Demonstrated Progress



Today's ethanol already reduces GHG emissions [by 52%](#), on average, when compared directly to gasoline.

By 2030, ethanol would reduce GHG emissions by [70%](#), on average, vs. gasoline.

By 2050, ethanol would achieve [net carbon neutrality](#).

Connection to EOR

The emissions impact from burning oil produced with CO₂ + EOR is currently excluded from lifecycle analyses touting the technology.

What is EOR?

“Currently, most CO₂-EOR is done with natural underground reservoirs of CO₂, yet the industry’s future growth depends on taking advantage of the large amounts of CO₂ that result from electricity generation and industrial processes.”

- National Enhanced Oil Recovery Initiative (now the Carbon Capture Coalition)