



Carbon Capture + Sequestration

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Air & Waste Management Association Fall Joint Conference

Meet the Panelists



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Director of Geological
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Troy Cumings

Partner at Warner
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Rob Gerhard

Founder and CEO at
Riverside Energy

Introduction

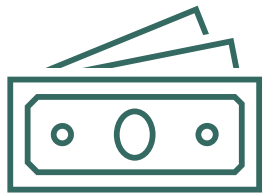


What is Carbon Capture and Sequestration (CCS) and how does it work?



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Economic Incentives



What tax credits, grants and other carbon credits are driving the CCS market?



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Current Market + Regulatory Environment



Project Development



Provide some background on projects that Riverside Energy has worked on in Michigan.



Why Michigan?



Geographical characteristics that make it possible.

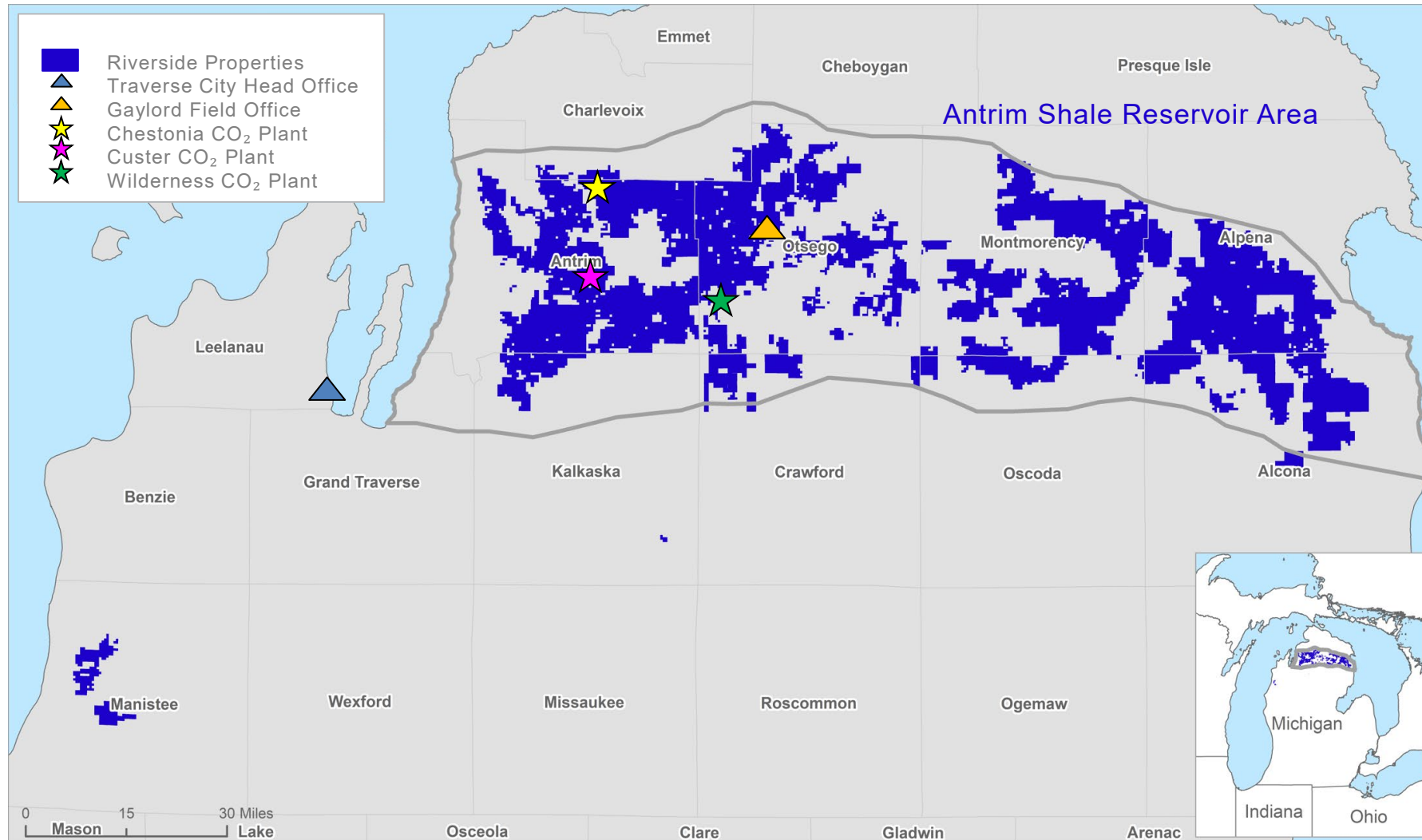


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Riverside's Natural Gas Operations in the Antrim Shale



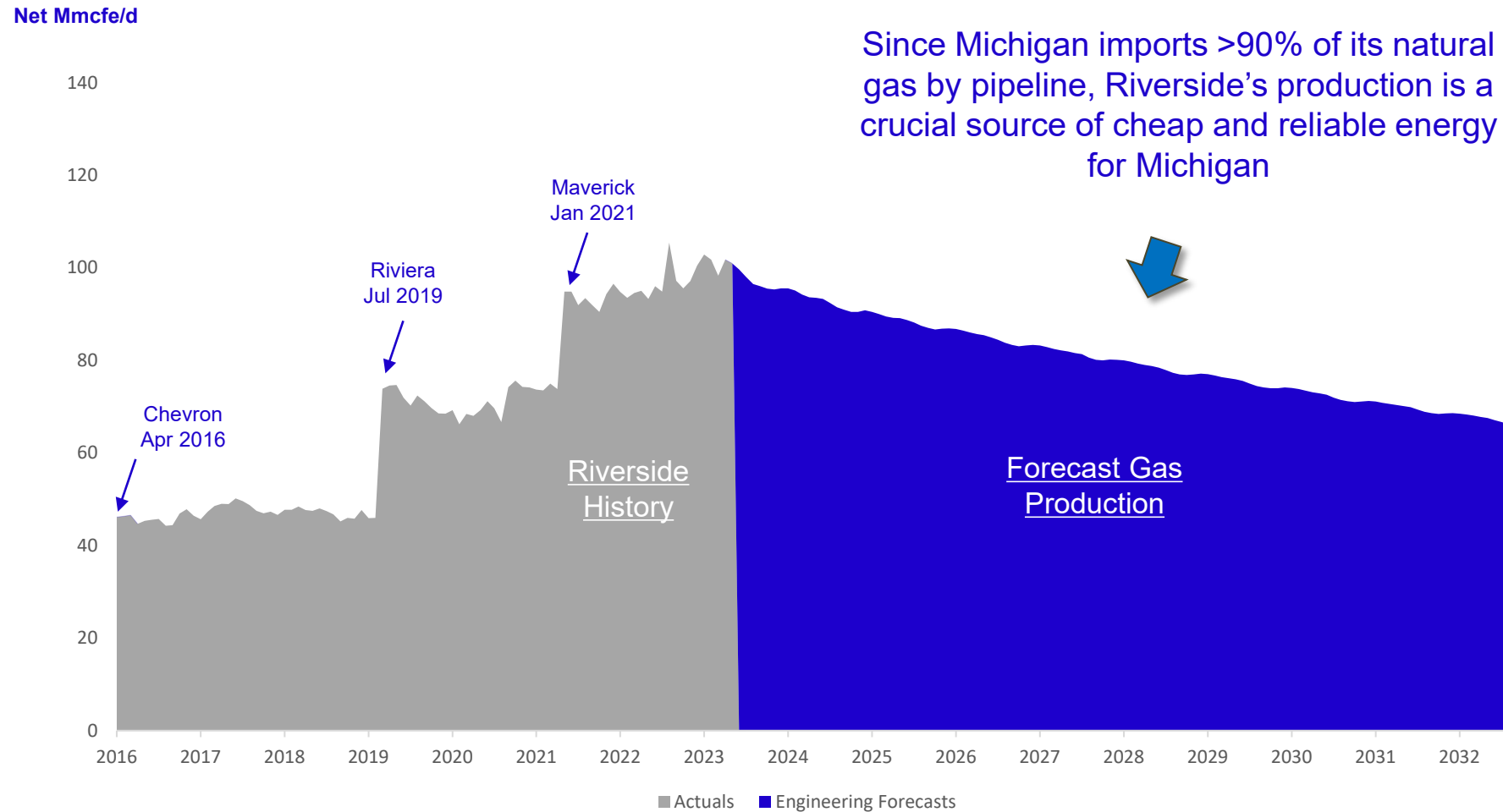
Riverside operates over 5,100 natural gas wells on over 600,000 acres of pristine Northern Michigan land



Michigan's Long Life Gas Endowment



Riverside's natural gas assets are a key source of long-term energy supply to Michigan

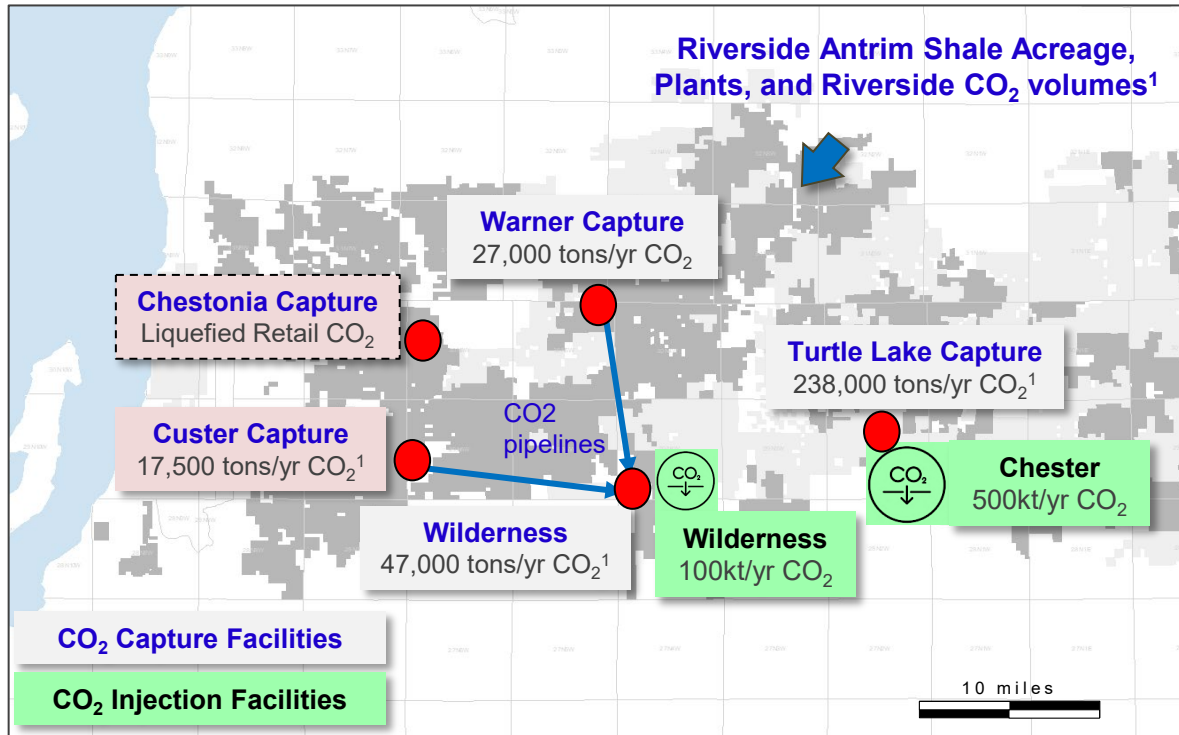


Riverside CO₂ Capture and Sequestration



Riverside owns 65% of the total 515,000 tons CO₂ per year produced in the Antrim Shale

CO₂ is injected into Niagaran limestone reservoirs



On track for 100% geological storage by Q1 2025 – EOR at Wilderness EOR and CO₂ sequestration at Chester

Note: 1. Riverside owned CO₂ volumes in 2024
2. Gas processing plants owned by Riverside

Site Selection



How do you assess potential sites?



Where in Michigan are you currently targeting for CCS development?



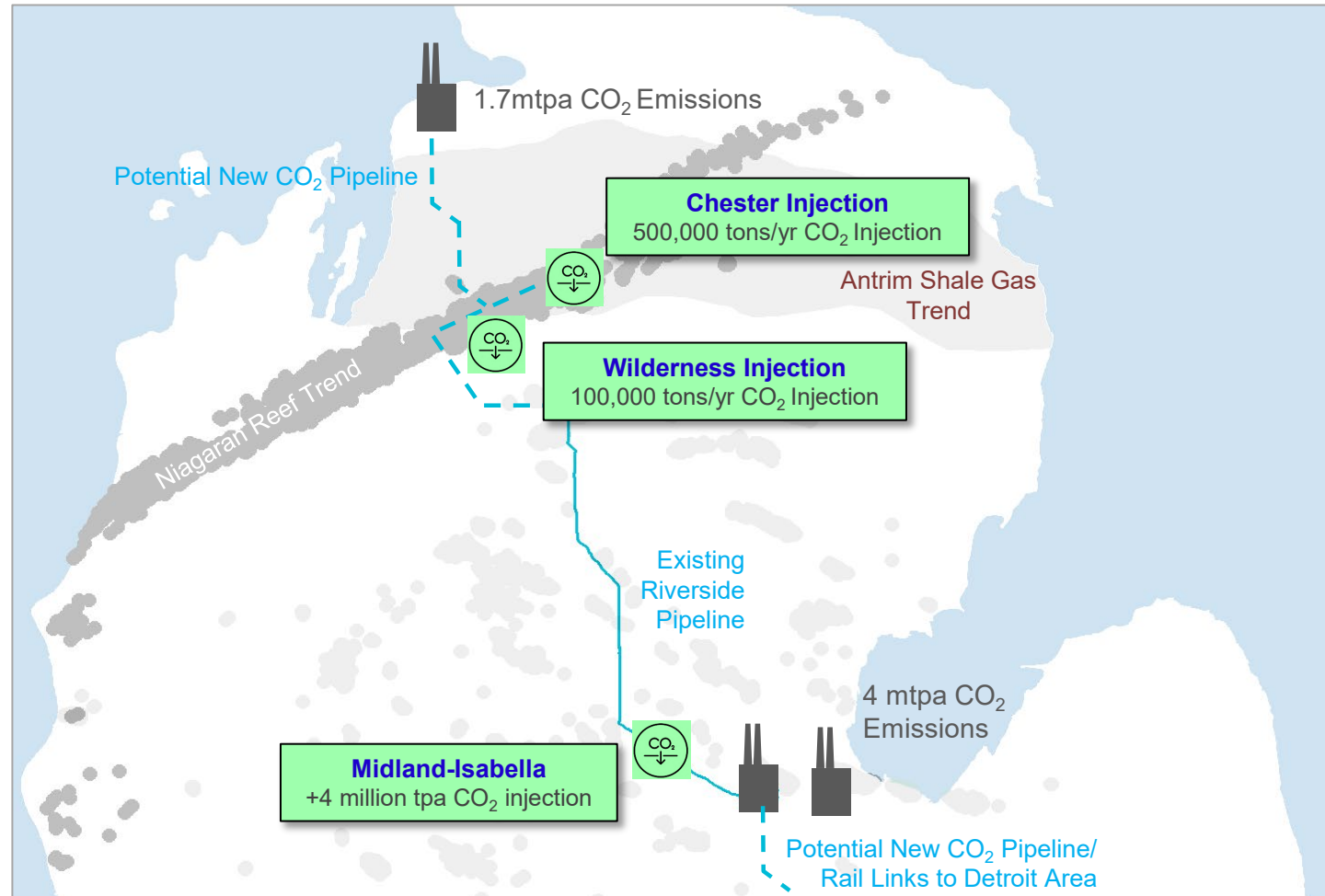
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Developing a Carbon-Free Zone in Michigan



Working with large industrial emitters for transport and storage of their CO₂ and to develop a “Carbon Free” zone in Northern Michigan

Prospective Northern Michigan “Carbon Fee Zone”



State Policies



What are the current state policies in Michigan that regulate CCS?



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Other Legal Considerations



Other than state policy, what other legal considerations are currently impacting CCS, particularly in regard to:

Real property law.

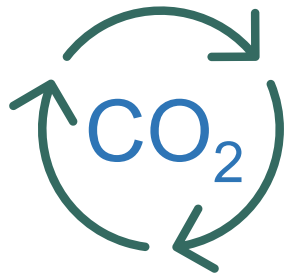
Permitting.

Environmental liability.



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Current Regulatory/Legal Environment



How does the current regulatory and legal environment affect your decision-making process for developing CCS projects in Michigan?



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Class II CO₂ EOR/EGR

Class II injection permit
Michigan - EGLE
3 to 6 month lead time

CO₂ injection into mature oil or gas reservoirs. Some of the injected CO₂ will recycle back out with oil and gas production but will be reinjected back into the reservoir indefinitely, storing it long term

Class VI CO₂ Sequestration

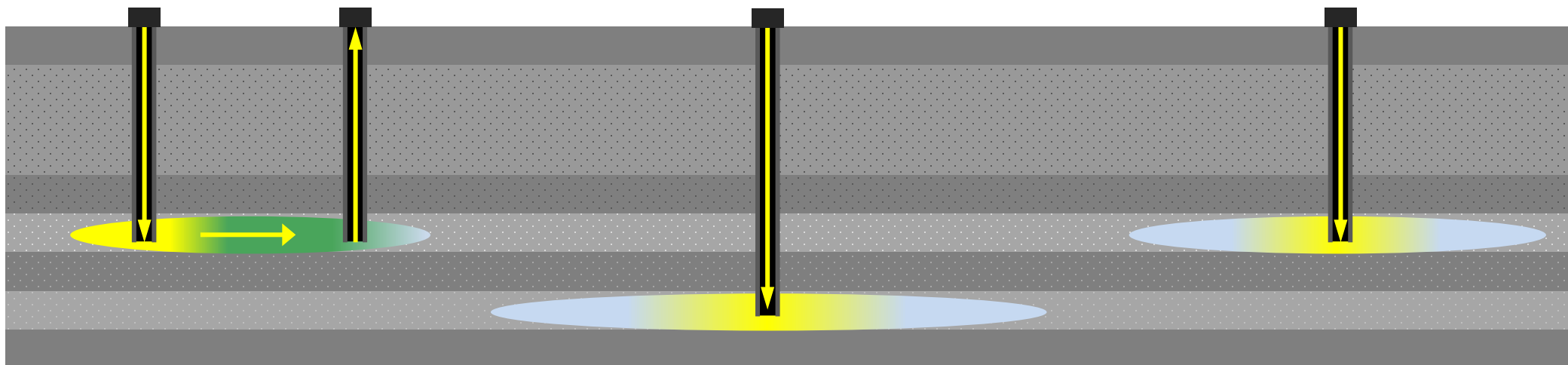
Class VI injection permit
Federal - EPA
3 to 5 year lead time

CO₂ injection into deep geologic formations bearing no oil or gas, but only brine water, with the aim to permanently dispose of CO₂ for 10,000+ years

Class II CO₂ Sequestration

Class II injection permit
Michigan - EGLE
6 to 9 month lead time
+
Federal EPA MRV

CO₂ waste from natural gas operations can be sequestered permanently - well known storage reservoir like Niagaran Reefs



New Developments



New Legislation



A new CCS bill is being proposed.



What are the main goals of that legislation, what problems does it seek to solve and how will it affect CCS development if passed?



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Implementation Challenges



What specific challenges does your department face in implementing the new CCS bill and other CCS initiatives in Michigan?



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Impact on CCS Development



If the new CCS bill is passed, what impact will it have on CCS development in Michigan?



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Future of CCS in Michigan



Risks and Challenges

1

What specific risks and challenges does your company encounter in developing CCS projects in Michigan?

2

How do you mitigate them?



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Liability Concerns

1 What are the key legal liabilities that companies developing CCS projects in Michigan might face?

2 What about landowners?



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Cross-sector Collaboration



What are some effective ways the regulatory and private sectors in Michigan can collaborate to enhance CCS efforts?



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Opportunities for Growth

1 What opportunities do you see for expanding CCS projects in Michigan?

2 How do you plan to capitalize on them?



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Several advanced emitter relationships in Michigan

- **MCV** exclusivity – **4 mtpa** CO2 emissions, ~ 15% to Corteva. DOE CarbonSafe to test/develop storage reservoir
- **Northstar** joint CarbonSafe application to test St Peter – **1.5 mtpa** CO2 from biomass
- **Waste Management** 1st landfill development
- **Cement** plant – **1.3 mtpa** CO2



- ✓ Michigan new energy law – all gas Gx must have CCS by 2035/40
- ✓ Michigan ripe for new industrial development projects – H2 hub, methanol
- ✓ Further CCS business opportunities near Riverside operations in SW Indiana and the Texas panhandle

Project Selections for FOA 2711: Carbon Storage Validation and Testing (Round 3)

Office of Fossil Energy and Carbon Management

Office of Fossil Energy and Carbon Management
Project Selections for FOA 2711: Carbon Storage Validation and Testing (Round 3)

Michigan Intrastate Technical Team (Project MITT) – **Riverside Carbon Solutions** (Traverse City, Michigan) intends to investigate reducing carbon emissions in central Michigan through the development of a storage hub near Midland, Michigan. The project will evaluate technical, economic, and social feasibility of developing a CO₂ storage project by drilling and characterizing subsurface formations. Primary targeted storage reservoirs include the Sylvania Sandstone and the Bois Blanc Formation with potential storage in deeper formations. Preliminary static storage calculations of the target storage reservoirs indicate an estimated storage capacity of more than four million metric tons of CO₂ per square mile. Initial landowner outreach has indicated that the project's land position spans a sparsely populated rural and forested region of northwestern Midland County. Economically, it is anticipated that Project MITT will benefit the region by reducing emissions from facilities in the region, many of which are key employers and taxpayers. Further, this project will enable the achievement of existing industry net-zero goals.

DOE Funding: \$8,405,599
Non-DOE Funding: \$2,101,248
Total Value: \$10,506,847

Looking Ahead

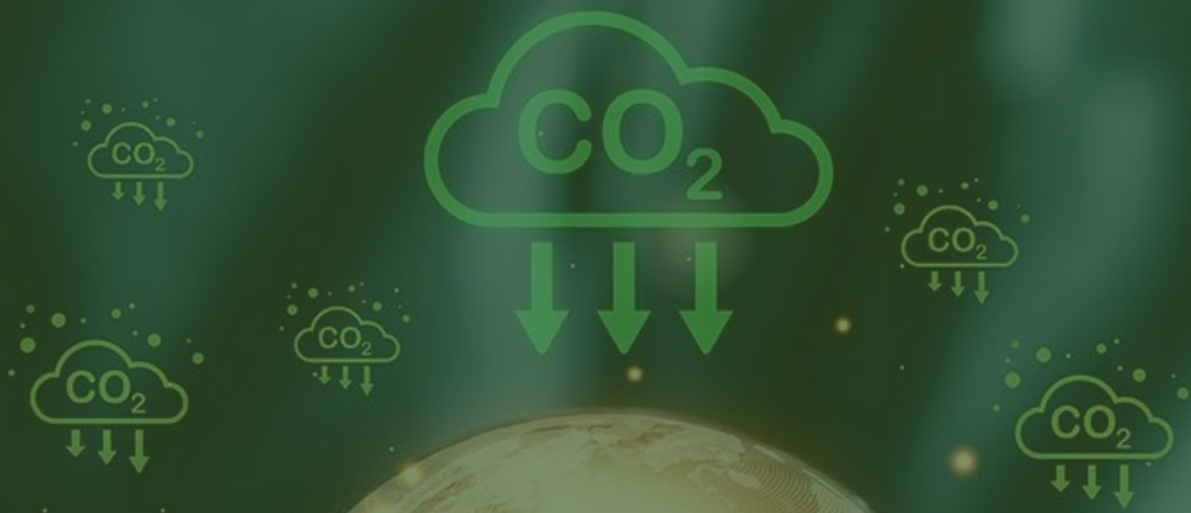


What do you believe is the most critical factor for the success of CCS in Michigan over the next decade?



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Thank you!



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