Energy & Environmental Research Center (EERC)

CARBON CAPTURE, UTILIZATION, AND STORAGE (CCUS): FACT OR FICTION?

Midwest Energy Summit

Fargo, ND

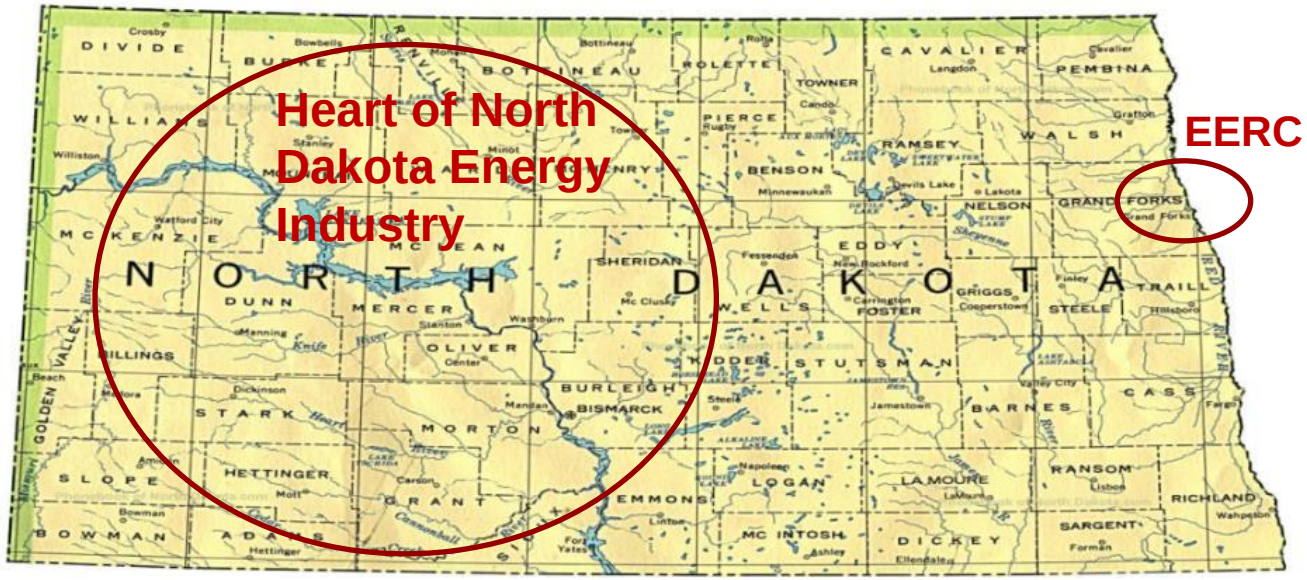
November 7, 2024

Josh Stanislowski

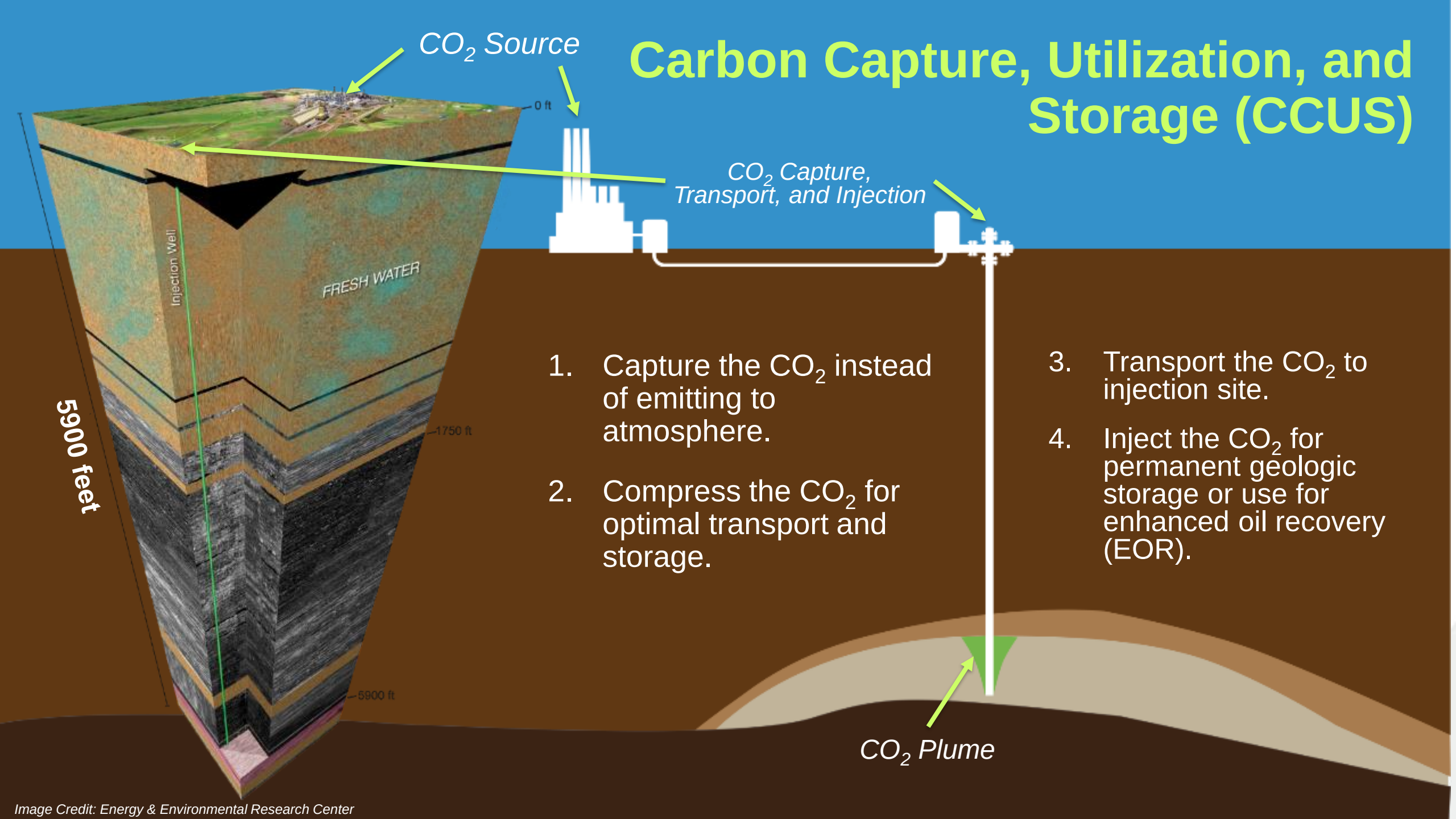
Director of Energy Systems Development

ENERGY & ENVIRONMENTAL RESEARCH CENTER (EERC)

- Nonprofit branch of the University of North Dakota.
- Over 270 employees focused on energy and environmental solutions.
- More than 254,000 square feet of state-of-the-art laboratory, demonstration, and office space.



Carbon Capture, Utilization, and Storage (CCUS)



1. Capture the CO_2 instead of emitting to atmosphere.
2. Compress the CO_2 for optimal transport and storage.
3. Transport the CO_2 to injection site.
4. Inject the CO_2 for permanent geologic storage or use for enhanced oil recovery (EOR).

Image Credit: Energy & Environmental Research Center

FACT: THE PCOR PARTNERSHIP HAS BEEN DEVELOPING CCUS TECHNOLOGIES FOR OVER 20 YEARS

2003–2005 – PCOR Partnership: Characterization

2005–2008 – PCOR Partnership: Field Validation

2007–2019 – PCOR Partnership: Commercial Demonstration

2019–2025 – PCOR Partnership Initiative: Commercial Deployment

U.S. DEPARTMENT OF ENERGY | NATIONAL ENERGY TECHNOLOGY LABORATORY

Institute of Northern Engineering
University of Alaska Fairbanks

University of Wyoming School of Energy Resources

20 YEARS PCOR Partnership

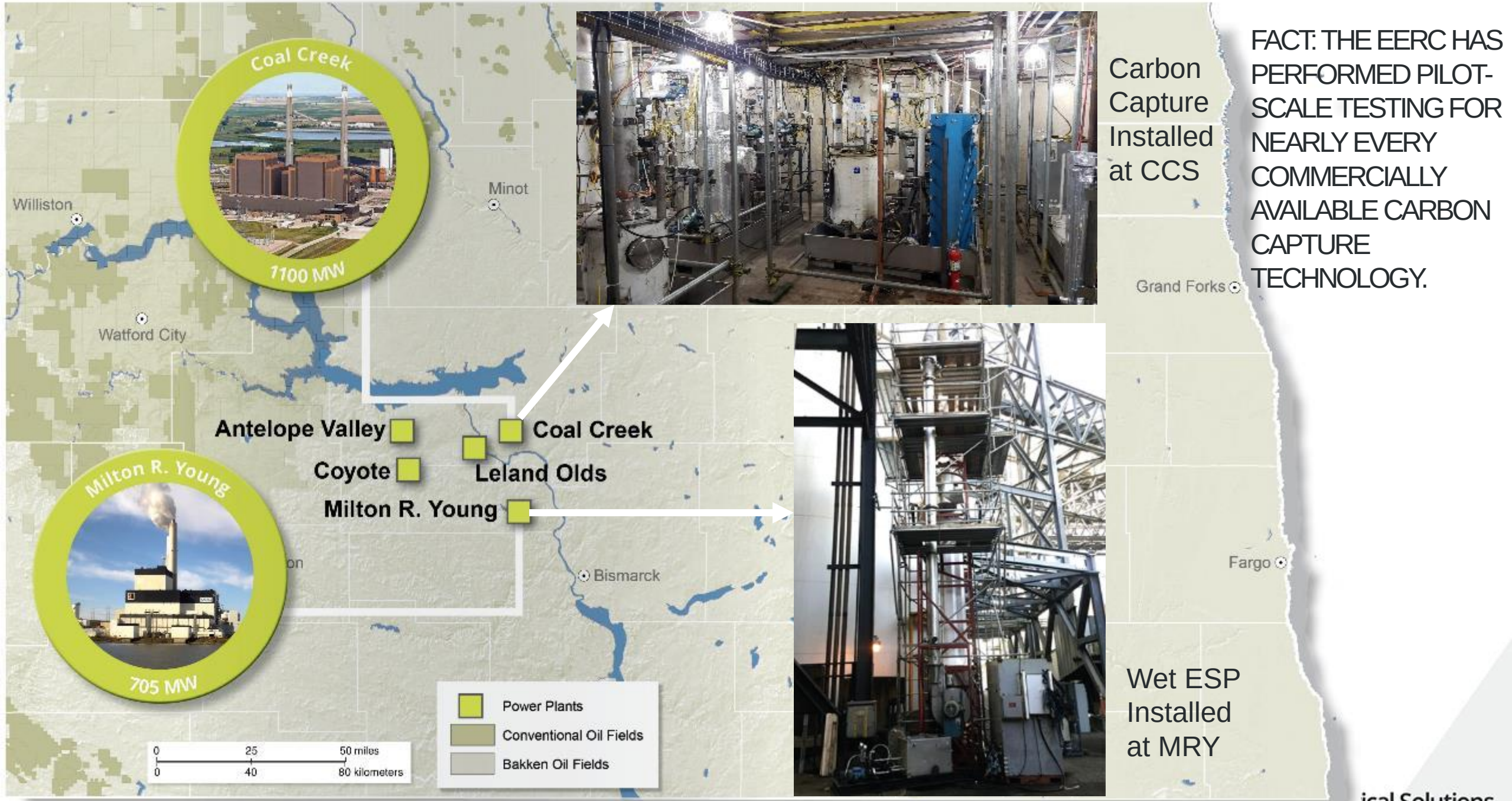
EERC | U.S. DEPARTMENT OF ENERGY | NATIONAL ENERGY TECHNOLOGY LABORATORY

PCOR Partnership — PARTNERSHIP MEMBERS

U.S. DEPARTMENT OF ENERGY | NETL NATIONAL ENERGY TECHNOLOGY LABORATORY | EERC UNIVERSITY OF NORTH DAKOTA | North Dakota Industrial Commission | UAF Institute of Northern Engineering, University of Alaska Fairbanks | University of Wyoming, School of Energy Resources

FACT: 265 SPONSORS OF PCOR SINCE 2002

08/24



Carbon Capture Installed at CCS

Wet ESP Installed at MRY

FACT: THE EERC HAS PERFORMED PILOT-SCALE TESTING FOR NEARLY EVERY COMMERCIALLY AVAILABLE CARBON CAPTURE TECHNOLOGY.

ical Solutions.

FACT: EXXONMOBIL'S SHUTE CREEK FACILITY HAS CAPTURED CO_2 FROM PRODUCED GAS SINCE 1986.

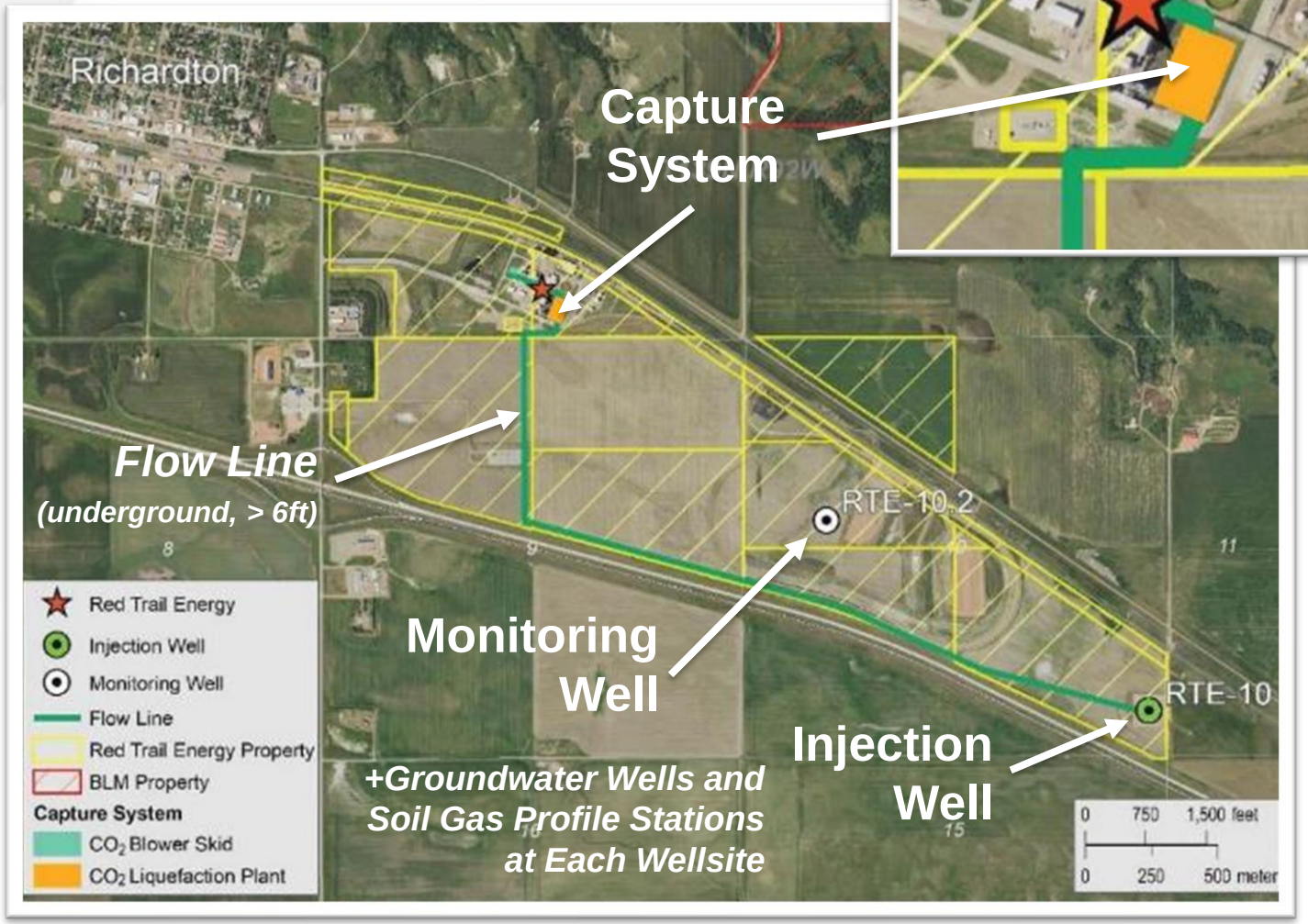
- The facility has captured more CO_2 than any other facility in the world, which is used for EOR in Wyoming, Montana, and North Dakota oil fields.

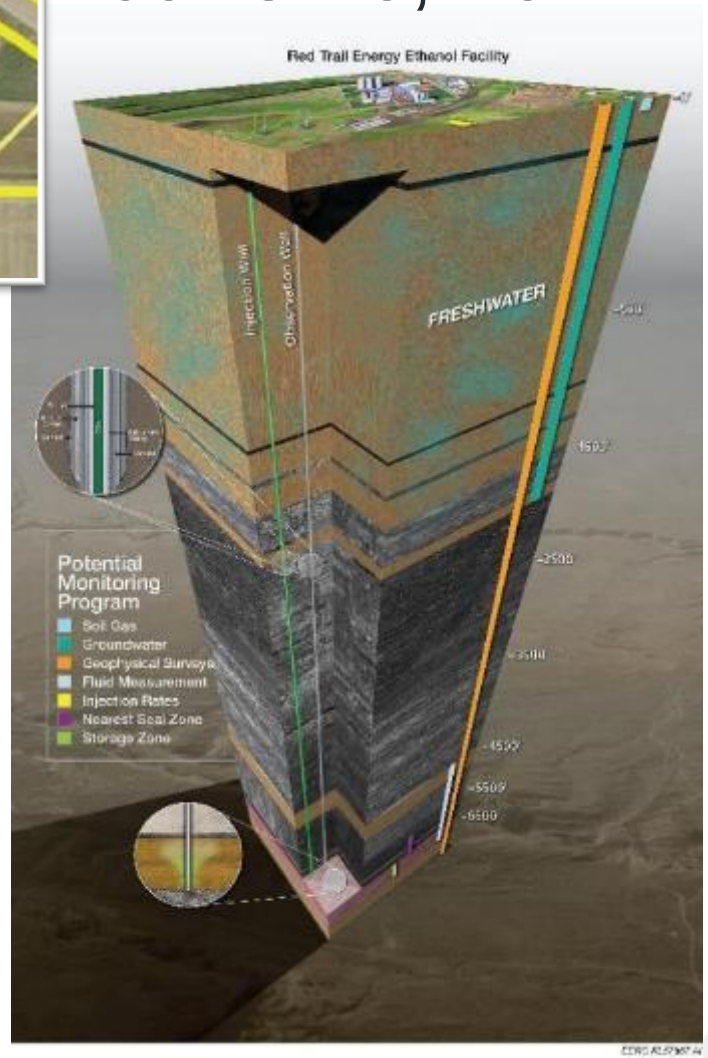
GREAT PLAINS SYNFUELS PLANT HAS BEEN SEQUESTING CO_2 FOR NEARLY 25 YEARS.

Image from dakotagas.com

FACT: RED TRAIL ENERGY CCS IS NOW COMMERCIAL.

~180,000 metric tons per year since June 16, 2022





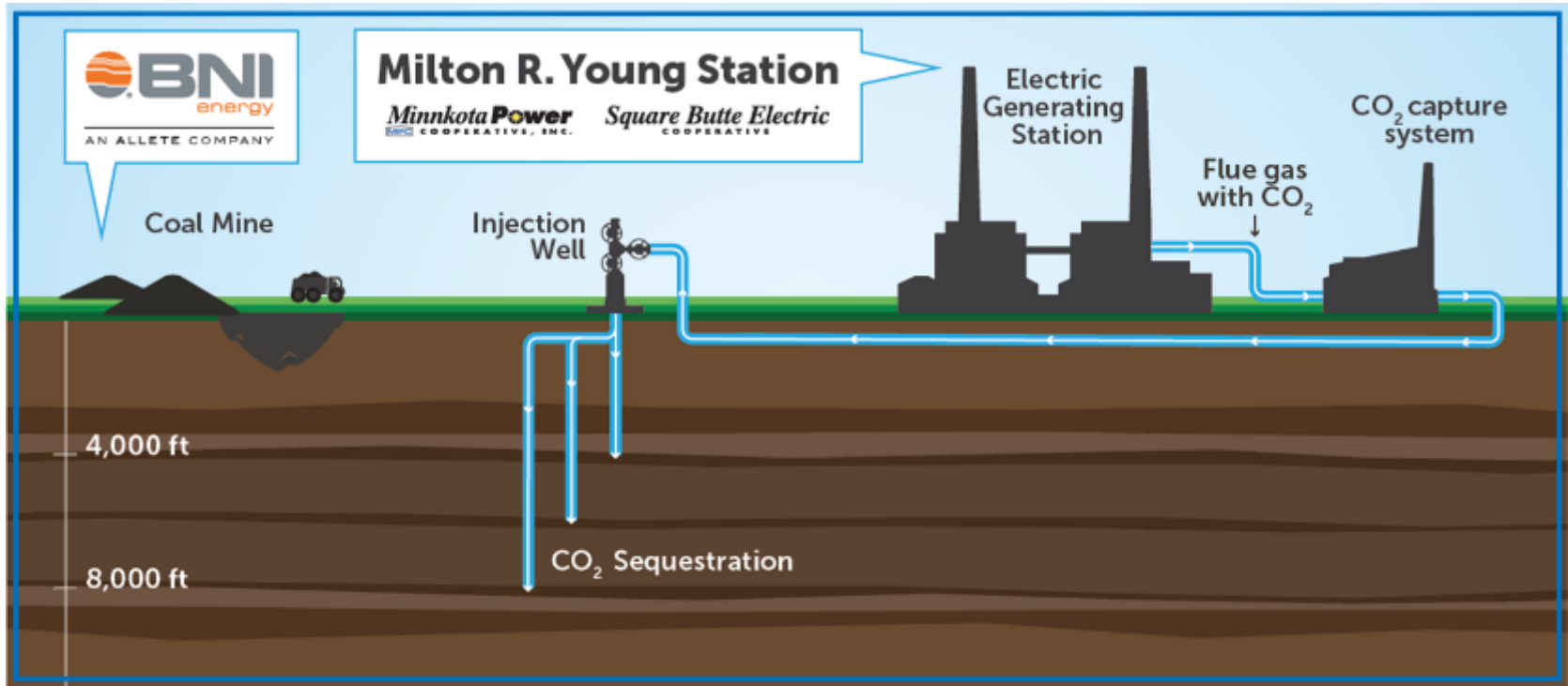
FACT: PROJECT TUNDRA IS NEARING A FINANCIAL INVESTMENT DECISION.

Project Tundra is in the advanced engineering and design phase. If the project moves ahead, construction could begin in 2025.

Precommercial:

>90% postcombustion CO_2 capture (~4 million tons per year).

All necessary Class VI permits have been secured for permanent geologic storage.



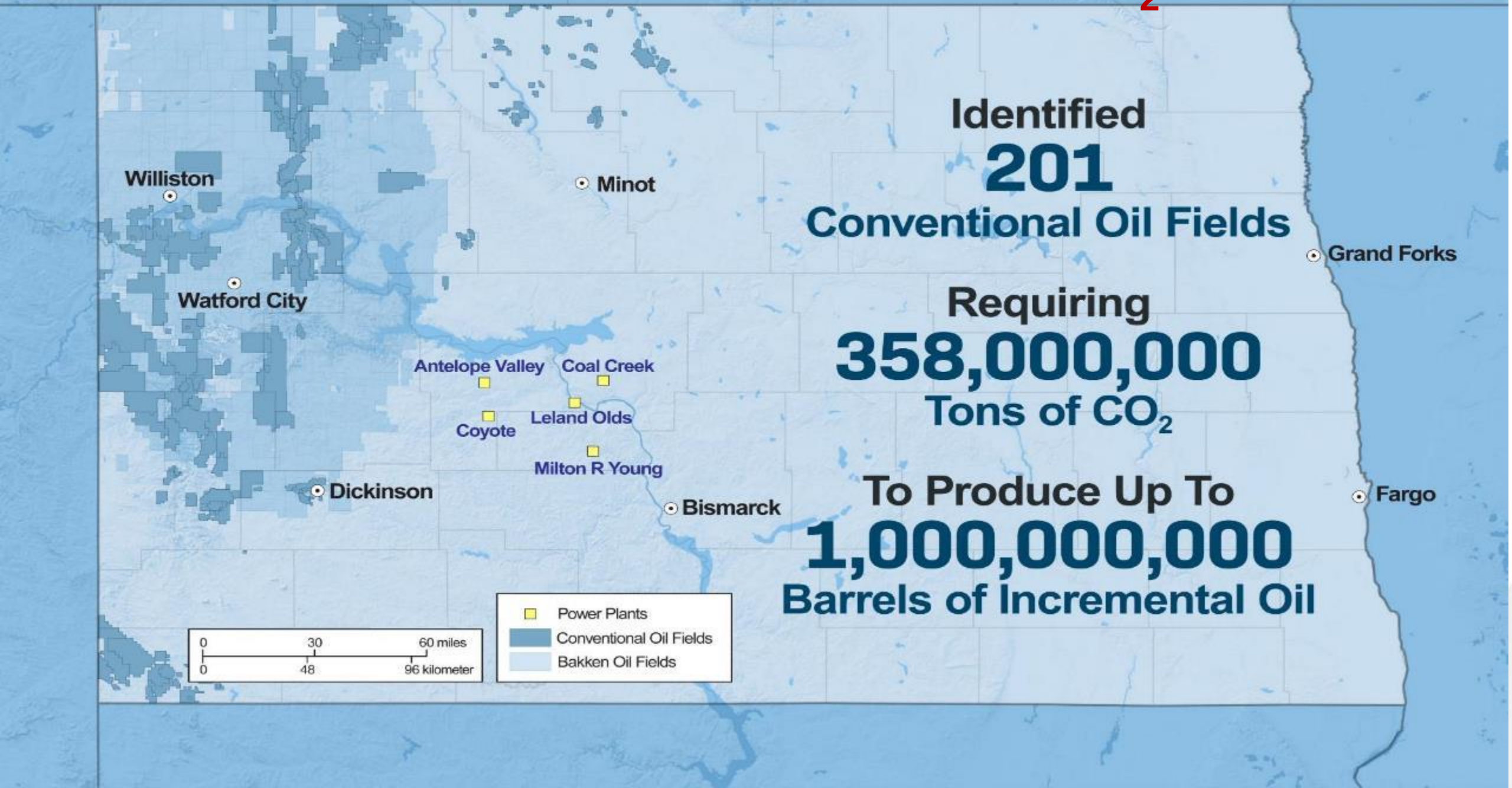
EERC | UND UNIVERSITY OF NORTH DAKOTA

FACT: COAL CREEK STATION IS MAKING INVESTMENTS IN UNDERSTANDING CCUS.

Coal Creek Carbon Capture FEED study will be completed in 2025.

Photo credit: greatriverenergy.com

FACT: NORTH DAKOTA OIL FIELDS NEED CO_2.



FACT: "WE ARE ON THE CUSP OF WIDE-SCALE COMMERCIAL DEPLOYMENT."

–EERC CEO Charles Gorecki Addressing U.S. Secretary of Energy Granholm, October 14, 2021

PROJECTS IN PCOR PARTNERSHIP REGION

- **17** active projects
- **4** partially permitted
- **35** announced/developing

Josh Stanislowski
Director of Energy Systems Development
jstanislowski@undeerc.org
701.777.5087

Energy & Environmental Research Center
University of North Dakota
15 North 23rd Street, Stop 9018
Grand Forks, ND 58202-9018

www.undeerc.org
701.777.5000

THANK YOU

Critical Challenges. Practical Solutions.

Critical Challenges. Practical Solutions.