

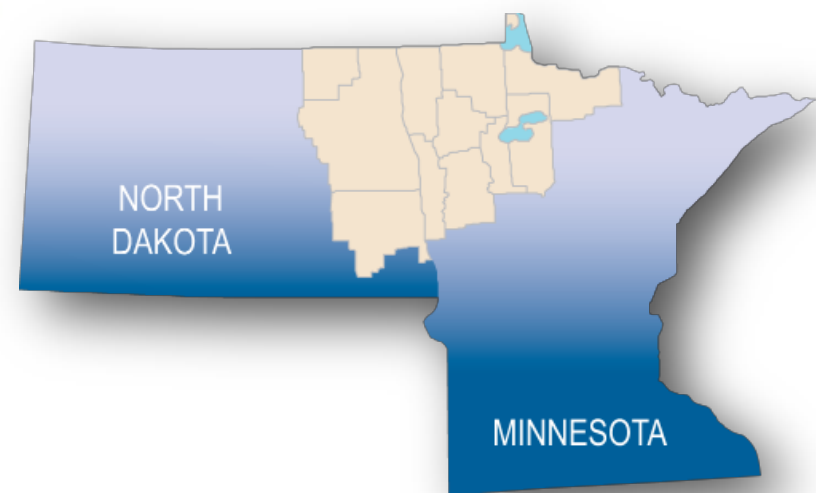
NORTH DAKOTA LAW REVIEW
**ENERGY LAW
SYMPOSIUM**

Sponsored by:

**CROWLEY
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UND SCHOOL OF LAW
UNIVERSITY OF NORTH DAKOTA





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Minnkota Power
COOPERATIVE

A Touchstone Energy® Cooperative

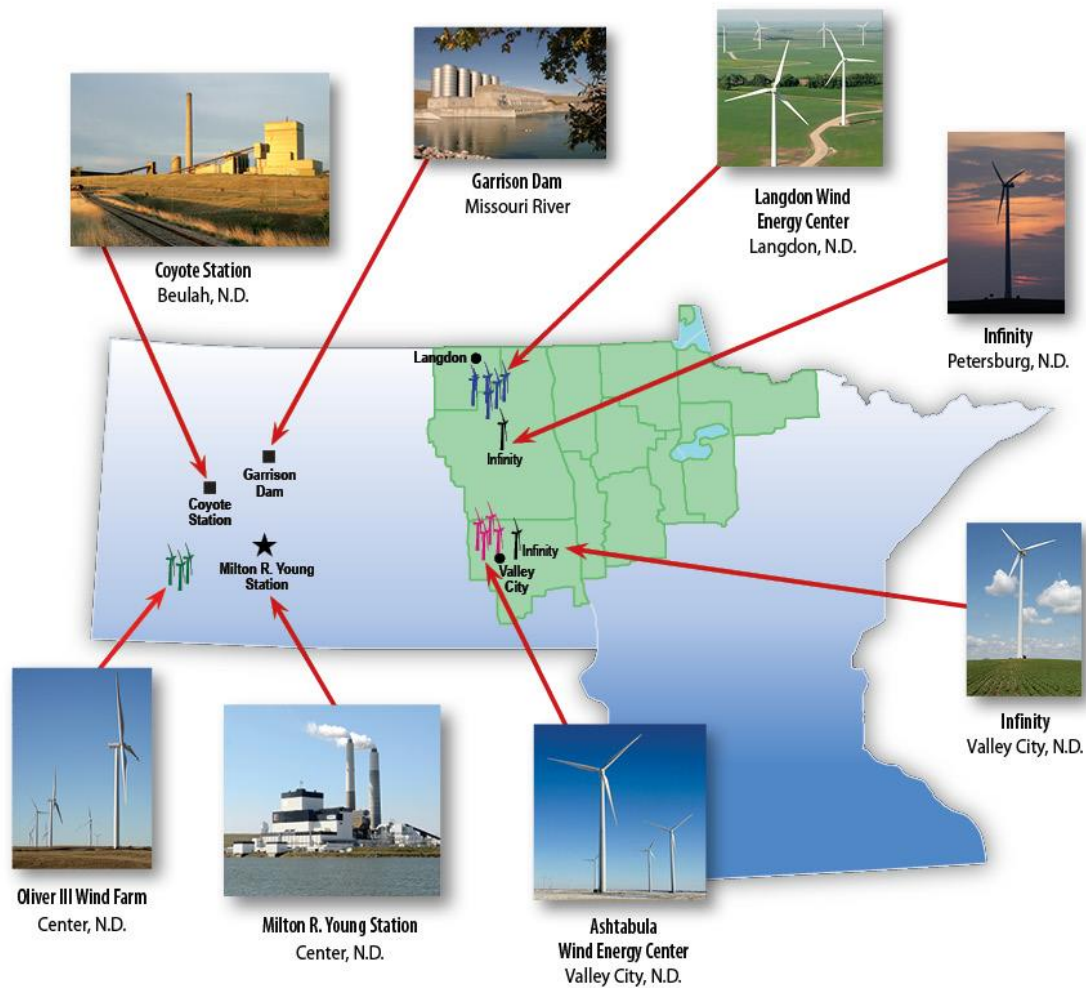


Who We Are

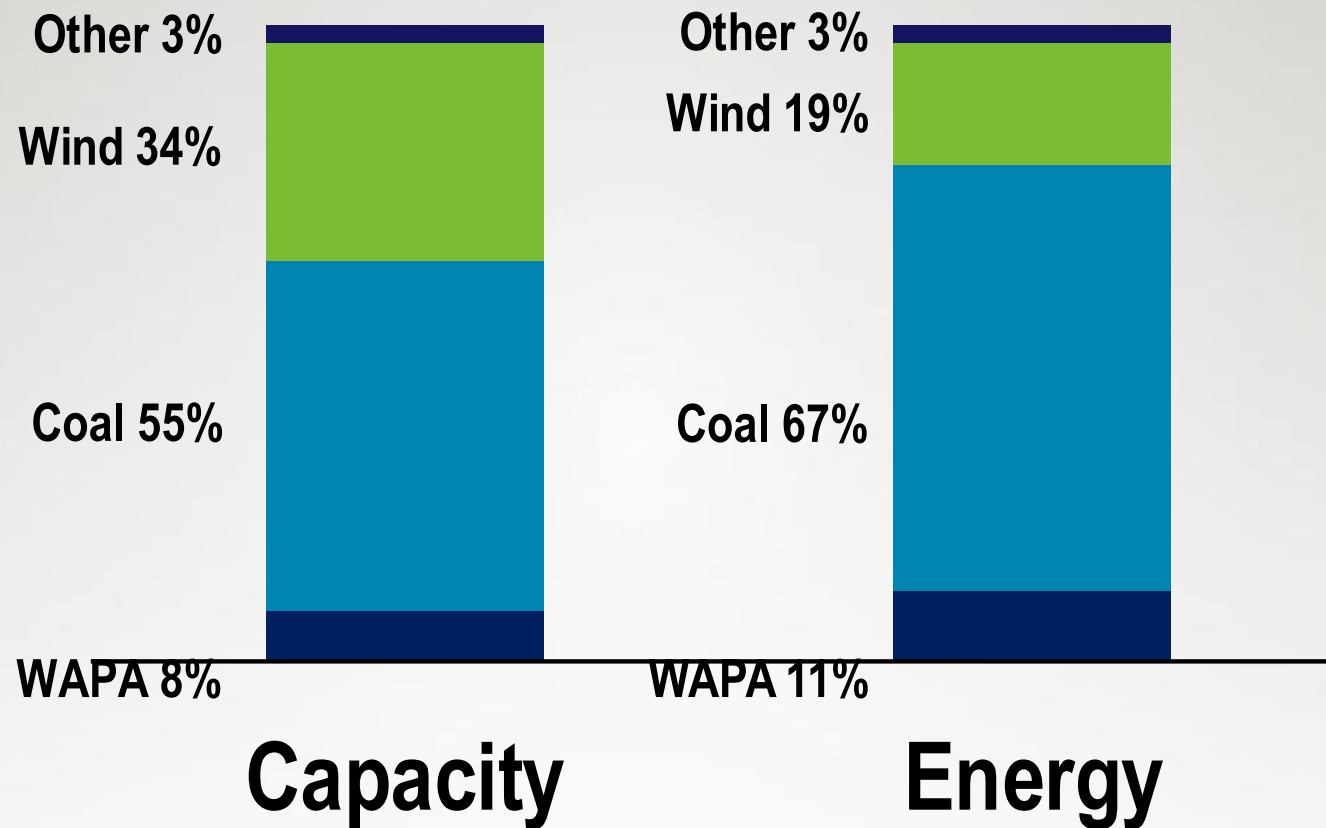
- Wholesale electric generation and transmission cooperative headquartered in Grand Forks, N.D.
- 11 member-owner cooperatives
- 3 in ND, 8 in MN
- 12 municipals – Northern Municipal Power Agency
- Serve 35,000 square miles in 33 counties
- About 150,000 consumers
- 390 employees



Generation Resources



2017 Joint System Resources



Living in a carbon-managed world

- Society increasingly demands carbon-free energy
 - IPCC report
 - White House report
- Intermittency of renewable generation requires some form of backup
 - Natural gas
 - Nuclear
 - Hydro
 - Coal
 - Future of batteries?
- While there is less pressure with the current administration, we believe we will live in a carbon-managed future
- North Dakota coal facilities are in a unique position
 - Nearby Williston-Basin oil formation
 - Unique geology



Our Common Vision

Value

- Unlock value of North Dakota oil production
- Enhance value of local lignite resources
- Transform state CO2 emissions landscape
- Preserve value of state electric generating units
- Utilize Energy Corridor for CO2 transport – future optionality for other products

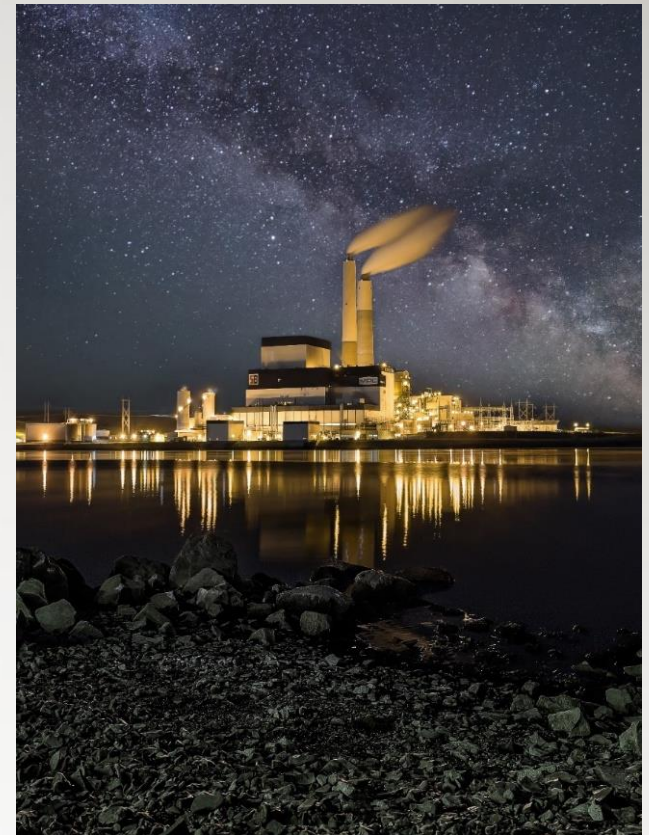
Development Plan

- Develop technology and offtake solutions
- Work with State of North Dakota officials and key stakeholders on financial and policy project support
- Build upon already established federal support
- Align project for outside investment

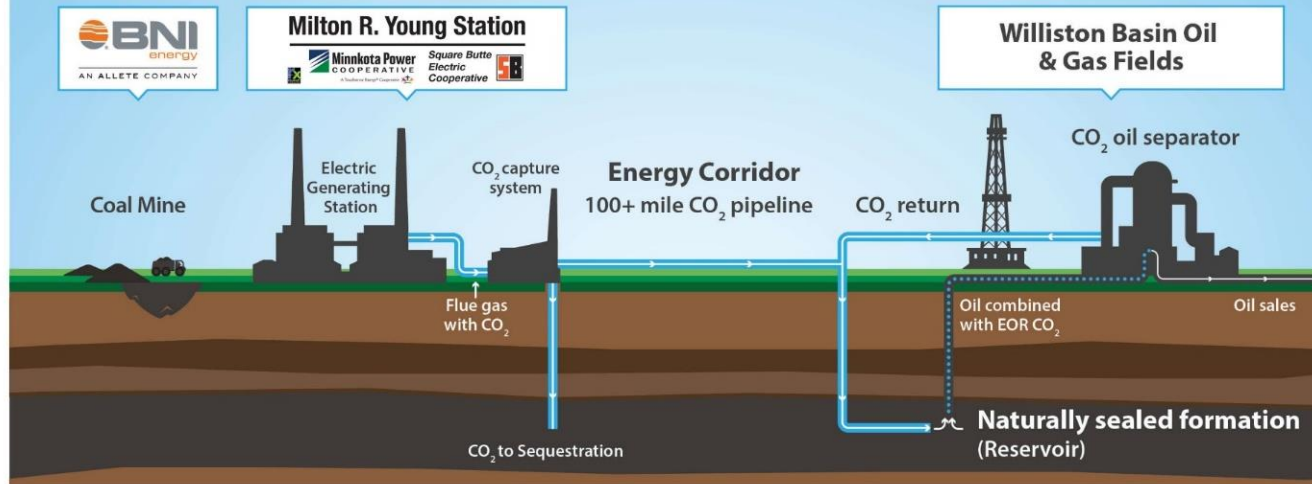


Project Tundra

- Equip Unit 2 at the Milton R. Young Station with amine-based technology to capture up to 95 percent of the unit's carbon dioxide (CO₂) emissions
- CO₂ to be used for Enhanced Oil Recovery (EOR) or simple permanent underground storage
- In the EOR application the CO₂ would be transported through a 100+ mile pipeline to be used to recover oil that is otherwise stranded and unrecoverable
 - CO₂ has been proven to substantially increase production in declining fields – 45 years of history
- In the storage application the CO₂ will be injected in saline formations near the plant property that has been proven to provide permanent storage.



Utility Industry Carbon Solutions—Project Tundra



Project Tundra Development Pathways

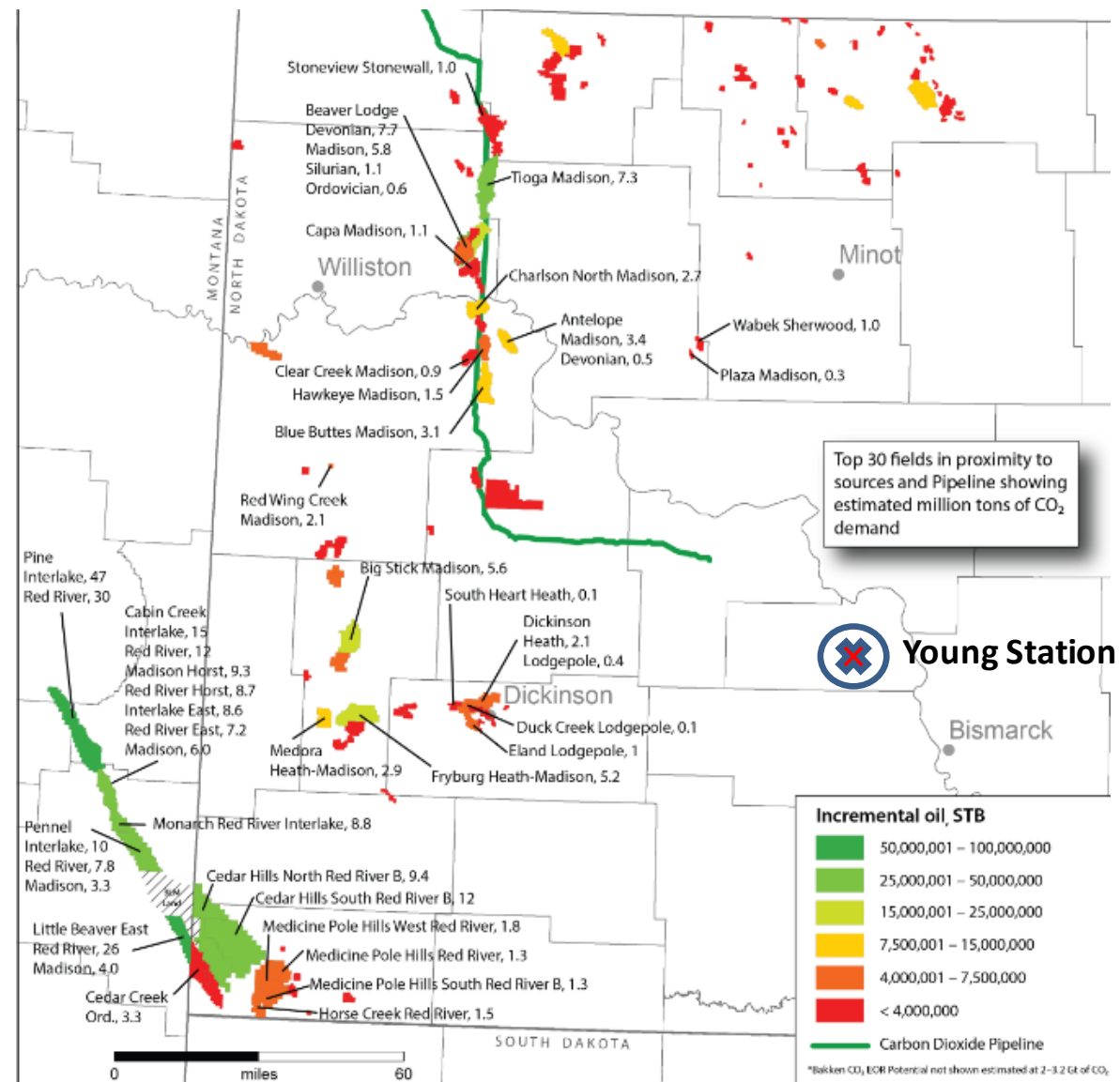
Develop Business Structure

State and Federal Policy Support

Secure CO₂ Source

Secure CO₂ Sink

Oil Field Target Project Tundra



Petra Nova Project

- Texas project that Project Tundra is modeled after
- Operational in December 2016
 - On time and on budget
 - 1300% increase in oil production



Our People are the Experts

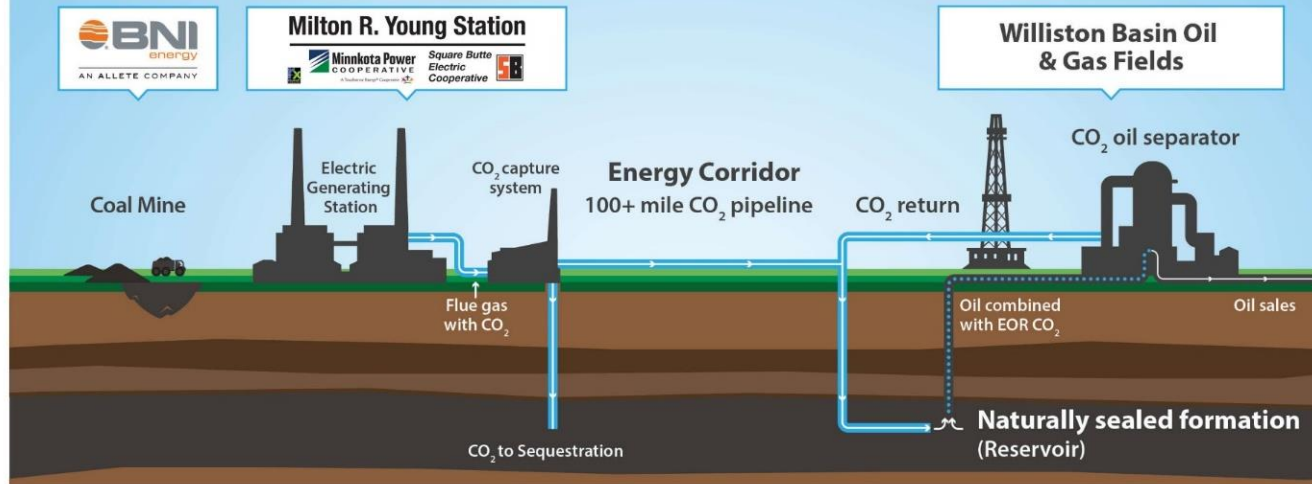
- Project research is being led by the Energy & Environmental Research Center (EERC) at the University of North Dakota
 - Recognized as leading experts in Carbon Capture and Utilization projects
- David Greeson
 - Former Vice President of Development for NRG Energy, Inc.
 - Petra Nova was his vision and he led the project from inception through design, financing, construction, and commissioning



45Q Changes Everything

- Increased incentives for capturing CO2
 - Signed into law in February 2018
- \$35 per ton of CO2 used for Enhanced Oil Recovery
- \$50 per ton of CO2 permanently stored underground
- Represents up to \$1 billion to Project Tundra
- However, Minnkota cannot monetize these 45Q Federal Income Tax Credits – means we will need a partner
- Expect tax equity market to be interested:
 - 45Q deals will be ramping up while wind and solar tax credits phase out
 - Opportunity for multiple 45Q deals
 - Coal-fired power plants
 - Ethanol plants, fertilizer plants, cement, and others

Utility Industry Carbon Solutions—Project Tundra



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Questions?



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