



Empower people
Improve lives
Inspire success

NORTH
Dakota Be Legendary.

NORTH DAKOTA ENERGY

- North Dakota ranks second in the nation, after Texas, in crude oil reserves and third, after Texas and New Mexico, in crude oil production.
- North Dakota is a top 10 ethanol-producing state, and its five ethanol plants with nearly 527 million gallons in production capacity provide about 3% of the nation's fuel ethanol.
- North Dakota has almost 3% of U.S. natural gas reserves, and in 2021 the state accounted for 2% of U.S. natural gas gross withdrawals.
- North Dakota contains the world's largest known deposit of lignite, and it is the fifth-largest coal producing state, accounting for 5% of U.S. total coal production.
- In 2021, coal-fired power plants provided 57% of North Dakota's electricity generation, and wind energy accounted for 34%, which was the sixth-highest share from wind power for any state.

NORTH DAKOTA CURRENT STATUS....

Overview

- **Goal – Carbon Neutral by 2030**
 - Set by Governor in 2020
 - Innovation over Regulation
- **Sources of Carbon**
 - North Dakota is an Energy Exporter!
 - 93% of produced oil is exported
 - 85% of natural gas is exported
 - 50% of electricity is exported



GOAL SET----- WHAT NEXT?

Carbon Neutrality “is a state of net zero carbon dioxide emissions. This can be achieved by balancing emissions of carbon dioxide with its removal (often through carbon offsetting) or by eliminating emissions from society (the transition to the “post carbon economy”). The term is used in context of carbon dioxide-releasing processes associated with transportation, energy production, agriculture, and industry.” Wikipedia

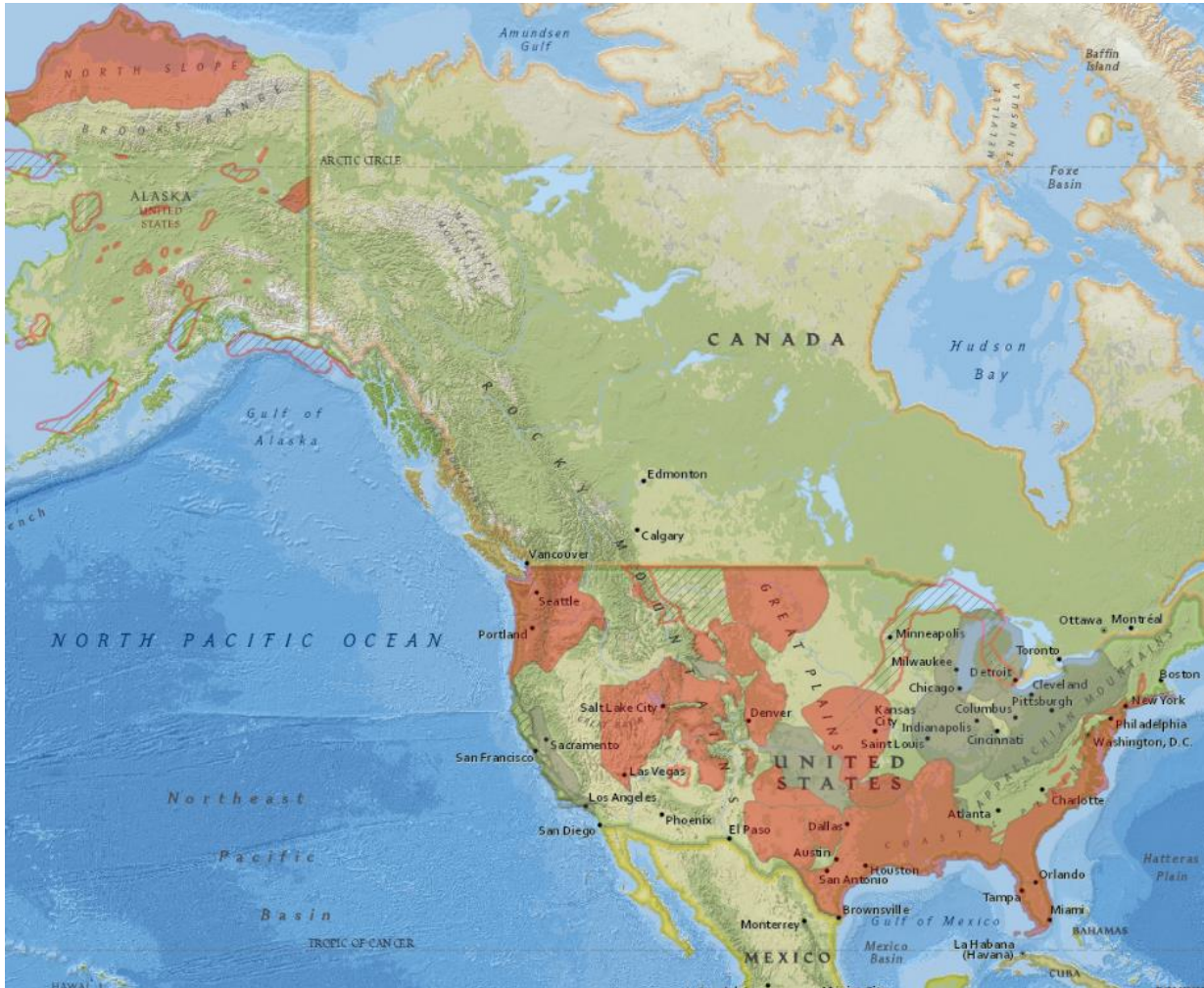
- How to reach the goal?
 - Renewable Energy – In 2021 ND produced 35% of megawatt-hours from renewable sources (WIND). The state exported as much electricity as produced!
 - Renewable energy resources will continue production and development throughout the state
 - Carbon Capture
 - Existing fossil fuel plants are actively working on carbon capture and utilization or storage
 - Carbon Utilization
 - Enhanced oil recovery -consider a carbon-negative barrel of oil

➤ **North Dakota is the first to receive Class VI Primacy**

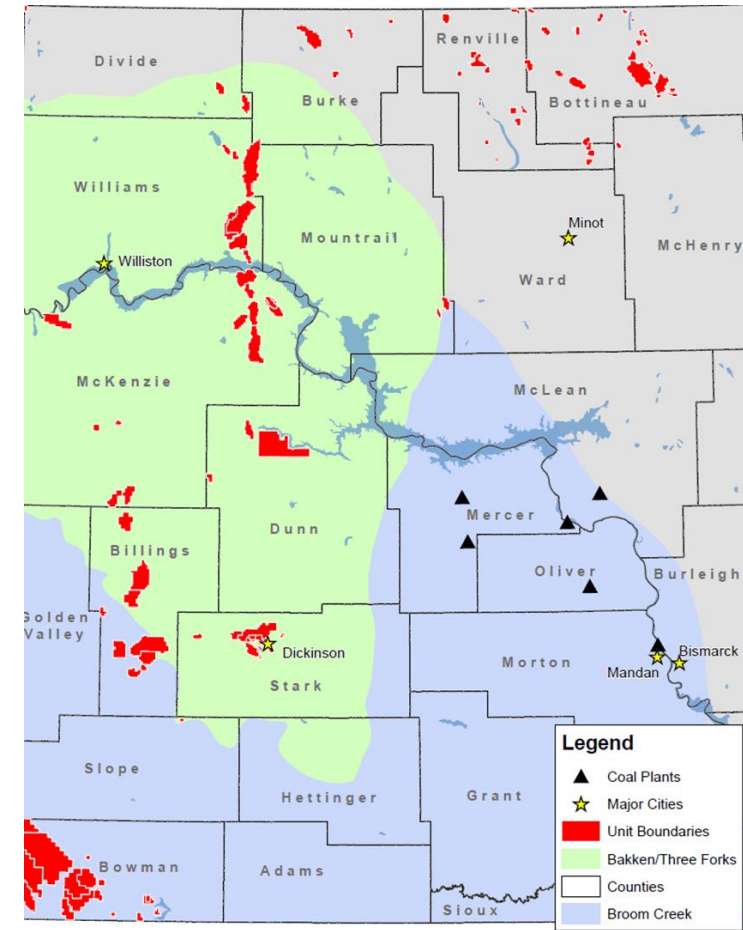
➤ Carbon sequestration is advantageous in ND due to natural Geology

- a. Tundra (Minnkota MRY Plant) along with Rainbow Energy Center are in design phase for capture. Both projects are also permitting sequestration wells.
- b. Red Trail Energy has been capturing and sequestering from their ethanol plant for over 6 months.
- c. Many companies are also interested in locating in the state due to the geology. Gas to liquids, fertilizer, and material processing facilities are included in the list.

CARBON SEQUESTRATION



Source: <https://www.usgs.gov/media/images/co2-sequestration-assessment-interactive-map>



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CARBON SEQUESTRATION CONTINUED

ND has the potential to store over 100 GIGATONS
Enough for over 1,600 years of the North Dakota's current output.

TIMELINE

- **2002** - IOGCC Carbon Geologic Storage (CGS) Task Force was established in 2002 to study the potential for Geologic Storage of CO₂ and the role of States.
- **2007** - IOGCC Task Force created a model statute and model rules and regulations for States to adopt for geologic storage of CO₂ regulatory frameworks.
- **2008** - North Dakota formed the ND CO₂ Storage Workgroup
- **2009** - North Dakota legislation – Geologic Storage of Carbon Dioxide, pore space ownership, long-term liability (IOGCC model statute)
- **2010** - North Dakota administrative rulemaking – effective April 1, 2010 (IOGCC model rules) & EPA Class VI Rule – Effective December 10, 2010
- **2013** - North Dakota administrative rulemaking (meeting stringency of federal Class VI Rules) – effective April 1, 2013 & North Dakota submitted its Class VI Primacy application on June 21, 2013
- **2018** - North Dakota's Class VI Primacy application approved by EPA – effective April 24, 2018
- **2021** - North Dakota legislation – Geologic Storage of Carbon Dioxide fees

CARBON UTILIZATION AND MORE

Uses for carbon versus only storage

- Enhanced oil recovery – oil coming out of southwest ND with a carbon negative footprint!
- Various uses in existing industry – food grade CO2 shortage is a current issue
- Consider carbon as a substitute for cement in concrete
- Greenhouses and reduction in food deserts

Additionally Direct Air Capture – valued at \$160/ton versus \$85/ton for capture (*Currently \$60 for use*)

- Multiple studies and projects ready for pilot testing for CO2 capture and storage from direct air
- Projects must be located at the storage site, eliminating CO2 transportation

MANAGING FEDERAL GOVERNMENT EXPECTATIONS

Electrification and Efficiencies

- Justice 40 requirements
- Rebate program management
- Coordination of state and federal dollars

Loan Fund

Additional Funds for programs without enough people to administer

Innovation



Regulation

