



NORTH DAKOTA'S PATH TOWARD CARBON NEUTRALITY

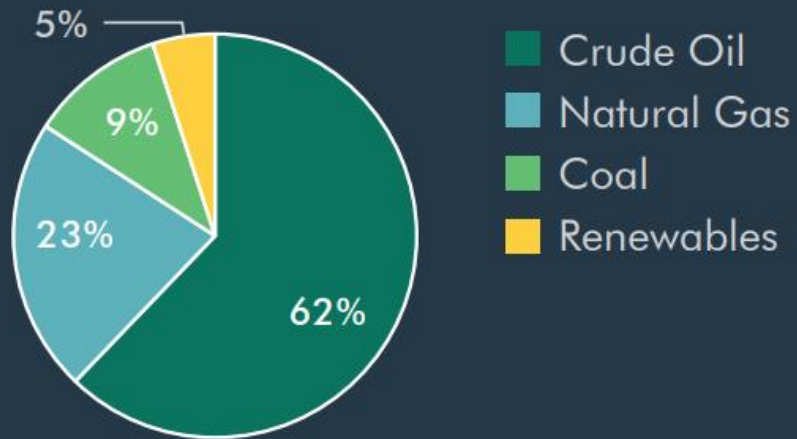
NGA Energy Policy Institute

July 13, 2021

NORTH
Dakota
Be Legendary.™

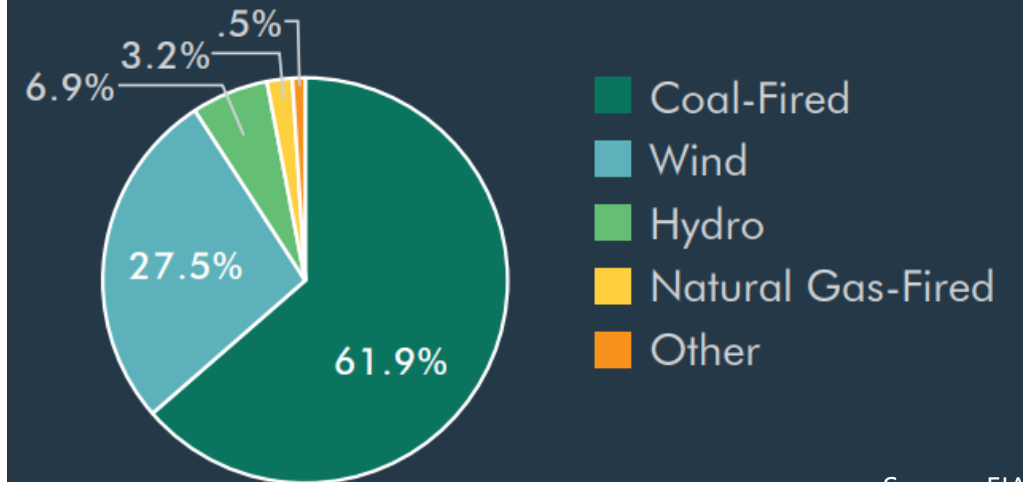
NORTH DAKOTA'S ALL-OF-THE-ABOVE ENERGY POLICY SUPPORTS A RESILIENT, DIVERSE PORTFOLIO

North Dakota Total Energy Production



Source: EIA

North Dakota Electricity Production



Source: EIA

POLICY GOAL: NORTH DAKOTA CARBON NEUTRAL BY 2030



Gov. Doug Burgum calls for North Dakota to be carbon neutral by 2030

Speaking before hundreds of oil industry operators and executives, the Republican governor advocated for a path to retain the core place of the state's fossil fuel industries while dramatically reducing their carbon footprint.

Written By: Adam Willis | 6:30 pm, May 12, 2021

North Dakota governor believes state could one day be net carbon negative, sets goal for neutrality by 2030

By Renée Jean rjean@willistonherald.com May 13, 2021 Updated Jun 22, 2021

A Carbon-Neutral North Dakota

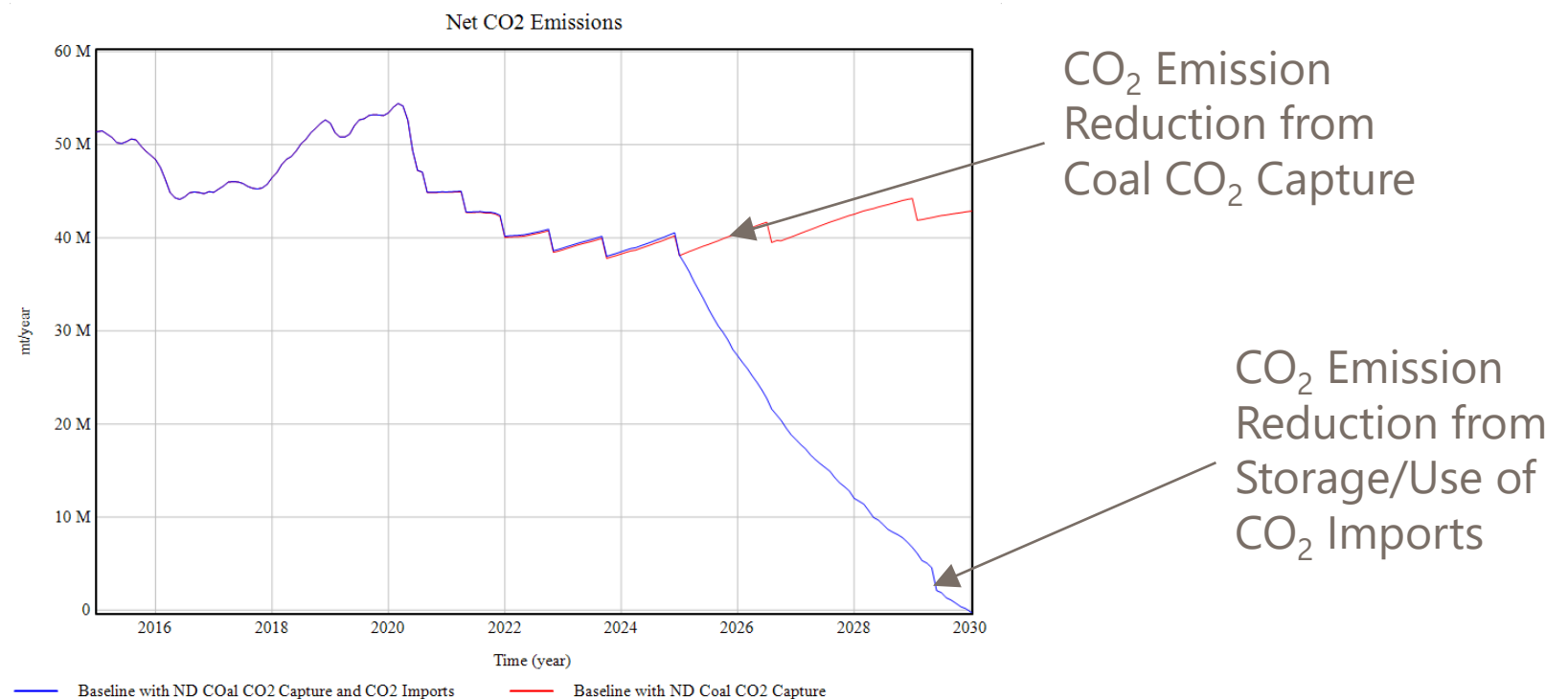
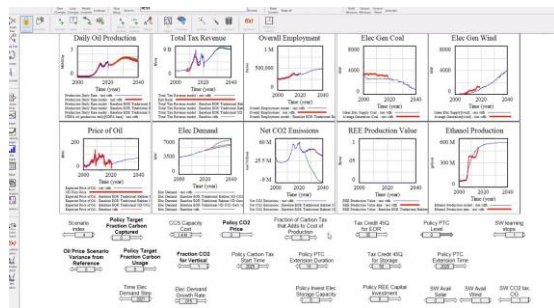
North Dakota Governor Doug Burgum has set a goal to make the nation's second largest oil-producing state carbon-neutral by 2030.

By ESG Review Staff - May 19, 2021

North Dakota Carbon Neutral by 2030 through a Just Transition

07 June 2021 | Christine Chow

PATH TO CARBON NEUTRALITY THROUGH INNOVATION, NOT REGULATION



ROADMAP TO CARBON NEUTRALITY

Subsurface Sequestration

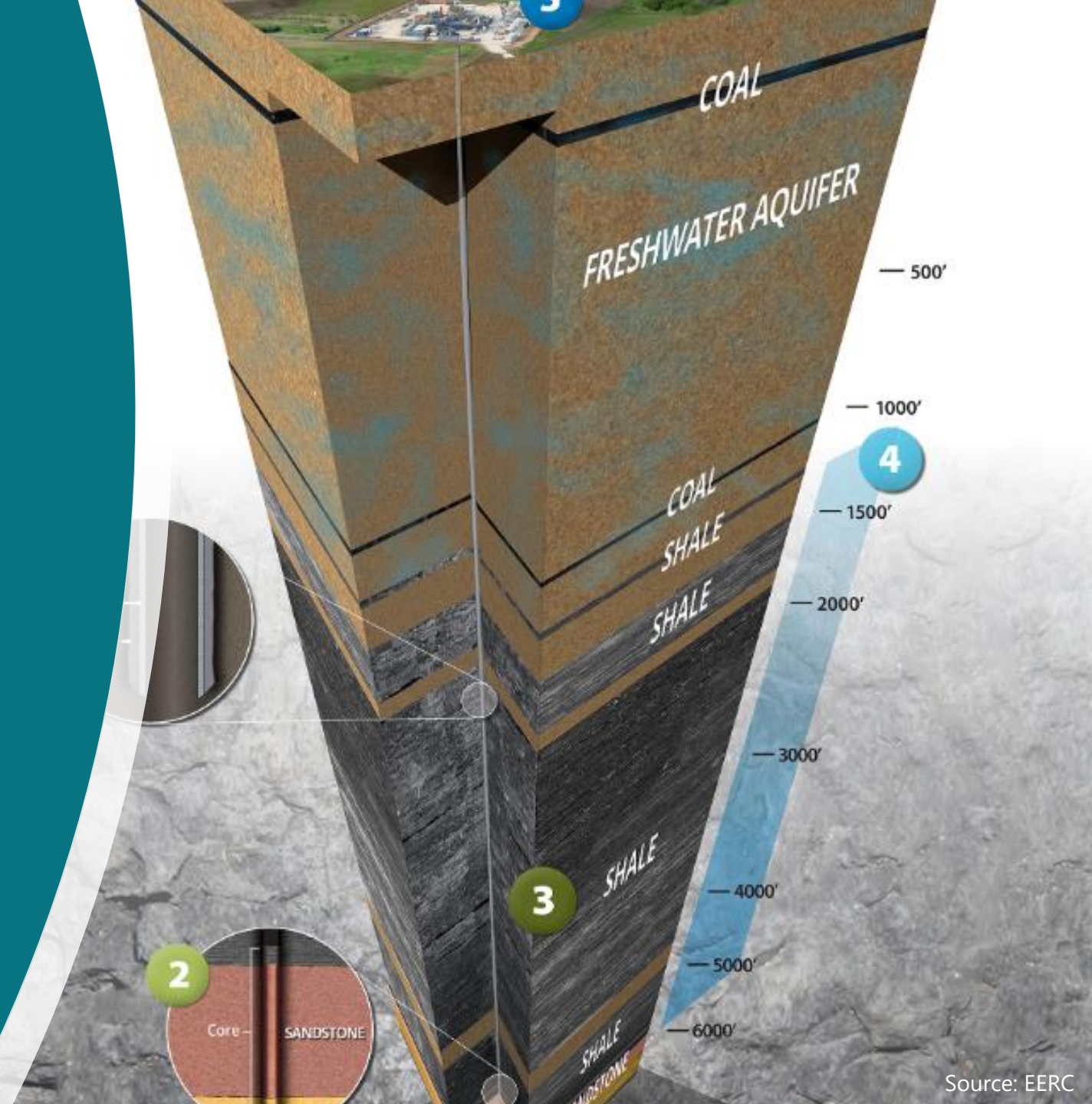
Markets for Reuse

Diversify Generation

Leverage Agriculture Utilization

CARBON SEQUESTRATION

- “Geologic Jackpot”: Up to 252 billion tons of storage capacity
 - Over 4,400 years of total ND production
 - Over 50 years of entire US production
- First State with Class VI primacy
 - First Class VI wells permitting this summer
- After 10 years post-injection, State takes permanent liability
 - Per ton fee for Carbon Dioxide Storage Facility Trust Fund
- Interest from surrounding states to sequester their CO₂



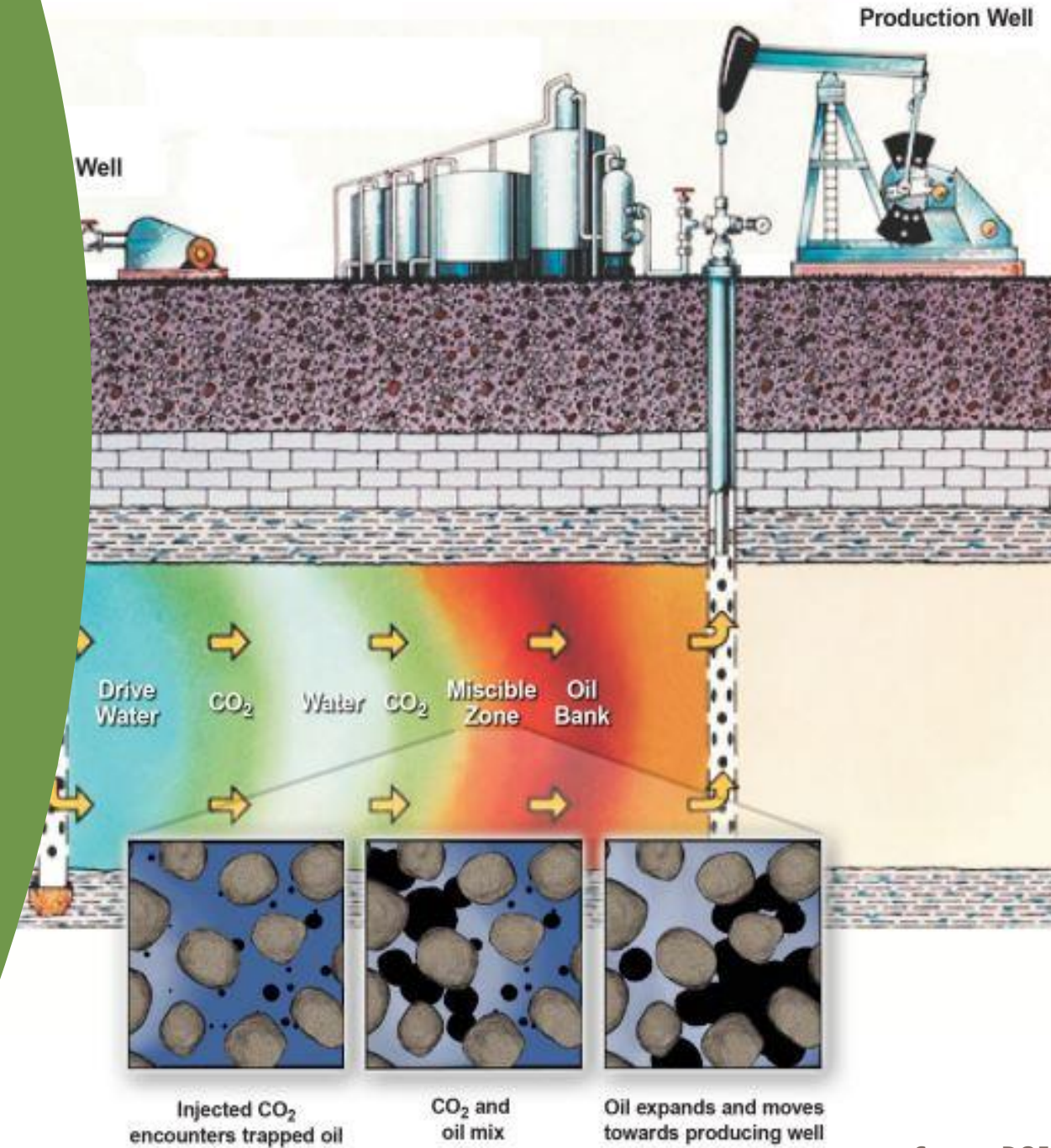
INVESTMENTS IN SEQUESTRATION

- Reinvesting production and extraction taxes:
 - Lignite Research Fund (\$0.10/ton up to \$7.5 m)
 - Oil and Gas Research Fund (2% up to \$10 m)
 - Renewable Energy Fund (20.5% up to \$3 m)
- Clean Sustainable Energy Fund
 - Develop and commercialize low emissions technologies
 - \$25 million in grants
 - \$250 million Line-of-Credit
- CCUS sales and use tax exemption
- Allow utility rate recovery for CCUS costs



MARKETS FOR CO₂ REUSE

- Co-located greenhouses
- Enhanced oil recovery
 - Produce 8+ billion barrels from depleted fields
 - Need to import 10x ND's annual CO₂ production
 - Net carbon-negative barrel of oil
 - Incremental oil exempt from extraction tax
 - Advocating for equal 45Q federal tax treatment
- Manufacturing
 - Graphene dots
 - Carbon-negative plastics



DIVERSIFYING ENERGY PORTFOLIO

- Blue hydrogen production
 - Using lignite and natural gas as feedstock
 - Carbon captured for reuse or sequestration
- Green hydrogen production
 - Electrolysis using water and renewable power
- Underground Salt Cavern Storage
 - Could be paired with intermittent sources to firm capacity
 - \$9.5 m grant from State for feasibility study
- Opportunities for Agriculture
 - Market for ammonia, fermentation byproduct
 - Nitrogen source for fertilizer



North Dakota could be largest, lowest cost producer of blue hydrogen in North America

By Renée Jean rjean@willistonherald.com Jun 2, 2021 Updated Jun 2, 2021

LEVERAGING AG/ENERGY SYNERGIES

- Co-located Ethanol/Power Generation Plants
 - Using waste steam
 - Sharing carbon capture system
- Renewable Diesel
 - Using soybean oil as feedstock
 - Renewable power source
- Agriculture Best Practices
 - Mandan, ND USDA Research Center, over 100 years
 - Mimicking historic bison migration with grazing practices
 - Increase carbon sink with healthy native grasses
 - No-till farming with crop diversity
 - Cover cropping





NORTH
Dakota

Be Legendary.™