



North Dakota Update

September 21, 2023

NDPC Annual



- Statistics
- The Next 10 Years of (Bakken Development & EOR) (Legacy EOR)
- 2023 Legislation & Rule Changes
- Vision vs NIMBY



- **Statistics**

- The Next 10 Years of (Bakken Development & EOR) (Legacy EOR)
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Oil Production

June 1,166,604 barrels/day (final)
July 1,180,611 barrels/day (all-time high 1,519,037 BOPD Nov 2019)
1,138,360 barrels/day or 96% from Bakken and Three Forks
42,251 barrels/day or 4% from legacy pools

NM = 1,710,515

Gas Production and Capture

June Production 3,247,513 MCF/day
94% Capture 3,062,710 MCF/day
July Production 3,289,759 MCF/day (New all-time high)
96% Capture 3,148,942 MCF/day (NEW all-time high)

July Gas Capture

Statewide	96%
Statewide Bakken	96%
Non-FBIR Bakken	96%
FBIR Bakken	98%
Trust FBIR Bakken	98%
Fee FBIR	99%

Permits 2023

June 85 drilling and 0 seismic
July 70 drilling and 0 seismic
August 87 drilling and 0 seismic (all-time high 370 in 10/2012)

Permits 2022

June 77 drilling and 0 seismic
July 53 drilling and 0 seismic
August 102 drilling and 0 seismic (all-time high 370 in 10/2012)

Permits 2021

June 75 drilling and 0 seismic
July 40 drilling and 0 seismic
August 79 drilling and 0 seismic (all-time high 370 in 10/2012)

Rig Count 2023

July 37
August 37 (all-time high 218 on 5/29/12)
Federal surface 0
NM 107

Rig Count 2022

July 45
August 46 (all-time high 218 on 5/29/12)
Federal surface 0
NM 109

Rig Count 2021

July 23
August 28 (all-time high 218 on 5/29/12)
Federal surface 0
NM 82

Wells Waiting on Completion

June 483 > 433

July 465 > 419

Inactive Wells

June 1,750 > 1,693

July 1,655 > 1,665

Completions

June 27 > 85

July 74 > 83

August 66 > 91

Producing Wells

June 18,101

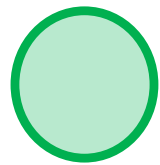
July 18,179 (preliminary)(NEW all-time high)

15,917 wells or 88% are now unconventional Bakken – Three Forks wells

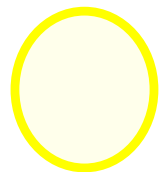
2,262 wells or 12% produce from legacy conventional pools



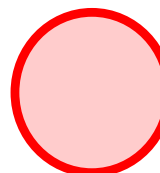
- Statistics
- **The Next 10 Years of (Bakken Development & EOR) (Legacy EOR)**
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Core=Tier 1
 85-90% developed
 +7,500 wells
 1-2% growth = 35 rigs = 7 years
 EOR

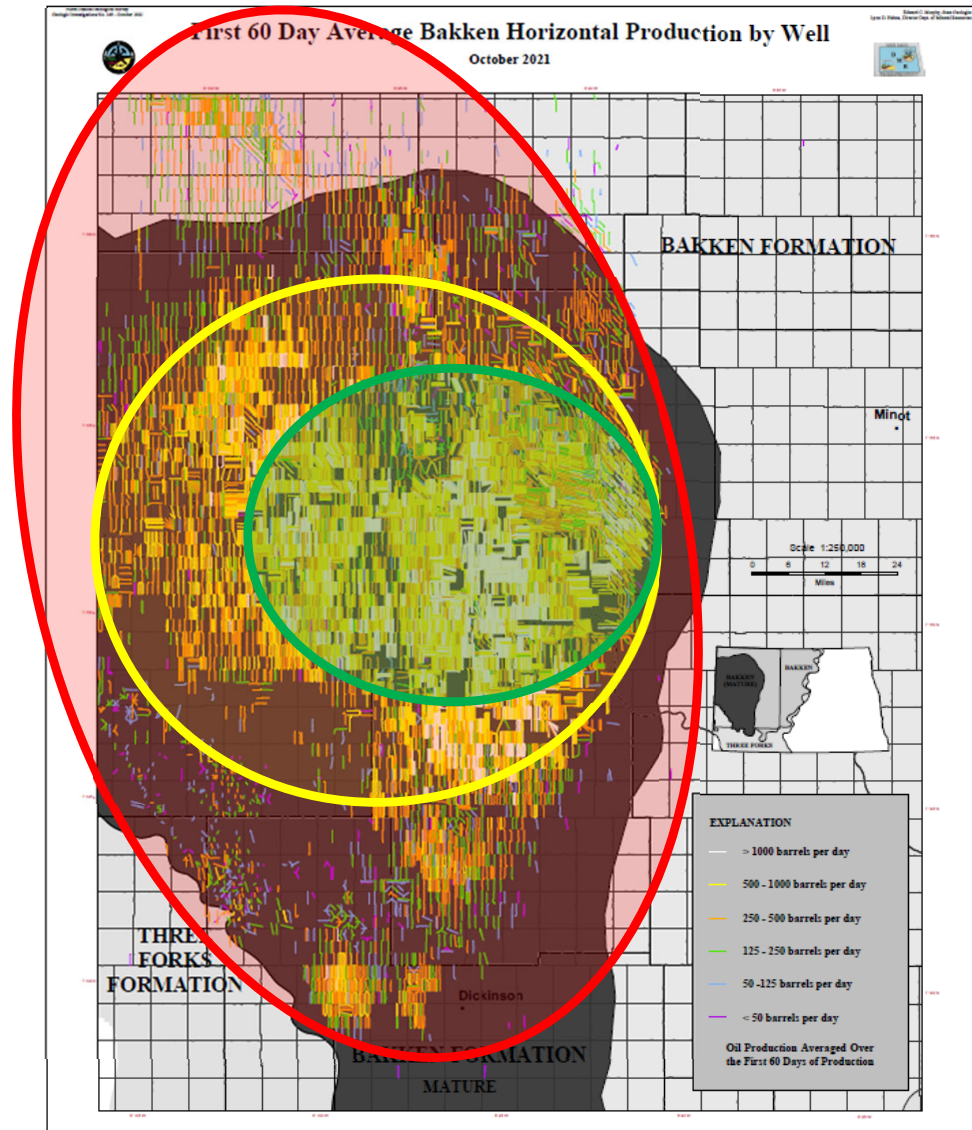


Tier 2
 50% developed
 +7,500 wells
 1-2% growth = 40 rigs = 6 years

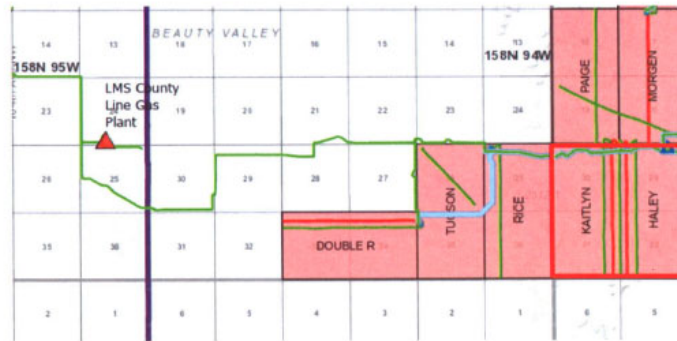


Tier 3
 25% developed
 +7,000 wells
 1-2% growth = 65 rigs = 4 years

Total = 22,000 wells & 17 years
 Current 18,200 wells & 17 years



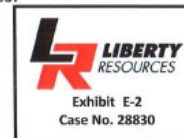
Features of Project Location



- 2560-acre Spacing Unit of Interest
- Existing Middle Bakken Horizontal
- Existing Three Forks Horizontal
- Existing Gas Pipeline (LMS)
- Existing Water Pipeline (LMS)

- Location selected based on results and learnings from prior Bakken EOR pilots, specifically the “Stomping Horse” pilot documented in NDIC Case No. 27926.
- Utilizes more recently completed infill wells (August '19); limited depletion.
- Accesses rich gas via connection to the gas plant gathering line.
- Liberty operates most of the offsetting DSUs.
- Well & completion design provides for favorable conformance along the horizontal interval using cemented liners with “Plug & Perf” completions.
- Jet pump operations ease well conversion to injection.
- Offset well configuration allows for surveillance and boundaries.

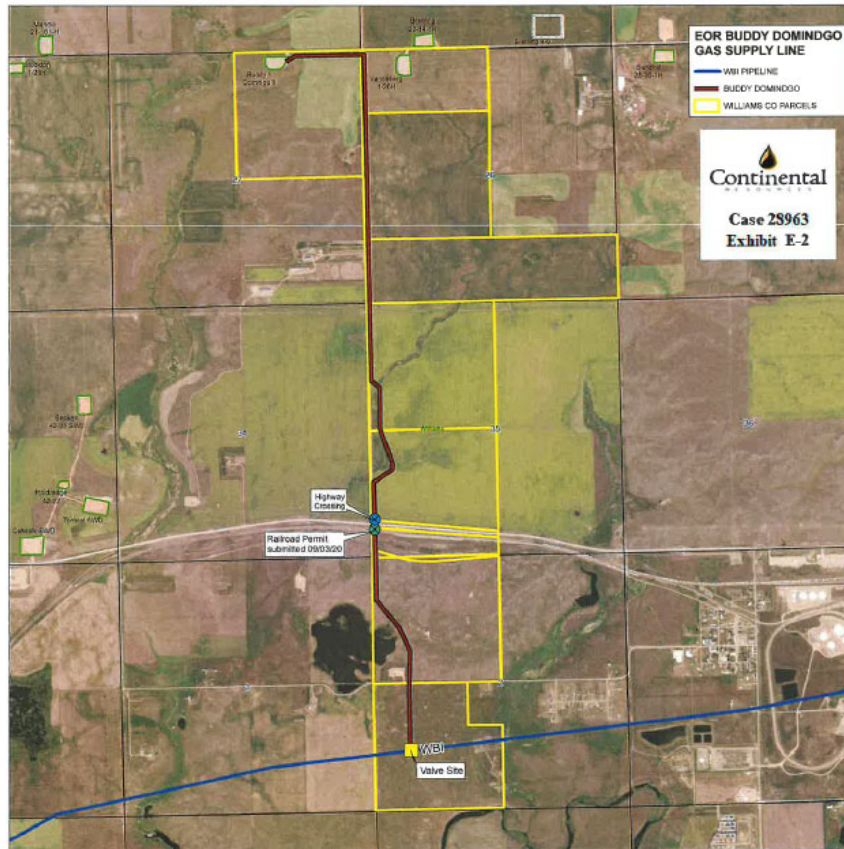
INDUSTRIAL COMMISSION
 STATE OF NORTH DAKOTA
 RPT 6-17-21 CASE NO. 28830
 introduced by Liberty
 dated E-2
 identified by Pospisil



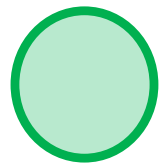
Location Map – Hess WI



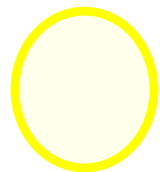
Case # 27836
10/23/19
Exhibit 3



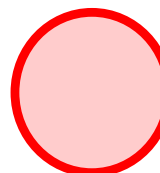
INDUSTRIAL DIVISION
 STATE OF OREGON
 DATE 9-30-21 Filed No 28963
 APPROVED BY Continental
 EXHIBIT E-2
 WITNESSED BY Bennett



Core=Tier 1
 80-85% developed
 +8,000 wells
 5% growth = 55 rigs = 5 years
 1-2% growth = 35 rigs = 8 years
 EOR

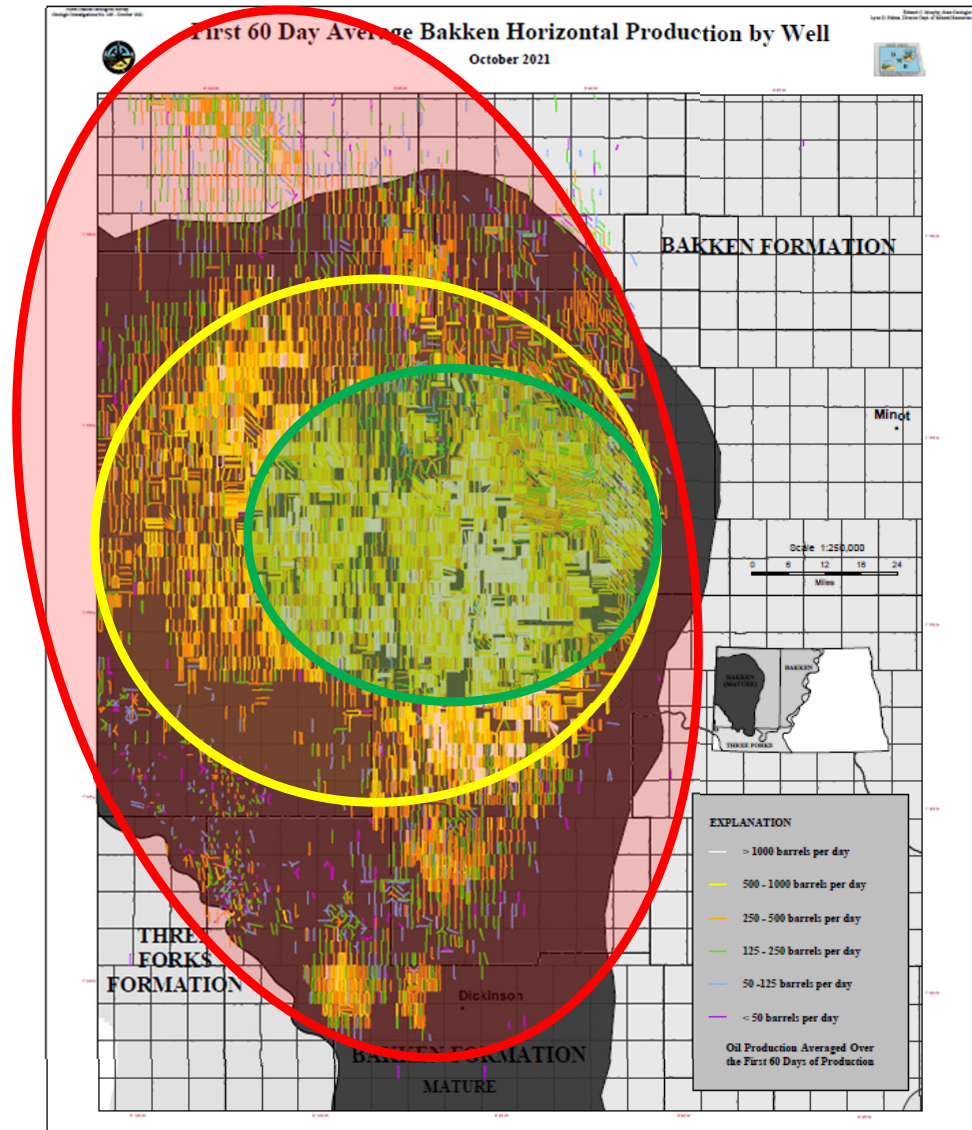


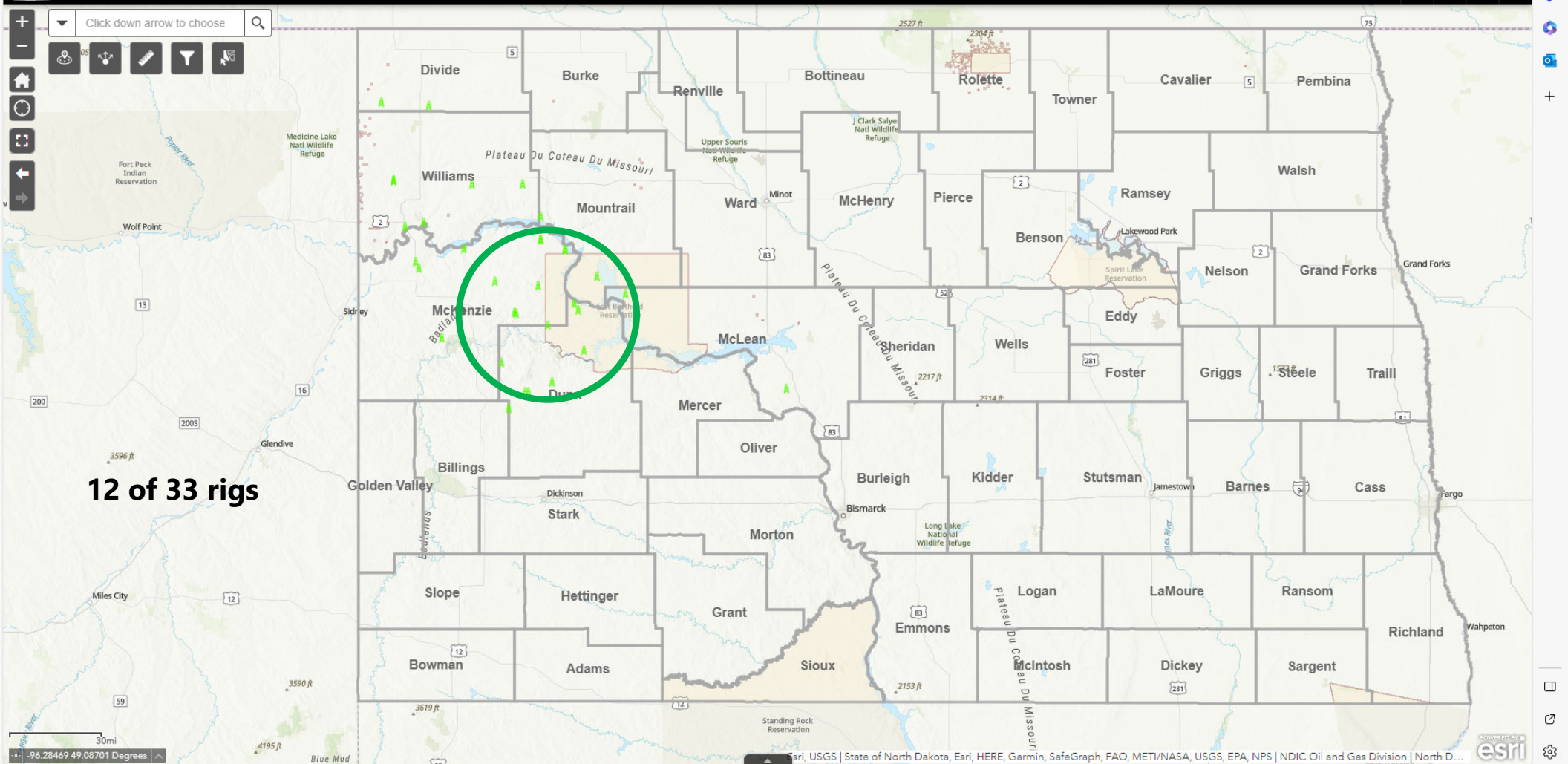
Tier 2
 50% developed
 +8,000 wells
 5% growth = 100 rigs = 3 years
 1-2% growth = 50 rigs = 6 years



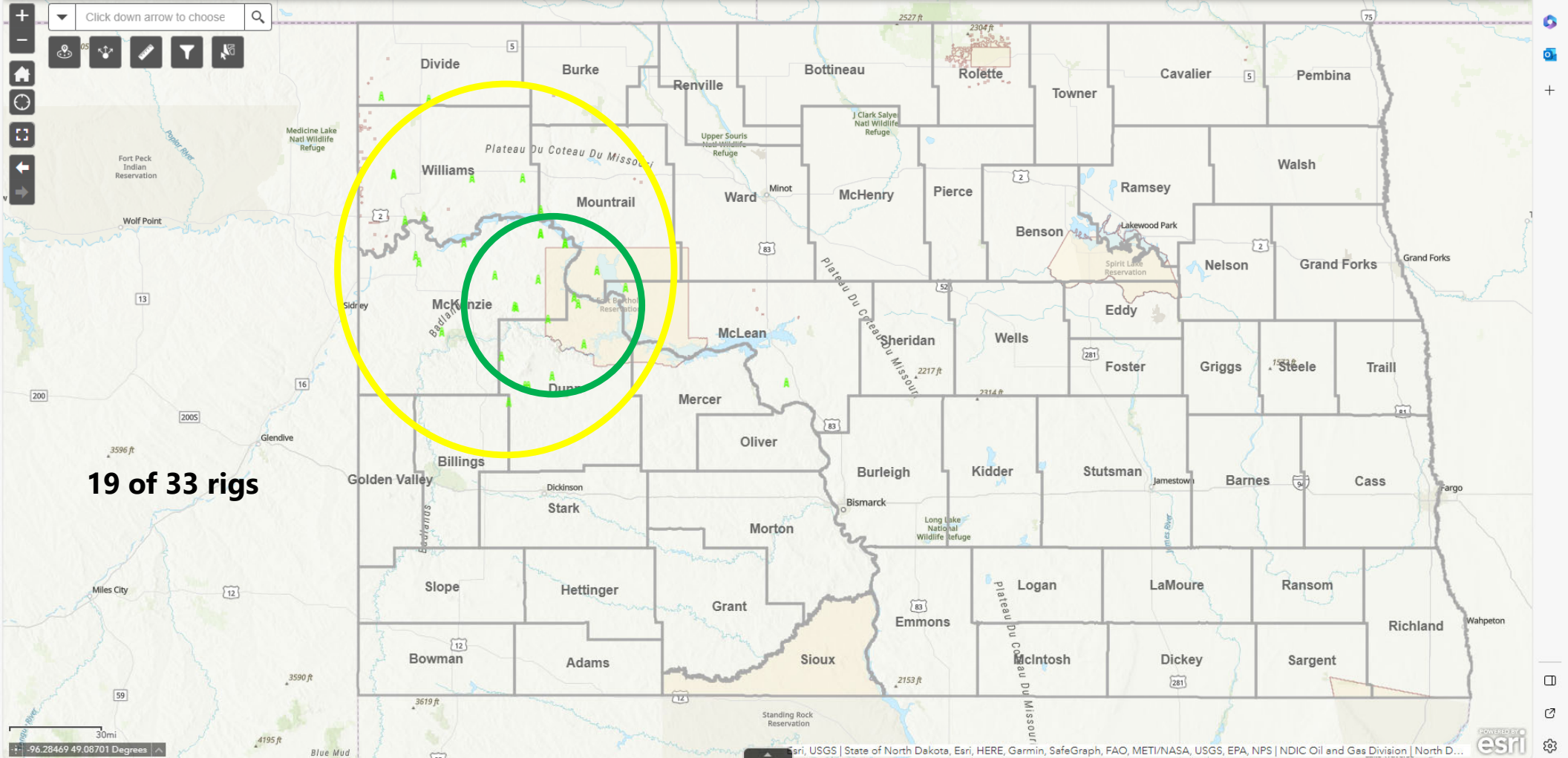
Tier 3
 25% developed
 +7,000 wells
 5% growth = 150 rigs = 2 years
 1-2% growth = 75 rigs = 4 years

Total = 23,000 wells & 18 years
 Current 17,000 wells & 16 years

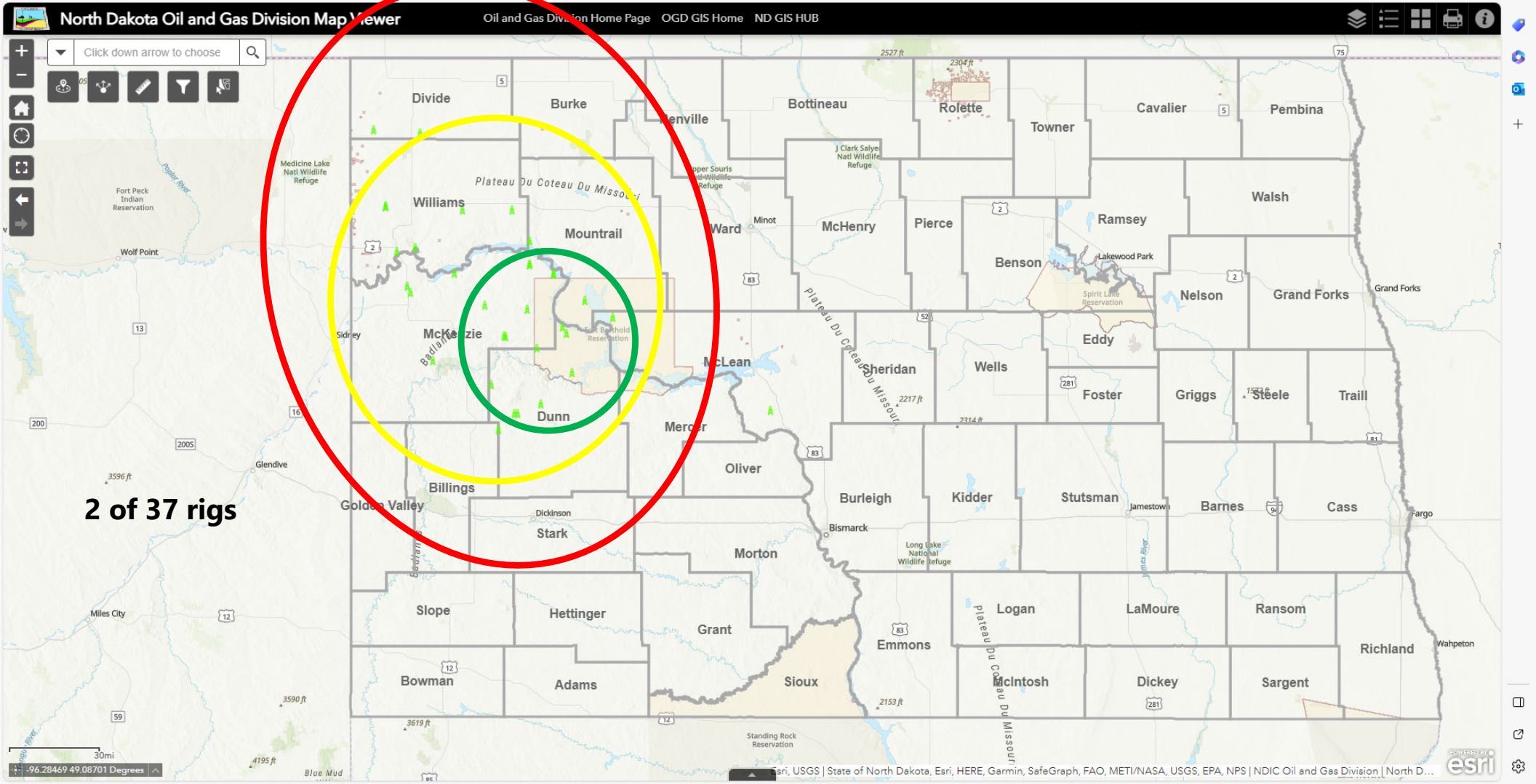




12 of 33 rigs



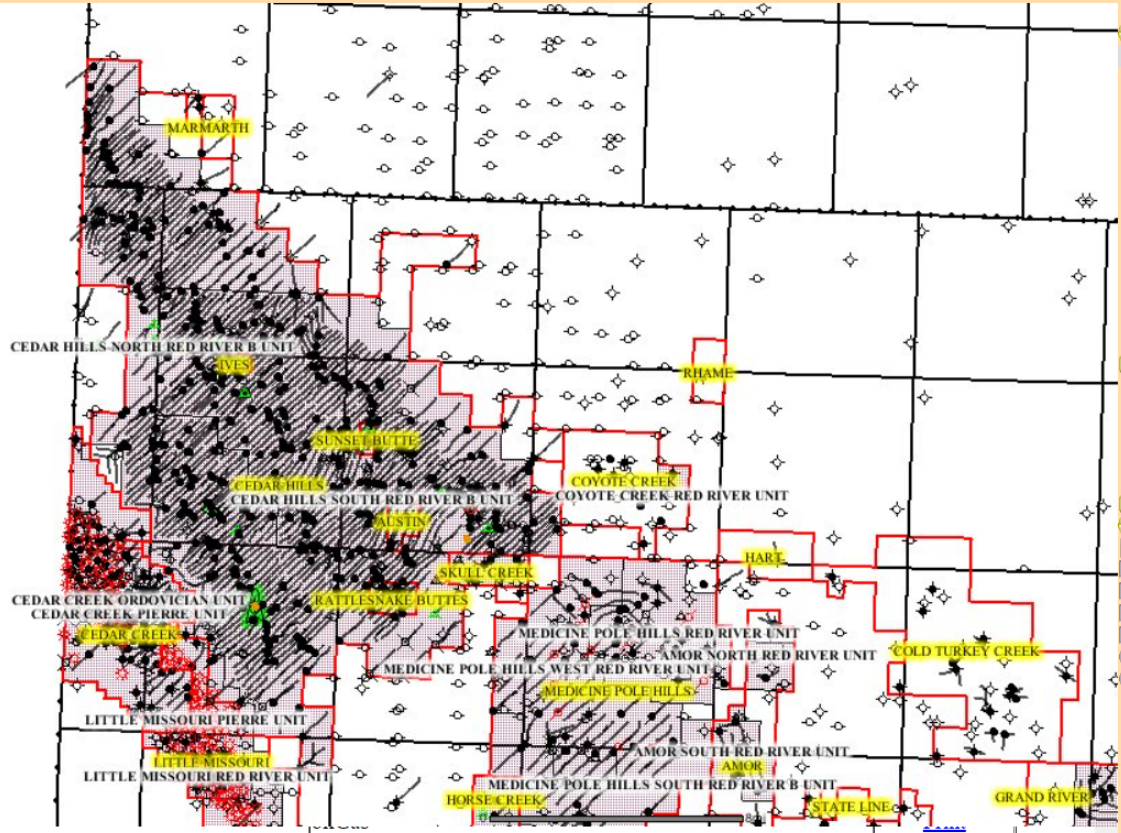
19 of 33 rigs



2 of 37 rigs

Oil and Gas : ArcIMS Viewer

- Legend / Layers
- Overview Map
- View Entire State
- Previous View
- Clear Selection
- Search
- Create PDF
- Zoom In
- Zoom Out
- Pan
- Rect Identify
- Select Object
- Buffer
- Distance
- Find Well
- Find Field / Unit
- Find Section
- Browser Settings Suggestion



ND OIL & GAS LAYERS

- Oil and Gas
- Wells
- Permit Status Before Spud
- Rig Location
- Directional Surveys
- Directional Legs
- Horizontal Surveys
- Horizontal Legs
- Cases Docketed
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Refresh Map

Auto Refresh

Help:

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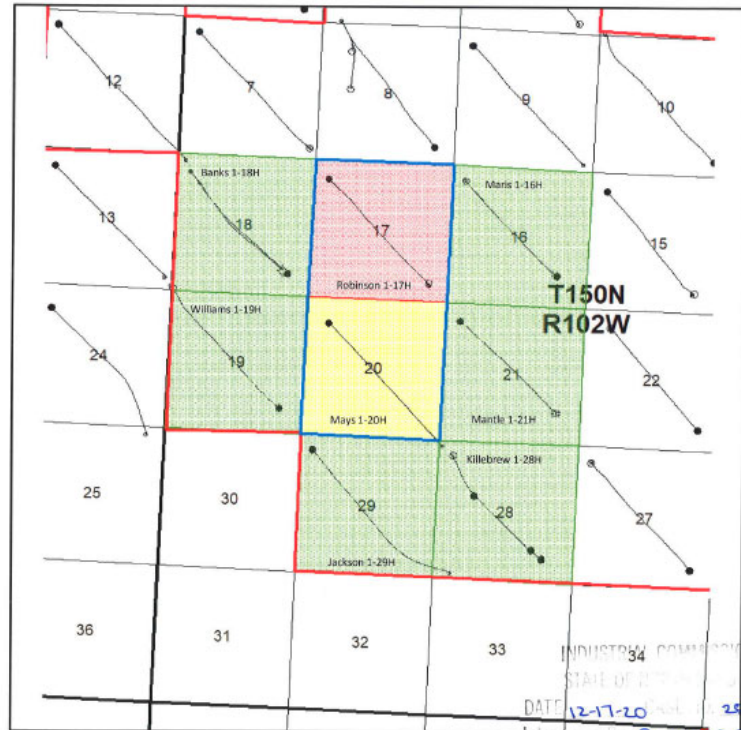
<input type="radio"/>	CEDAR HILLS	oilGas	Print
<input type="radio"/>	CENTENNIAL	oilGas	Print
<input type="radio"/>	CHAMA	oilGas	Print
<input type="radio"/>	CHARBONNEAU	oilGas	Print
<input type="radio"/>	CHARLIE BOB	oilGas	Print

Find

Map Data Last Updated : 7/19/2021

Mays Waterflood Test Plat

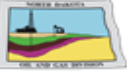
Foreman Butte Field: Madison Pool



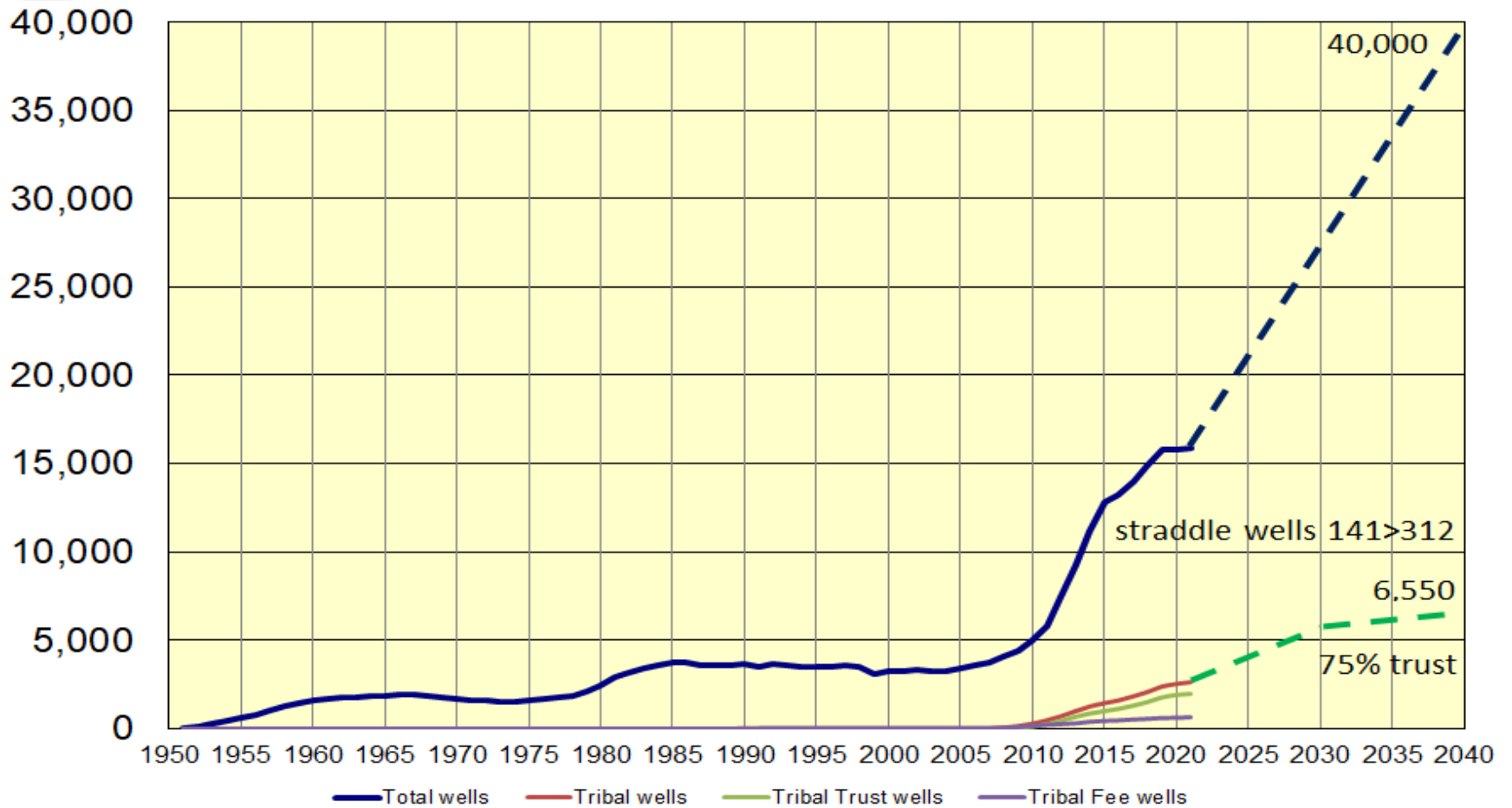
INDUSTRY COMMISSION
STATE OF OREGON
DATE: 12-17-20
FILE: 28572
Initialed by: Samson
Exhibit: 4
Identified by: Hatcher

Mays 1-20H – Injector		Mays/Robinson Unit	
Robinson 1-17H – Producer			
6 Monitoring Wells			

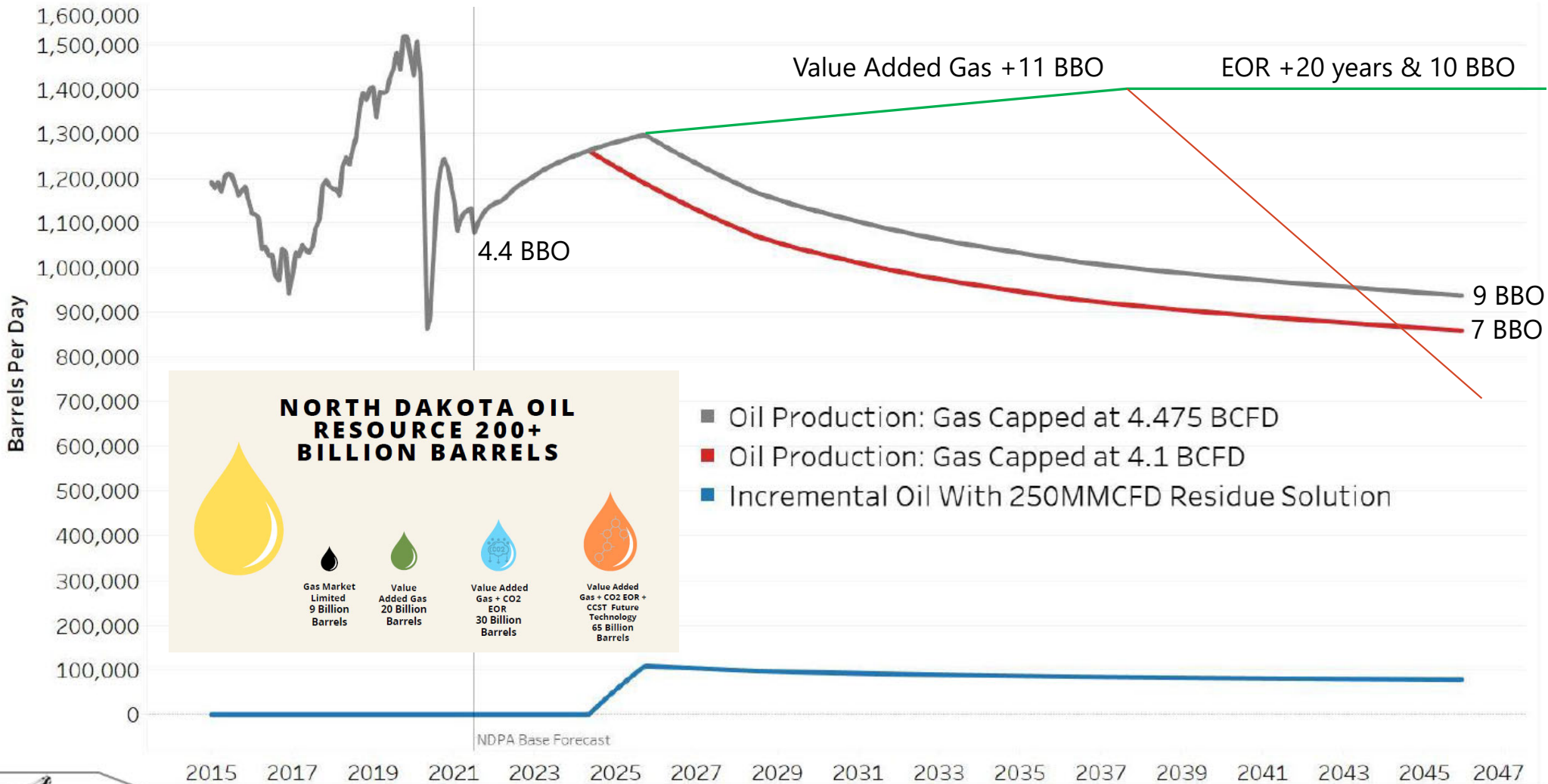
Exhibit: 4
Docket Case No. 28572



North Dakota Wells Producing



North Dakota Oil Resource Potential





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HB1014 – DMR budget

Move website and NorthSTAR from on site servers to cloud

Streamline NorthSTAR

\$11.3 million for salt cavern project

\$1.5 million for critical mineral / rare earth research

\$3 million for litigation

\$3 million for IPIPE

\$50 million for CSEA grants and \$390 million CSEA loans

\$3.2 million for orphan well to water well conversions

HB1272

Creates a new category “enhanced oil recovery potential” for idle wells

NDAC 43-02-03-15 (10)

Enhanced oil recovery potential well bond

NDAC 43-02-03-55 (3)

Enhanced oil recovery potential well integrity requirements

HB1286

Removed oil extraction tax trigger

HB1427

Extraction tax reduction for restimulations

NDIC Certification – file sundry attesting well meets the 3 items in statute.

SB2009 & SB2194

Create and fund royalty owner ombudsman program

SB2057

Amended 38-22-06 to streamline mineral owner notice requirement for CCS

SB2058

Amended 30-08-04 to place all equipment located at or on an oil or gas well sites and underground pipeline surface facilities under NDIC jurisdiction

SB2059

Increased abandoned well fund limit to \$100 million

SB2089

Created a \$3 million OGRC grant program, added tank vapor capture technologies, gas lift, and temporary gas injection

SB2289

Amended 54-35-18 to require EDTC committee to develop a statewide energy policy

SB2209, SB2212, SB2313, SB2314, SB2228, SB2317, SB2383 > NWLA lawsuit

Carbon dioxide pipelines, storage (also oil & gas), and eminent domain

NDAC 43-02-03-14.2

Shifts focus of meter inventory and witnessed tests from operators to provers

NDAC 43-02-03-16

Can extend a permit to drill to recomplete or drill horizontally for up to one year upon application
Extends verbal waivers for site construction with single APD on multiwell pad

NDAC 43-02-03-19.3

Produced water for fracture stimulations stored in open receptacles upon approval by the director

NDAC 43-02-03-21

Requires an accurate gauge be maintained on the surface casing of any well, not properly plugged and abandoned, to detect any buildup of pressure

NDAC 43-02-03-28

Allows potential ignition sources closer to processing vessels

NDAC 43-02-03-29.1 (10)

Requires filing of data sharing plan on underground gathering pipelines

NDAC 43-02-03-30

Applies 10 barrels spill reporting threshold applied to underground gas gathering pipeline facilities

NDAC 43-02-03-31

Confidentiality for information furnished to the director on refracs except the operator name, well name, location, permit date, confidentiality period, spacing or drilling unit description, spud date, rig contractor, any production runs, or volumes injected into an injection well

NDAC 43-02-03-35

Change responsibility to record reclamation waivers from operator to commission

Hearings:

8:00AM CDT 10/09/2023 Bismarck

1:00PM MDT 10/09/2023 Dickinson

8:00AM CDT 10/10/2023 Williston

1:30PM CDT 10/10/2023 Minot



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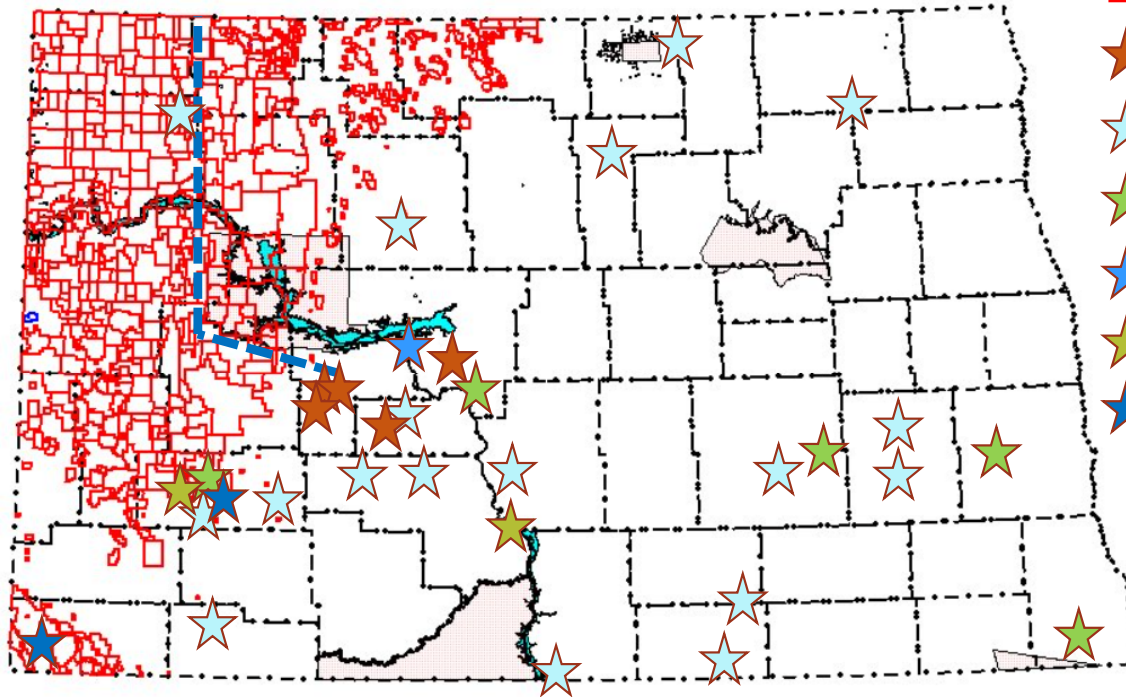
Distance

Find Well

Find Field / Unit

Find Section

Browser Settings
Suggestion



Current ND energy landscape

- Oil & Gas
- Coal-ElecGen
- Wind Farm
- Ethanol
- Hydro
- Refinery
- CCUS

Download Shape

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Map Data Last Updated : 1/24/2025

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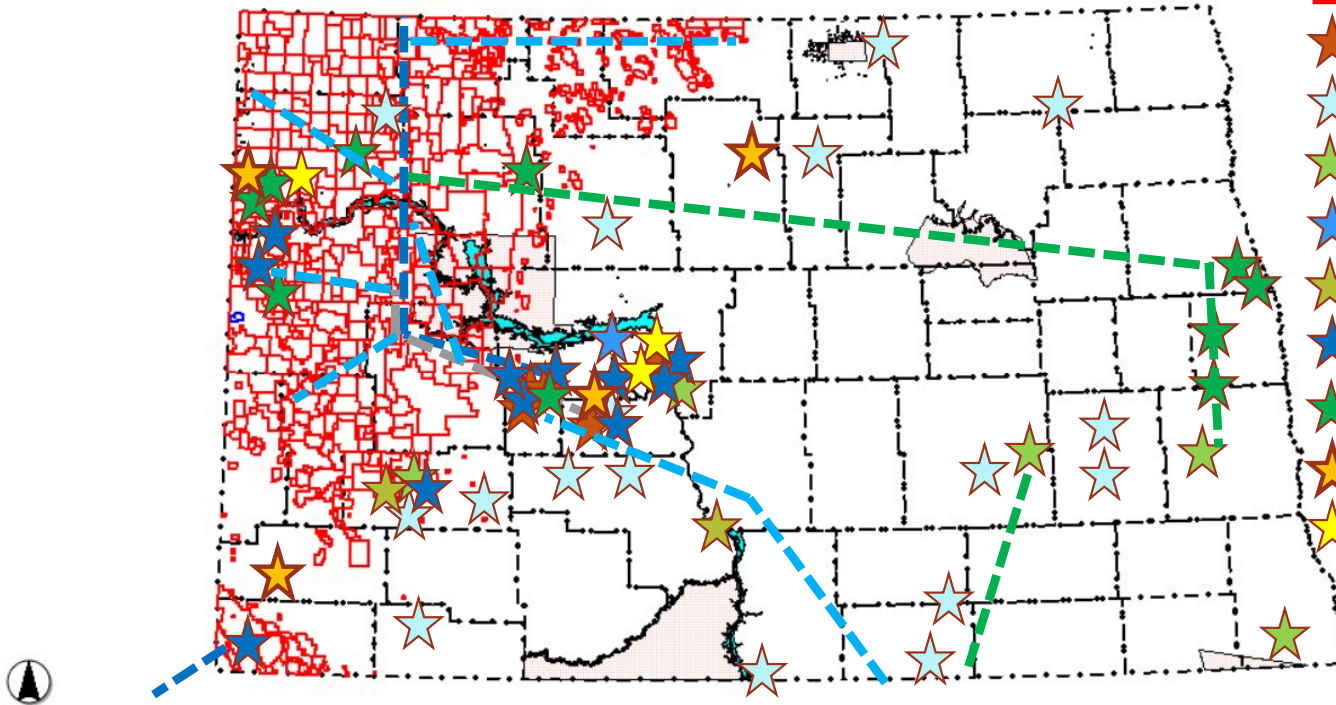
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-  Oil & Gas
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-  Wind Farm
-  Ethanol
-  Hydro
-  Refinery
-  CCUS
-  NG / Industrial
-  Minerals
-  Data Center



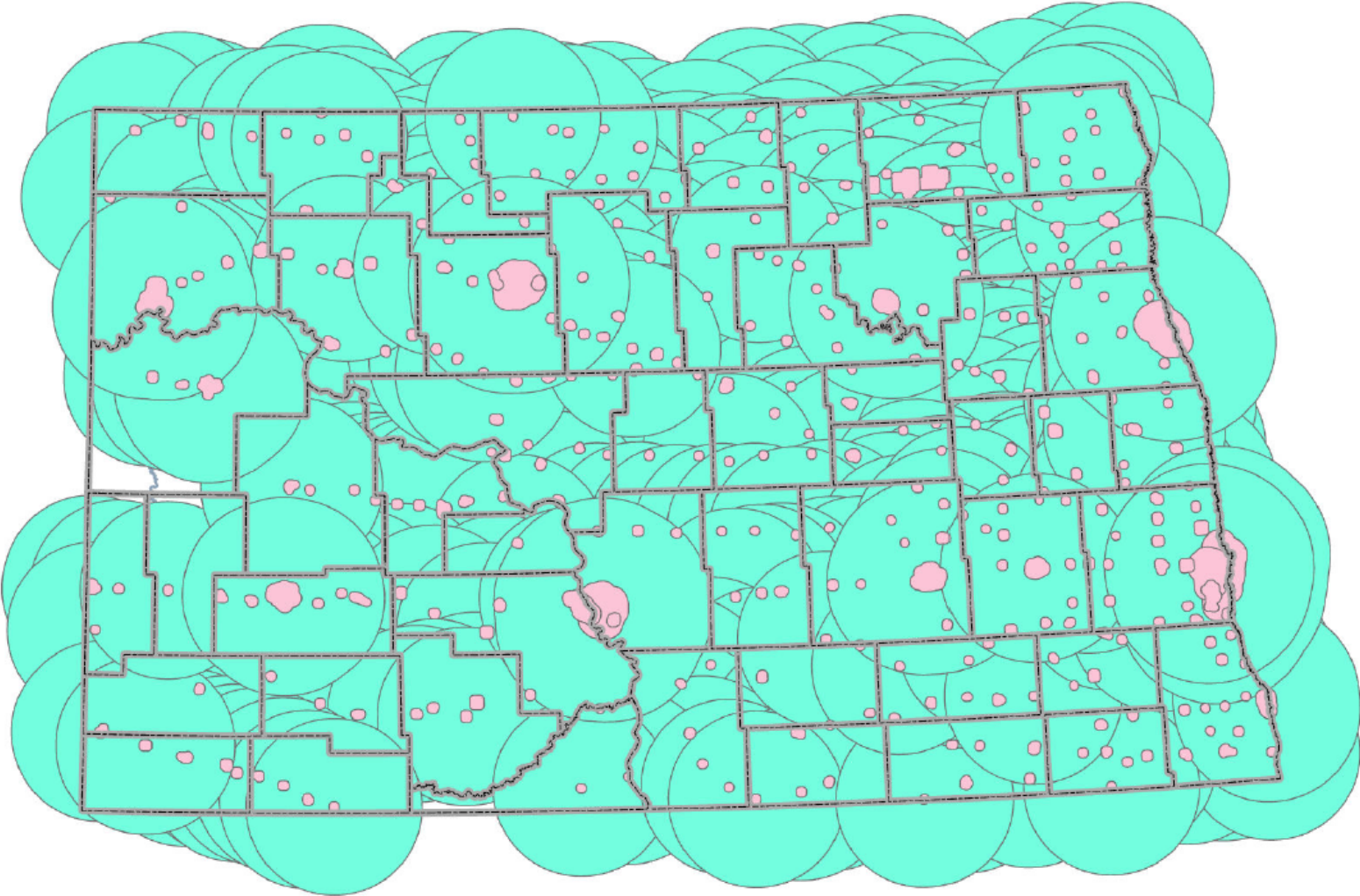
0 88mi

ND Energy Landscape Vision

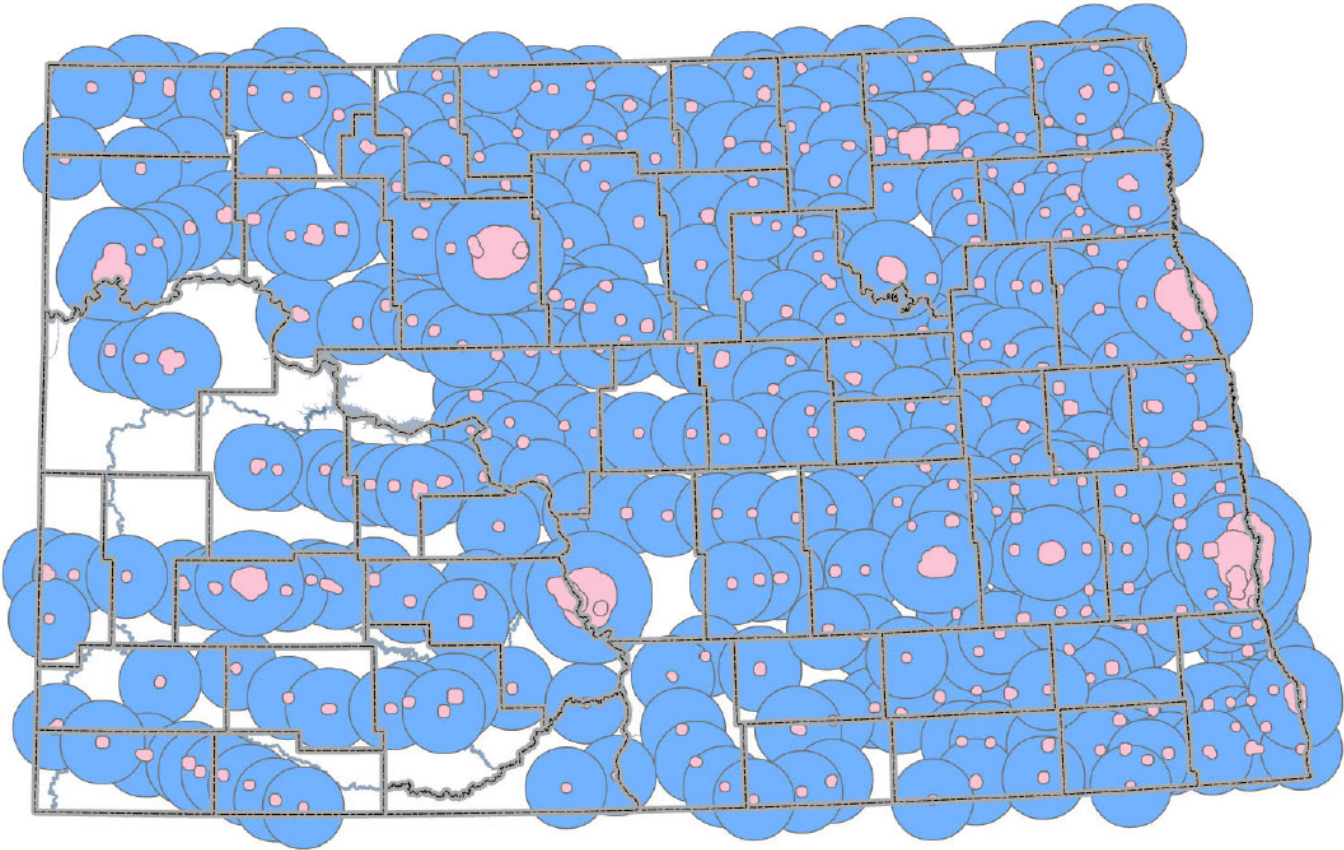
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Map Data Last Updated : 1/24/2025

Extraterritorial Jurisdiction +25 miles

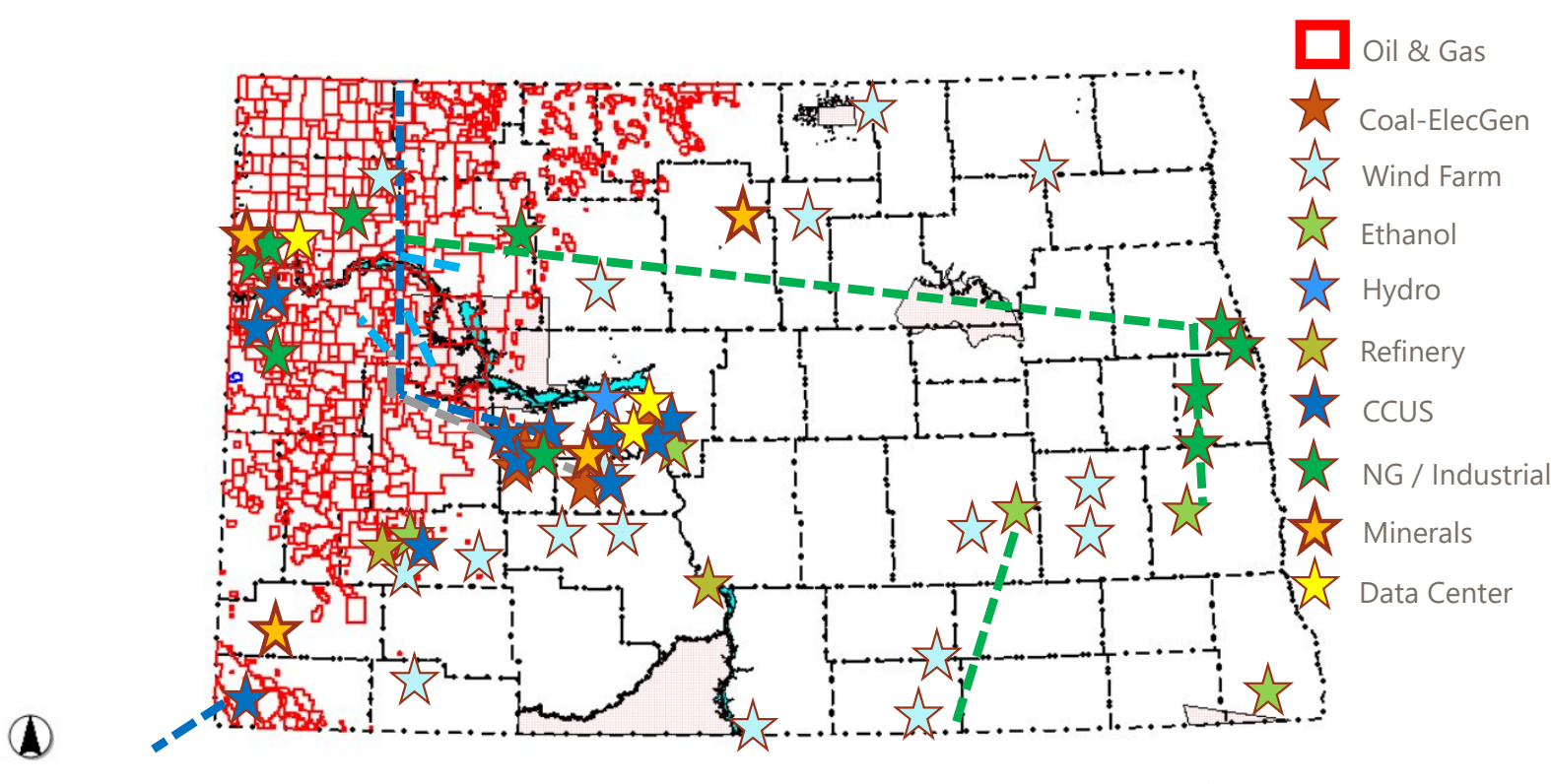


Extraterritorial Jurisdiction + 10 miles



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**ND Energy Landscape NIMBY
Vision (-)9 BBO**

- Oil & Gas
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- Wind Farm
- Ethanol
- Hydro
- Refinery
- CCUS
- NG / Industrial
- Minerals
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North Dakota
Department of Mineral Resources
www.dmr.nd.gov

Phone: 701.328.8020 Email: oilandgasinfo@nd.gov
Mailing Address: 600 East Boulevard Ave. Dept 474; Bismarck, ND 58505