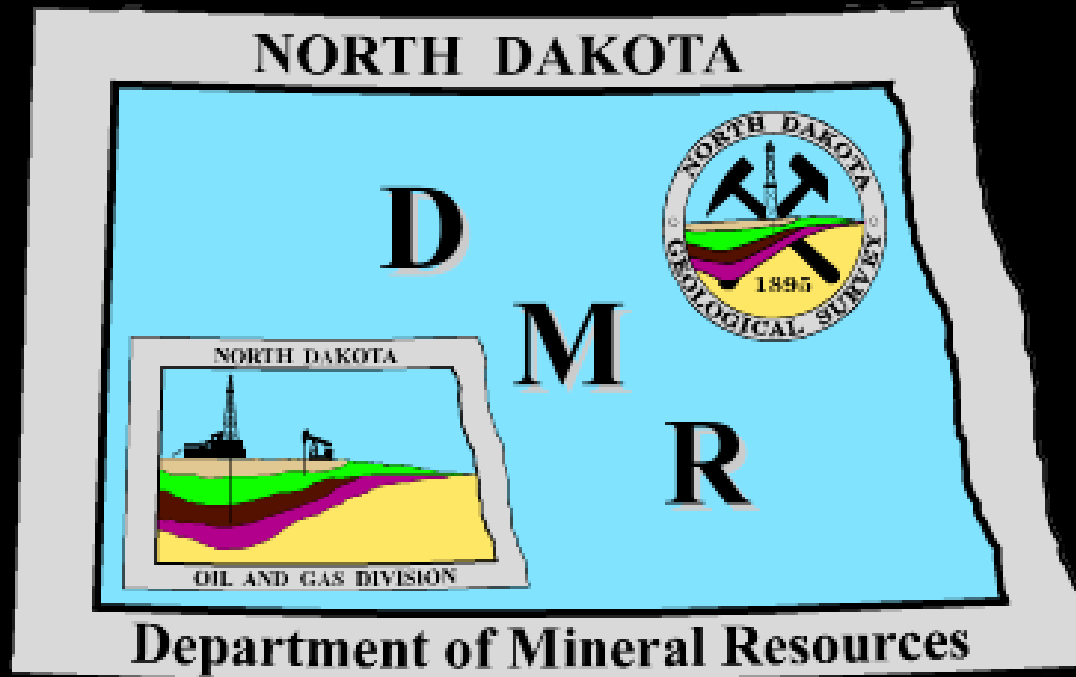


North Dakota Department of Mineral Resources



<http://www.oilgas.nd.gov>

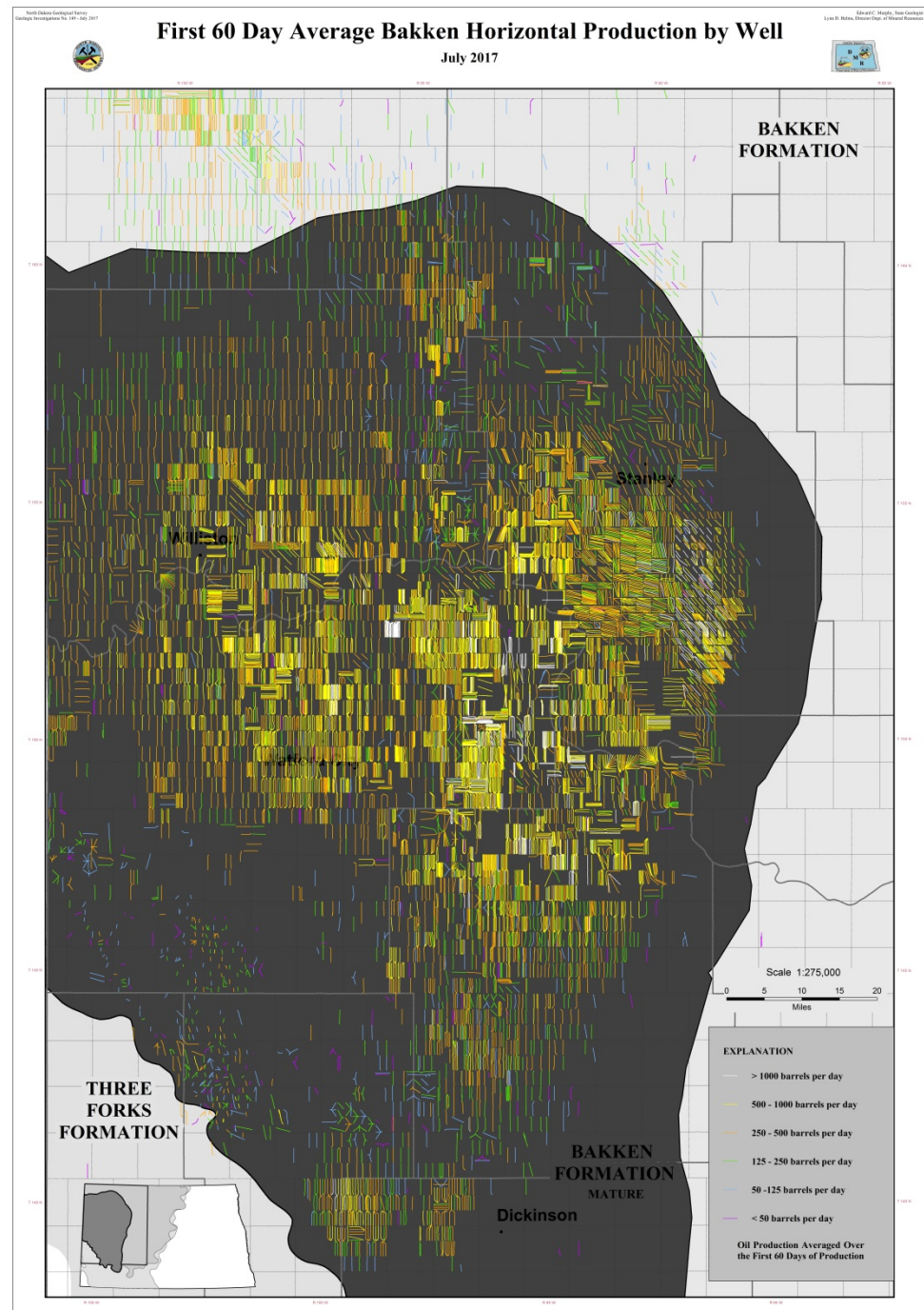
<http://www.state.nd.us/ndgs>

600 East Boulevard Ave. - Dept 405

Bismarck, ND 58505-0840

(701) 328-8020

(701) 328-8000

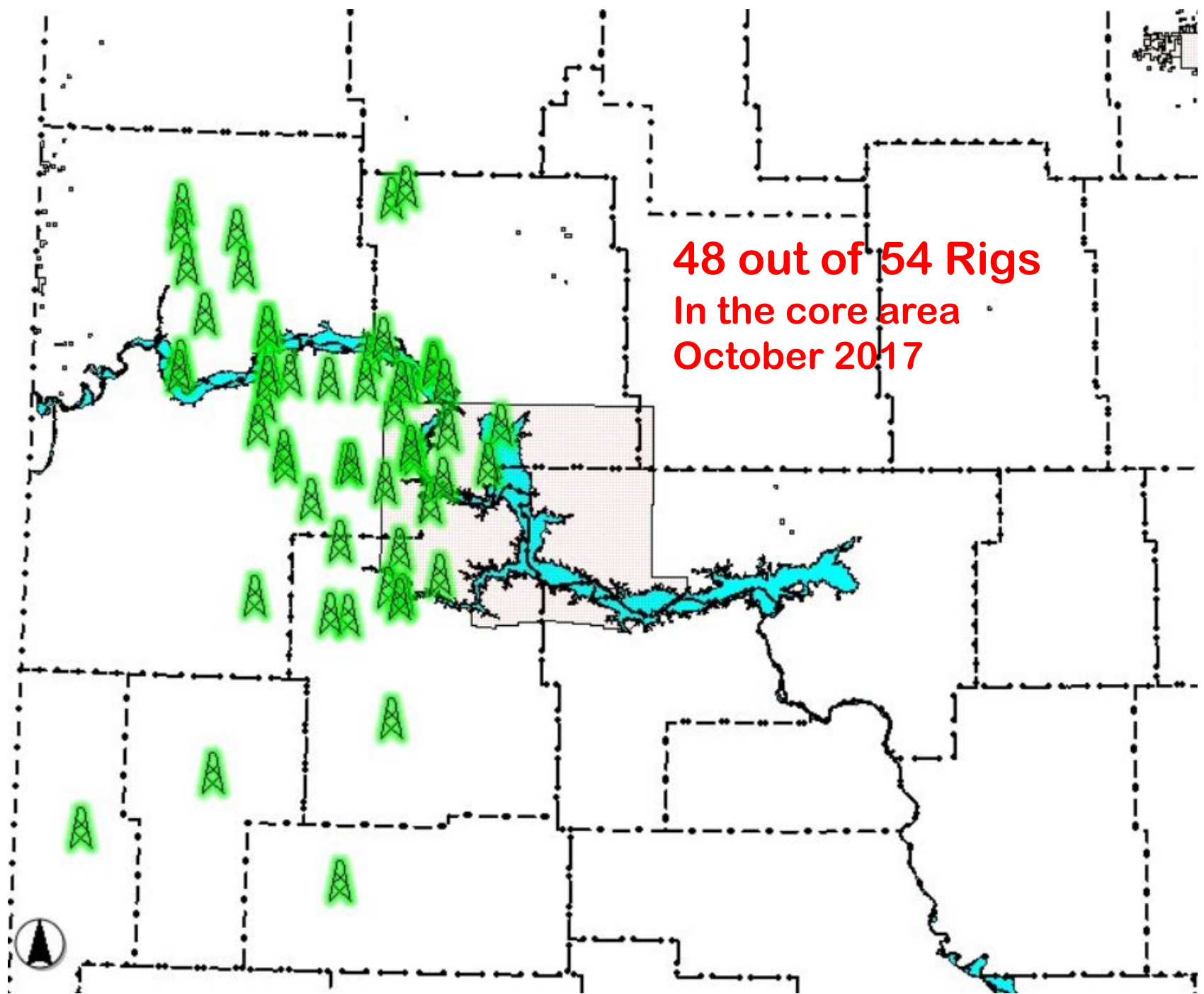


Wells

- 14,080 active
 - 2,056 conventional
 - 12,024 Bakken/Three Forks
- 1,498 inactive
 - +\$50 for 90 days
- 863 waiting on completion
 - +\$55 for 90 days
- 1,950 permitted
 - +\$60 for 90 days
 - NYMEX 2024+
- 13,154 increased density approved 10/30/17
- 31,545 total
- 55,000-65,000 estimated final



**48 out of 54 Rigs
In the core area
October 2017**



Impact

Wells drilled and completed - \$99.9 billion

Wells drilled not yet completed - \$8.8 billion

Natural Gas gathering and processing - \$13 billion

Rail and rail transportation facilities - \$1.25 billion

Crude Oil transmission pipelines - \$2 billion

Total estimate - \$125 billion

This does not include the investments in housing and infrastructure made by private firms and state-local-federal government.

Coming Attractions

NDIC Rule Changes

EOR Field Tests

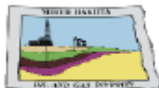
\$50/barrel & \$60/barrel

Coming Attractions

NDIC Rule Changes

EOR Field Tests

\$50/barrel & \$60/barrel



**NORTH DAKOTA INDUSTRIAL COMMISSION
DEPARTMENT OF MINERAL RESOURCES
OIL AND GAS DIVISION**

SUMMARY OF PROPOSED 2018 RULES

NDAC CITE	RULE	PROPOSED CHANGE
43-02-03 GENERAL RULES		
43-02-03-01	Definitions	"Treating Plant" does not include treating tank bottoms at well site or facility
43-02-03-05	Enforcement of Laws, Rules, and Regs	Requires contractors know regs before conducting operations
43-02-03-14.2	Oil and Gas Metering Systems	Requires serial numbers of oil and gas meters to be submitted
43-02-03-15	Bond and Transfer of Wells	Requires principal to submit drawing identifying location of pipelines off site
43-02-03-17	Sign on Well or Facility	Clarifies signs must be on both the well and facility
43-02-03-22	Defective Casing or Cementing	Requires MIT if suspect defective casing or cementing Requires subsequent MIT if casing integrity is questionable after remedial work
43-02-03-28	Safety Regulation	Clarifies ignition sources (not just boiler/generator) must be at a safe distance
43-02-03-30	Fires, Leaks, Spills, or Blowouts HB1151	Leak/spill involving CO, PW, NGL notification NR if < 10bbls, stays on site built >9-01-2000
43-02-03-30.1	Leak and Spill Cleanup	Requires Fm4 w/in 10 days of spill cleanup
43-02-03-33	Notice of Intention to Plug Well	Notice must include well bore diagram
43-02-03-34.1	Reclamation of Surface SB2333	Requires reclamation to original condition per 38-08-04.12 (SB2333) Authorizes Director to require an environmental assessment of the site
43-02-03-49	Oil Production Equip, Dikes, and Seals	Requires dikes around production equipment at new production facility Synthetic liner required on dikes and within diked area
43-02-03-51.3	Treating Plant Construction and Operation	Requires all discharged wastes to be promptly removed, not just accidentally spilled Requires Fm4 w/in 30 days of TP construction/modification Clarifies that prior approval needed before modify TP Authorizes Director to shut-in TP operations if noncompliant
43-02-03-51.4	Treating Plant Abandonment & Reclamation	Removes duplication in Adm Code--language appears under 43-02-03-34.1
43-02-03-53.3	SHF Construction & Operation Requirements	Requires Fm4 w/in 30 days of TP construction/modification Authorizes Director to shut-in TP operations if noncompliant
43-02-03-53.4	SHF Abandonment & Reclamation	Removes duplication in Adm Code--language appears under 43-02-03-34.1
43-02-03-55	Abandonment of Wells, TPs, & SHFs	Clarifies Comm can require shut-in inj wells plugged after notice & hearing
43-02-03-88.1	Special Procedures	Clarifies Comm must receive comments by 5pm last business day prior to hearing
43-02-05 UNDERGROUND INJECTION CONTROL		
43-02-05-06	Construction Requirements	Requires all SWD wells to have surface casing set below Fox Hills Fm Requires Director approval to perf after initial completion Clarifies surface facilities must be constructed pursuant to saltwater handling facilities rules
43-02-05-09	Pressure Limitations (formerly Operating Regs)	Moves existing language to 43-02-05-12
43-02-05-12	Reporting, Monitoring, and Operating Regs	Identifies forms needed to report monthly injection Requires initial and annual press test of all inj lines leaving the pumphouse site Added annular injection prohibition currently residing in 43-02-05-09
43-02-06 ROYALTY STATEMENTS		
43-02-06-01	Royalty Owner Information Statement	Requires point of sale for oil and gas Requires weighted average price and point of sale for natural gas liquids Modifies rule to conform to existing statute--must clearly identify deductions Requires gross and net mineral acres in spacing unit
43-02-11 CERTIFICATION OF HORIZONTAL, RE-ENTRY, AND TWO-YEAR INACTIVE WELLS		
43-02-11-01	Definitions HB1043	Removes reference to tax incentives repealed by HB1043
43-02-11-02	Appl to Certify Hor, Hor RE, Two-Yr Inactive HB1043	Removes qualifying well certification for tax incentives repealed by HB1043
43-02-11-04	Appl for Tax Exempt for Hor Well HB1043	Removes tax incentives repealed by HB1043
43-02-11-05	Appl for Tax Exempt for Hor RE Well HB1043	Removes tax incentives repealed by HB1043
43-02-11-06	Appl for Tax Exempt for Two-Yr Inactive Well HB1043	Removes tax incentives repealed by HB1043
43-02-11-07	Books & Records--Substantial Reports HB1043	Removes reference to tax incentives repealed by HB1043
43-02-11-08	Appl for Tax Exempt for Shallow Gas Well	Removes requirement to notify all working interest owners and gas purchasers
43-05-01 GEOLOGIC STORAGE OF CARBON DIOXIDE		
43-05-01-19	Facility Closure SB2333	Requires reclamation to original condition per 38-08-04.12 (SB2333)

TIMETABLE FOR ADOPTING OIL AND GAS RULES (tentative in RED FONT)

2017

- Jun 27:** Requested ideas f/rule changes at Annual Inspector Meeting
- Jul 28:** Received interoffice comments for proposed rules
- Aug 22:** IC meeting—received approval to proceed with proposed rulemaking
- Aug 23:** Sent legal ad to North Dakota Newspaper Association for rules notice
File full notice + rules w/Leg Council (LC) via hand-delivery
LC sends rules notice to interested parties w/in 15 business days after receiving them
- Aug 30:** Write reg analysis f/rules impacting industry > \$50,000
All papers (10 daily + 42 weekly) to publish proposed rules notice Aug 30 – Sep 5
- Oct 11:** Rules hearing (Case 26062) @ 9 am, Oil and Gas Division Field Office, 1000 E Calgary Ave, Bismarck
- Oct 11:** Rules hearing @ 1 pm, Oil and Gas Division Field Office, 926 E Industrial Drive, Dickinson
- Oct 12:** Rules hearing @ 8:30 am, Home Place Lodge and Suites, 1505 15th Ave West, Williston
- Oct 12:** Rules hearing @ 2 pm, Oil and Gas Division Field Office, 7 3rd St SE, Suite 107, Minot
Minimum ten-day comment period starts (to receive input on proposed rules)
- Oct 23:** Comment period ends—11 days from final hearing date
- Nov 27:** Finalize responses to all comments rec'd (oral-hearing + written comments)
Finalize appropriate amendments to rules
- Nov 28:** IC approve rules w/ICO # _____ (Case 26062): Prepared Aff of mailing to all parties
- Nov 28:** Write small entity reg analysis and small entity impact statement
Complete small entity regulatory analysis required to minimize adverse impact on small entities
Complete small entity impact statement required if has an adverse impact on small entities
Submit final rules to Attorney General (AG) for legal opinion including:
- Dec 20:** Receive opinion from AG's office
File rules+AG opinion w/LC
(Rules filed w/LC btn Nov 2-Feb 1 become effective Apr 1, 2018.)

2018

- Jan 17:** Notify all interested parties (+ post on web) of Adm Rules Comm hearing after LC posts agenda
- Mar 14:** Administrative Rules Committee Hearing (Notify all interested parties when LC posts agenda)
- Apr 1:** Adopt final rules

Coming Attractions

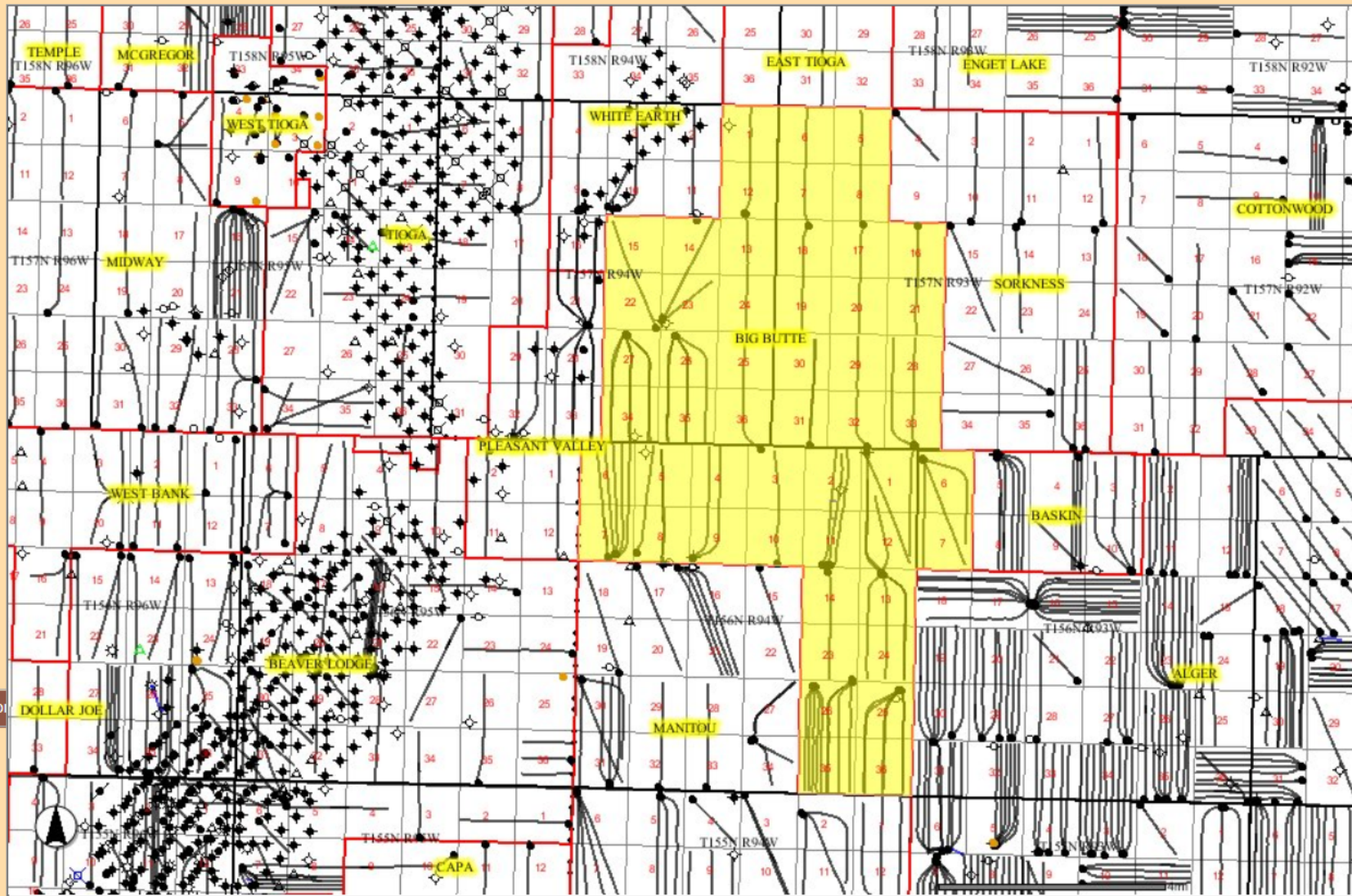
NDIC Rule Changes

EOR Field Tests

\$50/barrel & \$60/barrel

Oil and Gas Subscription: ArcIMS Viewer

- Legend / Layers
- Overview Map
- View Entire State
- Previous View
- Clear Selection
- Search
- Create PDF
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- Browser Settings Suggestion

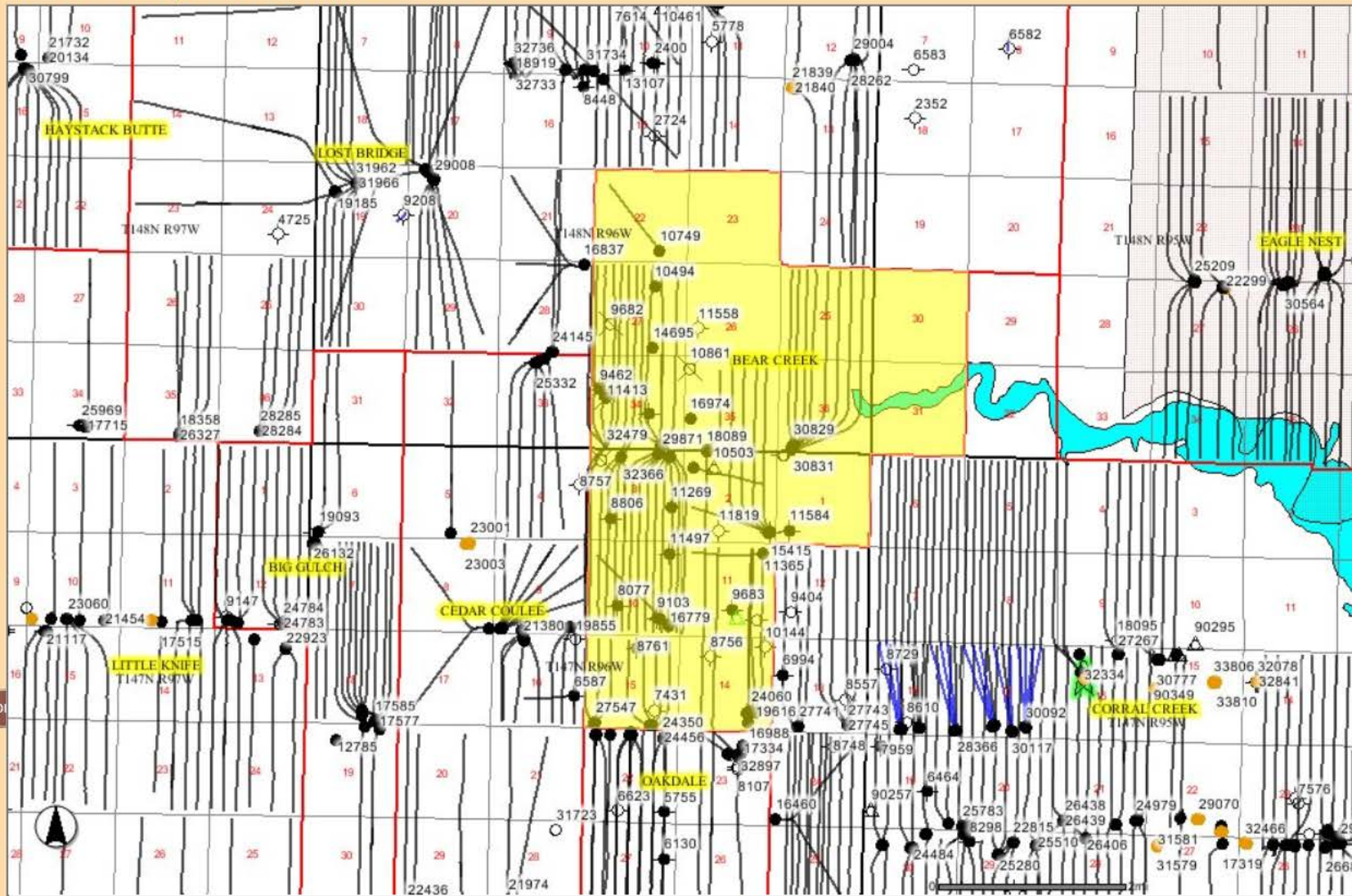


Oil Fields

Rec	Name	Type
1	BIG BUTTE	oilGas

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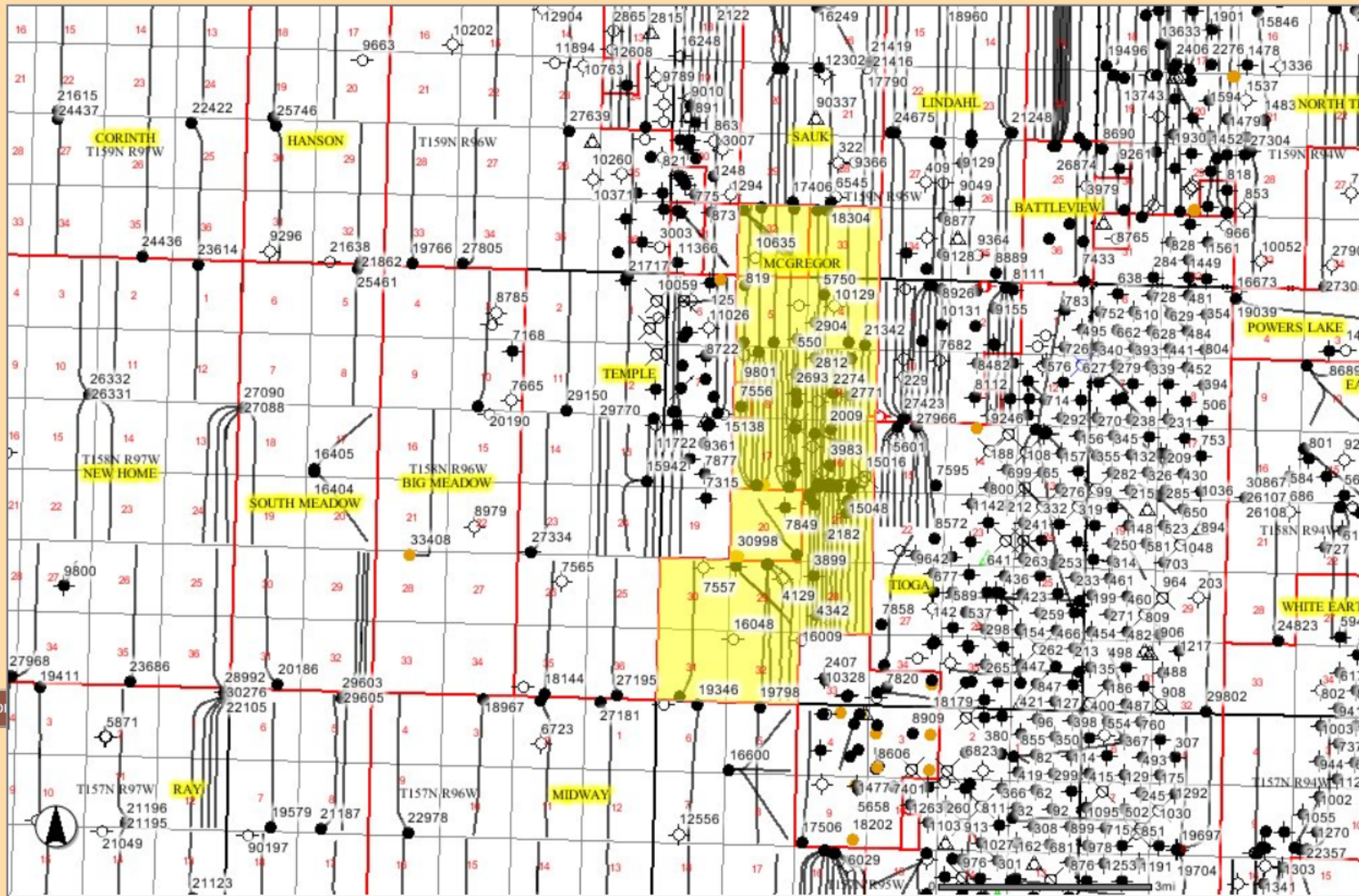


Oil Fields

Rec	Name	Type
1	BEAR CREEK	oilGas

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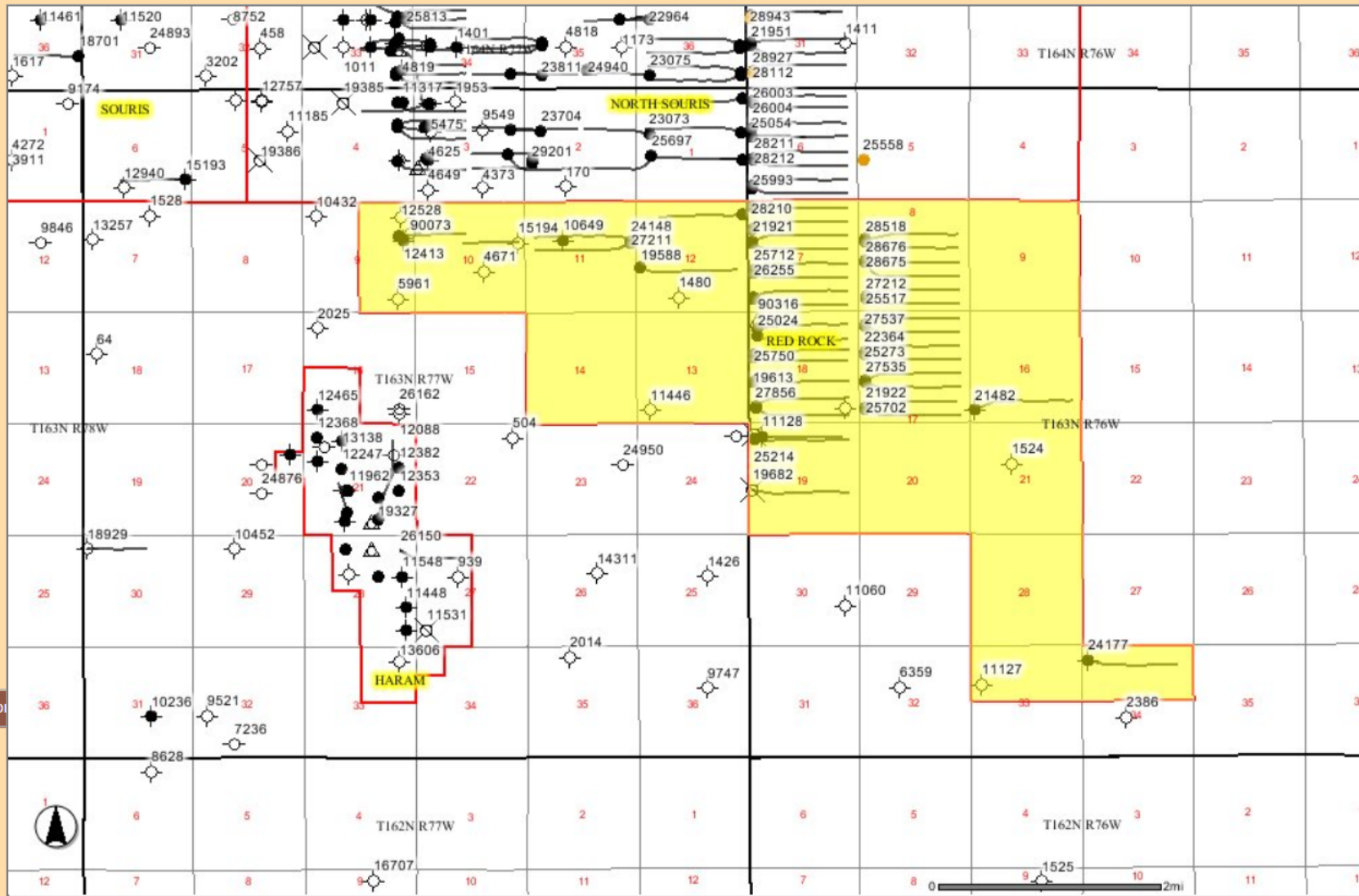


Oil Fields

Rec	Name	Type
1	MCGREGOR	oilGas

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- Find Section



Oil Fields

Rec	Name	Type
1	RED ROCK	oilGas

EOG on EOR

EOG is the first company to say it has significantly increased oil production from an unconventional play using gas injection.

Field tests since program started in 2013:

- The production increases on 15 wells indicated from 30 to 70% reserve gains.
- A 32-well test in 2016 added 300,000 bbl of oil at \$6/bbl finding cost.
- Work is ongoing on 100 wells in six areas in 2017.

Inputs and Outputs

- Additional capital costs average about \$1 million per well.
- The process uses associated gas from its wells.
- Production response is in 2–3 months.
- \$1 invested adds \$2 to net present value.

It Works if:

- The formation is able to contain high-pressure gas injection near the well.
- Wellbores contact the most productive rock.
- The completion maximizes the fractured area within a restricted zone around the wellbore.

Source: EOG.

Coming Attractions

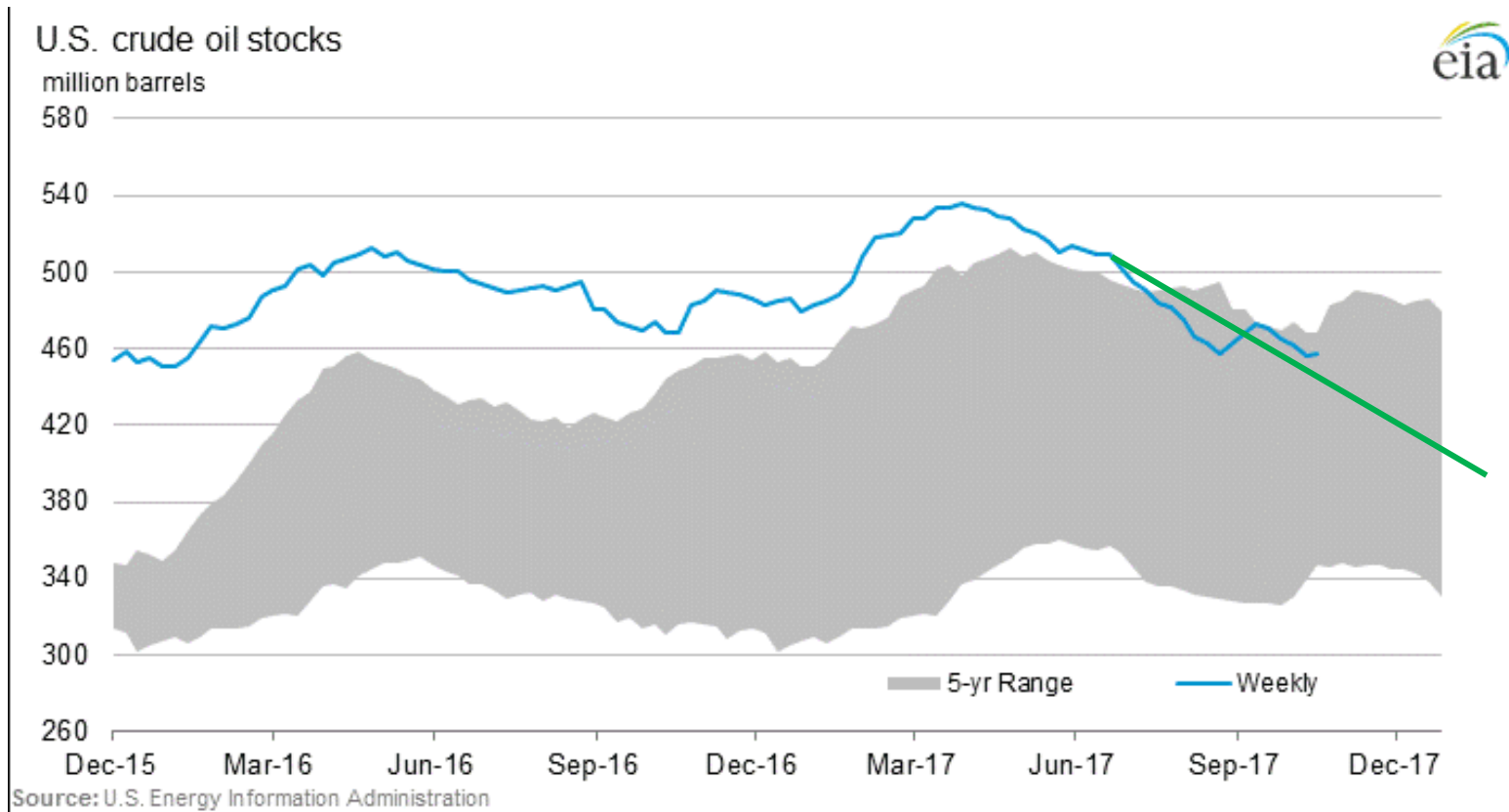
NDIC Rule Changes

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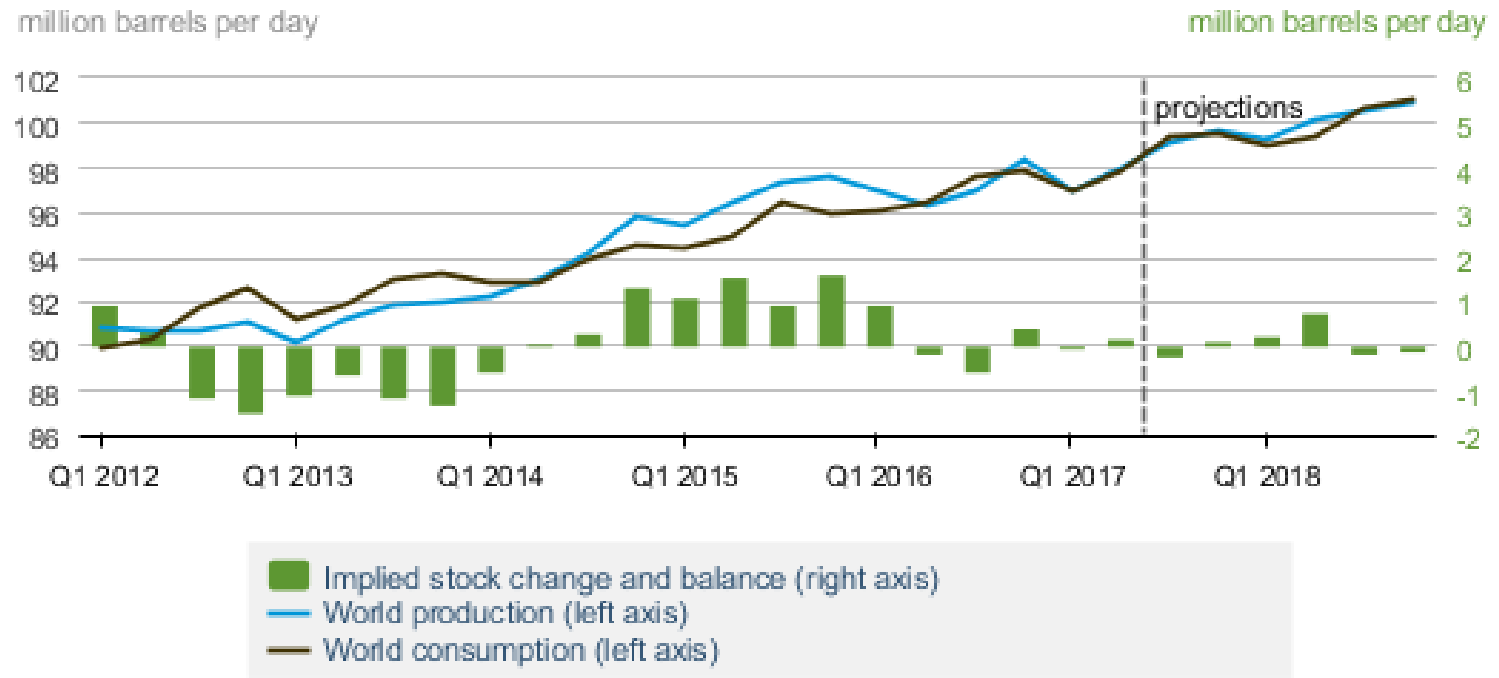
\$50/barrel & \$60/barrel

Storage East Coast 13 of 20=65%
 Permian 86 of 120=72%
 Rockies 20 of 40=50%
 Total US 457 of 735=62%

Cushing 64 of 70=91%
 Gulf Coast 224 of 395=57%
 West Coast 50 of 100=50%
 Normal 400 of 735=54%

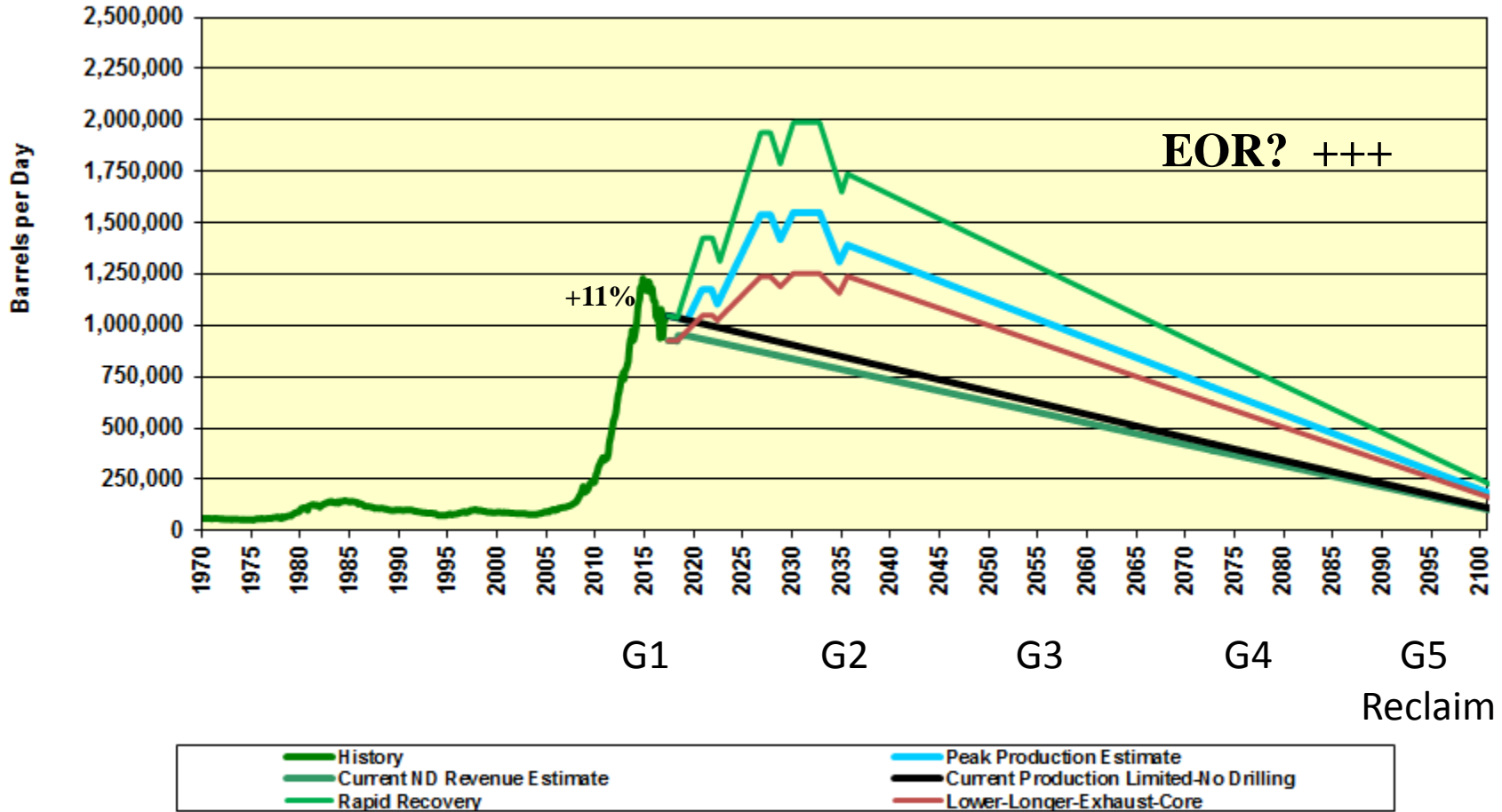


World liquid fuels production and consumption balance





North Dakota Oil Production



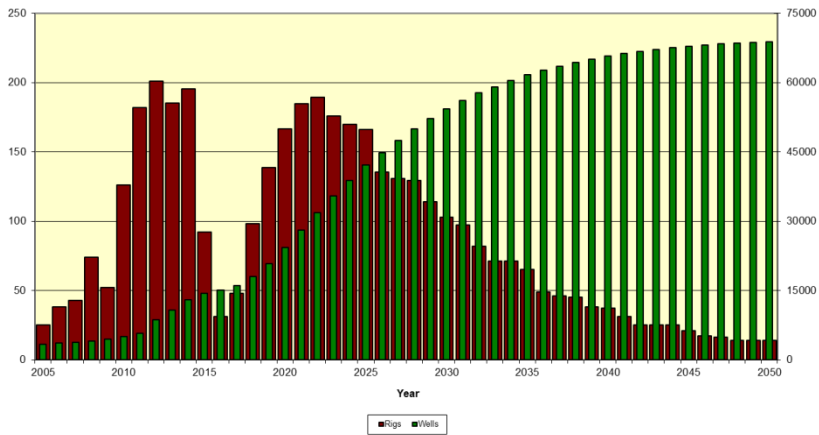


North Dakota Oil Production and Price

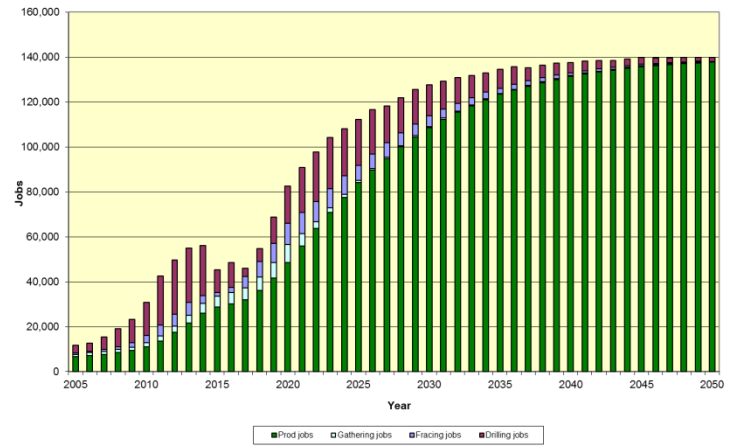


— \$/Barrel History ◆ \$ Barrel ND Revenue Forecast — \$/Barrel NYMEX - 15%

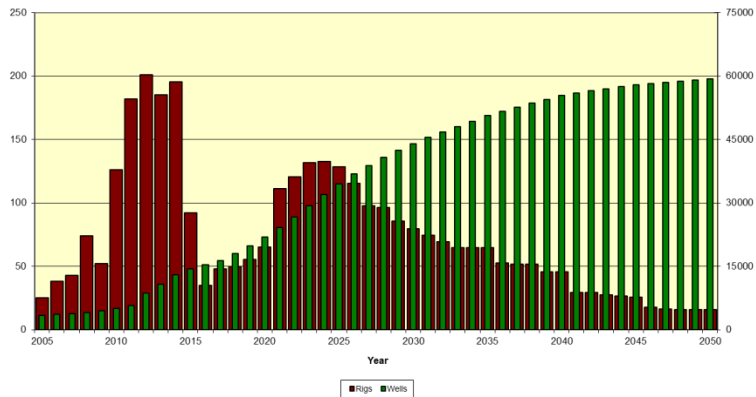
North Dakota Rigs and Wells



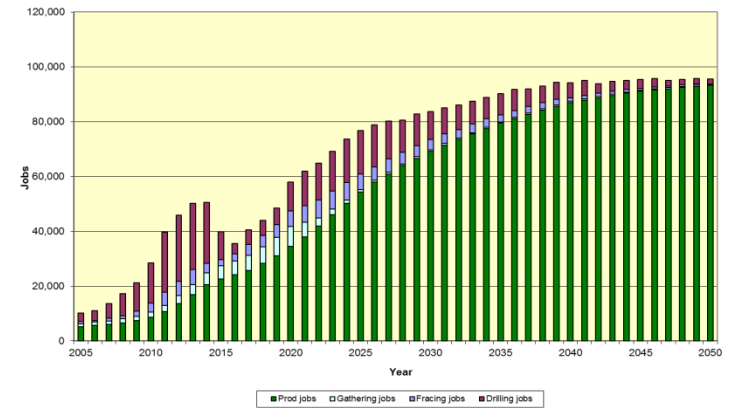
North Dakota Oil Industry Jobs



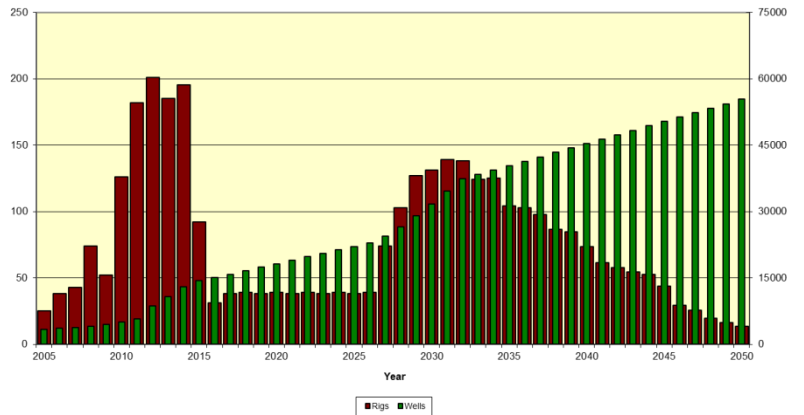
North Dakota Rigs and Wells



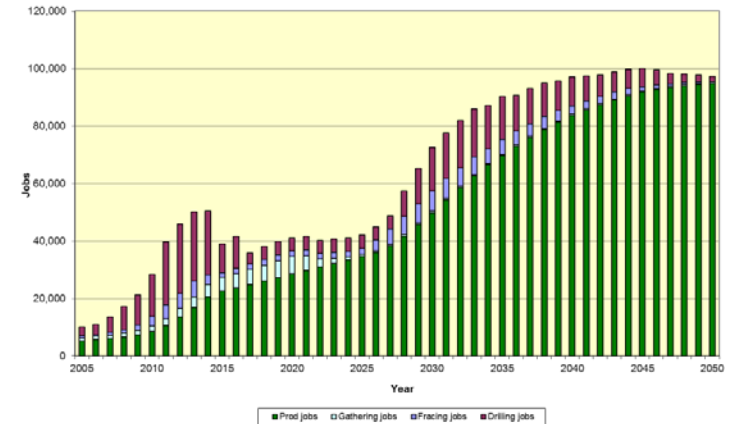
North Dakota Oil Industry Jobs



North Dakota Rigs and Wells

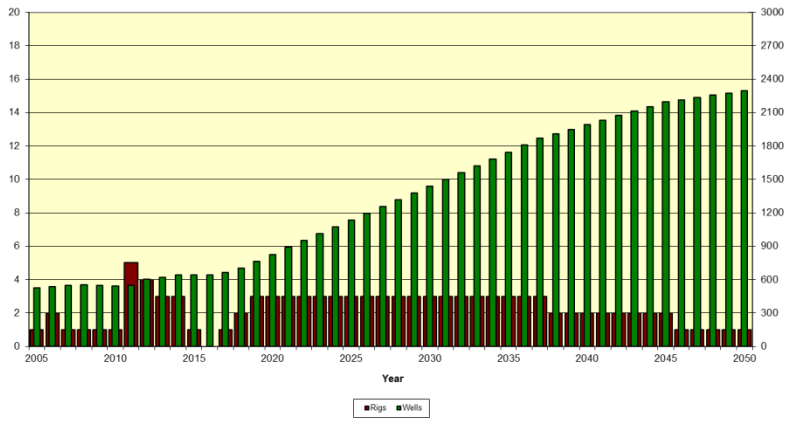


North Dakota Oil Industry Jobs

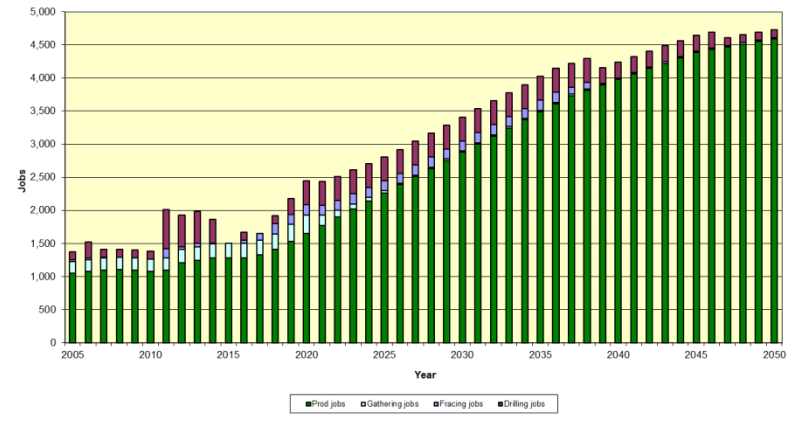


County by County Outlook

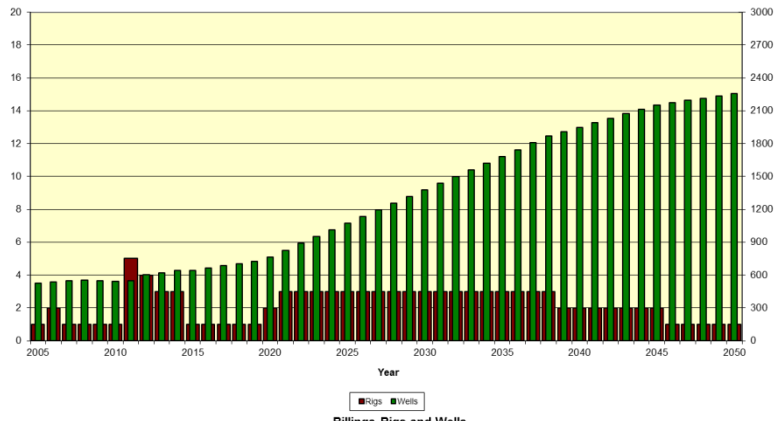
Billings Rigs and Wells



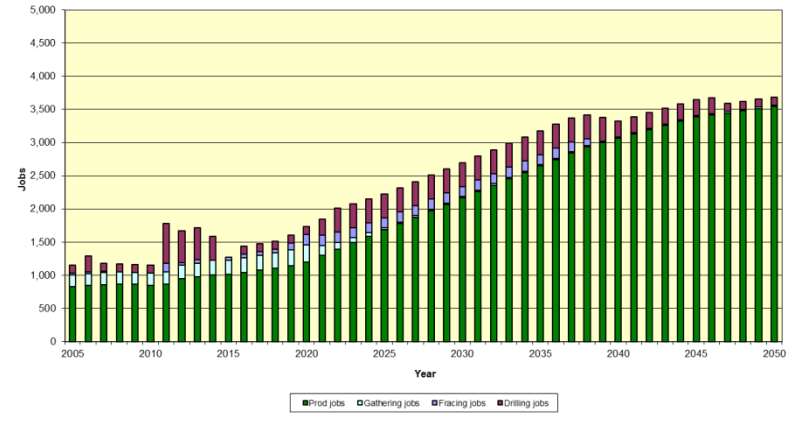
Billings Oil Industry Jobs



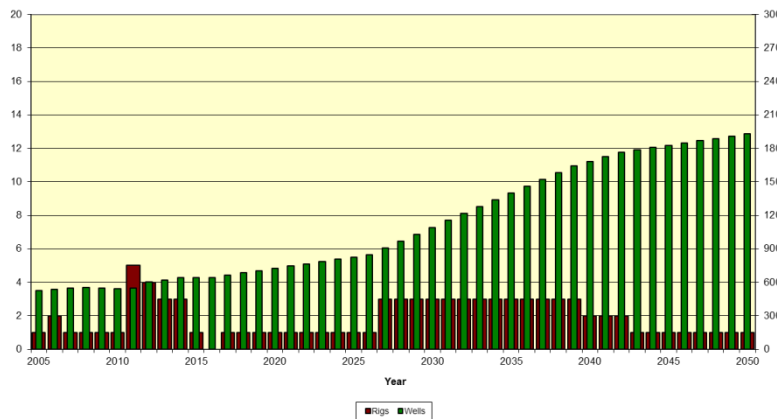
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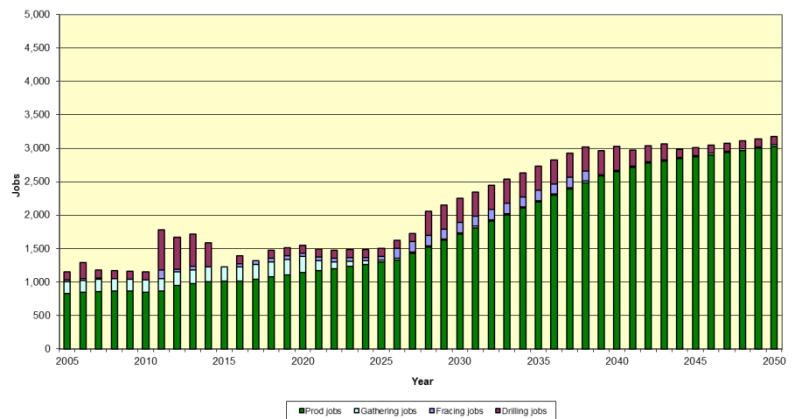
Billings Oil Industry Jobs

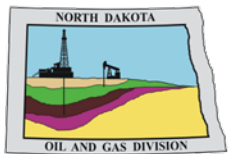


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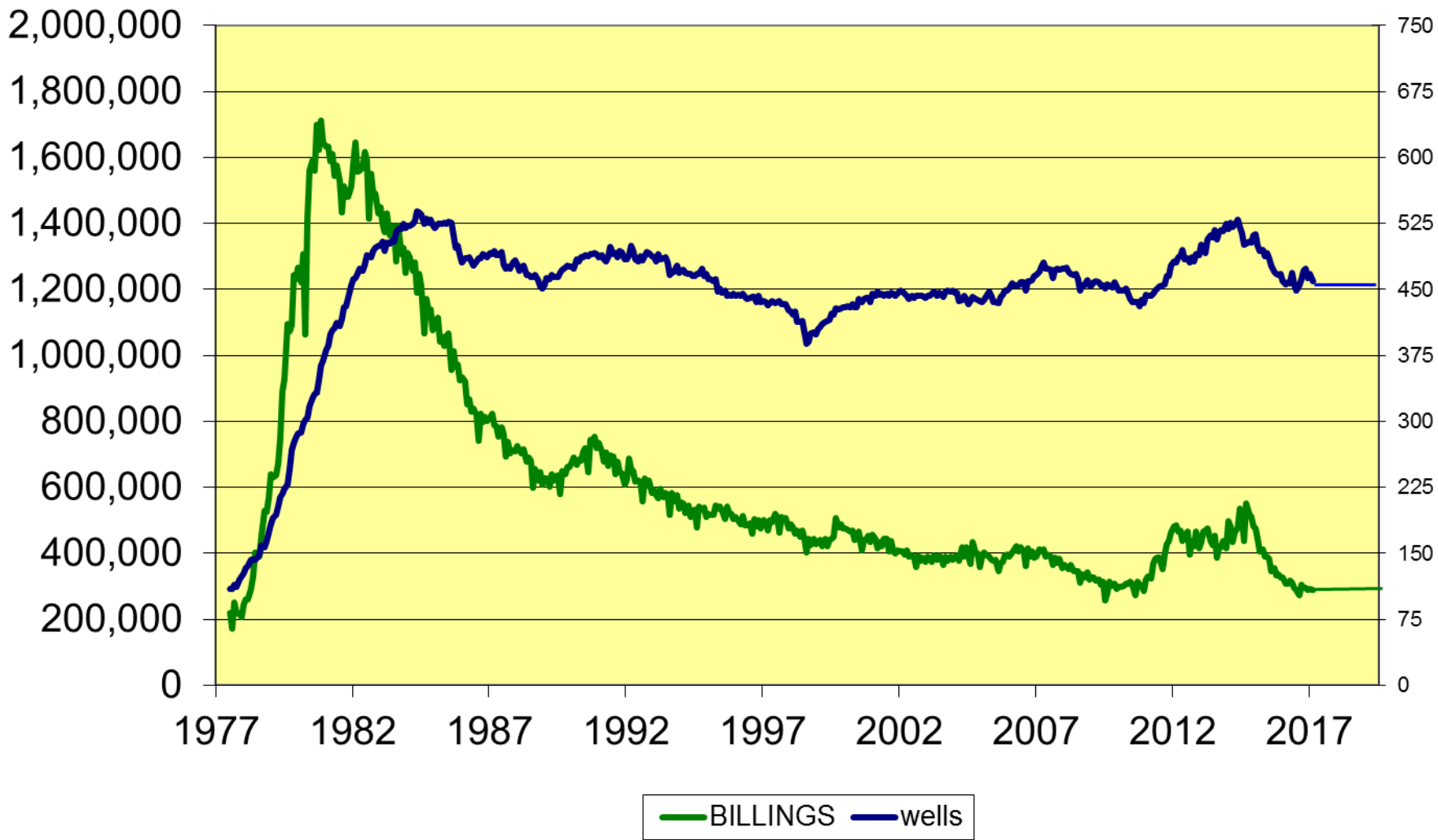


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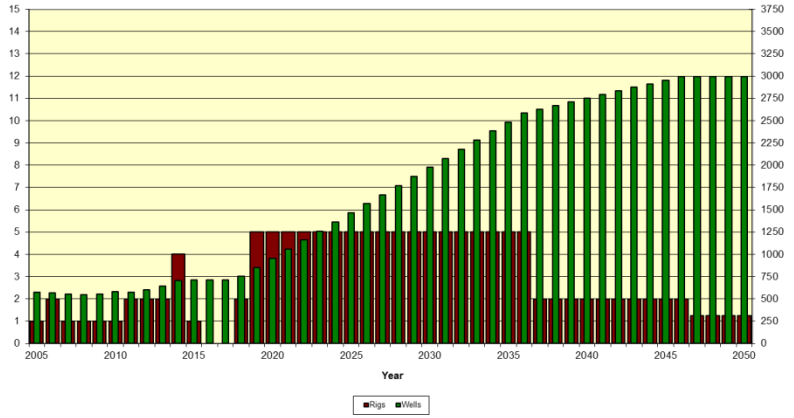




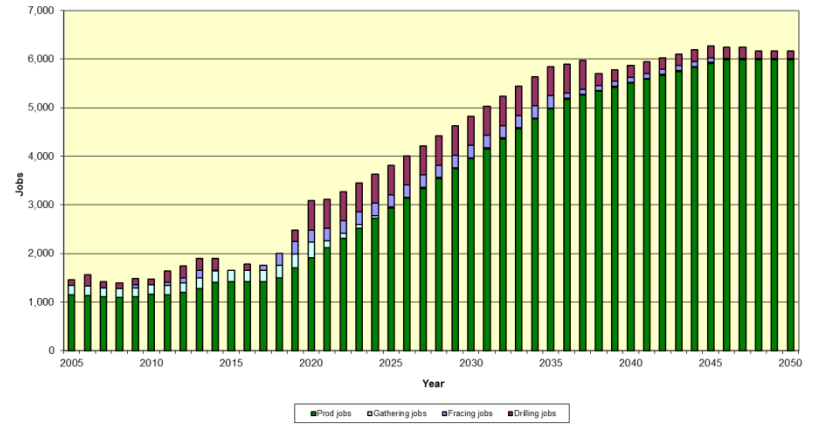
MONTHLY OIL PRODUCTION FOR LOCAL COUNTIES



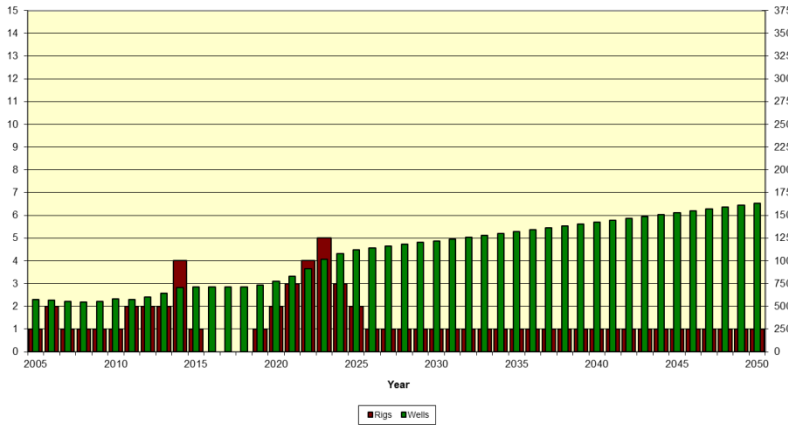
Bottineau Rigs and Wells



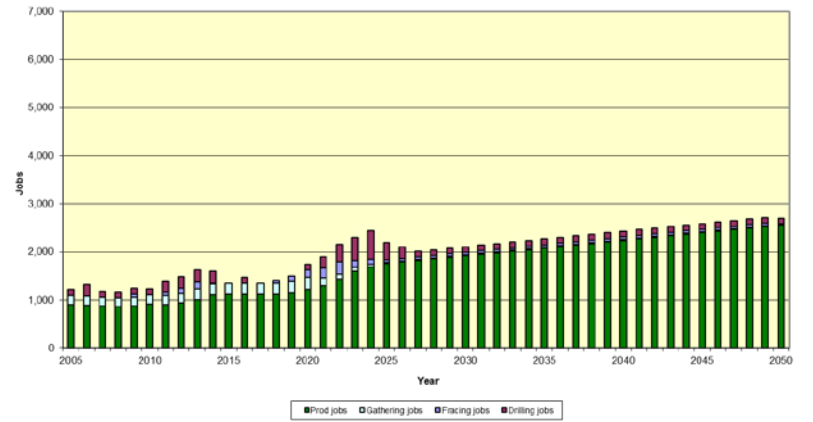
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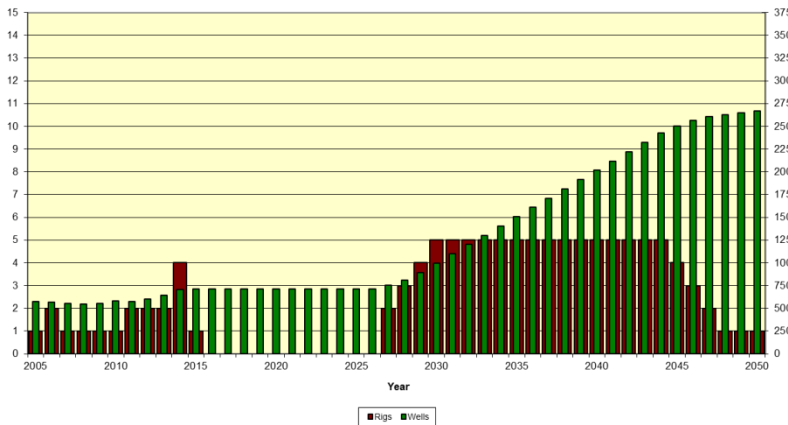
Bottineau Rigs and Wells



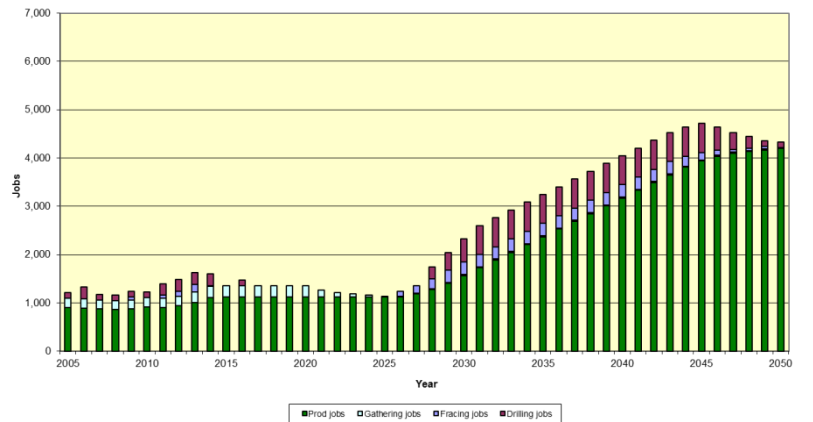
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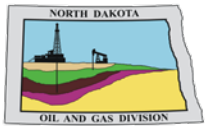


Bottineau Rigs and Wells

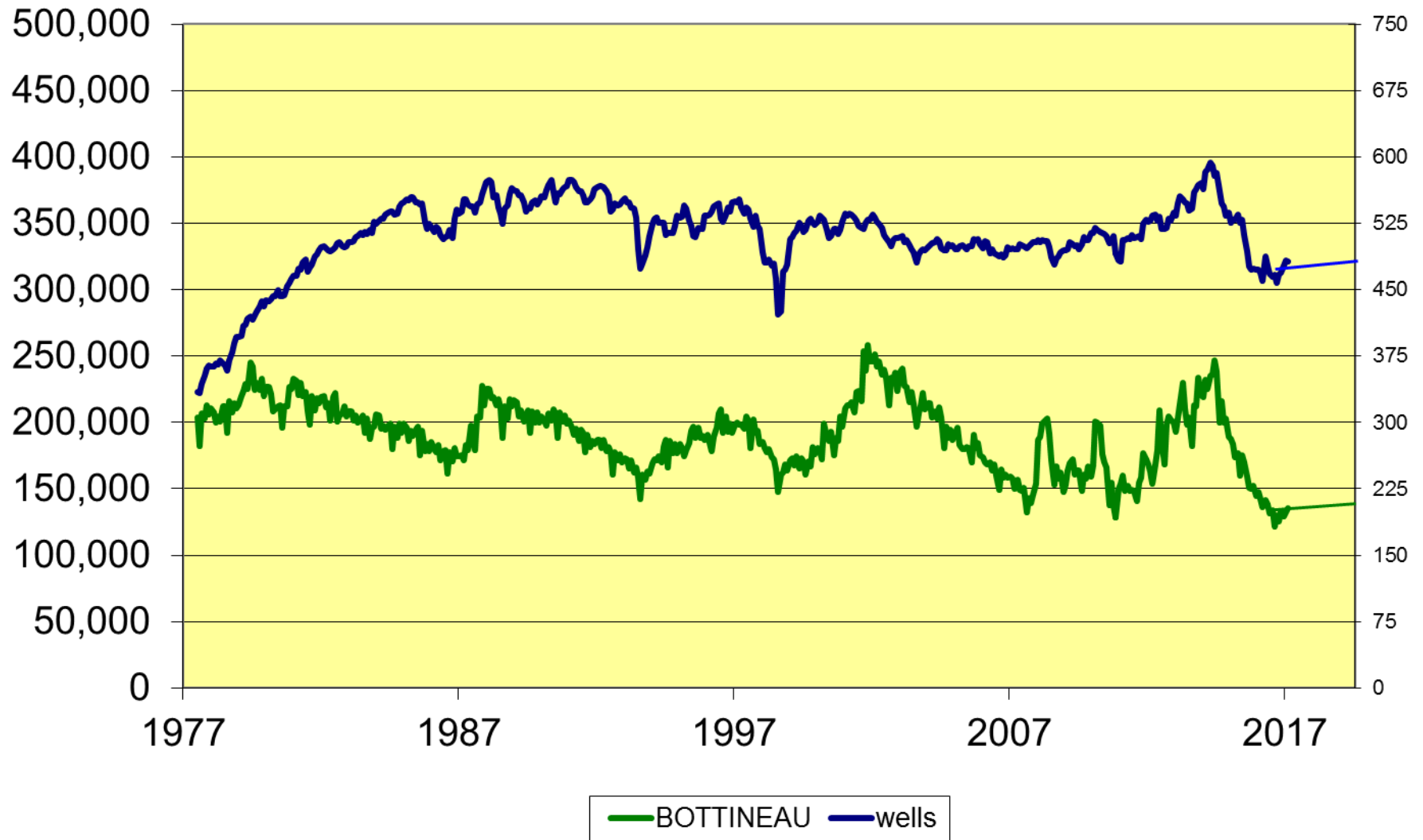


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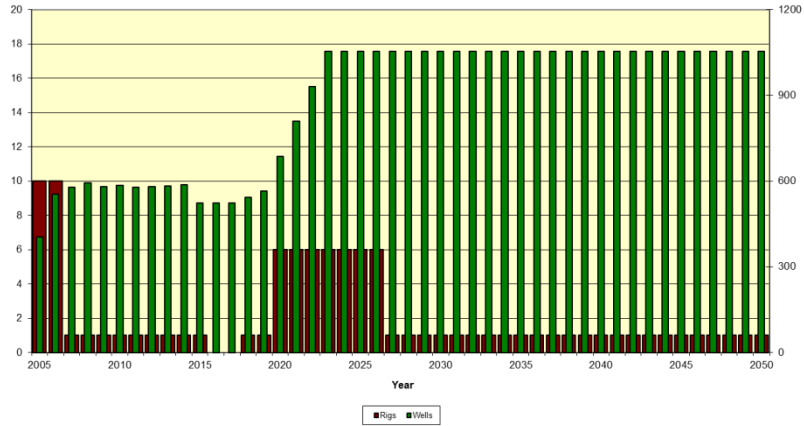




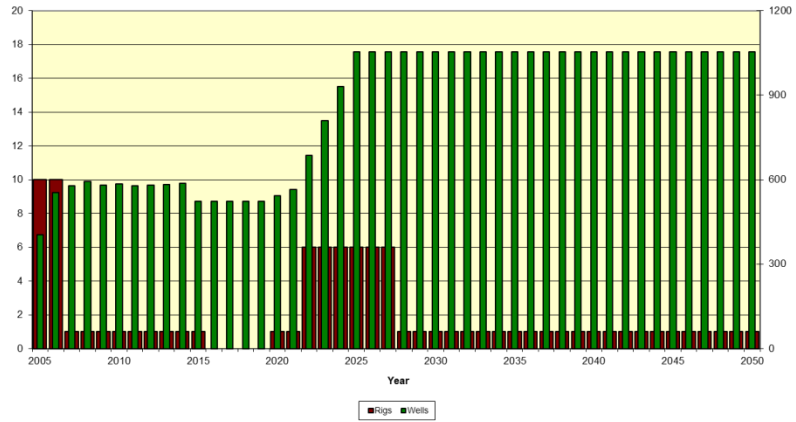
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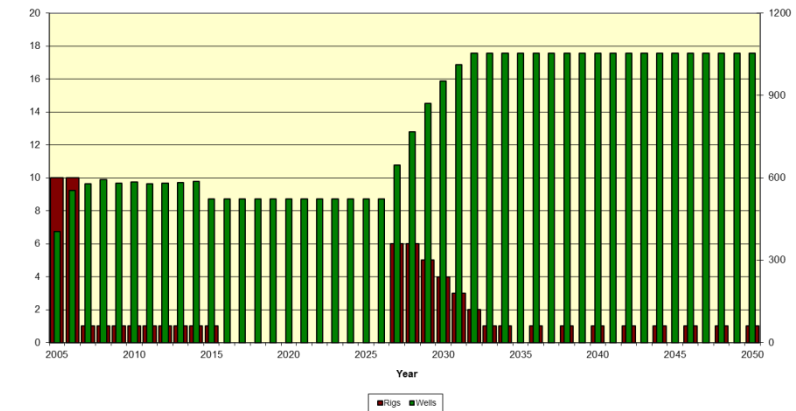
Bowman Rigs and Wells



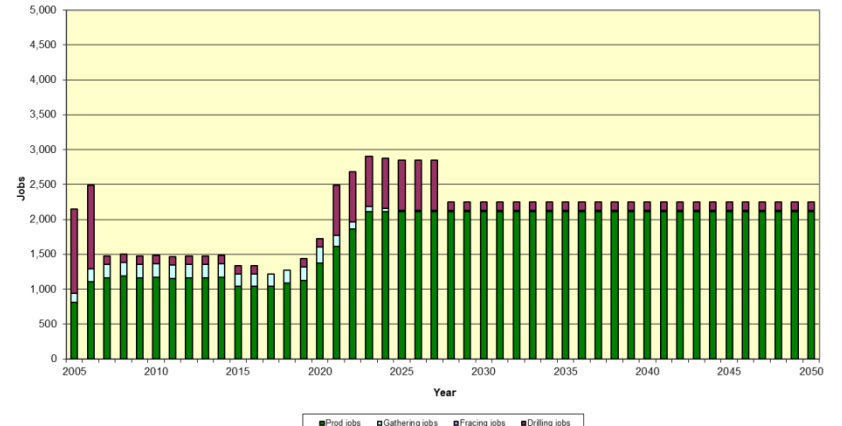
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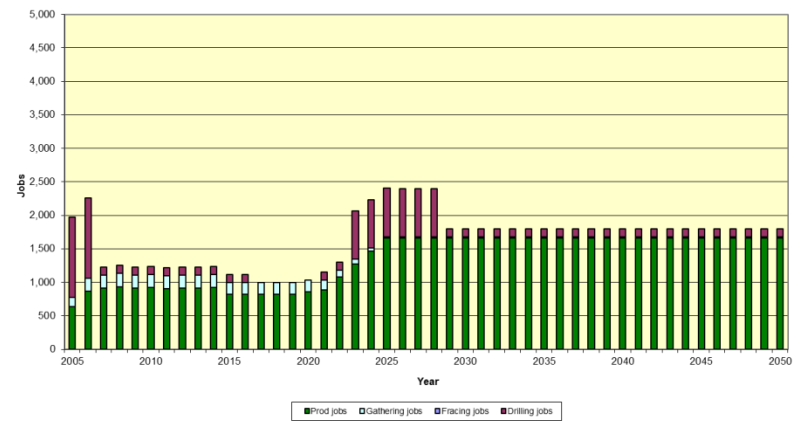
Bowman Rigs and Wells



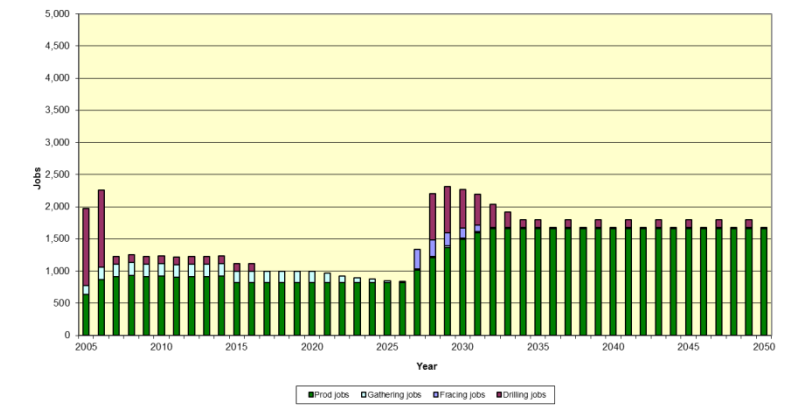
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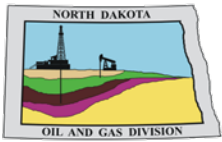


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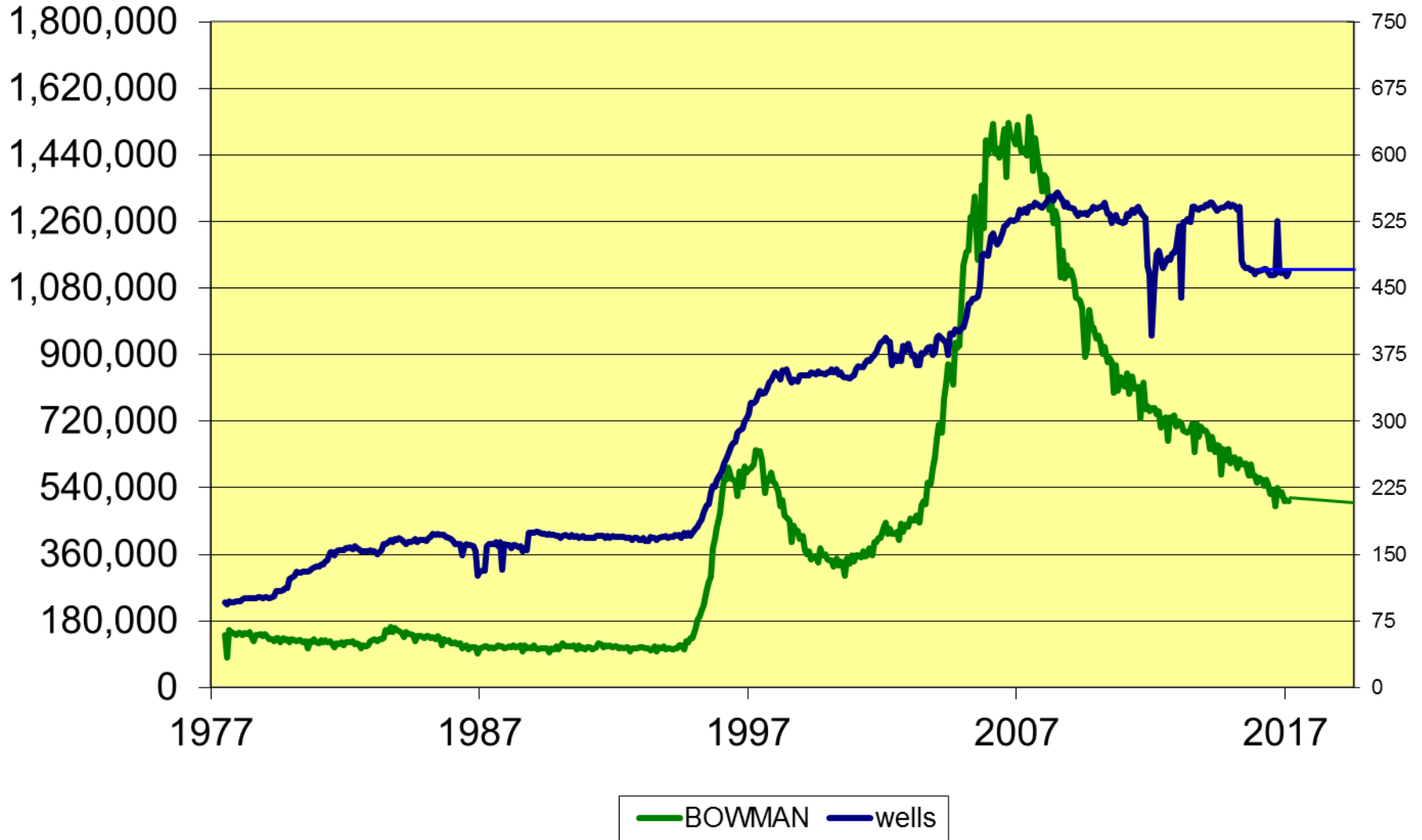


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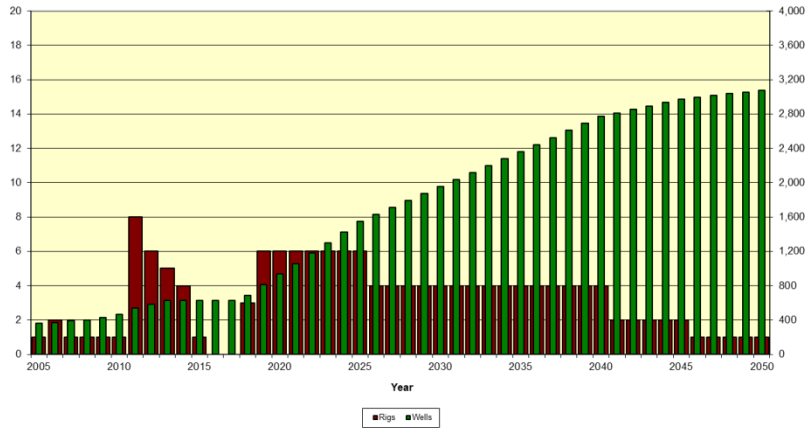




MONTHLY OIL PRODUCTION FOR LOCAL COUNTIES

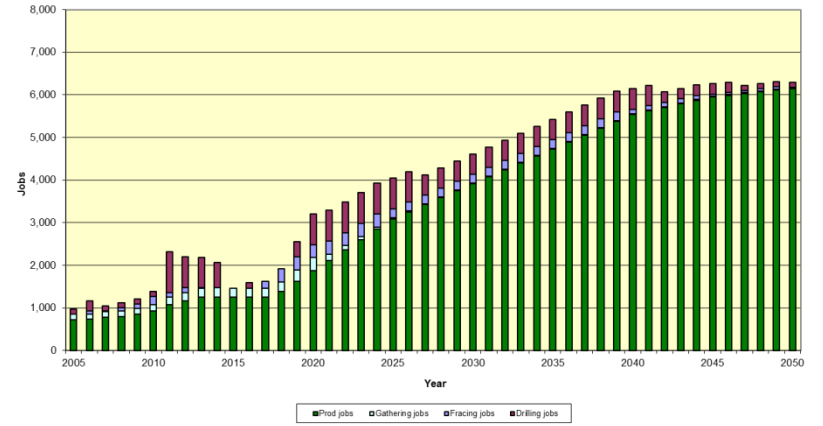


Burke Rigs and Wells



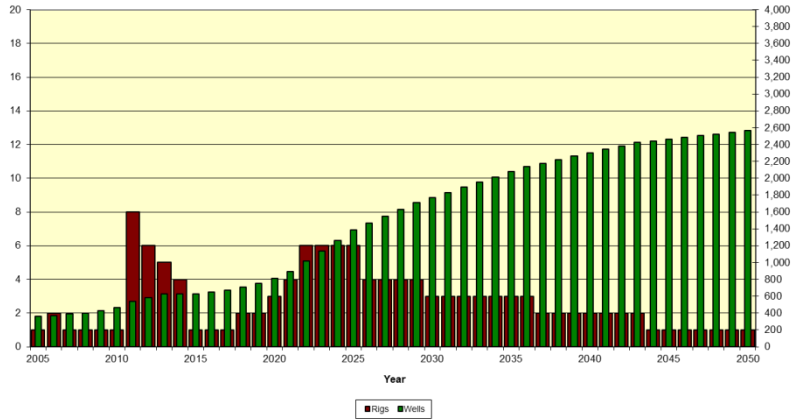
Burke Rigs and Wells

Burke Oil Industry Jobs

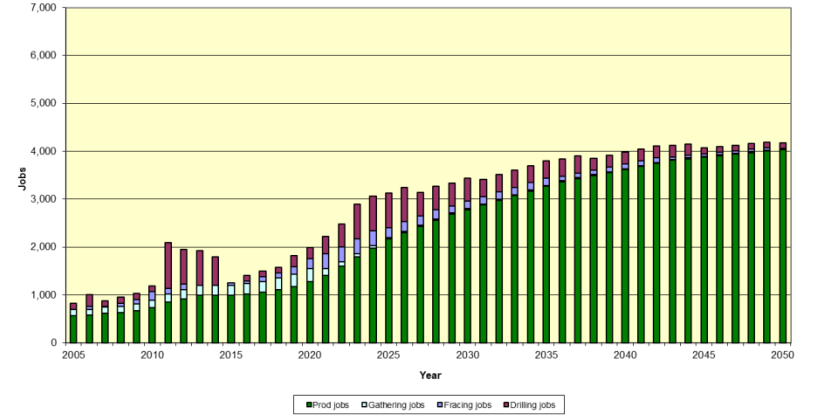


Burke Oil Industry Jobs

Burke Rigs and Wells

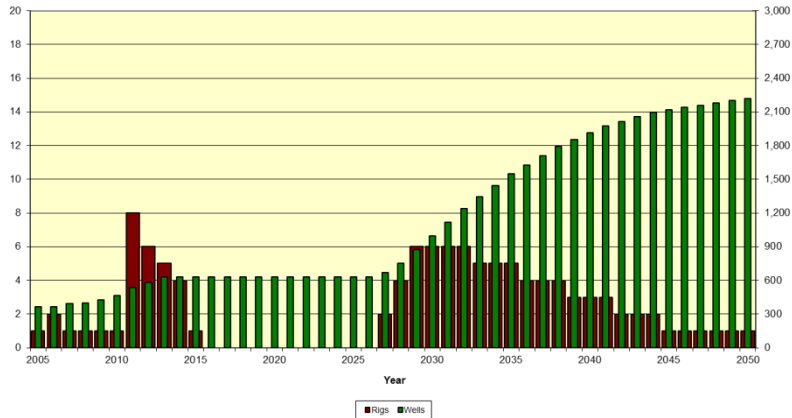


Burke Rigs and Wells

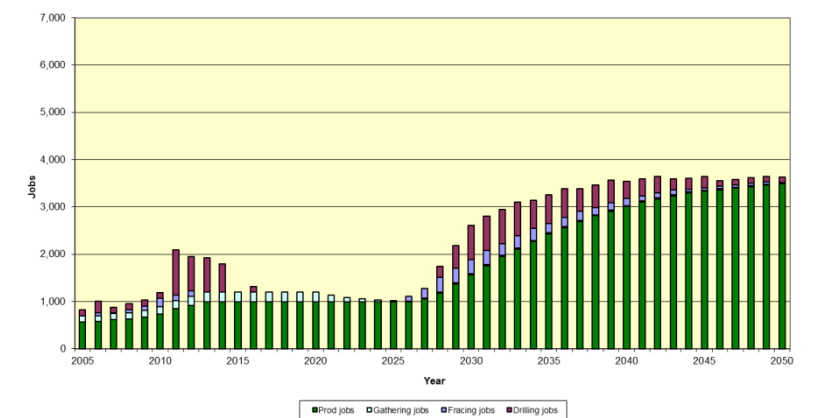


Burke Oil Industry Jobs

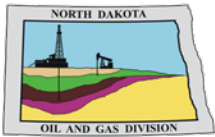
Burke Rigs and Wells



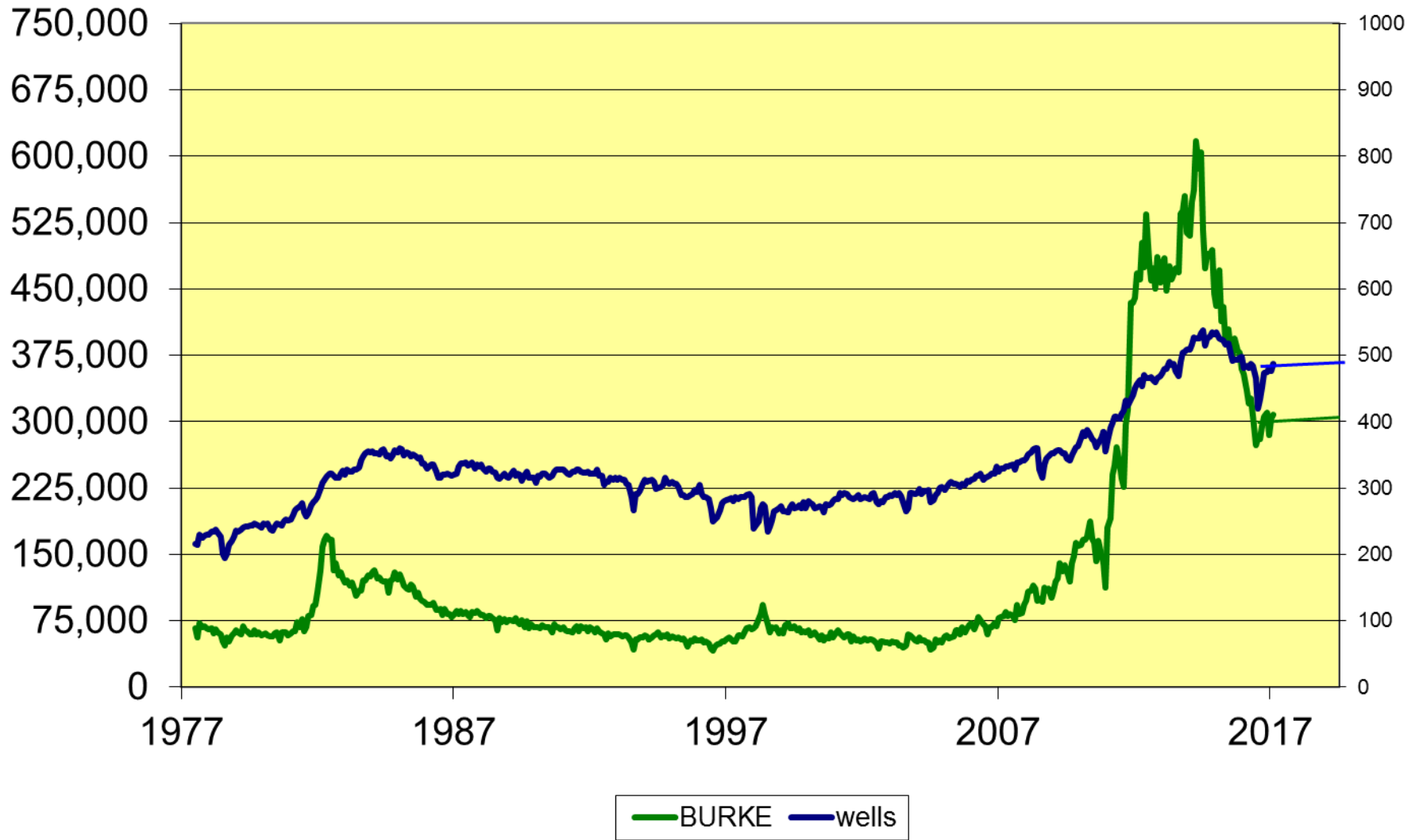
Burke Rigs and Wells



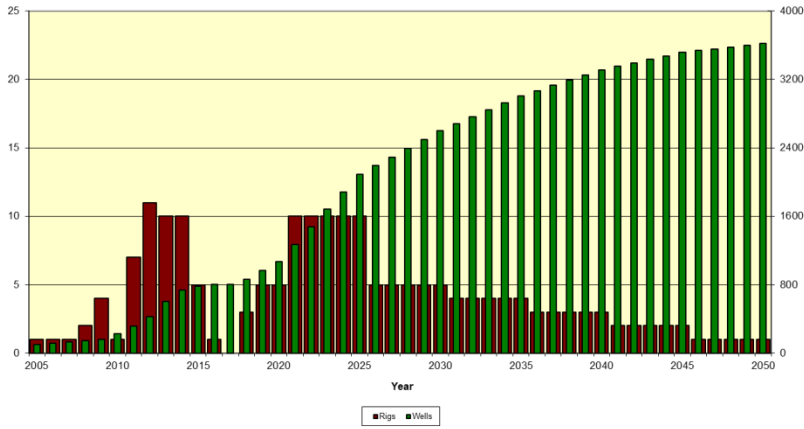
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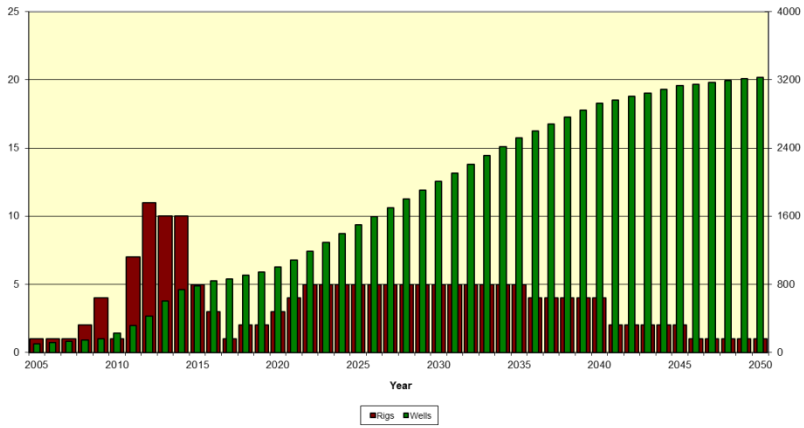
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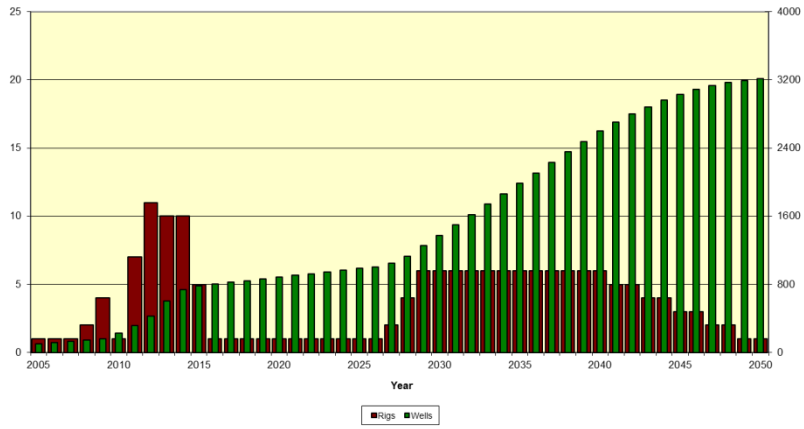
Divide Rigs and Wells



Divide Rigs and Wells

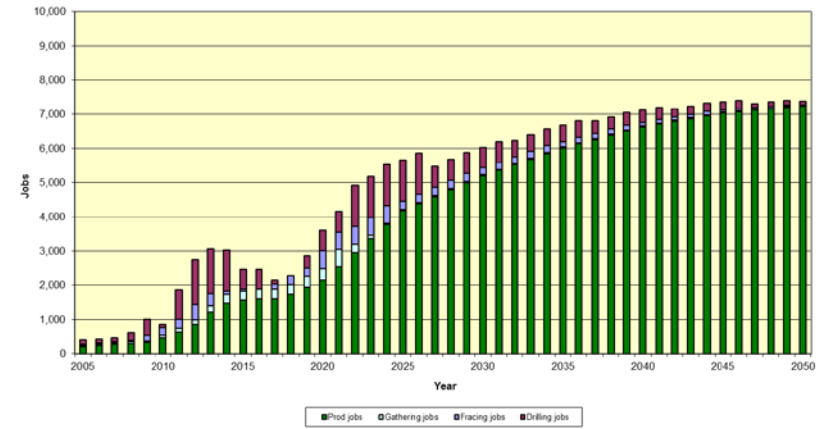


Divide Rigs and Wells

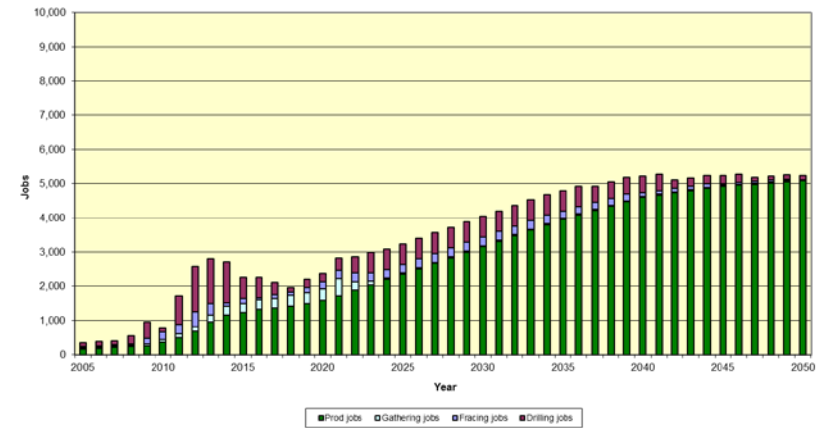


Divide Rigs and Wells

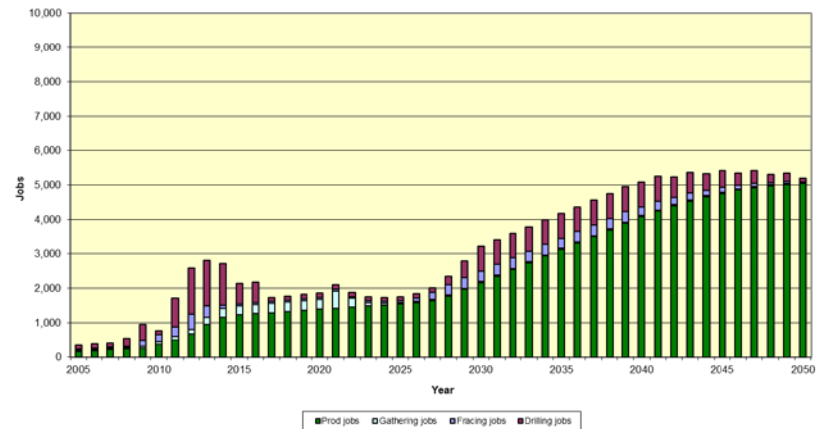
Divide Oil Industry Jobs



Divide Oil Industry Jobs



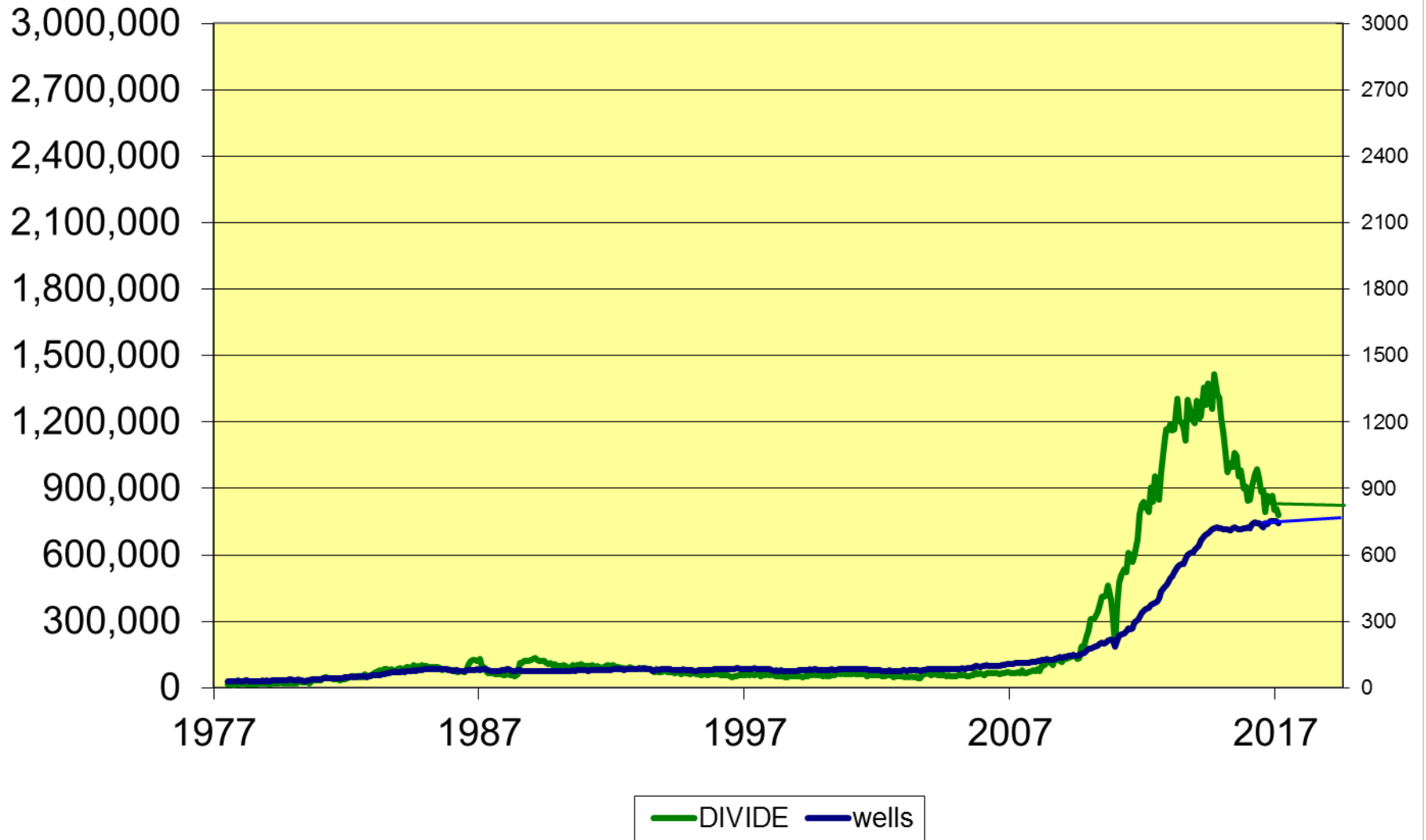
Divide Oil Industry Jobs



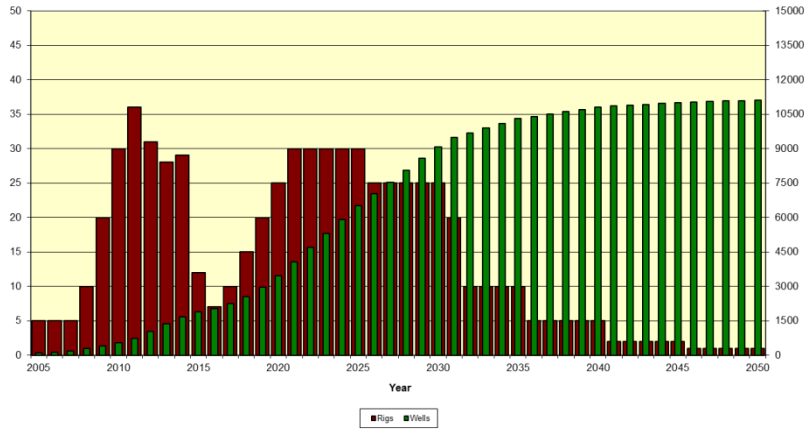
Divide Oil Industry Jobs



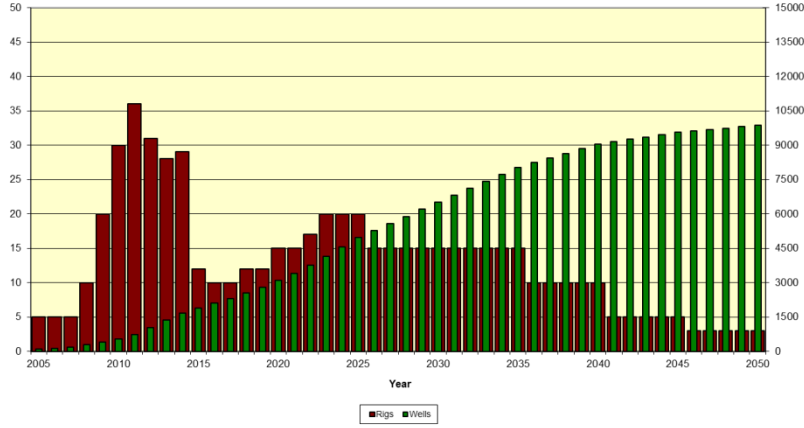
MONTHLY OIL PRODUCTION FOR LOCAL COUNTIES



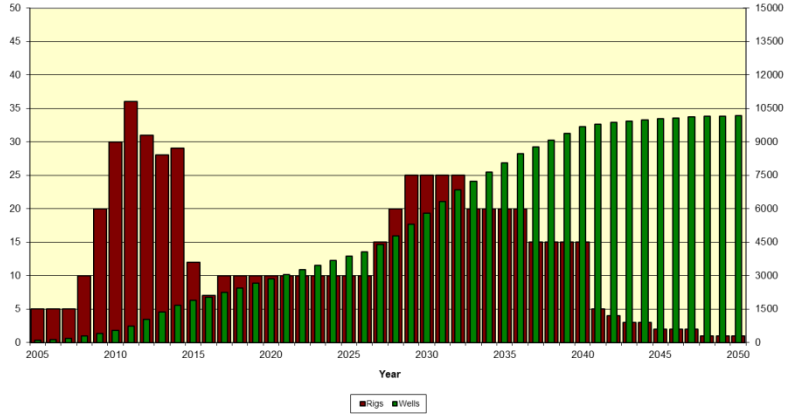
Dunn Rigs and Wells



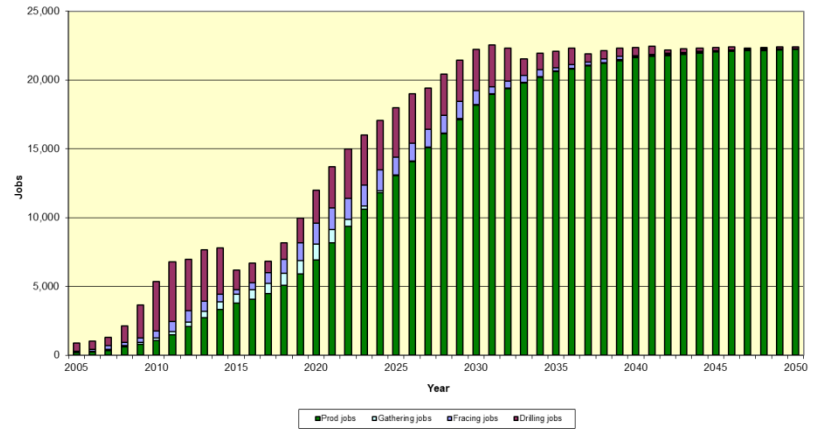
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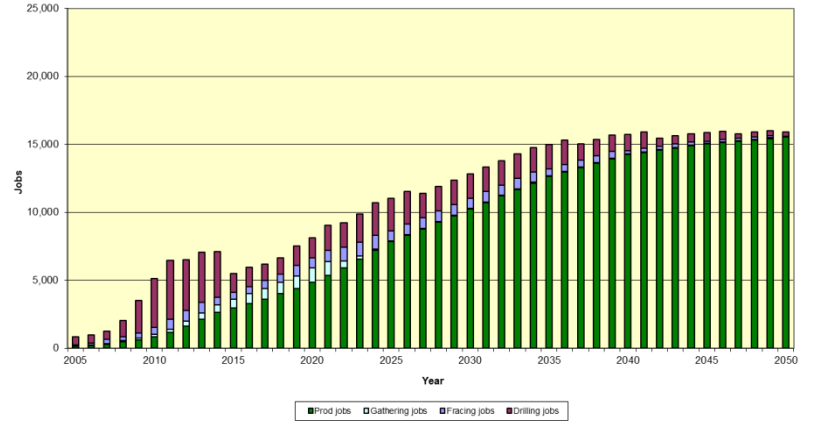
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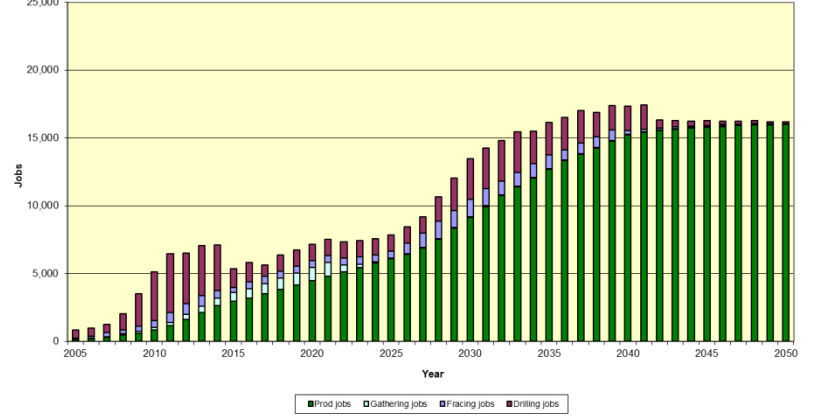
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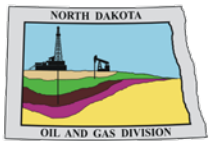


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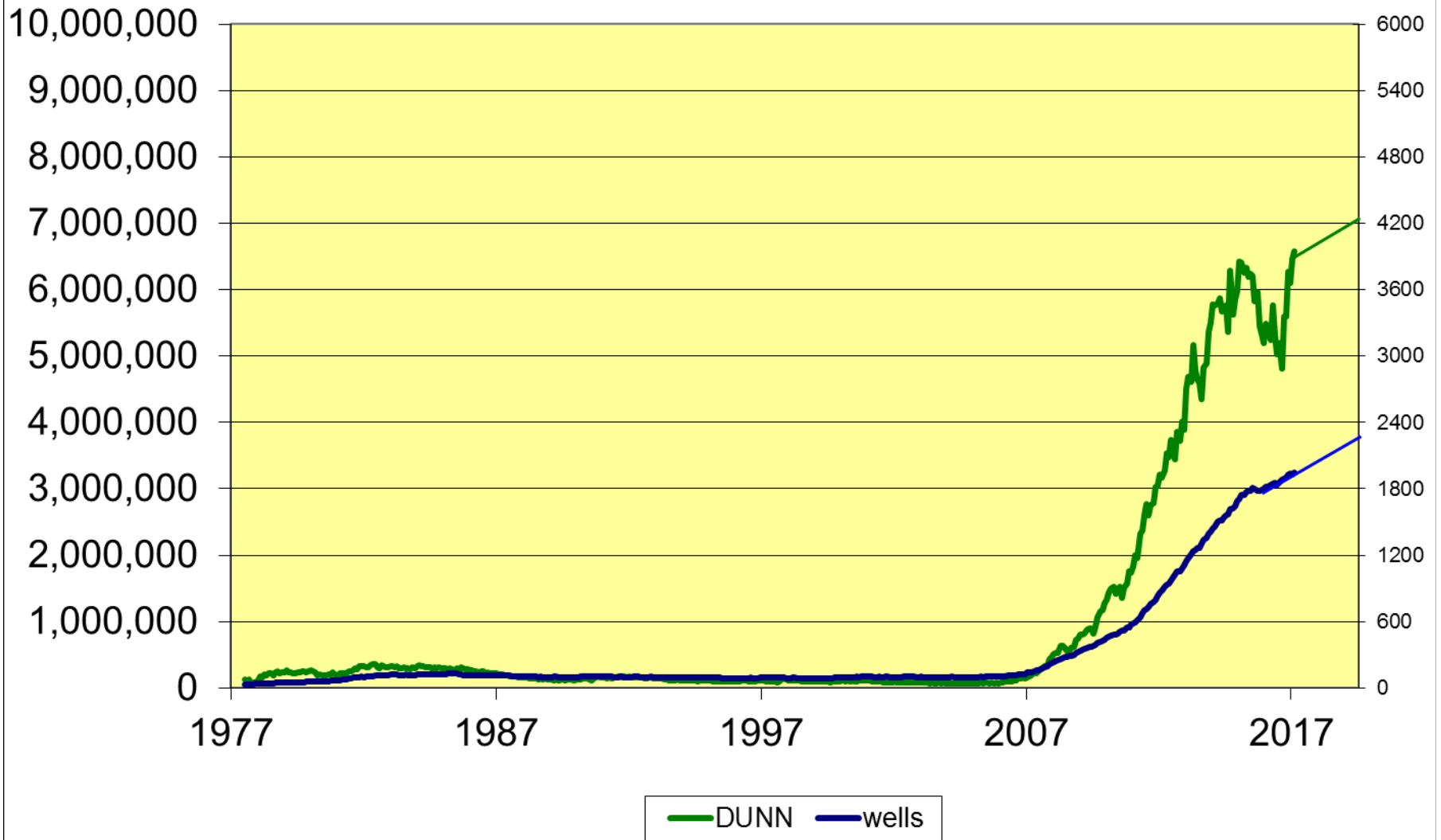


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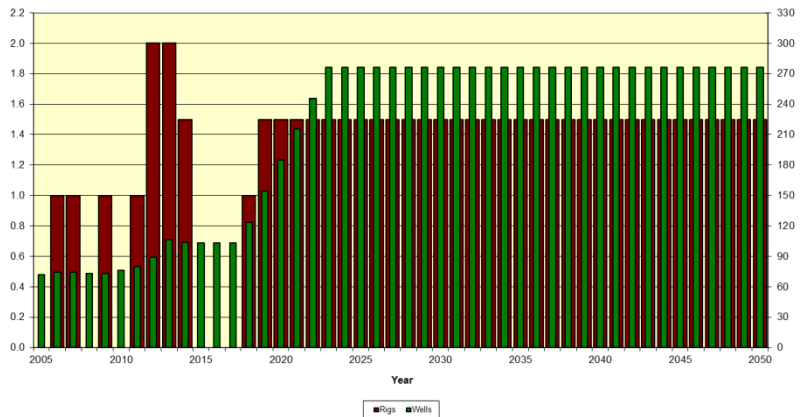




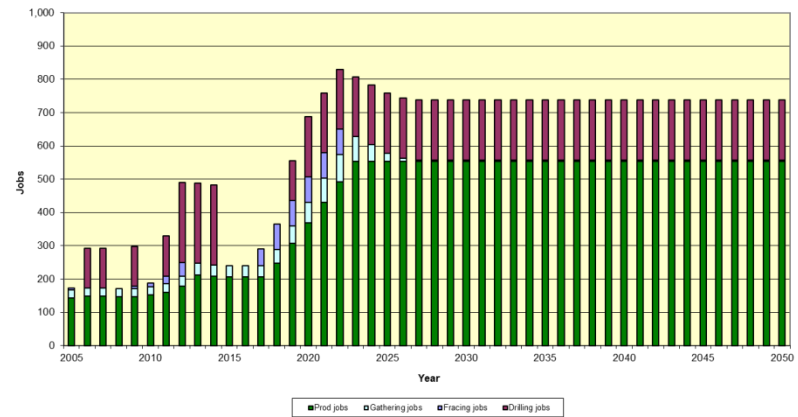
MONTHLY OIL PRODUCTION FOR LOCAL COUNTIES



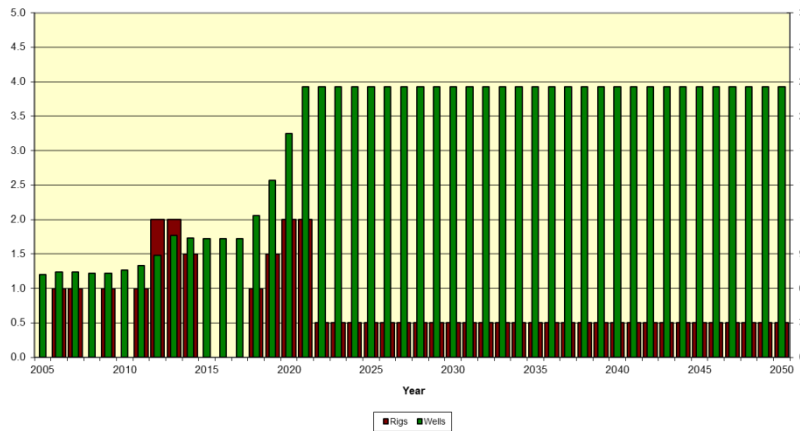
Golden Valley Rigs and Wells (includes Red River)



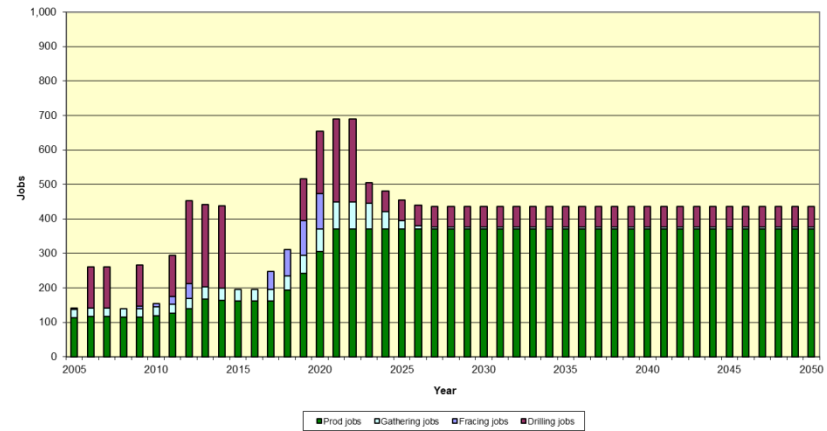
Golden Valley Oil Industry Jobs



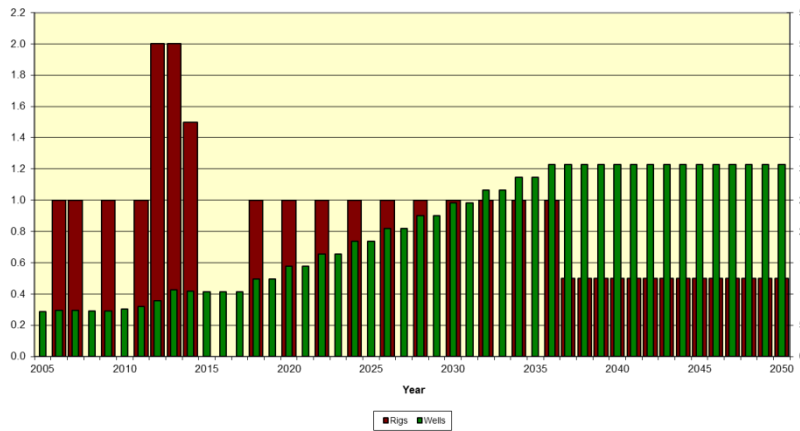
Golden Valley Rigs and Wells (includes Red River)



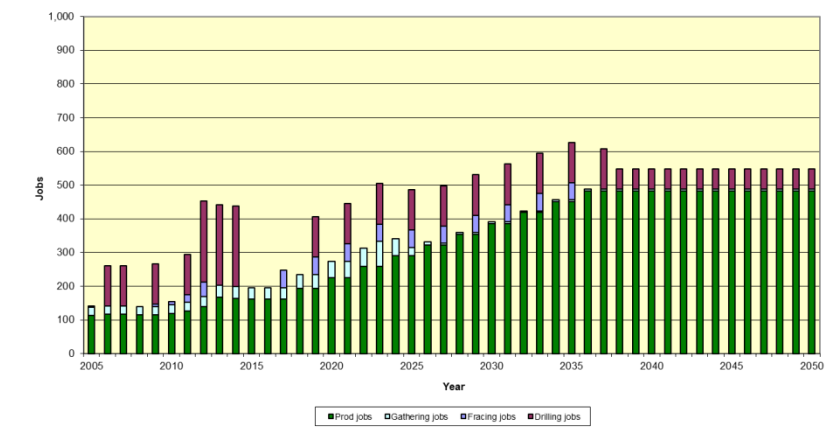
Golden Valley Oil Industry Jobs

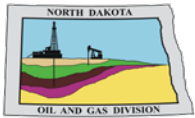


Golden Valley Rigs and Wells (includes Red River)

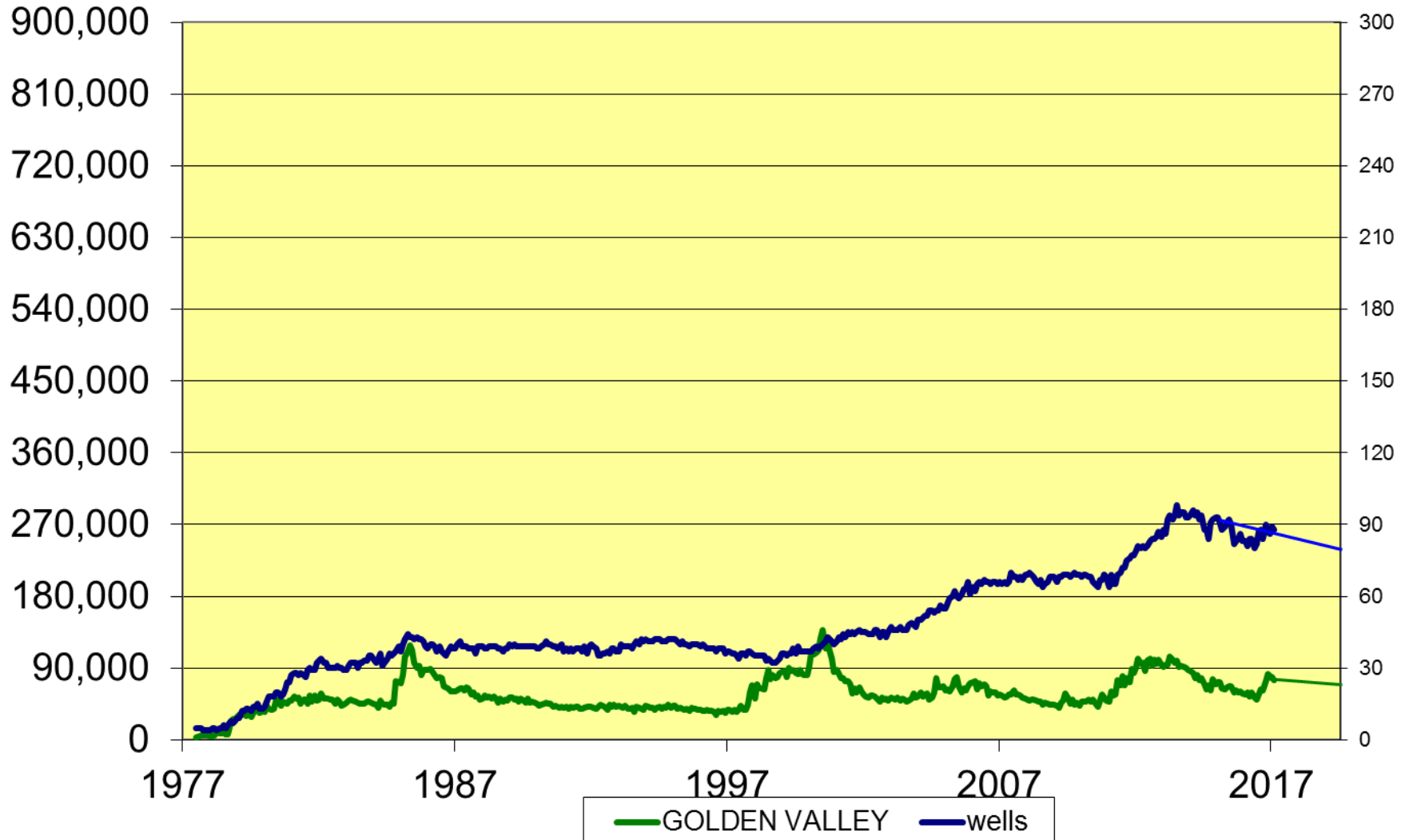


Golden Valley Oil Industry Jobs

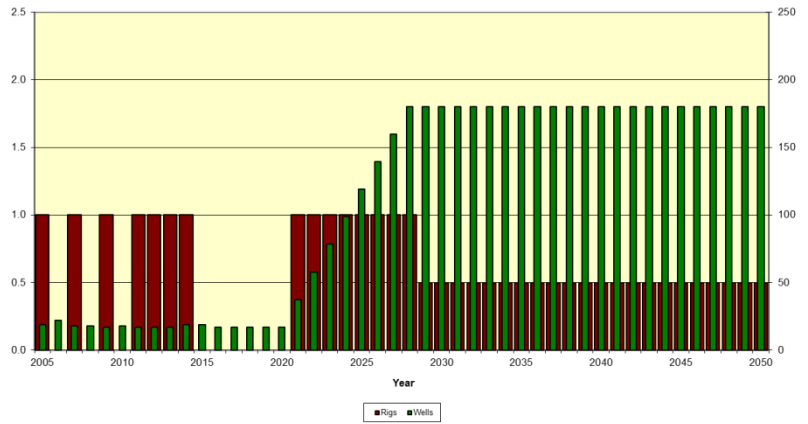




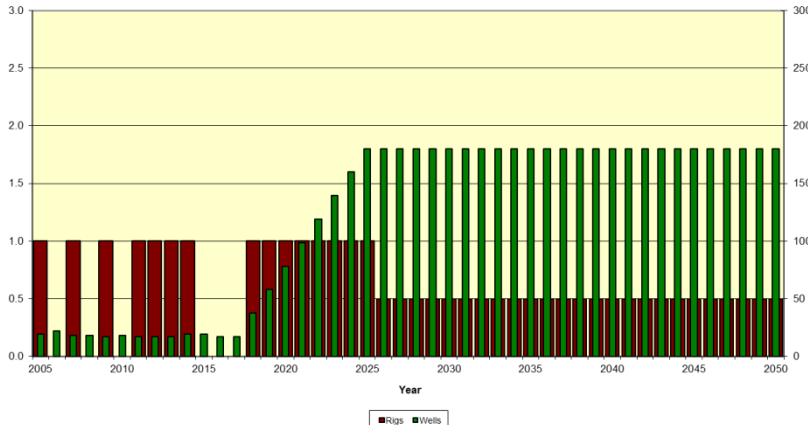
MONTHLY OIL PRODUCTION FOR LOCAL COUNTIES



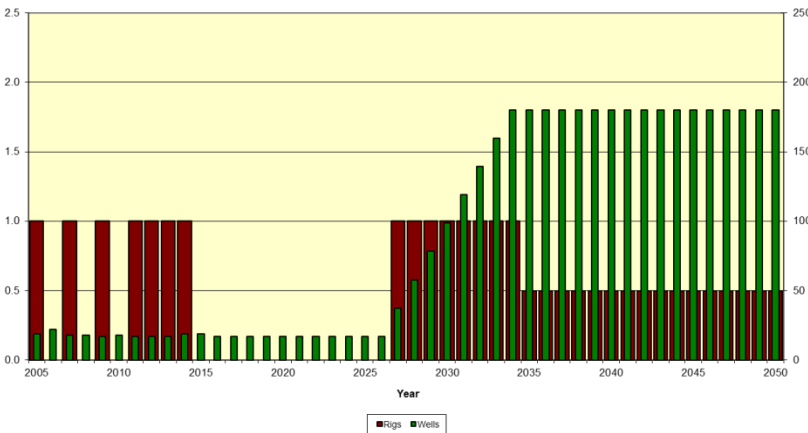
McHenry Rigs and Wells



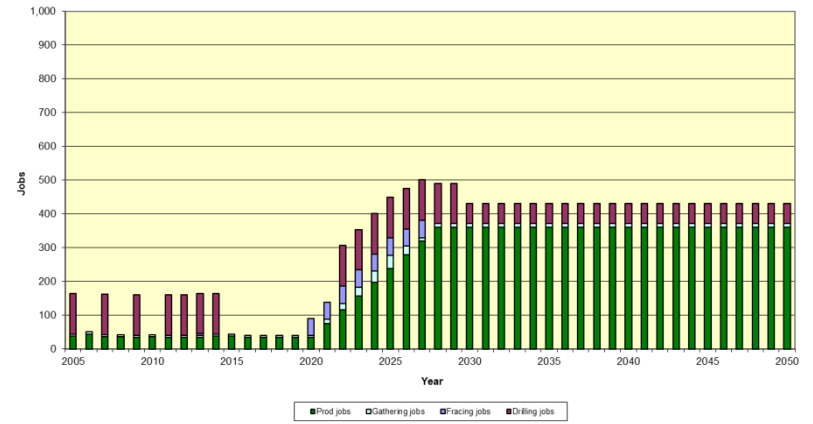
McHenry Rigs and Wells



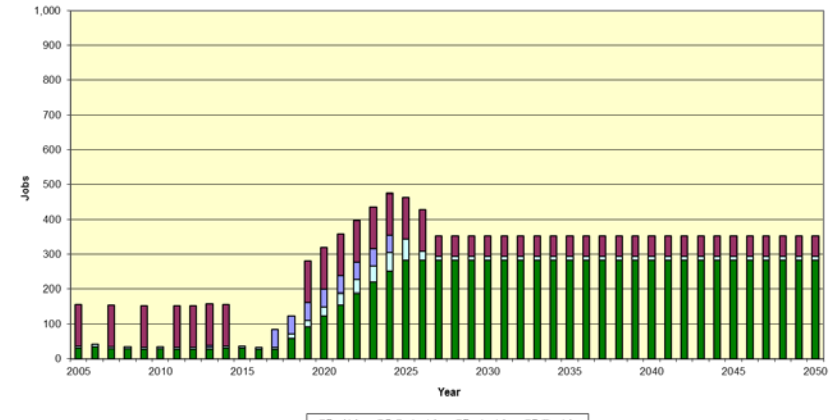
McHenry Rigs and Wells



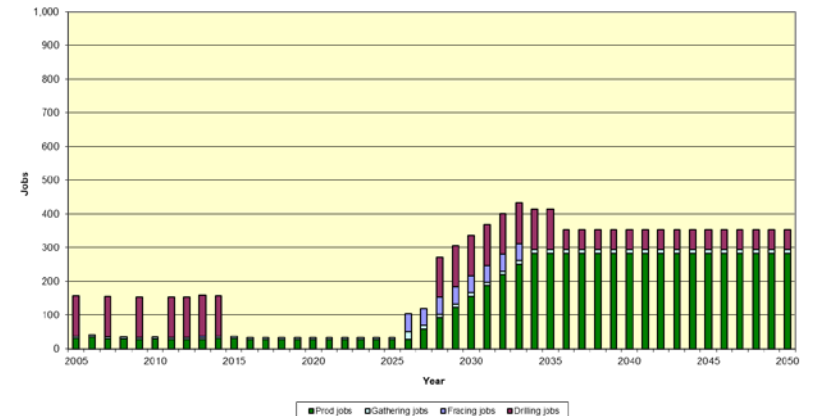
McHenry Oil Industry Jobs

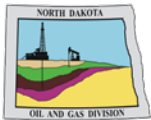


McHenry Oil Industry Jobs

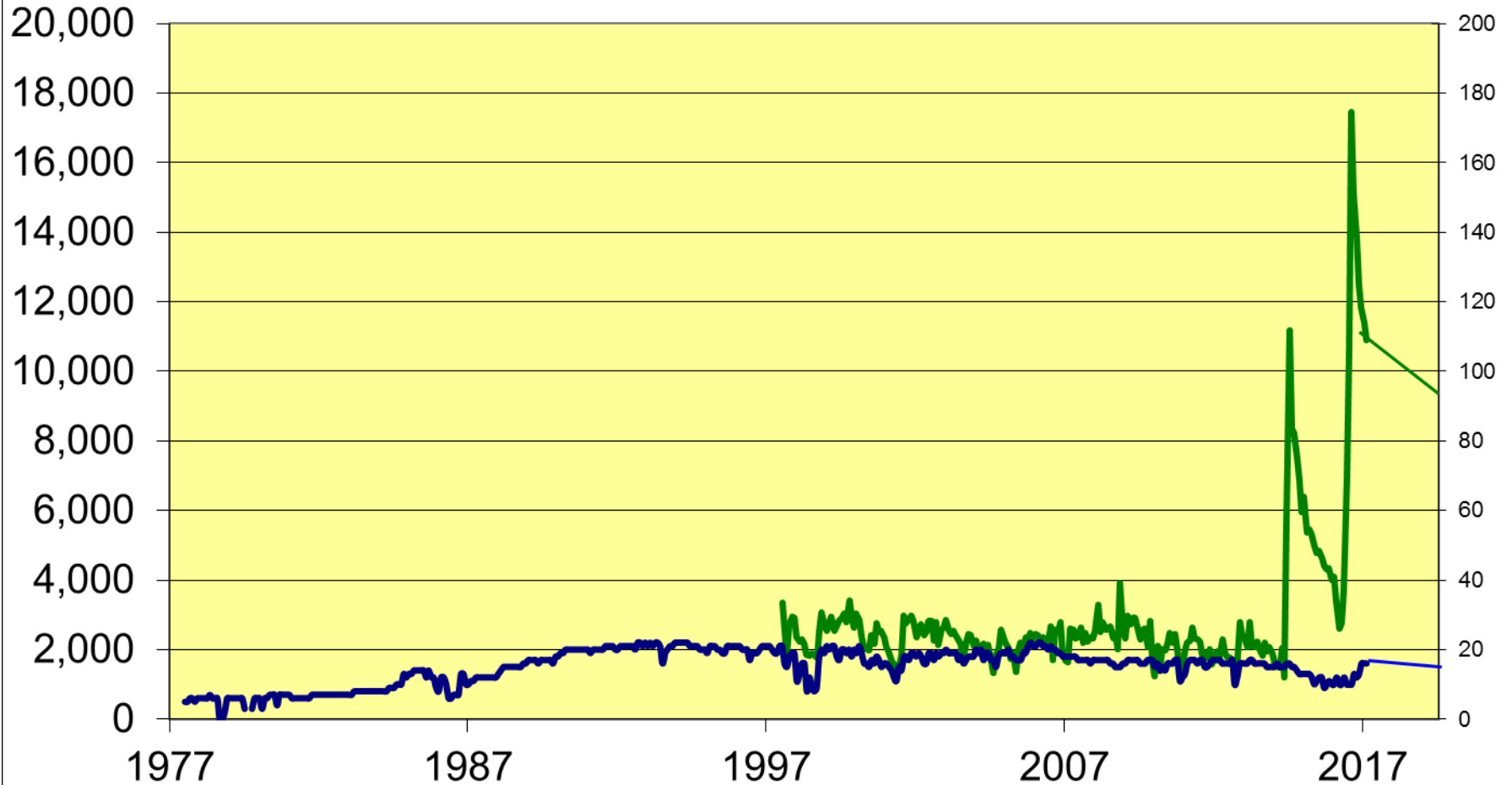


McHenry Oil Industry Jobs



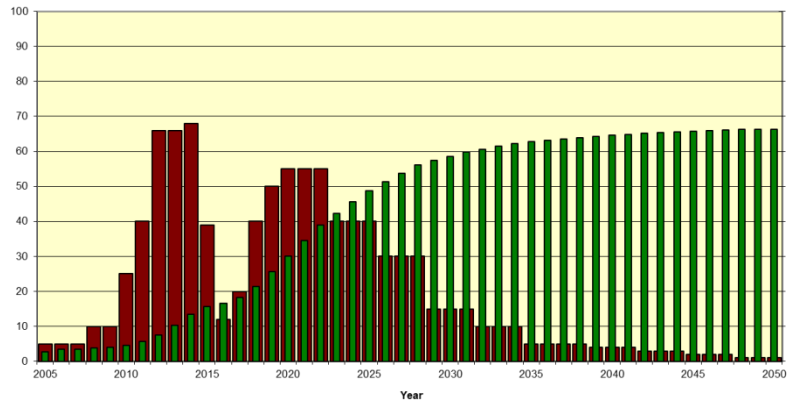


MONTHLY OIL PRODUCTION FOR LOCAL COUNTIES



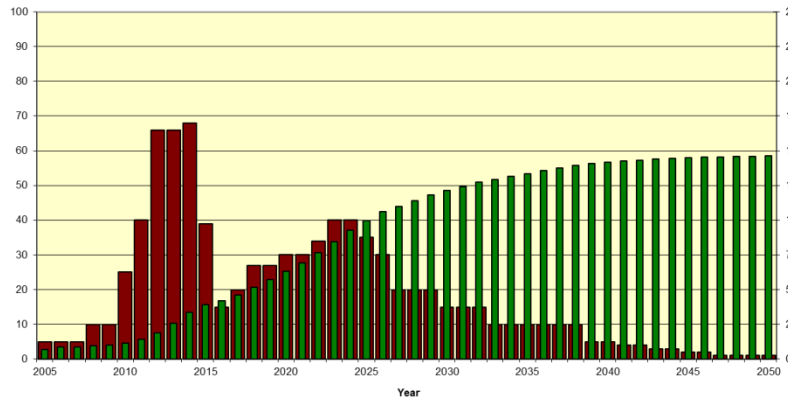
— McHENRY — wells

McKenzie Rigs and Wells



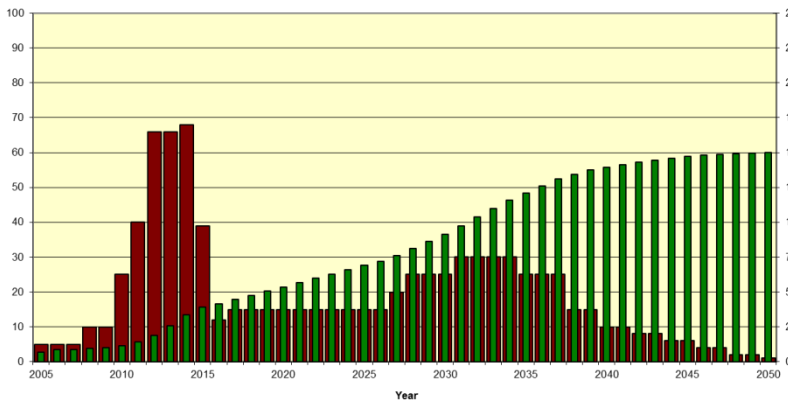
■ Rigs ■ Wells

McKenzie Rigs and Wells



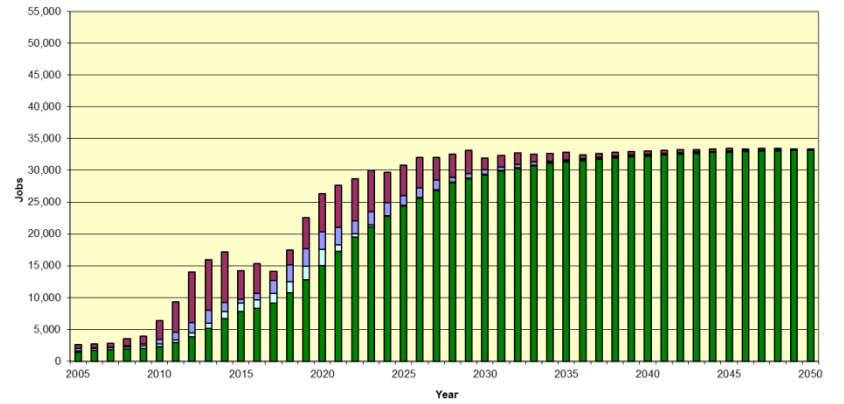
■ Rigs ■ Wells

McKenzie Rigs and Wells



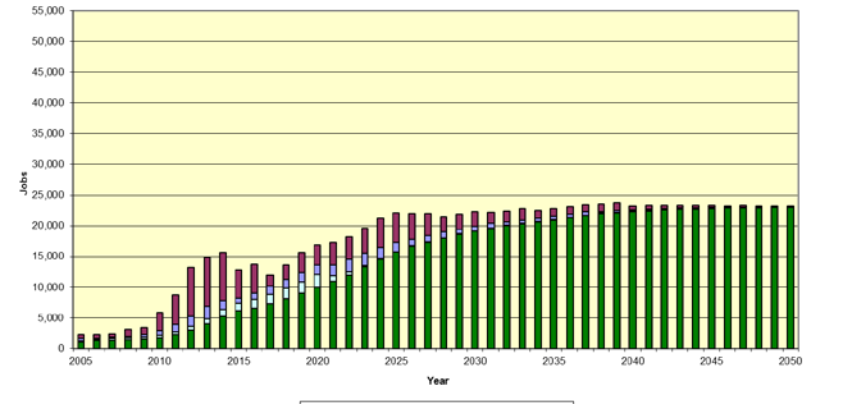
■ Rigs ■ Wells

McKenzie Oil Industry Jobs



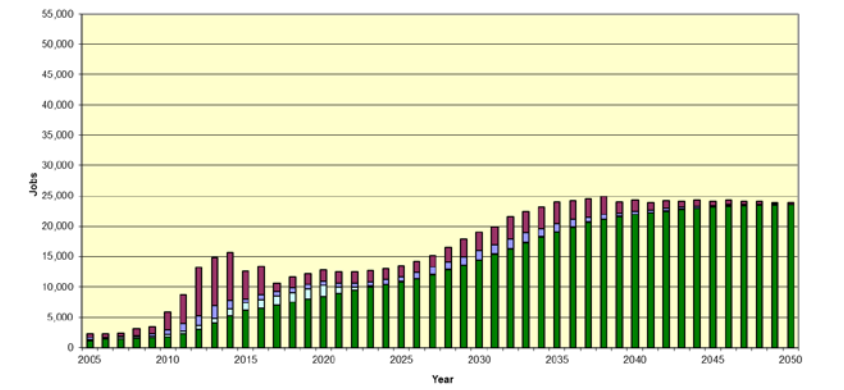
■ Prod jobs ■ Gathering jobs ■ Fracing jobs ■ Drilling jobs

McKenzie Oil Industry Jobs



■ Prod jobs ■ Gathering jobs ■ Fracing jobs ■ Drilling jobs

McKenzie Oil Industry Jobs

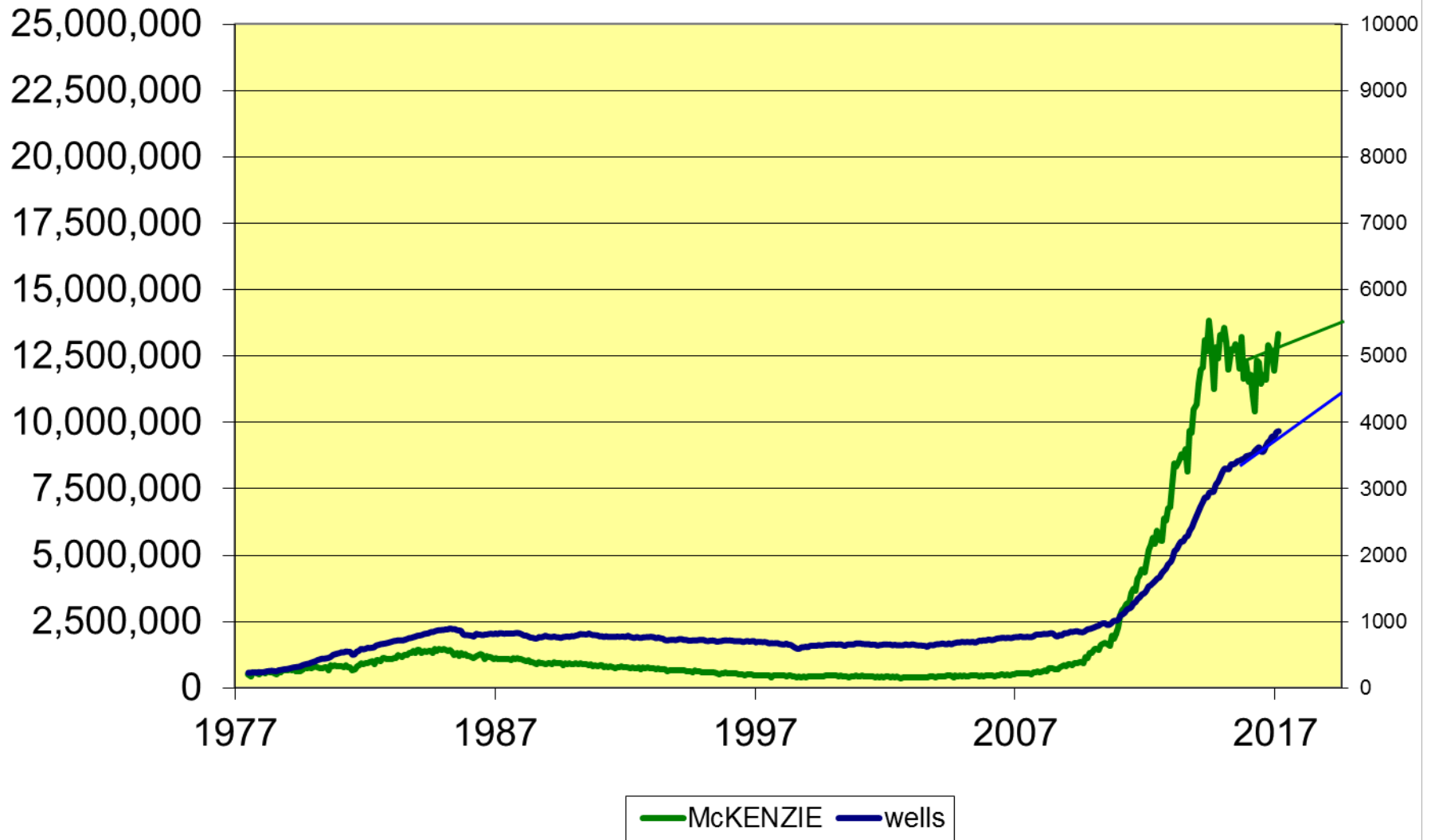


■ Prod jobs ■ Gathering jobs ■ Fracing jobs ■ Drilling jobs

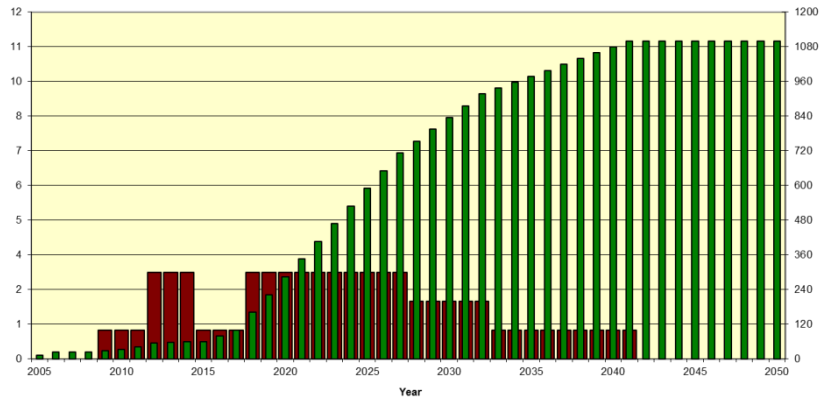
McKenzie Oil Industry Jobs



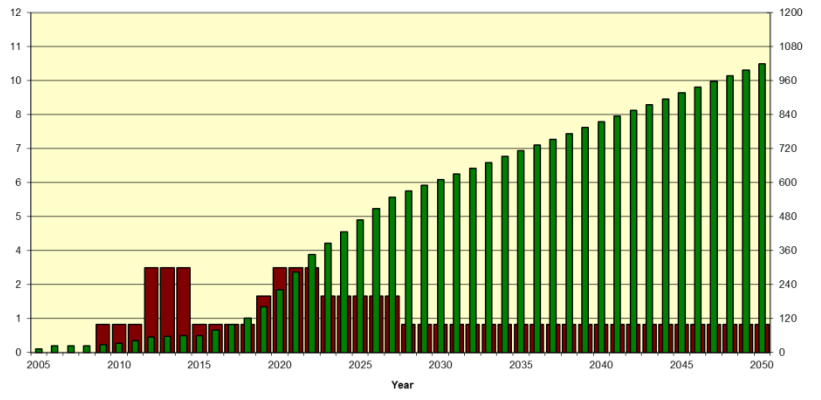
MONTHLY OIL PRODUCTION FOR LOCAL COUNTIES



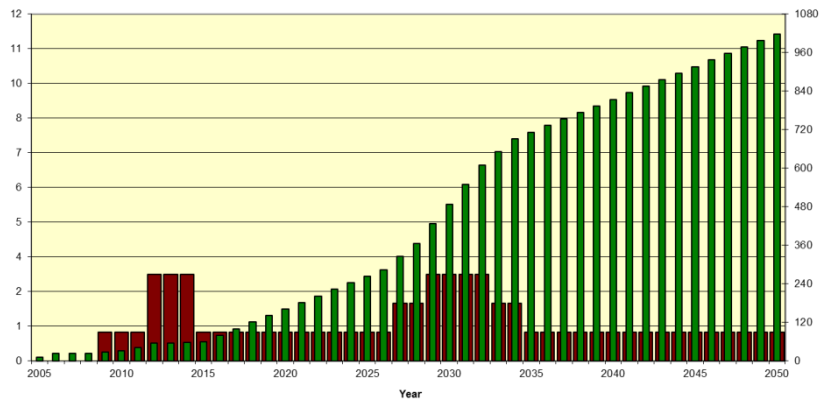
McLean Rigs and Wells



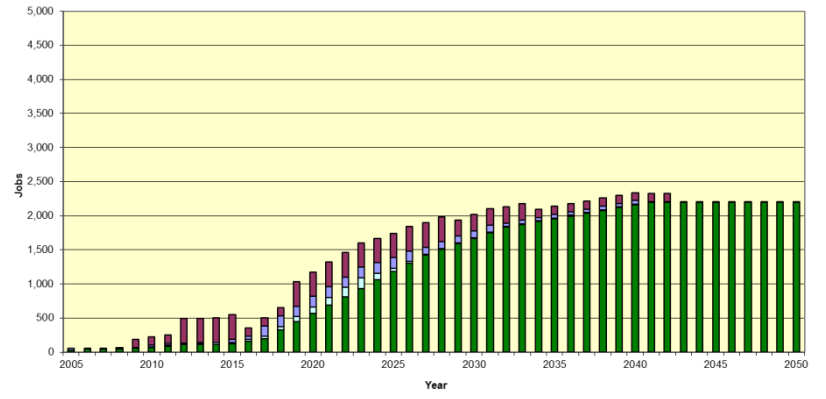
McLean Rigs and Wells



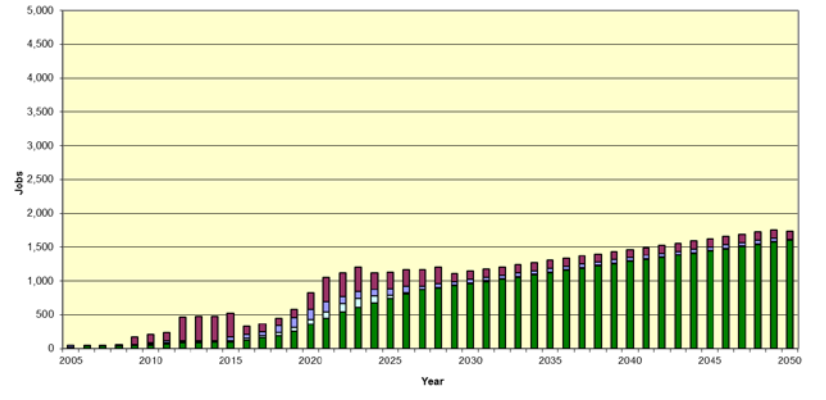
McLean Rigs and Wells



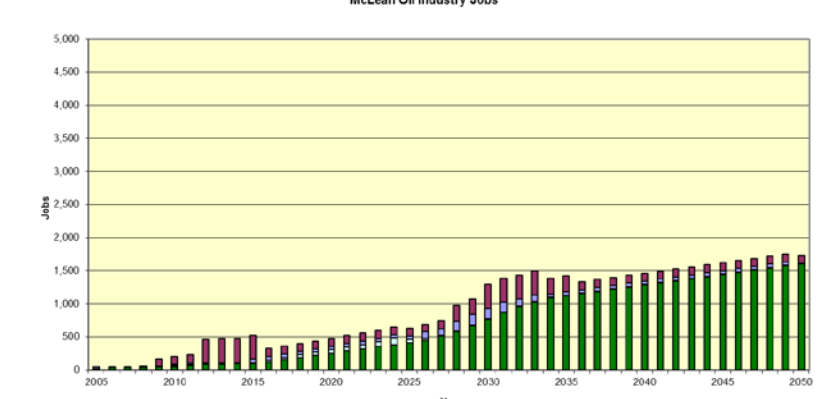
McLean Oil Industry Jobs

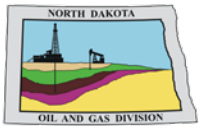


McLean Oil Industry Jobs

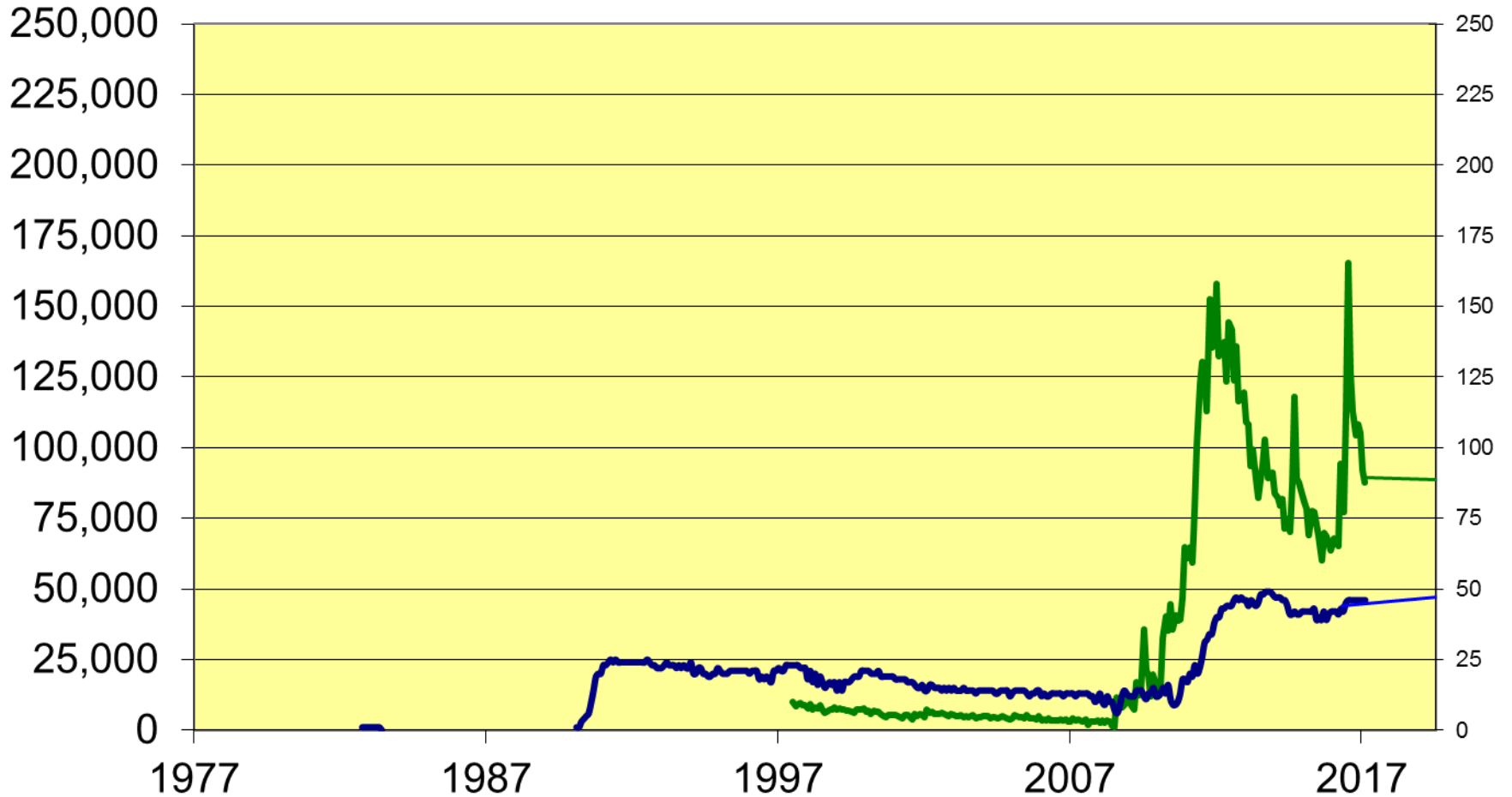


McLean Oil Industry Jobs



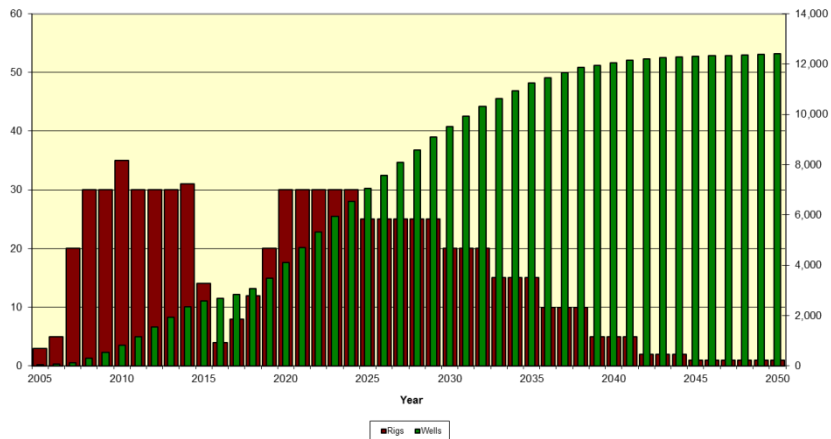


MONTHLY OIL PRODUCTION FOR LOCAL COUNTIES



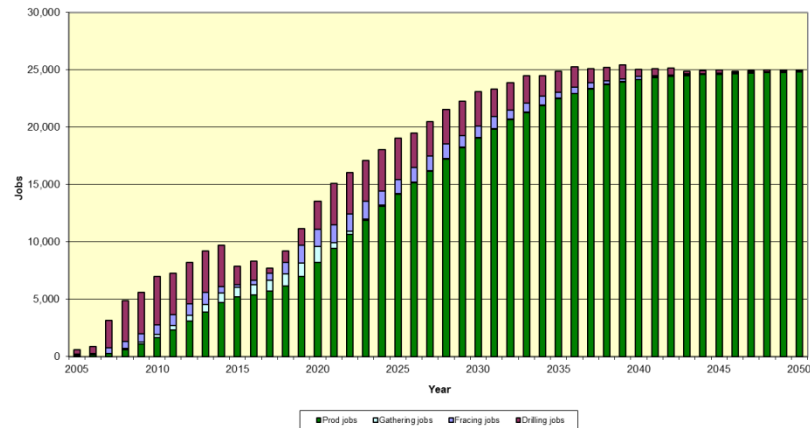
— McLEAN — wells

Mountrail Rigs and Wells



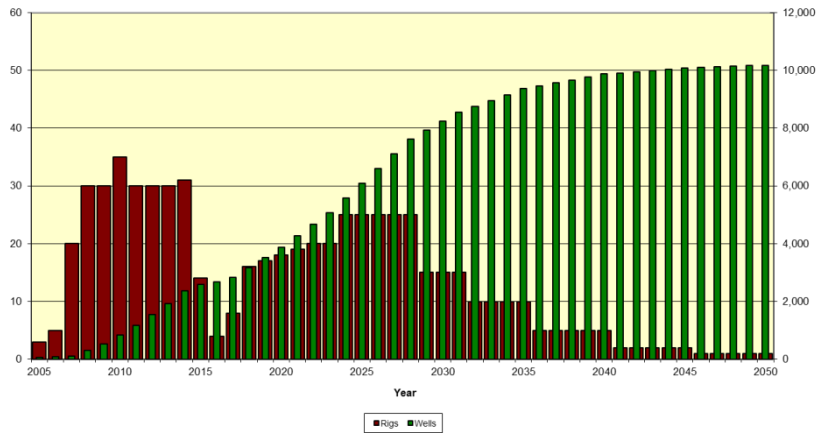
Mountrail Rigs and Wells

Mountrail Oil Industry Jobs



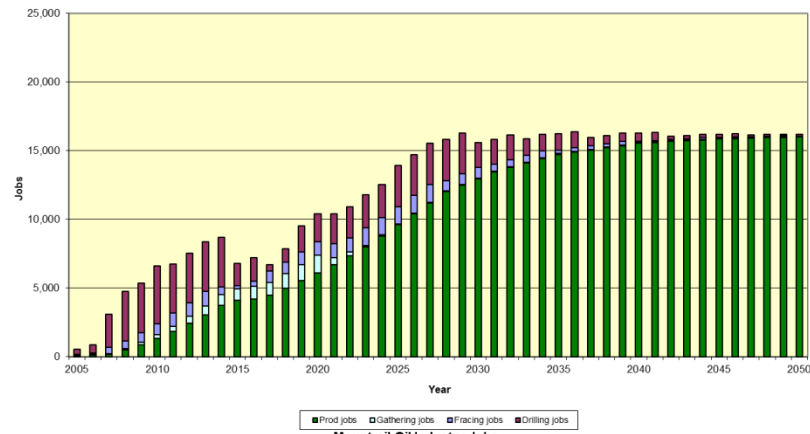
Mountrail Oil Industry Jobs

Mountrail Rigs and Wells



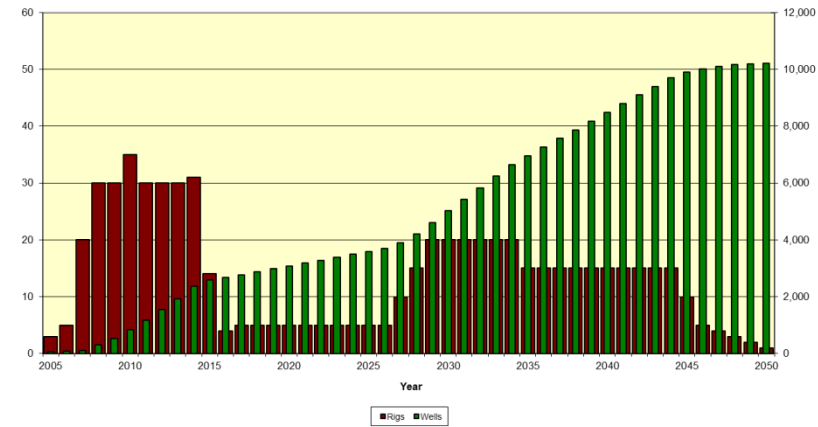
Mountrail Rigs and Wells

Mountrail Oil Industry Jobs



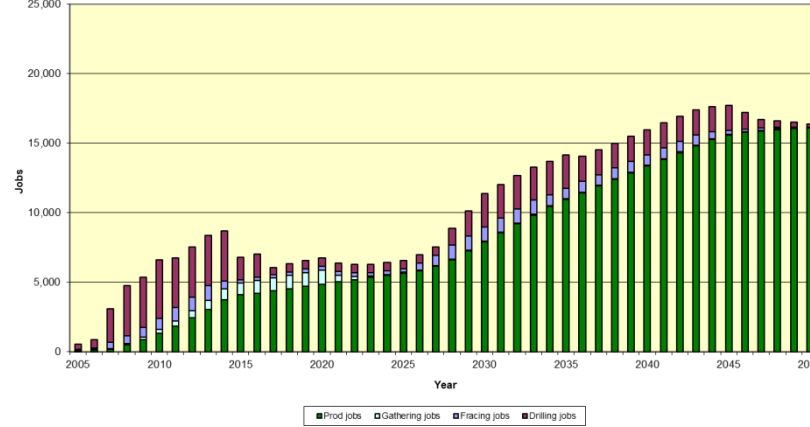
Mountrail Oil Industry Jobs

Mountrail Rigs and Wells



Mountrail Rigs and Wells

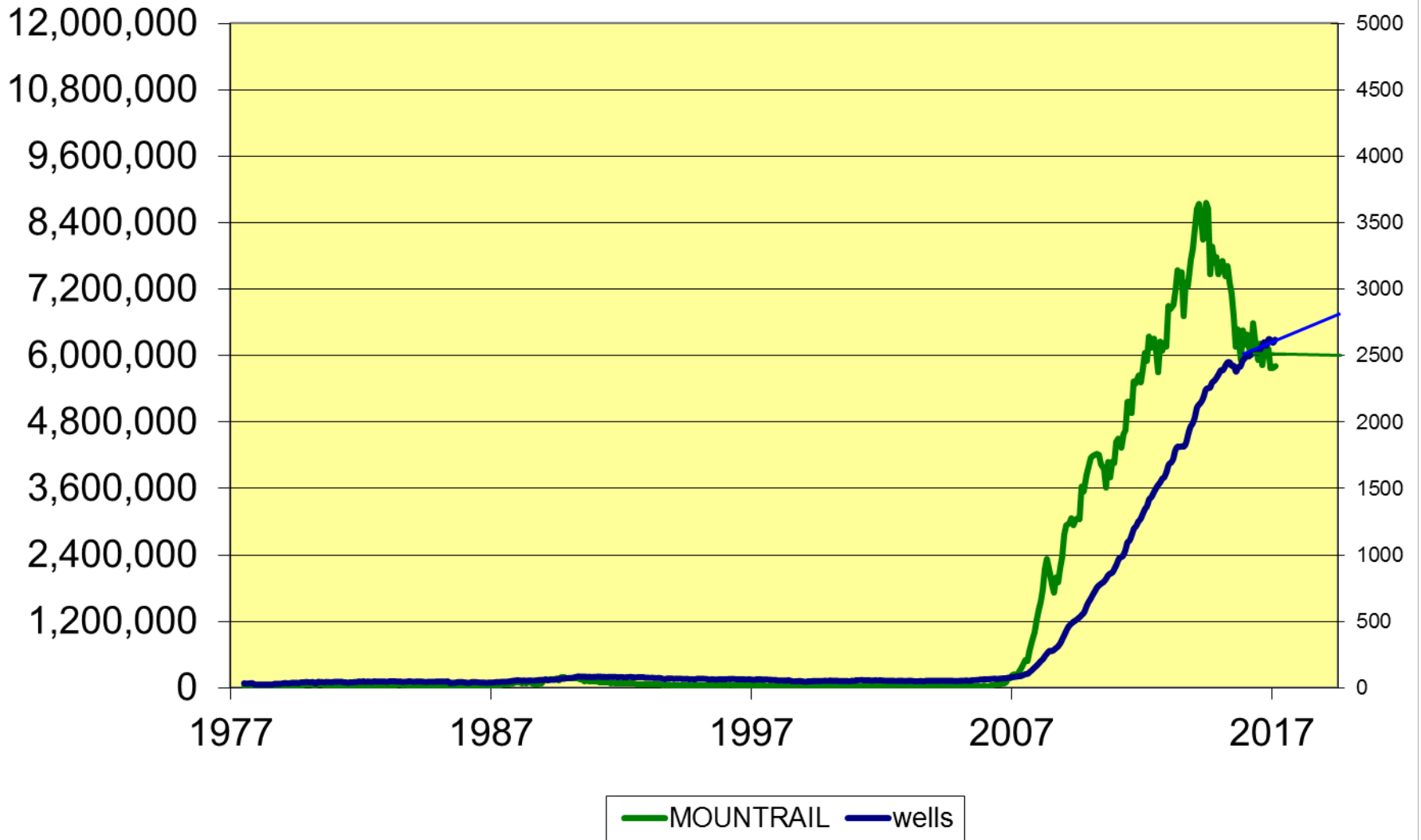
Mountrail Oil Industry Jobs



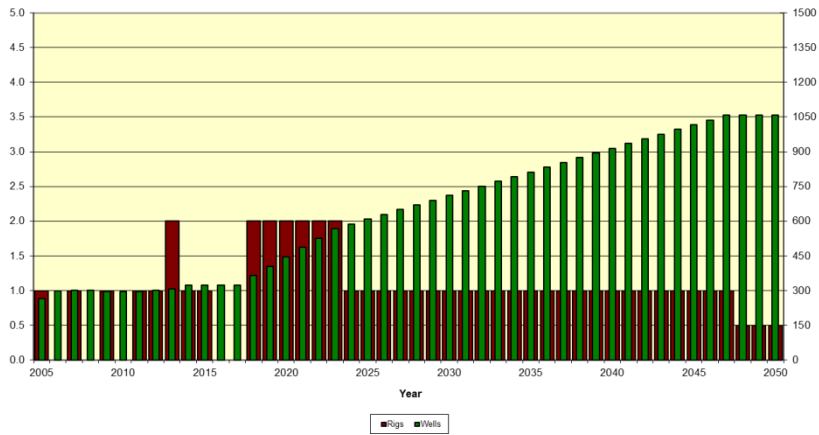
Mountrail Oil Industry Jobs



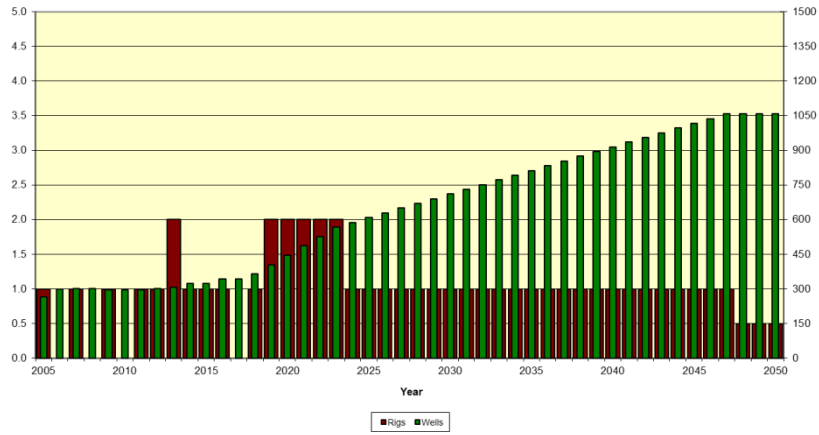
MONTHLY OIL PRODUCTION FOR LOCAL COUNTIES



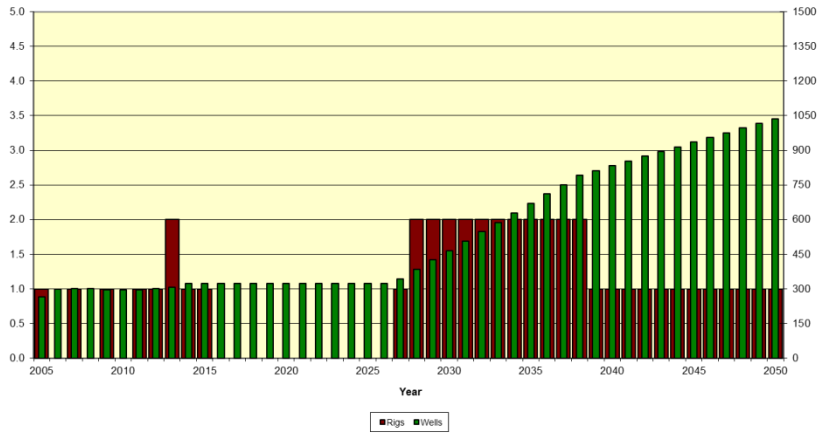
Renville Rigs and Wells



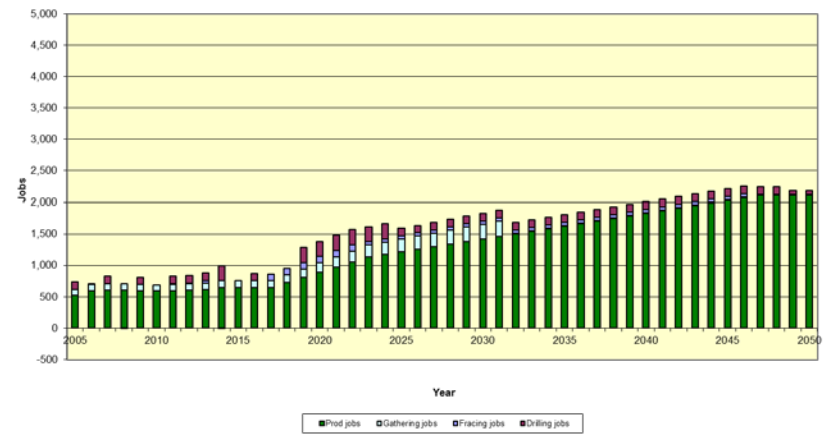
Renville Rigs and Wells



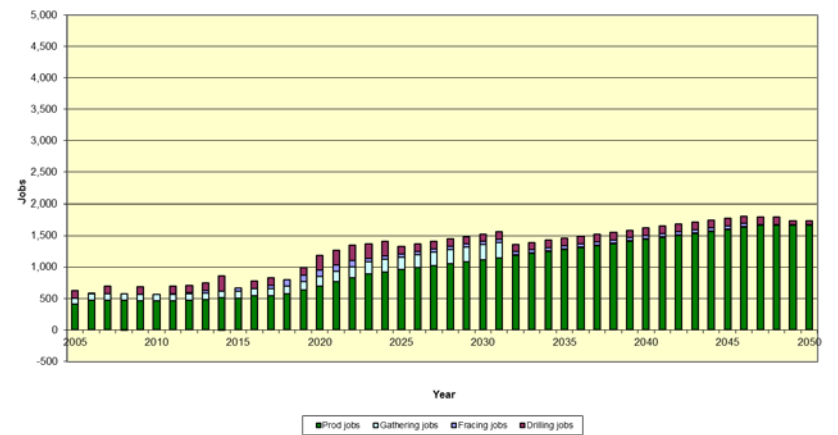
Renville Rigs and Wells



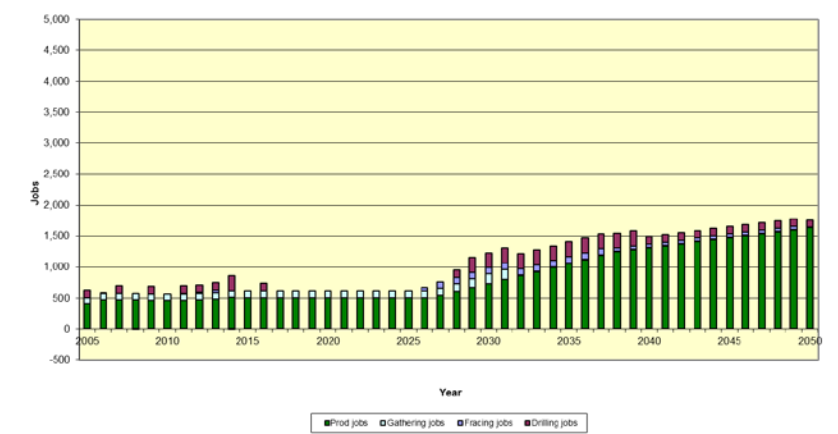
Renville Oil Industry Jobs

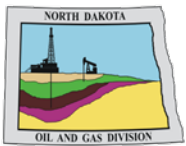


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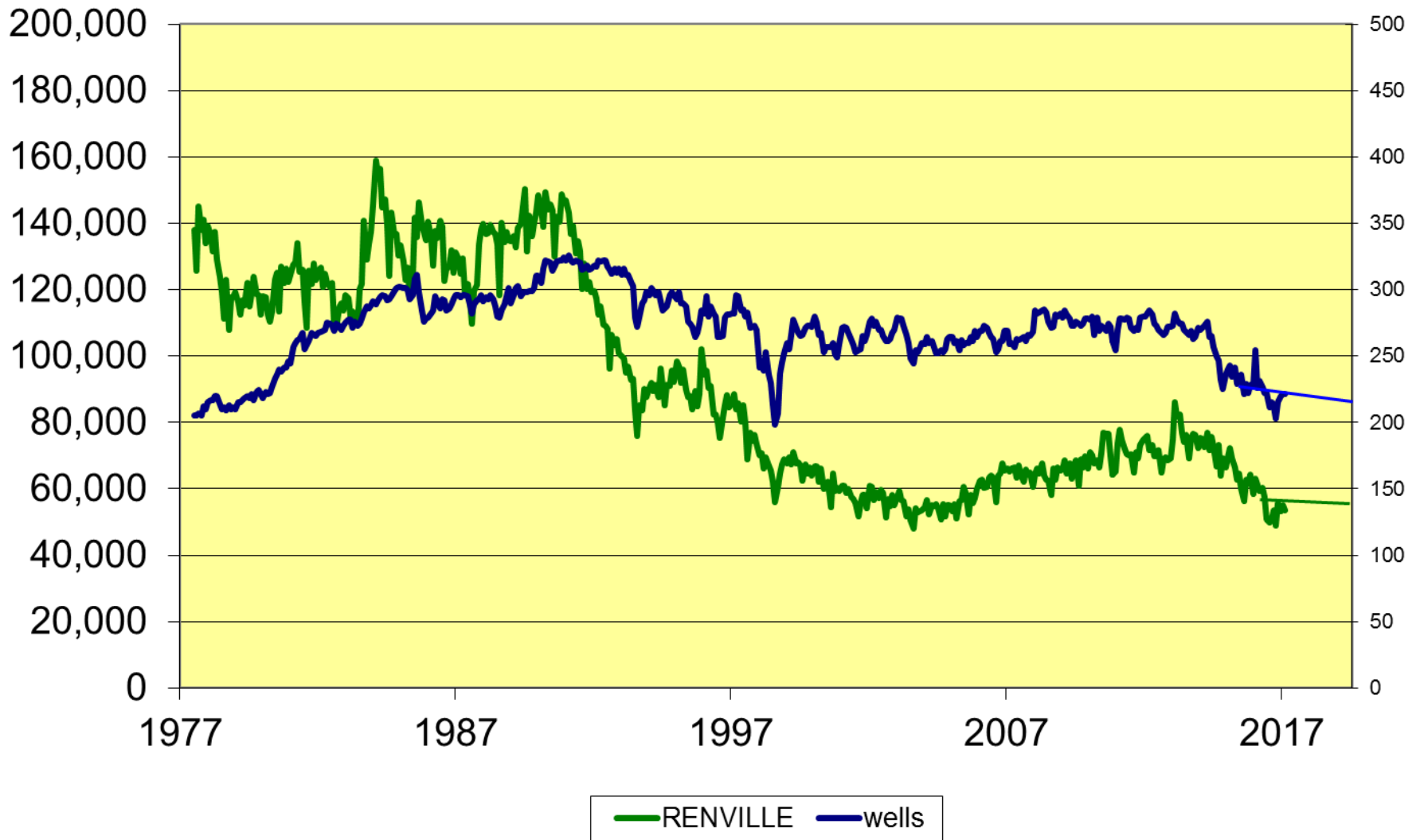


Renville Oil Industry Jobs

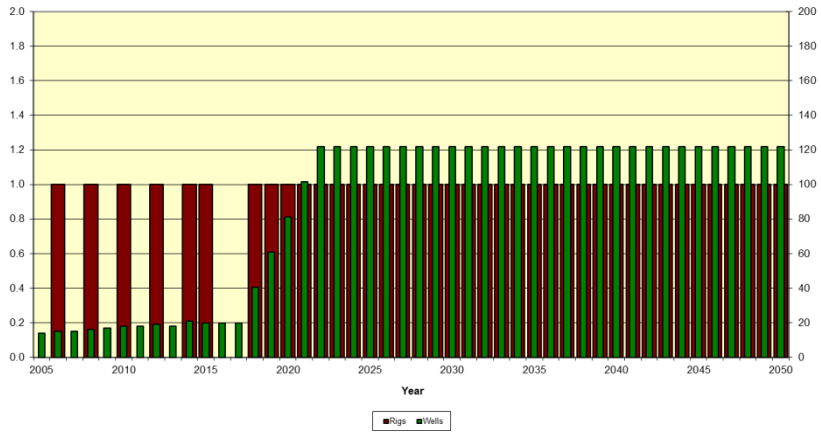




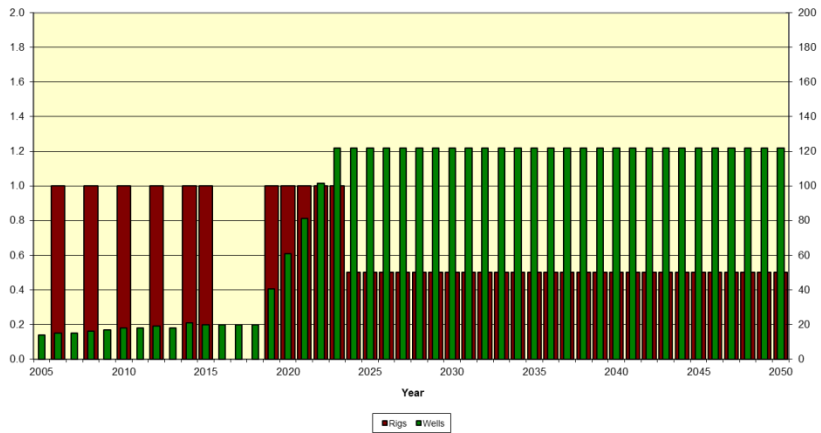
MONTHLY OIL PRODUCTION FOR LOCAL COUNTIES



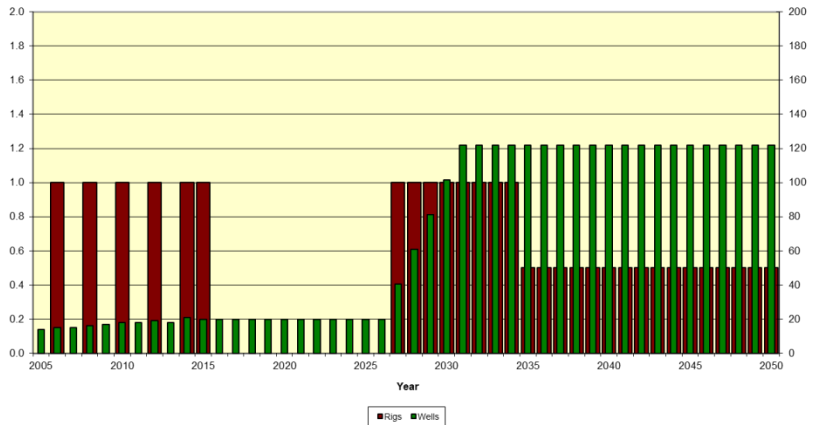
Slope non-Tyler Rigs and Wells



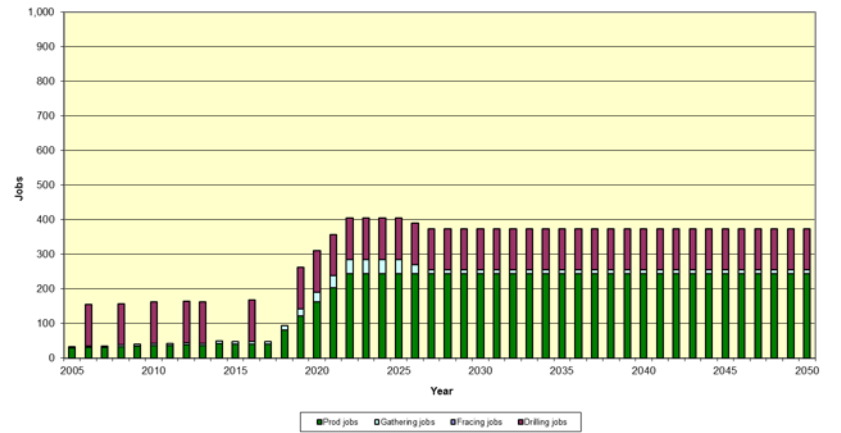
Slope non-Tyler Rigs and Wells



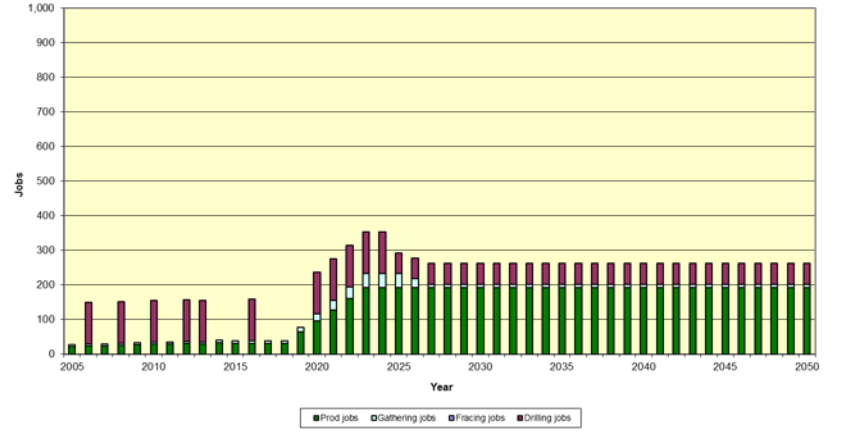
Slope non-Tyler Rigs and Wells



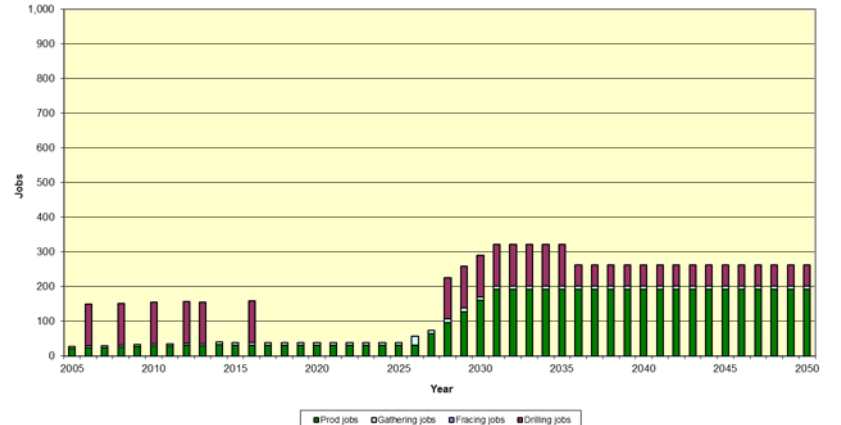
Slope non-Tyler Oil Industry Jobs

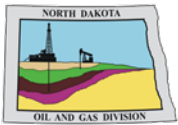


Slope non-Tyler Oil Industry Jobs

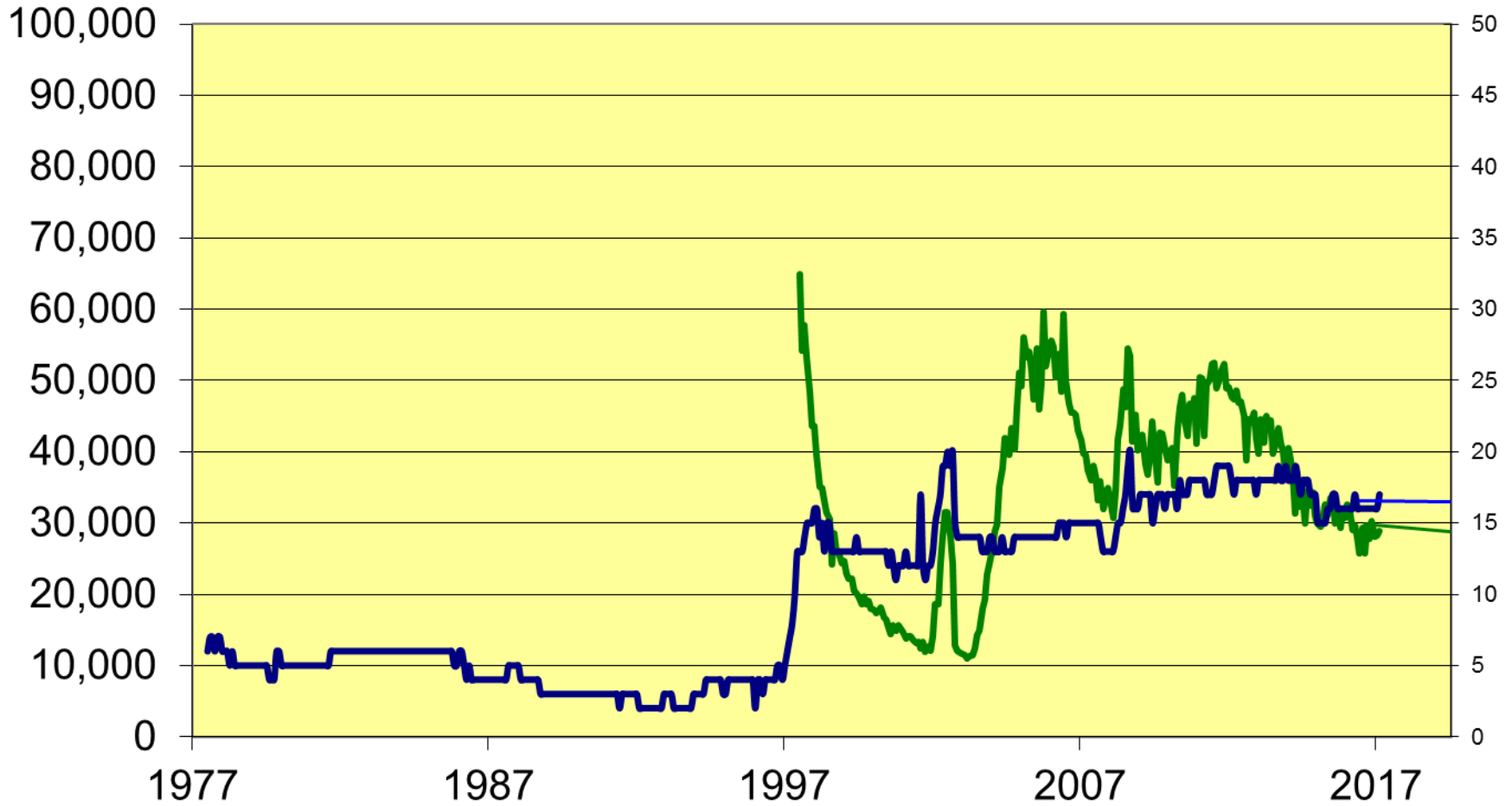


Slope non-Tyler Oil Industry Jobs



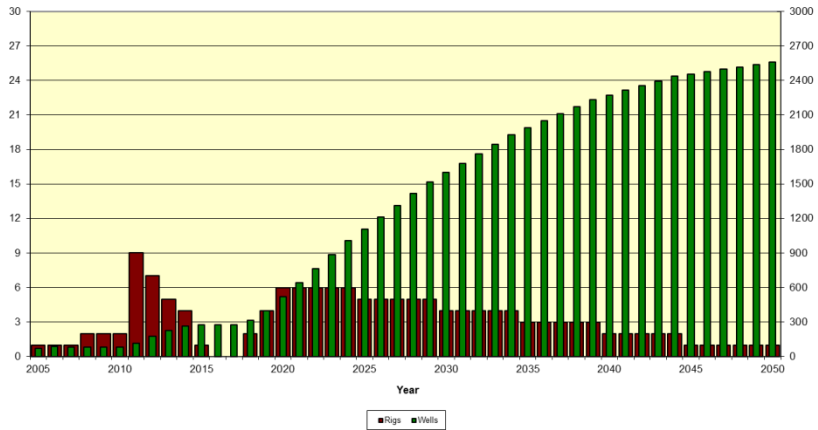


MONTHLY OIL PRODUCTION FOR LOCAL COUNTIES

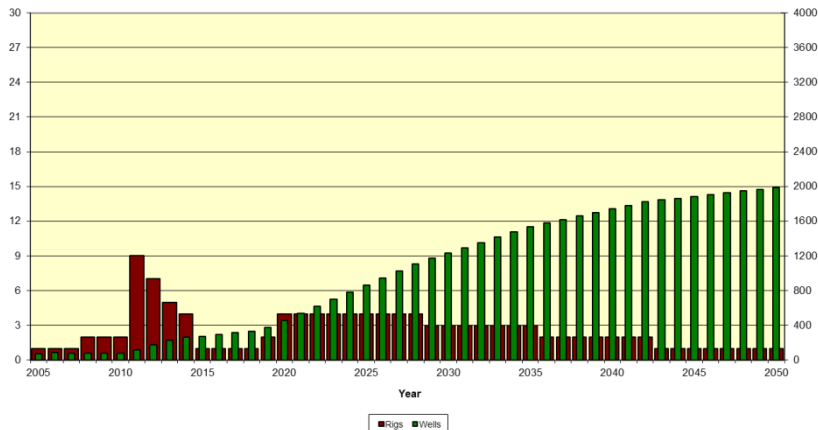


— SLOPE — wells

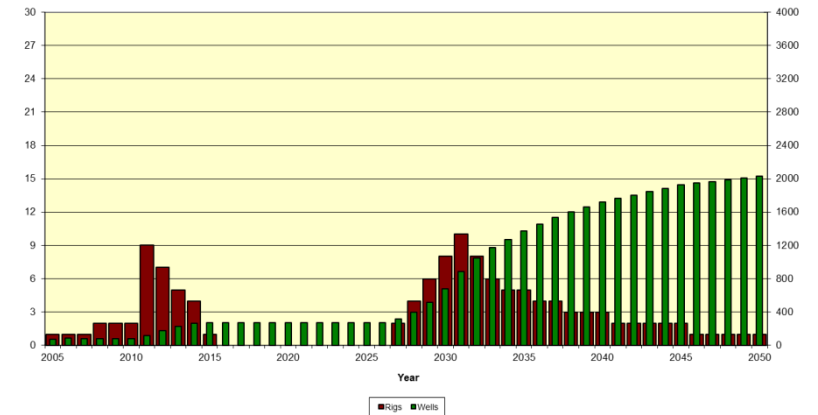
Stark Rigs and Wells



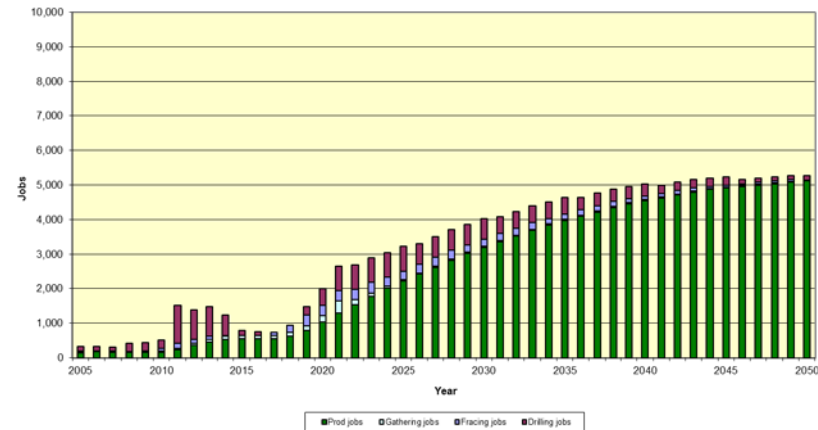
Stark Rigs and Wells



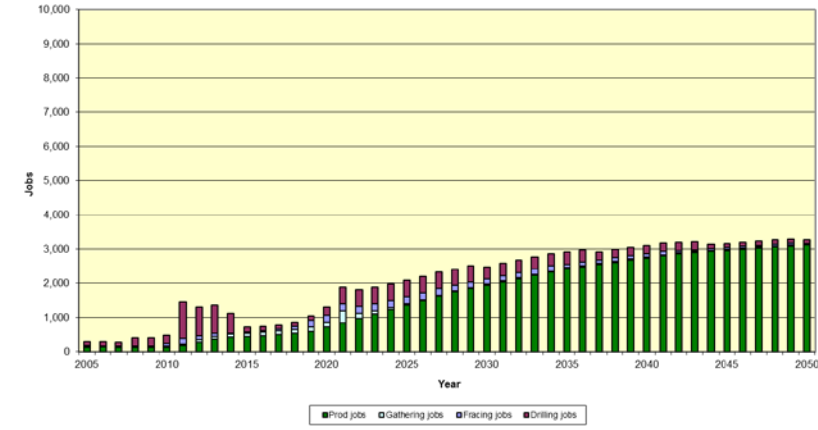
Stark Rigs and Wells



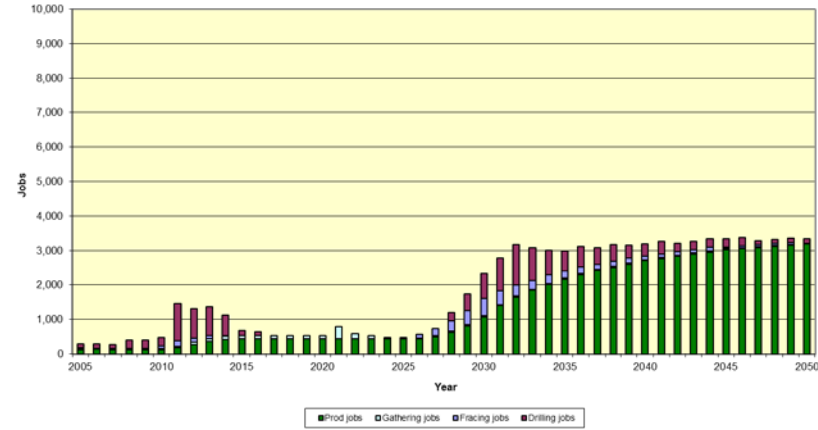
Stark Oil Industry Jobs

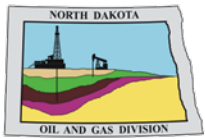


Stark Oil Industry Jobs

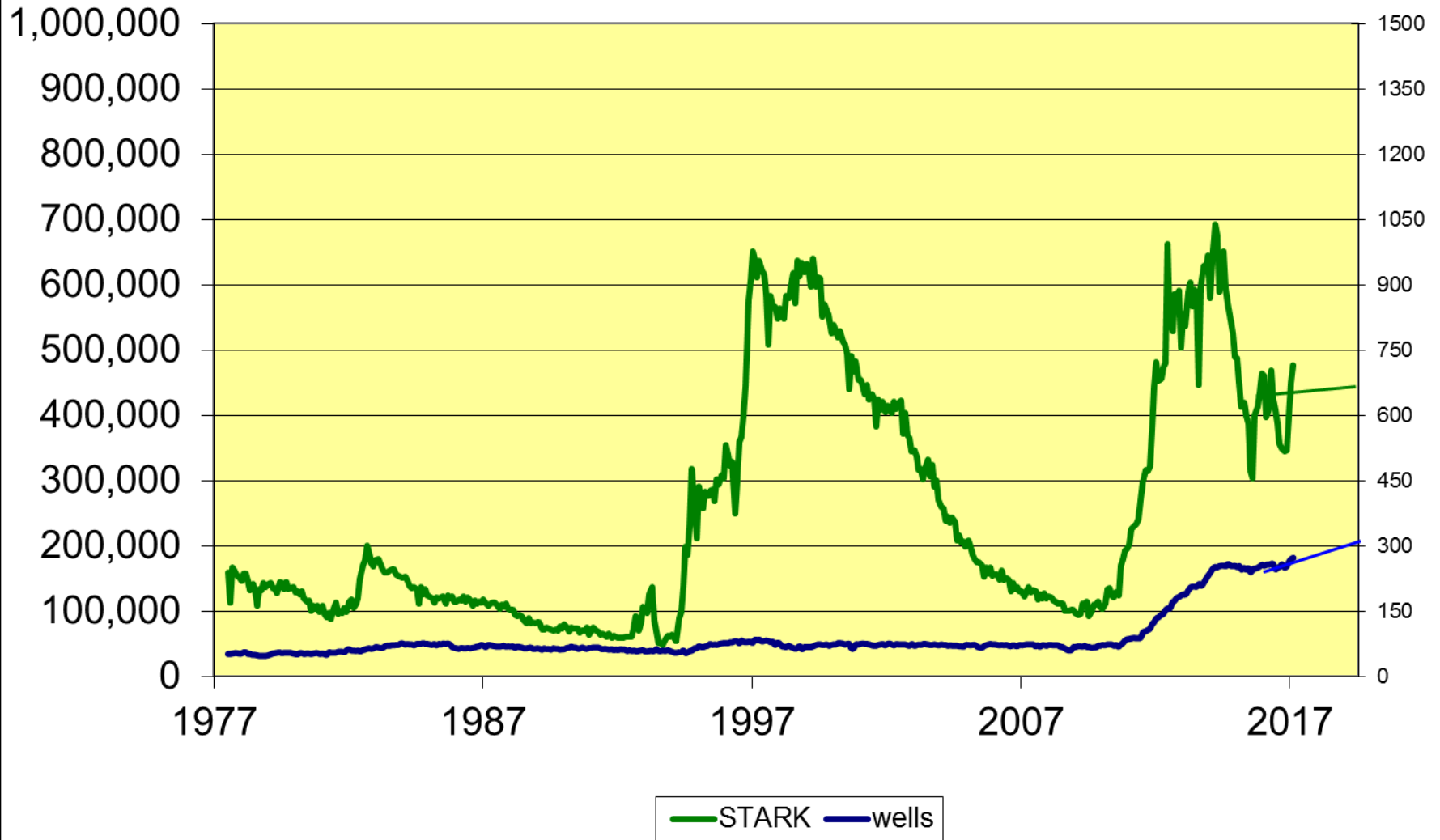


Stark Oil Industry Jobs

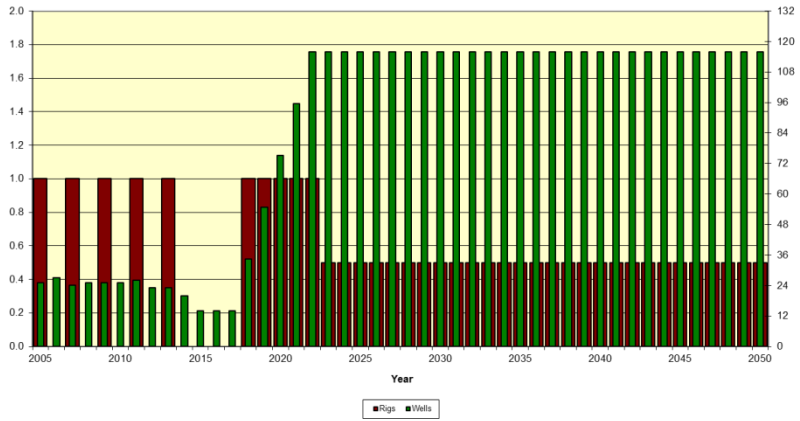




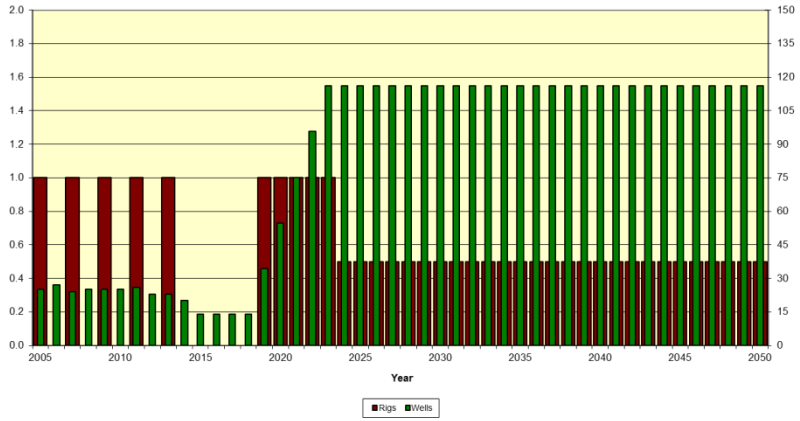
MONTHLY OIL PRODUCTION FOR LOCAL COUNTIES



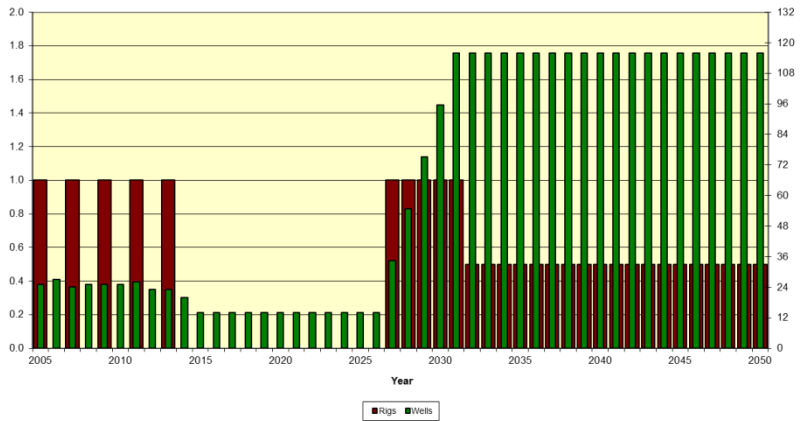
Ward Rigs and Jobs



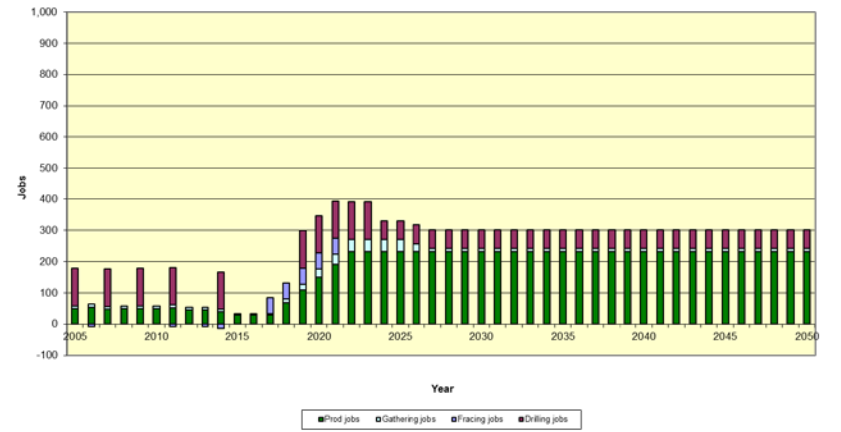
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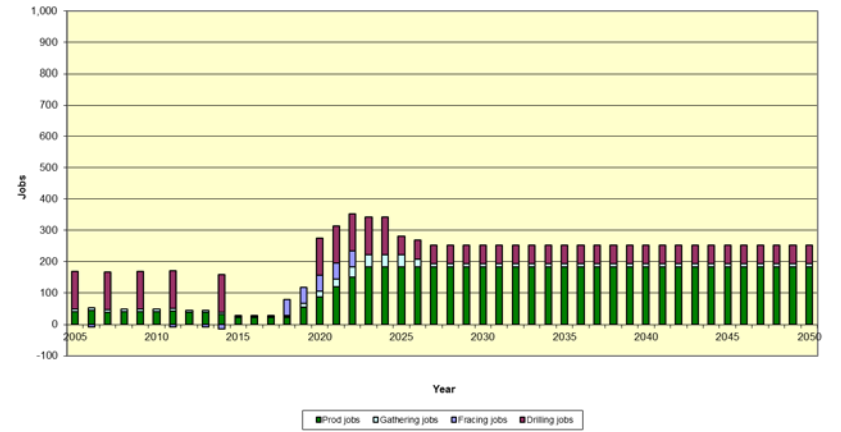
Ward Rigs and Jobs



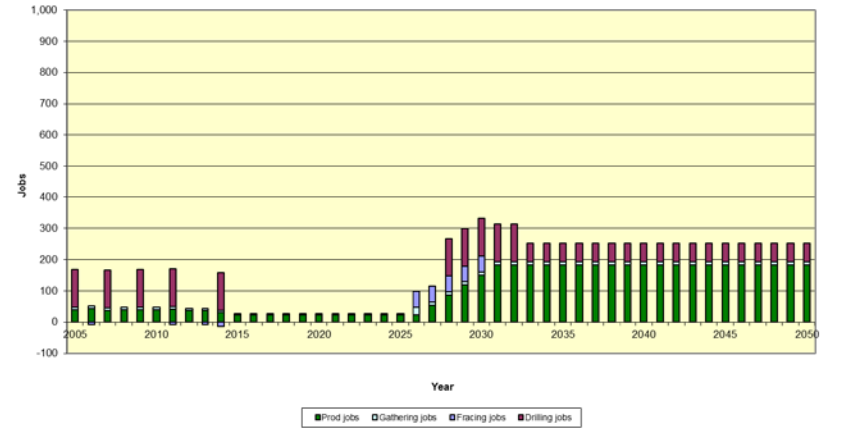
Ward Oil Industry Jobs

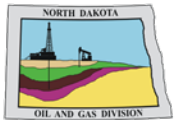


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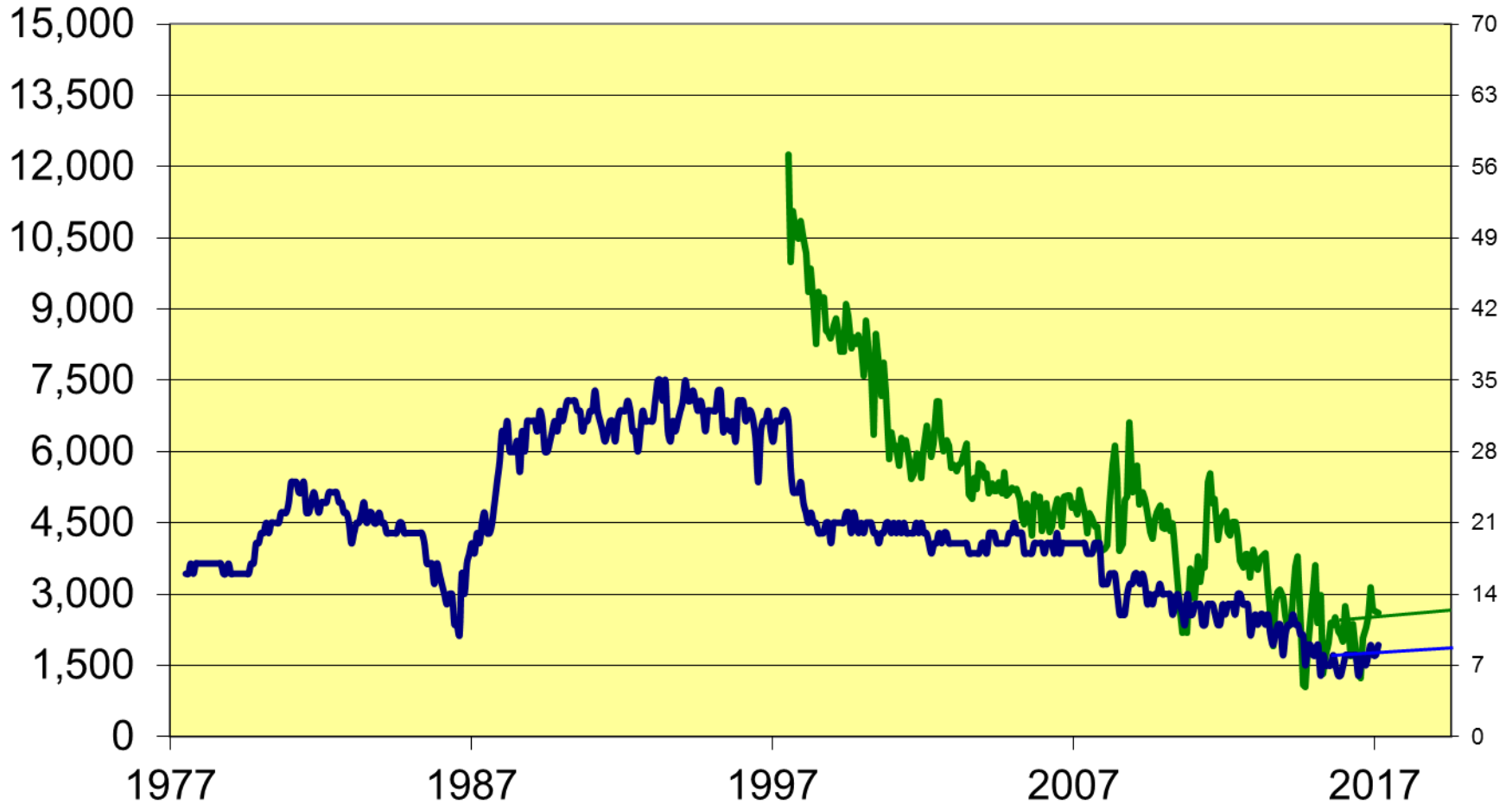


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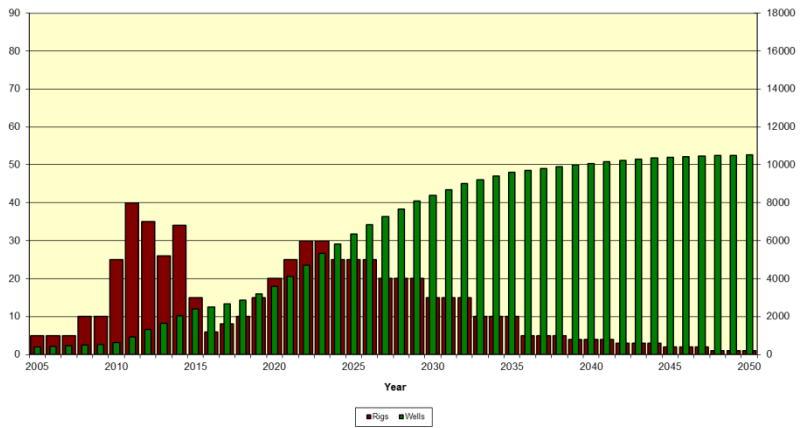


MONTHLY OIL PRODUCTION FOR LOCAL COUNTIES

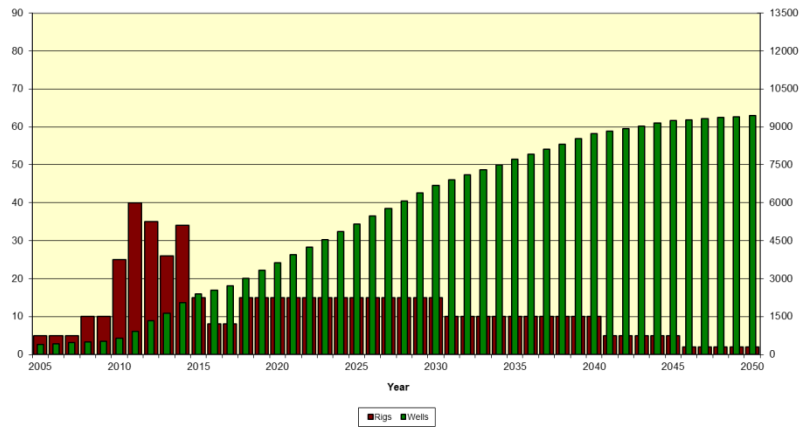


— WARD — wells

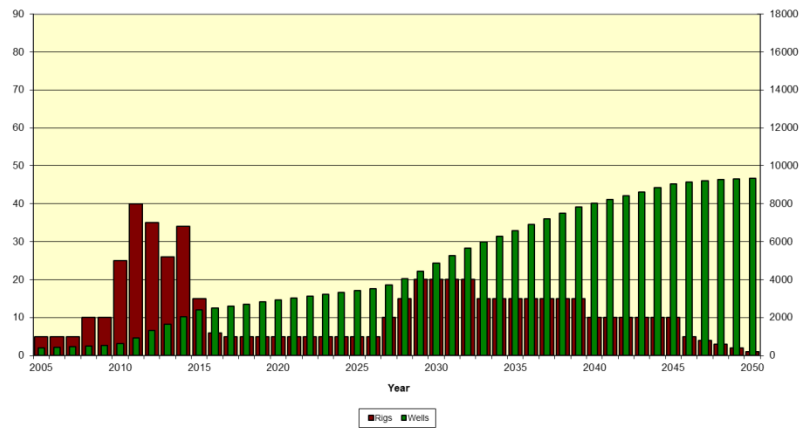
Williams Rigs and Wells



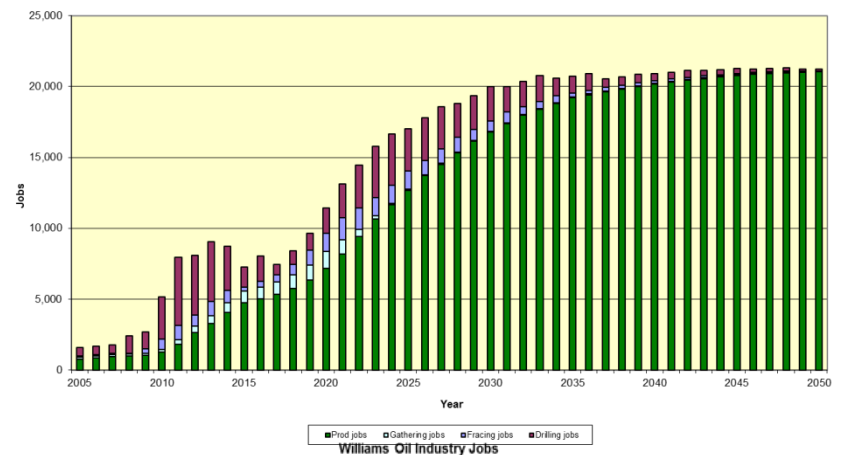
Williams Rigs and Wells



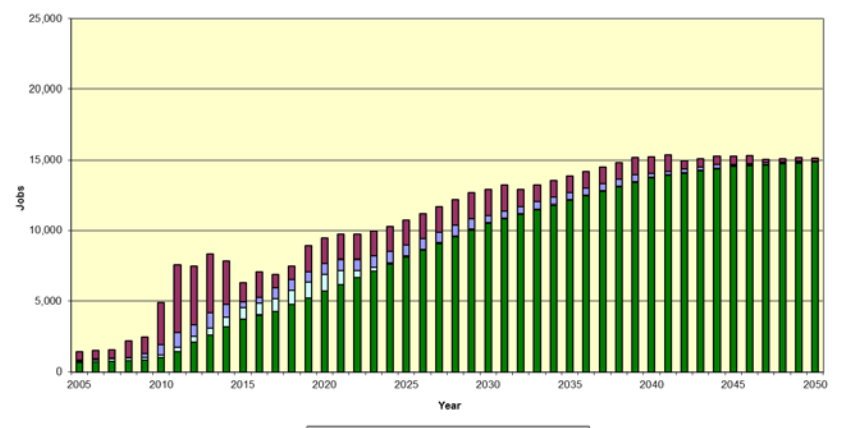
Williams Rigs and Wells



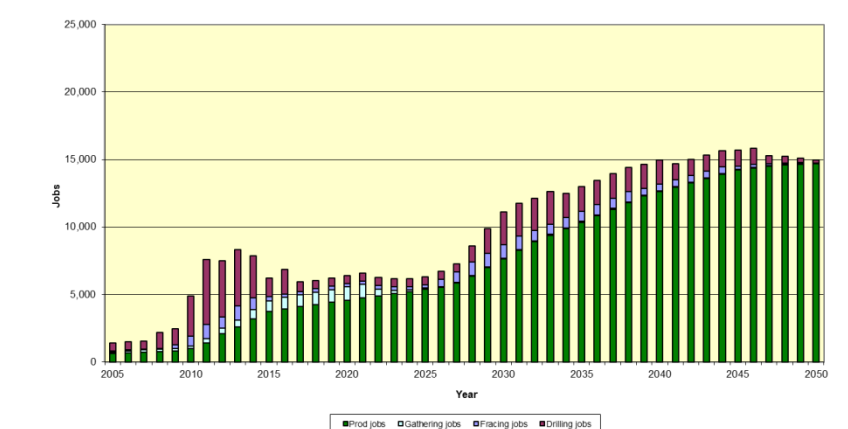
Williams Oil Industry Jobs

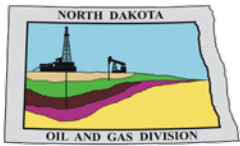


Williams Oil Industry Jobs

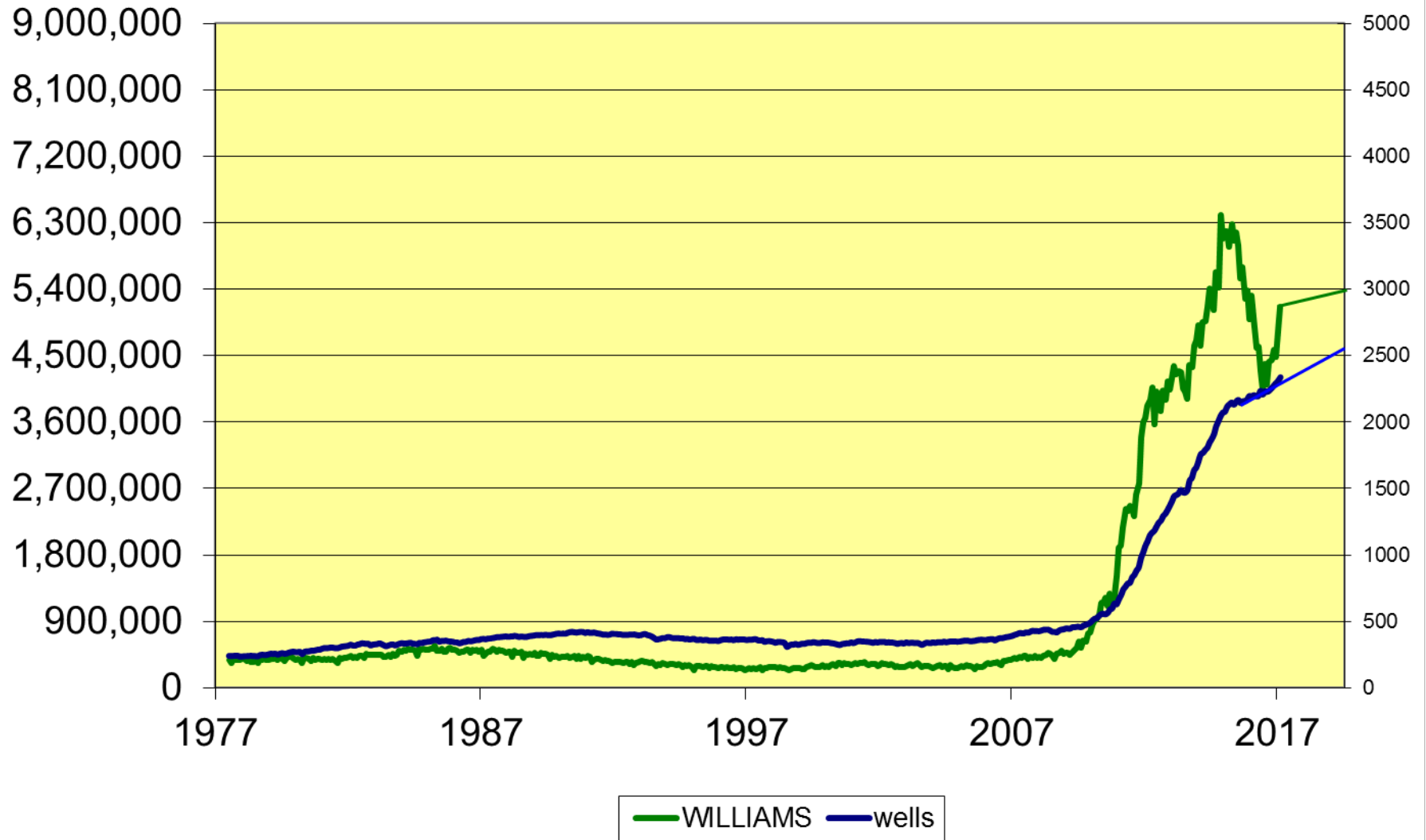


Williams Oil Industry Jobs



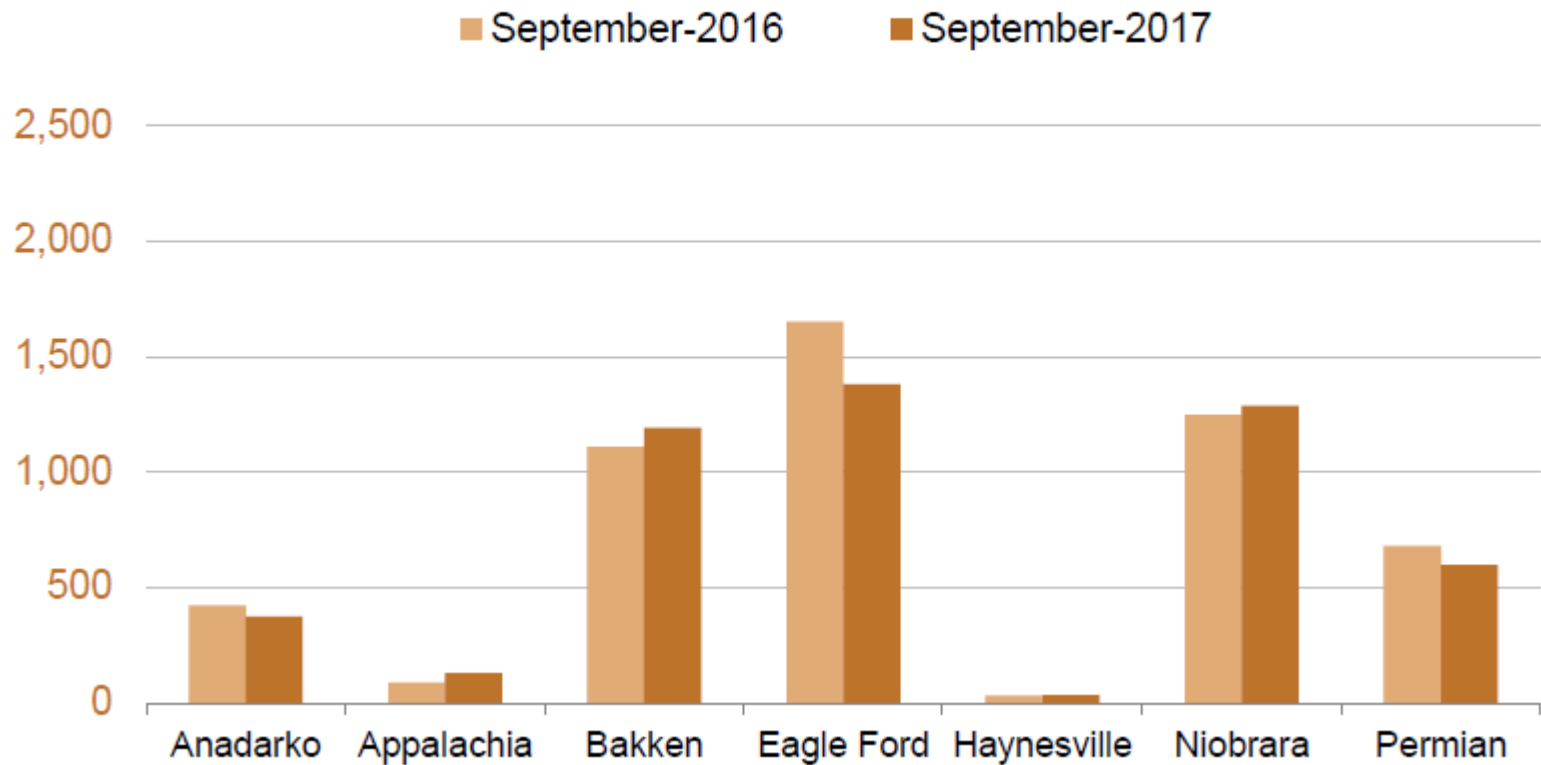


MONTHLY OIL PRODUCTION FOR LOCAL COUNTIES



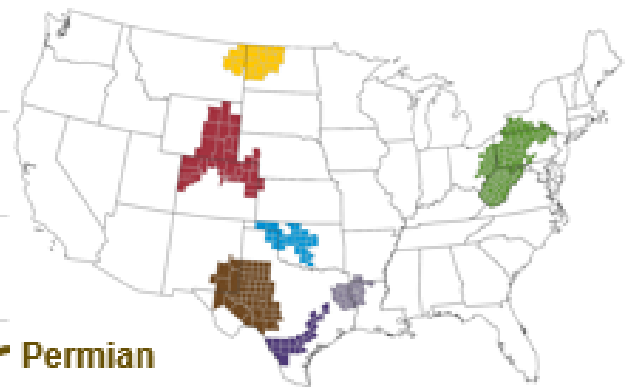
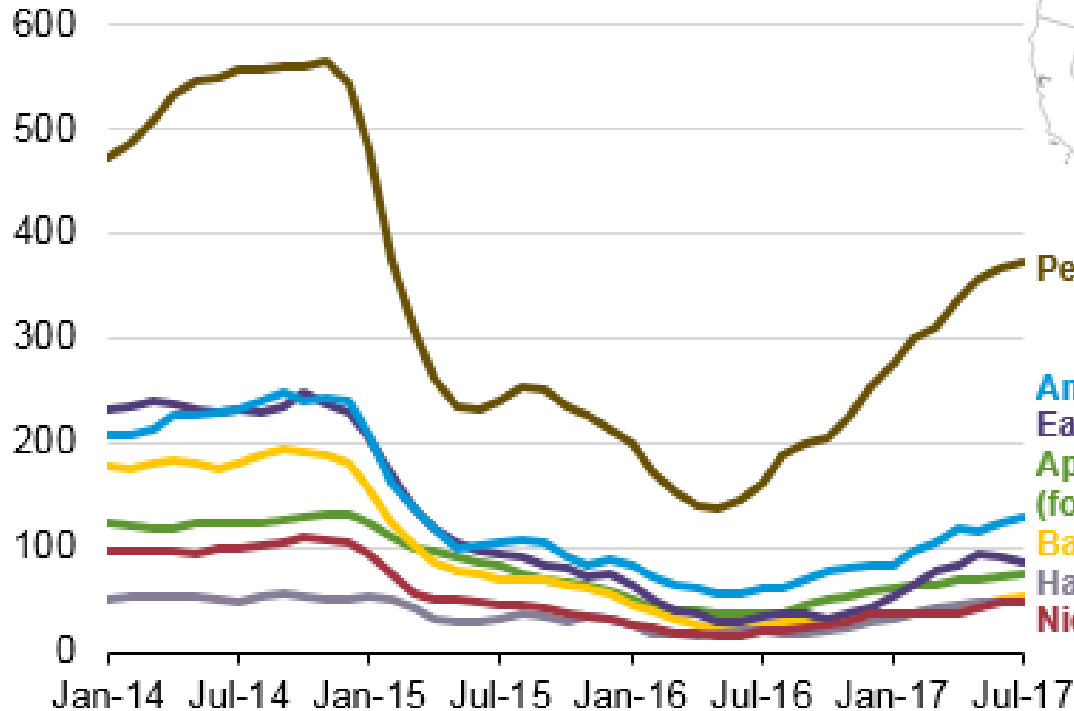
New-well oil production per rig

barrels/day



Rig count in EIA's *Drilling Productivity Report* regions

number of active drilling rigs



Taxes

- Permian – 3.75% to 7.5%
- Anadarko – 7%
- Eagle Ford – 7.5%
- Appalachia – 0.2%
- Bakken – 10%
- Haynesville – 5% to 7.5%
- Niobrara – 3% to 6%

Federal & Tribal Lands

- Permian – <2%
- Anadarko – <2%
- Eagle Ford – <2%
- Appalachia – <2%
- Bakken – 9% to 30%
- Haynesville – 2% to 9%
- Niobrara – 36% to 48%

17 Potential unconventional resource Source Rock formations

- Spearfish 1
- Tyler 1
- Lodgepole 1
- Birdbear 1
- Winnipegosis 1
- Red River 2
- Deadwood 1
- Charles 2
- Mission Canyon 2
- Bakken 2
- Duperow 1
- Stony Mountain 1
- Winnipeg 1

