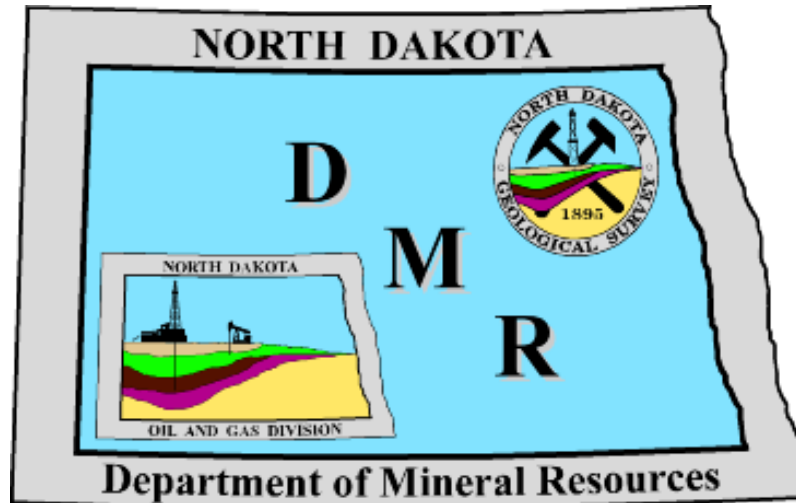


# North Dakota Department of Mineral Resources

Government Finance Interim Committee

07/30/2013

Lynn D. Helms, Director



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

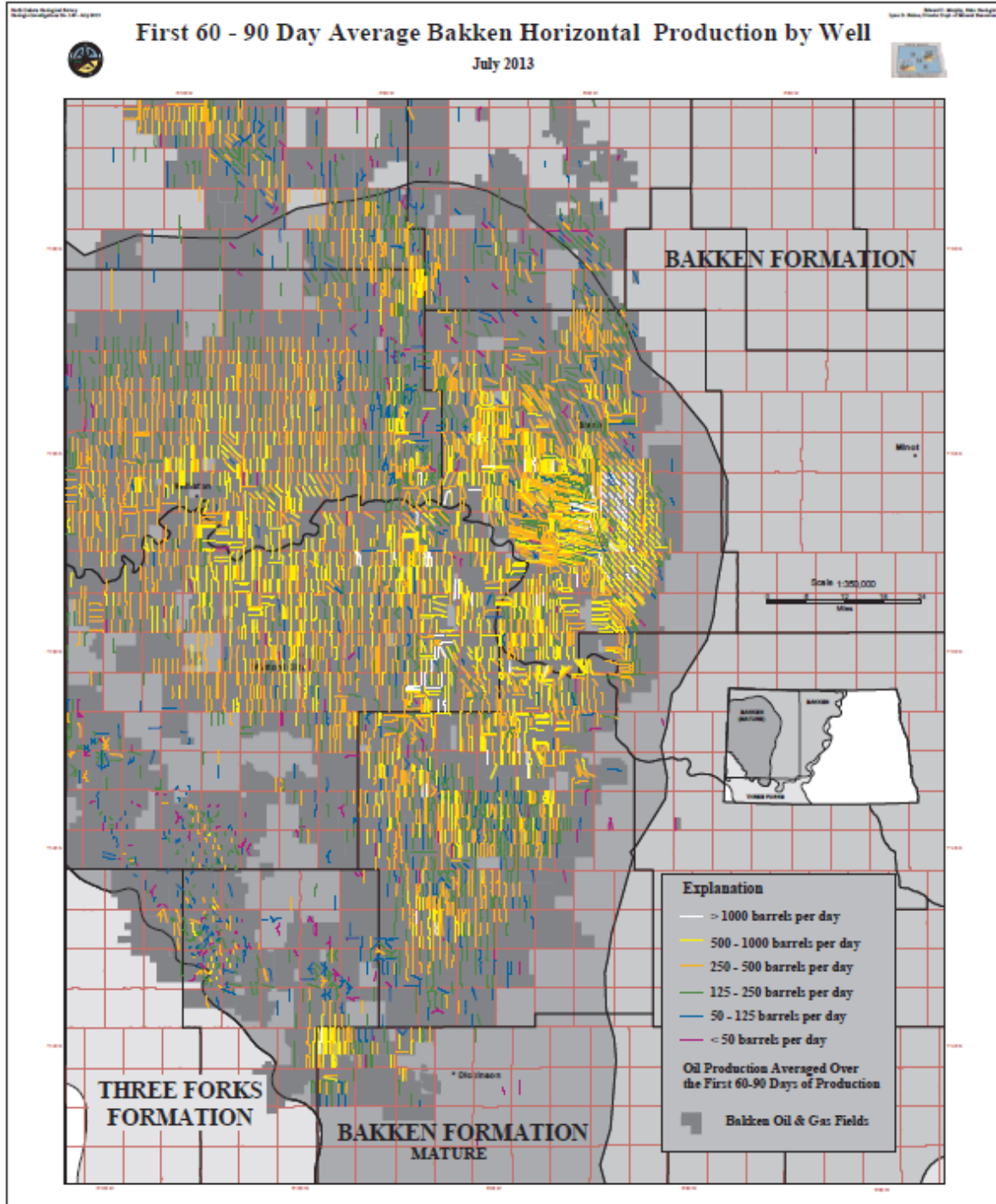
<http://www.state.nd.us/ndgs>

***600 East Boulevard Ave. - Dept 405***

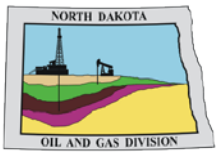
***Bismarck, ND 58505-0840***

***(701) 328-8020      (701) 328-8000***

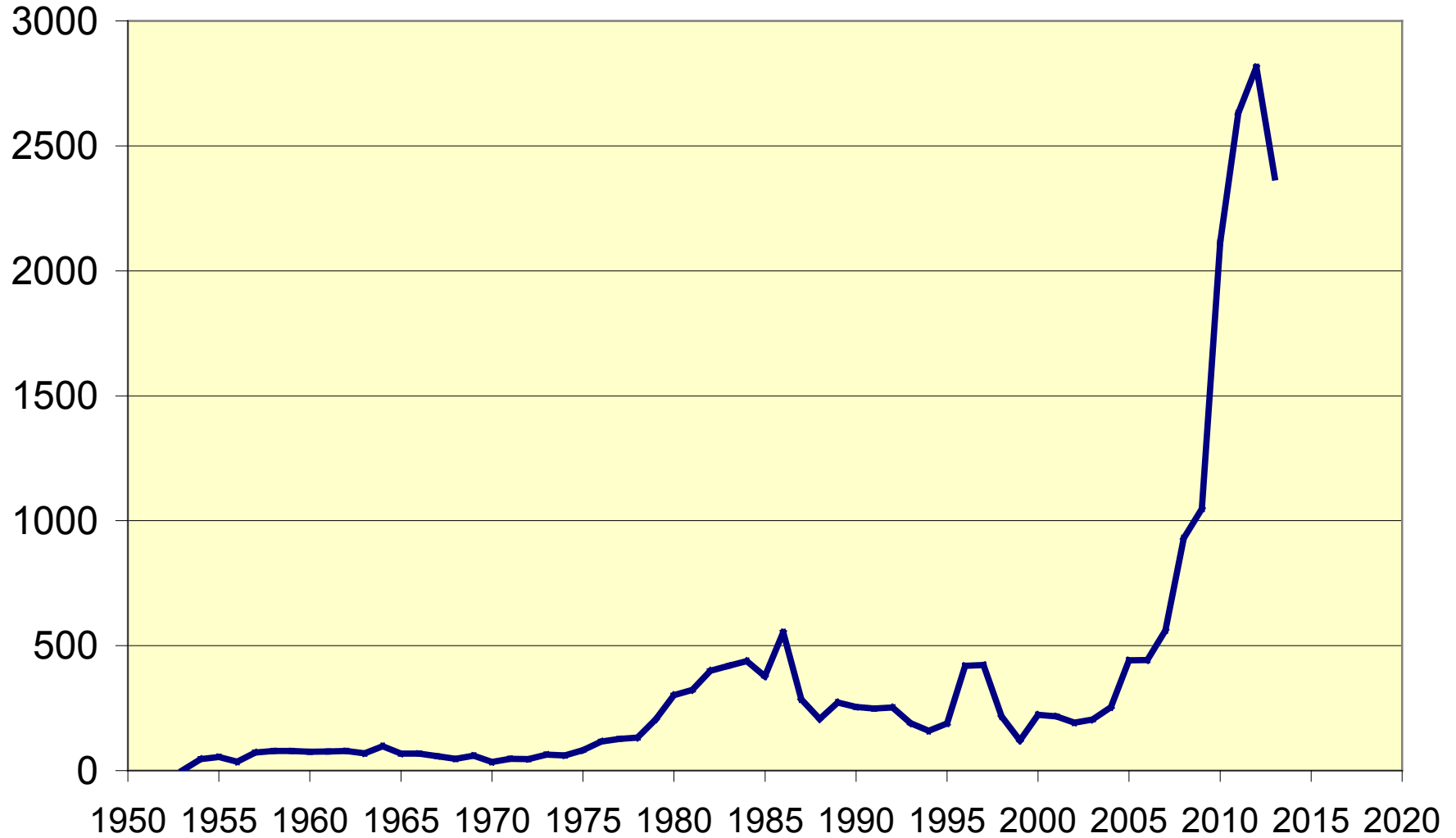
Presentation by Mr. Lynn Helms, Director, Department of Mineral Resources, regarding the status of oil and gas development in the state, projected state drilling activities, and the effect on state and local infrastructure.



Development area  
> 15,000 sq mi  
Size of West Virginia

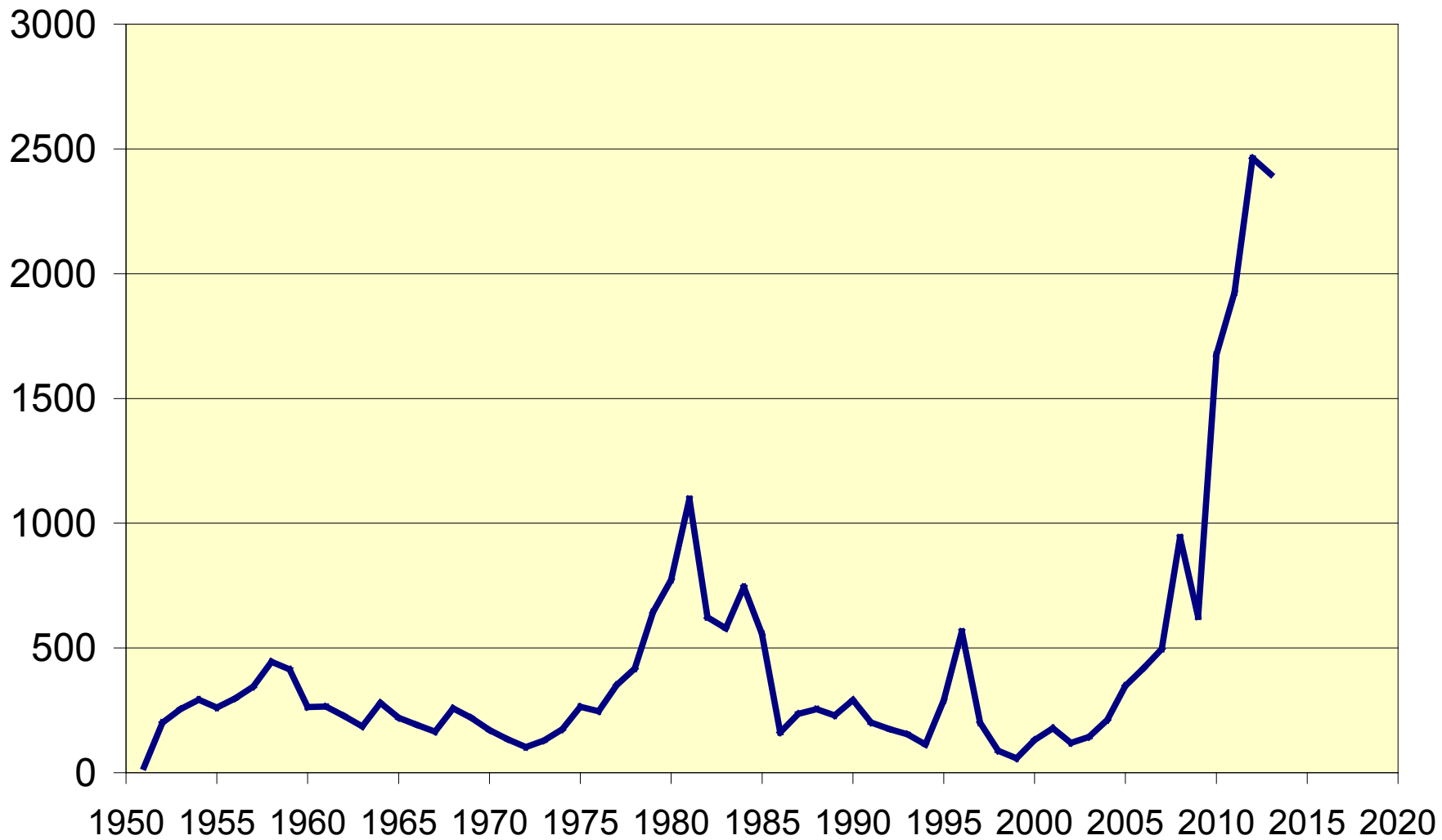


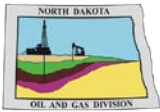
## North Dakota Industrial Commission Cases Heard



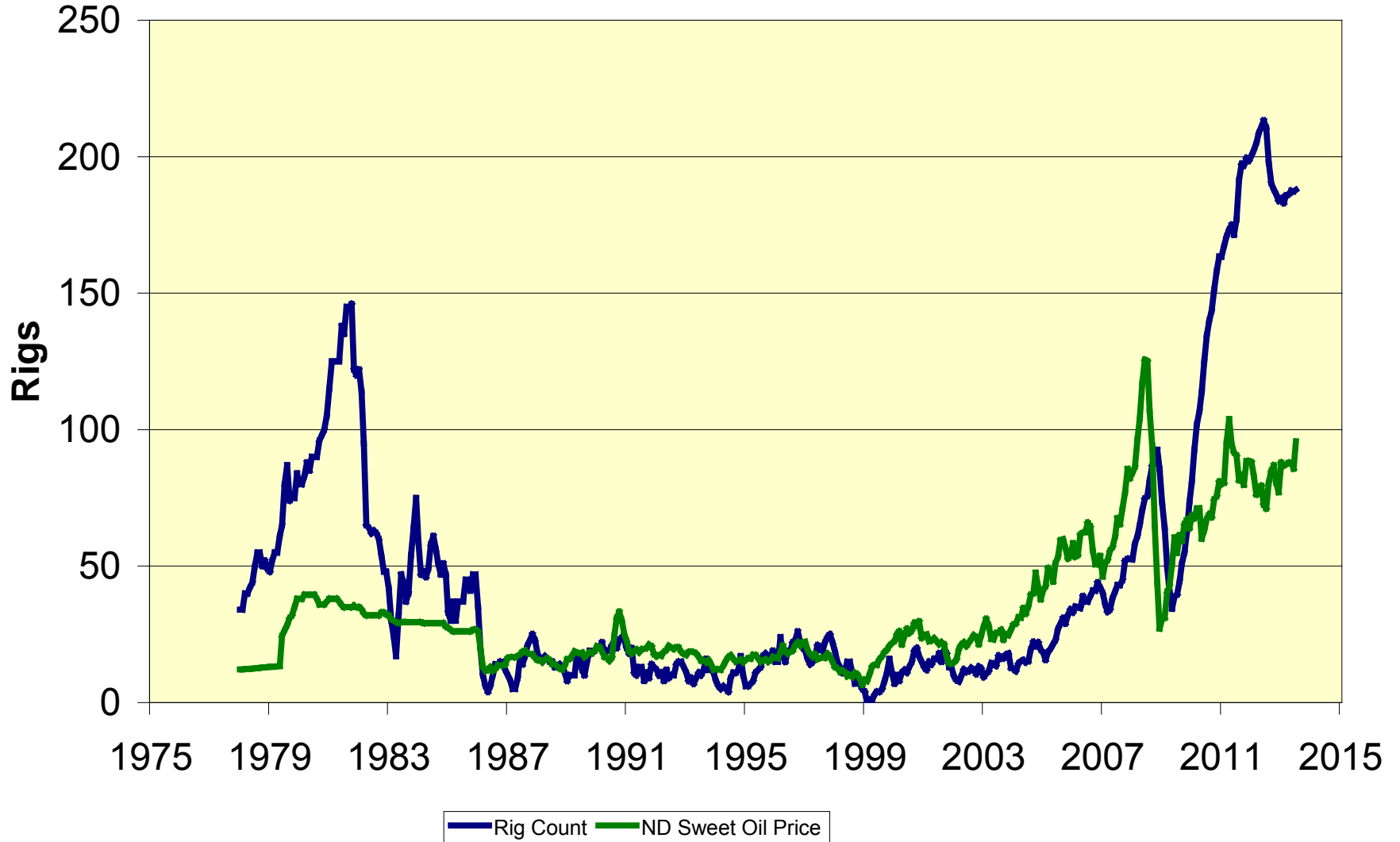


## North Dakota New Well Permits Issued



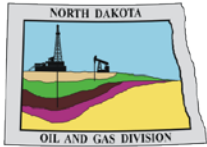


# North Dakota Average Monthly Rig Count

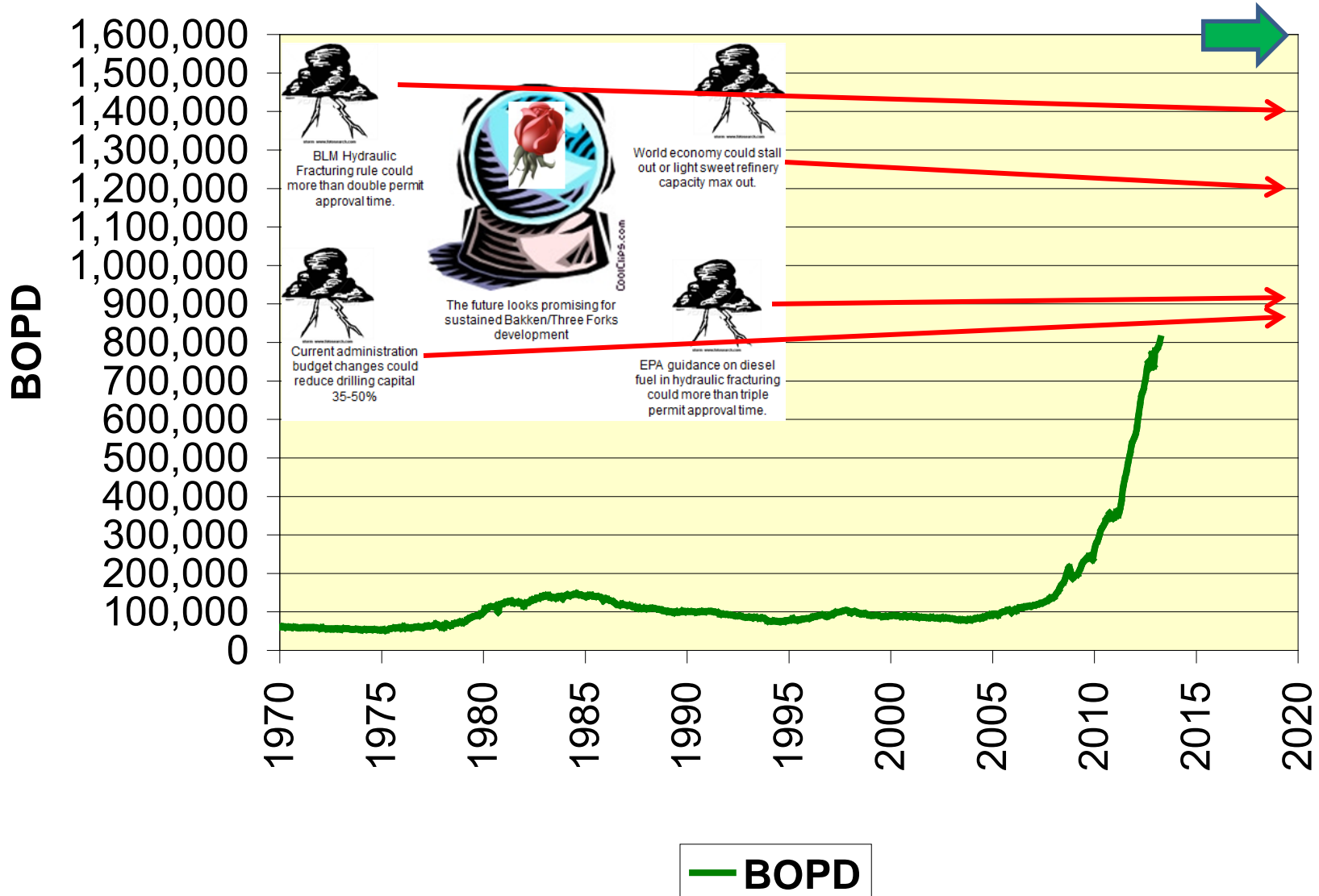


# Western North Dakota

- 1,100 to 2,700 wells/year = 2,000 expected
  - 185 rigs = 22,000 temporary drilling jobs
  - Another 13,000 temporary jobs building infrastructure
  - 2,000-3,000 permanent jobs added each year
  
  - 185 rigs will complete the first phase of drilling in 6-12 months
  - 185 rigs will require about 20 years to complete phase 2 drilling
  
  - 2,000 new wells per year requires 11-22 million gallons of frac water per day
  
  - 40,000-45,000 new wells = 40,000-70,000 long term jobs  
17-28 million gallons per day maintenance water



# North Dakota Daily Oil Produced and Price



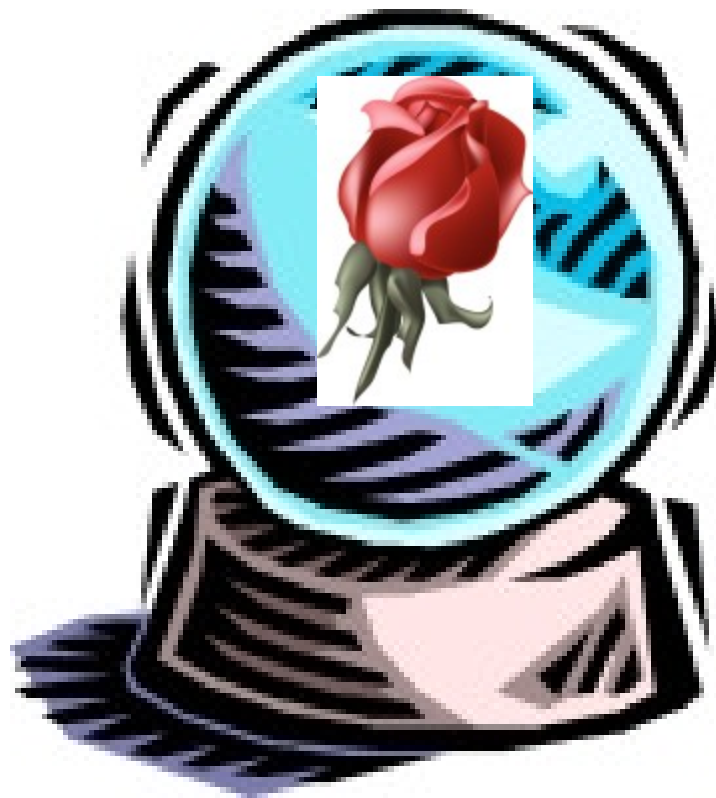




BLM Hydraulic Fracturing rule could more than double permit approval time.



Current administration budget changes could reduce drilling capital 35-50%



The future looks promising for sustained Bakken/Three Forks development

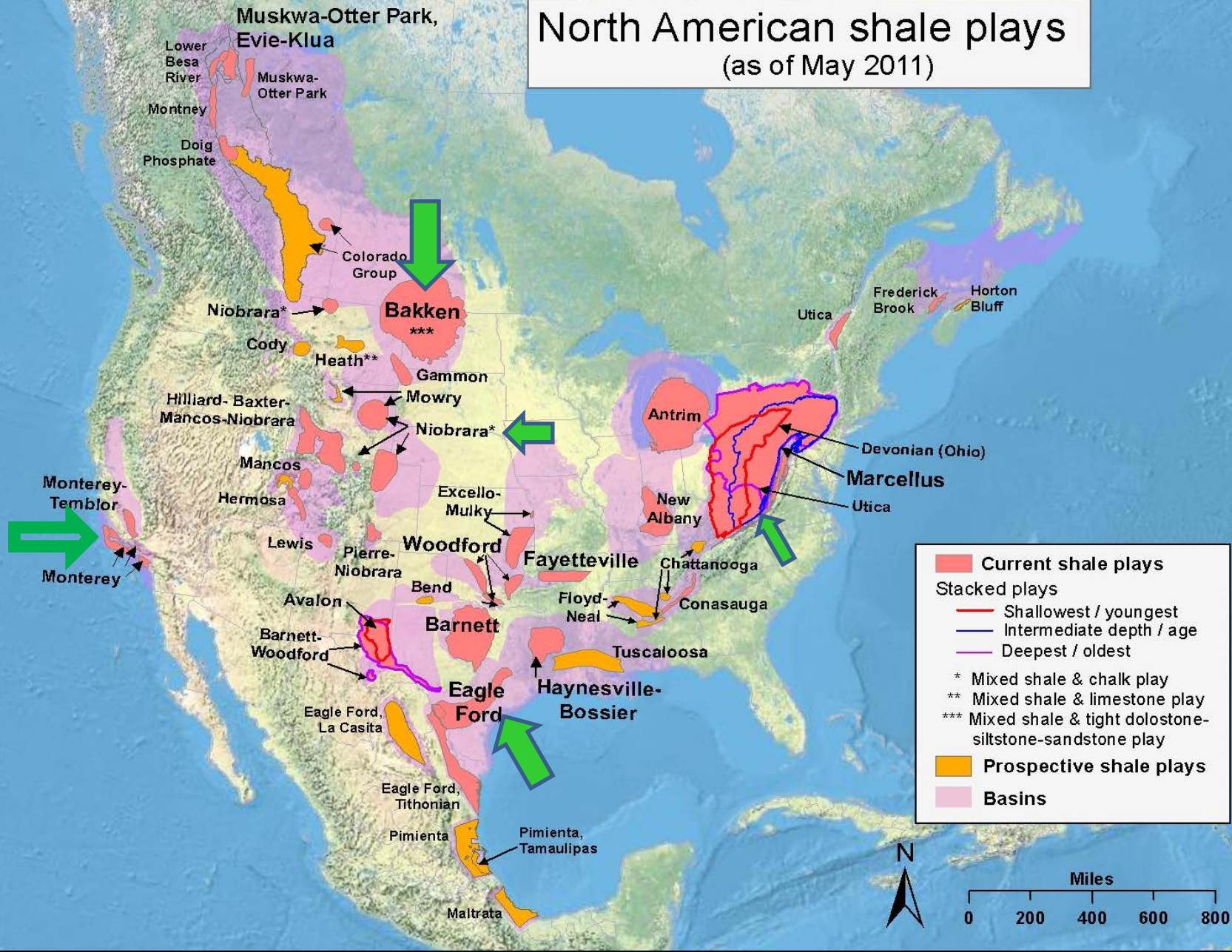


World economy could stall out or light sweet refinery capacity max out.



EPA guidance on diesel fuel in hydraulic fracturing could more than triple permit approval time.

# North American shale plays (as of May 2011)



**Bakken** – The Bakken shale play is one of the biggest oil discoveries in recent history. Long known since the early days of drilling in the Williston basin, the Bakken shale was largely ignored until technology came along to make it economic to develop. Since then, it has become a huge success.

The seven most active E&P companies account for about 75% of Bakken drilling. In order by rig count they are: **Continental Resources, Whiting Petroleum, Hess, Burlington Resources, Oasis Petroleum, XTO, and QEP.**

Entering efficiency stage:

185 rigs down from peak of 218 in May 2012

740,000 barrels per day

Record well Statoil 5,387 BOPD / 9,484 MCFD

Drilling days/well 20-25

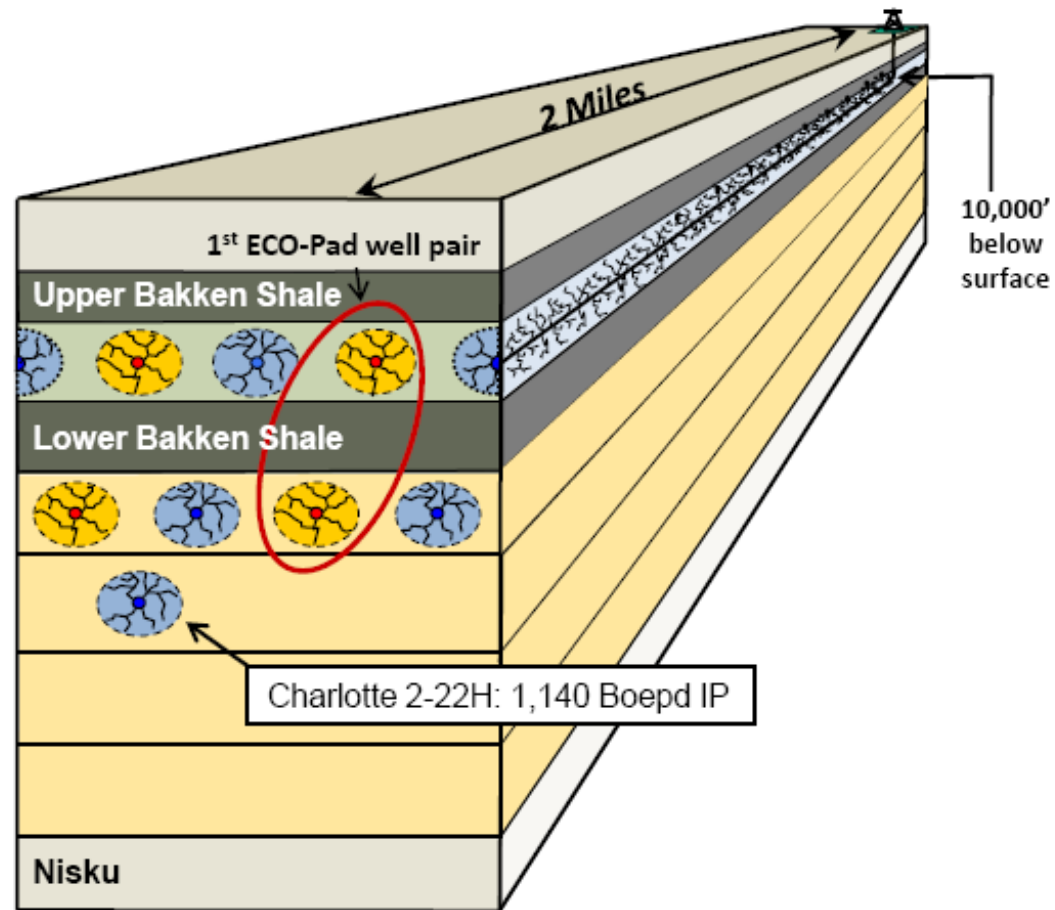
Hydraulic fracturing back log of 500 wells, 92 days TD to IP.

These wells cost down to about \$9 million each.



# Bakken Development Plan

7 – 20+ wells per 1,280 acres proposed



**Eagle Ford** – About 400 miles in length and stretching from Southwest Texas into East Texas, the Eagle Ford shale is a very interesting play with oil, liquids, and dry gas windows with 60% to 70% carbonate content and a more brittle geology that's good for fracturing.

Companies drilling here and also in North Dakota include **EOG**, **Conoco Phillips**, **Marathon**, and **Statoil**.

Efficiency stage 1-2 years away:

270 rigs down from peak of 285 in September 2012

580,000 barrels per day

Record well EOG 7,513 BOPD / 6,800 MCFD

Wells cost up to about \$7.5 million each.

**Permian** – Several exciting shales now overlay an historic conventional oil basin where drilling began in the 1920s. They include the Avalon, Leonard, Wolfcamp, Bone Spring Field, Spraberry Field, and Yeso Oil Play. Also included is the Wolfberry Trend which refers to the Wolfcamp Shale and the Spraberry Field.

Companies drilling here and also in North Dakota include XTO and Oxy.

Efficiency stage 1-2 years away:

296 rigs down from peak of 350 in July 2012

880,000 barrels per day

Record well Devon 575 BOPD / 600 MCFD

Wells cost up to about \$6.5 million each.

**Monterey** – Shale oil play north and east of Los Angeles.

Companies potentially drilling there and also in North Dakota include [Oxy](#).

Drilling 1-2 years away:

Attempting to write regulations and legislation in a very anti oil and gas culture.

USGS assessment indicates 15+ billion barrels technically recoverable, almost double the size of the Bakken.

**Utica** – Shale oil play north and east of Cleveland, OH.

Companies potentially drilling there and also in North Dakota include Hess and XTO.

Efficiency stage 1-2 years away:

37 rigs is the new record

3,000 barrels per day

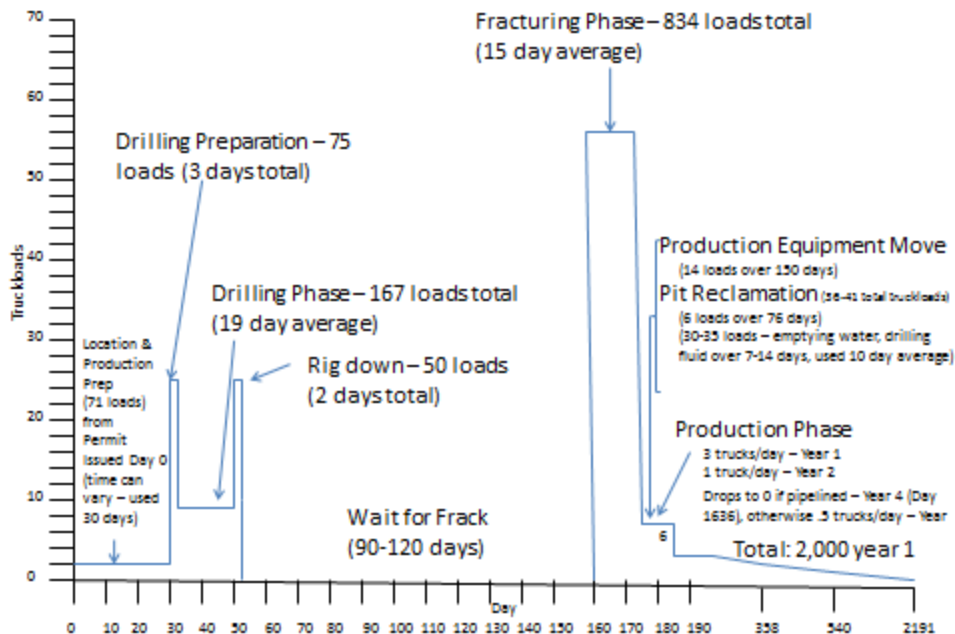
Record well Chesapeake 465 BOPD / 600 MCFD

Wells cost up to about \$10 million each.

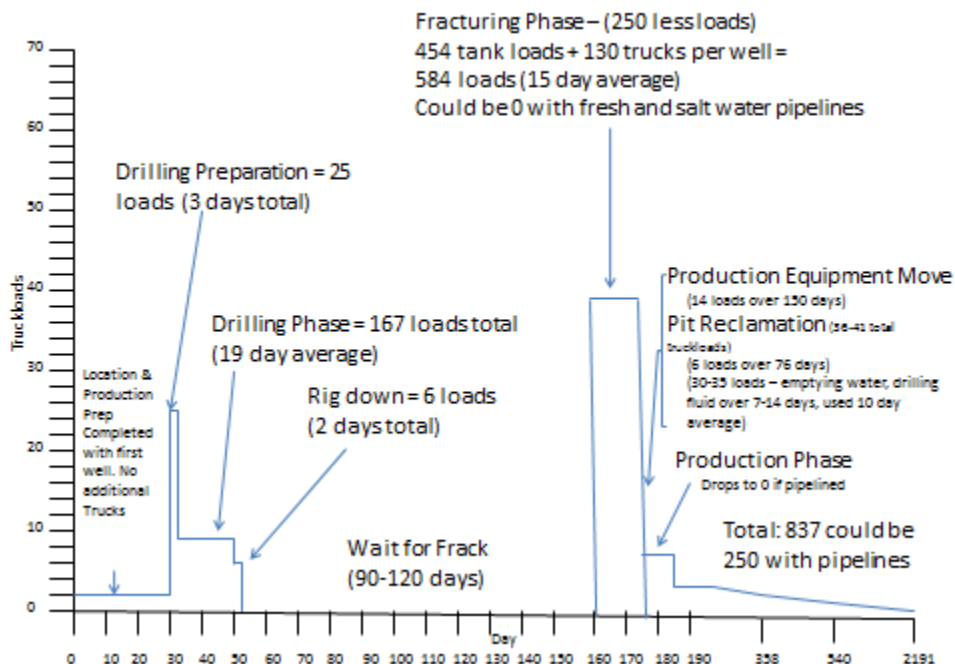


# North Dakota Infrastructure

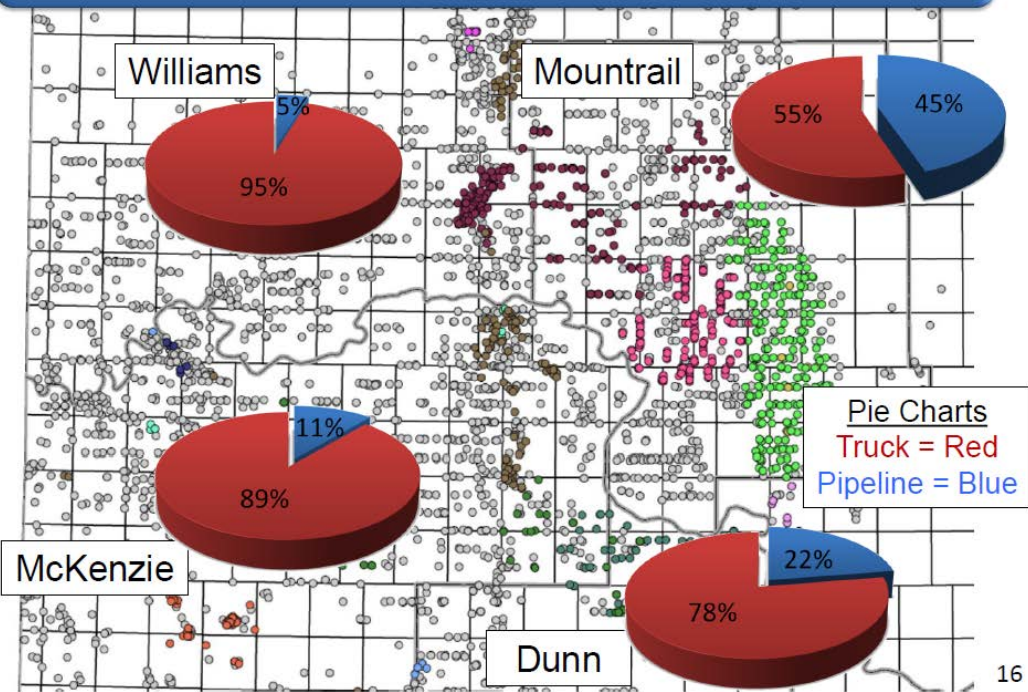
# New Bakken Well – Truckload Timeline



# Bakken Wells 2-4 – Truckload Timeline



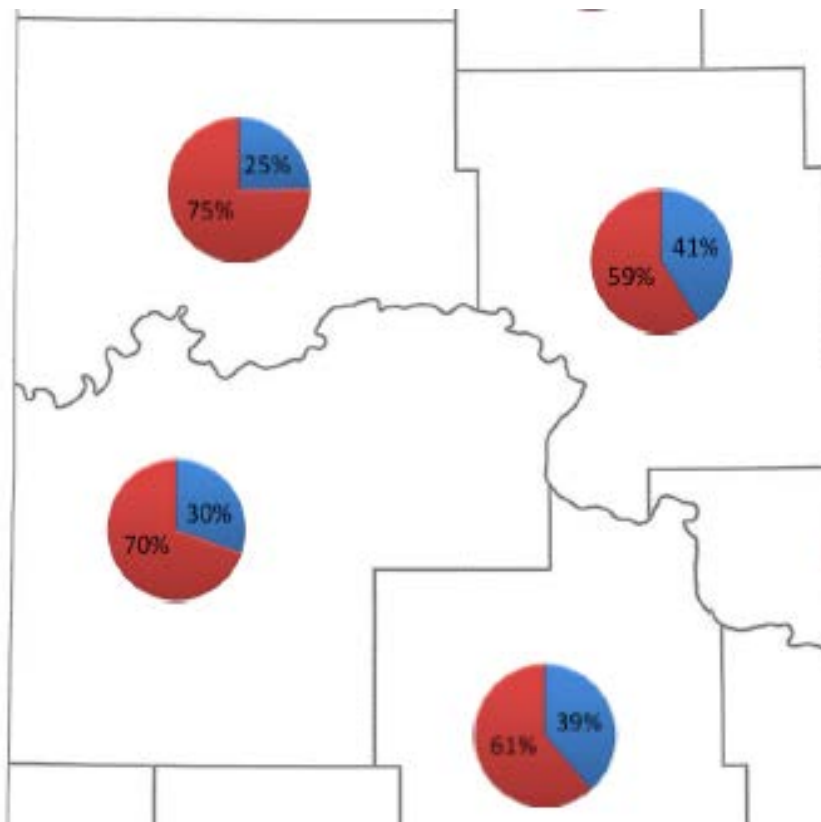
# North Dakota Crude Gathering



May 2012

16

May 2013

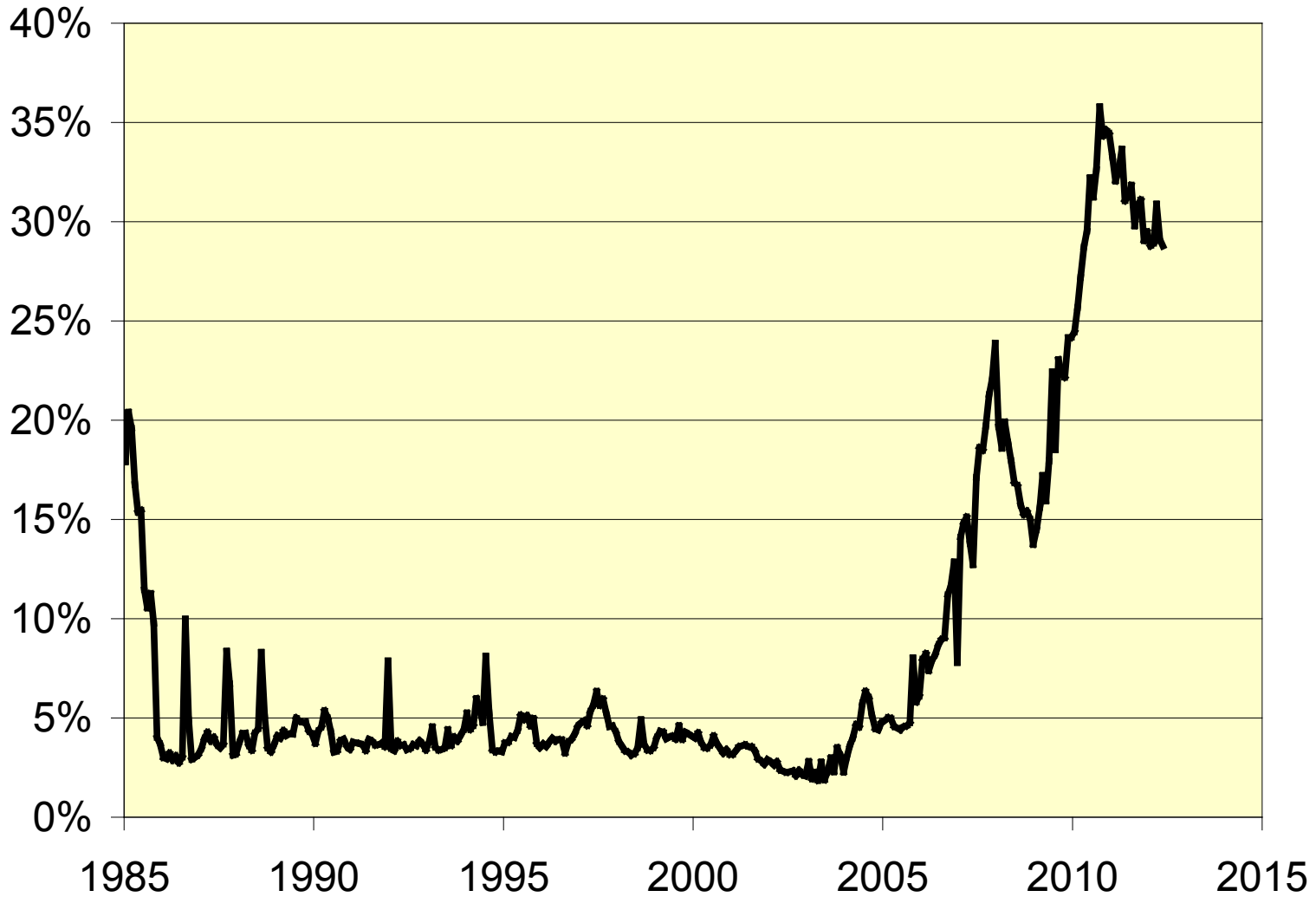


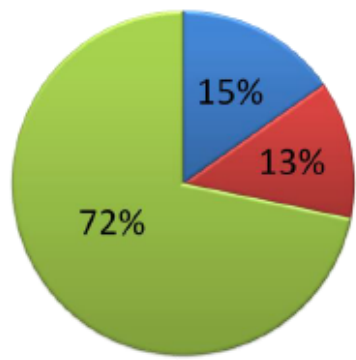




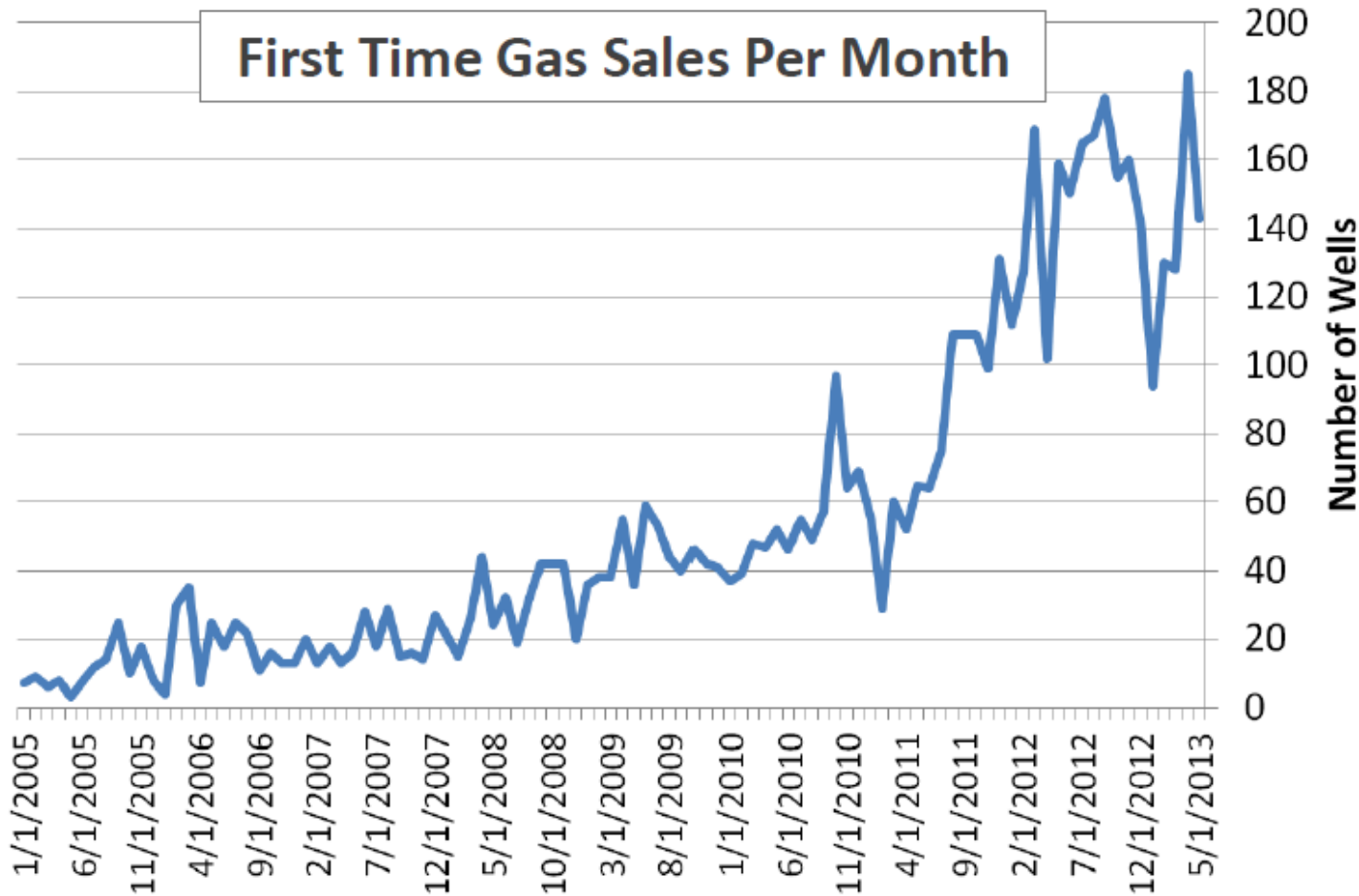


## North Dakota Monthly Gas Flared





# Capturing the 15% Faster Well Connections



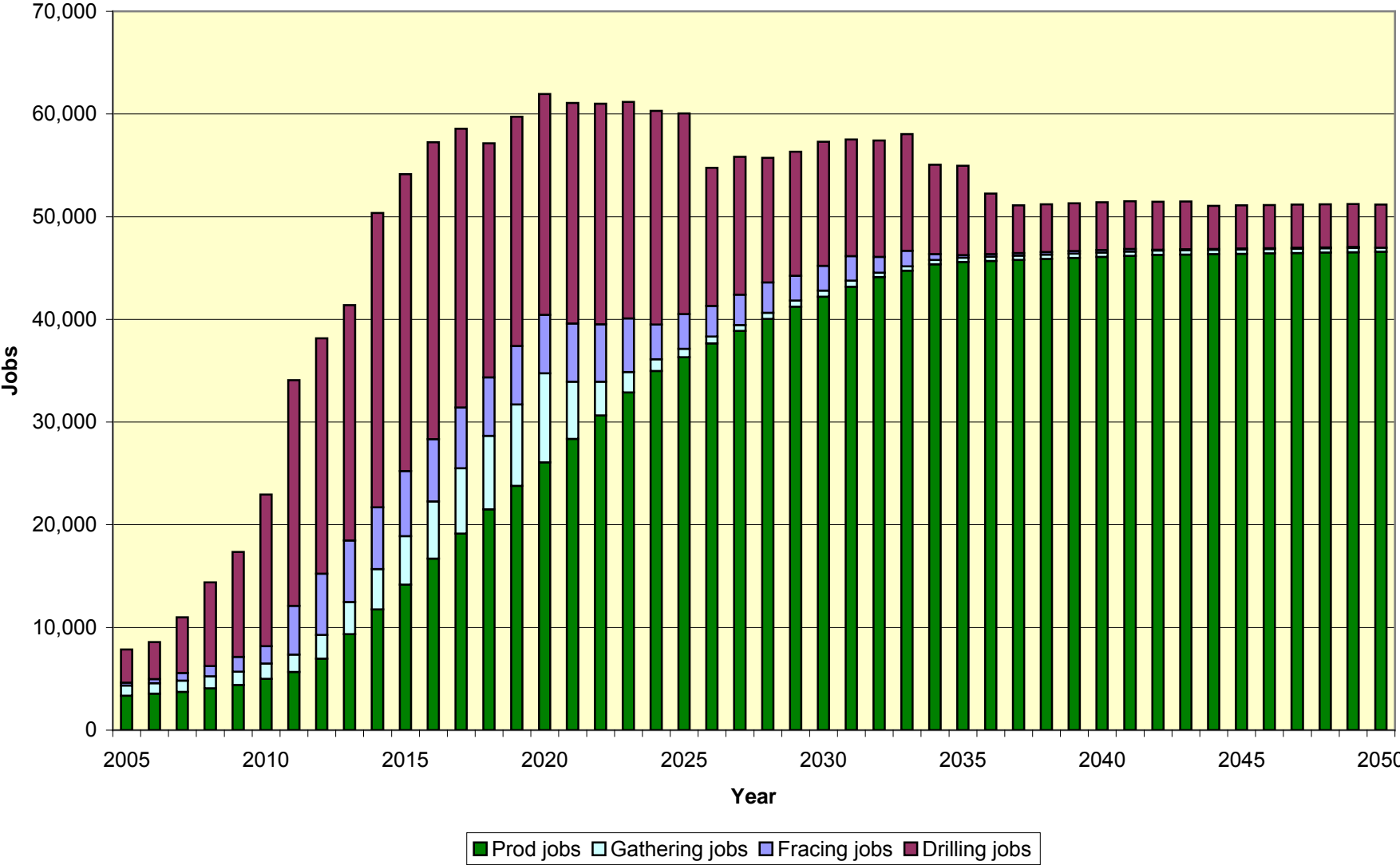
# Western North Dakota

- 1,100 to 2,700 wells/year = 2,000 expected
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  - 2,000-3,000 permanent jobs added each year



# Expected Case

## North Dakota Oil Industry Jobs





District Field Office Housing Survey

1-Mar-13

**Dickinson**

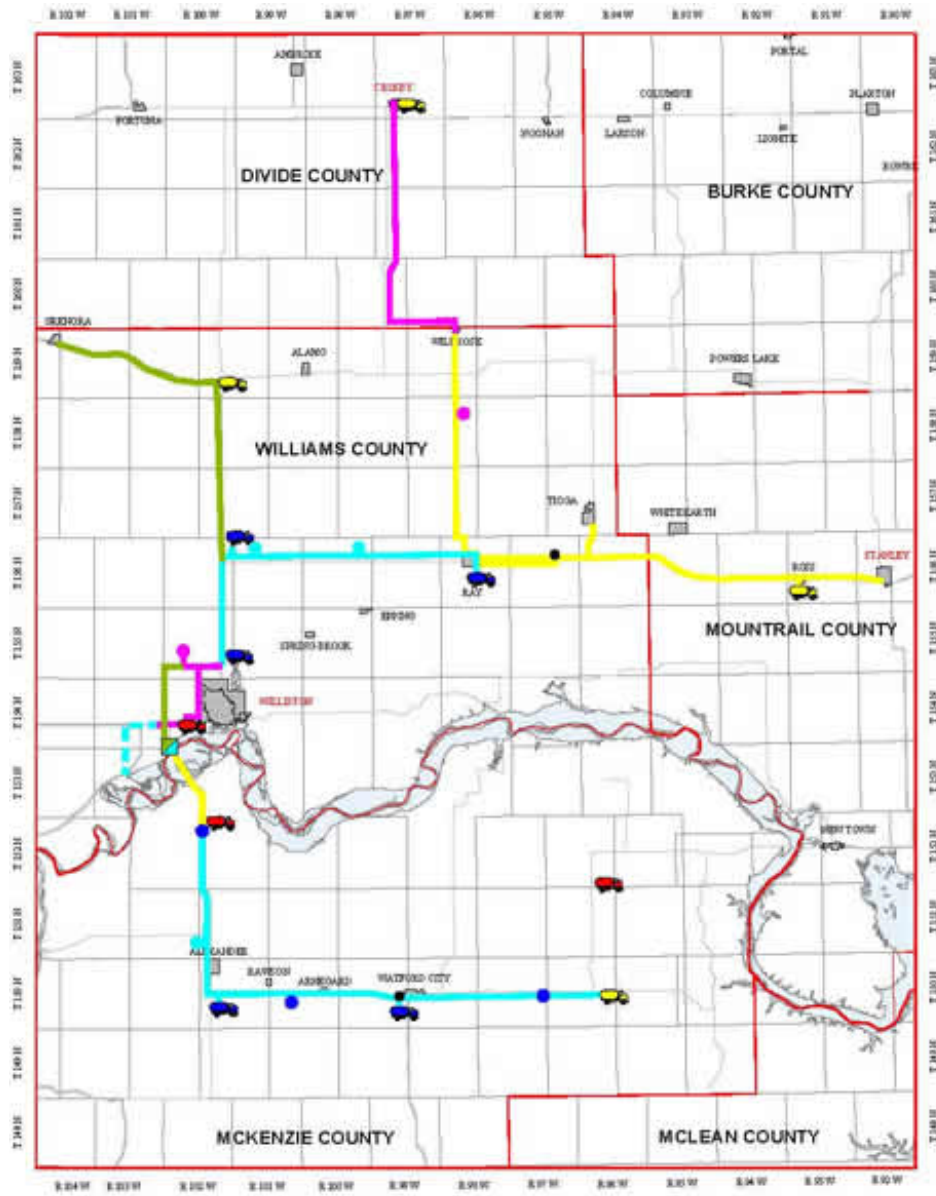
	2006	2012	current
Housing Cost	\$75,000.00	\$150,000.00	\$150,000.00
New Construction	\$170,000.00	\$177,000.00	\$222,000.00
Apt Rental	\$600/mo	\$3000/mo	\$2400/mo
Hotel rates	\$69/night	\$189/night	\$165/night Govt rate rarely available

**Williston**

	2006	2012	current
Housing Cost	\$78,000.00	\$155,000.00	\$170,000.00
New Construction	\$150,000.00	\$256,000.00	\$290,000.00
Apt Rental (old existing)	\$450.00	\$1,100.00	\$1,500.00
Apt Rental (new)	\$600.00	\$2,450.00	\$3,000.00
Hotel rates	\$65.00	\$165.00	\$132.00 Govt rate rarely available

**Minot**

	2006	2012	current
Housing Cost	\$127,000.00	\$176,000.00	\$185,000.00
New Construction	\$149,860.00	\$207,680.00	\$218,300.00
Apt Rental	\$670.00	\$965.00	\$1,250.00
Hotel Rates	\$70.00	\$118.00	\$107.00 Govt rate rarely available

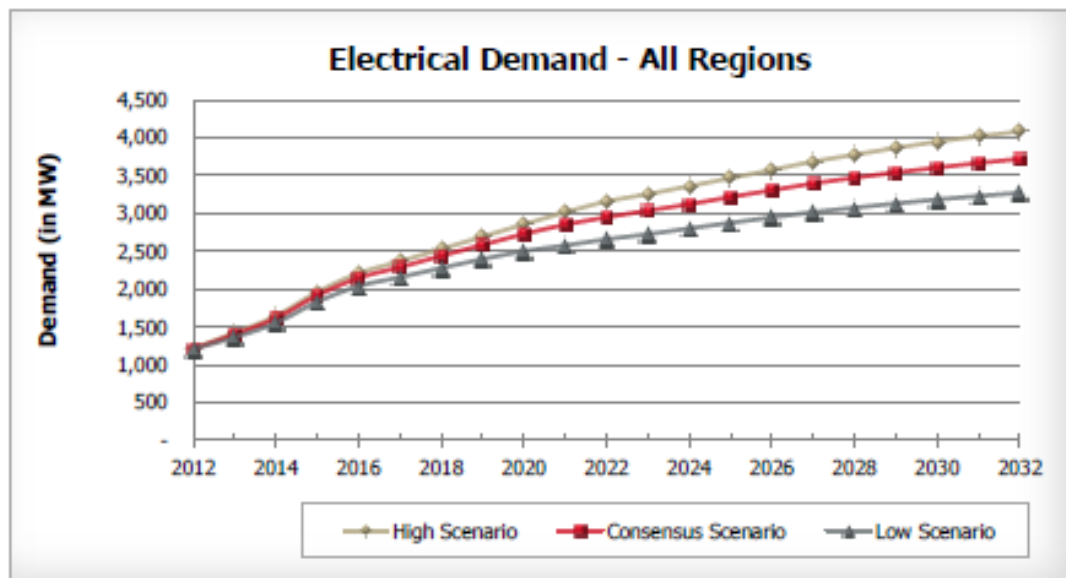


- ESTERHOFWOOD TRANSMISSION LINE
- 24-11 IMPROVEMENTS
- 24-9 IMPROVEMENTS
- 21-0-014 IMPROVEMENTS
- PROPOSED RESERVOIR
- PROVIDED RESERVOIR
- PROVIDED DUCK FILL



# Western North Dakota

- 1,100 to 2,700 wells/year = 2,000 expected
  - 185 rigs will complete the first phase of drilling in 6-12 months
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  - 2,000 new wells per year requires 11-22 million gallons of frac water per day
  - 40,000-45,000 new wells = 17-28 million gallons per day maintenance water



**Figure 10: Electrical Demand - All Regions**  
*Source: KLJ*

Forecasted Electrical Loads - All Regions					
Demand (MW)					
	2012	2017	2022	2027	2032
Region 1	701	1,256	1,599	1,828	1,998
Region 2	404	838	1,139	1,348	1,495
Region 3	104	195	210	218	228
<b>Total Demand</b>	<b>1,209</b>	<b>2,288</b>	<b>2,948</b>	<b>3,395</b>	<b>3,721</b>
Energy (MWh)					
Region 1	3,977,246	7,945,361	10,387,903	12,058,128	13,217,653
Region 2	2,476,678	5,677,350	7,887,167	9,445,752	10,489,326
Region 3	600,749	1,272,543	1,356,960	1,404,199	1,449,922
<b>Total Energy</b>	<b>7,054,673</b>	<b>14,895,254</b>	<b>19,632,031</b>	<b>22,908,079</b>	<b>25,156,901</b>

**Table 3: Forecasted Electrical Loads - All Regions**  
*Source: KLJ*