

“My Bakken Adventure”

Lyndon Ibele, PE

Alaska Industry Support Alliance

March 28, 2013



Acknowledgements

Information in this presentation is from public sources including:

- **State of North Dakota-- Department of Mineral Resources (DMR); North Dakota Industrial Commission (NDIC), North Dakota Pipeline Authority (NDPA)**
- **North Dakota Petroleum Counsel (NDPC), host and organizer of the 2012 Williston Basin Petroleum Conference (WBPC)**
- **Dickinson Press**
- **Bismarck Tribune**
- **Oil & Gas Journal (OGJ)**
- **Bakken News (Petroleum News)**
- **Various corporate investor relations websites**

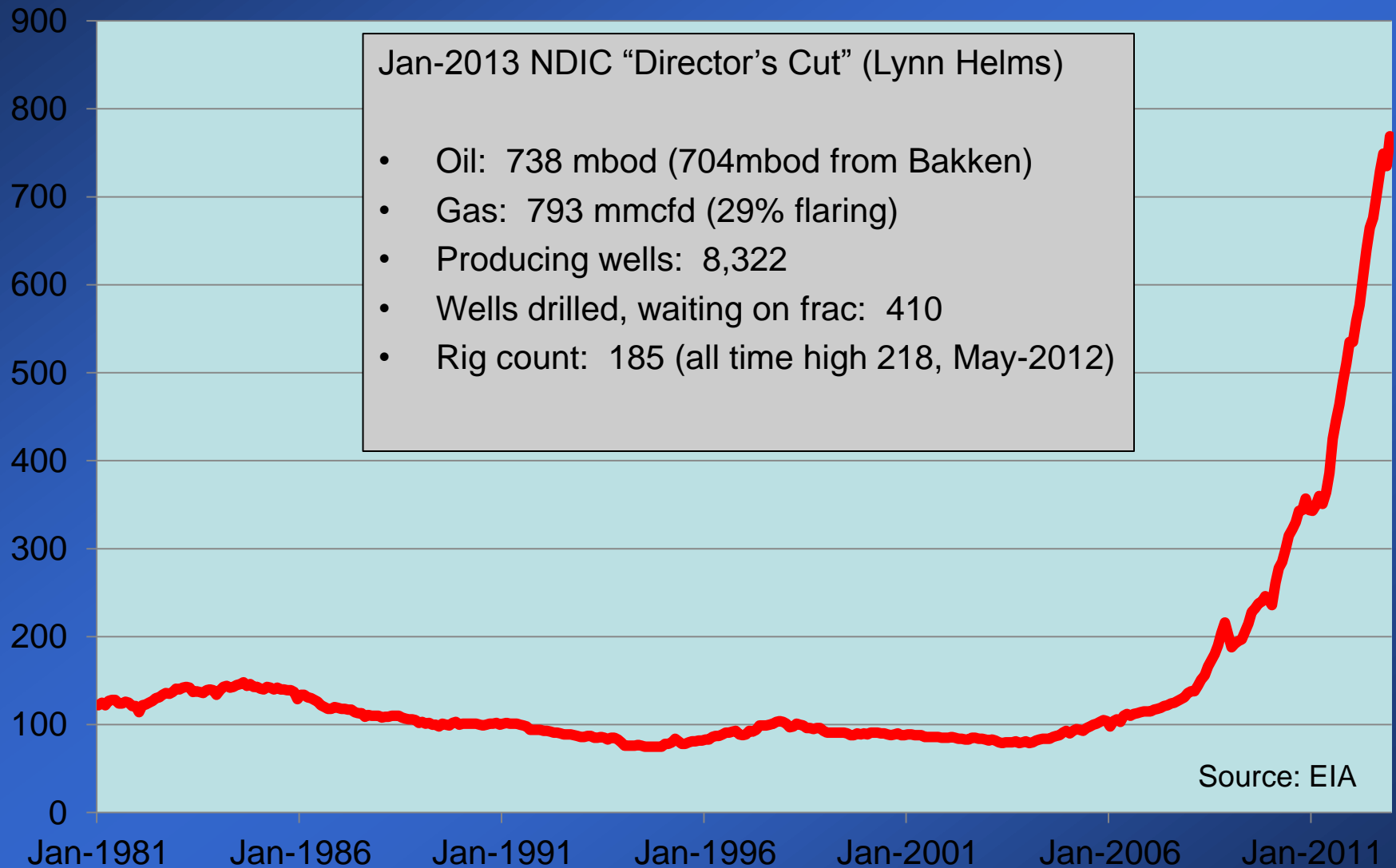
Modified Safe Harbor Statement

If you rely on any information in this presentation to make investment decisions, you deserve to lose all your money.

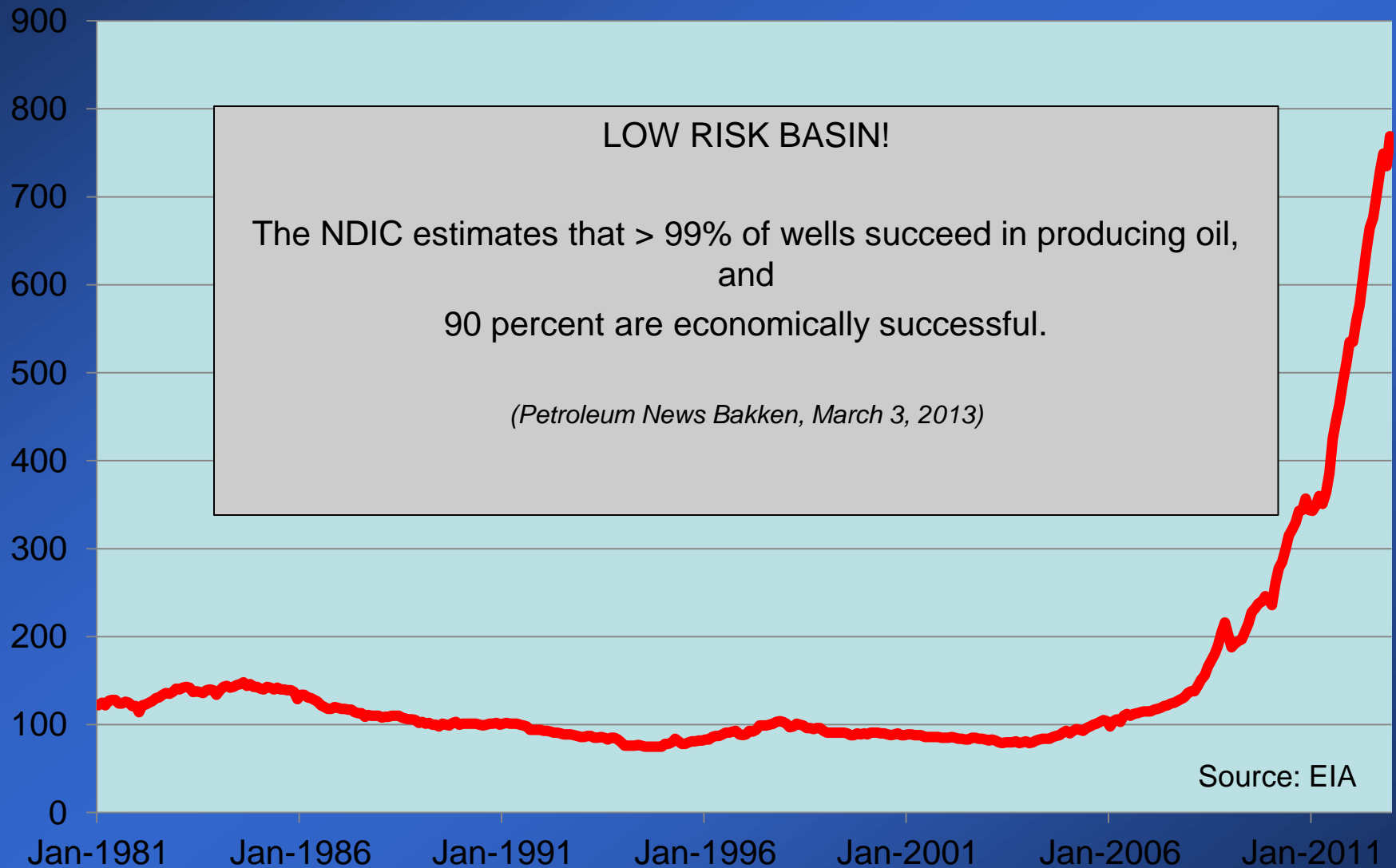
Topics

- **Bakken overview**
- **Exploration & development**
- **Crude transportation & market dynamics**
- **How big is it?**
- **Impacts of the boom**
- **North Dakota business climate**

North Dakota Oil Production, MBOPD



North Dakota Oil Production, MBOPD



Anybody think this isn't a boom?

The 20th Annual Williston Basin Petroleum Conference in Bismarck ND May 22-24, 2012 had a record-breaking attendance of **4,051 people**, breaking the record set in 2010 by nearly 1,300 people. The Conference included:

- **Three hundred exhibitors**, including 282 indoor exhibits and 45 outdoor exhibits. In fact, the conference was such a large draw, **exhibit space sold out within 17 minutes**;
- Representation by more than **2,102 businesses**, including 145 sponsors.
- Attendees from **47 states** (Maine, Hawaii and Delaware being the only states not represented);
- **Seven Canadian provinces**;
- **Nine countries**, including the United States, Canada, France, Germany, Nigeria, Norway, Taiwan, Turkey and the United Kingdom;

2011 Impact in ND:

Thursday, March 21, 2013 ■ Covering the Williston Basin ■ Volume 3, Issue 12



Oil's impact on N.D. economy
\$30.4B

Gene Veeder, McKenzie County economic development director, talks during a press conference held March 13 in Bismarck on how the oil and gas industries have contributed in terms of money and jobs to western North Dakota.

MIKE McCLEARY/Tribune

By JESSICA HOLDMAN
Bismarck Tribune

Oil and gas added more than \$30.4 billion to North Dakota's economy in 2011.

North Dakota State University's Department of Agribusiness and Applied Economics conducted the oil and gas economic impact study funded by the North Dakota Petroleum Council. Ron Ness, petroleum council president, along with others involved in the study reported the results at the MDU Resources campus March 13.

Economic impacts more than doubled since 2009 and grew 511 percent, excluding infrastructure spending, since the first study in 2005.

"The revenue is there," Ness said.

every dollar spent in the state by the oil and gas industry, another \$1.59 in additional business activity was generated.

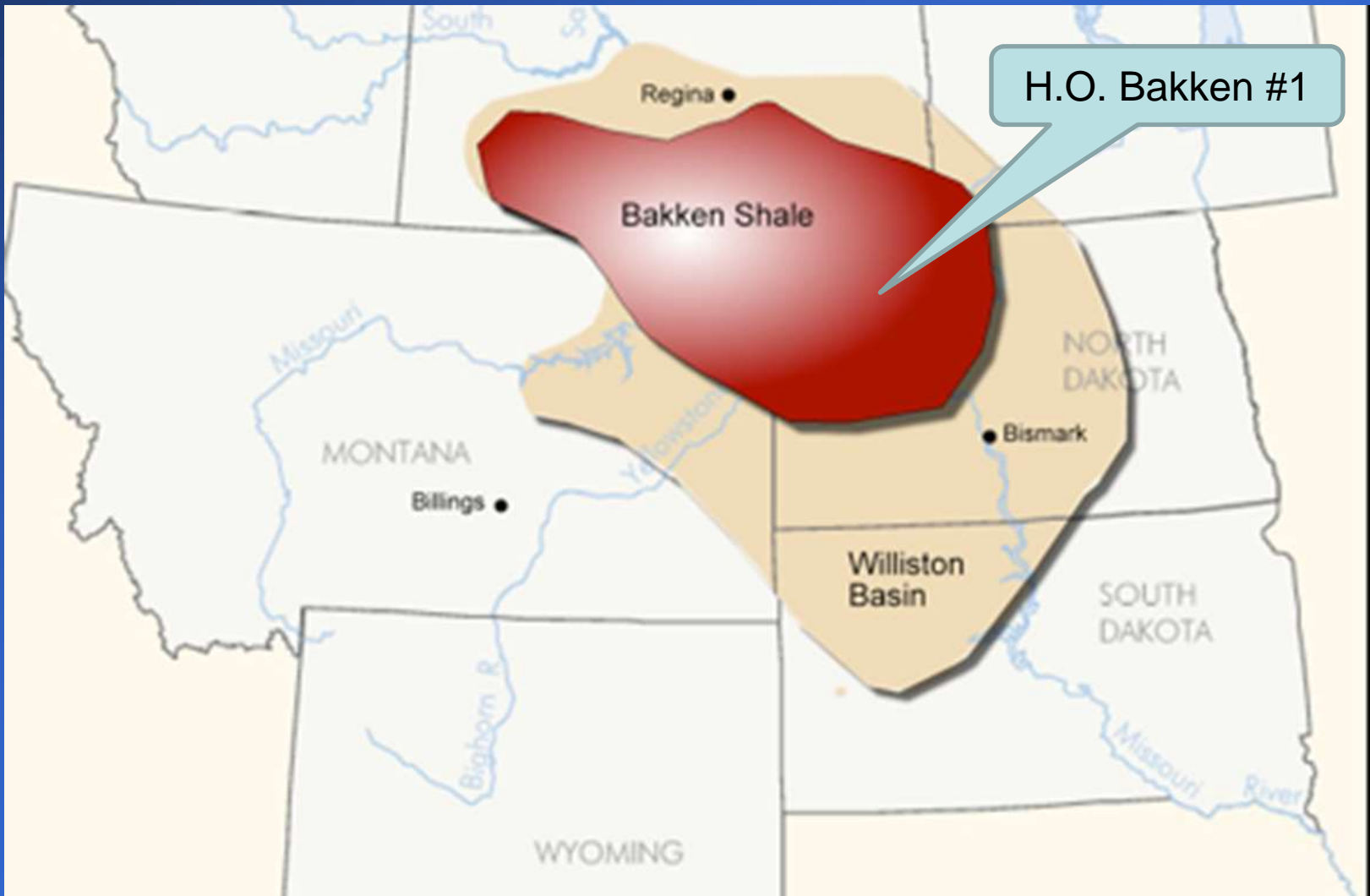
Gene Veeder, economic development director for McKenzie County, said he meets with multimillion-dollar investors interested in North Dakota every day.

The study showed the industry also has directly and indirectly created about 60,000 jobs in the state in 2011. Direct employment by the industry, equal to 40,856 full-time jobs, accounts for 9 per-

“...the industry also has directly and indirectly created 60,000 jobs...”

“You are part of an historic event”

Terry Kovacevich, MRO Bakken Asset Manager, to MRO employees



Bakken Formation

Three Forks Formation

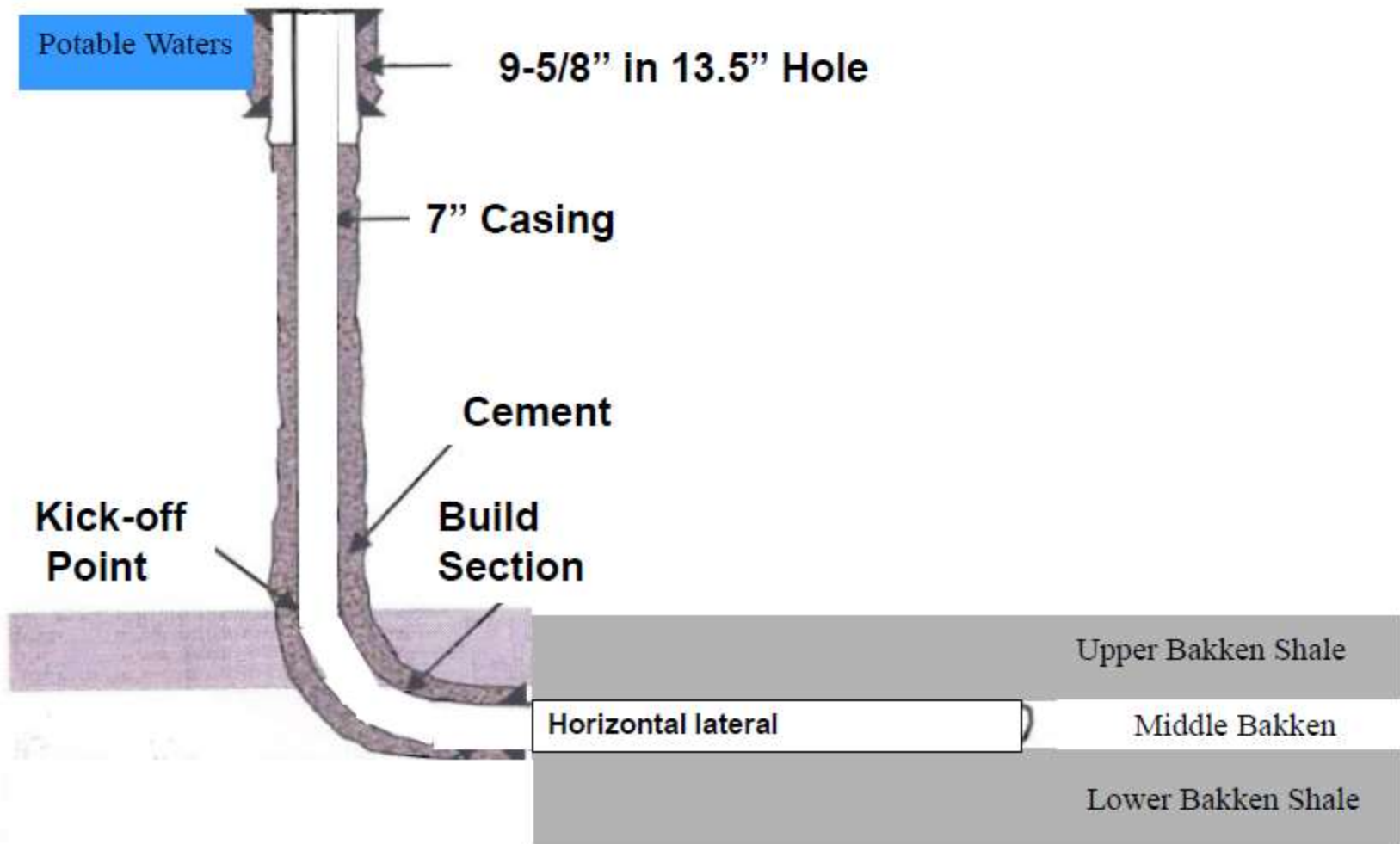
upper shale

middle member

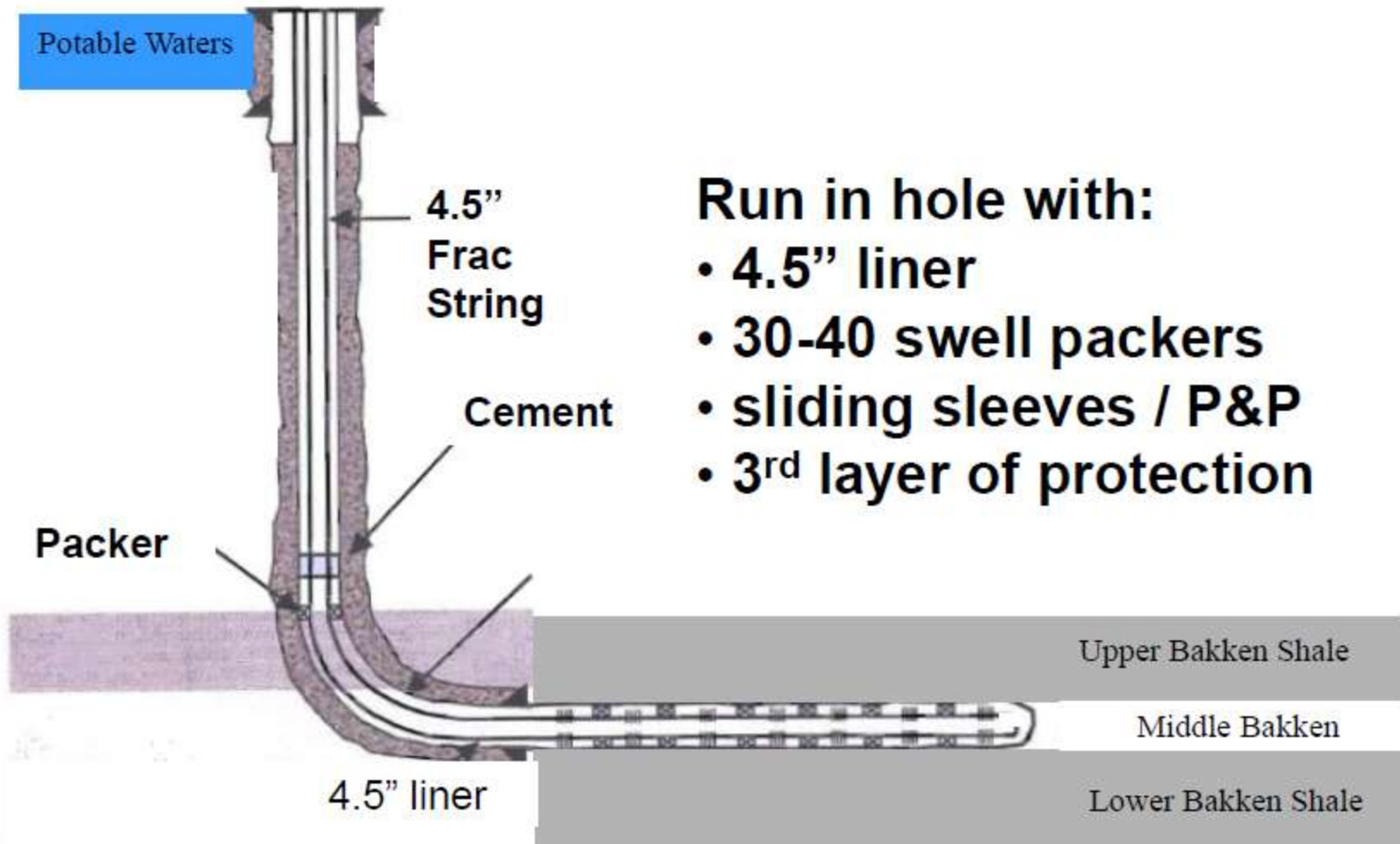
lower shale



TYPICAL HORIZONTAL OIL WELL



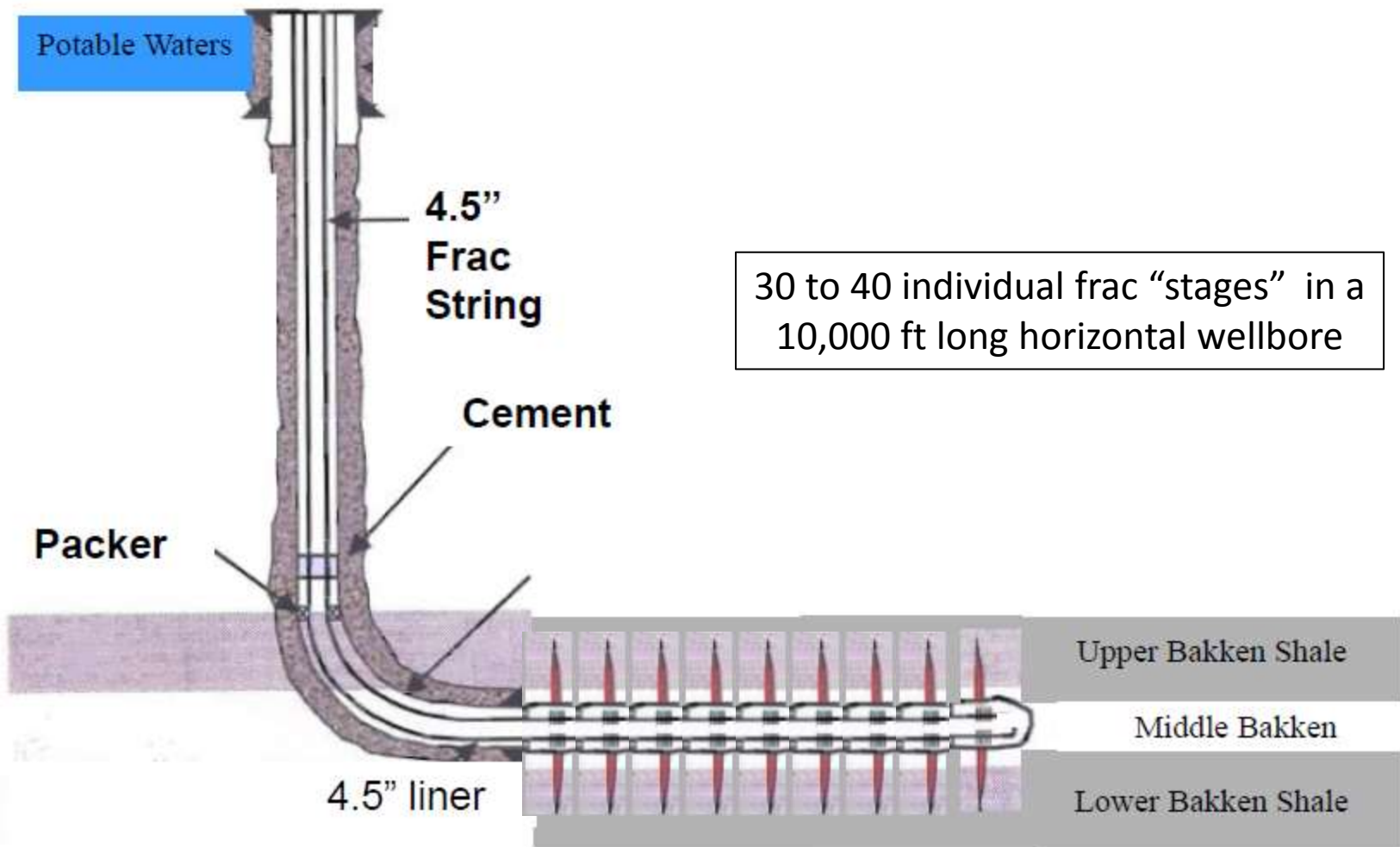
TYPICAL HORIZONTAL OIL WELL



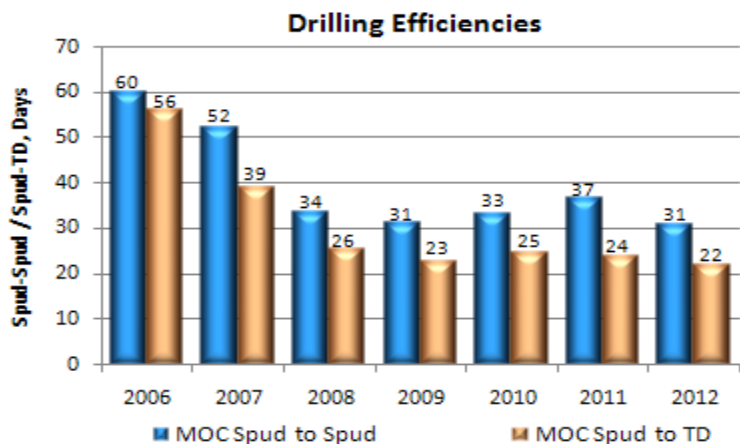
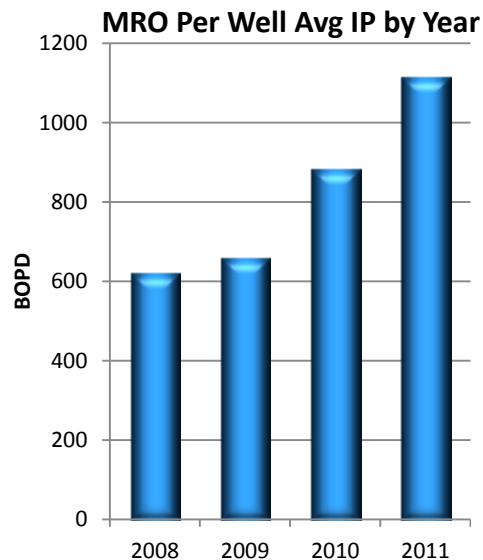
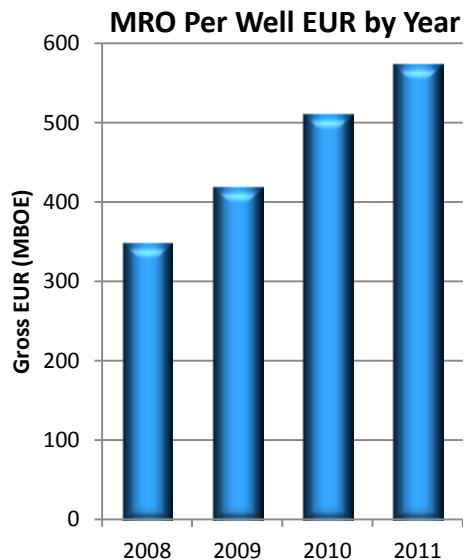
Run in hole with:

- 4.5" liner
- 30-40 swell packers
- sliding sleeves / P&P
- 3rd layer of protection

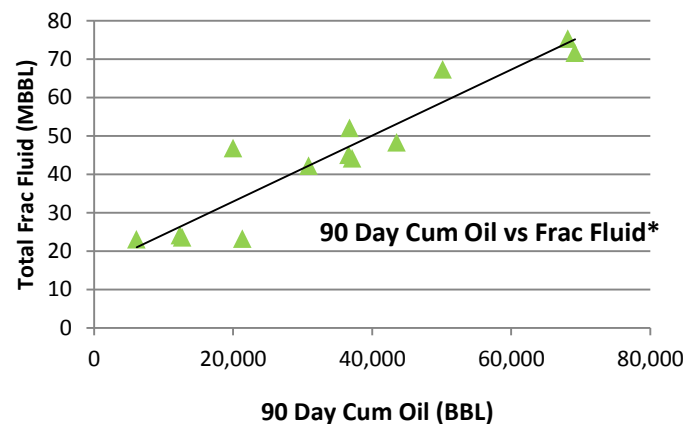
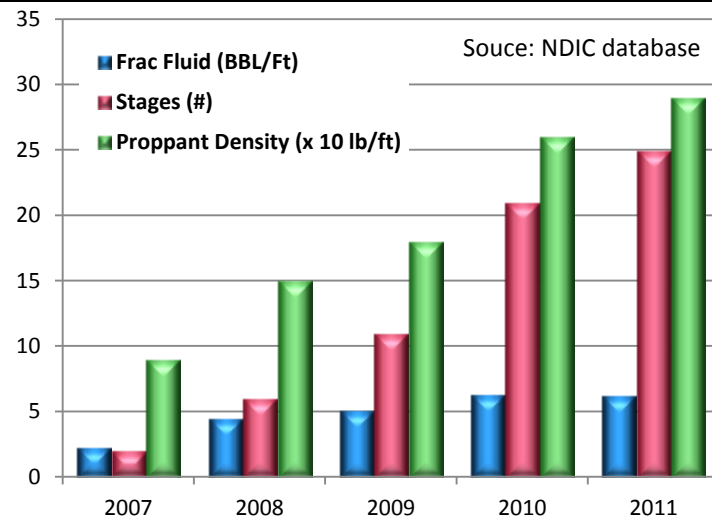
TYPICAL HORIZONTAL OIL WELL



Striving for Performance Improvement



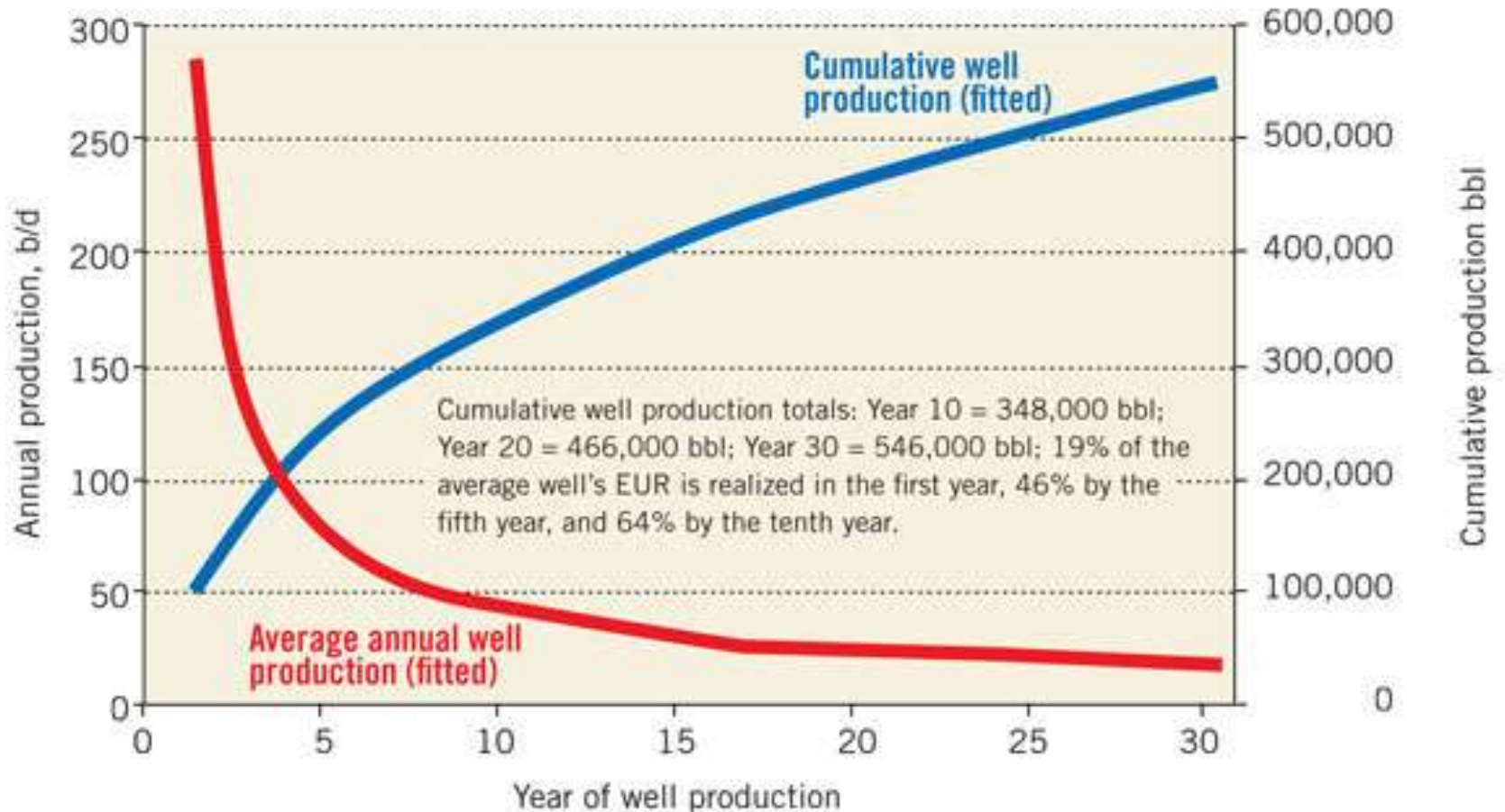
Industry Completion Practices (1,600 wells)*



Marathon Oil

NORTH DAKOTA BAKKEN WELL PRODUCTION PROFILE

FIG. 5

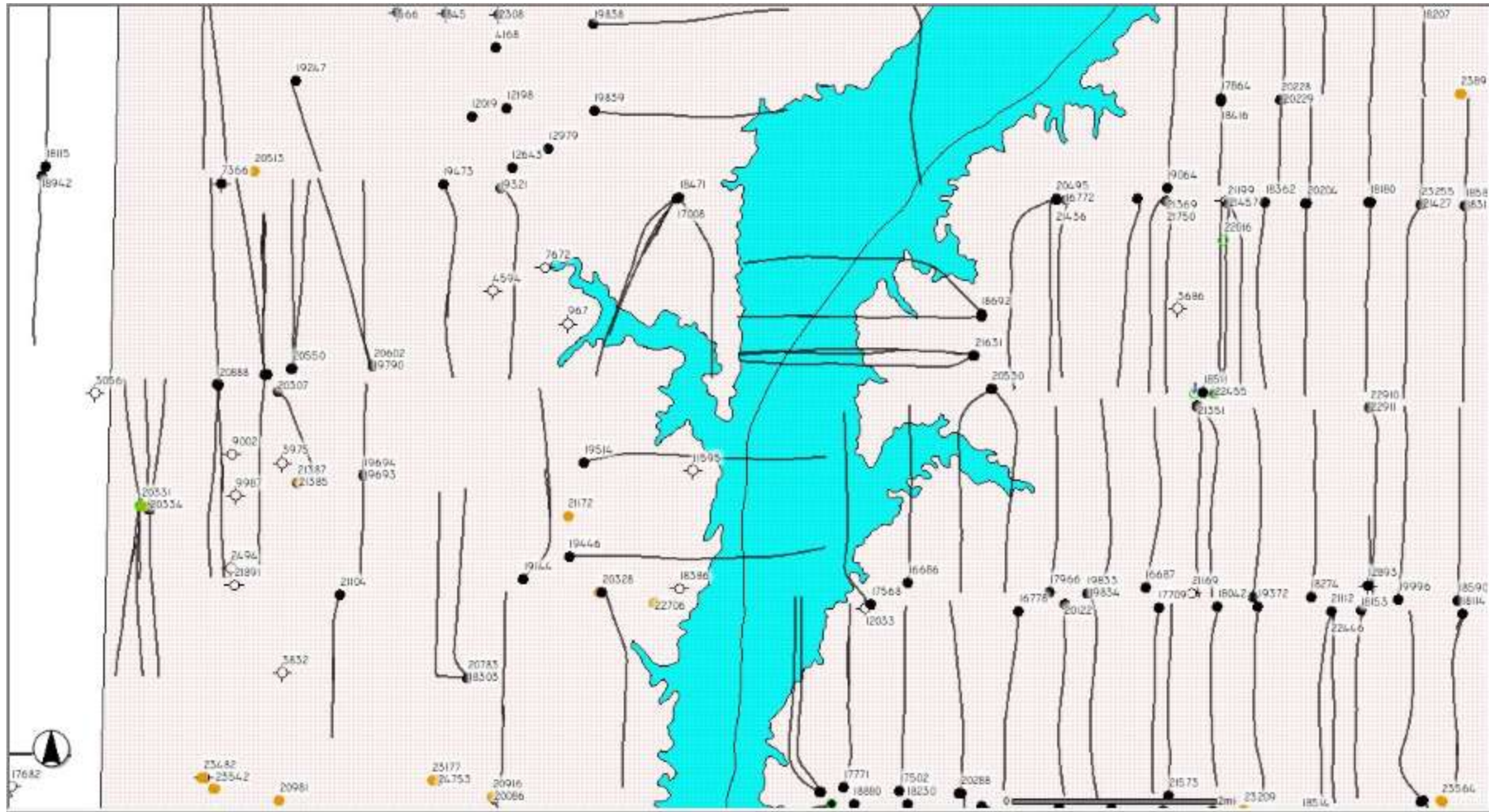


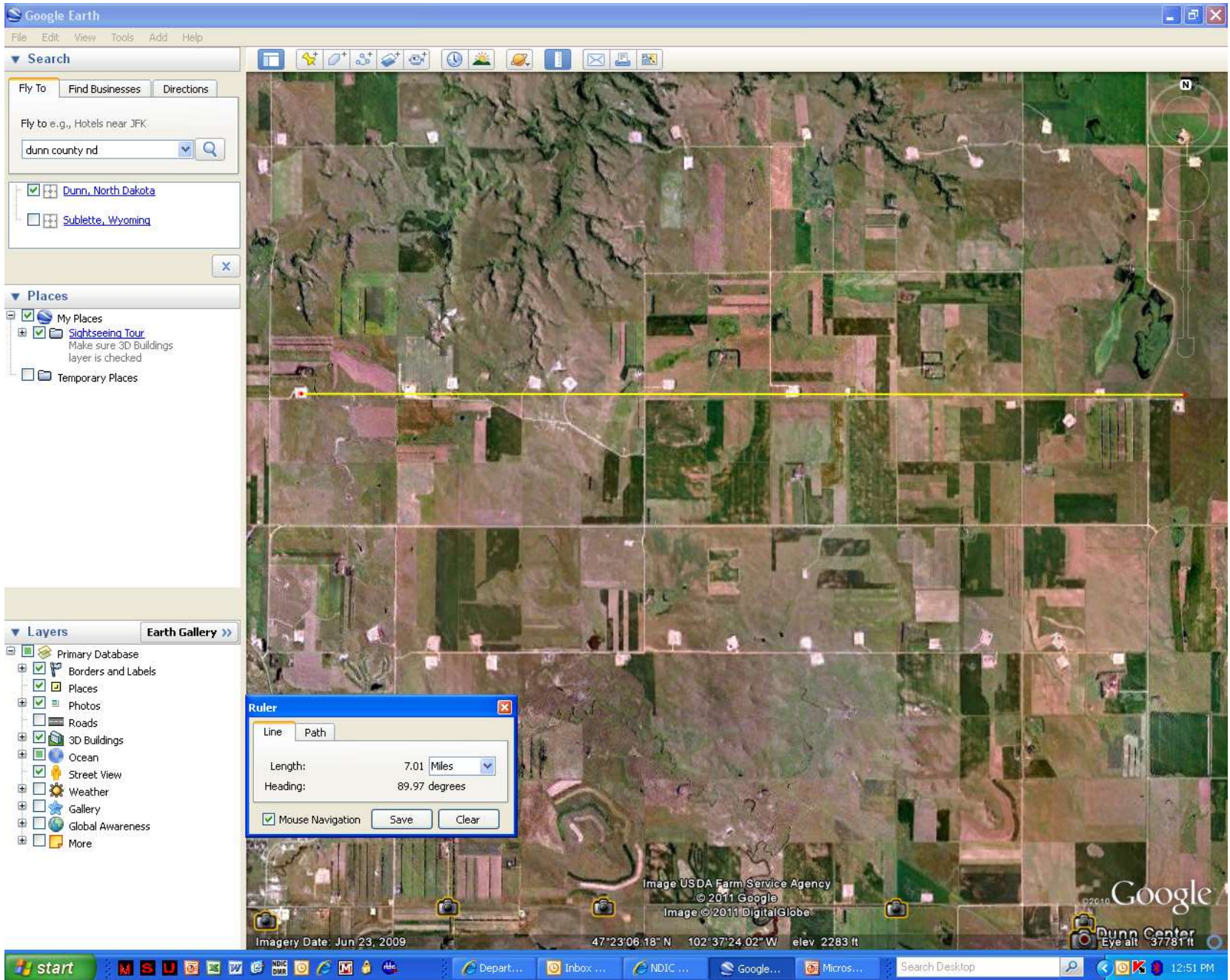
Development challenges and Drill Spacing Units (DSU's)



Source: Larry Mayer, Billings Gazette, 03/26/12

Stand-Up vs Lay-Down wells





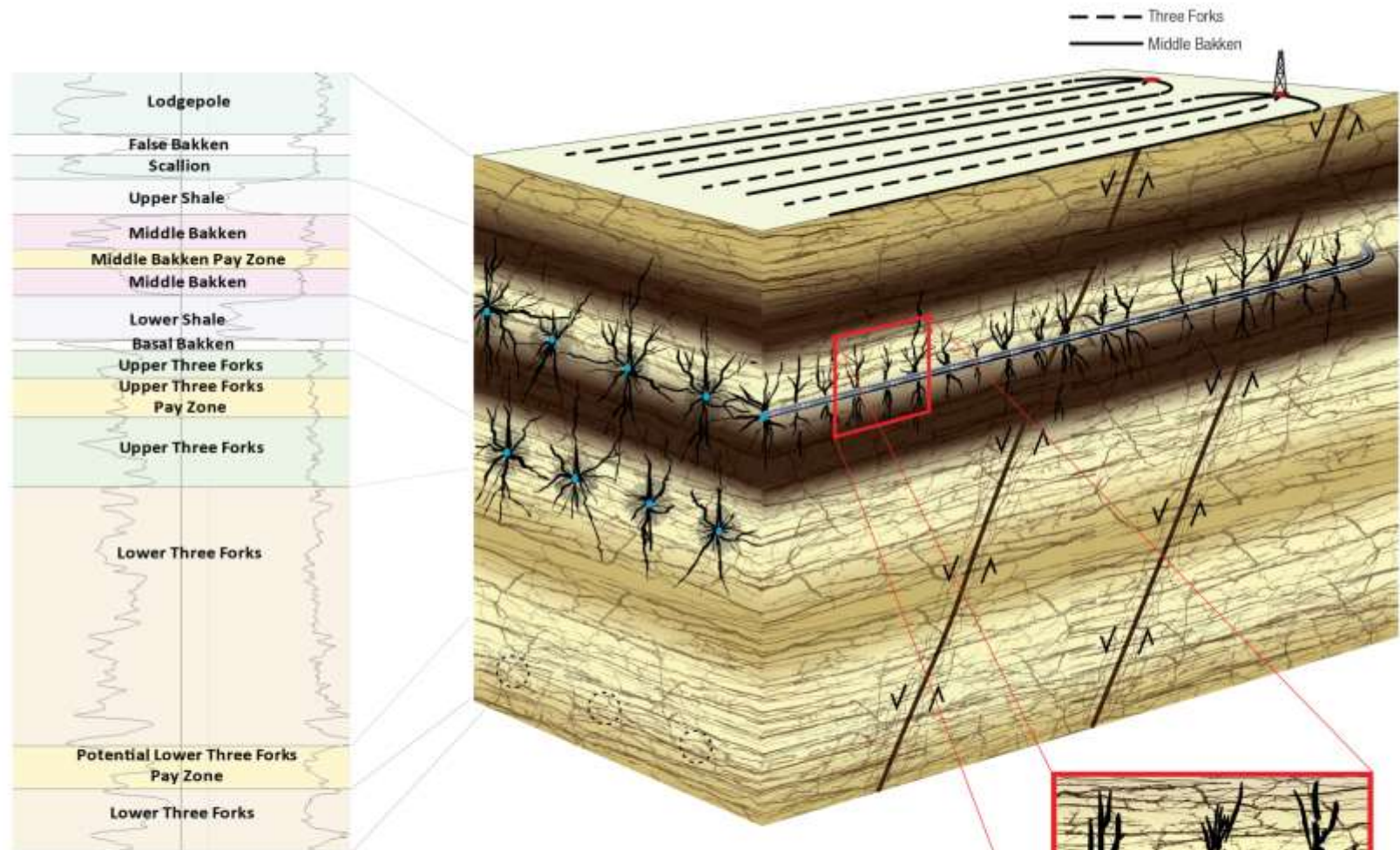
Energy Corridors



Source: NDIC (Vern Whitten Photography)

Bakken high well density development concept

Including lower Three Forks



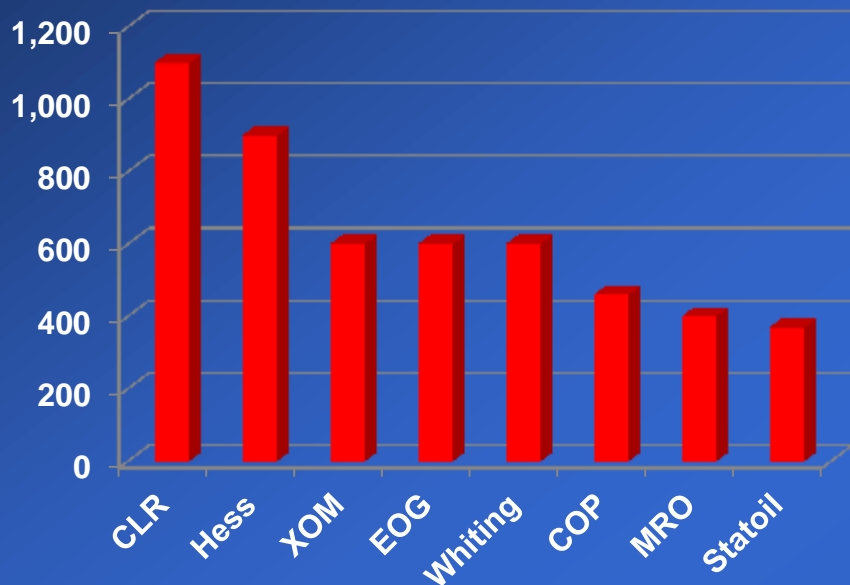
Today's typical well is 10,000ft deep with 10,000ft horizontal bore.

Development and Pad Drilling

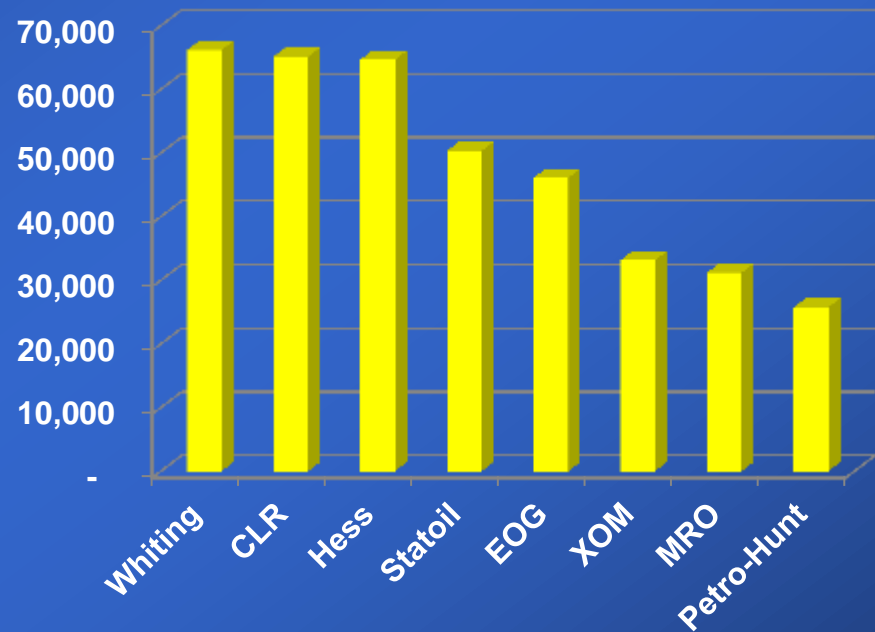


Source: NDIC (Vern Whitten Photography)

ND Bakken Operators

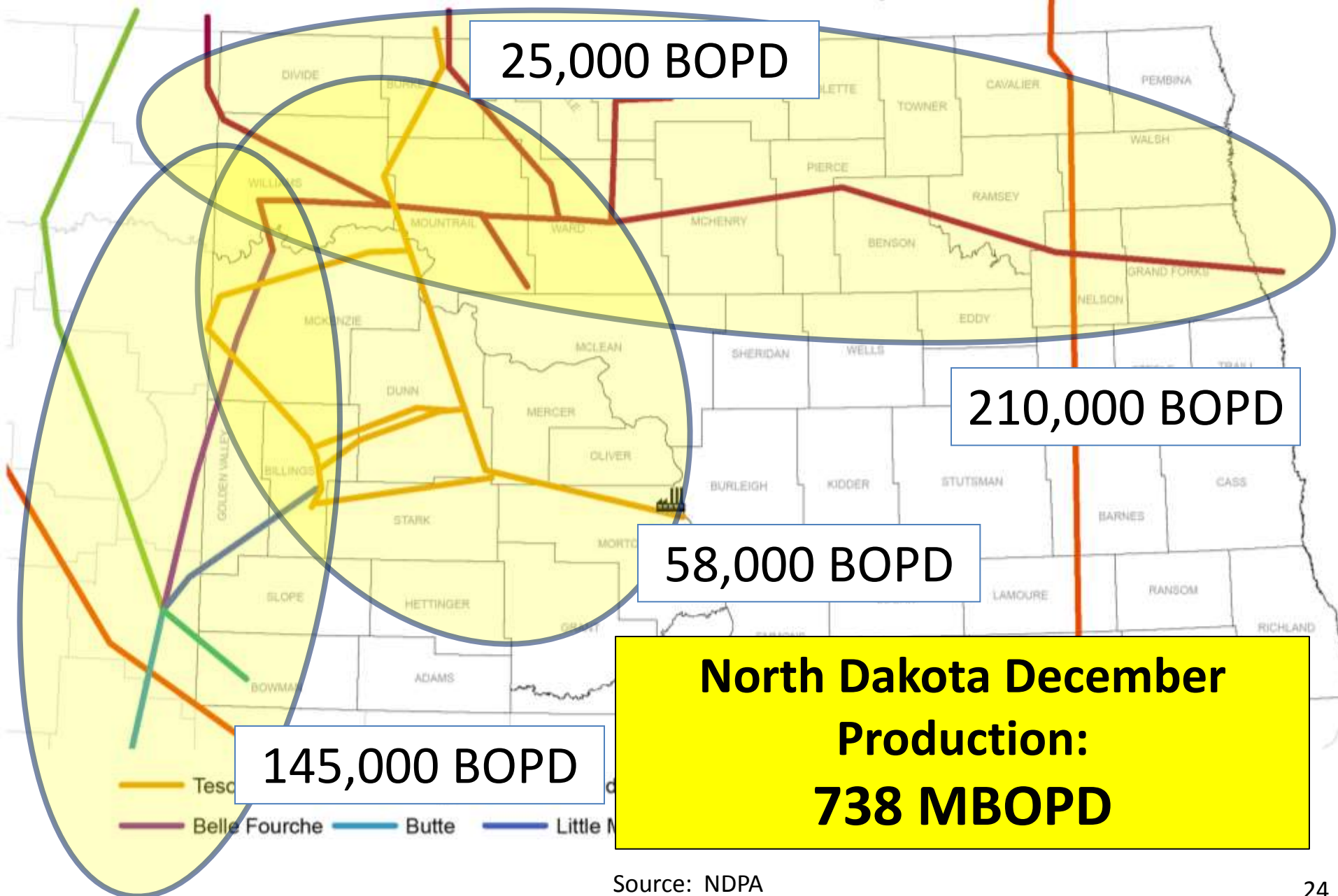


Approximate Net Acres, 1000's



BOPD, December 2012

North Dakota Crude Oil Pipelines





CANADIAN ASSOCIATION OF PETROLEUM PRODUCERS

For Information Contact: (403) 267-1141 / www.capp.ca

Newfoundland & Labrador
North Atlantic 115



2011 Canadian Crude Oil Production		
	000 m/b/d	000 b/d
British Columbia	6	37
Alberta	354	2,225
Saskatchewan	69	431
Manitoba	6	40
Northwest Territories	2	10
Western Canada	436	2,741
Eastern Canada	43	273
Total Canada	479	3,017

Vancouver to:
Japan - 4,500 miles
Tokyo - 5,600 miles
Sydney - 4,600 miles
China - 5,100 miles

San Francisco - 800 miles
Los Angeles - 1,100 miles

Puget Sound
BP (Cherry Pt) 225
Phillips 66 (Hemlock) 100
Shell (Anacortes) 105
Tesoro (Anacortes) 120
US Oil (Tacoma) 39

San Francisco
Chevron 290
Phillips 66 120
Shell 105
Tesoro 166
Valero 170

Los Angeles
Alon USA 94
BP 263
Chevron 285
ExxonMobil 115
Phillips 66 130
Tesoro 97
Valero 135

Three Rivers
Valero 100
Cargill 100
GTCC 105
Pine 300
Valero 375

Sweeny
Phillips 66 297

Houston/Texas City
PFI (Prairie) 117
BP 87
Shell (Open Parks) 290
ExxonMobil 284
Houston Refining 268
Marathon 80
Valero (2) 180/265

Port Arthur/Bassment
ExxonMobil 360
Motiva 325
Valero 310
Total 174

Lake Charles
GTCC 125
Motiva 279
Phillips 66 290
Valero 290

Mississippi River
ExxonMobil (Baton Rouge) 903
Chulmeto 192
Marathon (Garyville) 800
Motiva (Corvett) 235
Motiva (New) 220
Valero (Mena) 135
Phillips 66 (Belle Chasse) 247
Alon (Belle Springs) 65
Shell (St. Rose) 55
Pine (Port Allen) 56

Port Arthur/Bassment
ExxonMobil 360
Motiva 325
Valero 310
Total 174

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ExxonMobil (Baton Rouge) 903
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Shell (St. Rose) 55
Pine (Port Allen) 56

Pipeline Tolls Light Oil (\$5 per barrel)	
Edmonton to	
Burnaby (Trans Mountain)	2.70
Anacortes (Trans Mountain/Puget)	2.90
Sarnia (Enbridge)	3.95
Chicago (Enbridge)	3.55
Wood River (Enbridge/Mustang/Capwood)	4.60
USGC (Enbridge/Mustang/ExxonMobil)	6.15
USGC (Enbridge/Spearhead/Seaway)	7.05*

Hardisty to	
Guernsey (Express/Platte)	1.55*
Wood River (Express/Platte)	4.70*
Wood River (Keystone)	4.75*
USGC (Express/Platte/MAP/ExxonMobil)	3.00**
USGC to Sarnia (Portland/Montreal/Enbridge)	4.40
St. James to Wood River (Capline/Capwood)	1.05

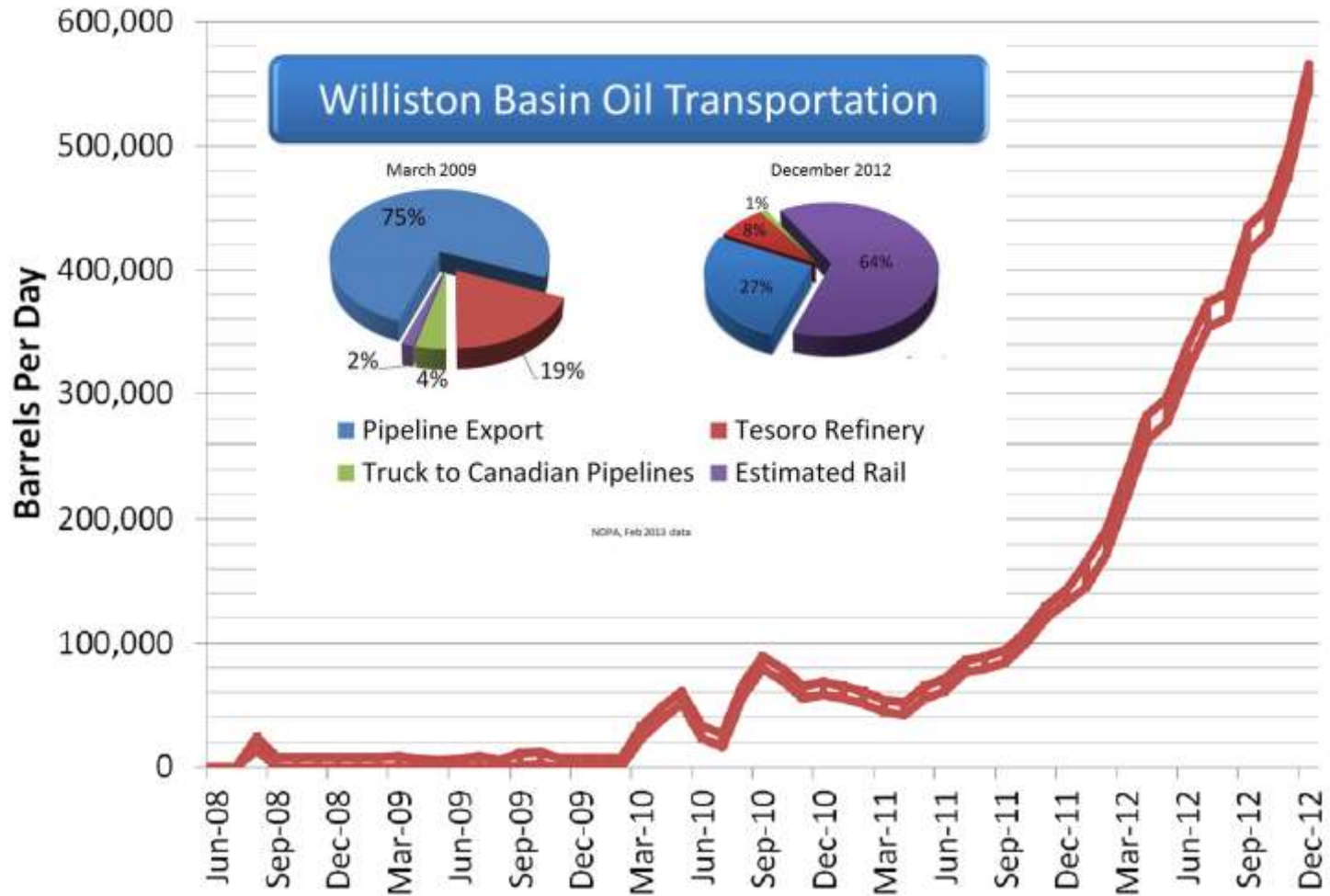
Pipeline Tolls - Heavy Oil (\$5 per barrel)	
Hardisty to	
Chicago (Enbridge)	4.00
Chicago (Enbridge/Spearhead)	5.00
Cushing (Keystone)	6.15**
Cushing (Keystone)	6.55**
Wood River (Enbridge/Mustang/Capwood)	5.45
Wood River (Keystone)	5.35**
Wood River (Express/Platte)	2.30*
USGC (Enbridge/Spearhead/Seaway)	8.00*

Notes: * Assumed exchange rate = 1:06 / US\$
 ** 2010 statistics based on 5 months
 ** 2010 statistics based on 5 months
 * 10 year committed toll
 ** 20 year committed toll

Canadian and U.S. Crude Oil Pipelines and Refineries

- Area Refineries - Capacities in '000s barrels per day (b/d)
- PADD Petroleum Administration for Defense District (US\$)
- Major Existing Crude Oil Pipelines carrying Canadian crude oil
- Selected Other Crude Oil Pipelines

Estimated ND Rail Export Volumes



NDPA, Feb 2013 data

Railroad Terminals

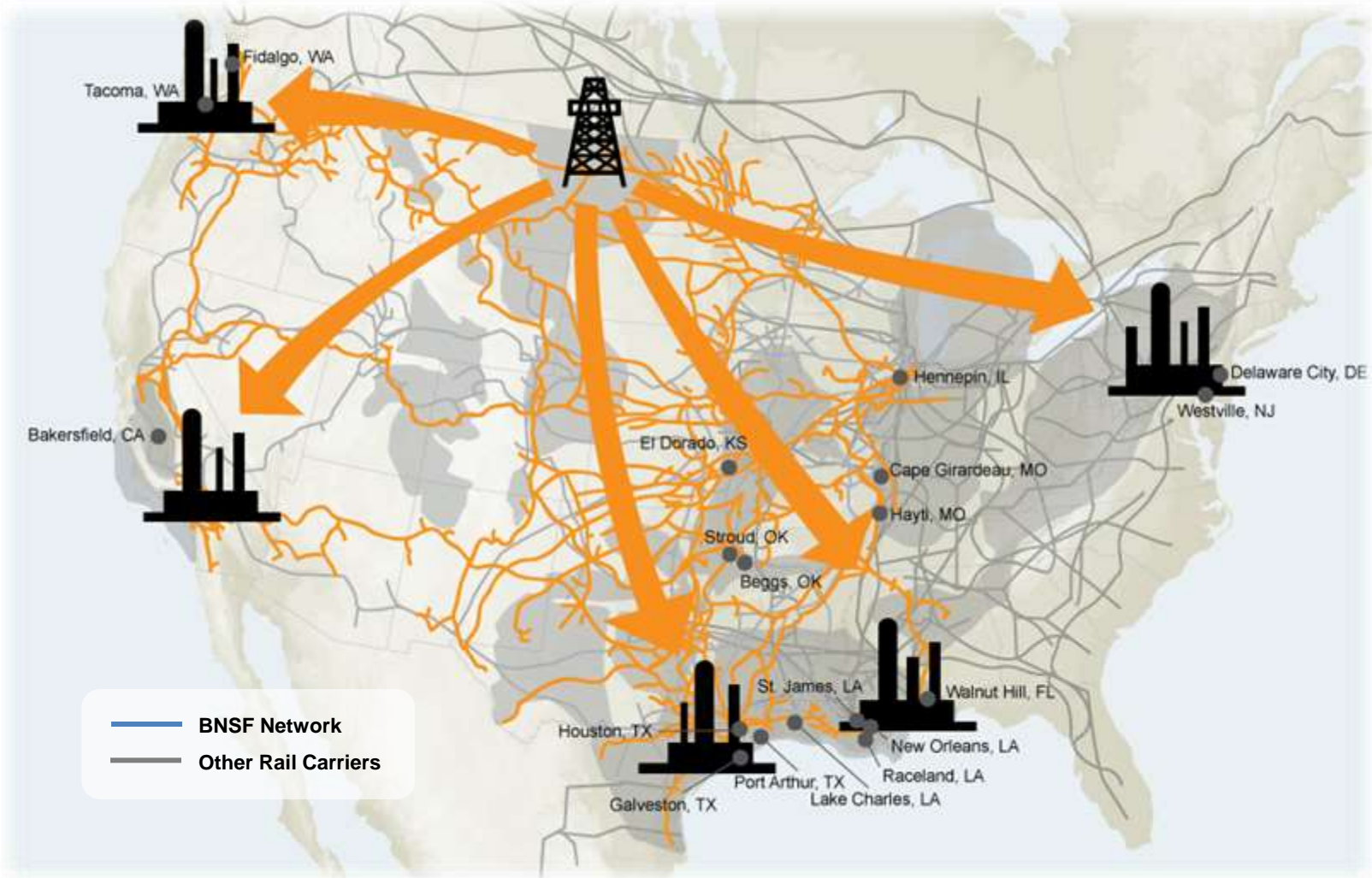


Colt Hub (BNSF), Epping, ND
(source: www.rgldenergy.com)



New Town (CP), ND
(source: www.dakotaplains.com)

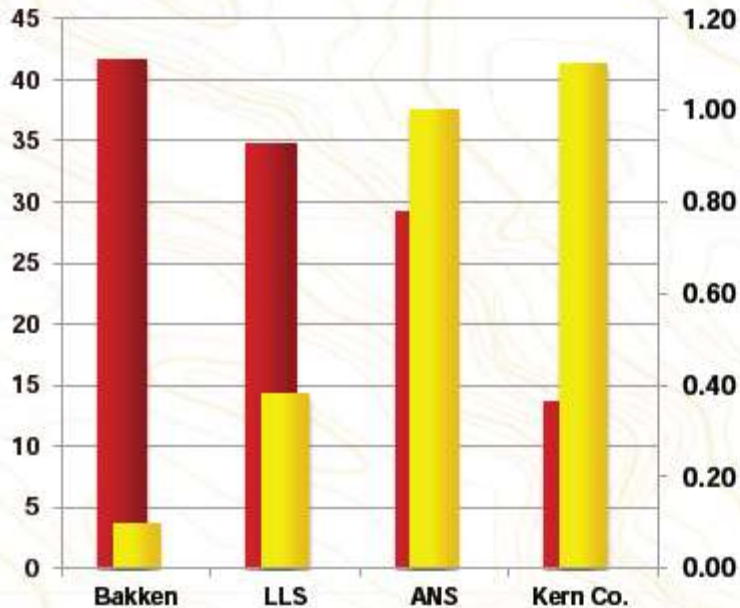
Access and Expansion



Source: NDPA

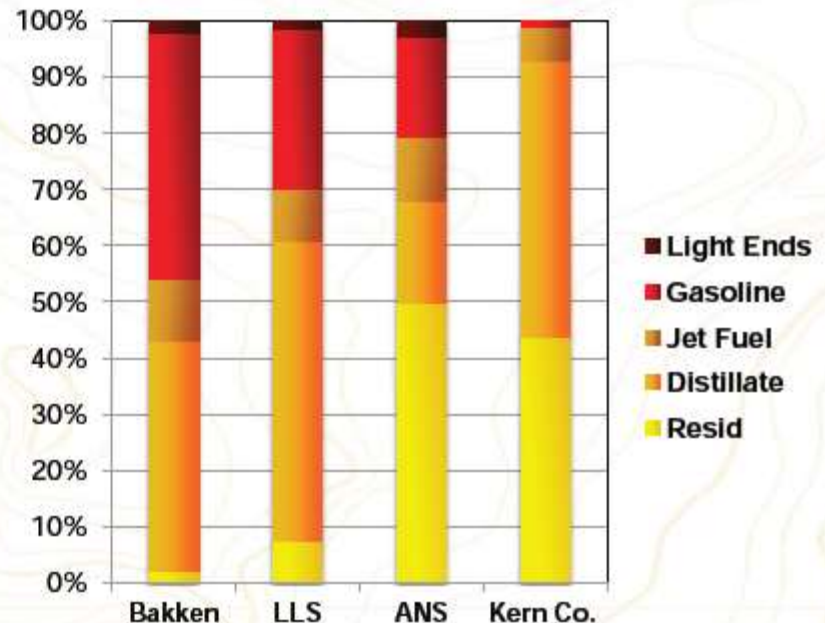
Improved Refinery Yields vs. Other Benchmarks

Crude Quality:
API Gravity & Sulfur



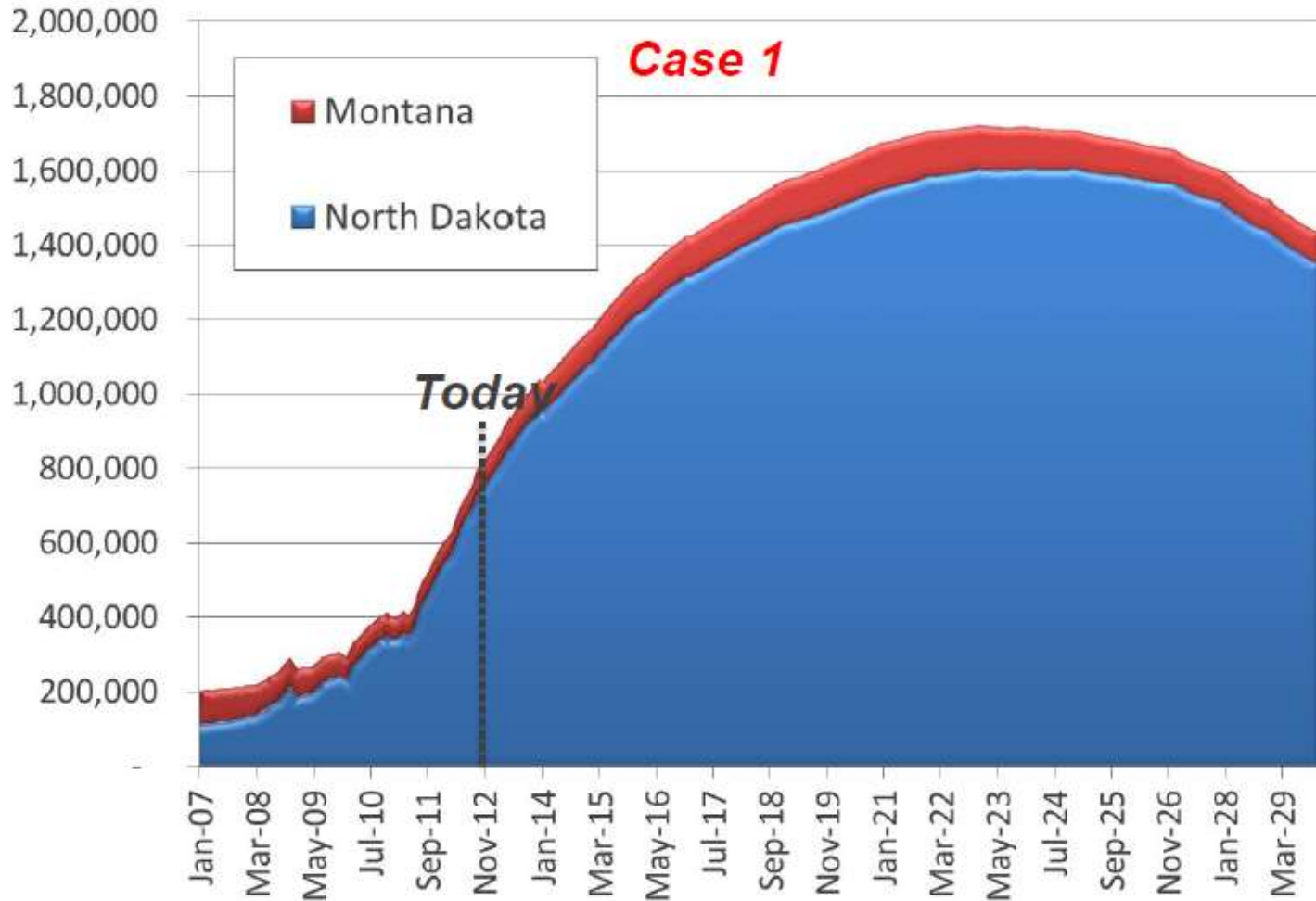
USGC USWC
 ■ API° ■ Sulfur % wt

Distillation Cuts



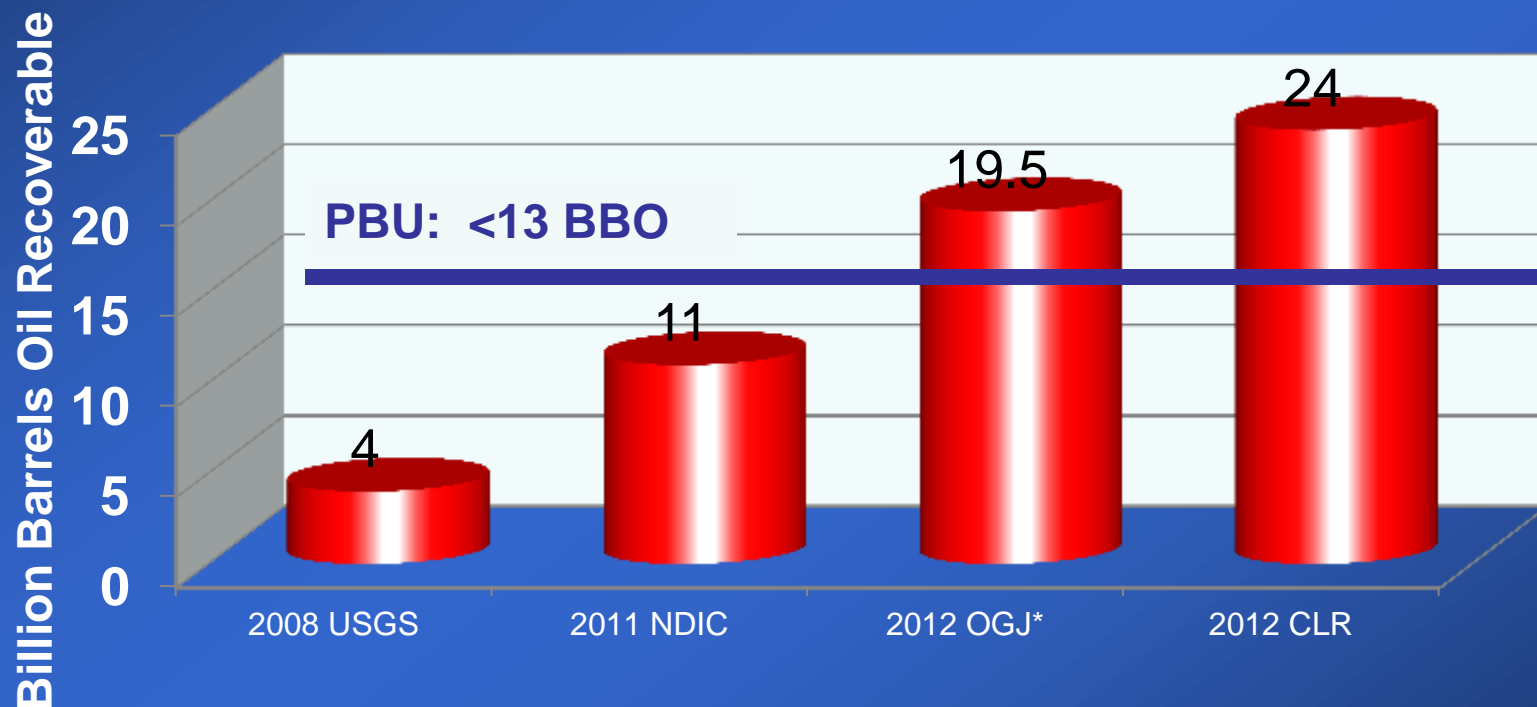
USGC USWC

Forecasting Williston Basin Oil Production, BOPD



Production forecast is for visual demonstration purposes only and should not be considered accurate for any near or long term planning.

Reserve Growth Estimates

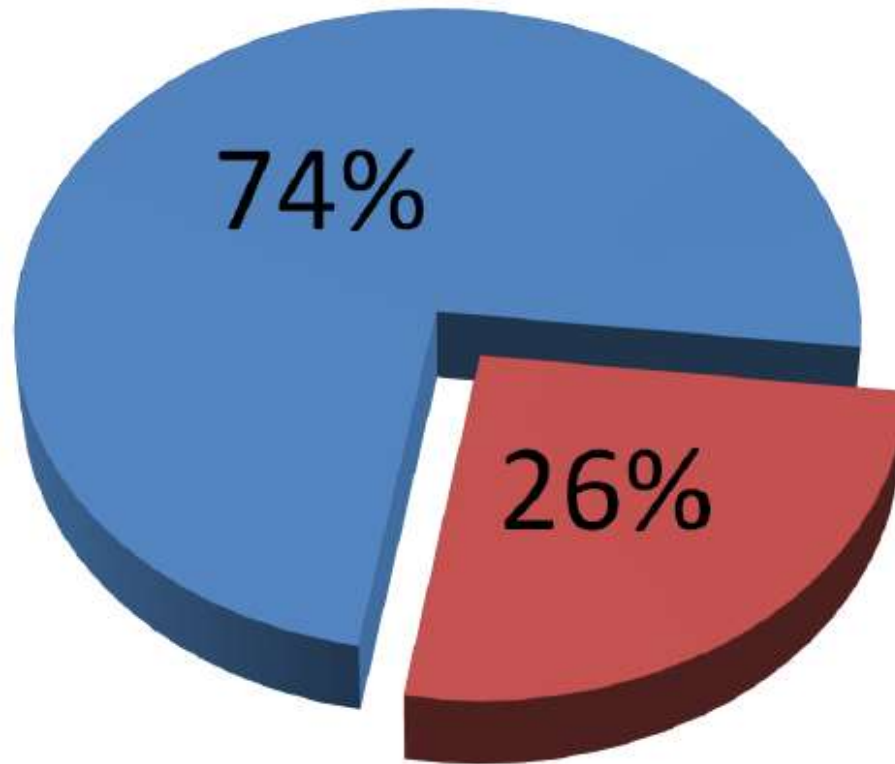


*OGJ 4/2/12, "Bakken's Maximum Potential Oil Production Rate Explored", James Mason

Truck Traffic—Crude Oil Gathering

Impacts:

- Traffic
- Accidents
- Road deterioration
- Dust



Infrastructure is slowly catching up to development.

■ Truck ■ Pipeline

Truck Traffic—Crude Oil Gathering

Impacts:

- Traffic
- Accidents
- Road deterioration
- Dust

74%

Infrastructure is slowly catching up to development.

A 77 mile, 12” diameter pipeline, constructed in ND in 2012 by Bridger Pipeline, was estimated to reduce crude oil hauling by 300 loads per day and reduce 55,000 truck miles daily from HD highways.

Housing and “Man Camps”



← Typical, seen everywhere!

<http://www.businessinsider.com>



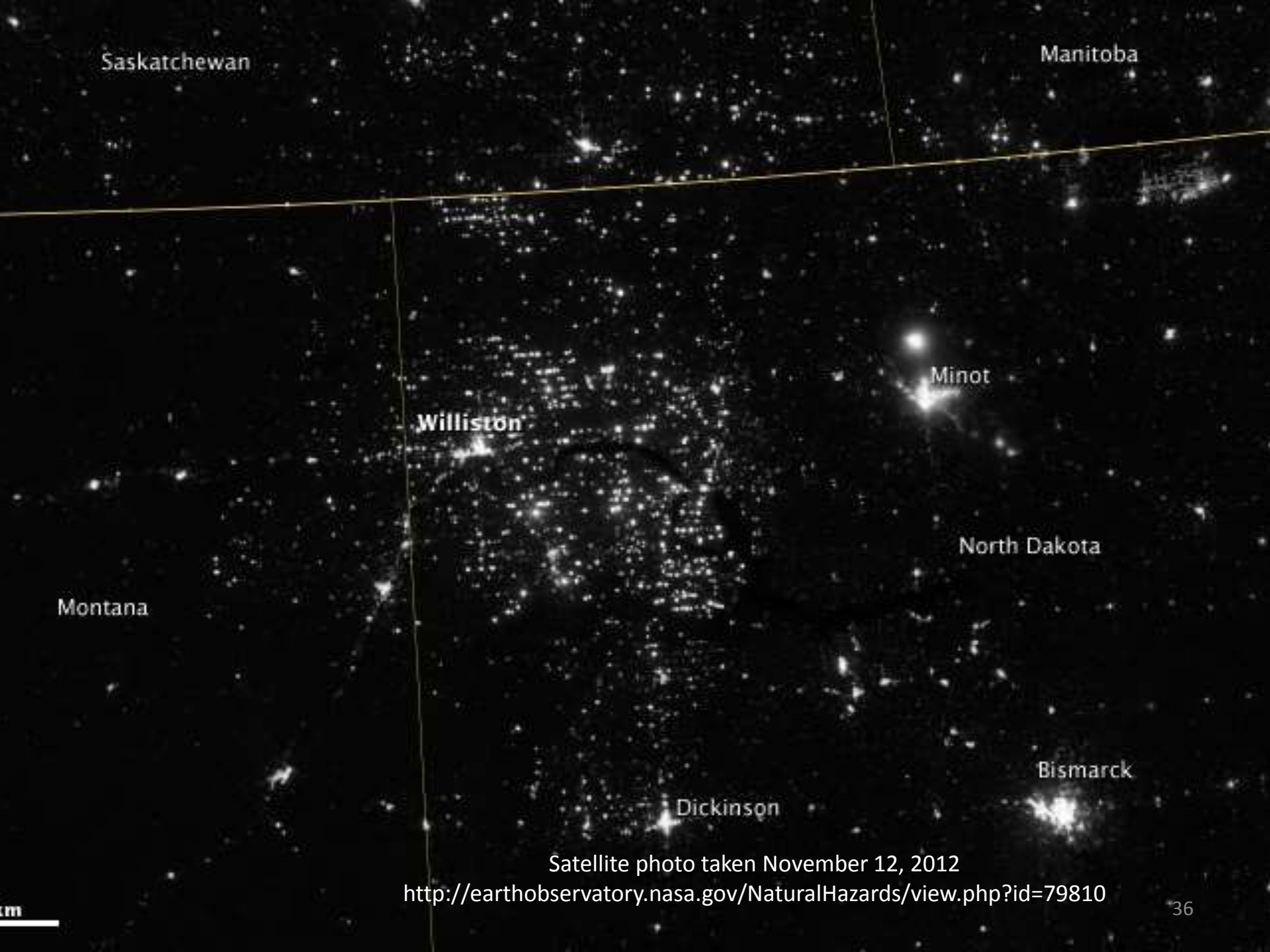
→ Target Logistics, Dunn County, ND (600 beds)

<http://bismarcktribune.com>

Gas Flaring:

*“North Dakotans hate waste.”
(Gov. Jack Dalrymple, June, 2012)*





Saskatchewan

Manitoba

Minot

Williston

North Dakota

Montana

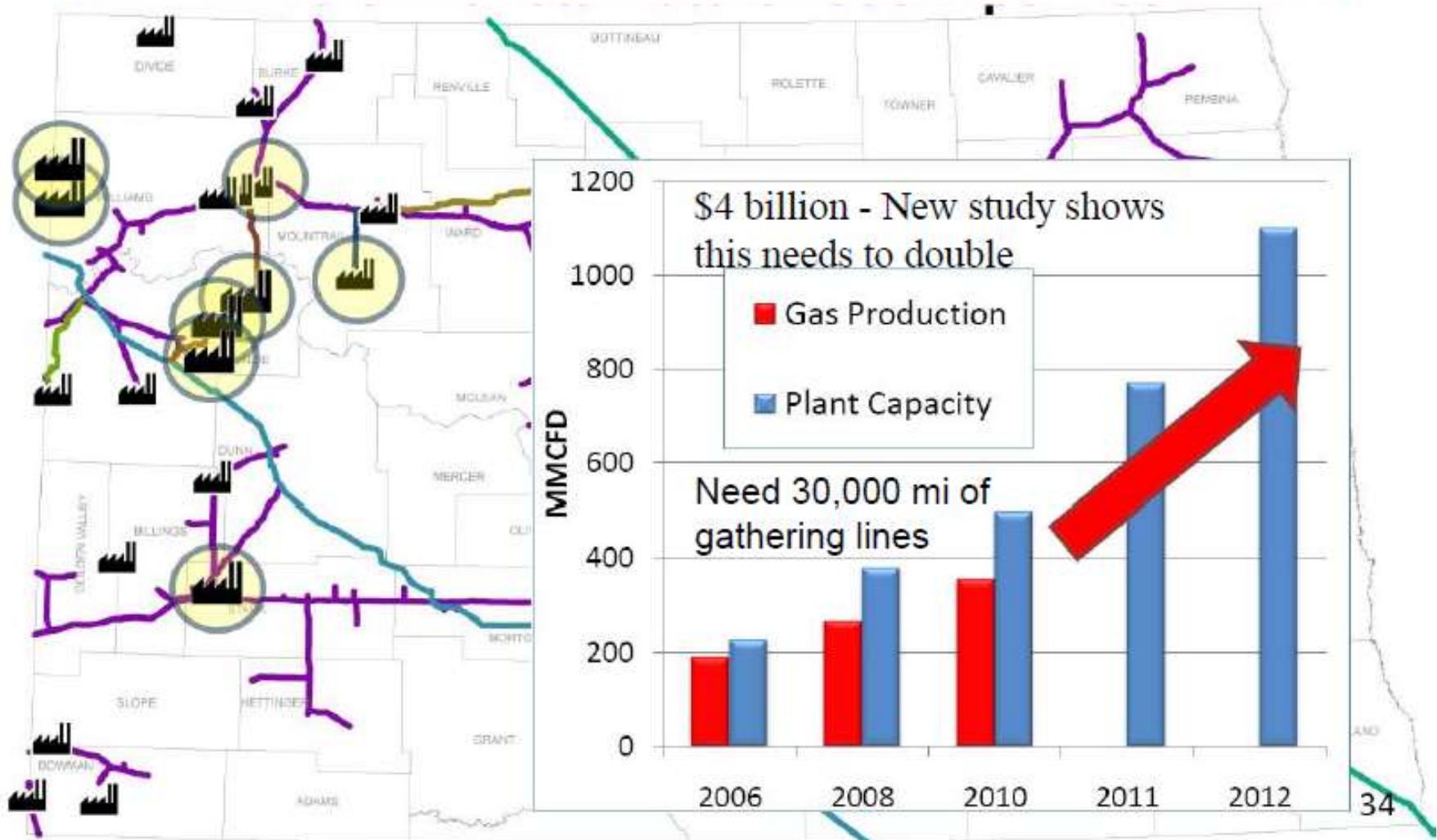
Bismarck

Dickinson

Satellite photo taken November 12, 2012

<http://earthobservatory.nasa.gov/NaturalHazards/view.php?id=79810>

New or Expanding Gas Plants



Widely-publicized Negative Impacts

- **Hiring and impact on minimum wage businesses (difficulty attracting and keeping employees)**
- **Schools, hospitals, law enforcement, social services (struggling due to population influx)**
- **Crime, drugs, prostitution (lost sense of security)**

Personal Wealth Creation

Assume:

- 1280 Acre DSU
- One well with IP of 1000 BOPD
- First month production = 23,000 BO
- Oil price = \$80/bbl
- Landowner with one section (640 acres)
- Royalty rate = 3/16

First month's royalty check = **\$172,500**

$$23,000 \text{ BO} \times (3/16) \times (640/1280) \times \$80/\text{BO}$$

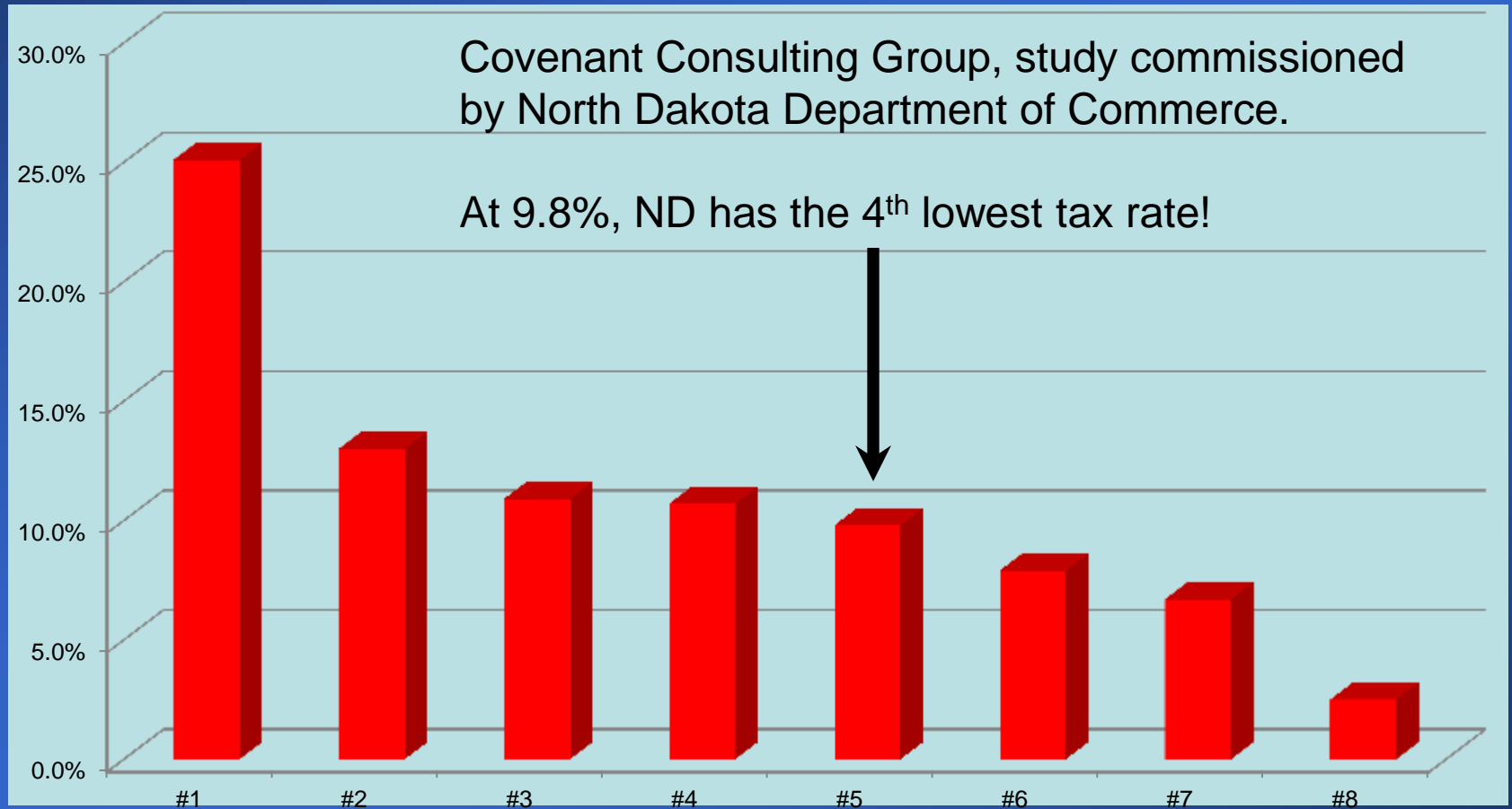
Each well will generate \$7.3mm in royalties (NDIC)

What makes ND successful?

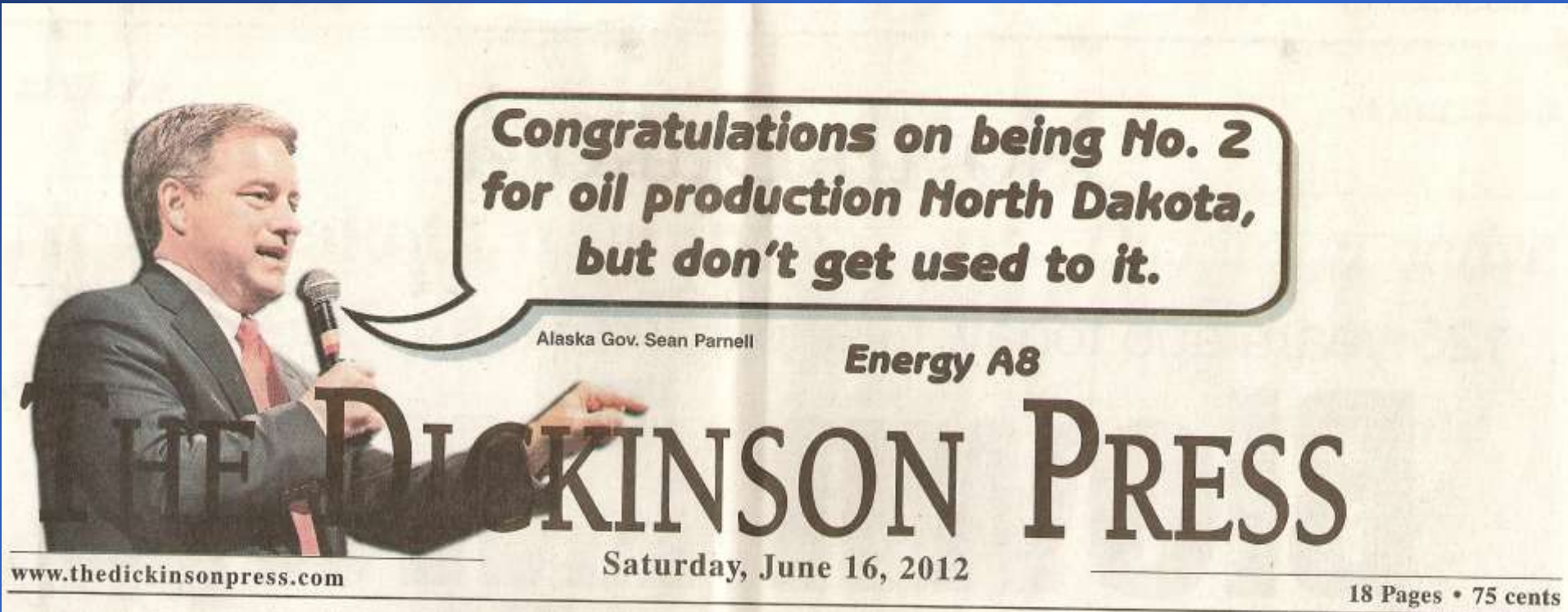
(North Dakota Governor, Jack Dalrymple, 2012 WBPC)

- Keep your fiscal house in order
- Keep taxes down
- Have a reasonable regulatory climate
- Have a friendly business climate

2010 Effective Oil Tax Rate (top 8 oil producing states)

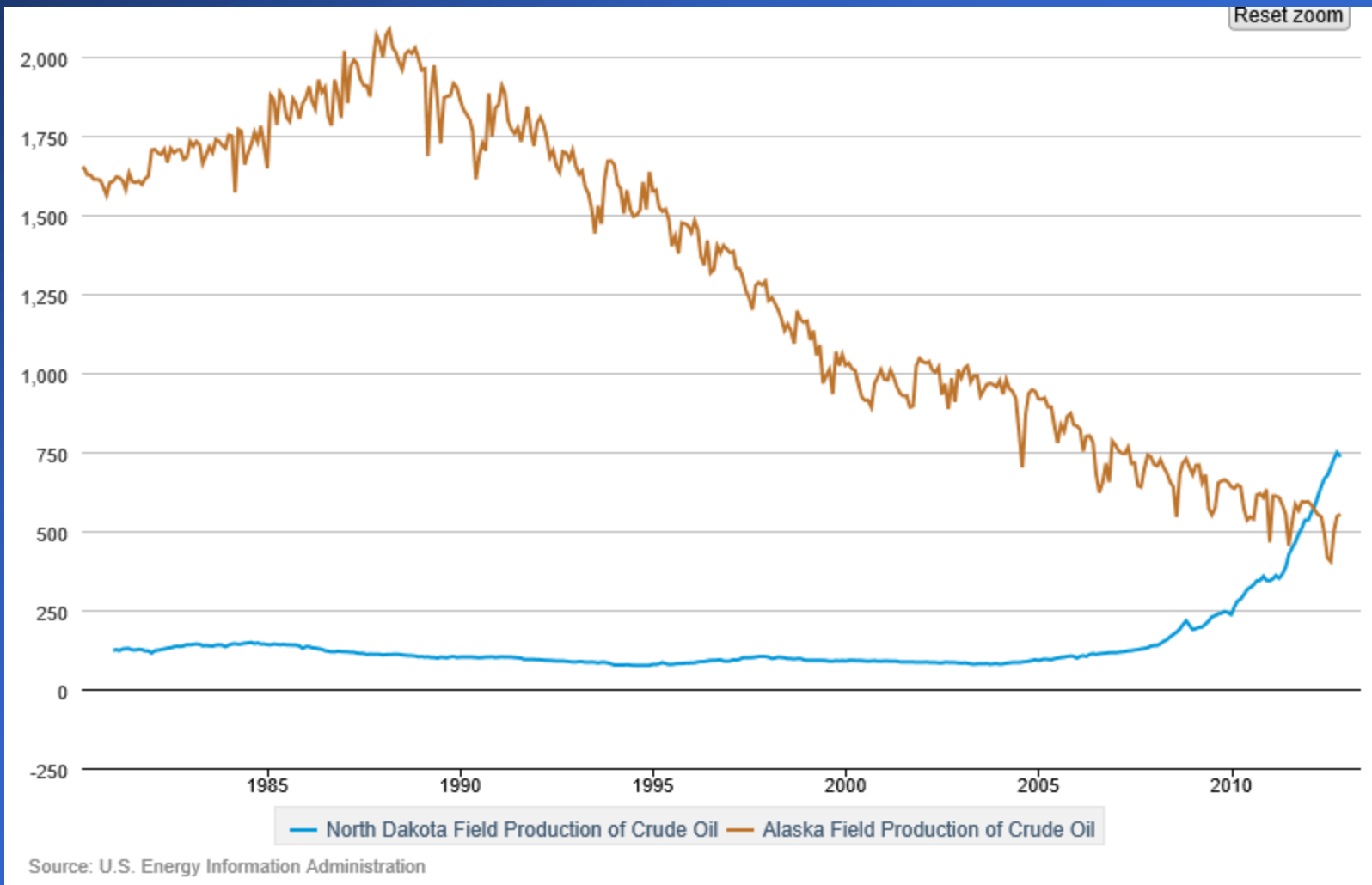


How Alaska makes headlines in North Dakota...

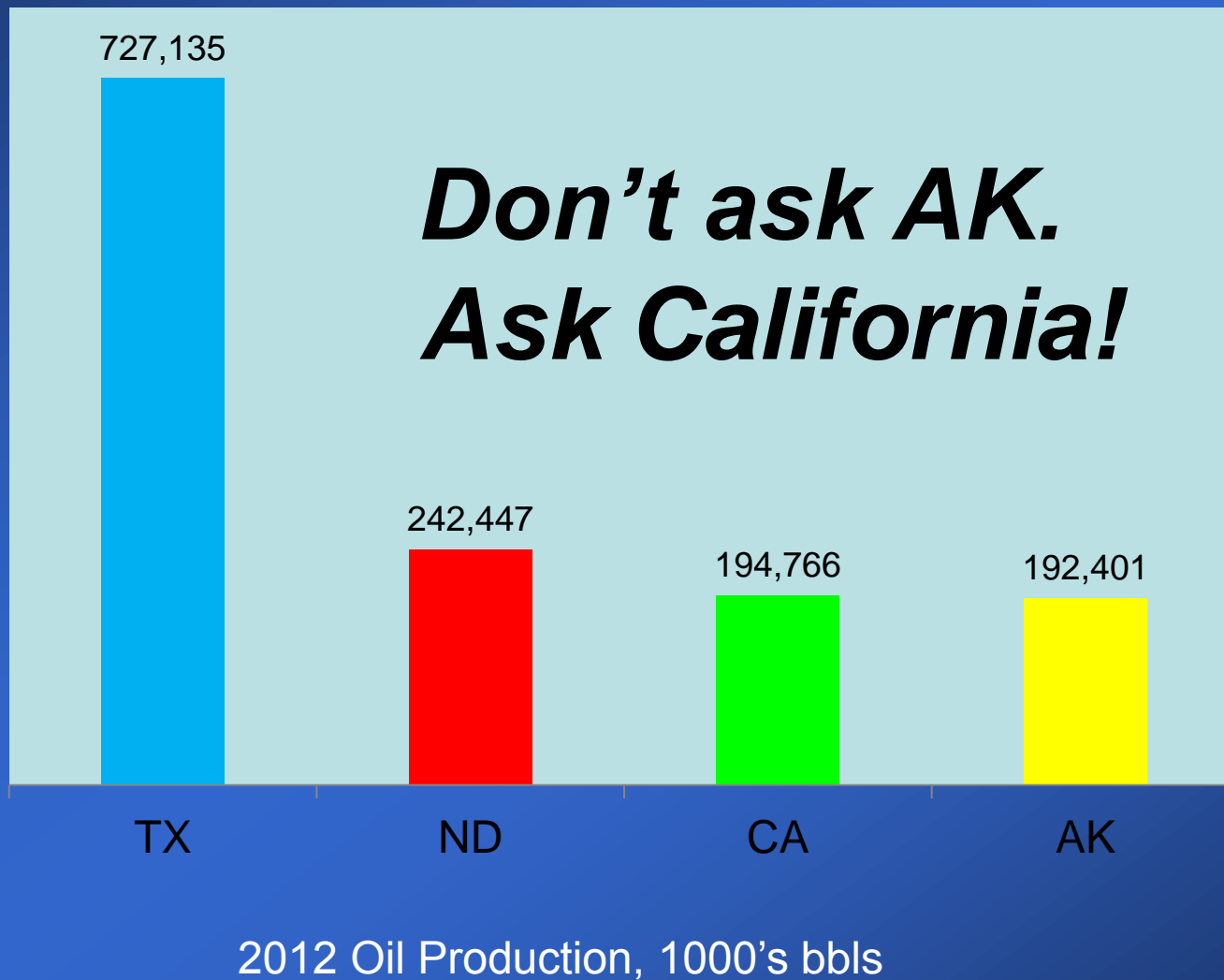


Interstate Oil & Gas Compact Commission,
Vancouver, BC, June-2012

A Long Road Ahead for AK...



How does it feel to be number 3?



WHEN DID ALASKA'S OIL INDUSTRY BECOME . . .

The enemy?


“To listen to some legislators rant endlessly on the television news shows, to listen to young and breathless TV reporters, to read some editorials, to read all too many letters expressing bitter viewpoints about greedy petroleum giants, you’d think Alaska has been pillaged and stripped bare by forces of evil who care nothing for this state or its future.”

Voice of the Times, ADN, 7/20/06

***“Thank you for investing in
North Dakota.
Thank you for being here.”***

***ND Congressman, Rick Berg, in taped
comments to Williston Basin Petroleum
Conference, Bismarck, May-2012***

***“Welcome to North Dakota. We’re
open for business.”***

A photograph of an oil drilling rig in a flat, open field under a clear sky. The rig is the central focus, with various structures and pipes. In the background, there are some smaller buildings and storage tanks. The foreground is a vast, flat expanse of dry, yellowish-brown grass.

North Dakota Governor, Jack Dalrymple
6/14/12
North Dakota Governor’s Pipeline Summit

The Bakken—Summarized:

- Its big
- Its technology-driven
- Its growing
- Its supported by a friendly business climate

Questions?

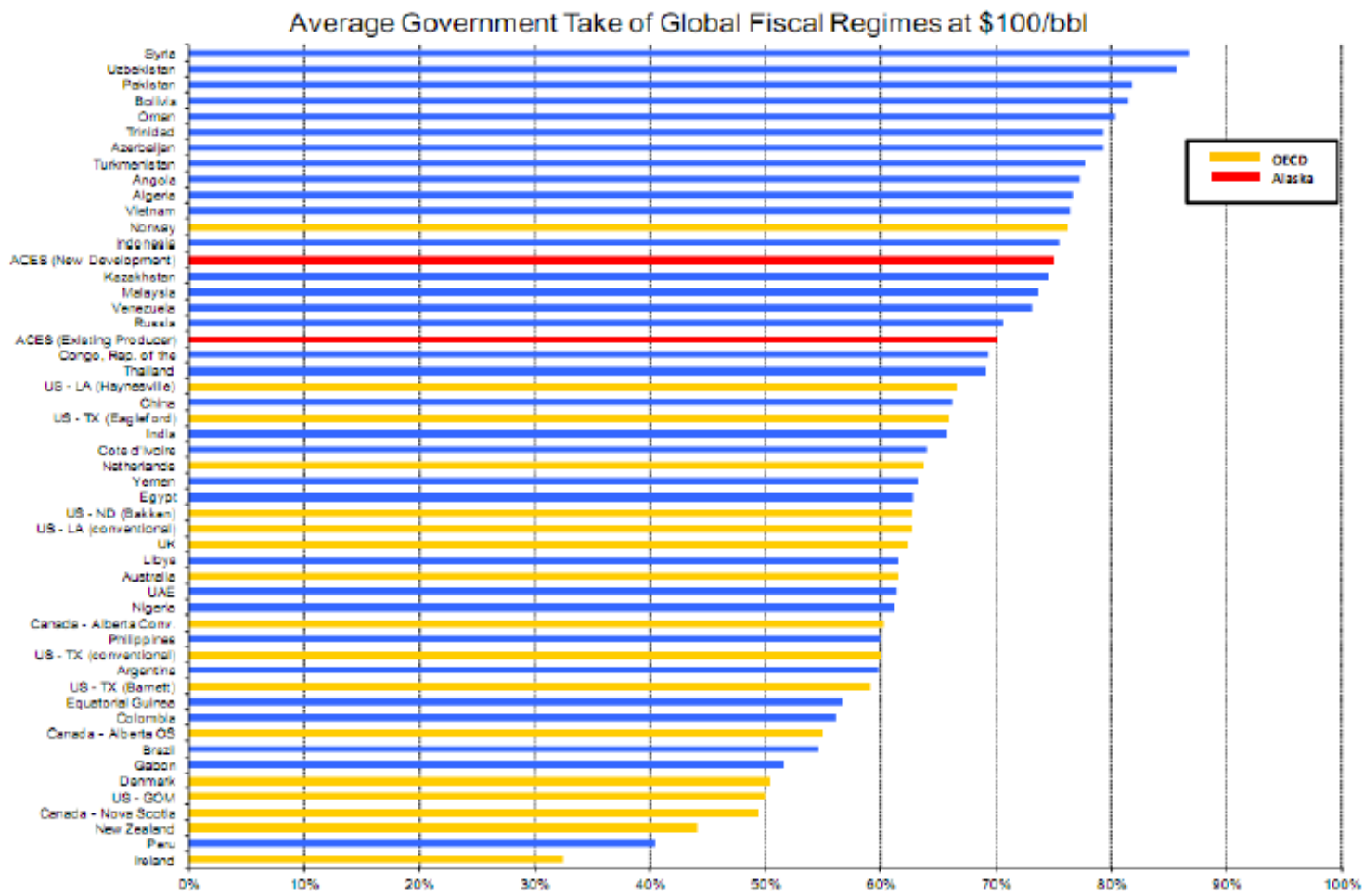


ND drill site, photo courtesy of Dan Stamness

Addendum

- **At the conclusion of my presentation at the Anchorage Alliance breakfast on 3/28/13, a question came from the audience, “what is the total government take in North Dakota?”**
- **The following slides were added to answer that question, and to illustrate the fact that the total government take is only one of several factors inhibiting investment in AK.**

Average Government Take at \$100 Per Barrel Other Jurisdictions



Source: PFC Energy.

COMPETITIVENESS

HOW ALASKA COMPARES

Average government take at \$100/bbl for selected jurisdictions.

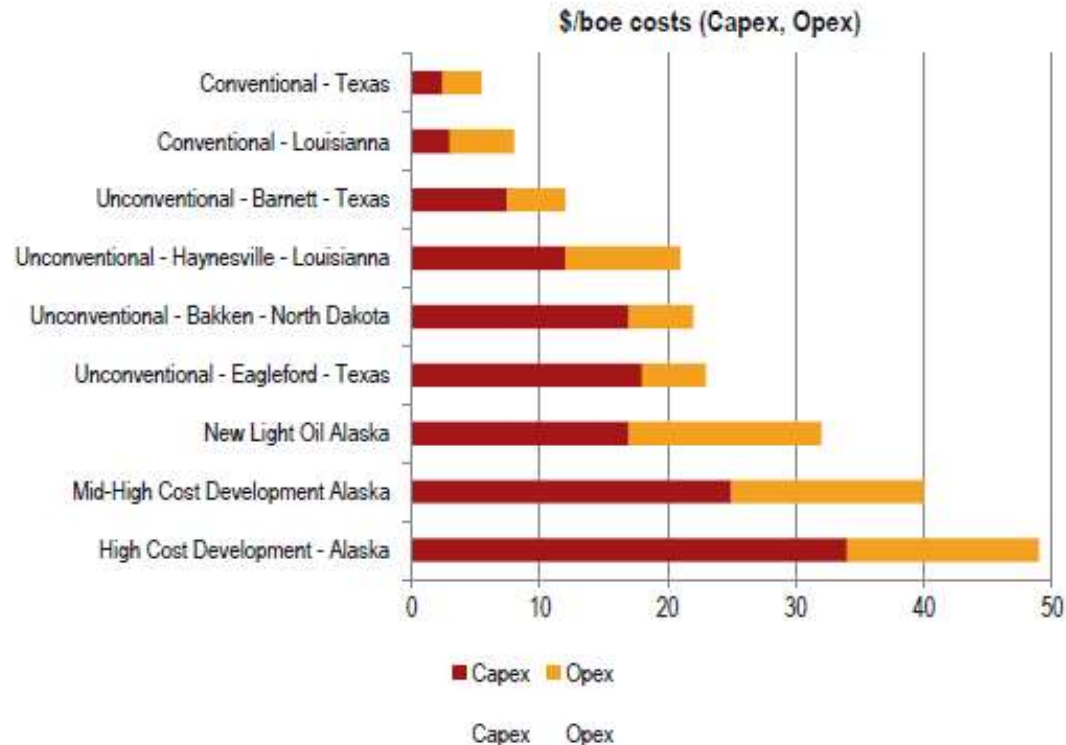


Source: PFC Energy - Alaska Hydrocarbon Fiscal System Analysis, 2013

Additional investment considerations

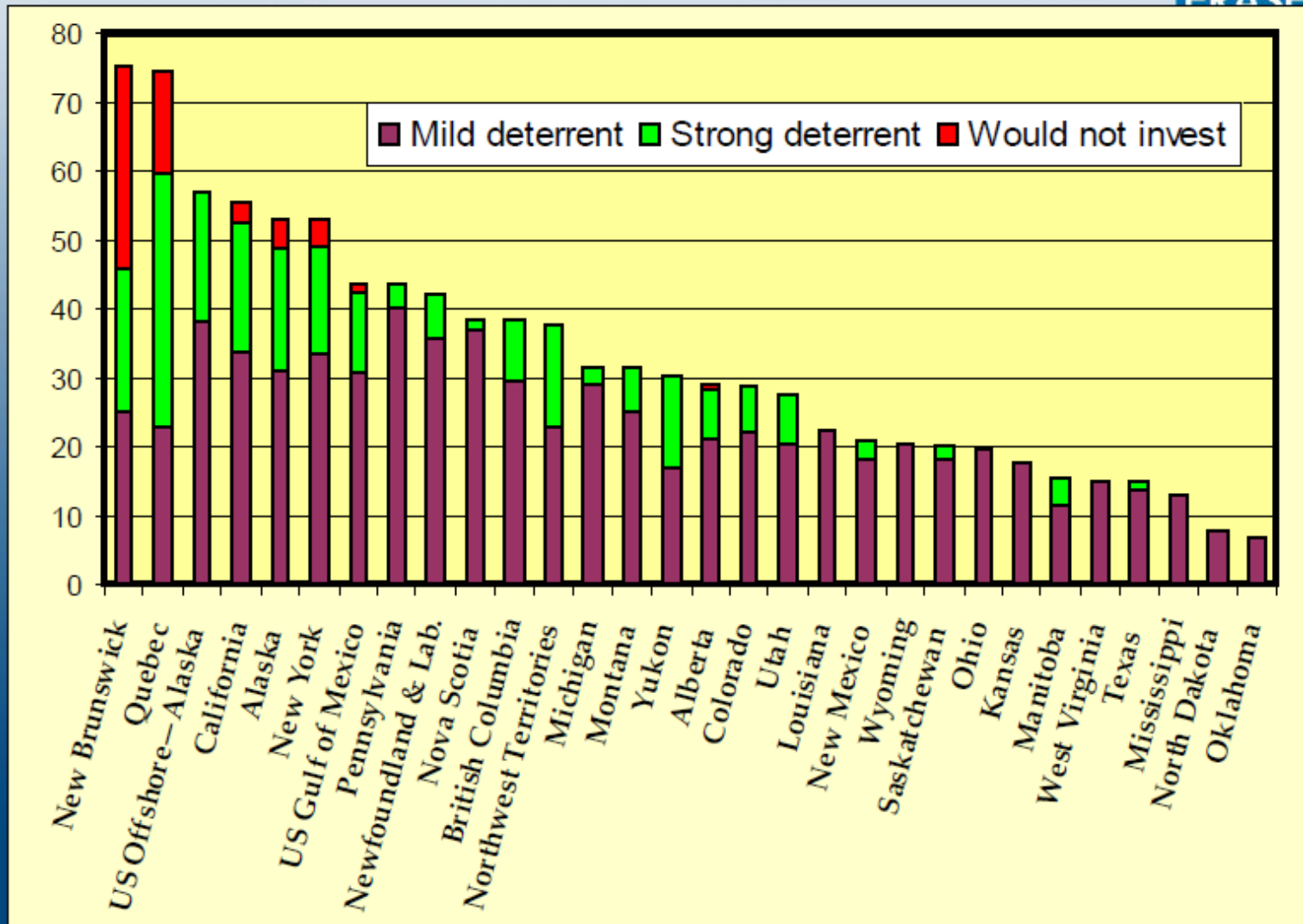
- Risk--99% of ND Bakken wells find oil, 90% are economic (statistics from NDIC). Similarly, risks in other other areas are also lower than in AK.
- OPEX and CAPEX in Alaska are much higher than in other jurisdictions (see Slide #54)
- Regulatory climate and ease of permitting are also a deterrent to Alaska investment (see Slide #55).

Alaska's Days of "Easy Oil" Are Gone: High Costs and High Government Take Present Challenges



Costs are significantly higher in Alaska than the Lower 48 – even compared to unconventionals. Meanwhile, Alaska's Government Take has risen significantly over recent years, meaning new project economics can be very challenging

Regulatory Climate Index Values: US & Canada



Dr. Gerald Angevine, Senior Economist, The Fraser Institute, Alliance 2013 Annual meeting

Conclusion: simply having a tax regime that is “no worse than” other jurisdictions is a start, but likely it will not be enough for Alaska to compete for significant oil and gas investment.

Alaska has vast resources, but it needs to improve not just in taxes, but in other controllable areas (regulatory and business climate) to compensate for uncontrollable factors such as high risk and high cost. Alaska needs to become a more attractive, (friendly) place to do business.

“Alaska is open for business” is a fine slogan, but it was first used by our Governor (Knowles) over 13 years ago, and without meaningful action over that time, we have continued down the path of decline. Action that has occurred (principally, ACES) appears to have hurt, rather than improved the situation.