

U.S. Bakken Shale Play: Update From The Field

Chris Faulkner

CEO, Breitling Oil and Gas



BREITLING
OIL AND GAS

CONFIDENTIAL

© 2012, All rights reserved, Breitling Oil and Gas

No portion of this presentation may be reproduced, reused or otherwise distributed in any form without prior written consent.

Breitling Oil and Gas North American Unconventional Resource Experience

- **CBM**
 - San Juan
 - Drunkards Wash Uinta
 - Powder River
 - Horseshoe Canyon
 - Manville
- **Shale**
 - Barnett
 - Haynesville
 - Muskwa
 - Montney
 - Austin
 - Anadarko
- **Tight Gas**
 - Piceance
 - Anadarko
 - San Juan
 - Deep Basin
 - Uinta
 - Greater Green
 - Lobo
 - Bossier



Pre-Bakken North Dakota Traffic Jam



Bakken Boom Traffic



Where Is the Bakken?

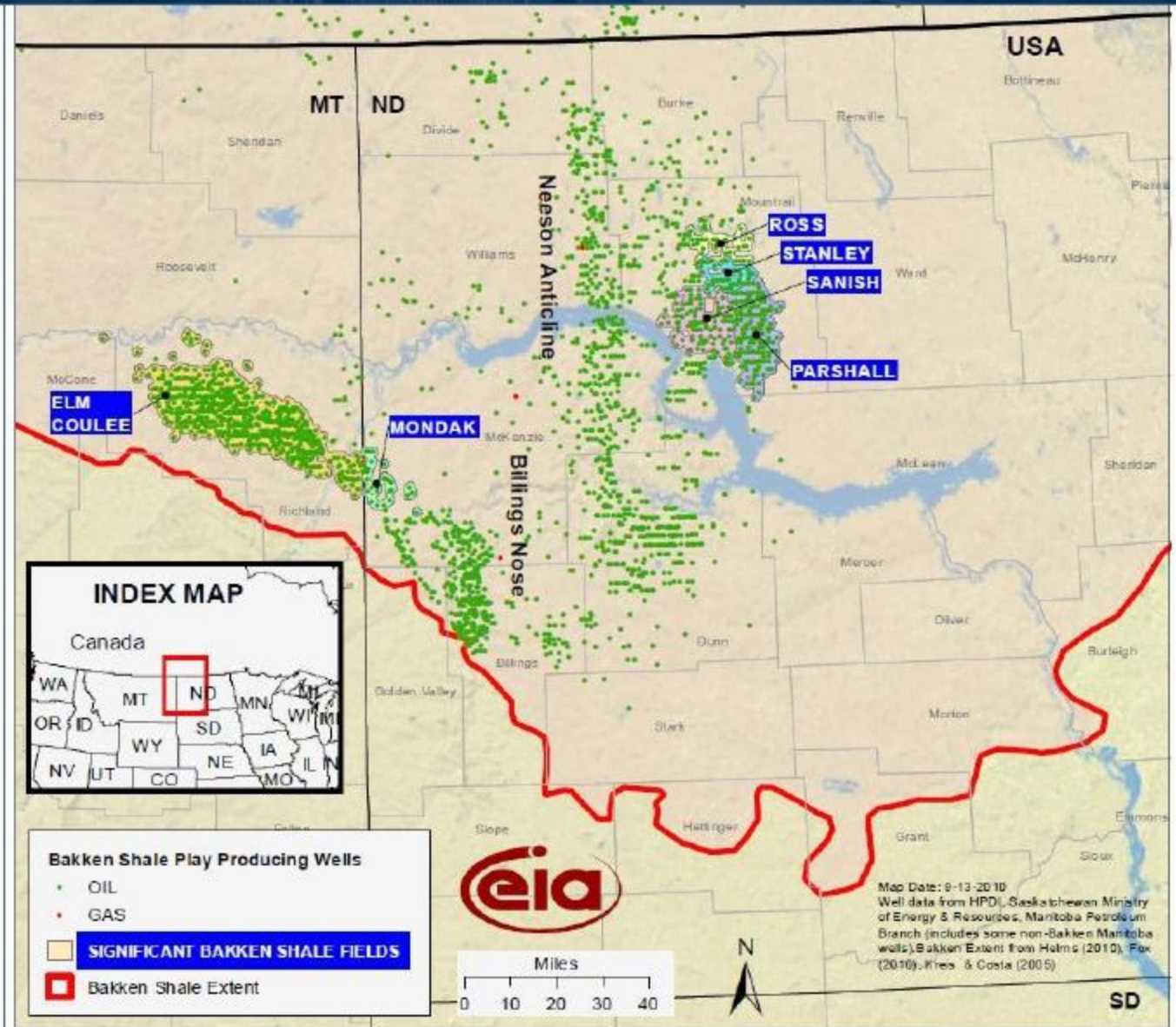
The Bakken Formation is a rock unit occurring deep in the Williston Basin.

Discovered in the 1950s in North Dakota.

Prolific, sustained production began in the 2000s.

Oil is currently produced from the Bakken Formation in:

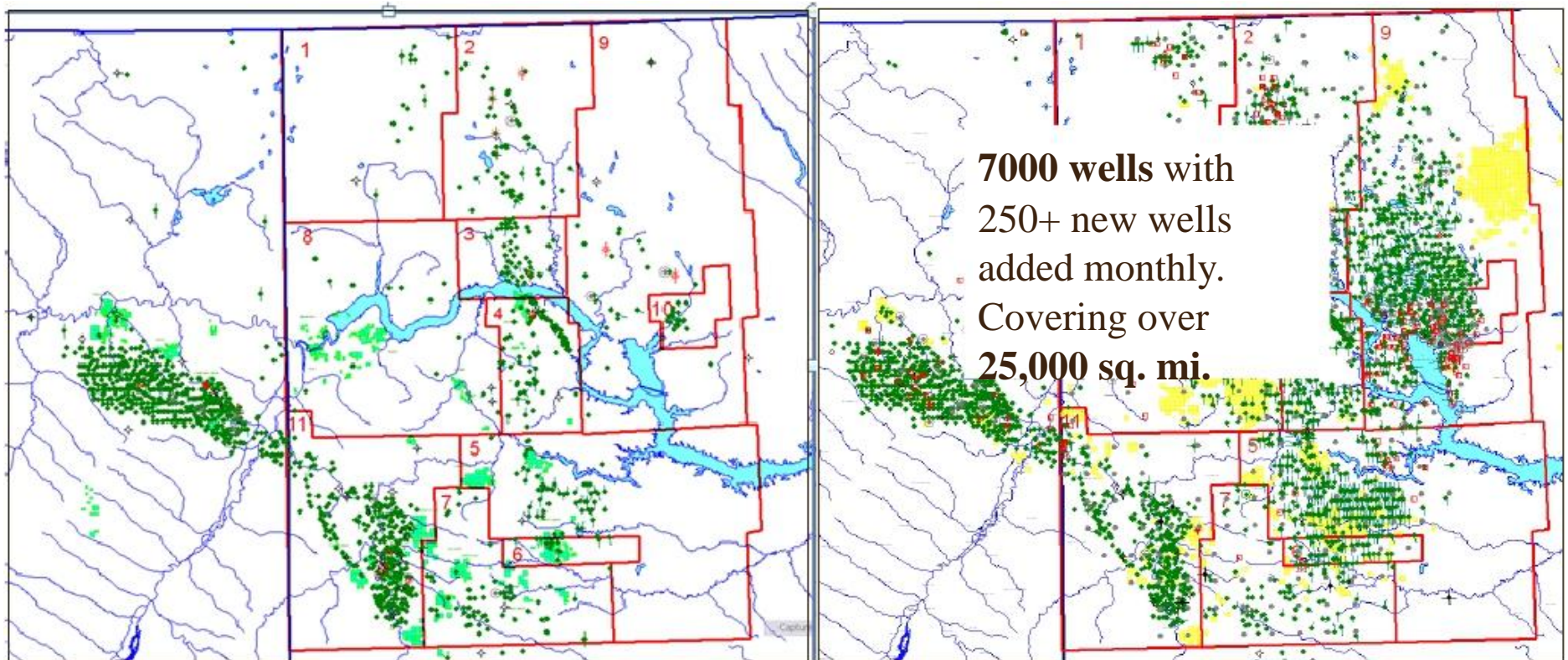
- North Dakota
- Montana
- Saskatchewan
- Manitoba



The Williston Basin

2008

2012



Williston Basin Bakken Development

History

§ 1953 – 1960

- § 56 vertical wells targeting both zones (209 BOPD avg IP)
- § Some have cumulative production over 1,000,000 bbl oil to date

§ 1961 – 1976

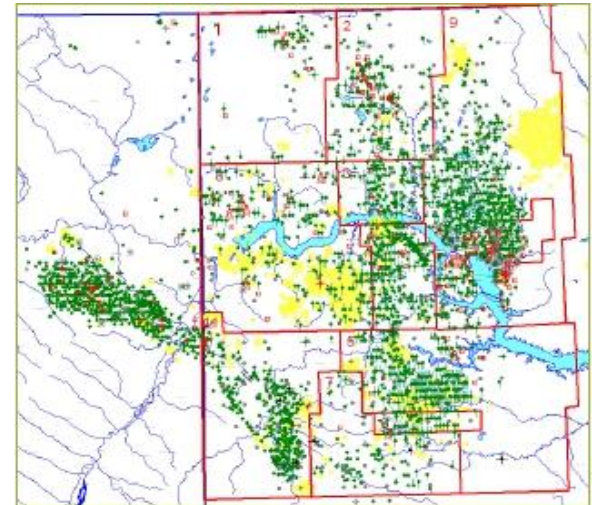
- § Billings Nose “Bakken Fairway” on South west side of the Basin
- § Bail out zone to Red River

§ 1987 - 2005

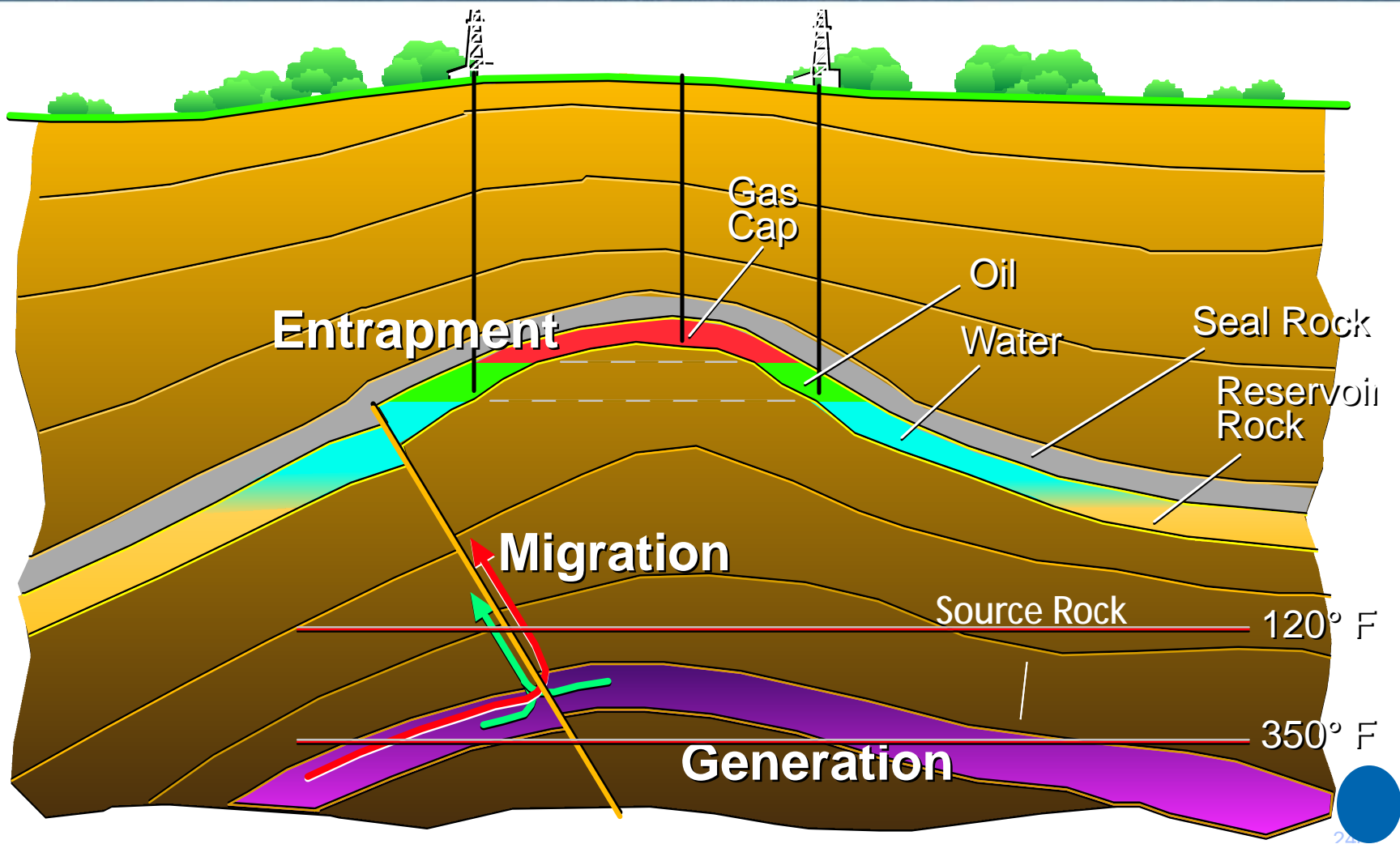
- § Horizontal drilling in the shale along the Fairway & Elm Coulee
- § 225 wells: 86 BOPD IP yielding 145 MBOE

§ 2006+

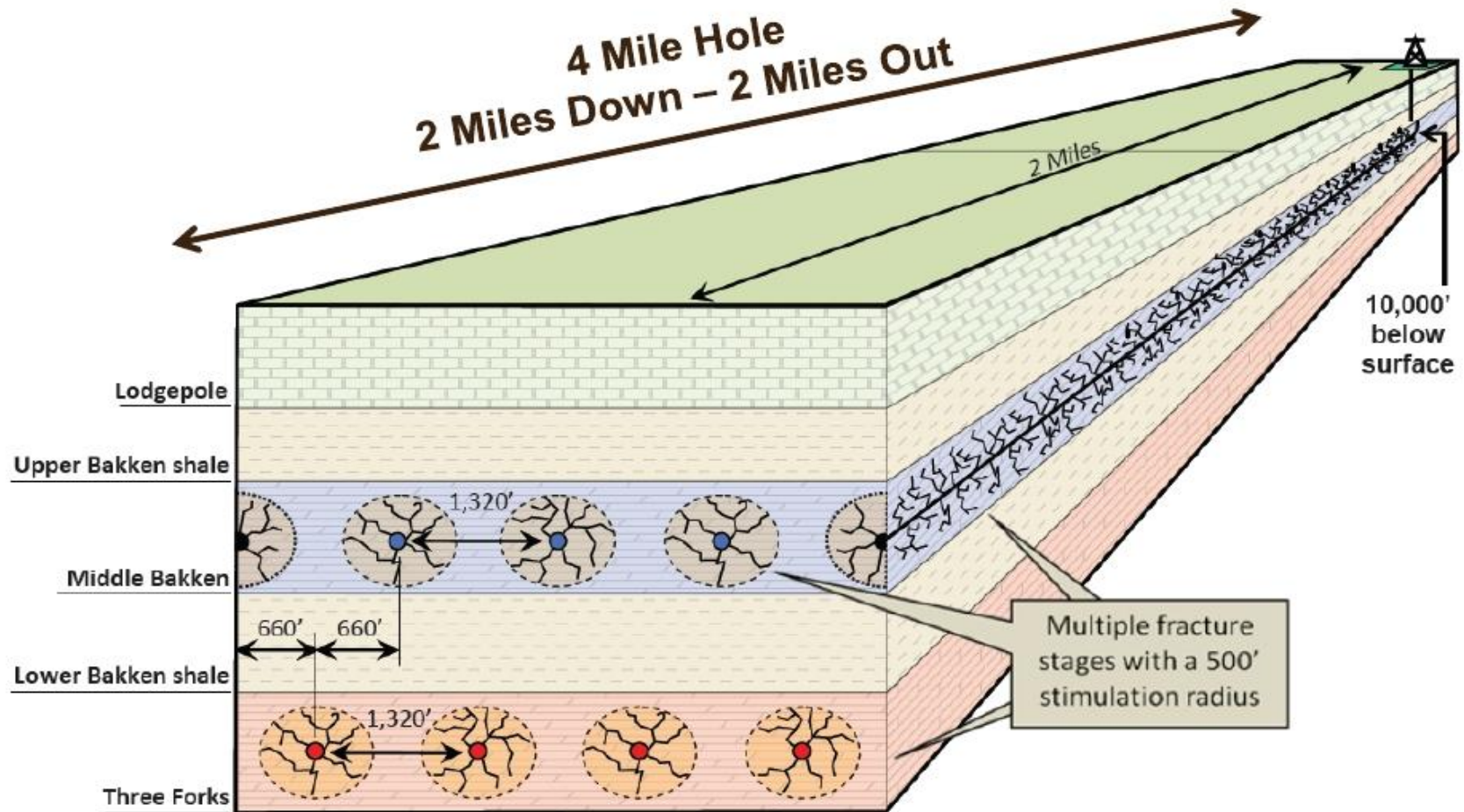
- § Parshall Discovery Well
- § 3,000 wells later.....



Total Petroleum System

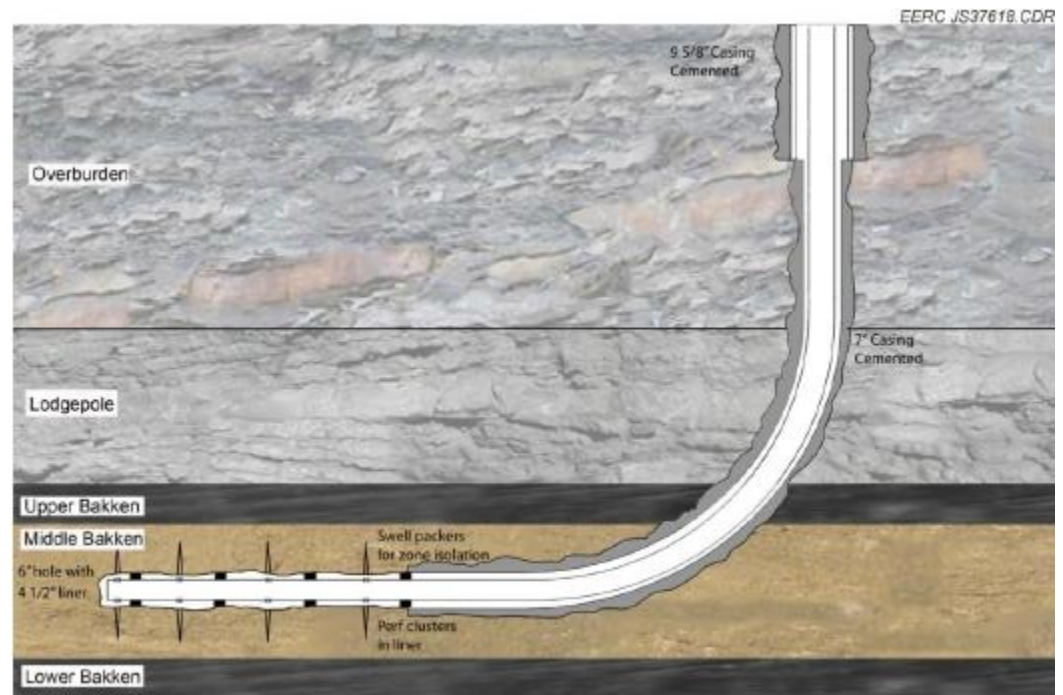


Bakken Well Specifications

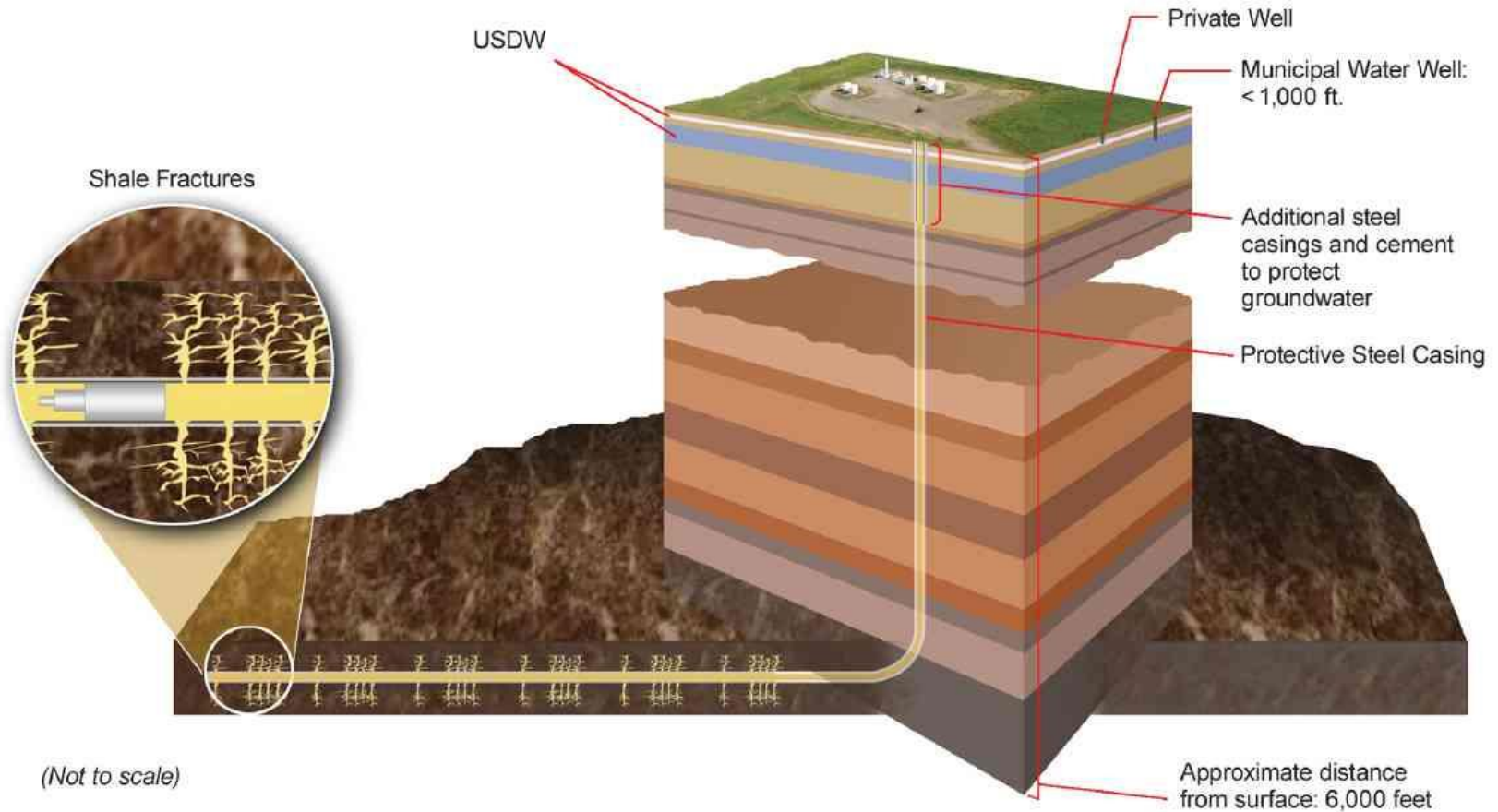


How is Bakken Shale Production Possible?

- Recent advancements in technology have spurred tight oil production.
 - Horizontal drilling and completion
 - 8,000- to 10,000-ft laterals in the Bakken
 - Hydraulic fracturing
 - “Fracking” with a mixture of fluids and Proppants (sand & ceramic)



What is Fracking?



(Not to scale)

Steel casing lines the well and is cemented in place to prevent any communication up the wellbore as the fracturing job is pumped or the well is produced. Shallow formations holding fresh water that may be useful for farming or public consumption are separated from the fractured shale by thousands of feet of rock.

How Many “Bakken’s” Are There?



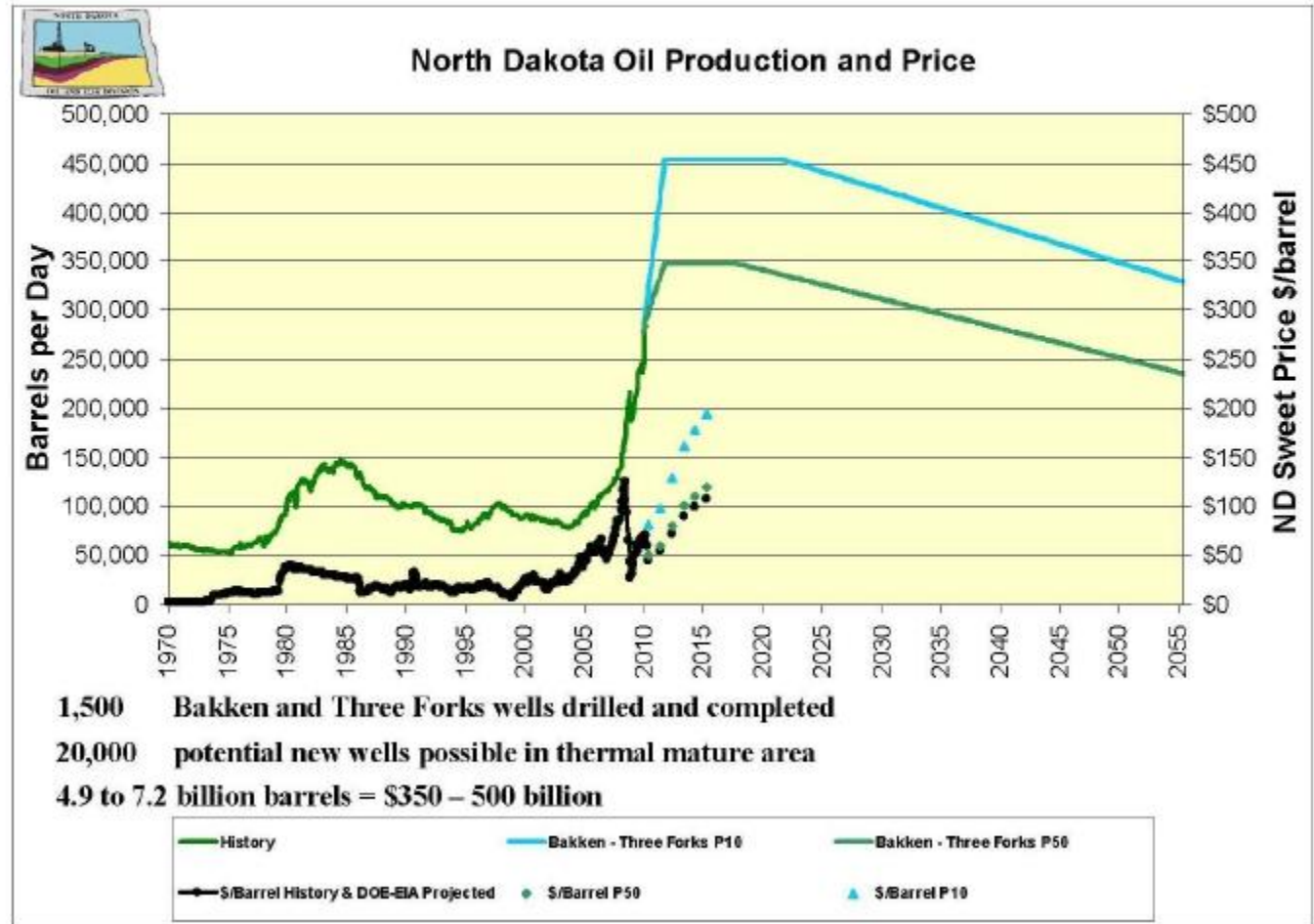
Unconventional Oil – Projections

2013 Williston Basin tight oil production will be over **1,000,000 bpd**.

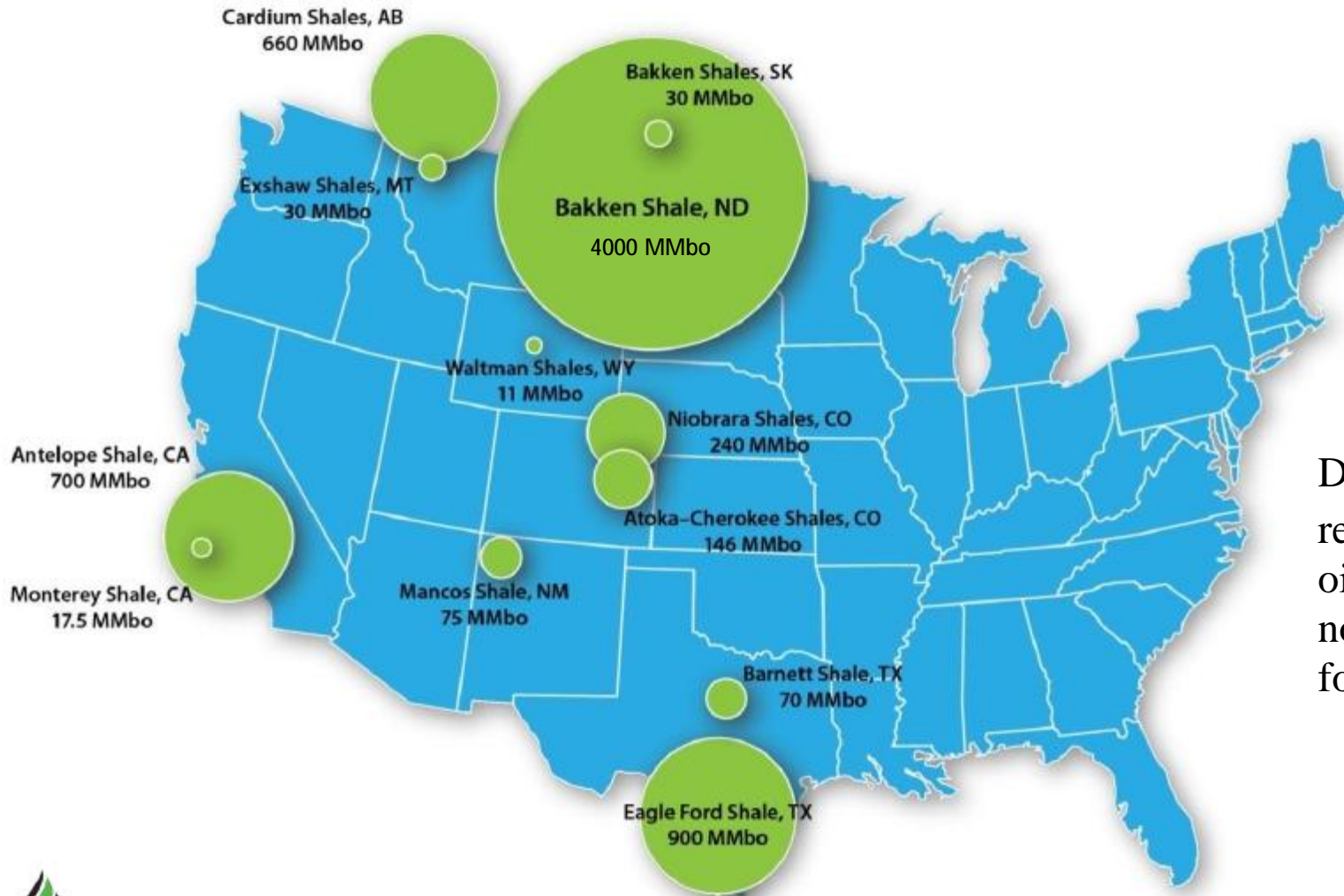
Eagle Ford will be over **250,000 bpd**.

2020 North American tight oil production could be over **3,000,000 bpd**.

2050 North American tight oil production could be over **10,000,000 bpd**.



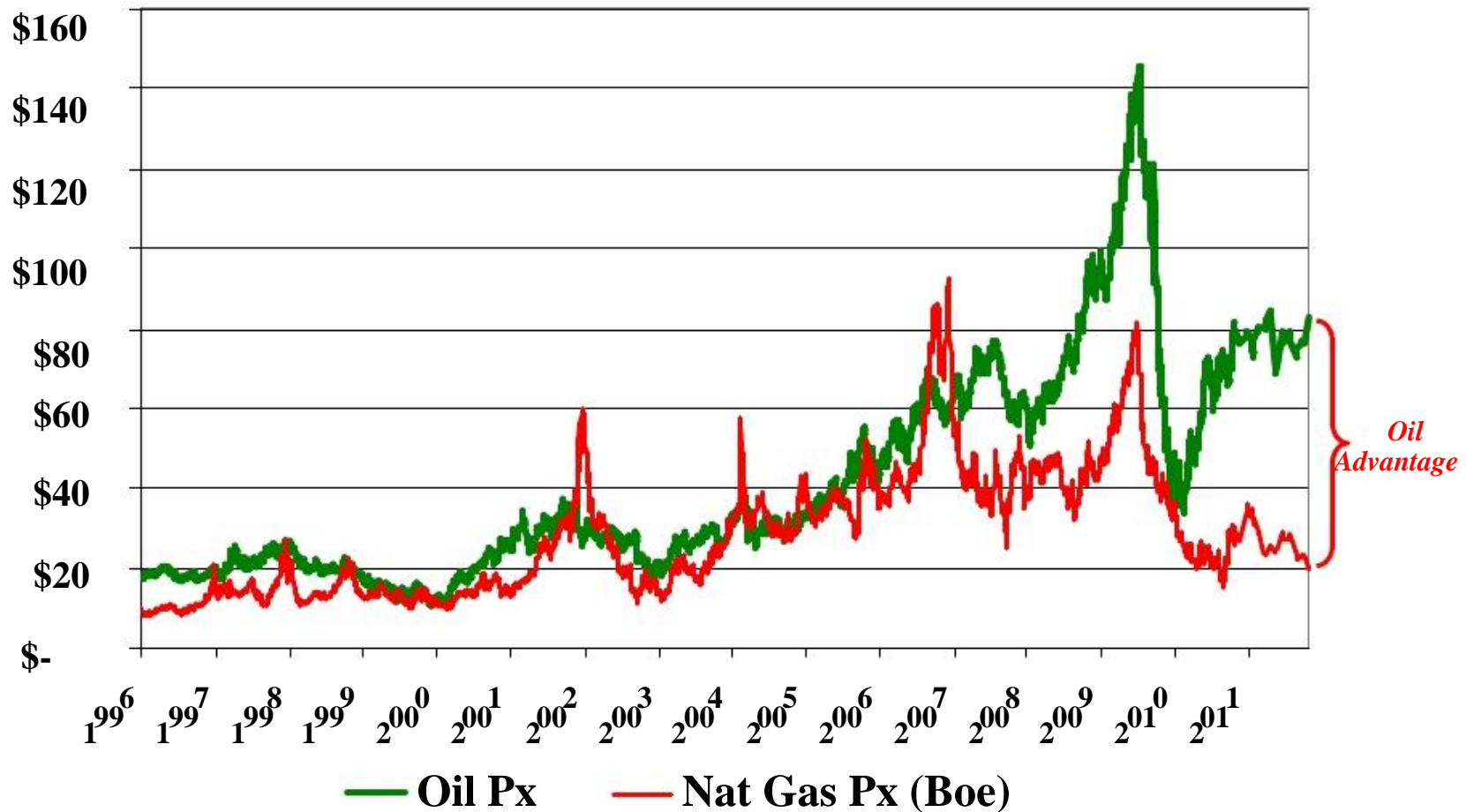
Magnitude of Recoverable Unconventional Oil Resources



Data on recoverable tight oil resources are not yet available for many states.

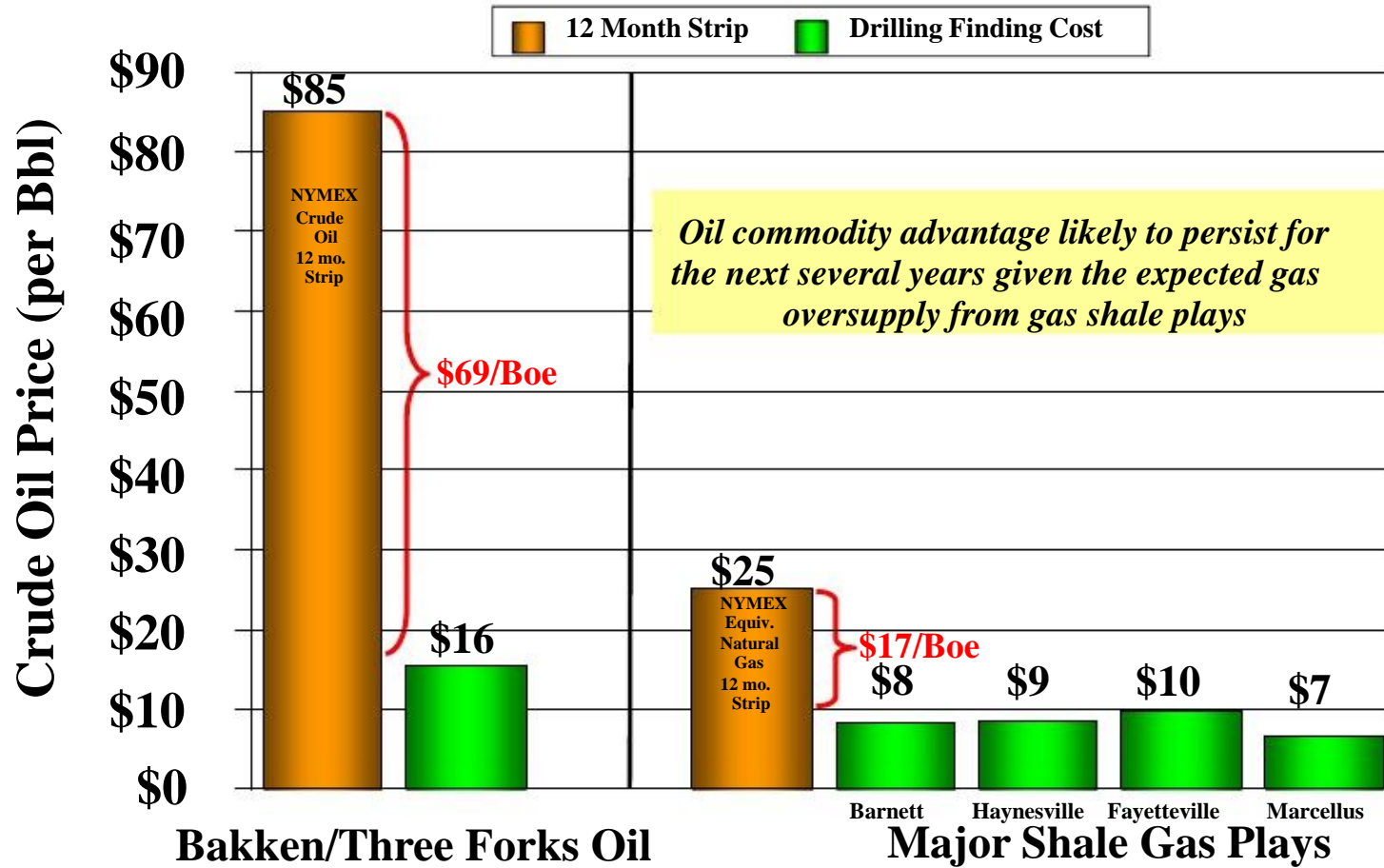
Commodity Advantage Favors Oil

Oil Prices vs 6:1 Equivalent Natural Gas Prices

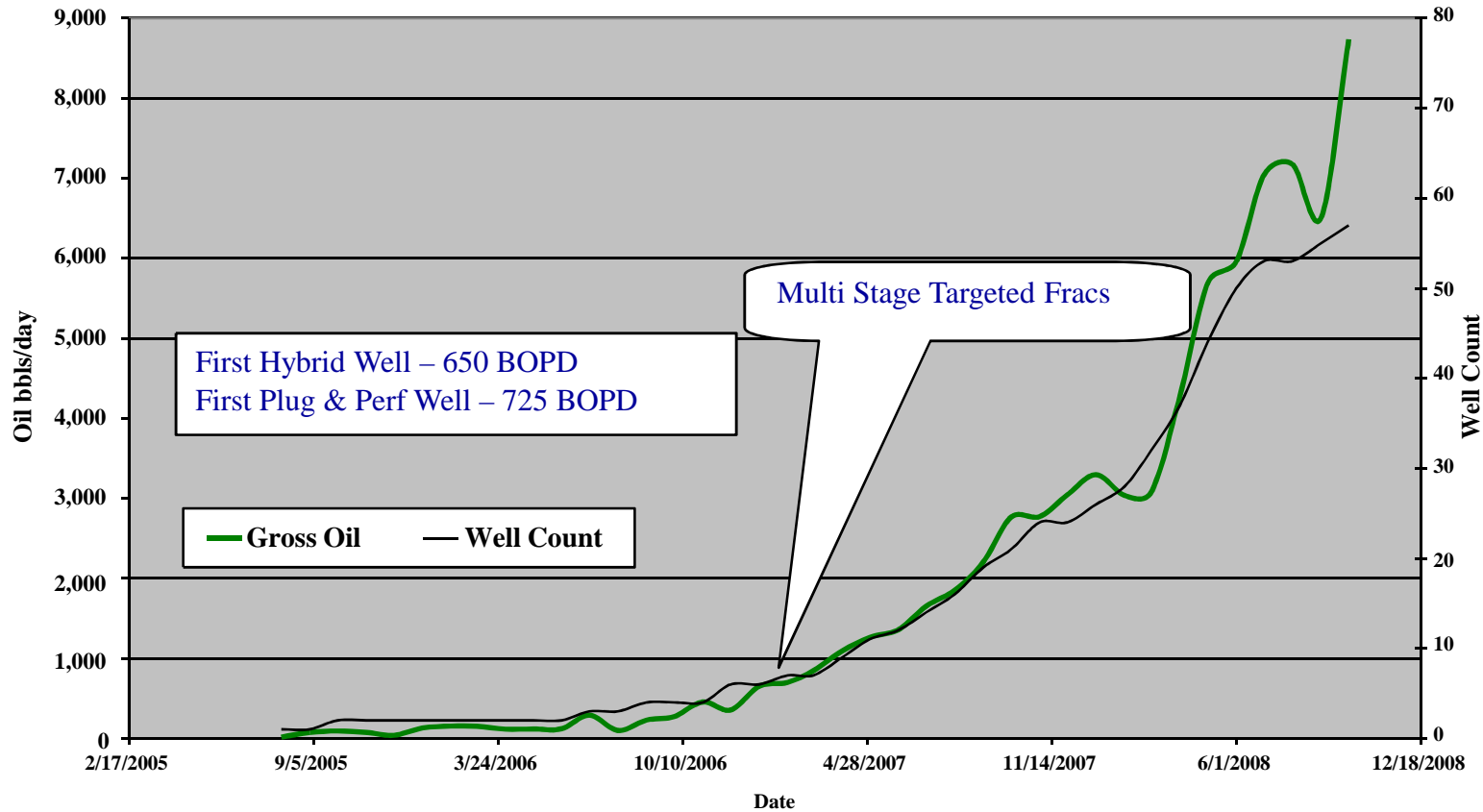


High Value Oil Enhances Margins Relative to Natural Gas

Per Barrel of Oil Equivalent (6:1 Conversion)

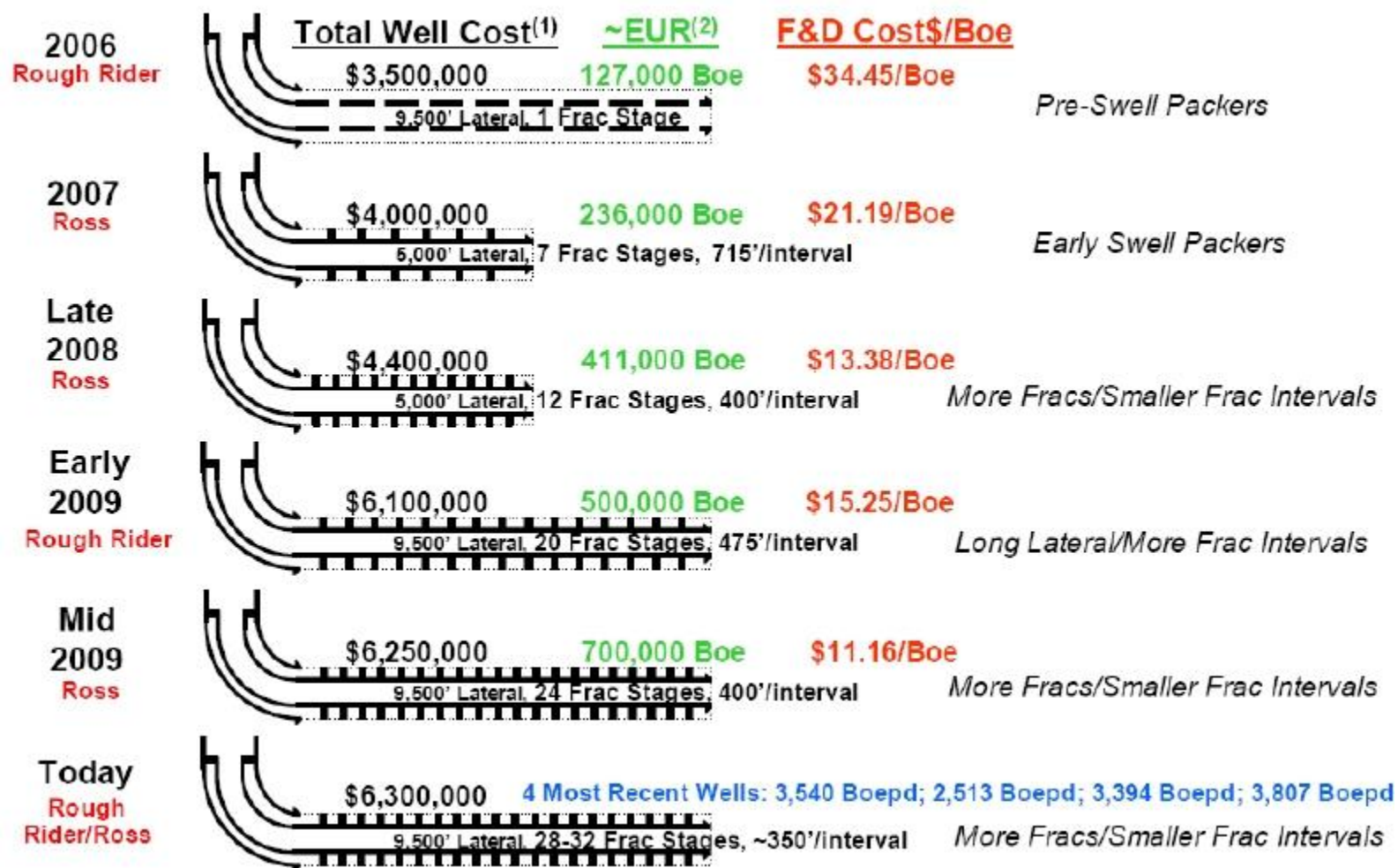


Bakken Horizontal Play

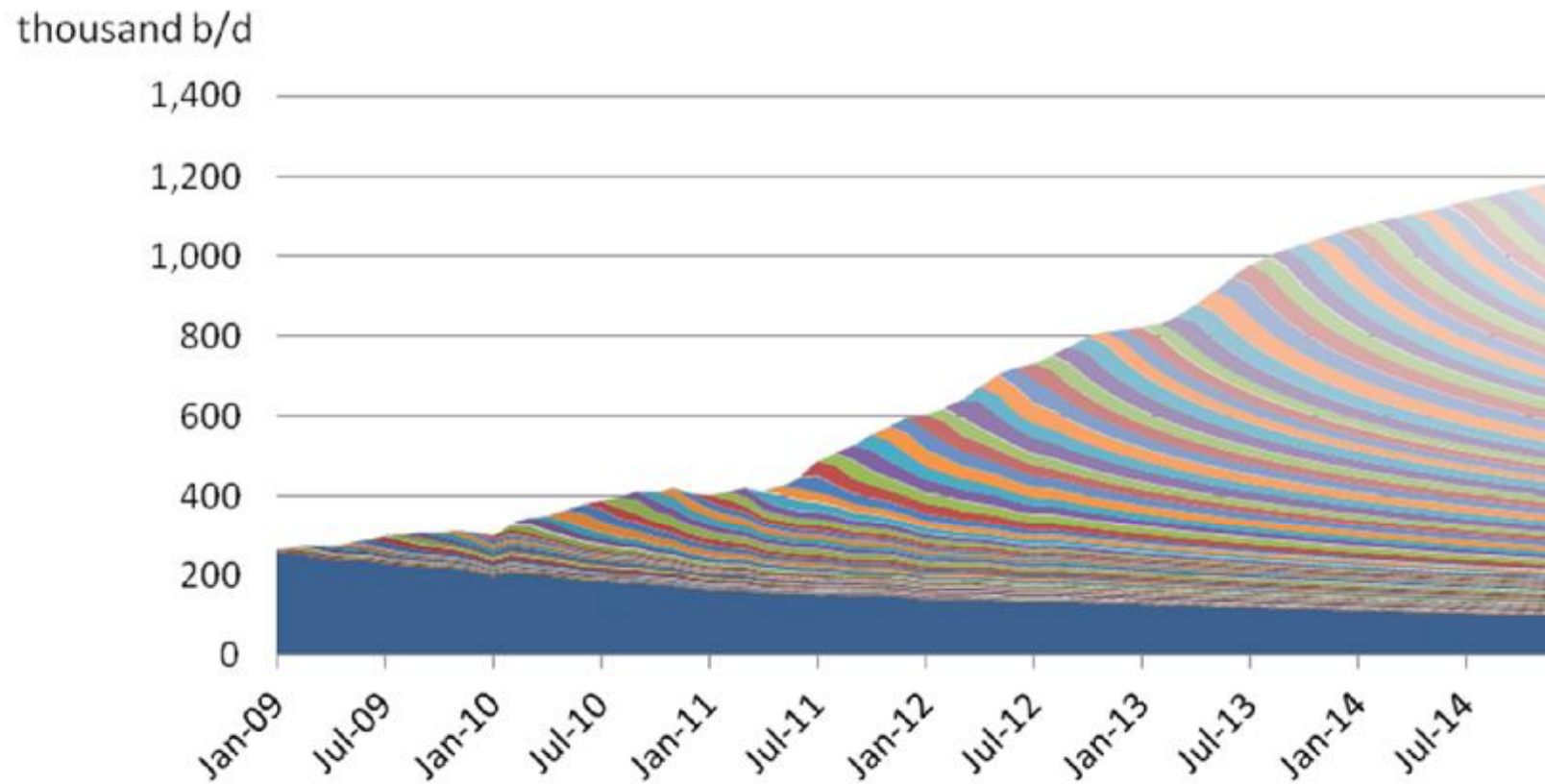


*New completion designs improves results...
continually modeling and testing different types of stimulation*

Horizontal Bakken Drilling Cost



Oil production by monthly volume

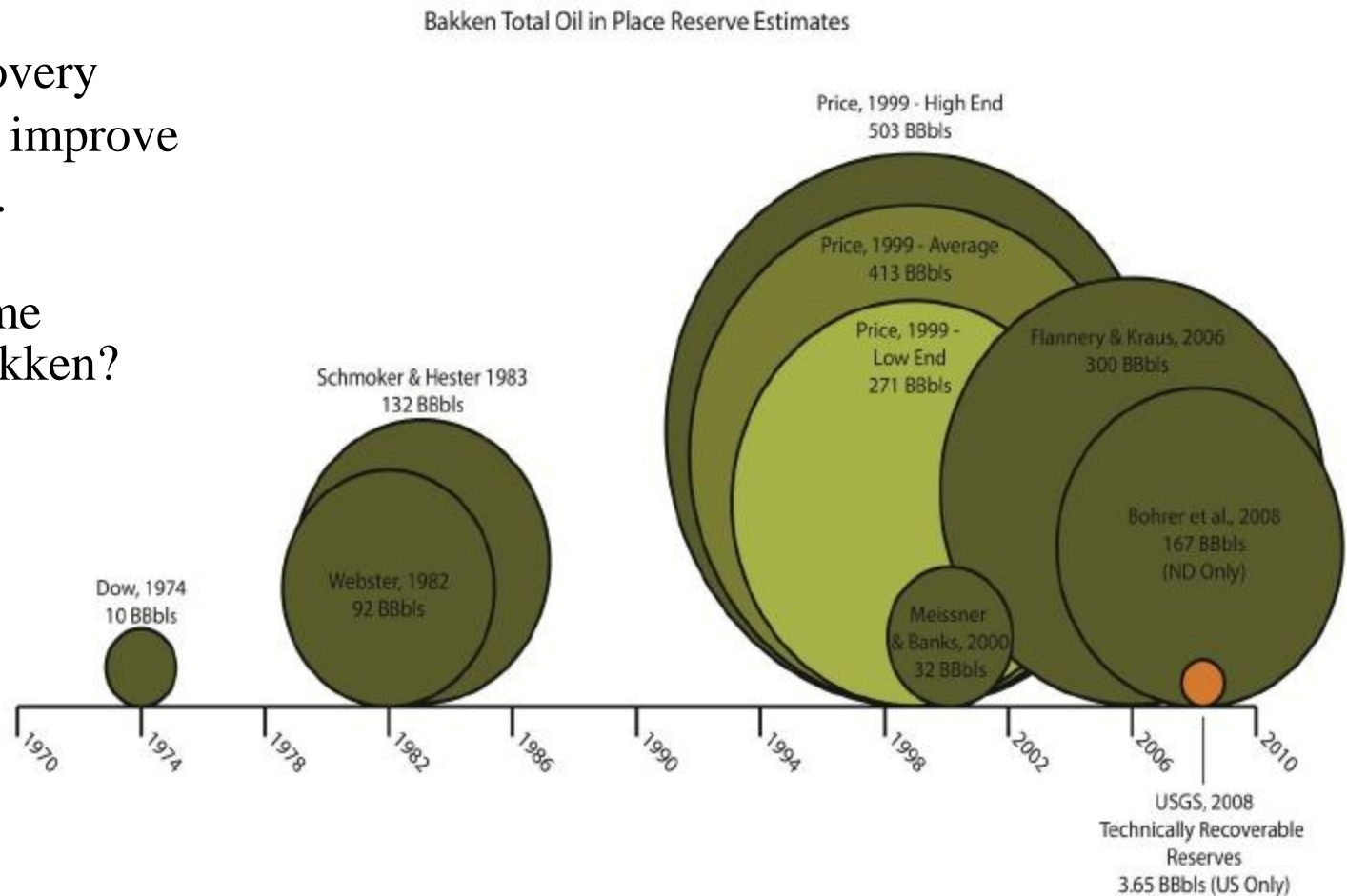


How Much Bigger Can The Bakken Get?

Currently only 5%–10% recovery factor.

Enhanced oil recovery technologies may improve ultimate recovery.

Can CO₂ be a game changer in the Bakken?



Challenges- Environmental Issues

Environmental Issues

- Multiple-stage fracking can require millions of gallons of water.
- The frack fluids may contain chemicals that have become the subject of public concern.
- Flaring has been a source of environmental criticism. (100 MM CF/day)



Solutions

Environmental Issues

- Development and application of frack fluid recycling. Breitling is utilizing CLF.
- Reformulation of frack fluids to be more environmentally friendly. Breitling’s “EnviroFrac”
- Utilization of flare gas.
 - Infrastructure is catching up.
 - On-site and off-site uses for gas are developing.



Challenges - Public Perception Issues

Public Perception Issues

- The construction of thousands of well pads and truck traffic for the drilling and fracking of thousands of wells:
 - Wear and tear on roads and highways
 - Traffic jams in rural communities
 - Increased airborne dust
 - Adversely affect the “viewshed”



Solutions

- Increased use of technologies to drill multiple wells from a single pad:
 - Reduces the overall footprint of drilling operations. Breitling's "Smart Pads"
- Construction of truck routes around outskirts of communities.
- Development and application of environmentally friendly dust control materials.



Bakken – Current Economic Impact

Statistics

By 2014

1450 to 2940 wells/year, with 2140 being expected.

- 100 to 165 rigs running
- This equates to **12,000 to 19,800 jobs**

10- to 20-year life span for the Bakken play

- 21,250 new wells
- This equates to **3000 to 3500 long-term jobs**



Current Economic Impact (cont).

North Dakota Middle Bakken

A single Bakken well over its lifetime is projected to:

Produce more than 575,000 barrels of oil.

Generate over **\$20 million net profit.**

Pay approximately **\$4,250,000 in taxes.**

Pay royalties of **\$6,900,000 to mineral owners.**

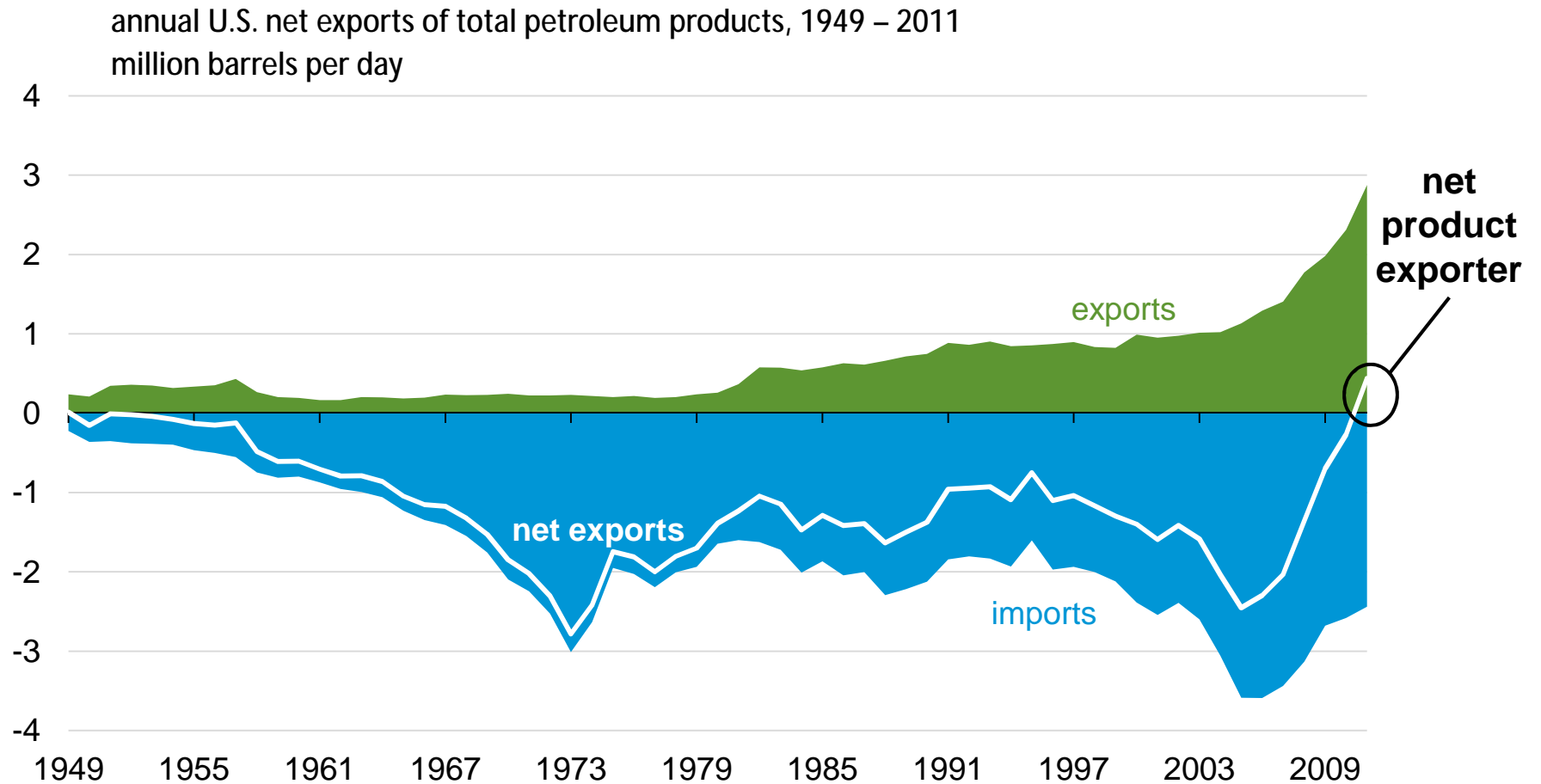
Pay **salaries and wages of \$1,550,000.**

Pay operating expenses of \$1,900,000.

20+ year lifespan.



U.S. petroleum product exports exceeded imports in 2011 for first time in over six decades



Source: EIA, Petroleum Supply Monthly

Conclusions & Closing Comments

- **The potential of Liquids-rich shales was discovered by a number of innovative firms that did not restrain themselves with conventional dogmas. (Sounds like the Shale Gas Revolution.....)**
- **The resource contained in already discovered plays is vast (100+ Billion barrels), and includes more than just oil.**
 - **44 Billion Barrels of Oil, 57 Billion Barrels of NGLs, with 300+ Tcf of Dry Gas in the liquids-rich plays alone.**
 - **More exists in undeveloped plays.**
- **The economic boost given these plays by high oil prices makes these plays very economic in a low gas price environment.**
- **Robust economics and highly productive wells allow for significant productive capacity.**
- **The Bakken is in its infancy. There will be decades of work ahead.**

Contact Information



Chris Faulkner
CEO

Breitling Oil and Gas

www.breitlingoilandgas.com

Email: chris@breitlingoilandgas.com

Phone: 214-716-2200