



## **Outlook on Energy Private Equity**

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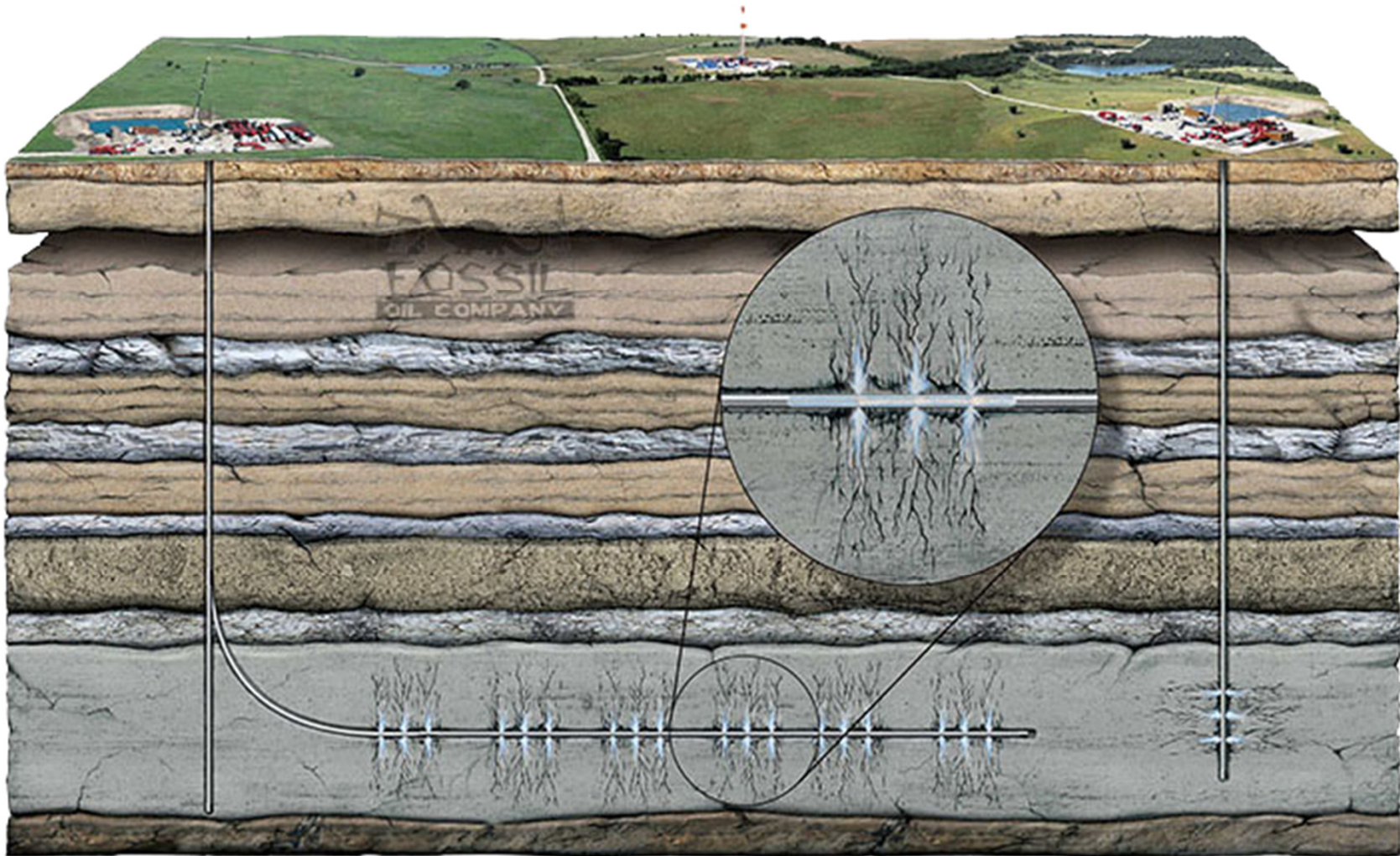
[www.kaynecapital.com](http://www.kaynecapital.com)

## **CURRENT THEMES IN THE OIL & GAS SECTOR**

TECHNOLOGICAL ADVANCEMENTS HAVE CHANGED THE GAME

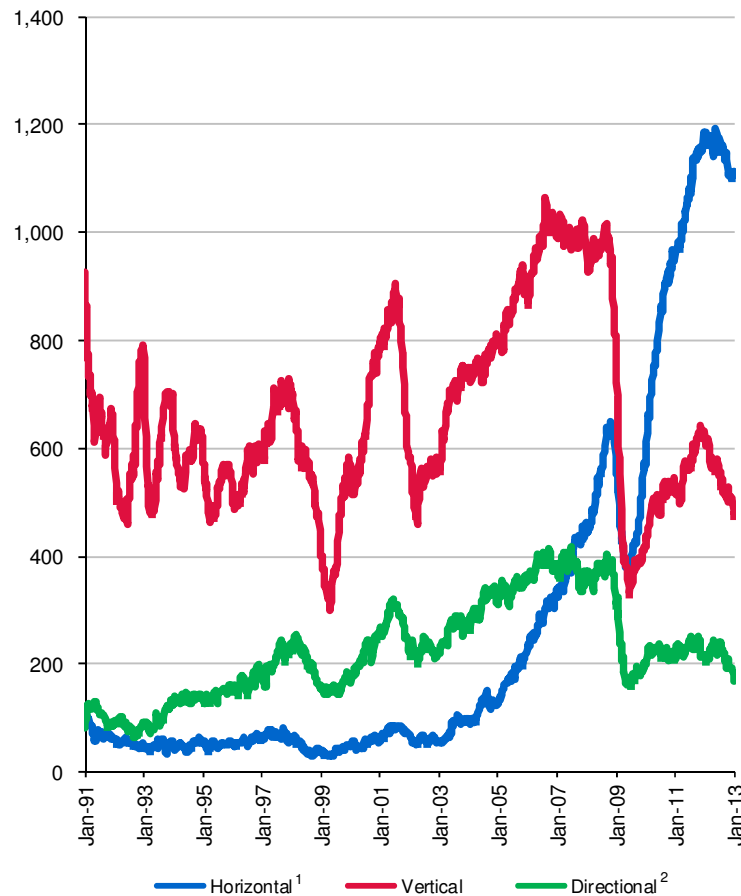
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- Horizontal drilling allows producers to expose the wellbore to dramatically higher percentages of the reservoir than vertical drilling
- This is particularly helpful in low permeable (or “tight”) formations such as shales

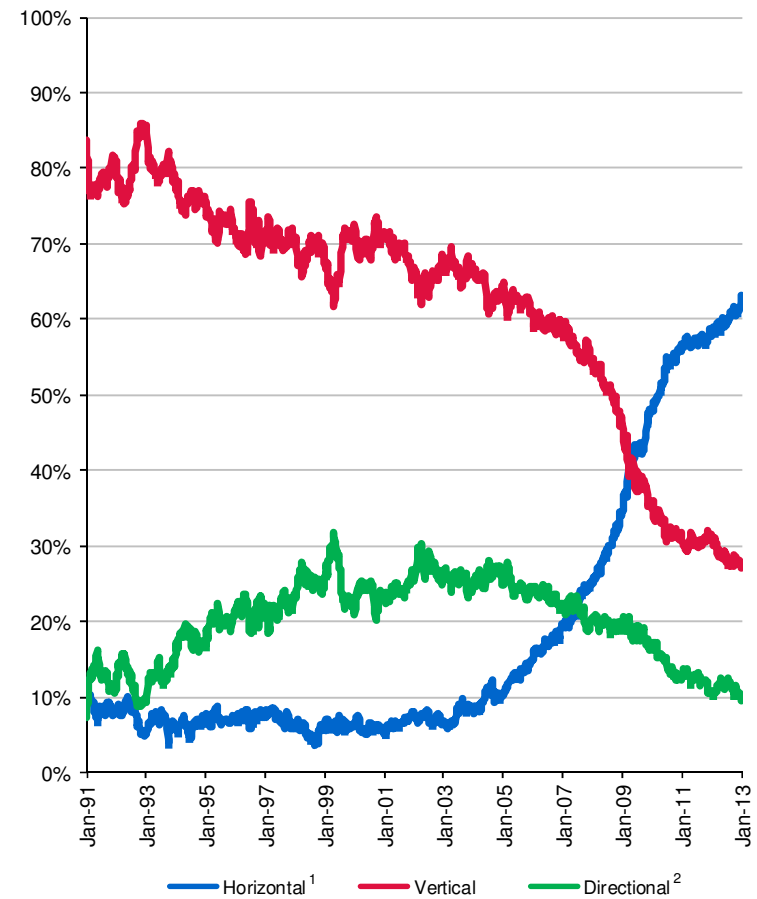


Source: Fossil Oil Company.

**RIG COUNT BY DRILLING TYPE - #**



**RIG COUNT BY DRILLING TYPE - %**



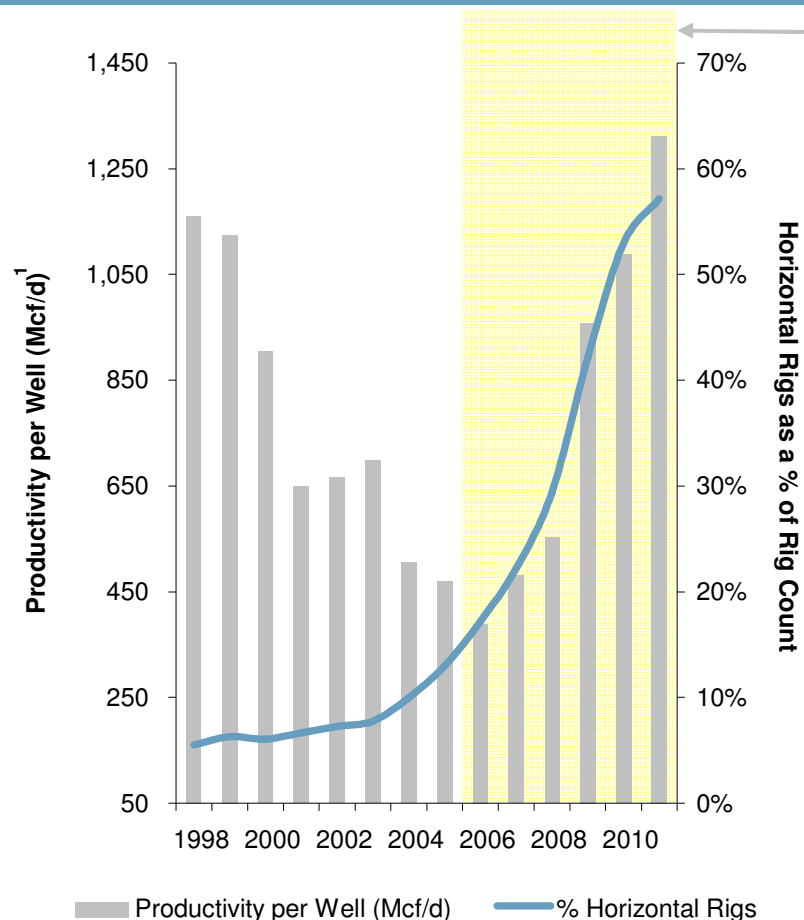
Source: Baker Hughes, Inc.

(1) Horizontal wells are drilled to increase the length of the well that contacts the reservoir in order to increase the productivity of the well.

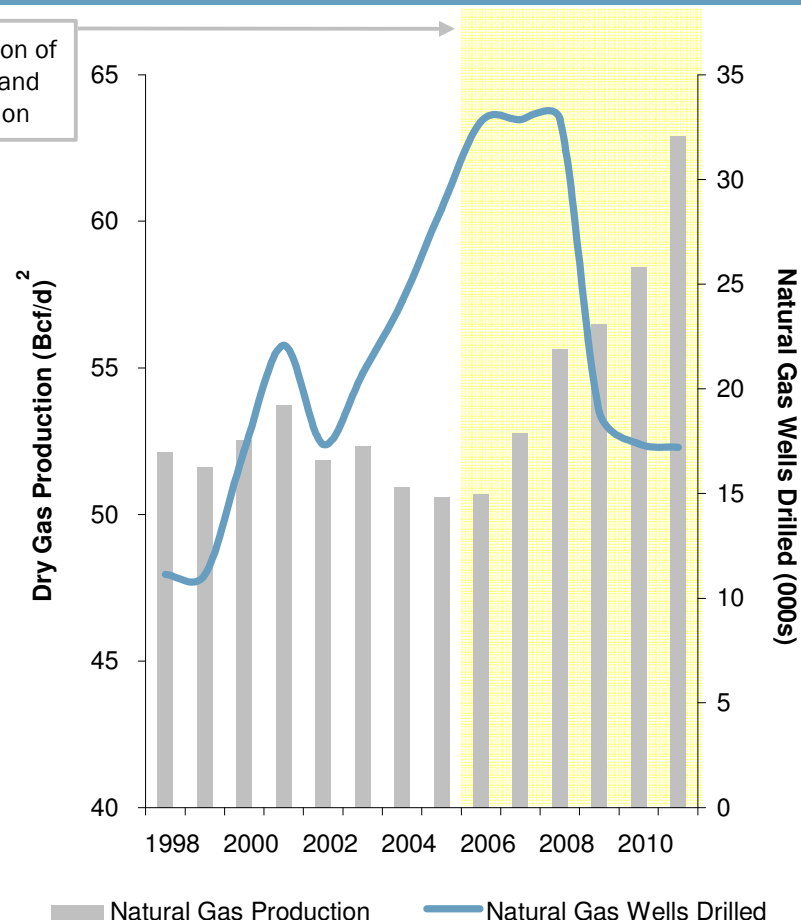
(2) Directional wells are typically drilled when the surface location of the well cannot be located directly above the reservoir.

**The use of horizontal drilling has exploded since 2006 and now accounts for 63% of all drilling activity...**

**WELL PRODUCTIVITY VS.  
% HORIZONTAL RIGS (1991 – 2011)**



**NATURAL GAS PRODUCTION VS.  
WELLS DRILLED (1991 – 2011)**



Widespread adoption of horizontal drilling and fracture stimulation

Source: Baker Hughes, Inc., EIA and Ross Smith Energy Group.

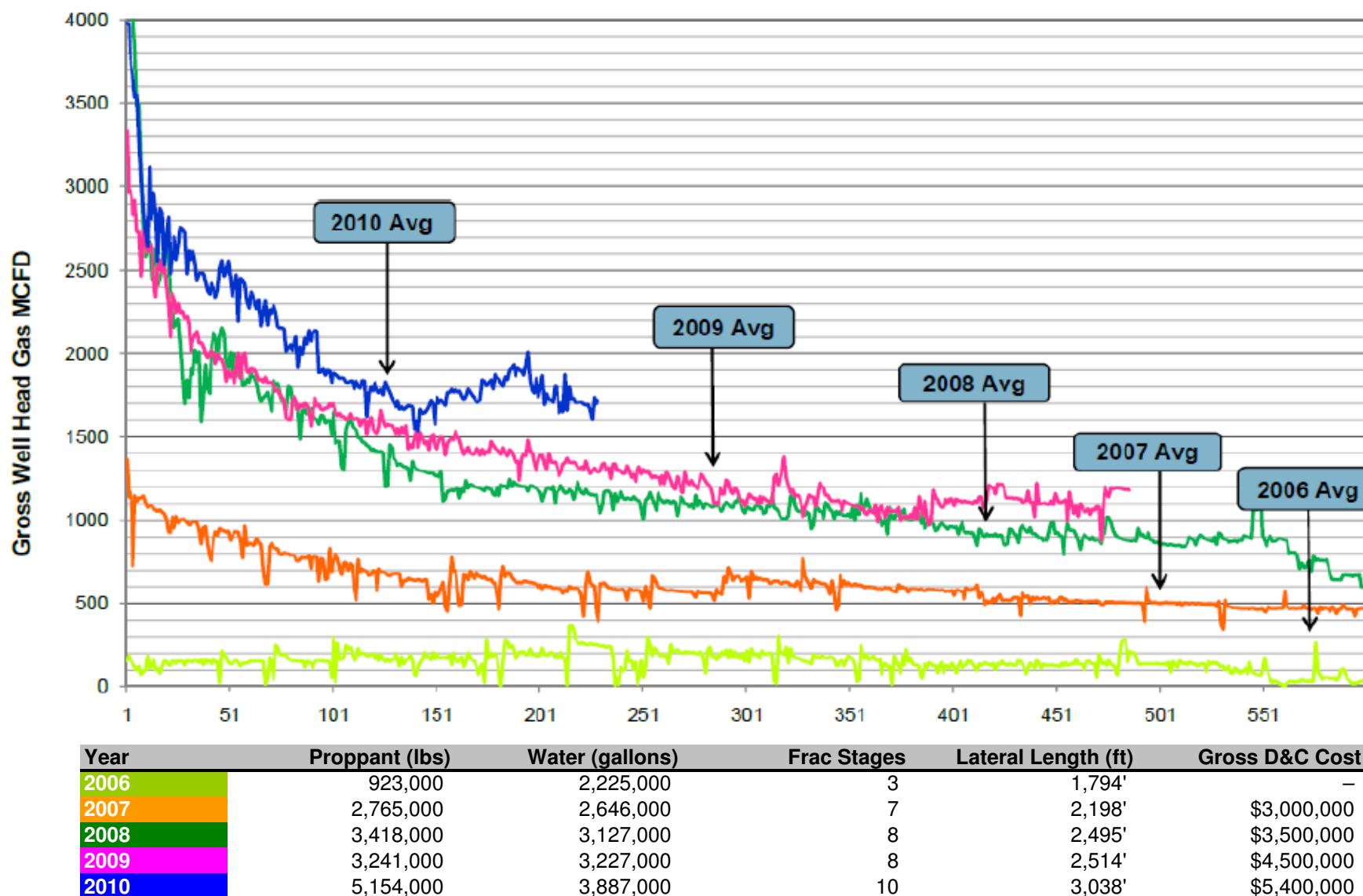
(1) Well productivity is defined as the annual natural gas production additions in the U.S. divided by total natural gas wells drilled in a given year.

(2) Dry natural gas production equals marketed production less extraction loss.

**Well productivity has increased 340% since 2006 due to longer lateral lengths and higher frac intensity allowing the U.S. to grow gas production with reduced drilling activity.**

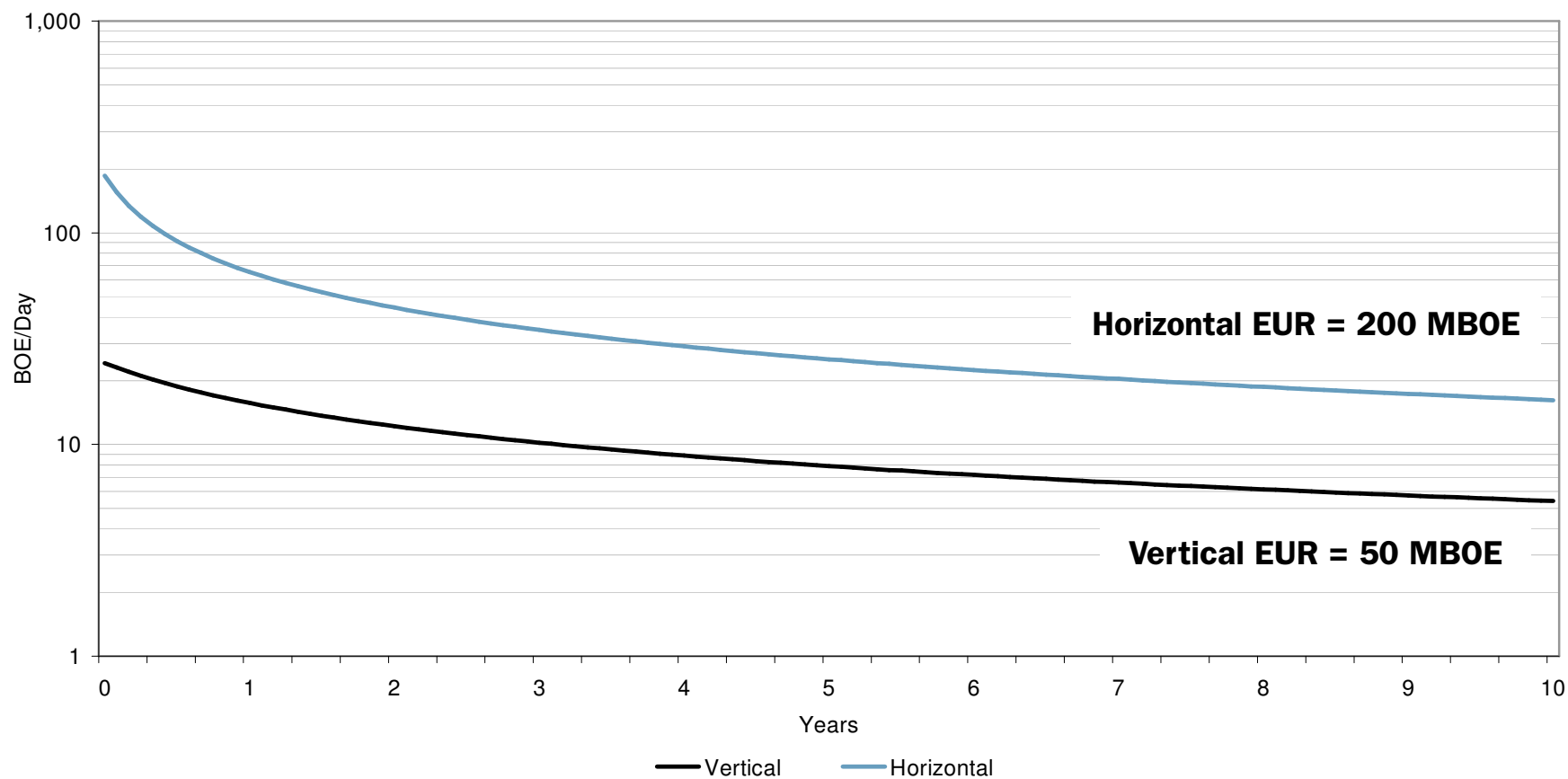


## RANGE RESOURCES – MARCELLUS SHALE COMPLETION HISTORY



Source: Range Resources.

## MISSISSIPPIAN LIME EXAMPLE – VERTICAL VS. HORIZONTAL

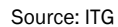


### Mississippian Single Well Economics

	Vertical	Horizontal	Difference
<b>EUR (MBOE)</b>	<b>50</b>	<b>200</b>	4.0x
IP Rate (BOE/D)	24	186	7.7x
D&C Cost (\$000s)	\$1,000	\$3,000	3.0x
<b>IRR (%)</b>	<b>4.8%</b>	<b>25.5%</b>	
ROI (x)	1.3x	2.5x	
PV-10% (\$000s)	(\$185)	\$1,543	

Source: Plymouth Exploration.

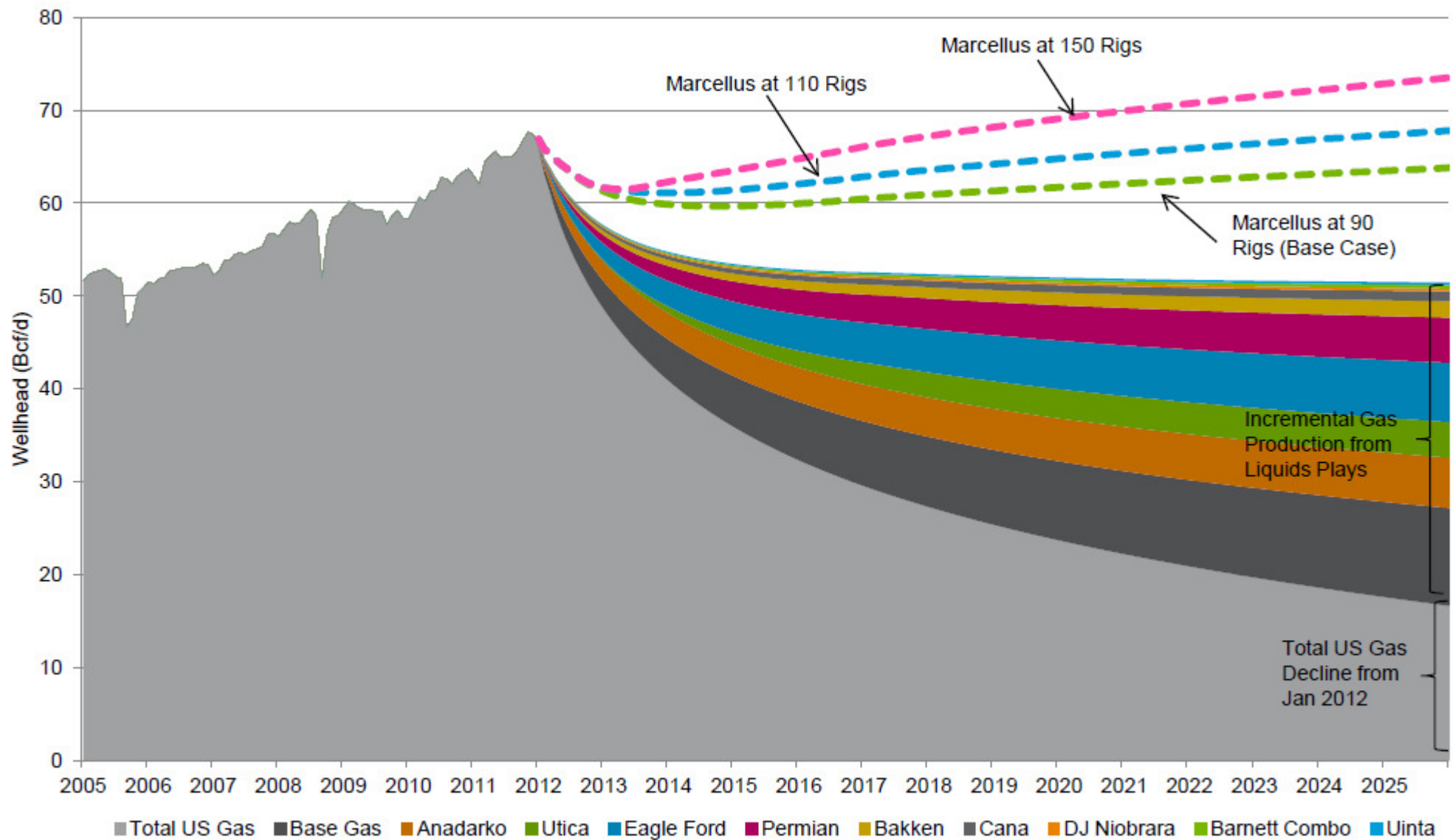
Note: Flat NYMEX price deck of \$85.00/bbl oil used.



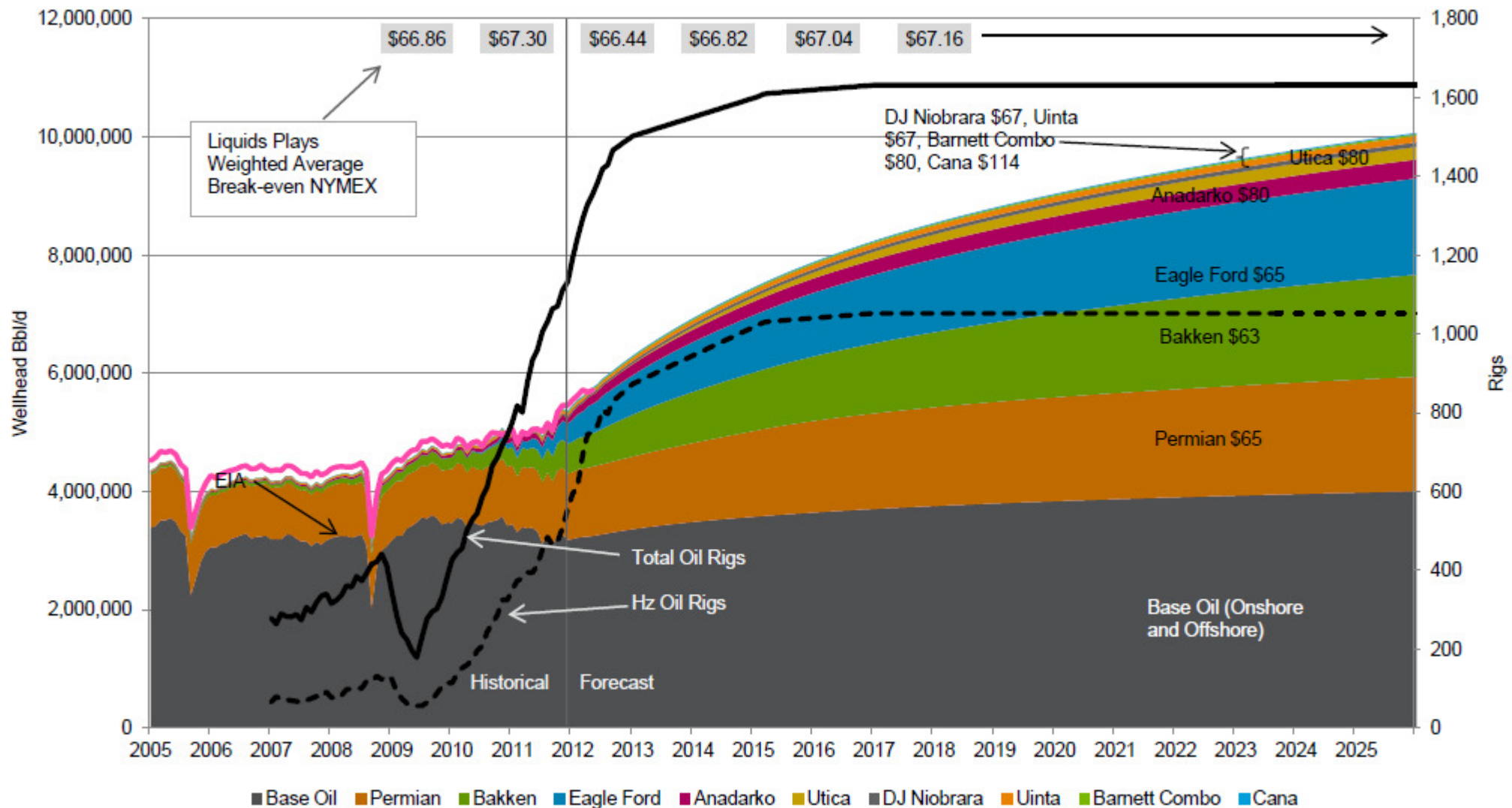
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# THE POTENTIAL IMPACT OF THE MARCELLUS SHALE ON U.S. PRODUCTION/SUPPLY IS ENORMOUS



Source: ITG



Source: ITG

**Success from horizontal drilling technology in oil weighted resource plays has changed the outlook for domestic oil production from that of precipitous decline to substantial growth.**

# **CURRENT THEMES IN THE OIL & GAS SECTOR**

## IMPLICATIONS OF THE TECHNOLOGY REVOLUTION

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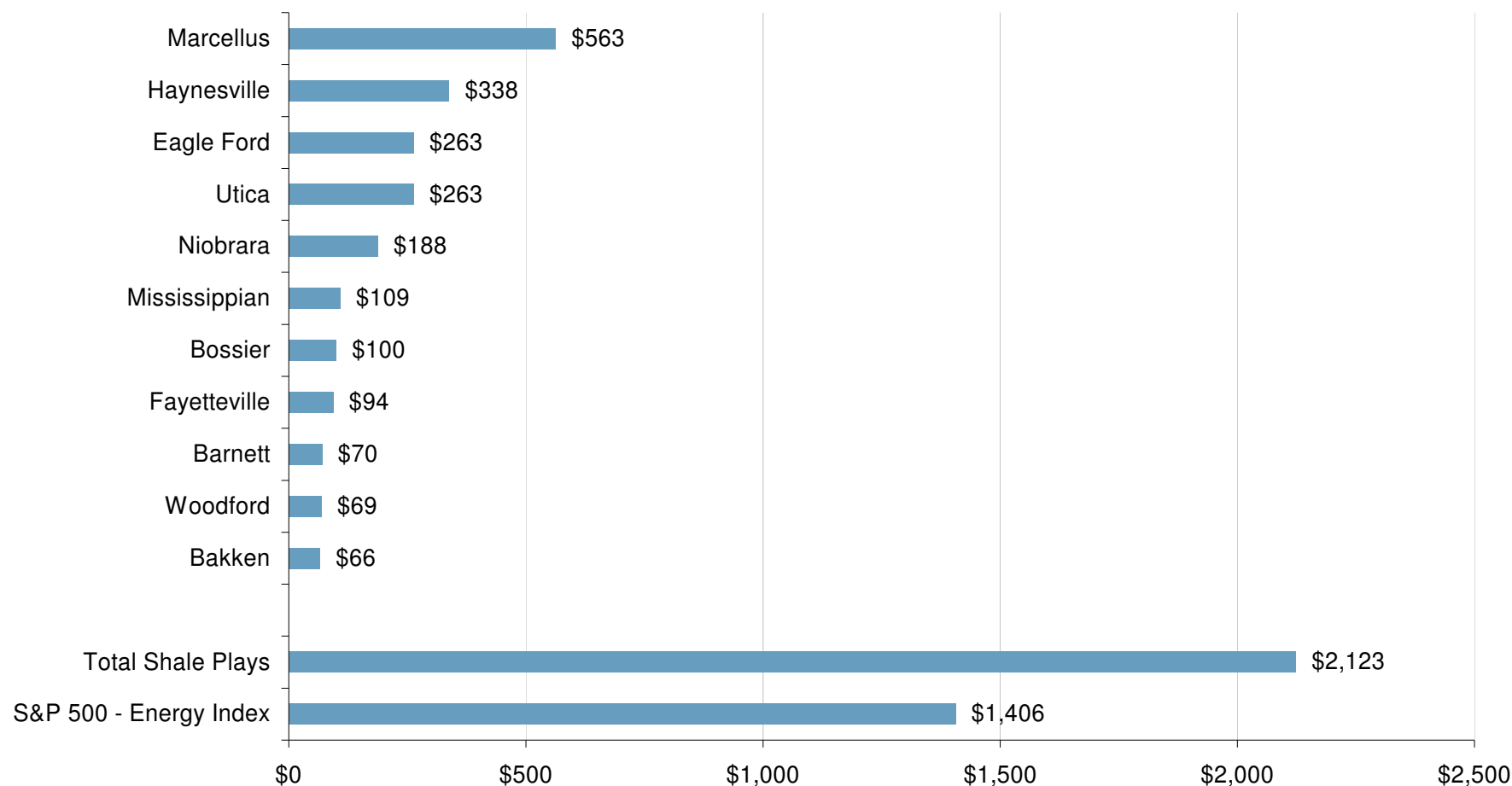
**Resource Plays  
Are Transforming  
The Industry**

- Public companies are rushing to gain access to resource plays because Wall Street grades oil and gas companies on quarterly production growth and predictability
- In general, resource plays deliver:
  - “Repeatability” across a large area
  - Wells with high initial production rates
  - Predictable long-term “manufacturing-like” operations
- Resource plays are very capital-intensive

**Significant  
Impact on  
M&A Activity**

- Majors and international oil companies have been active buyers in the U.S. M&A market after years of inactivity
- Early activity focused on JV transactions by the independents
- Now, large corporate M&A activity is beginning to accelerate (e.g., Petrohawk, Brigham, etc)
- Public companies are shedding non-core conventional assets to fund capital requirements in resource plays
- Public companies are no longer “serial acquirers” so private equity is competitive again in the acquisition arena

**ESTIMATED FUTURE CAPITAL REQUIREMENTS BY BASIN (\$BN)**



Source: Jefferies.

**The estimated capital to fully develop some of the largest resource plays is 50% greater than the entire market capitalization of the S&P 500 Energy Index!**



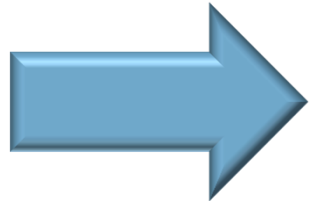
## 2011 – 2013 CONVENTIONAL ASSET TRANSACTIONS

Date	Buyer	Seller	Transaction Value (\$MM)	Location
<b>Public Sellers</b>				
11/5/2012	Harbinger Group Inc	EXCO Resources, Inc.	597.5	East Texas
11/7/2012	Legacy Reserves LP	Concho Resources Inc.	520.0	Permian Basin
1/3/2013	Hilcorp Energy Company	Forest Oil Corporation	325.0	South Texas
7/24/2012	Sheridan Holding Company II, LLC	Noble Energy Incorporated	309.0	Permian Basin
9/27/2011	NFR Energy	SandRidge	231.0	East Texas
10/12/2012	Texas Petroleum Investment Company	Forest Oil Corporation	220.0	South Louisiana
5/8/2012	Diamondback Energy Inc.	Gulfport Energy Corporation	202.0	Permian Basin
12/12/2011	Patara Oil & Gas LLC	Apache	200.0	East Texas
2/24/2011	Vintage Petroleum	Rosetta Resources	200.0	Sacramento Basin
3/9/2012	Linn Energy, LLC	Southwestern Energy	175.0	East Texas
1/12/2012	Petro Harvester Oil & Gas	Denbury Resources	155.0	Gulf Coast
8/13/2012	Citation Oil & Gas Corporation	Noble Energy Incorporated	140.0	Kansas
6/4/2012	Morgan Stanley Global Private Equity	SandRidge Energy Inc.	130.0	Permian Basin
11/8/2012	Undisclosed company(ies)	Continental Resources, Inc.	125.0	Illinois
8/7/2012	PetroPoint Energy Partners LP	Rosetta Resources Operating L.P.	95.0	South Texas
9/18/2012	Memorial Production Partners LP	Goodrich Petroleum Corporation	93.2	East Texas
4/11/2012	Navajo Nation Oil and Gas; Resolute Energy	Denbury Resources	75.0	Rocky Mountains
2/25/2011	Augustus Energy Partners	Rosetta Resources	55.0	Rocky Mountains
8/17/2011	EnergyQuest II	Swift Energy	53.5	Gulf Coast
6/17/2011	Wapiti Energy	Delta Petroleum	43.2	DJ Basin, Texas
4/18/2011	Momentum Oil & Gas	Newfield	40.0	South Texas
<b>Private Sellers</b>				
11/5/2012	Ursa Resources Group	Antero Resources LLC	407.0	Rockies
5/1/2012	Denbury Resources	Undisclosed private company	360.0	Gulf Coast
3/19/2012	QR Energy, LP	Prize Petroleum LLC	230.0	Ark-La-Tex
3/22/2012	Parallel Energy Trust	Bravo Natural Gas LLC	189.4	Texas Panhandle
1/28/2011	Petro Harvester Oil & Gas	Sagebrush Resources	175.0	Williston Basin
9/30/2011	Newton Energy Partners	Merit Energy	172.0	Alberta
12/28/2012	QR Energy, LP	Quantum Resources	145.0	Undisclosed
10/4/2012	Argent Energy Trust	EnergyQuest II LLC	132.5	Mid-Con
12/5/2012	Argent Energy Trust	Wapiti Energy, LLC	120.0	Undisclosed
3/3/2011	Legend Natural Gas	Smith Production	99.2	South Texas
8/22/2011	Silver Oak Energy	Addison Oil	95.0	East Texas
1/18/2011	Gulf Coast Energy Resources	Cypress E&P	95.0	Gulf Coast
11/23/2012	BreitBurn Energy Partners L.P.	American Energy Operations Inc.	93.6	California
6/1/2011	Cordillera Energy	Highland Oil & Gas	74.0	Anadarko Basin
5/3/2012	LRR Energy	Lime Rock Resources	67.0	Permian, Gulf Coast
8/16/2011	Hayden Harper Energy KA	Undisclosed	59.5	Kentucky

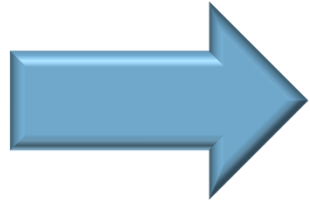
Source: IHS Herold conventional transaction screen of \$40MM to \$1,000MM.

Note: Bolded items represent private equity-backed transactions. Blue shading signifies Kayne Anderson portfolio company.

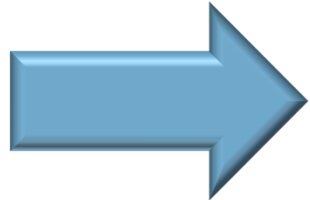
**Private equity has recently been the primary buyer of conventional assets in the market.**



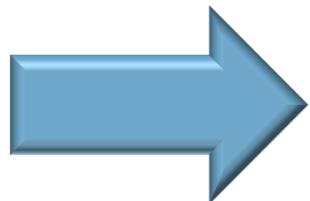
Advancements in drilling and completion technology are unlocking huge amounts of reserves – “old, tight” rock as well as shales



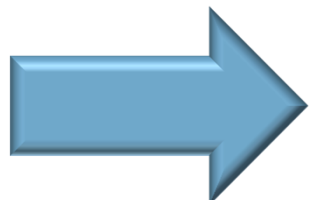
Public companies are chasing resource plays



Public companies are expected to continue (accelerate?) to shed non-core conventional assets and remain on the sidelines for non-resource play acquisitions



KAEF portfolio companies see a lot of opportunities to develop lower-entry-cost resource plays and capitalize on conventional asset sales

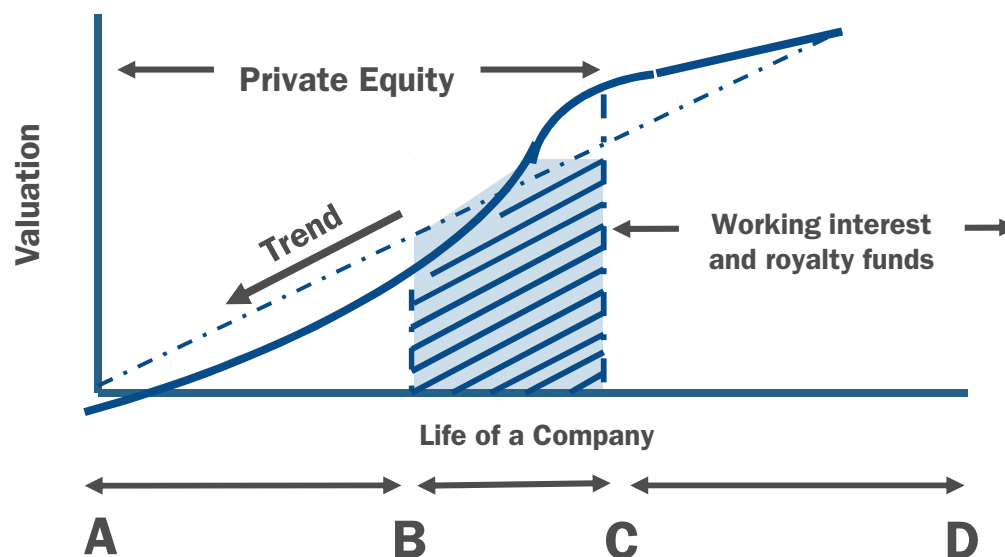


U.S. is back in play

## Overview of Energy Private Equity

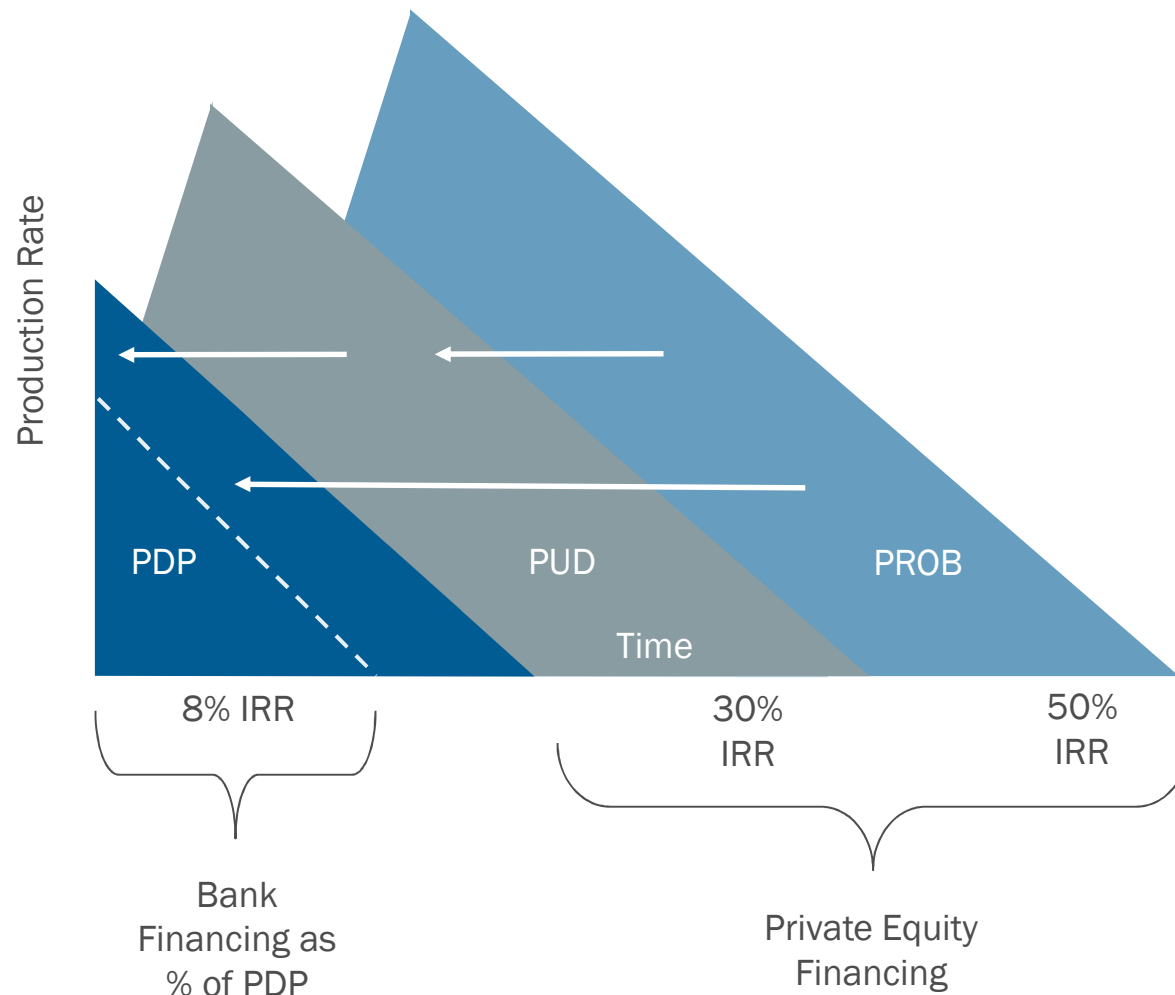
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- Private equity helps finance A to B and B to C opportunities, however A to B situations require a more complex understanding of the reserves



Risk Profile:	High	Medium	Low
Risk Type:	Engineering Geologic	Drilling Operational	Operational Commodity Price
Fund Type:	Private Venture	Private	Mezzanine Tranche B
Expected IRR:	30-50%	15-30%	10-15%
Investment Horizon:	2-6 years	2-4 years	7+ years

- Private equity is typically used to accelerate a company's reserve and production growth

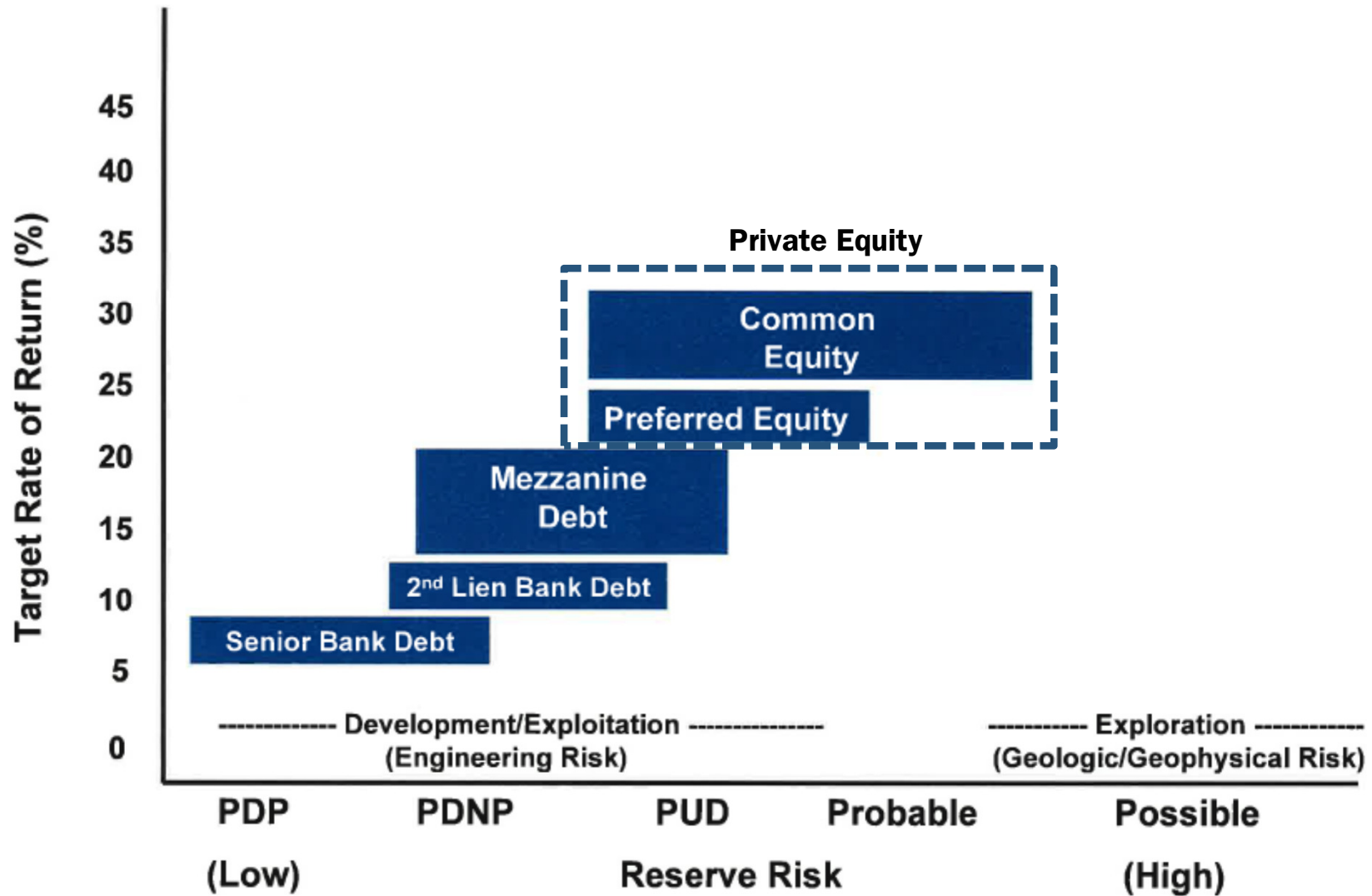


**PDP** Proven Developed Producing reserves, which are reserves attached to drilled wells

**PUD** Proven Undeveloped reserves for which wells need to be drilled, greater than 90% chance of success

**PROB** Probable reserves for which wells need to be drilled, greater than 50% chance of success





- **Investment strategy**

- Operator-focused investments in private oil and gas companies
- Proven management teams – experienced in 1-2 basins
- Diversified portfolio, although portfolio companies are not necessarily geographically diversified
- “Equity” return upside and “quantifiable” risk

- **Investment structure**

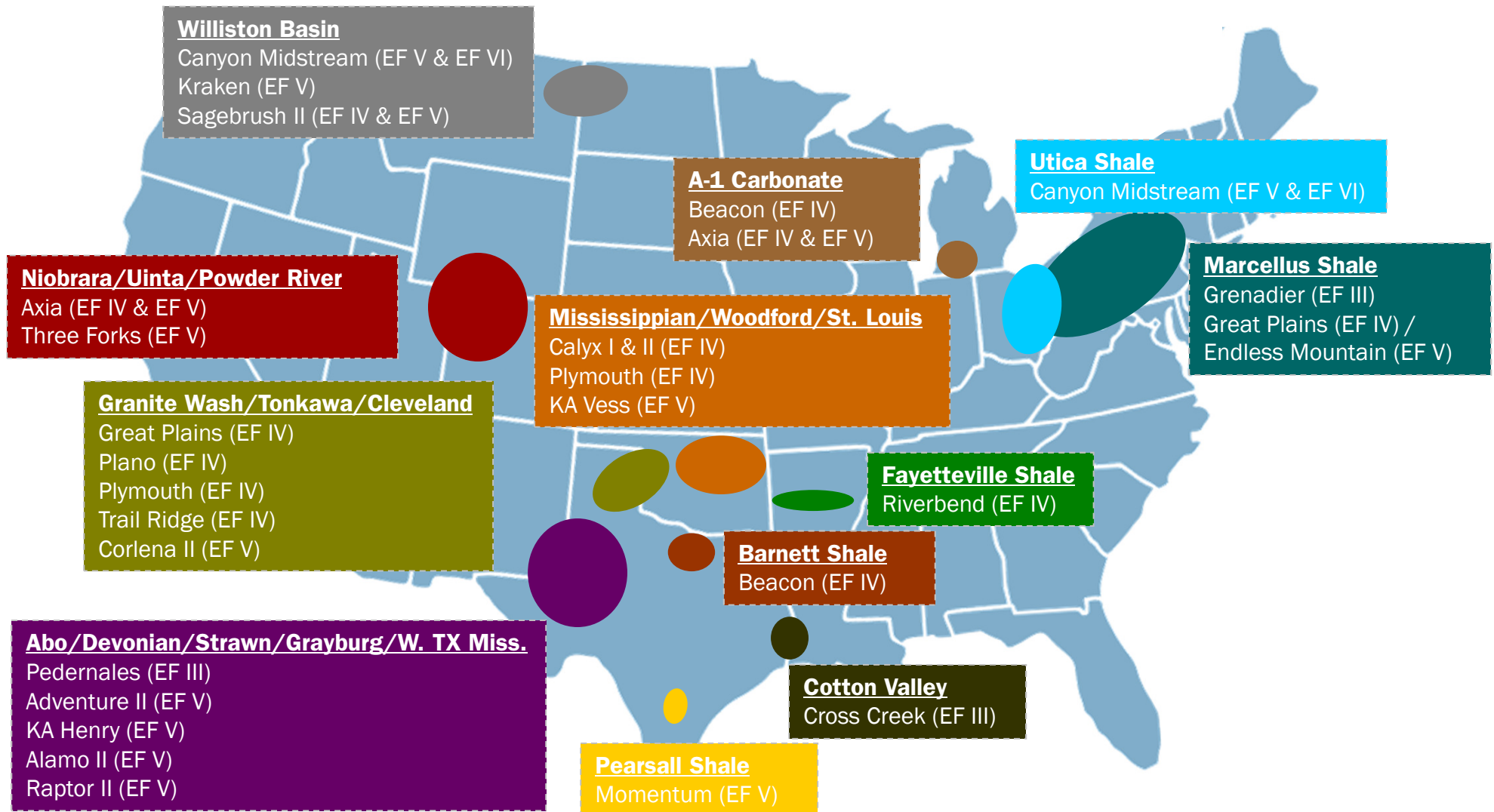
- Investment size \$50 to \$150 million
- Returns primarily from capital appreciation
- Targeted gross ROI of 2.0x to 2.5x and gross IRR of 20% to 30%
- Typical holding period of three to five years
- Active investor (usually with majority control)
- Typically common investments through LLCs

- **Outstanding Track Record**

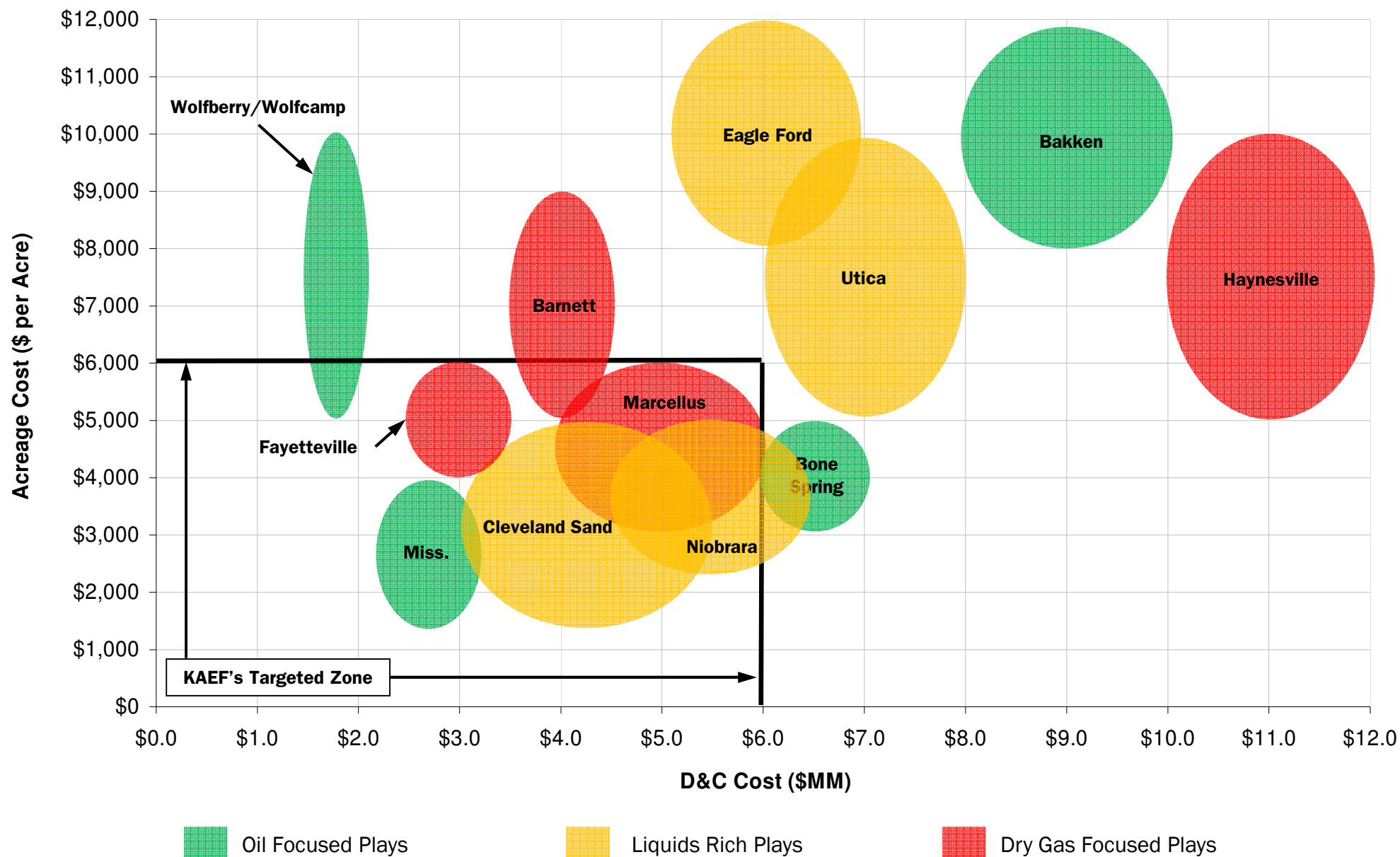
- 43 realizations since inception (over \$2.0 billion of total value)
- 2.4x ROI and 52% IRR from realized investments

- **Balanced portfolio of Acquiring & Exploit (A&E) and Lease & Drill (L&D) companies**
- **Resource play revolution is driving a “game changing” transformation in the energy industry**
  - E&P industry requires trillions of dollars of capital to fully develop capital intensive resource plays
  - Public E&P companies will continue to sell conventional, legacy assets to fund resource play development
- **We run two price decks (Base Case and Downside Case):**
  - Base Case price deck – strip prices capped at \$85/bbl for oil and \$5.00/MMbtu for gas
  - Downside Case price deck – strip prices capped at \$60/bbl for oil and \$4.00/MMbtu for gas
  - Targeting equity rates of return (25+%) at Base Case price deck and reasonable returns (10%) at Downside Case price deck
- **We continue to focus on risk mitigation and capital preservation**
  - Moderate levels of leverage via senior credit facilities
  - Prudent hedging
  - Avoid overpaying for drilling locations or acreage
  - Moderate initial pace of drilling until we know a project works
  - Potentially sell-down to industry partners

- **Lease & drill strategy: Assemble a lease position and derisk the acreage with development activity**
  - Identify underexploited reservoir or new development concept
  - Assemble meaningful acreage position (usually 10,000 to 40,000 acres)
  - Drill wells to “prove up” acreage position
  - Sell to larger E&P company who will pay for low risk drilling inventory
  
- **Keys to success:**
  - Ability to acquire acreage at a reasonable cost (need to be ahead of the “land grab”)
  - Managing amount of capital exposed before knowing whether a project is working
  - Ability to drill wells on budget
  - Gathering and interpreting technical data
  - Monitoring activity of other operators in the area
  - Derisking reserves (acreage → PROB → PUD → PDP)







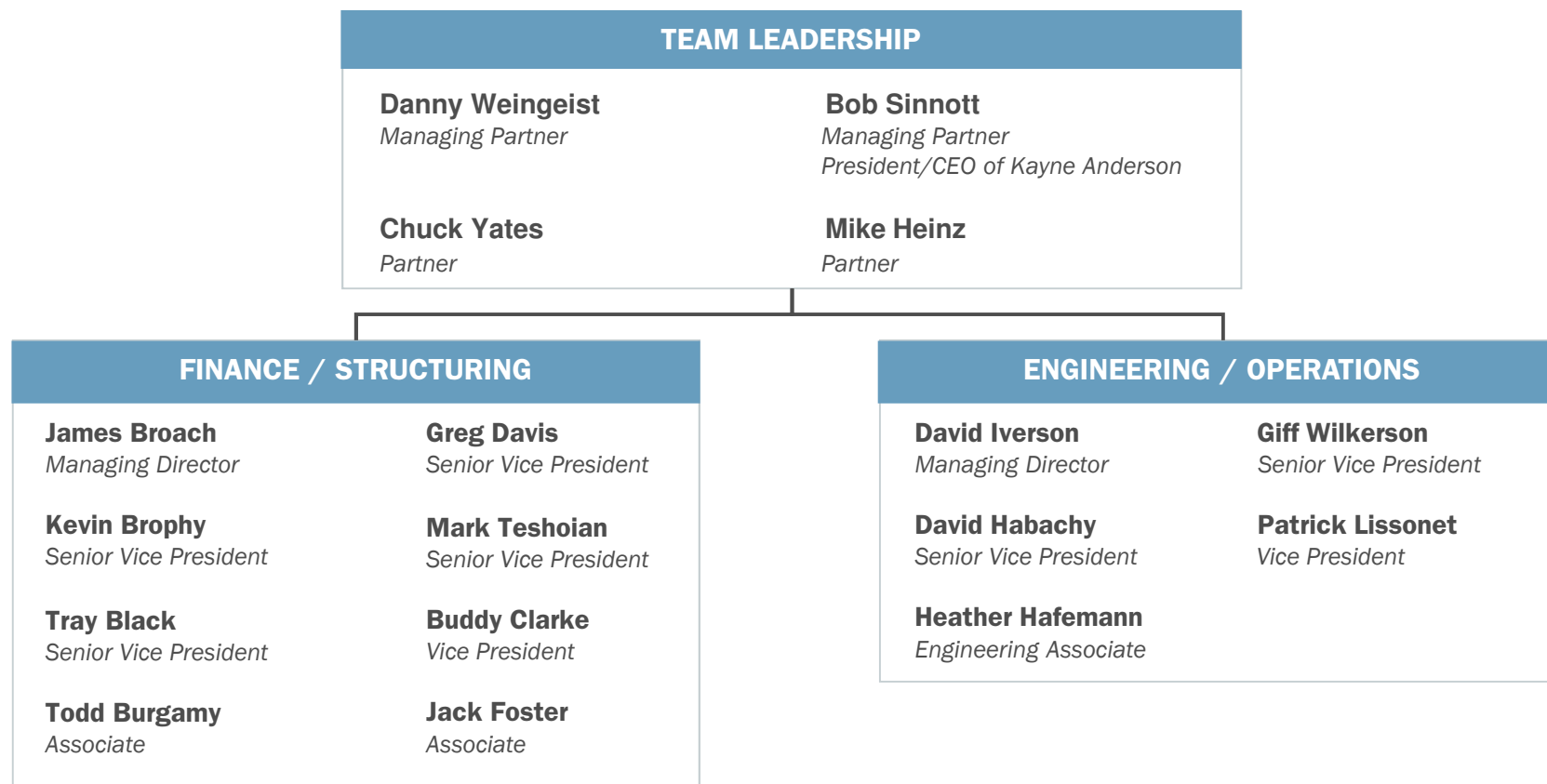
- **Acquire & exploit strategy: Acquire producing oil and gas properties with upside opportunities**
  - Drill new wells
  - Workover/recomplete/commingle existing wells
  - Reduce operating costs
  - “Prove up” new productive zones
  - Incorporate new technologies (horizontal drilling, modern fracs, large volume water handling)
  
- **Keys to success:**
  - Ability to source, evaluate and negotiate acquisitions
  - Avoid overpaying for upside
  - Ability to identify and execute on upside opportunities to add value
  - Exit in an attractive environment (long-lived reserves offer flexibility around exit timing)

**Tremendous  
Investment  
Opportunity in  
Energy**

- Resource play revolution is driving a “game changing” transformation in energy
- E&P industry requires trillions of dollars of capital to fully develop the resource plays
- Companies will continue to sell non-core assets to help fund resource play development programs

**Why Kayne  
Anderson?**

- ALWAYS maintained a consistent strategy
  - Onshore North America
  - Middle market private oil and gas companies
- Team – competitive advantage
  - Close-knit culture (no turnover)
  - Technically-focused with 6 petroleum engineers
- Conservative bias
  - Focused on risk mitigation and capital preservation
  - Active partner with our management teams
- Outstanding track record in energy private equity
  - Committed over \$3.4 billion to 87 investments since inception
  - 43 realizations since inception (over \$2.0 billion of total value)
  - 2.4x ROI and 52% IRR from realized investments

**Prior Work Experience:**

- Akin Gump
- Credit Suisse First Boston
- Goldman Sachs
- JP Morgan
- Lehman Brothers
- Simmons & Company
- Stephens

**Prior Work Experience:**

- ARCO
- Exxon
- Manti Resources
- Netherland Sewell
- Vastar