February 2, 2016

The Changing Oil Markets

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SuperInvestor U.S. 2016

Pine Brook

Surprising Changes Across the Geopolitical Landscape…

Oil price on December 31, 2015 closed at $37.13/Bbl…

January 2, 2016

THE NEW YORK TIMES

Iranian Protesters Ransack Saudi Embassy in Tehran After Executive of Shiite Cleric

Iranian protesters ransacked and set fire to the Saudi Embassy in Tehran on Saturday after Saudi Arabia executed an outspoken Shiite cleric who had criticized the kingdom's treatment of its Shiite minority. The cleric, Sheikh Nimr al-Nimr, was among 47 men executed in Saudi Arabia on terrorism-related charges, drawing condemnation from Iran and its allies in the region, and sparking fears that sectarian tensions could rise across the Middle East. The executions coincided with increased attacks in Saudi Arabia by the jihadists of

January 4, 2016

THE WALL STREET JOURNAL

Islamic State Attacks Libyan Oil Terminals

Islamic State militants set fire on Thursday to oil storage tanks in a fresh assault on Ras Lanuf terminal in northern Libya and the group threatened further attacks as they exploit a prolonged power vacuum in the large north African nation. The chairman of the National Oil Corporation, Mustafa Sanalla, told reporters in Tripoli that Ras Lanuf - shut since December 2014 - would remain closed for a "long time" because of the damage inflicted

January 6, 2016

THE NEW YORK TIMES

North Korea Says It Has Detonated Its First Hydrogen Bomb

What price did the Oil price close at on January 8, 2016?

...That Negatively Affected Oil Prices

Oil price on January 8, 2016 = $33.20/Bbl (Down 11%)

Today's Agenda

1. Where We Are Now
   a) Demand
   b) Supply
2. Where We Are Heading
3. The Private Equity Opportunity

Where We Are Now

North America Transformed Global Oil and Gas Markets

2006 – 2008
North American Natural Gas

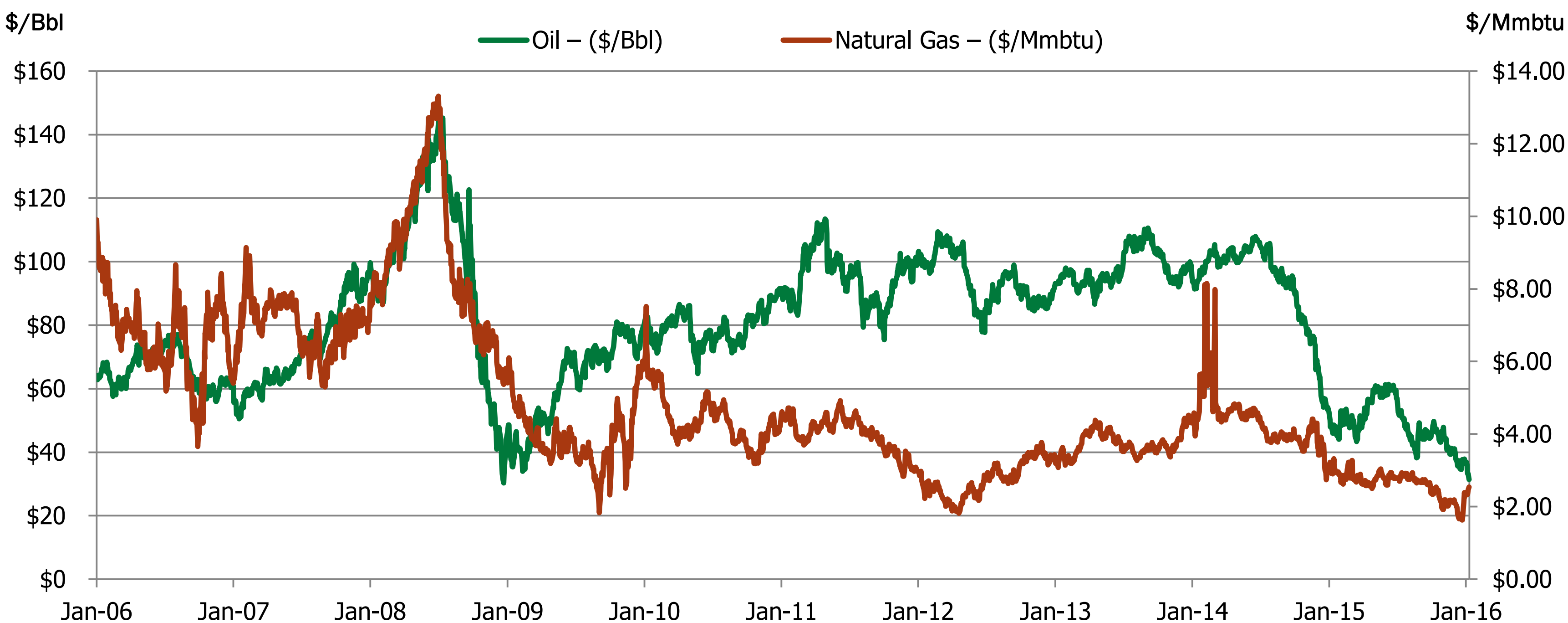
- Modern horizontal drilling unlocks vast amounts of natural gas resource
- Newly unlocked resource displaces higher cost sources of supply

2008 - 2014
North American Oil

- Shale technology is applied to oil plays, leading to unprecedented growth in US oil supply

2014–2015+
Global Oil Prices Fall

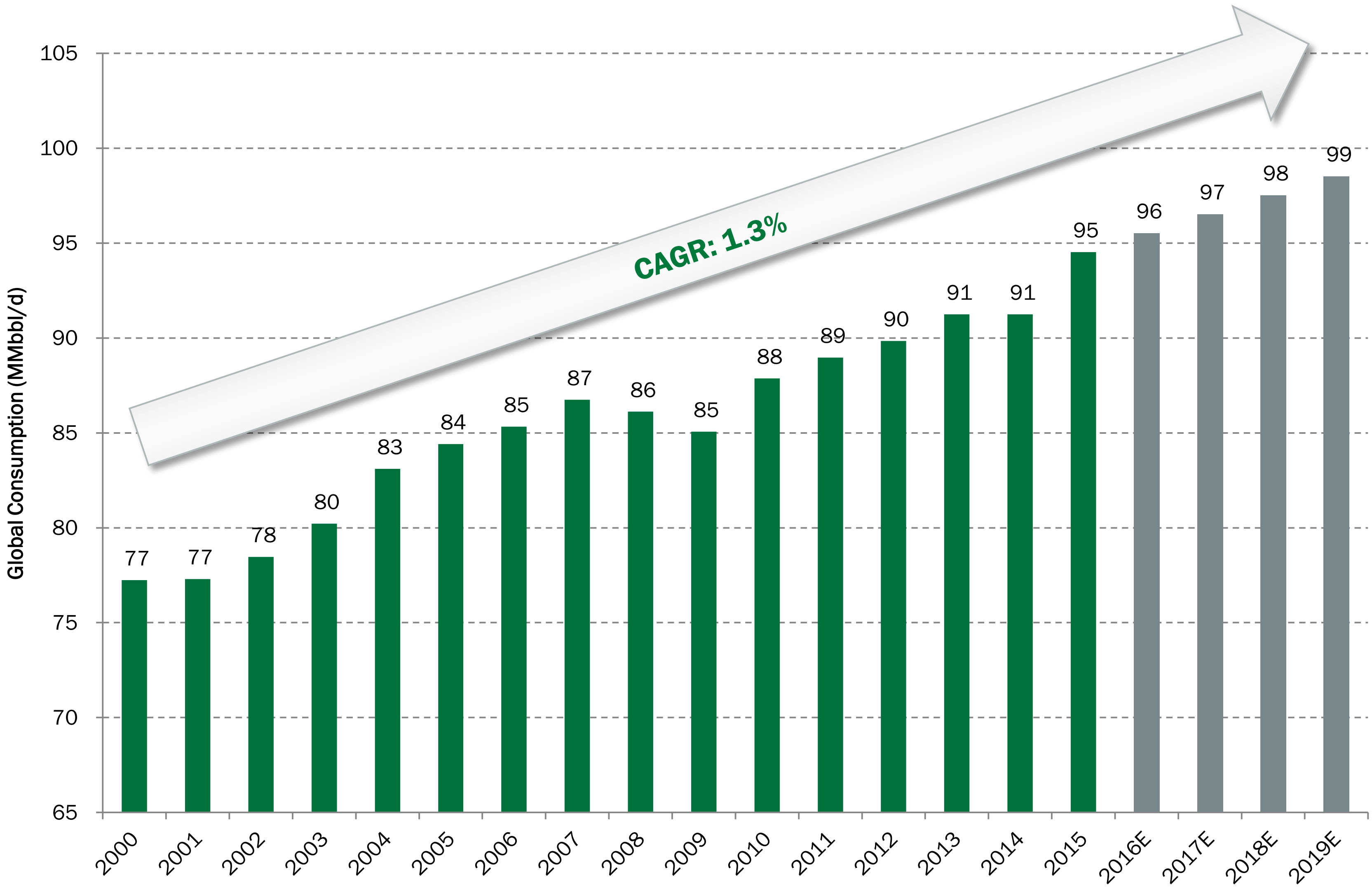
- Global oil markets become oversupplied
- OPEC opts to protect market share instead
- US is exposed as the swing producer



Source: EIA

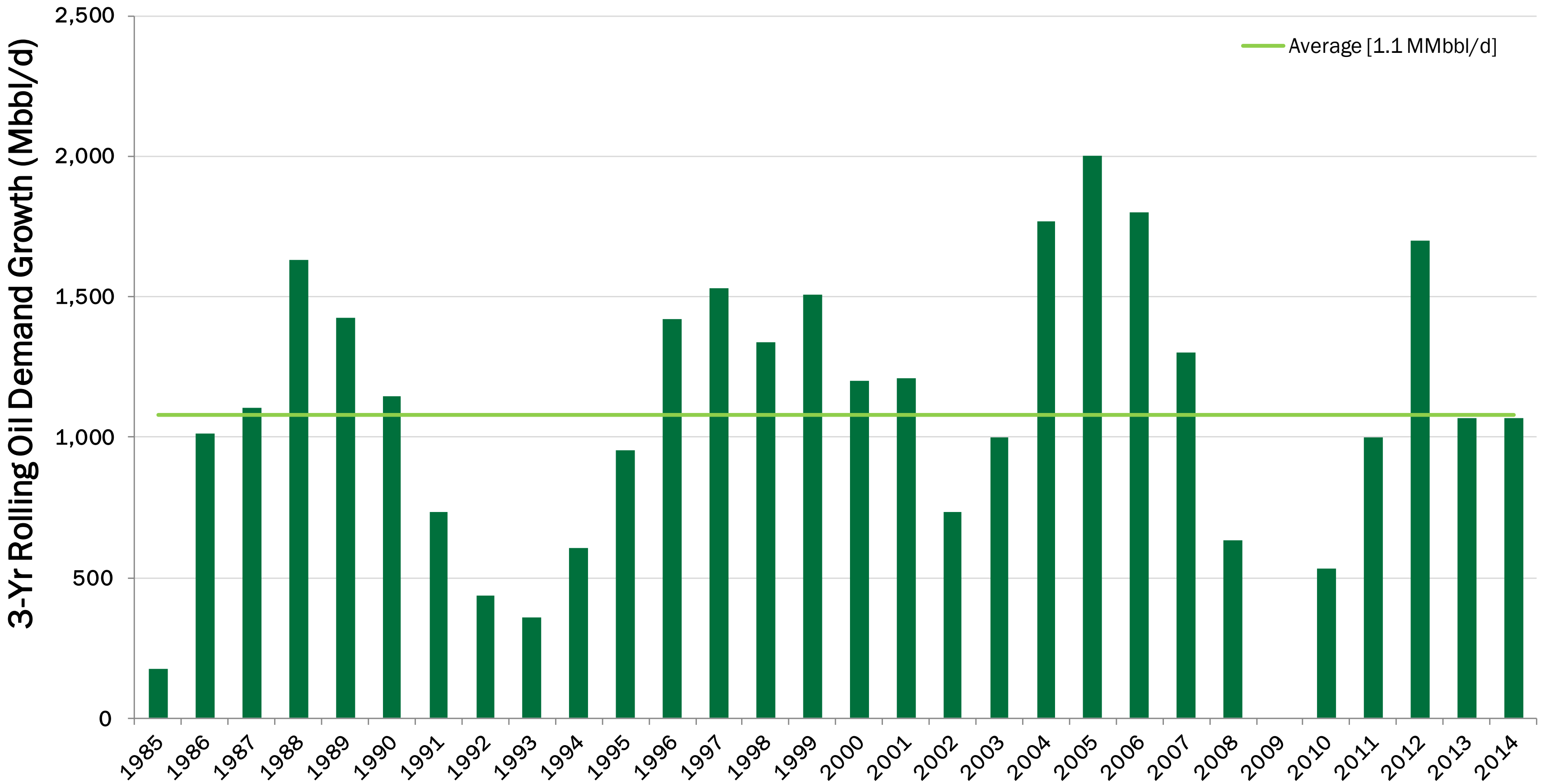
Demand

Global Consumption Will Continue to Grow…



Source: BP Statistical Review June 2015.

…Within a Fairly Narrow Band



Source: EIA / IEA data.

Supply

Time Frame to Absorb Excess Supply

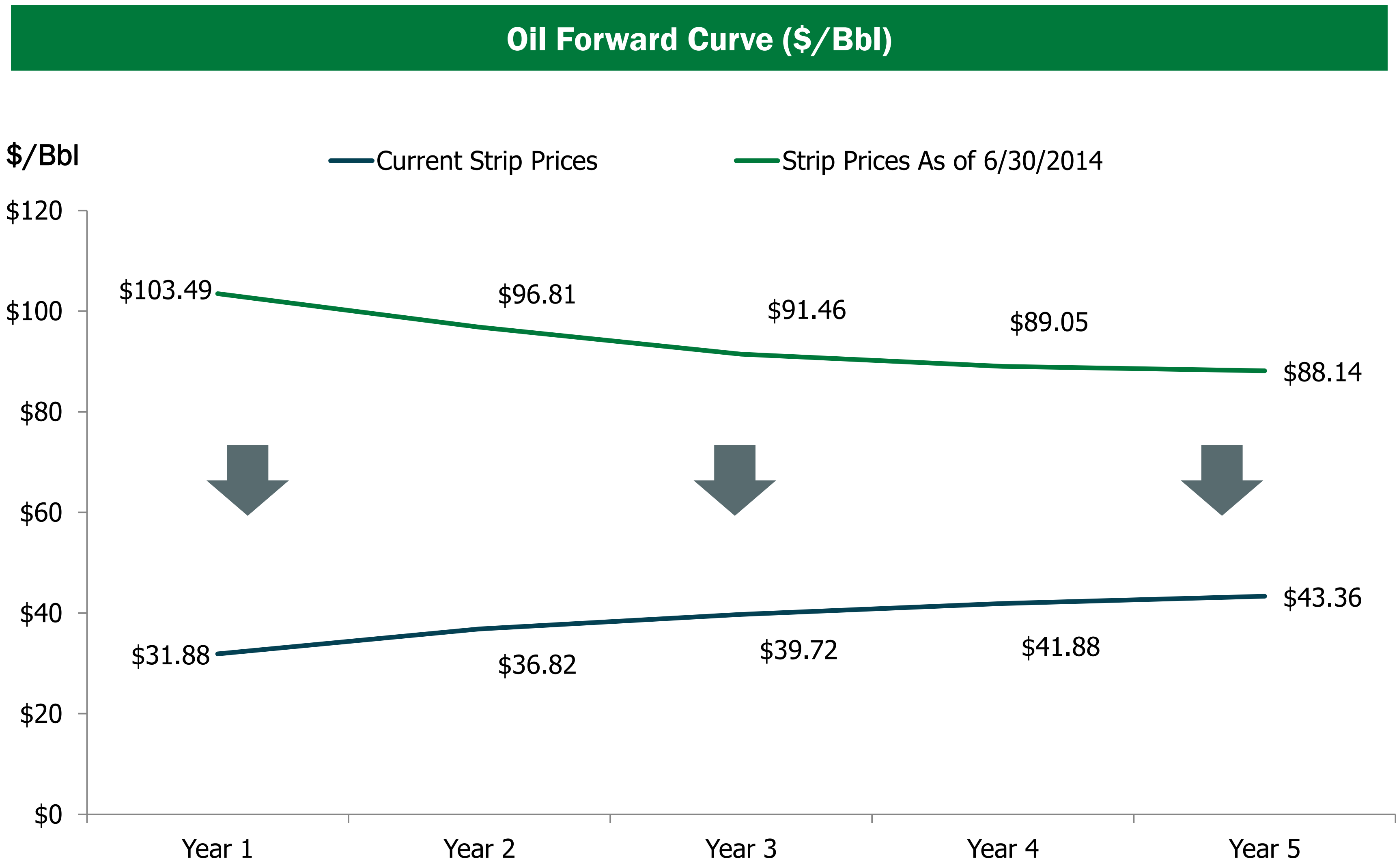
Reaching supply/demand equilibrium could take 1-3 years ex-impact of North American supply declines

Supply			
	(MMbbl/d)		(MMbbl/d)
Estimated Current Excess Supply	1.5	–	2.0
Potential Increase from Iran	0.5	–	1.0
Potential Increase from Saudi and Iraq	0.0	–	1.0
Excess Supply Before NAM	2.0	–	4.0

How many years of oversupply?

		Excess Supply		
		2.0	–	4.0
Demand Growth	1.0	2.0 years	–	4.0 years
	1.5	1.3 years	–	2.7 years
	2.0	1.0 years	–	2.0 years

Price-Induced Dislocation Is Now Under Way

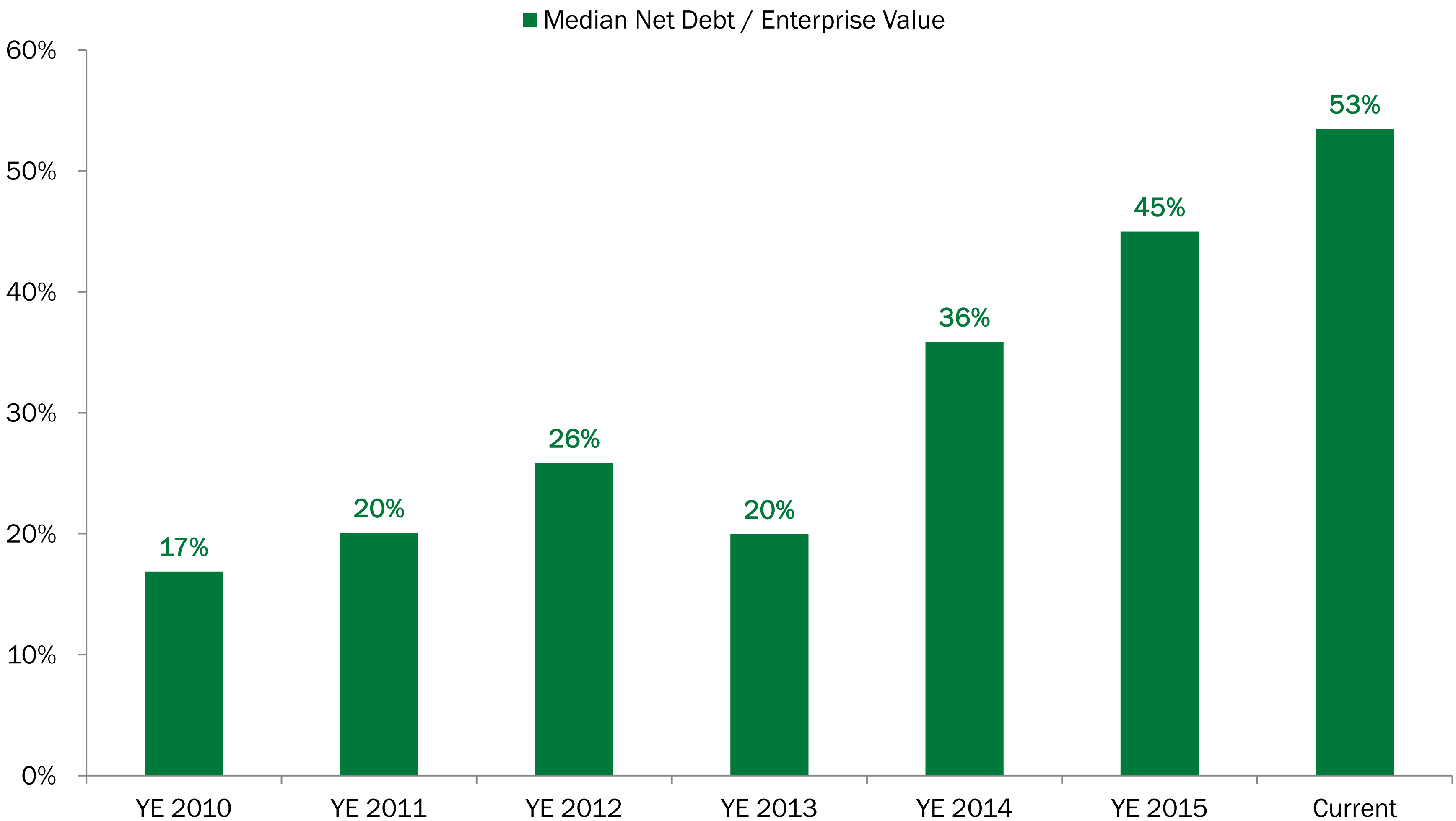


Source: Bloomberg as of January 20, 2016

Where We Are Heading

Financial Distress Among Public E&Ps Is Growing

Leverage Levels Continue to Grow[1]

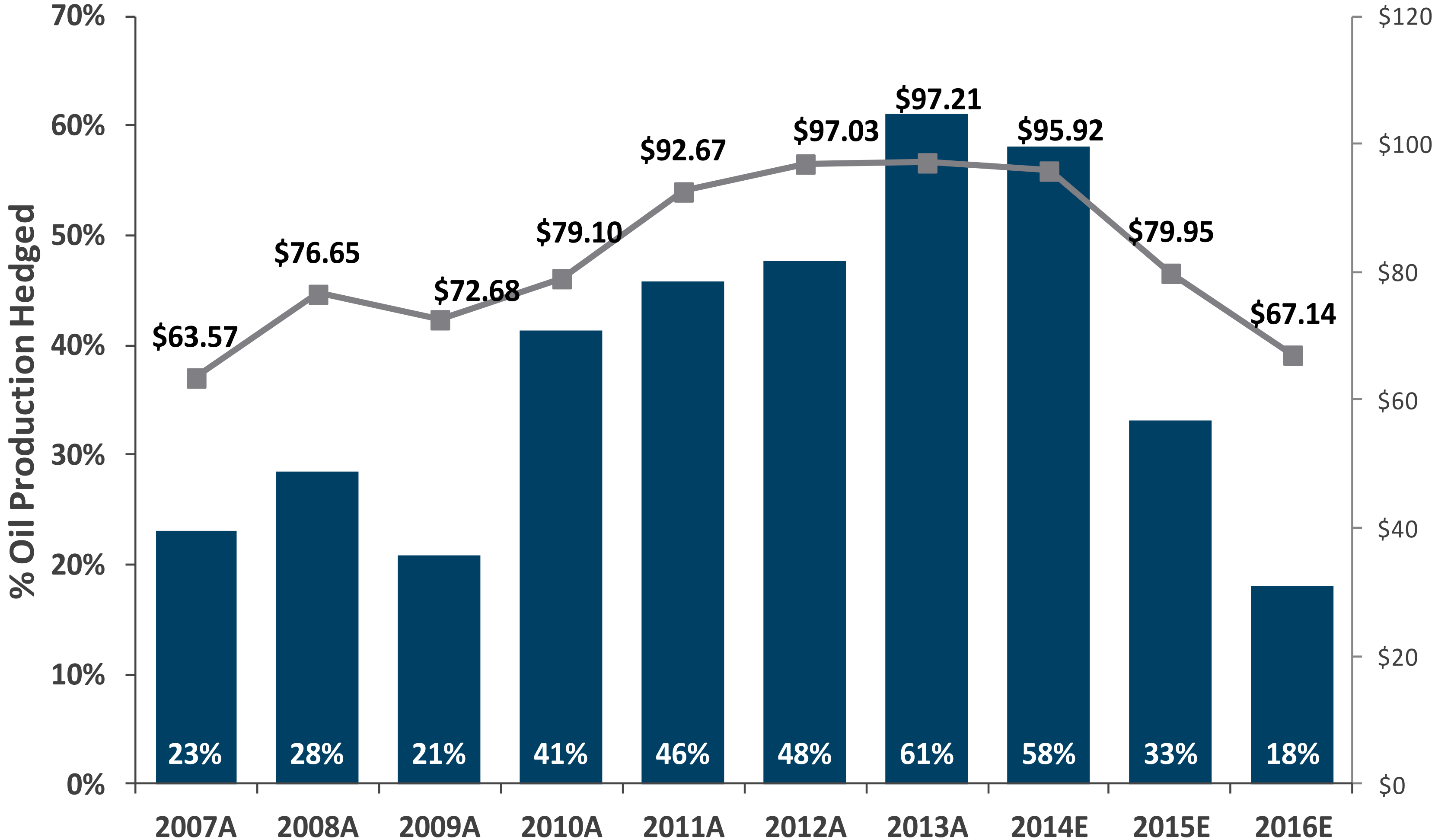


Source: Capital IQ as of January 20, 2016

1) U.S. E&P Industry dataset comprised of 67 small, mid and large-cap oil & gas companies.

Market Dislocation Bound To Get Worse Before It Gets Better

% of Oil Hedged per Year and Average Hedge Price



Source: Simmons and Company International Research.

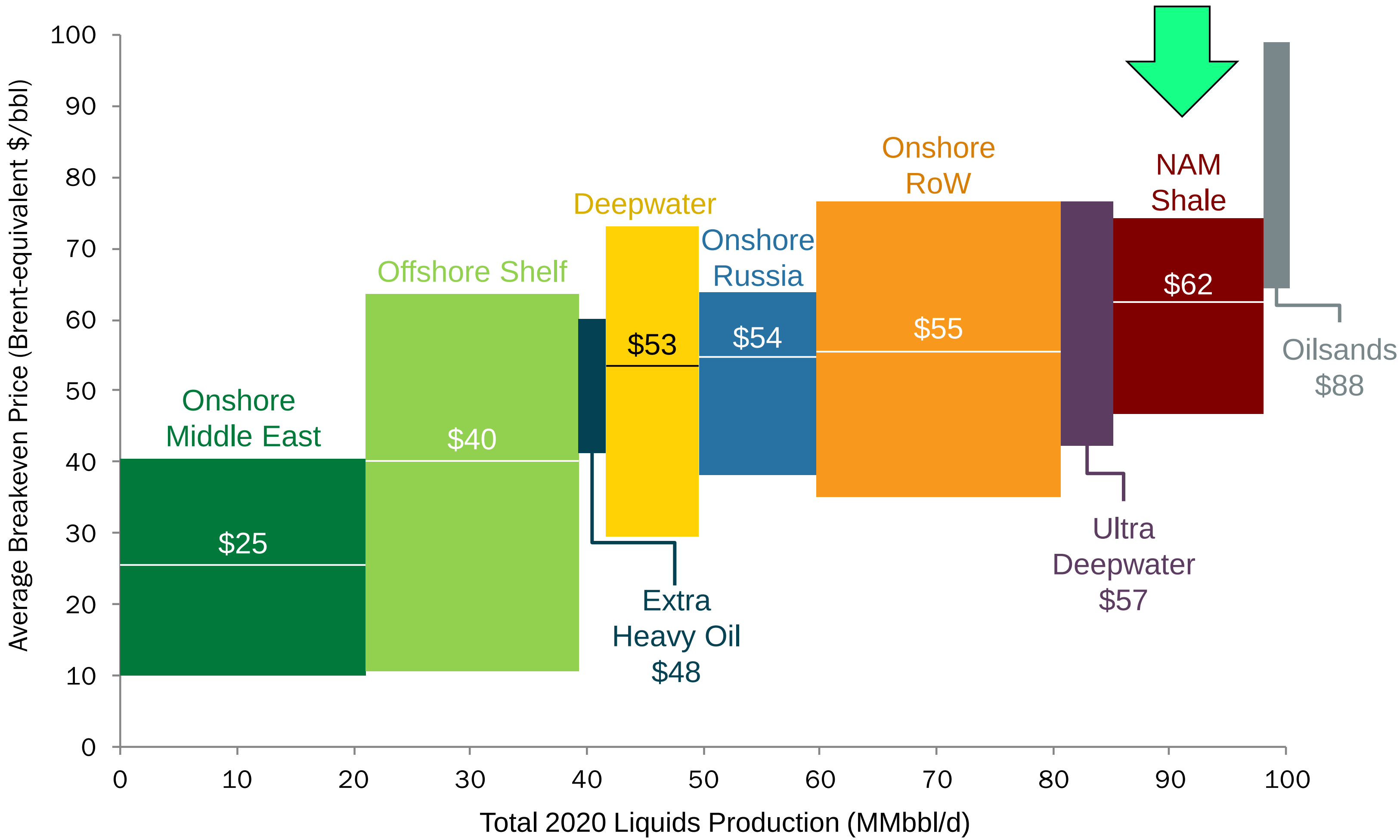
Traditional Sources of Capital Are Drying Up

Traditional Sources of Funds in Exploration & Production

Public Equity	"A Tale of Two Cities"
High Yield	Unavailable
Second Lien	Down
Revolver / Borrowing Base	Down
Hedge protected Cash Flow	Down

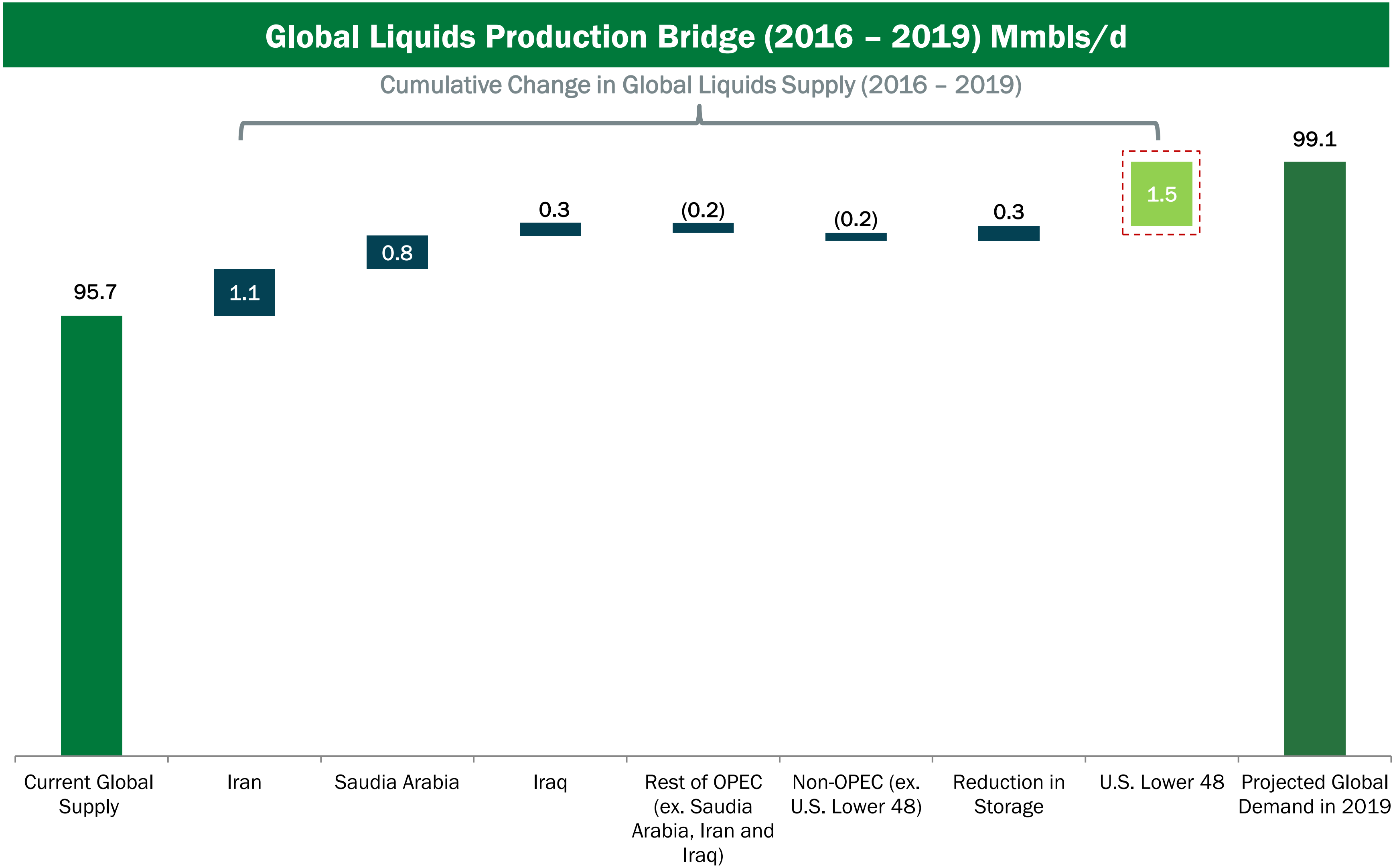
North American Shale Is the Marginal Resource

Global Margin Breakeven Oil Supply Curve



Source: *Rystad Energy, as of January 2015*

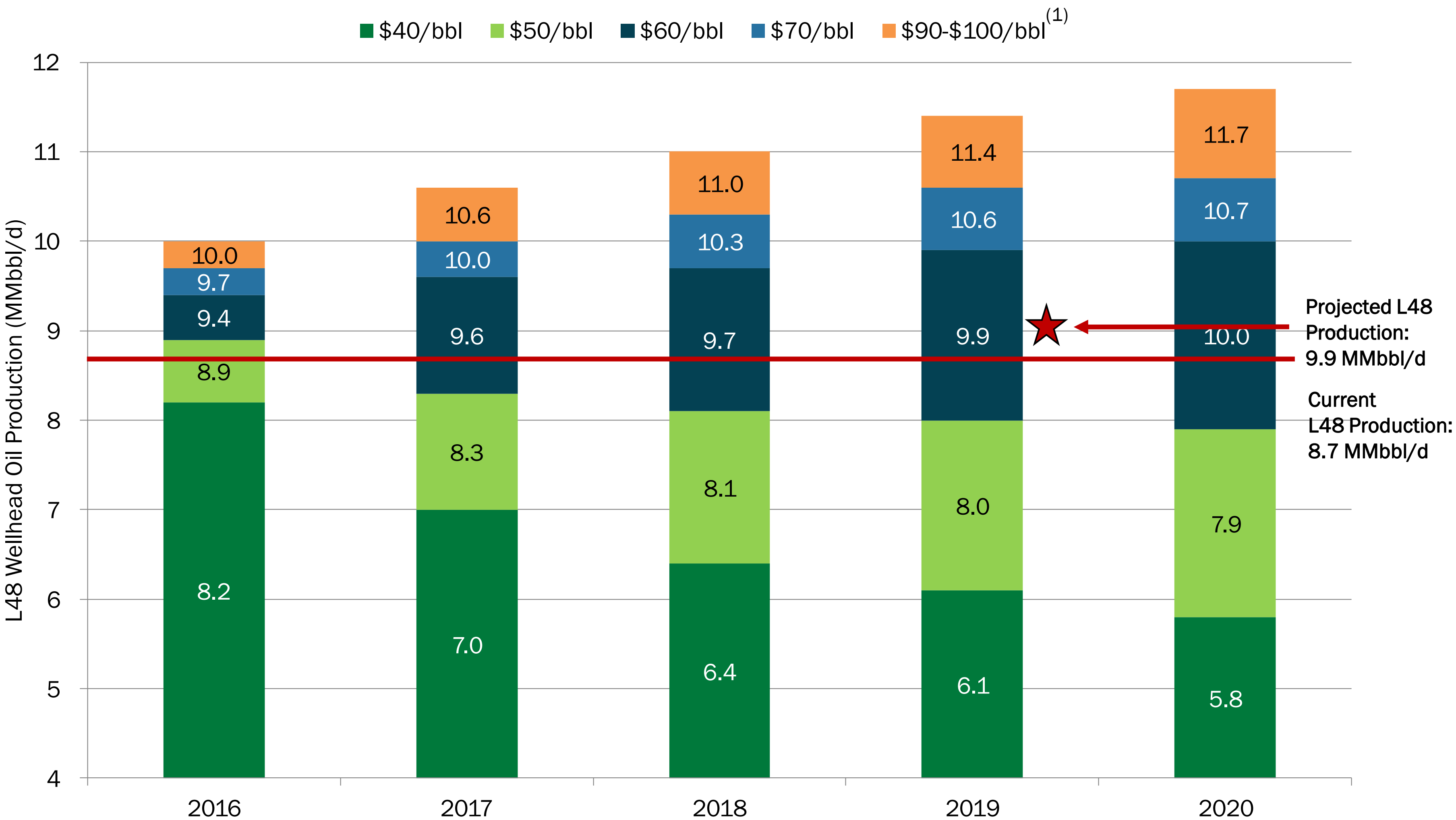
The World Eventually Needs the U.S. to Increase Production…



Methodology: Assumes Wall Street research for demand growth in 2016 and 2017. 1 MMbbl/d of demand growth thereafter. 2016 supply based on Wall Street Research. In 2017, global changes in supply (ex. U.S.) based on Wall Street Research. In 2017, assumes that the US fills the difference between annual demand growth of 1 MMbbl/d and the total change in supply for the rest of global production. 2018-2019 assumes that Saudi Arabia, Iraq and Iran maintain market share. Assumes rest of OPEC remains flat. Assumes Non-OPEC (ex. U.S. L48) remains flat. US production balances the market.

(1) Liquids includes NGLs. Total U.S. liquids production is approximately 73% oil.

…and for Production Growth to Resume, the U.S. Needs Price Recovery



Source: ITG. As of March 2015.
Methodology: ITG created production forecasts and ran WTI sensitivities for over 300 regions in the L48. In regions that generate less than a 10% IRR at a given WTI price, ITG models a gradual drop in the rig count to zero over a 12-month period. ITG assumes a 6-month delay in the production response to a change in the rig count to account for spud-to-sales times and backlog wells. The model runs $3.50 NYMEX flat and accounts for a 20% reduction in D&C costs (relative to ITG's D&C assumptions in December 2014).
(1) $90-$100/bbl WTI case does not assume a reduction in D&C costs. All other cases assume a 20% reduction in D&C costs.

Our Expectations

- In the short-term, prices will continue to be low and volatile
- In the near term, lower oil prices will continue to pressure North American E&P companies
- Once the market reaches equilibrium, prices will begin to gradually recover
- Industry distress creates an investment opportunity for alternative sources of capital

The Private Equity Opportunity

Where We Are Today

Excess Supply	▶	**Price Decline**
Price Decline	▶	**Deleveraging and Production Decline**
Deleveraging	▶	**Asset Sales**
Supply/Demand Inbalance	▶	**Production Restart**

The Private Equity Opportunity Is Here

Risk Capital Will Be Needed	▶	**?**

Large Dislocation Eclipses the Capital Raised for Energy Private Equity

$380 BN	+	$60 BN	-	$180 BN	-	$190 BN	=	$70 BN
Estimated E&P Capital Required Through 2020[1]		Estimated Equity Capital Required to Bring Debt Levels Back In-Line with Historical Norms[2]		Estimated Industry Cash Flow (Including Hedges) Through 2020[3]		Capital from the Debt and Equity Markets[4]		Shortfall Through 2020

1) Based on forecasted US supply growth through 2020. See page 19 for methodology.
2) Based on average historical and current debt/FY-1 EBITDAX multiples. Data-set includes 70 public E&P companies. Assumes that 50% of the industry's outstanding debt is not repaid due to bankruptcies and restructurings.
3) 2016 pricing based on NYMEX Strip as of 1/21/2016. Thereafter assumes $50/bbl in 2017-2018, $55/bbl in 2019 and and $60/bbl in 2020. Estimated US E&P hedge value based on Wall Street Research.
4) Based on debt and equity issuances from 2012 – 2015. Assumes lower issuances in 2016-2017 as the industry recovers.

While Entry Has Become More Attractive, The Degree of Risk in E&P Private Equity Has Decreased

2008 - 2015	Today
▪ Exploration phase in U.S. unconventional (gas, then oil) ▪ Land capture followed by exploration drilling – 50% of play concepts didn't work – Play concepts that did work showed high returns	▪ Exploitation in proven unconventional basins ▪ "Core" areas of plays are now established and well known – Capital required to develop rather than prove up plays
▪ Substantial risk of capital loss ▪ Play concepts that did work led to very high returns ▪ Portfolio-level returns attractive	▪ Lower risk of capital loss ▪ Commodity price recovery is an imbedded option in long-lived assets ▪ Opportunity and portfolio-level returns highly attractive

Conclusions

- The ongoing dislocation in the oil and gas sector is creating an attractive private equity investment opportunity

- Industry needs to deleverage and shrink for a period of time

- Transient opportunity to capture resource in the midst of industry dislocation

- However, when supply/demand equilibrium is reached, the industry will need capital to restart the engine…

- **…and the need for this capital will be huge**

Questions and Answers

Contact Information

- Mr. Aube joined Pine Brook in July 2011 and is a managing director responsible for Pine Brook's energy investing activities. He is also a member of the Investment Committee.
- Mr. Aube has 25 years of experience in the energy sector. Prior to joining Pine Brook, Mr. Aube was with D.E. Shaw & Company, a multi-strategy global investment firm, where he was a managing director responsible for co-managing the firm's North American private equity effort. Previously, Mr. Aube was a partner with J.P. Morgan Partners, a multi-billion-dollar private equity firm affiliated with JPMorgan Chase, where he focused on growth equity and buyout investments in the energy and industrial sectors. Earlier in his career, he was a partner with the Beacon Group, an investment and advisory firm. Mr. Aube has served on the boards of several energy companies, including Bill Barrett Corp., Latigo Petroleum, Capstone Turbine Corp., FirstWind Corp. and Proton Energy Systems.
- Mr. Aube holds a B.A. in Sociology and Economics from Dartmouth College

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