



Risked Revenue
Energy Associates

OIL: WHAT IS DRIVING PRICE IN 2017

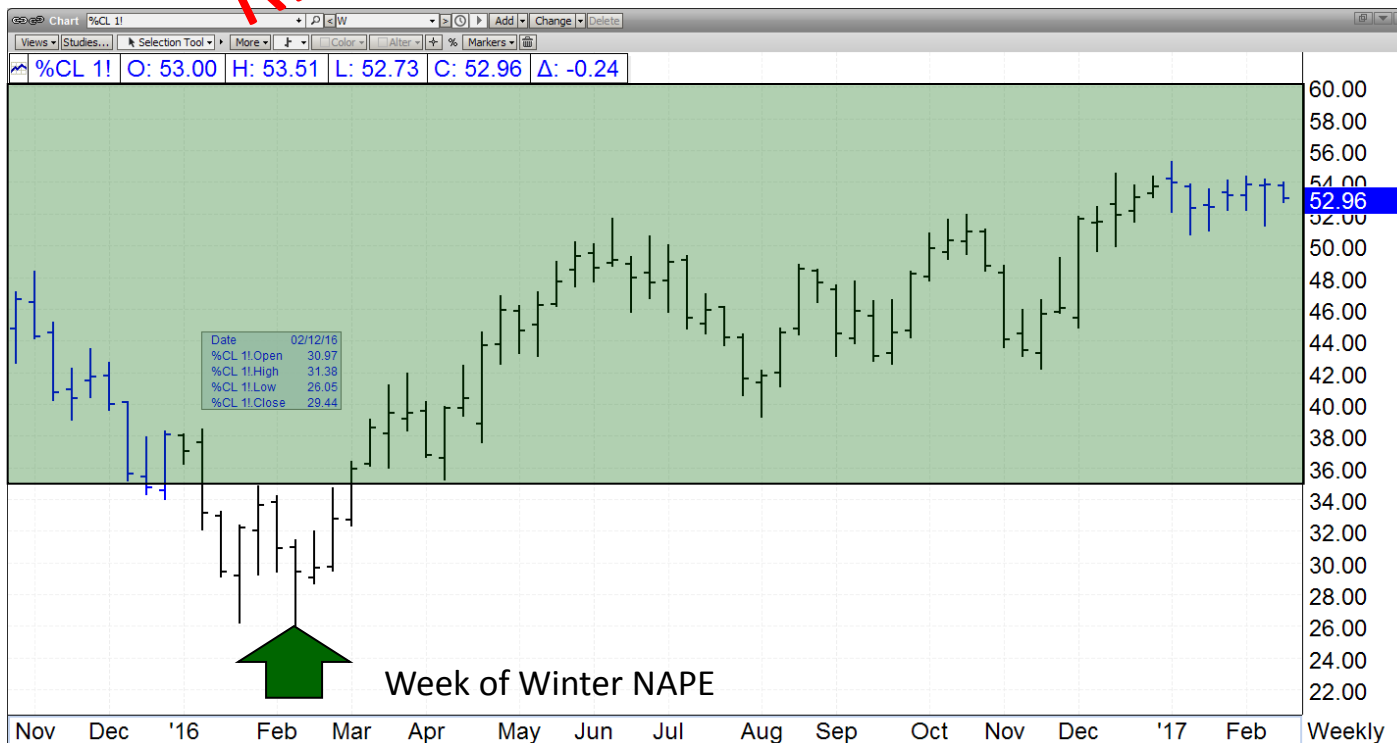
WINTER 2017 NAPE

February 16, 2017

We feel a bottom is likely in 2016, supported by:

- ★ **TLC:** Trend is attempting to rise
- ★ **OEI:** At 1.5%, distressed lows indicating a future range of \$35-\$60
- ★ **Forward Value:** At 38% indicative of the need for contraction
- ★ **Speculator Interest:** Record Long/Short interest predicts big move

Though it may bottom in 2016, there is still near term downside risk. Our risk analytics put the downside at \$21-\$24.



IEA says that fundamentals are improving

- Expects supply and demand to balance in 3Q16
- Estimates 2016 demand growth of 1.4 MMBpd and 1.3 MMBpd in 2017
- Little guidance on supply changes

REPRINT

While geopolitical events remain a wild card, price shocks in oil are unlikely for the foreseeable future.

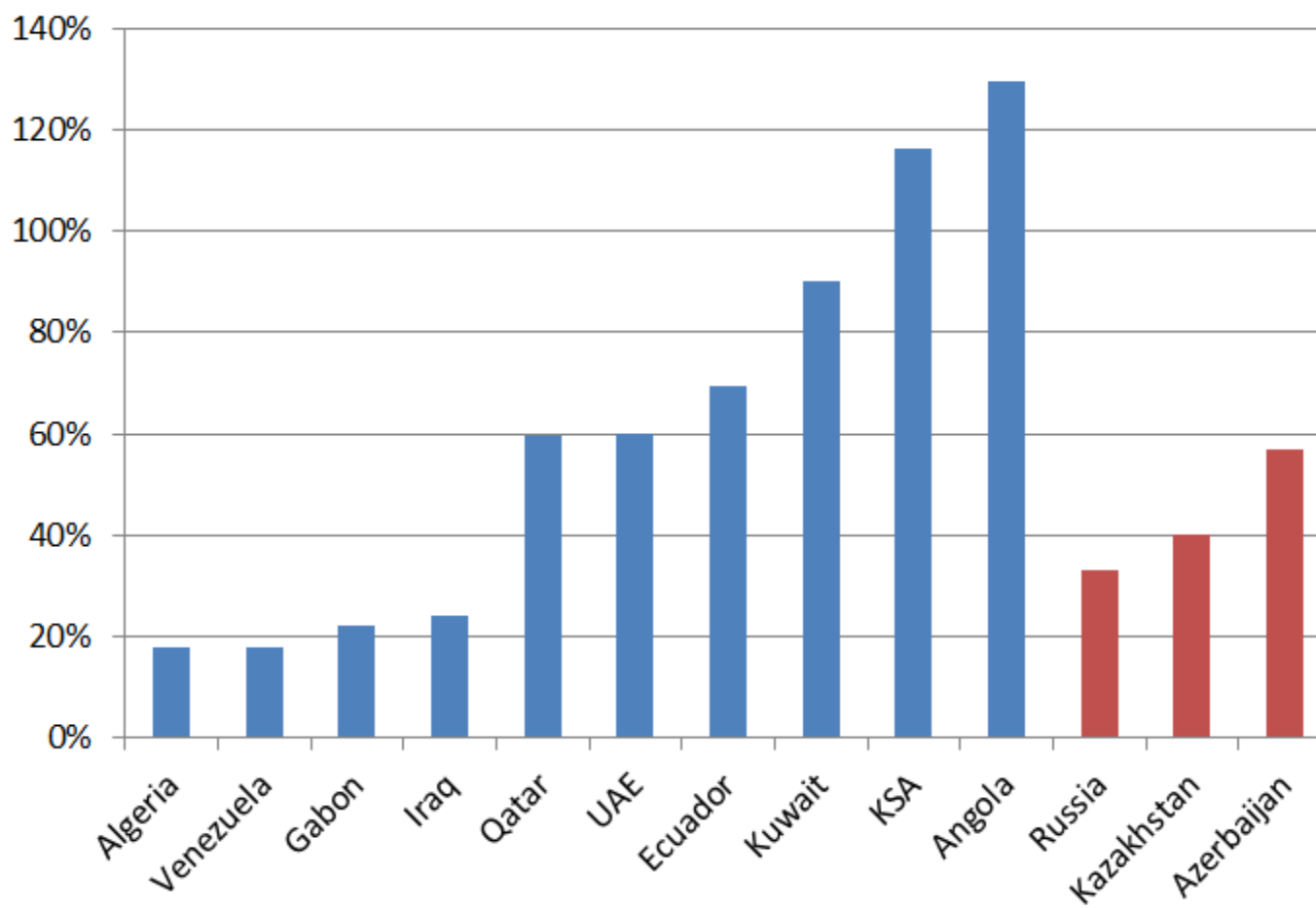
- IEA reports record storage of almost 3.1 Billion barrels
- No OPEC production agreement
- Price response by producers above \$50 will be swift and effective, both with completions adding new supplies and hedging activity capping price

★ Plan for higher prices. Oil prices may trade above \$60 in 2017, but it will be very difficult for the annual swap to achieve that for an average.

- CRUDE OIL
 - Fundamentals
 - OPEC Deal/Compliance
 - Supply & Demand
 - US Production/Rig Growth/Productivity
 - Trump Border Tax Proposal
 - Pricing
 - Net Spec Length
 - Yoy Swap Pricing
 - Hedge Recommendations

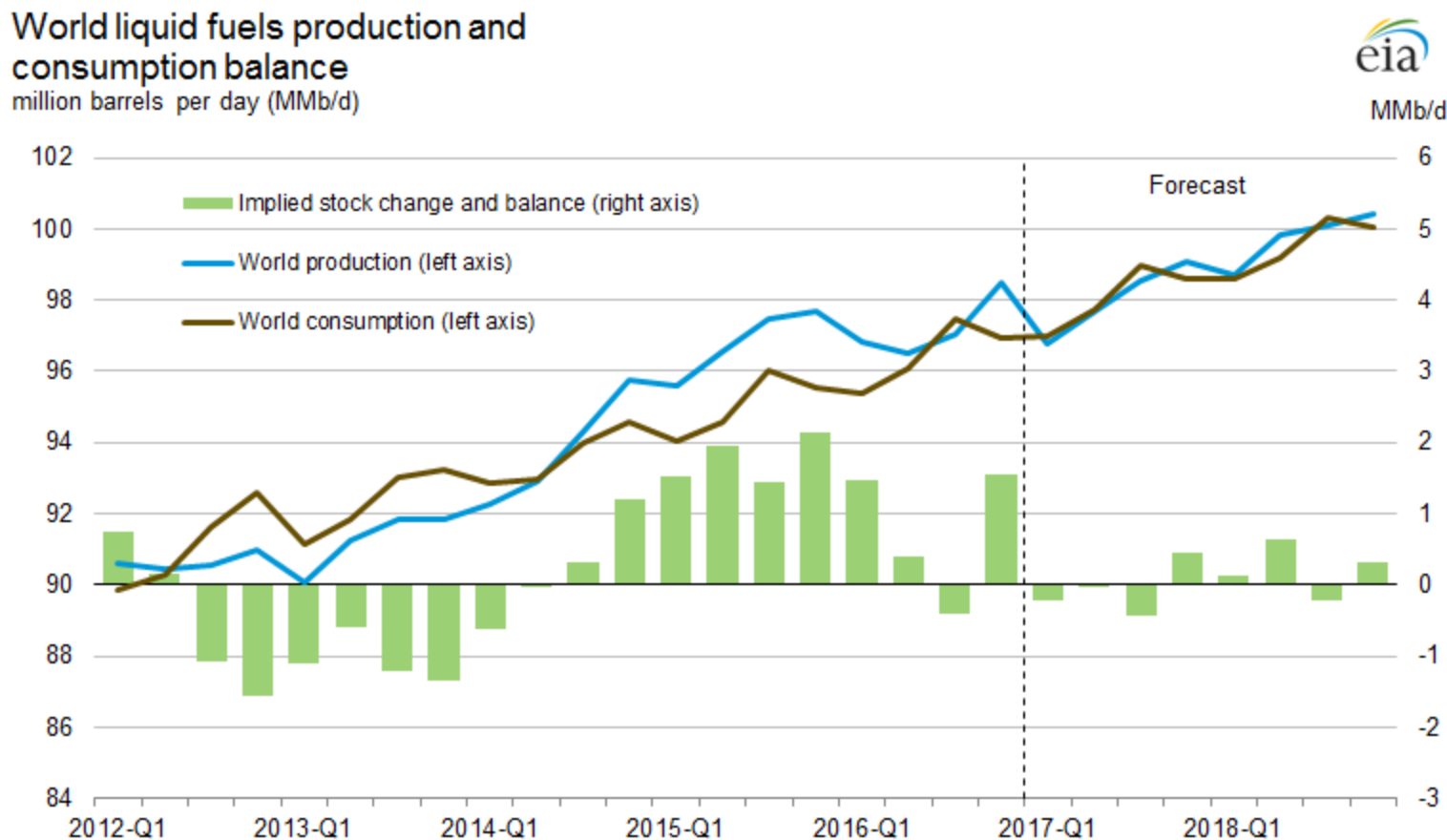
OPEC/Non-OPEC Production Accord

	OPEC	Non-OPEC
Pledged Cuts (Bbls)	1.164MM	0.558MM
Compliance	Reuters 82% IEA 90%	Anecdotal 30-57% IEA 48%



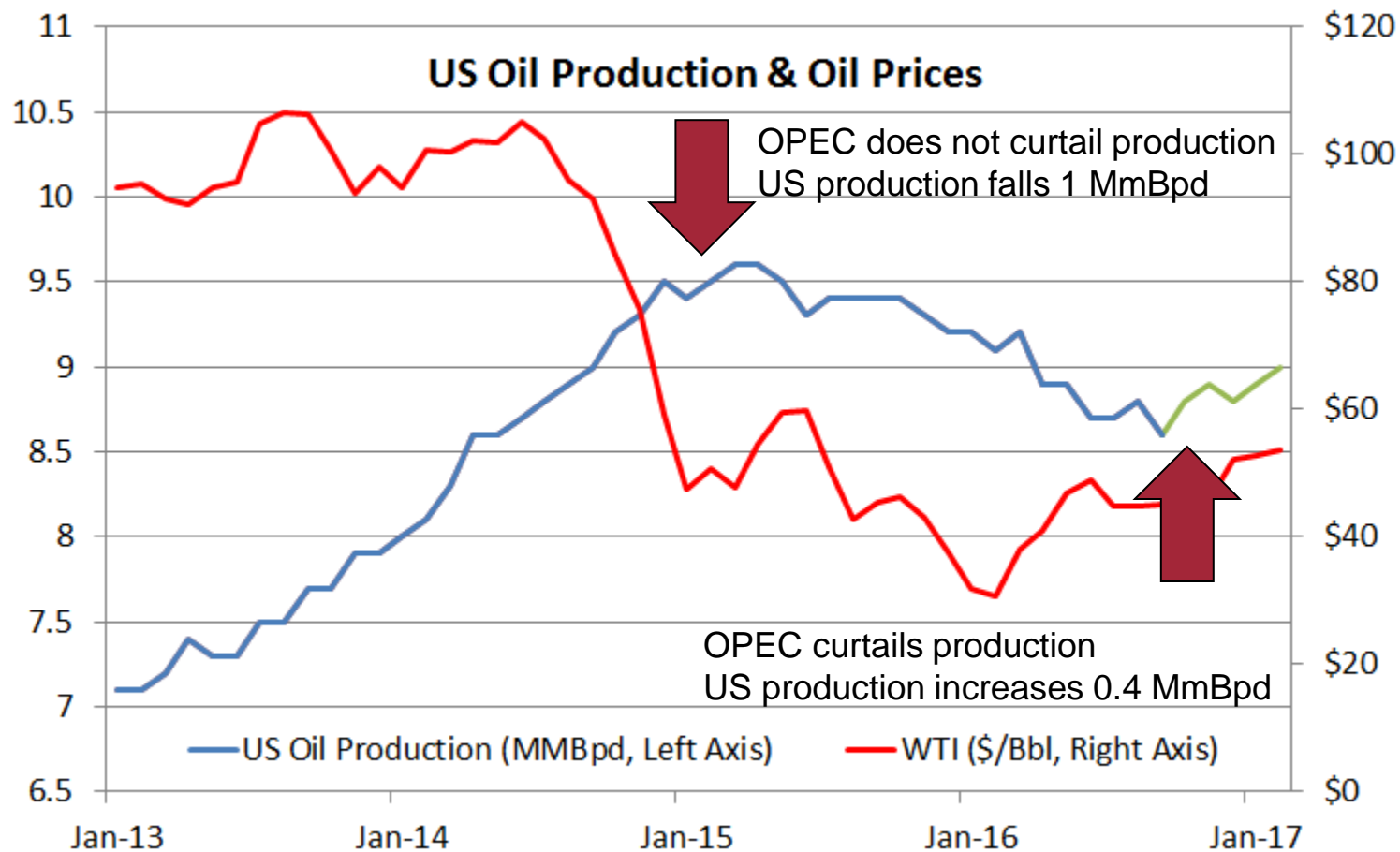
Commodity	Region	5 yr High	5 yr Low	Current	Percentile
Crude Oil	US	518	301	518	100%
Gasoline	US	259	195	259	100%
ULSDistillate	US	149	80	148	99%
Crude Oil	OECD	3,100	2,550	2,990	80%

Ample Inventories should be a buffer to geopolitical spikes and minimize the potential for prices to reach/stay above \$65/Bbl



Source: Short-Term Energy Outlook, February 2017.

- Excess Production has been reigned in
- EIA forecasts a **balance** of production and consumption
- IEA 2/10/17 report implies **~700KBpd Supply/Demand imbalance**



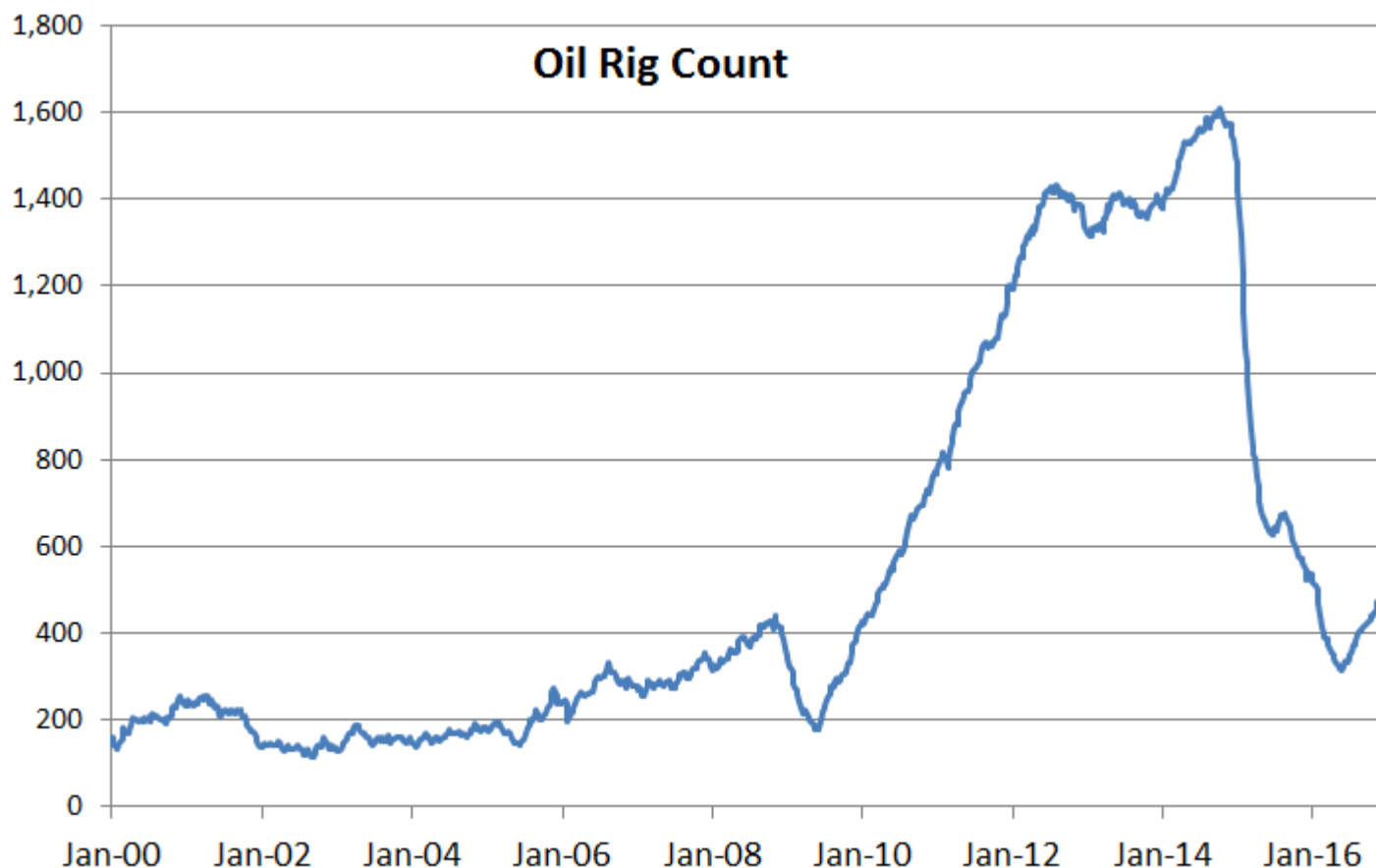
US Shale is grabbing market share away from OPEC. The US will quickly be back at 9.6MMBpd at a lower price

Rig Productivity Continues to Increase

<i>y/o/y</i> % Change in Production per Rig	Bakken	Eagle Ford	Permian
2012	+23%	+46%	+10%
2013	+26%	+53%	+35%
2014	+21%	+27%	+31%
2015	+41%	+43%	+89%
2016	+32%	+41%	+55%
Average	+28%	+42%	+42%

Productivity gains in Shale technology are still following “Furman’s Law”, doubling every 2 years

Oil rig counts are +85% since May 2016



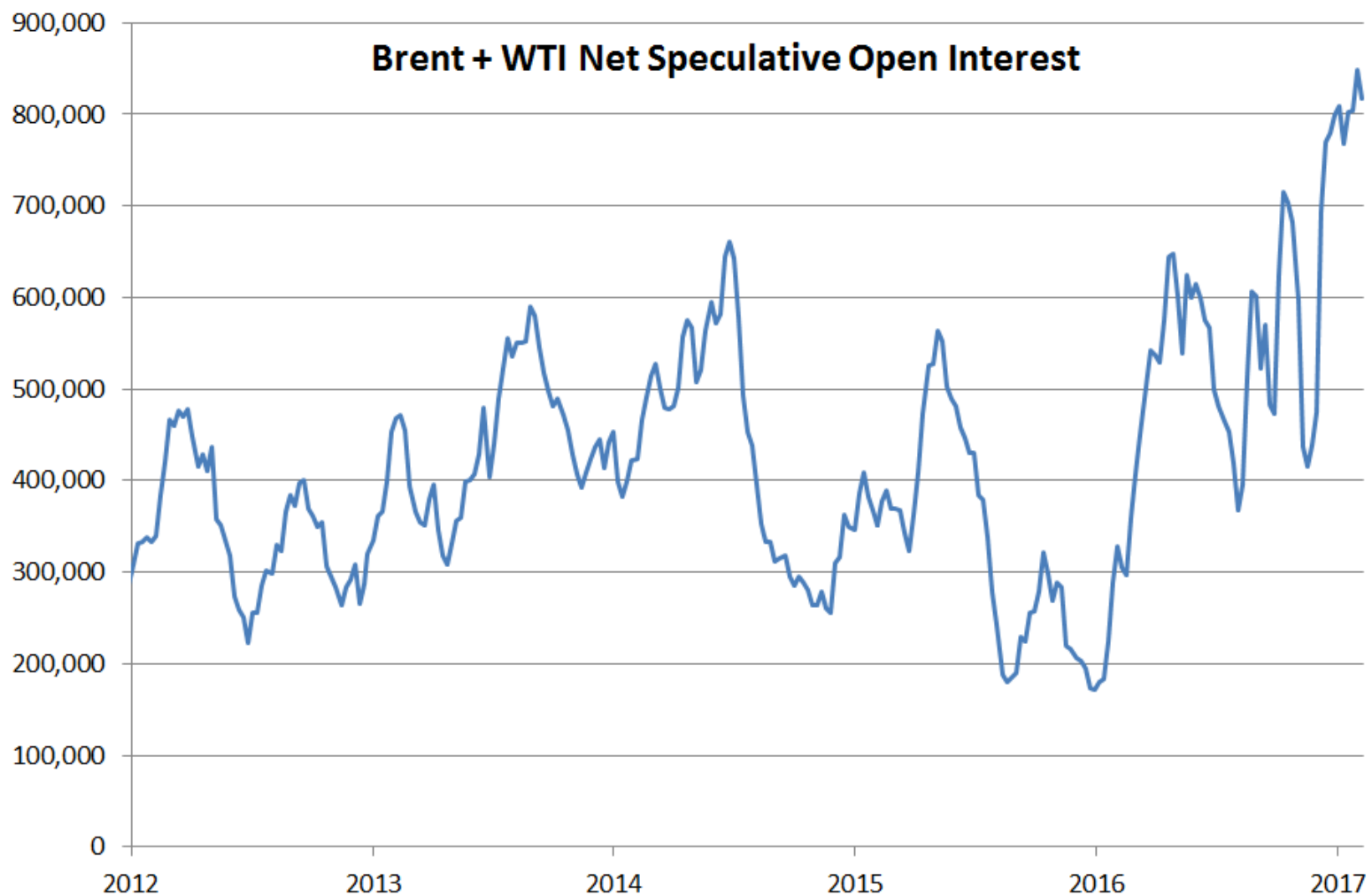
Given that rig usage is still 64% below the peak from 2014, the service sector should have sufficient excess capacity to meet expected demand

- Trump Administration is in preliminary discussions to implement a 20% border adjustment tax (“BAT”) on imports
- Initial analysis by oil analysts believed this would increase domestic Gasoline prices substantially
- Subsequent analysis determined that this would modestly increase domestic Gasoline prices and actually decrease the price of Crude Oil
- One bank now estimates that a BAT has only a 30% chance of being implemented

BAT proposals will see many challenges and changes before/if accepted. Stay abreast but do not obsess.

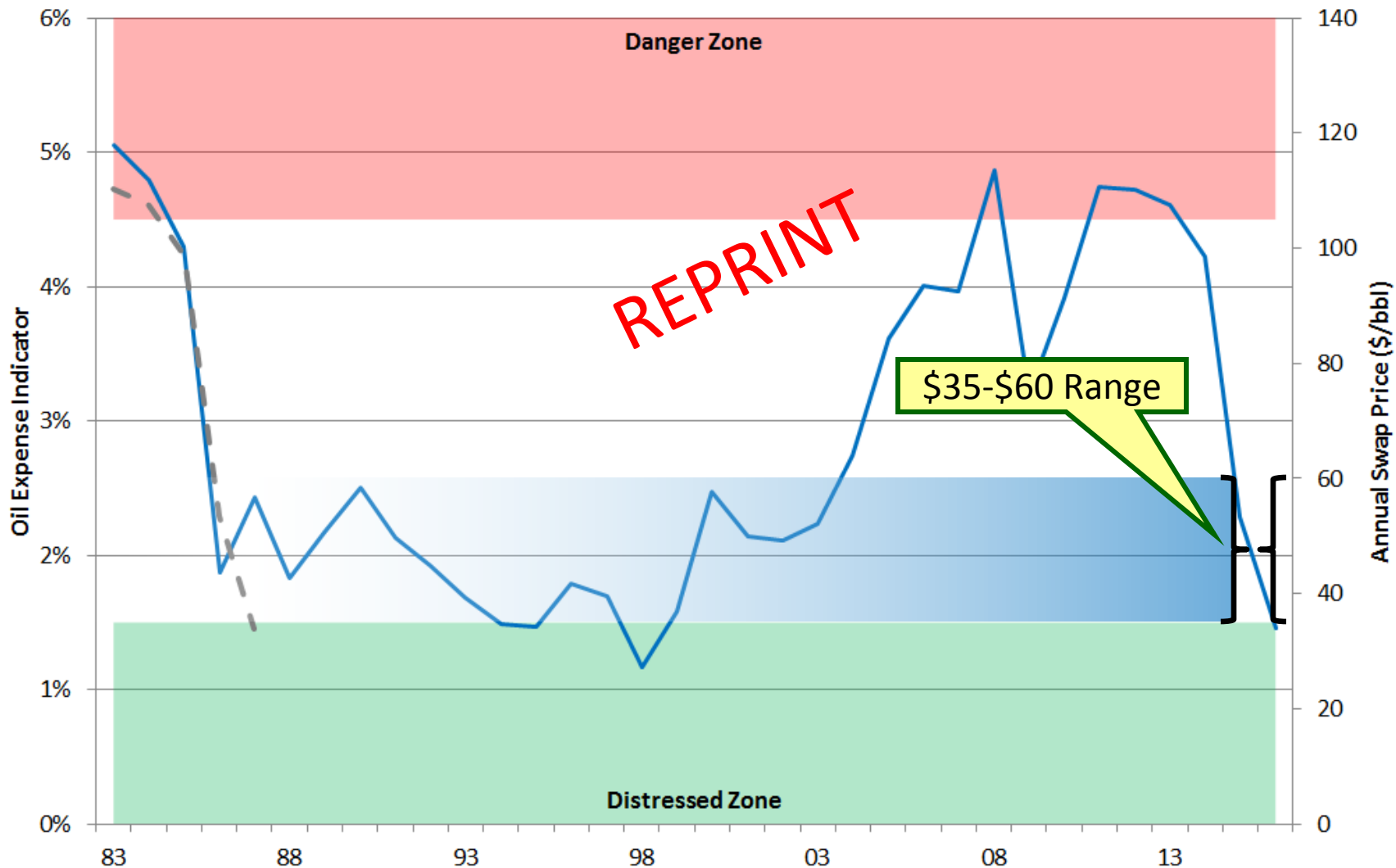
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Record Net Speculative Length



With buyers “all-in,” continued OPEC compliance will be necessary to support speculators and price

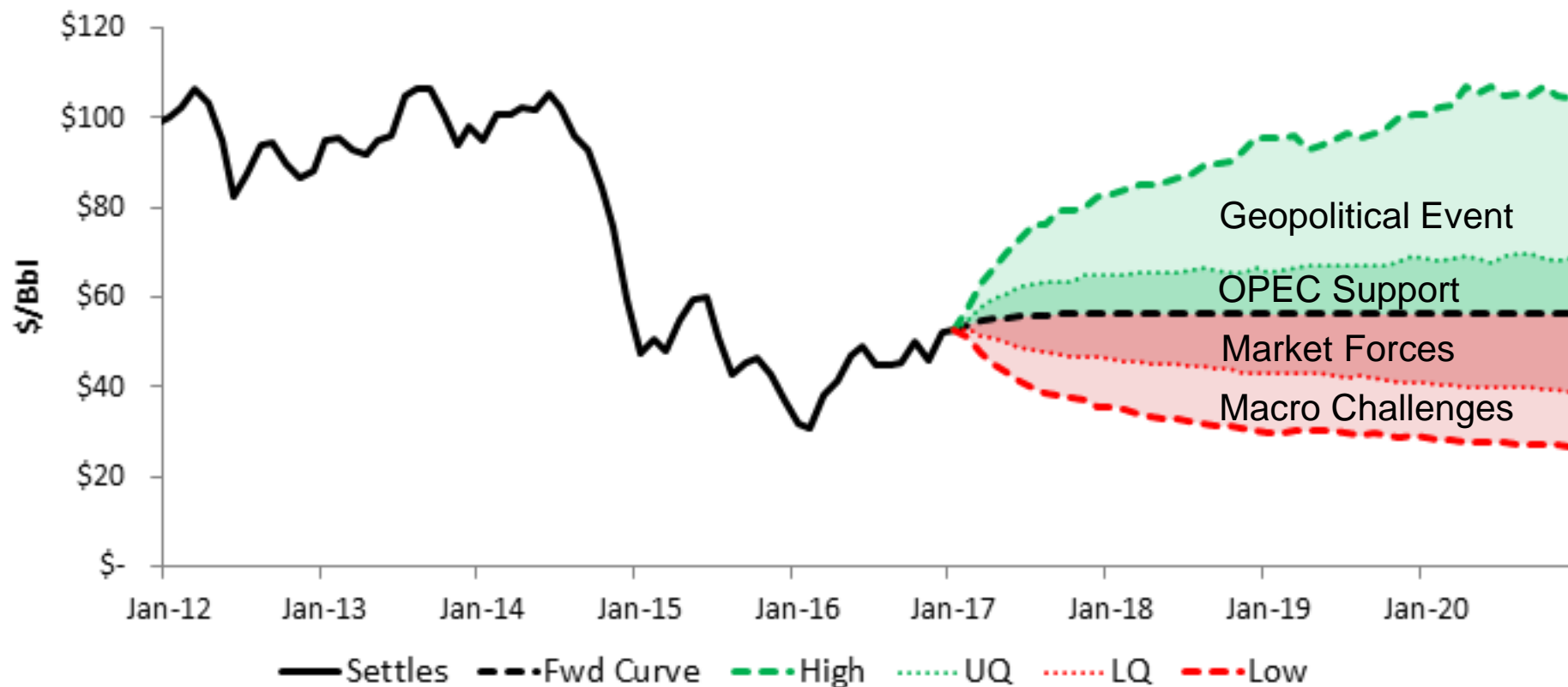
Oil Expense Indicator >> YOY SWAP EXPECTATIONS



After 1986, oil had 5 up years (+22% avg) and 7 down years (-12% anvg). The analog for a well supplied market implies +2% average YOY SWAP GAINS

WTI Settles and Forward Projections

WTI Historical Settles and Fwd Curve with Risk Bands



WTI	2016	2017 YTD	Jan-2017	Bal 2017	2018	2019
High				\$74.67	\$87.85	\$96.30
UQ				\$62.39	\$65.66	\$67.07
Settles/Fwd Curve	\$43.32	\$52.61	\$52.61	\$55.81	\$56.31	\$56.19
LQ				\$48.47	\$44.72	\$42.26
Low				\$40.41	\$32.68	\$29.65

Risk Driven Hedges

Low case estimates fell this month. Adding hedges to lift Low Case estimates to levels reported last month is recommended. Further, borrowing base redeterminations are approaching. If risked estimates or the expected borrowing base are below targeted levels, hedging is recommended.

<i>WTI Swap and Collar Prices (1/31/2017)</i>	Bal 2017	2018	2019
Fixed Swap	\$54.65	\$55.43	\$55.42
Crude Percent Hedged Increase from 1K Bbl/d Swap	8%	8%	8%
Risk Reduction (Low Case lift) from 1K Bbl/d Swap	\$5 MM	\$9 MM	\$10 MM
Costless Collar Indication	\$49 x \$59	\$50 x \$60	\$50 x \$60

<i>Henry Hub Swap and Collar Prices (1/31/2017)</i>	Bal 2017	2018	2019
Fixed Swap	\$3.28	\$3.07	\$2.86
Gas Percent Hedged Increase from 10K MMBtu/d Swap	6%	6%	6%
Risk Reduction (Low Case lift) from 10K MMBtu/d Swap	\$3 MM	\$5 MM	\$5 MM
Costless Collar Indication	\$2.75 x \$4.09	\$2.50 x \$4.07	\$2.40 x \$3.66

Market Driven Hedges

R² continues to advise opportunistic WTI hedge targets of \$55 - \$57 for Bal 2017 & Cal 2018.

Producers should target hedging NYMEX natural gas above \$3.25 in Bal 2017 and Cal 2018.

Crude Oil

- Non/OPEC cuts are supportive, but built into pricing by...
- Record Net Speculation is capping the market
- US Shale production/productivity growth will take away share
- 2018 Saudi Aramco IPO shapes timing
- Rangebound annual swaps \$40-\$60

Natural Gas (separate presentation)

- Fundamentals have turned positive, as cheap pricing is spurring...
 - More LNG & Exports to Mexico
 - Reduced Supply from Ethane Rejection
 - Reduced Incentive for Production
- Hedge for Upside Participation with (Economic) Collars in 2018+

Please contact us to learn how R^2 analytics can help you grow.

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For additional information about the services we offer, our team and projects we have completed, please visit our website

www.riskedrevenue.com