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Denver, Colorado 80202
T: 303.296.8834
F: 303.293.9904
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# *Energy Industry Data and Trends*

*What Does a Growth Company Look Like in 2017?* *January, 2017*

Welcome to the EnerCom Energy Industry Data and Trends for January 2017. This month, we examine what it means to be a "growth" company after the most recent downcycle. Using early 2014 as a comparison, we look at production growth and equity metrics required to attract a premium valuation from investors, as well as which basins are performing the best, and what issues are preventing companies from attracting premium valuations. The charts found in this month's theme can also be found in slide format at the end of this report.

**IN THIS REPORT – KEY SUMMARY POINTS:**

- Investors are paying more of a premium for companies that can grow production 20% or more today than they were three years ago.
- Not all plays are created equal. Companies that can grow production by more than 20%, but can't get that production to market, are not receiving the same premiums as their peers in other plays.
- Deleveraging the balance sheet and moving into hot plays such as the Delaware Basin drove share prices higher in 2016.
- The current threshold for debt that investors appear to be comfortable with is 3.7x net-debt to EBITDA, but the banking side is trying to get businesses to live in the 2.5x and lower world going forward.
- The effective rig count at the end of 2016 was about 2.5x higher than the reported rig rate when changes in rig efficiencies are taken into account.
- Oilfield service companies expect prices to rise for E&Ps in the future, but an infusion of private equity capital into the sector has kept competition high and prices low for the time being.
- Production growth becomes less important to investors than potential catalyst looking forward to 2017 as markets wait for companies to execute on plans laid last year.
- Permian players have seen the most significant improvement over the course of the downturn, but equity multiples for Appalachian players could increase past those seen in the Permian as pipeline constraints ease.
- A rush of capital to the Permian has left opportunities for innovation in other plays across the United States.

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**This Month's Theme – What Does a Growth Company Look Like in 2017?**

The last two years have been a trying time for the oil and gas industry. Oil prices plummeted in late-2014 as increasing production from U.S. shale plays was met with news that the Organization of Petroleum Exporting Countries (OPEC) would not act as a swing producer and lower its own output in order to balance markets.

The decision hit the industry hard. For years, oil and gas companies had touted their ability to grow production to investors, often leveraging their companies to generate the capital needed to pump more out of the ground each quarter. But with markets oversupplied in the wake of the OPEC decision, highly-leveraged companies were no longer able to support their balance sheets, and investors were no longer interested in growth for growth's sake.

In February of 2014, EnerCom wrote a report on growth companies prior to the collapse of oil prices, which defined a "growth" company as one that reported 20% annualized production growth, adjusted for dilution. The analysis found that investors were indeed willing to pay a premium for companies that could demonstrate strong growth metrics, but does that remain true following a downcycle, and does "growth" still mean a 20% or more increase in production?

**Investors Paying for Growth in 2016**

Investors continued to give a premium to companies that showed they could increase output in 2016 as long as it didn't come at the cost of the balance sheet. Looking at share price appreciation for full-year 2016 against debt-adjusted production growth over the same time period, markets still favored operators that displayed production growth of 20% or more.

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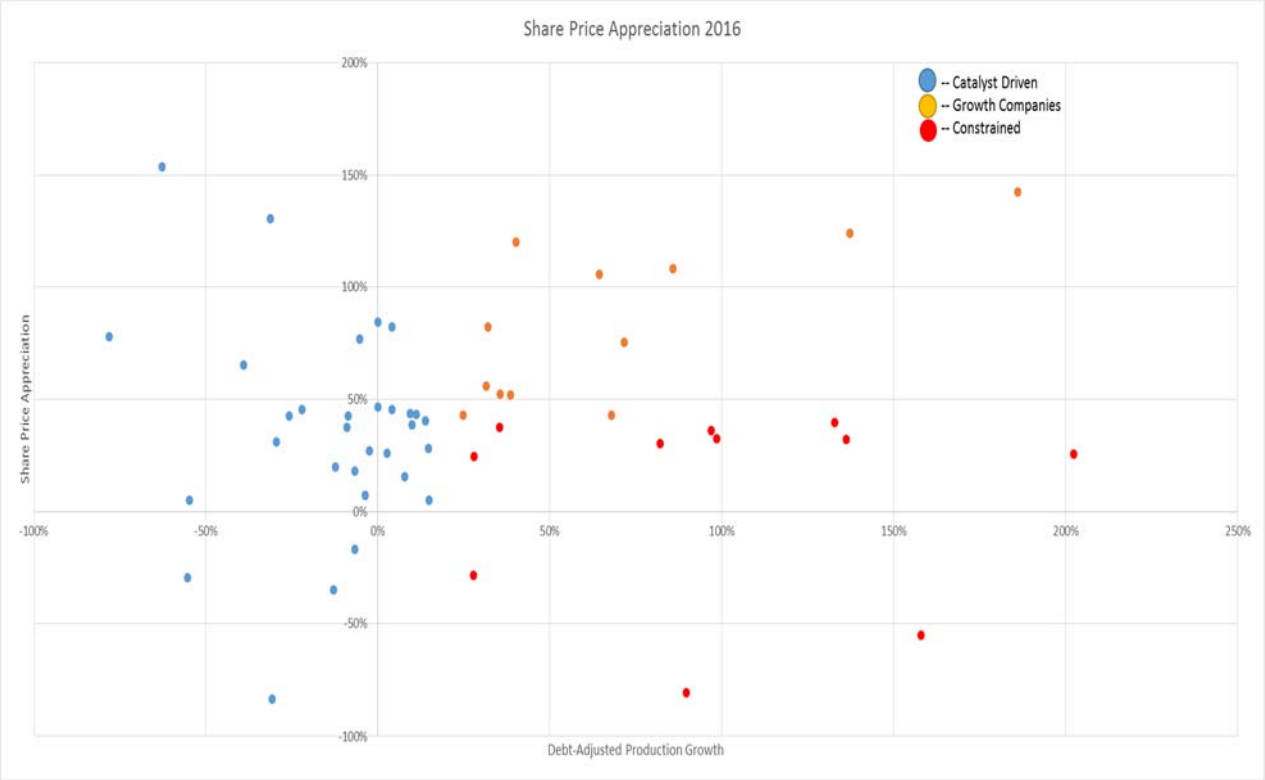


Three groups of companies emerged from the analysis:

*Investors are actually willing to pay an even higher premium in 2016 for 20% or greater debt-adjusted growth than they were in 2014.*

**Growth Companies.** Of the 56 companies examined by EnerCom, those with growth greater than 20% often saw their share prices increase more than 40%. Interestingly, this suggests that investors are actually willing to pay an even higher premium in 2016 for 20% or greater debt-adjusted growth than they were in 2014. The analysis done by EnerCom in 2014 found that companies reporting 20% or greater growth saw their share prices appreciate between 20% and 60% compared to a range of 40%-140% in 2016.

Looking at just the companies that qualify as "growth" there is an r-squared of approximately 53%, suggesting that production plays a serious role in determining the companies' share price. Not all companies that reported greater than 20% debt-adjusted production growth saw the

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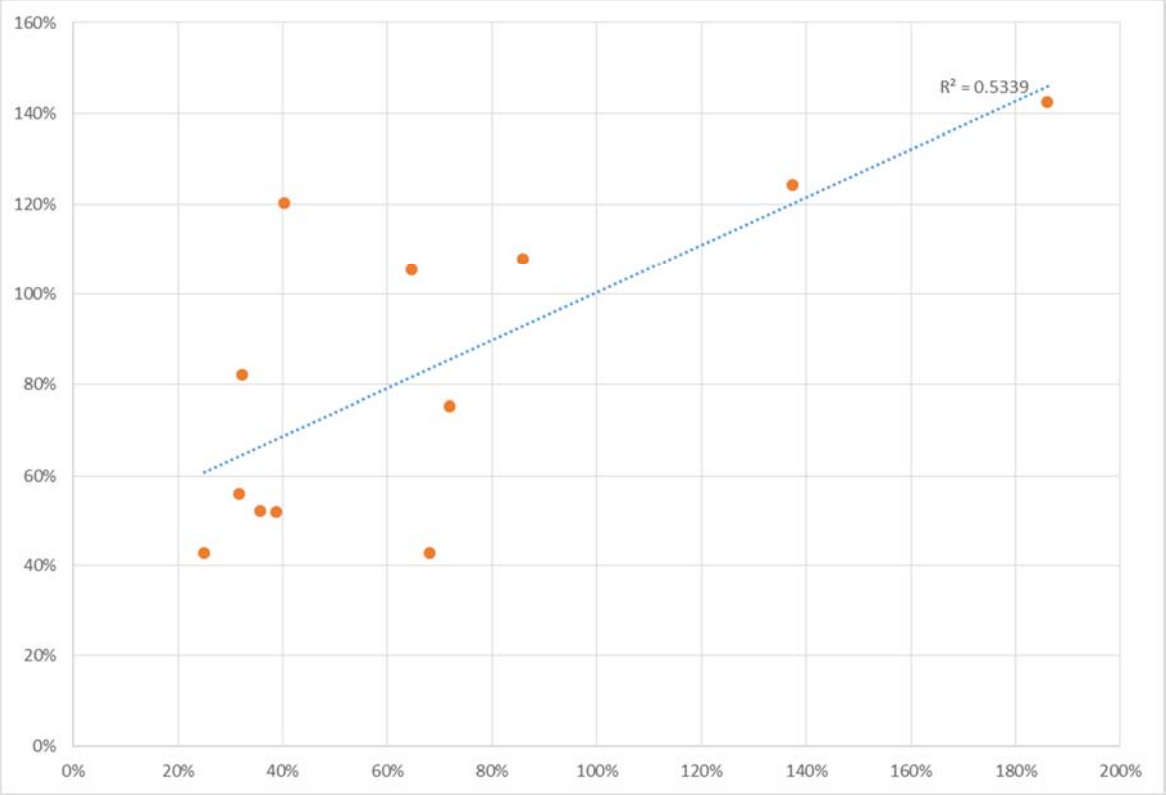
same uplift in their share price, however. This group, marked in red above, formed the second group.




**Constrained.** Many companies were able to grow production by more than 20%, but did not see the corresponding uplift in share price. Of these companies, many were E&Ps in the Marcellus. Pipeline constraints in the play could have kept the companies from realizing more attractive share price growth because investors didn't feel the production warranted a premium if it was not able to reach markets. Other constraints to share price growth included weak balance sheets and the threat of bankruptcy.

**Catalyst-Driven.** A number of companies saw their share prices change in 2016 without the corresponding increase in debt-adjusted production as the rest of the group. In fact, the company with the largest share price appreciation in the graph above had negative debt-adjusted production growth, suggesting that other factors were more important in determining the stock price of some companies.

That company, WPX Energy, underwent a major transformation, completing more than $6 billion in M&A deals since 2014 to become a more oily company. Despite debt-adjusted production

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declining 63%, the company's share price increased 154%, underlining the confidence investors have in the potential of the company's acquired core assets in the Delaware Basin.

Another major catalyst for companies in this group included paying down debt. Whiting Petroleum, for example, reduced its debt by $2.3 billion (41%) from March to December 2016, prompting a 27% increase in share price over the course of the year despite a small decrease in debt-adjusted production.

"Upon the completion of this conversion, we will reduce our debt by $721 million. After the conversion and the sale of our North Dakota midstream assets for $375 million that we anticipate to close in early 2017, we will have reduced our debt by $2.3 billion or 41% since March 31, 2016, approximately equal to all the debt assumed in the Kodiak acquisition," Whiting Chairman, President and CEO James Volker said following the conversion of company notes in December.

Resolute Energy saw its share price skyrocket 847% over the course of the year through a combination of growth and executing on deals that investors felt made the company worth a premium multiple. Resolute's debt-adjusted production increased 140% while the company cleaned up its balance sheet with offerings and midstream sales. A focus on growth assets in the Delaware also helped the company realize the largest share price appreciation of any company in EnerCom's database.

**Growth Inhibitors**

In the February 2014 edition of EnerCom's monthly report, we said "growth for its own sake can be problematic," a statement that rings sharply true following the most recent downturn. Highly levered companies continue to miss out on higher multiples much the way they did three years ago.

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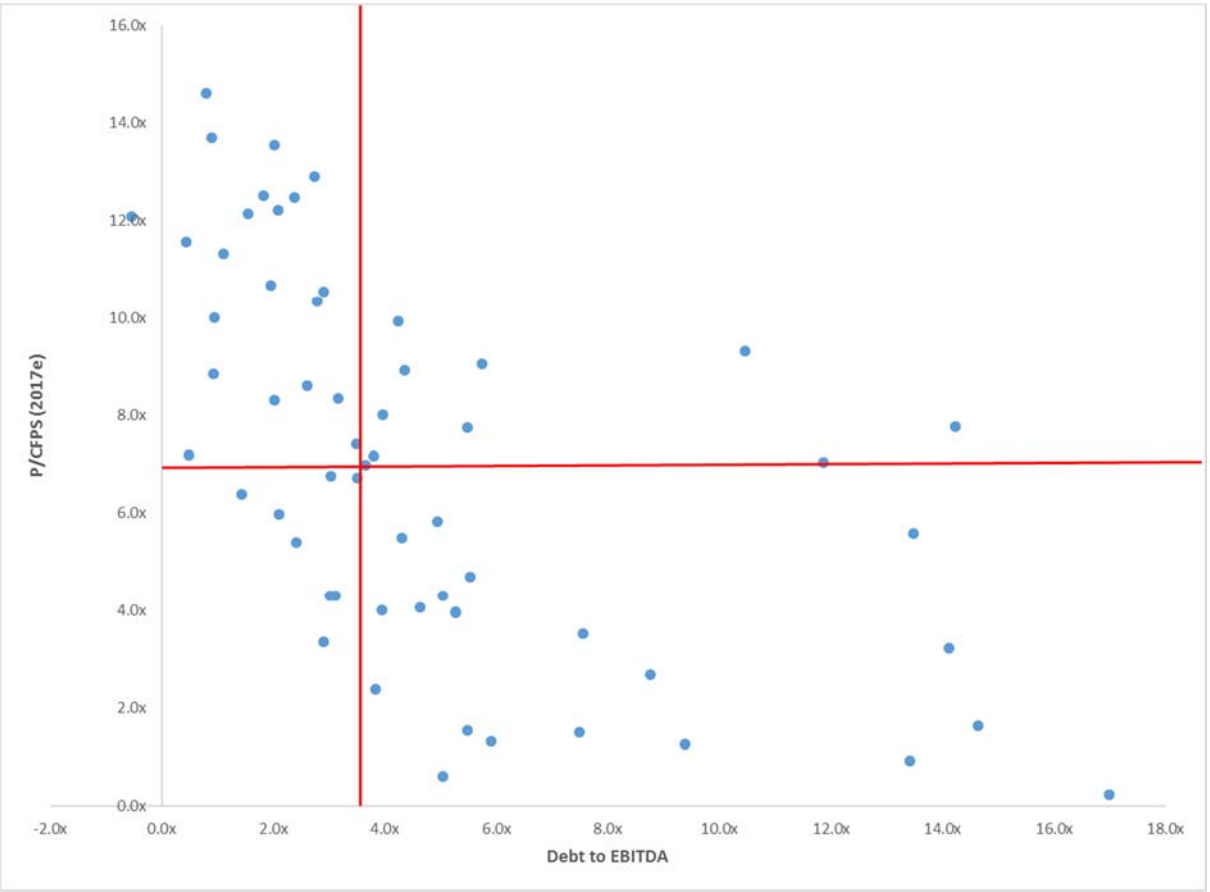


Examining debt, measured here as debt to EBITDA, against equity multiples for 62 companies in the EnerCom E&P database (outliers and those without P/CFPS estimates were excluded) it quickly becomes clear that investors are as debt-conscious as ever.

Once debt exceeds the median 3.7x of EBITDA, the perception of financial risk by equity investors increases exponentially, and generally caps equity multiples at 7.0x (using 2017 estimates). Our friends on the banking side of the business are working to get their clients to live in the 2.5x and lower world going forward.

This threshold changes in response to market sentiment, fluctuating with investors' perceptions about the state of the industry. The 2014 analysis found that the threshold doubled from the end of the 2008 financial crisis to early-2014 when oil prices were staying near $100 per barrel. The period of sustained oil prices left investors feeling more comfortable with higher levels of debt as most companies could profit from low-risk developments and afford to explore for new finds

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to increase reserves. After the floor fell out from under oil prices, investors became more cautious, looking for companies that could weather the storm.

**The Name of the Game: Efficiency**

There has been a tremendous shift in the last two years towards more efficient operations. Growth for the sake of growth is no longer enough to attract investors. Markets want to see strong balance sheets and improving operational efficiencies before rewarding a premium share price to an E&P company.

As oil prices cratered over the course of 2015 and early-2016, many operators laid down rigs and focused on their most attractive core positions. As companies focused more intently on getting the highest possible return from each well, per-well production began to increase.

*By adjusting the reported rig count in November 2016 for efficiencies, the effective rig count was 2.5x higher than what was reported by November 2016. It would take approximately 1,044 rigs drilling with the same efficiency as those in January 2014 to produce the same amount as 401 rigs in November of last year.*

The reported U.S. rig count in November (the last month the EIA reported a rig count with the associated production numbers) stood at 34% of the total in January 2014, but the amount of production from each new well has increased substantially. For example, while there were 474 rigs operating in the Permian in January 2014, compared to just 222 in November 2016, each 2014 well drilled was only producing about 244 MBOE, according to the EIA. Even though there were fewer than half as many rigs operating in November of last year, the wells drilled were producing 796 MBOE.

By adjusting the reported rig count in November 2016 for efficiencies, the effective rig count was 2.5x higher than what was reported by November 2016. It would take approximately 1,044 rigs drilling with the same efficiency as those in January 2014 to produce the same amount as 401 rigs in November of last year. Running a similar analysis for every month between January 2014 and November 2016, the effective rig rate has still not returned to the levels seen in the beginning of 2014, but it is much closer than the reported rig count would indicate.

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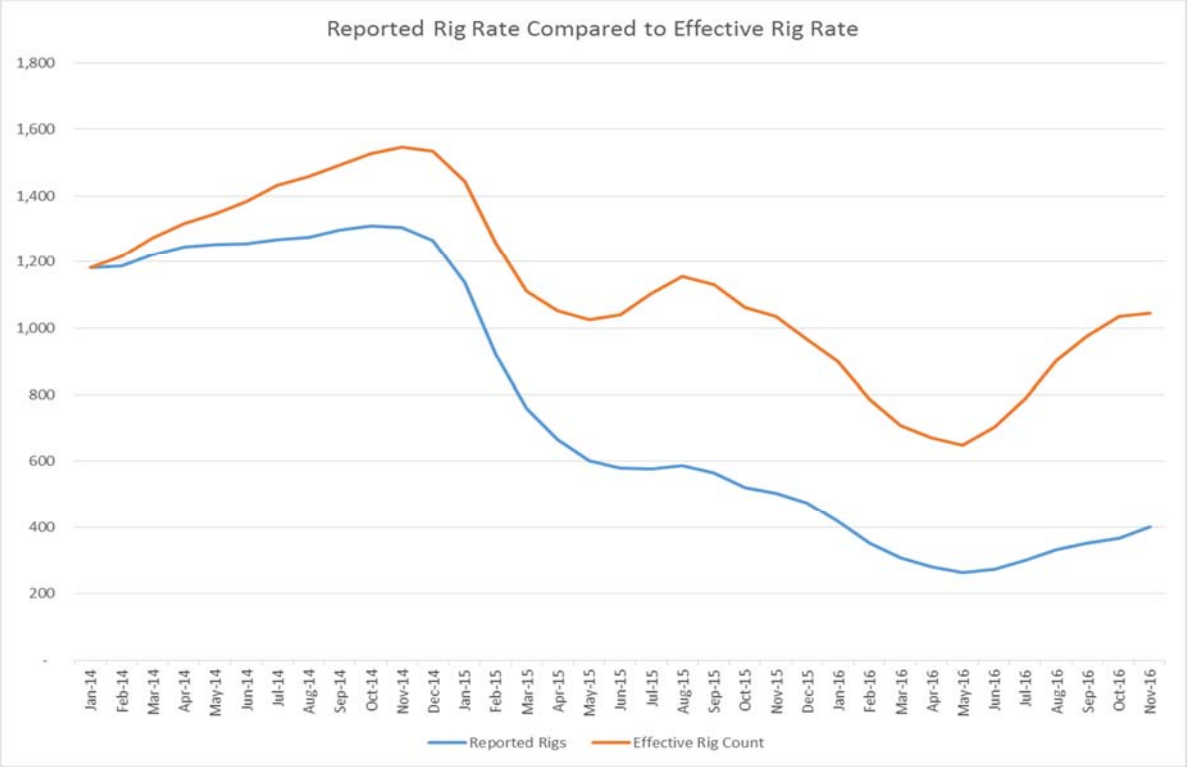


The increased efficiency seen in wells across the U.S. has also led to higher rates of returns, and lowered the breakeven cost for operators in plays across the country. Many plays required $60 or more per barrel of oil to generate 10% IRRs in the second half of 2014, even after some improvements had been made to drilling efficiencies, but that number was pushed even lower as time went on, dropping below $40 per barrel in many plays by November 2016.

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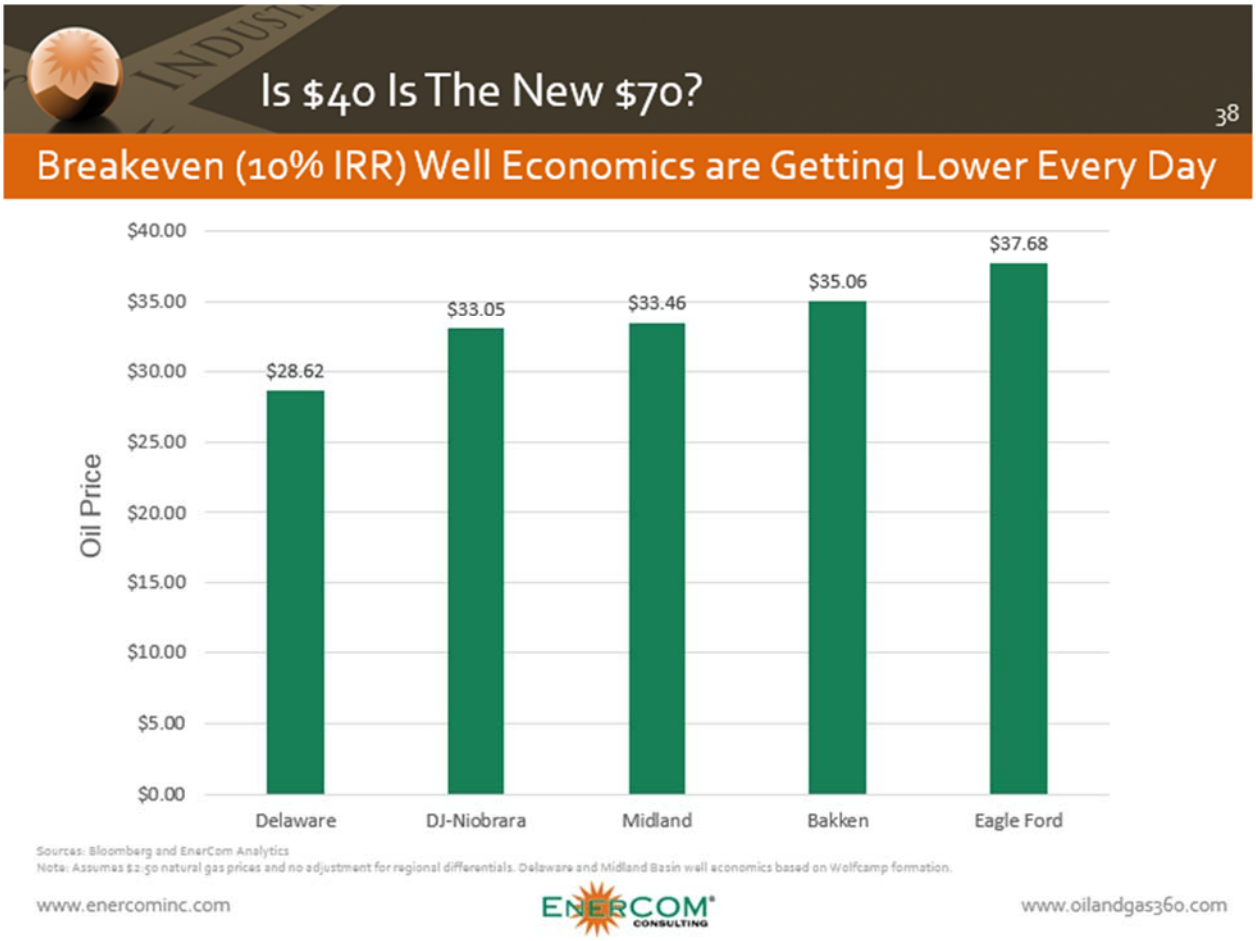


**Are Efficiencies Here to Stay?**

Another important part of the equation in increased efficiencies on the upstream side of the business was downward pressure on oilfield service costs. Low oil prices cut into oilfield service margins as well as operators pushed down costs in pursuit of better rates of return.
As oil prices begin to recover, oilfield service providers expect to increase the cost of their services as well. During Haliburton's second-quarter conference call, company CEO David Lesar commented that he and other service providers would have to increase prices at some point, and E&P companies knew it too.

"[Our customers] know in their heart of hearts that service prices have to go up. They are going to fight the impact of prices coming up as fast and as long as they can, but the reality is – they know they need a viable service industry to be successful in the long run," Lesar said.

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*"[Our customers] know in their heart of hearts that service prices have to go up. They are going to fight the impact of prices coming up as fast and as long as they can, but the reality is – they know they need a viable service industry to be successful in the long run." – David Lesar, CEO Halliburton*

More downward pressure remains on service providers, however. As prices declined, private equity firms began raising capital to purchase distressed assets. Over the course of 2015, private equity raised approximately $34 billion, some of which was used as a lifeline for struggling oil service companies. This infusion of cash into the sector prevented a rash of bankruptcies that might have otherwise forced consolidation in the sector. Private equity dollars have kept competition alive and well on the service side of the business, making it less attractive for oilfield service providers to raise their prices and risk losing out to another company.

As activity increases, this trend will change. Drilling crews that have remained active over the last two years have become incredibly efficient, but new crews will be required as the rig count increases, and less experienced workers will mean longer drill times. This will translate into higher costs to drill new wells and lower the overall returns E&P companies see from individual wells. Unless E&P companies are able to further improve drilling efficiencies to offset higher service costs, IRRs will decline and breakeven costs will increase.

Lower service costs are not the only reason IRRs have improved since 2014, however. Many companies have improved their well designs and drilling processes to create sustainable improvements in their cost structures. Sanchez Energy, for example, said in early-2016 that it believes 27% of its cost reductions in 2015 will carry through to all future wells. The company highlighted points like turning "Dumb Iron" into "Smarter Iron" by optimizing parallel and flat-time processes, and advantages gained in development mode compared to earlier stages of delineation as cost savings the company would retain.

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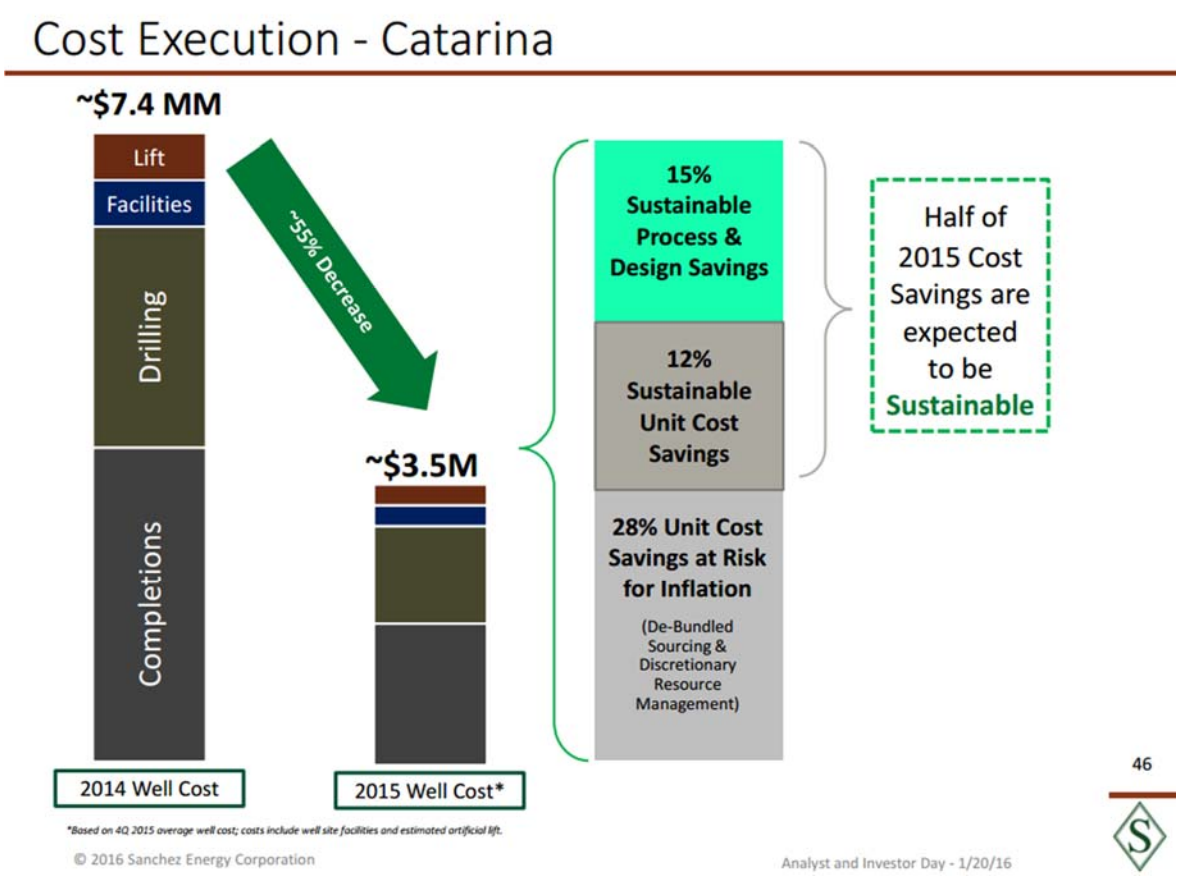


It is also worth noting that the shale industry has delivered improved operating efficiencies since 2008. While it became a much more salient issue for the industry following the crash in oil prices, companies have always sought to make their next well better than the last, and there is no reason to think that new technologies and outside-the-box thinking will not continue to improve operations.

**Investors Looking for Execution in 2017**

Doing an analysis between estimated 2017 production growth and share price, the correlation becomes weaker than the backward-looking data.

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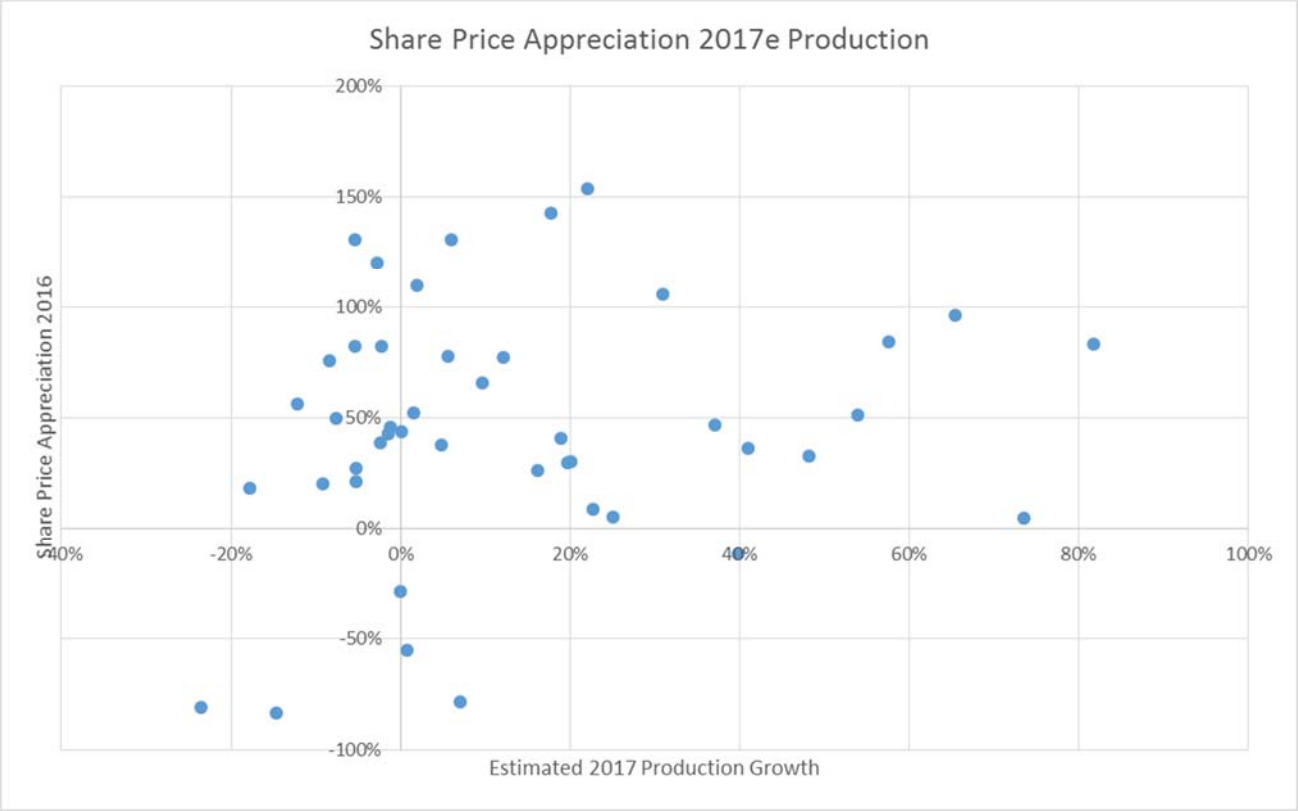


It appears that share price is much more catalyst-driven when talking about expected production growth. Companies in this group from the first analysis that had strong share price appreciation despite low production growth continue to show similarly strong share price appreciation compared to their 2017 estimated production, indicating that the catalyst is more interesting to investors than the production.

The catalyst will only continue to benefit these companies if management teams are able to execute on future plans, however. Moving to a hot basin such as the Delaware will attract investors initially, but those same investors will want to see strong well results moving forward if they are going to keep their capital in the company.

**The Mold of a 2017 Growth Company**

Investors are willing to pay an even greater premium today for a company that can generate 20% debt-adjusted growth than they were prior to the crash in oil prices, but growth alone can prove dangerous if it endangers the balance sheet. Using EnerCom's 5 Factor Model (5FM), we have identified what we believe sets companies apart from the competition.

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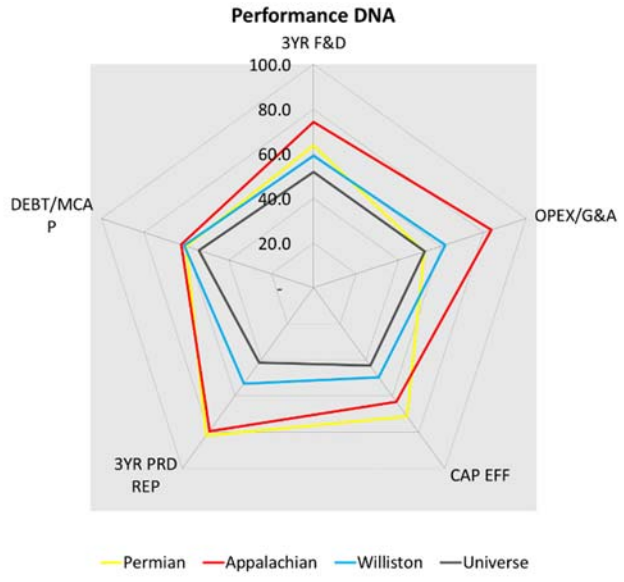
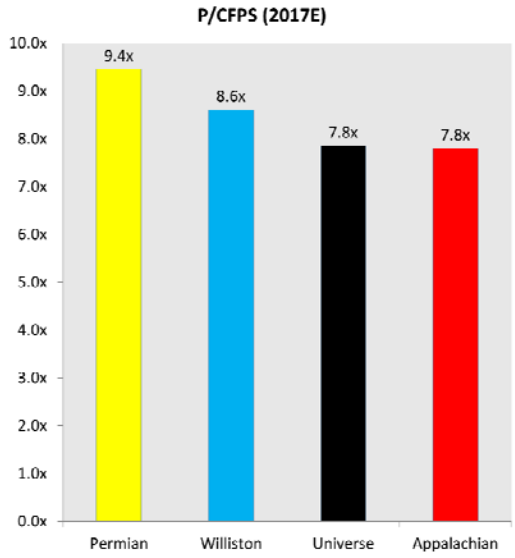
The components of the 5FM include (a) three-year finding & development costs per unit, (b) capital efficiency, (c) operating and general & administrative expense per unit, (d) three-year production replacement and (e) debt to market capitalization. When we rank these factors on a relative basis, we coined the term "Performance DNA" or "Dynamic Numerical Analysis", to describe how E&P financial and operational performance looks to investors.

The below illustrates the Performance DNA for four groups of E&P companies at September 30, 2016, the most recent date for which we have complete data. Using this analysis, the greater the area covered by the polygon, the better the Performance DNA. Components of the five factors were indexed to 100 (i.e. the highest 3-Year F&D costs would receive a 0, and companies with the lowest 3-Year F&D costs would receive a 100). The polygon represents the averages of the five factors by play.




The chart on the left illustrates that growth companies with operations in the Appalachian Basin (red polygon), on average, have the strongest Performance DNA, but their equity multiples have them placed on-par with the majority of our universe. The 2014 analysis showed Appalachian Basin players had the strongest Performance DNA three years ago as well, but they were able to get a premium multiple to match.

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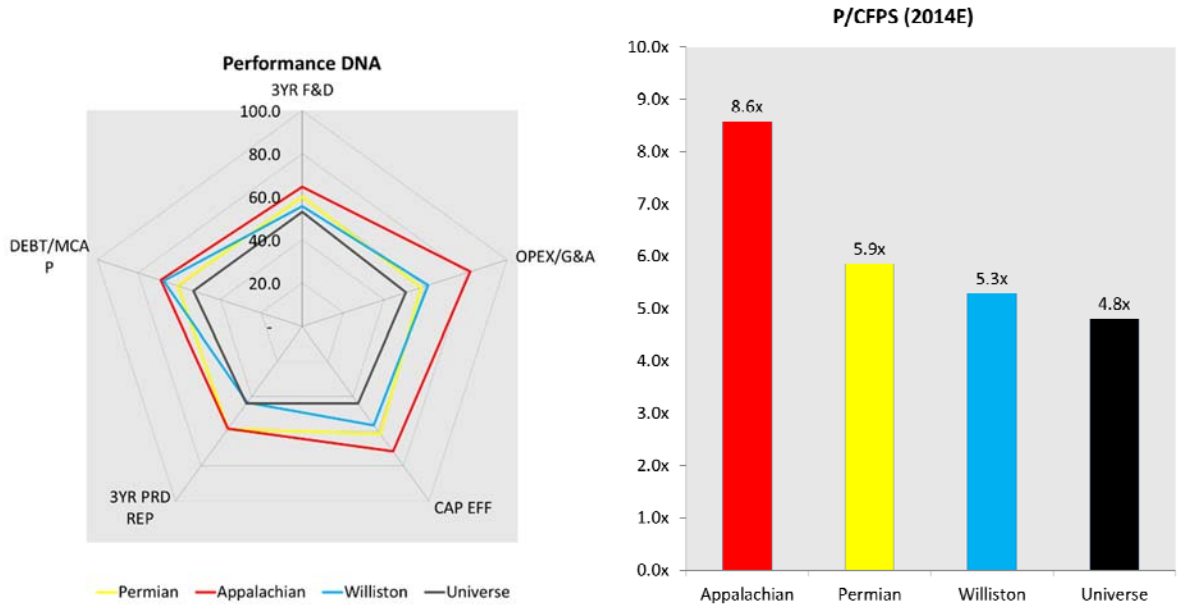


Again, it appears that strong operational metrics are being hampered by pipeline constrictions. Even though the Appalachian players continue to execute on improving operations, investors are not willing to give a premium multiple to a company that cannot get production to market. As midstream capacity in the play improves, the downward pressure on the equity multiples may be relieved, giving those players some uplift.

Permian players (yellow polygon) saw the largest increase in the equity multiples, moving from an average of 5.9x to 9.4x. This trend is unsurprising given the spike in M&A transactions in the Permian, particularly the Delaware Basin. Of the $69 billion spent on oil and gas M&A in 2016, $27 billion (39% of total M&A) was directed to the Permian, and $18 billion of that (two-thirds of total Permian deals in terms of value) was in the Delaware Basin, according to a report from PLS. As operators race to some of the most cost effective production in the country.
Growth companies in the Williston Basin received an equity multiple of 8.6x on average, outperforming the Permian players in terms of OPEX/G&A. Lower levels of capital efficiency among the group kept them from receiving equity multiples similar to those seen in the Permian, however.

The Performance DNA for all three growth company groups continues to outperform the other companies in the EnerCom E&P database (black polygon), despite equity multiples that are on-par with those seen from growth players in the Appalachian Basin.

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Looking forward to 2017, it appears that growth companies will continue to be those that can demonstrate 20% or greater production growth, but investors expect more as well. Premium multiples will go to those that can manage their balance sheet while growing, and companies in the Permian will receive even better multiples than their counterparts in other plays. The strong Performance DNA for Appalachian players suggest that as midstream capacity increases, growth companies in play could receive even better multiples than those in the Permian, but they need to get their production to market before investors will be willing to pay more than the average rate for E&Ps in the play.

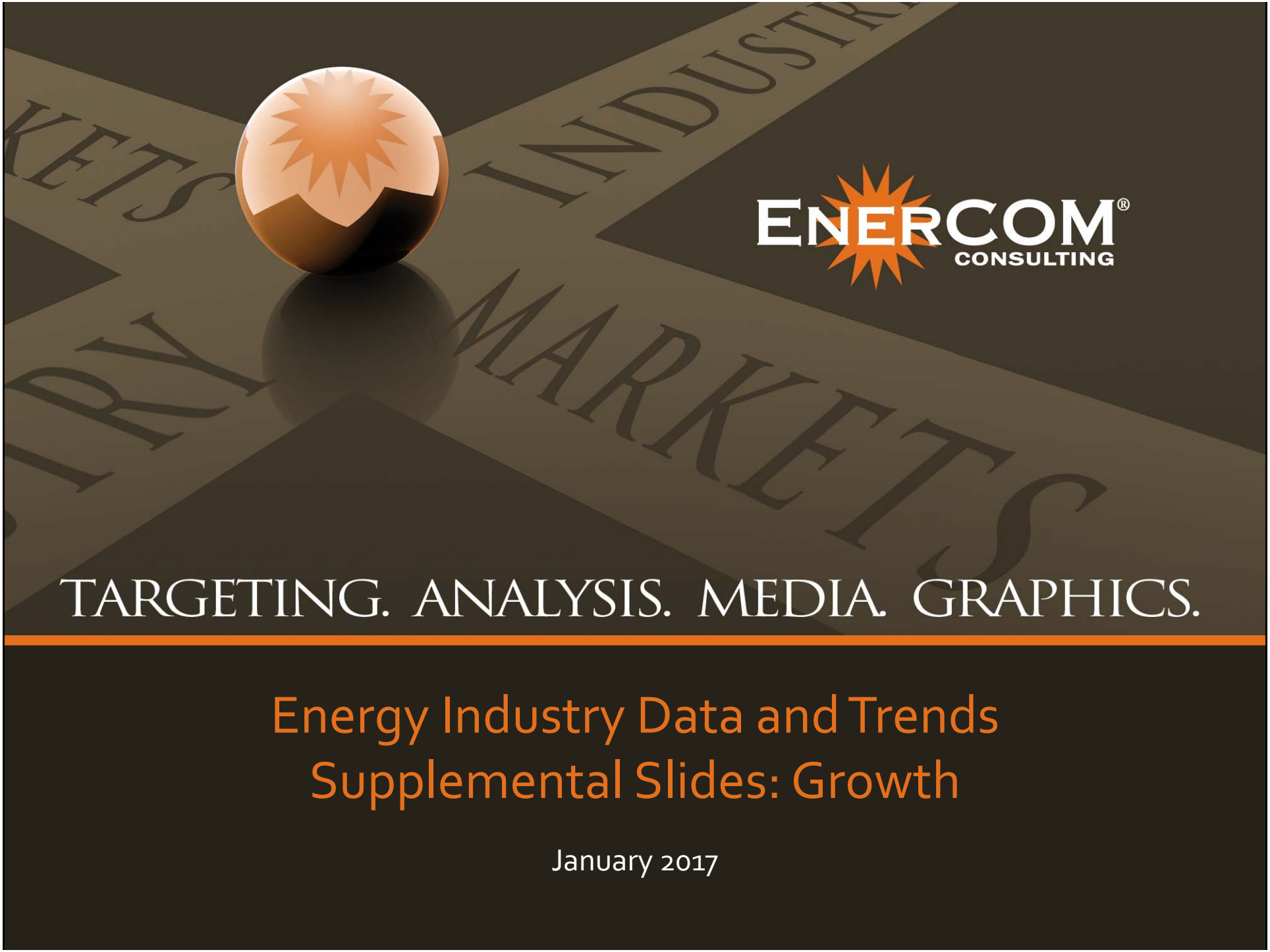
*Looking forward to 2017, it appears that growth companies will continue to be those that can demonstrate 20% or greater production growth, but investors expect more as well. Premium multiples will go to those that can manage their balance sheet while growing.*

The flow of cash in the Permian Basin has sent M&A metrics in the region up to approximately $227,200 per flowing BOE compared to just $53,000 for the Eagle Ford for deals announced in 2016. While the Permian offers impressive assets to generate such high multiples, applying operational efficiencies to other plays in the U.S. could turn the resources in place in plays like the Cotton Valley and the Piceance Basin into the next hot play.

At the end of the day, the companies with the best growth prospects and the lowest cost of capital will win.

**A Word of Thanks**

Thank you again for putting your trust in EnerCom. Please do not hesitate to contact us with questions or additional needs. And, remember that you can get frequent updates and analysis on Oil & Gas 360® at www.OAG360.com




# Energy Industry Data and Trends
# Supplemental Slides: Growth

January 2017

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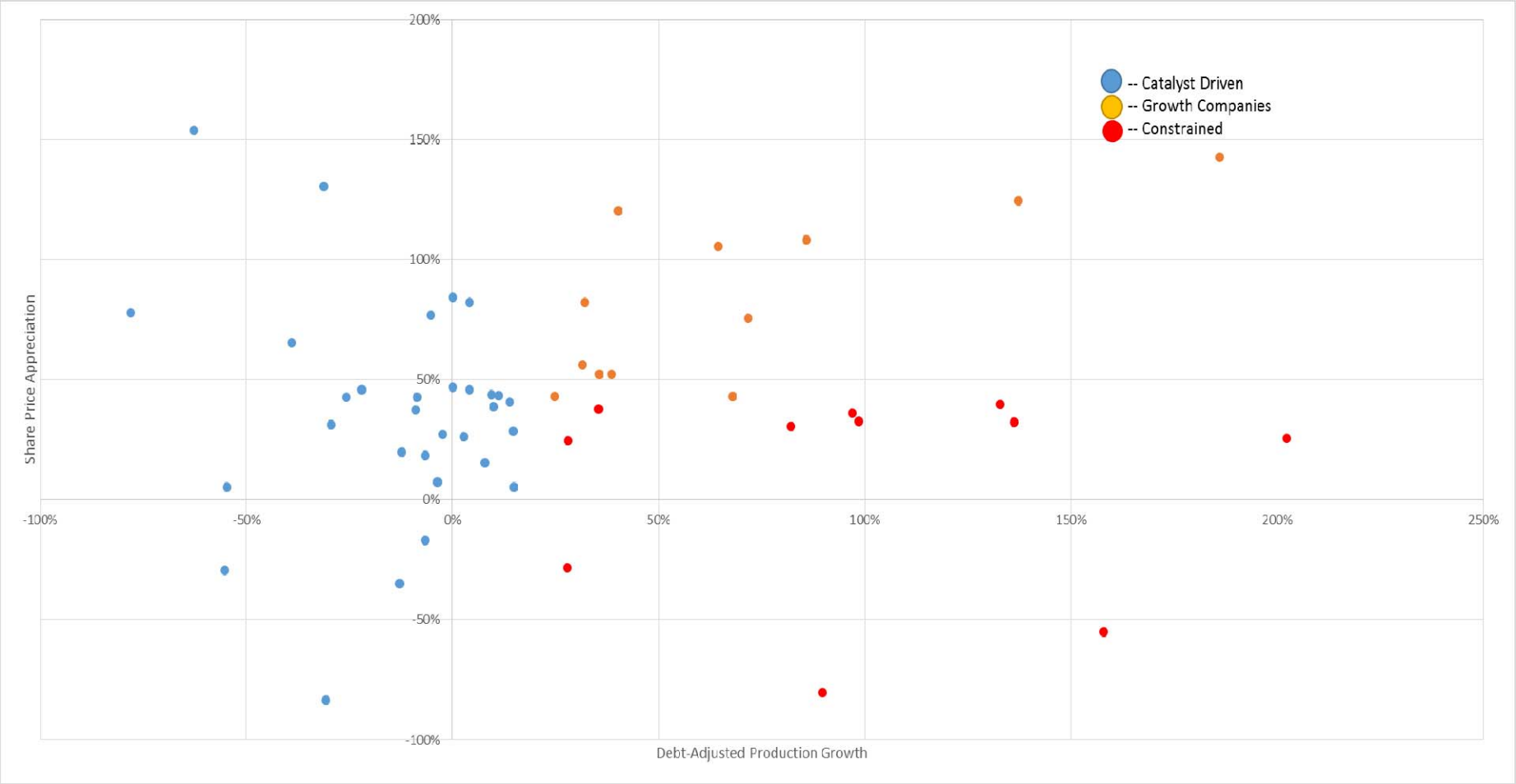
# Growth Company Charts

# 2016 Share Price Appreciation Compared to 2016 Debt-Adjusted Production Growth

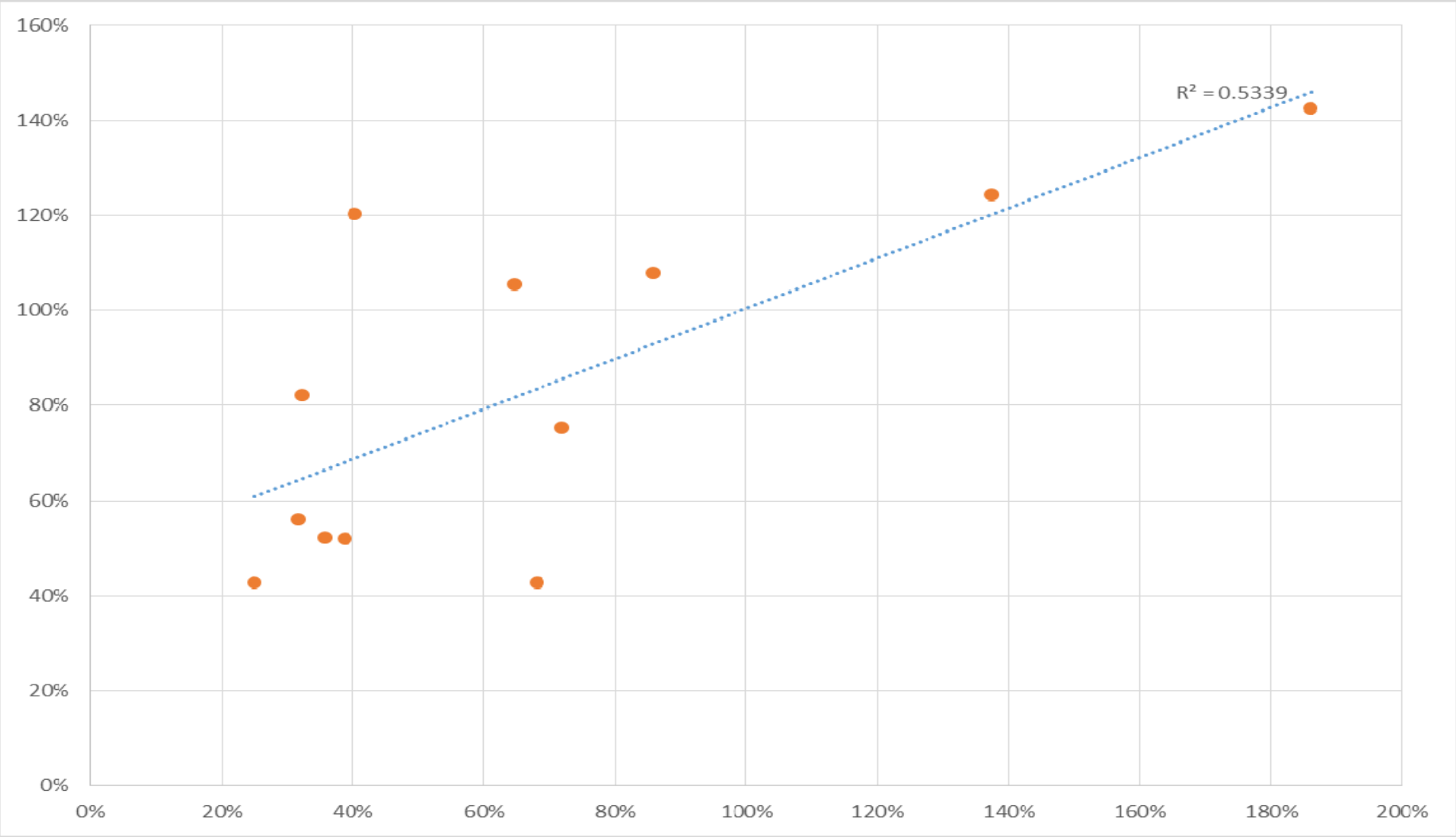





Data: Bloomberg and EnerCom Analytics

# Correlation Between Share Price Appreciation and Debt-Adjusted Growth Among "Growth" Companies

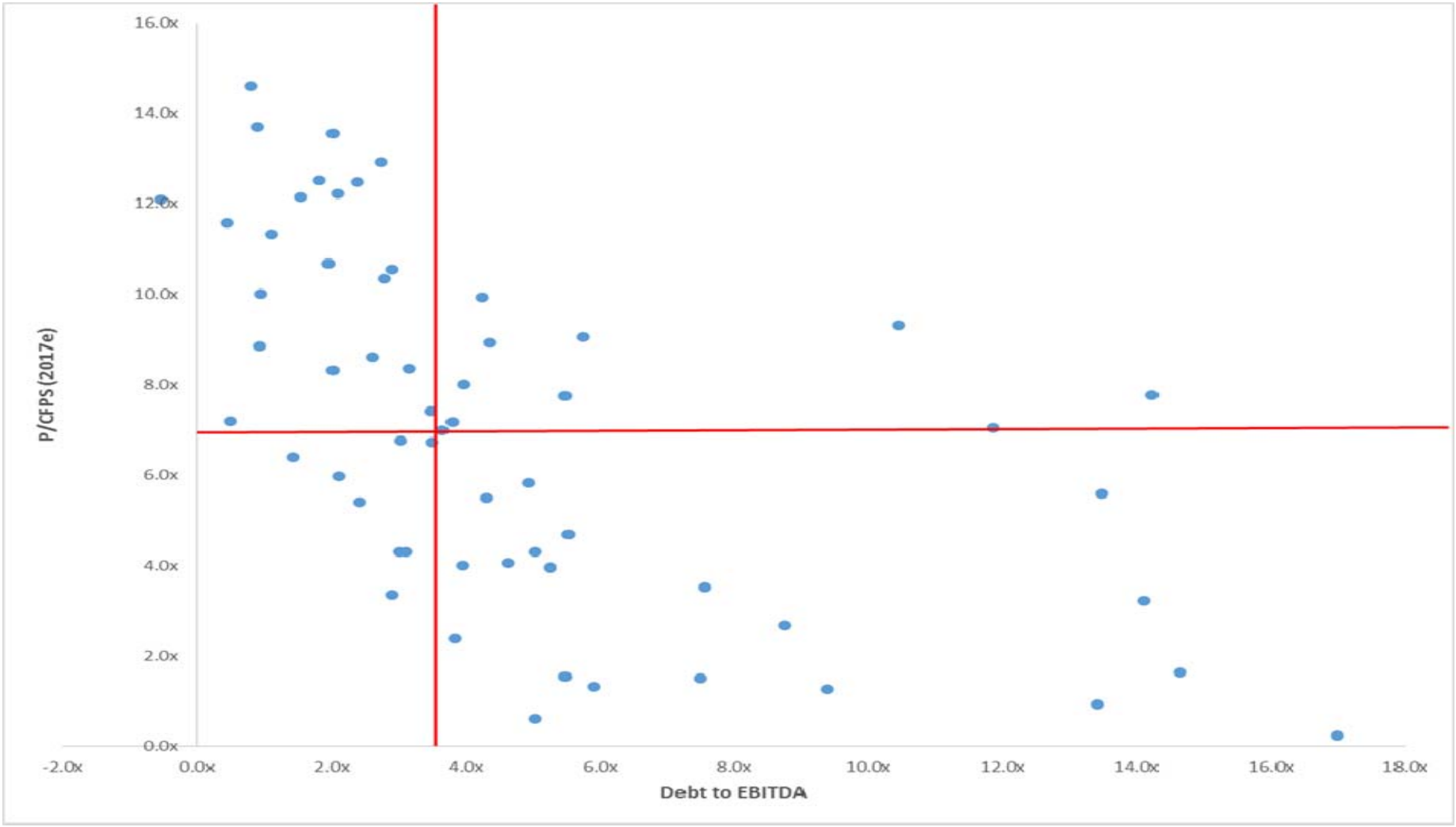





Data: Bloomberg and EnerCom Analytics

# Price to Cash Flow Per Share Against Debt-to-EBITDA

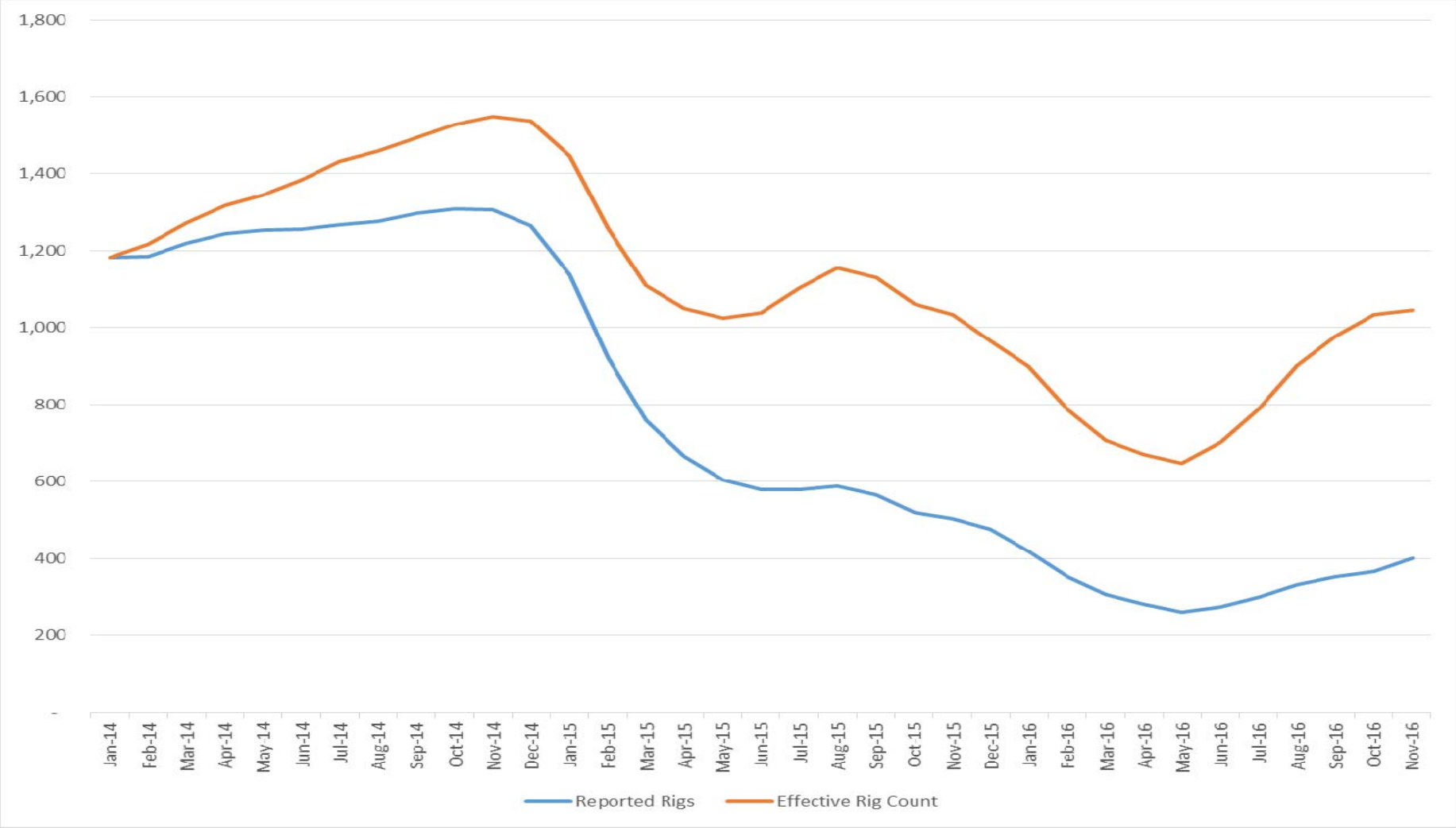





Data: Bloomberg and EnerCom Analytics

# Effective U.S. Rig Count is 2.5x Higher than Reported Rig Count

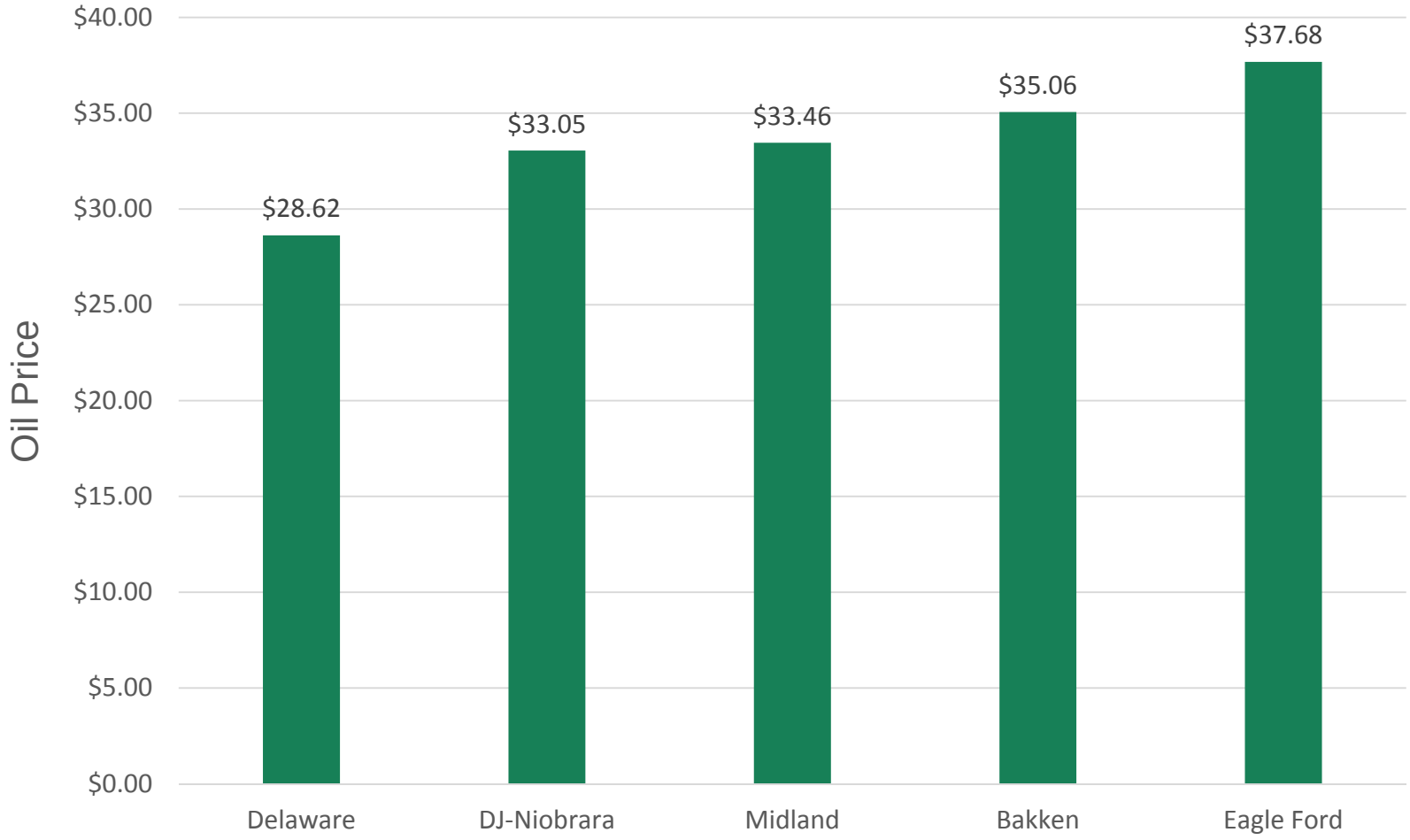





Data: EIA compiled by EnerCom Analytics

# Is $40 Is The New $70?

## Breakeven (10% IRR) Well Economics are Getting Lower Every Day




Sources: Bloomberg and EnerCom Analytics
Note: Assumes $2.50 natural gas prices and no adjustment for regional differentials. Delaware and Midland Basin well economics based on Wolfcamp formation.

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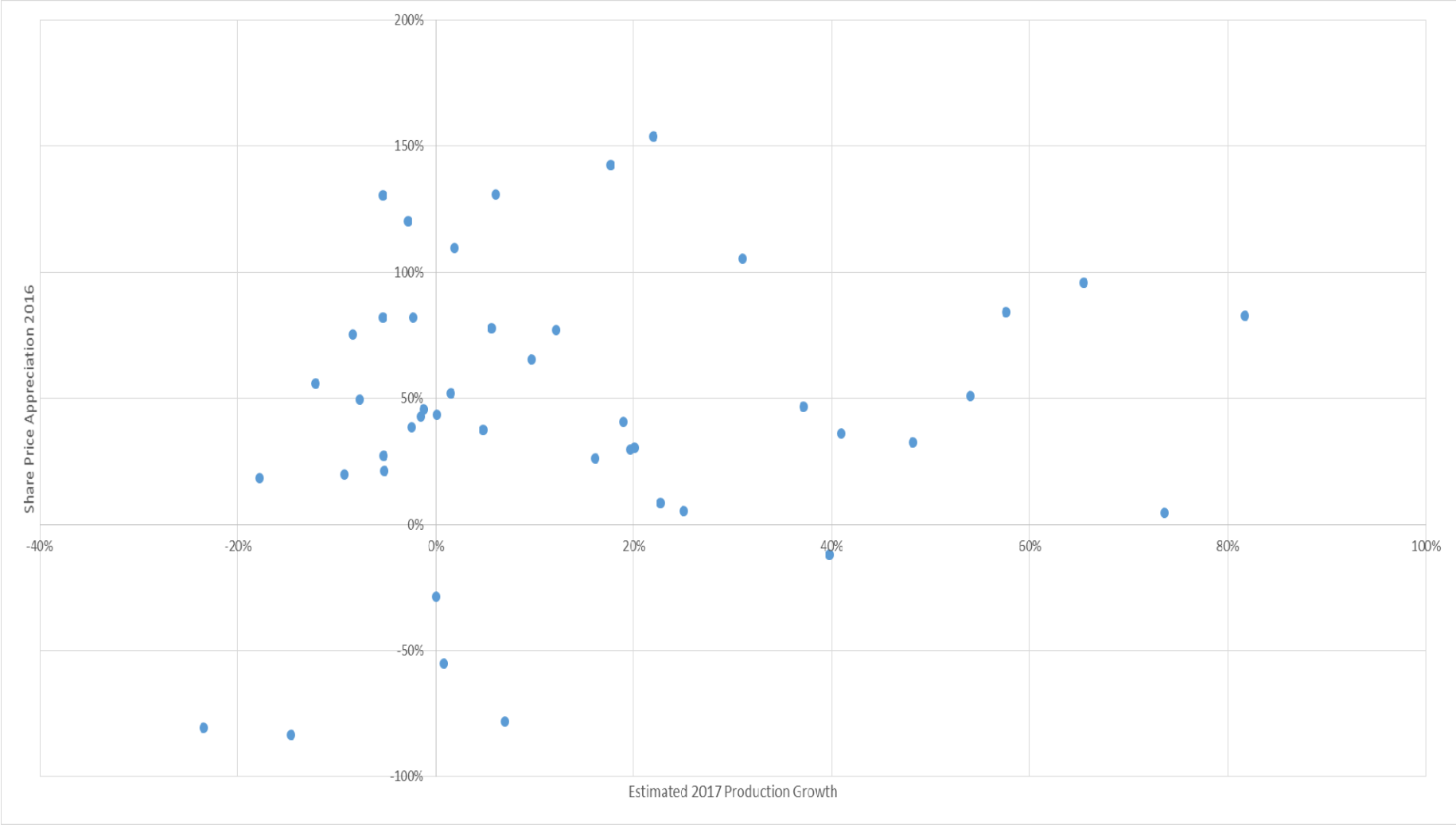
# 2016 Share Price Appreciation Compared to 2017e Debt-Adjusted Production Growth

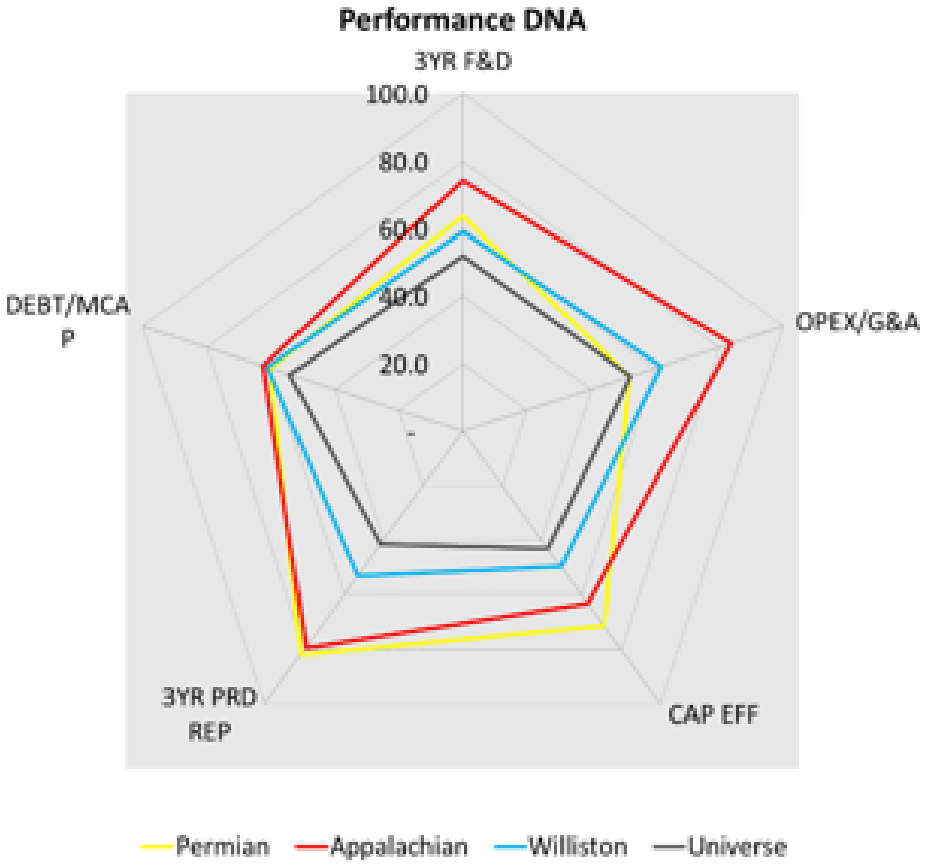


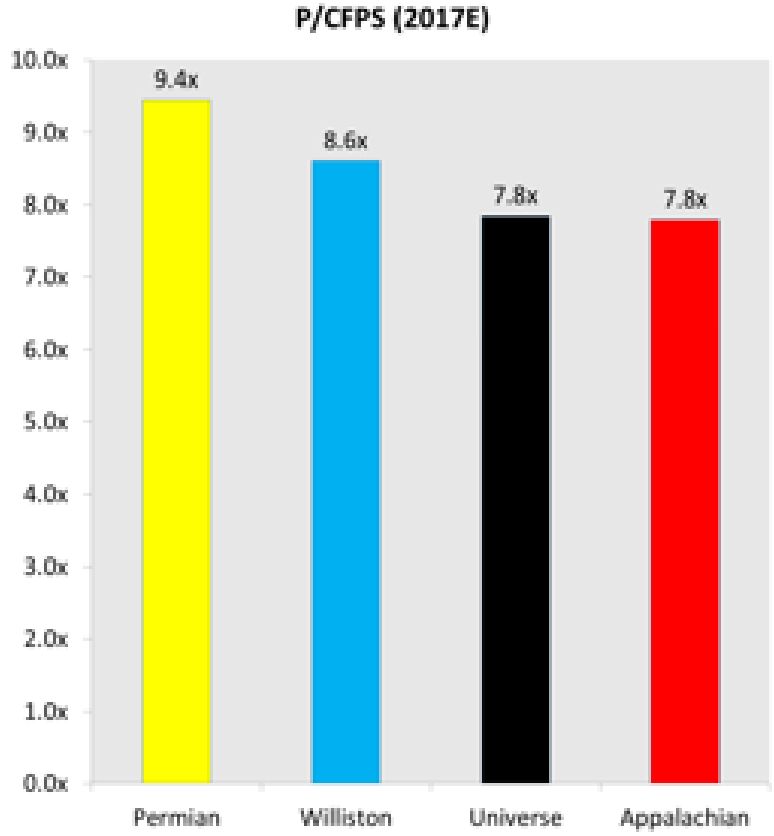



Data: Bloomberg and EnerCom Analytics

# 2016 Performance DNA by Basin



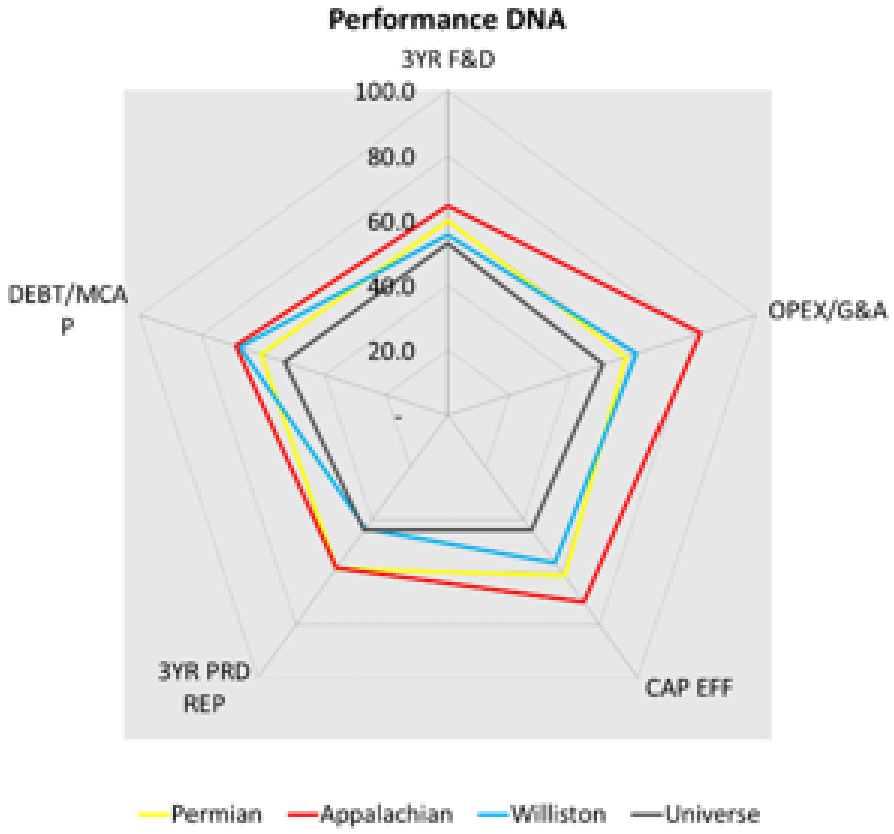


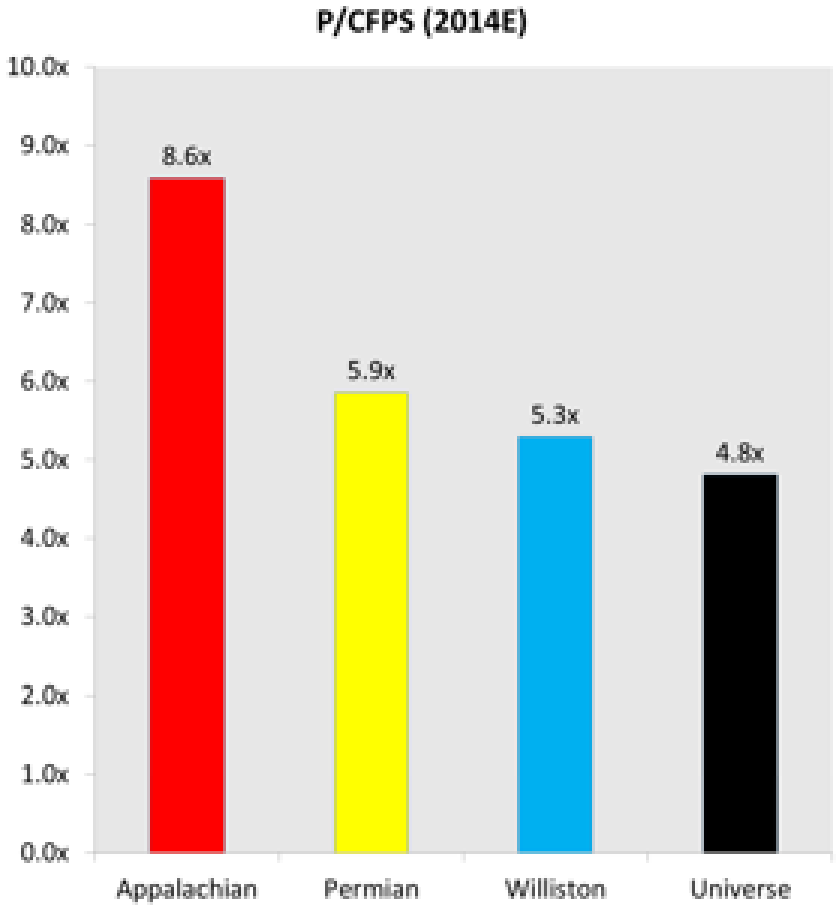




Data: Bloomberg and EnerCom Analytics

# 2014 Performance DNA by Basin






Data: Bloomberg and EnerCom Analytics

# Supplemental Market Slides

# S&P 500 vs. 360-Day MAVG (Long-Term)



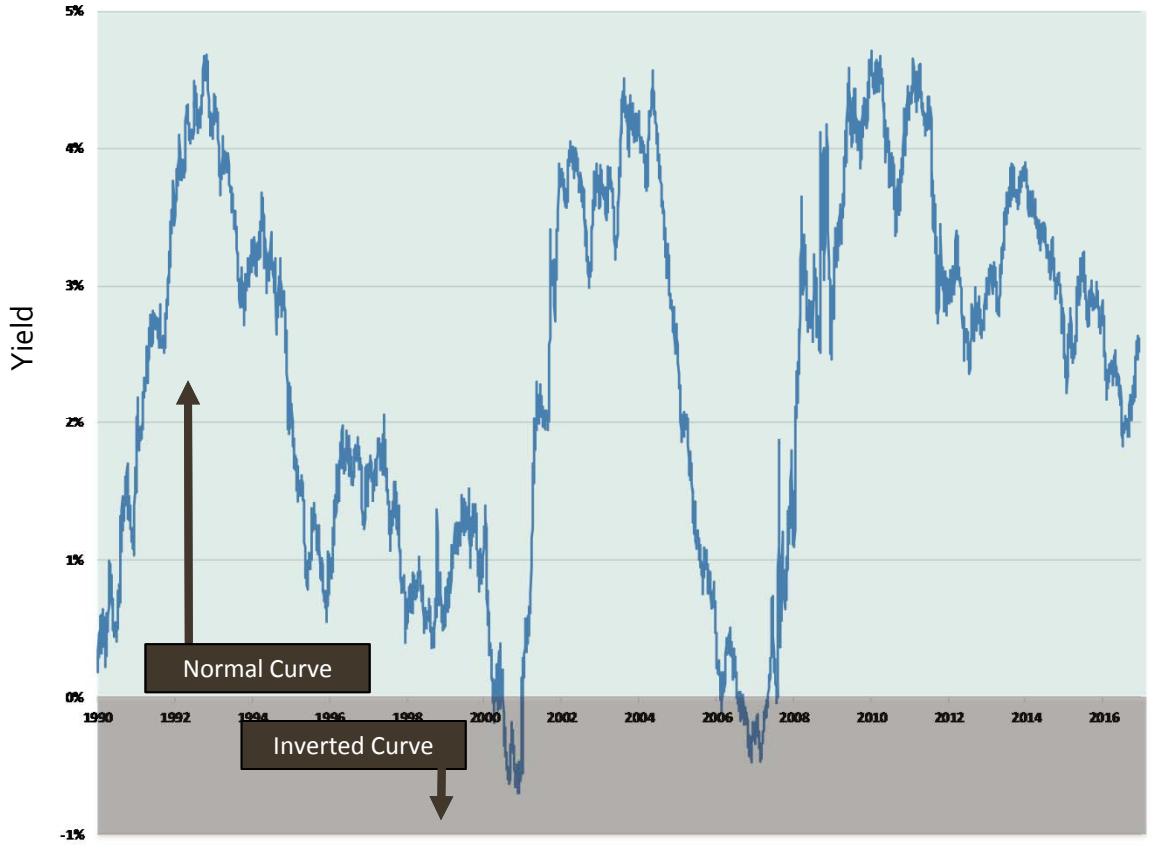

Source: Bloomberg.

# U.S. Treasury Yield Curve

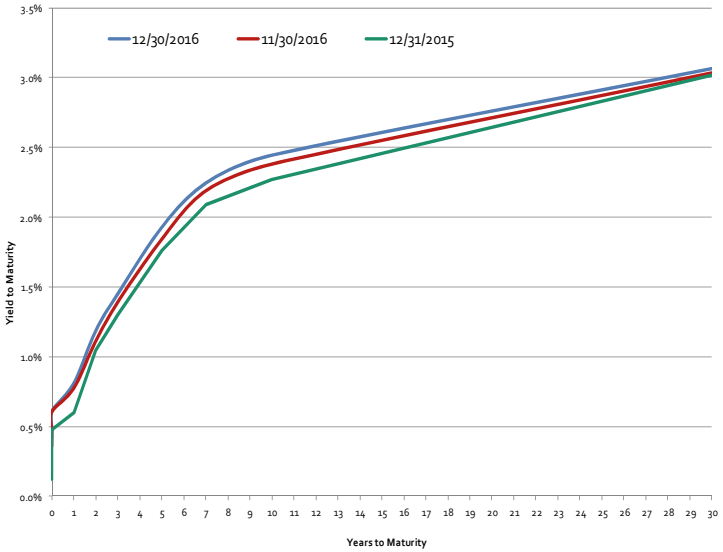


## U.S. Treasury Yield Curve Continues to Look "Normal" – Investors Expect Low Inflation

### Spread between 30-Year and 3-Month Treasury Yields (1990 to Current)




### Yield Curves




Source: Bloomberg

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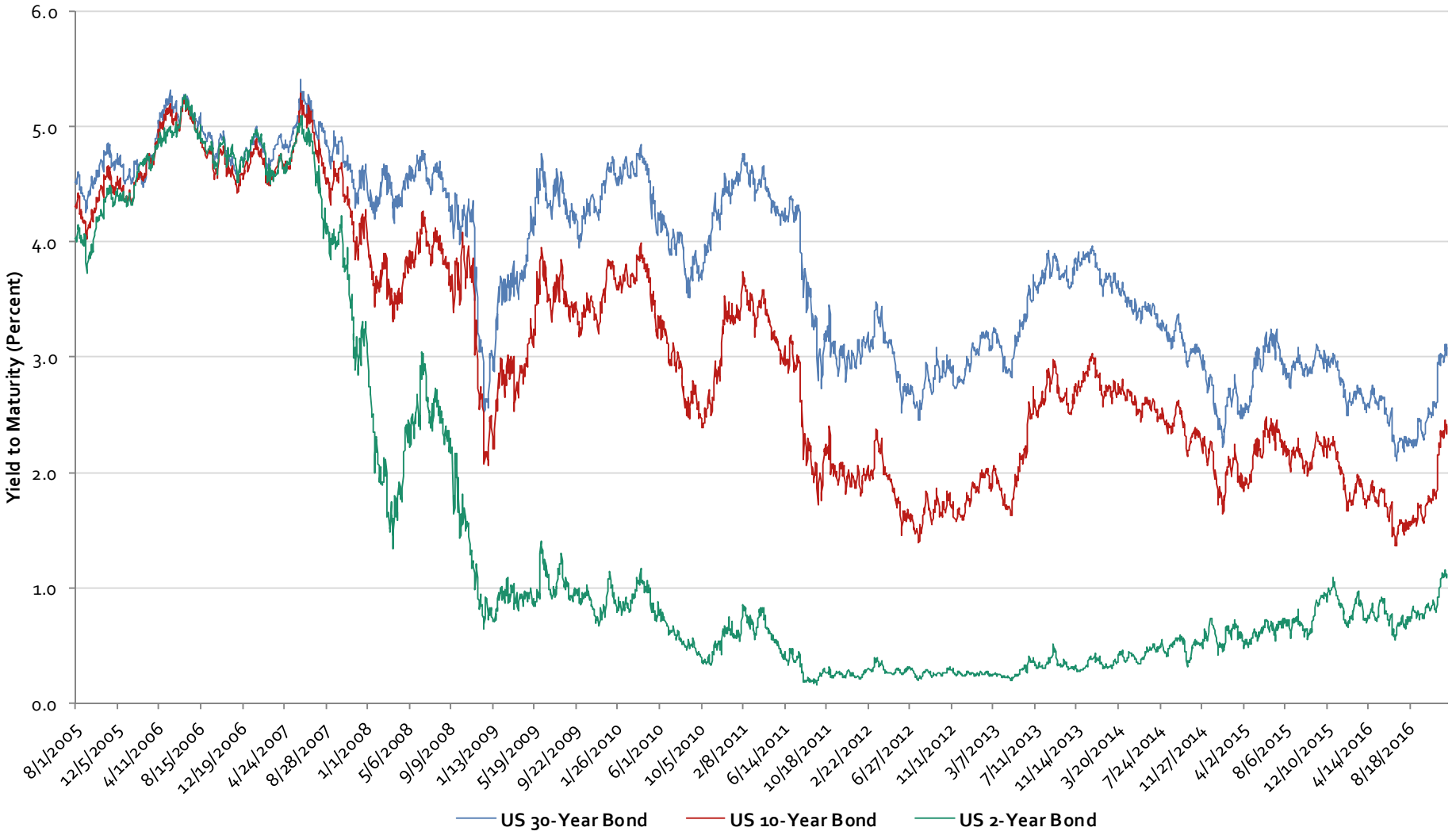
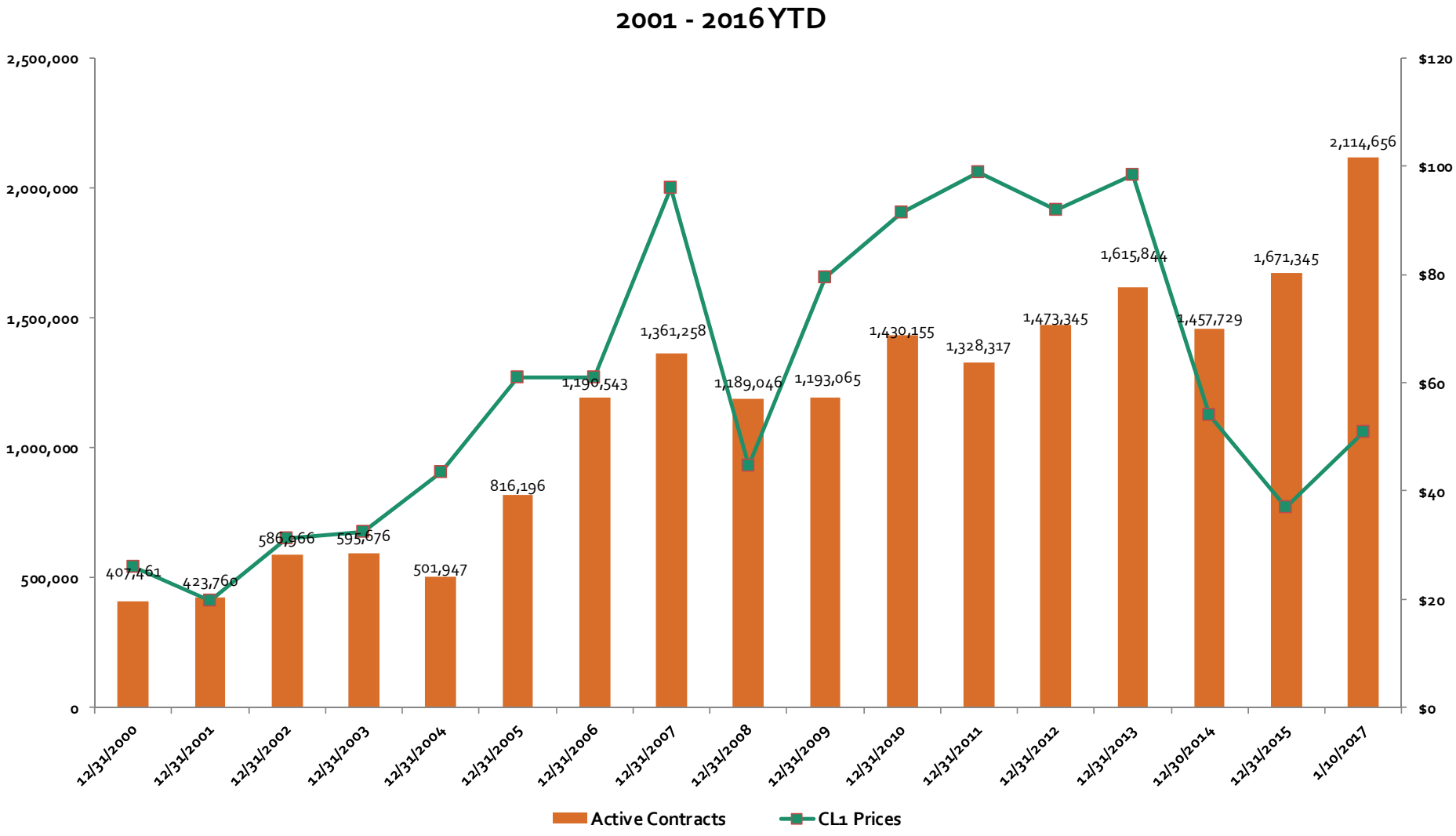
# U.S. Treasury Yields





# Active NYMEX Crude Oil Contracts

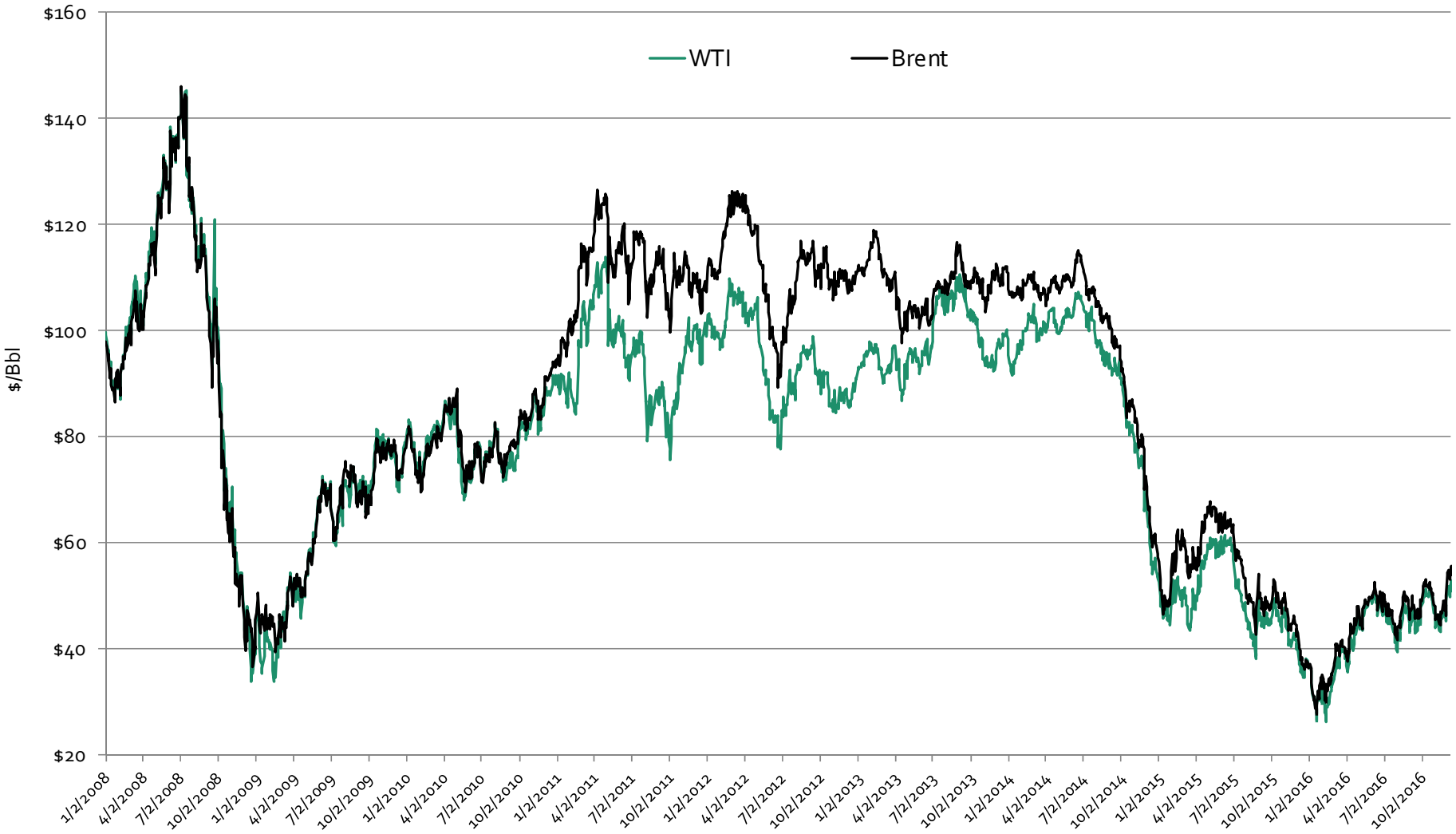





Sources: Bloomberg

# Oil Prices – WTI and Brent

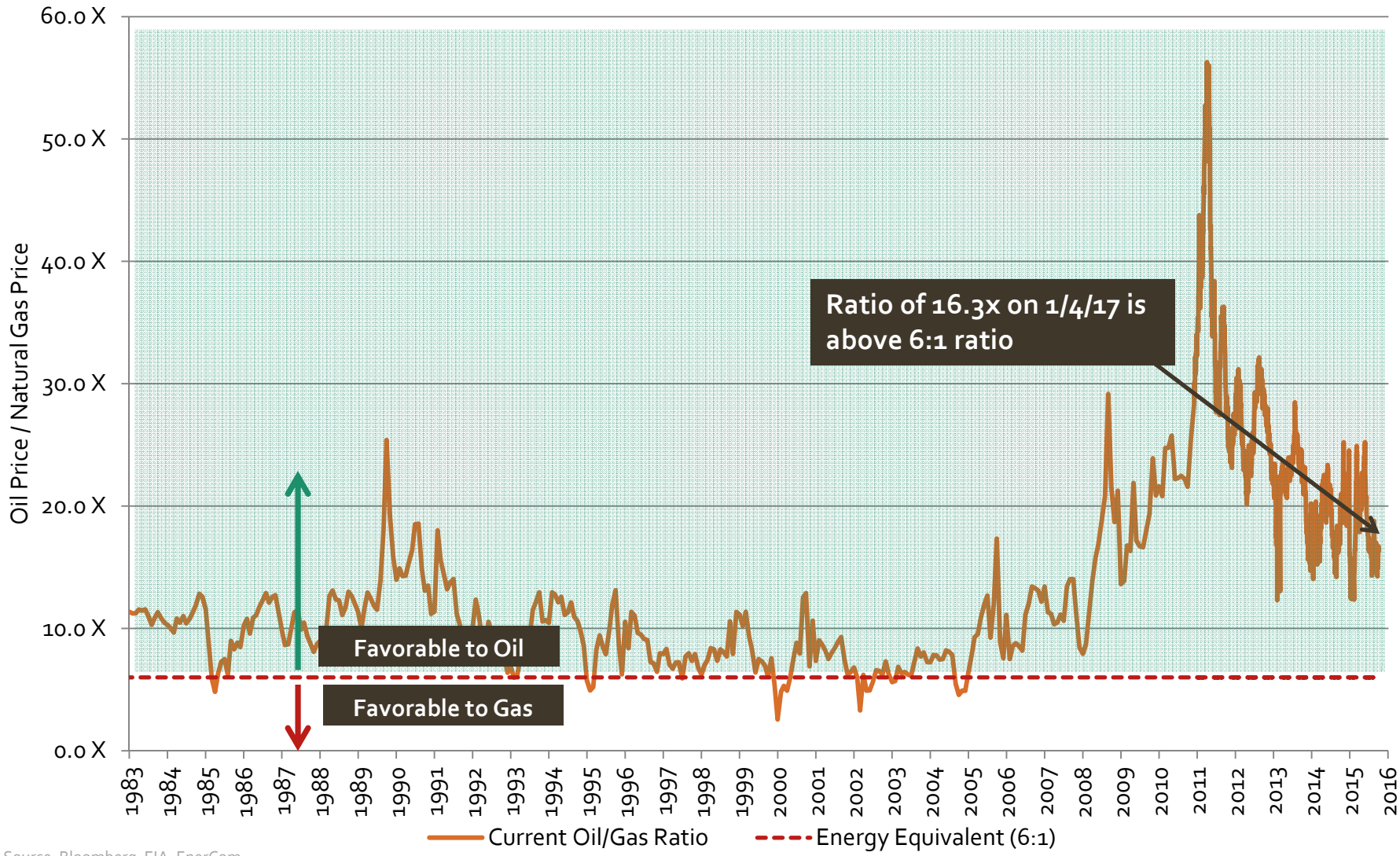





Source: Bloomberg.

# Energy Equivalent Pricing






Source: Bloomberg, EIA, EnerCom.

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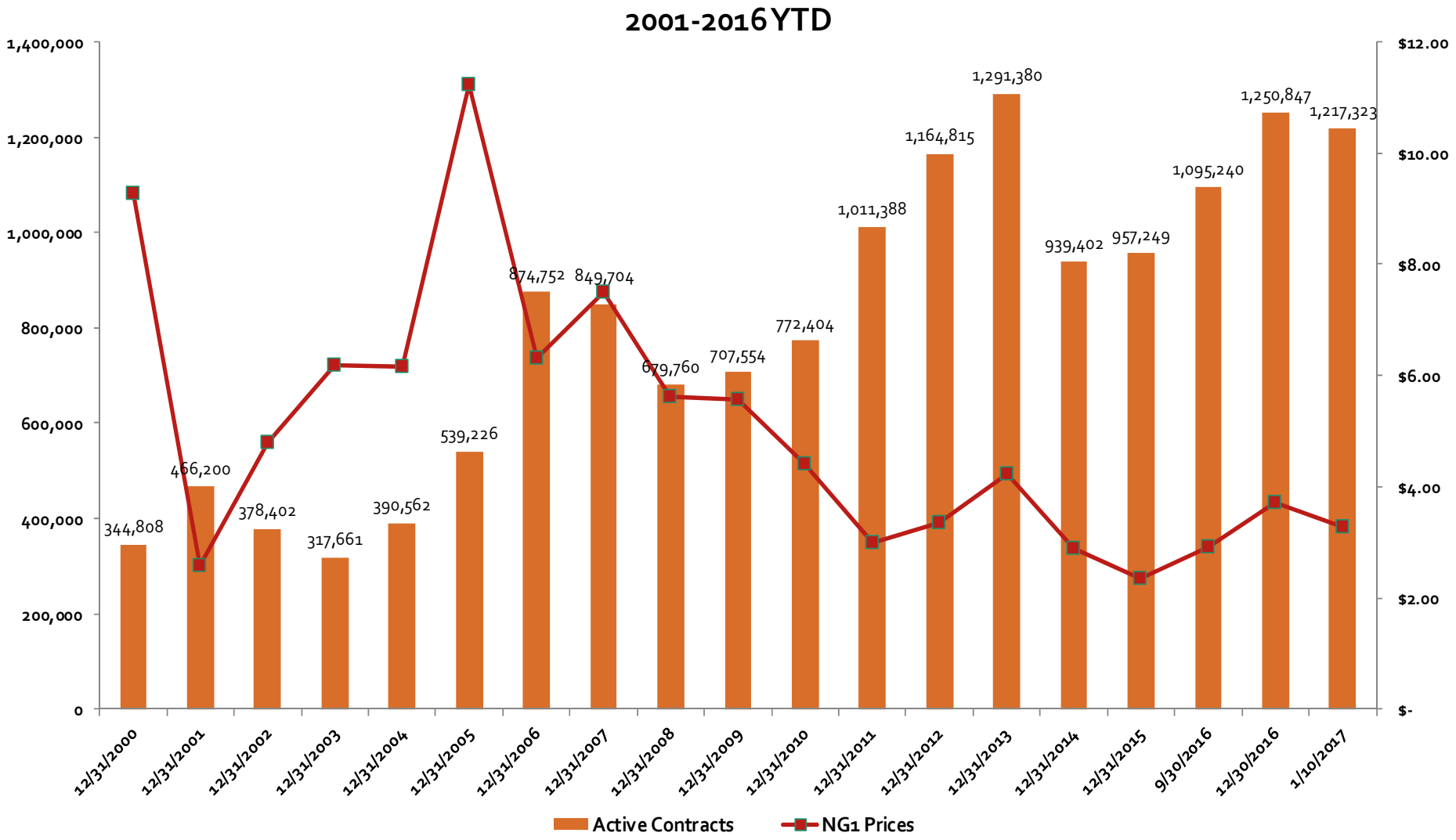
# Active Natural Gas Contracts

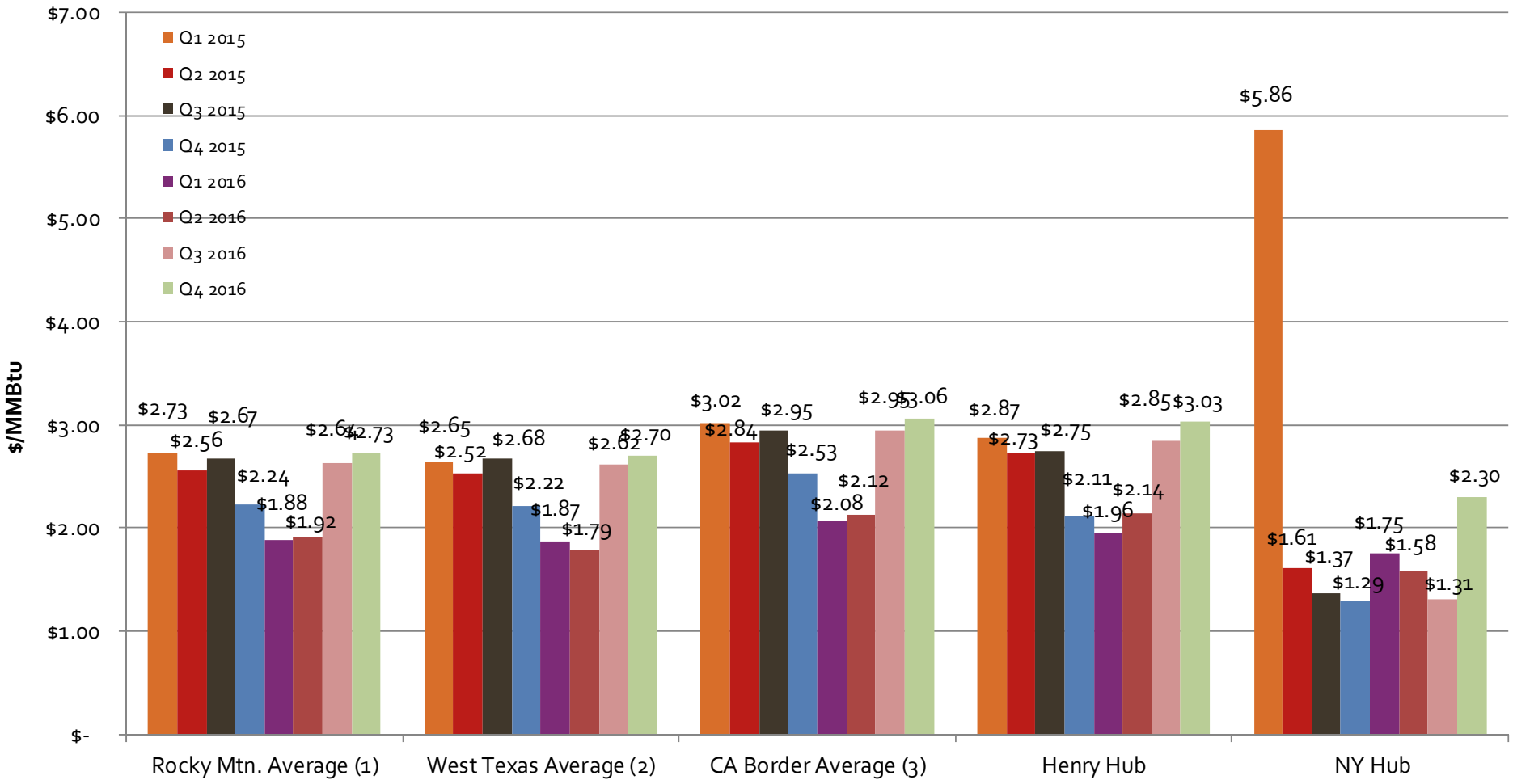





Sources: Bloomberg

# U.S. Regional Natural Gas Prices






Notes: (1) Average of 3 Rocky Mountain hubs (2) Average of 2 West Texas hubs (3) Average of 3 hubs delivering gas to California border

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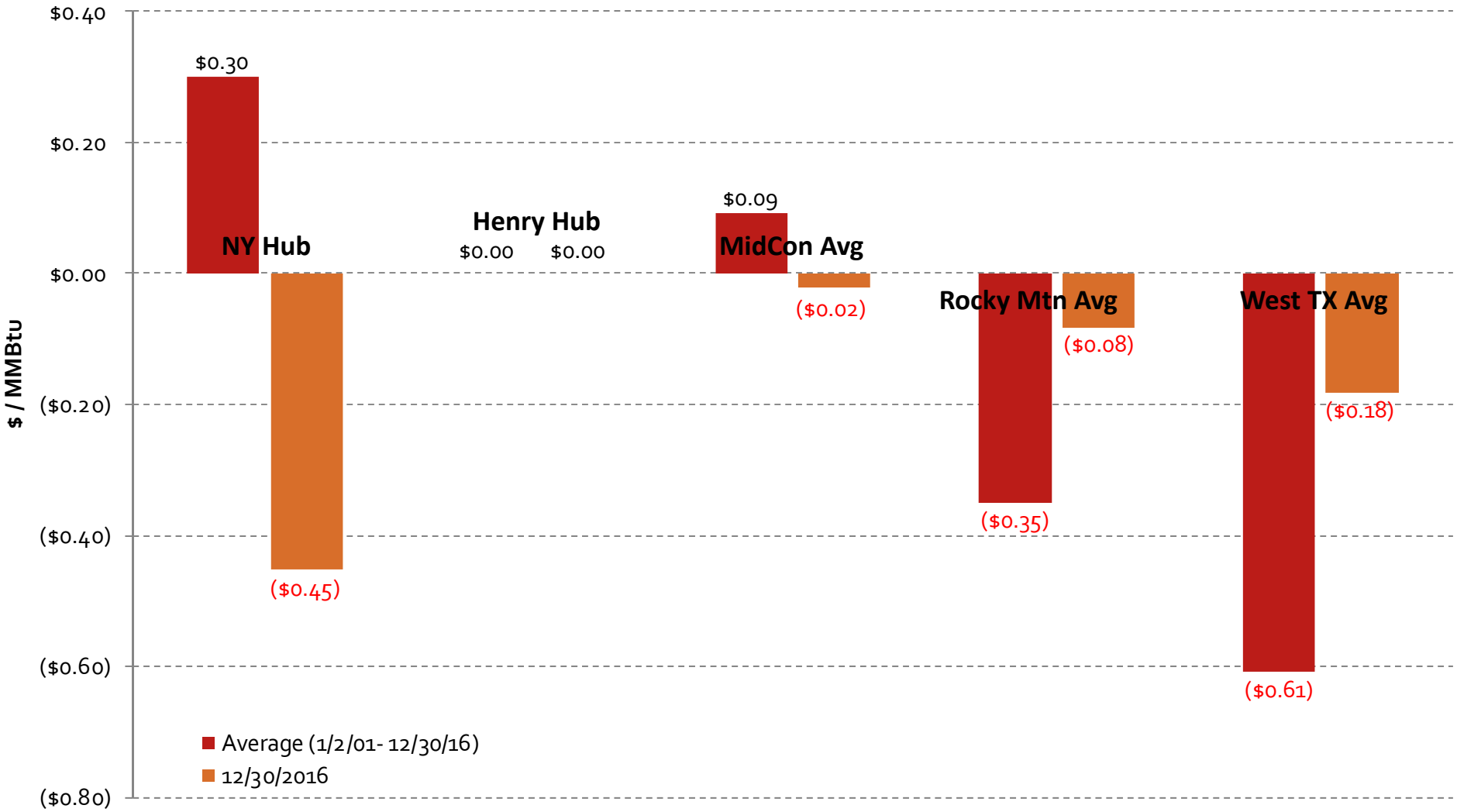
# Regional Gas Price Differentials






Source: Bloomberg, EnerCom.

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