

Natural Gas Market Update

Two Big Questions for 2017

Kinect Energy Group
February 23, 2017





▼ 2016 in Review – A Year for the Record Books

▼ Bullish Set Up for 2017?

- **Two Big Questions** for the rest of the year

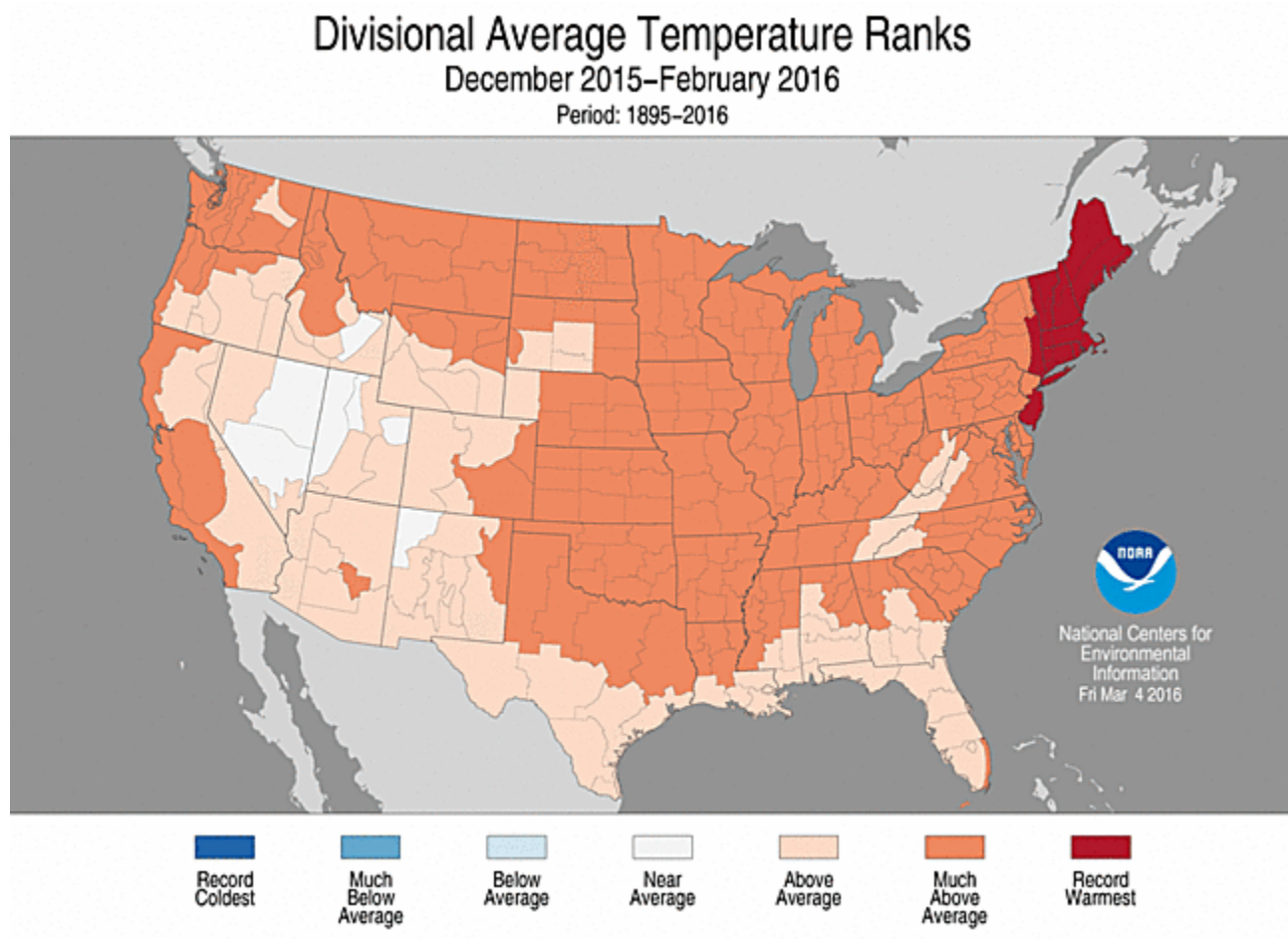
▼ Natural Gas Price Risk Management

- Universities in a unique position to take advantage of current market opportunities

2016 Natural Gas Market Review



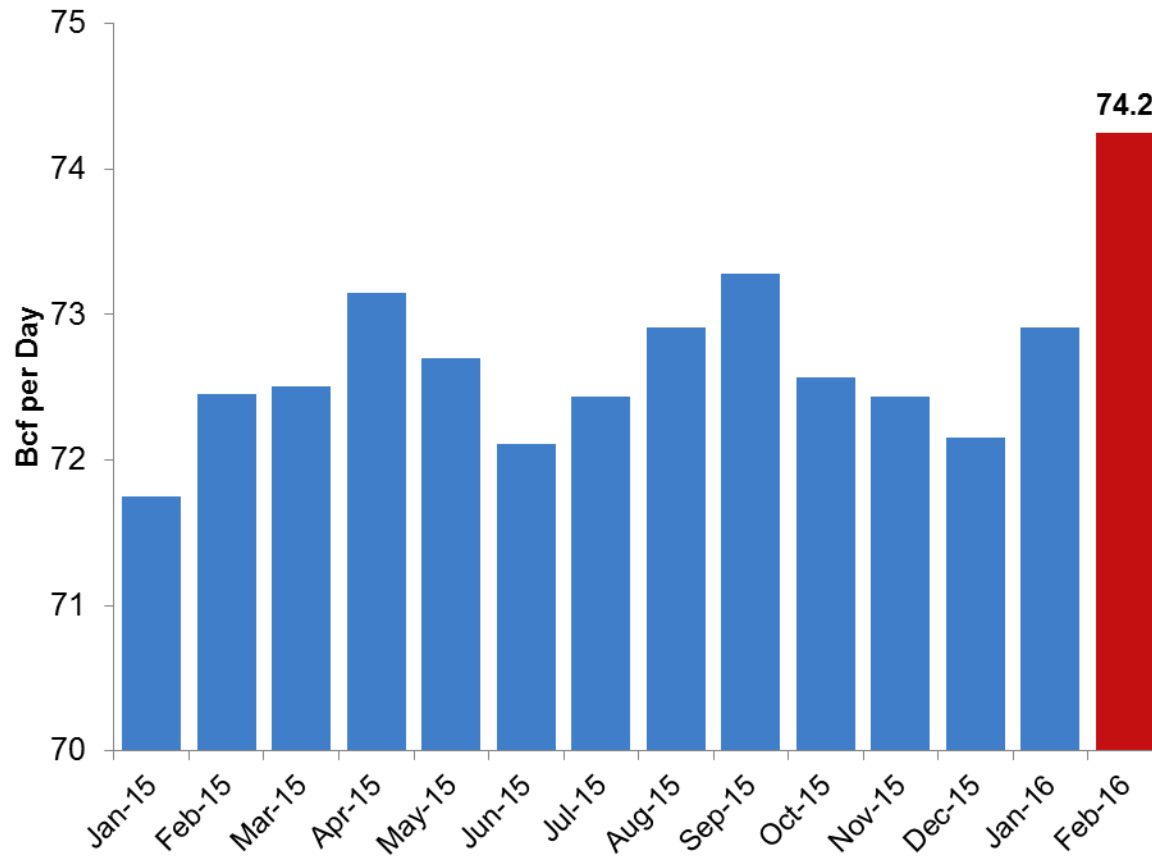
▼ Record high winter temperatures



2016 Natural Gas Market Review



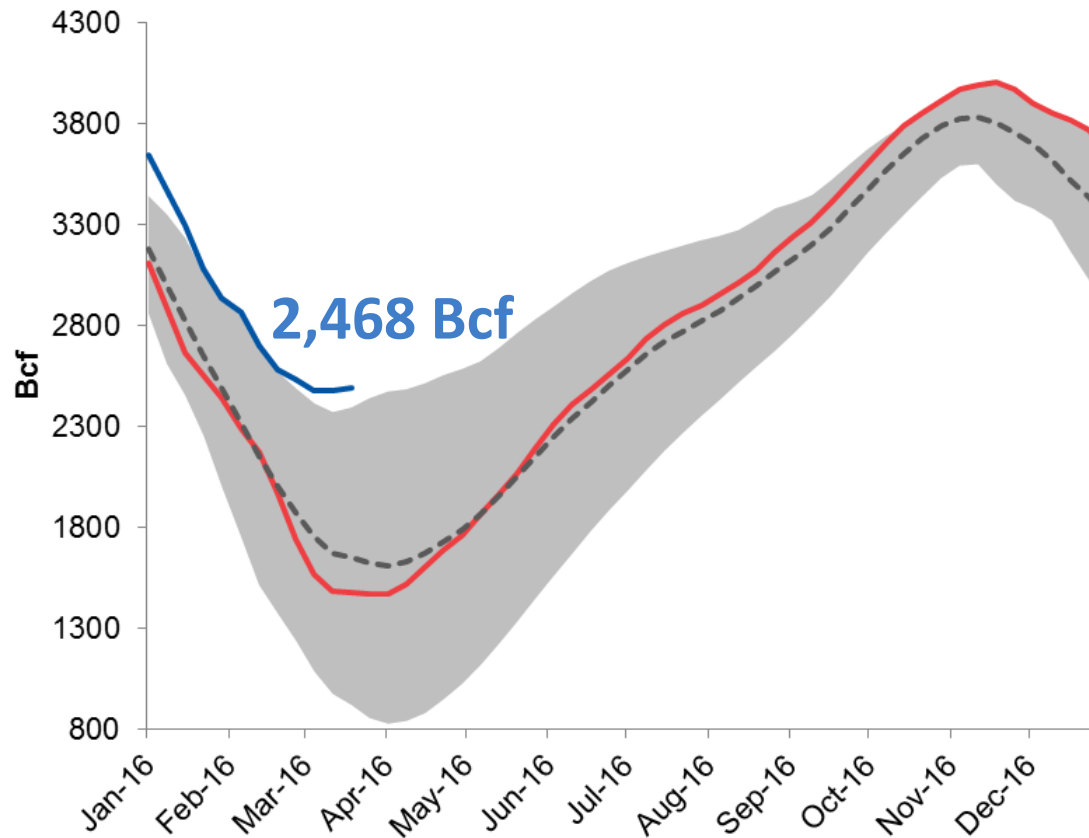
▼ Record high natural gas production in February



2016 Natural Gas Market Review



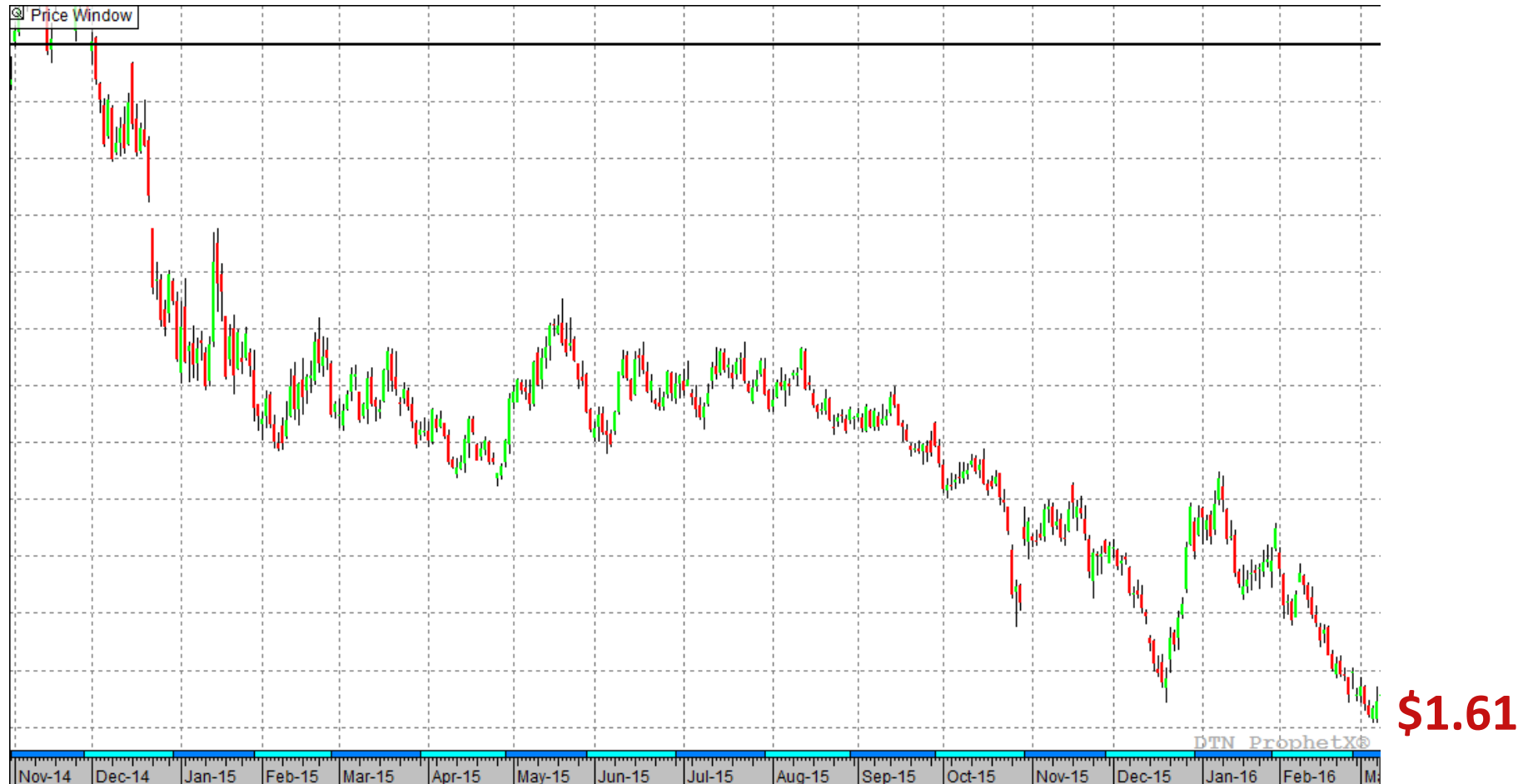
▼ Record high end-of-winter Inventories



2016 Natural Gas Market Review



▼ Record low inflation-adjusted NYMEX price



2016 Natural Gas Market Review



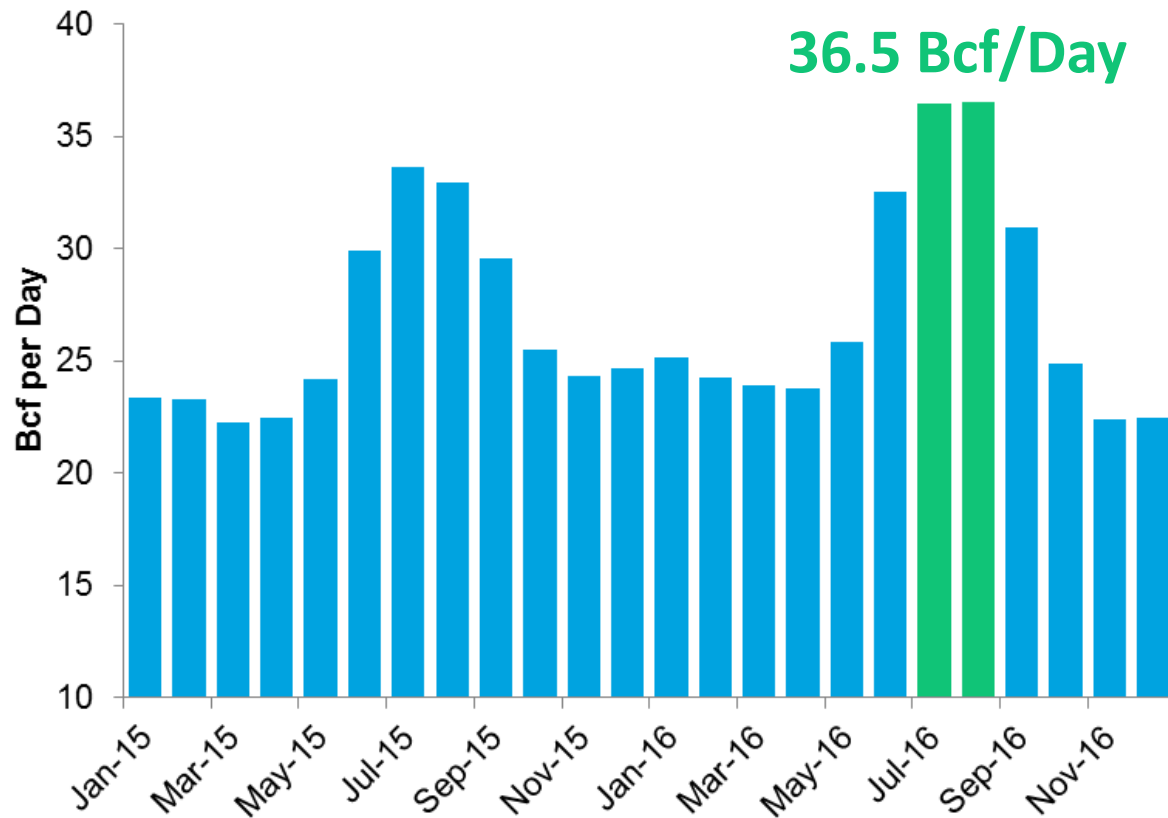
▼ Record low natural gas exploration



2016 Natural Gas Market Review



▼ Record high power generation demand



2016 Natural Gas Market Review



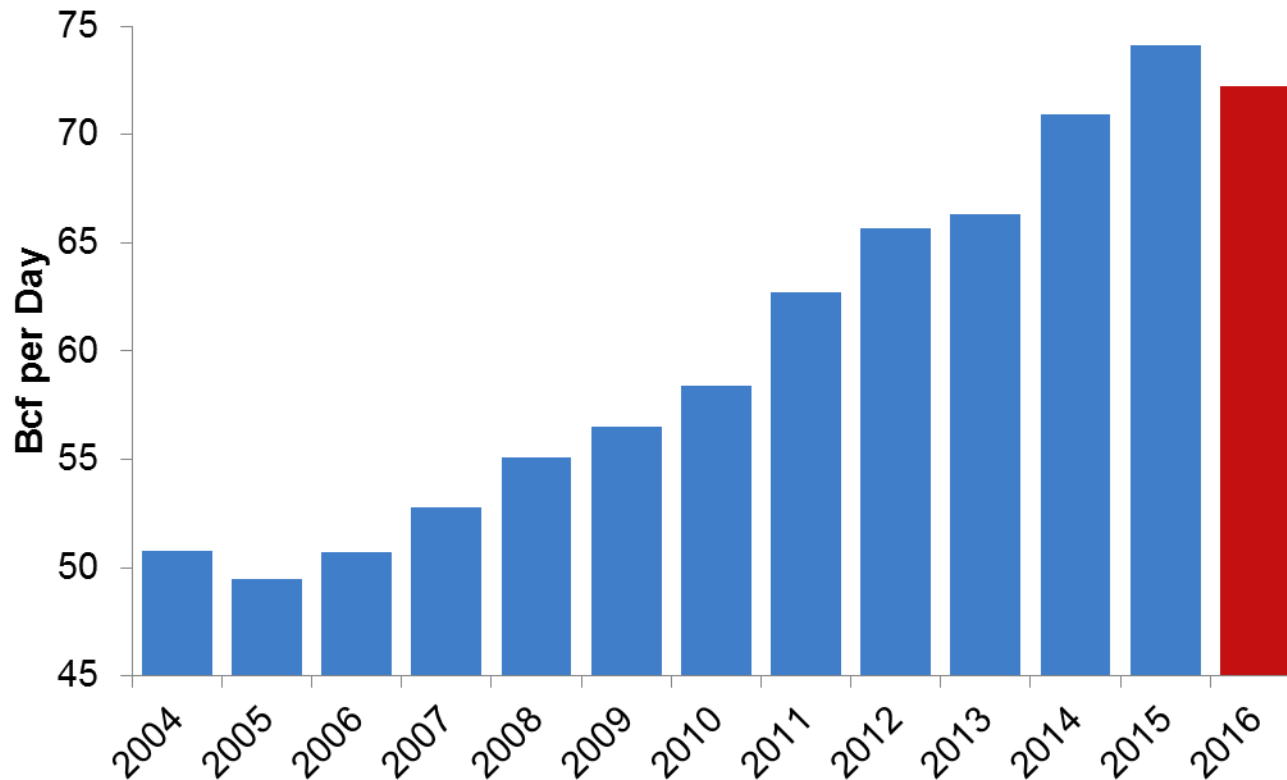
▼ Record high natural gas exports



2016 Natural Gas Market Review



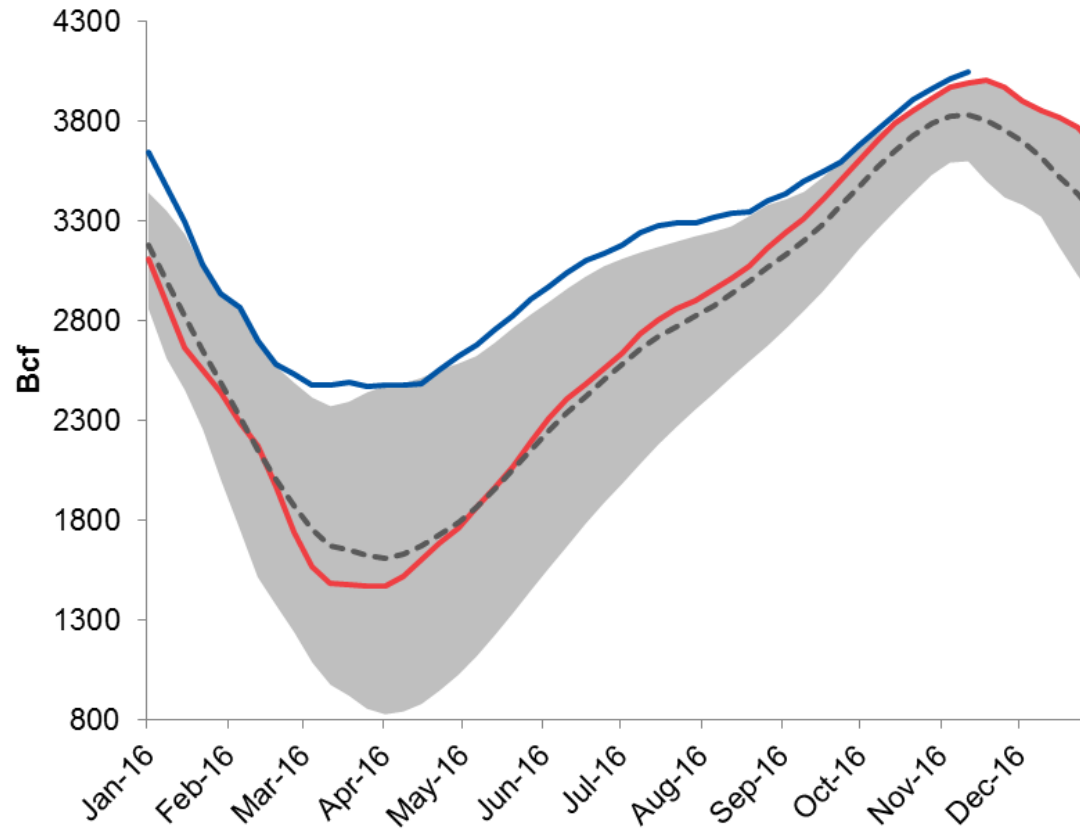
▼ **No record** for annual production – first decline since 2005



2016 Natural Gas Market Review



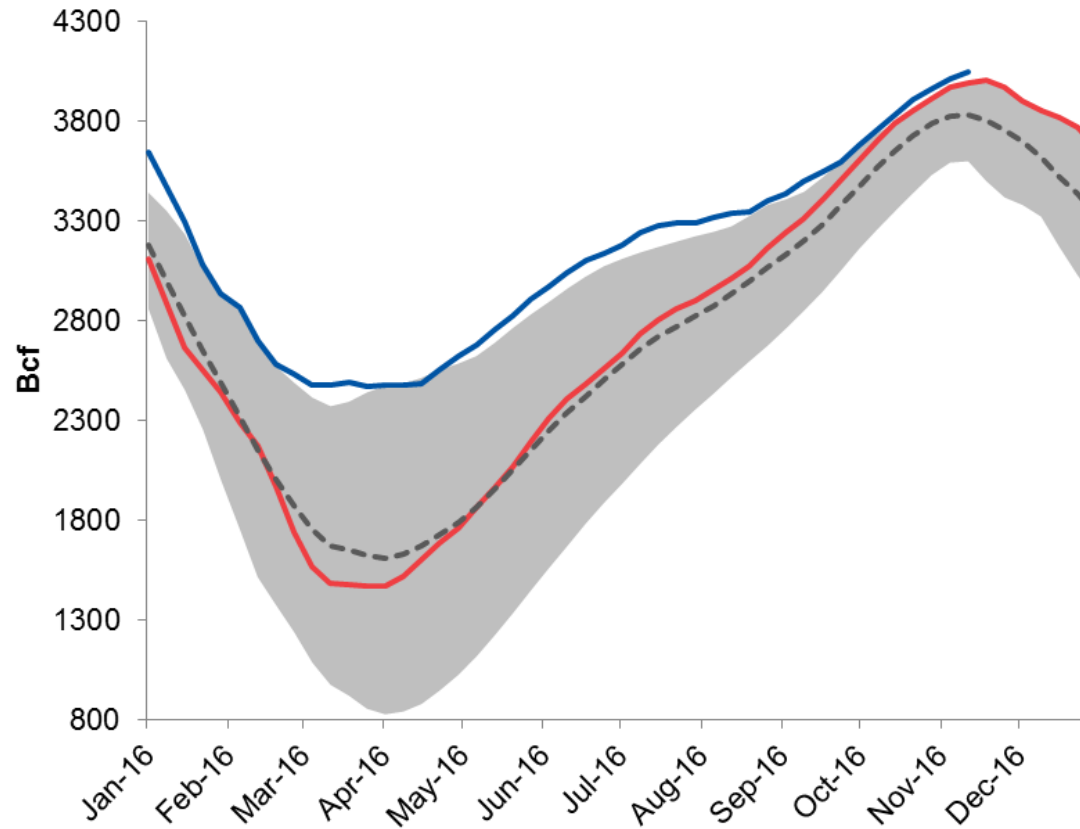
▼ Record high end-of-summer storage



2016 Natural Gas Market Review



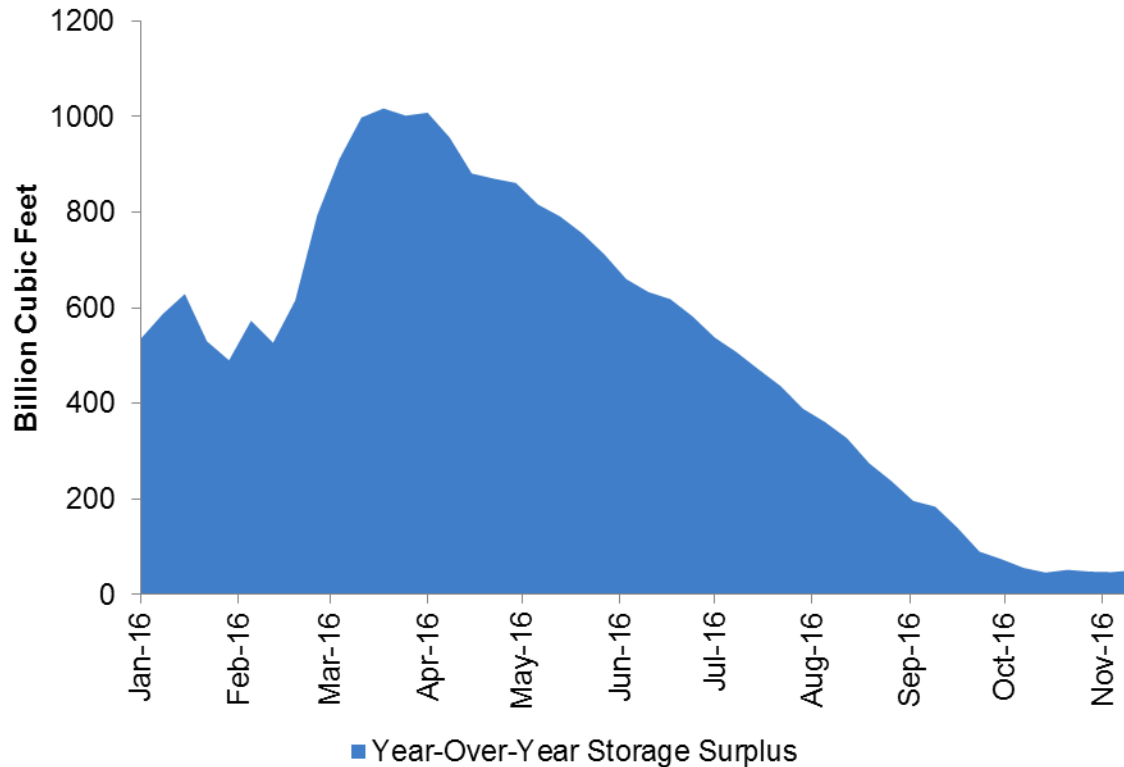
▼ Record high end-of-summer storage.... BUT



2016 Natural Gas Market Review



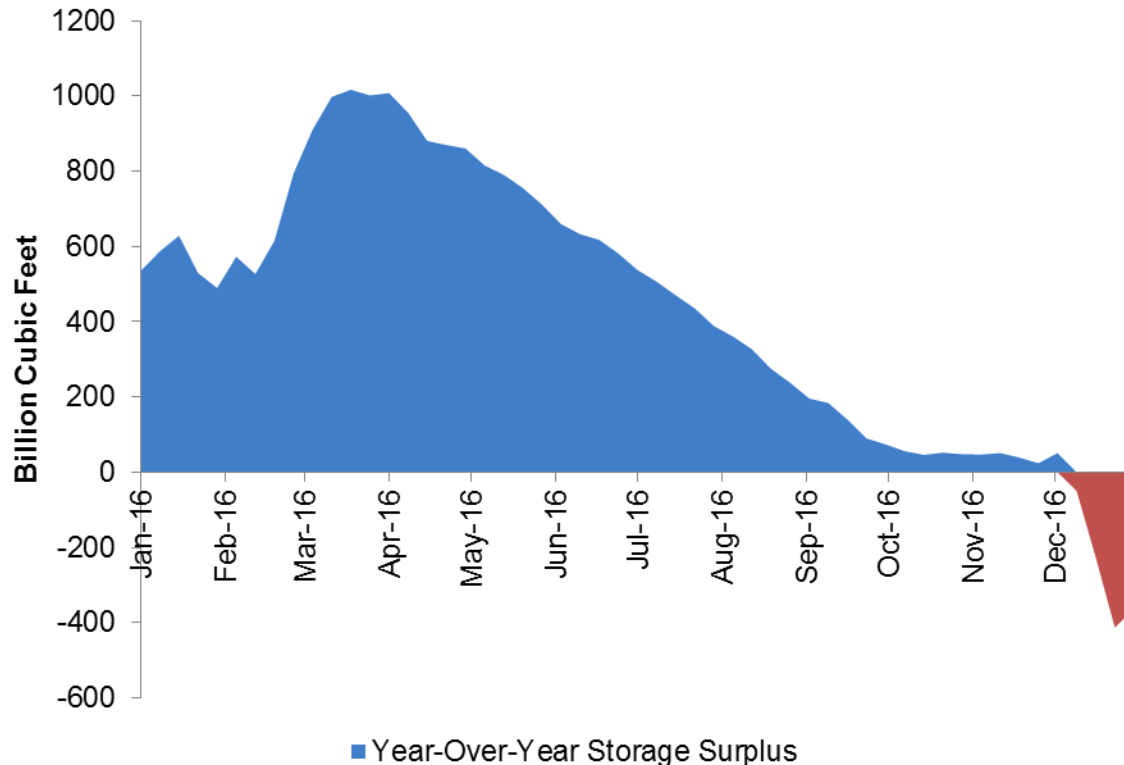
▼ Record high end-of-summer storage.... **BUT**
The “1-Tcf” glut was fully eroded



2016 Natural Gas Market Review



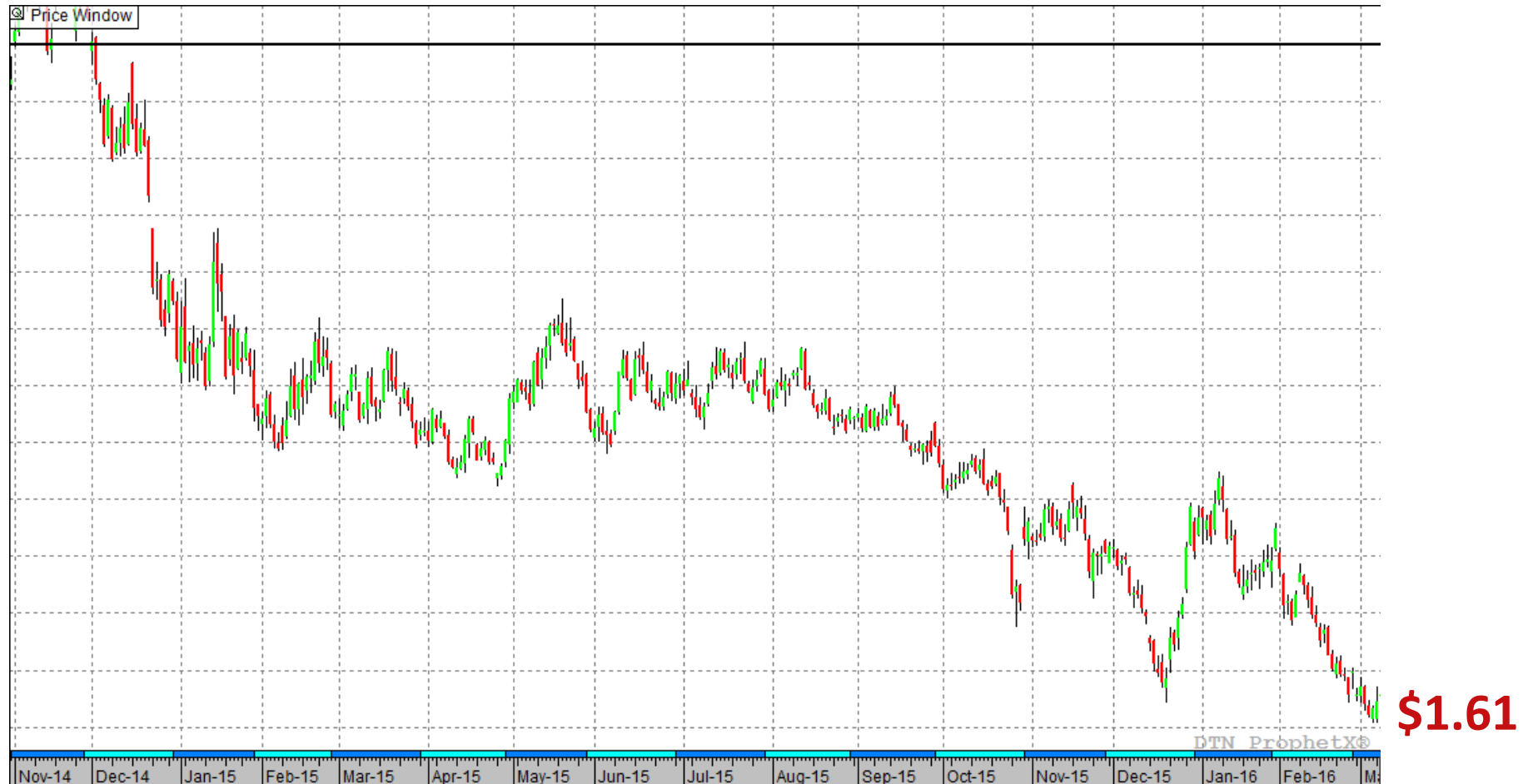
▼ Record high end-of-summer storage.... BUT
The “1-Tcf” glut was fully eroded and turned to
a steep deficit by year-end



2016 Natural Gas Market Review



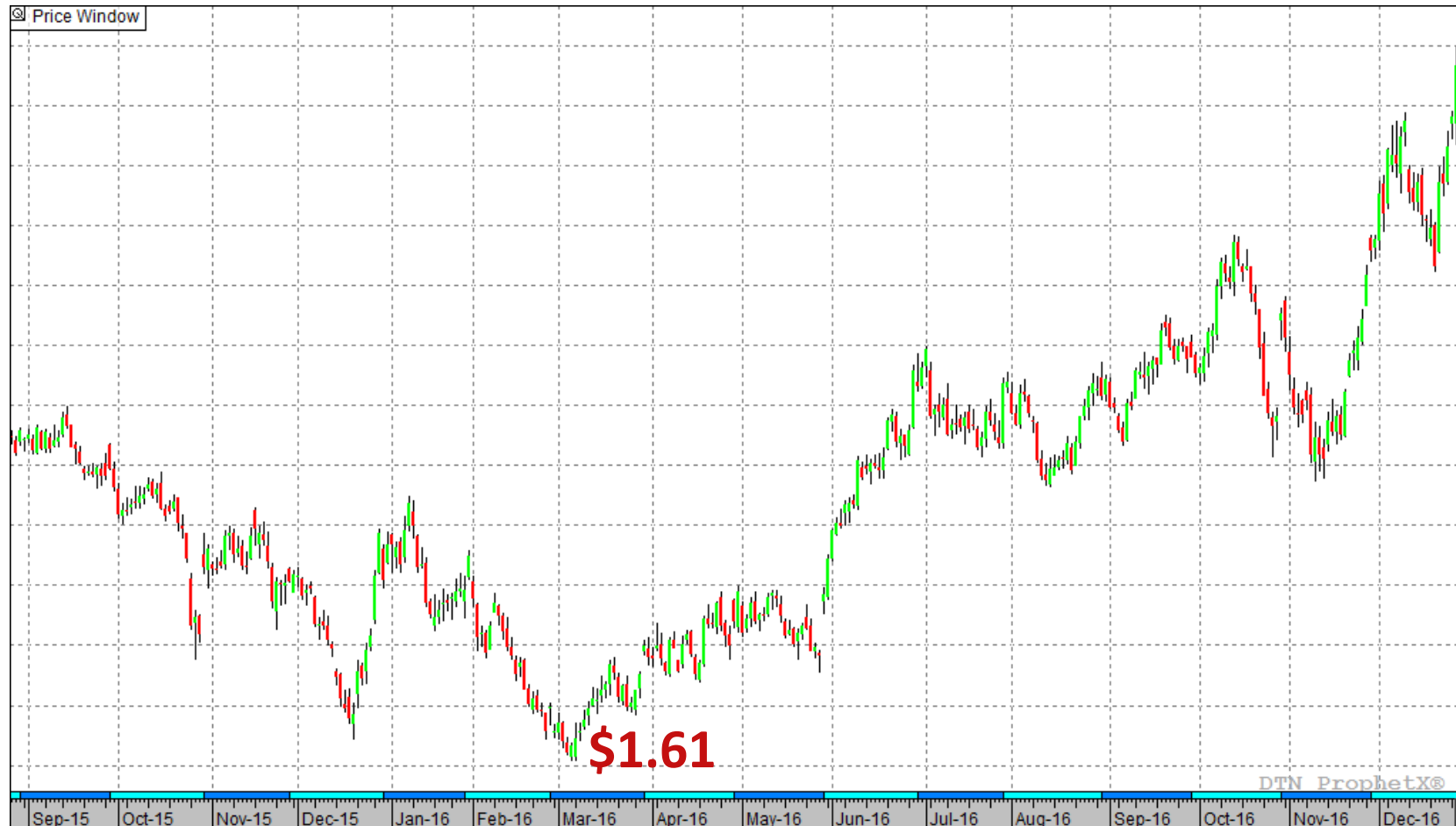
▼ From the \$1.61 March low...



2016 Natural Gas Market Review



▼ Prompt-month gas rallied almost 150%

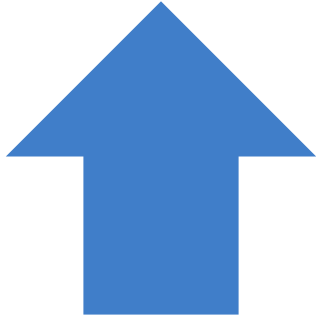


2016 Natural Gas Market Review

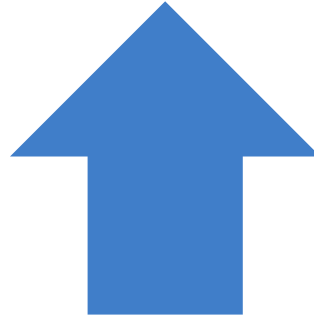


▼ **Three major factors** led to a tighter market in 2016 and helped fuel a major price recovery

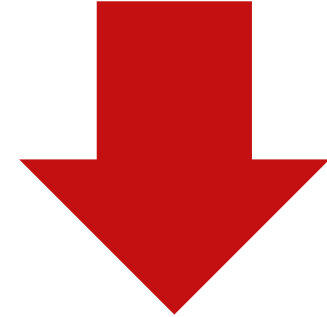
**Exports
(Mexico/LNG)**



**Power
Generation**



Production

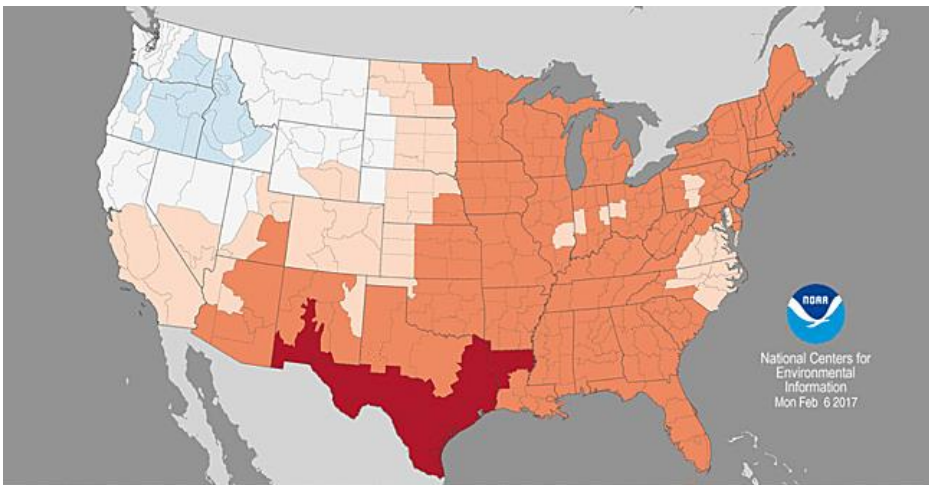


Winter So Far

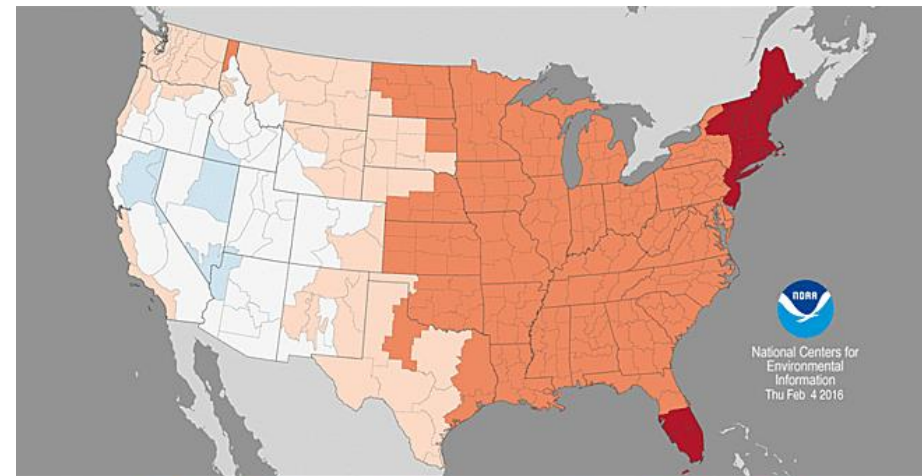


- ▼ From Nov through Jan, the winter has **been modestly cooler** on average compared to 2015-16
- ▼ **Record February warmth** drove the most recent price collapse

Nov16-Jan17



Nov15-Jan16



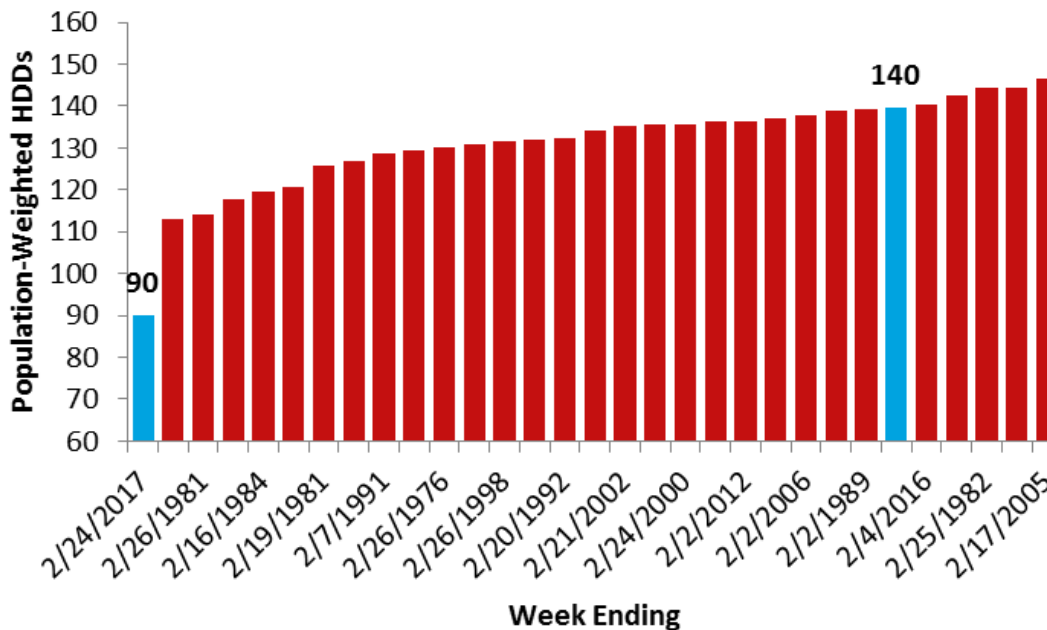
Record Coldest Much Below Average Below Average Near Average Above Average Much Above Average Record Warmest

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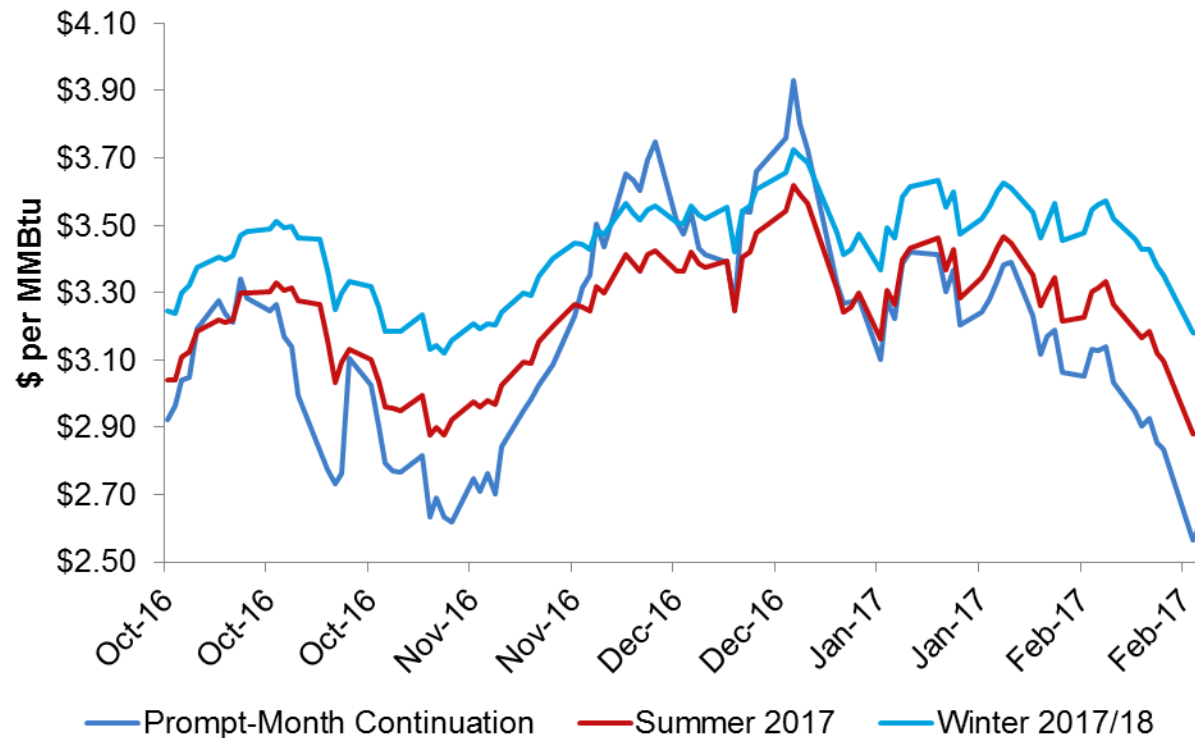
- ▼ February is on track to set a new record for warmest ever across the U.S.
- ▼ This week is the warmest single week on a population-weighted basis in February history



Recent Price Collapse



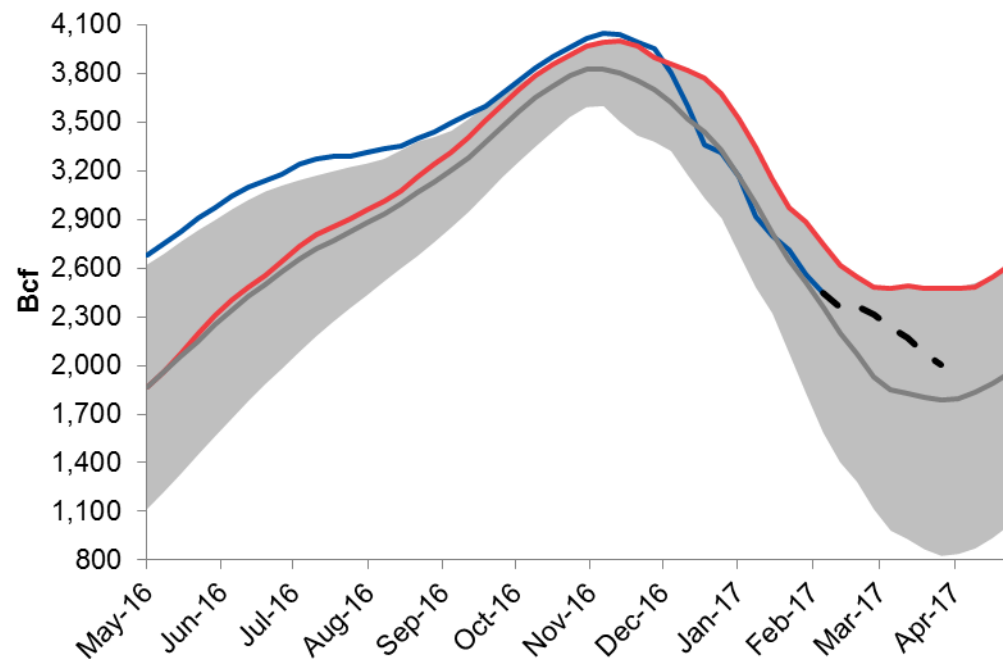
- ▼ Amid record-warm February temperatures, natural gas prices have fallen significantly since the beginning of the month



End-of-Winter Storage Forecast



- ▼ Winter withdrawals are expected to continue to outpace 2016
- ▼ Inventories are set to end the winter near 1,900 Bcf

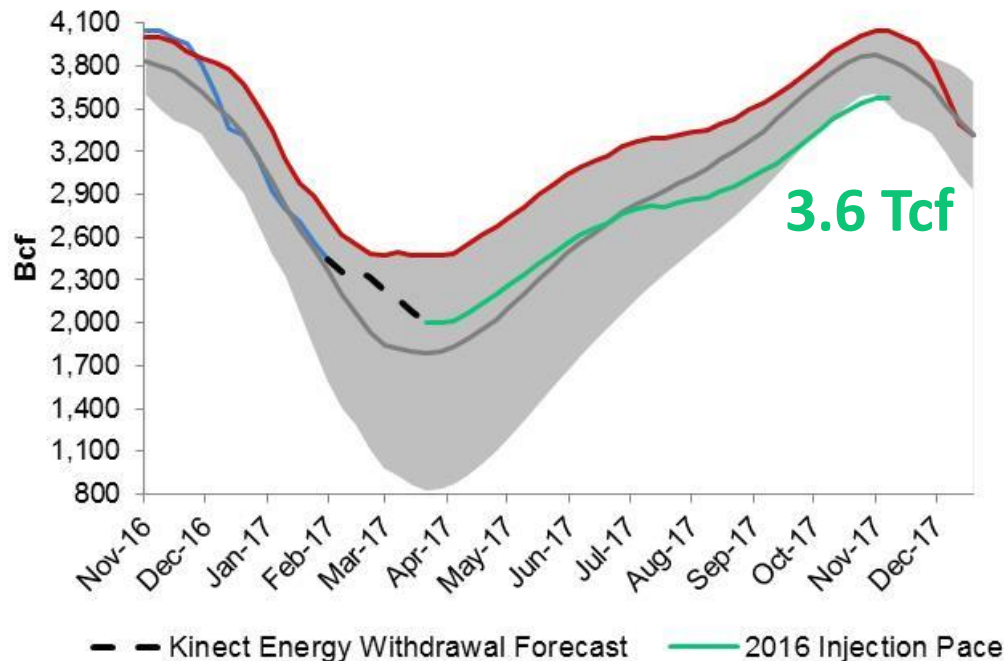


5-Year Range 2016/17 YTD Year-Ago 5-Year Avg Kinect Energy Forecast

Storage Math – Bullish 2017?



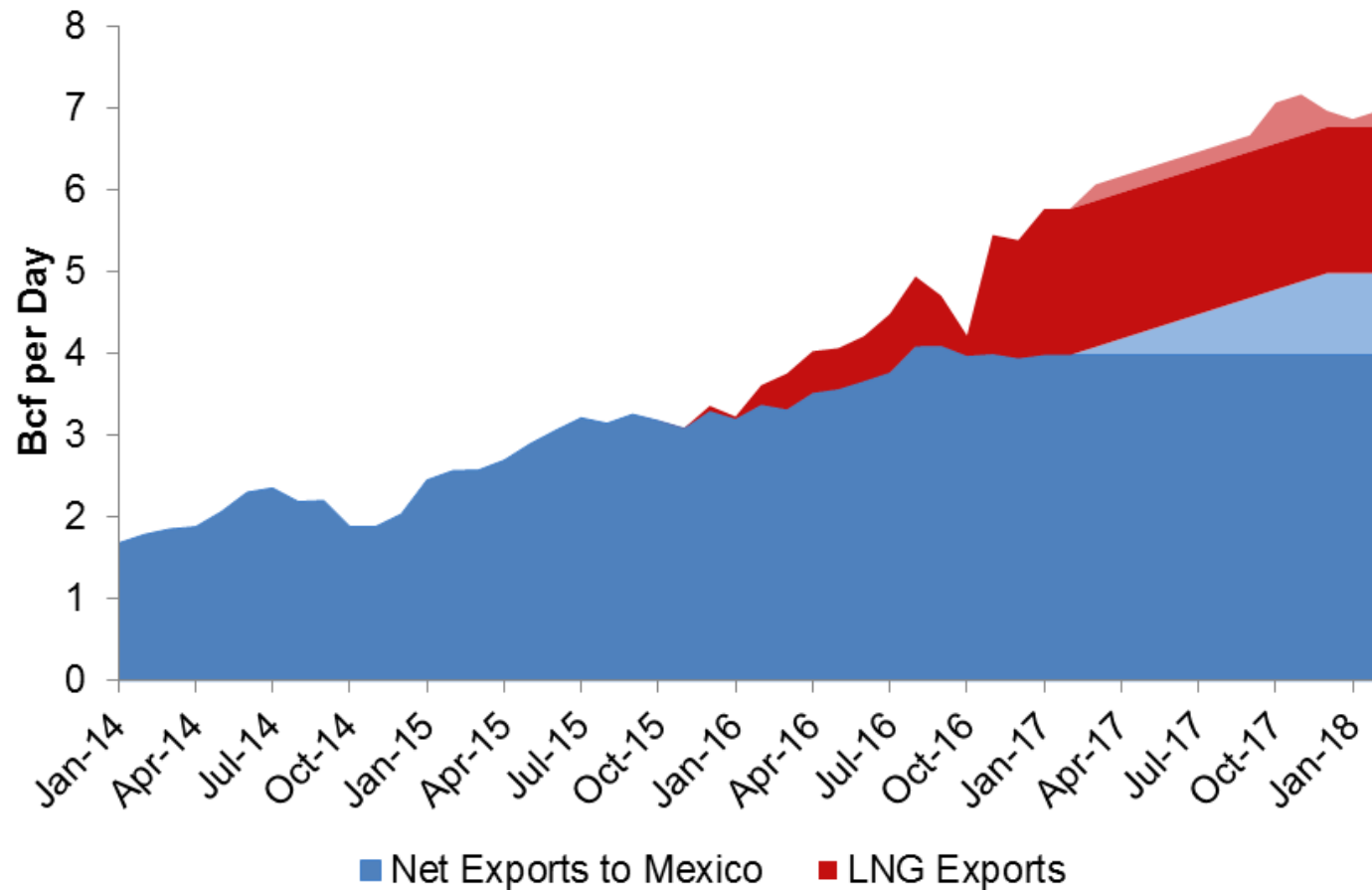
- ▼ Injections in 2016 totaled about **1,600 Bcf**
- ▼ That pace would only bring inventories to about **3,600 Bcf by Oct 2017** - lowest since 2014



Storage Math – Bullish 2017?



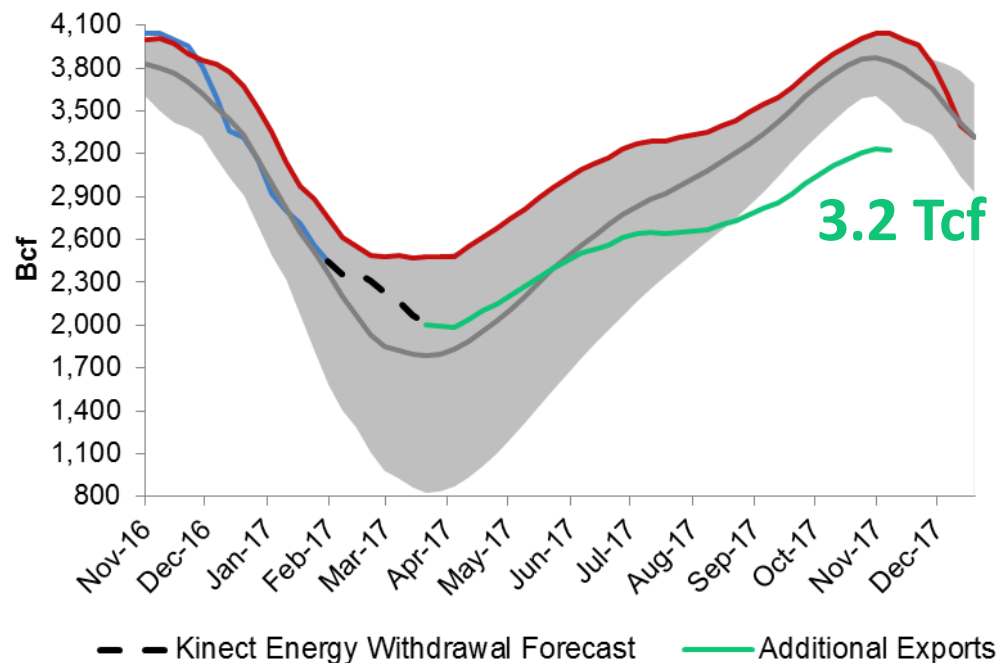
▼ Exports expected to grow further this year



Storage Math – Bullish 2017?



- ▼ A very conservative estimate of **1.5 Bcf per day of additional exports** makes refilling storage ahead of next winter even more difficult

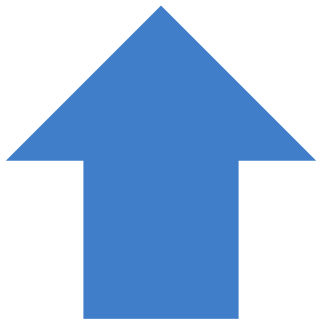


Storage Math – Bullish 2017?

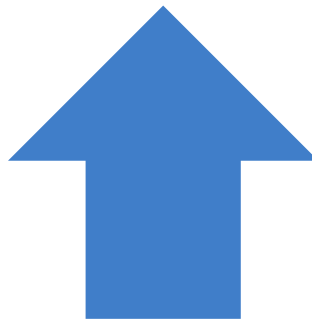


▼ **Three major factors** led to a tighter market in 2016 and helped fuel a major price recovery

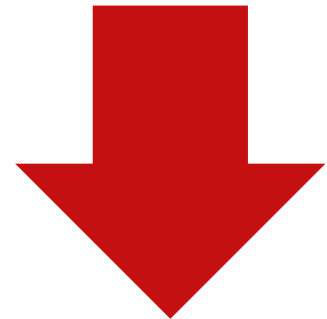
**Exports
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**Power
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Production

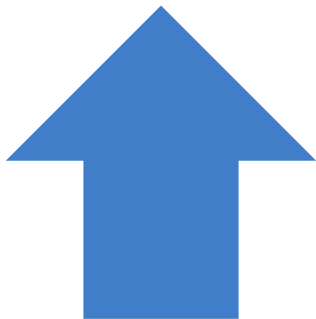


Storage Math – Bullish 2017?

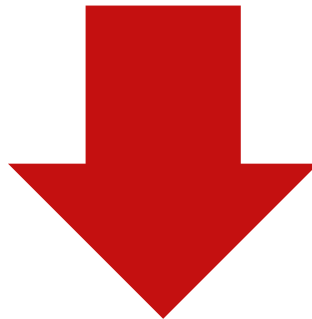


- ▼ **Three major factors** led to a tighter market in 2016 and helped fuel a major price recovery
- ▼ **Two of these** need to reverse in 2017 to prevent a storage shortage and potential price spike

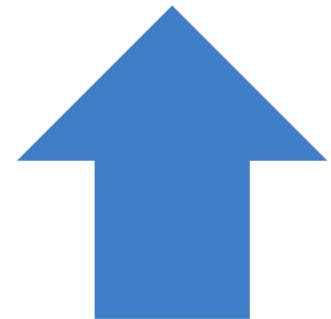
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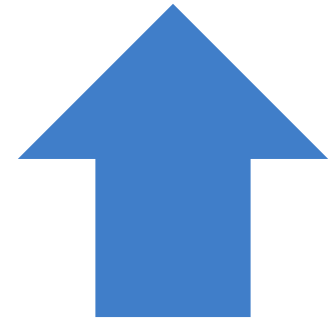


Two BIG Questions for 2017



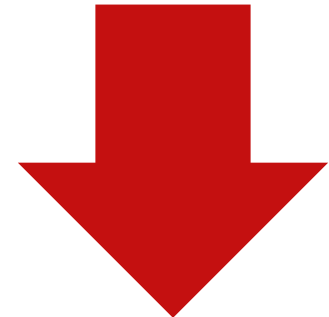
How quickly and effectively can producers ramp up output in response to a higher price environment?

Production



How much of the record gas generation demand in 2016 is “price flexible” and can go back to coal?

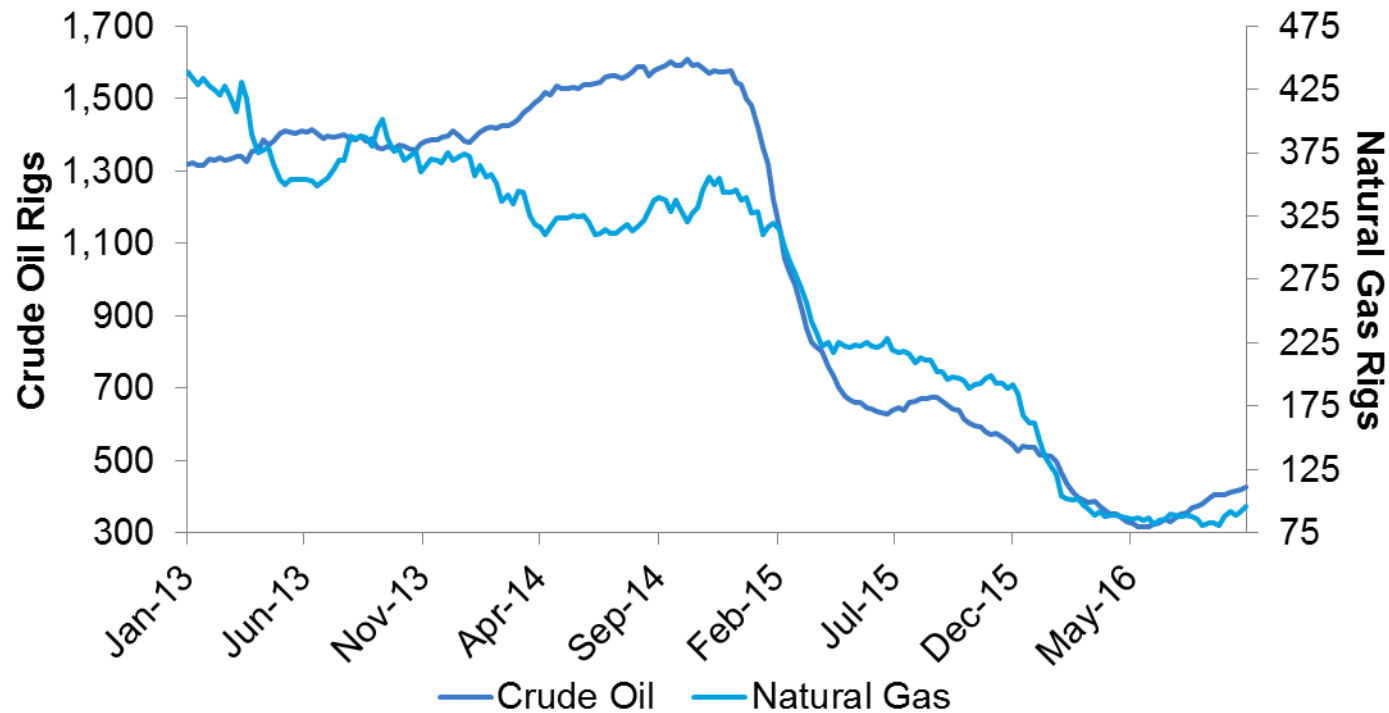
**Power
Generation**



Drilling Rising – Slowly But Surely



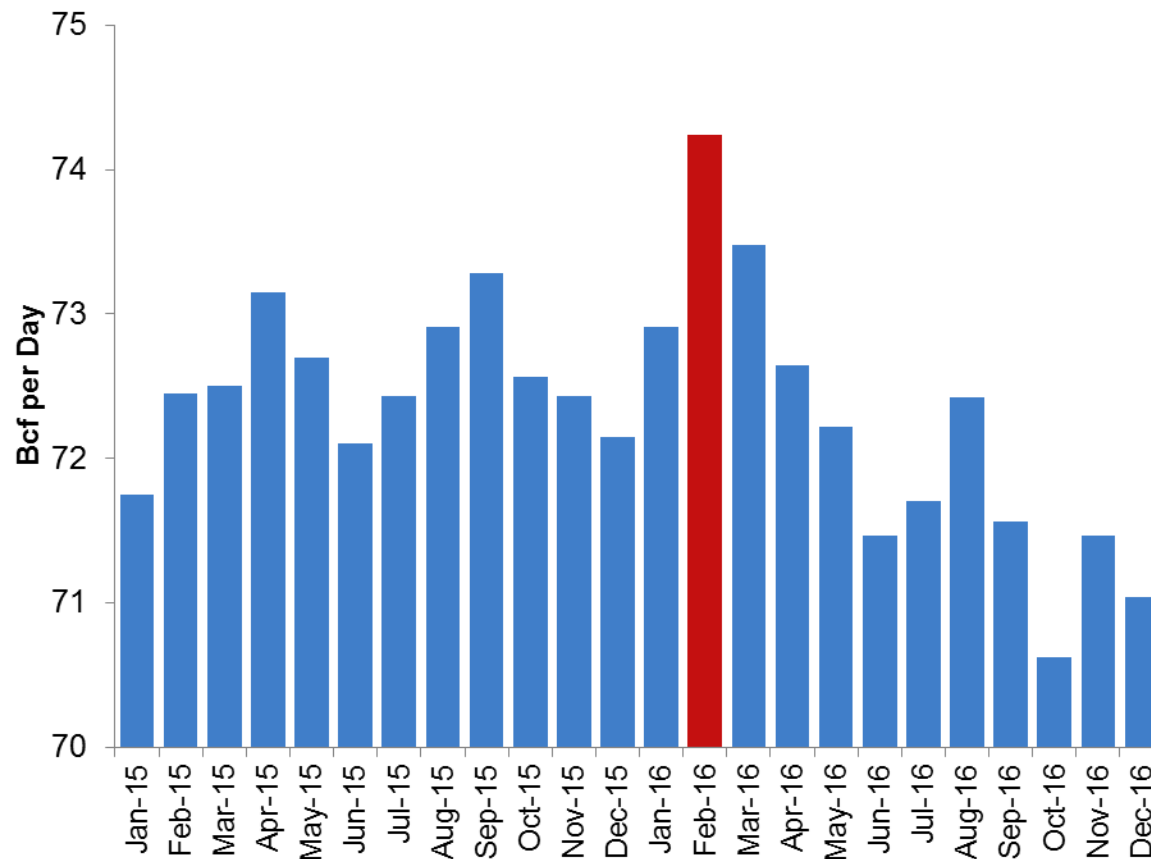
- ▼ Exploration has increased since mid-2016 as producers have access to higher oil and gas prices



But Production is Stagnant



- ▼ Since peaking in February 2016, domestic gas production has come off by nearly 4 Bcf per day



Roadblocks to Production Growth



▼ Pipeline Constraints

- Projects expected to come online will allow more Northeast production, but delays are possible

▼ Drilling Slow to Come Back

- Producers may be hesitant to shift back into full growth mode

▼ Declining “Traditional” Recourses

- The market is overly reliant on the Northeast to grow total production

Power Generation Mix



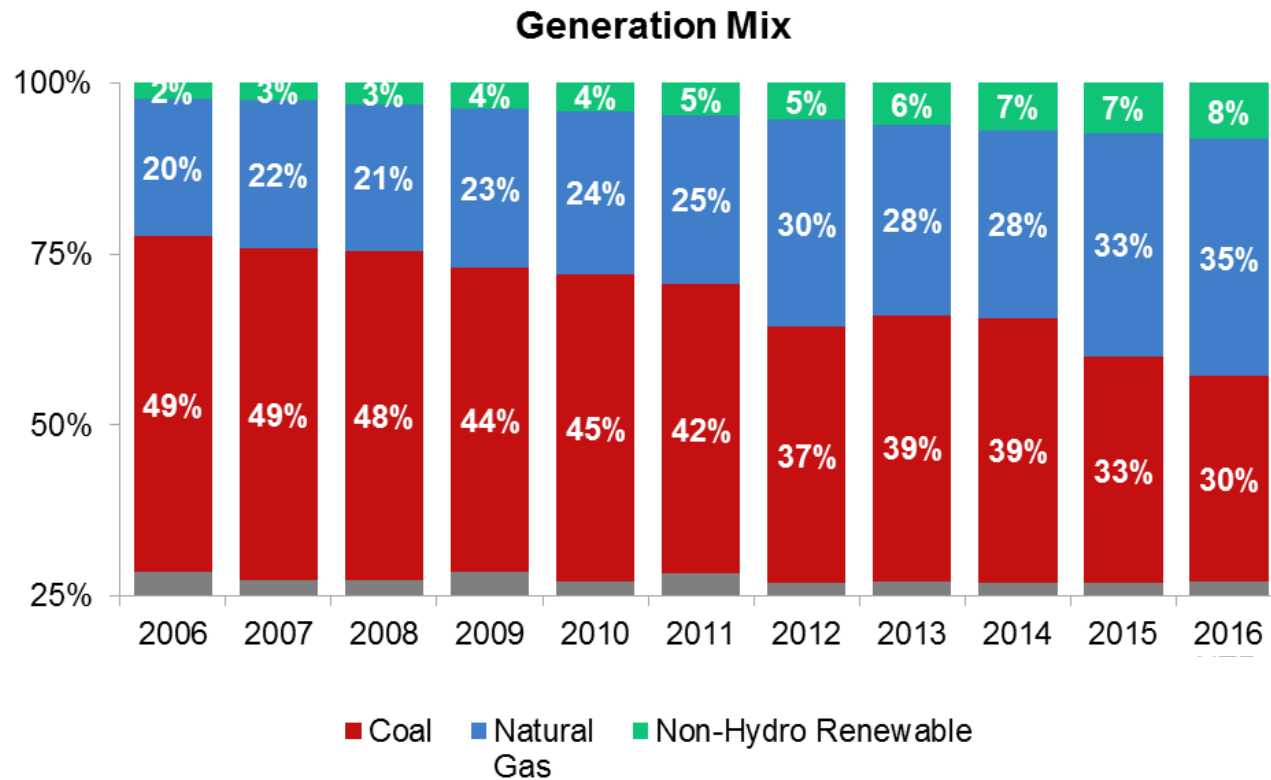
- ▼ “Price sensitive fuel switching” ramps up as gas nears coal on a per-MMBtu basis, helping to keep the natural gas market in balance



Power Generation Mix



- ▼ Structural changes in the generation mix have been exaggerated in recent years by low gas prices



**Nuclear, Hydroelectric, Petroleum*

Roadblocks to Demand Decline



▼ Structural Generation Shift

- Each year sees more gas-fired generation come online and new coal plant retirements; this has increased the “baseline” for natural gas consumption

▼ Rising Coal Prices

- Coal has generally rallied with gas since early 2016, keeping generation economics more competitive

Two Scenarios for 2017



▼ Rebalanced Scenario

- The increase in drilling begins to accelerate in the coming months; production volumes begin year-over-year growth
- Power generation demand reacts to high prices and remains well south of last year as the summer ramps up
- Weekly storage injections outpace 2016 by a wide margin
- **Prices rally and remain and volatile during the first half of the year, but the market relaxes as it becomes apparent that storage will not be a concern for winter 17/18**

Two Scenarios for 2017



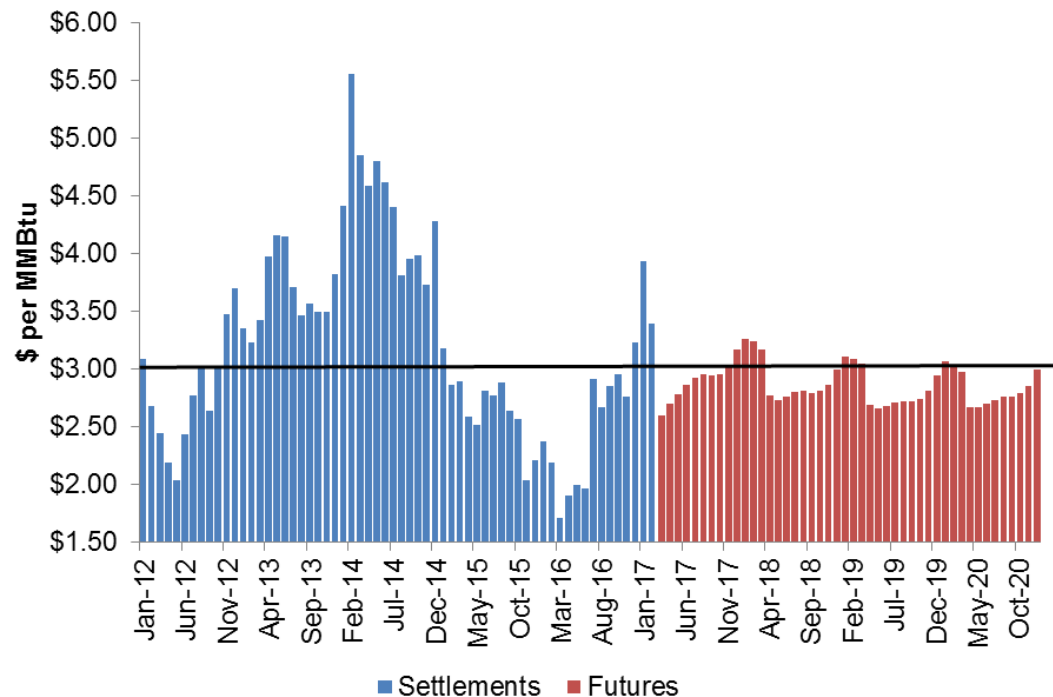
▼ Unbalanced Scenario

- Drilling recovery remains slow and stagnant; production volumes stay behind to on par with 2016
- Baseline power generation demand proves higher than expected; usage from this sector remains stubbornly strong in the face of higher prices
- Weekly storage injections are even with or behind 2016
- **Prices exhibit continued volatility throughout the year and generally trend higher; major price spikes are possible ahead of and especially into winter 17/18**

Long-Term Market Value



- ▼ Contracts **beyond March 2018** are priced near **below \$3** per MMBtu, offering historic value
- ▼ A **wave of LNG exports** expected to come online in 2018-19



Risk Management Strategy



- ▼ Due to their long-term stability and budget-oriented nature, **universities are in a unique position** to take advantage of value in the current market
- ▼ This week's price collapse has brought **summer 2017 and winter 2017/18** strips back into “buy” territory
- ▼ Beyond that, **prices deep across the forward curve remain historically low** and an initial layer of coverage is advised through **at least the end of the decade**

Summary



- ▼ 2016 was a “bottoming” year for the natural gas market
- ▼ Volatility has been elevated since the start of the 4th quarter and is likely to continue
- ▼ **Conditions favor a higher price environment in 2017, but absent production growth and power generation demand declines a great deal of upside risk could still be realized**

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