

The Mighty Marcellus - Coming of Age

Steve Schlotterbeck

Special Partner - Energy, Stone Pier Capital Advisors

Former President and CEO of EQT Corporation



NORTHEAST PETROCHEMICAL
EXHIBITION & CONFERENCE
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Modern Shale Gas - A Little History

- ▶ Barnett shale discovered in 1998 by Mitchell Energy
- ▶ Fayetteville shale discovered in 2005 by Southwestern Energy
- ▶ Marcellus shale discovered in 2005 by Range Resources
- ▶ Haynesville shale discovered in 2008 by Chesapeake
- ▶ Utica shale discovered in 2011 by Chesapeake

There is A LOT of gas down there

Marcellus

- ▶ 2002 USGS estimates Marcellus resource at 1.9 TCF
- ▶ In 2008, Terry Englander estimated gas in place of 500 TCF with 50 TCF recoverable.
- ▶ Gas producer estimates of resource potential suggest 200 TCF+ recoverable

Utica

- ▶ USGS 2012 estimates 38 TCF of gas and 940 million bbls of oil
- ▶ WVU 2015 estimates 782 TCF and 2 billion bbls of oil

Tremendous benefits

- ▶ Wholesale electric prices down 41% since 2008
- ▶ Natural gas prices for end-use customers down 57% - 81% since 2008
- ▶ Average annual savings > \$1,200 per household
- ▶ 870,000 jobs created
- ▶ \$120 billion in new capital investments expected in new Petrochem manufacturing
- ▶ By 2025, up to 4 million jobs supported by unconventional activity
- ▶ Per capita CO2 emissions down 20%

But, there are headwinds...

- ▶ Extreme opposition to expanded pipeline infrastructure
 - ▶ Mountain Valley Pipeline
 - ▶ Atlantic Coast Pipeline
- ▶ Increased regulatory burdens
- ▶ Tax increases
 - ▶ PA severance tax proposal
 - ▶ WV severance tax increase proposed
- ▶ OVERSUPPLY leading to poor economics

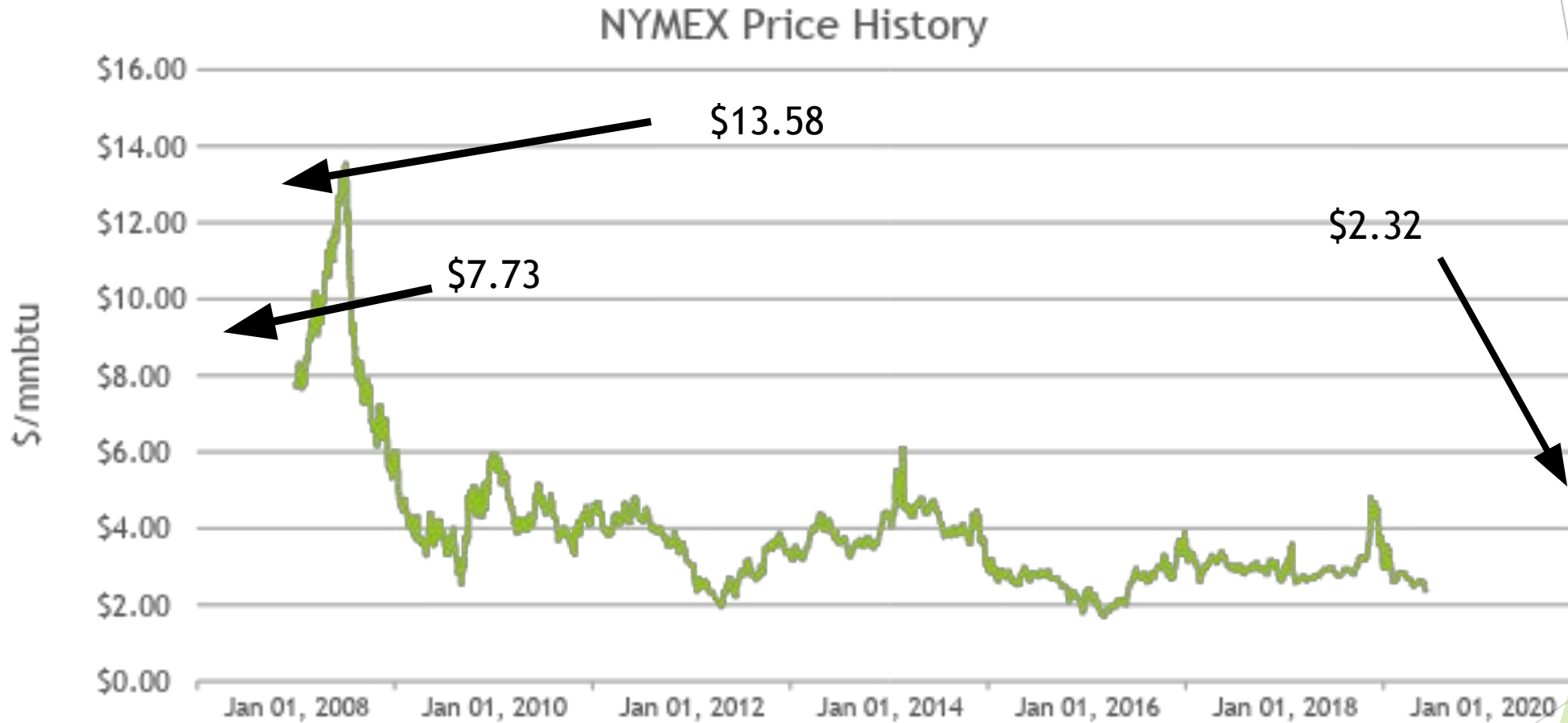
The Shale Revolution has been a disaster for shale gas producers

| | Stock price change <u>since Jan 2008</u> | Dividend Yield | Current Production <u>BCF/yr</u> | 2019 Growth <u>Guidance</u> |
|--------------|--|-------------------|--|-----------------------------------|
| EQT | -40.0% | 0.66% | 1500 | 5% |
| Antero* | -85.8% | 0% | 1116 | 18% |
| Range | -86.2% | 0.88% | 803 | 13% |
| Cabot | 140.1% | 1.44% | 831 | 21% |
| Southwestern | -87.9% | 0% | 708 | 9% |
| CNX Gas | -87.7% | 0% | 480 | 5% |
| Gulfport | -73.7% | 0% | 496 | 2% |
| Chesapeake | -95.0% | 0% | 828 | 10% |

- ▶ Weighted avg 2019 supply growth = 11%
- ▶ Estimated 2019 demand growth = 5%

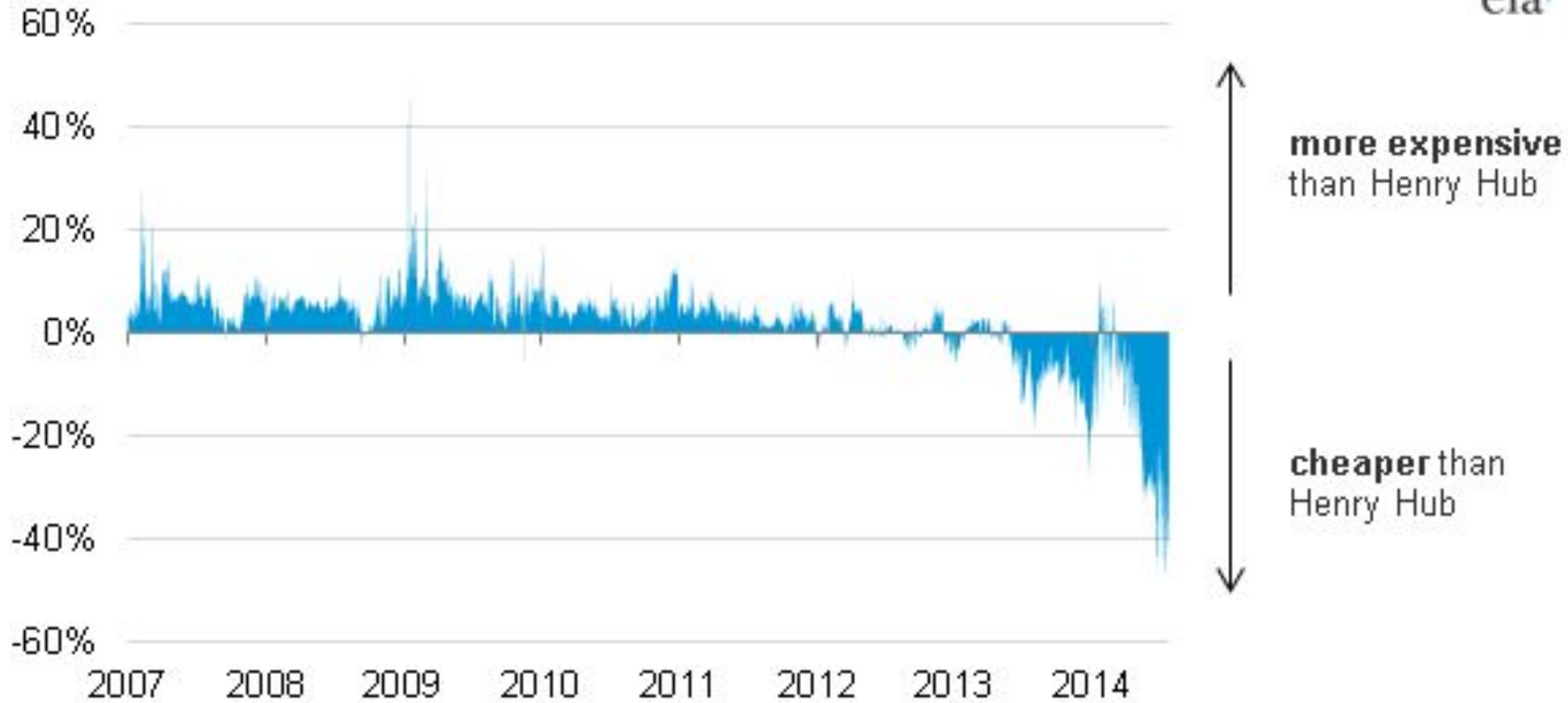
*Antero since Oct 2013 IPO

NYMEX price down 70% since 2008



Northeast basis also plummeted

Natural gas price differences between Dominion South and Henry Hub



Yet, growth continues

Demand

- ▶ Global gas demand grew 5% in 2018, one of its highest in history
 - ▶ Global energy consumption rose 2.9% last year (double its historical rate)
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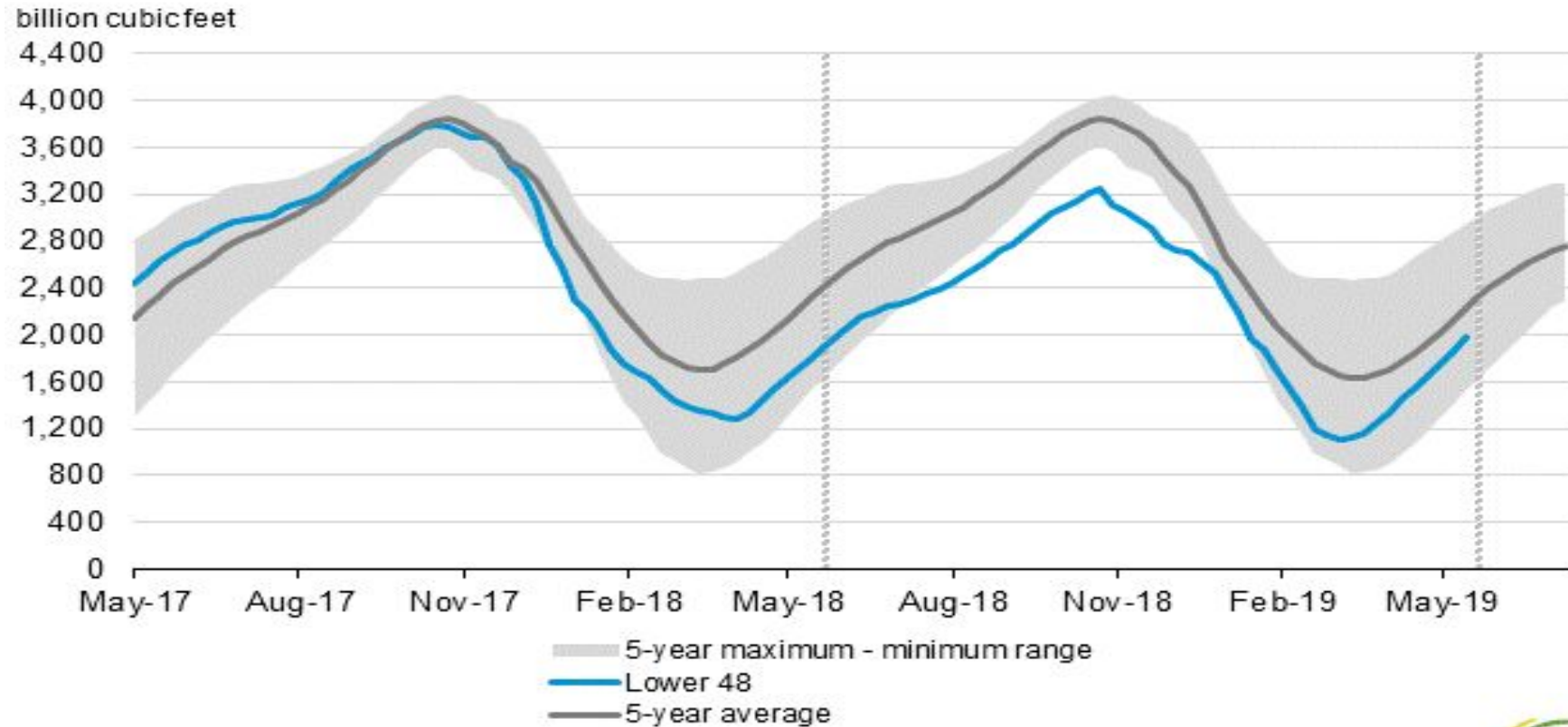
Supply

- ▶ Global gas production rose 5.2% (half from the US)
- ▶ US gas production rose 12% in 2018
- ▶ This was the largest increase in gas production by a single country in history

Source: BP Statistical Review of World Energy 2019

Low Storage inventories have not helped

Working gas in underground storage compared with the 5-year maximum and minimum



Source: U.S. Energy Information Administration



- ▶ EIA estimates Oct '19 storage levels will be 17% higher than Oct '18

How can they right the ship?

1. Reduce drilling down to production maintenance levels and for the next 1-2 years.
 2. Return excess cash to shareholders thru dividends and buybacks
 3. Utilize capital for balance sheet strength as necessary
- ▶ This would quickly move the commodity price into an economic range.
 - ▶ Once that happens and equity valuations improve, they must stay the course with growth limited to low single digit growth at the max.
 - ▶ Remaining capital should be returned.
 - ▶ Upstream E&P's no longer a growth investment but a yield investment.

Final Thoughts

- ▶ A rebalancing of gas supply and demand is necessary for the gas producers to survive.
- ▶ Expect a modest increase in gas prices to a level where producers and consumers both benefit from the shale resources opportunity.

Thank You!

Contact Information:

Stone Pier Capital Advisors

One Oxford Centre, 43rd Floor

301 Grant Street

Pittsburgh, PA 15219

412-577-4004 (receptionists-Heidi/Nicole); 412-255-4701
(fax)

www.StonePierCapital.com

STEVEN T. SCHLOTTERBECK, Special Partner--Energy

412-327-9421 steve.schlotterbeck@stonepiercapital.com