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North American Natural Gas and Crude Prices:
ALL BETS ARE OFF
March 2012 Luncheon – Houston Chapter SPE

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WHAT WE DO

Detailed Natural Gas and Crude Oil Production Forecasts

Up to 2 year projection by month

30+ regional forecasts in Lower 48

Regional forecasts in Canada

Drilling Rig Activity Forecasts

Multiple basins, up to 2 years

Account for lags associated with deferred completions & infrastructure bottlenecks

Provide frequent 'Quick Updates' on gas production forecasts

Apply weekly forward gas price changes and reported rig counts to give 'quick updates' on Lower 48 gas production forecasts

Utilize E&P news releases, monthly investor presentations, quarterly regulatory filings, and extensive personal networks to update model parameters

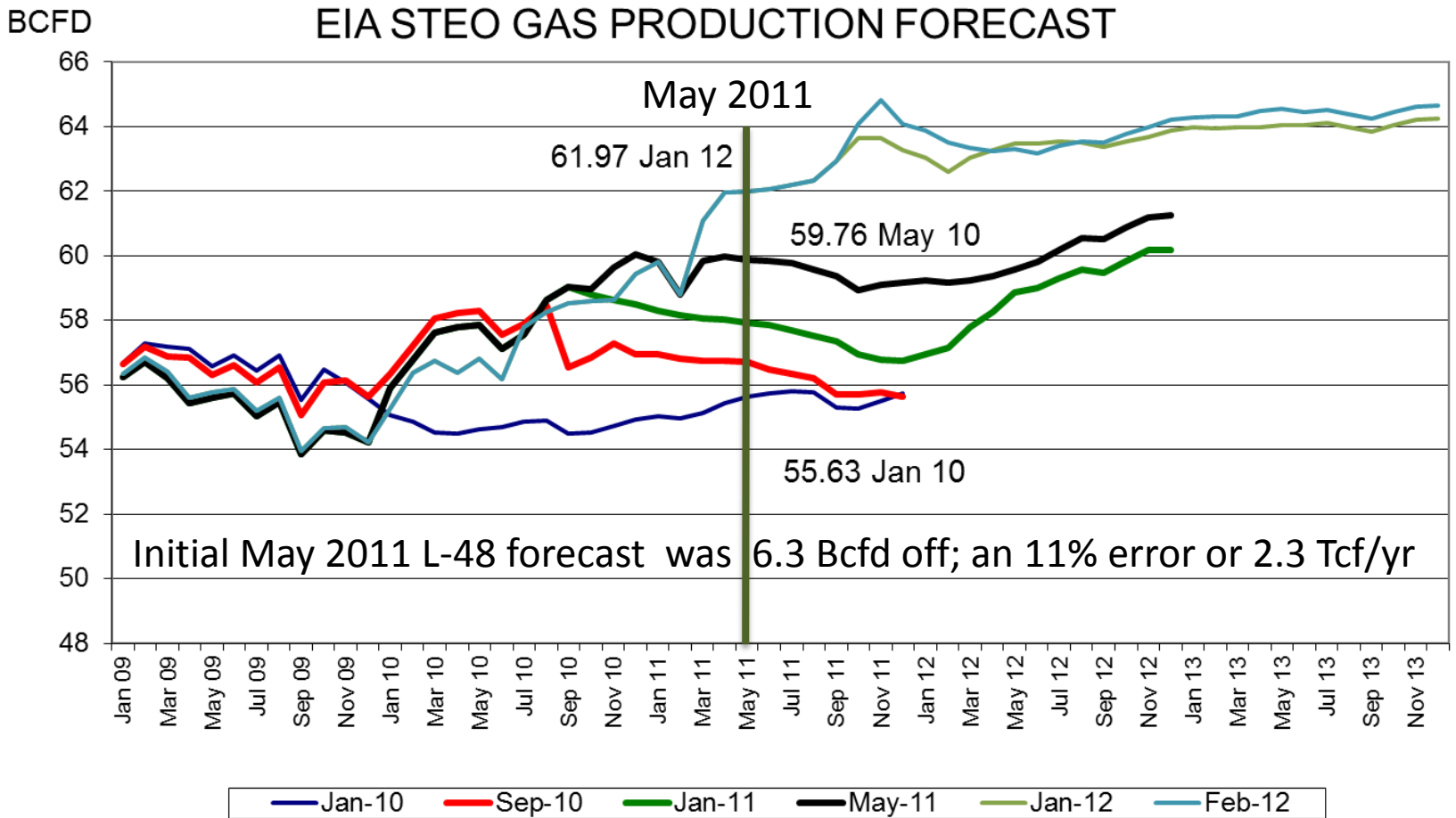


Natural Gas Price Drivers

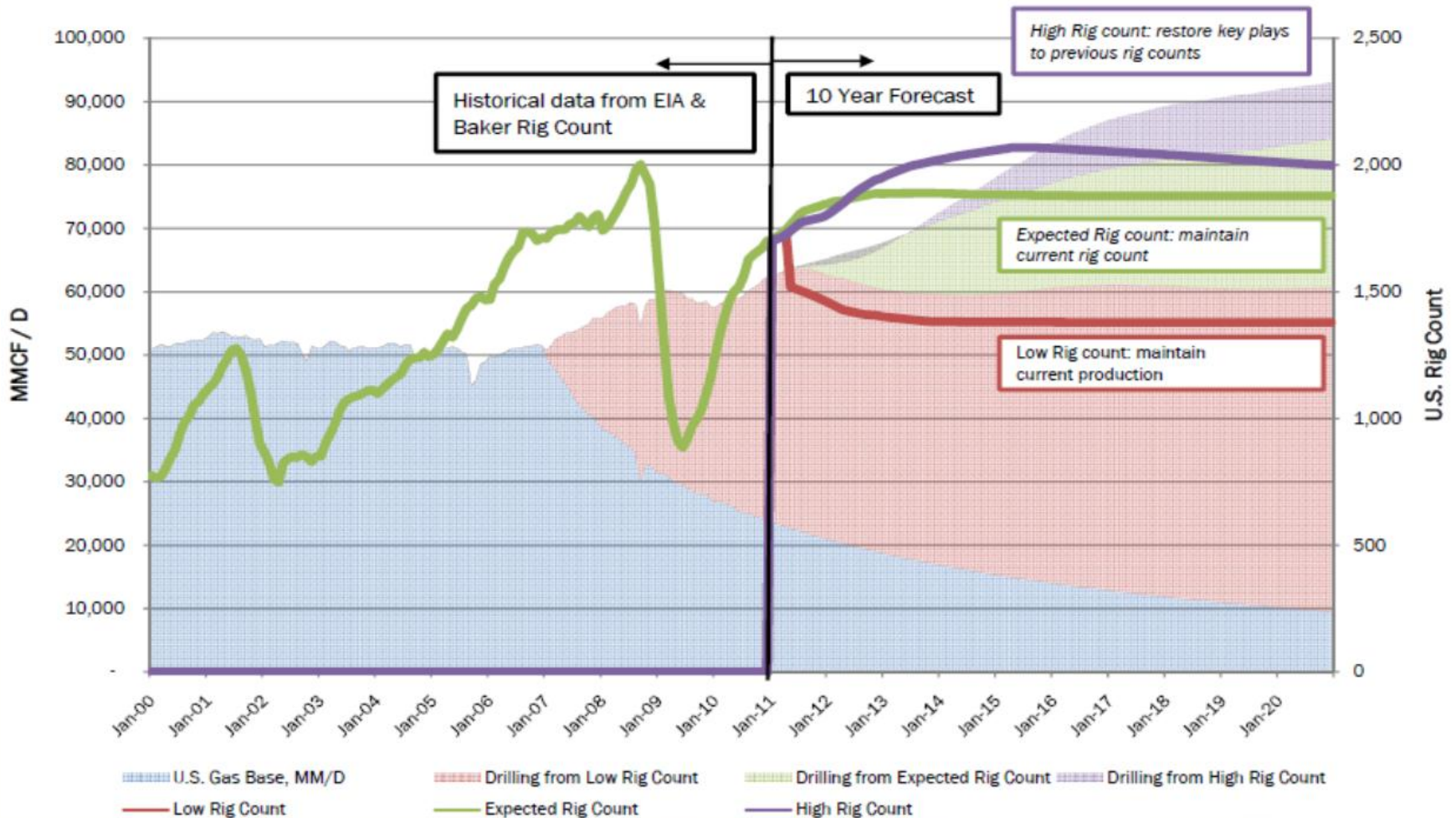
- Lower-48 Production Growth (onshore versus offshore)
- Declining Net Imports (Cause or Effect?)
- Demand Components:
 - Weather
 - Gas for Power Generation (Coal to Gas Switching)
 - Petrochemical strength and chemical rebirth
- Regulatory: supply, demand, and infrastructure
- EXCESS GAS STORAGE CAPACITY AND INVENTORY
- Financial markets (money flows: commodities; capital access for E&P activity)



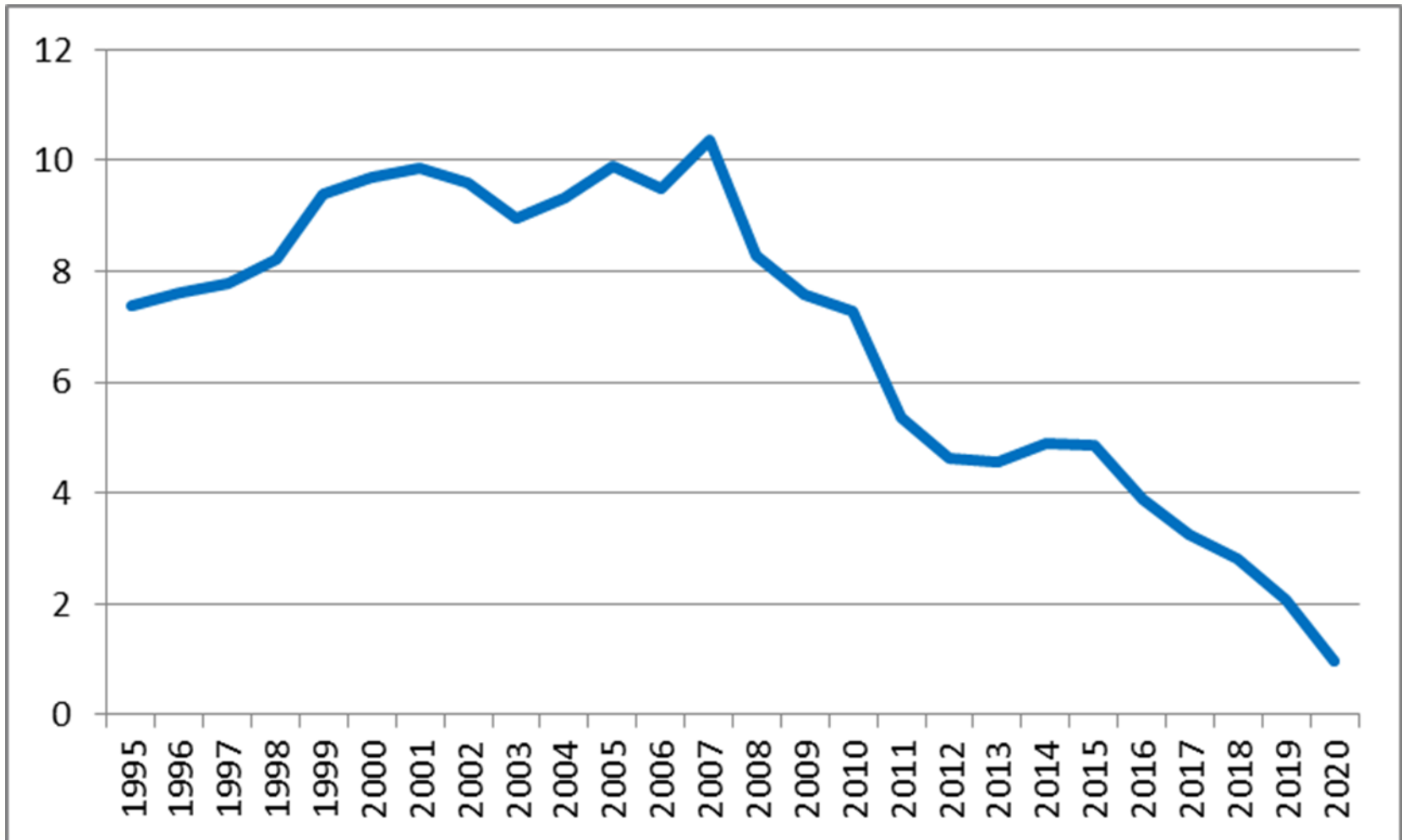
Production Growth: Abundant but Hard to Predict



Range of Production Potential



Shrinking Net Imports (Bcfd)



Weather has been Extraordinary

Winters 2009-2011

- First back to back colder than normal winter since early 1990's; coldest since early 1980's
- Winter 2009-2010
 - Cold in middle; mild NE USA
 - 2.2 TCF withdrawal
- Winter 2010-2011
 - Cold everywhere except MTN with multiple snow storms
 - 2.3 TCF withdrawal

Summer 2010 & 2011

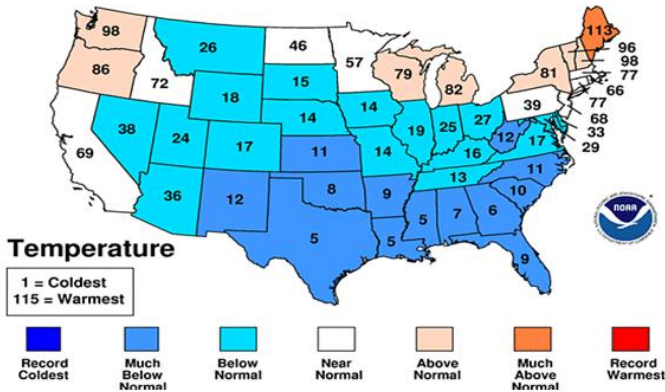
- Two of the hottest peak summer periods since the dust bowl days of 1930's
- Summer 2010
 - 22% warmer than normal
- Summer 2011
 - 24% warmer than normal and 3% warmer than 2010
 - 3 of 4 northern power ISO's set new peak records



Weather has been Extraordinary

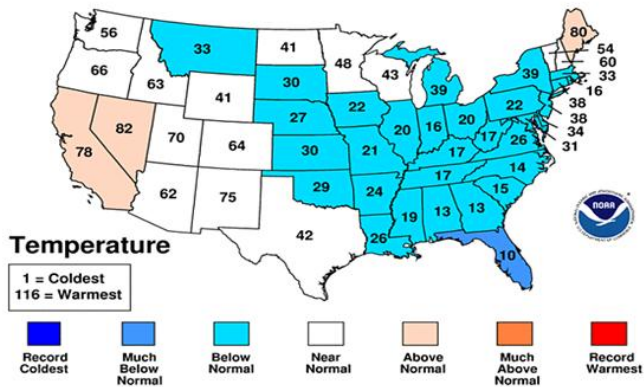
Statewide Ranks Dec 2009 - Feb 2010

National Climatic Data Center/NESDIS/NOAA



Dec 2010-Feb 2011 Statewide Ranks

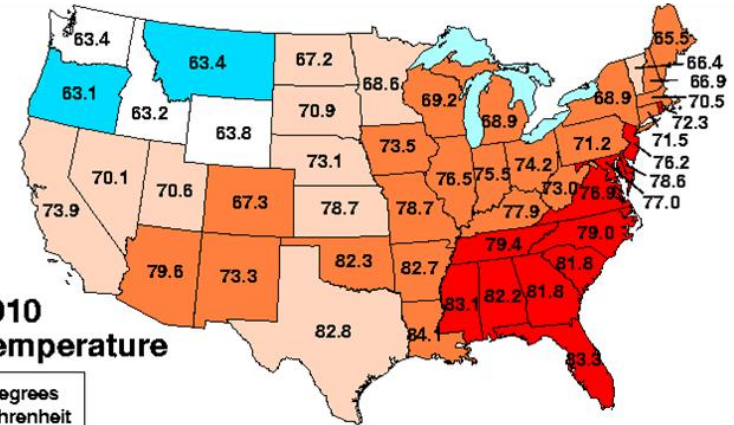
National Climatic Data Center/NESDIS/NOAA



Source: NOAA - NCDC

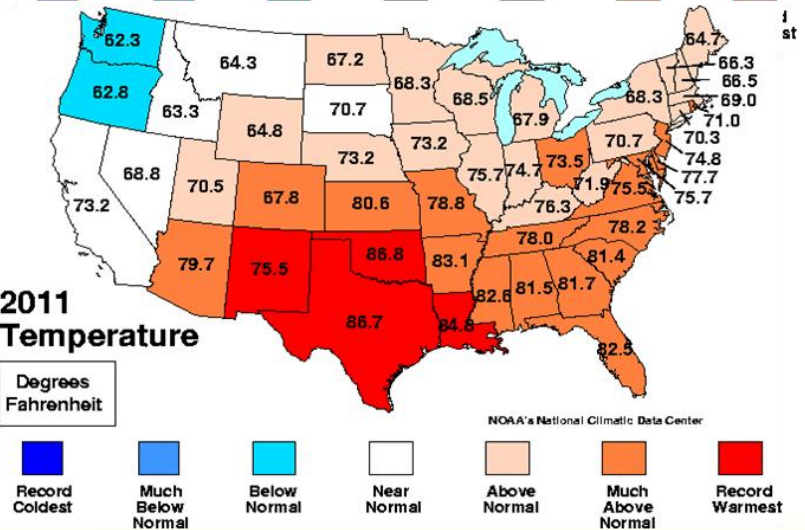
2010 Temperature

Degrees Fahrenheit



2011 Temperature

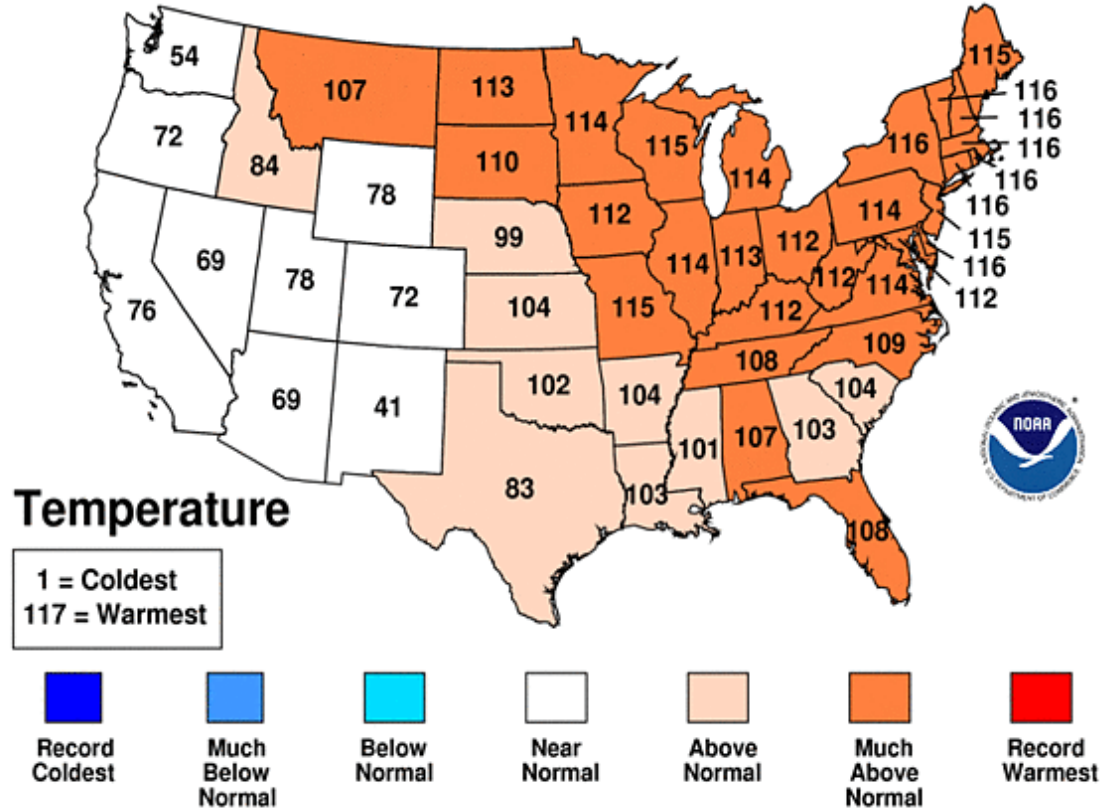
Degrees Fahrenheit



2011-2012 Winter Has Been Very Mild

Dec 2011-Feb 2012 Statewide Ranks

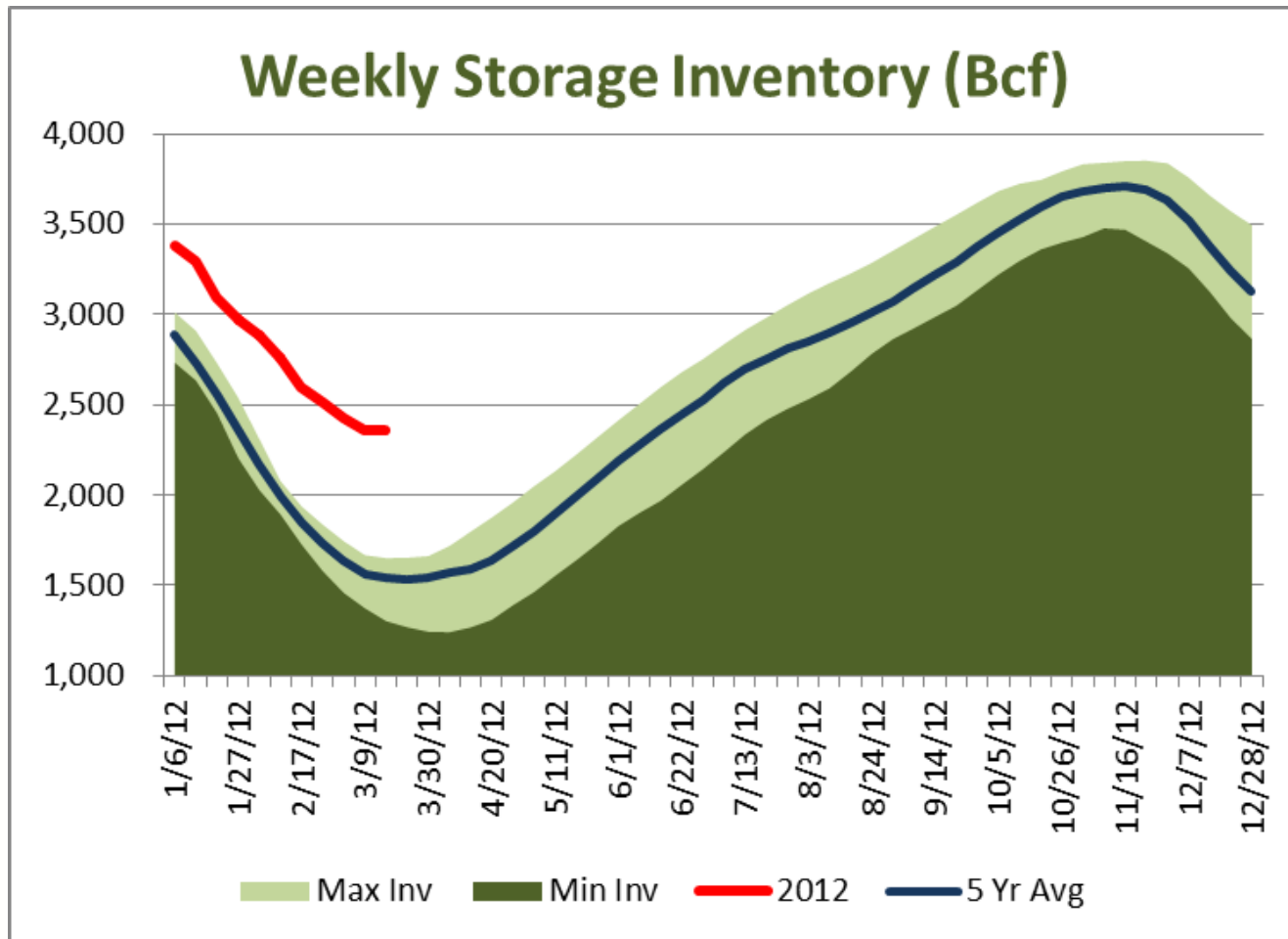
National Climatic Data Center/NESDIS/NOAA



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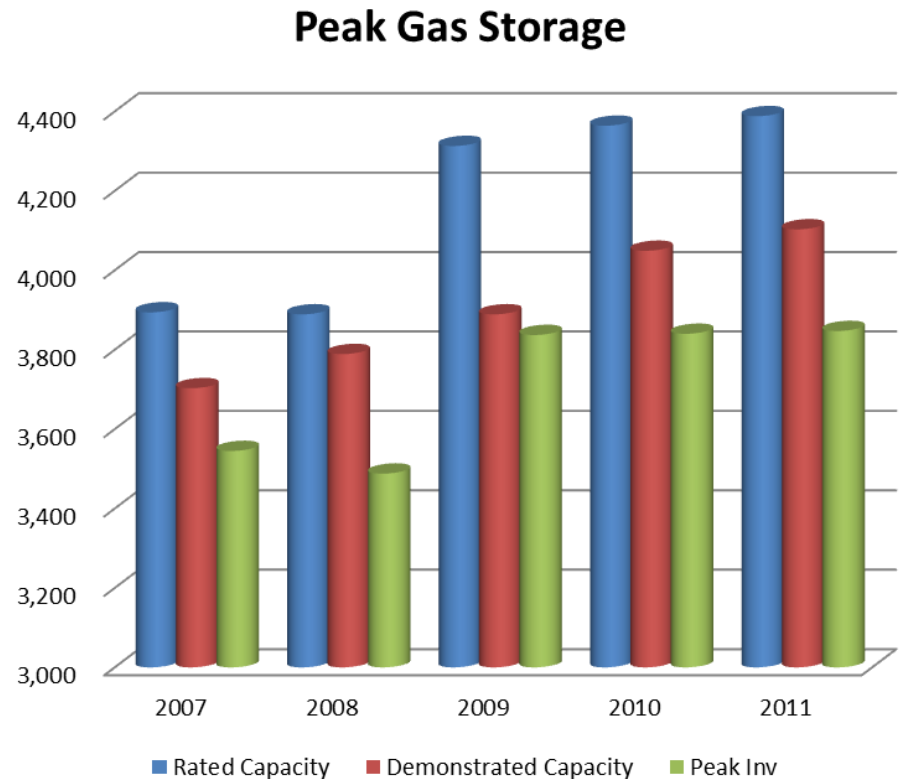
Source: NOAA National Climatic Data Center

2011-2012 Winter Behind on HDD and Storage



Excess Storage Capability 3rd Supply (Price) Driver

- Storage is essential to the reliable operation of the gas grid (and power)
- Price volatility and regulatory policy caused an overbuild
- Risk of season ending containment depresses prices and incentivizes late season injections



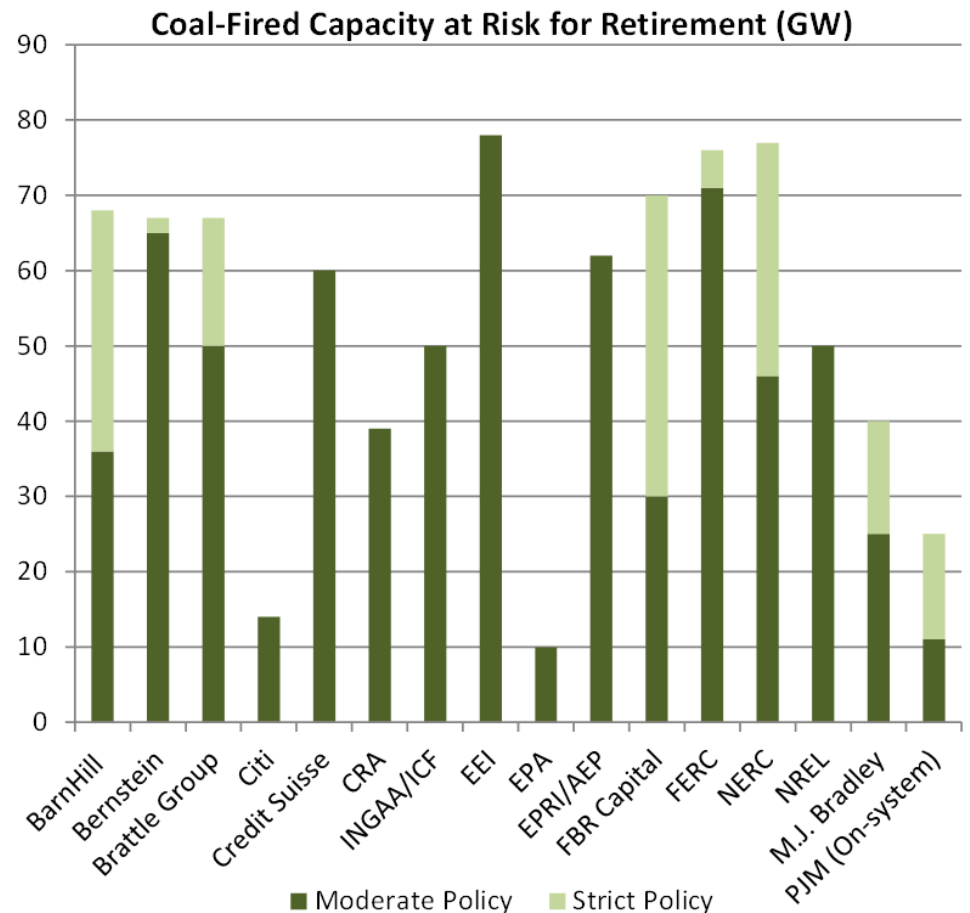
Power Demand is the Growth Story for Gas

- Coal to Gas Switching
 - Range of estimates: 1.3 – 5.5 Bcfd
 - Less switching during high demand periods
- Coal plant retirement
 - Estimates of retirement magnitude and timing
 - By 2015 20 GW fairly certain; 35 GW probable
 - 1.8 to 3.5 Bcfd impact
 - By 2018 38 GW fairly certain; 55-70 GW probable
 - 3.5 to 7.5 Bcfd demand impact
 - New EPA regs could accelerate retirements



Coal Units Will Retire; But How Much and When

- Older, smaller coal units are first
- Units that are uneconomic to add controls are put on “glide path” to retirement
- Impact on natural gas consumption depends upon capacity factor and coal saturation in region



Regulatory (Extraneous) Drivers

- Supply:
 - Hydraulic fracturing issues and EPA actions
 - Water usage (Susquehanna River Basin Commission)
 - Will New York open to Marcellus drilling
- Demand:
 - EPA rules (alphabet soup of new regulations)
 - EPA extension of smog and sulfur rules to Texas
 - Deely power plant announced it will retire not scrub
 - LNG export from Lower 48 (yes, no, maybe?)



Financial Market Drivers

- Capital for E&P Companies
 - Bond offerings in 2010 were ~\$21 Billion up 35%
 - IPO's in 2011 raised \$2.4 billion up from \$1.4 in 2010
 - Forecasted prices are cited as #1 factor in capital spending decisions followed by access to capital
 - 77% said hedging required by lenders and 59% are increasing the usage of such instruments
 - Hedge portfolios are being actively managed for improved results rather than the “fire and forget” historic approach
 - Professionals like Asset Risk Management, LLC are helping oil and gas producers optimize their hedge portfolios



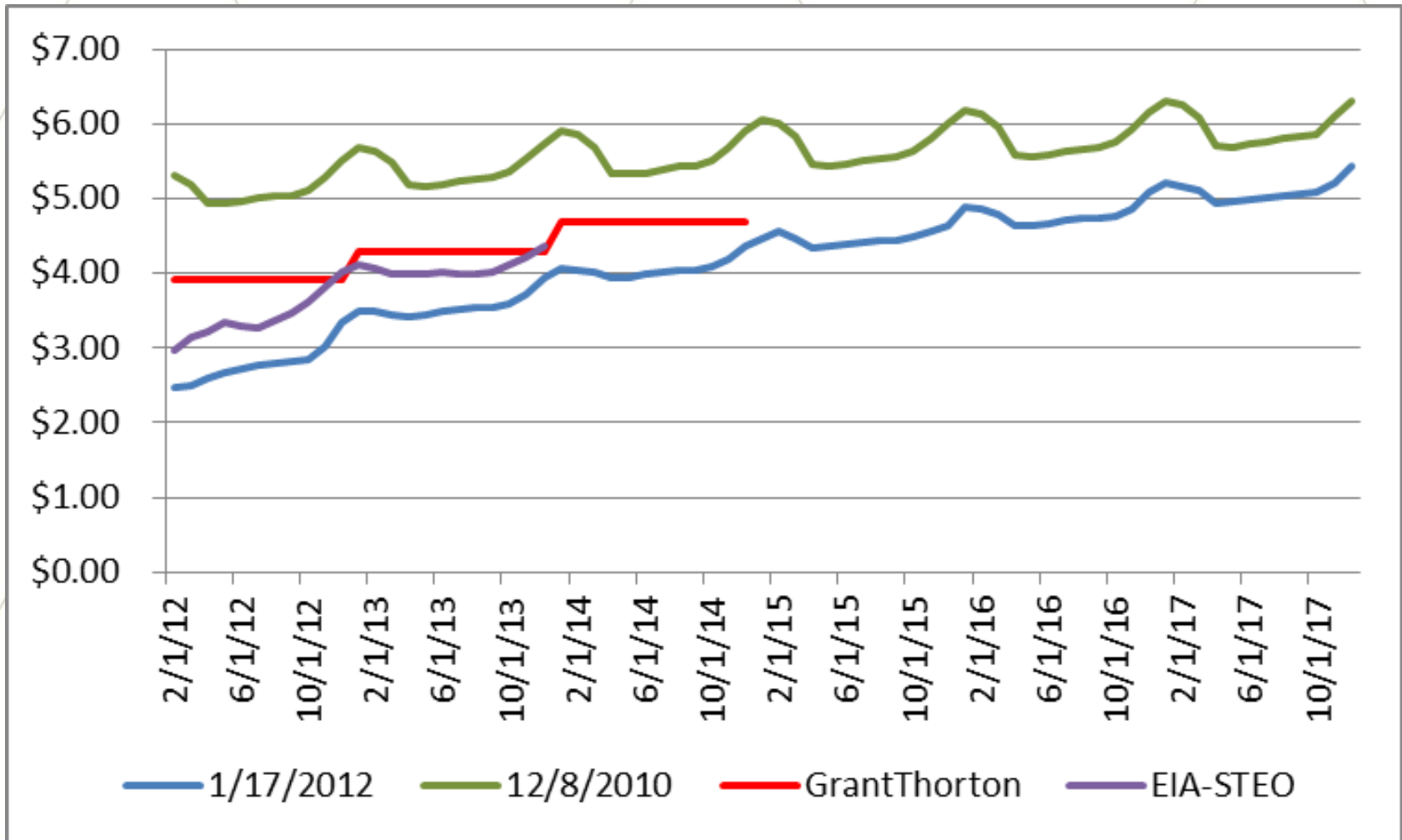
Natural Gas Price History NYMEX \$/MMBTU



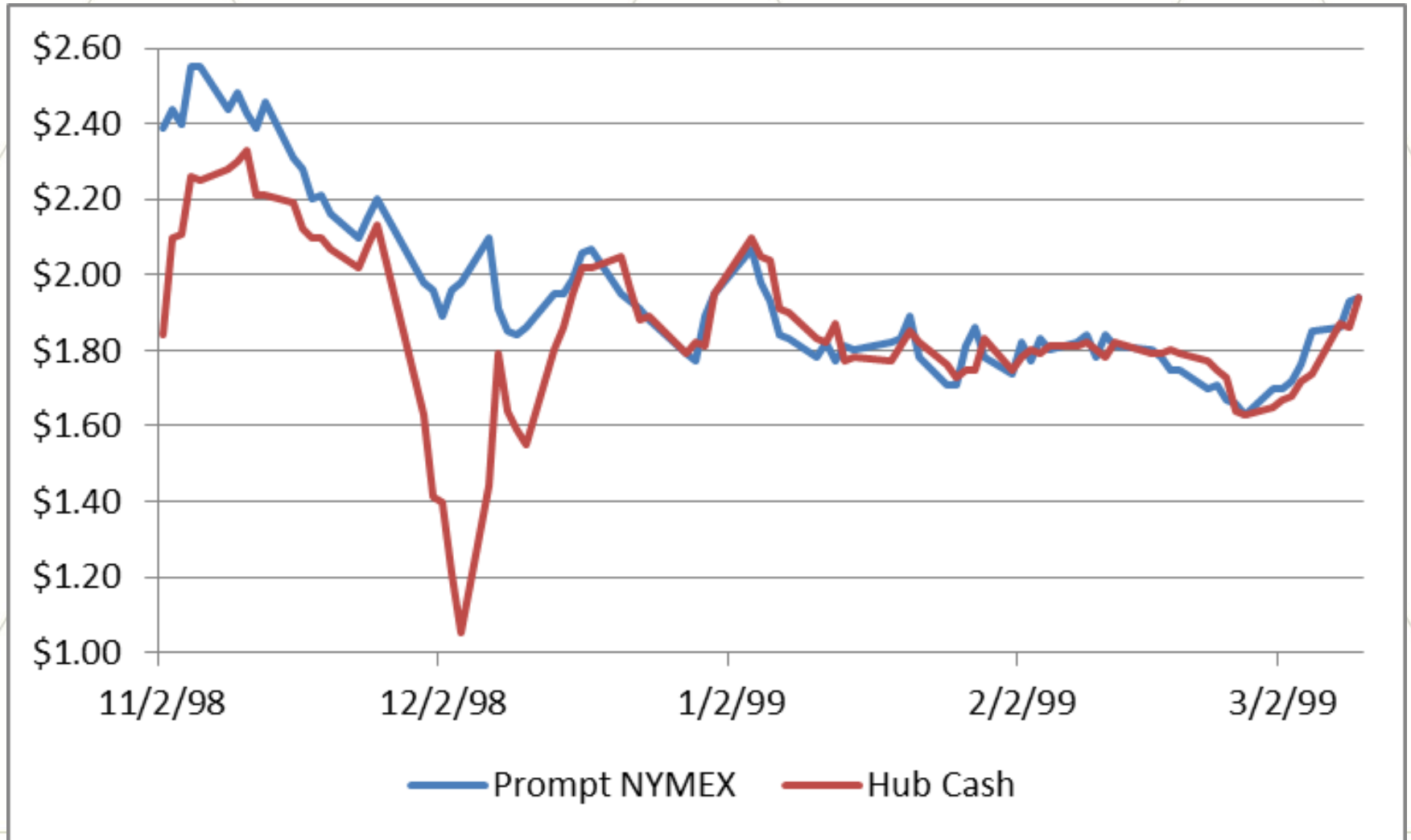
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Source: CME /NYMEX via Energy Information Agency

Natural Gas Price Outlook \$/MMBTU



Historical Comparisons of Low Gas Prices \$/MMBtu



Natural Gas Conclusions

- We are oversupplied as production continues to grow into 2012; market fears associated gas will grow sufficiently to match declines in dry gas production
 - Price volatility and inflection point will be driven by market's divination of when supply growth stops
- Weather normalized increased demand will not solve S&D problem for several years
 - Minimum of one year to work off storage overhang
- Smart hedging and active hedge portfolio management will pay dividends for both producers and consumers of gas



A More Pleasant Story: Crude Oil @ \$100+ per bbl



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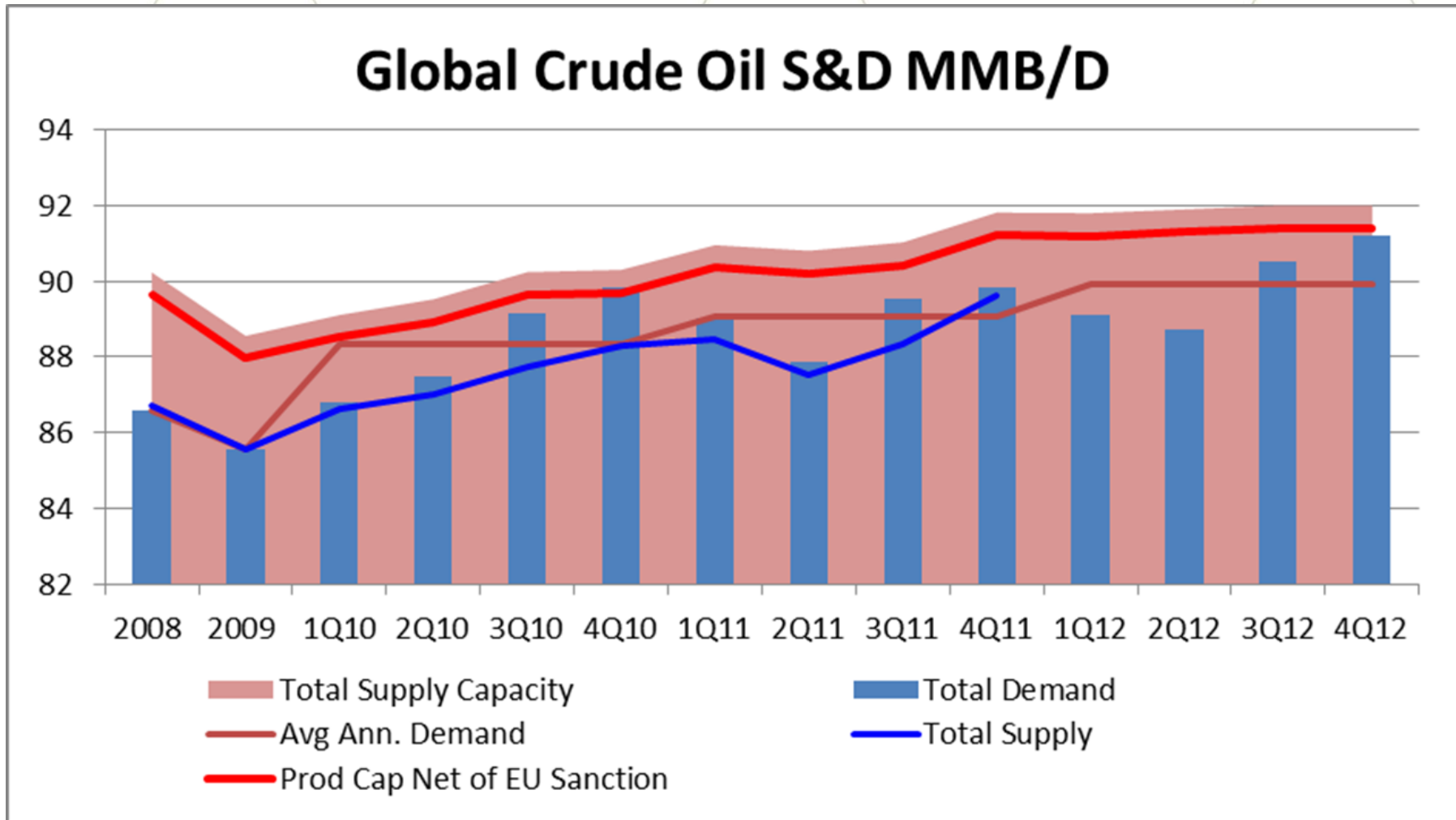
Source: CME /NYMEX via Energy Information Agency

Global Crude Oil S&D with Brent-WTI Kicker

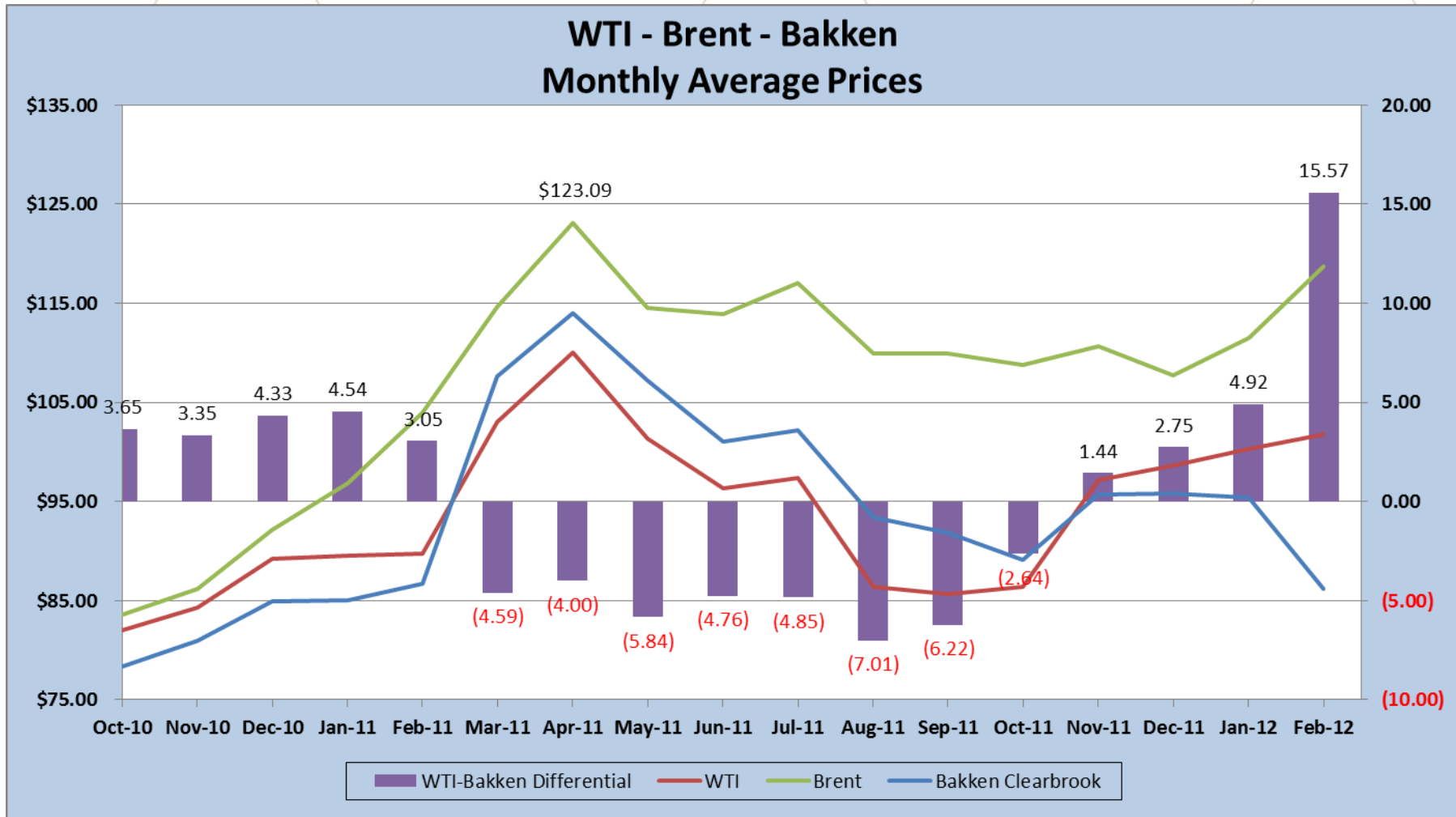
- Supply: Global supply could grow to meet demand but continual risks for major disruptions puts a fear premium into global oil price
 - Each time a disruption begins to “heal” another one erupts {Libya vs. South Sudan} or is feared like Iran sanctions / Strait of Hormuz threats
 - West Africa, U.S. + Canada, Saudi, and few others can still grow
- While demand growth is forecasted to slow, it is still growing; the non-OECD countries are poised to become larger consumers than the OECD bloc
 - Forecasts cut from 1.2-1.4 mmb/d growth to 0.7-0.8 mmb/d [IEA, EIA, OPEC, etc.]
 - Weakness in EU primary threat to growth, but higher prices in U.S. and China demand net of strategic reserve are other reasons to “fade” growth
- Brent continues to get its “light” premium from European refiners who were hit with Libya and now EU sanctions against Iran
- WTI differential likely to remain wide(r) until U.S. infrastructure is improved



Global S&D is Tightening Unless Capacity Grows



Prices Driving Exploration Behavior



Source: Asset Risk Management

Shale Oil: Magnitude of the Impact

Shale oil is reversing the continual decline in US production.

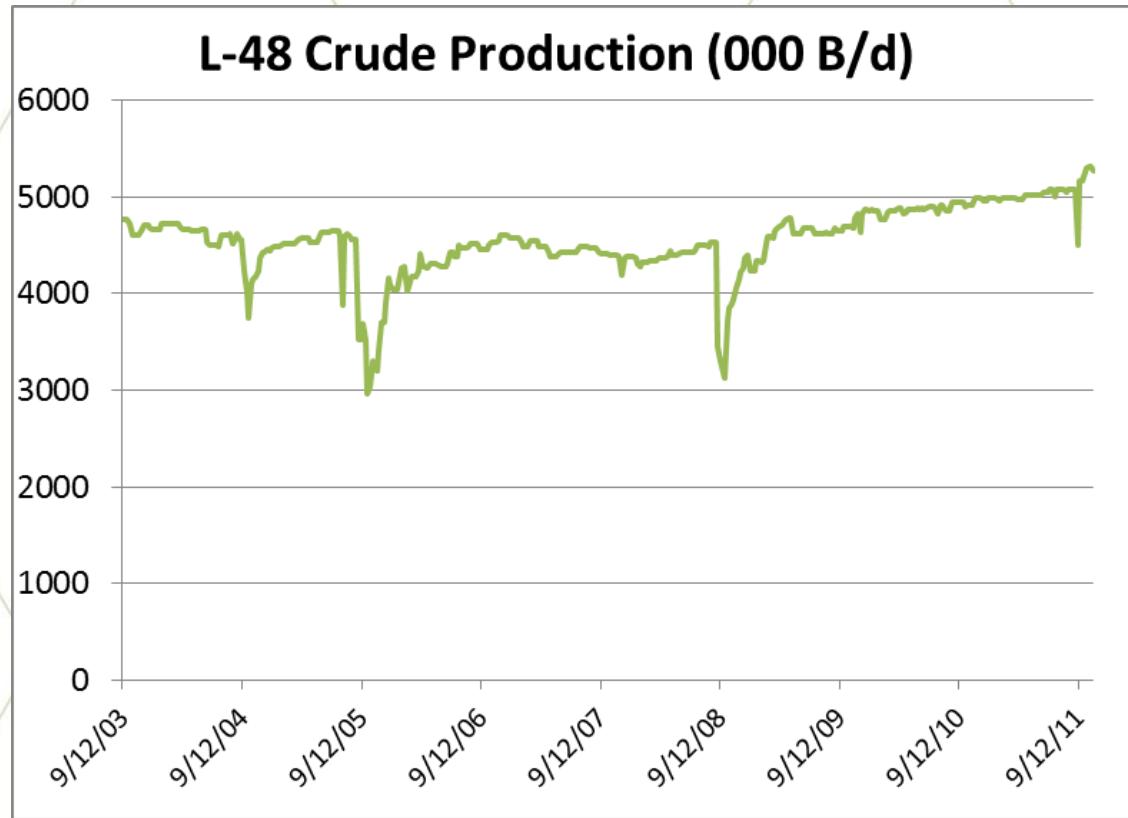
Bakken ~ 400,000 /d

Eagle Ford ~ 85,000 /d

Niobrara ~

Wolf.....

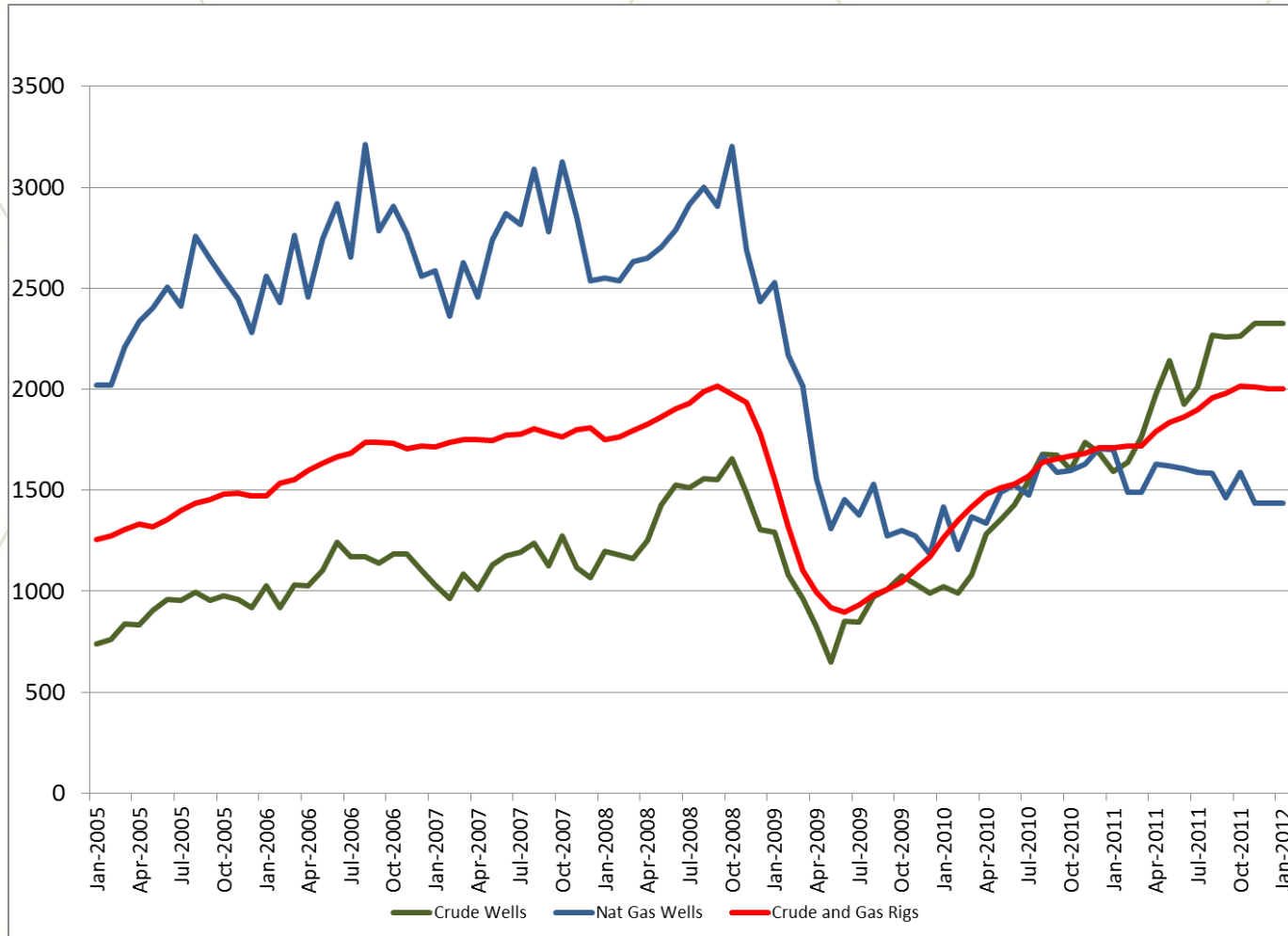
Utica just starting



Potential Shale Oil production rates range from 600,000 /d to over 3,000,000 / d by 2020.



Drilling has Rolled Over to Liquids

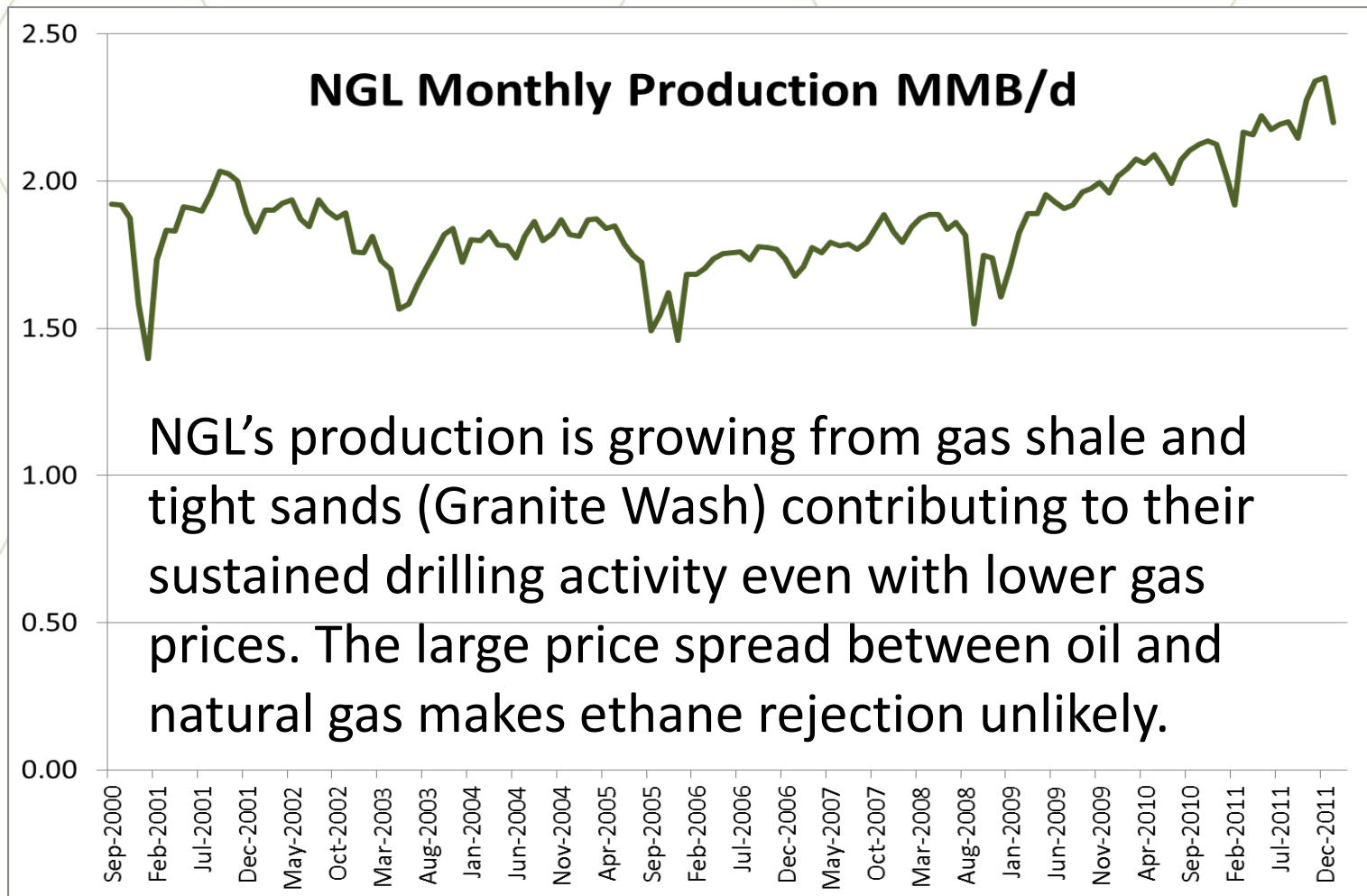


Shale Oil: Where is the Opportunity

	Gas	Wk/Wk	Yr/Yr	Oil	Wk/Wk	Yr/Yr	Total	Wk/Wk	Yr/Yr
Haynesville LA	80	(2)	(46)	1	0	1	81	(2)	(45)
Barnett Shale	56	3	(28)	1	0	1	57	3	(27)
Eagle Ford	94	(9)	5	114	10	66	208	1	71
Fayetteville	33	(1)	(5)	1	0	1	34	(1)	(4)
Marcellus PA	133	3	4	2	0	2	135	3	6
Woodford	25	(3)	(12)	3	0	3	28	(3)	(9)
Granite Wash	86	(2)	2	8	0	6	94	(2)	8
Niobrara	24	(3)	8	17	2	5	41	(1)	13
Bakken	0	0	0	172	(11)	41	172	(11)	41
Canal Woodford	54	(1)	10	6	1	5	60	0	15
Piceance	28	0	(4)	0	0	(1)	28	0	(5)
Uinta	12	1	(4)	13	(2)	4	25	(1)	0
Total Shales/New	625	(14)	(70)	338	0	134	963	(14)	64
% of US	64%			29%			45%		

Drilling in Shale Oil is primarily in 2 areas right now with traditional Permian Basin drilling masking the Wolf.... activity

Natural Gas Liquids are Also Contributing



Technology Goes Beyond Shale Plays

Long Horizontal Laterals and High Volume Fracturing is being applied to many reservoir types.

Tight Sands: too many to list

Limes: James Lime; Mississippi Lime; St. Louis Lime

“ We are not only looking for new shale and tight sand plays to develop, but we are looking at our entire inventory of opportunities to see where horizontal drilling and multi-stage hydraulic fracturing can increase our production and profitability.” CEO of mid-size private E&P



Conclusions and Thoughts for the Future

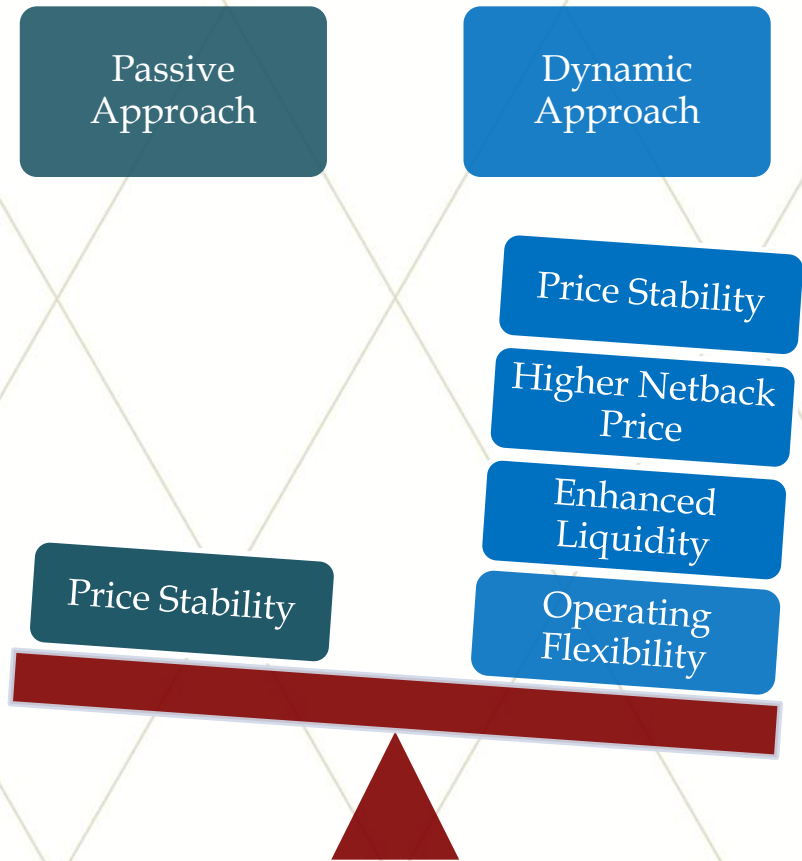
- We are likely to remain “mired” in the tug of war between fear of supply disruption versus economic weakness impact upon demand with fear winning 2/3 of the time
 - Drives our recommendations for using 3 way and other structures to protect against downside while keeping spiky upside potential
 - Geopolitical events can only be probability tested, not predicted
- S&D balances appear to be tightening in 2012 even without high demand growth and disruptions beyond those already priced into market; UNLESS projected non-OPEC projects come online as “advertised”
- U.S. infrastructure (pipe and rail) will likely overbuild to relieve Cushing congestion caused by increased Bakken, Permian, and Mid-Continent activity
 - Brent likely to maintain at least shipping differential between N. Sea and U.S. Gulf Coast
 - Oil directed activity will remain high since the oil / gas spread will continue to favor oil indefinitely



Dynamic Risk Management Outperforms Traditional Passive Hedging Approach “Fire and Forget”



Active hedge management mitigates the liquidity and margin risk introduced by passive hedging. More of your competitors are using these tools are you?



Asset Risk Management's Client Types

Representative public and private clients include:



RAAM GLOBAL ENERGY COMPANY



PATRIOT EXPLORATION CORP.



CINCO NATURAL RESOURCES CORP.

Resolute



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