



2015 Pipeline Energy Group Conference: ERCOT Market Update *Market Dynamics and Energy Price Trends*

May 6th, 2015

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GDF SUEZ Energy Resources NA

GDF SUEZ Energy Resources NA is a leading retail electricity provider to industrial and commercial customers in the United States. Headquartered in Houston, TX.

- One of the **largest national energy providers (4th)**, licensed to serve 12 deregulated markets, with customers in TX, CT, DE, IL, NY, NJ, MA, MD, ME, PA, OH & DC
- GDF SUEZ Energy Resources NA serves over **3,000 customers and over 60,000 accounts**
- The first retail supplier to publicly **guarantee on-time enrollment**
- Recognized for quick problem resolution, competitive pricing, and accurate billing
- The information leader, providing tools to customers
- With **90% customer satisfaction**, and **8 out of 10** customers would recommend our service
- **GDF SUEZ NA owns ~13,000 MW** of electricity generation, including 4,000 MW in Texas.



A world leader in energy

Operational strength

Financial responsibility and historical stability

Informational leader

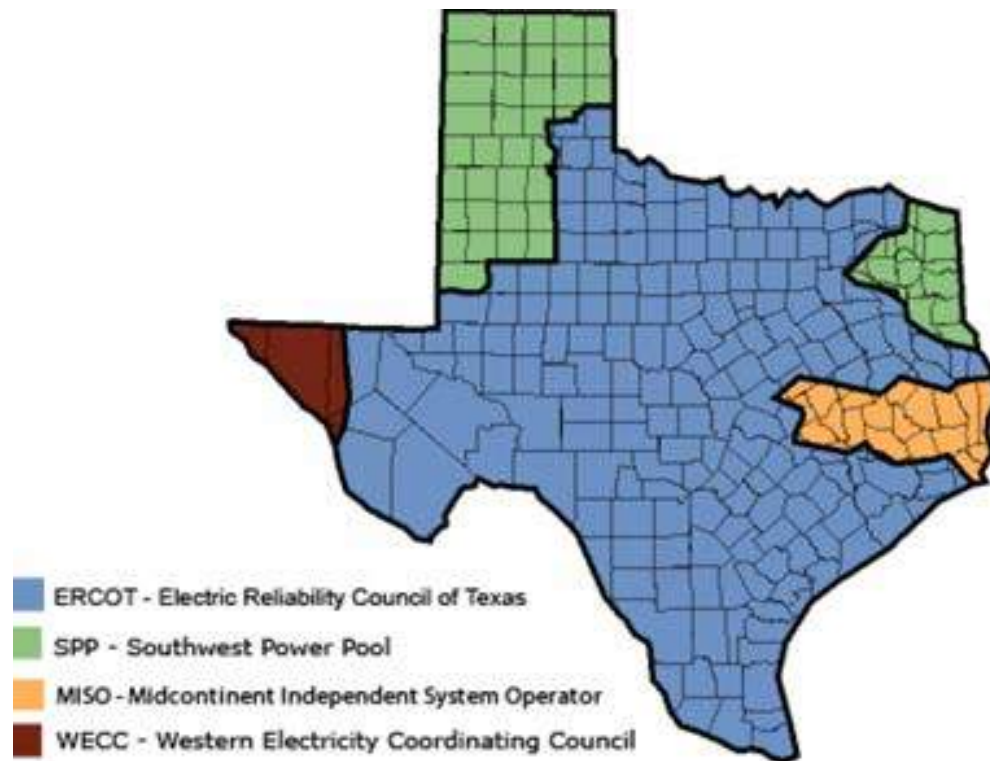
Provides decision making tools

Competitively priced

Simplified products & services

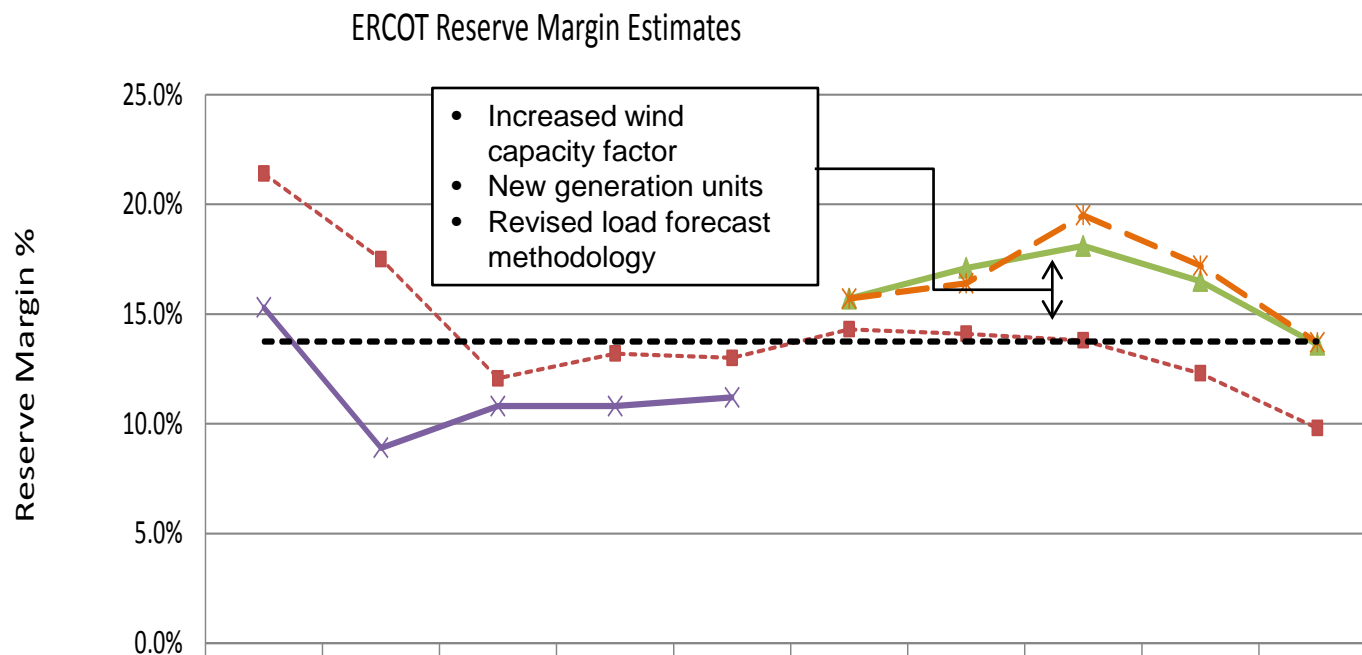
Electric Reliability Council of Texas (ERCOT)

- ERCOT is about 90% of Texas load
- Serves 24 million consumers
- Competitive-choice customers: 75% of load
- 550 generating units
- Over 74,000 megawatts (MW) capacity for peak demand
- Market participants: More than 1,100 active entities that generate, move, buy, sell or use wholesale electricity



Source: ERCOT and PUCT

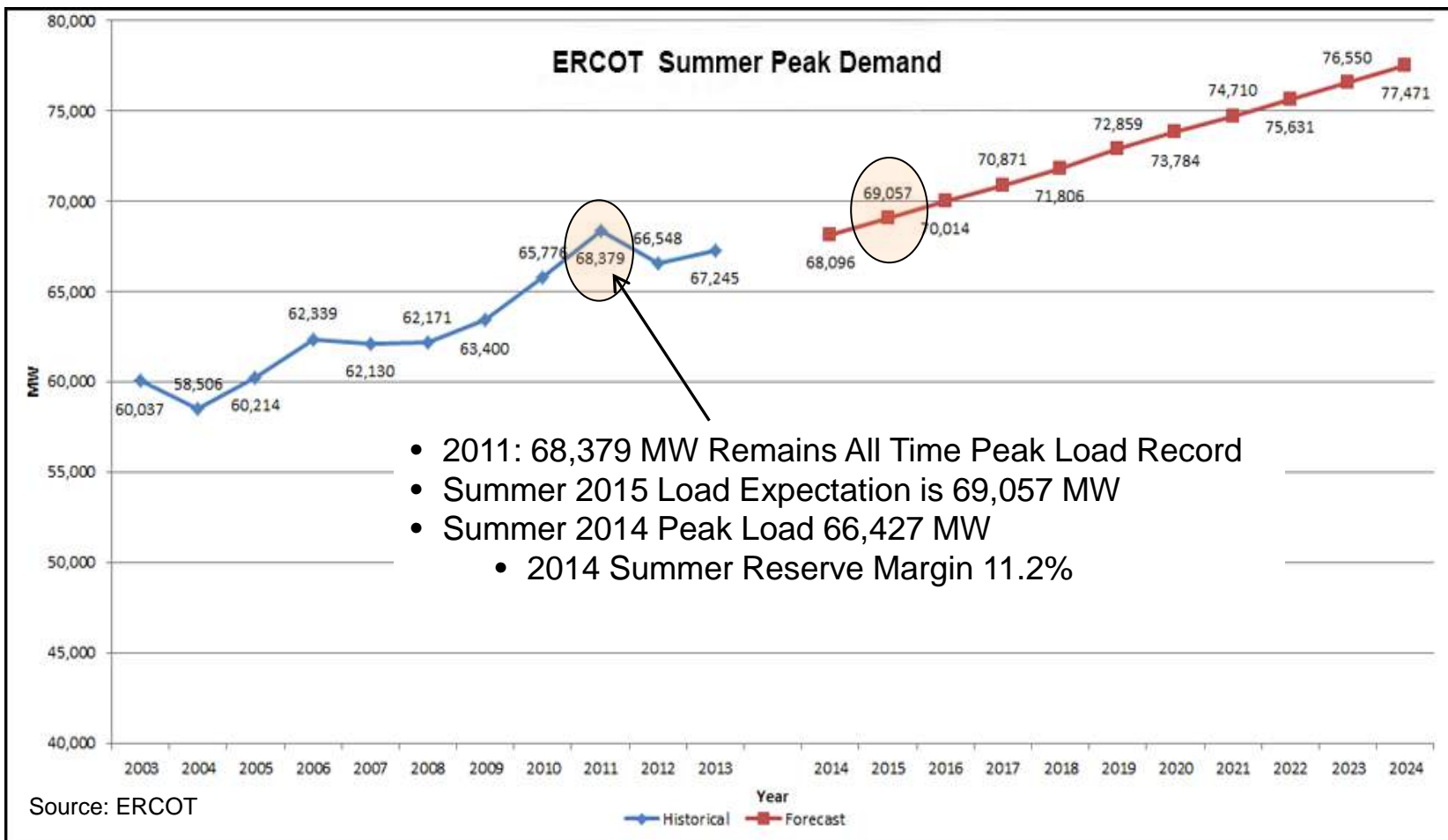
Reserve Margin Forecasts (Excess Available Generation vs. Expected Peak Demand)



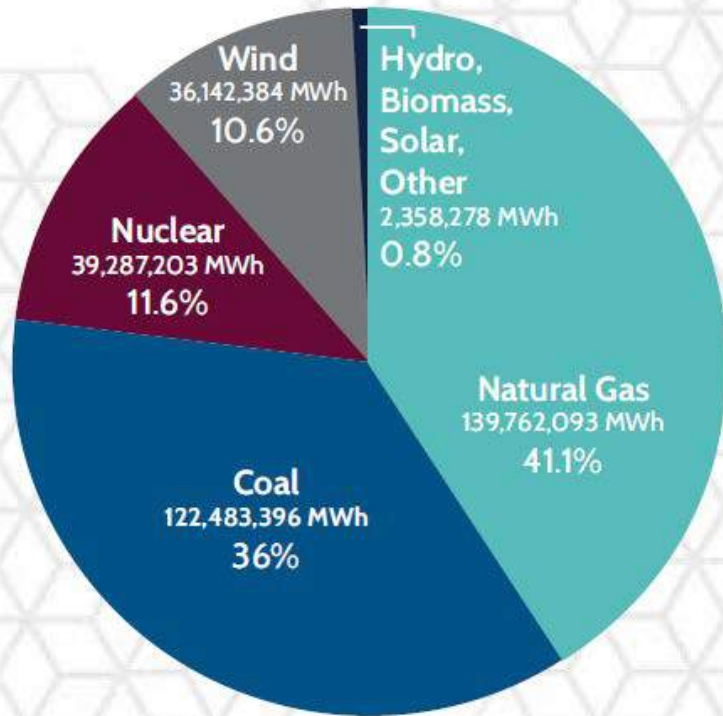
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
ERCOT, Dec 2014 CDR Forecast						15.7%	17.1%	18.1%	16.5%	13.6%
ERCOT, Previous/May 2014 CDR Forecast	21.4%	17.5%	12.1%	13.2%	13.0%	14.3%	14.1%	13.8%	12.3%	9.8%
UBS Estimates, Dec 2014						15.7%	16.4%	19.5%	17.2%	13.7%
Summer Effective Reserve Margin	15.3%	8.9%	10.8%	10.8%	11.2%					
ERCOT Current Target Reserve Margin	13.75%	13.75%	13.75%	13.75%	13.75%	13.75%	13.75%	13.75%	13.75%	13.75%

Sources: Electric Reliability Council of Texas (ERCOT) & GDF SUEZ

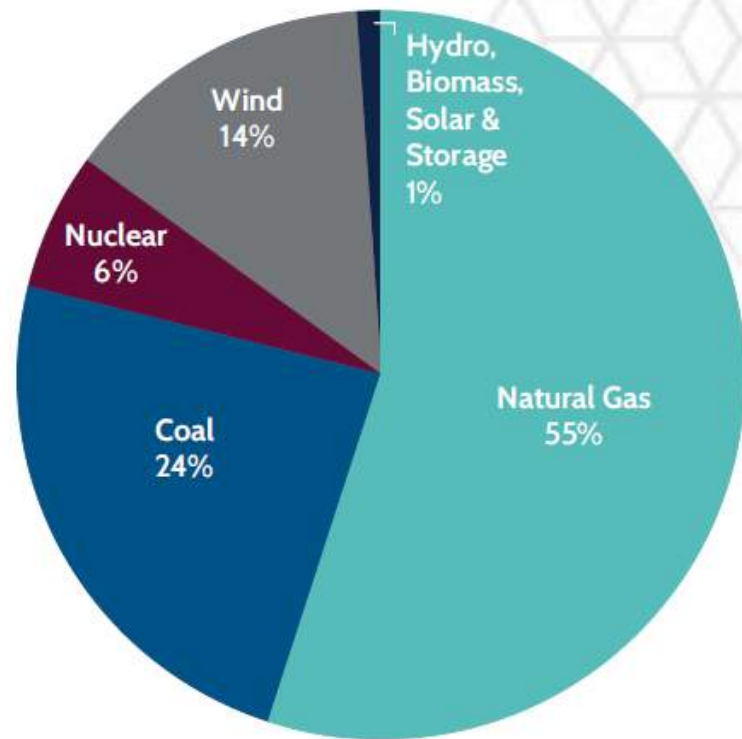
ERCOT Summer Peak Load History and Future Forecasts



Generation Use and Capacity



Energy Use 2014
340,033,353 MWh



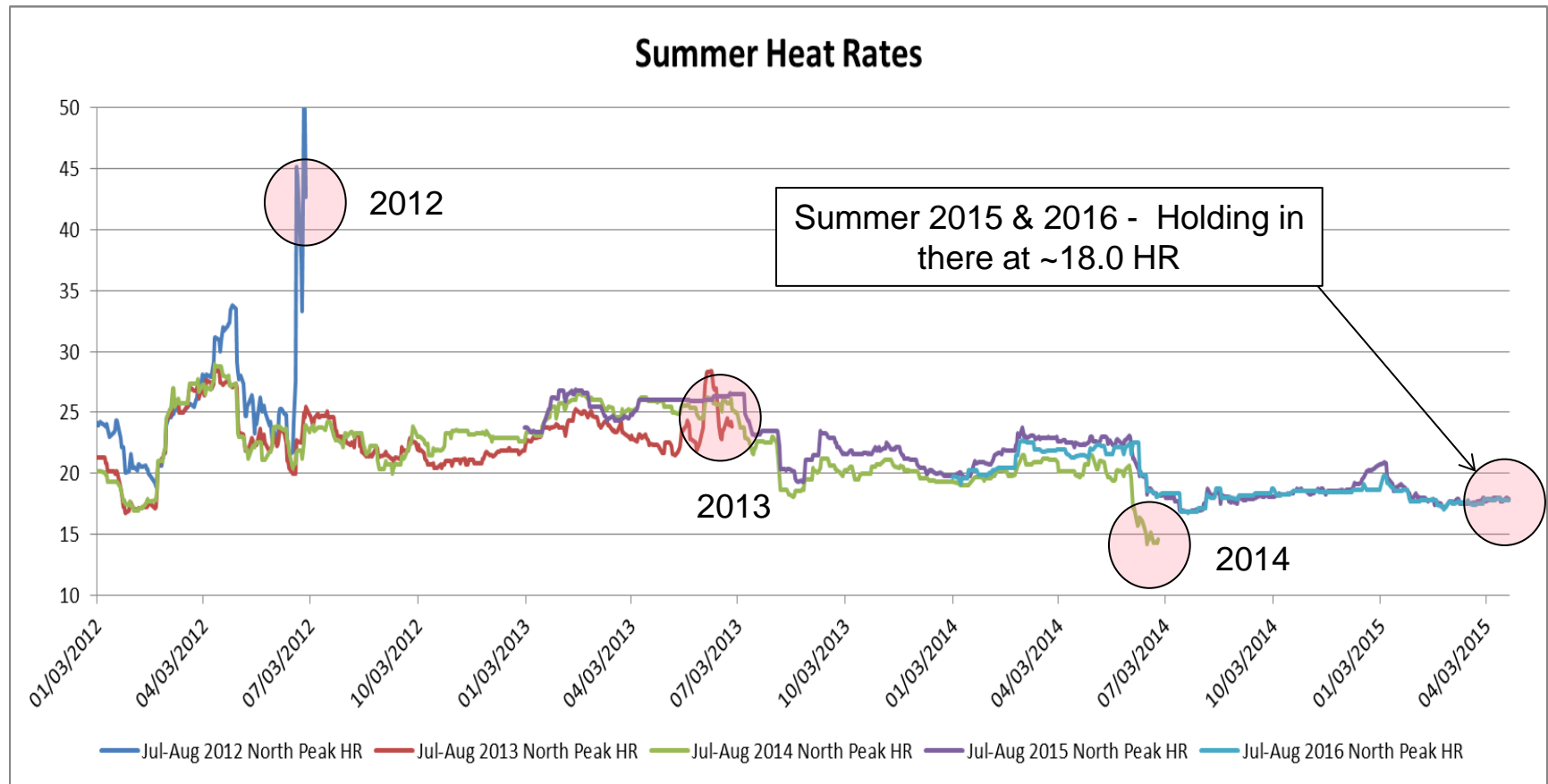
2014 Generation Capacity
effective December 2014

Source: ERCOT

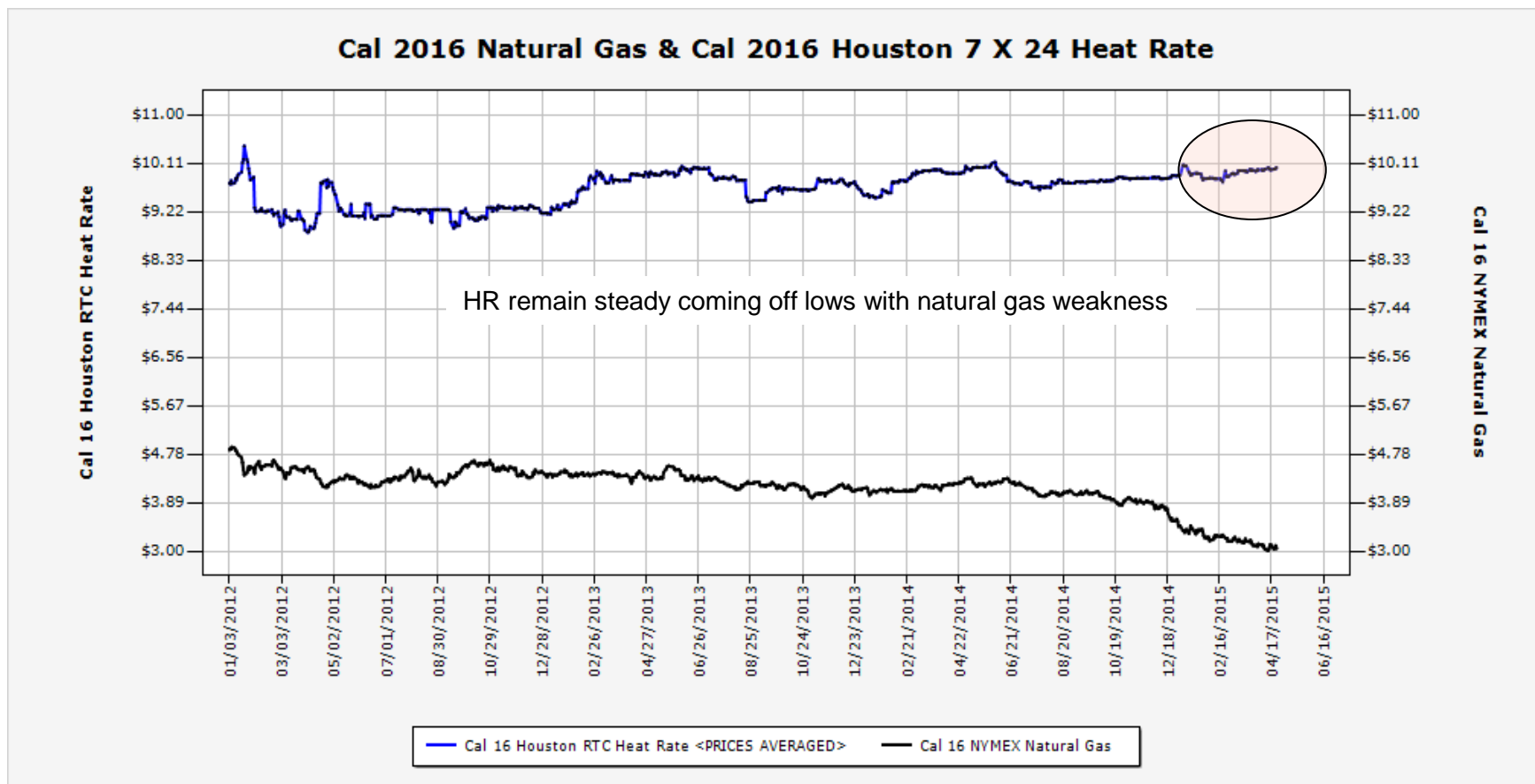
North Hub July-August (Summer) On-Peak Heat Rates

Heat Rate = Power Price / Natural Gas Price

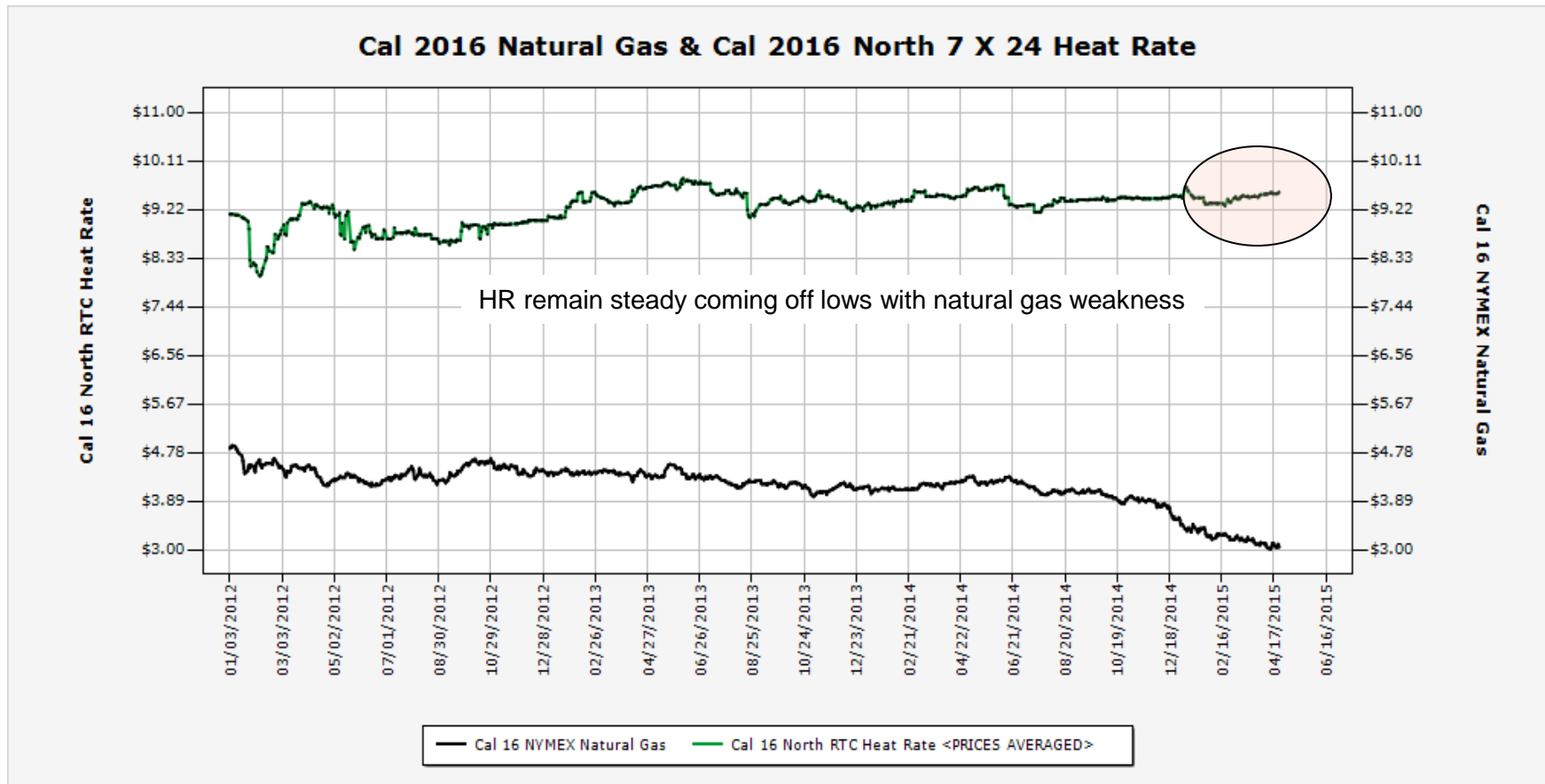
Power Price = Natural Gas Price X Heat Rate



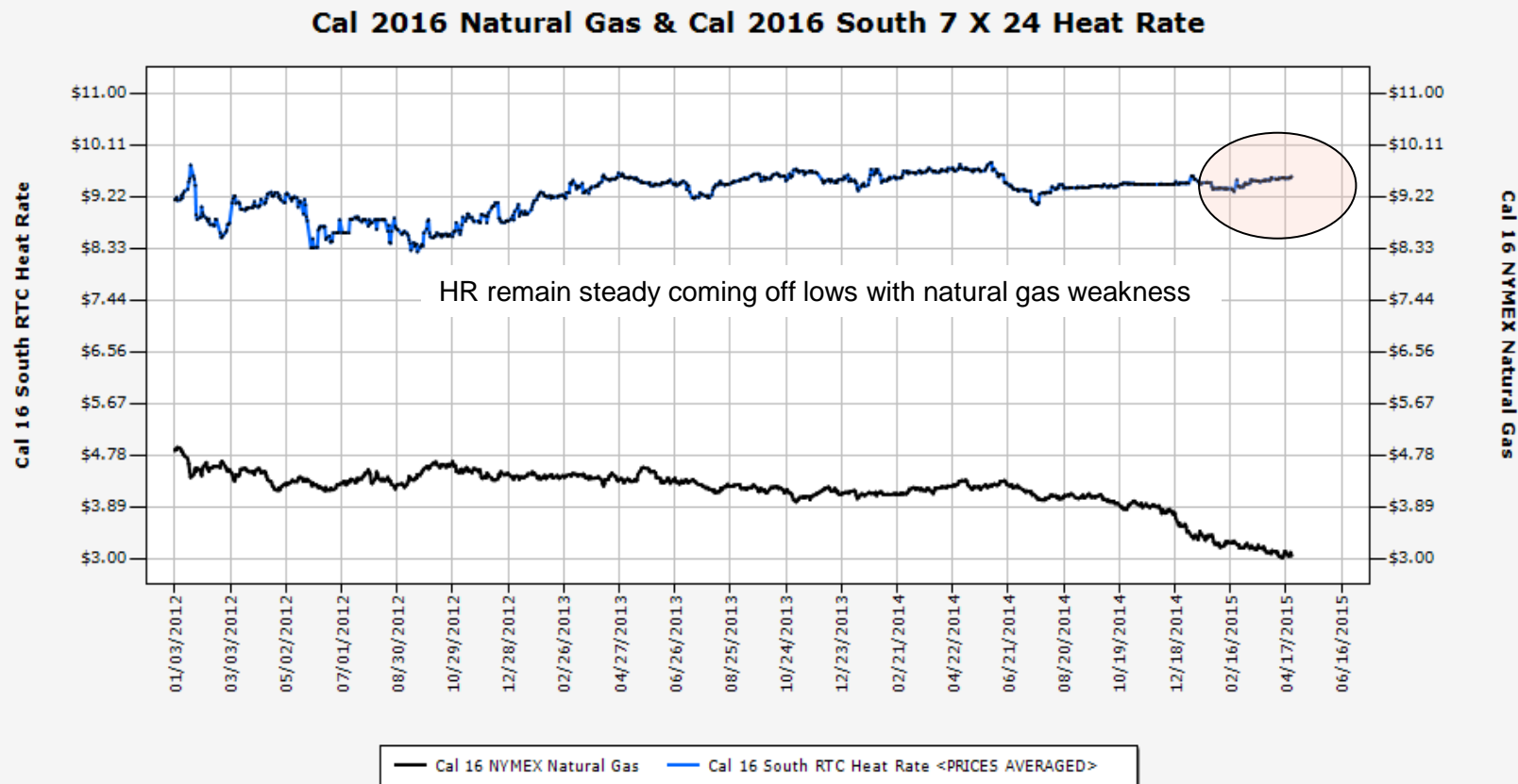
Cal 2016: Natural Gas Price & Heat Rate; Houston Hub



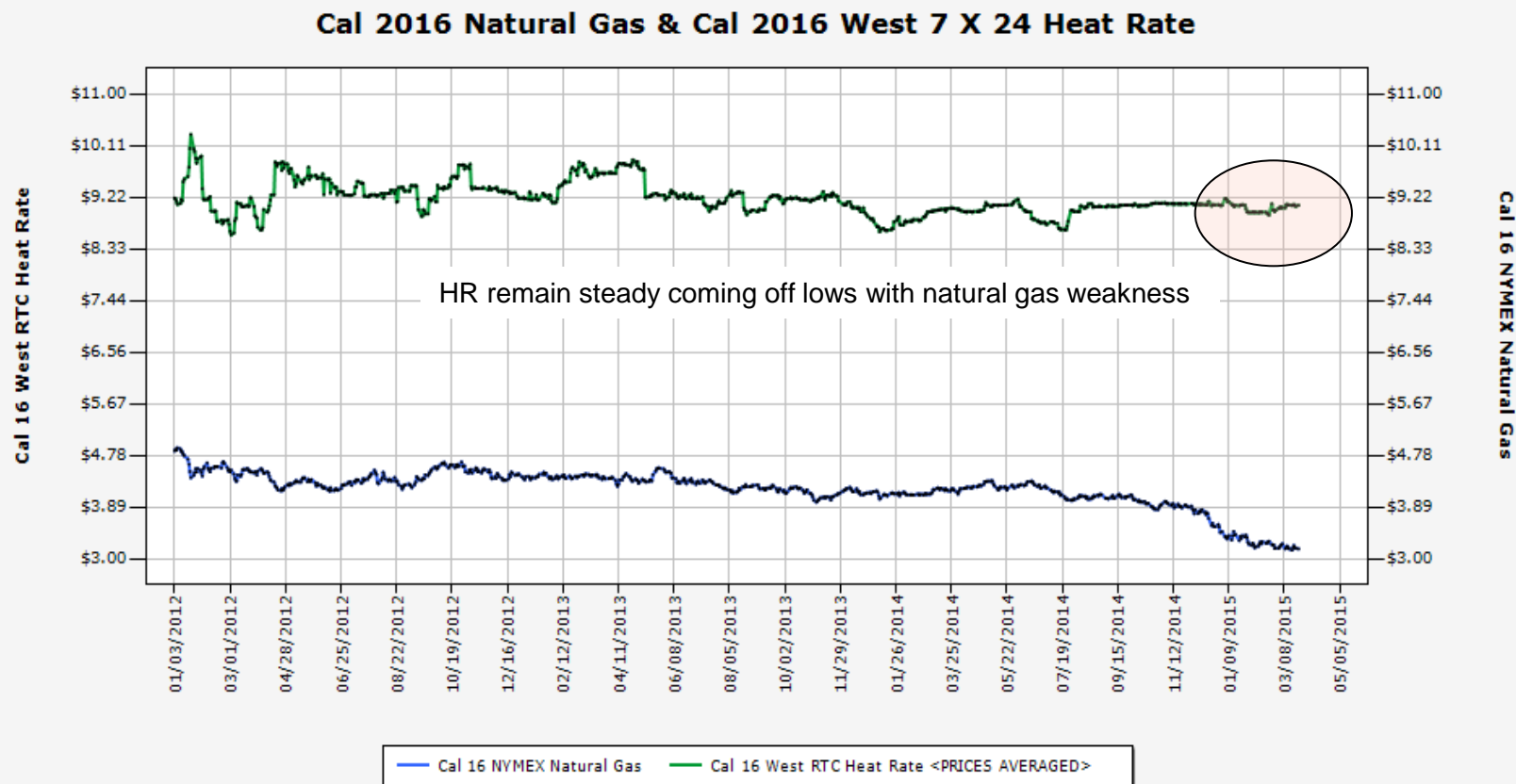
Cal 2016: Natural Gas Price & Heat Rate; North Hub



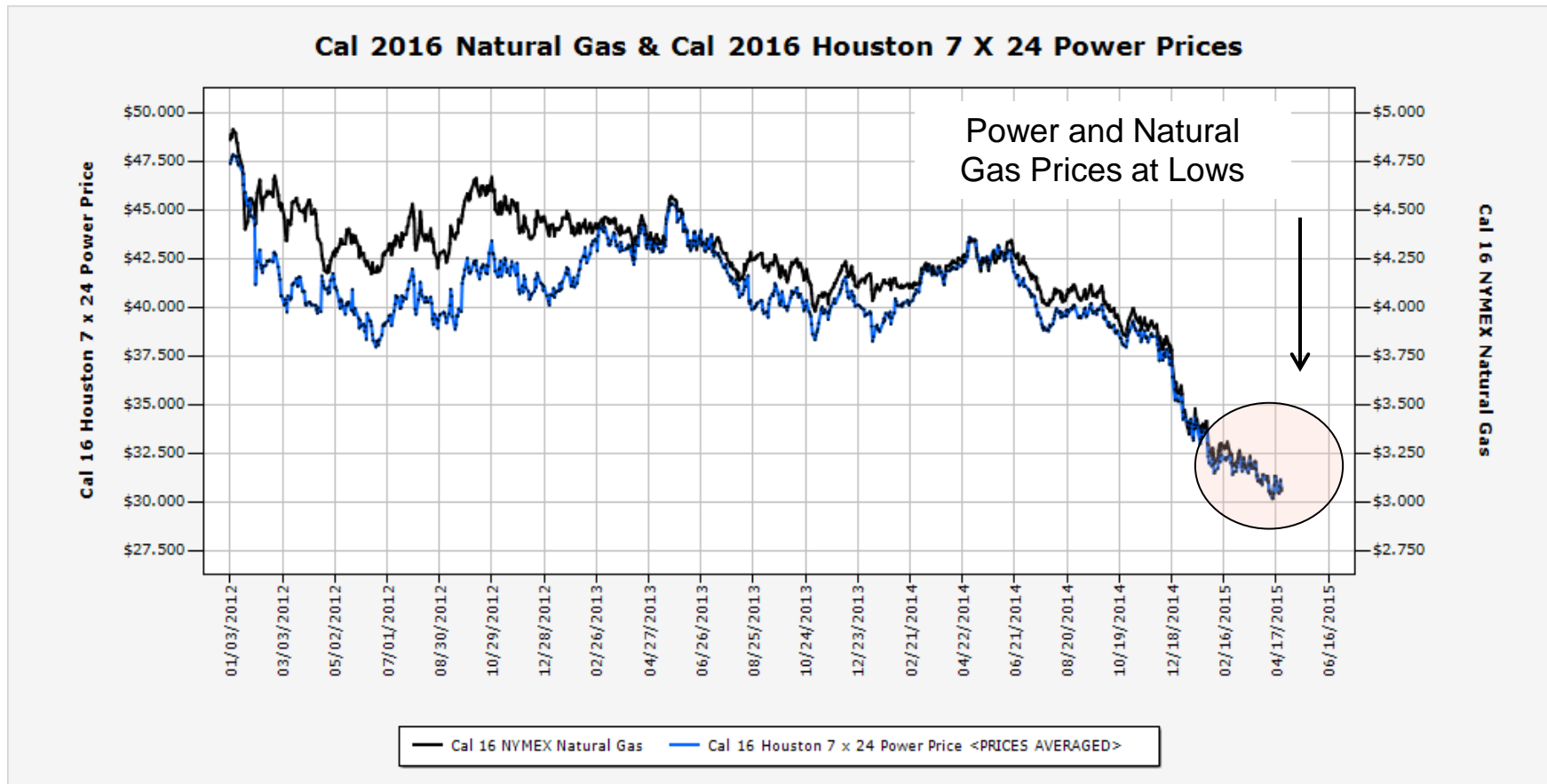
Cal 2016: Natural Gas Price & Heat Rate; South Hub



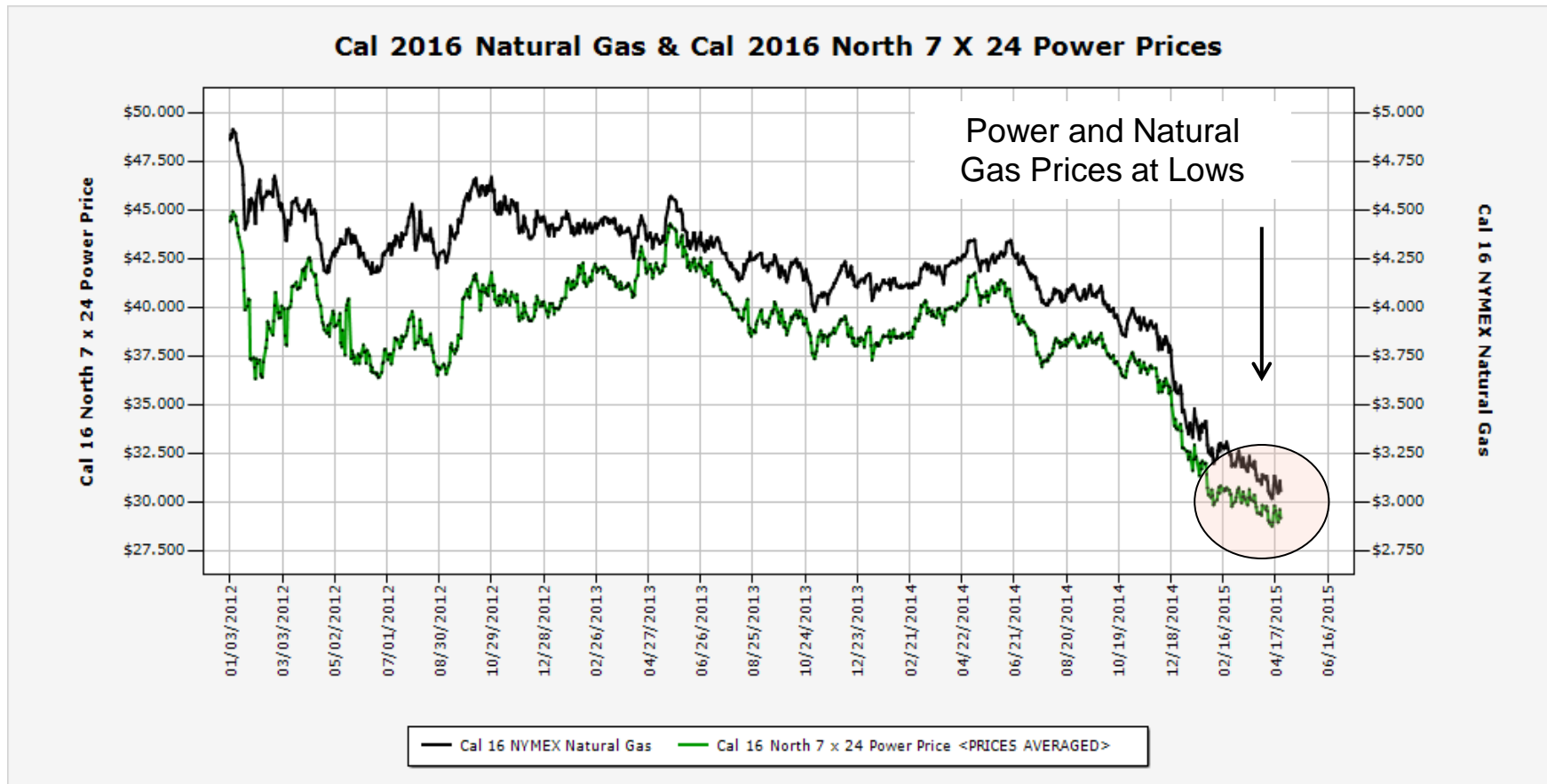
Cal 2016: Natural Gas Price & Heat Rate; West Hub



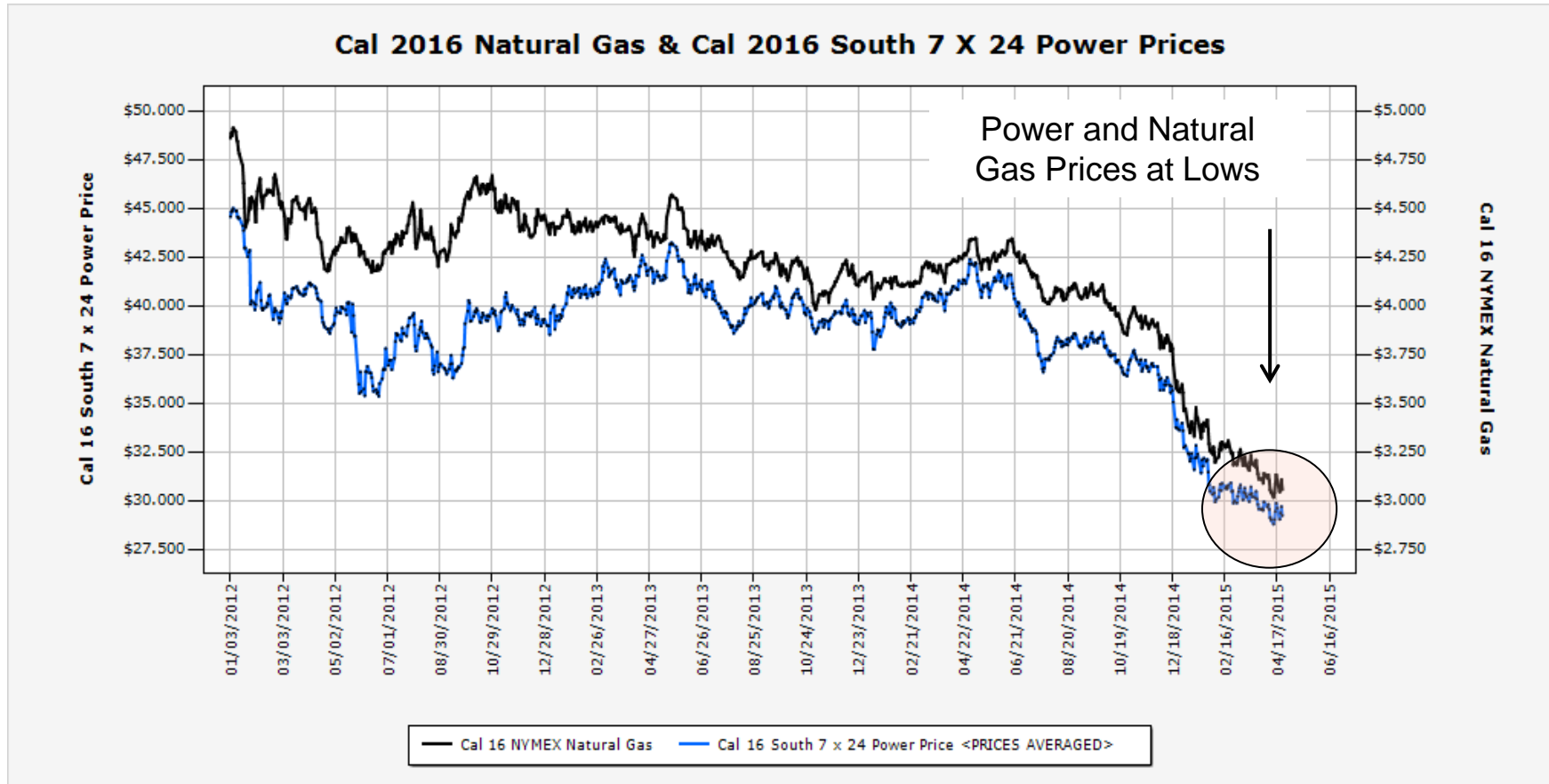
Cal 2016: Natural Gas Price & Power Price; Houston Hub



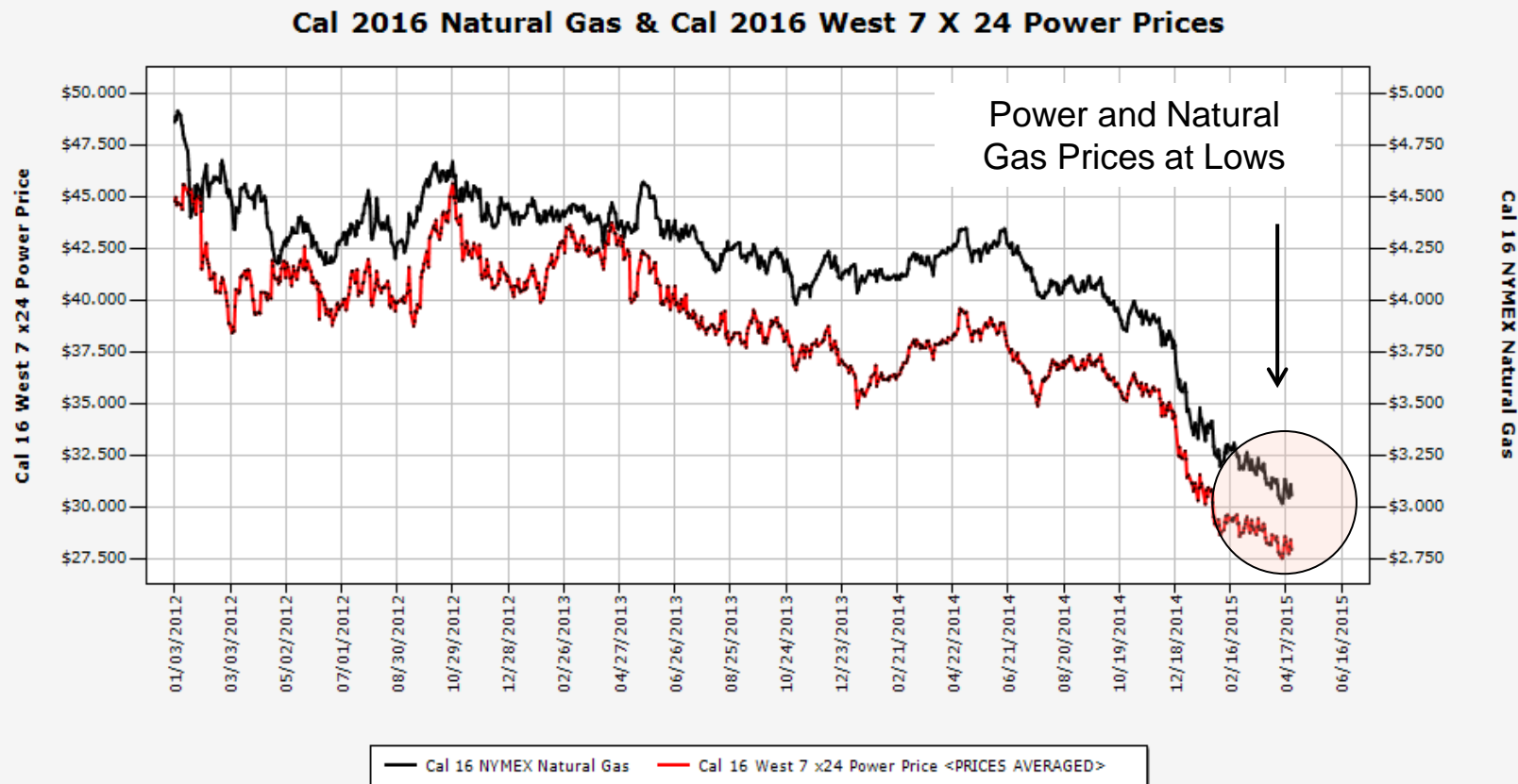
Cal 2016: Natural Gas Price & Power Price; North Hub



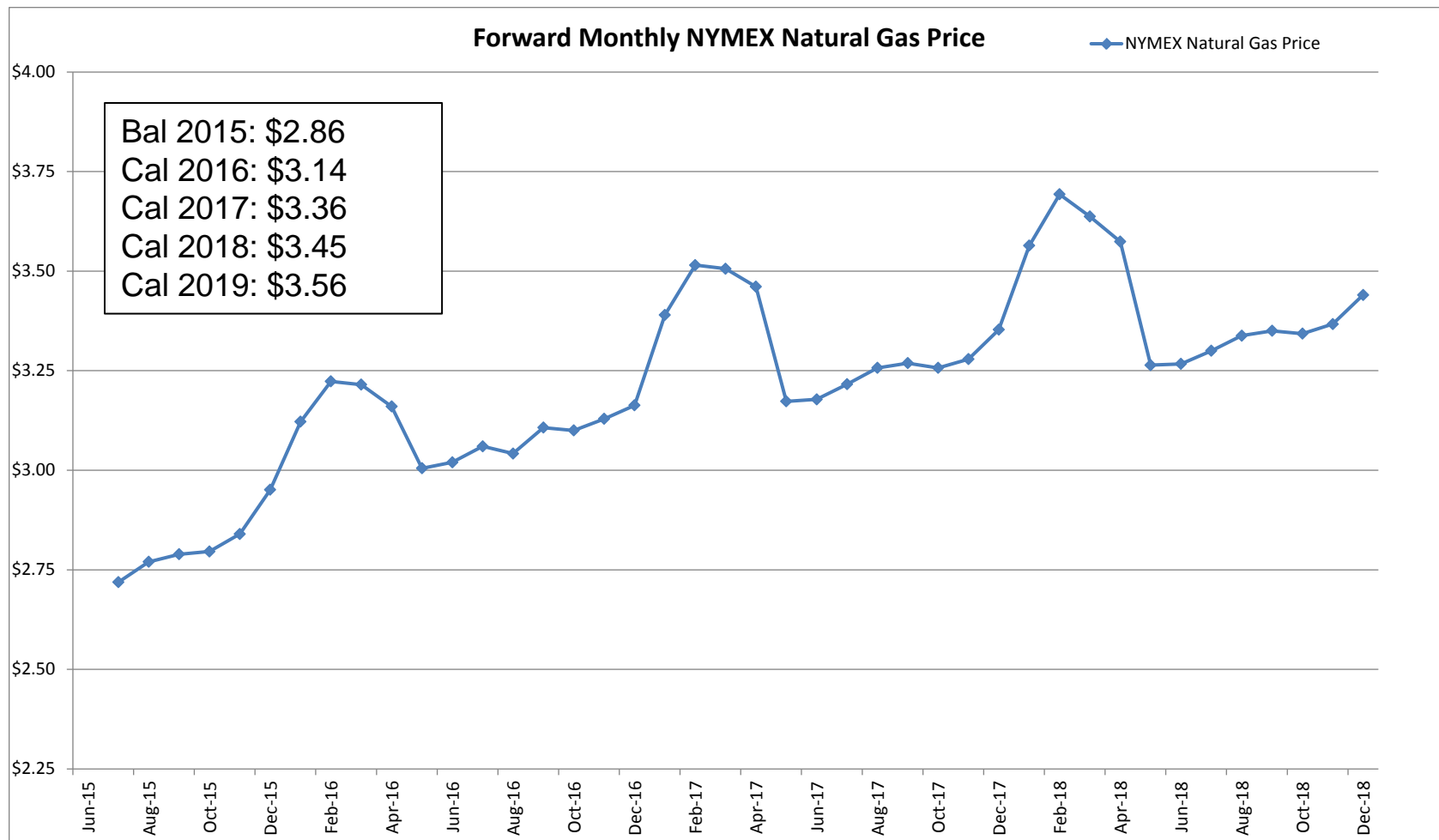
Cal 2016: Natural Gas Price & Power Price; South Hub



Cal 2016: Natural Gas Price & Power Price; West Hub



Natural Gas Forward Prices; NYMEX Henry Hub



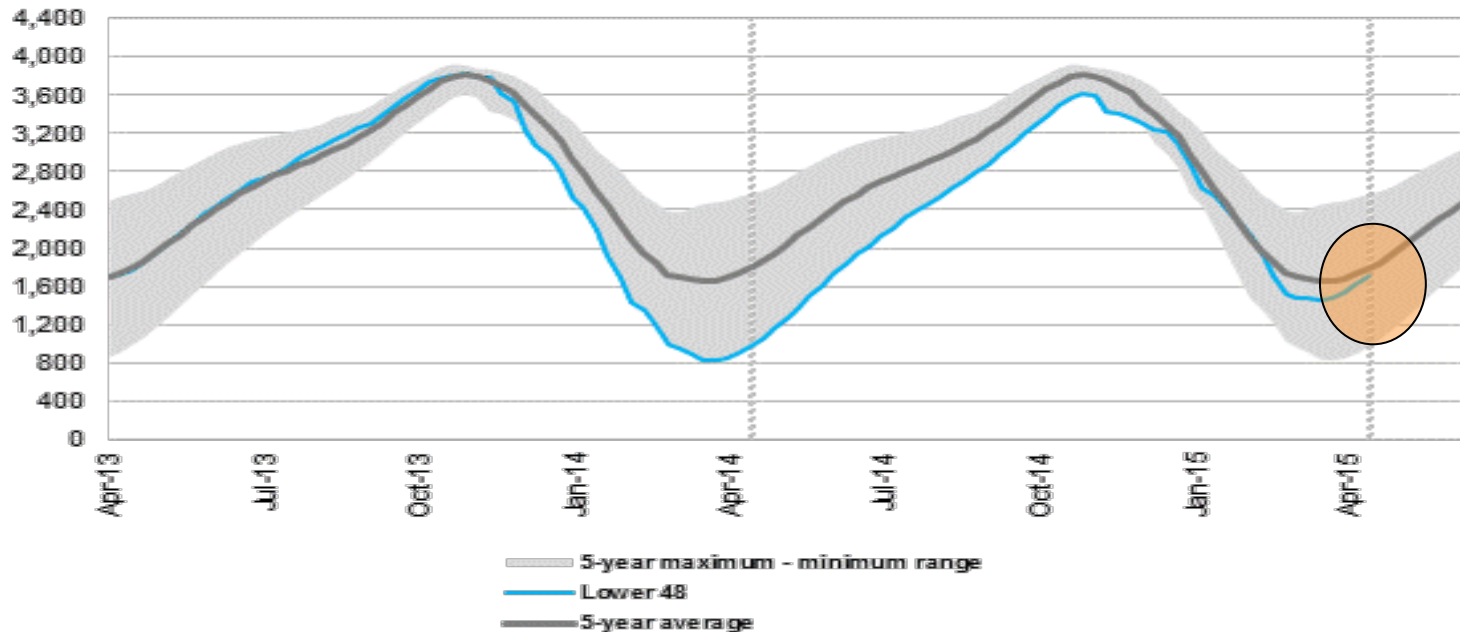
US Natural Gas Storage Level

Current Storage Level: 1,710 Bcf, 4% below the five year average, but 76% above last year

- Last week's report showed an injection of 81 Bcf, below market expectations of 92 Bcf
- Expectations for this week is 70 – 75 Bcf
- Early expectations for the end of injection season; 3.80 Tcf – 4.0 Tcf

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

billion cubic feet

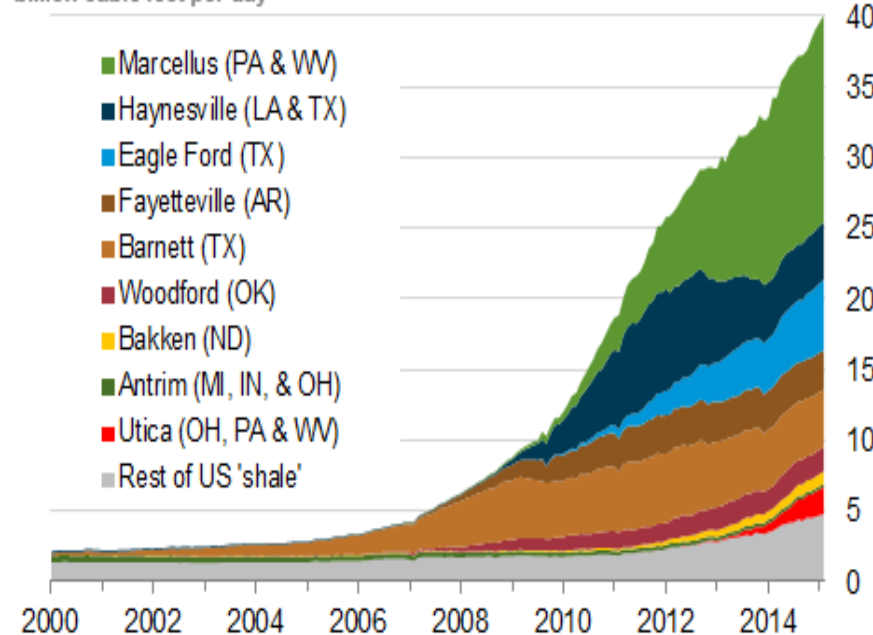


Source: U.S. Energy Information Administration

Shale Production by Location and Rig Counts

Monthly dry shale gas production

billion cubic feet per day



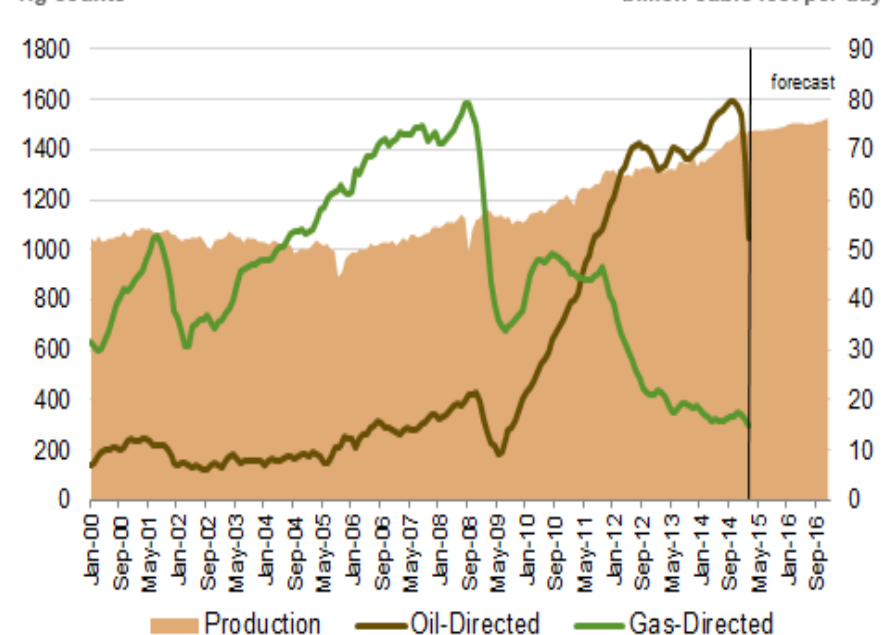
Sources: EIA derived from state administrative data collected by DrillingInfo Inc. Data are through February 2015 and represent EIA's official shale gas estimates, but are not survey data. State abbreviations indicate primary state(s).



Natural gas production and oil- and gas-directed rig counts

rig counts

billion cubic feet per day



Source: U.S. Energy Information Administration, based on data from EIA *Short-Term Energy Outlook* (March) and Baker Hughes, Inc.



Global Oil and Gas Shale Formations

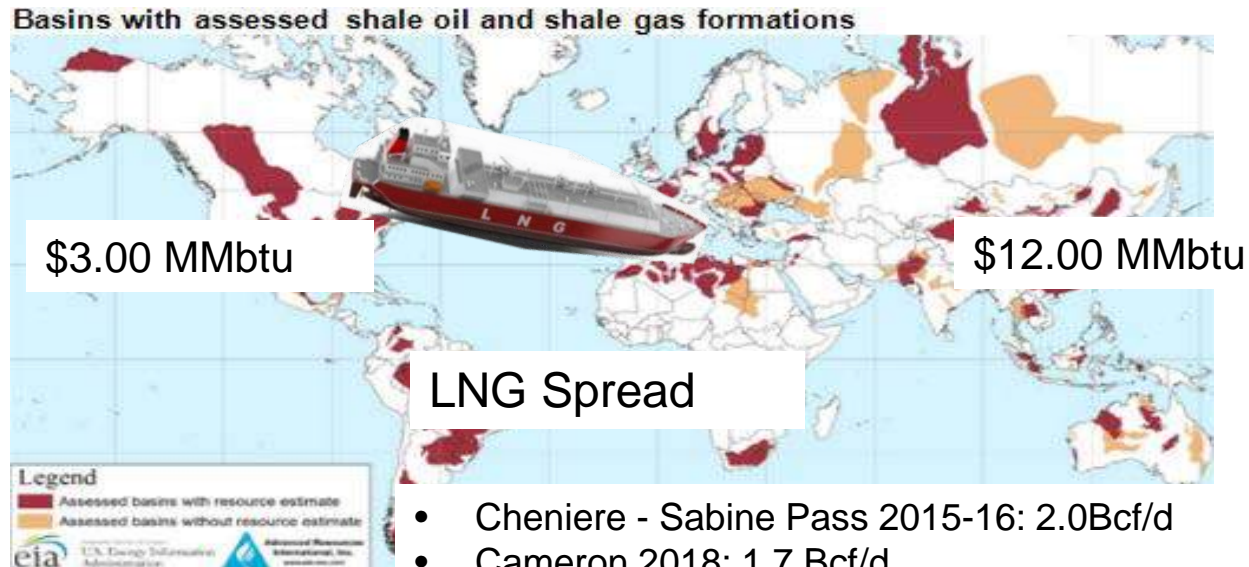


Table 2. Top 10 countries with recoverable shale oil resource

Rank	Country	(billion barrels)
1	Russia	75
2	U.S. ¹	58 (48)
3	China	32
4	Argentina	27
5	Libya	26
6	Australia	18
7	Venezuela	13
8	Mexico	13
9	Pakistan	9
10	Canada	9
World Total		345 (335)

¹ EIA estimates used for ranking order. ARI estimates in parentheses.

- Cheniere - Sabine Pass 2015-16: 2.0Bcf/d
- Cameron 2018: 1.7 Bcf/d
- Cheniere – Corpus 2018: 1.7 Bcf/d
- Freeport 2018: 1.8 Bcf/d

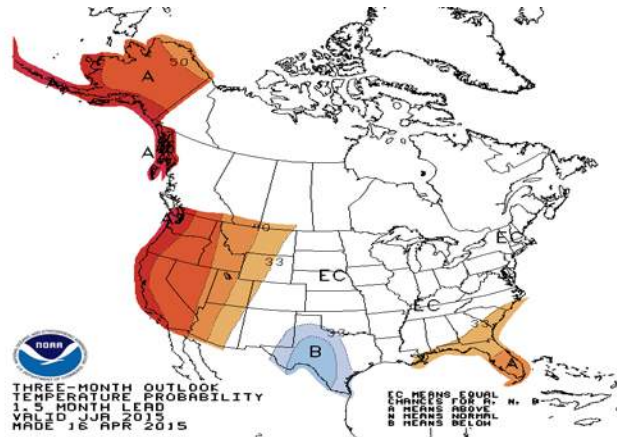
nically

Rank	Country	Shale gas (trillion cubic feet)
1	China	1,115
2	Argentina	802
3	Algeria	707
4	U.S. ¹	665 (1,161)
5	Canada	573
6	Mexico	545
7	Australia	437
8	South Africa	390
9	Russia	285
10	Brazil	245
World Total		7,299 (7,795)

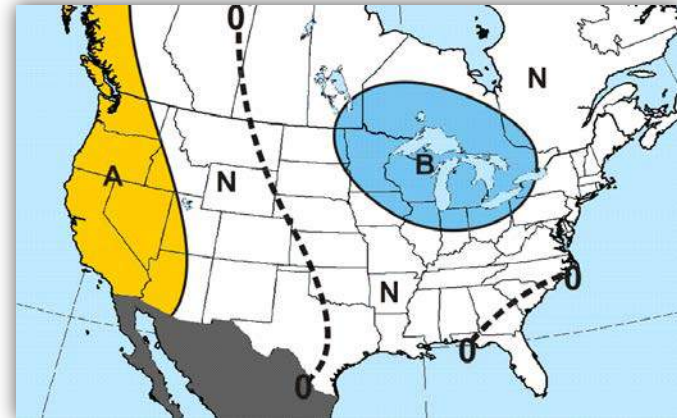
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Summer Weather Forecasts – Texas Always a Wildcard

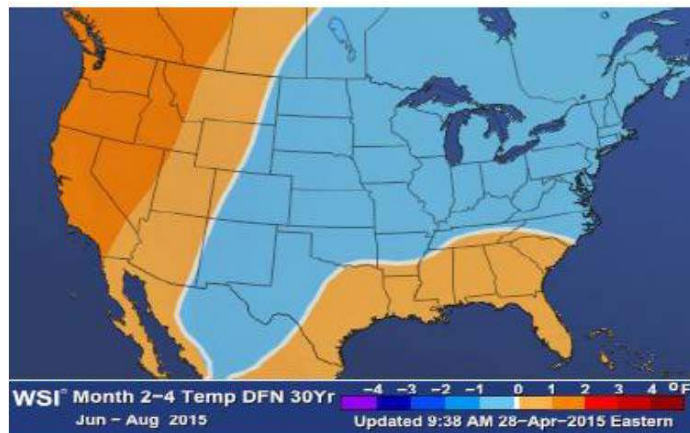
June – August (NWS)



June – August (EarthSat)



June - August (WSI)



“Summer” (Farmers’ Almanac)



Bullish and Bearish Indicators

- * Denotes potential impacts to heat rates
- ☀ Denotes potential impacts on natural gas prices

Hotter

< Summer Weather >

Cooler

Bullish Indicators (Rising Prices)

- * Regulatory Activities, PUCT and ERCOT - SWOC increases to \$9,000 for 2015. Implementation of the Operating Reserve Demand Curve (ORDC) in June 2014. Effects of Protocol changes on prices?
- ☀ * Clean Air Legislation in general provides upward pressure on natural gas prices due to increased build and dependence on natural gas fired generation; retire or retrofit coal units, fracking restrictions; Regional Haze Rule, Cross State Air Pollution Rule (CSAPR)
- ☀ * Early Winter weather forecasts called for below normal temps in Northeast/Southeast. *Cold but not too cold*
- ☀ Natural gas storage - Did Winter weather patterns draw down storage levels again? *No*
- ☀ LNG exports – will enough LNG export facilities be built to allow for significant exports (2017- 2018 effect?)
- ☀ Natural gas and power exports to Mexico – Mexico's privatization of the energy sector may increase US exports to Mexico; gas and power (Frontera 520 MW)
- ☀ Coal to Gas switching – generators using more gas units to produce electricity due to price advantage vs. coal units
- ☀ * Texas and national industrial demand recovery – industrial demand rising
- * ERCOT Reserve Margins expected to decrease yearly with load growth and unit retirements/mothball. Projected to drop below target reserve level in 2019. *Too far off*

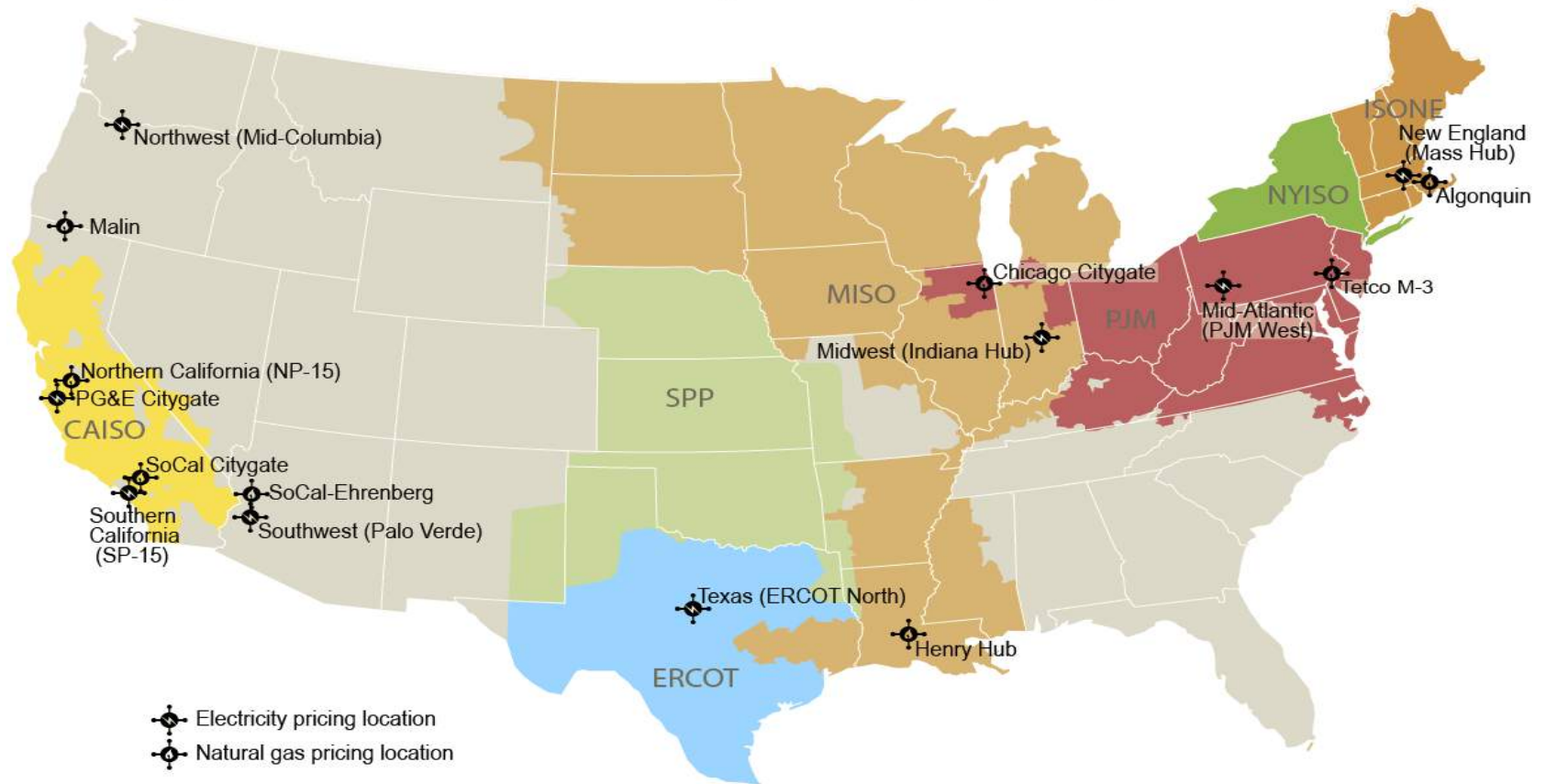
Bearish Indicators (Falling Prices)

- ☀ Natural gas storage levels – gas storage levels are healthy returning to 5 year averages. Gas from shale production continues to grow and liquids margins/spreads are supporting uneconomic gas well production. Reduces impact of hurricane production losses from offshore.
- * Generation Investment in Texas – renewed interest in generation investment in Texas. Tenaska and Exelon announce three new units (2,800 MW) for 2017, will others follow?
- * Energy efficiency gains – are efficiency measures kicking in? ..green buildings, commercial and industrial retrofitting, AC efficiencies, Energy Star homes
- ☀ * Early Summer weather forecasts calling for normal to below normal temps east of the Rockies, Texas a wildcard; El Nino impacts
- * Distributed generation/renewables – continued wind expansion, solar technology advancement, distributed generation initiatives and battery technology
- ☀ * Increased role of Demand Response – will demand response effectively reduce scarcity pricing/shortage concerns, 4 CP management
- * Transmission upgrades and expansion may lower costs to North , South and Houston.
- * WILD CARD – Crude prices..... Demand destruction? Peak demand forecast revisions possible for 2015

GDF SUEZ

Price Hub Locations for Power and Natural Gas

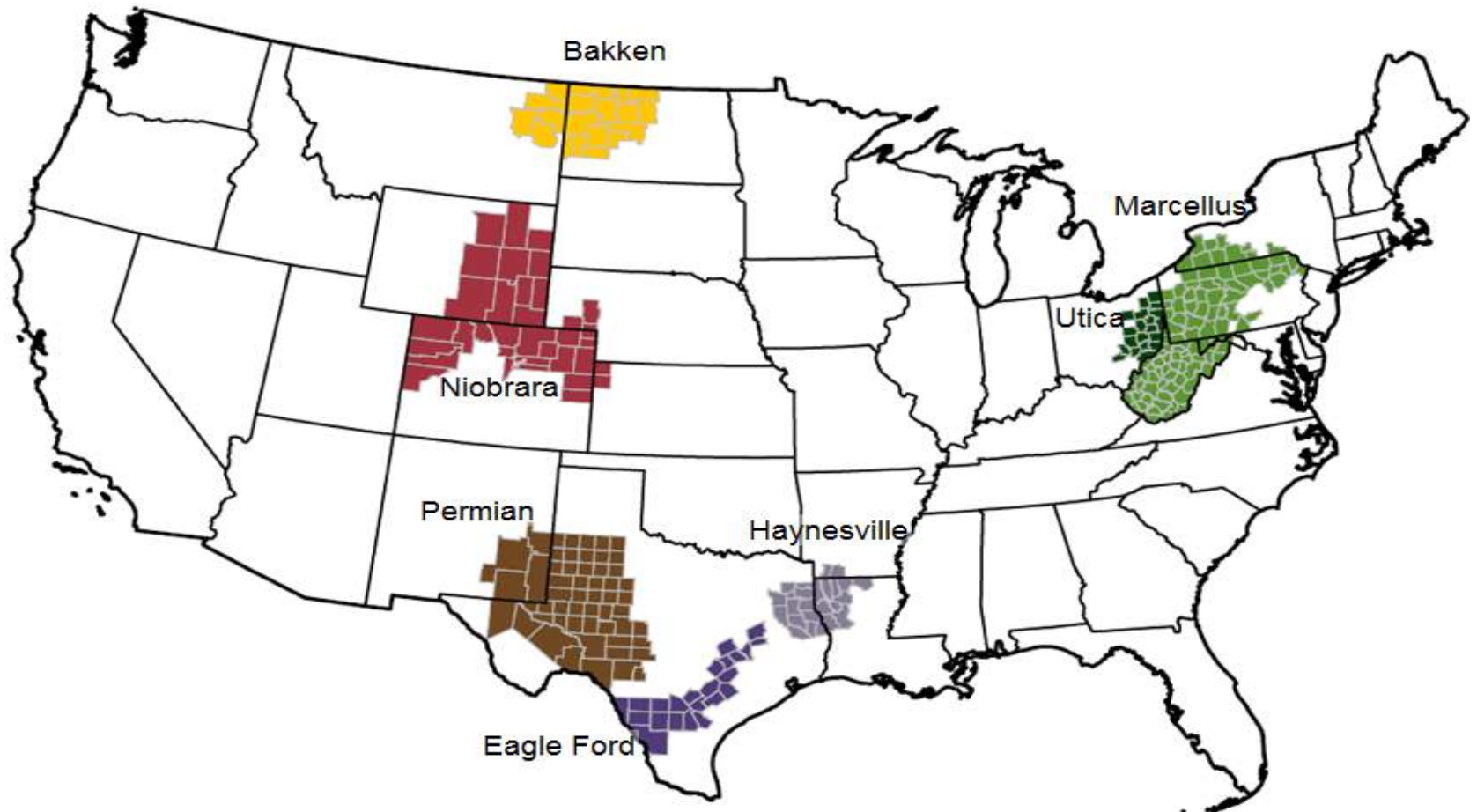
Selected price hub locations for wholesale electricity and natural gas reported by Intercontinental Exchange



Note: Colored areas denote Regional Transmission Organizations (RTO)/Independent System Operators (ISO)

Source: U.S. Energy Information Administration based on Ventyx Energy Velocity Suite

US Shale Locations





Safe Harbor Announcement:

- **Disclaimer.** The views and opinions expressed herein are for informational purposes only. No reliance may be placed on such information and GDF SUEZ makes no representation as to accuracy, completeness, suitability, or validity of any information therein. In no event shall GDF SUEZ or its directors, principals, agents, employees or representatives be liable for any loss or damage whatsoever arising out of the use such information.