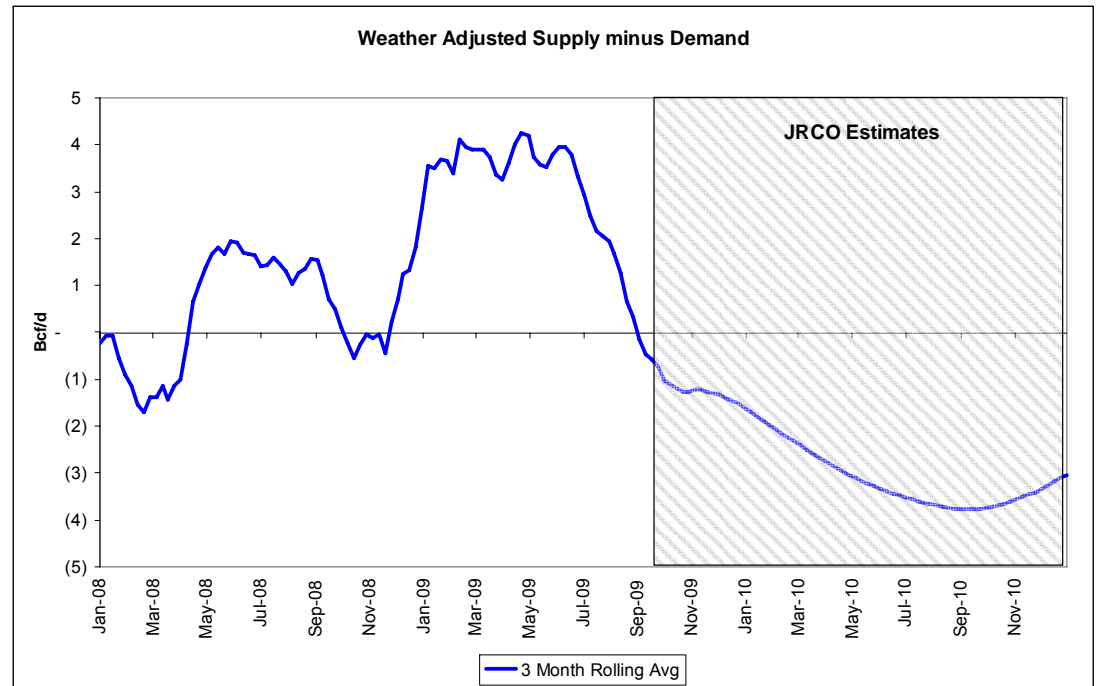


### Natural Gas

Reaching the inflection point, bullish outlook unfolding for 2010

October 1, 2009

- Our model shows the gas market moving from an oversupplied to undersupplied situation heading into 2010
- Excess inventory (storage) should be worked off the market by Q2'10
- Natural gas prices could surprise to the upside in 2010
- Get in front of the move with a heavier weighting in gas sensitive energy names



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## *Summary & How to play the theme*

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### *Natural gas prices should move higher in 2010 as the impact of falling supply overwhelms the market*

- Our model shows that the excess supply of natural gas should be worked off by Q2 2010
  - ◇ Given recent and forecasted drilling activity, supply should be down >4 bcf/day from peak production levels reached late in 2008
  - ◇ Demand loss has been ~2.7 bcf/day, almost all industrial sector
  - ◇ The return of Gulf of Mexico storm-related shut in gas has masked the 2.0 bcf/d drop in supply from land so far in 2009
  
- The back half of 2010 could show below average storage levels, leading natural gas prices to surprise on the upside
  
- We forecast the gas rig count to build to >1,100 by Q4'10, up >40% from current levels

### *How to play the theme*

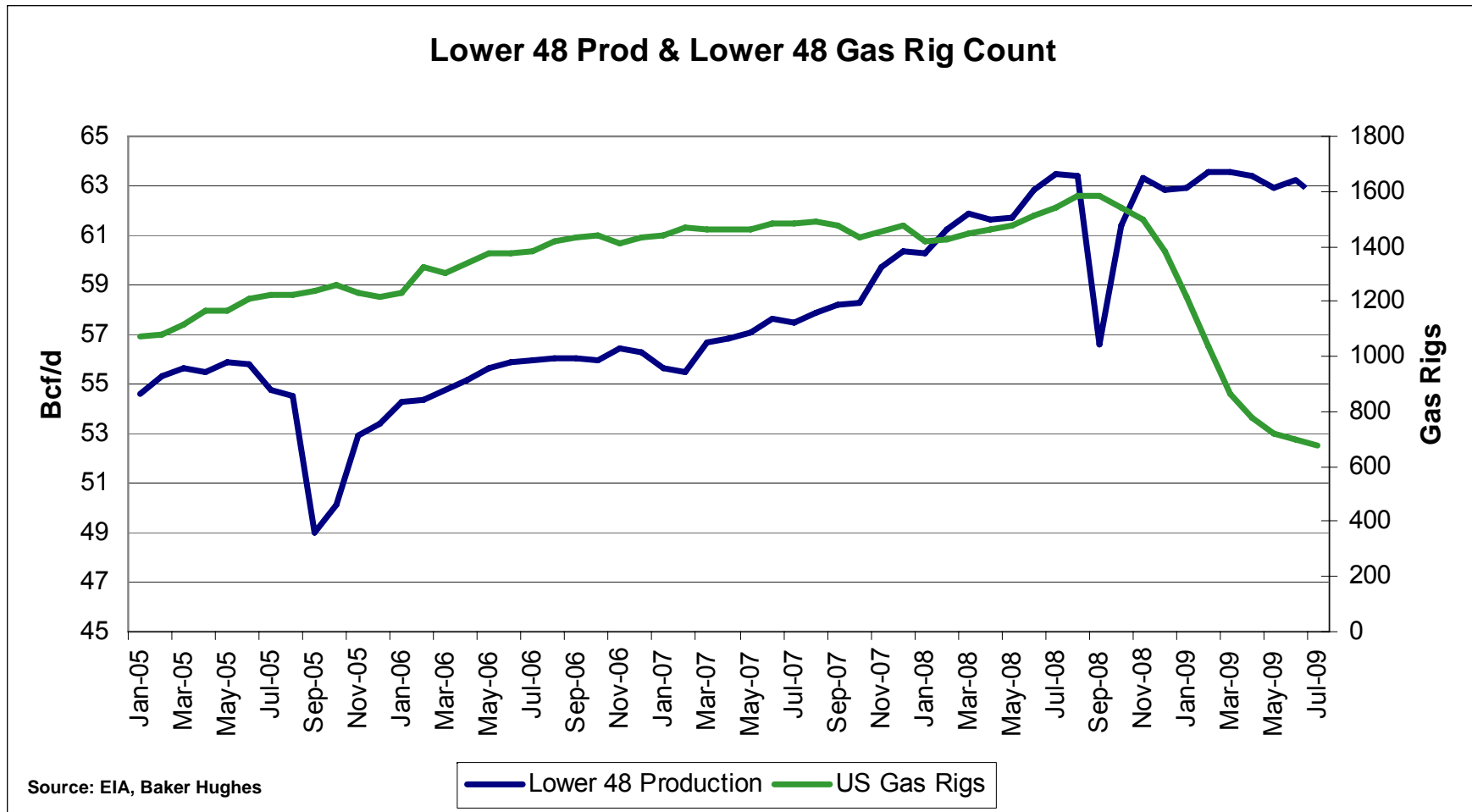
- The XNG and OSX clearly anticipate and move with price and rig count trends
  
- We recommend adding highly-leveraged natural gas names in both E&P and Service
  
- Oilier names have been the leaders in 2009, but that may change

## *Quick overview of the market*

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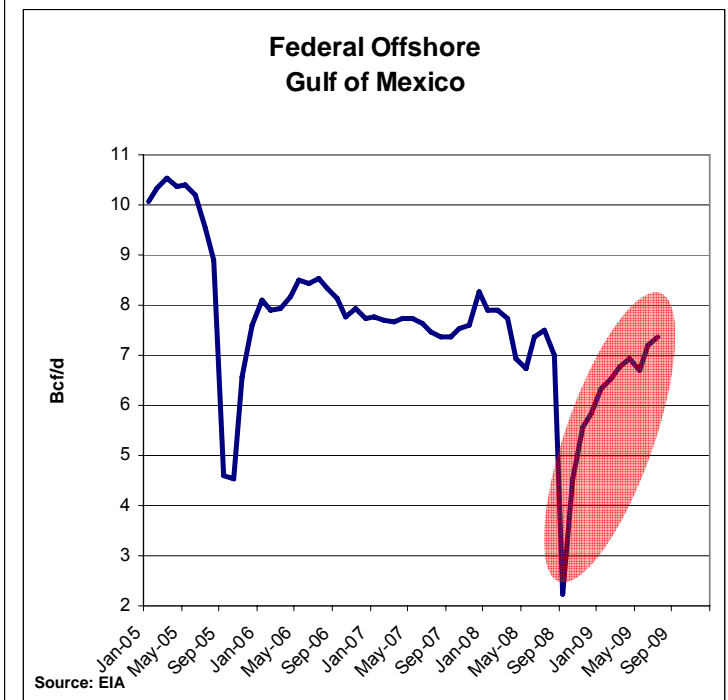
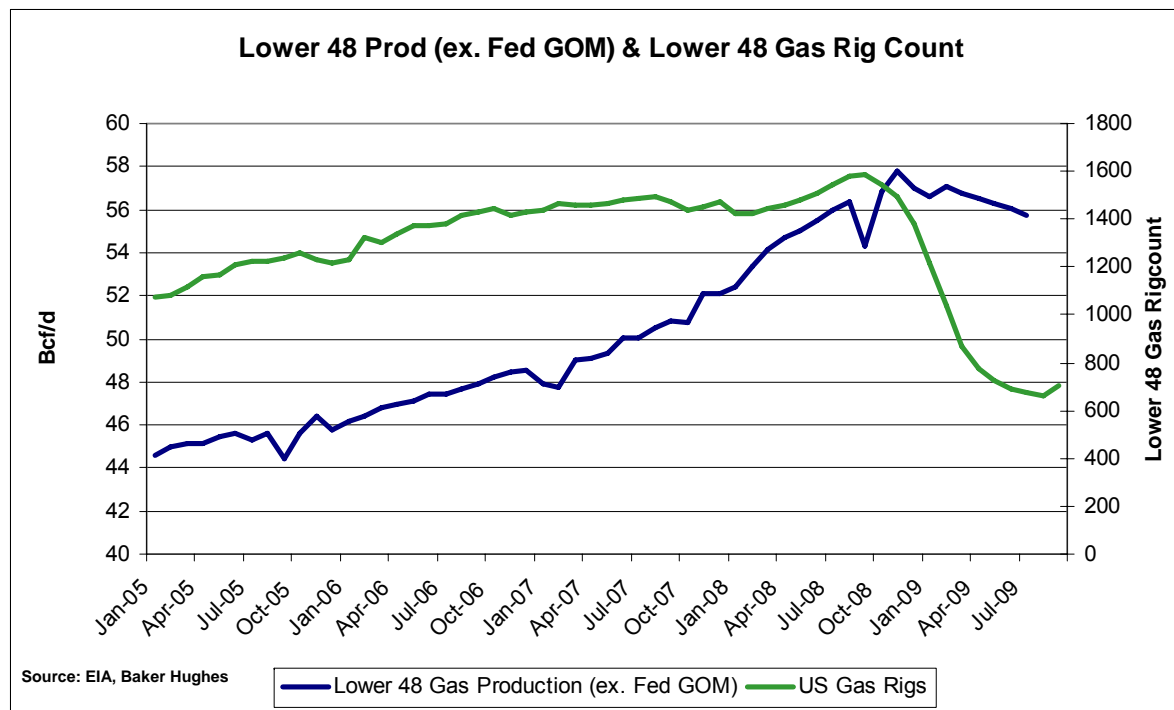
- Total supply of 64 bcf/d entering 2009 following the peak of 1,600 gas rigs drilling in Q3 2008
- Demand fell by ~2.7 bcf/d due to the recession, almost all from the industrial sector
- Storage started out in middle of 5-yr range, but has been building in 2009 due to excess supply from an out of balance market in 1H'09
- Gas rig count dropped from ~1,600 peak to high 600's by Q2'09, down 59%
- Overall U.S. production decline averages ~30%
- New shale wells decline an average of ~75% in first year

*On the surface, total supply has been flat in 2009*



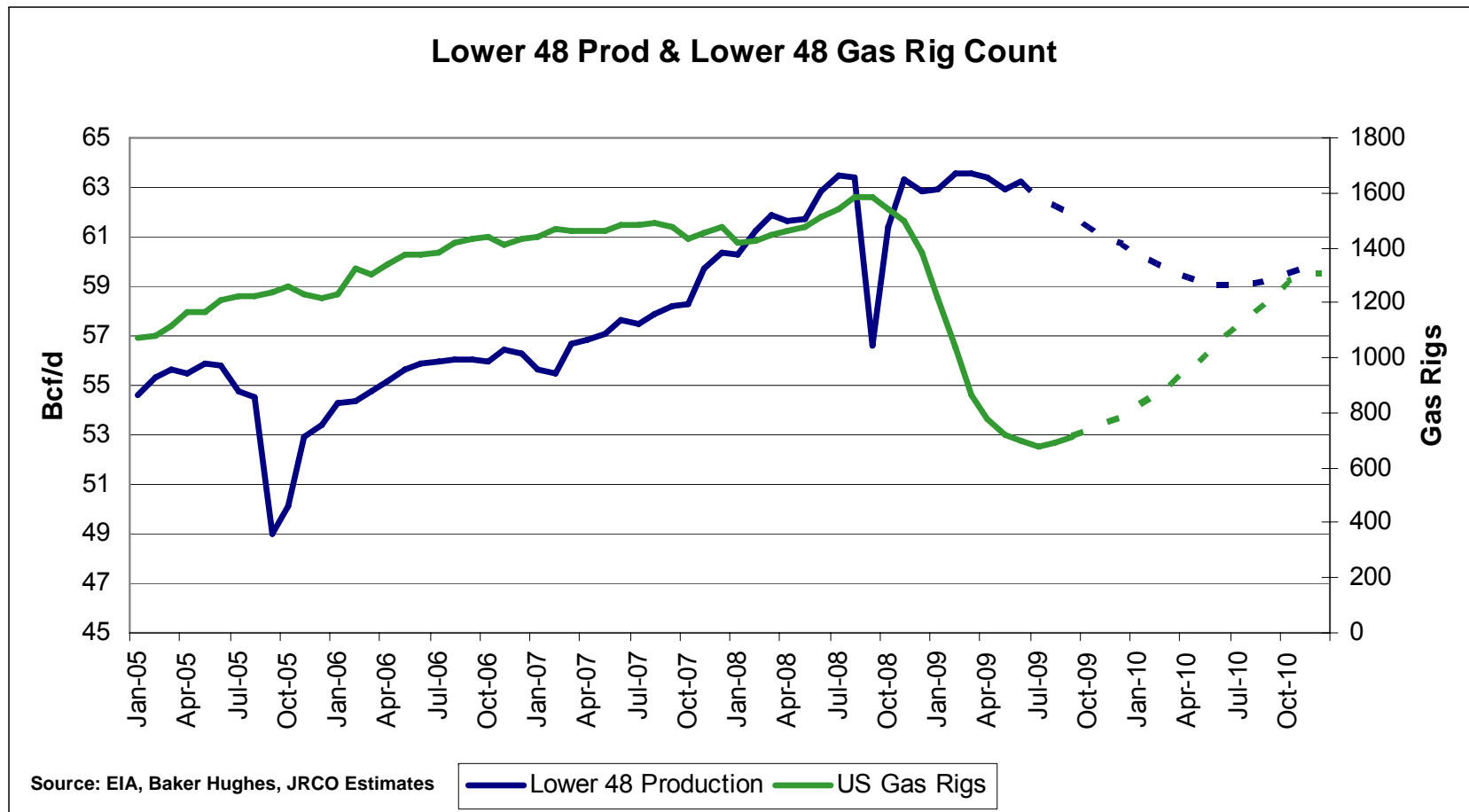
## *BUT ... the return of Gulf production has masked a 2 Bcf/d drop so far!*

- Onshore lower 48 supply is already ~2.0 Bcf/d off peak, showing what happens when the rig count falls and the 30% decline curve kicks in
- Gulf supply increased as storm-related shut-ins returned, but should flatten out as the rig count is at record lows



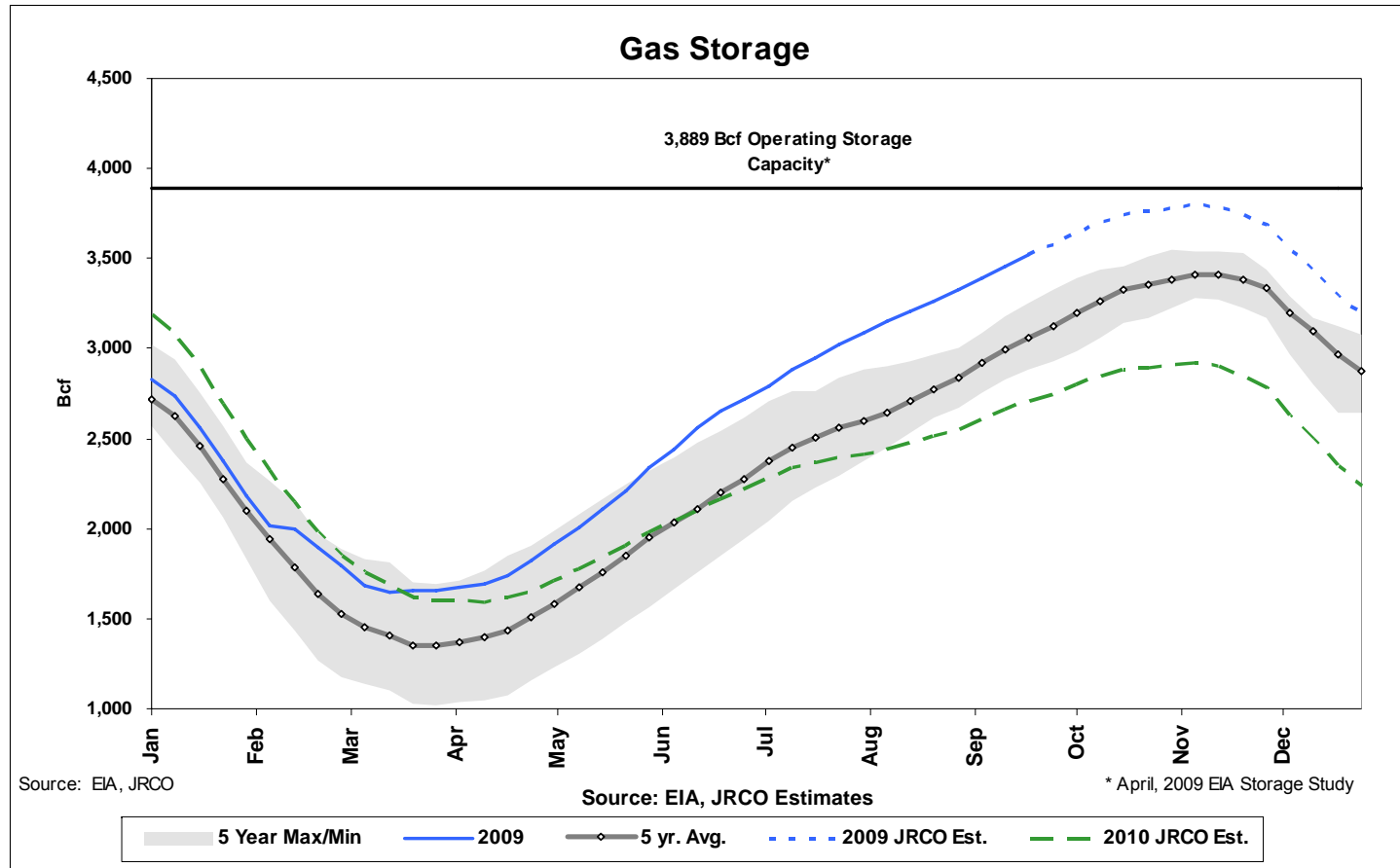
## Gas supply is heading lower, we estimate down 4.6 Bcf/d from peak

- Our supply model shows a 0.38 Bcf/d drop per month for the next 6 months
- The model uses a working gas rigs of 735 in Q4'09, 865 in Q1'10, 1012 in Q2'10, 1169 in Q3'10 and 1291 in Q4 '10

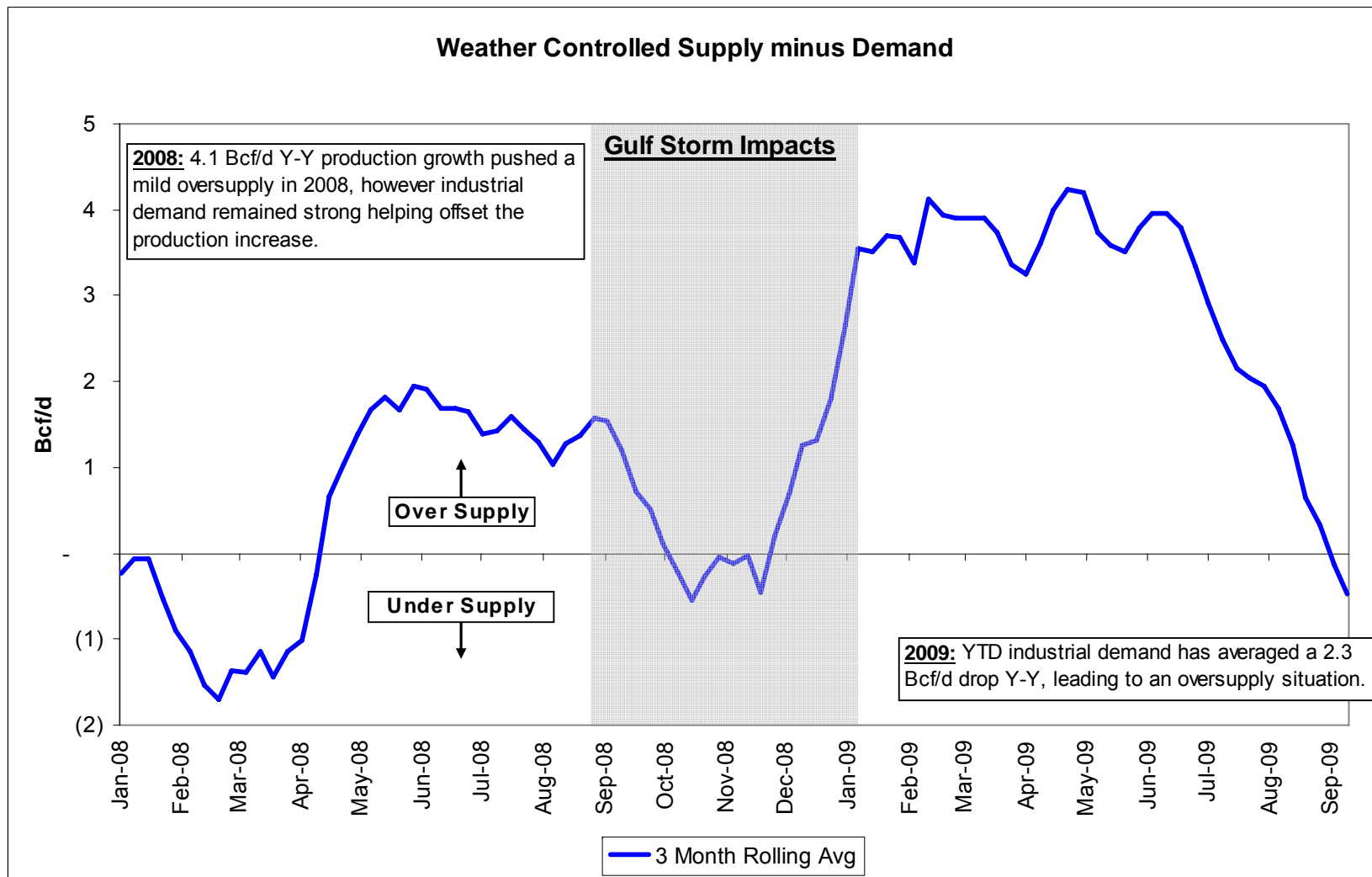


## Which means inventories could be back at 5-yr average by Q2'10

- Our model shows storage moving from oversupplied to undersupplied in 2010, even with an increase in the rig count



## Another way of showing that the inflection point has been reached

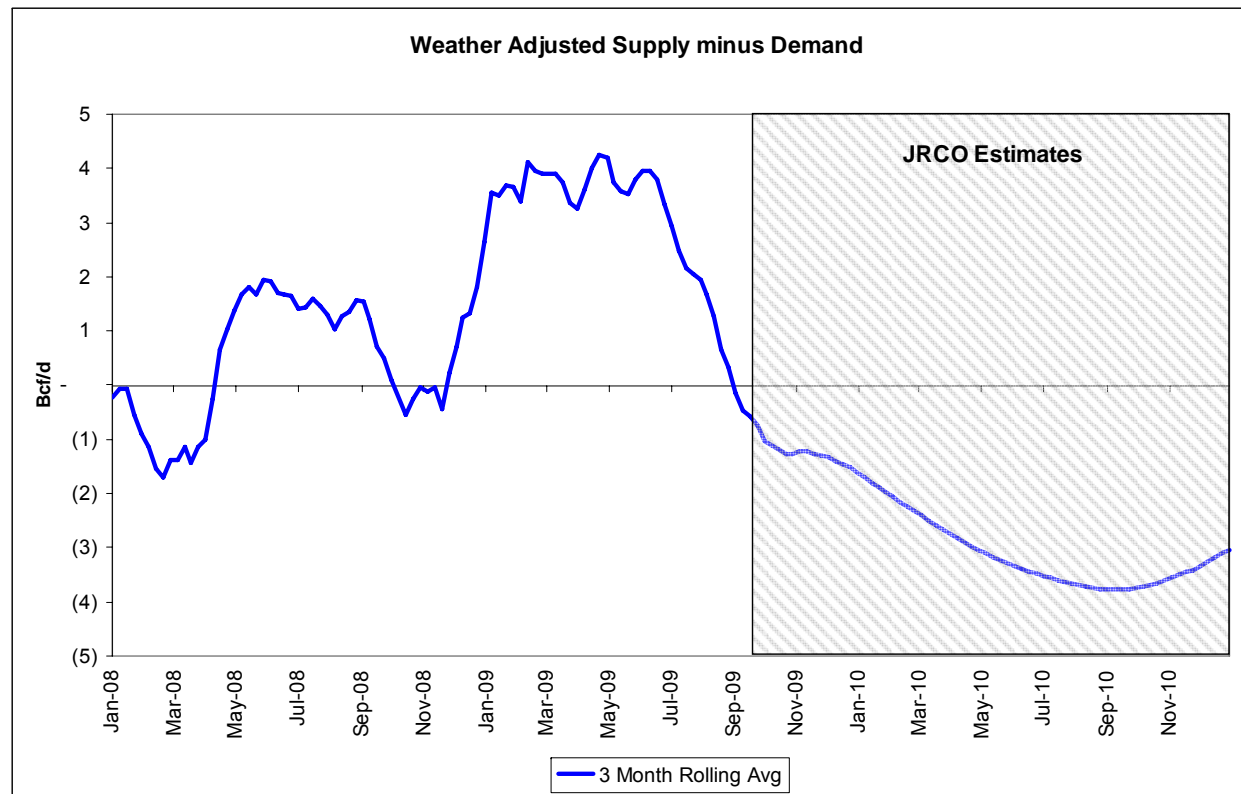


Source: JRCO Estimates

## *This chart includes our model's forecast of base level supply vs. demand*

As a result of this move we expect:

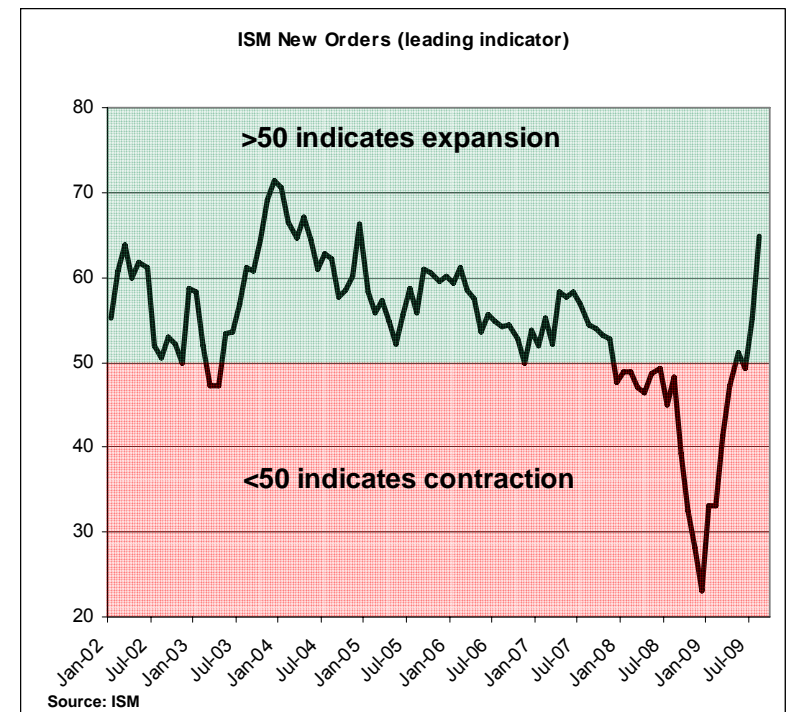
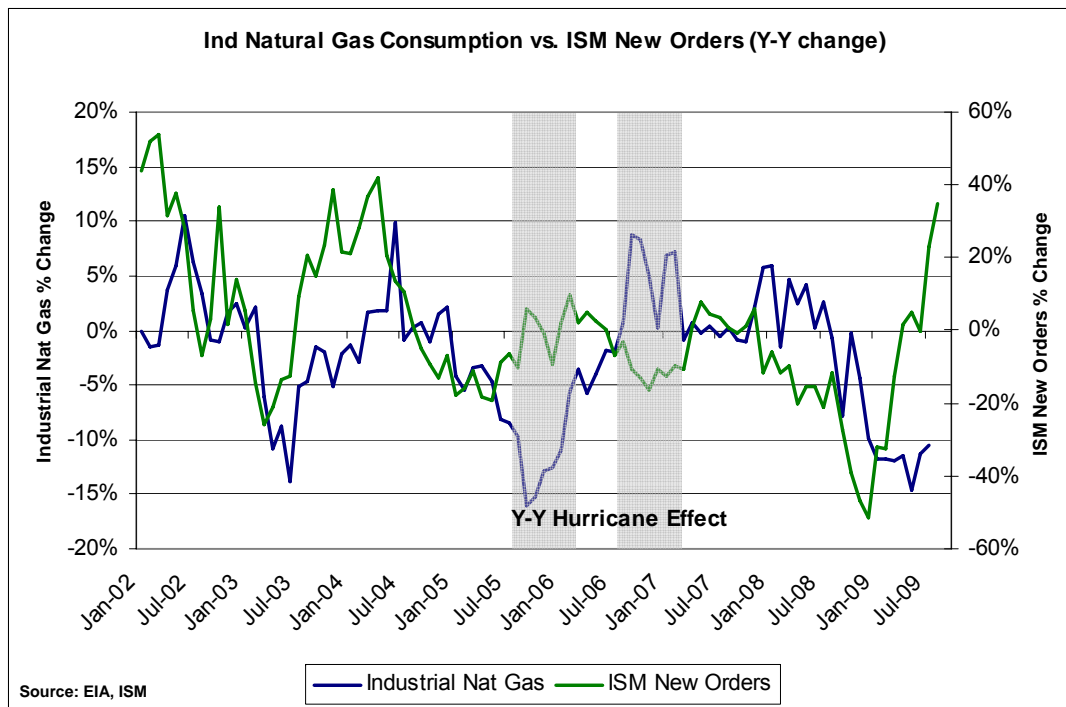
- Bullish storage trends as inventory levels move below 5-yr. average in mid-2010
- Natural gas prices to rise and surprise on the upside
- Gas drilling to increase



Source: JRCO Estimates

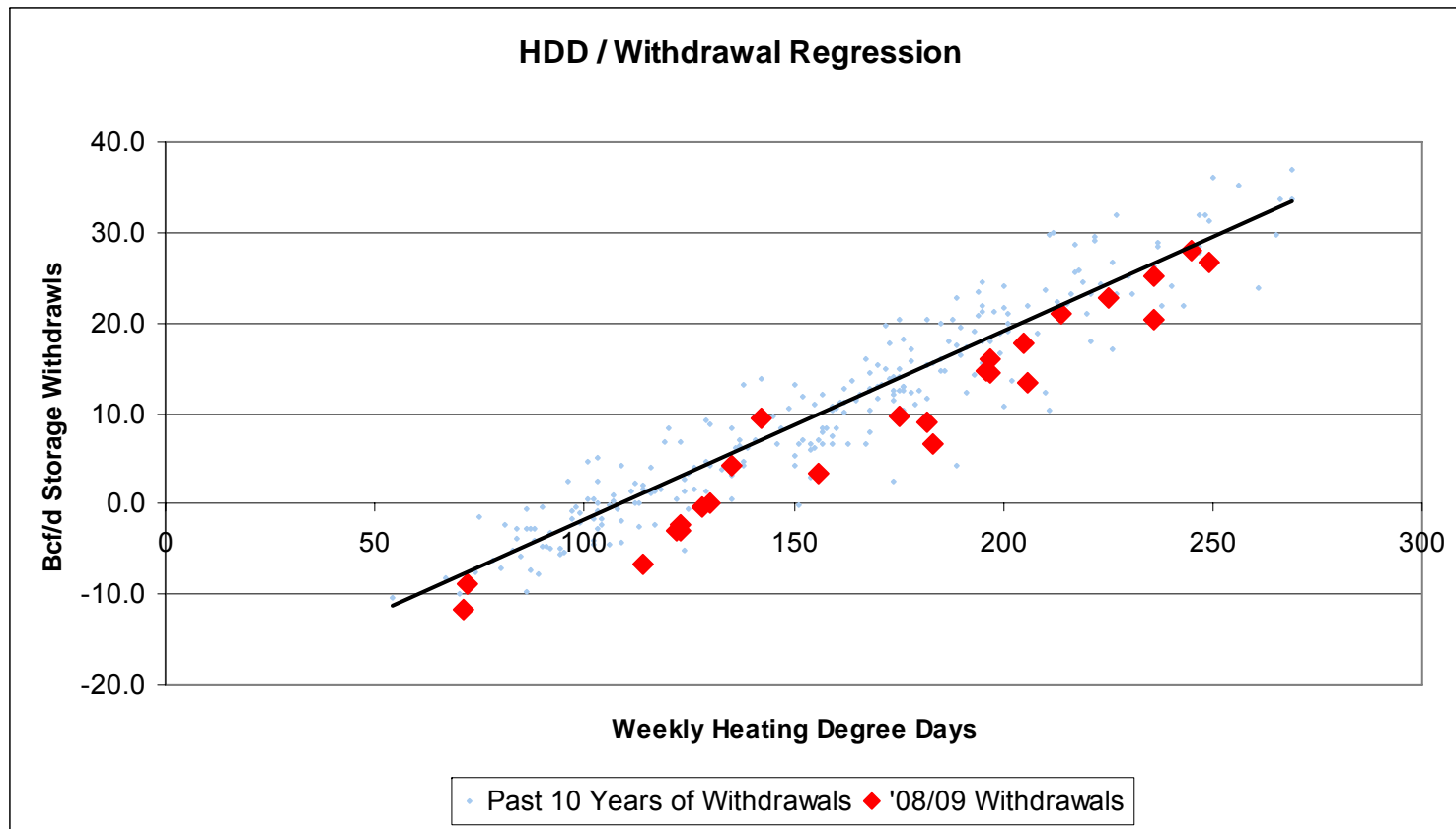
## Demand - signs of improvement in the industrial sector could add fuel to the move

- Industrial demand has been down 2.4 bcf/d in 2009 but leading indicators are turning up
- *Our model assumes only flat demand through 2010, thus a demand increase would tighten the market even more*
- Post-recession demand typically returns at a rate of 0.5-1.0 bcf/d per year, however we assume flat demand in our model



## Signs of oversupply – Winter '08/'09 withdrawals

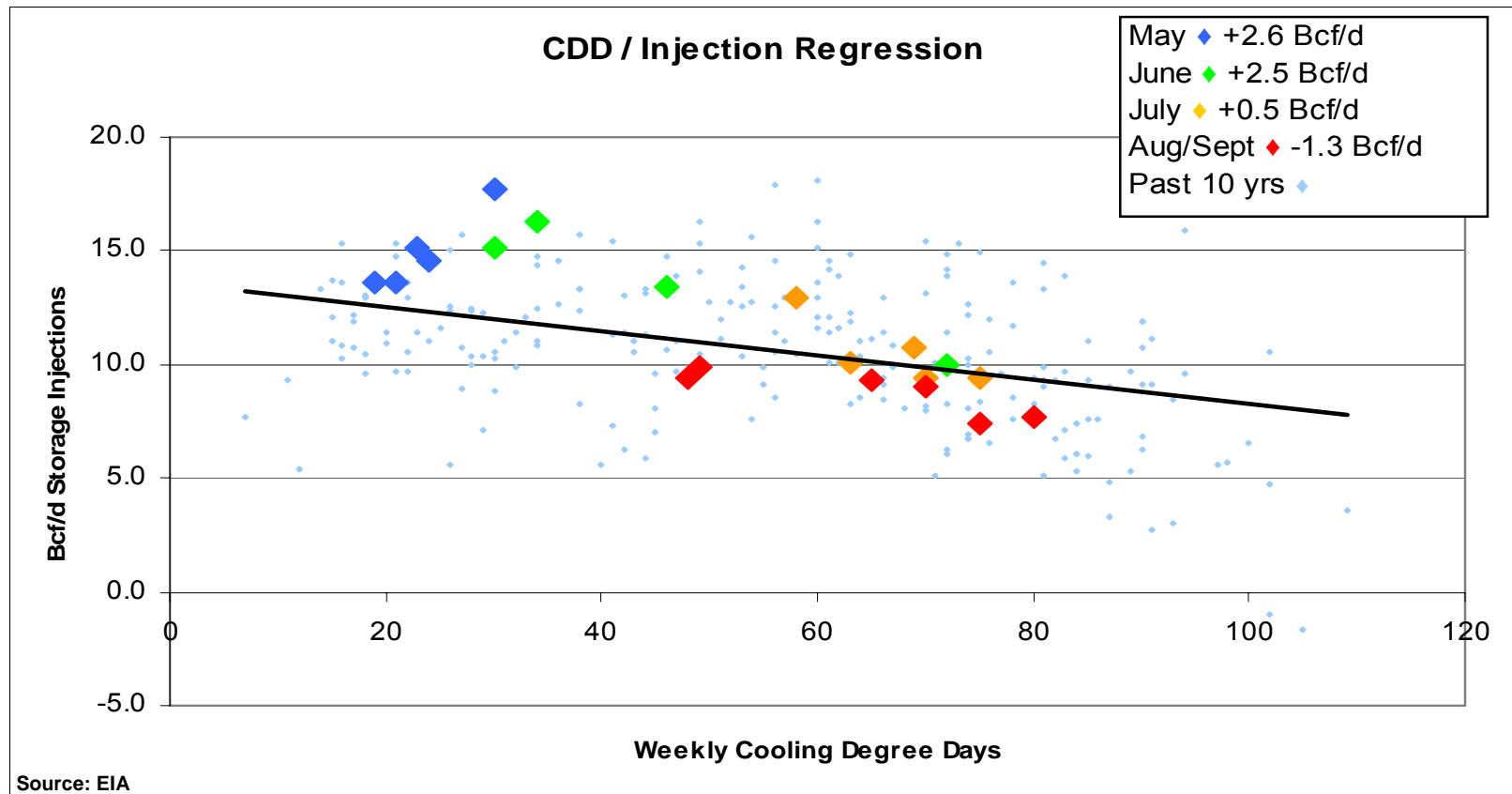
- November 2008 to April 2009 withdrawals were below what the weather-based model would suggest
- Falling demand led to excess supply and lower-than-expected storage withdrawals



Source: EIA

## *BUT ... the summer injection levels show some interesting changes*

- Injections moved from higher-than-predicted by the cooling degree days model (excess supply) to lower-than-predicted in recent months, suggesting a fall in supply



## The impact on supply of a lower rig count is substantial

750 gas rig example:

62.6 Bcf/d (July production, most recent EIA #s)

*minus*

18.8 Bcf/d (30% aggregate decline)

*plus*

14.5 Bcf/d (production adds with 750 rigs)

58.3 Bcf/d

Net decline = 4.3 Bcf/d

Assumes 33% Shale Drilling		
Total Rigs	Shale Rigs	Y-Y Bcf/d Adds
650	215	12.6
700	231	13.5
750	248	14.5
800	264	15.4
850	281	16.4
900	297	17.4
950	314	18.4
1000	330	19.3
1050	347	20.3
1100	363	21.2
1150	380	22.2
1200	396	23.2
1250	413	24.2
1300	429	25.1
1350	446	26.1
1400	462	27.0

- The 750 rig example shows a net decline 4.3 Bcf/d decline
- However, the industry dipped to the high 600's and should average ~690 rigs in Q3'09
- **If the industry ran at 700 rigs for an extended period (the current level) supply would decline by >5 bcf/d**

## *What level of rig count is needed to keep production flat?*

- Using our production-per-rig model we show two scenarios (different % of shale rigs)
- The model assumes a 30% aggregate decline rate on U.S. gas production
- The level of rig count required to keep production flat is roughly 1,000 – 1,100 rigs, but currently stands at 710
- We expect the rig count to ramp to >1,100 by Q4'10 putting the total up ~30-40% yr/yr

Assuming 27% shale drilling		Assuming 33% shale drilling	
Gas Rigs	Mo/Mo Bcf/d Change	Gas Rigs	Mo/Mo Bcf/d Change
700	(0.53)	700	(0.46)
750	(0.46)	750	(0.38)
800	(0.38)	800	(0.30)
850	(0.31)	850	(0.22)
900	(0.23)	900	(0.14)
950	(0.16)	950	(0.06)
1,000	(0.08)	1,000	0.03
1,050	(0.01)	1,050	0.11
1,100	0.07	1,100	0.19
1,150	0.15	1,150	0.27
1,200	0.23	1,200	0.35
1,250	0.31	1,250	0.43
1,300	0.38	1,300	0.51
1,350	0.46	1,350	0.59
1,400	0.53	1,400	0.67

## Modeling supply by well type

- Our model starts with basin level well data, such as drilling and completion times, IP rates and decline curves
- We build our supply forecast using the *production added per rig day*, or effectively the amount of wells that one rig drills in a year, which varies by basin
- The model adjusts for the current and projected rig count mix between types of wells
- The model assumes 33% of gas rigs are drilling shale wells
- It is worth noting that the highest production rate shale plays, e.g. Haynesville, take substantially longer to drill, which is the reason we use production per rig day (IP/rig day)

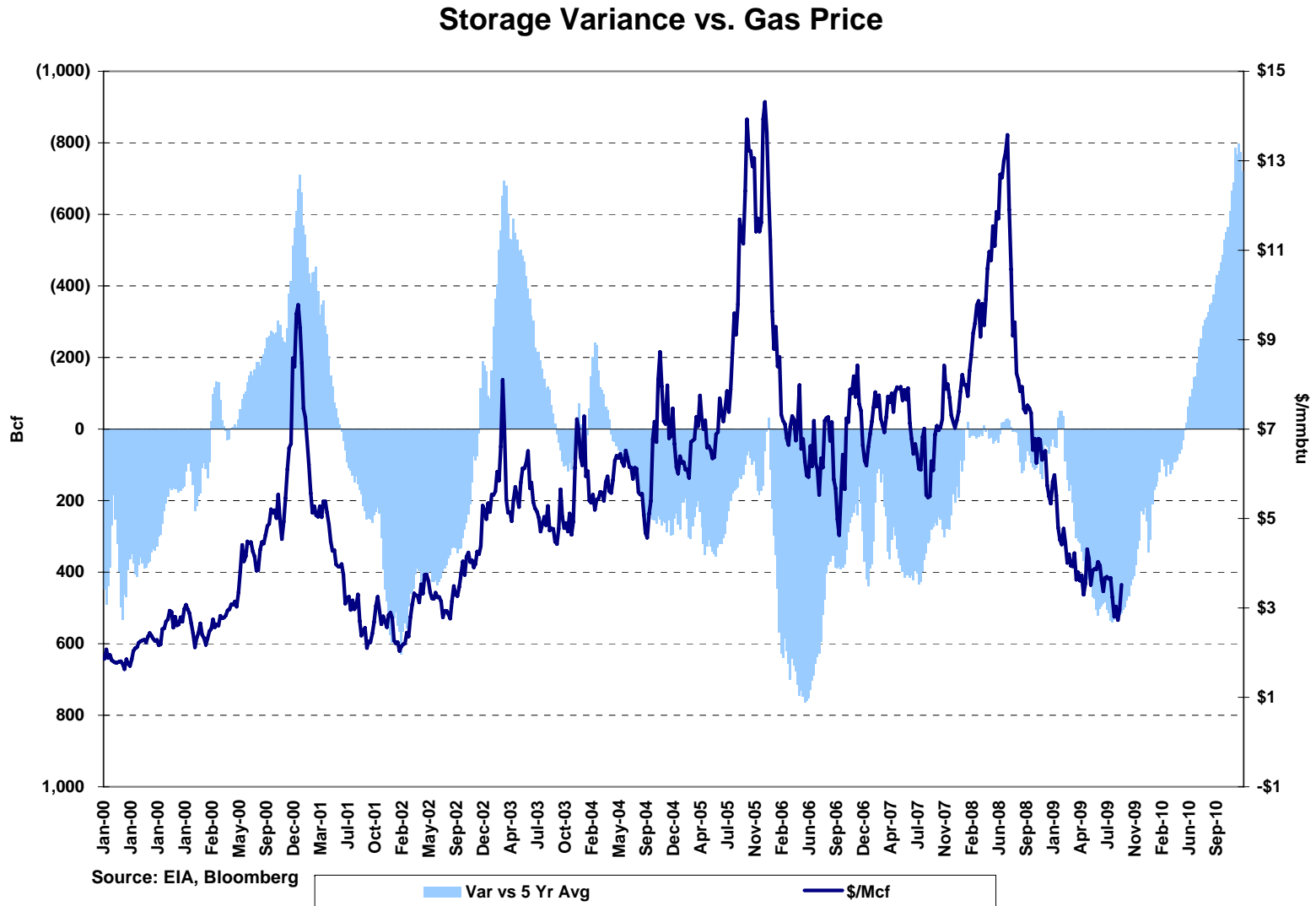
### An estimate of production added at 1,000 rigs with 33% working in shales

Cumulative Effect Conventional Wells	
Total Rigs	330
Wells/Rig-Year	15
Total Wells/Year	4,916
IP/well (Mcf/d)	1,000
Decline Rate	70%
Avg. 1st Year Prod (Mcf/d)	533
Total Avg. 1st Year Prod. (Bcf/d)	2.6

Cumulative Effect Rockies Wells	
Total Rigs	330
Wells/Rig-Year	20
Total Wells/Year	6,759
IP/well (Mcf/d)	1,200
Decline Rate	45%
Avg. 1st Year Prod (Mcf/d)	840
Total Avg. 1st Year Prod. (Bcf/d)	5.7

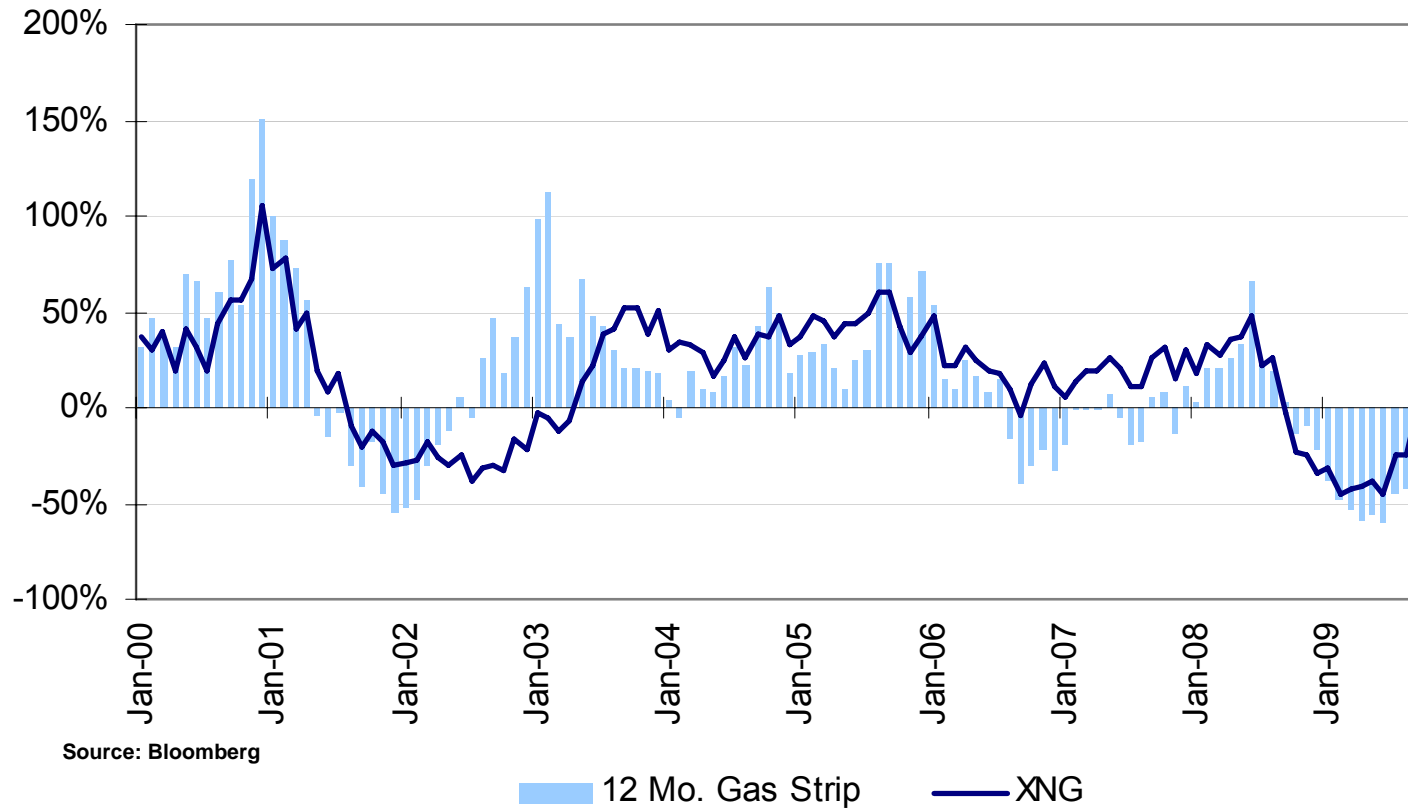
Cumulative Effect Shale Wells	
Total Rigs	325
Wells/Rig-Year	20
Total Wells/Year	6,659
IP/well (Mcf/d)	3,220
Decline Rate	75%
Avg. 1st Year Prod (Mcf/d)	1,610
Total Avg. 1st Year Prod. (Bcf/d)	10.7

# Storage levels are a major driver of natural gas prices



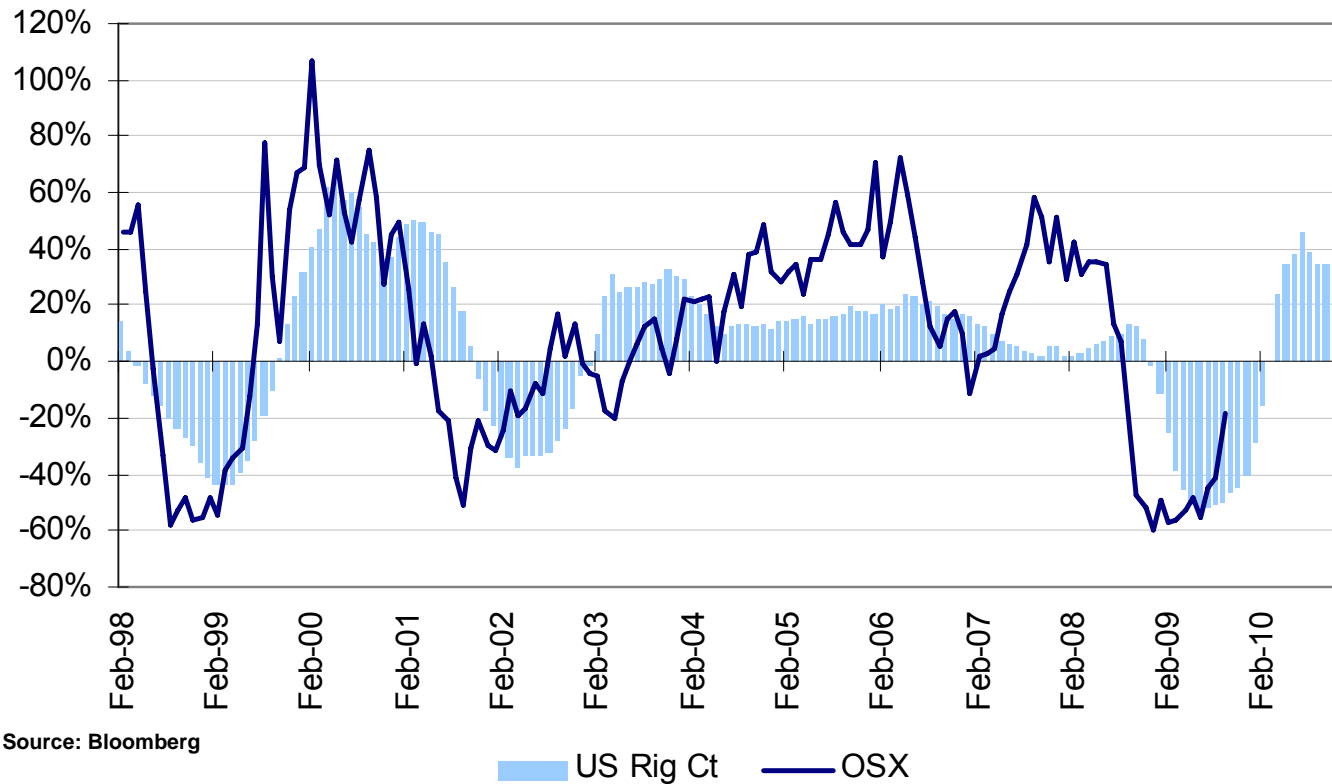
*Not surprisingly, E&P stocks move with Natural Gas prices*

**Y/Y % 12 Month Nat Gas Strip v. XNG**



## *Oil service stocks anticipate and move with rig count trends*

**Y/Y % change US rigs v. OSX**



## *Where could we be wrong?*

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- The number of drilled but uncompleted wells is higher than expected
  - ◇ Substantial production that would not be accounted for in the rig count would create higher than expected production numbers
  
- The U.S. aggregate decline rate could be less than 30%
  - ◇ Lower than expected decline rates would mean less gas that the rig count needs to replace, creating a lower equilibrium rig count
  
- Industrial continues to fall
  - ◇ If industrial demand continues to fall it would throw off our demand projections, making a more bearish scenario
  
- Weather
  - ◇ Weather is always the wildcard with gas storage, the difference between a cold winter and a hot winter can create a 300-500 Bcf swing in the storage numbers
  
- LNG
  - ◇ LNG can replace declining U.S. production, however we would need to have prices higher than those in Europe and significantly higher than those in Asia to attract such cargoes

# Supply / Demand / Rig count data

Estimated EIA-914 Gross Withdrawals<sup>1</sup> by Area by Month, Bcf/d (JRCO est. in grey)

Total Demand				Non-Industrial Demand			Industrial Demand			Lower 48 States Production				Federal Offshore Gulf of Mexico Production			Lower 48 ex. Fed H2O Production								
	Gross Demand (Bcf/day)	Change from Last Month	Change from Last Year	=	Gross Demand (Bcf/day)	Change from Last Month	Change from Last Year	+	Gross Demand (Bcf/day)	Change from Last Month	Change from Last Year	=	Gross Withdrawals (Bcf/day)	Change from Last Month	Change from Last Year	+	Gross Withdrawals (Bcf/day)	Change from Last Month	Change from Last Year	+	Gross Withdrawals (Bcf/day)	Change from Last Month	Change from Last Year	Onshore US Gas Rigs	Onshore US Gas Rigs (3 mo. lag)
Jan-08	87.7	10.6	8.1	=	66.6	9.2	6.9	+	21.1	1.4	1.2	=	7.9	(0.4)	4.7	+	52.4	0.3	4.5	+	1,421	1,435			
Feb-08	85.7	(2.0)	(5.8)	=	64.7	(1.9)	(5.5)	+	21.0	(0.1)	(0.3)	=	7.9	0.0	5.8	+	53.3	0.9	5.6	+	1,426	1,451			
Mar-08	73.1	(12.6)	4.5	=	53.6	(11.1)	3.7	+	19.5	(1.6)	0.9	=	7.8	(0.2)	5.2	+	54.2	0.8	5.1	+	1,447	1,473			
Apr-08	60.5	(12.6)	0.3	=	42.1	(11.5)	(0.2)	+	18.3	(1.2)	0.4	=	6.9	(0.8)	4.8	+	54.7	0.5	5.6	+	1,461	1,421			
May-08	50.8	(9.6)	0.7	=	33.4	(8.7)	0.0	+	17.4	(0.9)	0.7	=	6.7	(0.2)	4.7	+	55.0	0.3	5.7	+	1,478	1,426			
Jun-08	53.6	2.8	1.9	=	36.6	3.2	1.8	+	17.0	(0.4)	0.0	=	7.4	0.6	5.2	+	55.5	0.5	5.5	+	1,510	1,447			
Jul-08	55.1	1.6	1.7	=	38.3	1.7	1.3	+	16.8	(0.2)	0.4	=	7.5	0.1	6.0	+	56.0	0.5	5.9	+	1,543	1,461			
Aug-08	54.4	(0.7)	(6.7)	=	37.4	(0.9)	(6.6)	+	17.0	0.2	(0.1)	=	7.0	(0.5)	5.5	+	56.4	0.4	5.8	+	1,581	1,478			
Sep-08	48.7	(5.7)	(4.1)	=	32.9	(4.5)	(2.8)	+	15.8	(1.2)	(1.3)	=	2.2	(4.8)	(1.6)	+	54.3	(2.0)	3.5	+	1,585	1,510			
Oct-08	52.7	4.0	0.4	=	35.4	2.5	0.4	+	17.3	1.5	(0.0)	=	4.6	2.3	3.1	+	56.8	2.5	6.0	+	1,542	1,543			
Nov-08	62.0	9.3	1.0	=	43.9	8.5	1.8	+	18.0	0.7	(0.8)	=	5.6	1.0	3.7	+	57.8	1.0	5.7	+	1,496	1,581			
Dec-08	77.1	15.1	(0.0)	=	59.3	15.4	1.9	+	17.8	(0.3)	(1.9)	=	5.8	0.3	2.5	+	57.0	(0.8)	4.9	+	1,380	1,585			
Jan-09	87.1	10.0	(0.6)	=	68.5	9.1	1.9	+	18.6	0.8	(2.5)	=	6.3	0.5	2.6	+	56.6	(0.4)	4.2	+	1,215	1,542			
Feb-09	82.3	(4.7)	(3.4)	=	63.8	(4.7)	(0.9)	+	18.5	(0.1)	(2.5)	=	6.5	0.2	2.3	+	57.1	0.5	3.7	+	1,037	1,496			
Mar-09	69.6	(12.8)	(3.5)	=	52.4	(11.4)	(1.2)	+	17.1	(1.4)	(2.3)	=	6.8	0.2	1.6	+	56.8	(0.3)	2.6	+	867	1,380			
Apr-09	57.9	(11.7)	(2.6)	=	41.6	(10.8)	(0.5)	+	16.2	(0.9)	(2.1)	=	6.9	0.2	1.8	+	56.5	(0.3)	1.8	+	775	1,215			
May-09	48.4	(9.5)	(2.5)	=	33.5	(8.1)	0.1	+	14.9	(1.3)	(2.5)	=	6.7	(0.2)	1.2	+	56.3	(0.3)	1.3	+	723	1,037			
Jun-09	50.8	2.4	(2.8)	=	35.7	2.2	(0.9)	+	15.1	0.2	(1.9)	=	7.2	7.5	0.4	+	56.0	(0.2)	0.5	+	700	867			
Jul-09	53.0	2.2	(2.2)	=	37.9	2.2	(0.4)	+	15.1	0.0	(1.8)	=	7.4	2.4	(0.9)	+	55.2	(0.9)	(0.8)	+	675	775			
Aug-09	53.2	0.2	(1.2)	=	38.1	0.2	0.7	+	15.1	-	(1.9)	=	7.4	-	(1.2)	+	54.8	(0.4)	(1.6)	+	691	723			
Sep-09	47.4	(5.7)	(1.3)	=	32.4	(5.7)	(0.5)	+	15.1	-	(0.8)	=	7.4	-	5.2	+	54.4	(0.4)	0.1	+	700	700			
Oct-09	48.4	1.0	(4.3)	=	33.4	1.0	(2.0)	+	15.1	-	(2.2)	=	7.4	-	0.0	+	54.0	(0.4)	(2.8)	+	735	675			
Nov-09	55.8	7.3	(6.2)	=	40.7	7.3	(3.2)	+	15.1	-	(3.0)	=	7.4	-	(2.3)	+	53.7	(0.4)	(4.1)	+	757	691			
Dec-09	70.4	14.7	(6.7)	=	55.4	14.7	(4.0)	+	15.1	-	(2.7)	=	7.4	-	(2.2)	+	53.3	(0.4)	(3.8)	+	778	700			
Jan-10	75.8	5.3	(11.3)	=	60.7	5.3	(7.8)	+	15.1	-	(3.6)	=	7.4	-	(2.6)	+	52.9	(0.4)	(3.7)	+	822	735			
Feb-10	78.0	2.2	(4.3)	=	62.9	2.2	(0.9)	+	15.1	-	(3.5)	=	7.4	-	(3.7)	+	52.5	(0.4)	(4.5)	+	867	757			
Mar-10	65.6	(12.5)	(4.0)	=	50.5	(12.5)	(1.9)	+	15.1	-	(2.1)	=	7.4	-	(4.0)	+	52.1	(0.4)	(4.7)	+	907	778			
Apr-10	55.1	(10.5)	(2.8)	=	40.0	(10.5)	(1.7)	+	15.1	-	(1.2)	=	7.4	-	(4.2)	+	51.9	(0.2)	(4.6)	+	960	822			
May-10	47.7	(7.3)	(0.6)	=	32.7	(7.3)	(0.8)	+	15.1	-	0.2	=	7.4	-	(3.9)	+	51.7	(0.2)	(4.6)	+	1,011	867			
Jun-10	49.2	1.5	(1.6)	=	34.1	1.5	(1.6)	+	15.1	-	0.0	=	7.4	-	(4.2)	+	51.6	(0.1)	(4.4)	+	1,064	907			
Jul-10	52.2	3.0	(0.8)	=	37.2	3.0	(0.8)	+	15.1	-	-	=	7.4	-	(3.6)	+	51.6	(0.1)	(3.6)	+	1,116	960			
Aug-10	53.2	0.9	-	=	38.1	0.9	-	+	15.1	-	-	=	7.4	-	(3.1)	+	51.7	0.1	(3.1)	+	1,169	1,011			
Sep-10	47.4	(5.7)	-	=	32.4	(5.7)	-	+	15.1	-	-	=	7.4	-	(2.6)	+	51.8	0.1	(2.6)	+	1,222	1,064			
Oct-10	48.4	1.0	-	=	33.4	1.0	-	+	15.1	-	-	=	7.4	-	(2.0)	+	52.1	0.3	(2.0)	+	1,274	1,116			
Nov-10	55.8	7.3	-	=	40.7	7.3	-	+	15.1	-	-	=	7.4	-	(1.3)	+	52.3	0.3	(1.3)	+	1,300	1,169			
Dec-10	70.4	14.7	-	=	55.4	14.7	-	+	15.1	-	-	=	7.4	-	(0.5)	+	52.8	0.4	(0.5)	+	1,300	1,222			

Source: EIA, JRCO Estimates

## *Required Disclosures:*

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### **Required Disclosures:**

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