Putting Together the Pieces…
Coal vs Gas the Saga Continues

March 12, 2012

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Putting Together The Pieces

- **Summary:**
  - Lately, we're reminded on a daily basis that domestic thermal coal / natural gas markets are currently firmly connected via power generation market share dynamics.
  - 2012 is shaping up to be a pivotal year for that dynamic. Weak power demand plus price driven gas market share inroads have the domestic thermal coal market moving firmly into oversupply. Gas is taking power gen market share at a decent clip but until recently not enough to keep pace with supply adds.
  - We have triangulated on a 2012 coal/gas supply/demand forecast that threads the needle between maximum gas storage (~4.1 Tcf), and the need to work down coal inventories.
  - **For 2012 we have developed a month by month base-case scenario that includes:**
    - **A 10% (92mtpa) y/y drop in coal production**,
    - **An incremental 1.7 Bcf/d of coal/gas switching,**
    - And assumes roughly flat y/y power demand along with gas production ~flat against 2011's exit rate.
- **Our thought process:**
  - We are headed to maximum gas storage levels requiring either supply cuts (shut-ins) and/or demand growth to meet storage limits.
  - We believe incremental coal-gas switching will be sufficient to clear the gas market this fall. If so, gas production shut-ins will not be required and gas prices won't be forced to dip to silly-low levels to incent those shut-ins.
  - **$3/Mcf gas is low enough** to theoretically incent ~**12 Bcf/d of switching** (or an incremental 8 Bcf/d over last year's 4 Bcf/d average).
  - Coal contract structure means we are not going to see the full 12 Bcf/d of switching in 2012, but an incremental 2Bcf/d over 2011's avg to a total of 6Bcf/d should be easily achieved…actually**, *our calcs say we are there today and our forecast simply reflects a full-year extension of our estimate at the current run-rate*.**
  - Weak winter power demand + coal-gas switching has coal inventories building. Reversing the trend and beginning to work-off excess inventory requires a 10% (or 92mm ton) y/y production cut.

Coal / Gas Switching Dynamics

- **Coal –gas switching dynamics:**
  - ***Current levels not purely economic:*** $2.50/mmbtu gas puts the entire efficient CCGT fleet ahead of coal on an economic dispatch basis. Allows gas to beat out even low-cost PRB fired units and puts eastern coal at parity with some gas-fired simple cycle units. Current levels of switching are running at ~50% of expected theoretical levels (see June 2011 report for more detail here). Some combination of power transmission and non-economic coal-fired generation runs is likely driving this discrepancy. We believe coal running "out-of-economic merit" is a significant factor in limiting switching that should otherwise occur. Why would coal-fired generation run when it would be cheaper to supply generation load with gas-fired units? ***Multi-year, take-or-pay coal supply contracts.***
  - ***Coal Supply Contracts:*** Historically generators purchased coal under long-term 3+ year contracts often with fixed pricing and delivery schedules. That's changing…but slowly. Long-term contracts made sense in a world with low coal price volatility, easy to forecast generation run-times (coal generation was always in the money, running base-load) and a desire to ensure access to coal for a specific piece of generation. That's all changed coal on gas power generation competition.

- **Coal supply dynamics:**
  - ***2012 contracted deliveries > supply chain capacity:*** Will require supply contract deferrals which in turn will allow appropriate production cuts.
  - ***Contract deferral announcements to come:*** While the recent Q4 earnings season revealed little in the way of explicit contract deferral data-points, recent coal production numbers indicate that this process is currently occurring. Expect coal supply deferral announcements over the next couple of earnings seasons. Our coverage universe which accounts for 2/3 of US thermal coal production has current guidance showing a 4% y/y drop (includes post earnings release updates). We have taken another rounds of cuts to our production forecasts matching our coal macro call, which dropped our 2012 EBITDA estimates a smallish 4% (production cuts don't hurt much when gross margins are ~zero).
  - ***No basin immune at $2.50 gas:*** With gas-fired economics ahead of even PRB-fired generation, production cuts need to be ~pro-rata to clear the supply chain. Over the longer-term, higher cost CAPP production should disproportionally come out of the domestic thermal market and be back-filled by less expensive ILB and PRB coals.

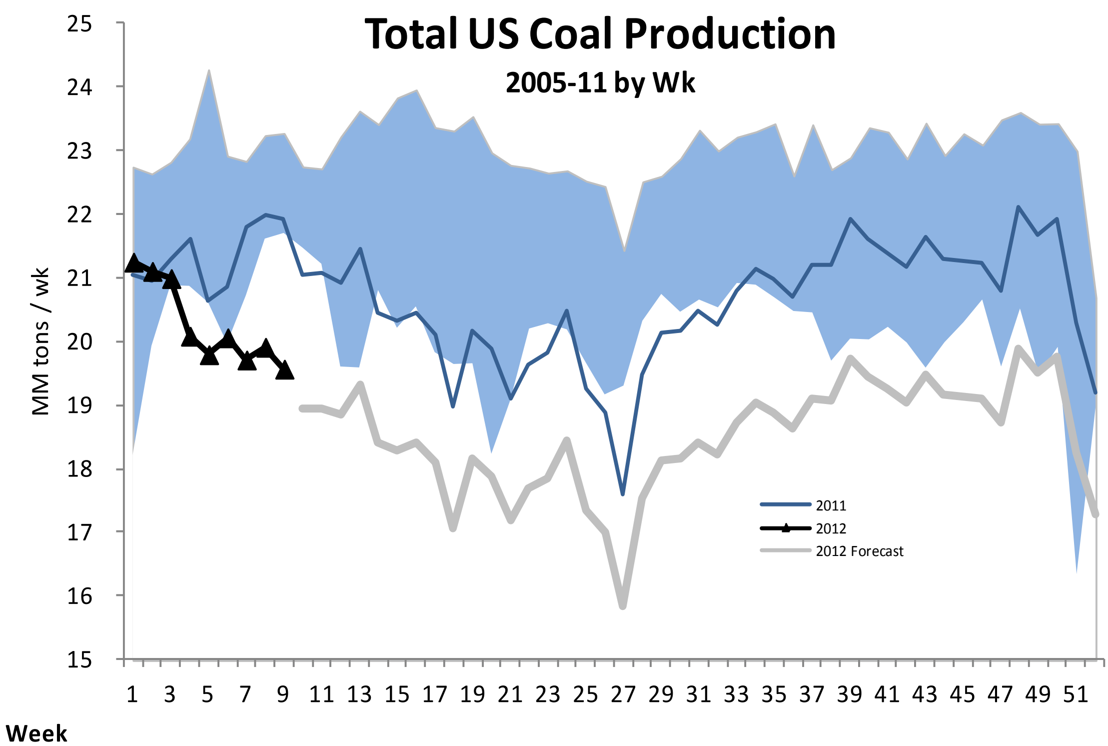
Coal / Gas Switching Dynamics

- **Where we could be wrong:**
  - **Gas supply:** We assume natural gas supply growth slows and begins to reverse over the course of 2012. Continued growth into summer injection season will likely require sub $2 gas and subsequent production shut-ins as storage hits maximum capacity.
  - **Ethane rejection:** Adds incremental supply to the gas stream…not likely a big enough factor stand-alone but could be an additive factor overwhelming the ability of the power gen fleet to create incremental demand.
  - **Power grid constraints:** The gas generation fleet is not evenly dispersed amongst the coal fleet and therefore there are physical limits (transmission constraints) to pure national economic generation dispatch. If we are already up against those limits, then no incremental switching can take place. We believe we have seen a peak monthly average of 7Bcf/d previously…the trick for our current forecast is maintaining that level over a full year.
  - **Coal contract enforcement:** Coal companies could take an aggressive stance on contract performance forcing customers to take delivery and run generation despite spot price economics as generator on-site storage capabilities are maxed out. Following this path is not likely good for long-term customer relationships and not how coal companies have historically behaved.

Coal Production

History / 2012 Forecast

- Total US coal production showed some relative strength 2H'11…though recent weeks this year have shown a dramatic drop-off.
- **Trailing 3 weeks have averaged 10% Y/Y drop**…in-line with our FY'12 decline forecast. A full year 10% drop equates to a ~100mmtpa decline in US coal production.



Total US Production (mm tons)

	2007	2008	2009	2010	2011	2012
Q1TD	287	294	289	267	277	264
Q2	283	285	261	265	257	0
Q3	286	294	266	275	266	0
Q4	288	296	256	272	276	0
FY	1145	1169	1072	1079	1077	264

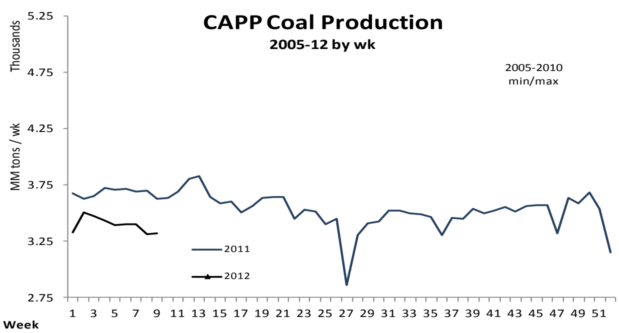
Year / Year Change

	2008	2009	2010	2011	2012
Q1TD	2%	-2%	-8%	4%	-5%
Q2	1%	-8%	1%	-3%	
Q3	3%	-10%	3%	-3%	
Q4	3%	-14%	7%	1%	
FY	2%	-8%	1%	0%	-76%

Source: DOE, TPH research

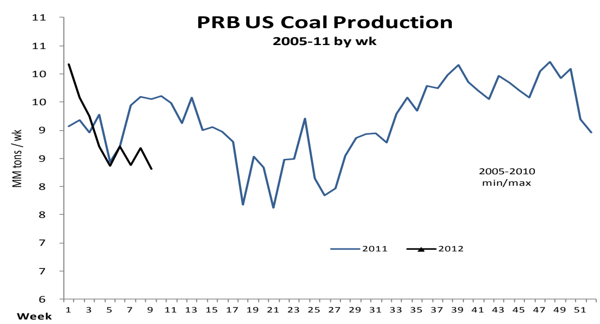
Gas @$2.50 Spreads Pain Across All Basins

- Eastern basins frequently set new production lows throughout 2011
- Lower cost Illinois and PRB production offset Eastern declines showing nice strength throughout last year
- While impacts appear to have been delayed by a couple of months, a mild winter and LOW natural gas prices has hurt y/y comps across all basins.
- YTD US coal production indicates an annualized fall off of 54mtpa. Includes declines of CAPP 14mtpa, PRB 13mpta, NAPP13mtpa, and ILB 9 mtpa
- The big drop over the last 3 weeks would on an annualized basis yield a total 100mtpa y/y drop: CAPP 16mtpa, PRB 54mtpa, NAPP 13mtpa, ILB 9mtpa



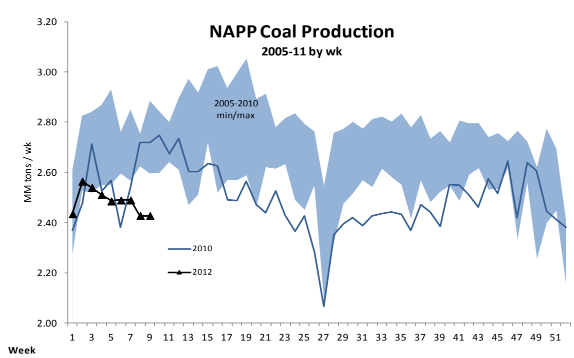
CAPP Production (mm tons)	2007	2008	2009	2010	2011	2012
Q1TD	55	55	56	46	48	44
Q2	55	59	47	46	46	0
Q3	55	57	45	46	44	0
Q4	54	56	43	45	46	0
FY	218	227	192	183	184	44

Year / Year Change	2008	2009	2010	2011	2012
Q1	1%	2%	-18%	4%	-8%
Q2	8%	-21%	-1%	0%	
Q3	4%	-21%	0%	-3%	
Q4	3%	-23%	3%	2%	
FY	4%	-16%	-5%	1%	-76%



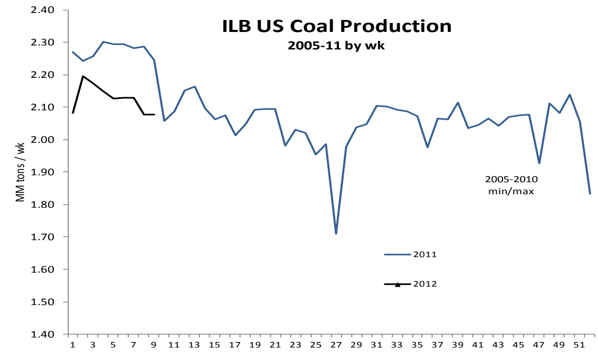
PRB Production (mm tons)	2007	2008	2009	2010	2011	2012
Q1TD	124	128	125	116	119	116
Q2	120	119	113	117	110	0
Q3	122	132	120	127	120	0
Q4	127	131	114	125	127	0
FY	494	510	471	485	475	116

Year / Year Change	2008	2009	2010	2011	2012
Q1	3%	-2%	-7%	2%	-2%
Q2	-1%	-5%	4%	-6%	
Q3	8%	-9%	6%	-5%	
Q4	3%	-13%	10%	1%	
FY	3%	-8%	3%	-2%	-76%



NAPP Production (mm tons)	2007	2008	2009	2010	2011	2012
Q1TD	34.2	35.7	34.8	33.2	35.4	32.3
Q2	34	36	31	32	32	0
Q3	34	32	30	31	31	0
Q4	33	35	31	33	33	0
FY	136	138	127	129	132	32

Year / Year Change	2008	2009	2010	2011	2012
Q1	4%	-3%	-4%	7%	-9%
Q2	4%	-12%	3%	0%	
Q3	-6%	-9%	5%	1%	
Q4TD	3%	-10%	5%	0%	
FY	1%	-8%	2%	2%	-76%



ILB Production (mm tons)	2007	2008	2009	2010	2011	2012
Q1TD	23	26	27	26	30	28
Q2	24	24	26	26	27	0
Q3	24	25	25	27	26	0
Q4	25	26	25	27	27	0
FY	97	101	103	106	109	28

Year / Year Change	2008	2009	2010	2011	2012
Q1	11%	4%	-4%	14%	-7%
Q2	1%	8%	-2%	3%	
Q3	2%	1%	8%	-3%	
Q4	4%	-4%	9%	-1%	
FY	4%	2%	2%	3%	-75%

Source: EIA, TPH research

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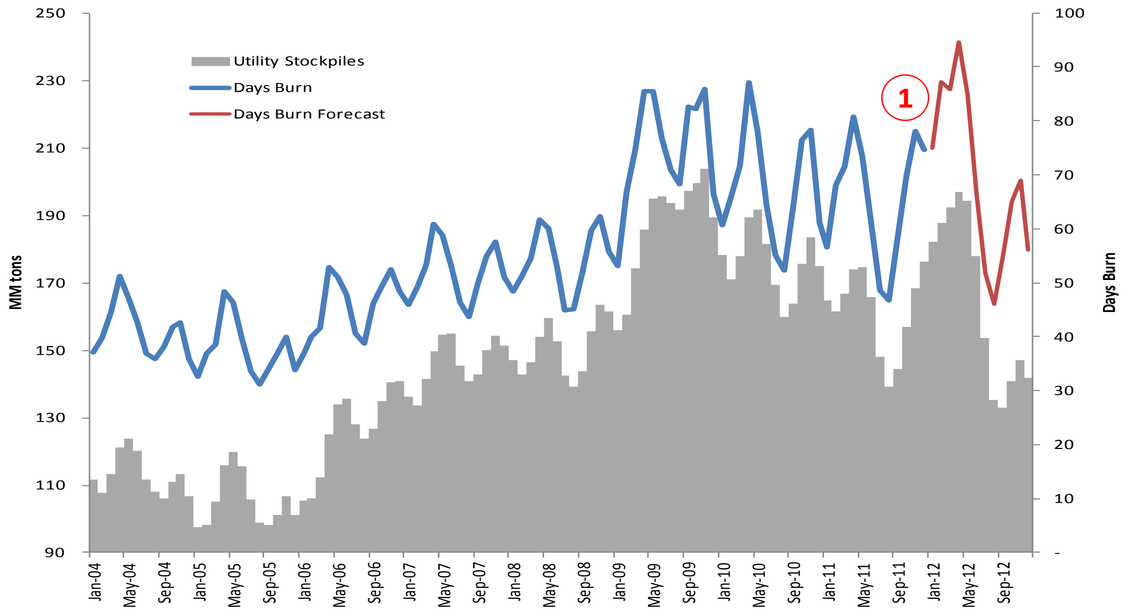
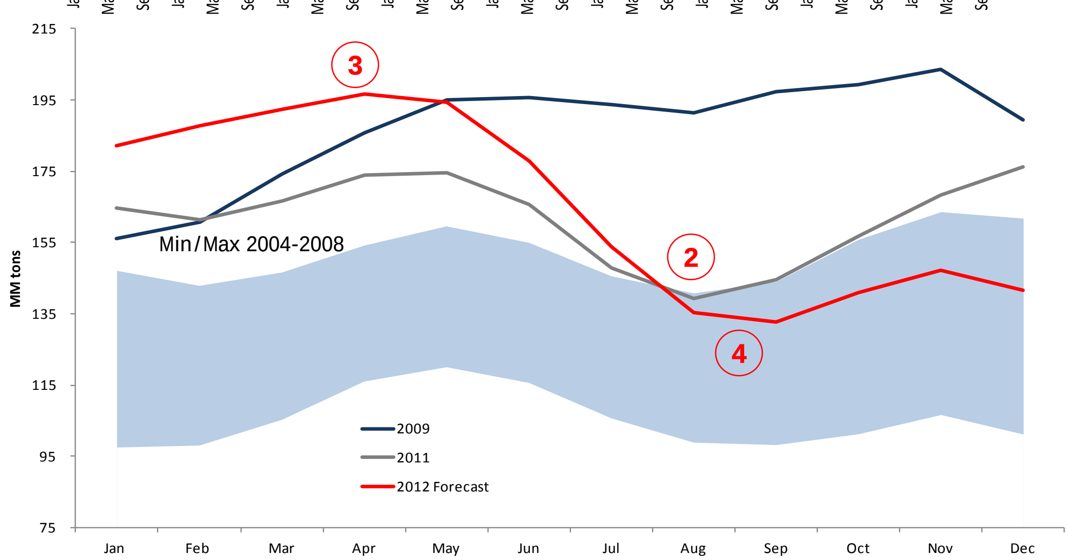
Generation Coal Stockpiles

1) Most current EIA power generation coal stockpile data point is November '11. We forecast a counter seasonal build through winter resulting in a record 95 days of inventory by April peak inventory levels.
2) First half 2011 coal production was at or below historic lows (see pg. 5) allowing demand to catch up and move inventories to the top-end of a more normal range by late summer.
3) A forecasted 10% y/y production cut doesn't fully offset effects of a warm winter and coal gas switching causing inventories to rebound and reach 197mmtons by April
4) Normal summer power demand allows production cuts to get ahead of demand moving inventories towards target levels…entering 2013 within historic range.





Source: EIA, TPH research

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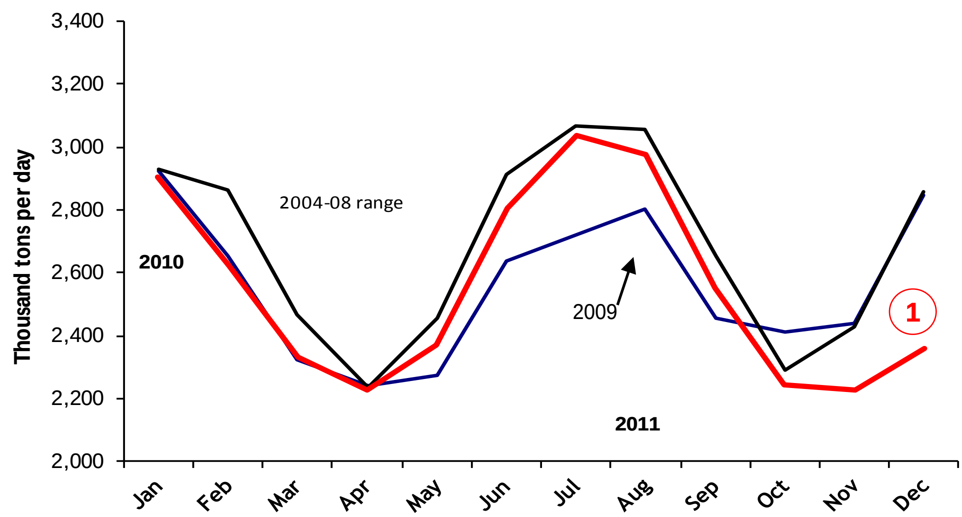
Historical Generation Coal/Gas Consumption

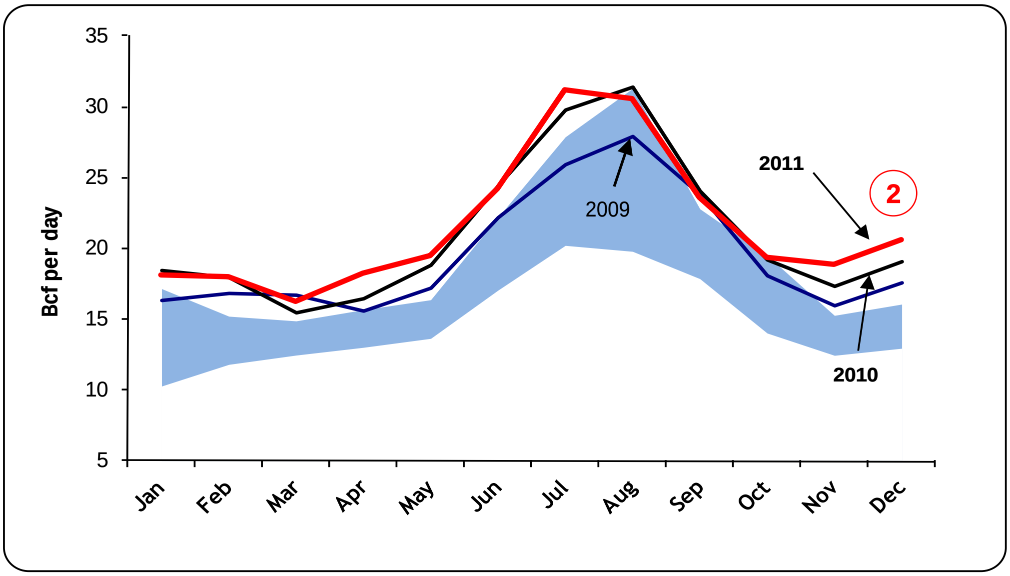
1) *Coal demand seeing recent incremental pain:* The aggressive downward trajectory of natural gas prices in the second half of 2011 had gas ending the year at ~$3/mmbtu. Cheap gas and sticky coal prices plus mild winter weather pushed power gen coal demand to an all time low…off 8% y/y in November and a whopping -21% in December
2) *Gas demand up:* Despite the mild weather (overall power load ~flat y/y Nov and down 7% Dec) gas demand increased +9% November and 12% December.

Coal Consumed for Electric Generation



Source: EIA, TPH research

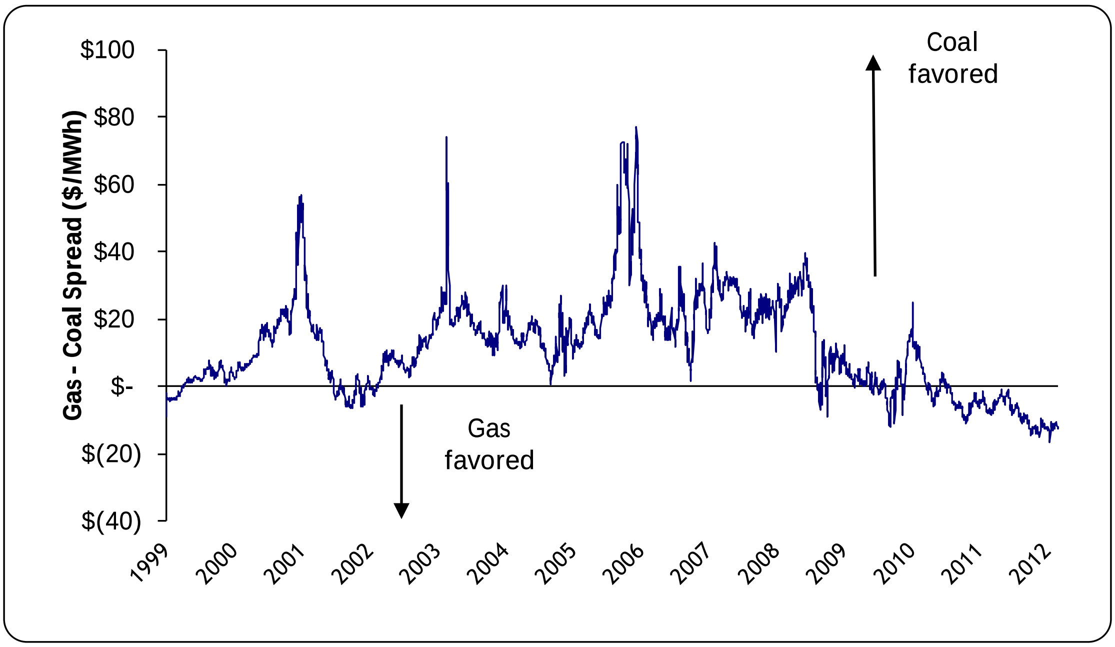
Natural Gas Consumed for Electric Generation

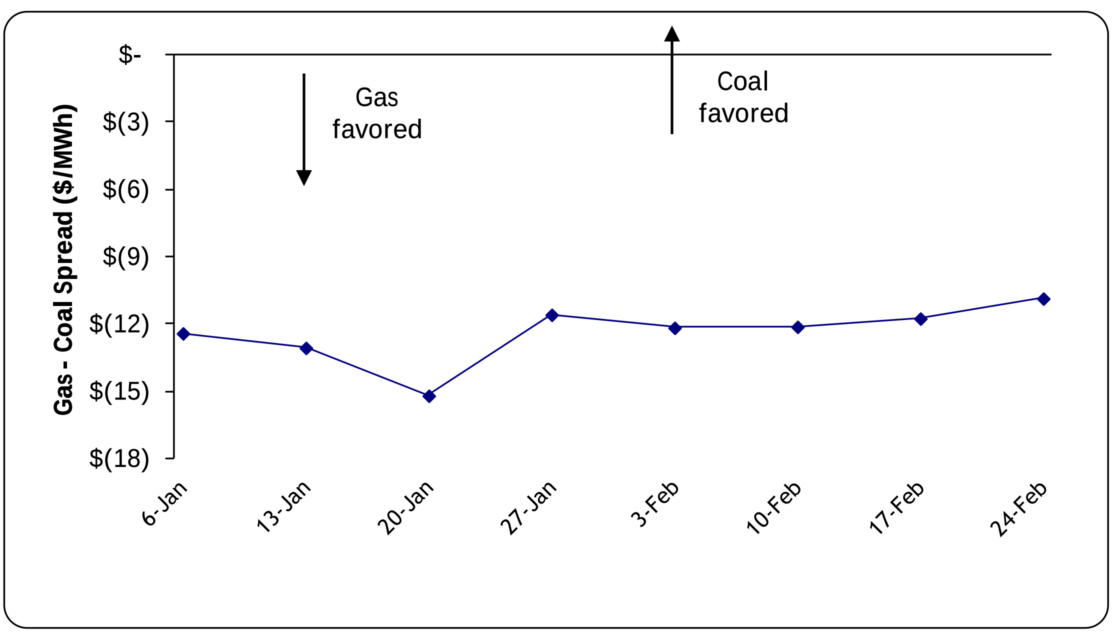


Source: EIA, TPH research

Historic Coal Gas Spread –
In power generation terms ($/MWh)

- Relatively high coal prices driven by high variable cost of production. Current spot CAPP coal prices look to be below marginal cost of production for a meaningful amount of basin's output.
- Loose natural gas supply / demand dynamics (supply up 8% y/y) continues to push gas prices down.





Source: Bloomberg, TPH research

Gas Price vs Coal Generation Breakeven

- Coal vs. gas power generation competition starts as gas moves below $5/Mcf and continues below $3/Mcf

1) First older, less efficient eastern coal-fired units are displaced
2) …then newer units
3) At $3/mmbtu Midwest low-cost PRB units are at gas-parity
4) Finally, at sub $3 gas even some less-efficient simple cycle gas units are in the money vs. coal.

3

Midwest Scrubbed PRB

Breakeven with Natural Gas	
CCGT Heat Rate	7.2
Coal Generation Heat Rate	9.5
Coal Price ($/ton)	$10
Coal Transport ($/ton)	$30
Breakeven Gas Price @ Del Point	**$3.03**

1

Northeast "Vintage" NAPP

Breakeven with Natural Gas	
CCGT Heat Rate	7.2
Coal Generation Heat Rate	12.0
Coal Price ($/ton)	$60
Coal Transport ($/ton)	$12
Breakeven Gas Price @ Del Point	**$4.64**

2

Southeast Scrubbed CAPP

Breakeven with Natural Gas	
CCGT Heat Rate	7.2
Coal Generation Heat Rate	9.5
Coal Price ($/ton)	$60
Coal Transport ($/ton)	$18
Breakeven Gas Price @ Del Point	**$4.31**

4

Mid Atlantic Simple Cycle Gas vs NYMEX

Breakeven with Natural Gas	
Simple Cycle Gas Heat Rate	10.5
Coal Generation Heat Rate	9.5
Coal Price ($/ton)	$60
Coal Transport ($/ton)	$12
Breakeven Gas Price @ Del Point	**$2.73**

Source: TPH research

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