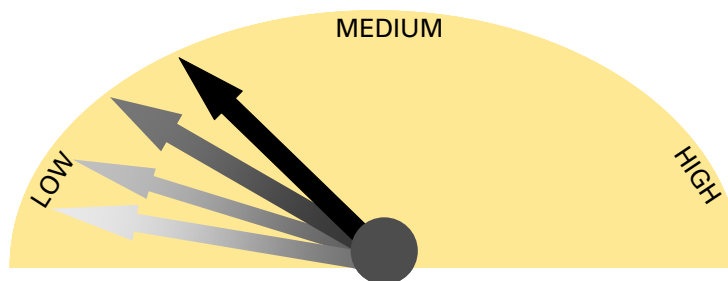


# Natural Gas Markets Waiting on Old Man Winter

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In this report, we attempt to address near-term issues facing the natural gas market. We expect ongoing price weakness in coming months driven by above average storage levels and sloppy market fundamentals. Disaster...no! Softness...yes. Unfortunately, weather is a key component of the gas equation for the remainder of winter.

## *Gas Market: Fear Factor Gauge*



### Key Takeaways

- Gas storage is dangerously high.
- Underlying fundamentals are weak.
- Oil prices support natural gas...currently mid-\$5/mcf.
- Gas prices will likely weaken further in the near term. The chance of the 12-month futures strip falling below \$5/mcf, although small, is increasing.
- The Wall Street 'fear factor' is low...and rising.
- At the risk of sounding wishy-washy, we are nervous about natural gas prices. Yet we realize that panicking over soft natural gas fundamentals has been the wrong answer over the past 24 months.
- Gas price fundamentals will test conviction, ours included, but will not "crater" the cycle.

\*\*\*IMPORTANT DISCLOSURES ON PAGE 6 OF THIS REPORT\*\*\*

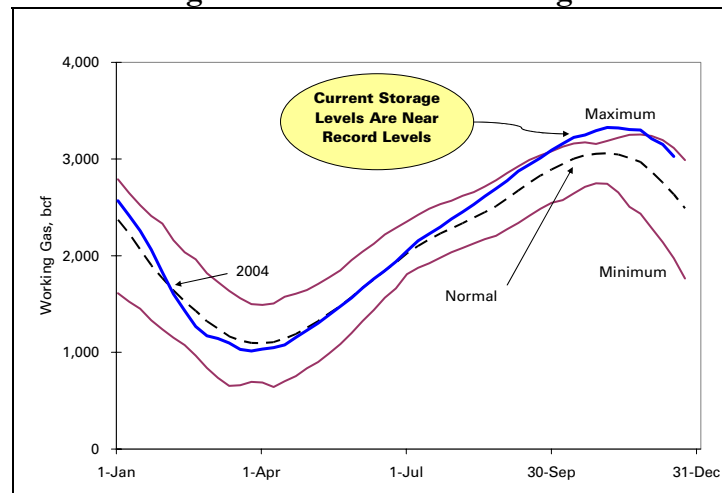
## Summary

- Current storage levels of 3,027 bcf are near record levels...~350 bcf (+17%) above normal.
- Weather adjusted storage draws so far this winter have been uninspiring...averaging ~25 bcf/wk lower than normal over the past five weeks.
- Price weakness – will impact the entire 12-month strip and not just the prompt month.
- Based on recent trends, a very cold winter (close to the coldest experienced over the past eight years) is required to exit winter with near normal storage levels.
- Absent cold weather, prompt month gas price will likely fall, creating the incentive to switch from residual fuel oil to natural gas. Current threshold price for switching is mid-\$5/mcf.
- Fuel switching could add 1 bcf/day of demand. Lower gas prices could also increase price elasticity of industrial demand.
- Although unlikely, an abnormally mild winter coupled with weaker than expected oil prices (say \$30 to \$35/bbl) could cause gas prices to drop below \$5/mcf.

## Where Are We?

Current Storage levels are near seasonal record high levels, even though Hurricane Ivan has impacted GOM production by 140 bcf.

**Fig. 1: U.S. Natural Gas Storage**

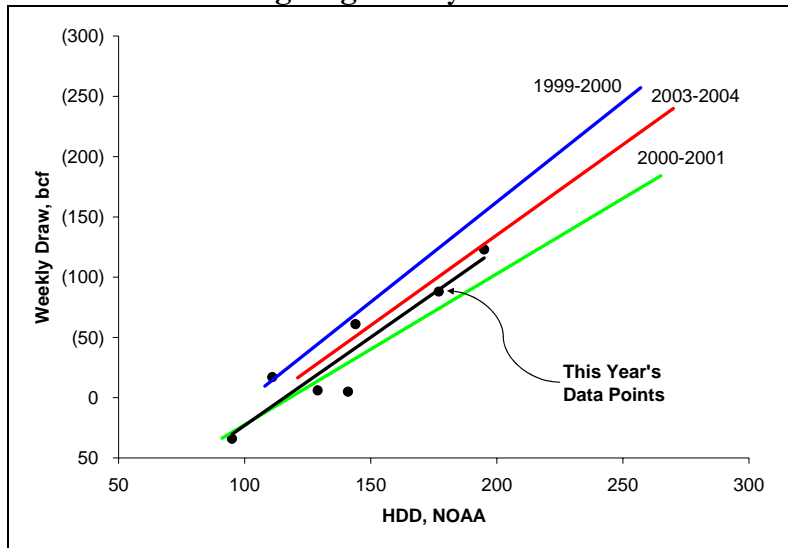


Sources: DOE and Pickering Energy Partners, Inc.

## Winter Season – Key Considerations

- The following graph shows relationship between weekly gas storage draws and heating degrees days (HDD). No surprise: large HDD's mean cold weather and large corresponding storage draws.
- The relationships differ from season to season based on changes to the underlying supply and demand balances.
- For example, for the same amount of cold weather (i.e., HDD's), the storage draws were greater in 1999-00 than in the winter of 2000-01. The underlying supply and demand fundamentals were more favorable in 1999-00 (supply declining due to low rig count and robust industrial demand).

**Fig. 2: Historical Winter Storage Relationship  
Heating Degree Days and Draws**



Sources: DOE, NOAA, and Pickering Energy Partners, Inc.

- The weekly storage data used in our analysis covers the past seven years. As a result, we only consider the weather data over the same time period.
- Prior year HDD's for the remainder of the winter are listed in the table below. Weather so far this winter season has been only slightly colder than normal (not shown).

**Heating Degree Days, mid-December thru March**

	Heating Degree Days: Dec 17 thru Mar 31		% Deviation From Normal
	Rest of Season	Weekly Average	
1997-98	2,336	156	-12%
1998-99	2,573	172	-3%
1999-00	2,501	167	-6%
2000-01	2,981	199	12%
2001-02	2,626	175	-1%
2002-03	2,818	188	6%
2003-04	2,715	181	2%
Min	2,336	156	-12%
Max	2,981	199	12%
Average	2,650	177	0%

Sources: NOAA and Pickering Energy Partners, Inc.

- The table below shows that based on the current withdrawal trends so far this winter, there is a large range of potential storage outcomes at the end of winter (note: 1,000 bcf is normal).
  - **Average Winter : 1,691 bcf**
  - Cold Winter (max): 1,207 bcf
  - Warm Winter (min): 2,150 bcf
- In an attempt to 'bracket the answer' for storage levels at the end of winter, we utilized the historical storage relationships (Fig. 2) and the weather data in the previous table.
- So far this winter, the data fall between neutral and bearish.

### End of Season Storage Matrix

<i>Winter Severity</i>	<b>Supply Demand Balance</b>			
	<i>1999-00 Bullish</i>	<i>2003-04 "Normal"</i>	<i>2000-01 Bearish</i>	<b>2004-05 This Year</b>
	Average Weekly Storage Draw, bcf			
Min	(89)	(69)	(47)	<b>(58)</b>
Max	(160)	(133)	(101)	<b>(121)</b>
Average	(124)	(100)	(74)	<b>(89)</b>
	End of Season Storage, bcf			
Min	1,694	1,999	2,316	<b>2,150</b>
Max	622	1,032	1,508	<b>1,207</b>
Average	1,172	1,528	1,922	<b>1,691</b>

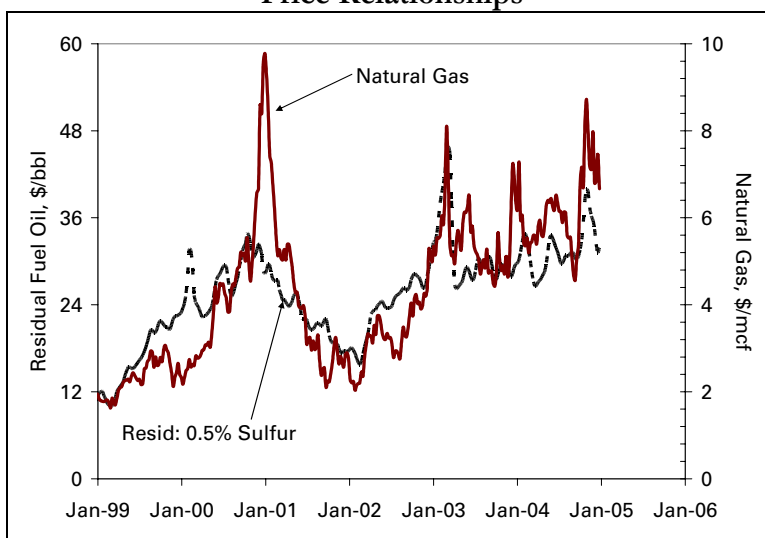
Source: Pickering Energy Partners, Inc.

- A cold winter (equal to the coldest in the past seven years) is required for storage levels to exit winter near normal.
- In the absence of cold weather (e.g., an average winter), storage is projected to end March 05 with 1,691 bcf.
- The prior maximum storage level ending winter was 1,491 bcf in the spring 2002. Gas prices averaged \$2.5/mcf during 1Q02 (oil prices averaged \$21.6/bbl).
- In a normal weather scenario, gas prices likely fall from the current \$6.30/mcf level to a point which encourages demand from both residual fuel oil (keep reading) and elastic industrial demand (difficult to quantify).
- It is highly unlikely that winter prices would fall below summer prices...creating an incentive to hold storage inventories during the winter months. Thus, if winter gas prices fall, it will impact the calendar year 2005 futures prices nearly 1:1.

### Fuel Switching

- Natural gas prices can (and should) fall below low sulfur residual fuel oil prices in order to entice consumers of resid to switch to natural gas.
- Over the past two years, natural gas prices have not traded materially below low sulfur residual fuel oil prices.
- Currently, this price threshold is in the mid \$5's/mcfe range.
- For gas, the direction of crude oil and oil products over the next several months is important.
- OPEC's recent decision to trim production, effective Jan 1<sup>st</sup>, has helped stabilize oil prices in the short term. We believe they are likely to stay near \$40/bbl over the next several months.
- In recent years, there has been approximately 150 kbpd of switchable residual fuel oil...or approximately 1 bcf/day of gas demand.

**Fig. 3: Natural Gas and Residual Fuel Oil Price Relationships**



Sources: Bloomberg and Pickering Energy Partners, Inc.

***Absent significant winter weather, fuel switching alone may not be sufficient to clear the storage overhang this winter.***

- Although difficult to quantify, industrial gas demand has more elasticity than conventional wisdom believes.
- At ~ 19 bcf/day, industrial demand is concentrated in the petrochemical, refining, metals and food sectors (combined they account for ~ 80% of industrial demand). Operational flexibility allows these industries to respond (on the margin) to high energy costs.
- Falling gas prices would likely ‘pick-up’ some of this elastic demand.

***High gas prices over the past several years have enticed some industrial users to improve operational efficiency, causing a structural reduction in gas consumption.***

- The most recent Federal Reserve Beige Book suggests that a large portion of manufacturing sector capital spending was “devoted to replacing outdated or worn equipment and/or cost-saving technologies, rather than expanding capacity.” Cost savings = less energy usage.
- Although difficult to quantify, increased energy efficiency will structurally reduce gas consumption and result in reduced demand elasticity over time.

***What to watch in the next few weeks and months.***

- Weather: The coldest part of winter and the largest storage draws (146 bcf/wk) occur in January. Expect draws to increase...but with current storage levels 350 bcf above normal, cold weather is much needed to increase the withdrawal rate relative to normal.
- Gas Prices: Monitor relative to residual fuel oil. Watch for the economic incentive to burn gas.
- Storage Numbers: Weather adjusted storage numbers will indicate if/when the underlying demand improves if gas prices fall.

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**Analyst Certification:**

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