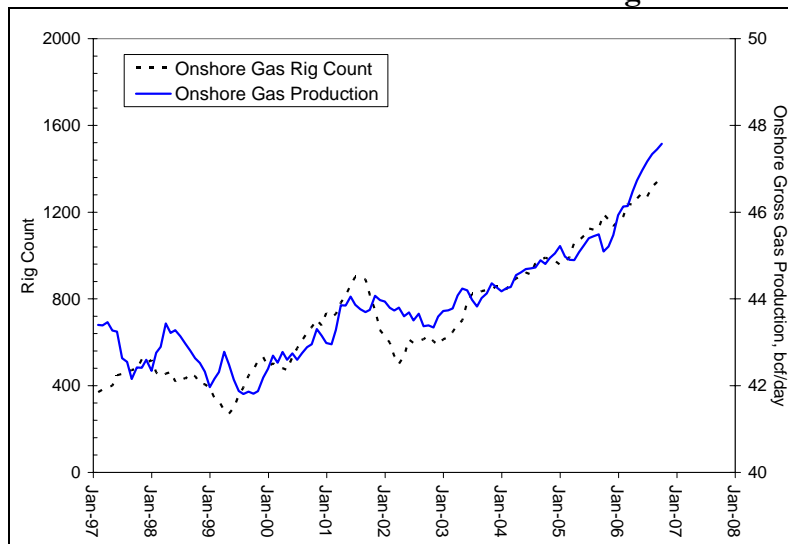


## U.S. Natural Gas Production Growth Drives Soft Outlook

U.S. Onshore Production Growth and Rig Count



Sources: EIA-914, Baker Hughes and Pickering Energy Partners, Inc.

### Key Takeaways

- We project total U.S. supply will grow ~1bcf/day (+2%) in 2007.
- U.S. *onshore* gas production is growing based on the new EIA 914 production survey.
- GOM production decline has offset onshore growth over the past few years, but GOM declines are poised to moderate in 2007.
- U.S. supply growth combined with record storage puts increasingly more pressure on weather to prevent high/record storage levels...but weather is not cooperating.
- The overall natural gas picture remains weak.

**January 9, 2007**

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## Summary

We project total U.S. supply will grow ~1bcf/day (+2%) in 2007:

- U.S. onshore continues to grow at roughly 1.7bcf.day
- U.S. offshore production decline moderates to 0.7bcf.day
- Bias is for higher growth...onshore production could be closer to 2.0bcf/day and GOM decline could be less than 0.7bcf/day (depending on the magnitude of the shelf decline).

U.S. supply growth combined with record storage puts increasingly more pressure on weather to prevent high/record storage levels at the end of winter (March 31<sup>st</sup>) and the end of the summer injection season (Nov 1<sup>st</sup>).

- Storage levels ~1,750bcf end March 07
- Storage levels ~4,085bcf end October 07...well above capacity of 3,500bcf
- Numbers above assume normal weather from here.

New EIA production survey!

- The EIA's new monthly production survey shows natural gas supply is growing.
- The new survey is far superior to the old method, which relied on untimely reporting from gas producing state agencies.
- The new survey is far superior to the IHS commercial data, which is a powerful data base...but not for determining current gas production trends (because of state reporting data lag).
- The data is released monthly, 60 days after the end of the month.

Survey says! U.S. *onshore* gas production is growing.

- Growth was 1.9bcf/day (+3.5%) in 2006
- Growth has been ~2%/yr since 2002...consistent with growth in the rig count.

GOM production decline has offset onshore growth over the past few years.

- GOM decline is due to a combination of shelf decline and hurricane impacts.
- Current GOM production of 8.0bcf/day is ~an equal mix of shelf and deepwater production.
- GOM decline in 2007 could moderate due to smaller shelf decline (off a smaller production base) and large amount of deepwater capacity adds thru 2007 (+1.3 bcf/day).

Weather summary so far this winter.

- Winter weather so far has been 10% warmer than normal. Storage levels are ~550bcf above normal.
- Warm weather accounts for additional ~300bcf of gas in storage...even with normal weather, gas storage would be 10% (+250bcf) above normal.

What makes gas look "good"?

- Weather...lots of it. Cold winter and hot summer and hurricanes could prevent a storage over-fill situation this fall.
- Without weather help, gas looks better with rig count lower...to moderate the impacts of onshore production growth.
- Also – Canadian imports could be lower than our expectations of 4% decline in 07.

## I. Production Data – There’s A New Sheriff In Town

The U.S. Department of Energy’s Energy Information Administration (EIA) has a new method to track natural gas production which we believe is far superior to the old EIA data collection system and alternative industry data sources.

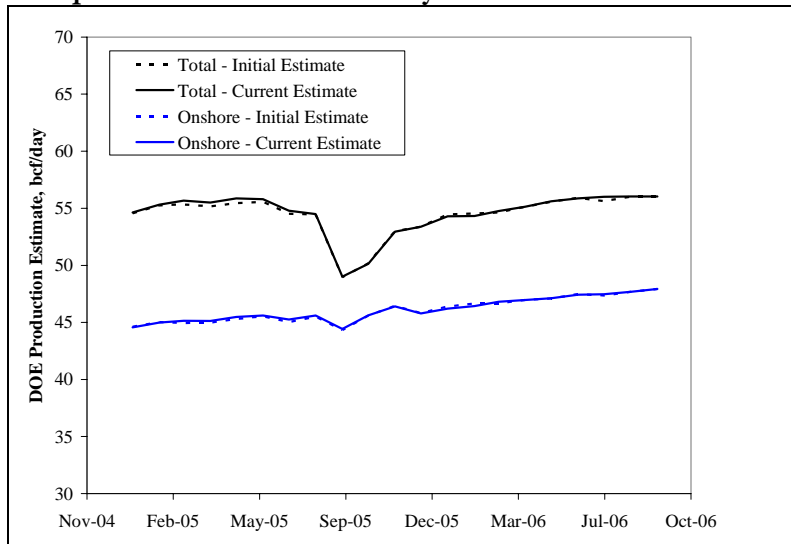
### Out with the old:

Formerly the EIA based their historical natural gas production on data compiled by natural gas producing state agencies. Individual states collect gas production from E&P companies to track production tax payments. Ultimately, the data is accurate...but the lag time is unacceptable for Wall Street purposes. One example is Texas gas production data (~30% of U.S. total), which takes over a year to be within 1% of the actual production. Over the past few years, the data lag *increased* (mainly Texas and the Federal GOM) making the EIA’s task increasingly more challenging.

### In with the new:

EIA prodding the states for quicker production data collection was not effective in improving timeliness, so the EIA embarked on their own data collection effort. The EIA created the 914 survey to accurately measure monthly U.S. natural gas production by eliminating the “middle man”...the state agencies. The EIA surveys **~300 of the largest public and private companies, targeting 90% of U.S. production.** 60 days after the end of the month, the EIA publishes the gross (unprocessed) monthly gas production: regionally segregated into the GOM, the five largest producing states, and “other”.

### Comparison of DOE 914 Survey Data - Revision Are Small



Sources: DOE and Pickering Energy Partners, Inc

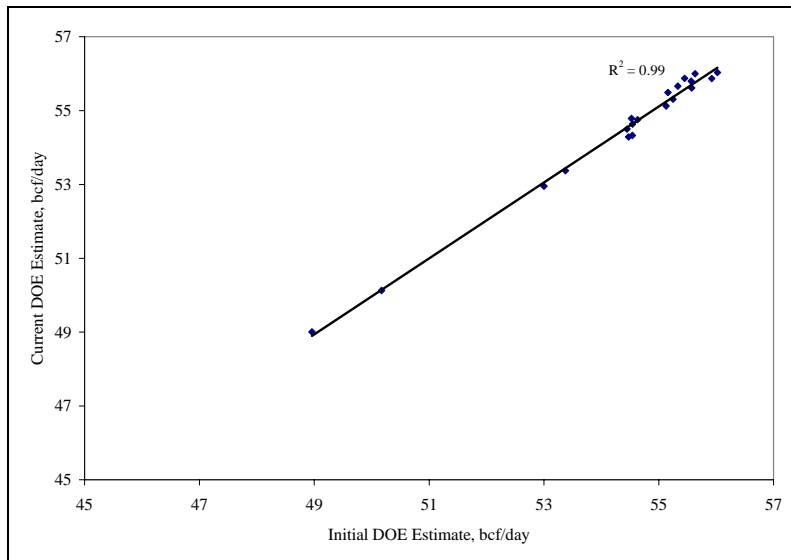
The 914 data so far has proved **robust**. The following graph shows the currently reported monthly production data and the initial 914 reported data. There have only been minor revisions after the initial 914 report. The EIA can ensure timely and complete reporting because *responding to the survey is not optional*. Bottom line – the data are reliable indicators of actual production and the 60 day lag is a significant improvement over the old state based method.

The 914 survey data is not (yet) the official EIA production data. That means the reported EIA gas production does not match the 914 data. There is a ton of bureaucracy in Washington to change a data collection process...but *we expect the data to become "official" during 1H07*. We are not waiting and are incorporating the new data into our analysis and models.

Detailed information about the 914 survey can be found at the following link.

[http://www.eia.doe.gov/oil\\_gas/natural\\_gas/data\\_publications/cia914/cia914.html](http://www.eia.doe.gov/oil_gas/natural_gas/data_publications/cia914/cia914.html)

### Comparison of DOE 914 Survey Data Initial Estimates Are Accurate



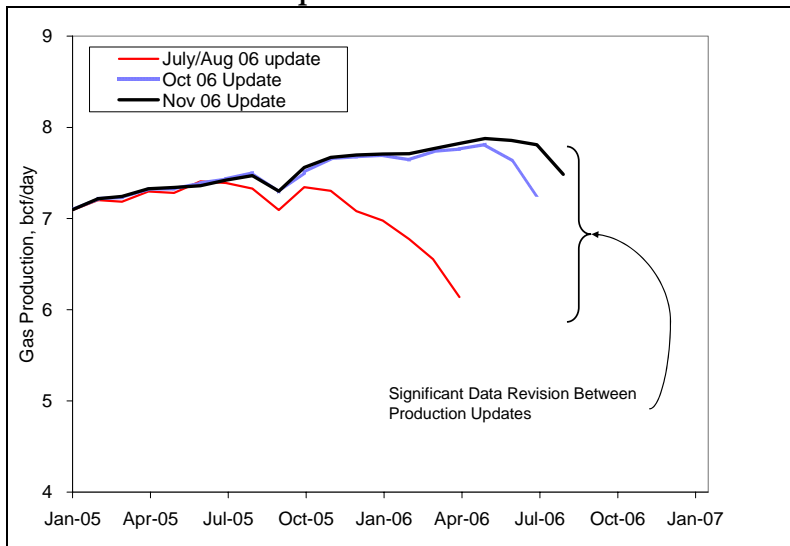
Sources: DOE and Pickering Energy Partners, Inc.

Most E&P companies use IHS data (some old-timers may refer to this as the Dwight's/PI) to look at individual well, field, and basin-wide natural gas production. We use IHS data for our Barnett Shale analysis as well as other key basins. It is a very powerful database which provides individual well production for almost every well in the U.S., for those willing to cough up the big \$\$\$.

*IHS data should not be used to assess current production trends.* IHS gathers their data from the states...so their data suffers from the same lag as the initial EIA survey (which is the reason the EIA created the 914). IHS data should not be used to directly analyze 2006 overall production trends until we are well into 2007.

We looked at selected regions of the IHS data series (we do not cough up the big \$\$\$ for the entire data set) to illustrate the impact of incomplete production on an analysis of current production trends. We have selected natural gas production from 3 regions in Texas (Railroad Districts 4, 5, and 6). The following graph shows that in July 2006, production through April looked to be on a steep decline. The November 2006 data update shows that production is actually growing in these districts. However, the revisions to 1H05 are fairly small. IHS data is better for analyzing historical production data than assessing current production.

**IHS Production Data Trends – 3 Random Texas Districts  
Takes Time For Complete Production Data**



Sources: Pickering Energy Partners, Inc. and IHS

## II. Production Growth and the New EIA Data

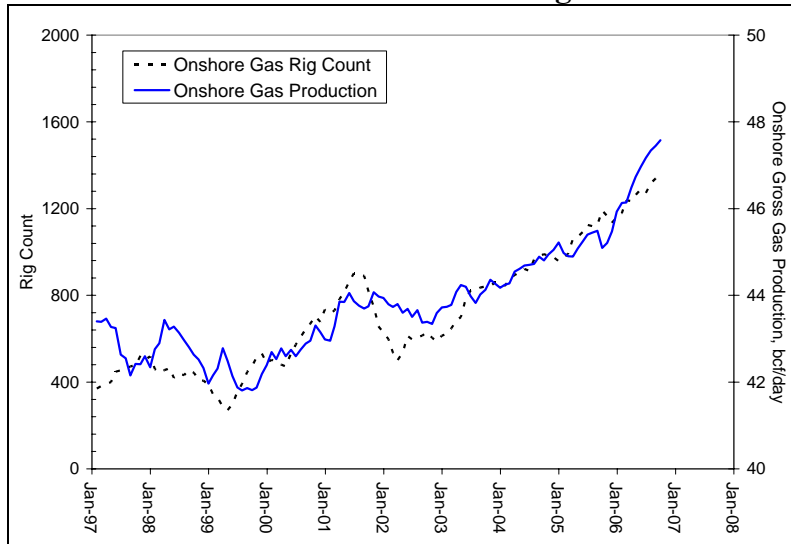
### How much can supply grow in 2007?

Our base case assumes net growth of **~1bcf/day** (+2% y/y) as onshore production grows 1.7bcf/day and total offshore production declines 750mmcf/day...driven by continued deepwater production growth and slightly moderating shelf declines. The bias is for higher net growth than 1bcf/day as recent onshore production growth has been ~2bcf/day. If this is sustainable into 2007, net natural gas supply growth could be closer to **1.5bcf/day** (+3%).

Whether you agree or disagree with our supply forecast, we will be able to *check our assumptions* against actual U.S. monthly production using the EIA's 914 survey.

Onshore U.S. natural gas production is growing. 2006 growth (thru October) is 1.9bcf/day or 4% compared to year ago. The driver of this growth is increasing rig count...which is up 225 rigs (+19%) over the same time period. In fact, onshore production has steadily grown since early 2002 when rig count began to climb steadily. U.S. rig count has more than doubled and onshore production has increased ~4.5bcf/day (+10%) since early 2002.

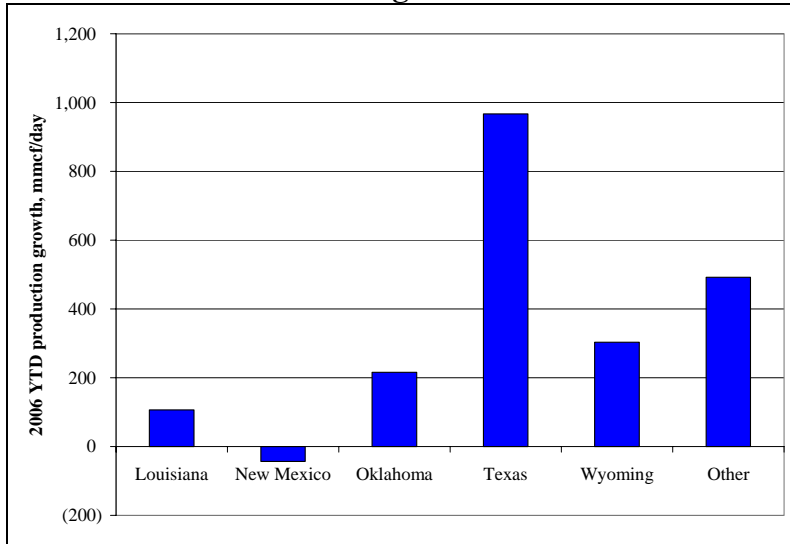
### U.S. Onshore Production Growth and Rig Count



Sources: EIA-914, Baker Hughes and Pickering Energy Partners, Inc.

An interesting anecdote (if you are a data geek)...during 2006, onshore production has grown in every region except New Mexico.

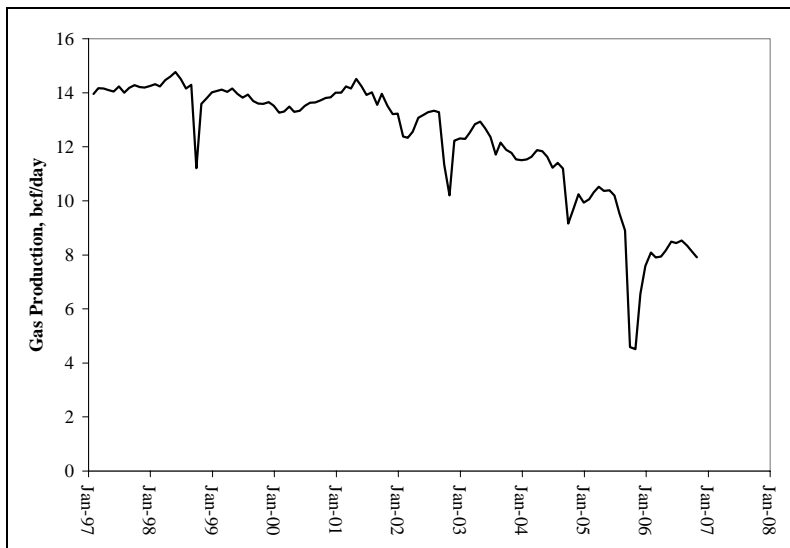
### U.S. Onshore Production Regional Growth – 2006 YTD



Sources: EIA-914 and Pickering Energy Partners, Inc.

Declines in the GOM have offset the steady growth seen onshore over the past few years. Total GOM natural gas production has declined from ~14bcf/day in 2001 (rig count peaked at ~170) to the current ~8bcf/day (rig count ~85). Production declines in the GOM are well documented, but it is important to re-emphasize that this decline in both production and rig count occurred as gas prices reached record levels.

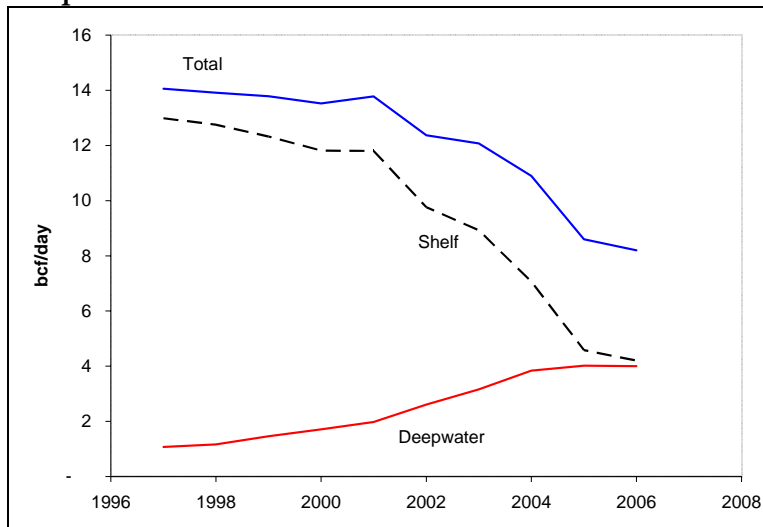
### Gulf of Mexico Production



Sources: DOE and Pickering Energy Partners, Inc.

*Offshore* – In 2007, we do not believe that Gulf of Mexico declines will offset onshore production growth (as it has over the past several years). The mix of GOM production is more balanced between shelf and deepwater production, which results in the deepwater portion gaining more importance. Specifically, we expect an aggregate decline of **750mmcf/day** as the shelf decline moderates to 1bcf/day and deepwater grows 250mmcf/day (as new projects are slated for mid-year...Independence Hub is the largest at 1 bcf/day).

### Gulf of Mexico Production Deepwater and Shelf



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

*Shelf Production* is roughly 4.5bcf/day currently. Net declines have averaged 1.5bcf/day per year over the past five years as drilling activity has been moribund.

- Decline could continue at 1.5bcf/day (worst case), which would represent a 33% total decline.
- We think it is more likely that shelf declines moderate to **roughly 1bcf/day** (a 25% total decline) as declines are from an increasingly small base.

*Deepwater Production* is currently 4bcf/day and annual gas production growth has averaged ~400mmcf/day over the past five years. In 2007, there are 1.3bcf/day of new projects starting throughout the year. Independence Hub accounts for 1bcf/day of this new capacity (startup expected mid-year). This new production is not all additive as it will offset some base decline in existing deepwater projects.

- As the new production is expected on-line mid-year, the worst case scenario is that deepwater production is flat y/y (with growth in 2H07).
- On a full year 2007 basis, we are conservatively modeling 250mmcf/day of deepwater growth...less than the typical 400mmcf/day.
- This implies large growth in 2008 as 2007's new capacity should be producing at capacity for the entire year.

### III. Implications Of Supply Growth...Why We Remain Cautious On Natural Gas

Current storage levels of 3,121bcf are 17% (462bcf) above normal. Assuming normal weather for the rest of the winter and 1bcf/day of supply growth, we project storage will end winter at ~1,760bcf (660bcf above normal and 70bcf above year-ago). Even if winter weather from here was 10% *colder* than normal, we will end winter >350bcf above normal. If winter weather is only 5% *warmer* than normal, then gas storage ends winter at a record level of 1,916bcf.

Bottom Line – it takes a colder than normal winter to alleviate the storage overhang.

#### End Winter 2007 (1Q07) - Projected Gas Storage Sensitivities

		Heating Demand (warmer)/colder vs. Norm				
		-10%	-5%	0%	5%	10%
Cooling Demand hot/(cooler) vs. Norm	-10%	2,070	1,916	1,763	1,610	1,457
	-5%	2,069	1,916	1,763	1,610	1,456
	0%	2,069	1,916	<b>1,762</b>	1,609	<b>1,456</b>
	5%	2,068	1,915	1,762	1,609	1,455
	10%	2,068	1,915	1,761	1,608	1,455

Note: Cooling demand not meaningful in winter

As we project storage levels through the 2007 summer injection season, the importance of weather becomes more obvious as *we maintain our 1bcf/day of U.S. supply growth* thru 2007. Assuming normal winter heating load and summer cooling demand (air conditioning), storage is projected above 4tcf, exceeding our estimate of maximum storage capacity of 3,500bcf. It takes a cold winter (10% colder than norm) and hot summer (10% warmer than norm), to forecast storage levels near capacity (~3,550bcf).

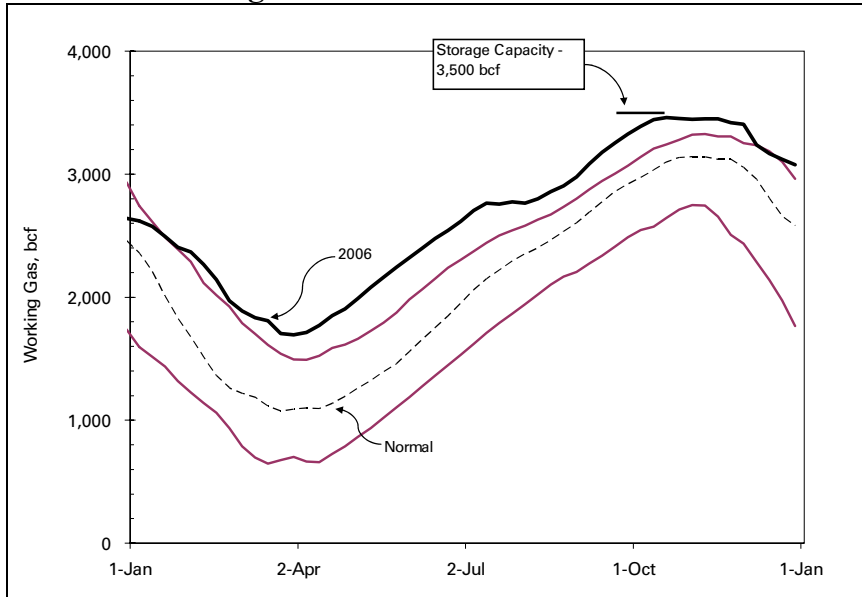
A scenario where weather is mild for the rest of this winter and through the summer results in a storage forecast well over 4tcf...which would put significant downward pressure on the natural gas prices. As we have discussed in our recent daily research commentary, the natural gas “Pay Me Now” scenario is increasingly likely.

#### End Summer 2007 (Nov-07) - Projected Gas Storage Sensitivities

		Heating Demand (warmer)/colder vs. Norm				
		-10%	-5%	0%	5%	10%
Cooling Demand hot/(cooler) vs. Norm	-10%	4,604	4,443	4,283	4,123	3,962
	-5%	4,505	4,345	4,184	4,024	3,863
	0%	4,406	4,246	<b>4,085</b>	3,925	3,764
	5%	4,307	4,146	3,986	3,826	3,665
	10%	4,208	4,047	3,887	3,726	<b>3,566</b>

We provide this gas storage chart as a reference for 2006 storage levels and previous seasonal ranges.

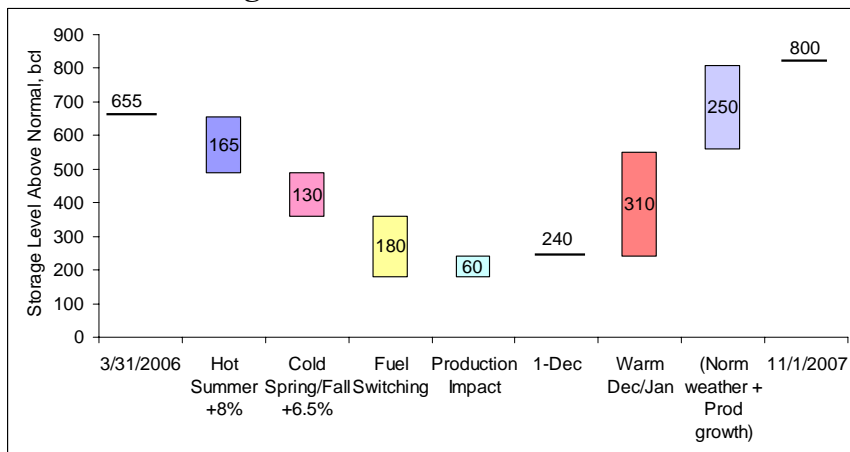
### Natural Gas Storage



Sources: DOE and Pickering Energy Partners, Inc.

The following graph shows the components of storage under/out performance since early 2006 and projected in 2007. Production growth is a significant contributor to the projected underperformance over the next nine months.

### Natural Gas Storage



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### *Implications of Supply Growth*

The reality of gas production growth creates more pressure on demand to help balance the supply growth. In the near term (next 12 months), weather demand is the most visible source of this demand increase. Thus, to be bullish on natural gas (>\$7/mcf) over the next 12 months, one has to believe that winter weather will be *colder* than normal and summer weather will be *warmer* than normal (or a KatRita hurricane).

The natural gas storage overhang can be cleared up quickly via a reduced rig count which flattens onshore supply growth. The question is if/when will this rig count decline occur? We have proposed that either a Pay Me Now or Pay Me Later scenario will develop.

- Pay Me Now – warm winter weather causes the 12-month futures curve to fall. Rig count drops ~300 rigs from current 1,700. Production growth turns to a production decline, the storage overhang is removed by end of 2007...and 2008 is great for natural gas (and energy stocks).
- Pay Me Later – normal or cold winter keeps 12-month gas prices from falling below \$7/mcf for a prolonged period of time. Barring another hot summer/major hurricane impacts, gas storage is still projected to exceed capacity 3,500bcf. Late in 2007, gas prices fall sufficiently to moderate drilling activity/supply growth and 2H08/2009 gas markets are great. LNG is a looming threat in 2009 and beyond.

### *Implications of Supply Growth*

Could we be too bearish on natural gas in 2007? Maybe...and here is where we could be wrong.

- Weather could bail out the storage overhang. Cold winter and a hot summer (or major hurricanes)...but it is inherently a bet on extreme weather.
- Canadian imports could be lower than we currently think. We model 2007 net imports flat with 2006 as increased LNG imports will roughly offset declines in Canadian imports (300mmcf/day). We will be keeping our eye on Canadian rigcount and wellhead supply.
- Baseline power generation demand could increase natural gas demand. This is a longer term gas market positive, but with 2007 expectations for slower U.S. economic growth, we are not counting on significant underlying demand growth in the next 12 months.

## **Concluding Remarks**

- Supply is growing. The EIA 914 survey provides a means to track/monitor U.S. supply in a timely fashion.
- Inventories are at record levels. The inventory overhang will be tougher to alleviate with supply growth.
- Barring a drop in rig count which would moderate supply growth, it will take extreme weather to erode the storage surplus.

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