

# Monthly Energy Update

February 1, 2010

## Highlights

### Bearish

- Economic recession
- Reduced demand
- High storage levels
- Surplus capacity
- Reduced commodity speculation

### Bullish

- Weak dollar
- Low exploration
- Cold December
- Continuing geopolitical uncertainty
- OPEC efforts to support prices

## Weather, the Economy, and Storage

Weather, the economy, and storage levels have all had major impacts on the energy industry recently. It has been well over a year since the last major hurricanes, Gustav and Ike, entered the Gulf of Mexico in September of 2008. They both caused production shut-ins and major damage to coastal communities. Prices spiked briefly and inventories dropped. However, unlike hurricanes Katrina and Rita in 2005, their impact on energy production was short-lived. Nearly all Gulf production was quickly restored.

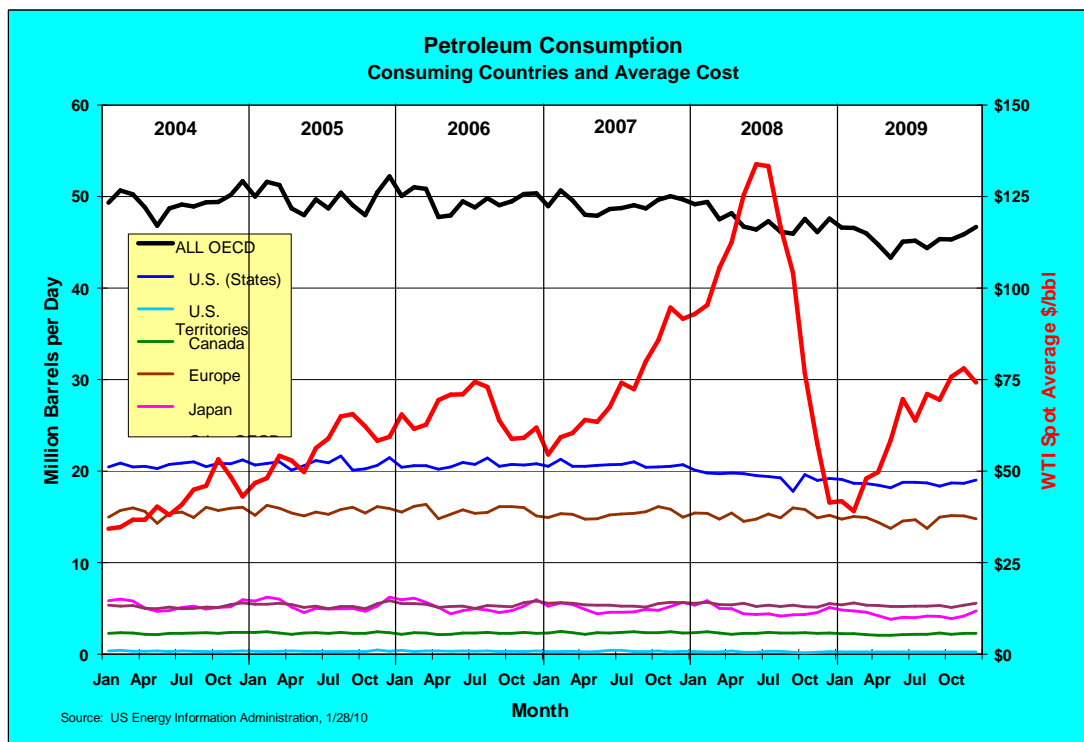
Then, in October of 2008, the sudden and dramatic international economic crisis further cooled the demand for energy in general and oil in particular. This contributed to a downward trend in prices that continued into the winter of 2008/2009.

The chart below shows petroleum consumption for the OECD countries since 2004. These are the net petroleum consuming countries of the Organization for Economic Cooperation and Development. The chart illustrates that consumption in these countries had been relatively stable, at near 50 million barrels per day, despite climbing prices.

The record price levels during the summer of 2008, along with the worldwide recession, ended the stable consumption. Demand began a decline and consumption fell to around 46 million barrels per day through October of 2008. With dramatically lower prices, consumption climbed briefly, but subsequently continued to fall to about 44 million barrels per day in May and then stabilize at about 45 million barrels per day since then. During 2009, petroleum consumption for the OECD countries was about 5% lower than for 2008 and 8% lower than previous years, prior to the recession.

Combined with relatively mild weather, the reduced demand has helped to build storage to record levels. The result was a year of low energy prices (particularly natural gas).

OPEC reacted to the falling crude oil prices with quota reductions on November 1, 2008 and January 1, 2009. However, the actual reductions only reflected the reduced demand and have not had an impact on prices.



The key question early in 2008 was whether the high crude oil prices were sustainable or whether the energy bubble was about to burst (like the tech bubble, housing bubble, and so many other bubbles before it). It is now clear that the energy bubble did not burst, but leaked steadily through the last half of 2008. The bubble has now re-inflated a bit and crude oil prices are likely to remain near current levels for the short term.

A factor contributing to the price increases over the past few years was index speculation in commodity futures by institutional investors. Historically, such investors had not participated in commodities futures trading but, over the five years prior to the peak in 2008; their participation had grown from \$13 billion to \$260 billion. The increase in speculation in crude oil futures over this period is comparable to the increase in Chinese demand over the same period (from the Masters testimony before the U.S. Senate).

The characteristics of this futures speculation that set it apart from normal activity in the futures market is described in Masters' testimony. In a nutshell, the index speculator buys a specific dollar amount of commodity futures contracts without regard to price. Prior to the contract coming due, they cover the contract and buy another, again without regard to price. This creates a huge artificial demand for the commodity which can only force the price higher.

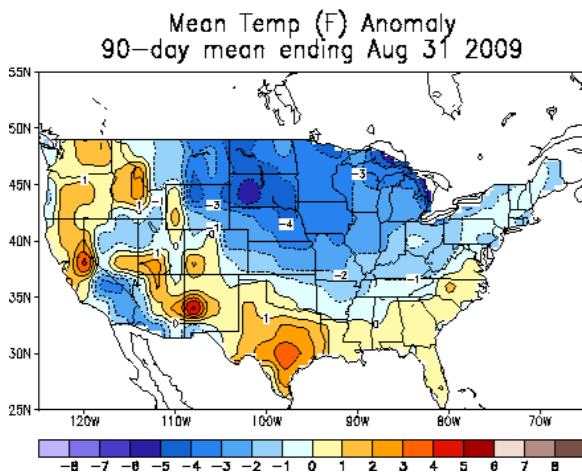
Now, with the current economic crisis, the earlier Senate investigation, and efforts of the Commodity Futures Trading Commission (CFTC), speculators have left these markets. This allowed traditional market forces to regain their influence on prices, allowing them to drop.

## Price Trends

As mentioned above, crude oil prices now appear to be driven primarily by weak demand stemming from the continuing economic crisis. Geopolitical tensions, surplus capacity, a weak dollar, and, as noted above, ending index speculation are now secondary factors.

The weather over the past year has also caused a number of major price surges and dips, but they have all been relatively brief. Last year, a mild winter over much of the U.S. allowed natural gas storage levels to rebuild and tempered the normal early winter surge in prices.

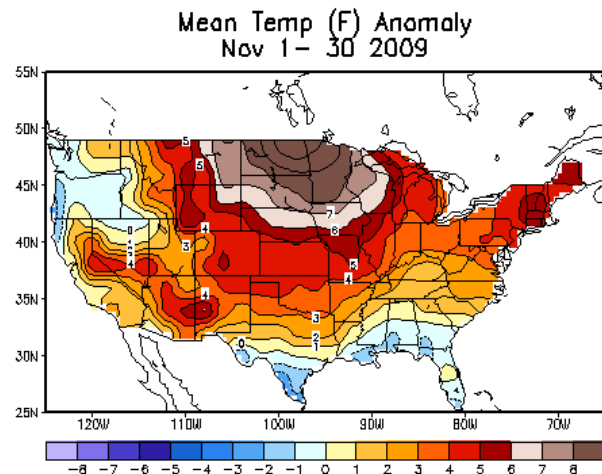
The exception to this, both last year and this year, were blasts of severe winter weather that hit the Northeast. The cold snaps increased the demand for natural gas while disrupting some of its supply. This resulted in a drop in storage to average levels and large, but brief, surges in spot prices for natural gas in New York. Late winter and early spring saw mild weather in the areas that normally use natural gas for heating.



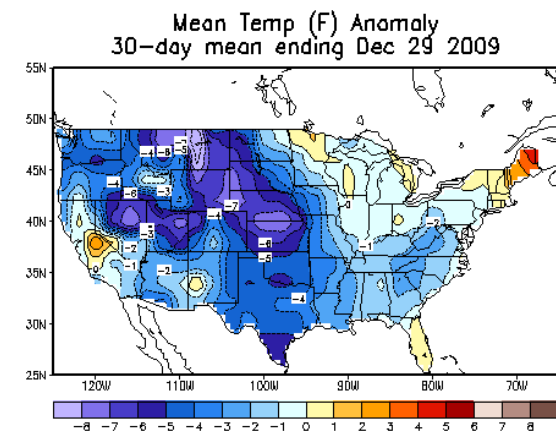
This summer was much cooler than normal over much of the country. This resulted in a lower than normal requirement for cooling in the eastern and Midwestern states. Less cooling means less need for peaking generators that are often fueled with natural gas. As a result, natural gas in storage was at a record high level as we entered the injection season.

Then, an unusually mild November allowed natural gas injections to continue into the beginning of what is normally the withdrawal season. Storage built to record levels that tested system capacity.

The mild November was followed by a bitterly cold December over most of the country.



The cold weather caused relatively high consumption and nudged prices up a bit. However, record stocks tempered the price increase.



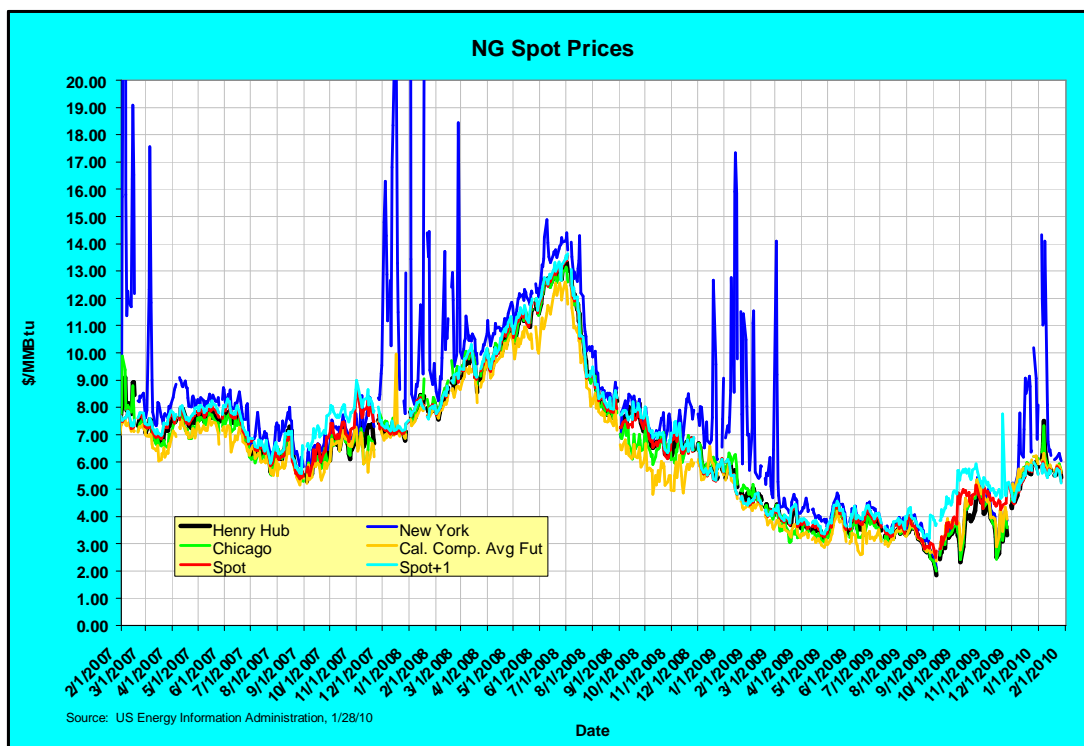
When crude oil prices reached record highs during the summer of 2008, demand (which had already started to decline) collapsed. A rapid drop in crude prices followed, leading OPEC to announce their quota reductions. However, the OPEC reductions were less than the decline in demand just

in the U.S. and quotas remained higher than the production capacity for some members. As a result, the OPEC reductions had no effect and prices continued to decline until October, when low prices, and rebuilding stocks following the hurricanes, led to a bit of an increase in consumption.

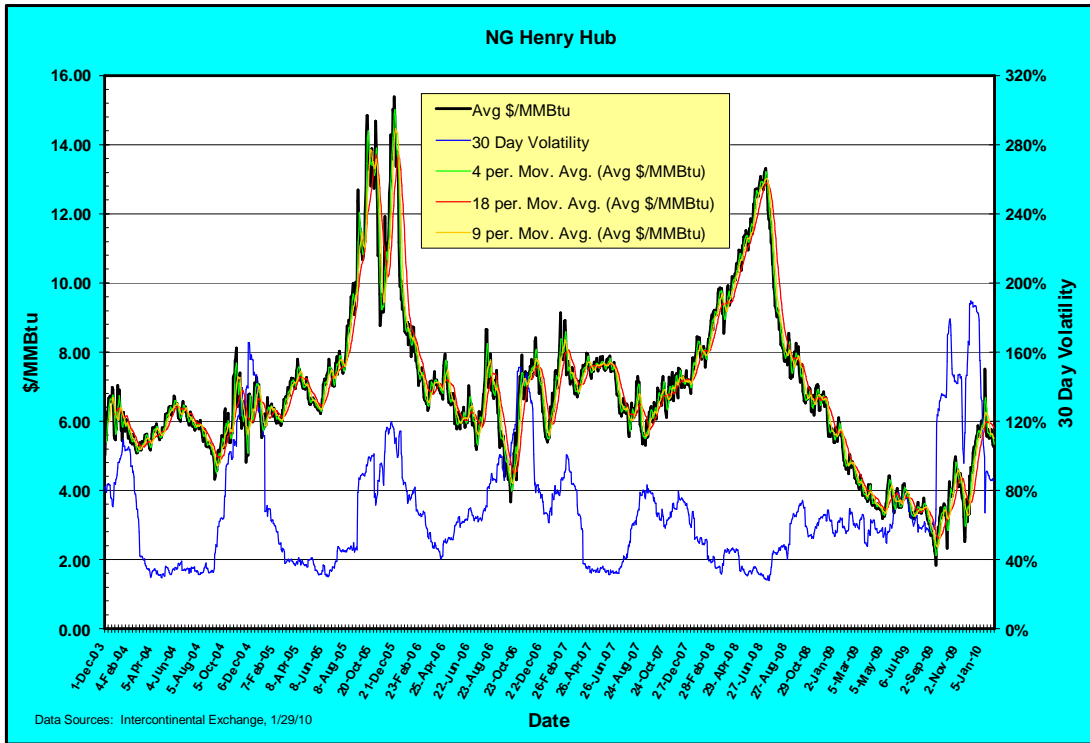
Crude prices now seem to have stabilized at a level close to that necessary to encourage alternative fuel production. Historically, crude oil prices recover much more slowly than they collapse. Time will tell whether the current trend will follow the historical pattern. When crude prices peaked in 2008, they aroused strong sentiment to develop alternatives. If that sentiment can survive the current lower crude prices, alternatives might actually begin to permanently displace some demand for crude and help to hold crude prices down.

Since electricity prices are influenced much more by natural gas prices than by crude oil prices, electricity prices remained relatively stable compared to crude. However, in 2008 the high oil prices and weakening dollar pulled natural gas prices up and this caused electricity prices to climb as well. Now, the decline in both oil and especially gas prices should allow electricity prices to stabilize at near their current levels.

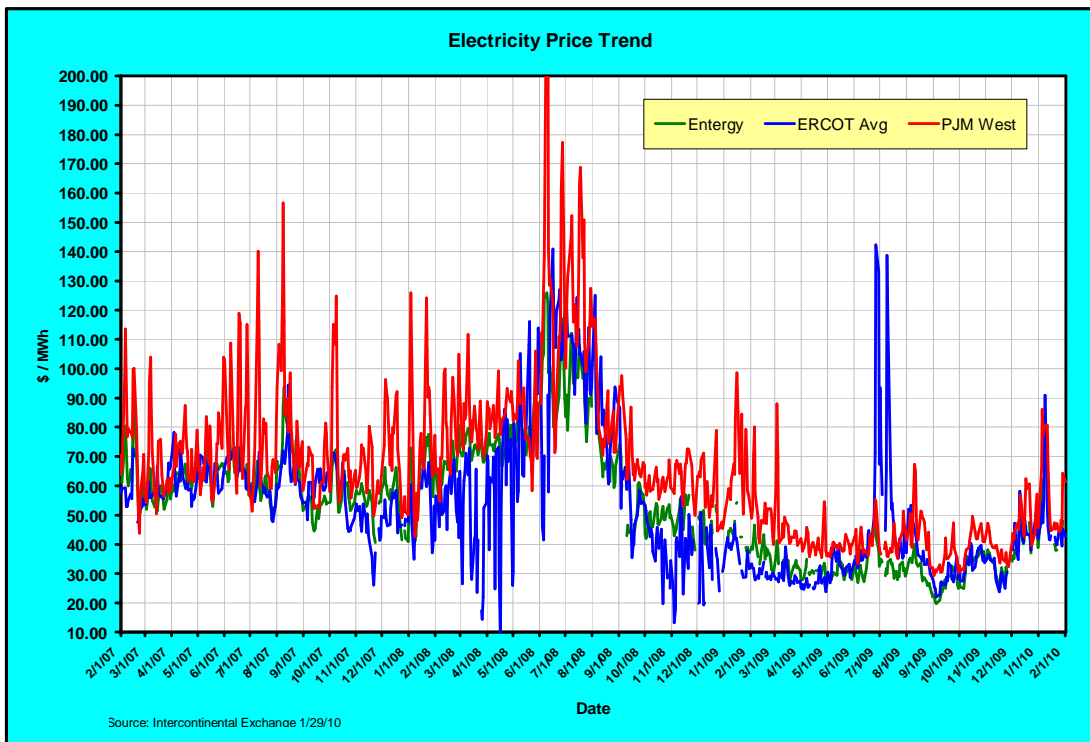
The charts that follow illustrate the movement of the energy markets. The first chart clearly illustrates the dramatic spikes in New York natural gas prices when severe winter weather strikes the Northeast. The charts also illustrate the relatively low level of current prices.



The weather induced price variations also brings higher volatility to natural gas prices. Volatility spiked due pipeline and storage restrictions that hampered the ability to deliver gas. This caused prices to fall briefly to 2002 levels and then rebound. Then, bitterly cold weather in December increased gas demand and pushed prices higher. However, with high storage levels, natural gas prices are likely to remain relatively low this winter.



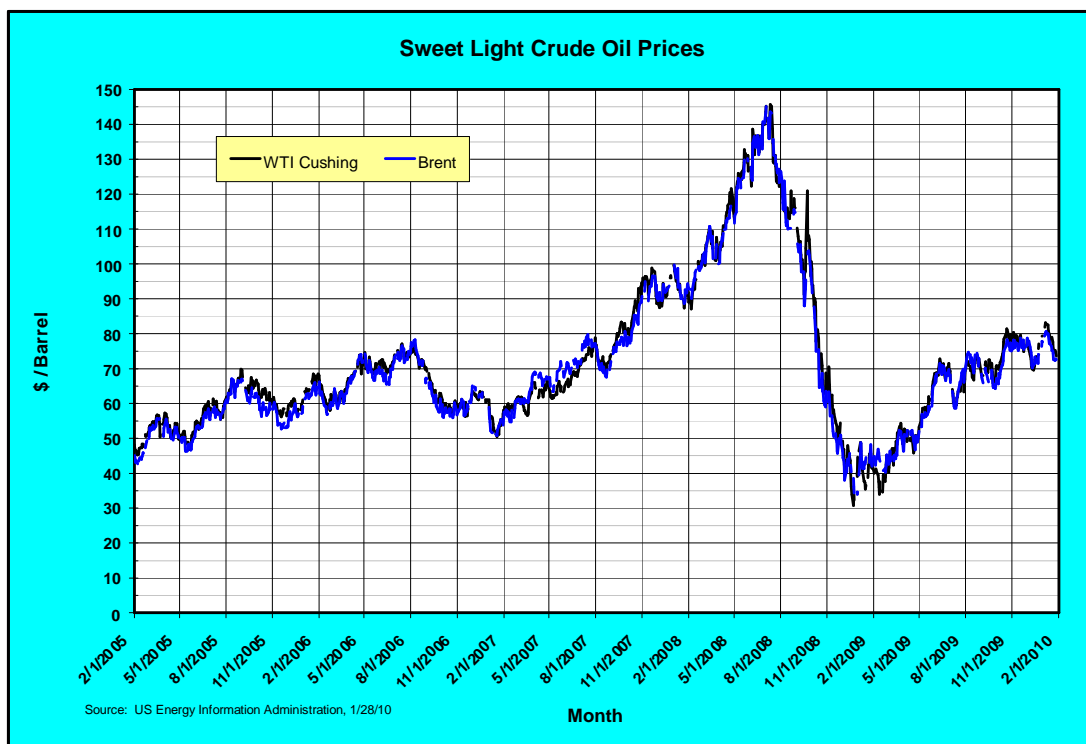
Since natural gas is the primary fuel used to meet variable electricity demand (base demand is typically met with coal, hydro, and nuclear), its cost is reflected in the price of electricity.



In 2006, a sense of increasing stability along with high production and storage levels started a steady decline in oil prices. The falling prices prompted OPEC production cuts which arrested the decline. This, along with the arrival of cold weather in February of 2007, and the other factors mentioned above, triggered steadily increasing crude oil prices, interrupted only by brief, and small, declines. Supply concerns, a weak dollar, little excess capacity, and speculation continued to drive crude oil prices to record highs until July of 2008, when they began a decline in response to falling demand and the scrutiny of index trading mentioned earlier. In September of 2008 the hurricanes in the Gulf of Mexico caused oil prices to spike briefly, but their decline quickly resumed and prices fell to levels last seen five years ago.

In an effort to arrest the decline in crude oil prices, OPEC announced a largely symbolic production cut at their emergency meeting in October of 2008. The 1.5 million barrel per day cut was less than the amount that demand had declined in the U.S. alone. In addition, even the revised quotas actually allowed increased production by some OPEC members, if they had the capacity. As a result, the announcement had no impact on prices.

In their December meeting, OPEC followed with another quota reduction that became effective January 1, 2009. Again, the reduction only served to bring the quotas more in line with demand. Like the previous reduction, this one had no impact on prices. Crude oil prices have, however, recovered to levels they were at prior to the run up and crude has recently been trading at about four times the cost of natural gas on a Btu basis.



Together, these charts illustrate the relationship between natural gas and crude oil prices and their impact on electricity costs. A number of factors, including those mentioned earlier, have contributed to these price trends. Other factors are examined in more detail below.

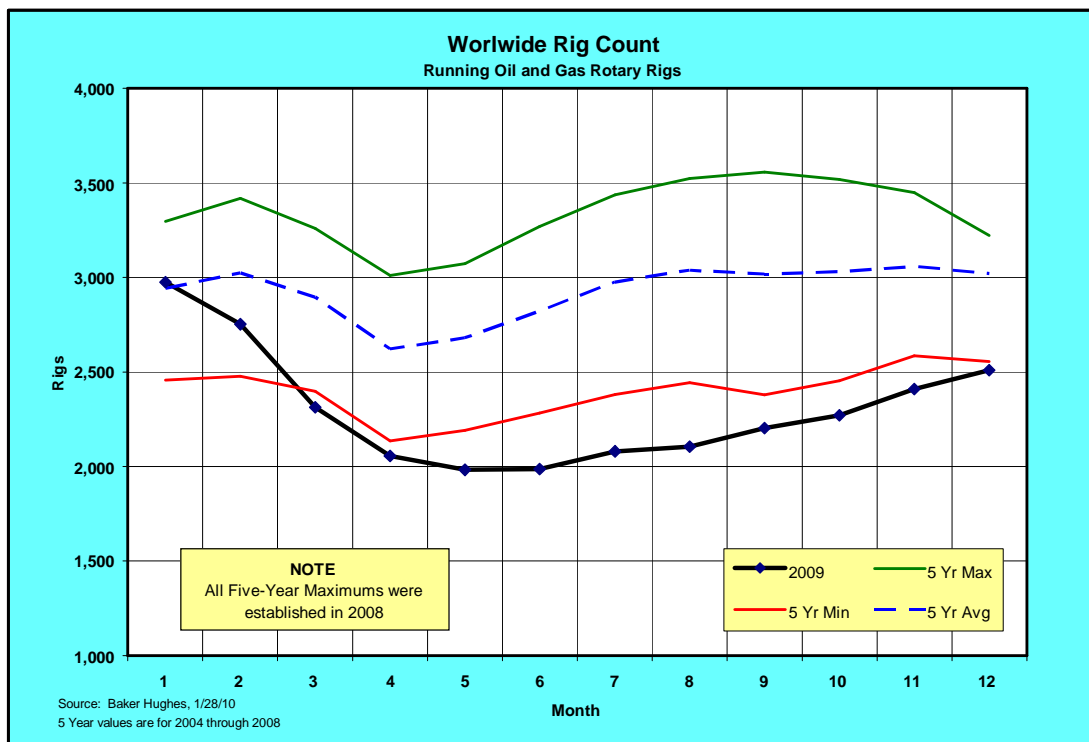
## Production Trends

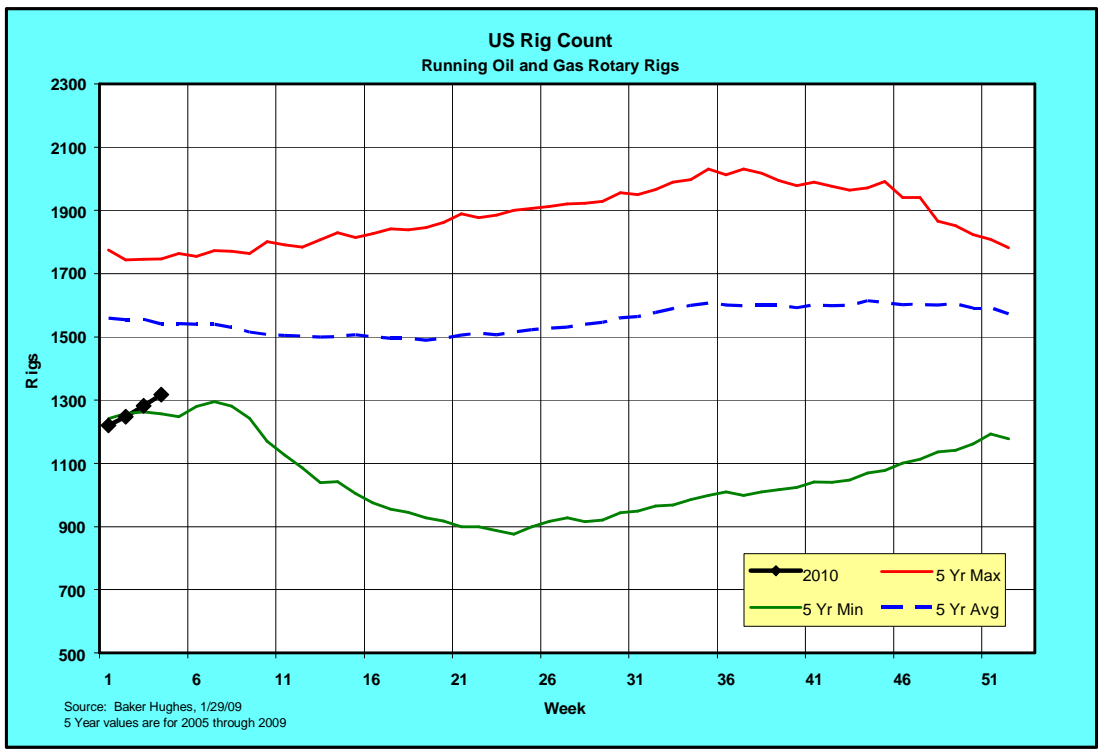
Normally, natural gas and crude oil influence each other and also tend to drive the price of electricity. For this reason, their production and inventories are important, not only in their own right, but also to help understand and anticipate electricity price changes.

A number of years ago, both natural gas in storage and crude oil stocks were at very low levels. This contributed to escalating prices. Higher prices encouraged production increases that brought inventories well above average levels. In September of 2004, Gulf of Mexico production shut-ins resulting from hurricane Ivan helped to quickly draw crude oil inventory levels below five-year lows. With the return of production, and steady imports, inventories were restored and stocks built to well above previous five-year highs. Then, in the aftermath of hurricanes Katrina and Rita, these stocks again were drawn down, but the mild winter of 2005/06 allowed them to rebuild quickly.

With strong inventories and quiet 2006 and 2007 hurricane seasons, the energy markets responded with some softening in natural gas and electricity prices. While hurricanes Gustav and Ike were certainly severe, they did not have nearly the impact on oil and gas production that hurricanes Katrina and Rita had in 2005. As a result, prices were not severely impacted.

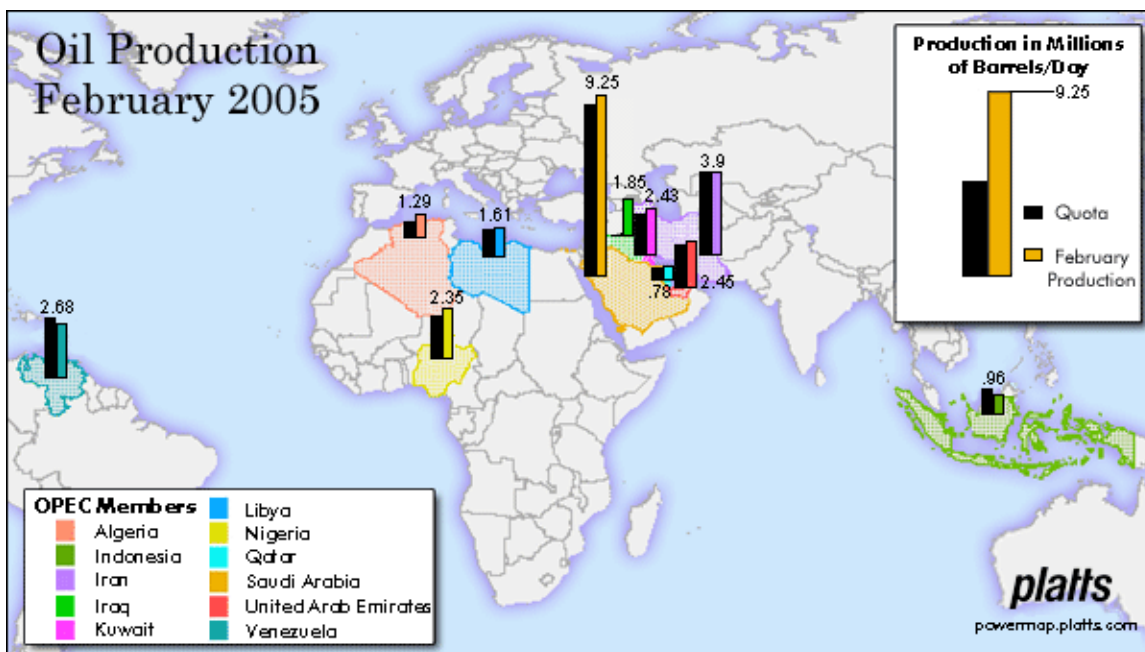
The following charts show that low prices are having a huge impact on the number of oil and gas rigs in the U.S. and worldwide. With the low prices, exploration and the number of running oil and gas rigs dropped below five-year minimums. Now, with oil prices back at moderate levels, the number of oil rigs is beginning to climb but is likely to remain below five-year averages for some time.





With reduced demand, and their new lower quotas, several OPEC countries have reduced production and now, for the first time in years, have some surplus capacity. Still, only Saudi Arabia has sufficient surplus capacity to influence markets.

The following graphic and table illustrate the relative level of OPEC oil production by country.



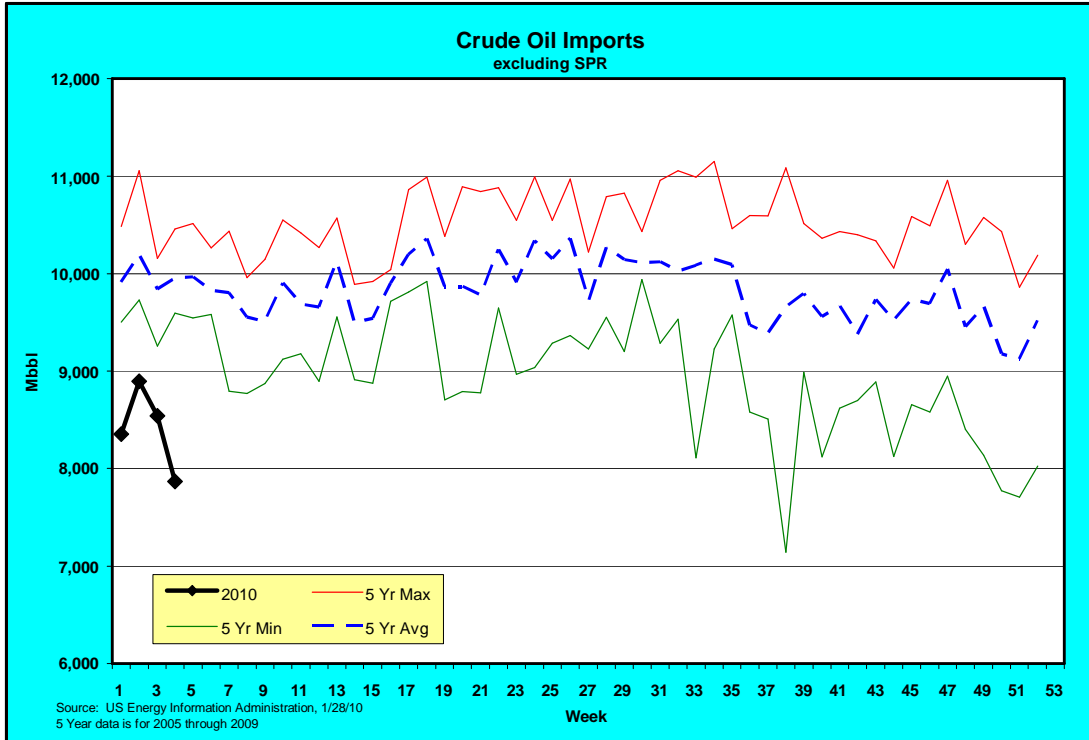
**OPEC Oil Production**  
(Thousands of Barrels per Day)

Country	Quota			OPEC Production			Over/Under Quota		Dec 2009	
	(12/1/07)	(11/1/08)	(1/1/09)	Oct-09	Nov-09	Dec-09	Tb/d	%	Capacity	Surplus
Algeria	1,357	1,286	<b>1,200</b>	1,370	1,370	1,370	170	13.2	1,370	0
Angola	1,900	1,801	<b>1,506</b>	1,900	1,900	1,900	394	21.9	2,070	170
Equador	520	493	<b>429</b>	470	470	480	51	10.3	480	0
Iran	3,817	3,618	<b>3,334</b>	3,800	3,800	3,800	466	12.9	3,900	100
Kuwait	2,531	2,399	<b>2,221</b>	2,300	2,300	2,300	79	3.3	2,600	300
Libya	1,712	1,623	<b>1,472</b>	1,650	1,650	1,650	178	11.0	1,800	150
Nigeria	2,163	2,050	<b>1,704</b>	1,880	1,960	1,960	256	12.5	1,960	0
Qatar	828	785	<b>730</b>	850	850	850	120	15.3	1,070	220
Saudi Arabia	8,943	8,477	<b>8,014</b>	8,300	8,300	8,200	186	2.2	12,000	3,800
UAE	2,567	2,433	<b>2,226</b>	2,300	2,300	2,300	74	3.0	2,600	300
Venezuela	2,470	2,341	<b>2,010</b>	2,200	2,100	2,000	-10	-0.4	2,000	0
<b>OPEC 11</b>	<b>28,808</b>	<b>27,306</b>	<b>24,846</b>	<b>27,020</b>	<b>27,000</b>	<b>26,810</b>	<b>1,964</b>	<b>7.2</b>	<b>31,850</b>	<b>5,040</b>
Iraq	N/A	N/A	<b>N/A</b>	2,400	2,350	2,350	N/A	N/A	2,350	0
<b>Total Oil</b>	<b>28,808</b>	<b>27,306</b>	<b>24,846</b>	<b>29,420</b>	<b>29,350</b>	<b>29,160</b>	<b>1964</b>	<b>7.2</b>	<b>34,200</b>	<b>5,040</b>

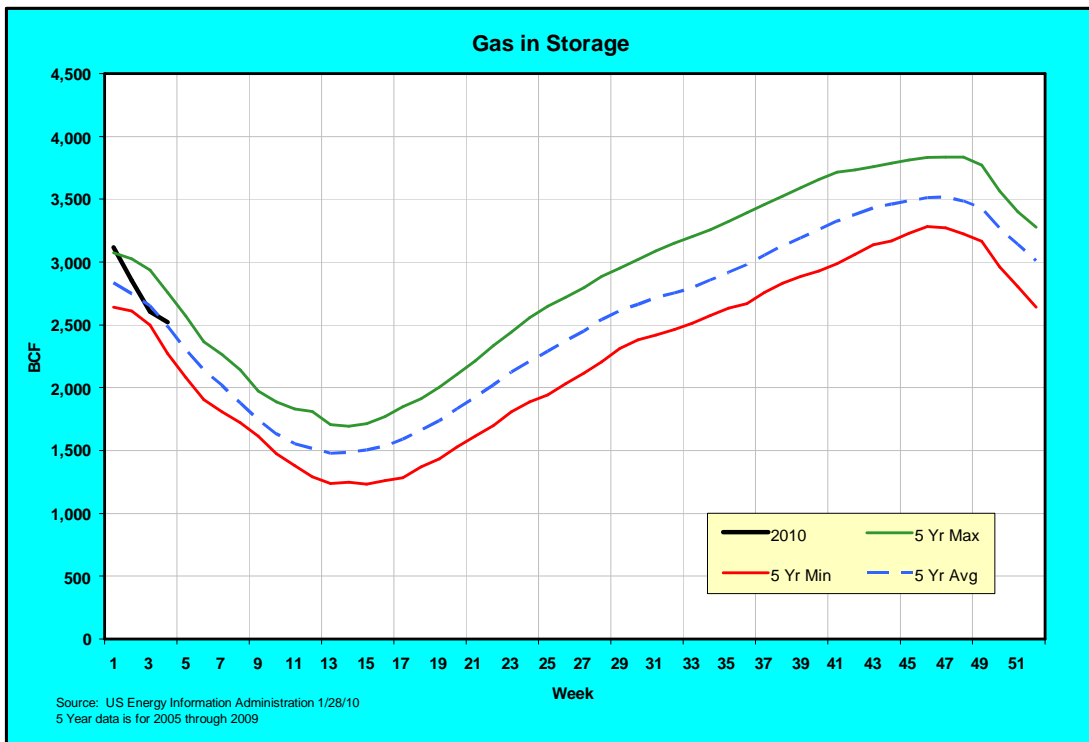
Sources: DOE / EIA Short-Term Energy Outlook

Until recently oil imports remained at very high levels. In fact, they had been near the maximum level of the prior five years most weeks since the summer of 2004 except when hurricanes interrupted access to port facilities in the Gulf of Mexico. Then high prices cooled demand and slowed imports to average levels. Following the disruptions caused by the hurricanes in 2008, imports briefly climbed to five-year highs to rebuild stocks before falling to average levels again in December of 2008 and to very low levels in recent months.

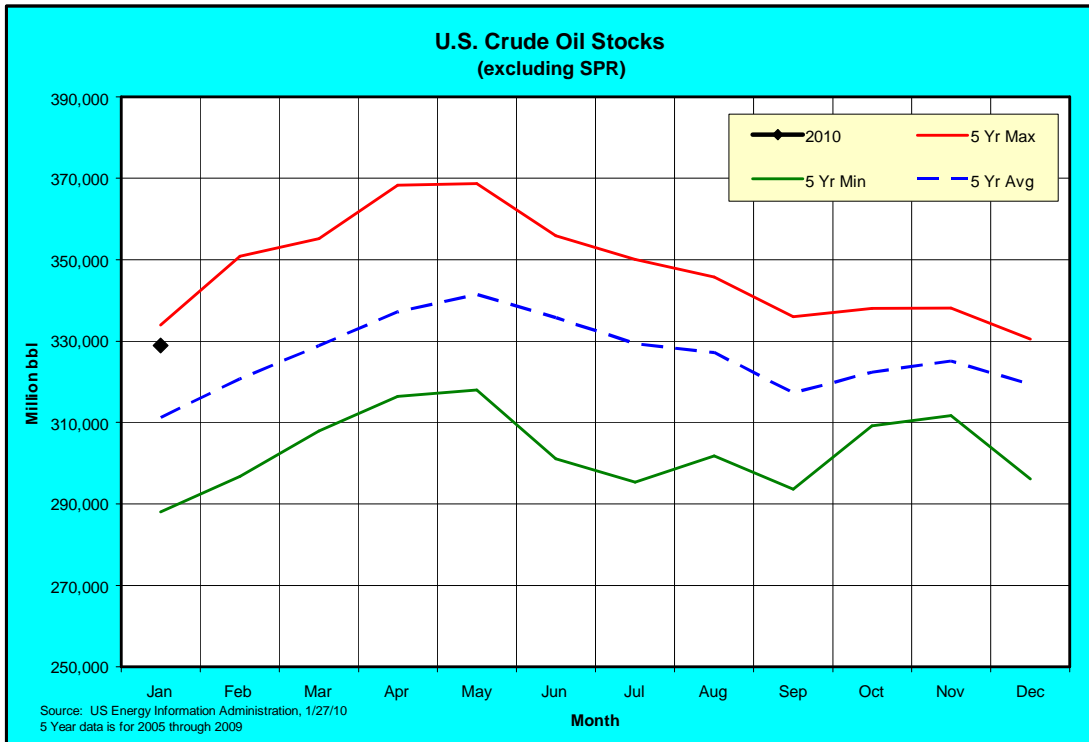
Crude oil import levels are illustrated in the following chart.



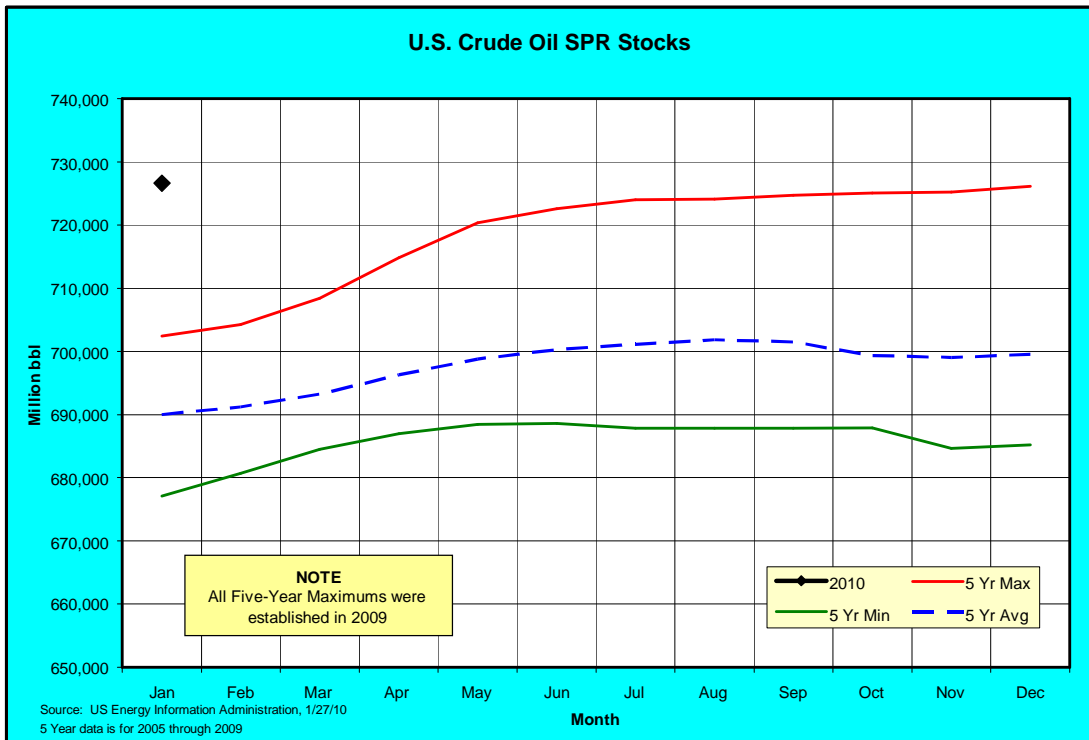
The next chart shows that, even after a bitterly cold December, natural gas in storage is still at average levels. Being at this level well into the withdrawal season, along with reduced demand, should result in downward pressure on prices.



Record high crude oil prices and the hurricanes in 2008 slowed additions to storage and stocks fell below average levels. Now, moderate prices and low demand have allowed crude stocks to climb to five-year highs.



Despite draw downs following the hurricanes of 2005 and other supply interruptions, the U.S. strategic petroleum reserve is now stable and is well above the previous five-year high.



## Conclusions

With unusually hot weather in the summer of 2007, tensions in the Middle East, memories of Katrina and fears associated with the start of the hurricane season, energy prices climbed. However, strong fundamentals, along with two calm hurricane seasons and a relatively mild start to the winter, moderated energy prices as we entered the heating season of 2007/08.

Then, in 2008, increasing index speculation, a plummeting dollar, and continuing supply concerns pushed oil prices to record highs. Only in July of that year, with solid fundamentals, did they begin to stabilize and decline. Then, hurricanes Gustav and Ike entering the Gulf of Mexico caused price fluctuations, but their impact on production was minor and the price decline resumed.

Now, with low demand and a worldwide recession, storage levels have climbed, and prices have stabilized at about the levels they were at prior to the run up during 2008.

The current prices could be pushed higher by a number of factors including:

- new supply disruptions,
- further weakening of the dollar,
- severe winter weather,
- declining production by Russia or other major producers.

Considering all of these factors, and barring major supply disruptions, energy prices should be relatively stable this winter. Because of the high storage levels and excess capacity, any winter price increases this winter should be small.

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