Monthly Energy Update

January 2, 2012

Highlights

Bearish

- Economic recession
- Reduced OECD demand
- High storage levels
- Surplus capacity
- Recovering production in Libya and Iraq

Bullish

- Turmoil in Libya and the Middle East
- Weak dollar
- Signs of an improving economy
- Increasing Third-World demand
- Continuing geopolitical uncertainty

Libya, the Middle East, Weather, and the Economy

The continuing political and commercial uncertainty in Libya and the Middle East puts upward pressure on oil prices. This is due both to fear and reduced oil exports from Libya. First, the revolution in Egypt drove oil prices up, not because Egypt is a significant oil producer (they are a net importer) but because they control two major shipping paths. The Suez Canal is the most visible, moving about a million barrels of crude each day. However, the SUMED pipeline that crosses Egypt has the capacity to carry over twice that amount. Together, the canal and pipeline today carry the about equivalent of the crude production of Kuwait from the Persian Gulf to the Mediterranean and Europe.

After Egypt, revolution spread to Libya, which is an oil producer. While the impact on Libyan production may be temporary, the interruption in production and fear that revolution will spread to other OPEC countries pushed oil prices higher. These same factors are strengthening the drive to find alternatives to OPEC crude.

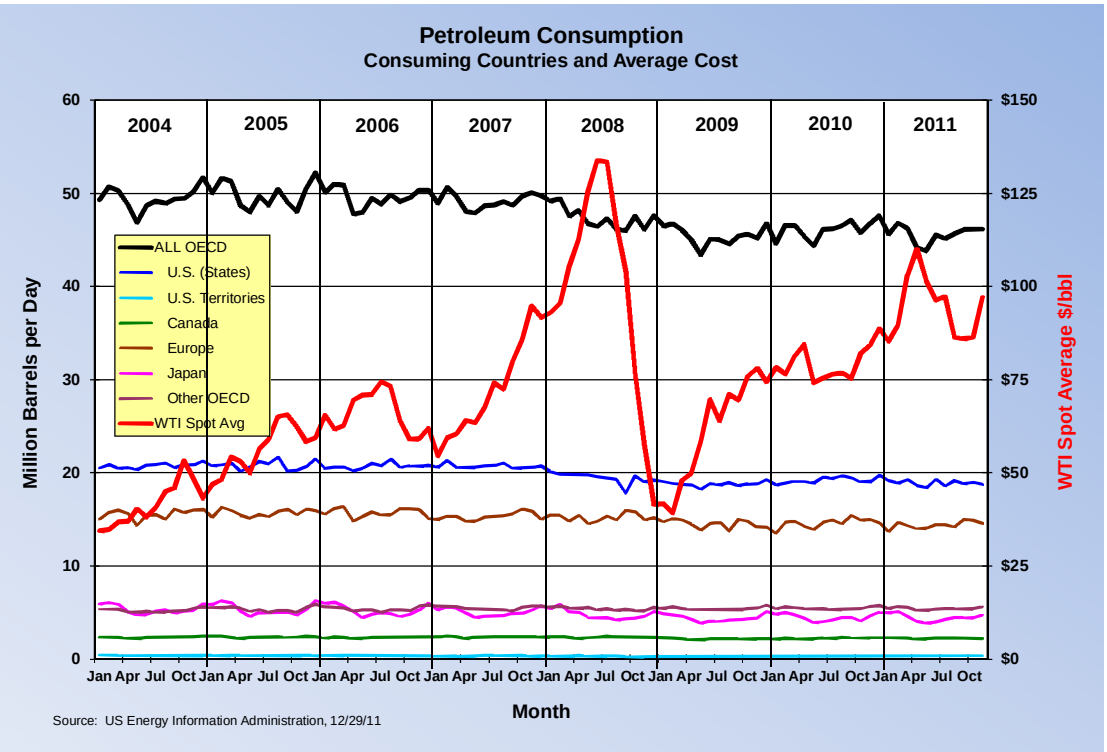
With high oil prices and disruption of Libyan supplies, Saudi Arabia increased production. While waiting for this increase to be felt, consuming countries released some crude from their strategic petroleum reserves. Together, these actions and the end of hostilities in Libya put a little downward pressure on oil prices.

Here at home, last winter proved a bit colder than usual over the eastern half of the country. This drew natural gas storage levels down from the record levels of the fall to average levels by mid-winter. While the storage levels remained healthy, the weather also disrupted gas distribution, especially in New York and Texas, causing spikes in spot prices.

Looking back ton October of 2008, the sudden and dramatic international economic crisis 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, until 2008, 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. During 2009, petroleum consumption for the OECD countries was about 5% lower than for 2008 and 8% lower than years prior to the recession. Consumption has remained at about the same level since then, but had started to show signs of a slight increase until the political upheavals in the Middle East.



Weather and storage levels have also had major impacts on the energy industry in recent years. It has been over three years 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.

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). 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 and crude oil prices are likely to remain relatively high until the uncertainty in the Middle East is reduced.

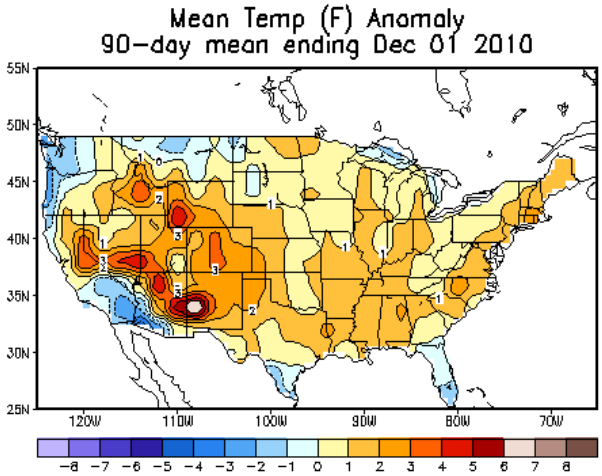
Price Trends

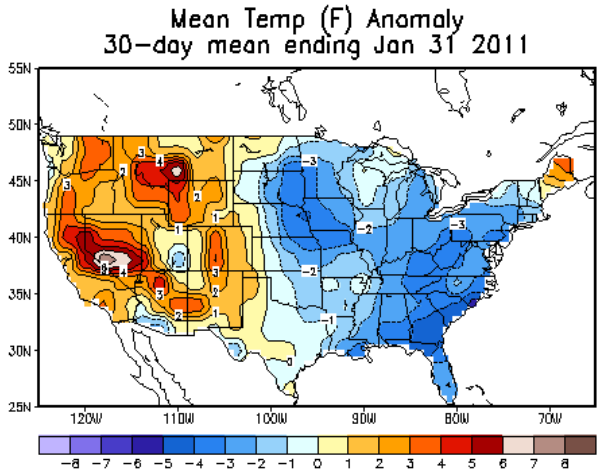
As mentioned above, crude oil prices now appear to be driven by the political upheaval in the Middle East that is offsetting the weak demand stemming from the continuing economic crisis. Other geopolitical tensions, surplus capacity, a weak dollar, falling euro, and the ending of index speculation are now secondary factors with their impact limited to minor variations within a relatively narrow range.

The weather over the past few years has also caused a number of major price surges and dips, but they have all been relatively brief. A mild winter over much of the U.S. in 2008/09 allowed natural gas storage levels to rebuild to very high levels and tempered the normal early winter surge in prices.

The exception to this, both this past winter and prior winters, were blasts of severe winter weather that hit the Northeast. Last winter also brought unusual snow storms to Texas. 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 and the Southwest.

In 2010, a relatively mild spring and early summer allowed natural gas storage levels to rebuild to near record levels. Then, a very hot July and August over the eastern half of the country caused a surge in air conditioning use and natural gas consumption for peaking generators. This drew storage levels down significantly, but without a corresponding increase in prices.

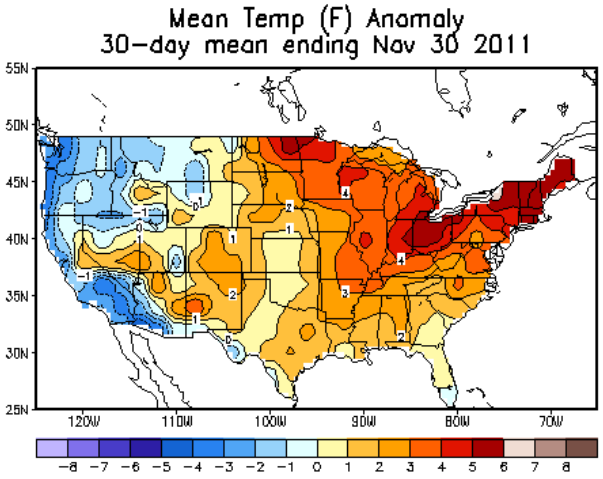




Fall temperatures were mild over most of the country. October, in particular, was warmer than normal in areas that might normally have begun their heating season. As a result, natural gas in storage built to five-year highs as we entered the withdrawal season. This year has seen similar summer and fall weather.

However, in January of last year, severe weather struck the eastern half of the country disrupting supply and drawing natural gas in storage down to average, but adequate levels. This put some upward pressure on natural gas prices.

The cold winter was followed by an unusually hot summer over most of the country. This again caused a surge in air conditioning use with a corresponding demand for natural gas to fuel peaking power plants. However, with strong production, natural gas in storage remained near average levels and increased with a warmer than normal fall as we begin the injection season.



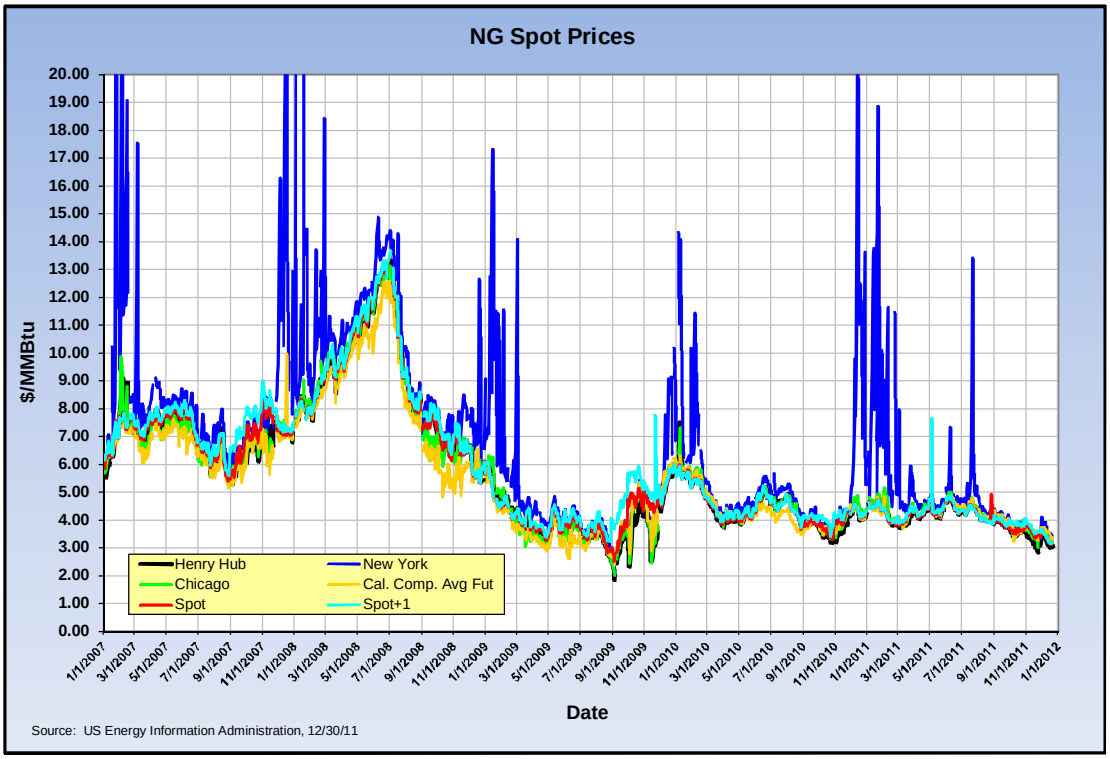
When crude oil prices reached record highs during the summer of 2008, demand (which had already started to decline) collapsed. A rapid drop in crude prices followed and led OPEC to announce their quota reductions. However, the OPEC reductions were less than the decline in demand just in the U.S. and quotas remained higher than the production capacity for some members. As a result, the OPEC reductions had no affect and prices continued to decline until October of 2008, when low prices, and rebuilding stocks following the hurricanes, led to a bit of an increase in consumption.

Crude prices seemed to have stabilized at a level above that necessary to encourage alternative energy production. Now, the tensions in the Middle East and a recovering economy are putting more upward pressure on crude prices.

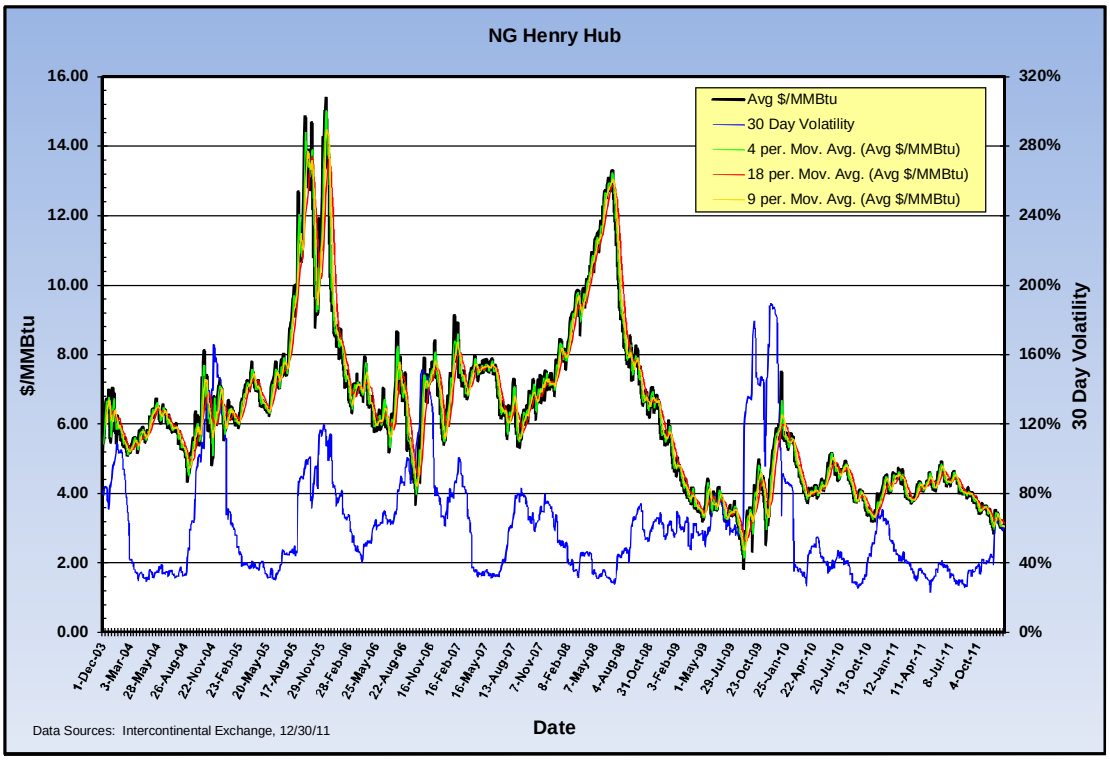
Historically, crude oil prices recover much more slowly than they collapse. However, the tensions in Libya and the Middle East drove crude prices up more quickly than expected. Time will tell whether the long term trend will follow the historical pattern. When crude prices peaked in 2008, they aroused strong sentiment to develop alternatives. If that sentiment can survive, 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, low gas prices should allow electricity prices to stabilize at near their current levels.

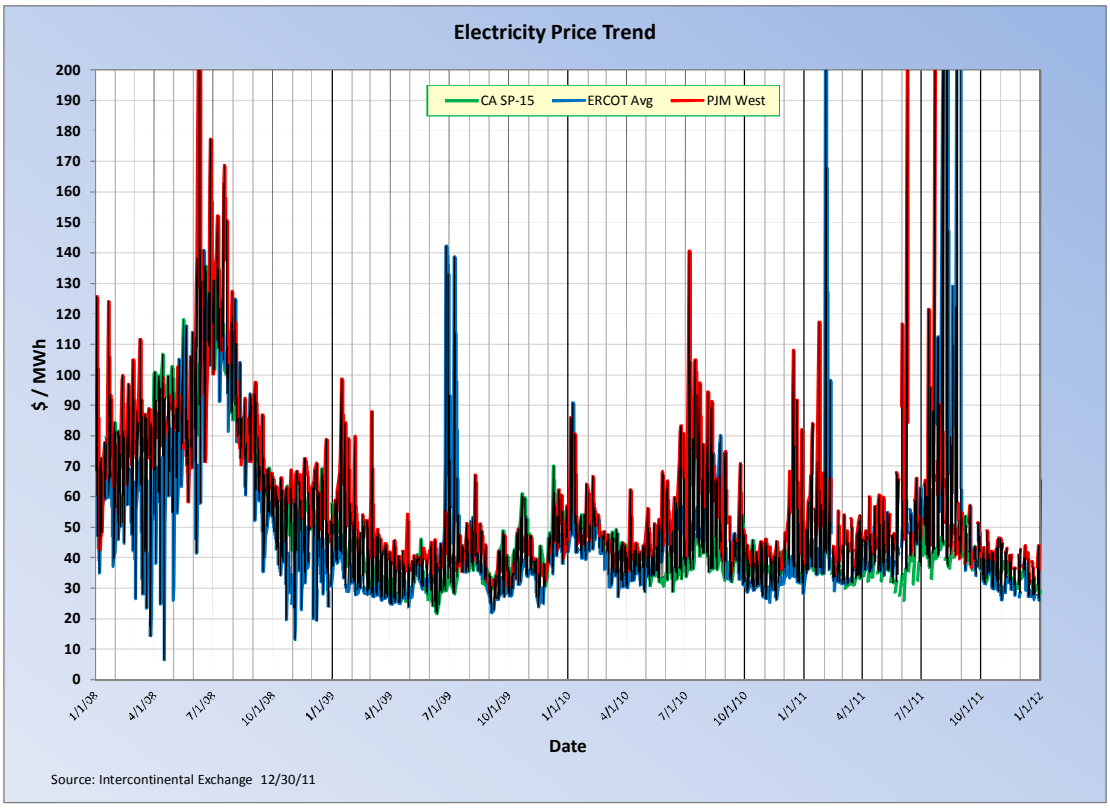
The charts that follow illustrate the movement of the energy markets. The first chart clearly illustrates the dramatic spikes in New York natural gas prices when severe winter weather strikes the Northeast. The charts also illustrate the relatively low level of current natural gas and electricity prices.



The weather induced price variations also bring higher volatility to natural gas prices. Volatility spikes due to pipeline and storage restrictions that hamper the ability to deliver gas. This caused prices to fall briefly to 2002 levels and then rebound. However, high storage levels have tempered volatility and the impact of the weather on prices.



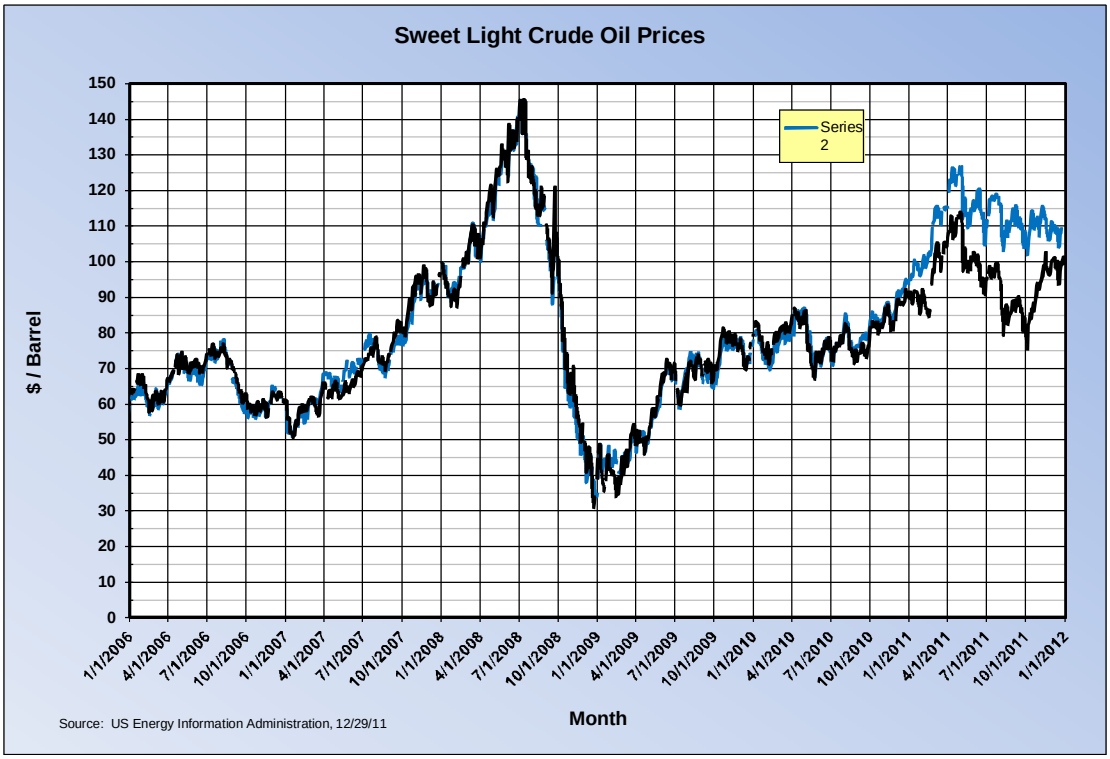
Since natural gas is the primary fuel used to meet variable electricity demand (base demand is typically met with coal, hydro, and nuclear), its cost is reflected in the price of electricity.



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. 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 earlier.

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, 2008 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 and, despite recent declines, are still at levels that are higher than they were prior to the run up. Crude and natural gas prices are now decoupled and crude has recently been trading at over 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

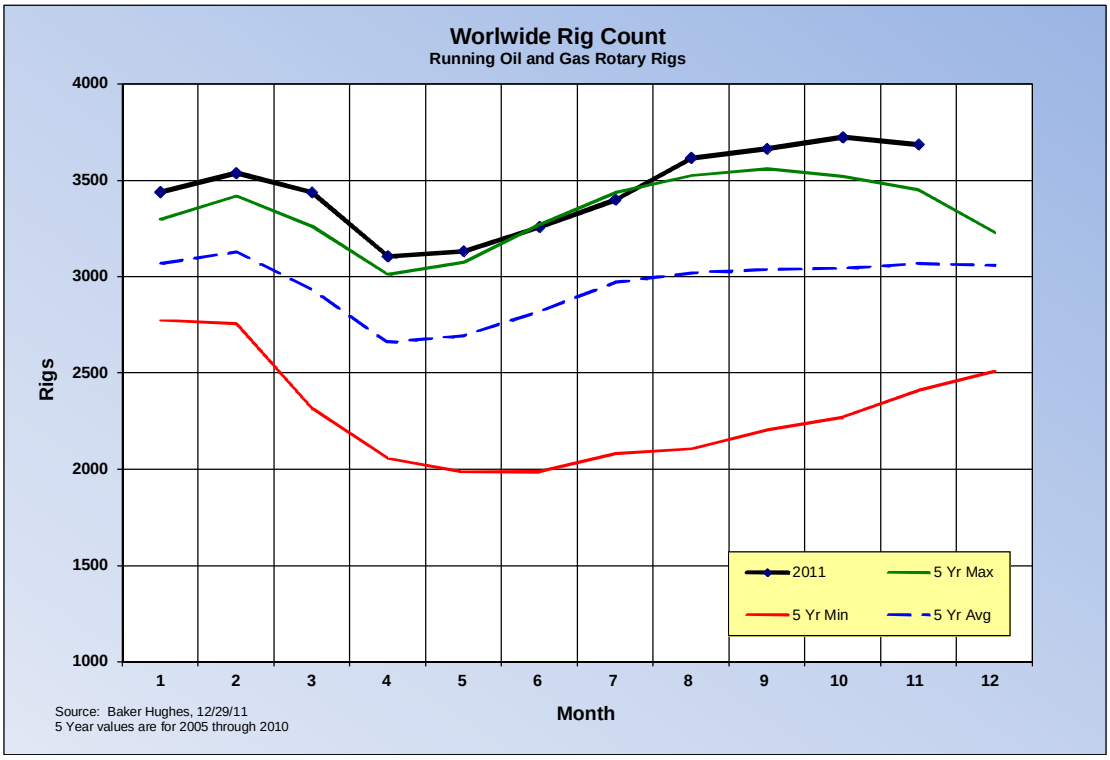
Historically, natural gas and crude oil prices have influenced each other and also tended to drive the price of electricity. For this reason, their production and inventories are important, not only in their own right, but also to understand and anticipate electricity price changes.

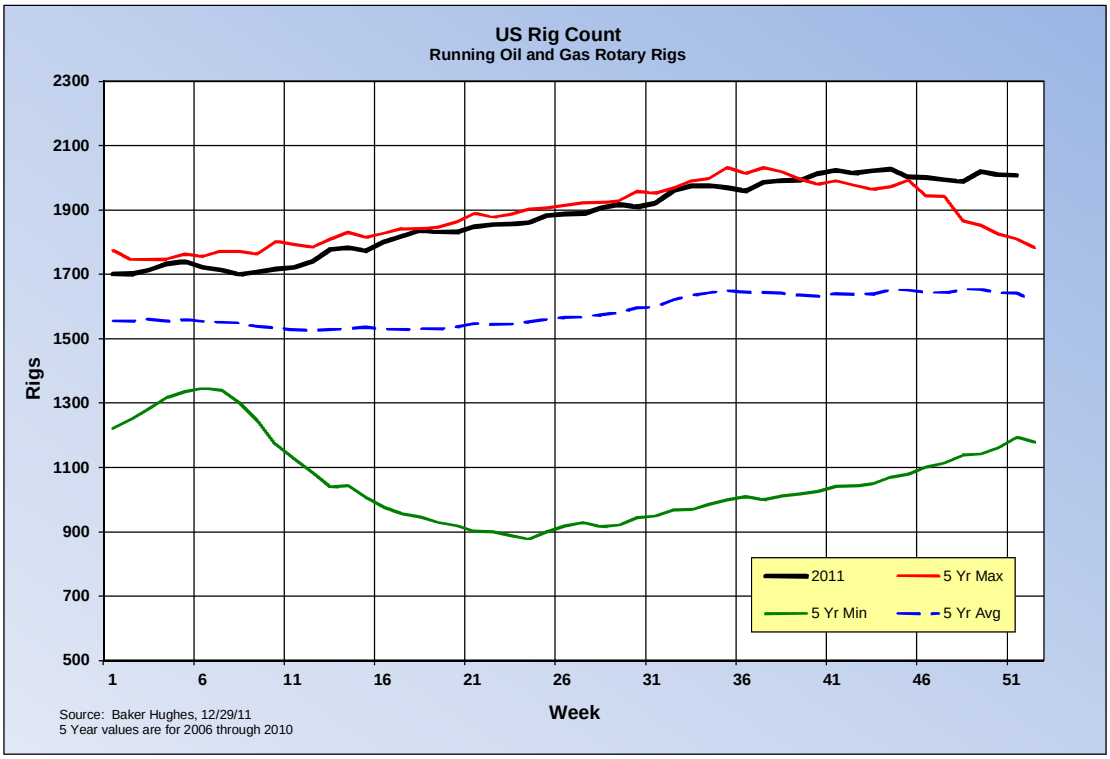
At the turn of the 21st century both natural gas in storage and crude oil stocks were at very low levels. This contributed to escalating prices. Higher prices encouraged production increases that brought inventories well above average levels. In September of 2004, Gulf of Mexico production shut-ins resulting 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 the number of oil and gas rigs in the U.S. and worldwide have recovered from the huge impact that low prices had on them in 2009. With the low prices, exploration and the number of running oil and gas rigs dropped below five-year minimums.

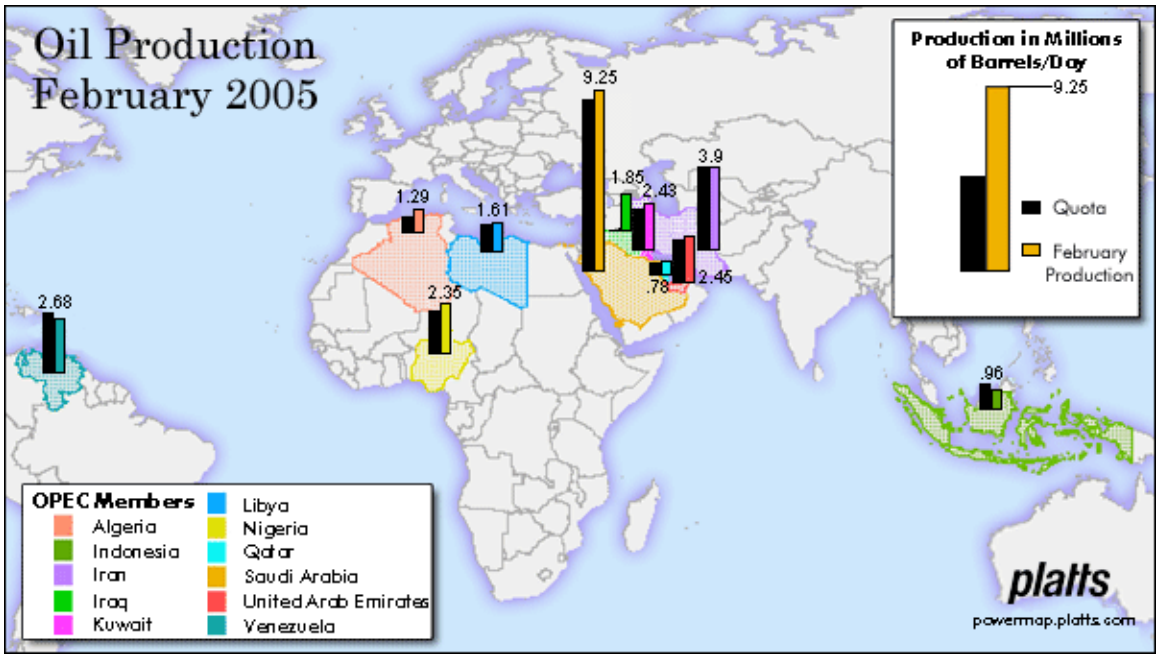
Now, with oil prices back at high levels, the number of oil rigs has climbed above the maximum number over the previous five years. In addition, many of the new wells are horizontal with much higher initial production than traditional vertical and directional wells.





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

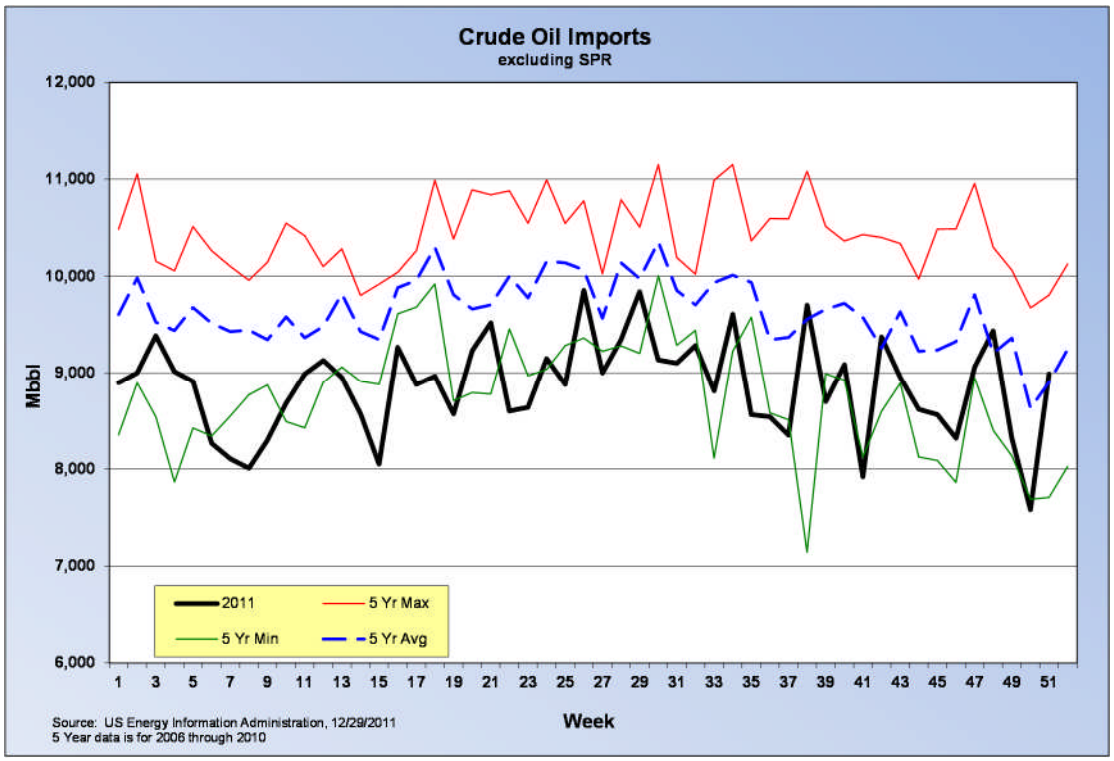
(Thousands of Barrels per Day)

	Quota			OPEC Production			Over/Under Quota		Nov 2011	
Country	(12/1/07)	(11/1/08)	(1/1/09)	Sep-11	Oct-11	Nov-11	Tb/d	%	Capacity	Surplus
Algeria	1,357	1,286	**1,200**	1,270	1,270	1,270	70	5.4	1,270	0
Angola	1,900	1,801	**1,506**	1,750	1,800	1,850	344	19.1	1,850	0
Equador	520	493	**429**	500	480	480	51	10.3	480	0
Iran	3,817	3,618	**3,334**	3,650	3,650	3,600	266	7.4	3,600	0
Kuwait	2,531	2,399	**2,221**	2,550	2,550	2,550	329	13.7	2,550	0
Libya	1,712	1,623	**1,472**	100	350	550	-922	-56.8	550	0
Nigeria	2,163	2,050	**1,704**	2,200	2,000	2,200	496	24.2	2,200	0
Qatar	828	785	**730**	850	850	850	120	15.3	850	0
Saudi Arabia	8,943	8,477	**8,014**	9,400	9,400	9,400	1,386	16.4	12,250	2,850
UAE	2,567	2,433	**2,226**	2,600	2,600	2,600	374	15.4	2,660	60
Venezuela	2,470	2,341	**2,010**	2,200	2,200	2,200	190	8.1	2,200	0
OPEC 11	28,808	27,306	**24,846**	**27,070**	**27,150**	**27,550**	**2,704**	**9.9**	**30,460**	**2,910**
Iraq	N/A	N/A	**N/A**	2,700	2,600	2,600	N/A	N/A	2,600	0
Total Oil	28,808	27,306	**24,846**	**29,770**	**29,750**	**30,150**	**2,704**	**9.9**	**33,060**	**2,910**

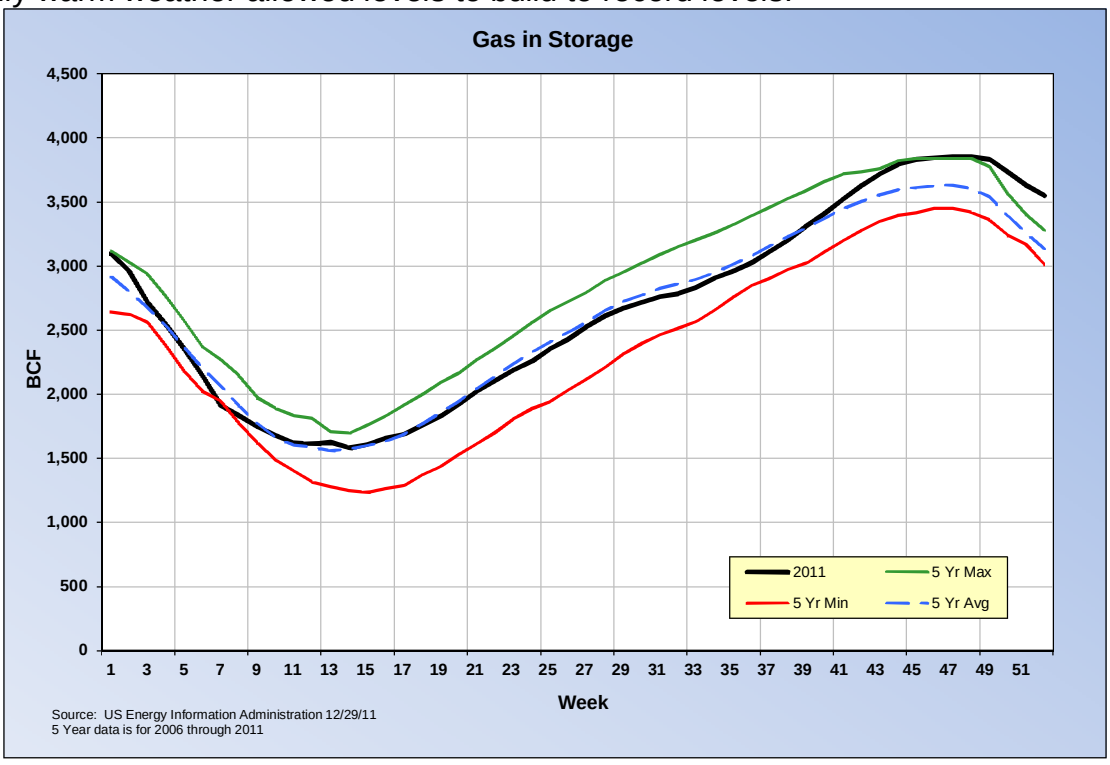
Sources: DOE / EIA Short-Term Energy Outlook

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 as prices have climbed, and demand has remained low, in recent months.

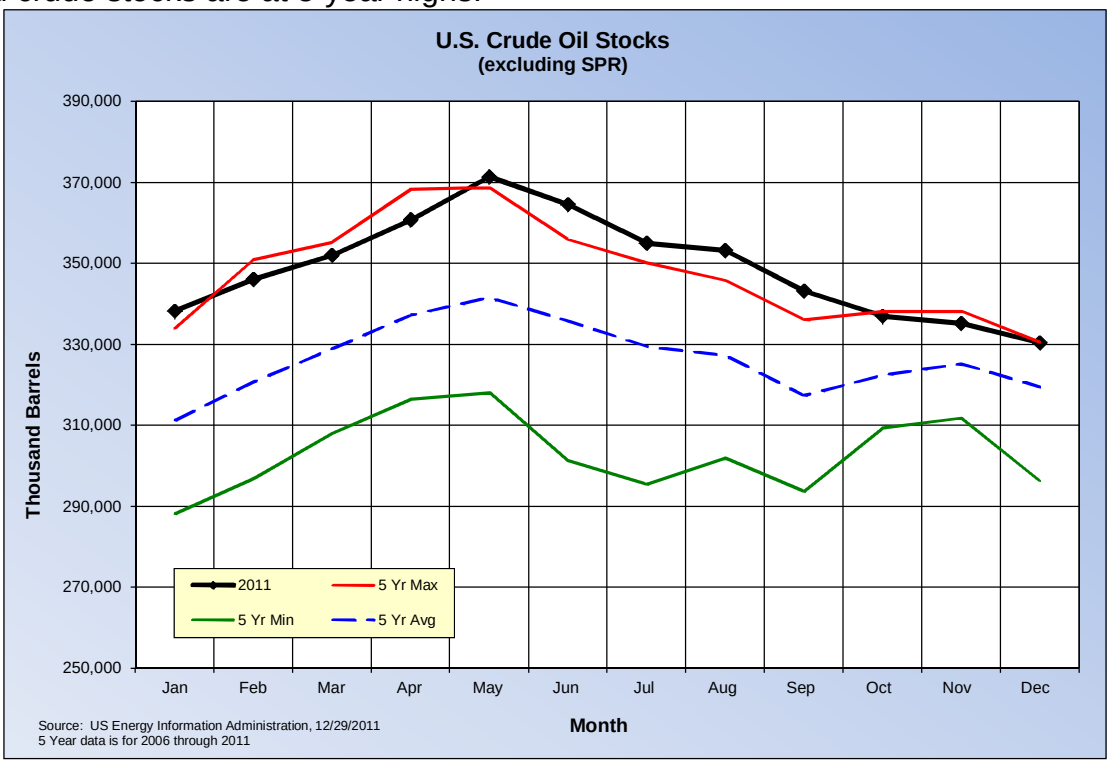
Crude oil import levels are illustrated in the following chart.



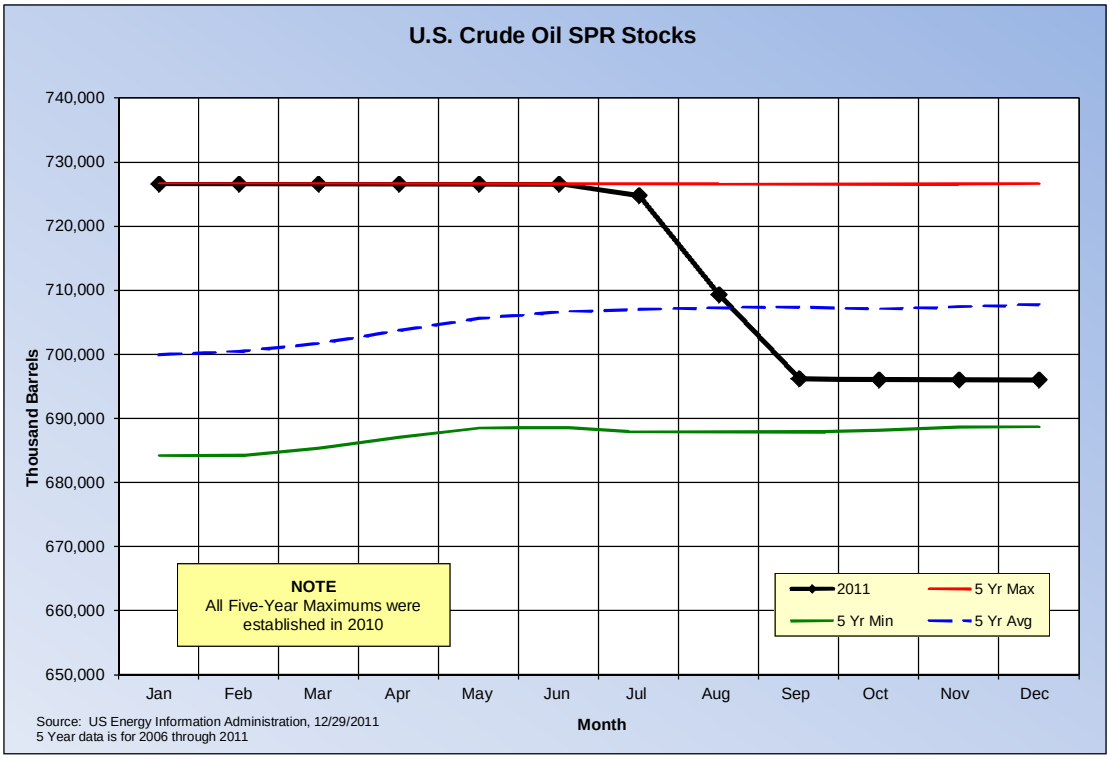
The next chart shows how cold winter weather drew natural gas in storage down from record high levels to average levels. Despite strong production, unusually hot summer weather over much of the country kept storage from building above average levels until this past fall when unusually warm weather allowed levels to build to record levels.



Record high crude oil prices and the hurricanes in 2008 slowed additions to crude oil stocks and they fell below average levels. Now, following a period of moderate prices and low demand crude stocks are at 5-year highs.



Despite the 30 million barrel release in July and the ones following the hurricanes of 2005, the U.S. strategic petroleum reserve is still above its 5-year minimum level.



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 political turmoil in Libya and the Middle East, and an improving economy, prices have climbed. The current prices could be pushed higher by a number of factors including:

- new supply disruptions,
- further weakening of the dollar,
- a strengthening global economy,
- increasing Third-World demand,
- declining production by Russia or other major producers.

The current uncertainty surrounding the political climate in Libya and the Middle East has driven oil prices higher than previously expected. If the turmoil expands, prices could continue to climb. On the other hand, with increased Saudi production and the release from the strategic petroleum reserve, if relative stability returns to the Middle East, and barring major supply disruptions in other regions, energy prices should continue to decline from current levels. If the latter is the case, because of the high storage levels and excess capacity, we should see no more than modest price increases this coming winter.

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