

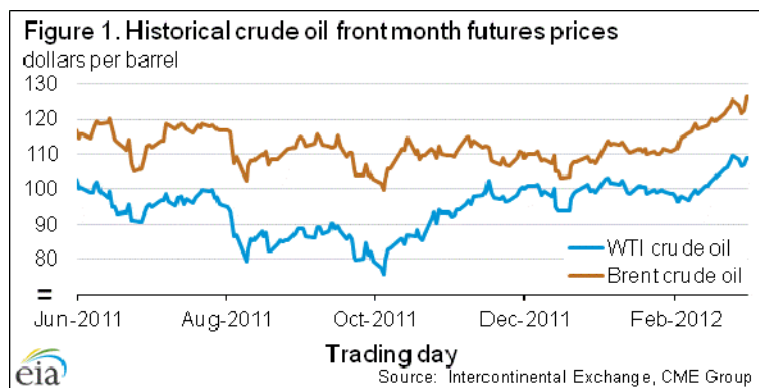


Short-Term Energy Outlook Market Prices and Uncertainty Report¹

March 6, 2012 Release

Crude Oil

Prices: During the month of February, crude oil prices moved higher and out of the trading range they had been in since November. Brent settled at \$126.20 per barrel and West Texas Intermediate (WTI) settled at \$108.84 on March 1, increases of \$15 and \$11 dollars per barrel from February 1, respectively (**Figure 1**). The March 1 price for Brent was the highest price that the front month contract has settled at since April 8, 2011.



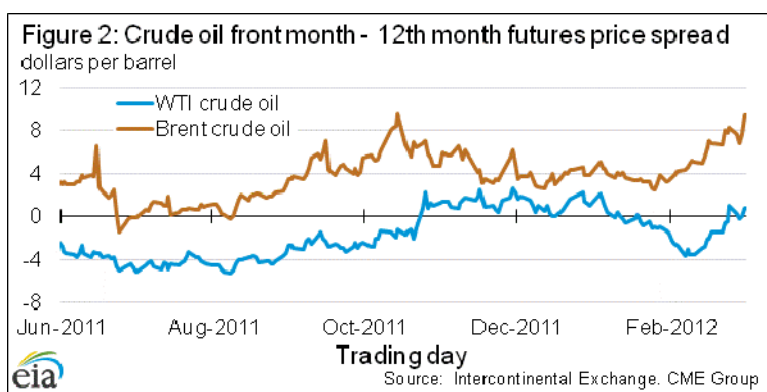
The increase in oil prices over the last month is a reflection of the current tight balance between global supply and demand. EIA estimates that spare production capacity averaged 2.6 million barrels per day in January and February, less than 3 percent of global consumption and a decrease of 1.1 million barrels per day from one year ago. Most of the oil production from Yemen, Syria and South Sudan continues to be shut-in and has contributed to the reduction in global spare production capacity. On the demand side, recent developments have been bullish for future economic growth and liquid fuel demand: Eurozone countries continued progress in addressing sovereign debt issues of member countries and global stock markets rose, as indicated by a 4 percent rise in the Morgan Stanley Capital International (MSCI) world equity index since February 1. A more in-depth analysis of current crude oil supply and demand dynamics can be found in EIA's recently released report concerning the [Availability and Price of Petroleum and Petroleum Products in Countries Other than Iran](#).

¹ This is a regular monthly companion to the EIA *Short-Term Energy Outlook*.

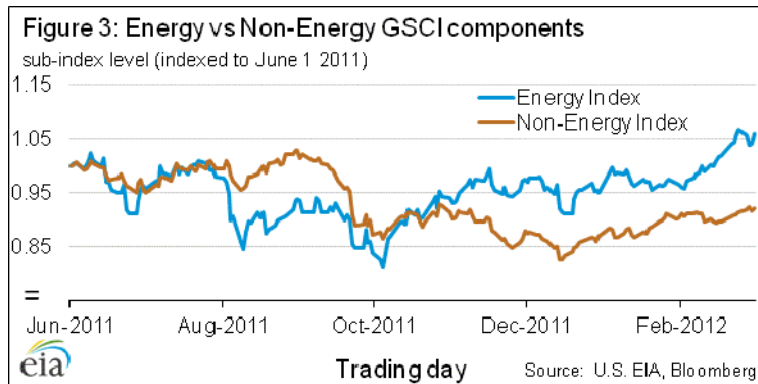
(<http://www.eia.doe.gov/emeu/steo/pub/contents.html>)

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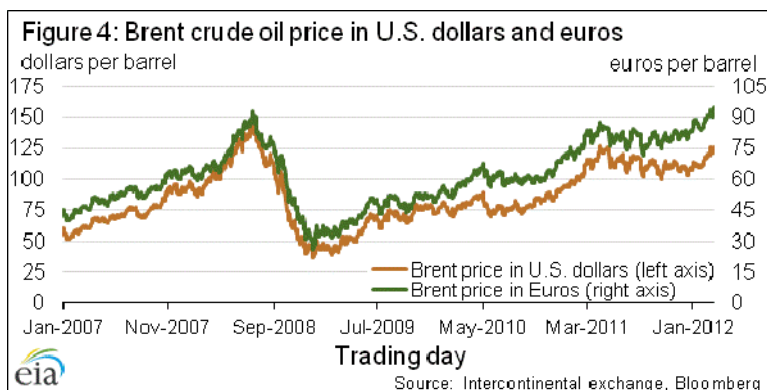
The Brent oil futures market is currently in backwardation - that is, the prices of futures contracts closer to expiration exceed the prices of contracts with longer times to expiration. Backwardation provides incentive for oil to be sold out of inventories since it appears to be more valuable now than in the future. This is a sign of current market tightness. The average for the last five trading days ending on March 1 of the spread between the front month and 12th month futures contracts for Brent has increased to \$8 per barrel, a rise of \$4.50 compared to average of the last five trading days ending February 1 (**Figure 2**). This is likely due to a combination of a tighter world waterborne crude oil market as well as some production issues surrounding oil produced in the North Sea. The WTI market, which remains somewhat isolated from the world crude oil market, is also currently in slight backwardation for the first time since late December as measured by the front month – 12th month spread, but is still in contango (higher prices in the future than at present) when using the front month – 3rd month spread.



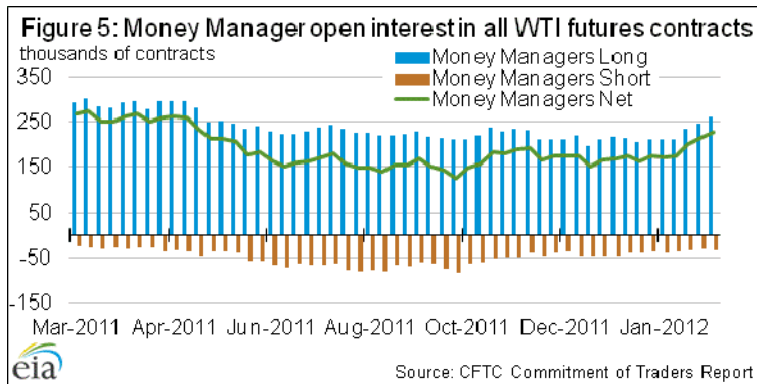
Crude oil and other commodities: The S&P Goldman Sachs Commodity Index (GSCI) is composed of prices for 24 different commodities, weighted by spot market size and futures market volume. The GSCI can be broken out into sub-indices, such as the energy component, which includes WTI and Brent crude oil, gasoline, heating oil and natural gas, and a non-energy component, which tracks precious and industrial metals, agricultural commodities and livestock. Since the beginning of this year, both components have moved higher along with global equity markets, but energy has risen faster, rising 7.5 percent since January 3, compared to the non-energy component rising only 4 percent. The greater move higher in energy prices compared to other commodities could be evidence of current tightness in the crude oil market as well as concerns relating to potential future supply disruptions being priced into petroleum and petroleum products (**Figure 3**).



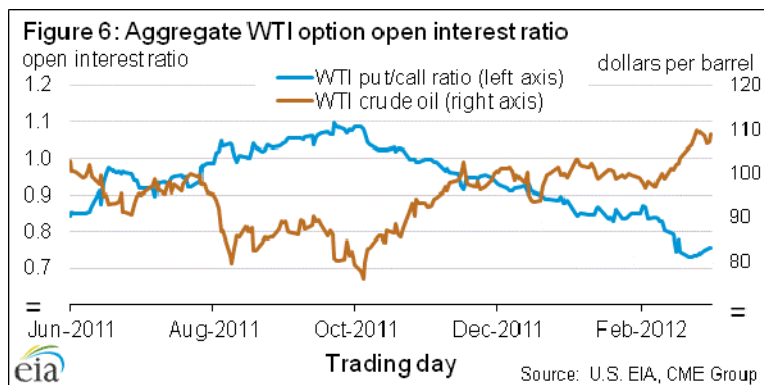
Crude oil and Currency: Over the last year, fears surrounding the European debt situation have weakened the euro against many other currencies, including the U.S. dollar. This dollar strength has had the effect of increasing oil prices in terms of euros, even though the price has remained relatively stable when priced in dollars. As of market close on March 1, the price of Brent in dollars is \$20 per barrel below its all-time nominal high set on July 3, 2008 of \$146 per barrel; however, the price of Brent in euros actually surpassed its historical, nominal high, reaching 94.80 euros per barrel on March 1 (**Figure 4**). A broader discussion of the relationship between crude oil and currency markets can be found on the [energy and financial markets website](#), “[What Drives Crude Oil Prices?](#)”.



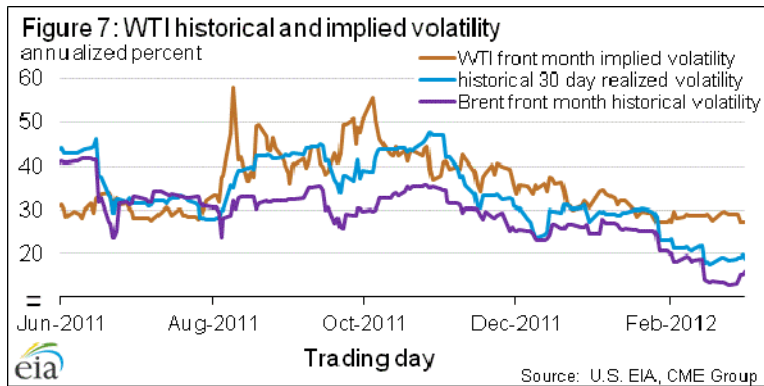
Open interest: Money managers’ net long positions, as reported by the Commodity Futures Trading Commission (CFTC), for WTI futures contracts remained relatively stable between 150 and 192 thousand contracts between mid-October 2011 and early February 2012 (**Figure 5**). Over the last few weeks, however, the net positions of money managers’ have broken out of their previous range and reached 228 thousand contracts on February 28. This is still about 15 percent below the levels observed in the spring of 2011.



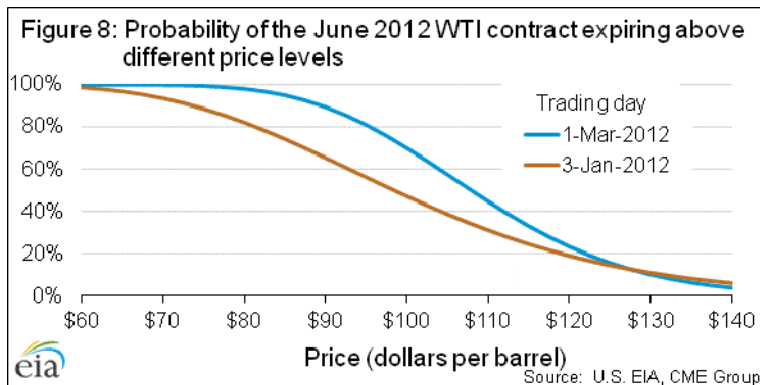
The put-call ratio is a measure of market sentiment, which is calculated by dividing the total number of put option contracts by the number of call option contracts. If market participants are concerned about prices rising in the future, they would tend to purchase more call options, which would reduce the put-call ratio. Similarly, if market participants are more worried about protecting against downside movements, they will tend to purchase more put options. During the recent rise in oil prices, the number of puts held by market participants has dropped as fears of a downside price movement related to a debt crisis in Europe have abated (but not disappeared). At the same time, the number of call options has risen as concerns of potential supply disruptions have increased (**Figures 6**). The put-call ratio is currently below 0.8, a level not seen since 2008.



Volatility: Historical realized volatility continued to move lower for both Brent and WTI in February as the recent rise in prices has largely consisted of small incremental increases over many days, as opposed to large price swings on a single day. Implied volatility, however, has remained unchanged from February 1 (**Figure 7**). These two measures tend to move together, but can diverge from time to time. Implied volatility is a forward looking market measure based on current options prices while historical volatility is calculated from returns that have occurred in the past.



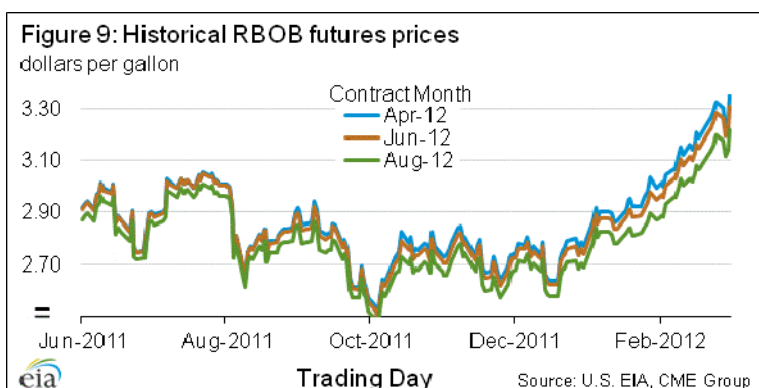
Market Derived Probabilities: The average price of WTI crude oil for June delivery for the five days ending March 1 has increased by \$6 per barrel since January 3 and implied volatility for that futures contract has moved lower by 5 percentage points over the same time period. Even though there is a shorter time to expiration, the increase in price resulted in an increased probability for higher prices compared to January 3. The probability of the June 2012 futures contract expiring above \$125 per barrel is now 23 percent, a 4 percentage point increase from the five day period ending January 3 (**Figure 8**). It should be noted that these probabilities do not reflect the future price distribution of world waterborne crude oil. These probabilities are based on the cumulative normal densities derived from market expectations using futures and options prices. (See Appendices I and II of EIA’s October 2009 [Energy Price Volatility and Forecast Uncertainty](#) article for discussion on how these probabilities are derived.)



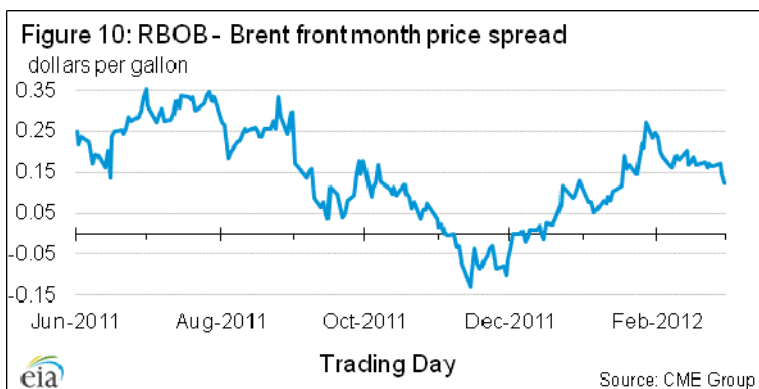
Gasoline

Prices: New York Harbor Reformulated Blendstock for Oxygenate Blending (RBOB) prices increased consistently over the month of February (**Figure 9**). The average prompt month price from February 1 through March 1 was \$3.03, up from an average of \$2.80 in January and an average of \$2.60 in December. The \$0.43 increase in monthly RBOB prices between December and February came from a combination of monthly crude oil price increases and a higher average monthly crack spread (the gasoline prompt month price minus the crude benchmark prompt month price). Between December and February, the monthly price of Brent crude oil rose by \$0.28 and the crack spread rose by \$0.15, which suggests a combination of factors has contributed to the increase in gasoline prices ([Potential Impacts of Reductions in Refinery Activity](#)

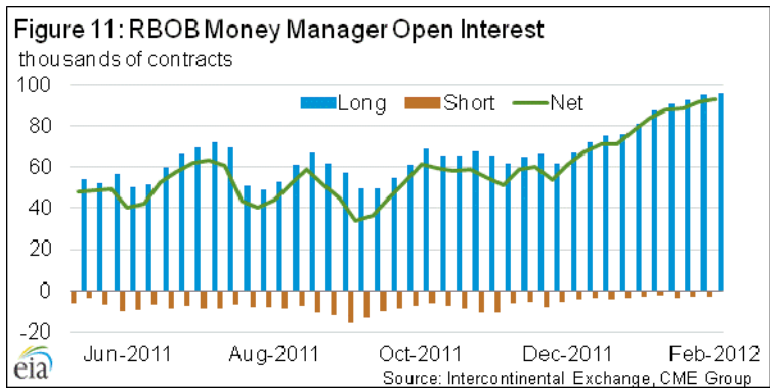
[on Northeast Petroleum Products Market](#)). The futures curve currently shows an unusually steep decline from April through the summer. RBOB futures prices follow the usual increase in the April contract due to seasonal differences in fuel formulations and in preparation for higher expected summer gasoline demand. However, the current futures curve shows prices declining steadily after April through the end of the summer.



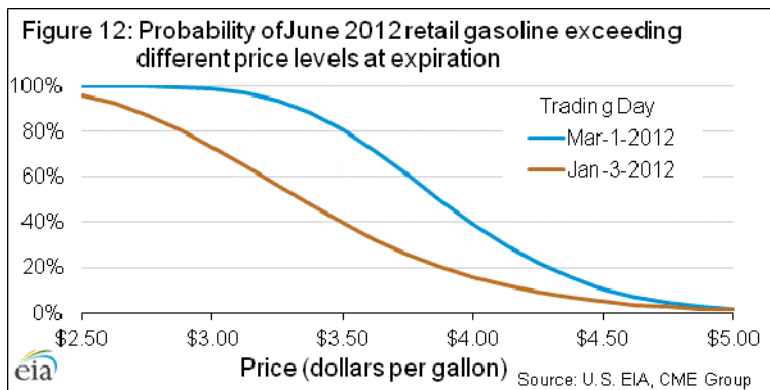
Brent crude prices increased from January to February, averaging \$119.35 from February 1 through February 29, up almost \$8 from January's average price of \$111.47. The gasoline crack spread stabilized over the month of February as both Brent and RBOB prices increased by approximately 7 percent (**Figure 10**). The average crack spread for February was \$0.18 per gallon, up from \$0.14 in January and \$0.03 in December.



Money Manager Positions: Money managers increased their net positions of RBOB futures to more than 93,000 contracts in the last week of February. Both net positions and long positions have exceeded their all-time record highs for each of the last five weeks (**Figure 11**). Short positions are also at record lows, representing only 3 percent of total money manager positions, in contrast with an average of 12 percent over the last six months. The almost negligible short positions held by money managers indicate they are much less concerned about negative price swings and downside risk as compared to upside risk and price increases.

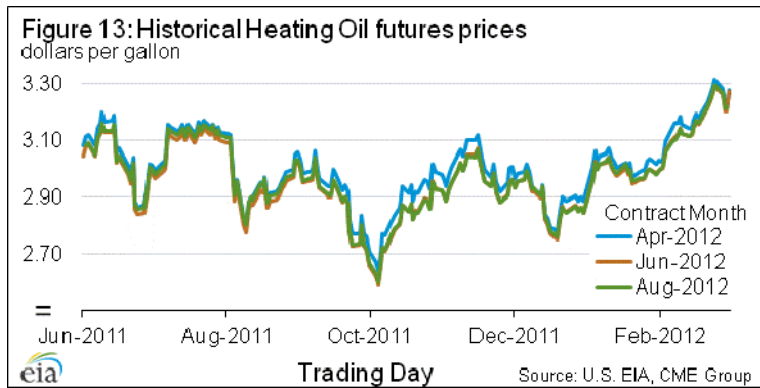


Market Derived Probabilities: The June 2012 RBOB futures contract averaged \$3.26 for the five trading days ending March 1 and has a probability of exceeding \$3.35 per gallon (\$4.00 retail) at expiration of approximately 39 percent, and a probability of exceeding \$4.35 per gallon (\$5.00 retail) of approximately 2 percent. The same contract as of the five trading days ending January 3 had a probability of exceeding \$4.00 retail of 16 percent, and a probability of exceeding \$5.00 retail of 1 percent. These probability increases reflect a combination of increased crack spreads, higher crude oil prices, relatively unchanged implied volatility and less time to expiration (Figure 12).

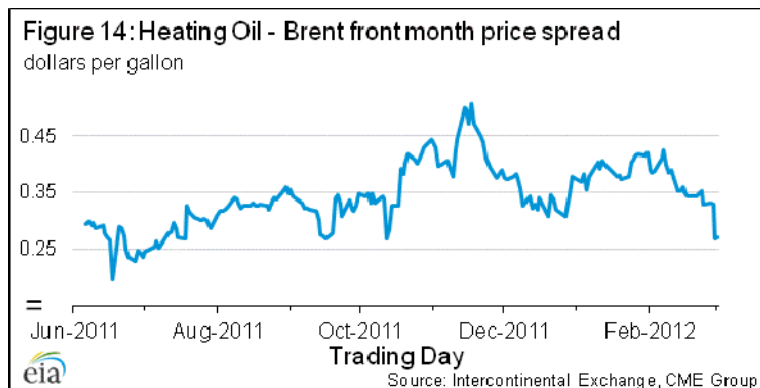


Heating Oil

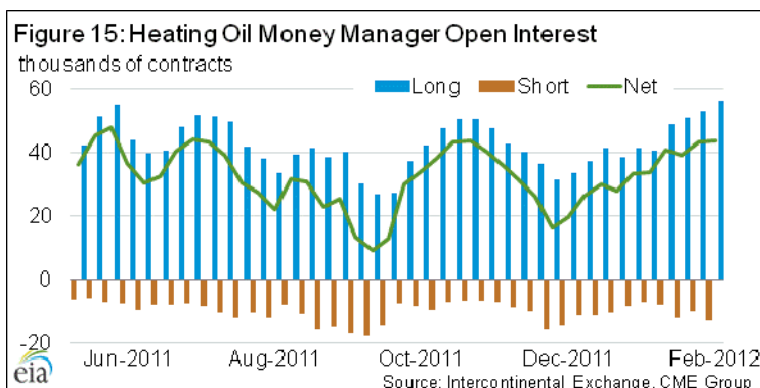
Prices: As was the case with crude oil and gasoline, heating oil prices increased for most of February. The average prompt month price for February 1 through March 2 was \$3.20, up from \$3.05 in January and \$2.91 in December (Figure 13). The differential for prices for contracts with different maturities has disappeared toward the end of heating oil season in anticipation of reduced summer demand. On March 1, the prices for heating oil delivery in April, June and August were \$3.28, \$3.27 and \$3.27, respectively, indicating a flat futures curve.



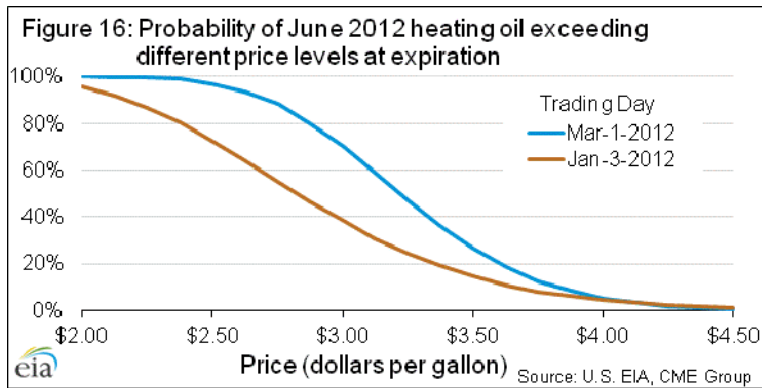
According to the EIA [Weekly Product Supplied](#) report, the 4-week average of heating oil and diesel fuel implied consumption in U.S. markets was down 19 percent in February from peak demand in the October and down 2 percent from January. This, combined with a warming trend in Europe, led to a decreasing crack spread (prompt heating oil minus prompt Brent) over the month of February (**Figure 14**). The average crack spread for February was \$0.36 cents per gallon, down from \$0.39 in January.



Money Manager Positions: Money managers held a net position of 43,000 heating oil futures contracts on February 28 (**Figure 15**) with both long and short positions increasing by approximately the same number of contracts over the last week. Their net positions, as of February 28, are 27,000 contracts above their 2011 low point, which occurred in December.

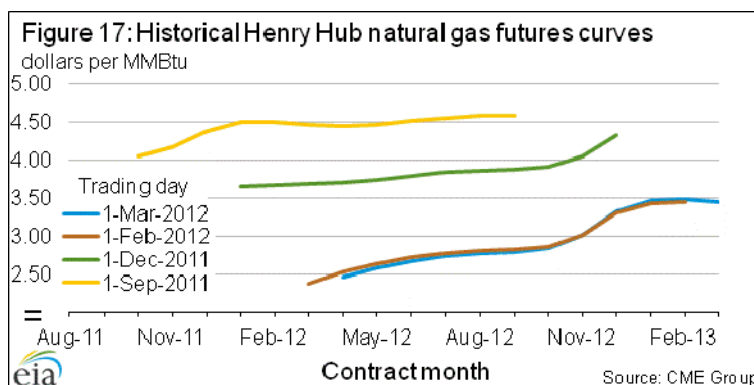


Market Derived Probabilities: The June 2012 heating oil futures contract averaged \$3.25 for the five trading days ending March 1 and has a probability of exceeding \$3.50 per gallon at expiration of approximately 26 percent. The same contract as of the five trading days ending January 3 had a probability of exceeding \$3.50 per gallon of 14 percent; this increase reflects higher prices and less time to expiration for the futures contract (**Figure 16**).



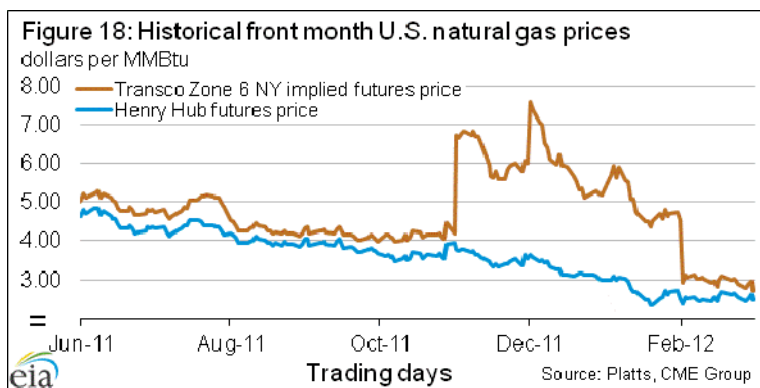
Natural Gas

Prices: The general bearish sentiment for natural gas prices continued over the last month as the price for April delivery of natural gas settled at \$2.46 per MMBtu on March 1, a small decrease of \$0.07 from February 1 (**Figure 17**). This marks the 10th consecutive month where the price at the beginning of the month is less than the price at the beginning of the previous one. The price declines over the last few months are not limited to contracts with shorter times to expiration but also include lower prices for the delivery of natural gas in 2013, suggesting that natural gas supplies will be ample in the future. However, the change from February 1 to March 1 is very small, unlike the large declines across the whole curve in previous months.

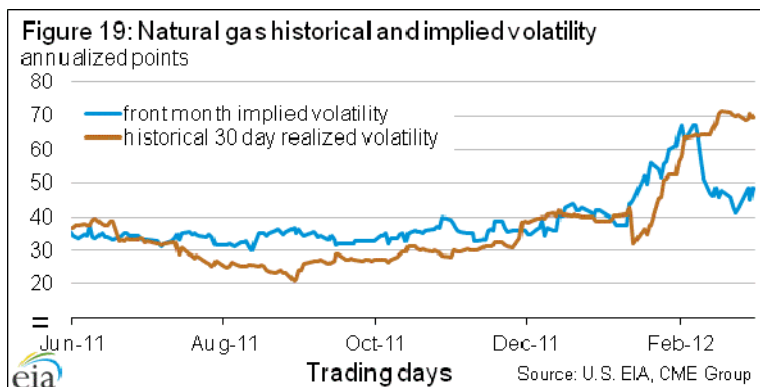


April marks the end of the winter heating season and as such, there is a much smaller gap between the Henry Hub and the Transco NY Zone 6 price than there was for the March contract a month ago (**Figure 18**). For winter delivery months of December through February, the difference between the two prices over the last year was \$2 to \$4 per MMBtu, while the spread for delivery of gas in other months of year traded in a range of \$0.27 to \$0.88 per MMBtu. As

less natural gas is needed to heat homes in the northeast, capacity restrictions are eased on pipelines flowing into New England and mid-Atlantic and this results in lower price differentials.



Volatility: Historical volatility for the front month natural gas contract remained elevated in the month of February, measuring 69 percent for the 30 day period ending March 1. The high level of volatility is partially due to low price levels since volatility is quoted as a percentage of price. Implied volatility for the front month natural gas contract was 49 percent as of market close on March 1, a drop of 19 percentage points since February 1 (**Figure 19**).



Market Derived Probabilities: The average price over the five trading days ending on March 1 for the June 2012 natural gas futures contract has fallen by \$0.34 per MMBtu since January 3. Even though there was an increase of 4 percentage points in implied volatility for that contract, the price decrease and shorter time to expiration had a larger effect and lowered the probability of expiring above different price levels. The probability that the June contract will settle higher than \$3.50 per MMBtu fell by 18 percentage points from 30 to 12 percent when compared to market conditions on the five trading days ending January 3 (**Figure 20**). These natural gas probabilities are cumulative normal densities generated using market-based inputs provided by futures and options markets, i.e., futures prices and implied volatilities. (See Appendices I and II of EIA’s October 2009 [Energy Price Volatility and Forecast Uncertainty](#) article for additional discussion).

