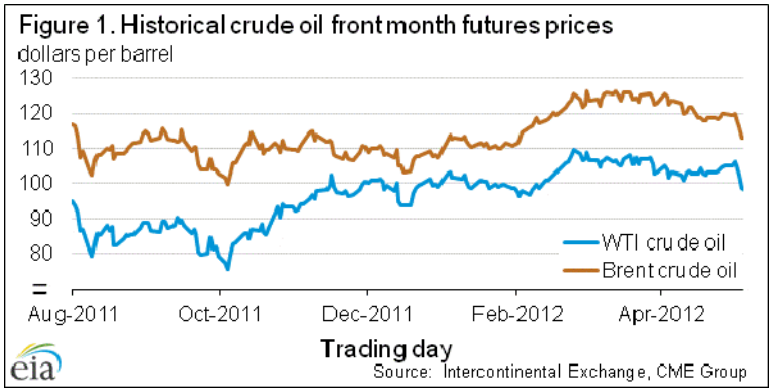
Short-Term Energy Outlook
Market Prices and Uncertainty Report[1]

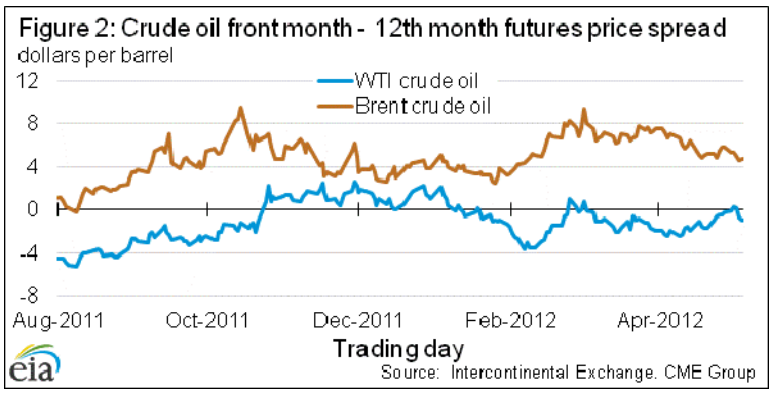
Crude Oil

Prices: Front month futures prices for Brent and WTI settled at $113.18 and $98.49 per barrel, respectively, on May 4 (**Figure 1**). Brent is now $13 per barrel lower compared to its 2012 high reached on March 13 and WTI is $9 per barrel off its 2012 high on February 24.

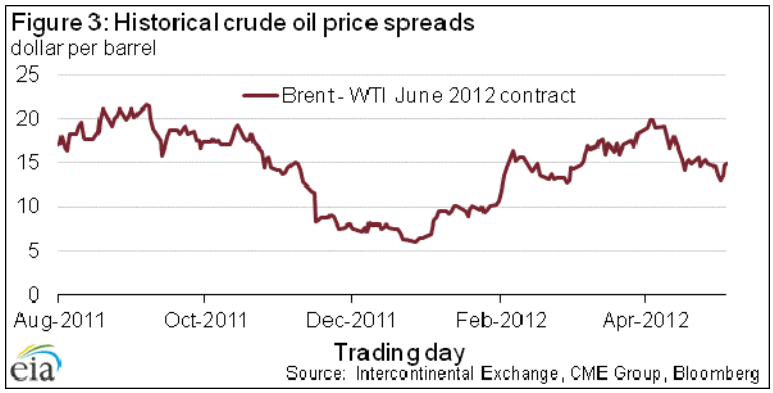


Brent time spreads continued their decline in April from a peak on March 1, supporting estimates that crude oil inventories are building and suggesting that crude oil markets may be less tight than earlier this year **(Figure 2)**. The 1st – 12th month contract spread for Brent was $7.59 per barrel on April 2 and has decreased to $4.75 per barrel as of market close on May 4. As the difference between the first and twelfth month contracts decreases (Brent becomes less backwardated), there is less incentive to sell oil out of inventories now and buy them back later. The WTI future curve was in contango on April 2 but has since flattened with a 1st – 12th month spread of -$0.91 per barrel on May 4.

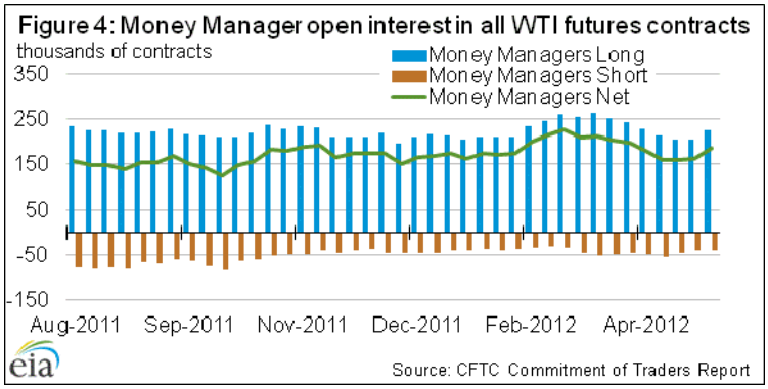
[1] This is a regular monthly companion to the EIA Short-Term Energy Outlook (http://www.eia.gov/forecasts/steo/)
Contact: James Preciado (james.preciado@eia.gov)



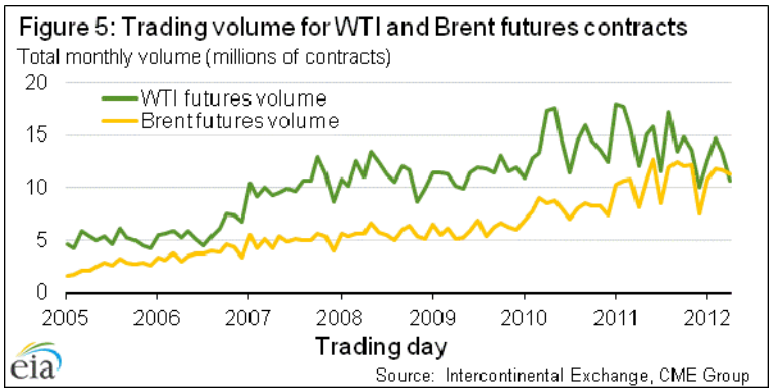
The Brent – WTI spread for delivery of crude oil in June 2012 decreased from its 2012 high of $19 per barrel on April 3 to $14 per barrel on May 4 **(Figure 3)**. This spread is influenced by the cost of transporting an additional barrel of oil from Cushing Oklahoma, the delivery point for WTI, to the U.S. Gulf Coast, where market prices are closely tied to international waterborne crudes.



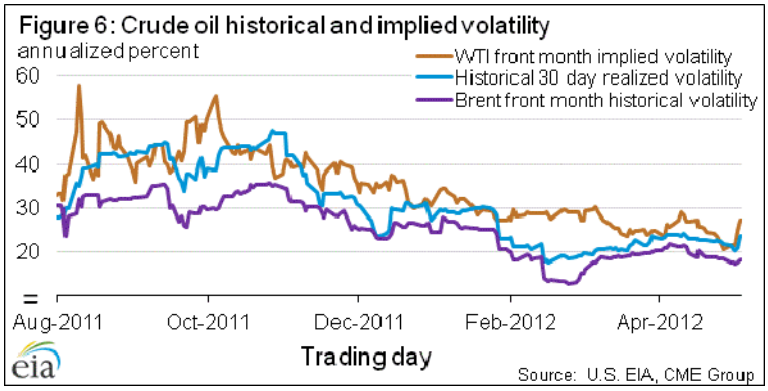
Open Interest: The net open interest for traders identified as money managers in the Commodity Futures Trading Commission's (CFTC) weekly commitment of traders report leveled off in the in the month of April after declining since February 28 but then increased just in the last week (**Figure 4**). On May 1, money managers held 186 thousand WTI contracts, an increase of 22 thousand contracts from the previous week.



Volume: April 2012 marked the first month in which more Brent futures contracts changed hands than WTI contracts **(Figure 5)**. The change in relative trading volumes between these two futures markets could reflect the increased reliance on Brent as a global crude oil benchmark while WTI prices are being affected by transportation limitations. Overall, WTI volume in the month of April was 2.6 million contracts below the 2009 – 2011 April average, though still well above the levels seen before 2007.

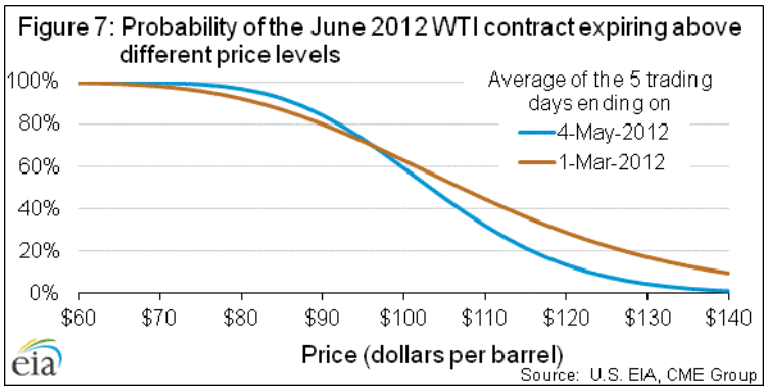


Volatility: Historical volatility for the front month Brent futures contract moved lower in the month of April, while implied volatility for WTI ended higher. (Implied volatility is not available for Brent.) Historical volatility for Brent moved lower by 3 percentage points from April 2 to May 4. Implied volatility for the front month WTI contract was at 27 percent on May 3, an increase of 3 percentage points since April 2 (**Figure 6**).



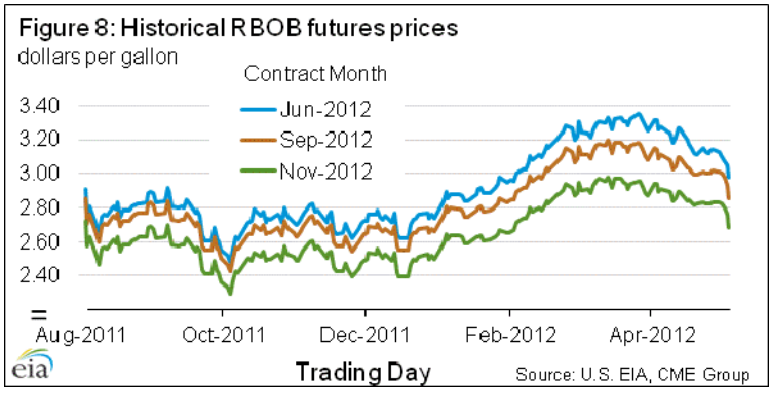
Market Derived Probabilities: The average price of WTI crude oil for September delivery for the five days ending May 4 has decreased by $5 per barrel since March 1 and implied volatility for that futures contract has moved lower by 5 percentage points over the same time period. The decrease in price and implied volatility, as well as less time until the contract expires, resulted in a decreased probability for prices to settle higher compared to market conditions on March 1. The probability of the September 2012 futures contract expiring above $120 per barrel is now 14 percent, a 15 percentage

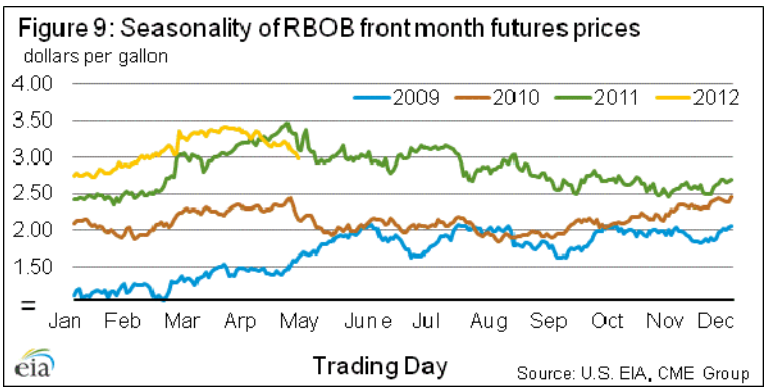
point decrease from the five day period ending March 1 (**Figure 7**). Given the higher absolute level of Brent prices relative to WTI prices, the probabilities that the September Brent contract will exceed specified dollar thresholds are higher. These probabilities are based on the cumulative normal 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.)



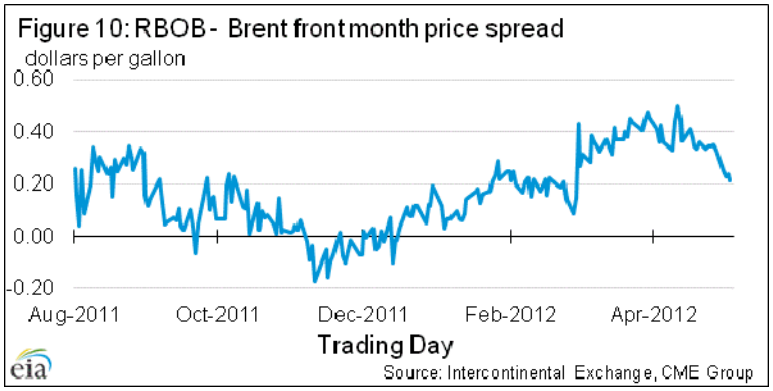
Gasoline

Prices: New York Harbor Reformulated Blendstock for Oxygenate Blending (RBOB) prices decreased over the second half of April from their highs in the end of March (**Figure 8**). The front month futures price settled on May 4 at $2.98 per gallon, down from $3.38 per gallon on April 2. The $0.40 decrease is partly a result of lowered crude oil prices, with Brent decreasing more than $13 per barrel, or $0.31 per gallon. Additionally, the futures curve shows prices steadily decreasing through September by another $0.12 per gallon. Gasoline prices may have reached their seasonal peak at the end of March, about a month earlier than last year (**Figure 9).**

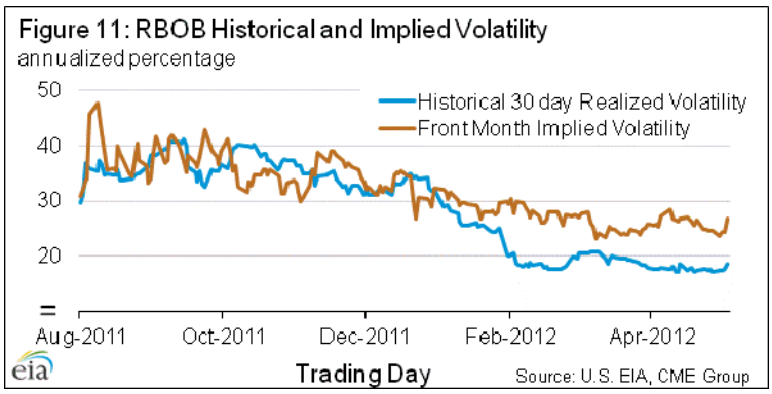




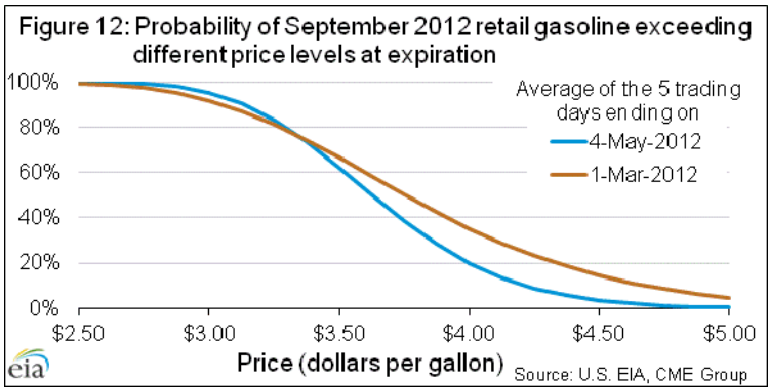
While the gasoline futures curve remains in backwardation (lower prices in later months), the backwardation has become much less steep. U.S. gasoline inventories are in the middle of the 5-year average range and the earlier tightness in international markets has eased somewhat. With the June contract becoming the prompt month at the beginning of May, the gasoline crack spread declined to the middle of the range seen last summer, substantially below the level from early April **(Figure 10**).



Volatility: Both historical and implied volatility for RBOB have been generally trending downwards through the winter, with historical realized volatilitiy in the month of April reaching its lowest level in the last year **(Figure 11)**. RBOB average realized and implied volatilities for the 5 trading days ending May 4 have decreased by 11 and 6 percentage points, respectively, as compared to the first 5 trading days of the year.

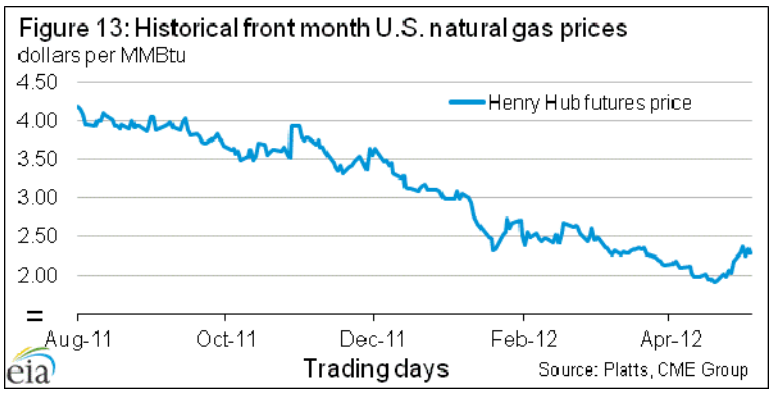


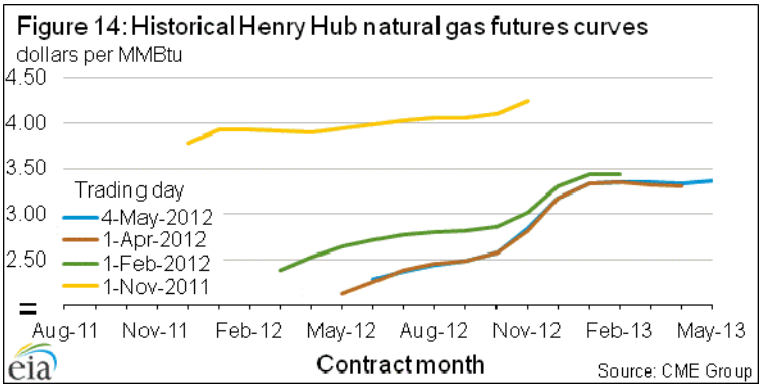
Market Derived Probabilities: The September 2012 RBOB futures contract averaged $2.95 for the five trading days ending May 4 and has a probability of exceeding $3.30 per gallon ($4.00 retail) at expiration of approximately 20 percent, and a probability of exceeding $3.80 per gallon ($4.50 retail) of about 3 percent. The same contract as of the five trading days ending March 1 had a probability of exceeding $4.00 retail of 35 percent, and a probability of exceeding $4.50 retail of 14 percent. A combination of lower crude oil prices and lower implied volatility contributed to a lower probability of the September contract exceeding these price levels (**Figure 12**).



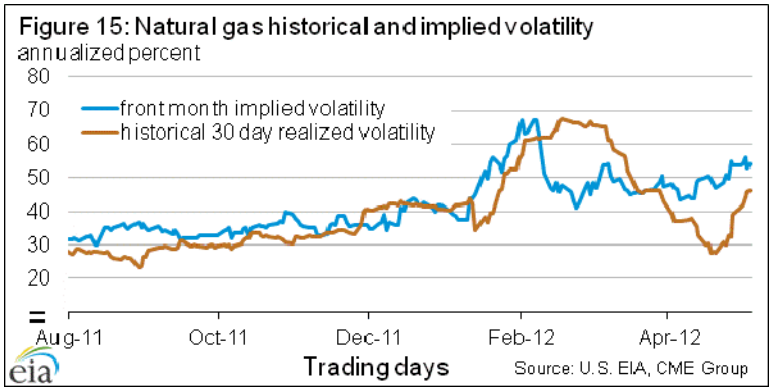
Natural Gas

Prices: The front month futures price for delivery of natural gas at Henry Hub in Louisiana hit a low of $1.91 on April 19. Since then, natural gas prices have rebounded off of the lowest prices seen in over a decade to reach $2.27 per MMBtu on May 4 **(Figure 13)**. U.S. natural gas inventories built less than the five year April average last month and production has been flat. The contango in the natural gas market has remained relatively unchanged compared to April 1 with the futures curve on May 4 nearly identical to its shape on April 1 (**Figure 14**).





Volatility: Natural gas front month futures contract implied volatility has increased by 6 percentage points since April 2 to reach 54 percent on May 4 **(Figure 15)**. Historical volatility moved lower for the first half of April but has increased over the last few weeks, narrowing the gap with implied volatility.



Market Derived Probabilities: Even with natural gas prices recently rising, futures prices are still lower compared to two months ago. The average price over the five trading days ending on May 4 for the September 2012 natural gas futures contract has fallen by $0.46 per MMBtu since March 1. Despite an increase in implied volatility of 9 percentage points for that contract, the lower prices were responsible for a large decrease in the probability of natural gas prices exceeding different price levels

compared to market conditions two months ago. The probability that the September contract will settle higher than $3.00 per MMBtu fell by 20 percentage points from 41 to 21 percent when compared to market conditions on the five trading days ending March 1 **(Figure 16)**. 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).