WHOLESALE NATURAL GAS MARKET ASSESSMENT
Wholesale Natural Gas Futures Prices as of November 4, 2016

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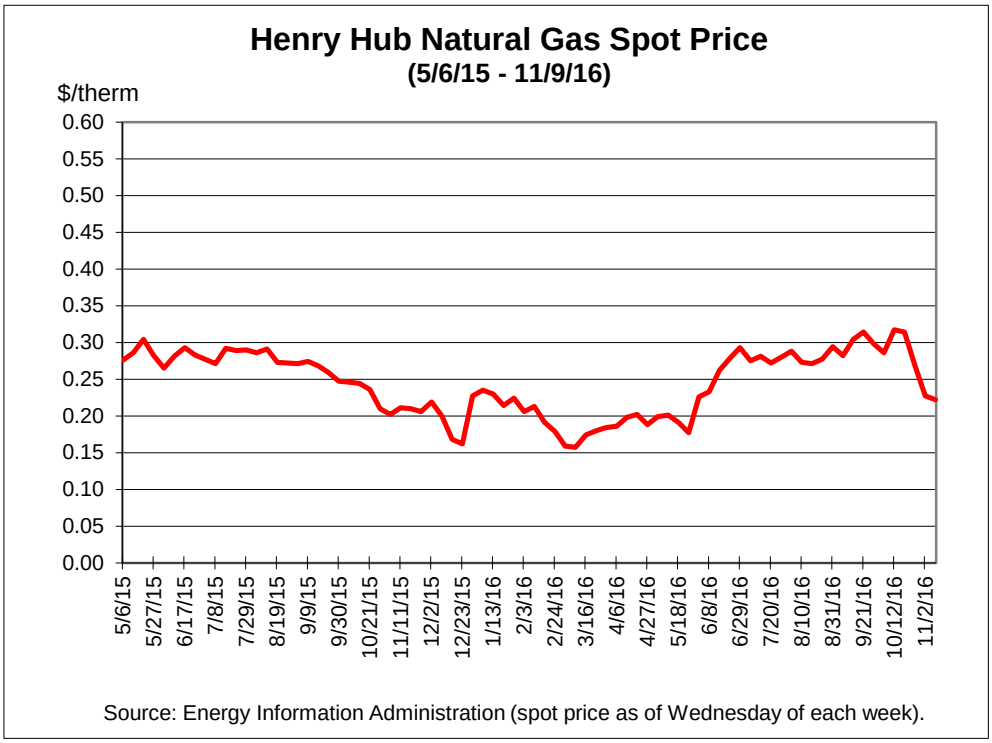
Outlook for Wholesale Natural Gas Prices

This report presents the Office of Technical and Regulatory Analysis' ("OTRA") assessment of wholesale natural gas supply and prices for November 2016.[1] OTRA's current assessment of the natural gas market suggests that wholesale natural gas prices may remain around $0.30 per therm, or less, during November 2016 (see Henry Hub Spot Price figure). Recent natural gas spot prices are up at least 4 percent compared to prices for the same period a year ago.



Source: Energy Information Administration (spot price as of Wednesday of each week).

Data from the Energy Information Administration ("EIA") indicates that the average Henry Hub natural gas spot price for October 2016 was about $0.30 per therm, nearly unchanged from the average for the previous month of September.[2] In its Short-Term Energy Outlook ("STEO") for November 2016, EIA indicates that **"[t]he price difference between November and January natural gas futures contracts reached the highest level in October since 2012, with the difference in prices for the two contracts averaging 40 cents/MMBtu [million Btu]. EIA is currently forecasting about 21% of U.S. natural gas consumption in December,**

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1 This assessment is based on information collected from various sources. Projecting future conditions is a difficult task at best, so these comments are subject to change as new information becomes available.

2 EIA, *Natural Gas Weekly Update* (various issues).

January, and February to be drawn from inventories, slightly higher than the five-year average. Rather than signaling the need for inventory builds to meet winter heating needs, the higher November-to-January futures price spread this year likely reflects the difference between current warmer-than-normal temperatures and the expectation for colder temperatures this winter compared with last winter."[3] EIA expects natural gas prices to gradually rise through the forecast period. Forecast Henry Hub natural gas prices average [$0.250 per therm] in 2016 and [$0.312 per therm] in 2017.[4] Natural gas prices averaged $0.263 per therm in 2015.

As of November 4, 2016, natural gas in storage stood at 4,017 billion cubic feet ("Bcf"). The working gas in storage is up 1 percent from the same period a year ago, and is up by about 5 percent compared to the 5-year average.

Commodity prices, together with the costs Washington Gas Light ("WGL") incurs for storage, peaking, and balancing, have resulted in a higher retail price than what was experienced last year. Specifically, the costs WGL incurs to acquire and deliver natural gas to customers are reflected in WGL's retail commodity price, called the Purchased Gas Charge ("PGC").[5] The PGC for November 2016 is 48.86 cents ($0.49) per therm, compared with 42.89 cents ($0.43) per therm for the same period a year ago—up 14 percent. The PGC for November 2016 is up 12 percent from the previous month.

The major factors that contribute to this outlook are described below. These factors include the weather, the economy, the storage situation, the supply situation, and national security.

Weather

Weather variations always have an effect on natural gas price formation. As of October 20, 2016, the National Oceanic and Atmospheric Administration ("NOAA") indicated that its outlook for November 2016 through January 2017 generally calls for above normal temperatures across much of the nation, with the highest probabilities for the Southwest.[6] Near or below normal temperatures may be possible for the northern tier of the nation stretching from parts of the Pacific Northwest eastward through the Great Lakes. The expected weather for November and December may be somewhat neutral for natural gas prices.

On August 11, 2016, NOAA released its updated 2016 Atlantic Hurricane Outlook. In particular, NOAA indicates that a near-normal or above-normal hurricane season has increased to 85% (compared to 75% in May). The outlook calls for a 50% chance of a near-normal season, a 35% chance of an above-normal season, and a 15% chance of a below-normal season. NOAA states that this is a more challenging hurricane season outlook than most because it is difficult to determine whether there will be reinforcing or competing climate influences on tropical storm

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3 EIA, *Short-Term Energy Outlook* (November 2016) at 10.

4 Ibid at 29.

5 The current Purchased Gas Charge reflects current market conditions and current collections. The current cost of gas (including commodity, demand, and other cost adjustments) reflects the seasonal market. Alternative suppliers' newer fixed price offers should generally reflect the PGC benchmark, with anticipated price changes as well, over the next twelve months.

6 NOAA at http://www.cpc.ncep.noaa.gov/.

development. NOAA calls for a 70% probability for each of the following ranges of activity during the 2016 hurricane season: 12-17 named storms, which includes Alex in January; 5-8 hurricanes, which includes Alex in January; and 2-4 major hurricanes (rated at Category 3 or above, with a maximum sustained wind speed of at least 111 miles per hour). As of November 13, there have been fourteen named storms and six hurricanes—three of which developed into a major hurricane. The Atlantic hurricane season generally runs from June 1 through November 30. Any significant storm-related disruption to the energy infrastructure—in the Gulf of Mexico, for example—will tend to contribute to upward pressure on natural gas prices. Thus far, there have been no significant impact on the energy infrastructure.

Economic Conditions

National economic factors also contribute to the formation of wholesale natural gas prices. The Federal Open Market Committee ("FOMC") maintained a low target range for short-term interest rates.[7] The FOMC indicated that information received since the last meeting in September indicates that the labor market has continued to strengthen and the growth of economic activity has picked up from the modest pace seen in the first half of this year. Although the unemployment rate is little changed—at 4.9 percent—in recent months, job gains have been solid. Consumer spending has been rising moderately but business fixed investment has remained soft. Inflation has increased somewhat since earlier this year but is still below the FOMC's 2 percent longer-run objective, partly reflecting earlier declines in energy prices and in prices of non-energy imports. Thus, at present, the current state of economic activity may still be relatively neutral for natural gas prices.

Storage

EIA reports that the working gas in storage was 4,017 Bcf as of November 4, 2016, a net increase of 54 Bcf from the previous week. Stocks were 47 Bcf higher than the same period a year ago—up 1.2 percent—and up 189 Bcf from the 5-year average of 3,828 Bcf—an increase of 4.9 percent.[8] EIA indicates that **"[w]ith total U.S. working natural gas inventories already at elevated levels, the reduced demand [for natural gas in October, due to warmer-than-normal temperatures in the U.S.] did not translate into additional storage builds. The pace of storage injections in October was slower compared with previous years, which could reflect a decline in natural gas production during October. Working natural gas storage increased by 71 billion cubic feet (Bcf) per week in October compared with the five-year average of 79 Bcf/week at this time of year in 2011 through 2015."**[9] Thus, the current storage picture suggests some downward pressure for natural gas prices.

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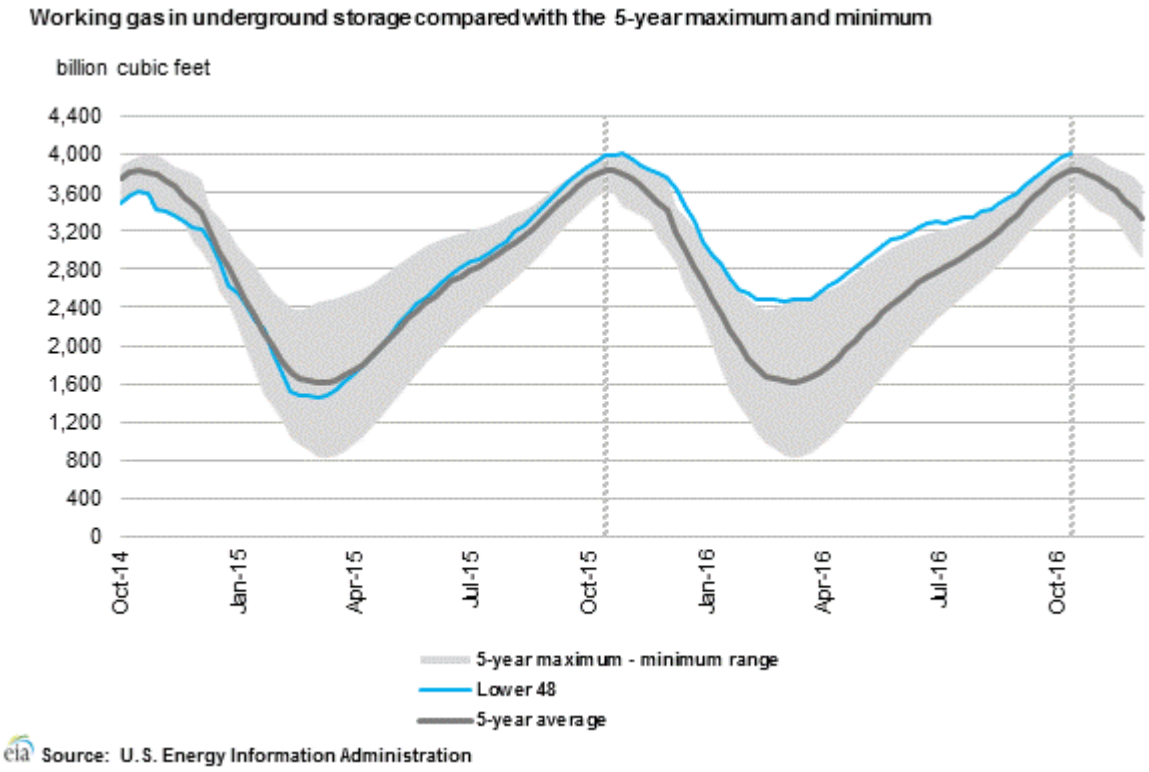
7 *Statement of the Federal Open Market Committee* (released November 2, 2016).

8 EIA, *Weekly Natural Gas Storage Report* (released November 10, 2016).

9 EIA, *STEO* (November 2016) at 10.



Note: The shaded area indicates the range between the historical minimum and maximum values for the weekly series from 2011 through 2015. The dashed vertical lines indicate current and year-ago weekly periods.
Source: EIA, *Weekly Natural Gas Storage Report* (released November 10, 2016)

Supply

Flexibility in the nation's domestic production has helped to soften upward price pressure, especially with the continued development of natural gas in shale formations. In the November 2016 STEO, EIA indicates that **"[n]atural gas marketed production is forecast to average 77.3 Bcf/d in 2016 and 80.3 Bcf/d in 2017, which are 0.2 Bcf/d and 0.9 Bcf/d lower than the previous forecast, respectively. These changes reflect model adjustments to include greater sensitivity of drilling activity to Henry Hub natural gas prices."**[10]

National Security

As noted in previous reports, we see little danger to the natural gas supply.[11] Most of the U.S. supply is secure, in that it is generally domestically produced or imported from Canada.

Future Natural Gas Prices

The PGC rate of roughly $0.49 per therm for November 2016 is up 11.9 percent from the previous month, and is up 13.9 percent compared to the same period a year ago.[12] The

[10] EIA, *STEO* (November 2016) at 11.

[11] The Department of Homeland Security ("DHS") issued its last bulletin on June 15, 2016. The National Terrorism Advisory System, or NTAS, replaces the color-coded Homeland Security Advisory System.

December 2016 PGC (assuming that the commodity market adjustment factor is zero) should be around $0.48 per therm, based, in part, on the expectation that near-term NYMEX futures prices continue to trade between $0.26 and $0.33 per therm, among other things. OTRA's assessment of natural gas prices may be significantly different from actual market prices if: (i) there are significant variations in weather-related factors, (ii) crude oil prices change significantly, (iii) other substantial disruptions to the energy market occur, or (iv) certain cost-related assumptions are significantly different.

As always, investments in energy efficiency and conservation measures are important ways toward reducing energy consumption and lowering energy bills. Ratepayers are encouraged to invest in measures such as insulation, weather stripping, or replacing an old inefficient water heater and/or furnace. Finally, for those residential consumers whose budgets are severely challenged, arrangements for assistance should be made as soon as possible in anticipation of need. Contact either the District Department of the Environment's Energy Office or the D.C. Public Service Commission's Office of Consumer Services for advice and/or solutions as well as programs such as the Washington Area Fuel Fund (888-318-9233).

[12] The commodity market adjustment factor for the November 2016 PGC was $0.00 per therm, resulting in the adjusted PGC (excluding the commodity market adjustment factor ("CMAF")) being equal to $0.4886 per therm.

Wholesale Natural Gas Price/Supply Assessment Information

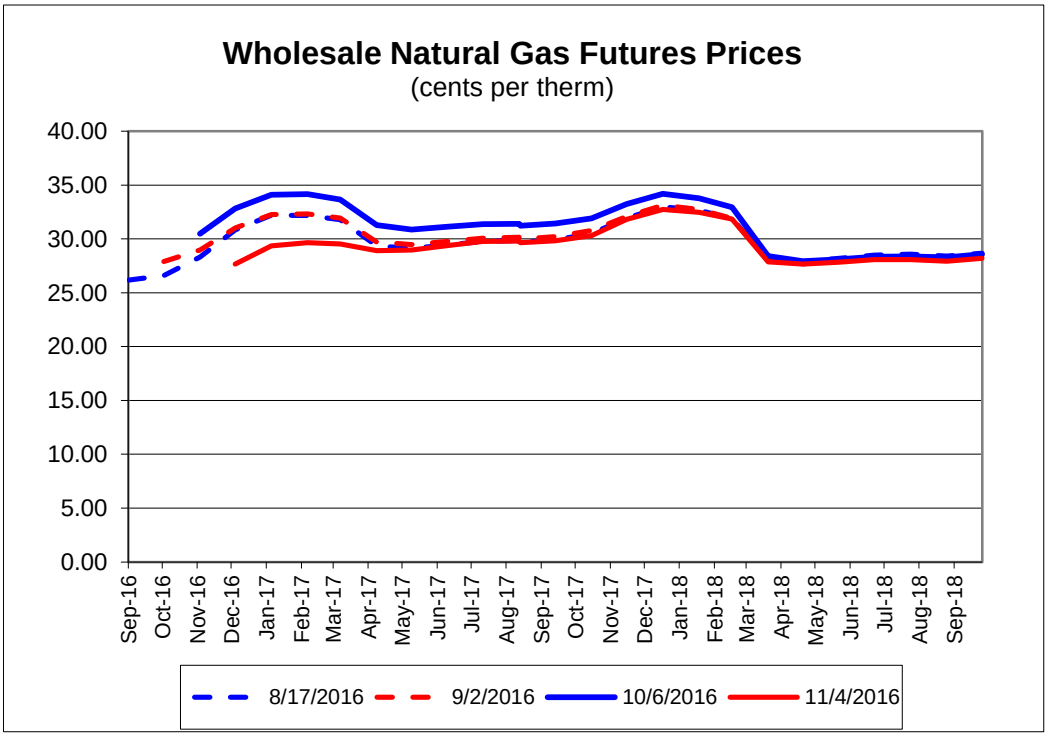
Current for November 4, 2016

Price Information

Twelve Month NYMEX Strip Components
11/4/16, cents per therm

Henry Hub Spot Market Price
11/4/16, cents per therm

Current Month		Previous Month		Current Only Available
Dec 16	27.67	Dec 16	32.82	21.9
Jan 17	29.37	Jan 17	34.10	
Feb 17	29.67	Feb 17	34.17	
Mar 17	29.55	Mar 17	33.67	
Apr 17	28.92	Apr 17	31.29	
May 17	28.98	May 17	30.88	
Jun 17	29.38	Jun 17	31.13	
Jul 17	29.76	Jul 17	31.37	
Aug 17	29.79	Aug 17	31.40	
Sep 17	29.65	Sep 17	31.23	
Oct 17	29.83	Oct 17	31.44	
Nov 17	30.31	Nov 17	31.92	



The current PGC for November 2016 is about $0.49 per therm. Assuming, among other things, that near-term futures prices remain around $0.26 to $0.33 per therm, the PGC rate (excluding the commodity market adjustment factor) for December 2016 may be around $0.48 per therm. However, given the uncertainty about the weather, as well as other factors, this assessment could easily change. The assessment for November 2016 is that wholesale prices may remain around $0.30 per therm, or less, resulting in wholesale prices that are at least 4 percent higher compared to year ago levels (see Market Conditions Summary).

Weather Forecast

1. Current for next few days to one week:

   http://www.cnn.com/Weather/
   http://home.accuweather.com/

2. National Oceanic and Atmospheric Administration Forecast for the Winter

   http://www.noaa.gov/

3. U.S. Weather Service Atlantic Hurricane and Storm Reports

   http://www.nhc.noaa.gov/

Wholesale Natural Gas Market Conditions Summary
November 14, 2016

Factors	Next Month	Winter Season
Oil Prices		
Weather - Temperature		
Weather - Hurricanes		
Economic Conditions		
Storage		
Natural Gas Supply		
National Security		
Overall		

Code: Red - Upward Pressure

Blue - Downward pressure

Yellow - No Change

No color - Not Applicable N.A.