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RAILROAD COMMISSION OF TEXAS
Gas Services Division
Market Oversight Section

September 1, 2014

Natural Gas Trends

Highlights

Recycled fracking fluids safer, save water: Study

More advanced recycling rather than disposal of produced water pumped back out of oil and natural gas wells could calm fears of accidental spillage and save millions of gallons of fresh water a year, according to a study by a Rice University research team.

The team conducted a detailed analysis of water produced by hydraulic fracturing in the Marcellus, Eagle Ford and Barnett formations.

Rice chemist Andrew Barron, who led the study, said shale gas and oil wells produce most of their water within the first few weeks of production. Afterwards only a few barrels a day are commonly produced.

Barron and the study's lead author, Rice alumnus Samuel Maguire-Boyle, also found that shale oil- and gas-produced water does not contain significant amounts of the polyaromatic hydrocarbons that could pose health hazards.

But minute amounts of other chemical compounds led them to believe the industry should focus on developing nonchemical treatments for fracking and produced water. Barron explained non-chemical treatment "may include membranes or similar materials that do not require the use of a chemical additive to precipitate or destroy any part of the frack water."

"Ultimately, it will be necessary to clean produced water for reuse in fracking," Barron said. "In addition, there is the potential to recover the fraction of hydrocarbon in the produced water."

The researchers found most of the salt, organic and other minerals that appear in produced water from shale gas reservoirs originate in the water in the dense rock over geologic time scales. These, they wrote, should be of little concern.

But they also found that produced water contained potentially toxic chlorocarbons and organobromides. The organic chemical compounds were probably formed from interactions between high levels of bacteria in the water and salts or chemical treatments used in fracking fluids, the report said.

Barron's and Maguire-Boyle's study was published by the Royal Society of Chemistry journal Environmental Science: Process and Impacts.

Source: Platts Gas Daily

Data

- October 2014 Natural Gas Futures Contract (as of August 29), NYMEX at Henry Hub closed at $4.065 per million British thermal units (MMBtu)
- October 2014 Light, Sweet Crude Oil Futures Contract WTI (as of August 29), closed at $95.96 per U.S. oil barrel (Bbl.) or approximately $16.54 per MMBtu

Last week: Texas warmer than normal

For the week beginning 8/24/14 and ending 8/30/14, cooling degree days (CDD) were higher than normal (warmer) for the week and for the year to date for most Texas cities shown.

Source: www.cpc.ncep.noaa.gov

COOLING DEGREE DAYS (CDD)

City or Region	Total CDD for week ending 8/30/14	*Week CDD + / - from normal	Year-to-date total CDD	* YTD % +/- from normal
Amarillo	102	35	1311	15%
Austin	141	9	2144	-5%
DFW	150	26	2235	10%
El Paso	112	12	2202	18%
Houston	136	16	2258	4%
SAT	164	35	2578	12%
Texas**	133	17	2052	0%
U.S.**	69	13	1004	3%

-999 = Normal Less Than 100 or Ratio Incalculable

* A minus (-) value is cooler than normal; a plus (+) value is warmer than normal. NOAA uses 65° Fahrenheit as the 'normal' basis from which CDDs are calculated. ** State and U.S. degree days are population-weighted by NOAA.

Last week: U.S. natural gas storage at 2,630 Bcf

For the week ending 8/22/2014 working gas in storage increased from 2,555 Bcf to 2,630 Bcf. This represents an increase of 75 Bcf from the previous week. Stocks were 490 Bcf lower than last year at this time and 518 Bcf below the 5 year average of 3,148 Bcf.

Source: http://ir.eia.gov/ngs/ngs.html

U.S. WORKING GAS IN STORAGE

Region	Week ending 8/22/14	Prior week	One-week change	Current Δ from 5-YR Average (%)
East	1,403	1,342	61	-14.6%
West	416	407	9	-11.5%
Producing	811	806	5	-21.7%
Lower 48 Total	2,630	2,555	75	-16.5%

Lower 48 states, underground storage, units in billion cubic feet (Bcf)

Last week: U.S. gas rig count up for the week

The gas rig count for the U.S. was up eight for the week but was down 42 when compared to twelve months ago. The total rig count for the U.S. was up 18 from last week and up 138 when compared to twelve months ago. The total rig count includes both oil and natural gas rotary rigs.

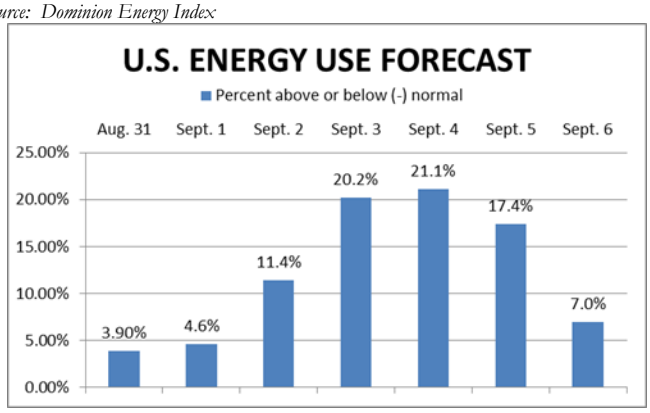
Source: Baker Hughes

BAKER HUGHES ROTARY RIG COUNT				
	As of 8/29/2014	+/- prior week	Year ago	+/- year ago
Texas	900	12	846	54
U.S. gas	338	8	380	-42
U.S. oil	1575	11	1388	187
U.S. total	1914	18	1776	138
Canada	409	4	399	10

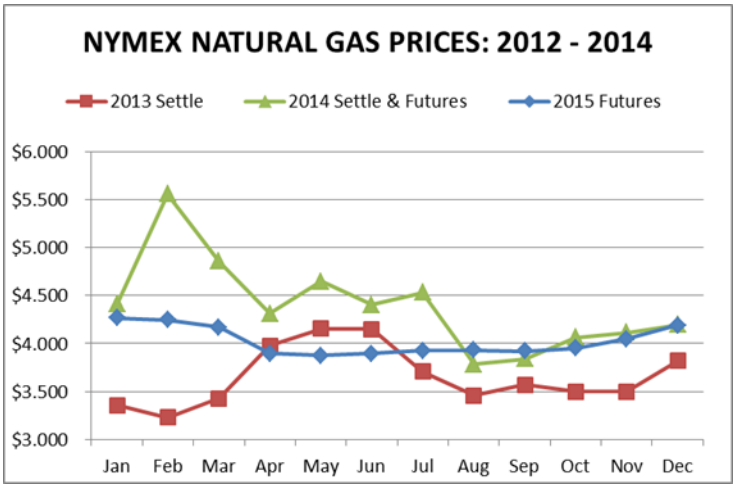
This week: U.S. energy above normal

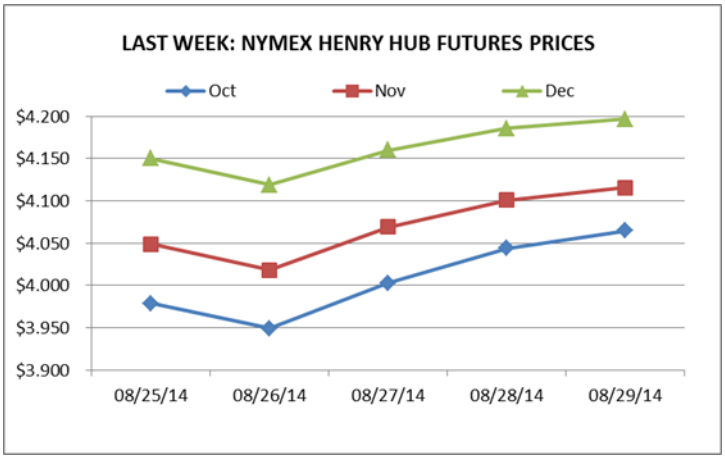
U.S. energy use is predicted to be above normal most of this week, according to the Dominion Energy Index, as shown below. Dominion forecasts total U.S. residential energy usage, a component of which is natural gas.

Source: Dominion Energy Index



2014 prices. Natural gas prices for 2014, shown below in green, are the NYMEX settlement prices for Jan.-Aug. and futures prices for the remainder of the year.





NATURAL GAS PRICE SUMMARY AS OF 8/29/2014

	This Week	+/- Last Week	+/- Last Year	12-Month Strip Avg.
US Oct. futures				
NYMEX	$4.065	$0.225	$0.498	$4.023