US NATURAL GAS: HOME ON THE RANGE

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The classic American song "Home on the Range" requests:
"Oh give me a home where the buffalo roam,
Where the deer and the antelope play,
Where seldom is heard a discouraging word,
And the skies are not cloudy all day."

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CONCLUSION AND OVERVIEW

Did the major bull trend for NYMEX natural gas (nearest futures continuation) that started with 3/4/16's dismal 1.611 depth finish with 12/28/16's 3.994 top? Although it is a difficult call, assuming normal weather and moderate United States economic growth, it will be hard for the NYMEX front month price to exceed the high neighboring 4.00 by much (if at all) over the next few months. However, significant support rests around 2.50 (lows 8/12/16 at 2.523, 11/9/16 at 2.546, and 2/22/17 at 2.522; high 1/8/16 at 2.495).

The bull trends that began around first quarter 2012 (4/19/12's 1.902) and during 1Q16 display many similarities, including their commencement following substantial oversupply conditions. Yet bearish signs exist in regard to the 2016 bull charge. The distance and duration travelled by 2016's bull climb up to its December 2016 height, though less than average for major bull natural gas moves in NYMEX natural gas (nearest futures continuation), was within the historical range. Several previous major peaks in NYMEX natural gas occurred in calendar December. Current US natural gas inventories are above average. The CFTC's net long commercial position is very high and consequently vulnerable to liquidation. And the 2012 rally showed an interim high in springtime (5/1/13 at 4.444).

As always, audiences should be cautious about linking natural gas price patterns with those in petroleum and other financial marketplaces. And apparent convergence/divergence (lead/lag) relationships between marketplaces can change, sometimes dramatically. However, these other playgrounds currently suggest that natural gas will struggle to advance above 12/28/16's 3.994 anytime soon. See "The Oil Battlefield: Evolution, Relationships, and Prices" (4/10/17). Note also "Eurozone Under Siege: Currency Trends and Politics" (3/20/17), "Easing Comes, Easing Goes: US Government Interest Rates" (3/13/17), "Rhetoric and Global Currency Trends" (2/13/17), "Gold and Goldilocks: 2017 Marketplaces" (1/10/17), "Back to the Future: the Marketplace Time Machine" (12/13/16). Even the price gap from 3.568 (1/3/17) to 3.690 (12/30/16) represents a formidable near term roadblock.

However, what does looking further around the corner reveal? Everyone knows "much can happen" over the next six months and thereafter. Yet US natural gas days coverage at the end of inventory build season 2017 (October 2017) probably will be slightly bullish, with that (in the admittedly even cloudier distant horizon) at end build season 2018 more so. Thus an eventual retest of a ceiling around 4.00/4.10 is a reasonable conjecture. Looking ahead over the next several months, it probably will take a much colder than normal winter 2017-18 for the price to stay above 4.00/4.10 for long, and especially to spike above resistance at 4.45 to 4.55. Recall that winter 2013-14 required a freeze and resultant sharp stock draw to soar above the May 2013 and 12/23/13 (4.532) highs. Remember too the price collapse from 11/10/14's 4.544.

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For additional natural gas analysis, see "US Natural Gas: a View of the Past, a Vision of a Future" (1/21/17); "Parallels in US Natural Gas: 2012 and 2016 Build Seasons" (7/4/16), "NYMEX Natural Gas: a History of Bull Trends" (9/5/16), "US Natural Gas: Traveling Forward" (6/13/16), "US Natural Gas Bear Trends and the Commitments of Traders" (4/11/16), and "US Natural Gas: Caught in the Middle" (2/1/16).

BIG BULL MOVES

Marketplace history does not necessarily repeat itself, whether entirely, partly, or at all. But all else equal, since 2016's natural gas rally was less than average in time and (percentage) distance terms, this argues that the move that commenced in March 2016 may have more time and price to run. NYMEX natural gas (nearest futures continuation) rallied about 148 percent in about ten months from its 3/4/16 bottom at 1.611 to 12/28/16's high at 3.994. The distance and duration for eleven major bull moves in NYMEX natural gas (nearest futures continuation) since trading began in 1990 is about 246 percent and twelve months and three weeks.

Some adventurous bull trips took a very long time to complete. The April 2012 to February 2014 advance lasted about twenty-two months and a week. September 2003-December 2005's flight took 26 months and three weeks; the August 1998 to December 2000 expedition lasted 28 months.

However, a few major (over 120 percent) bull charges were shorter in extent or briefer in time than 2016's leap. So an assertion that the 2016 rally ended in December 2016 is not "unreasonable". One big bull move voyaged up around 123.5 percent, another 129.2pc. For the time horizon parameter, three major bull moves from 1990 to the present were completed quickly. One finished in about two months, another in about three and a half months, and a third in four months.

CALENDAR DECEMBER PINNACLES

However, place the attainment of 12/28/16's crest in historical perspective. Numerous impressive natural gas bull moves ceased in calendar December. Recall 12/21/95's 3.72, 12/20/96's 4.60, 12/27/00's sky-high 10.10, and 12/13/05's majestic (and record) 15.78 summit.

Also, the late December 2016 peak occurred close in calendar time to 1/7/10's major high at 6.108. An important interim top at 7.63 occurred 1/9/04. Finally, don't forget 12/23/13's interim high at 4.532.

Since NYMEX natural gas trading began, calendar December has had no major bottoms.

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December 2016's high fell just short of a major unfilled gap from over two years ago. Keep an eye on the space between 11/28/14's 4.075 low and 12/1/14's 4.041 high. A 150 percent rally from March 2016's major bottom at 1.611 gives 4.028. An important interim high in the 2012 bull ascent, 3.933 on 11/23/12, occurred fairly close in price and time of year to December 2016's top. The spike up to 6.493 on 2/24/14 began from an interim low with an elevation close to 4.00, 1/10/14's 3.953. Four times the all-time low equals 4.08.

COVERING GROUND IN NATURAL GAS INVENTORIES: BUILD SEASONS 2012 and 2016 AND THEIR AFTERMATH

In "Lookin' Out My Back Door", Creedence Clearwater Revival sing:
"Just got home from Illinois, lock the front door, oh boy!
Got to sit down, take a rest on the porch.
Imagination sets in, pretty soon I'm singin'…"

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In the ensuing analysis of US working natural gas inventories, historic bcf levels and subsequent month bcf estimates are from the Energy Information Administration's ("EIA") Short-Term Energy Outlook, ("STEO", Table 5a, 4/11/17, next release 5/9/17). Bcf production and consumption statistics also are from the EIA.

What given marketplace players view as "average" (sufficient, normal, typical, appropriate, or reasonable) in arithmetic or days coverage terms can shift. So can opinions regarding what is "high" or "low" (abnormal, unusual, unreasonable).

The following perspective calculates days coverage for a given end calendar month by dividing that month's arithmetic bcf total by a full calendar year daily consumption average. Thus October 2016's end month bcf amount is divided by the average consumption over all twelve months of calendar 2016. However, for end January, February, and March calendar months, the consumption denominator is the average daily demand for the entire preceding calendar year (twelve months, January through December). For example, to ascertain days coverage represented by the end March 2017 bcf level, divide end March 2017's 2082bcf by the average demand over the January through December 2016 calendar year, just over 75.1bcf/day. That makes end March 2017 days coverage of 27.7 days. An actual January (or February or March) calendar month such as January 2013 belongs to the winter draw season that began at the end of the prior October (winter 2012-13).

The EIA's natural gas supply/demand predictions of course partly derive from its price forecast. The April 2017 STEO (Table 2) declares calendar year 2017 spot Henry Hub prices will average 3.10 per mmbtu (calendar 2016 was 2.51 per mmbtu), with 2018's 3.45/mmbtu.

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The winters of 2011-12 and 2015-16 both ended with massive supplies. They also completed long-running major bear trends. In commodity realms, all else equal, and absent revolutionary developments on the supply or demand side, there is some tendency for gigantic oversupply (massive inventories) accompanied by sustained depressed prices eventually to be reversed by falling production, increasing demand, or both.

A crucial similarity between the calendar 2012 and calendar 2016 build seasons was the substantially diminishing US natural gas oversupply over the course of build season. Seasonal builds were much less than normal. This sparked and sustained noteworthy bull moves.

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Both March 2012 and March 2016 inventories leaped far over average levels. The long run (1990-2016) end month days coverage for end March is 22.4 days. The medium run (2006-16) end March days cover average is 25.3 days, 2.9 days greater than 1990-2016's.

The long run (1990-2016) average days coverage inventory for end October is 53.6 days. The medium run (2006-16) days coverage for end October is 55.3 days, 1.7 days above 1990-2016's span. The peak days end October coverage was 1990's huge 66.0 days, with 2009's 60.7 days the runner-up.

The average winter natural gas draw from 1990 to 2016 is about 31.1 days (1953bcf), that for 2006-16 is 30.1 days (2029bcf). The average of these two overlapping periods is about 30.5 days.

From 1990-2016, the average days coverage increase from end March to end October is about 30.9 days. For about the past decade of build seasons (2006-16), the average days coverage increase from end March to end October is about 30.0 days. The average of these two spans is 30.5 days.

Natural gas consumption climbed from about 59.4bcf/day for full calendar year 2006 to 69.8bcf/d in 2012 to 75.1bcf/d in 2016. However, according to the EIA, demand slips about 2.4 percent to 73.3bcf/day in 2017. Looking out its window toward 2018's vista, the EIA predicts calendar 2018 consumption will be up 3.7pc year-on-year to almost 76.1bcf/d.

Calendar March 2016's 2495bcf inventory at the close of winter draw period 2015-16 slightly surpassed 2012's 2473bcf, thus establishing a new bcf record for the 1990-2016 era. However, end March 2016's 33.4 days coverage resides beneath calendar March 2012's lofty 36.9 days. In days coverage terms, end March 2016's 33.4 days soared over the 1990-present average for end March by eleven days, and that of 2006-2016 by 8.1 days.

Let's do some homework and compare the inventory path for the evolution of the 2012 bull marketplace trend alongside that for the 2016 advance, including hypothetical bcf inventory for calendar 2017 and 2018 from the EIA's STEO predictions.

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	Calendar 2012 Build Season		**Calendar 2016 Build Season**	
	Inventory (BCF)	Days Coverage	Inventory (BCF)	Days Coverage
March	2473	36.9	2495	33.4
October	3929	**56.3**	4022	**53.5**

Concentrating on the days coverage dimension, calendar 2012 build season dramatically slashed US natural gas oversupply. Calendar 2012 build season days coverage rose only 19.4 days (1456bcf), far less than the roughly 30.5 days average seasonal expansion. End October 2012's 56.3 days coverage surpassed the long run end October (1990-2016) 53.6 day average by only 2.7 days, the medium run (2006-16) 55.3 day average by only a day.

Calendar 2016 build season likewise repaired the severe oversupply problem from the days coverage dimension. Days coverage ascended only 20.1 days (1527bcf) from end March to end October 2016, around ten days less than average. End October 2016's 53.5 days of coverage (4022bcf divided by full calendar year 2016 average daily consumption of about 75.1bcf/day) about matched the 53.6 day long run average and was 1.8 days beneath 2006-16's 55.3 day average. From the days coverage vantage point, end October 2016 days coverage total (taken "alone" and "all else equal") was neutral to slightly bullish. In addition, build season 2016 ended on a more bullish note than did calendar 2012's.

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	Winter 2012-13 Draw Season		Winter 2016-17 Draw Season	
	Inventory (BCF)	Days Coverage	Inventory (BCF)	Days Coverage
March	1720	24.6	2082	27.7

The winter 2012-13 draw was 2209bcf (3929bcf less 1720bcf), or approximately 31.7 days (56.3 less 24.6 days). The 2016-17 draw, however, was only 1940bcf (4022 less 2082 bcf), or 25.8 days (53.5 less 27.7 days), about five days less than normal.

An end March 2017 stockpile in days coverage terms of 27.7 days (2082bcf divided by full calendar year 2016 consumption of about 75.1bcf/day) overshadows calendar March 2013's level by 3.1 days. End March 2017 days coverage flies significantly, by 5.3 days, over the 22.4 day long run (1990-2016) average days coverage for end March. It moderately exceeds, by 2.4 days, the 25.3 day average end March level for 2006-16.

Thus the 27.7 days of coverage at end March 2017 level is bearish. That inventory level underscores that it probably will be difficult for NYMEX natural gas prices (nearest futures continuation) to climb above December 2016's summit anytime soon.

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The climb from 4/19/12's major bottom at 1.902 to 5/1/13's interim top at 4.444 was 133.6 percent and about 12 and a half months. Measuring that climb up to the second interim top, 12/23/13's 4.532, is 138.3pc and about twenty months. The 147.9 percent move from the 3/4/16 2016 trough to 12/28/16's 3.994 height exceeds that of the April 2012-May 2013/December 2013 advance. However, the time spent in the rally following the March 2016 low, nine months and three weeks, is briefer than that of the April 2012 to May 2013 stage of the bull move that ended in February 2014.

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	End Build Season Calendar 2013		End Build Season Calendar 2017	
	Inventory (BCF)	Days Coverage	Inventory (BCF)	Days Coverage
October	3817	53.3	3833	52.3

Relative to calendar year 2017 consumption of about 73.3bcf/day, days coverage at the close of the 2017 build season will be roughly 52.3 days (3833bcf divided by 73.3bcf/day). This is neutral to slightly bullish. It is 1.3 days under the 53.6 day end October 1990-2016 average, and three days under 2006-16's 55.3 day average.

The EIA's numbers imply a 24.6 day inventory accumulation (52.3 less 27.7 days) over the course of calendar 2017 build season. This stock replenishment falls significantly short of the roughly 30.5 day average build season days coverage expansion.

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The EIA estimates the demonstrated maximum working gas storage volume for the lower 48 States. It defines this as the sum of the highest storage inventory levels of working gas observed in each storage reservoir over the previous five year period. Demonstrated underground maximum working gas capacity in the lower 48 states as of November 2016 was 4373bcf ("Underground Natural Gas Working Storage Capacity"; 4/3/17, next release March 2018). This grew 31bcf from November 2015's 4342bcf.

Will containment problems emerge if end build season 2017 supplies at end October sit around the 3833bcf estimate? Probably not. At 3833/4373bcf, this equals 87.7 percent of capacity, a high but not dangerous total.

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Dialogue from the film "Sweet Home Alabama": "It's funny how things don't turn out." The reply: "It's funny how they do." (Andy Tennant, director)

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	Winter 2013-14 Draw Season		**Winter 2017-18 Draw Season**	
	Inventory (BCF)	Days Coverage	Inventory (BCF)	Days Coverage
March	857	12.0	1666	22.7

The hypothetical end March 2018 working gas inventory of 1666bcf will equal 22.7 days coverage, tumbling from end March 2017's 2082bcf and 27.7 days coverage. This end March 2018 days coverage will stand about even with the 22.4 day average for end March over the 1990-2016 period; it will rest about 2.6 days under the 25.3 day end March average for 2006-16.

This conjectural end March 2018 days supply is neutral to slightly bullish for NYMEX natural gas prices (nearest futures continuation). All else equal, relative to nowadays, what does that potential inventory coverage suggests for prices? It probably will be difficult for natural gas to exceed December 2016's ceiling by much over the next several months.

In summer 2013, prices bounced from 8/8/13's 3.129 up to 12/23/13's 4.532. However, it required an enormous drawdown in natural gas inventories to produce the explosive price spike up to 2/24/14's 6.493 (from 1/10/14's 3.953 low). Winter 2013-14 displayed a record days coverage draw of 41.3 days. Compare not only the average winter season draws, but also contrast the all-time low draws of 19.5 days (1456bcf) in winter 2015-16 and 2011-12's 19.8 (1331bcf).

Days coverage of 22.7 days at end March 2018 hovers far above March 2014's 12.0 days, so the conjectured end March 2018 level probably would not generate a price flight similar to that of winter 2013-14. The record end March inventory troughs are 11.6 days cover (742bcf in winter 2000-01; 730bcf in winter 2002-03).

Breaking above 4.45/4.55 resistance probably will be difficult. Nevertheless, as these hypothetical end March 2018 inventories are around normal, they (their possible occurrence) will help (all else equal) to maintain the long run bullish trend that began in March 2016. Potential end October 2018 inventories bolster this long run bullish scenario.

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	End Build Season Calendar 2014		**End Build Season Calendar 2018**	
	Inventory (BCF)	Days Coverage	Inventory (BCF)	Days Coverage
October	3587	49.2	3723	48.9

October 2018 of course is a long time from now. Will United States natural gas production jump over the next year or two? The EIA's April 2017 STEO states total dry gas production in calendar 2016 was about 72.3bcf/day. It rises 2.1 percent in calendar 2017, to about 73.1bcf/d. According to Baker Hughes, US natural gas rig counts bottomed on 8/5/16 at 81, rebounding to 165 on 4/7/17 (162 on 4/13/17). The EIA forecasts calendar 2018 dry gas output increases substantially, up 5.4 percent to nearly 77.1bcf/d.

What about demand? The EIA states calendar 2016's total consumption was 75.1bcf/day. Demand for full year 2017 stumbles about 2.4pc lower versus 2016 to 73.3bcf/d (contrast the 2017 versus 2016 year-on-year production trend). The April 2017 STEO weathervane predicts US consumption in 2018 advances about 3.7pc year-on-year to nearly 76.1bcf/d. However, calendar 2018 average daily demand is only 1.2pc over that of 2016.

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In any case, end October 2018's 48.9 days coverage estimate (3723bcf divided by 2018 demand of just under 76.1bcf/day), though admittedly conjectural, is bullish for natural gas prices. It stands 4.7 days beneath 1990-2016's 53.6 day October average, and 6.4 days under the medium term (2006-16) 55.3 day average.

This 48.9 days coverage estimate for end October 2018 is several days above October 2000's 42.9 days, the all-time end October days coverage low. In 2000, NYMEX natural gas peaked on 12/27/00 at 10.10. Recall also October 1996's 45.5 days coverage depth; nearest futures continuation peaked 12/20/96 at 4.60.

Significantly, this potential October 2018's days coverage would continue a bullish days coverage trend tracing back to build season 2016. Compare end October 2016's 53.5 days supply.

Anticipated October 2018 coverage drops slightly beneath October 2014's 49.2 days. Why is this relevant? After all, a major bear trend for natural gas began well before October 2014, starting with 2/24/14's 6.493 and accelerating from 6/16/14's 4.886 on its way to 3/4/16's 1.611 floor.

However, in addition to comparing days coverage of build season 2014 with that of build season 2018, recall summer/early fall 2014's price movements. In its descent, natural gas halted for a while at 3.723 on 7/29/14 (only modestly beneath the level of December 2016's top), running up to 4.544 on 11/10/14. November 2014's minor price peak not only occurred shortly after the close of 2014 build season; it also is notably higher than current major resistance around 4.00 (December 2016 high) confronting the bull trend which commenced in first quarter 2016. This hints that the bull trend that began in March 2016 eventually may retest December 2016's ceiling, perhaps breaking moderately above it.

COMMITMENTS OF TRADERS

A character in the movie "Home Alone" (Chris Columbus, director) says:
"It's Christmastime. There's always a lot of burglaries around the holidays. So we're just checking the neighborhood to see if everyone's taking the proper precautions."

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The CFTC's Commitments of Traders sometimes is a helpful indicator for predicting significant trend changes and travels in natural gas and other marketplaces. One should interpret Commitments of Traders data with care. Review the benchmark NYMEX and the ICE Henry Hub natural gas contracts (futures and options combined; ICE data converted to NYMEX contract terms) plus the NYMEX European look-alike options contract (all options in futures-equivalent terms). In the natural gas complex, sometimes (but not always) key price tops and bottoms occur alongside notable highs and lows in the net noncommercial position.

The CFTC's Commitments of Traders reveals a very large net noncommercial long position in the natural gas complex. The current net noncommercial long position in the petroleum complex

likewise is very substantial from the historical standpoint. Both natural gas and petroleum currently are vulnerable to liquidation by the net noncommercial long fraternity, which would tend to pressure prices.

February 2014's net noncommercial long position ("NCL") summit for natural gas roughly coincided with 2/24/14's NYMEX natural gas pinnacle at 6.493. The net NCL plateau was 2/18/14's approximately 328,000 contracts, 7.7 percent of total open interest of around 4.3 million contracts. The 8.4pc of the following week was the net NCL percentage record up to that time for the period starting January 2010, when ICE Commitments of Traders data first appeared.

What about nowadays? The recent high net NCL and net percentage of total open interest warn of (tend to confirm a price top in) NYMEX natural gas prices (nearest futures continuation). Natural gas open interest on 4/11/17 is just under 3.5 million contracts. The natural gas net noncommercial long position is about 318,000 contracts, almost equal to 2/18/14's net NCL height. Moreover, the 4/11/17 net NCL represents a record 9.1 percent of total open interest (for the January 2010-present span). Current net NCL clearly exceeds the prior high reached after the March 2016 bull move began, 12/20/16's 283,000 contracts (8.8pc of total OI).

The prior high percentage for net NCL relative to total open interest for the recent natural had been 1/3/17's 9.0 percent (net NCL that week was 280m contracts). Note the timing of 12/20/16's elevated net NCL position and 1/3/17's high in the net percentage of total open interest in conjunction with 12/28/16's 3.994 high. Remember the vicious natural gas price drop from 12/28/16's 3.994 roof.

In total contract terms, the record net noncommercial long peak is 4/30/13's net NCL peak of 367m contracts. This net NCL total represented 7.6pc of total open interest of about 4.8 million contracts. That spring 2013 open interest soars over current levels. Also recall that natural gas made an interim high on 5/1/13 at 4.444. February 2014's 4.3 million contract total open interest likewise is higher than the current elevation.

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The petroleum complex also manifests a hefty noncommercial long position (futures and options combined). In this context, keep 1/3/17's $55.24 NYMEX crude oil plateau (nearest futures continuation) in sight, as well as the second top at $54.84 on 2/23/17. For the NYMEX petroleum complex (benchmark crude oil, heating oil/diesel, and gasoline/RBOB contracts combined) plus the ICE Brent/North Sea contract, 2/21/17's net noncommercial long position of slightly more than one million contracts (15.9pc of total open interest) was very substantial. Note it occurred close in time to February 2017's NYMEX price high.

THE PETROLEUM PLAYGROUND

For guidance in predicting NYMEX natural gas price trends, monitor those in the petroleum complex. NYMEX crude oil's 2/11/16 trough at $26.05 (nearest futures continuation) occurred shortly before the NYMEX natural gas bottom on 3/4/16 (and alongside the S+P 500's 2/11/16 trough at 1810). NYMEX crude oil made important interim lows in its rally, $39.19 on 8/3/16 and $42.20 on 11/14/16; critical interim lows in NYMEX natural gas occurred near in time to these. Remember 8/12/16's 2.523 and 11/9/16's 2.546. NYMEX crude oil's recent high occurred 1/3/17 at $55.24, adjacent in time to 12/28/16's 3.994 natural gas elevation. A second top in NYMEX crude oil, 2/23/17's $54.84, occurred not long before the S+P 500's high to date, 3/1/17's 2401.

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In calendar 2014, NYMEX natural gas, after 2/24/14's 6.493 pinnacle, collapsed from subsequent interim highs on 6/16/14 at 4.886 and 11/10/14 at 4.544. Recall NYMEX crude oil's crucial drop-off point high on 6/20/14 at $107.73, close in time to June 2014's natural gas one.

OTHER NATURAL GAS SIGNPOSTS

For US natural gas "in general", analysis of and comparisons between past and current natural gas price marketplaces can venture beyond the NYMEX nearest futures continuation contract. Marketplace professors study actual NYMEX contract months (October 2017 or March 2018) and intramarket spreads (such as March 2018 versus April 2018). Some observers analyze price trends at other key natural gas delivery locations, as well as intermarket (basis) spreads involving such pricing points. Compare natural gas price movements with those of other commodities (such as coal, electricity, crude oil and the rest of the petroleum complex, base and precious metals) and financial arenas such as stocks, interest rates, and the US dollar.

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Since NYMEX natural gas (nearest futures continuation) established a major bottom in first quarter 2016, the NYMEX natural gas winter 2017-18 calendar strip price pattern generally has coincided with it. The NYMEX winter 2017-18 strip bottom was 2/29/16 at 2.632, the top 12/29/16's 3.732. Note also its interim lows on 11/9/16 (at 3.045) and 2/27/17 (3.111). The timing of its 4/7/17 high at 3.631 parallels one in NYMEX nearest futures, 4/5/17's 3.347.

Not all NYMEX intramarket spreads trade alike. But price trends in the NYMEX March 2018 less April 2018 spread in recent times have tended to resemble those in the NYMEX nearest futures contract. For example, note the spread lows of .356 (backwardation, March greater than April) on 11/11/16 and .370 on 2/27/17. See the spread peak at .684 on 12/28/16 and 4/7/17's high at .645.

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