

“In commodities, the impossible happens every few years.” Remark of an experienced trader to the author

OVERVIEW AND CONCLUSION

When the United States natural gas draw season concludes around end first quarter 2014, the low in working gas inventories in the key Producing Region probably will be between 650 to 750bcf. That range presumes that weather in key American consuming regions for the balance of winter 2013-is fairly close to normal and that the US economy continues to expand modestly. Based on the inventory patterns of the past seven seasons or so, the lower end of that range would be bullish. Sustained very cold temperatures for the balance of winter, especially in the key consuming areas, could drag Producing Region (“PR”) stocks down to about 325 to 375bcf. Extremely warm temperatures could leave inventory as high as 970bcf.

The lofty pinnacle created around 611 four years ago (1/7/10; NYMEX nearest futures continuation) is a distant memory for many marketplace visionaries. So are much higher price peaks prior to this. Especially since mid-2011, US natural gas production jumped due to the shale gas revolution as well as output associated with the petroleum drilling boom. This has built confidence that ample natural gas supplies generally will keep prices fairly subdued. Allegedly inevitable North American liquefied natural gas exports will not become sizable for at least another two or three years from now. Forecast US electricity demand for calendar 2014 is essentially flat relative to 2013. The NYMEX natural price (nearest futures continuation) even fell under two dollars two years ago (190 bottom; 4/19/12)! Recall the important resistance established this spring at 4.444 (on 5/1/13; challenged but not broken by the recent high on 12/13/13 at 4.443). So how on earth could the front month NYMEX price eventually (even if not this winter) ever sustain itself over 450, or even fly up to 500, 600, or even higher?

Yet inventory obviously still matters. History shows that weather can slash working gas inventories in the Producing Region and elsewhere, sometimes dramatically. Thus despite widespread faith in growing production and other supply/demand variables, high or even average national inventories, particularly from the days coverage perspective, are not guaranteed. Consequently if overall US inventories plummet far enough, and even if this is relatively unlikely (as of now) for winter 2013-14, five or six dollars (and yes, even higher) NYMEX prices are not inconceivable.

In addition, alternative “investment” in commodities has reduced the amount of “free supply” in natural gas. This buy-and-hold for the long run activity probably has been more of a factor since around 2003 (or at least 2006) than in the preceding time span. In any event, for any given arithmetical or days coverage gas inventory level nowadays, such investment makes stocks tighter than they appear, though experts can debate how much. “Speculative” buying enthusiasm also may rally prices.

Suppose NYMEX natural gas prices stay over 400, or even advance beyond 500. This probably will boost North American gas production. But substantial output increases from current levels will not be immediate (as in time for the close of this winter at least). Soothsayers talk about short hedging, especially by producers. Prices may not sustain a move over the major resistance around

450 or so, especially if inventories do not fall significantly from here to the end of the season. Yet even this year, how active will short hedgers be if the weather stays quite cold and prices keep going up? Might some cover their existing shorts, or at least refrain from selling much “until the picture becomes clearer”? And might some long hedgers (think of industrial users, for example) decide to enter the arena to manage risks related to a bull move in price?

History reveals that many miraculous natural gas rallies do not persist at extraordinary levels. But that did not abolish the actual price spike. Recall such summits as 7/2/08’s 1369, 12/13/05’s all-time pinnacle at 1578, 2/25/03’s 1190, 12/27/00’s 1010, 11/30/06’s 905, 10/28/04’s 920, and 1/9/04’s 763 (NYMEX nearest futures continuation). Even in ancient times of over ten years ago, prices sometimes more than doubled from major bottoms.

US NATURAL GAS PRODUCING REGION INVENTORY HISTORY

The following table displays US Producing Region (“PR”) seasonal draws for the past 19 years from the build season summit to the end of winter draw season floor. The calendar month (October or November) from which the inventory reduction commences determines the label for the given draw season “year” (winter season) in the table. Thus the winter season period spanning 11/25/11’s 1261bcf to 3/9/12’s 965bcf is indicated as “year” 2011 in the table. The current draw season of 2013-14 is the 2013 draw year. The Energy Information Administration provides weekly historical data; it started doing so at end December 1993 (the 3/11/94 inventory trough for the 1993 draw year was 271bcf.).

Each column highlights its low and high over 1994-2012. The table lists many noteworthy price bottoms and pinnacles for NYMEX natural gas (nearest futures continuation).

| <u>Year (start)</u> | <u>Inventory Peak (bcf; date)</u> | <u>Inventory Low (bcf)</u> | <u>Inventory Change (bcf)</u> | <u>Inventory Change (percent)</u> | <u>Key Price Low/High (date)</u> |
|------------------------------|---|------------------------------------|---------------------------------------|---|--|
| 1994 | 801 (11/18) | 387 (3/10/95) | 414 | 51.7pc | |
| 1995 | 768 (11/3) | 186 (4/12) | 582 | 75.8 | 372 (12/21/95) |
| 1996 | 642 (11/1) | 249 (2/28) | 393 | 61.2 | 174 (9/5/96); 460 (12/20/96) |
| 1997 | 712 (11/7) | 332 (3/20) | 380 | 53.4 | 385 (10/28/97) |
| 1998 | 915 (11/6) | 526 (3/26) | 389 | 42.5 | 161 (8/27/98) |
| 1999 | 864 (10/22) | 374 (4/14) | 490 | 56.7 | 208 (11/24/99) |
| 2000 | 679 (11/10) | 233 (3/30) | 446 | 65.7 | 1010 (12/27/00) |
| 2001 | 933 (12/14) | 546 (3/29) | 387 | 41.5 | 176 (9/26/01) |
| 2002 | 889 (10/25) | 198 (4/11) | 691 | 77.7 | 264 (8/7/02); 1190 (2/25/03) |
| 2003 | 904 (11/7) | 371 (3/12) | 533 | 59.0 | 439 (9/22/03)/ 763 (1/9/04) |
| 2004 | 968 (11/12) | 486 (3/25) | 482 | 49.8 | 452 (9/16/04)/ 920 (10/28/04) |
| 2005 | 897 (11/18) | 615 (3/24) | 282 | 31.4 | 1578 (12/13/05) |
| 2006 | 1015 (11/10) | 564 (3/9) | 451 | 44.4 | 405 (9/27/06)/ 905 (11/30/06) |
| 2007 | 1074 (11/23) | 490 (3/14) | 584 | 54.4 | 519 (8/27/07) |
| 2008 | 974 (11/14) | 690 (3/6) | 284 | 29.2 | 1369 (7/2/08) |
| 2009 | 1219 (11/27) | 548 (3/5) | 671 | 55.0 | 241 (9/4/09); 611 (1/7/10) |
| 2010 | 1254 (11/26) | 687 (2/18) | 567 | 45.2 | 321 (10/27/10) |
| 2011 | 1261 (11/25) | 965 (3/9/12) | 296 | 23.5 | 498 (6/9/11) |
| 2012 | 1287 (11/9) | 690 (4/5/13) | 597 | 46.4 | 190 (4/19/12) |
| AVERAGE 1994-2012 | 950 bcf | 481 bcf | 469 bcf | 49.4pc | |

The average date for the end of PR draw season is March 20. In the table above, the 49.4 percent inventory change in the column derives from 469bcf/950bcf. Alternatively, analysts can depict a 50.8pc average stockdraw by adding the 19 individual periods together and dividing them by 19. Within draw season in general, as well as over any given winter season in particular, actual inventory declines of course do not occur in the same weekly quantity.

In the current marketplace situation, keep in mind NYMEX nearest futures contract highs of 443 (4/18/13)/444 (5/1/13). The recent high on 12/13/13 at 444 attacked spring 2013's elevation.

In natural gas as in other marketplaces, what is a "high", "low", "average", or "significant" price or inventory level (or change in them) is a matter of opinion. These viewpoints on "high" and so forth (and on other supply/demand variables) can vary over time. It also is challenging to define what currently is (and was previously) an "average" ("normal", "typical", "desirable") inventory level or range for any given time of year, whether in arithmetic or days coverage terms. Especially for a nationwide perspective, natural gas inventory analysis on a days coverage basis (not just an arithmetic one) offers insight.

Overall US natural gas demand shifted upward from calendar 2006's consumption low of 59.4bcf/day (2000 was 63.8bcf/d). Supply likewise generally has increased. The EIA's December 2013 Short-Term Energy Outlook ("STEO", 12/10/13; next release 1/7/14) estimates calendar 2013 consumption at just over 70.7bcf/day; 2014 edges down to about 69.6bcf/d (the 2012 level). Higher demand and supply since 2006 argue that the natural gas industry probably prefers to maintain larger arithmetic (bcf) inventories relative to prior history. In recent years, growing working gas storage capacity reflects this. The 950bcf long run average (1994-2012) level for the end of build season and the 481bcf total for the end of draw season consequently are too low to be "average" for the supply/demand landscape of recent years. So clairvoyants probably should raise their estimate as to what is an average starting and ending inventory total in arithmetic terms for "nowadays" for America as a whole as well as the Producing Region (and the Eastern and Western regions).

Moreover, in assessing whether a given inventory level is average, high, or low, one should assess it from the days coverage perspective. Over the past seven years, the average (desired, normal) days coverage for natural gas probably shifted higher. See "US Natural Gas: Drawing Pictures" (11/25/13) and earlier essays.

For the seven years 2006-2012 (winter 2006-07 through winter 2012-13), the average inventory high for the Producing Region at the end of build season is 1155bcf. Relative to this guideline, the weekly high in the PR for the 2013 year (winter 2013-14) draw season, 11/8/13's 1297bcf, rested only modestly above average relative to the 2006-12, span. The 11/8/13 total appears even less lofty if one focuses on the US demand history evident in calendar 2012 and 2013 and as forecast by the EIA for 2014.

For the seven years 2006-12, the average trough in the PR at the end of draw season is 662bcf. An average drawdown of 493bcf represents a 42.7 percent inventory cut over the winter season.

WINTER 2013-14 PRODUCING REGION STOCK DRAWING PICTURES

According to the EIA, on 12/6/13, Producing Region working gas inventory on 12/6/13 was 1214bcf, slumping 5.4 percent from the same week a year ago. However, this 12/6/13 level is up 3.5pc from the widely-watched five year (2008-12) average.

Assume normal US weather and modest American economic growth over the balance of this upcoming winter season. What will be the Producing Region natural gas inventory when year 2013 (winter 2013-14) draw season ends?

Start with 11/8/13's 1297bcf, the high for the 2013 draw year (2013-14 winter) period. Reviewing the long run table above (1994-2012), an average decline of around fifty percent would leave PR inventories around 649bcf at the end of the draw period. Compare 4/5/13's actual 690bcf as well as the spring 2013's price tops in the 440s.

If, however, one chooses the average 42.7pc draw over the seven year period of 2006-12 to generate an estimate for this year's winter inventory cut, the 554bcf draw leaves PR inventories at the close of draw season around 743bcf. But keep in mind that this seven year history includes two years of low percentage draws (2008's 29.2pc and 2011's 23.5pc), with 2009's 55.0pc being a rather modest higher than average level. So selecting 42.7pc as the appropriate average for predicting winter 2013-14 PR draws looks mildly conservative.

The EIA's December STEO estimates that end first quarter 2014 Producing Region working gas inventory will be 794bcf (4Q13's 1097bcf). Since the PR inventory draw typically (though not always) ceases around March 20, this 794bcf amount arguably incorporates a boost from roughly a March 20 date. Perhaps this implicit increase is about 30 to 50bcf. For the 2011 year, inventory increased about 74bcf from 3/9/12 to 3/30/12; for the 2009 year, inventory grew from 548bcf on 3/5/10 to 596bcf on 3/26/10 (and 627bcf on 4/2/10). However, these two years saw their inventory low a couple of weeks before the March 20 date. Thus if one takes the EIA's end 1Q14 PR inventory estimate of 794bcf and adjusts it down by 30 to 50bcf, that leaves end winter PR season stocks around 750bcf.

Alternatively, suppose one employs the average arithmetic draw over the 2006-12 span of 493bcf and subtracts it from 1297bcf. That leaves 804bcf. But keep in mind that this seven year time horizon contains two years of very small stock drawdowns.

In any event, concentrate again on the wide range of historical swings in percentage terms displayed since 1994. Suppose the balance of winter 2013-14 is very warm, and that US inventories decline only about 25pc, or 324bcf from 11/8/13's plateau. That leaves ample supplies of about 973bcf.

However, what if declines are huge in percentage terms? If they are 75pc, the 973bcf draw in the PR leaves stocks quite low, at only 324bcf. Widespread sustained freezing winter weather could have substantial bullish price consequences.

Inventory levels and trends in the Eastern and Western regions, not just the Producing Region, significantly influence NYMEX (and other) natural gas price levels and trends. However, NYMEX's benchmark natural gas contract delivery location resides within the PR at Henry Hub, Louisiana.

Buy-and-hold for the long run (alternative investment) in commodities reduces free supply in those marketplaces to some extent. The CFTC's Index Trader category roughly represents this long run alternative investment. Based on the CFTC's overall data for Index Traders in agricultural commodities (the CFTC does not provide Index Trader data for the energy complex or metals), twenty percent of total open interest is a conservative estimate for Index Trader involvement in the key natural gas contracts (the NYMEX benchmark, the ICE contract, and NYMEX European look-alike options; futures and options combined).

Since alternative investment therefore focuses on the PR region (due to the Henry Hub location), its supply/demand consequences (its reduction of free supply) especially affect the PR region (and thus the NYMEX benchmark natural gas contract- and its ICE parallel). Moreover, NYMEX price moves often influence those in other parts of the US (though obviously natural gas basis relationships often move around a lot). So alternative investment directly bound to NYMEX (Henry Hub, the PR) can affect a very wide territory, not merely the PR.

In addition, when inventory (whether in arithmetic or days coverage terms) for a given commodity has seasonal highs and lows, alternative investment (long run ownership) tends to have greater influence on the supply/demand situation at the end of the draw season. The long run alternative investment total does not change to any significant extent due to seasonal considerations. But physical (real world) inventory does. Thus, all else equal, the alternative investment percentage relative to actual physical inventory tends to be higher in natural gas around the end of the gas draw season. If natural gas physical inventories are "low" during winter, or if marketplace players fear this will be the case, alternative investment arguably can have a noteworthy bullish effect on gas prices.

Admittedly, a major bear move in commodities, as occurred in the acceleration of the worldwide economic crisis of 2008, may inspire substantial investment liquidation by the buy-and-hold alternative investment crew.

The CFTC's Commitments of Traders statistics for natural gas offer some guidance regarding the importance of "noncommercial" players in natural gas. As of 12/10/13, the net noncommercial long position in the three signpost contracts (NYMEX benchmark, ICE contract, NYMEX European options; futures and options combined) was about 178,000 contracts, or 4.5 percent of total open interest. Noncommercials were slightly net short around the time of the NYMEX nearest futures low near 338 on 11/5/13. On 11/5/13, noncommercials were nearly 5,000 contracts net short; on 11/19/13, they were net short about 27,000 contracts (.7pc of total open interest). Thus the noncommercials became noteworthy net buyers during the rally from the November 2013 price low.

As NYMEX prices peaked in spring 2013 (5/1/13 top around 444; 4/18/13 high 443), so did the natural gas net noncommercial long position, about 367,000 contracts (7.6pc of total open interest) on 4/30/13.

INVENTORIES, FLAT PRICE TRENDS, AND INTRAMARKET SPREADS

US natural gas players should monitor inventories within the Producing Region in the context of NYMEX's outright price and intramarket spreads.

Overall flat price natural gas marketplace levels and trends intertwine with NYMEX intramarket spread relationship ones. Intramarket spreads such as the NYMEX March 2014/April 2014 one

reflect or confirm outright price travels and the natural gas supply/demand situation, particularly within the contract delivery region. For example, increasing backwardation (or shrinking contango) in a NYMEX March/April spread generally tends to indicate (confirm) a bull trend in outright NYMEX prices, whereas falling backwardation (or growing contango) often confirms bearish outright price direction. Note the date of the bottom around flat (almost no backwardation) reached in the NYMEX March less April 2014 spread- 11/5/13, the same day as the important 338 nearest futures low. Its final high in its long downtrend beginning in mid-April 2013 occurred 5/1/13 at around 42 cents backwardation (peak around 45 on 4/12/13; note 4/18/13's 42 as well). The 12/13/13 high in the March/April 2014 spread was about 22 cents.

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