

US NATURAL GAS- A WINTER'S TALE

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From William Shakespeare's "A Winter's Tale": "What's gone, and what's past help, Should be past grief" (Act III, Scene II)

TALKING TRENDS

Despite widespread faith in growing United States natural gas production and the influence of other supply/demand variables, high or even average national inventories, particularly from the days coverage perspective, are not guaranteed. Thus in winter 2013-14, as it did in several previous years, very cold weather has slashed US natural gas inventories dramatically.

The overall US natural gas inventory draw of 726bcf from end November 2013 to end December 2013 (3602bcf less 2876bcf; EIA, January 2014 Short-Term Energy Outlook, "STEO", 1/7/14, Table 5a) was huge. It established a new record draw for the end November to end December period in arithmetic terms for the over two decade span from 1990 to the present. Compare 2000's 723bcf gigantic stock reduction (2442bcf less 1719bcf). Don't overlook 2009's 707bcf. The EIA states that as of 1/3/14, total United States working gas inventory (lower 48 states) was 2817bcf, down 15.8 percent versus the year-ago week. The 1/3/14 total slumps 10.1pc from the 2009-13 five year average of 3132bcf for that week.

The January STEO (p6) points out that storage withdrawal of 285bcf for the week ending 12/13/13 "was the largest [weekly] storage withdrawal since recordkeeping began in 1994." The November 2013 STEO estimated US calendar 2013 demand at 70.13bcf/day. December 2013's freeze helped raise the yearly consumption statistic to 71.21bcf/day in (January STEO; next release 2/11/14).

In regard to this November to December inventory draw context and the bull move up to 453 in late December 2013, recall the price spike peak of December 2000 (12/27/00 at 1010) and January 2010's major high on 1/7/10 at 611.

The broad range for natural gas (NYMEX nearest futures continuation) over the medium term (extending beyond the balance of this winter 2013-14) remains roughly 280/310 to 490/520. Many players view "around 350" as a near term equilibrium price. Why is there substantial support around 300? Note the 305 low on 1/2/13 (and the gap relative to the 3.046 high on 9/26/12), the 313 lows of 2/15/13 and 8/8/13, and that a 33 percent fall from the 453 high is about 302.

But what about gas prices specifically for the balance of winter 2013-14? Assuming normal weather and moderate American economic growth, the natural gas trend for the remainder of the current draw season probably is about 340 to 453 (the 12/23/13 top; the 5/1/13 high was 444). Inventory from the days coverage perspective has fallen sufficiently to support prices at higher levels than the longer run 280/310 bottom. Around 338 was the 11/5/13 rally take-off point; 340 is a 25pc tumble from the 453 high.

The current low days coverage level of gas inventory nevertheless implies a warning that a break above the December 2013 summit is not out of the question. Suppose (even if this is relatively unlikely) the US suffers through colder than normal weather for the rest of winter 2013-14, and

that overall inventories consequently decline significantly relative to average trends. A five percent break over the December 2013 high gives about 476, a 10pc one 499 (498 was the 6/9/11 high. Recall 2010's 6/16/10 top at 520 and 8/2/10's around 501; a 50pc rally from the 11/5/13 point is about 507. If severely cold weather is sustained for a rather long time, then six dollars or higher may ensue, even if only on a brief spike. Keep in mind 1/7/10's 611 pinnacle.

THE DAYS COVERAGE STORY

What does the US lower 48 states working gas inventory picture unveil regarding potential price moves? Much depends on the viewpoint adopted regarding what constitutes average (appropriate, normal, reasonable, typical, usual) inventory levels. One factor in this regard is the historical time horizon selected. Although arithmetic inventory totals are important to monitor, observers especially should focus on the days of inventory coverage variable. After all, changing consumption levels influence industry viewpoints regarding what constitutes average, high, or low stockpiles.

The long run (1990-present) end calendar month days coverage average for March is 22.3 days. The record high for end March was draw "year" 2011's (October through March) stratospheric 37.1 days. The calendar "year" referring to March incorporates/refers to the year of the preceding October. So the 37.1 days coverage existing in actual calendar March 2012, as part the winter 2011-12 draw season, is labeled as belonging to calendar year 2011. The other days coverage high for end March in the relatively recent past was draw year 2005's 28.1 days. Peaks in the more distant past are 1990's 36.4 days and 1991's 28.8 days. The record depth of 11.6 days occurred in the 2000 and 2002 draw years.

Although the long run 1990-2012 vista should not be overlooked, suppose the 2006-12 horizon is more relevant for inventory analysis. See "US Natural Gas: Drawing Pictures" (11/25/13), "US Natural Gas Inventory: the Producing Region Drawing Board" (12/16/13), and earlier essays. The 2006-12 vista reveals that an average end March inventory level is 26.4 days. This exceeds the long run (1990-2012) period by about 4.1 days. This difference is not confined to the month of March. Each calendar month from October through March manifests a noteworthy increase for the 2006-12 era relative to the long run history. The average boost for these six calendar months runs from 3.0 to 4.3 days, with the average end month growing about 3.8 days.

Suppose end March 2014 United States working gas inventory is 1541bcf (January 2014 STEO, Table 5a). Then days coverage will be about 21.6 days (1541bcf/full calendar year 2013 average daily demand of 71.21bcf/day). This is 4.8 days beneath the 2006-12 average, indicating that end March 2014 US natural gas inventories probably will be tight. So if severe cold weather reappears this winter and remains for a "fairly long while", thus cutting days coverage relative to this estimate, then gas prices probably will resume their rally. If end March inventories decline to 1450bcf, days coverage falls to around 20.4 days.

Even if audiences prefer to embrace the long run horizon of 1990-2012 for days coverage analysis, 21.6 days is slightly beneath the long run average of 22.3 days. This view should tend to support prices over the long run around the 280/310 level, and perhaps higher.

Suppose marketplace watchers want to employ the EIA's 2014 calendar year consumption estimate of 69.63bcf/day as a means of assessing March 2014 days coverage. Inventories days coverage of about 22.1 days still is low relative to the end March 26.4 day average (2006-12)

TAKING STOCK: EASTERN CONSUMING REGION INVENTORY

“When the winter’s in full swing and your dreams just aren’t coming true
Ain’t it funny what you’ll do.” The Arctic Monkeys’ song, “Knee Socks”

Reviewing Eastern Consuming Region inventories in historical context underlines that its current supplies are on the low side. Colder than normal weather in this territory for the balance of this winter probably would spark renewed bull price moves.

The table below summarizes US Eastern Consuming Region (“ER”) seasonal draws for the past 19 years from the commencement of winter draw season inventory 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 “year” 2011 in the table designates the winter season period covering 11/11/11’s 2091bcf to 3/16/12’s 1049bcf. The current draw season of 2013-14 is the 2013 draw year. The EIA provides the weekly historical data. It started doing so at end December 1993 (for the 1993 draw year, the inventory low occurred 3/25/94 at 461bcf). As a footnote, remember that although the Eastern region is labeled as and remains a major natural gas consuming territory, the shale revolution has boosted the ER’s gas production in the past few years. Each column highlights its low and high over the 1994-2012 years.

**US NATURAL GAS INVENTORY: EAST CONSUMING REGION DRAW SEASON
(1994-Present)**

<u>Year</u>	<u>Inventory Peak (bcf; date)</u>	<u>Inventory Low (bcf; date)</u>	<u>Inventory Change (arithmetic, bcf)</u>	<u>Inventory Change (percent)</u>
1994	1896 (11/11/94)	613 (4/14/95)	1283	67.7
1995	1813 (11/3)	285 (4/12/96)	1528	84.3
1996	1841 (11/1)	493 (4/18)	1348	73.2
1997	1824 (11/7)	635 (3/27)	1189	65.2
1998	1917 (10/30)	657 (3/26)	1260	65.7
1999	1877 (11/12)	535 (4/14)	1342	71.5
2000	1762 (11/10)	364 (4/6)	1398	79.3
2001	1928 (11/30)	721 (4/12)	1207	62.6
2002	1867 (10/25)	277 (4/11)	1590	85.2
2003	1891 (11/7)	473 (4/9)	1418	75.0
2004	1939 (11/5)	546 (4/1)	1393	71.8
2005	1946 (11/7)	846 (3/31)	1100	56.5
2006	1990 (10/20)	663 (4/13)	1327	66.7
2007	2017 (11/2)	563 (4/4)	1454	72.1
2008	2041 (11/7)	641 (3/27)	1400	68.6
2009	2101 (11/13)	750 (4/2)	1351	64.3
2010	2087 (10/29)	616 (4/1)	1471	70.5
2011	2091 (11/11)	1049 (3/16)	1042	49.8
2012	2096 (11/2/12)	646 (4/5/13)	1450	69.2

1994-2012

Average (19 periods):

1943bcf	599bcf	1344bcf	69.2pc
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The average date for the Eastern Consuming Region inventory top is around November 6. The average end date for the inventory trough is April 5. The table presents percentage inventory change for the entire period as the average inventory shift relative to the average high (1344/1943bcf). Alternatively, the average of the actual percentages (sum of the inventory changes divided by 19) is 69.4pc.

What about the current scene? Recent freezing weather tightened natural gas inventories in the key ER considerably. EIA weekly data show ER working gas stocks of 1403bcf as of 1/3/14. They thus plummeted 17.6 percent relative to one year ago and stand 14.6pc beneath the 1642bcf five year average.

The 2013 end build season high occurred 11/8/13 at 1984bcf. Suppose they decline over the entire winter 2013-14 by 70 percent, about the long run average drawdown. A seventy percent inventory descent will leave end winter 2013-14 Eastern Region inventories at 595bcf, the lowest since the 2007 draw year. Though this about equals around the 599bcf long run average (1994-present), the end winter 2013-14 total represents less coverage and thus is relatively bullish because US consumption has grown in recent years.

The January 2014 STEO predicts the ER will have 689bcf inventory at end February 2014, slumping further to 566bcf by end March. Since the average end date for ER lows occurs after end March (on April 5), ER inventories at the end of this year's draw season may fall slightly beneath the EIA's 566bcf estimate for end 1Q14.

Suppose frigid weather slashes US Eastern regional inventories at the start of this year's draw season by 85pc, the record percentage highs over the 1994-present span. That leaves merely 298bcf of gas inventory, neighboring the all-time arithmetic depths for this period. Therefore a colder than normal winter for the balance of this season probably will encourage price rallies in NYMEX natural gas (nearest futures continuation) and various Eastern region hubs.

US PRODUCING REGION:AN INVENTORY UPDATE

"US Natural Gas Inventory: the Producing Region Drawing Board" (12/16/13) provides detailed history on that domain in historical context, including in relation to major price turns in NYMEX natural gas (nearest futures continuation).

That essay asserts that when the US natural gas draw season concludes around end first quarter 2014, the bottom in working gas inventories in the key Producing Region probably will be between 650 to 750bcf. That inventory range assumed that weather in key American consuming regions for the balance of winter 2013 (after 12/16/13) would be fairly close to normal and that the US economy would continue to grow 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, particularly in the key consuming areas, could push Producing Region ("PR") stocks down to about 325 to 375bcf.

As of 1/3/14, natural gas in underground storage in the Producing Region was 1019bcf, down 12.2 percent from the prior year week and 3.8pc relative to the recent five year (2009-13) average (EIA). The Eastern Consuming Region draw so far this winter thus has been more dramatic in percentage terms than the PR's.

The EIA's January 2014 STEO forecasts end March 2014 Producing Region Inventory at 708bcf.

The PR inventory draw typically (though not always) ceases around March 20 (earlier than in the Eastern Consuming Region). Consequently, the EIA's 708bcf total arguably incorporates a boost from around a March 20 date. This implicit increase may be about 30 to 50bcf. See "US Natural Gas Inventory: the Producing Region Drawing Board". Suppose one takes the EIA's end 1Q14 PR inventory estimate of 708bcf and cuts it down by 30 to 50bcf. That leaves end winter PR season stocks around 668cf.

Let's briefly survey the Western Consuming Region as well. As of 1/3/14, working gas inventory declined 18.0pc from the comparable 2013 week. The January 2014 week retreated 8.1pc from the 430bcf 2009-13 average. The January 2014 STEO predicts end March 2014 Western Region inventories will be 267bcf.

COMMITMENTS OF TRADERS AND ALTERNATIVE INVESTMENT

"The Big Chill": "Ever gone a week without a rationalization?" (Lawrence Kasdan, director)

The CFTC's Commitments of Traders portrays participation by noncommercial marketplace players in assorted natural gas contracts. Combine the noncommercial ("NC") figures from the benchmark NYMEX natural gas contract (futures and options combined), the NYMEX European look-alike options contract (futures equivalent), and ICE's Henry Hub contract.

What was the net noncommercial position around the time of 11/5/13's important price low at 338? The net NC short position was around five thousand contracts. As of 11/19/13, the net noncommercial short position expanded modestly, rising to about 27,000 contracts. This net NC short total contrasted with the massive net NC long position of about 367m contracts on 4/30/13 (7.6pc of total open interest), achieved near in time to 5/1/13's important plateau around 444. The high net NC long pc of total open interest in this rally was 7.8pc on 5/28/13 (when the total net NC length was about 368m contracts). The final high after the 5/1/13 peak at 444 was 5/28/13's 431.

From mid-November 2013 through end calendar 2013, the fairly small net noncommercial short reversed, becoming a substantial net noncommercial long one. On 12/31/13, not long after the 12/23/13 high in NYMEX nearest futures continuation just over 453, the net NC long position was about 310m contracts. This equaled 7.7 percent of total open interest, roughly the same percentage as around the time of May 2013's 444 price top. The substantial shift to a net NC long position probably encouraged the sharp price advance since mid-November 2013.

As of 1/7/14, the net NC long position had melted modestly to about 279m contracts. Suppose the net NC long position declines significantly from recent levels. All else equal, that probably will tend to propel the NYMEX natural gas price complex lower.

In general, alternative "investment" in commodities diminishes "free supply" in them. Gurus can debate as to the extent of this decline in readily available supply. This buy-and-hold for the long

run investment fervor probably has been more of a factor since around 2003 (or at least 2006) than in the preceding time span.

For any given arithmetical or days coverage natural gas inventory level nowadays, buy-and-hold alternative investment in the natural gas complex makes physical natural gas inventories tighter than they appear, though experts can quarrel as to how much. For commodities such as natural gas with notable seasonal inventory level swings, this investment enthusiasm tends (all else equal) to have more significant influence when inventories are seasonally falling and low (as during winter draw season). “Speculative” buying (and holding) enthusiasm of course also helps to rally prices.

SEASONAL MARKETPLACE TURNS: WINTERTIME

Of course not all important US natural gas trend changes have occurred during winter (NYMEX natural gas nearest futures basis). But several have. What does the past unveil?

**Calendar December- no noteworthy lows; but several important tops 12/21/95 (at 372), 12/20/96 (460), 12/27/00 (1010; recall the inventory drawdown from end November to end December that year), 12/13/05 (1578; all-time high). This suggests that NYMEX’s 12/23/13 high at 453 may turn out to be an important top. Yet as noted above, colder than normal winter weather for the balance of the current season may cause the December 2013 high to be broken. Again, recall 2000’s 723bcf mammoth draw from end November to end December and keep in mind 2009’s 707bcf one.

However, in assessing whether the 12/23/13 summit was and will remain a key top, review actual NYMEX natural gas contracts, calendar strips, and intramarket spreads. For example, the February 2014 contract’s late December high did not break over its 5/1/13 pinnacle around 478. The 2014 NYMEX natural gas summer strip high on 5/28/13 at 433 also has not been broken by the rally from 11/5/13’s 354 bottom.

Several key NYMEX intramarket gas spreads established their highs alongside that in nearest futures continuation. The spreads likewise then retreated. The low in the March 2014 less April spread was about flat on 11/5/13, the date from which the bull charge in nearest futures continuation accelerated. The March 2014 less April 2014 spread’s final high was 12/23/13 at 35 cents backwardation (4/12/13 peak about 45 cents, the subsequent high on 5/1/13 at about 42 cents occurred alongside the 444 top that day in nearest futures continuation). The NYMEX April 2014 less October 2014 spread (daily settlement basis) rallied from about 13 cents (8/7/13)/12 cents (11/8/13) contango to a high of two cent contango on 12/28/13.

As always, watch prices in other natural gas regions as well as electricity and coal trends alongside NYMEX price and time behavior.

**Calendar January- significantly, there have been four key bottoms in calendar January. The two highs that also occurred in January indicate the potential for trend change during that month. Major lows: 1/24/92 (102), 1/13/95 (125), 1/15/00 (213; see the November 1999 bottom at 208 alongside that low), 1/28/02 (185; preceded by 9/26/01’s 176 trough). Remember the interim lows in early January 2013 (1/2/13’s 305 and 1/9/13’s 309).

Tops 1/9/04 (763) and 1/7/10 (611; recall the large inventory drawdown from end November 2009 to end December 2009). Note that these calendar January highs occurred relatively early in the calendar month. When did highs in many US natural gas physical (spot) marketplaces occur recently?

**February- troughs at 2/24/97 (168), 2/26/99 (163); summits 2/2/94 (269), 2/25/03 (1190)

**March- no noteworthy lows or highs.

**April- major bottom 4/19/12 at 190. From the time perspective, the key double top of 4/18/13 at 443 and 5/1/13 at 444 averages out to a late April pinnacle.

AFTER WINTER 2013-14 (THE FOLLOWING MONTHS)

“Winter gray and falling rain
We’ll see summer come again
Darkness falls and seasons change
(Gonna happen every time)” “Weather Report Suite”, a Grateful Dead song

Suppose that for the next several months NYMEX natural gas prices stay over 400, or even advance toward 500. This probably will boost North American gas production. Electricity demand probably will not help natural gas prices to increase much in calendar 2014. The EIA forecasts calendar 2014 US electricity consumption of about 10.53 billion kilowatt hours per day will be about unchanged year-on-year.

In any event, the EIA’s January STEO forecasts US calendar year 2014 total marketed production will increase to about 71.7bcf/day, up 2.1 percent relative to 2013’s 70.2bcf/d. In contrast, calendar 2014 US natural gas consumption slumps about .2.2 percent to 69.6bcf/day from 2013’s roughly 71.2bcf/d. Thus the calendar 2014 scenario of eroding demand alongside growing supply, if this occurs, will tend to weigh on (keep a lid on) natural gas prices. However, this bearish tendency should be viewed in days coverage context.

Although the United States natural gas supply/demand situation after winter 2013-14 arguably becomes somewhat bearish after winter 2013-14 (and one should keep an eye on Canada as well), that bearishness probably is not severe. Why? The overall US situation arguably remains slightly bullish through around October 2014 from the days coverage vantage point. And end March 2015 gas inventory, though much less tight than at the end of March 2014, will not be much above its 2006-12 average.

The January 2014 STEO gives end October 2014 US working gas stocks of 3840bcf. Relative to calendar year 2014 demand of about 69.6bcf/day, days coverage at end October 2014 will increase to about 55.1 days. However, that October 2014 days supply total falls modestly below the 2006-12 average for end October of 57.2 days (and the 56.7 days for 2006-13, including October 2013’s 53.4 days coverage). The EIA predicts end March 2015 inventory will be 1909bcf. That represents about 27.4 days coverage, or one day above the 26.4 day average for 2006-12.

The EIA’s January STEO estimates US calendar 2015 total marketed production will rise about 1.3 percent to nearly 72.6bcf/day. However, calendar 2015 consumption relative to 2014 rebounds 2.1pc to about 71.1bcf/d. Retirements of coal power plants rise in 2015 due to the

implementation of the Mercury and Air Toxics Standards. In 4Q15, the first of the new facilities to liquefy gas produced in the lower 48 states for exports is expected to come partially on line (p7).

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