

NATURAL GAS INVENTORY: the EASTERN CONSUMING REGION BUILD SEASON

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CONCLUSION

Assuming normal weather, natural gas inventories in the United States Eastern Consuming Region at the end of the 2013 build season probably will range between roughly 2050bcf and 2100bcf. The midpoint of this range, 2075bcf, likely is about “normal” (average) for current United States supply and demand patterns.

Recall that end April 2012 Eastern Consuming Region peak working natural gas storage capacity for the region was 2219bcf. That total probably has been growing modestly since then. The Eastern Consuming Region therefore probably will not face a significant containment issue around the end of build season 2013, even if inventories reach around 2120bcf to 2135bcf.

BUILDING UP: HISTORY

For Eastern Consuming Region (“ECR”) build season, the following table details the early spring inventory low and the autumn stockpile summit for a given calendar year (1994-2012). Valleys and peaks for each column are in bold. Averages for the 19 season span appear at the base of the columns.

US NATURAL GAS INVENTORY: EASTERN CONSUMING REGION (1994-Present)

<u>Year</u>	<u>Inventory Low</u> <u>(bcf; date)</u>	<u>Inventory Peak</u> <u>(bcf; date)</u>	<u>Inventory Change</u> <u>(arithmetic, bcf)</u>	<u>Inventory Change</u> <u>(percent)</u>
1994	461 (3/25/94)	1896 (11/11)	1435	311.3
1995	613 (4/14)	1813 (11/3)	1200	195.8
1996	285 (4/12)	1841 (11/1)	1556	546.0
1997	493 (4/18)	1824 (11/7)	1331	270.0
1998	635 (3/27)	1917 (10/30)	1282	201.9
1999	657 (3/26)	1877 (11/12)	1220	185.7
2000	535 (4/14)	1762 (11/10)	1227	229.3
2001	364 (4/6)	1928 (11/30)	1564	429.7
2002	721 (4/12)	1867 (10/25)	1146	158.9
2003	277 (4/11)	1891 (11/7)	1614	582.7
2004	473 (4/9)	1939 (11/5)	1466	309.9
2005	546 (4/1)	1946 (11/7)	1400	256.4
2006	846 (3/31)	1990 (10/20)	1144	135.2
2007	663 (4/13)	2017 (11/2)	1354	204.2
2008	563 (4/4)	2041 (11/7)	1478	262.5
2009	641 (3/27)	2101 (11/13)	1460	227.9
2010	750 (4/2)	2087 (10/29)	1337	178.3
2011	616 (4/1)	2091 (11/11)	1475	239.4
2012	1049 (3/16)	2096 (11/2)	1047	99.8
1994-2012				
<u>Average (19 periods):</u>				
	589bcf	1943bcf	1354bcf	229.9pc

The average date for the Eastern Consuming Region inventory bottom is around April 6. The average end date for the inventory top is about November 5. The table presents percentage inventory change for the entire period as the average inventory shift relative to the average low (1354/589bcf). Alternatively, the average of the actual percentages (sum of the inventory changes divided by 19) is 264.4pc.

The 2013 ECR inventory bottom is 4/5/13's 646bcf. ECR stocks on 5/3/13 stand at 756bcf, down 36.3 percent from 5/3/12's 1186bcf.

STORAGE CAPACITY

How spacious will Eastern Consuming Region peak working natural gas storage capacity be at end build season 2013? Probably around 2244bcf to 2256bcf.

As of April 2012, demonstrated peak working gas capacity for the ECR was 2219bcf (Energy Information Administration, 9/12/12; April 2012 represents the most recent data). ECR capacity builds in recent years have been slight, averaging between 16 and 17bcf each 12 months. From April 2011 to April 2012 capacity grew merely 14bcf. The year-on-year rise from 2008 to 2009 was 25bcf. For 2009 to 2010, it was 18bcf, with that for 2010 to 2011 only nine bcf.

To estimate ECR storage capacity developments since April 2012, assume the average build of the 2008-12 yearly increases, about 17bcf. Adjust this upward by eight bcf to cover the additional six months to end October 2013. Adding the 25bcf storage rise to April 2012's 2219bcf pushes end October 2013 to 2244bcf.

Perhaps new natural gas production from the ECR in the past few years, long run potential for further output gains, and regional (and national) containment fears (as in 2012), will encourage more significant storage capacity creation since April 2012 than displayed by the 2008-12 average. As the maximum rise from one April to another in recent years was 25bcf, expansion of ECR storage by about 37bcf to reach 2256bcf by end October would be unsurprising.

What is a very optimistic capacity expansion outcome? Double the largest 12 month capacity build seen over the 2008-2012 period; this gives 50bcf. Over 18 months, that stretches to 75bcf. Though this outcome is unlikely, it would inflate ECR storage to 2294bcf around the close of build season 2013.

BUILDING UP IN 2013

What will be Eastern Consuming Region inventory at end build season 2013?

Given increased United States natural gas demand (and supply) since 2006, viewpoints regarding and estimates derived from "average" (normal, typical, desired), "high" and "low" gas inventories should emphasize the 2006-12 time period. However, the long run perspective beginning with 1994 remains relevant. See "US Natural Gas Inventory: the Producing Region Scenery" (5/6/13) and "US Natural Gas: the 2013 Build Up" (4/25/13).

Over the seven years from 2006-2012, average ECR inventory at the commencement of build season is 733bcf. The average inventory elevation at the end of build period is 2060bcf. Thus the average increase is about 1327bcf (2060 less 733bcf), or about 181percent (1327/733bcf).

Natural gas price levels and trends of course intertwine with gas supply, demand, and inventory totals and patterns, as well as with numerous other factors. In the current US natural gas marketplace, the natural gas versus coal switching issue, especially within the electric power sector, is a critical variable.

In any event, the most recent EIA Short-Term Energy Outlook (“STEO”; 5/7/13; next release 6/11/13) predicts end September 2013 ECR inventory of 1911bcf. This drops 2.9 percent relative to end September 2012’s 1969bcf stocks.

From end September 2012/early October to the stockpile pinnacle at the close of 2012 build season, inventories enlarged about 121bcf (based on EIA weekly statistics). The rise from end September/early October 2011 to the mid-November 2011 plateau was 210bcf. The 2010 increase from end September to build peak was around 175bcf, with 2009’s 120bcf. The 2008 build was 161bcf, with 2007’s 141bcf and 2006’s only 71bcf. That makes the seven year average about 143bcf. **Add this 143bcf average build for these years from end third quarter to the inventory peak to the EIA’s 1911bcf estimate for end September 2013. That equals 2054bcf.** Adding 210bcf (2011’s high) to the end September 2013 total gives 2121bcf.

The May 2013 STEO portrays how ECR year-on-year inventories from 1Q13 to 1Q14 catch up with and eventually surpass prior year levels. This is a bearish sign for gas prices. The EIA states that end first quarter 2012 ECR natural gas stocks were 1060bcf; compare the much lower 657bcf at close 1Q13. End 2Q12’s 1514bcf still remain significantly above the 1240bcf end 2Q13 forecast. However, end 3Q2013’s 1911bcf approaches the 1969bcf of the prior year quarter. What about end year 2013? End 4Q2013’s 1714bcf working gas inventory almost exactly matches 4Q12’s 1732bcf. Finally, the EIA predicts that 1Q2014 ECR inventory will be 810bcf. This marches 23.2pc above 1Q13’s 657bcf.

Let’s calculate ECR inventory levels for end build season 2013 via other methods.

Suppose one takes the 646bcf low for 2013 (4/5/13) and adds the 1327bcf average (2006-12) to it. Thus inventory climbs to 1973bcf by the end of 2013 build season. Is this 1327bcf estimated increase too conservative? Probably.

All else equal, average natural gas inventory levels at the onset of build season tend to be followed by average stock increases for the overall build season. Low inventory encourages higher builds. For example, note the extremes of 1996, 2001, and 2003 build seasons; and in the 2006-12 era, see 2008 and perhaps 2011 as well. High inventory at the start of the build period tends to produce smaller increases, as in the 2012 and 2006 build seasons (as well as 1999 and 2002). **Significantly, the 646bcf starting point for 2013 ECR inventory lurks a fair amount beneath the 733bcf average of the 2006-12 time frame. Consequently, the relatively low April 2013 ECR inventory total probably will be followed by a greater than average (relative to the 2006-12 vista) bcf increase.**

Moreover, it is noteworthy that for the last five years (2008-2012), ECR end season inventory in the ECR stood about the same. This argues that an industry target close to 2100bcf has evolved for the region. The average end season hoard of these five most recent years is about 2083bcf.

A 1437bcf ascent (from 646bcf to 2083bcf) over the course of 2013 build season would be greater than the 1327bcf average (2006-12), but it is not an unusual jump from the historical perspective. The 2007 (663bcf), 2009 (641bcf), and 2011 (616bcf) inventory levels at the start of build season are not far from 2013's. The average inventory rise for those three years (1354bcf, 1460bcf, and 1475bcf) is 1430bcf.

This analysis therefore indicates that a reasonable estimated ECR inventory range for end build season 2013 is around 2083bcf to 2100bcf.

Alternatively, suppose by end build season 2013 that inventories expand 181pc (the 2006-12 average) relative to 646bcf. They would rise about 1169bcf, making end season stocks about 1815bcf. Is this prediction likely to be realized? Probably not. Not only does this 1815bcf level fall below the average for the 1994-2012 horizon (it would be the lowest since 2000's 1762bcf). More importantly, it stands far underneath the end season levels of the past seven years. Assuming normal weather, this 1815bcf forecast is too low.

Because the 646bcf of April 2013 is a relatively low starting total in regard to the 2006-12 history and the current context, the percentage stock growth very likely will be more than this. Again, remember that 2007 (663bcf), 2009 (641bcf), and 2011 (616bcf) inventory levels at the start of build season are not far from that in 2013. Note the respective percentage builds of about 204 percent, 228pc, and 239pc, an average of about 224.3pc. So 646bcf times 2.243 is 1449bcf; 646bcf plus 1449bcf gives around **2095bcf** (about the ECR ending stock level the past several years). Or, choose the average long run percentage increase of about 230 percent (1994-2012); 646bcf times 2.3 is 1486bcf. Thus 646bcf plus 1486bcf gives **2132bcf**.

As the 2132bcf total decisively exceeds ending stocks of the past several years, they probably will not get that elevated. However, it is not inconceivable. The arithmetical gains of 2008 (1478bcf), 2009 (1460bcf), and 2011 (1475bcf) were rather close to this 1486bcf. Note also the even larger bcf gains during build seasons 1996, 2001, and 2003. Also, recall that adding a large total of 210bcf (2011's high) to the May STEO's end September 2013 estimate gives 2121bcf.

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