Natural Gas
Will shale gas be able ride to the rescue of natural gas storage by next fall and keep natural gas both cheap and abundant? The market for the last few weeks appears to be saying that supply will ride over the hill just in time to save the day. This week’s report looks at how likely it is the shale gas cavalry will show up and save the day.

First though let’s look at the EIA weekly natural gas storage report released yesterday. The EIA reported a build of 4 Bcf. That put US lower 48 working gas storage 50.7% below a year ago and 54.7% below the five year average which is impacted by the outlier year of 2012 when unlike this year winter didn’t happen.

The graph on the left illustrates just how far below the current storage levels have fallen compared to the prior eleven years. To reach the start of winter levels seen in the last five years will now require storage injections of 3,000 Bcf or more. To refill storage to by that amount now requires an unprecedented level of natural gas being available.

The second graph on the left focuses on the last two years along with three possible scenarios for the period leading up to the beginning of next winters heating season. The black line is the historic storage levels from January 2012 thru April 4th of this year.

The orange line represents the results of weekly fills equal to the average for each individual week since 2006. During that eight year period the average weekly injection was 62 Bcf. Some weeks experienced fills approaching 100 Bcf while others were in the mid 40 Bcf range.

This average injection would result in storage levels at the end of October equaling 2,775 Bcf. A storage level of 2,775 Bcf would be roughly 28% below the last two years. That approximate shortfall of over 1,000 Bcf would more than likely have the market very nervous. For some context on that storage level consider that the total draw from US storage this winter was in excess of 3,000 Bcf.

A worst case scenario is the light blue line which represents what would happen if the lowest weekly fills occurred over the period to the end of October. While this is very unlikely is does give some sense of just how wide ranging the weekly fills can be. The blue line also serves to illustrate the potential for shifting storage injection rates if the summer were to prove dramatically hotter than expected. This shift can even be seen in orange line reflecting the average fills. The summer burn remains one of the biggest unanswered questions and it is not dependent just on natural gas since coal’s participation in power generation will play major role in demand for natural gas.

Then there is the purple line which reflects the highest weekly fills over the period to the end of October. This line is what will happen if every week until October 31st the injections into storage are equal to highest volumes seen for that week in
the last eight years. Record weekly fills every week for the whole injection season would be inadequate to meet requirements to get back to levels many natural gas supporters have been forecasting.

Even that rate of injection which is an average of over 92 Bcf per week will still have storage falling short of every year post 2008. Storage would enter the winter at 3,643 Bcf. This scenario just like the low injection blue line seems very unlikely to happen.

So what is the likely scenario? It probably is somewhere around the orange line which means the current market expectations are probably significantly off the mark. The excerpt that follows from a Globe and Mail article on the North American natural gas storage situation sums it up very well (couldn’t have said it better myself).

"Delusional and naive is the way that I would characterize the forward curve right now," said FirstEnergy Capital Corp. analyst Martin King. "It just seems to be sunshine, butterflies, puppies, kitties: 'We're going to grow our way out of this problem, don't worry.' I don't think that's going to be the case."

Now for those of you expecting a price prediction we will stick to our “Prime Directive” and not make price forecasts. However it should be clear that the likely scenario for the rest of this year could make for a very interesting market and therefore opportunities.

So what are some of the factors that will impact these scenarios?

**Natural gas production**
The EIA and other strong supporters of shale gas forecast that supply will come charging over the hill and top up the natural gas storage tank. Given the forecasts of many of the leading natural gas producers in the US for flat to lower natural gas production on lower capital spending this seems to be unlikely. Even if drilling ramped up dramatically over the next couple of months the flows of gas from those efforts would be late to the game.

So while growth in some areas of production like the Marcellus will help it is difficult to see how the scale of supply growth alone could support the need storage build. Therefore it will come down to the weather and how much the alternatives to natural gas can provide power generation freeing up natural gas for injection. This means renewables such as wind but it primarily means coal burn.

**Coal**
Coal will play a large role in whether the volumes of natural gas required to refill storage are met. If power generators switch less generation back to coal it will impact storage. If generators refrain from coal burn this spring to build inventory in anticipation of the summer peak loads it will require higher levels of natural gas burn during the important injection months of April and May.

Utilities had been reducing their coal deliveries compared to the past five years as cheap natural gas displaced coal generation. One of the strategies at work here is to replace expiring long-term contracts for coal with spot market purchases. While this can give the generator more flexibility when demand for coal fired generation is down it can work against them when there is a need to increase supplies due to shifts in the market. Mine operators who have cut back on capital expenditures may find it difficult to fill both contracts and demands for growing spot supplies.
There is evidence that coal plant operators are anticipating higher demand for their generation in the months ahead based on reports like this one from Consol Energy last week.

(Reuters) - Consol Energy Inc raised its coal production outlook for the year, on strong demand from power companies. Increased demand for power after a severe winter in the United States, a dip in inventory levels at utilities and a ramp up in natural gas prices are boosting demand for thermal coal.

The Association of American Railroads reported that coal carloads rose in March climbing 2.2%. However, this was overshadowed by a 13.5% increase in intermodal carloads, 21% in grains and over 8% in petroleum and petroleum products. This put total US rail traffic 10% higher than year ago levels. This meant coal was competing with a broad range of freight traffic for space and time for shipments.

The EIA had this graph on its Today in Energy page that illustrates how the weather at the start of the year delayed rail shipments. The dwell time has improved since February so rail congestion may be a receding issue.

However, the average speed of a coal unit in the first quarter of 2013 on BNSF was 23.4 mph. At the end of March coal units on BNSF were only making 18.0 mph. The combination of increased volumes and weather may continue to have an impact on coal deliveries over the next two months despite improved dwell times.

How much power generation is provided by coal will play a very large role in what happens in the natural gas injection season. It will be the reverse of the situation of the last few years where natural gas was displacing coal from the market providing a surplus coal supply for export and pressuring some coal mining companies to curtail production. The degree to which this happens will depend on how quickly and on what scale the switch from natural gas to coal takes place. Some may elect not to shift back to coal if they have bought enough supplies of cheap natural gas independent of current natural gas prices.

California

Then there is California’s need for power. With the closure of the San Onofre nuclear power plant and the lowered expectation for hydro to carry its weight the state will need to depend on natural gas to fill the gap. While it is true that the state has added a record amount of solar to its mix in 2013 it just balanced the power provided by the San Onofre plant and then only during optimum daylight hours. The graph on the right from the EIA illustrates the situation in California concerning new natural gas and solar.

Nationally the addition of natural gas generation was 6.8 gigawatts in 2013 of which California accounted for nearly half (47%). This comes on top of additions in 2012 totaling 9.2 gigawatts.

Given the drought conditions in California and the need to fill the gaps from nuclear and hydro with natural gas the state could play a major role in raising the demand for natural gas in the US. This is not coming at a good time as the country tries to rebuild natural gas storage.

The nuclear option?

According to data gathered by Bloomberg this week US power generation from nuclear power is now 1.7% below year-ago levels. There are currently 19 nuclear plants offline in the US for both planned and unplanned work. At least for now with nearly one-fifth of US nuclear plants down their contributions to spring power generation will be reduced.
Canada
During all the hype surrounding the US shale boom it is frequently overlooked that the US still imports natural gas from Canada. EIA forecasts are for the US to import 3.7 Bcf per day in 2014. The US and Canadian natural gas markets cannot be viewed in isolation from each other. So checking in on what is going on up north of the border is important.

On the right are two graphs reflecting the situation concerning natural gas storage in Canada. The top graph shows the trailing five average storage levels with a black line. The blue bars represent the minimum and maximum levels of storage during the trailing five year period.

The red line is the current situation for 2014 storage. At the end of March Canadian natural gas in storage stood at only 45% of the five year average. At 189 Bcf it is 91 Bcf (32%) below the minimum seen in the prior 5 years.

Therefore at this point it seems unlikely that Canada will be in any position to export volumes in excess of historic levels to assist injections in US storage.

It will be interesting to see how this unfolds if the pull of the US market puts a dent in the ability of Canada to put the nearly 600 Bcf it will need into its own storage before next winter hits.

Mexico
Finally there is increasing exports to Mexico. Since 2010 annual exports have climbed by over 97%. Since US pipeline supplies to Mexico are competing with the price of imported LNG which is more than twice as expensive. Therefore it seems unlikely that Mexican demand for US natural gas in the short run will decline.

So to end this discussion of scenarios for the 2014 natural gas market it appears the US Shale Boom is about face its first real test. Based on what we see it is going to be a very difficult test to pass. However, raise the price another dollar or two per mmBtu and the supply story will change but that won’t happen in the next few months.

“Anyone who has never made a mistake has never tried anything new.”
~ Albert Einstein

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