
MUSINGS FROM THE OIL PATCH

January 3, 2012

Allen Brooks
Managing Director

Note: *Musings from the Oil Patch* reflects an eclectic collection of stories and analyses dealing with issues and developments within the energy industry that I feel have potentially significant implications for executives operating and planning for the future. The newsletter is published every two weeks, but periodically events and travel may alter that schedule. As always, I welcome your comments and observations. Allen Brooks

Are E&P Companies Coming To Their Senses About Gas?

These “liquids-rich” plays, unfortunately, contain a significant amount of associated natural gas that is helping sustain gas production growth

When gas production growth flattens and eventually declines, as we suspect will happen but we aren’t sure exactly when, it will be the increase in natural gas demand that will drive prices up

In our *Musings* of December 6, 2011, we concluded an article about the future of the natural gas market with the observation that “with less opportunity to bolster cash flow from hedging and joint venture cash, a likely decline in gas drilling appears on the horizon.” Increasingly, gas producers are cutting back their efforts directed towards drilling wells targeting dry gas resources and instead focusing on crude oil and natural gas liquids (NGLs) wells. These “liquids-rich” plays, unfortunately, contain a significant amount of associated natural gas that is helping sustain gas production growth even as the number of rigs targeting dry natural gas is falling. However, it is still possible that this shift in drilling focus will provide the catalyst for a decline in gas production, which would ultimately yield a corresponding rise in gas prices.

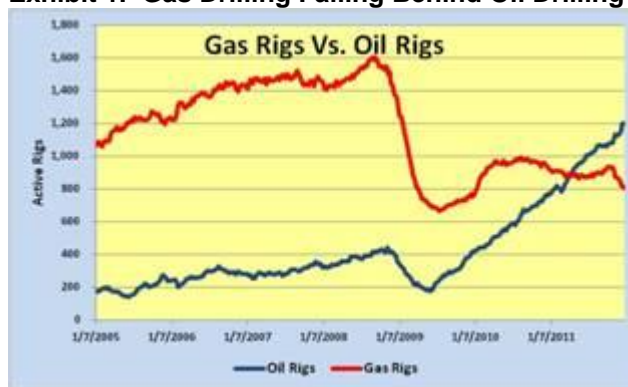
With the decline in the number of rigs drilling for dry natural gas, one has to question whether producers are finally coming to their senses about the weak economics of these drilling efforts. If they are, then the industry is on a track that will sustain higher gas prices as the volume of associated natural gas produced with crude oil or NGLs will eventually fall short of offsetting the decline in production from earlier, highly-prolific dry gas shale wells. When gas production growth flattens and eventually declines, as we suspect will happen but we aren’t sure exactly when, it will be the increase in natural gas demand that will drive prices up. Eventually, if gas production falls sufficiently, prices will rise to levels that will make more dry gas drilling economic as has been the pattern that underlies the history of the oil and gas exploration business.

If we examine what has happened to the drilling industry over the past few years we can clearly see how the drilling focus has shifted from natural gas to liquids plays - crude oil and NGLs. That shift is

Rigs drilling for liquids surpassed the number of gas rigs beginning in the second half of April this year

demonstrated by the chart in Exhibit 1. The chart shows the number of active rigs drilling for natural gas versus those targeting oil since the start of 2005. For most of this period, natural gas was the favored target, but as gas prices continued to fall to very low levels and oil prices soared back to the \$100 per barrel mark, oil and NGLs became the desired drilling target due to the superior economics of liquids. Rigs drilling for liquids surpassed the number of gas rigs beginning in the second half of April this year.

Exhibit 1. Gas Drilling Falling Behind Oil Drilling



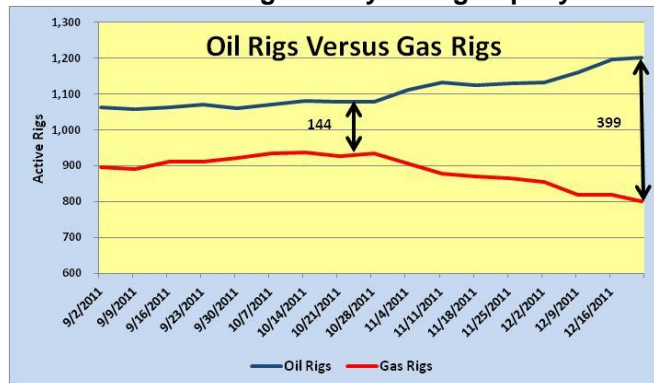
Source: Baker Hughes, PPHB

Along with those disappearing prices has gone the opportunity for producers to hedge future production at higher prices, which has helped to boost their cash flows during the past several years, a necessary ingredient to sustain the uneconomic gas drilling they have been engaged in

The pace of the switch toward oil-oriented drilling has accelerated since the start of September as seen in the chart in Exhibit 2. In the past eight weeks, the number of rigs drilling for oil has increased by 123, but the total drilling for gas has fallen by a 132. The result has been that the spread between the numbers of oil rigs versus gas rigs, which stood at 144 on October 28th, has increased to 399 as of December 22nd. The drilling shift has accelerated with the sharp fall in natural gas futures prices (\$3.92 per thousand cubic feet as of October 28th to \$3.11 on December 23rd) as traders' hopes for an early cold spell to sweep across the nation, or at least in the heavily populated regions, and boost gas demand has not materialized. With the lack of a boost in gas demand, gas volumes withdrawn from storage have not exceeded weekly withdrawals experienced last year or compared to the average weekly withdrawals of the past five years. Gas storage volumes remain enormous and with continued growth in gas production, not only have current natural gas prices fallen but prospects for higher future prices have evaporated. Along with those disappearing prices has gone the opportunity for producers to hedge future production at higher prices, which has helped to boost their cash flows during the past several years, a necessary ingredient to sustain the uneconomic gas drilling they have been engaged in.

The impact of this shift in drilling can also be seen by looking at the trend in the number of drilling rigs working in the six major shale basins in the United States. While the total number of drilling rigs working in these basins since the *Land Rig Newsletter* began

Exhibit 2. Oil Drilling Activity Rising Rapidly

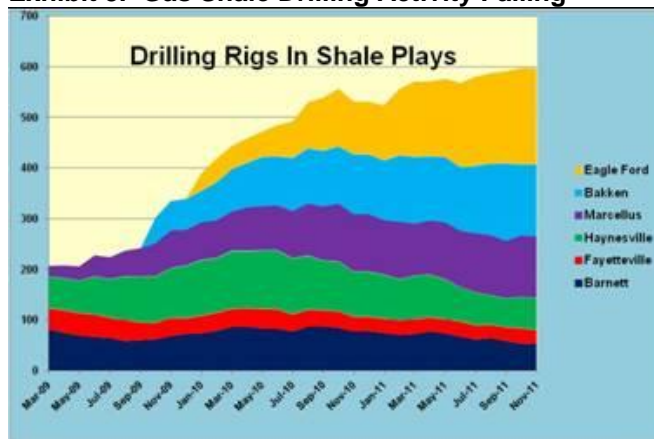


Source: Baker Hughes, PPHB

There have been noticeable shifts in the number of rigs working in the various basins based on their orientation toward dry gas or liquids resources

reporting them in early May 2010 has increased 31% from 461 to 602 at the start of December; there have been noticeable shifts in the number of rigs working in the various basins based on their orientation toward dry gas or liquids resources. Exhibit 3 shows the number of rigs working in these shale basins and how that number has changed over time.

Exhibit 3. Gas Shale Drilling Activity Falling



Source: Land Rig Newsletter, PPHB

From early 2010 to December 2011, the three predominantly dry gas basins have collectively experienced a 38% decline

If we consider the impact of the decline in natural gas prices versus the rise in crude oil prices and their respective impacts on drilling economics we can see how producers have made major adjustments to their drilling programs. From early 2010 to December 2011, the three predominantly dry gas basins have collectively experienced a 38% decline while the liquids-oriented basins have experienced a corresponding 181% drilling activity increase.

Our December 6th article on the future of the natural gas industry discussed the declining opportunities for producers to tap outside capital sources and how we anticipated this lack of money would

Exhibit 4. Oil Shale Basin Drilling Growing Rapidly

| Shale Basin | 1/5/2010 | 6/4/2010 | 12/2/2011 | 1/10 - Current |
|---------------------|----------|----------|-----------|----------------|
| Barnett | 73 | 85 | 54 | -26% |
| Haynesville | 114 | 118 | 58 | -49% |
| Fayetteville | 34 | 38 | 26 | -24% |
| Gas-oriented basins | 221 | 241 | 138 | -38% |
| Marcellus | 70 | 86 | 114 | 63% |
| Bakken | 60 | 97 | 155 | 158% |
| Eagle Ford | 35 | 60 | 195 | 457% |
| Oil-oriented basins | 165 | 243 | 464 | 181% |

Source: *Land Rig Newsletter*, PPHB

The capital raised from hedges, stock and bond offerings and joint ventures has sustained the industry’s acreage acquisition and drilling efforts in the face of low and declining gas prices

cause gas-oriented drilling to decline helping to eventually boost gas prices. The capital raised from hedges, stock and bond offerings and joint ventures has sustained the industry’s acreage acquisition and drilling efforts in the face of low and declining gas prices. To begin to understand investor perceptions for the future of natural gas producing companies, one needs only to examine two index performance charts composed of share prices for 16 E&P companies who also happen to be leading the gas shale revolution. Exhibit 5 shows the price action for this index (EPX-NYSE) compared to the overall stock market as reflected by the performance of the S&P 500 Index over the past four years. The charts show how the gas producers have outperformed the overall market, even though they failed to generate a positive return for investors. The overall market fell by 15% during this time period. Notice also that only in late 2008 and early 2009 did the performance of both the EPX and the S&P 500 match each other. The remainder of the time the EPX index outperformed the market.

Exhibit 5. Gas Producers Stocks Outperform Market



Source: Big Charts (certain data on chart missing)

When we examine a shorter period – the last six months – the results are markedly different as the gas producers started by outperforming and then fell behind. The initial outperformance coincided with investor expectations that the economy was starting a more robust economic recovery that would boost gas demand at the

The result was investors began turning the back on the cash needs of the producers

same time the gas rig count was starting to flatten and then decline raising expectations that gas supply growth was soon about to slow or possibly even fall. As late summer turned into fall and doubts about the health of the economy arose and gas storage volumes grew because production was far outrunning demand growth, investors became less enamored by the flood of money being directed into drilling new dry gas wells. The result was investors began turning the back on the cash needs of the producers. They were only attracted by investment vehicles that emphasized cash income streams – master limited partners (MLPs) or royalty trusts. While one way to raise capital, it becomes more costly since producers need to set aside cash flow to repay investors for the slug of capital they have provided. In December, as signs that the underlying fundamentals of the natural gas business were not improving, gas futures prices collapsed and the overall stock market's outperformance compared to gas producers was dramatic with a ten percentage point spread sustained for the last half of the month. Some of the more recent underperformance may be attributed to investor tax-loss selling as we approach the end of calendar 2011.

Exhibit 6. Gas Producers Fall Behind As Gas Prices Fall



Source: Big Charts

The country can not only sustain existing production flows for at least another 100 years or more but can become a significant exporter of LNG

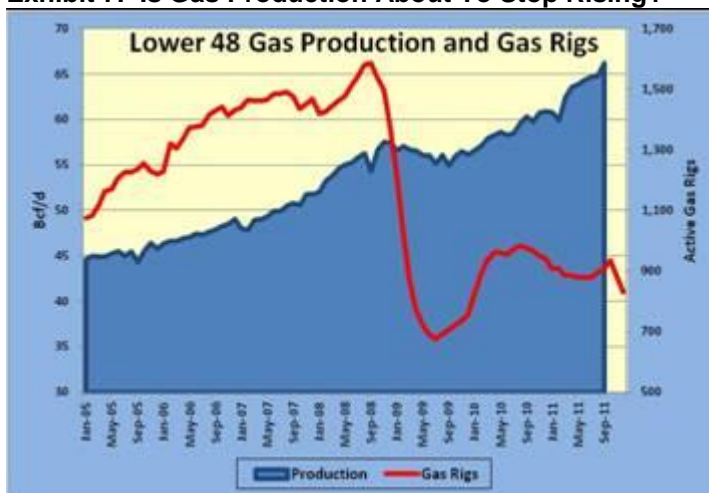
The fall in gas prices has surprised most industry participants and investors who have viewed this more environmentally-friendly fossil fuel as possessing an attractive long-term outlook. That view has been driven by the gas shale revolution that has produced dramatically and progressively larger estimates of the volume of potential natural gas reserves in North America, highly prolific initial well production results and prospects that the country can not only sustain existing production flows for at least another 100 years or more but can become a significant exporter of liquefied natural gas (LNG). This latter focus has become a rallying cry for investors who see the LNG market as a way for producers with substantial volumes of natural gas to be able to sell it into a market that currently pays a substantially higher price than available

The most recent monthly data (September) showed one of the largest month-over-month increases in estimated gas production since the survey began

domestically. The gas shale revolution has changed the search for natural gas from its prior focus on more-difficult-to-access conventional gas resources that were in a sustained downward trend in favor of highly-prolific and “economically-attractive” unconventional gas shale resources that are capable of being tapped by the application of advanced drilling and completion technologies.

In calling for a decline in gas production with this shift in drilling focus, we are counting on a continuation of the historical relationship between drilling and production. The government’s Energy Information Administration’s (EIA) Form 914 survey of natural gas production has shown nothing but steadily increasing volumes since it was started in January 2005. The most recent monthly data (September) showed one of the largest month-over-month increases in estimated gas production since the survey began, but it happened to coincide with a significantly large increase in the number of rigs drilling for gas. Since then, the number of gas drilling rigs has declined suggesting that the rise in gas production should also begin to flatten and subsequently decline. It should only be a matter of time, although time is a frustrating variable.

Exhibit 7. Is Gas Production About To Stop Rising?



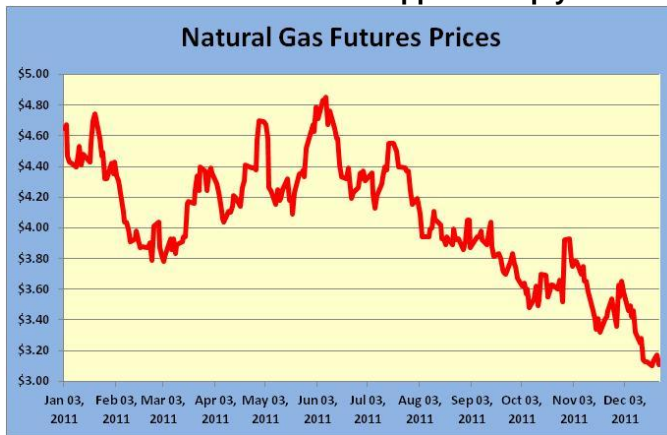
Source: EIA, Baker Hughes, PPHB

It would seem at some point, gas producers would stop drilling to enjoy the feeling of no longer beating their heads against a wall

As natural gas futures prices have continued to decline hitting a recent low of \$3.11 on December 23rd, prospects for increases in gas-oriented drilling appear slim. This is especially true given that spot gas prices have been as low as \$2.80 in recent weeks. It would seem at some point, gas producers would stop drilling to enjoy the feeling of no longer beating their heads against a wall.

We know the relationship between gas prices and drilling rigs is a strong one as shown by the historical pattern since 1987 with the exceptions of 1999 and 2006-2007. The latter period was in the

Exhibit 8. Gas Prices Have Dropped Sharply In 2011

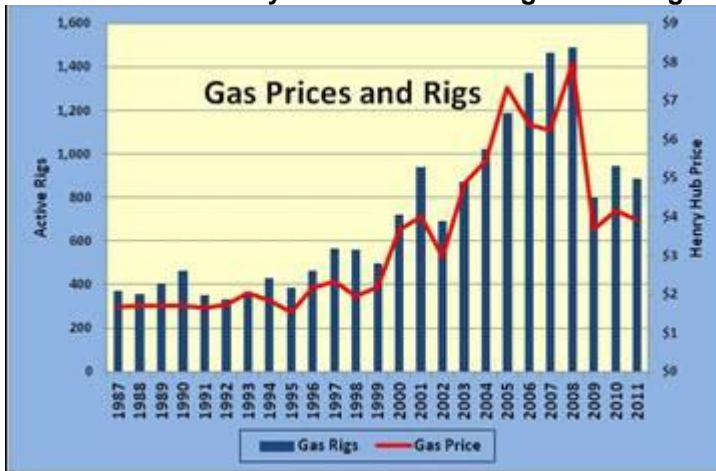


Source: EIA, PPHB

The relationship between gas prices and drilling activity has been consistent

early years of the gas shale revolution so producers were more focused on staking out land positions that required drilling wells to hold the acreage. In 1999, natural gas markets were just beginning to recover from the fallout from the collapse of commodity prices tied to the Asian currency crisis in 1998 but oil and gas companies' cash flows and desire to drill had yet to recover. Other than those two times, the relationship between gas prices and drilling activity has been consistent.

Exhibit 9. Historically Gas Prices And Rigs Move Together

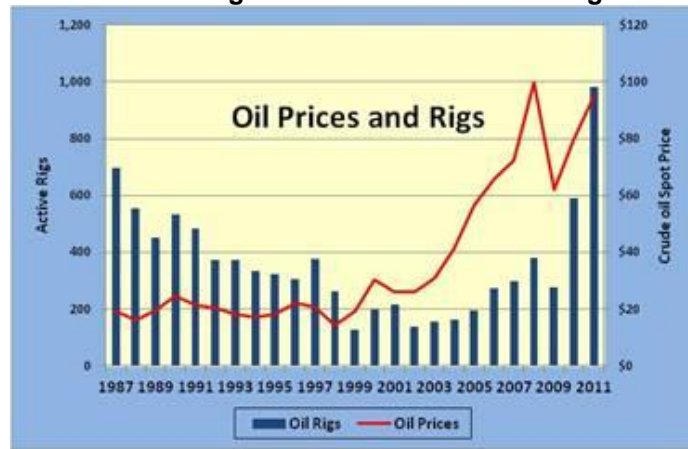


Source: Baker Hughes, EIA, PPHB

The consistent price/drilling activity relationship exhibited by natural gas also seems to hold for crude oil prices and oil drilling

The consistent price/drilling activity relationship exhibited by natural gas also seems to hold for crude oil prices and oil drilling. It makes sense that these relationships exist because oil and gas prices are a key determinant in producer cash flows. Since producers usually reinvest most of their cash flows into new drilling, having more or less money available would seem to support changes in drilling activity.

Exhibit 10. Oil Rigs And Prices Also Move Together

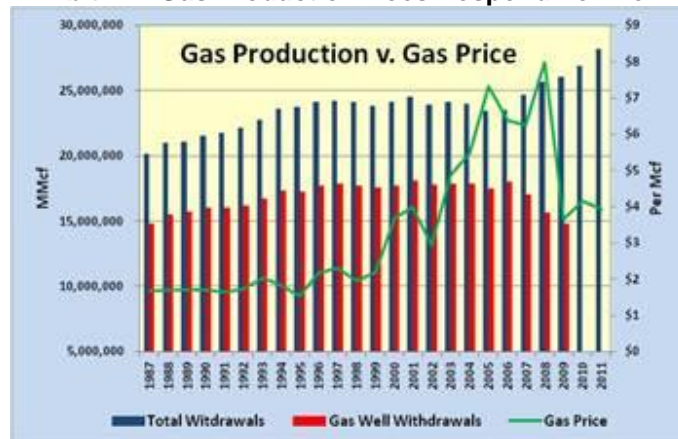


Source: Baker Hughes, EIA, PPHB

The gas shale revolution and its demands for producers to continue to drill wells in order to hold the leases they have purchased has changed the natural response to low gas prices

Maybe more important than the relationship between oil and gas prices and drilling rigs seeking those resources is the relationship between natural gas prices and gas production. When we plot the gross withdrawals from all wells along with those just from dry gas wells against the price of natural gas, we find that there is a relationship. While some might argue that the changes don't appear significant (Exhibit 11), we would point out that the U.S. has been short of domestic supply so there was little incentive to limiting production unless it proved uneconomic due to the price. Declines in withdrawals may have also been a reflection of the depletion of existing well productive capacity that was not offset by new well production as fewer wells were drilled when gas prices fell. The point of this chart is that producers do respond to changes in natural gas prices even if only marginally. This would argue that the gas shale revolution and its demands for producers to continue to drill wells in order to hold the leases they have purchased has changed the natural response to low gas prices.

Exhibit 11. Gas Production Does Respond To The Price

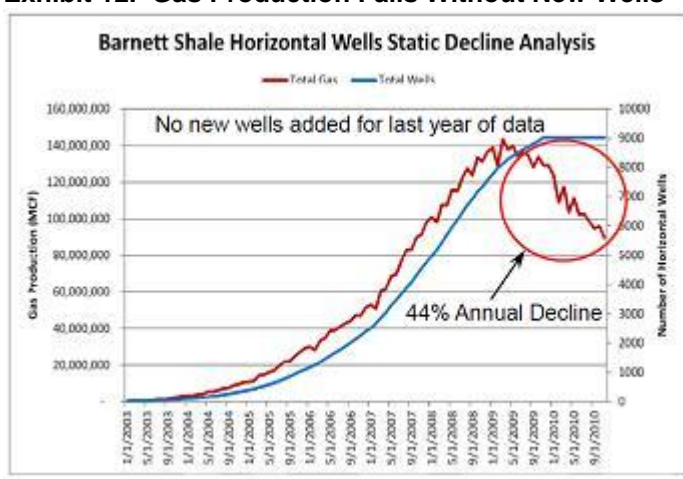


Source: EIA, PPHB

For gas production to be sustained at very high levels, producers need to climb on the treadmill of sustained active drilling

Another industry consideration about gas shale basins is that while the wells are initially highly prolific producers, their production decline is rapid. As a result, for gas production to be sustained at very high levels, producers need to climb on the treadmill of sustained active drilling. This phenomenon is best demonstrated by the following chart showing production in the Barnett gas shale basin when the industry stops drilling wells (static wells analysis). As shown by the chart (Exhibit 12), natural gas production from existing wells fell at a 44% annual decline rate when no new wells were added. For people who only focus on total production from a gas shale basin, they often ignore this natural phenomenon and attribute the rising production to the highly prolific nature of gas shale wells. Unfortunately, they are confusing trends in a gas shale basin with trends in individual wells. That can be a perilous mistake if producers are forced to quit drilling due to poor well economics.

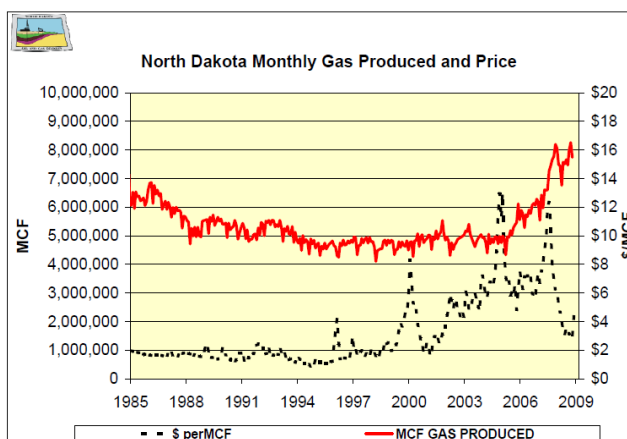
Exhibit 12. Gas Production Falls Without New Wells



Source: A. Berman, L. Pittinger

The “bear” case for natural gas prices in 2012 is based on the belief that the liquids-rich wells currently being drilled will produce substantially more associated natural gas than assumed, and in some cases more than typical dry gas wells

The “bear” case for natural gas prices in 2012 is based on the belief that the liquids-rich wells currently being drilled will produce substantially more associated natural gas than assumed, and in some cases more than typical dry gas wells. The proponents of this view point to an estimate from the EIA that in the North Dakota Bakken oil shale basin due to a lack of pipeline capacity to take away the associated gas production, as much as 30% of it is being flared. It is clear that there is a substantial amount of associated natural gas being produced as demonstrated by the chart in Exhibit 13. Unfortunately, the chart, prepared by the North Dakota Department of Mineral Resources, ends in early 2010. The chart, however, shows the dramatic growth in the state’s natural gas production since the Bakken formation oil shale play commenced in 2006 and that production continues to grow. For the last 12 months, the state’s natural gas production has grown by 50%.

Exhibit 13. Gas Production Soars With Oil Shale Boom

Source: North Dakota Dept. of Minerals Resources

Since North Dakota gas production amounts to just less than 1% of this total, even if 40% of it is being flared, we doubt that this volume of potential future supply is putting significant downward pressure on the gas market and gas prices

If we examine the latest monthly gas production data published on the state's web site, in October there was 15.73 billion cubic feet (Bcf) of gas produced, but only 9.67 Bcf sold. That represents a spread of 40%. If we assume that all this difference was flared, then producers burned 6.06 Bcf of gas in the month. Those figures are for October, a 30-day month, which suggests that the volume of natural gas burned was about 200 million cubic feet per day (MMcf/d). To put that volume into perspective, North Dakota's total daily production was about 525 MMcf/d. Total U.S. Lower 48 States gas production in September was 66.23 Bcf/d, as reported on Form 914. Since North Dakota gas production amounts to just less than 1% of this total, even if 40% of it is being flared, we doubt that this volume of potential future supply is putting significant downward pressure on the gas market and gas prices.

Despite natural gas prices remaining significantly depressed, we still believe the market could correct rapidly once it becomes evident that producers are beginning to reign in their gas drilling efforts. The drying up of funding sources and the significant underperformance of gas producer stock prices will lead to a different business environment. Either producers will begin living within their cash flows or some of them will be forced to stop drilling due to a lack of cash and available credit. Some producers may be forced to seek partners – a not uncommon phenomenon for this industry. Historically, merger and acquisition activity pickups up shortly after industry fundamentals have changed for the better. Stay tuned as the natural gas industry could be entering a whole new world as some bloodied producers decide to raise the white flag.

Bill Keeps Payroll Tax Holiday; May Doom Keystone Pipeline

A monumental clash of wills, or possibly just political theater, between the Republican House of Representatives, the Senate

The problem for the president was that this pipeline has become a target of anti-fossil fuels, or at least anti-oil sands, environmentalists who were staunch supporters of his in 2008

In the case of the Keystone XL Pipeline, it meant abandoning the unions who see the construction of the line as a job-creator in favor of gaining the support of environmentalists who are fighting “dirty” oil in the form of oil sands output

and the Obama administration played out immediately before Christmas. The end result was a bill that extends for two months the payroll tax holiday that has been in effect for all of 2012. One by-product of the legislation is a provision that mandates the Obama administration make a final determination about whether to build the Keystone XL Pipeline designed to move 700,000 barrels per day from Alberta to the Gulf Coast refining center of the United States.

This high-profile pipeline project has been the center of attention since President Obama announced to an Omaha, Nebraska television reporter that he would be making the final decision once the State Department ruled on it. Because the line will cross the nation's border, responsibility for approving the line was given to the diplomats, a 40-year policy that the Obama administration continued to follow. The problem for the president was that this pipeline has become a target of anti-fossil fuels, or at least anti-oil sands, environmentalists who were staunch supporters of his in 2008, the year the pipeline project was initially filed for approval. For a long time the environmental movement was not focused on the pipeline as they were helping marshal the “green” agenda of the Obama administration including subsidizing electric vehicles (EVs), battery technology for EVs, solar power, offshore wind development and Environmental Protection Administration (EPA) air and water rules designed to shut down coal power plants, impose stricter vehicle air quality and fuel-efficiency standards and limit the use of hydraulic fracturing to develop natural gas in populated areas.

Since each of these policies would impact both current and future activity of domestic industries, their impact on the pace of economic growth became a high-profile target of the business community and the public who has grown less supportive of job-killing rules in the name of nebulous environmental goals. For the past six months, the pressure for President Obama to find a coalition of citizens who will support him in sufficient numbers to ensure his re-election in 2012 has forced him to engage in the classical political maneuvering of stiffing your most loyal supporters in favor of winning support from larger numbers of currently less-committed voters. In the case of the Keystone XL Pipeline, it meant abandoning the unions who see the construction of the line as a job-creator in favor of gaining the support of environmentalists who are fighting “dirty” oil in the form of oil sands output.

President Obama's gambit was to suggest that the approval of the Keystone project was premature because the State of Nebraska wanted to get TransCanada Ltd. (TRP-NYSE), the pipeline's owner, to move the line to avoid the Sand Hill area and the Ogallala Aquifer. Since this shift would require additional environmental analysis of the 153 miles of pipeline detour, it could not be completed until the first quarter of 2013, conveniently after next fall's presidential election. President Obama said he would await that review before making a final decision.

This was the route with the least environmental damage and consistent with the 25,000 miles of pipeline that already cross the Ogallala Aquifer

While TransCanada agreed to the detour, in order to keep the project alive, it is important to note that the pipeline route the State Department was satisfied with was the result of examining 13 possible routes. This was the route with the least environmental damage and consistent with the 25,000 miles of pipeline that already cross the Ogallala Aquifer. We wondered whether there was any significance to the Baker's Dozen pipeline routes studied. For those who may not remember the evolution of the Baker's Dozen, it comes from the days when governments harshly punished merchants who short-changed customers. In those days, most of the bakers were not educated meaning they were not necessarily good at counting. Therefore, to protect against short-changing their customers, they threw in an extra – the 13th – roll when a customer purchased a dozen. So here we have a Baker's Dozen pipeline routes to ensure that the least environmentally damaging route was included.

Lots of charges and counter-charges have been hurled about the significance of the Keystone line for the U.S. economy and our nation's energy position. Will there be 20,000 construction jobs or only 5,000 generated? What about the supposed 120,000 additional jobs? Will the U.S. be less dependent on unfriendly energy suppliers? These and other questions have been debated, argued and demagogued.

TransCanada presented an economic analysis prepared by Dr. Ray Perryman, a respected economic consultant in West Texas. Using an input-output model, he came up with the 20,000 construction jobs and 120,000 associated jobs. His report was prepared in 2009. Recently, an economic consulting group at Cornell University prepared a report claiming that there would only be 5,000-6,000 construction jobs created, and that these would be short-time positions. They estimate that only 50 permanent positions will be created. They also questioned the 120,000 associated jobs based on spending associated with the project.

So if it has to do with fossil fuels, you can't use this model because it overstates the employment impact, but if it's for "green" energy projects then the model is acceptable

Since the Cornell study was prepared in 2011, nearly two years after the company study, it had additional information to use in its examination. We believe they have done a respectable analysis, but we haven't checked all their numbers. They took great pleasure in attacking the 120,000 job estimate, but demonstrated their very clear bias by comparing this number to other studies such as the Brookings Institution study of green jobs. That study is almost farcical in its counting of green jobs, such as when it determined that because one driver was driving a natural gas-powered bus, then all metropolitan bus drivers were "green" employees. The bigger problem with their criticism is that this same model was used to estimate the employment impact of wind farms in Texas and has been used to project the employment impact of many "green" energy projects around the country. So if it has to do with fossil fuels, you can't use this model because it overstates the employment impact, but if it's for "green" energy projects then the model is acceptable

The key point is that of our roughly 9 million barrels per day of imports, the largest supplier is Canada, followed closely by Mexico

Mr. Harper said, "I am very serious about selling our oil off this continent, selling our energy products off to Asia. I think we have to do that"

and the overstatement of jobs is not a problem. It would seem to us that you can't have it both ways, but then again clean energy operates in a world akin to Alice in Wonderland.

With respect to the question about energy security, there are cases being proposed that the growth of the oil shale production in the U.S. will be sufficient over time to wipe out the country's need for imported oil. This assumes that the federal and state governments will make available all the acreage the oil industry desires and will not restrict their use of hydraulic fracturing. Other studies say this scenario is not probable, or even likely. Rather they believe that there will be some erosion of imports from growth of domestic production, but more of the erosion will come from a decline in oil usage. The key point is that of our roughly 9 million barrels per day of imports, the largest supplier is Canada, followed closely by Mexico. After that, our next three top suppliers are Saudi Arabia, Venezuela and Nigeria. Collectively, these five suppliers account for over two-thirds of our current import volumes. Regardless of what happens to U.S. oil demand, it is hard to see that our principal oil suppliers will change, and these five are certainly friendly suppliers.

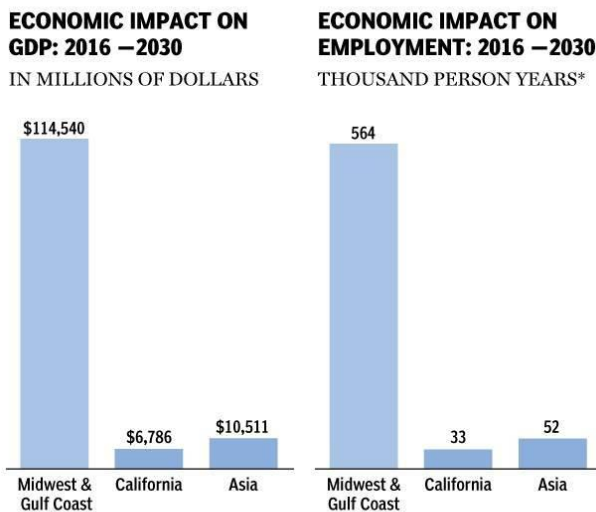
When President Obama's decision was announced, there was strong negative reaction from politicians on the right, many citizens and the oil industry. But some of the criticism came from Canadian politicians and the citizens of our northern neighbor. Canada's Prime Minister Stephen Harper came out and said that the country would begin to explore markets outside of the United States. In an interview with CTV National News after his most recent trip to the United States, Mr. Harper said, "I am very serious about selling our oil off this continent, selling our energy products off to Asia. I think we have to do that." He went on to say, "When I was down in the United States recently, it was interesting. I ran into several senior Americans who all said, 'Don't worry, we'll get Keystone [pipeline] done. You can sell all of your oil to us.' I said, 'Yeah we'd love to,' but I think the problem is now that we're on a different track."

There have been proposals to build new pipelines from the Alberta oil sands to the west coast of Canada where the output could be shipped to Asia or the U.S. West Coast. Other export ideas include using idle pipeline capacity in the eastern half of Canada and reversing the flow to allow Western Canadian oil to be exported to Europe, the U.S. or elsewhere in the world. The most desirable course for both Canada and the U.S. would be to send more oil south where there is substantial capacity to refine heavy oil.

A new study by the University of Calgary's School of Public Policy shows that Canada's GDP could benefit by up to \$131 billion between 2016 and 2030, adding about 1% per year to economic growth. Moreover, Canadian governments would receive an additional \$27 billion in taxes and there would be 649,000 person-

Exhibit 14. Canada Gains More With Keystone XL
PIPELINE ECONOMICS

How economic impact differs of oil sands pipelines to U.S. and to Asia



*Person year is one person working for one year
 SOURCE: M.C. MOORE , S. FLAIM , D. HACKETT , S. GRISSOM , D. CRISAN , A. HONARVAR / CATCHING THE BRASS RING: OIL MARKET DIVERSIFICATION POTENTIAL FOR CANADA ANDREW BARR / NATIONAL POST

Source: *Financial Post*

Canada’s economy would gain about \$114 billion over 2016-2030 with an additional \$22 billion in taxes

years of employment added. Each of three market accesses was studied with the U.S. providing the greatest economic benefit to Canada because of the very depressed price at which Canadian oil is being sold into that market. Assuming the construction of the Keystone line and the debottlenecking of the shipping point in Cushing, Oklahoma, more oil will be able to get to the Gulf Coast refining center and Canada’s economy would gain about \$114 billion over 2016-2030 with an additional \$22 billion in taxes. However, if the line were built to ship additional oil to California, Canada would only gain an additional \$6.7 billion in GDP and \$1 billion in taxes. If the export line was designed to move the oil to Asian markets, Canada’s economy would gain an additional \$10 billion in GDP and \$2 billion in taxes.

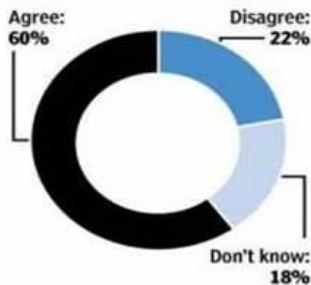
The opposition to both pipelines is strongest among the people of Quebec, Ontario and British Columbia

The challenge for the Canadian government is to figure out how to maximize it benefits from exploiting the oil sands deposits. A recent poll by Forum Research Inc. showed that half of Canadians are opposed to the Keystone Pipeline project. Just as many Canadians are opposed to the Northern Gateway pipeline to haul oil sands output to the Pacific West Coast. The opposition to both pipelines is strongest among the people of Quebec, Ontario and British Columbia. Presumably only in the Northern Gateway project would people from British Columbia be impacted directly. So it is quite interesting to note that 60% of Canadians view the oil sands as providing more ethical oil than comes from the Middle East. This

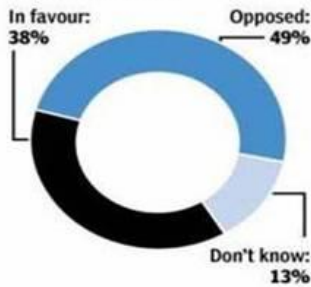
suggests that there is an educational effort needed to win over those opposed to exporting oil sands output and displacing less ethical oil supplies.

Exhibit 15. Canadian Dislike Oil Export Options

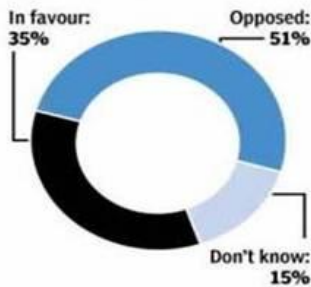
Q: Do you agree that oil from the Alberta oil sands is more ethical than oil from the Middle East?



Q: Are you in favour of the Keystone XL pipeline which would carry crude oil from the Alberta oil sands to Houston, Texas?



Q: Are you in favour of a second pipeline, the Northern Gateway pipeline which would carry crude oil from the Alberta oil sands across the Rocky Mountains to the B.C. coast at Kitimat, to be shipped by tanker to refineries in Asia?



Source: *Financial Post*

One has to wonder whether the Republican strategy of forcing President Obama to possibly reject the line in early 2012 as a campaign issues may backfire

While we haven't heard the last of the Keystone XL Pipeline debate, one has to wonder whether the Republican strategy of forcing President Obama to possibly reject the line in early 2012 as a campaign issues may backfire. These Canadian poll results plus 60-days of strategy planning-time provides the Obama administration sufficient room to develop a plan to address the pipeline issue while not jeopardizing the support of the environmental lobby. We are sure the plan will be ingenious as it will demonstrate that what we thought was up was really down, and what we believed to be good for us was really bad. So goes the world of politics and energy!

Recovering Economy To Boost Auto Sales And Energy

We have argued for years that the key to a sustainable economic recovery is for meaningful improvements in two key sectors that drive growth – autos and housing. In housing, we have seen some improved monthly statistics for new home starts and home sales, but since they are coming from low levels any improvement looks significant. There are some troubling details in the recently revised home sales figures that we will deal with later. The better news seems to be coming from the automobile industry, especially given the latest published outlooks for industry sales in 2012.

A compilation of 10 forecasts for U.S. light-vehicle sales next year calls for the industry to experience between 6% and 7% volume increases over 2011

A compilation of 10 forecasts for U.S. light-vehicle sales next year calls for the industry to experience between 6% and 7% volume increases over 2011. While December auto sales have yet to be reported, estimates put the full year's sales for light-vehicles at between 12.7 million and 12.8 million units. The estimates for the number of new light-vehicles to be sold in the U.S. next year range between 13 million and 14 million with an average of 13.6 million units. The principal driver of new vehicle sales is the need to replace aging cars and trucks coupled with access to financing.

Exhibit 16. Auto Sales Estimates For 2012

| | Sales in millions of units |
|--------------------------|----------------------------|
| Morgan Stanley | 14.0 |
| NADA | 13.9 |
| Center for Auto Research | 13.8 |
| TrueCar.com | 13.8 |
| Polk | 13.7 |
| Industry average | 13.6 |
| Manheim | 13.6 |
| ADESA | 13.5 |
| HIS Automotive | 13.3 |
| Kelly Blue Book | 13.3 |
| Wells Fargo | 13.0 |

Source: *Automotive News*

The average age of vehicles having risen to 10.7 years from the 8 to 9 years averaged during the boom years of the past decade

The forecasters all expect higher sales in 2012, but their estimates reflect their views on the health of the consumer and his desire or need for a new vehicle. The classical determinants for new vehicle sales are personal income growth, the unemployment rate and housing starts, all of which remain weaker than normal. Offsetting these variables are other factors such as the average age of vehicles having risen to 10.7 years from the 8 to 9 years averaged during the boom years of the past decade. As one forecaster put it, the phrase driving sales is "I need a new vehicle."

Coupled with that need is the increasing availability of financing. Auto customers remain an attractive lending universe as repossessed vehicles (used cars) continue to experience a strong market, which underpins the asset values of auto paper. With the real estate market still in the doldrums and businesses flush with cash and not interested in borrowing from banks, the attractiveness of auto lending is rising. As the auto loan syndication market improves, more financial institutions are entering the lending market further expanding the potential for increased auto sales going forward.

The range of new sales forecasts for next year seems pretty wide at one million units, but much of that difference is a reflection of the forecaster's view of the course of the economy in 2012. Admittedly most forecasters got 2011's auto sales estimates wrong, but that is because the economy failed to accelerate and very nearly fell back into recession. Increasingly, the economic statistics are dispelling the likelihood of a double-dip recession next year.

By summer, Morgan Stanley expects sales to be in the 14-million a year range and finishing the year in the high 14-millions

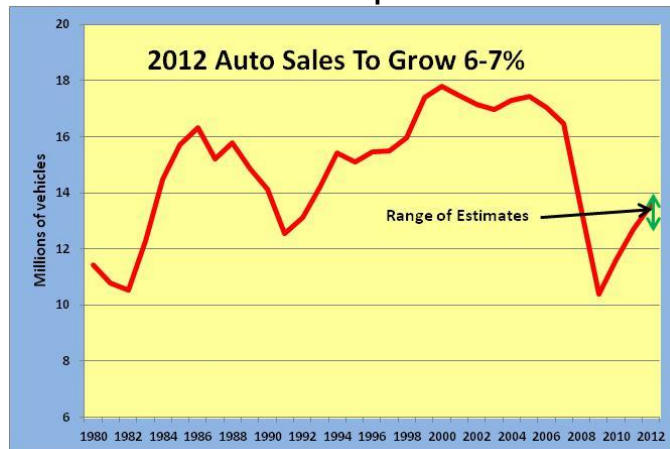
The most optimistic forecast comes from Morgan Stanley (MS-NYSE) that sees sales volumes in early 2012 falling back into the high 12-millions after being in the 13-millions for much of this fall. That dip is the result of the drying up of Japanese car buyers who patiently waited for those companies to solve their production problems and the ending of the accelerated depreciation write-off available for small businesses that has helped fuel the sales of small trucks. By summer, Morgan Stanley expects sales to be in the 14-million a year range and finishing the year in the high 14-millions.

The sales low of 2008 was about equal to the level experienced at the bottom of the 1981-1983 recession

The problem with these optimistic forecasts is that they still leave the auto industry well below the sales rate it was accustomed to during the decade prior to the onset of the financial crisis. As seen in the chart in Exhibit 17, the sales low of 2008 was about equal to the level experienced at the bottom of the 1981-1983 recession. Sales in 2011 are marginally above those of 1991, but even at the most optimistic 14-million unit sales forecast, 2012 would be well below the 17-plus million unit average chalked up by auto manufacturers between 1998 and 2008.

Most of the forecasters believe economic problems in Europe will actually aid the domestic industry as German manufacturers are

Exhibit 17. Auto Sales To Experience A Better Market



Source: Ward's Automotive Group, Crane's, PPHB

likely to target buyers over here for their unsold output. If the Japanese auto companies also decide to gain back market-share lost as a result of their production problems due to the tsunami, the American car buyer could find very attractive financial incentives and vehicle pricing next year. It could be a good time to purchase a car in 2012, even if you don't need one.

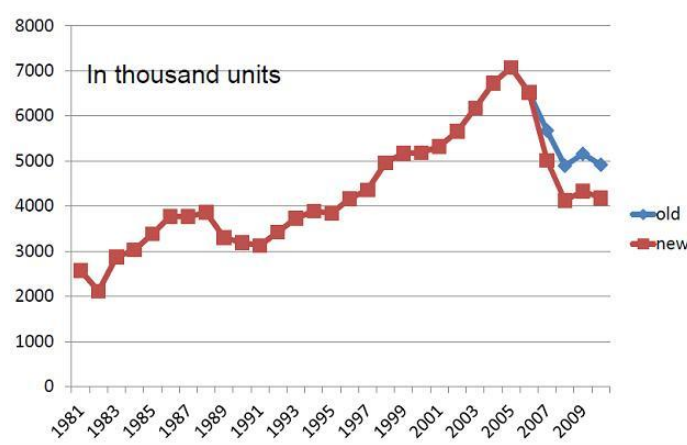
Housing, on the other hand, seems to be mired in a more difficult market. The National Association of Realtors (NAR) reported that in November existing housing sales were up 4% on a seasonally adjusted annual rate from revised October figures and up 12.2% from November 2010. The shocker in the NAR release was that it had to revise all its sales statistics for 2007-2010 because of a flaw in its methodology for estimating sales. The NAR lowered its estimate of sales for those years by 14%. The primary flaw in the methodology employed by NAR to estimate sales involved their estimate of the homes sold by owners, which used to account for 12% of sales but now is estimated to only represent 9%. The NAR's revision addresses the criticisms of the sales data by other real estate reporting services who for years have claimed that NAR numbers overstated actual sales. Fortunately, there will be little impact on the nation's economy as existing home sales were never counted in determining GDP, only the estimated revenues associated with real estate professionals involved in these transactions are counted.

What we now know is that current annual existing home sales are at levels more comparable to the early 1990s than the late 1990s. Some real estate analysts, however, are now questioning the 2006 and earlier data because they find the 2007 regional data revisions to be "funny" when viewed through the prism of earlier years. Critics have often contended that NAR's regional sales data was often too optimistic. For example, the data on Massachusetts real estate sales for 1999-2008 from NAR, the Massachusetts Association of

The shocker in the NAR release was that it had to revise all its sales statistics for 2007-2010 because of a flaw in its methodology for estimating sales

Current annual existing home sales are at levels more comparable to the early 1990s than the late 1990s

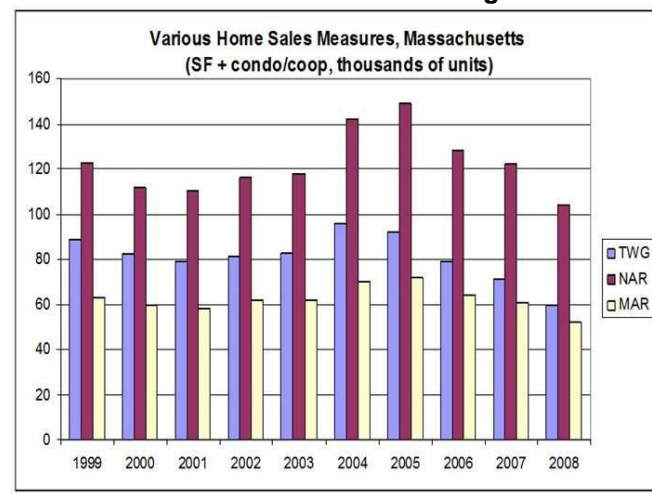
Exhibit 18. Home Sales Were Overstated For Years



Source: *housingbubble.com*

Realtors (MAR) and The Warren Group (TWG) shows wide divergence with NAR sales estimates always the highest. In this comparison there are some data differences that would explain some of the discrepancy, but certainly not all of it. MAR only reports sales by member realtors. TWG reports only arms-length sales and does not include transactions where lenders takeover foreclosed property, but it does report sales of REO (real estate owned by a lender) to third parties.

Exhibit 19. NAR Sales Estimates Long Doubted



Source: *housingbubble.com*

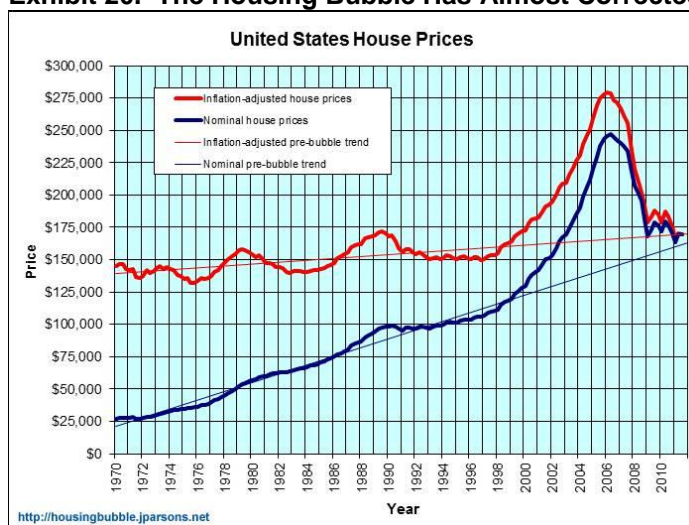
The revised NAR sales figures suggest that the collapse of the housing bubble was much worse than earlier thought

The revised NAR sales figures suggest that the collapse of the housing bubble was much worse than earlier thought. It may help explain why the various stimulus efforts by both the Bush and Obama administrations proved inadequate. On the other hand, we knew that there was a housing bubble that was reflected in sharply rising home prices and high sales figures, but no one appreciated

A big question is whether we will have to dip below those trend lines before stability truly returns to the real estate market

exactly how large the bubble had grown until it burst. The chart in Exhibit 20 shows the 40-year history of the median-priced house, thus controlling for the fact that housing sizes have changed over time. The thick red line shows the real house price while the thick blue line shows the actual price. The thin lines represent the pre-bubble (1970-1999) trend lines. As can be seen, we are close to touching those thin lines. A big question is whether we will have to dip below those trend lines before stability truly returns to the real estate market. Last week, the S&P/Case-Shiller Home Price Indices that track housing prices in various geographic markets across the country showed another drop in October. The 10- and 20-cities indices were off 1.1% and 1.2% from September and down 3.0% and 3.4% from October 2010, respectively. These declines suggest that home prices are probably headed below their long-term trend line, which will not be a positive for the economic recovery.

Exhibit 20. The Housing Bubble Has Almost Corrected



Source: housingbubble.com

She believes this means it may be harder to trigger a rebound in housing activity to clear the overhang of inventory

The greatest negative to come from NAR’s revised sales figures was pointed out by economist Michelle Meyer of Bank of America Merrill Lynch (BOA-NYSE). At the time of the revision, she wrote a note to clients in which she suggested that the divergence between affordability (low rates/low prices) and home sales is even larger today than it was before. Therefore, she believes this means it may be harder to trigger a rebound in housing activity to clear the overhang of inventory. That is certainly not good news for 2012, but one has to be more encouraged by the relationship of current house prices to the long-term trend lines in house prices as an indicator of a potential improvement in the market. Maybe 2012 will bring stability in housing and growth in auto sales. If so, then the outlook for energy demand in the U.S. next year has to be more positive.

A “Green” Queen Or Merely Facing A Budget Squeeze?

Queen Elizabeth was a surprise passenger on the December 13th 10:45 am First Capital Connect train service from London’s Kings Cross station to King’s Lynn

Sending messages by actions rather than words is often a mark of the British. Maybe this is what happened a few weeks ago. Queen Elizabeth the Second, by the Grace of God Queen of this Realm and of Her other Realms and Territories, Head of the Commonwealth, Defender of the Faith (her official title) was a surprise passenger on the December 13th 10:45 am First Capital Connect train service from London’s Kings Cross station to King’s Lynn, a seaport and market city about 100 miles north in Norfolk, England. The final destination is about seven miles away - Sandringham, the 20,000 acre estate owned by Queen Elizabeth and where she and her family typically spend the Christmas season.

Exhibit 21. Queen Elizabeth Boards Train



Source: *Daily Mail*

The Queen arrived at platform 11b about 10 minutes before the train was scheduled to depart

The Queen arrived at platform 11b about 10 minutes before the train was scheduled to depart with little fan-fair, although the police did seal it off five minutes before the scheduled departure time. She did not receive preferential treatment from the rail service other than having a car on the train set aside for her and her four plain-clothes royal protection guards. Other first class travelers who attempted to sit in the car were told by her protection detail to sit elsewhere. The Queen did receive a gift of a bouquet of posies from a young girl before boarding the train, presumably provided by the rail service.

Exhibit 22. Queen Receives Flowers



Source: *Daily Mail*

This is not the first time the Queen has availed herself of the rail service

According to a rail service attendant, the Queen used an advance-purchase senior citizen's discount first class ticket costing £44.40 (\$68.62) for the 95 minute journey. The regular first class ticket price is £86 (\$132.92), while the standard class ticket costs £27.70 (\$42.81). Upon her arrival at King's Lynn, the Queen was met by a Range Rover for the remainder of her trip to Sandringham. Based on our research, this is not the first time the Queen has availed herself of the rail service, as news stories reported she took the train in December 2010 and returned to London in early February. She has used trains occasionally in the past for other trips in the UK. Nor is this the first time the Queen availed herself of the advance-purchase and senior discount options.

Exhibit 23. Queen Readies For Train Departure



Source: NPR

One commentator on a British newspaper website wondered whether on her trip Queen Elizabeth listened to the speeches of President Obama on the iPod he gave her on his last state visit. The Queen clearly wasn't listening to anything based on the picture above, but that was before the train pulled out.

This Queen has the use of the Royal Train, but according to official figures, it costs the British citizens £57,142 (\$88,319) each time it is taken from its siding

Queen Victoria was the first British monarch to ride the rails, boarding her first train on June 13, 1842. This Queen has the use of the Royal Train, but according to official figures, it costs the British citizens £57,142 (\$88,319) each time it is taken from its siding. Queen Elizabeth demonstrated her frugal nature and did not engage in any hypocrisy on her journey such as having a car follow her carrying all her belongs like Prime Minister David Cameron did earlier this year. That happened at a time he was asking the British populace to accept stringent austerity measures to help reduce the country's debt, improve its financial condition and boost its economy.

With respect to sending an environmental message, some people have wondered if Queen Elizabeth's train travel was done in reaction to the actions of former Prime Minister Gordon Brown and her son, Prince Charles, who each flew in private planes to Durban, South Africa to attend The United Nations Climate Change Conference in early December. Based on her past rail journeys to Norfolk for the Christmas holidays, we doubt the Queen was sending environmental

The Queen and her family spent \$3.4 million on utilities in 2010, or about 7% of her estimated \$50 million annual income

messages to Mr. Brown or her son. On the other hand, the Queen is feeling a financial pinch due to the austerity measures the UK government has introduced along with earlier agreements that now have the royal family picking up more of the expenses of the monarchy that previously had been paid for by the government.

According to published estimates, the Queen and her family spent \$3.4 million on utilities in 2010, or about 7% of her estimated \$50 million annual income. Under the austerity measures her income will not increase, and given higher energy prices, there is the potential that the royal family could spend close to 10% of its income on its energy bills in 2012. That is the official threshold for being classified as a member of the fuel-poverty class. The government is considering changing the calculation to eliminate wealthy families. What it wants to do is make its determination based whether the cost of energy drops a family below the poverty line, which clearly Queen Elizabeth is not even close to given her annual income, despite rising energy costs. But that doesn't stop the Queen from being an avowed energy conservative.

Queen Elizabeth, in trying to stretch her income, has been known to go around Buckingham Palace turning off lamps and overhead lights

Like most people who lived through the Depression and World War II, conserving was a tenet of one's upbringing. From saving rubber bands, pieces of string and wrapping paper to turning off the lights when you leave the room, these were the mores of that generation. Some of the children of that generation still have those ingrained virtues. Queen Elizabeth, in trying to stretch her income, has been known to go around Buckingham Palace turning off lamps and overhead lights. She has even had signs posted throughout the palace to remind people to turn off the lights. The signs read: "The attention is drawn to all members of staff to the need to switch off unwanted lights - By Order of The Master of The Household." If you think about it, in a home with 775 rooms including 19 State rooms, 52 royal and guest bedrooms, 188 staff bedrooms, 92 offices and 78 bathrooms, a few lights could be left on for months before anyone would ever notice, running up a huge energy bill for the Queen.

In answer to our headline question, we guess the Queen is "green" but not given to flaunting it. On the other hand, she is a product of her generation that defined the "stiff upper lip" character of the British people. Being frugal is one of those qualities, and at 85, this Queen continues to demonstrate that trait.

Are Electric School Buses In Our Future?

School buses are an ideal candidate for conversion to electricity

The Wall Street Journal featured an article last week about the potential market for electric school buses based on their fuel savings even though they have a high initial cost. The article discussed how school buses are an ideal candidate for conversion to electricity due to their limited traveling distance, the amount of time per day they spend at the bus barn, which would facilitate re-charging of batteries, and frequent stops that help re-charge batteries. Since

Because buses travel prescribed routes, the chance of a bus running out of battery charge would be reduced

buses always return to a central facility, installation and use of battery charging equipment would be eased.

Electric buses also have advantages in that they have lower maintenance costs because they do not have as many moving parts and their use favors electric propulsion versus gasoline or diesel power. Because buses travel prescribed routes, the chance of a bus running out of battery charge would be reduced. Moreover, buses travel at slower speeds and make frequent stops, an ideal situation for electric power. Regenerative braking power allows a bus to recharge its battery when making those frequent stops.

Exhibit 24. Not Your Father's School Bus



Source: *The Wall Street Journal*

A typical diesel-powered, Blue Bird 66 passenger bus reportedly costs between \$80,000 and \$95,000

The challenge for electric buses is to overcome their high initial cost for school districts. A typical diesel-powered, Blue Bird 66 passenger bus reportedly costs between \$80,000 and \$95,000. There are other estimates for the cost of new buses that suggest the average price is closer to \$40,000. The problem is that there is such a wide range of bus models that cost estimates quoted are not necessarily comparable. The *WSJ* article referred to two companies that are building electric and hybrid buses. A representative with one company, Navistar (NAV-NYSE), said that a hybrid, gas-electric bus costs about 60% more than a diesel model. That would put our Blue Bird estimated bus model in the \$128,000 to \$152,000 range. On the other hand, Trans Tech, a unit of Transportation Collaborative, states that the premium for most of its electric vehicles over conventional ones runs about \$30,000, but the company plans on pricing its electric bus so that the premium can be recovered through fuel savings over a three- to five-year period.

Because it will be receiving grants toward the purchase of the bus, its final cost will be reduced to about \$35,000

Is it feasible that these savings can be attained? The King's Canyon School Unified District near Fresno, California, which is going to buy the first Trans Tech electric bus, believes so. An official with the school district says that because it will be receiving grants toward the purchase of the bus, its final cost will be reduced to about \$35,000. In that district, the average school bus gets between five and six miles per gallon and travels about 14,000 miles a year. The

electric bus is estimated to save the district about 16 gallons of fuel a day, or between \$50 (\$3.125/gallon) and \$60 (\$3.75/gallon) of diesel. Recharging the battery on the bus will cost about \$17 per day. Using the higher cost, it means \$43 a day in savings. If the school year is 182 days long, then the annual fuel savings from this switch should be \$7,826. That means that a \$30,000 premium for an electric bus versus a diesel model will be recouped in 3.8 years through fuel cost savings, or right in the middle of the estimated pricing range. This estimate does not include any possible savings from reduced maintenance costs of the electric bus.

If the premium for an electric bus is in the \$30,000 range, even without government subsidies that cost can be offset over a reasonable amount of time through fuel savings

In another case, IC Bus, another leading bus manufacturer said that its large model gasoline hybrid bus costs \$200,000, but the company was planning on reducing the price by \$30,000-\$40,000. That would put the cost in the \$160,000-\$170,000, or still meaningfully above the Blue Bird estimates we developed earlier. However, if the premium for an electric bus is in the \$30,000 range, even without government subsidies that cost can be offset over a reasonable amount of time through fuel savings. Obviously, if the premium is much higher, such as \$60,000, then the doubling of the time required to amortize that cost premium would begin to get too long for most analyses to suggest buying electric buses.

Exhibit 25. School Bus Sales Drop After Crisis



Source: American School Bus Council

Getting over the hurdle of the high cost of electric buses, especially in a time when school districts are under financial pressure to reduce costs, could prove to be a very difficult challenge

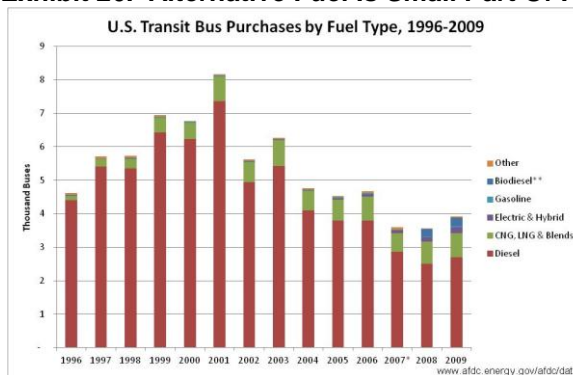
Getting over the hurdle of the high cost of electric buses, especially in a time when school districts are under financial pressure to reduce costs, could prove to be a very difficult challenge. The American School Bus Council estimates that there are 480,000 school buses in the United States that transport 26 million students each day and drive an average of 12,000 miles per year. While there are no rules governing when school buses must be retired, the purchase of new ones is clearly an economic decision that can be postponed. As the chart in Exhibit 25 shows, prior to the financial crisis in 2008, annual new school bus sales averaged about 44,000, or roughly 10% of the population of buses. Since 2008 when school bus sales peaked, they have been in a steady decline reaching a low of just over 29,000 this year (November 1 to October 31). With little prospect for a dramatic improvement in school finances in the near-term, it is

It was only in 2008 and 2009 when more than 100 units were purchased

hard to see electric school buses gaining much market share.

While not necessarily an exact comparable, if we look at the sales mix by fuel type for U.S. transit bus purchases from 1996 to 2009, we see that hybrid electric buses have barely made a dent in the market. While there were electric hybrid bus sales through the period, it was only in 2008 and 2009 when more than 100 units were purchased (135 in 2008 and 192 in 2009) out of total industry sales of 3,562 and 3,912 units, respectively, as reported by the Public Transportation Fact Book.

Exhibit 26. Alternative Fuel Is Small Part Of Fleet



Source: atdc.energy.gov

While electric buses may have many advantages, the longer experience people have had with natural gas-powered vehicles may make it easier for these fuels to gain greater market penetration

So what is the potential for electric buses? A 2004 study conducted for the Department of Energy, Analysis of U.S. School Bus Populations and Alternative Fuel Potential, reported that there 2,700 alternative fuel school buses in service in 130 school districts throughout the U.S. out of a total school bus population of 460,000 vehicles, or 0.06%. Most of these alternative fuel buses were powered by propane, natural gas or biodiesel, fuels that also lend themselves to vehicles that leave and return to a central facility so that the cost of centralized fueling systems can be spread over many vehicles. While electric buses may have many advantages, the longer experience people have had with natural gas-powered vehicles may make it easier for these fuels to gain greater market penetration. Based on the historical penetration of natural gas-powered alternative fuel buses, we suspect they have a brighter future than electric buses.

Contact PPHB:
 1900 St. James Place, Suite 125
 Houston, Texas 77056
 Main Tel: (713) 621-8100
 Main Fax: (713) 621-8166
www.pphb.com

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