
MUSINGS FROM THE OIL PATCH

August 12, 2014

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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

New Cost Research Disputes Attractiveness of Renewables

“Economic case is strong for divestment of coal assets”

Last Thursday, the *Financial Times* ran an op-ed column by former Vice President Al Gore, chairman of Generation Investment Management, and David Bloom, senior partner of Generation Investment Management. The title of their column was “Economic case is strong for divestment of coal assets” and made the argument that investors should recognize that the landscape for energy has changed making coal assets a more risky investment than most of them realize.

This analysis may be flawed by confusing the moral argument for curbing carbon emissions with a biased economic assessment of the cost of that decision

In their column, the two gentlemen wrote the following. “First, coal assets are threatened by the advent of attractive renewables, particularly solar-photovoltaic electricity, which are already penetrating the market. Solar-derived electricity is becoming a meaningful part of the global energy mix because its carbon-free profile and widely distributed delivery model make it increasingly good economic sense.” They went on to say that coal demand is being curbed by regulations restricting carbon emissions. This analysis may be flawed by confusing the moral argument for curbing carbon emissions with a biased economic assessment of the cost of that decision. There are many reasons for arguing that we want and should desire to strive for the cleanest air possible. On the other hand, we must recognize that electricity is the backbone of ours and virtually every other society in the world and by having governments mandating which types of fuel may generate electricity, we may be condemning many people to energy poverty. This is part of the reasoning behind the UN’s designation of 2014-2024 as the Decade of Sustainable Energy for All. Its mandate is to promote universal access to electricity and clean cooking, but to not choose winners and losers.

The Economist concluded is that “governments should target emissions reductions from any source rather than focus on boosting certain kinds of renewable energy”

An editorial column in a recent edition of *The Economist* pointed to the issue of whether there is a more appropriate way to evaluate the cost of electricity generated by various fuels that prioritizes the moral issue of creating cleaner air rather than promoting specific energies. This debate was at the heart of the public outrage over the Obama administration’s funding of numerous clean energy projects – Solyndra, Evergreen Solar and Fisker Automotive, to name a few – that eventually either went bankrupt or faltered to the point that the government’s funding was lost. The public was upset that government officials were picking and choosing among specific projects and technologies for federal funding and that many of those investments selected were headed or owned by large donors to the Obama political campaign. What *The Economist* concluded is that “governments should target emissions reductions from any source rather than focus on boosting certain kinds of renewable energy.”

Equally important is determining how much of the time the plant operates and whether it generates electricity at times of peak demand

There has been a significant focus recently on the decline in the cost of solar panels and how that had improved the economics of this renewable fuel, which was the fastest growing fuel in 2013. Since 2008, the cost of solar panels has fallen by 50%, which means that the cost of a solar-power plant, of which solar panels represent slightly less than half the cost, has declined by 22% between 2010 and 2013. While the cost of solar panels can be easily determined, the cost of electricity is very difficult to calculate. Why? It is primarily because of the cost of capital of the plants that generate the electricity and that these plants can last for decades. Equally important is determining how much of the time the plant operates and whether it generates electricity at times of peak demand. To adjust for these variable factors in determining the cost of electricity, economists utilize a measurement concept called “levelized cost.” The definition of this term is the net present value of all costs, both capital and operating, of a generating plant over its life cycle, divided by the number of megawatt-hours of electricity the plant is expected to produce.

Electricity demand also varies during the day in ways that the output from wind and solar may not match

Dr. Paul Joskow of the Massachusetts Institute of Technology has pointed out that levelized costs do not take into account the costs associated with the intermittency of the power output. Wind farms do not generate power when the wind isn’t blowing, and solar power isn’t produced during the night. Electricity demand also varies during the day in ways that the output from wind and solar may not match. Thus, according to Dr. Joskow, even if renewable forms of energy have the same levelized cost as conventional power sources, the value of the power they produce may be lower.

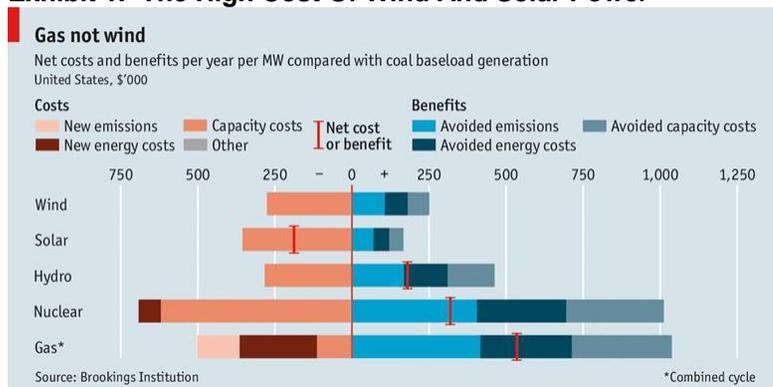
In his 2010 paper on the issue, Dr. Joskow said: “In a nutshell, electricity that can be supplied by a wind generator at a levelized cost of 6¢/KWh is not “cheap” if the output is available primarily at night when the market value of electricity is only 2.5¢/KWh. Similarly, a combustion turbine with a low expected capacity factor

He includes all the costs of building and running power plants, including the necessary costs associated with balancing the cost of intermittent energy sources such as standby power and the cost of disposing of spent nuclear-fuel rods

and a levelized cost of 25¢/KWh is not necessarily “expensive” if it can be called on reliably to supply electricity during all hours when the market price is greater than 25¢/KWh.”

Dr. Joskow highlighted this shortfall about levelized costs when all the costs, including the cost of standby power and intermittency, are not included, which is how the calculations have always been prepared. Charles Frank of the Brookings Institute recently has prepared a cost-benefit analysis in order to rank various forms of energy. In his analysis, he includes all the costs of building and running power plants, including the necessary costs associated with balancing the cost of intermittent energy sources such as standby power and the cost of disposing of spent nuclear-fuel rods. He also credits renewable energy with the value of the fuel that would have been used if coal- or gas-fired plants had produced the same amount of electricity and the amount of carbon emissions that they would have avoided. The conclusions from his analysis were put into a chart that shows that wind and solar appear to be more expensive than they appear on the basis of levelized costs. As the chart in Exhibit 1 shows, the length of the bar to the left of the zero point is greater than the benefits bar to the right for wind and especially for solar compared to hydro, nuclear and natural gas.

Exhibit 1. The High Cost Of Wind And Solar Power



Source: *The Economist*

A nuclear power plant that operates at 90% of its rated capacity, avoids almost four times as much carbon dioxide as do wind turbines that operate at about 25% of the time

Mr. Frank prepared an analysis of zero-carbon energy (solar, wind, hydro and nuclear) and low-carbon (combined-cycle natural gas) and compared them against conventional power sources. Obviously, low- and no-carbon power plants do not avoid emissions when they are not working, although they do incur some costs. Thus, a nuclear power plant that operates at 90% of its rated capacity, avoids almost four times as much carbon dioxide as do wind turbines that operate at about 25% of the time. Nuclear plants will avoid nearly six-times the emissions as due solar power plants.

He carries this analysis further and considers the cost of fossil-fuel plants that need to be kept in service to provide power when renewable fuel plants cannot. He calls these costs “avoided

Four wind farms would be needed to produce the same amount of electricity over time as a similarly-sized coal-fired power plant

capacity costs,” or costs that would not be incurred if the renewable fuel plants were not built. He presented an example of a 1 megawatt (MW) wind farm running at about 25% of capacity that can replace only about 0.23 MW of a coal plant running at 90% of capacity. Four wind farms would be needed to produce the same amount of electricity over time as a similarly-sized coal-fired power plant. The analysis for a solar facility is worse since it has a lower efficiency rating compared to a wind farm.

Those countries that are mothballing their nuclear power plants such as Germany and France are actually boosting the cost of electricity for their citizens while not truly reducing their carbon emissions

If all the costs and benefits are added up using Mr. Frank's calculation, solar power is the most expensive way to reduce carbon emissions. Wind turns out to be the next most expensive with hydropower providing a modest net benefit. The most cost-effective zero-emission technology is nuclear power, a conclusion that will not be popular in many sectors of society and among most environmentalists. All of Mr. Frank's analysis assumes that carbon is taxed at \$50 per ton, which is more than five-times the actual price of carbon in Europe. The current low carbon price in Europe makes solar and wind even that much more expensive compared to fossil fuel plants. Admittedly, Mr. Frank is not including the cost of emissions of other pollutants nor the fear of a nuclear accident. But the conclusions from his study suggest that countries that are subsidizing solar and wind power to help reduce carbon emissions are actually inflating the cost of these power sources. On the other hand, those countries that are mothballing their nuclear power plants such as Germany and France are actually boosting the cost of electricity for their citizens while not truly reducing their carbon emissions. The bottom line from Mr. Frank's study is that promoting wind and solar, although they appear to provide clean energy, is actually working to take current economies backward to the ultimate detriment of its citizens.

Will Natural Gas Storage Go From Worst To Best In Decade?

The volume injected last week was the smallest weekly injection since the fifth week of the injection season

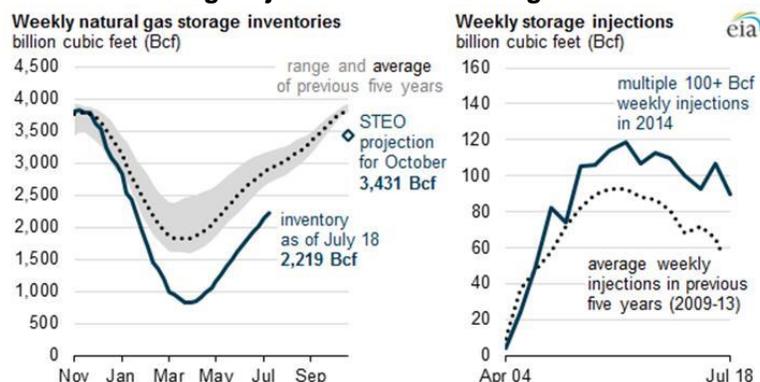
Last week's natural gas storage injection volume of 82 billion cubic feet (Bcf) fell short of the consensus of industry forecasters' projection for an 83 Bcf injection. This marked the third consecutive weekly shortfall in actual injections versus analysts' projections. Moreover, the volume injected last week was the smallest weekly injection since the fifth week of the injection season. Should consumers begin to worry about the gas industry having adequate supplies for next winter? We think not. In fact, it is possible that the industry may go from lowest level of gas storage inventory to the best in the past decade, which speaks to important underlying industry trends.

At the end of the withdrawal season (March 31), there was only 822 Bcf of gas in storage. This was the lowest level in a decade. There was 696 Bcf of storage gas at the end of the winter of 2002-2003 that marked the end of a period with several years (2001, 1997 and

The real fear come from North America experiencing another winter with polar vortex events such as the past winter that sent gas demand soaring

1996) of winter-end storage volumes below 1,000 Bcf. As natural gas consumption has grown in recent years, boosted by government policies pushing increased gas use in the power generation sector, a winter-end storage volume below 1,000 Bcf concerns many consumers and industry analysts that natural gas prices might spike with the arrival of cold weather. The real fear come from North America experiencing another winter with polar vortex events such as the past winter that sent gas demand soaring.

Exhibit 2. Storage Injection Pace Is Strong



Source: EIA

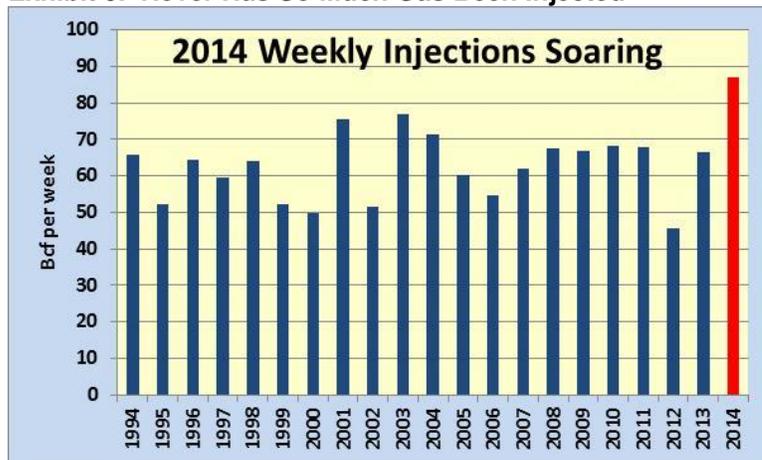
At the present time, the storage volume trails 2013 by 550 Bcf, but it is a whopping 850 Bcf of gas behind the 2012 storage volume

As of last week, there was 2,389 Bcf of gas in storage, an increase of 1,567 Bcf since the start of the injection season. At the present time, the storage volume trails 2013 by 550 Bcf, but it is a whopping 850 Bcf of gas behind the 2012 storage volume when the industry finished the injection season with over 3,900 Bcf in inventory. If, however, we use 2003 as the benchmark against which to measure progress, the amount of gas injected into storage so far this year has boosted storage to about 150 Bcf above the amount that the industry had put into storage at this same point in 2003. We need to remember that in 2003, after the second week of the injection season, gas in storage had fallen by 54 Bcf to 642 Bcf. To come within nearly 150 Bcf of gas in storage that year means the industry made a fast recovery.

It seems that during this injection season the industry has been keeping up with the pace of gas injected into storage during 2003

Measured against the total volume of gas injected during the 2003 injection season, the industry so far this year has been able to inject up to this point 63% of the total volume injected during all of 2003. That is positive, but it must be pointed out that at this point we have had 18 weeks of injection leaving 13-14 weeks remaining, or 42-44% of the season. On that basis, it seems that during this injection season the industry has been keeping up with the pace of gas injected into storage during 2003. If we continue that pace we will end the injection season with 3,406 Bcf of gas in storage – a healthy supply.

Exhibit 3. Never Has So Much Gas Been Injected

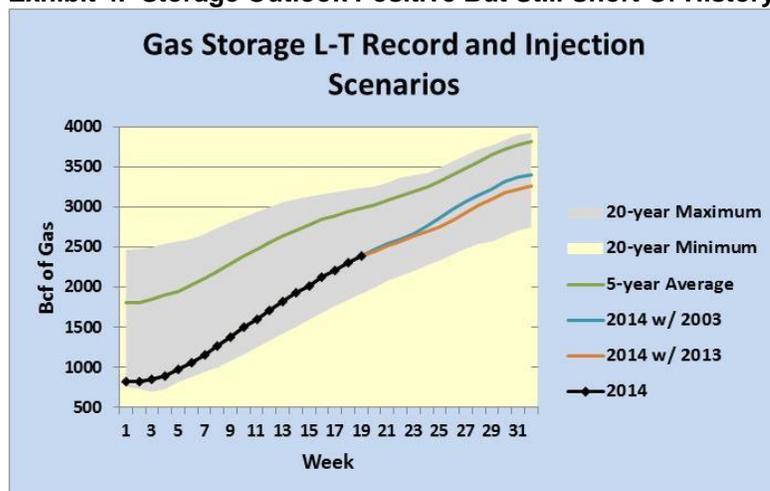


Source: EIA, PPHB

Given the pace of injections so far this season, analysts now are speculating that we could see inventory reaching 3,600 Bcf this fall

When we originally visited projections for the amount of gas to be in storage at the start of winter, there were serious fears that the industry would not be able to reach 3,200 Bcf of gas in storage, let alone 3,400 Bcf. In fact, some people speculated that we might not even reach 3,000 Bcf of gas in storage. Given the pace of injections so far this season, analysts now are speculating that we could see inventory reaching 3,600 Bcf this fall. This would still leave the industry over 300 Bcf behind the storage record of 3,929 Bcf of 2012. What makes this injection season impressive is that the industry has surpassed the volume of natural gas injected during all of the 2012 injection season. That year, the industry injected 1,457 Bcf of gas into storage, but the low volume was impacted by the fact that the injection season started with the industry having 2,472 Bcf of gas in storage, or more than is currently in inventory.

Exhibit 4. Storage Outlook Positive But Still Short Of History



Source: EIA, PPHB

In the middle of February 2014 when the second polar vortex was being experienced, natural gas futures prices surged above \$6/Mcf in response to the bitterly cold weather

The level of gas in storage, coupled with estimates for how much more might be injected by the start of the withdrawal season, influences current and future natural gas prices. In 2012, when the industry had record gas volumes in storage as it approached the start of the injection season due to the very warm winter, natural gas prices fell to low levels. In fact, during the second half of April 2012, as people realized how high storage volumes were, gas prices fell below \$2 per thousand cubic feet (Mcf) of gas. In fact, the futures price fell to barely over \$1.90/Mcf. Last winter, when gas storage volumes were falling below 1,000 Bcf, futures prices climbed as it was perceived that only higher prices would curtail demand and bring forth more gas supplies. In the middle of February 2014 when the second polar vortex was being experienced, natural gas futures prices surged above \$6/Mcf in response to the bitterly cold weather. At the end of April as the injection season was about to begin, the need for more gas led to futures prices stabilizing around \$4.80/Mcf. Natural gas futures prices slowly declined during the balance of the spring and into the summer as storage injections surged. Today, natural gas prices have risen into the \$3.90/Mcf range, primarily in response to expectations for hotter weather in the next few weeks.

The volume of Lower 48 gross initial natural gas output for May increased by 0.57 Bcf per day over the initial April report

What has been the key to the surge in gas injections? The simplest explanation is that the nation's natural gas output continues to grow despite the energy business devoting less effort to drilling new gas wells as reflected by the low number of gas-directed drilling rigs working. Recently, the EIA released its estimate for the amount of natural gas produced during the month of May. At the same time it revised its production estimate for April. The volume of Lower 48 gross initial natural gas output for May increased by 0.57 Bcf per day over the initial April report. This was essentially the same monthly increase experienced by the Lower 48 land market, which excludes output from the Gulf of Mexico. Possibly more shocking, however, was the comparison of the May initial projection to the revised April estimate. April's Lower 48 Land initial gas production estimate was 74.12 Bcf per day, which had been revised down to 73.76 Bcf per day, or a 0.36 Bcf per day reduction. When the revised April production figure is compared to the initial May production estimate, there was a 0.92 Bcf per day increase, a significant increase. The respective monthly increases were virtually the same for the Lower 48 states.

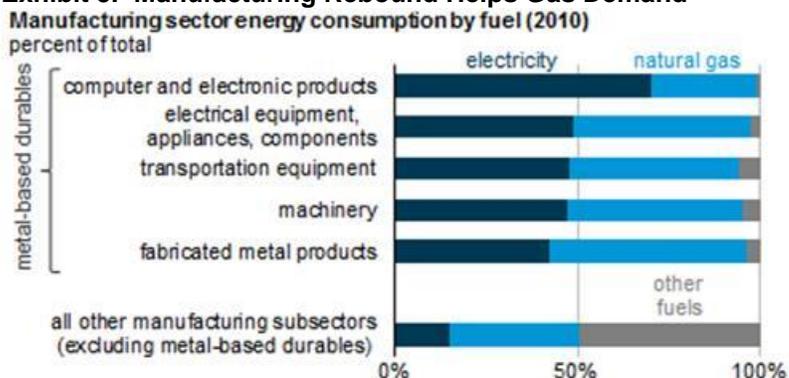
During 2005-2008 when the American gas shale revolution was gearing up, the industry operated anywhere from 1,100 to 1,500 gas-directed drilling rigs

Drilling activity and natural gas prices may help to explain the May gas production increase. The average number of active gas-oriented drilling rigs increased in May by nine rigs from 316 to 325. May's increase follows four consecutive monthly rig count declines. To place that rig count in perspective, during 2005-2008 when the American gas shale revolution was gearing up, the industry operated anywhere from 1,100 to 1,500 gas-directed drilling rigs. In that context, an uptick of nine rigs should probably be considered a rounding error. The fall of the gas-oriented rig count during 2005 to 2014 reflects the decline in natural gas prices reducing profitability,

We would suggest that the uptick in drilling had more to do with the start of operations that were set in motion by the higher gas prices and low storage volumes coming out of last winter

while at the same time the profitability of drilling for oil and condensates increased. Despite the shift in drilling focus, gas production has continued to grow. The change in natural gas prices between May and April is meaningless as the monthly average price declined by eight cents in May, or less than a 2%, and was unlikely to have caused producers to have altered their drilling or production plans. If we had to guess, we would suggest that the uptick in drilling, despite the minor decline in gas prices, had more to do with the start of operations that were set in motion by the higher gas prices and low storage volumes coming out of last winter. If correct, it is likely gas output will continue growing as these additional drilling programs ramp up.

Exhibit 5. Manufacturing Rebound Helps Gas Demand

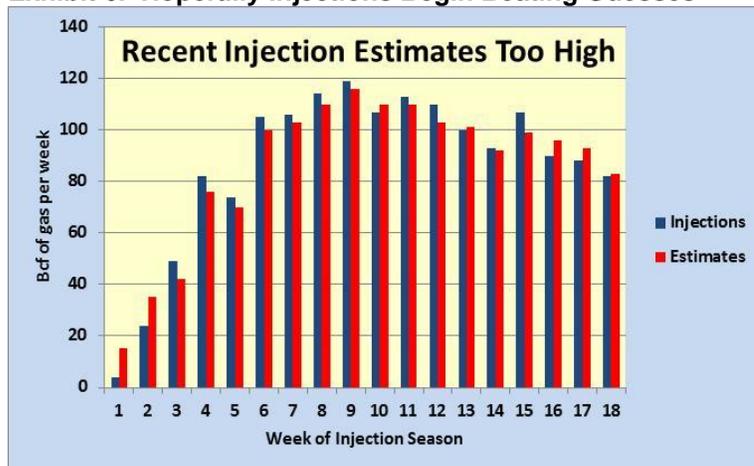


Source: EIA

The lower than expected natural gas injections during the past several weeks reflects more coal-fired power plants being idled and lower natural gas prices, conditions that boost gas demand

If gas production continues growing, will that mean an even greater increase in gas storage volumes? The answer to that question depends on what happens to natural gas demand. The pace of demand growth depends on the weather, the mix of fuels used for generating electricity and growth in American manufacturing that uses gas. Recent economic statistics suggest that the U.S. manufacturing sector is rebounding following the winter-impacted weak early months of 2014. On the other hand, the lower than expected natural gas injections during the past several weeks reflects more coal-fired power plants being idled and lower natural gas prices, conditions that boost gas demand, thus reducing the available supply of gas for injection. All of these trends are at work as cooler weather has prevailed in the eastern half of the nation further reducing gas demand. Another aspect of the weather's impact on the natural gas market is the likelihood of tropical storms and hurricanes disrupting Gulf of Mexico and possibly coastal U.S. onshore gas output. The latest tropical storm projections call for the balance of 2014 to reflect a below-average storm season. The primary risk, however, is for close-in storms to form and hit the U.S. coast. These storms will likely be weak and short in duration, meaning there shouldn't be too much damage inflicted on the industry's producing infrastructure. We hope this prediction doesn't come back to haunt us.

Exhibit 6. Hopefully Injections Begin Beating Guesses



Source: EIA, PPHB

If we follow last year’s pace, we will enter the withdrawal season with 3,262 Bcf of gas in storage, but if we follow the 2003 weekly injection pace, we will reach 3,406 Bcf

With warmer weather projected for the eastern portion of the United States for the balance of the summer, electricity demand should ramp higher as air conditioning load increases. That is a reason why natural gas prices have climbed higher in recent days. If coal and nuclear power plants continue to lag in output, there will be greater use of gas-fired generating plants suggesting that the volume of gas injected into storage could continue to trend lower. Again, we have plotted where natural gas storage will be at the end of the injection season if our future weekly injection rates follow those of the last year and 2003. If we follow last year’s pace, we will enter the withdrawal season with 3,262 Bcf of gas in storage, but if we follow the 2003 weekly injection pace, we will reach 3,406 Bcf. Is it possible that we might land on either side of this range of 3,200 Bcf to 3,400 Bcf of gas in storage? Yes, but it is unlikely the magnitude of over- or undershooting these targets will be substantial. As storage volumes grow and citizens become more comfortable about the coming winter supply, natural gas prices are likely to continue to drift lower.

Era Of Austerity: The EIA Recognizes Importance Of Profits

An EIA analysis points out the growing gap between the cash flow generated from operations by oil and gas companies compared to their uses of cash

Recently, the Energy Information Administration (EIA) posted on its web site a brief analysis pointing out the growing gap between the cash flow generated from operations by oil and gas companies compared to their uses of cash. Cash from operations comes from the realization of oil and gas output, i.e., the sale of units of crude oil, natural gas and other petroleum products, along with the cash from the sale of company assets plus any net increase in debt and equity. The uses of cash include capital expenditures for developing and sustaining oil and gas production, the payment of interest on debt issued by the company and dividends paid to shareholders, and net repurchases of the company’s shares. For purposes of the analysis

conducted by the EIA, the analyst used a shorthand schedule showing net issuance of debt and purchases of shares.

Exhibit 7. How To Measure Financial Resources

Sources of cash	Uses of cash
Cash from operations: the amount of cash a company generates from operations	Capital expenditures: purchases of property, plant, and equipment
Proceeds from sales of property, plant, and equipment	Dividends provided to shareholders
Changes in debt: involves both new debt obligations and existing debt reductions. When new debt obligations exceed existing debt reductions, it's considered a source of cash; otherwise it's a use of cash.	
Share repurchases: involves both issuing stock (sales) and purchasing common stock. When sales exceed purchases, it's considered a source of cash; otherwise it's a use of cash.	

Source: EIA

In the past, this confluence of major sector trends usually resulted either in a cyclical downturn, the embrace of game-changing technologies that reduced operating costs, or a rise in commodity prices

The analysis covered the period from 2009 through the first quarter of 2014 and utilizing financial data required to be reported by oil and gas companies to the EIA. What the analysis showed was that since 2011, there has been a widening gap between cash generated from operations and the uses of that cash. That gap has been closed by companies resorting to the sale of assets and shares along with increased borrowings. We have written about this situation in several *Musings* beginning with one in December 2013 as it became increasingly evident to us that the oil and gas industry was entering a new Era of Austerity dictated by the pressures of increased operating costs – higher finding and development costs caused by rising oilfield service prices and increased service intensity – and a lack of increases in oil and gas commodity prices as surging new supplies were overwhelming anemic demand growth, and growing pressures from shareholders demanding higher returns from their investments. In the past, this confluence of major sector trends usually resulted either in a cyclical downturn, the embrace of game-changing technologies that reduced operating costs, or a rise in commodity prices.

Exhibit 8. Gap In Cash Resources A Problem

Major energy companies' cash from operations and uses of cash billion 2014 dollars, annualized values from quarterly reports



Source: EIA

Analysts also believe that due to continued slow economic growth, it is unlikely that commodity prices are heading higher anytime soon

So far, analysts would suggest that we have only now begun to see signs of weakening oilfield demand, but it has largely been concentrated in sectors such as deepwater drilling and the most expensive shale formations. Analysts also believe that due to continued slow economic growth, it is unlikely that commodity prices are heading higher anytime soon. In fact, the International Monetary Fund (IMF) recently cut its projection for 2014 global economic growth to 3.4% from 3.7%. One could make the case that absent the substantial disruptions in oil output as a result of violence in the Middle East and North Africa and the political tensions over the Ukraine, crude oil prices might be \$10-15 a barrel lower than where they are currently trading. Had that decline happened, there would have been increased financial pressure on the oil and gas industry earlier than now due to rising capital expenditures during the past few years.

During the crisis, it was axiomatic that companies draw down their lines of credit available from their banks as insurance against further liquidity challenges

Another chart in the EIA analysis showed the trend in the sources of cash for the major energy companies based on their first quarter reports for the years 2009 to 2014. The first year, 2009, marked the recessionary year following the 2008 financial crisis. That year showed a fairly low level of operating income contribution to cash flow with a significant net increase in debt and a small contribution from asset sales. None of these trends are surprising given the dramatic decline, and subsequent rebound, in global oil prices and the lack of available liquidity because of the damage to the global banking system from the financial crisis. During the crisis, it was axiomatic that companies draw down their lines of credit available from their banks as insurance against further liquidity challenges. By 2010, there was a return to more normal market conditions and the on-going success of shale development drove spending higher both for new acreage and to drill existing shale holdings.

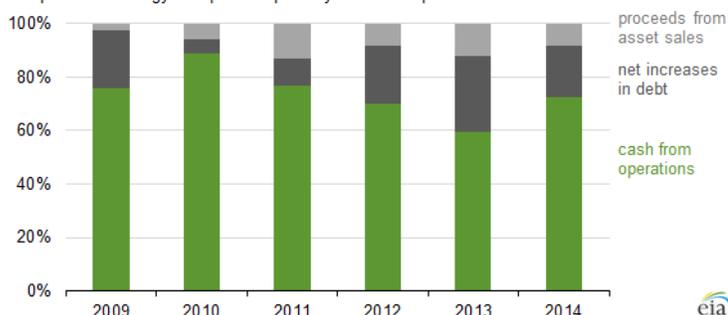
The oil and gas industry is skating on progressively thinner ice every quarter

Since 2011, the trend in energy companies' cash flow composition has reflected reduced contributions from core business operations, consistently greater cash generated from asset sales and net increases in corporate debt. To us, and a handful of our friends who have been beating the drum over this increased dependence on non-operating cash flow generation and increasing capital expenditures, the oil and gas industry is skating on progressively thinner ice every quarter. That condition will only change when commodity prices rise or operating costs are reduced. Short of that, companies will be forced to cut back their activity or step up their asset sales, including even the sale of entire companies.

As the EIA analysis pointed out, for the year ending March 31, 2014, 127 major oil and natural gas companies generated \$568 billion of cash from operations, but their major uses of cash totaled \$677 billion, leaving nearly a \$110 billion shortfall. That shortfall was met by \$106 billion increase in debt and \$73 billion from sales of assets, leading to an overall increase in cash balances.

Exhibit 9. Operating Cash Flow Shortfall Is Issue

First-quarter sources of cash for major energy companies
compiled from energy companies' quarterly financial reports



Source: EIA

Depending on which way prices go, companies might have more or less cash from operations

The oil and gas industry is facing a challenging future. Regardless of whether peace or war breaks out, the industry is likely looking at meaningful changes in its underlying fundamentals – commodity prices and energy demand. Depending on which way prices go, companies might have more or less cash from operations. On the other hand, whichever way commodity prices go, demand will also change, either positively or negatively. Due to these scenarios, the energy industry will either need to ramp up its spending to find and develop new supplies or it must cut back spending due to adequate supplies. Thrown into the mix is a more difficult and expensive environment for finding and developing new large oil and gas supplies.

If one studies the history of the energy industry during the first half of the 1980s, the result of continued long-term focus over concern for short-term ills proved devastating

For many in the energy industry who are unconcerned about the above challenges, we worry that they may be looking over the horizon with a risk of falling into the near-term valley. When confronted with what are perceived as merely short-term interruptions to long-term industry trends, it is often easier to maintain one's focus on these long-term trends to the exclusion of short-term conditions. If one studies the history of the energy industry during the first half of the 1980s, the result of continued long-term focus over concern for short-term ills proved devastating. We certainly hope current conditions are not a precursor to a repeat of the early 1980s, but hopefully by raising this issue we are providing a service to the industry.

Will Golden Arches Ruling Upset Oil Industry Structure?

The ruling drew little attention from the business press, which was surprising given its potential to disrupt a major segment of the American economy

Two weeks ago, the National Labor Relations Board (NLRB) issued a ruling that may alter the franchise structure of the fast food industry. The ruling drew little attention from the business press, which was surprising given its potential to disrupt a major segment of the American economy. The question flowing from the ruling is whether the government's nose under the corporate tent will not only change the relationship between franchisors and their franchisees in the fast food industry, but might it also alter relationships among all

The NLRB ruling stated that McDonald’s Corp. actually functions as a “joint employer” with its franchisees and can therefore be held liable for the employment decisions of their franchisees

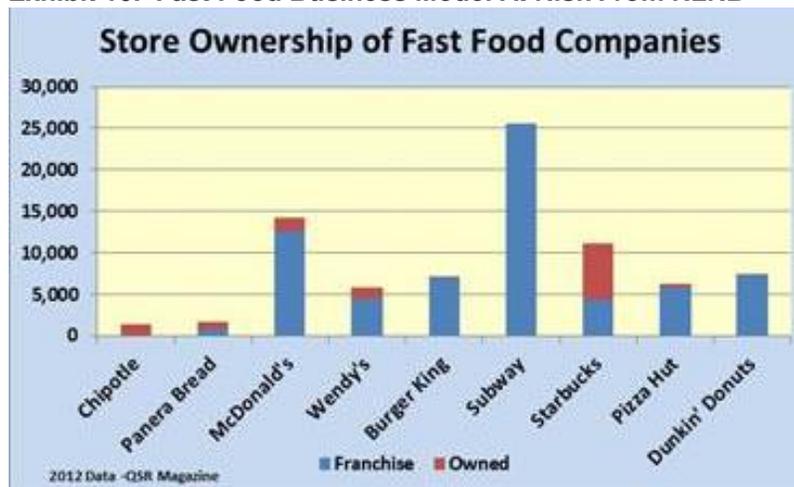
Many industries operate using the franchise model

franchisors and their franchisees in the United States, including those in the petroleum industry.

The NLRB ruling stated that McDonald’s Corp. (MCD-NYSE) actually functions as a “joint employer” with its franchisees and can therefore be held liable for the employment decisions of their franchisees. The immediate result of the ruling is that McDonald’s now can be joined to existing labor disputes at a handful of individual stores, but that is probably not the golden prize the labor unions were after. What they want is the ability to organize all of McDonald’s more easily than having to proceed by organizing individual stores. This is now the case. For McDonald’s, however, not only is unionization an issue, but their deep financial pockets can now be attacked for the actions of franchisees over which they have little control.

Some observers believe that if this decision stands, it will irreparably change the franchise business model in this country. Many industries operate using the franchise model. The fast food industry, however, may be the best known and possibly the largest industry to utilize it. A recent article in *Business Week* discussed the performance of Burger King (BKW-NYSE) since new management assumed control. In the article, there was a graphic showing the breakdown of company-owned and franchisees for a handful of fast food companies, and how that mix had changed between 2009 and 2013. The point was to illustrate how the other fast food companies – Chipotle Mexican Grill (CMG-NYSE), Panera Bread (PNRA-Nasdaq), McDonald’s, and Wendy’s (WEN-Nasdaq) compared to Burger King. In 2009, Burger King owned 11% of its outlets but has now sold all but 52 Miami stores so it only owns 0.4% of its stores. Some of the stores must have been sold in 2013 as 2012 data from *QSR Magazine*, shows a higher ownership number.

Exhibit 10. Fast Food Business Model At Risk From NLRB



Source: *QSR Magazine*, PPHB

According to data from a 2008 survey, fewer than 5% of the gasoline stations were owned by major oil companies at that time, while they also owned less than 2% of the convenience stores

While the possible impact on the fast food franchise business model of the NLRB decision has been discussed, we have seen little comment directed toward the possible impact on the gasoline marketing business. According to data from the National Association of Convenience Stores (NACS), there were roughly 153,000 gasoline stations across the United States. In addition, there are 126,658 convenience stores selling fuel in the U.S. More than 58% of the convenience stores selling fuel are single-store operators, or over 70,000 stores. According to data from a 2008 survey, fewer than 5% of the gasoline stations were owned by major oil companies at that time, while they also owned less than 2% of the convenience stores. The ownership percentages have continued to decline in recent years. Today, the major oil companies operate about 0.4% of the convenience stores that sell fuel. *Nielsen's* reported that as of June 2013, Chevron Corp. (CVX-NYSE) operated 406 convenience stores selling gasoline, while Shell (RDS.A-NYSE) operated only 23. ExxonMobil (XOM-NYSE) and BP North America (BP-NYSE) owned no convenience stores selling gasoline, while ConocoPhillips, now Phillips 66 (PSX-NYSE), owned only one station. We wonder if that single station is the one located just outside the main gate of Conoco's (COP-NYSE) corporate headquarters in West Houston.

31% of the roughly 153,00 fueling stations carry major oil brands

According to data from National Petroleum News' *MarketFacts 2012*, 31% of the roughly 153,00 fueling stations carry major oil brands with Shell having 14,000 branded locations, BP America 11,300, Chevron 8,000, ExxonMobil 7,753, and Phillips 66 with 6,875 stations. On the other hand, 19% of all fueling outlets, or 29,938 stations, represent top refiner brands such as CITGO, the Venezuelan-owned refining and marketing company with 5,900 stores, Marathon Petroleum (MPC-NYSE) with 5,046, Valero Energy (VLO-NYSE) had 5,000 outlets, Sunoco Logistics (SXL-NYSE) had 4,933 units and another six companies operated a total of about 6,500 stores.

The overall number of fueling locations in the nation has declined by 8.7% from 167,571 outlets to 152,995

Gasoline sales data shows that 80% of the fuels purchased in the United States are sold by convenience stores and their share of the market has increased over the past decade. During that period, the number of convenience stores selling fuel has grown by 21% from 104,600 to 126,658. At the same time, the overall number of fueling locations in the nation has declined by 8.7% from 167,571 outlets to 152,995. Another market for gasoline sales that has grown in recent years has been the big-box grocery stores and mass merchandising stores. The top five merchandisers in this category, according to Energy Analysts International, include Kroger (KR-NYSE) with 1,153 outlets, Wal-Mart Stores (WMT-NYSE) with 1,067 stores, Sam's Club with 479, Costco with 366, and Safeway (SWY-NYSE) with 337 stores.

In researching data for this article, we were intrigued to read that of the convenience stores, 71% of their total sales comes from motor

This is where the ruling may reshape the national franchise-franchisee model by making the franchisor jointly responsible for the individual business decisions of the franchisee

Do you think you may have better luck extracting a major liability award from your franchise boss or from ExxonMobil?

There exists the potential for creative union officials and their lawyers to plan attacks against the oil companies who may now be more exposed legally due to their franchise business model

fuels but only 36% of their profit dollars. This skinny margin from fuel sales is the motivation for convenience stores to sell fast food, snacks and other sundries which offer greater profit margin potential.

So what could the NLRB ruling mean for the petroleum industry? Some people believe that the ruling merely opens the door for people suing an individual McDonald's franchisee over labor issues, or problems associated with injuries from a fall, to now have the option to sue McDonald's. Under the franchise model, a franchisee pays McDonald's a license fee and a royalty on sales. He is also obligated to purchase supplies from McDonald's vendors and to follow operating procedures established by the corporation. The franchisee hires the workers, trains them and determines the wages he pays and the benefits he gives them. McDonald's does not participate in any of those decisions by the franchisee. If McDonald's is to become liable for employment decisions and injury claims of franchisees, how quickly will the corporation be compelled to establish corporate-wide policies in these areas? This is where the ruling may reshape the national franchise-franchisee model by making the franchisor jointly responsible for the individual business decisions of the franchisee.

If the NLRB ruling enables people suing franchisees to tap the resources of the franchisor, think about how people at branded (franchised) service stations or convenience stores who feel they are harmed by the employment decisions of their direct boss – the franchisee – and will sue the major oil company as their co-employer. Think about the number of people hurt or even killed during robberies of convenience stores. Do you think you may have better luck extracting a major liability award from your franchise boss or from ExxonMobil? Many of the major oil companies and refiners are unionized. Unions may see organizing individual stores as a way to gain additional union members thus providing them greater economic power against the oil companies.

While the potential impact of the NLRB ruling on the structure of the fast food industry may be pretty clear, its impact on the petroleum industry may not be as straight forward. That being said, there exists the potential for creative union officials and their lawyers to plan attacks against the oil companies who may now be more exposed legally due to their franchise business model. I suggest keeping an eye on how the NLRB case against McDonald's evolves as it has the potential to change the petroleum industry in ways we have not yet contemplated.

Once Again The Terror Of Technology: Driverless Vehicles

According to an article in Canada's *The Globe And Mail*, the Pew Research Center, in conjunction with Elon University in North Carolina, has completed a study on the impact on labor markets from the growth in driverless vehicles. The thrust of the study was

The study concluded that by 2025 these professions, some of the last bastion of male employment, could be made redundant

on the impact of this new technology, popularized by the Google (GOOG-Nasdaq) car, on the future for professions such as taxi drivers and over-the-road truckers. The study concluded that by 2025 these professions, some of the last bastion of male employment, could be made redundant. The reporter interviewed Aaron Smith, a co-author of the report and a senior researcher with the Pew Center's Internet & American Life Project, about the impact. He was quoted saying, "Driverless vehicles remove some of the last options available for that type [male] of employment."

Exhibit 11. Google Car Will Revolutionize Driving



Source: cnn.com

The report envisions that in a worst-case scenario, the increased penetration of driverless technology would create a world where a small group of highly successful people writing the computer programs that control the vehicles would be working in highly paid positions while a large number of low-skilled workers would be unable to compete with the robots and automated machines for factory and logistics jobs.

Today, we are all familiar with the reality that planes almost completely fly themselves

As we read this article several thoughts came to mind. First, we remember one of our earliest flights to Europe – we were on the Netherlands' flagship airline, KLM, which at that time flew a route from Mexico City to Houston to Montreal to Amsterdam – when the pilot announced as we landed in Montreal that this was the airline's first totally computer-controlled landing. That flight was in 1976, and we, and most of the other passengers, were duly impressed with the evolution of airplane automation. Today, we are all familiar with the reality that planes almost completely fly themselves; however, we have been on several flights with equipment emergencies when we were thankful there were skilled pilots up front flying the plane. And who can forget the pictures of US Airways flight 1549 piloted by Captain Chesley Sullenberger that struck a flock of birds upon take-off from LaGuardia Airport and lost power in both its engines but completed a picture-perfect landing in the Hudson River with no injuries.

Exhibit 12. US Airways Flight Lands In Hudson River

Source: *J-walkblog.com*

The belief was that office workers would never print another document

Our other thought about this scenario of the take-over of the taxi and trucking industries by driverless vehicles was about the famous studies predicting how the arrival of computers in offices would lead to them becoming paperless. The belief was that office workers would never print another document and Xerox (XRX-NYSE), the king of the office copier world, would be forced to reinvent itself as its business atrophied. Today, offices use more paper than ever!

As one newspaper put it: Who do you sue in a driverless car accident?

While the Google car is the most advanced driverless vehicle under development presently, various automakers are working on introducing driverless vehicles ranging from cars to highway trucks. The Google car is slated to begin road testing in California soon, even though a number of legal issues have yet to be resolved, primarily around the issue of liability in the event of an accident involving a driverless vehicle. As one newspaper put it: Who do you sue in a driverless car accident? Britain announced two weeks ago that it will begin testing driverless vehicles on its roads next year. The Ontario Ministry of Transportation has proposed a test for Canadian roads, but the proposal has yet to be finalized.

A researcher involved in the Pew study pointed out that robot vehicles are already replacing drivers in certain mining vehicles

A researcher involved in the Pew study pointed out that robot vehicles are already replacing drivers in certain mining vehicles. These vehicles, however, are primarily going back and forth between two points over the same road making it relatively easy to program and control the vehicle. We are reminded of our days with Citibank when we spent time in the then new Citibank Center building in midtown New York where the bank was intent on pioneering new technology (the ATM was born there). They installed a robot internal mail delivery system, which involved installing an electronic tracking system under the flooring that enabled carts to carry pre-sorted bundles of mail and packages around the floor, stopping at every secretary's desk so the mail for that group of workers could be removed and replaced with outgoing mail. One problem with these carts was that while they were

The article, quoting data from Statistics Canada, stated that the drivers of taxis and trucks in Canada are 96.5% male

equipped with radar to detect people and objects in their path, we quickly learned that they weren't always accurate so it was better for people to avoid the carts than to count on the carts avoiding the people.

The thrust of the article, and we assume the study, was on the negative impact driverless vehicles are going to have on low-skilled male workers who populate the taxi and trucking industries. The article, quoting data from Statistics Canada, stated that the drivers of taxis and trucks in Canada are 96.5% male. In the case of the taxi industry, 97% of the drivers are male, half are immigrants and over a third have at least some post-secondary education based on a 2012 Citizenship and Immigration Canada study. Given the demographics of the taxi and trucking industries, the dire outlook suggested by some of the people surveyed for the report calls for this technology to exacerbate income inequality, leave masses of people unemployable and stir up social unrest. This sounds like conditions facing certain Western European governments. On the other hand, about half the people surveyed believe that robots and artificial intelligence will actually create new forms of work offering new opportunities for these displaced workers.

Technology does move quickly, but changing the lives of 320 million people within the next ten years seems questionable

Mr. Smith of the Pew Center pointed out that many of the worst outcomes from this technology revolution can be overcome with better policies such as living wages, an enhanced social safety net and an educational system that better prepares students for the world of future work opportunities. Our greatest concern about this study is its conclusion that these terrible outcomes will occur within the next decade. Technology does move quickly, but changing the lives of 320 million people within the next ten years seems questionable. Will there be certain industries and pockets of society where this rapid a change might occur? Certainly – but we cannot recall other complete social and economic revolutions that have occurred this quickly.

Energy And Climate Change Lessons From Our River Cruise

What we saw from our cabin was a stream of German-owned river barges carrying loads of coal down the Rhine River

We have written extensively about the challenges in Germany from its clean energy move that have led to shutting down the country's nuclear power plants and boosting wind and solar power by offering large subsidies. The result of this policy has been a 44% increase in residential electricity costs over the past three years and disruptive conditions for the country's electricity grid, especially those portions that pass through neighboring countries. Probably the most surprising result of this policy has been the growth in the amount of electricity generated by cheap coal and the sharp increase in coal imports and carbon emissions that have wiped out the climate change gains of the past few years. What we saw from our cabin was a stream of German-owned river barges carrying loads of coal down the Rhine River. The picture, although it is hard to determine, is of one of these barges.

Exhibit 13. Germany Coal Barge On Rhine River



Source: Allen Brooks

Recent flooding has been nowhere as damaging as experienced during the 1500s and 1800s

Another thing that attracted a high level of interest from tourists, our guides and local citizens was the flooding that has occurred repeatedly over the centuries. What we usually hear from climate change alarmists is that we are beginning to experience more extreme weather events and that those events will become more severe in the future. The projected increase in weather events will lead to more rain and snow contributing to greater flooding in the future. When we visited Melk, the dates on this building near the Danube River mark the high water points of past floods. This was a common focal point of many of the cities we visited. Recent flooding has been nowhere as damaging as experienced during the 1500s and 1800s.

Exhibit 14. High Water Marks From Past Floods



Source: Allen Brooks

Seeing these conditions in real time has helped us to better understand the realities of climate change concerns and Germany's energy policies.

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