
MUSINGS FROM THE OIL PATCH

December 18, 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

Climate Change Proponents Target Energy Stock Holdings

The Doha meeting should be considered another chapter in the lengthening string of disappointing climate meeting outcomes

The latest United Nations sponsored climate change meeting held in Doha was striving to develop a follow-on agreement to the Kyoto Protocol. The meeting of the 195 parties to the UN Framework Convention on Climate Change even went an extra day in order to provide more time for attendees to reach an agreement. What emerged from the summit was an agreement to retain the 15% reduction in carbon emissions target initially established by the Kyoto Protocol. Once again, there was a general agreement that the western countries would compensate those developing economies most impacted by possible climate change, but no money terms were agreed for 2013-2015. The Doha meeting should be considered another chapter in the lengthening string of disappointing climate meeting outcomes. Departees from Doha expressed optimism that more will be achieved in Poland next year.

A new tactic is to pressure the managers of university endowment funds to divest their holdings in fossil fuel companies

These annual climate change meeting failures are particularly troubling for environmentalists and have forced them to focus on other tactics to try to gain leverage in fulfilling their carbon emissions agenda. A new tactic is to pressure the managers of university endowment funds to divest their holdings in fossil fuel companies. This was a tactic used successfully in the 1980s in a campaign to get pension funds and university endowments to sell the stocks of companies dealing with South Africa. While people refer to that campaign as having been successful, in essence it didn't really succeed until the instigators commenced campus demonstrations including hunger strikes, sit-ins and the seizure of buildings.

The divestment campaign has been used by a small group of students for about a year in fighting to get coal stocks sold from endowment portfolios in opposition to strip mining atop mountains in Appalachia. The companies the students targeted were labeled the

Today, there are 390 parts in the atmosphere, 41% greater than what existed before the Industrial Revolution

Sordid 16. Now, however, the movement is bigger and targeting a larger universe of energy stocks. It is being spurred by a former writer turned climate change advocate, Bill McKibben. He has been touring the United States by bus speaking to student groups. He has founded an organization called 350.org, which refers to the supposedly safe level of carbon dioxide in the atmosphere – 350 parts per million. Today, there are 390 parts in the atmosphere, 41% greater than what existed before the Industrial Revolution.

No longer are people or companies on the other side of a debate “opponents”

Mr. McKibben’s organization is attempting to motivate students to push for divestment of the shares of 200 energy companies. In his presentations, he paints the fossil fuel companies as the “enemy,” – a tactic that has become the norm in the political and social arena in recent times. No longer are people or companies on the other side of a debate “opponents,” or the “loyal opposition” as politicians are referred to in England, but rather they are the enemy.

Mr. McKibben’s goal of making the ownership of these energy stocks disreputable is similar to the effort to make owning tobacco stocks verboten in many circles some years ago. Mr. McKibben has set forth a series of demands, which if met would get energy companies off the 350.org target list. First, the companies must stop exploring for new fossil fuels. Second, they need to stop lobbying against emission reduction policies in Washington. Finally, companies must devise a transition plan that will leave most of their reserves in the ground while encouraging the use of lower-carbon energy alternatives. Does that mean an oil-focused company that stops exploring for and developing its oil resources in favor of going after natural gas reserves will get a bye from 350.org? We doubt it.

While the students have received sympathetic support for their goals from the college’s president, Rebecca Chopp, a theologian, she does not agree with their means

Last week we learned that students of Providence’s Brown University are among the latest to push for their endowment managers to sell its energy stocks. Earlier, a high-profile divestment effort was mounted at Swarthmore College located on the Main Line in Philadelphia. While the students have received sympathetic support for their goals from the college’s president, Rebecca Chopp, a theologian, she does not agree with their means. Suzanne Welsh, vice president for finance at the school, was quoted saying, “The college’s policy is that the endowment is not to be invested for social purposes” beyond the education of students. As she pointed out, the endowment money was given with the latter purpose in mind and not as a pile of money to be used for social purposes.

Do you think Alexander the Great or Attila the Hun didn’t view the people they were trying to conquer as enemies?

The idea that we need to target energy companies or others for that matter as the “enemy” in order to oppose their actions and/or policies seems to have become an accepted strategy. I would argue that it is an age-old strategy. Do you think Alexander the Great or Attila the Hun didn’t view the people they were trying to conquer as enemies? I think back to an experience in my youth that demonstrates that demonizing the opposition is not a new phenomenon, but it also reminds me of how often the strategy fails.

Hating your enemies isn't always a successful motivating factor

I grew up in Darien, Connecticut and our archrival in sports was the neighboring town of New Canaan. In my senior year, New Canaan sponsored a "Hate Darien Week" before our annual football game. According to posters and reports from a pep rally the students held that week, New Canaan high school students were encouraged to "hate your mother, hate your father, hate your girlfriend, but most of all hate Darien." The coach of the New Canaan football team was even complicit by locking us out of our locker room before the game at their school field, making us late for the coin toss that earned us a 15-yard penalty. The New Canaan coach made a grand gesture out of declining the penalty. After their warm-ups, the New Canaan team appeared on the field in totally different uniforms. They changed again at half time into their regular uniforms. As a starter, I only got to play about half the game as we beat New Canaan 70-0. Hating your enemies isn't always a successful motivating factor.

Hatred, however, appears to be growing as a strategy - witness the attack of Oil Change International and its cohort, The Other 98%, against ExxonMobil (XOM-NYSE) and the rest of the petroleum industry. These left-leaning and anti-fossil fuel organizations have created an advertisement directed against the petroleum industry using ExxonMobil as its caricature. Here is some of the text of the ad these organizations promoted to raise money for media time:

"Imagine if your *government gave a company* a sweet deal to build your local playground. Then, that company *dumped toxic waste* underneath where your kids play everyday, just because it was the most *profitable* thing for them to do. What would you do? Obviously you'd *protect your children* and demand that the company fully pay to clean up their mess. You'd demand that the company pay for any medical help needed by your kids. Finally, you'd demand that your government *immediately stop* sending your tax dollars —*subsidies* — to that company. That company is Exxon, the playground is our planet, and the sweet deal they get is by way of *massive government handouts*. But Exxon is not alone; their competitors and industry friends in the fossil fuel game are all running their businesses in a way that is *ruining our children's futures*. In short, if you judge Exxon and other fossil fuel companies not by the words on their press releases, but by their actions and predictable consequences, Exxon really must hate your children. The facts speak for themselves."

To continue doing these things in the face of the evidence suggested by the United Nations, the International Energy Agency and Superstorm Sandy, means that ExxonMobil hates your children

The ad points out that ExxonMobil (and its fellow petroleum companies) continues to drill and produce fossil fuels, endangering the planet's climate and poisoning the atmosphere for our children's future. To continue doing these things in the face of the evidence suggested by the United Nations, the International Energy Agency and Superstorm Sandy, means that ExxonMobil hates your children. The suggested remedies Oil Change International proposes are similar to those endorsed by 350.org – stop seeking new fossil fuel reserves, stop lobbying against environmental laws and determine out how best to keep your reserves buried in the ground.

E&P Spending Survey Gives Cheer Not Lumps Of Coal

Global oil and gas companies plan on boosting their E&P spending by 7% to a record \$644 billion in 2013

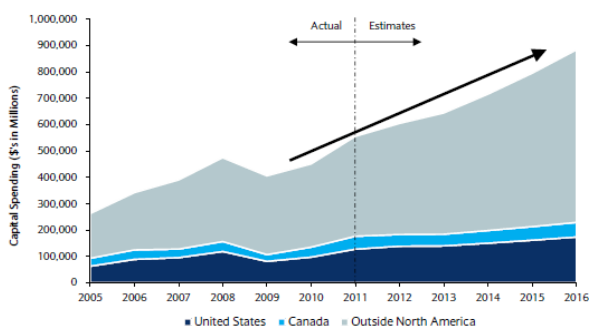
The Barclays' analysts believe the industry is in the early stage of an extended demand cycle, which will be driven by growth in developing economies

The annual exploration and production spending outlook survey conducted by Barclays oilfield service stock research team was unveiled a couple of weeks ago. According to the analysts, global oil and gas companies plan on boosting their E&P spending by 7% to a record \$644 billion in 2013. That's the good news. The bad news is that almost all the growth in spending will be outside of North America, where the spending outlook is projected to be flat with 2012. The analytical team at Barclays has been conducting these spending surveys for many years, and the results are anxiously awaited by the industry to see the thinking of managements about future oil and gas prices, commodity demand and where and how much the oil and gas companies figure they can, and should, spend to find, develop and produce hydrocarbons.

The capital spending increase for 2013 would mark the fourth consecutive year of growth, although the amount of the annual increases has varied noticeably. The Barclays' analysts believe, as well as energy company managements, the industry is in the early stage of an extended demand cycle, which will be driven by growth in developing economies. That growth should spur higher oil and gas prices providing producers with additional cash flow that is expected to be spent finding and developing future production. Reading the chart that we have reproduced in Exhibit 2, Barclays expects global capital spending to grow by almost 55% between 2011 and 2016, or at a healthy double-digit growth rate. The chart also shows that the spending growth will be driven by higher international spending.

Exhibit 2. Barclays Analysts See L-T Up-Cycle

Barclays Multi-Year Exploration & Production Spending Forecast



Source: Company data and Barclays Research

Source: Barclays

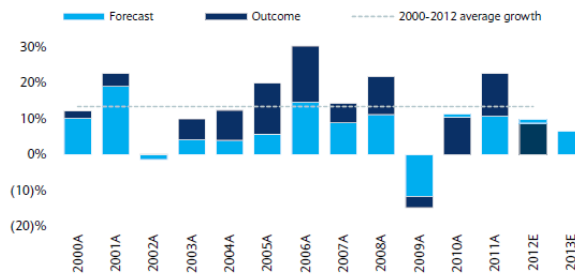
Ever the optimistic bunch, in response to the fact that the anticipated spending growth derived from the survey results fell short of the historical average spending growth since 2000, the Barclays analysts made the following observation about the survey: "While our survey has been directionally accurate over time, it also tends to

There has only been one year in that period when actual capital spending fell short of the forecast

prove conservative relative to actual spending levels.” This statement accompanied a chart showing the annual spending forecast and the resulting actual outcome for 2000 to 2012. They pointed out that there has only been one year in that period when actual capital spending fell short of the forecast, which occurred in 2010. However, it is likely that spending in 2012 may also fall slightly short of the beginning year estimate.

Exhibit 3. 2013 Spending Well Below Trendline

Analysis of Historical Report Accuracy



Source: Company data and Barclays Research

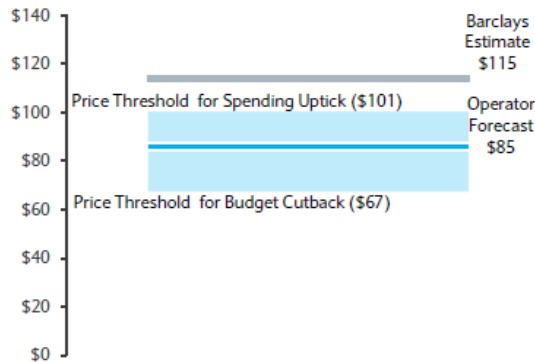
Source: Barclays

The companies have an average forecast price of \$85 per barrel, while the Barclays commodity group sees prices averaging \$115

The key to the Barclays’ analysts’ optimism about spending in 2013 is the relationship between the forecast for oil and gas prices used in budgeting by the companies and those of the bank’s commodity experts. In the case of crude oil, there is substantial upside to the estimate companies are budgeting. The companies have an average forecast price of \$85 per barrel, while the Barclays commodity group sees prices averaging \$115. What this means is that if global oil prices hit the Barclays forecasted average, there will be substantially more money available for E&P spending. The Barclays estimate is well above the \$101 per barrel figure managements have said is the point at which they would upscale their budgets.

Exhibit 4. Oil Prices Provide Cash Flow Upside

WTI Average 2013 Budget Thresholds

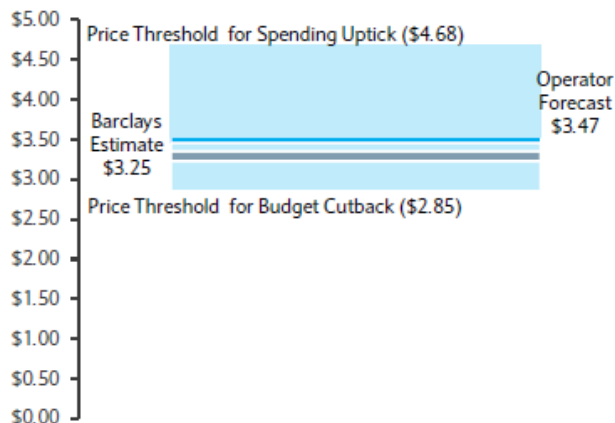


Source: Company data and Barclays Research

Source: Barclays

Exhibit 5. Gas Prices Could Cost Operators

U.S. Gas Average 2013 Budget Thresholds



Source: Company data and Barclays Research

Source: Barclays

The key to how much a company's cash flow might be impacted depends on its mix of gas and liquids production

Offsetting the positive cash flow implications of higher oil prices is the possibility that natural gas prices could meet Barclays' expectations that are about 7% below the operator average forecast, but this shortfall would mostly hurt the pace of spending in North America. Barclays has an average price expectation of \$3.25 per thousand cubic feet of gas versus the industry average price expectation of \$3.47. If Barclays' estimate proves more accurate, industry cash flow would be hurt, which might force producers of dry natural gas to have to reduce their E&P spending. The key to how much a company's cash flow might be impacted depends on its mix of gas and liquids production – more liquids production at a higher price helps offset the lower cash flow from weaker natural gas prices. There is also the issue of the mix of hydrocarbon targets in the lease inventories of companies. If a lease is already held by production, then throttling back spending wouldn't have too much impact on a company's future. On the other hand, producers might be forced to give up expiring leases if they didn't believe gas prices would recover soon enough to justify the cost of drilling a well to hold the lease, which would impact the future value of a company. This is a phenomenon that is starting to happen in the southern region of New York State as its moratorium on fracturing wells has prevented any shale drilling on leases that are due to expire in 2013.

The forecast calls for spending in 2013 to barely move the needle in Canada and the U.S.

The mix of E&P spending in 2013 will provide a challenge for the oilfield service industry. As shown in Exhibit 6, the forecast calls for spending in 2013 to barely move the needle in Canada and the U.S. In fact, the only potential for additional activity is the impact that lower service costs might have on company economics coupled with improvements in drilling and completion efficiency that enables more wells to be drilled per rig.

Exhibit 6. E&P Spending Reflects Global Activity Split

Worldwide E&P Capital Spending By Company Type/Region, 2012-2013

(\$ in Millions)	2012E	2013E	% Change
North America			
U.S. Spending	138,718	139,634	0.7%
Canada Spending	44,431	44,696	0.6%
Total North America:	\$183,149	\$184,330	0.6%
International			
Supermajors (Int'l Spending)	93,844	102,210	8.9%
North American Independents (Int'l Spending)	21,192	20,083	-5.2%
Latin America	63,263	72,819	15.1%
India, Asia & Australia	93,318	103,620	11.0%
Middle East	26,936	29,826	10.7%
Russia	47,109	50,346	6.9%
Europe	45,012	47,670	5.9%
Africa	23,586	24,639	4.5%
FSU/CIS	1,063	1,201	13.0%
Other	5,715	7,213	26.2%
Total International:	\$421,038	\$459,627	9.2%
Worldwide Spending:	\$604,186	\$643,957	6.6%

Source: Barclays Research

*We use companies that spend primarily in their home regions as a proxy for the regional forecasts detailed in the previous charts.

Source: Barclays

It looks as if 2013 will be a mixed year for the petroleum business as the economic and hydrocarbon situation in North America limits industry growth

Outside of North America, there are a number of geographic regions that are forecasted to show double-digit spending growth – Latin America; India, Asia & Australia; Middle East; and FSU/CIS. It is also noteworthy that the supermajor oil companies are targeting a healthy spending increase (8.9%) next year, which helps offset the projected decline in international spending by North American independents (-5.2%). In summary, it looks as if 2013 will be a mixed year for the petroleum business as the economic and hydrocarbon situation in North America limits industry growth. At the same time, the growth of developing economies around the world will drive energy consumption up, thus stimulating international petroleum industry activity. Increasingly, the outlook for the global energy industry will be dependent on the pace of economic activity that is being challenged by the economic, financial and political challenges virtually everywhere in the world. Let's hope the New Year brings better results than currently anticipated.

Energy In Crosshairs; Is The Fiscal Cliff Has War Lost?

The technology behind the revolution is an anathema for environmentalists for health risks and for undercutting the development of the renewable fuel market

The domestic energy boom, triggered initially by the gas shale revolution that morphed into an oil shale revolution, has become a doubled-edged sword for the petroleum industry. On the one hand, it has generated increased oil and natural gas production for a nation starved for additional domestic energy, which has translated into growing profits for producers and service companies, increased job opportunities for citizens and more taxes for state and local governments. On the other hand, the technology behind the revolution is an anathema for environmentalists for health risks and for undercutting the development of the renewable fuel market, leading them to oppose its use. But maybe more importantly for the future of energy markets is that the swelling of the petroleum industry's cash coffers has made the sector a target of Washington

In his view, Intangible Drilling Costs (IDC) and Section 109 credits for unconventional gas developments would not be a part of the short-term solution to the fiscal cliff issue

According to Barclays, a repeal of the IDC is scored by the Congressional Budget Office as generating \$13.9 billion of additional tax revenue over 10 years

What we do know about oil and gas tax credits is that they have been a lightning rod for environmentalists and those opposed to the development of more of our nation's oil and gas resources

politicians eager to siphon off some of that money for the “greater public good.” Could Washington’s actions, however, cause harm to the public rather than good?

The Hippocratic Oath implores medical professionals to first “do no harm” when dealing with ill patients. This is certainly not the oath politicians ascribe to. Instead, they seem more like bees searching for the next “honey pot” of tax revenue to fund their profligate spending ways. The issue of energy industry taxation surfaced recently in comments by a government affairs expert employed by the research department of Barclays, the international investment bank. In a presentation focusing on the results of the latest Barclays survey of estimated oil and gas company exploration and production spending for 2013, the government expert was asked to comment on the sustainability of certain existing tax credits for petroleum companies in light of the battle over avoiding having the U.S. economy go over the “fiscal cliff.” In his view, Intangible Drilling Costs (IDC) and Section 109 credits for unconventional gas developments would not be a part of the short-term solution to the fiscal cliff issue. He, however, was not so sanguine about their survival in any longer term outlook for an overhaul of U.S. taxes.

The comments about Washington possibly eliminating these tax credits for the oil and gas industry reflect the small amount of additional money they would bring in. That is probably a valid consideration when discussing the loss of the credits in the short-term financial deal being structured, but all tax credits are assumed to be at risk if Washington moves to reform the entire U.S. tax code. According to Barclays, a repeal of the IDC is scored by the Congressional Budget Office as generating \$13.9 billion of additional tax revenue over 10 years. The Section 199 manufacturer’s deduction for oil and gas companies will generate \$11.6 billion. Interestingly, the scoring of the production tax credit for wind energy is \$12.1 billion over 10 years. For tax credits that would generate less than \$1.5 billion a year when the president and Congress are wrestling with a fiscal cliff cure that needs \$800 billion to \$1.6 trillion in additional taxes over the next decade, suggests these tax credits are not high profile targets.

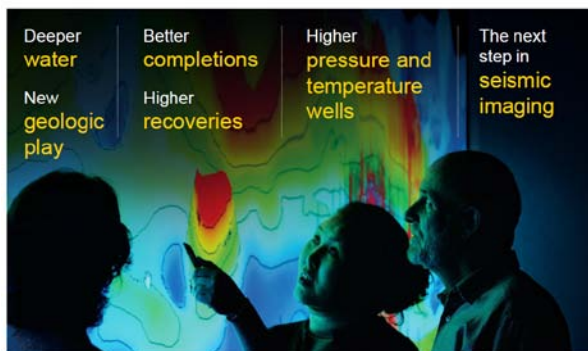
What we do know about oil and gas tax credits is that they have been a lightning rod for environmentalists and those opposed to the development of more of our nation’s oil and gas resources. At one point, the issue of the amount of oil and gas industry tax credits versus subsidies for renewable energy fuels was a raging battle. Political battles of this type flashed in our head as we sat listening to a presentation by Robert N. Ryan, Jr., VP Global Exploration, Chevron Upstream & Gas (CVX-NYSE) at the Decision Strategies Oilfield Breakfast Forum a couple of Fridays ago. Mr. Ryan had titled his presentation Redefining “Frontier.” A couple of his slides hit a point that had been touched on briefly in an earlier presentation by Lawrence Dickerson, President and CEO of Diamond Offshore Drilling, Inc. (DO-NYSE).

Mr. Ryan suggested that none of these challenges represent issues the industry cannot solve

Mr. Ryan discussed the issue of where the next frontier was for the petroleum industry. Most people, he said, believe the industry's challenges are below ground, which led him to show the slide in Exhibit 7. There were a number of activities displayed that are directed to below-ground issues the industry wrestles with. However, Mr. Ryan suggested that none of these challenges represent issues the industry cannot solve or are ones that keep him awake at night.

Exhibit 7. We Can Address Below-Ground Challenges

What Will Be the Next Frontier?



Source: Robert Ryan, Chevron

He sees issues associated with drilling and its water use as two of the major challenges confronting the industry, but again, ones he believes that can be solved

Instead, Mr. Ryan suggested that the big challenges for the petroleum industry going forward dealt with issues above ground. In particular, he sees issues associated with drilling and its water use as two of the major challenges confronting the industry, but again, ones he believes that can be solved. He listed his third above-ground issue as transparency of operations. This is an issue we found quite interesting since it reflects a critical challenge for the industry and that is shaping the political debate over petroleum activities, and may actually prove to be the industry's Achilles heel.

Exhibit 8. Transparency Is Industry's Greatest Challenge

The Next Frontier May Not Be Below Ground



Source: Robert Ryan, Chevron

For the industry, the only media attention it receives is when consumers are angry due to high gasoline prices or problems getting to refuel their vehicles such as happened during Superstorm Sandy

Since the industry never knows for sure what is below the earth's surface, it can never tell people exactly what the process will be and the actual scope of activity

Many people are opposed to fracturing because they see it as a way to produce inexpensive energy

The petroleum industry has a long-standing image problem with the public, which manifests itself in the various debates and attacks over tax policies, claims about speculators and oil company rip-offs at the pump whenever gasoline prices soar. For 99% of the American public, their dealings with the oil and gas industry come when they pull into the local service station to fill up their car. Depending on what the pump price is, American consumers will be either happy or angry! For the industry, the only media attention it receives is when consumers are angry due to high gasoline prices or problems getting to refuel their vehicles such as happened during Superstorm Sandy. Unfortunately, both situations are not the fault of the oil companies. But since the public's image of oil company executives is based on their viewing movies such as Giant, or the television series Dallas, or reading stories of the actions of the wildcatters such as the H.L. Hunt and his sons. Maybe they are familiar with the role Howard Hughes and his father played in the development of the drill bit, but more likely they are only familiar with his playboy activities and eccentric behavior. The public probably knows a lot more about the actions of Ken Lay and Enron, than any of the good works of thousands of workers in the business. The bottom line is that Americans generally have an unfavorable view of the oil industry.

This unfavorable view is reinforced by the workings of the industry beginning with its leasing activity – the role of landmen and the use of anonymous entities to conduct business. This negative view again is reinforced by the exploration process. Landowners are faced with seismic crews coming in and damaging the land in order to shoot seismic in order to gain an understanding of what may lie below the surface. The land is further scarred when a drilling rig is moved in. Lastly, assuming hydrocarbons are discovered, you have the completion process in which lots of equipment and materials are mobilized to the well site to perform the work, but few know or understand what chemicals are used and why. Since the industry never knows for sure what is below the earth's surface, it can never tell people exactly what the process will be and the actual scope of activity, although it can be described in general terms. Moreover, the leasing process does little but raise landowners' expectations of a financial bonanza. Those expectations are often disappointed.

Disappointment often intersects with antagonism that leads to the popular attacks on the industry. We are in the midst of one of those periods relating to hydraulic fracturing, one of the critical technologies that has spurred the shale revolution. One must understand that many people are opposed to fracturing because they see it as a way to produce inexpensive energy, in particular natural gas, which is undercutting the market for their preferred fuel - renewables. For them it is not a logical argument but rather an emotional one.

Several recent articles have highlighted the challenges facing the oil and gas industry with respect to its public relations image. An article


“We need to educate the public to the risks and how we are managing them”

For producers, the conflict between the environmental benefits of natural gas and the concerns over how it is extracted has created a serious challenge


in the *Journal of Petroleum Technology* reviewing the most recent Society of Petroleum Engineers annual meeting held in San Antonio last month highlighted some of these challenges. One section of the article covered an industry panel that discussed the broad issues and challenges confronting the E&P and service industries. In discussing how the shale revolution was changing the business, the article made the point that “The changes they described range from how engineers develop fields to what they say about what they do.” Mark Albers, senior vice president of Exxon Mobil Corporation (XOM-NYSE) was quoted saying, “We need to educate the public to the risks and how we are managing them.” The problem is that sensational movies such as Al Gore’s “An Inconvenient Truth” and Josh Fox’s “Gasland” have clouded the public’s view of the industry. Spectacular visuals married with the absence of, or manipulation of poor scientific facts, have been used to scare the American public about the use of fracturing.

David Hobbs, chief energy strategist at IHS CERA, who moderated the panel, offered several insightful observations about these challenges. He said that logic and science are not going to convince everybody of the benefits of fracturing. He went on to say that “Engineers share a common failing. They think if you disagree with them, you don’t understand, and they start explaining it again.” This is not the case, especially when we have a mid-70s geologist friend who openly worries about the possibility of hydraulic fracturing of a newly drilled well on his family’s farm in West Texas damaging one or more of his irrigation wells for the cotton crop grown on the property - and this is from a lifelong oil industry veteran. Yes, the industry’s embrace of a web site where companies can post the chemical mixtures used in fracturing wells has helped the industry’s public relations image, but it has not gone far enough in arresting their concerns. For producers, the conflict between the environmental benefits of natural gas and the concerns over how it is extracted has created a serious challenge. In reality, the industry has lost the environmental benefits argument for natural gas. Mr. Dickerson’s slide (Exhibit 9) shows the framing of today’s debate.

Exhibit 9. The War Is Waged In Black And White!

Fracking’s Negative Perception 

“Fracking is inherently unsafe...” – Anti-fracking group



“The process has raised concerns about contamination of groundwater.” – New York Times

Source: Larry Dickerson, Diamond Offshore

According to reports, it [the movie] will portray hydraulic fracturing, or fracking, as evil

Jay Nordlinger, writing in the *National Review* about cultural trends in the United States, commented on the role of Hollywood in the last election. "For as long as most of us can remember, businessmen in movies have been villains. Heroes have been such people as environmental activists." He went on to discuss how "Bain" was used as a scare word by Democrats to undercut the successful business career of Mitt Romney during the presidential campaign. Mr. Nordlinger went on to write, "In late December, a new Matt Damon movie ["Promised Land"] will come out. According to reports, it will portray hydraulic fracturing, or fracking, as evil. The movie is bankrolled by Gulf Arabs. Fracking would be a boon to American energy, without harm to the environment. But can you fight City Hall? Can you fight Hollywood? Many more people watch Matt Damon movies than bother to learn anything about oil production."

We believe the war over fossil fuels can be won, but the arguments supporting fossil fuels must be adjusted in order to gain greater acceptance from the public

Much like the Republican Party needs to rethink its use of social media and polling data and how well it gets out the vote in the next election, along with re-examining its core philosophical principles and the message it delivers, the oil and gas industry must examine the key issues impacting its future and how these relate to the American public. Rather than try to fight the current environmental/energy issues using its historical approach, the industry needs to overhaul its message and its tactics. We believe the war over fossil fuels can be won, but the arguments supporting fossil fuels must be adjusted in order to gain greater acceptance from the public. We are not optimistic the industry will embrace the necessary changes, partially due to the divergent views represented in industry lobbying groups that are most involved in delivering the message. The industry will win some skirmishes but probably lose critical battles, especially the battle for greater public support. That loss will dictate how the energy/environment war plays out.

The Ups And Downs Of The Global Natural Gas Business

Natural gas demand will increase by about 65% through 2040 and 20% of its production will occur in North America

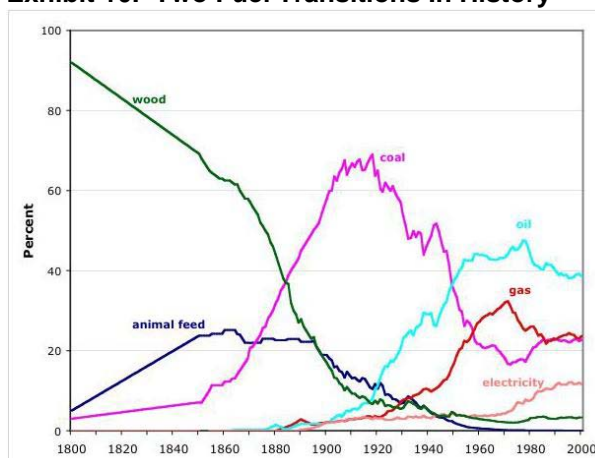
Christmas time and the approaching end of the year elicit many final actions, along with year-end reviews and New Year outlooks. The natural gas industry seems to be receiving its share of kudos and brickbats. ExxonMobil (XOM-NYSE) unveiled its energy outlook recently in which it projects global energy demand growing by 35% to 2040. Importantly, natural gas demand will increase by about 65% through 2040 and 20% of its production will occur in North America. The principal driver for growth in natural gas consumption is the 50% increase in electricity generation forecast by ExxonMobil. That growth is necessary since the company also predicts that electricity consumption will grow by 85%. The company expects that by 2040, natural gas will account for 30% of global electricity generation, compared to less than 25% today.

Clearly, one of the primary drivers for the increased use of natural gas in the electricity generating market is its inherently more

This expanded role for natural gas fits within the historical pattern of fuel transitions

environmentally-friendly footprint compared to coal. Natural gas emits 60% less carbon dioxide than coal when used to generate electricity. ExxonMobil sees the role of natural gas growing substantially within the menu of fuel choices available to the global economy. This expanded role for natural gas fits within the historical pattern of fuel transitions. In the modern world since the 1700s, America has gone through two fuel transitions – from biomass to coal and then coal to oil. According to ExxonMobil, we are in the next transition to natural gas. In 1800, more than 95% of the nation's energy was derived from wood and animal feed, but by the 1880s coal had overtaken biomass. Coal was supplanted by oil in the 1940s and then by natural gas in the 1950s. Today we are looking at a future in which natural gas overtakes coal and oil because it emits less carbon dioxide and it has a greater energy density than most of the alternatives.

Exhibit 10. Two Fuel Transitions In History



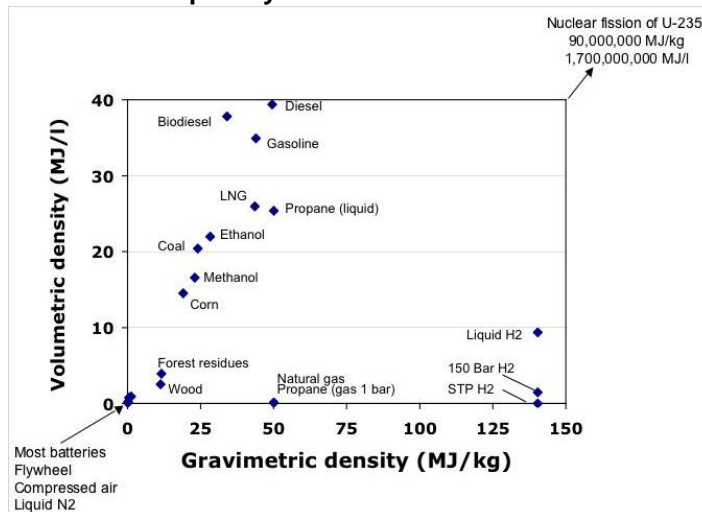
Source: Cutler Cleveland at *The Oil Drum*

Energy density is an important concept because it helps explain why some of the most environmentally benign fuels – wind, solar and hydro power – are not suitable for powering our economy since they are not scalable, meaning they need huge supplies to provide an equal amount of energy that denser fuels such as gasoline and diesel provide.

The unconventional gas business received a shot in the arm with the British government's endorsement of the use of hydraulic fracturing to tap gas shale formations in that country

While ExxonMobil is positive about the growing role natural gas will play in the world's future energy supply, attention then shifts to the issue of supply, about which the oil company is also positive. Late last week, the unconventional gas business received a shot in the arm with the British government's endorsement of the use of hydraulic fracturing to tap gas shale formations in that country. This approval followed a moratorium on the technology's use after two minor earthquakes in central England were attributed to wells that were hydraulically fractured in 2011. A study showed that the fluid used to crush the shale destabilized a fault in the earth causing it "to

Exhibit 11. Liquid Hydrocarbons Most Efficient



Source: Cutler Cleveland at *The Oil Drum*

fail repeatedly in a series of small earthquakes.” Only minor damage was done to the well but not enough to compromise the well’s integrity or to cause structural damage outside of the well.

Europe is the world’s second largest gas market but it is becoming increasingly dependent on expensive imported gas from places such as Russia and Algeria

The British government’s approval to use hydraulic fracturing under strict controls may have a profound impact on the development of natural gas resources both in England and on the Continent. Europe is the world’s second largest gas market but it is becoming increasingly dependent on expensive imported gas from places such as Russia and Algeria. British industry has pushed for increased use of gas to offset the growing use of renewable power that is much more expensive. Additionally, the development of substantial amounts of shale gas could help offset the decline of oil and gas production in the North Sea, Britain’s mainstay for energy supplies.

In Eastern European countries, however, shale development is viewed more favorably because it is seen as a job creator and as a way to loosen the stranglehold of high-cost Russian gas on their economies

Success in gas development in the UK could also potentially improve its development in Europe where countries such as France, which has banned the use of fracturing, and Germany that is reluctant to allow widespread development of its shale resources using the technology, but did reject an outright national ban, might rethink their positions. The two primary objections from these countries that have banned fracturing is the potential for polluting drinking water and the surrounding countryside and that the population density of Europe is not conducive for the number of wells that need to be drilled to tap shale resources. In Eastern European countries, however, shale development is viewed more favorably because it is seen as a job creator and as a way to loosen the stranglehold of high-cost Russian gas on their economies.

Back home in the United States, unconventional gas has taken a strange hit from the Sierra Club with the support of the Environmental Protection Administration (EPA). A recent

It [the EPA] said, this application “represents an opportunity for FERC and DOE to jointly and thoroughly consider the indirect and cumulative environmental impacts of exporting LNG”

Department of Energy (DOE) report on the nation’s gas supply potential argued that allowing meaningful volumes of domestic gas to be exported in the form of liquefied natural gas (LNG) will not seriously boost domestic gas prices. That conclusion re-stimulated a number of filings for constructing gas exporting facilities. The Sierra Club, in its “Beyond Natural Gas” publicity campaign, has argued that the Federal Energy Regulatory Commission (FERC) should consider the upstream impact of its decisions to allow LNG to be exported from this country. The EPA has recently waded into the debate with support for the Sierra Club’s position.

The EPA regional office with jurisdiction over the proposal to re-engineer the LNG import terminal at Cove Point, Maryland into an export facility released this statement about the scope of the project’s environmental review. It said, this application “represents an opportunity for FERC and DOE to jointly and thoroughly consider the indirect and cumulative environmental impacts of exporting LNG.” A similar statement was made by the EPA regional office overseeing the proposed Jordan Cove Energy Project in Oregon. In that case, the statement read, “We believe it is appropriate to consider available information about the extent to which drilling activity might be stimulated by the construction of an LNG export facility on the West Coast, and any potential environmental effects associated with that drilling expansion.”

The agency declined to go into the question of drilling impacts on the industry and economy

The EPA referred to an Energy Information Administration (EIA) report in January 2012 that said LNG exports would be supplied largely through new natural gas production, and that about three-quarters of that production could be expected to come from unconventional shale gas plays.

While wading in on the side of the Sierra Club, the EPA has started a battle with the primary regulator of natural gas facilities in this country. Last April, when FERC approved Cheniere Energy Inc.’s (LNG-NYSE) Sabine Pass, Louisiana LNG terminal for exports, the agency declined to go into the question of drilling impacts on the industry and economy. The DOE, later in its approval, also said that natural gas production is outside the scope of the export projects’ environmental studies.

FERC would be forced to perform the same reviews for gas pipelines, storage facilities and other infrastructure projects

Former FERC Commissioner Marc Spitzer was interviewed by a natural gas publication on this issue. He stated that there would be widespread energy policy changes if regulators were to accept the Sierra Club’s argument and FERC were to consider the entire gas supply chain when permitting LNG export terminals. He further commented that FERC would be forced to perform the same reviews for gas pipelines, storage facilities and other infrastructure projects. In his discussion, he said that he had seen many letters from the EPA that he considered fairly neutral on environmental impacts while he was overseeing FERC’s approval of LNG import terminals. This letter was much stronger in tone. The letter not only asks that

The mere disclosure of these letters suggests that hydraulic fracturing is, or will become, a target of both the environmental movement and the EPA

FERC consider the upstream project's impacts but also asks FERC to spell them out in the form of calculating how many wells need to be drilled to support the new gas demand and how the new project would drive demand for new or expanded natural gas pipeline infrastructure.

No one seems to believe that FERC will agree with the EPA's demands or the Sierra Club's appeal, but the mere disclosure of these letters suggests that hydraulic fracturing is, or will become, a target of both the environmental movement and the EPA. One should be concerned that the EPA will be looking for legal avenues to enable itself to become involved in this broader examination of natural gas and LNG exports. We would hope that the natural gas industry is examining all the laws and regulations looking for potential loopholes that might provide an opportunity for the EPA to gain regulatory oversight over the upstream gas business in order to ensure that LNG exports do not promote so much drilling that it creates an environmental issue. Could this become the gas industry's 2013 nightmare?

Record New Fleet MPG May Be Due To Cooking The Books

The Institute mentioned that this performance was in line with the 17% decline in fuel consumption (gallons per mile driven) over the period

In our last *Musings* we wrote about how America's new light-duty vehicle fleet in October had achieved a record average fuel-efficiency of 24.1 miles per gallon (mpg), up from 20.0 mpg in the same month five years earlier. This performance was reported by the Transportation Research Institute at the University of Michigan. Within the past two weeks we received an update from the Institute reporting that vehicles sold in November, based on their window-sticker EPA performance rating, maintained the October 24.1 mpg average, a 20% increase over October 2007. The Institute mentioned that this performance was in line with the 17% decline in fuel consumption (gallons per mile driven) over the period. While this performance is praiseworthy, based on recent news reports we have to question whether some auto companies may be cooking their books on these ratings in order to appear more environmentally friendly. Misstating the fuel-efficiency of car models is possible since ratings are based on self-administered tests.

The EPA has already charged Hyundai Motor Company and Kai Motors of Korea with overstating the mpg ratings for some 900,000 of their vehicles sold this year

The Environmental Protection Administration (EPA) has already charged Hyundai Motor Company (HYMTF-Nasdaq) and Kai Motors of Korea with overstating the mpg ratings for some 900,000 of their vehicles sold this year. The EPA is now looking into two high-profile hybrid models built by Ford Motor Company (F-NYSE) for a similar problem. The interesting thing is that the EPA is only acting after two testing companies reported dramatically lower mpg performance in their tests of these cars compared to Ford's fuel-efficiency claims. Furthermore, one of the auto writers at *The Wall Street Journal* recently tested one of the target vehicles himself and wrote a column about it following the second magazine report, but before the EPA announcement that it was looking into the issue.

Exhibit 12. C-Max Hybrid Is After EV Market Share



Source: *Motoramic*

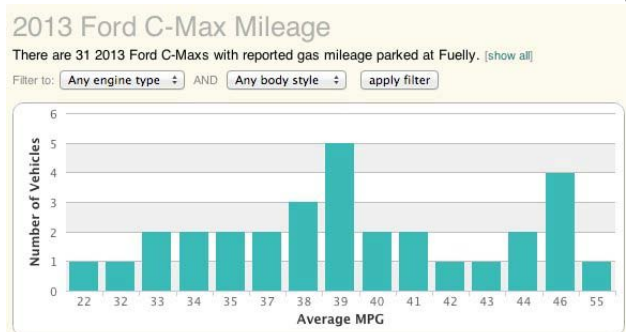
According to Consumer Reports, the C-Max Hybrid had a combined average rating of 37 mpg, ten mpg below the window-sticker rating, while the Fusion Hybrid averaged 39 mpg, eight mpg below the EPA rating

In November, *Green Car Reports* magazine reported that the Ford C-Max Hybrid cross-over and the Ford Fusion Hybrid vehicles it tested didn't come close to delivering their EPA mileage ratings of 47/47/47 mpg city/highway/combined. Within the last two weeks, *Consumer Reports* weighed in with claims that its testing of these vehicles fell well short of the averages claimed by Ford. According to *Consumer Reports*, the C-Max Hybrid had a combined average rating of 37 mpg, ten mpg below the window-sticker rating, while the Fusion Hybrid averaged 39 mpg, eight mpg below the EPA rating. Ford challenged the report saying that some drivers achieved greater mileage than *Consumer Reports* claims.

So far, 31 owners of Ford C-Max vehicles have registered and driven 58,000 miles

There is a web site, *Fuelly*, where vehicle owners can sign up to track their driving and keep score of how far they are traveling on a gallon of fuel. So far, 31 owners of Ford C-Max vehicles have registered and driven 58,000 miles. Those drivers have averaged 38.7 mpg, which is almost exactly in line with the *Consumer Reports* average. Interestingly, there are 212 owners of Toyota Prius V's registered with a reported average efficiency of 42.3 mpg, right in line with the that model's EPA combined estimate. So far there are only four Ford Fusion owners registered on *Fuelly*, but their average mileage is 39.9 mpg, almost exactly in line with *Consumer Reports'* estimate of 39 mpg.

Exhibit 13. Real C-Max Owners Track Less Mileage



Source: *Motoramic*

In his view, the EPA ratings numbers are for comparative purposes and not representative of what drivers will actually achieve in the real world

The Wall Street Journal auto writer, Dan Neil, said he test-drove a Ford C-Max Hybrid and averaged 33.9 mpg, toward the lower end of the spread of mileage ratings on *Fuelly*. He went on to discuss his testing technique, which he considers to be aggressive – rapid acceleration, high road speed and sharp breaking. In his view, the EPA ratings numbers are for comparative purposes and not representative of what drivers will actually achieve in the real world. He then goes on to ask: Whose real world? Mr. Neil's aggressive testing world; the consumer magazines' world; or Ford's world? This is a valid question, especially since the EPA testing methodology requires fuel without ethanol, which ensures 3-4% more mpg than the same test conducted using gasoline from a retail pump. In addition, Ford claims the C-Max Hybrid has the capability to achieve a highway speed of 62 mpg from a standing start totally in an electric mode, but doubt it will be achieved by typical drivers in the real world. Actually, Mr. Neil mentioned this capability but commented that his test method was to tromp on the accelerator since he lacked the patience for the slow and steady electric mode acceleration.

37 mpg is not that bad, but because more people desire Prius-type fuel-efficiency of 44 mpg or more along with larger vehicles such as SUVs and cross-overs

As one columnist said, 37 mpg is not that bad, but because more people desire Prius-type fuel-efficiency of 44 mpg or more along with larger vehicles such as SUVs and cross-overs; it may not be surprising that auto companies are seeking to boost mileage claims. Given all these issues, the question we should ask is: Should we pay attention to the claims of researchers such as the Transportation Research Institute about how well the light-duty fleet sales average fuel-efficiency is doing? Given the recent discoveries of actual performance versus corporate claims, I think the overall fleet numbers should come with a grain of salt.

Canada Open For Business; But The Open Door Is Closing

The new rules are somewhat still ill-defined, but in his press conference, Prime Minister Harper spelled out some rules that will make future transactions less desirable

On Friday afternoon, December 7, 2012, one business day before it was supposed to render a decision on China's CNOOC Limited's (CNOOC-Nasdaq) \$15.1 billion proposed purchase of Canadian energy company Nexen Inc. (NXY-NYSE), Prime Minister Stephen Harper's government announced it was approving the transaction, but also that it was changing the rules governing future state-owned enterprise (SOEs) purchases of local resource companies under the country's "net benefits" test. Along with approving the CNOOC transaction, the government okayed the \$5.2 billion purchase of Progress Energy Resources Corp. proposed by Malaysia's Petroliam Nasional Bhd (PETRONAS). (That deal has already closed.) The Progress deal had been turned down once by the government, but it encouraged the two parties to resubmit the transaction after agreeing to some sweetened terms. In issuing its affirmative decisions, the federal government also issued new rules for the purchase of Canadian natural resource companies by SOEs. The new rules are somewhat still ill-defined, but in his press conference, Prime Minister Harper spelled out some rules that will make future transactions less desirable, which raises the question of

The new rules seem to signal that the door is only open for non-state-owned buyers, although minority investments by SOEs will be welcomed

what the impact may be on Canadian natural resource companies securing the necessary capital to develop the new energy and mineral resources the country needs.

Previously, in response to concerns about the Canadian government's rejection of BHP Billiton's (BHP-NYSE) offer to purchase Saskatchewan-based Potash Corporation (POT-NYSE), Prime Minister Harper proclaimed that Canada was "open for business," but the new rules seem to signal that the door is only open for non-state-owned buyers, although minority investments by SOEs will be welcomed. The message seems to be: Bring your money, but don't plan to own our companies.

The policy goes on to explain that the government will assess the factors enumerated in Section 20 of the act, specifically corporate governance and reporting structure of the foreign buyer

The new guidelines state: "It is the policy of the government of Canada to ensure that the governance and commercial orientation of SOEs are considered in determining whether reviewable acquisitions of control in Canada by SOE are of net benefit to Canada. In doing so, investors will be expected to address in their plans and undertakings, the inherent characteristics of SOEs, specifically that they are susceptible to state influence. Investors will also need to demonstrate their strong commitment to transparent and commercial operations." The policy goes on to explain that the government will assess the factors enumerated in Section 20 of the act, specifically corporate governance and reporting structure of the foreign buyer. In expounding on the measures that will be examined, the policy cites "the appointment of Canadians as independent directors on the board of directors, the employment of Canadians in senior management positions, the incorporation of the business in Canada, and the listing of shares of the acquiring company or Canadian business being acquired on a Canadian stock exchange." Doing or committing to do these things will be considered favorably in assessing whether a purchase will be approved.

The government will only consider future takeover deals in the oil sands by SOEs in "exceptional circumstances," although what circumstances will be considered exceptional was not explained

One area that was determined by the federal government to be off-limits to new foreign purchasers is the oil sands. Prime Minister Harper said the government will only consider future takeover deals in the oil sands by SOEs in "exceptional circumstances," although what circumstances will be considered exceptional was not explained, leading to additional uncertainty. It was pointed out in several newspaper articles discussing Prime Minister Harper's announcement that this policy could put at risk the nearly \$17 billion in oil sands assets for sale formally and informally. These assets involve both partial and full ownership of projects. Prime Minister Harper said, "...Canadians generally, and investors specifically, should understand that these decisions are not the beginning of a trend, but rather the end of a trend." He went on to say, "To be blunt, Canadians have not spent years reducing the ownership of sectors of the economy by our own governments, only to see them bought and controlled by foreign governments instead."

“When we say that Canada is open for business, we do not mean that Canada is for sale to foreign governments”

As some observers pointed out, one nebulous net benefits policy for foreign investment has been replaced with another nebulous net benefits policy aimed especially at SOEs, regardless of their national origin. We were intrigued with the statement in the new policy that “Appropriate monitoring will be conducted in accordance with the ICA [Investment Canada Act].” So what happens if a foreign buyer fails to live up to these new rules? So while Prime Minister Harper was quoted at his news conference saying, “When we say that Canada is open for business, we do not mean that Canada is for sale to foreign governments.” Once a sale is made, can it ever be undone? We won’t hold our breath for the next SOE purchase in Canada. Whether this new policy translates into a reduction in the flow of foreign investment important for the development of Canada’s natural resources remains to be seen, but right now we believe it will.

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

PPHB is an independent investment banking firm providing financial advisory services, including merger and acquisition and capital raising assistance, exclusively to clients in the energy service industry.