PPHB

ENERGY INVESTMENT BANKING

MUSINGS FROM THE OIL PATCH

July 31, 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

Thoughts From The Road Confirm Uneven Recovery

The economy seems to be experiencing a mixed recovery, with strength in some regions and weakness in others

Two weeks ago we drove home to Houston from our Rhode Island home. This trip home was done over a three-day span that included two weekdays and one weekend day, which was a different pattern from our drive north in May and the pattern of most of our annual drives. However, what we experienced on this trip was very similar to our observations from our May trip – the economy seems to be experiencing a mixed recovery, with strength in some regions and weakness in others.

We were surprised by the number of highway construction projects

On this trip we left at mid-day on a Thursday. That day we drove from our house in Rhode Island to Staunton, Virginia, which is part way down Interstate 81 in the heart of the Shenandoah Valley. Earlier, as we wound our way down the Interstate 95 in Connecticut from Rhode Island, we were surprised by the number of highway construction projects including the reconstruction of multiple rest stop gasoline stations and eating establishments. These were major renewal projects involving leveling all existing structures, digging up the fuel tanks from the gasoline stations and constructing new, ultramodern fueling stations and multiple eating establishments.

We began to wonder whether these projects all reflected the missing "shovel-ready" projects of stimulus days

We encountered more highway construction projects and lane closures as we traveled through New York, Pennsylvania, Maryland and Virginia. We began to wonder whether these projects all reflected the missing "shovel-ready" projects of stimulus days that President Barack Obama said they found out didn't exist. We did begin to worry about the impact all this construction would have on our travel time, but once beyond Virginia the road construction activity fell off to only a couple of long-standing road rebuilding projects that we have dealt with in prior trips. One positive thought we had about all this construction ultimately turned out to be false. We found out

once we arrived home that the increased construction activity we saw and had to deal with hadn't helped the nation's job creation efforts, even for the construction trades.

Was there an economic boom underway that hadn't been caught in either the economic statistics or the reporting by the business media?

One of our favorite economic indicators, even though it is anecdotal, is the number of trucks on the road. This trip, as we traveled from the Northeast through the Mid-Atlantic region, we were struck by the volume of truck traffic we encountered. Surprisingly, the truck traffic was heavy both northbound and southbound. At times it was so heavy that we were forced to slow down. As the heavy truck traffic extended from New York through New Jersey, Pennsylvania and into Virginia, including the brief passages through Maryland and West Virginia, we wondered if there was an economic boom underway that hadn't been caught in either the economic statistics or the reporting by the business media. An alternative explanation could be that many of the trucks were empty and heading home rather than carrying goods to customers.

A phenomenon we didn't see this time, as opposed to having seen it on prior trips, was a large number of trucks parked at rest stops, truck stops and along highway interchanges

We also wondered whether the traffic congestion we encountered was merely a bunching up of trucks since they tend to travel together. That tends to be truer today given the installation of speed control devices by the truck owners who are trying to improve fuel economy and thereby their profits. A phenomenon we didn't see this time, as opposed to having seen it on prior trips, was a large number of trucks parked at rest stops, truck stops and along highway interchanges. We don't know whether the absence of those parked trucks meant that more of them were actually on the road or just that drivers were managing their travel hours better. What we have observed since returning home is a number of advertisements seeking over-the-road truck drivers. The ads tout the pay and job opportunities, but nothing about the stress or time away from home. Clearly, as the restrictions on drivers' working hours increase, trucking companies will need to hire more drivers to effectively manage and grow their businesses.

We can't explain the marked difference in truck traffic between the two geographic regions

One phenomenon that was distinctly noticeable about the truck traffic was that the further south we drove, the fewer trucks we encountered – on the roads and parked at rest areas, truck stops and highway interchanges. So is economic activity in Tennessee, Alabama, Mississippi, Louisiana and Texas at a lower level than in the Northeast? We don't think so. On the other hand, we can't explain the marked difference in truck traffic between the two geographic regions. Other than economic activity difference, the only other plausible explanation is that there are alternative ways to move goods.

Another conflicting signal about the health of the economy was our experience at the two Cracker Barrel restaurants we stopped at on Thursday and Friday evenings. On Thursday, at about 6:20 pm, we pulled into a half-filled Cracker Barrel parking lot in Carlisle, Pennsylvania. We were surprised how empty the restaurant

It may just be poor management, which might also explain why the parking lot was half empty

appeared at what would seem to be the height of the dinner hour. Then to my wife's surprise and disappointment, when she ordered the Thursday night turkey dinner special the waitress told her they were all sold out! While apologizing profusely for the lack of turkey, our waitress made a comment that suggested this wasn't an isolated event, which may speak to the management of that Cracker Barrel, or to the tighter management of food expense given the level of business. One might conclude that if the dinner specials are selling out early many nights then maybe business is strengthening and management hasn't caught on to that rising trend and adjusted its food ordering and preparation volumes. That would be a good sign and possibly consistent with the positive economic reading of the high volume of truck traffic. On the other hand, it may just be poor management, which might also explain why the parking lot was half empty. You can spin this data whichever way you want.

Our bottom line impressions from this drive remains that the national economic recovery is spotty

Our Friday night dining experience was quite different. We stopped at the Cracker Barrel in Meridian, Mississippi at about 6:30 pm. The parking lot was fuller than the night before, as was the restaurant. No menu disappointment this night. By the time we left, there was a waiting line to eat. Now, does this mean business is that much better in Mississippi than Pennsylvania? Or could it be the difference of a Friday night versus a Thursday night? The difference in hotel occupancies between Thursday and Friday nights mirrored the difference in our dining experiences even though we were hundreds of miles further down the road in each case. Our bottom line impressions from this drive remains that the national economic recovery is spotty, an impression that hasn't been altered over the past two years, and is supported by the economic reports. We will be quite interested to see what we encounter on our next drive north in a few weeks.

Figuring Out Where Economy And Stocks May Be Headed

Economic data released last week was mostly negative although there were several data series that provided some solace

Anyone focused on understanding the ups and downs of the energy business has to try to fathom what economic activity is doing and what the stock market, a recognized forecasting tool, may be saying about the future direction of the economy. With that in mind, we found the following charts, published last week, important in our effort to foresee where energy may be headed. Economic data released last week was mostly negative although there were several data series that provided some solace and suggested that the domestic economy may be improving, but at a frustratingly slow rate.

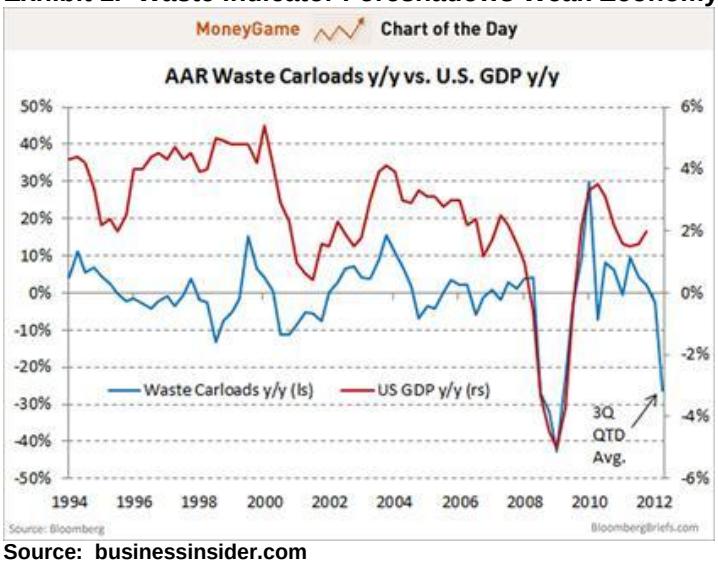
One of the most interesting charts showed the correlation between the year over year change in gross domestic product (GDP) and railroad car loadings of waste and nonferrous scrap. A study done in 2010 by economists Michael McDonough and Carl Riccadonna and reported by *Bloomberg* showed that the highest correlation with domestic growth of 21 categories of railroad car loadings was with

waste. That correlation was 82%. Recently, Mr. McDonough provided an update to the study, which *Bloomberg* published.

The decline in waste carloads experienced so far in this year's third quarter suggests the quarter's GDP growth will be weak

As of the week ending July 21, 2012, waste railroad car loadings as reported by the Association of American Railroads declined 12.3% from the same week a year ago. Overall, total carloads originated for the week were down 1.9%. Equally challenging is that for the 29-week period of 2012, waste carloads are 2.1% lower than for the same period in 2011. Overall, total carloads originated declined 2.6% in 2012. As the chart in Exhibit 1 demonstrates, the decline in waste carloads experienced so far in this year's third quarter suggests the quarter's GDP growth will be weak. In fact, the decline in waste carloads resembles the collapse that occurred during the financial crisis of 2008. Equally impressive was the explosive recovery in waste carloads during the 2009 rebound associated with the official ending of the recession in June 2009. If the decline in waste carloads originated can be viewed as a precursor of GDP, then the American economy is looking at a difficult second half of 2012 for generating growth above the current 1.5-2.0% rates experienced in the first two quarters. Does the waste carloads data suggest the economy may experience a double-dip recession?

Exhibit 1. Waste Indicator Foreshadows Weak Economy



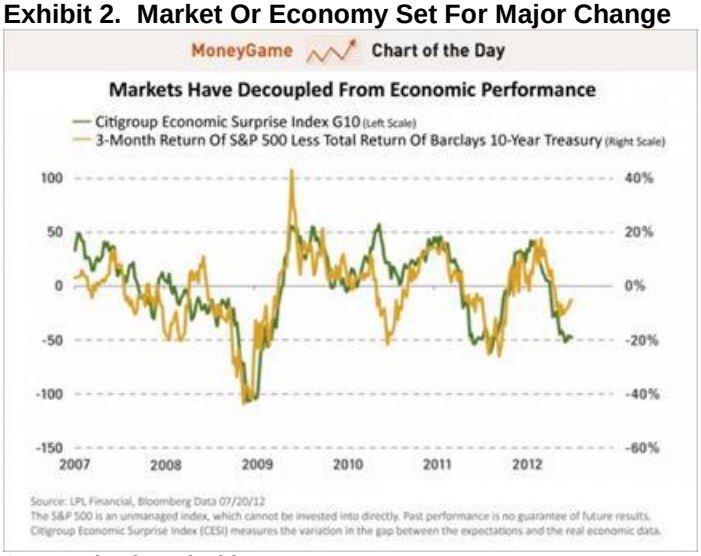
Source: businessinsider.com

The stock market's strength has been interpreted by many investors and analysts as an indication the U.S. economic recovery is gathering steam

While the economic data is mixed at best, the stock market has performed much better than one would have expected given the data. Since the stock market is considered to be a fairly good predictor of future economic activity, its strength has been interpreted by many investors and analysts as an indication the U.S. economic recovery is gathering steam and will do better in the future than the immediate past. A new stock market relationship some investors are beginning to pay attention to is the relationship between the Citigroup Economic Surprise Index, a measure of

whether reported economic data is more positive or negative than expected and the 3-month return of the S&P 500 Index less the total return of the Barclays 10-year Treasury bond index. In essence this is a measure of economic expectations and how the stock market is interpreting the data.

Exhibit 2. Market Or Economy Set For Major Change



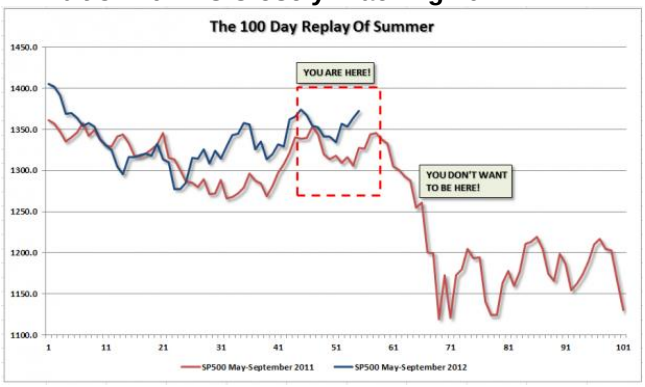
Source: businessinsider.com

The poor economic data of recent weeks and months has been offset by a resilient stock market

In recent days, a divergence between these two data series has opened. The poor economic data of recent weeks and months has been offset by a resilient stock market. The question is will this gap between the two series close, and if so, how and when will it close? Will the gap close by the economic data surprising to the upside or does the stock market have to drop? Since the date this chart (Exhibit 2) was prepared, the economic data has remained fairly negative with a few positive data points. The stock market, however, has experienced more down than up days, although the moves on some days have been extremely large. On balance, the stock market return has declined a little in recent days to close the gap between the two data series. It is ominous, however, that a similar gap between the economic data and the stock market opened up in July 2011. Unfortunately, the gap closed by a sharp decline in the stock market.

Another interesting stock market chart we encountered is one that compares the performance of the S&P 500 Index for May through September of 2011 and the same period in 2012. The chart for 2012 in Exhibit 3 ended at July 18th when the S&P 500 closed at 1,372.78. As of the close of the market on July 26th, the S&P 500 had declined to 1,360.41. This means the blue line (2012's performance) has dipped toward the second highest peak in last year's red line that happens to be at the right side of the dotted red box labeled, You Are Here. If the 2012 stock market follows a

Exhibit 3. 2012 Is Closely Tracking 2011



Source: businessinsider.com

similar pattern to the rest of the 2011 period, then we could be looking at weak months for August and September. That scenario is a distinct possibility given the outlook for economic growth, which is translating into weak growth for S&P 500 companies' revenues and declining profitability. If you combine that outlook with the traditional pattern of low trading volume in the latter part of summer, i.e., a decline in liquidity in the stock market, share prices may experience greater volatility and be subject to greater downward pressure.

Gasoline inventories jumped by 4.1 million barrels at the height of the summer driving season meaning gasoline demand was at its lowest level in 11 years

On the energy front, last week's data from the Energy Information Administration (EIA) was extremely bearish as it showed that crude oil inventories increased by 2.7 million barrels when analysts had expected a decline of 800,000 barrels. The build came as crude oil imports surged and domestic oil production reached its highest level since February 1999. At the same time, gasoline inventories jumped by 4.1 million barrels at the height of the summer driving season meaning gasoline demand was at its lowest level in 11 years. While the build in crude oil inventories was bearish for oil prices short term, it is the gasoline data that is most troublesome. The decline in gasoline demand corroborates the weak retail sales data that has been reported for the past three months through June – the longest stretch of consecutive monthly declines since the financial crisis period of 2008. The next few weeks may tell the tale for the balance of 2012.

"All-Of-The-Above" Energy Except When It Involves Offshore

All-of-the-above became President Obama's rallying cry, but his and his administration's actions have not matched the rhetoric

The Obama administration has promoted its commitment to encouraging the development of all sources of energy – conventional and renewable – beginning with the State of the Union address last January. All-of-the-above became President Obama's rallying cry, but his and his administration's actions have not matched the rhetoric. For most observers that became evident when President Obama rejected the opportunity to accelerate the approval process for permitting the construction of the Keystone

pipeline to bring oil sands output to the United States. The latest demonstration of this selective rather than all-inclusive embrace of energy supplies came with the unveiling of the latest five-year plan for offshore oil and gas lease sales, the principle driver for drilling and producing activity in the Gulf of Mexico.

The plan proposes 15 potential lease sales with 12 targeted for the Gulf of Mexico and three offshore Alaska

On June 28th, the Department of the Interior and the Bureau of Ocean Energy Management (BOEM) released the proposed final offshore oil and gas leasing program for 2012-2017. The press release and supporting material for the proposed plan focused on how this schedule was an integral part of the administration's "all-of-the-above" energy strategy. They also trumpeted that the plan "makes all areas with the highest-known resource potential – including frontier areas in the Alaska Arctic – available for oil and gas leasing in order to further reduce America's dependence on foreign oil." The plan proposes 15 potential lease sales with 12 targeted for the Gulf of Mexico and three offshore Alaska.

Exhibit 4. Resource Potential Of Proposed Lease Areas

Resources Estimates for the 2012-2017 Proposed Final Program				
Planning area	Estimated Undiscovered Technically Recoverable Resources			
	Oil (Bbbl)	Gas (Tcf)	Barrels of Oil Equivalent (Bbbl)	No. of Lease Sales
Central Gulf	30.47	130.91	53.76	5
Chukchi Sea	15.38	76.77	29.04	1
Western Gulf	12.38	69.45	24.74	5
Beaufort Sea	8.22	27.64	13.14	1
Cook Inlet	1.01	1.20	1.23	1
Eastern Gulf (area not under Congressional moratorium)	0.25	0.65	0.36	2
Total Proposed Final Program	67.71	306.62	122.27	15
Total OCS	88.59	398.37	159.49	

Source: BOEM, PPHB

The Obama administration plan could be described as following the old oil industry rule that your best place to look for new oil and gas discoveries is where oil and gas already has been discovered

With the resource potential of the Chukchi Sea in the Arctic being greater than that of the Western Gulf of Mexico, the fact that there is only one sale proposed suggests it is a sop to the oil industry while also making a statement to the environmental movement. The Obama administration plan could be described as following the old oil industry rule that your best place to look for new oil and gas discoveries is where oil and gas already has been discovered. On the other hand, we do know the domestic oil and gas industry found hydrocarbon deposits along the Atlantic Coast some decades ago when given the rare opportunity to drill. Now the industry would like to search again using newer technology, but it looks like it will not be allowed to explore until near the end of the decade if this plan goes forward.

Exhibit 5. 2012-2017 Proposed Lease Sale Schedule

Sale Number	Area	Year
229	Western Gulf of Mexico	2012
227	Central Gulf of Mexico	2013
233	Western Gulf of Mexico	2013
225	Eastern Gulf of Mexico	2014
231	Central Gulf of Mexico	2014
238	Western Gulf of Mexico	2014
235	Central Gulf of Mexico	2015
246	Western Gulf of Mexico	2015
226	Eastern Gulf of Mexico	2016
241	Central Gulf of Mexico	2016
237	Chukchi Sea	2016
248	Western Gulf of Mexico	2016
244	Cook Inlet	2016
247	Central Gulf of Mexico	2017
242	Beaufort Sea	2017

Source: BOEM, PPHB

Sale 244 for the Cook Inlet Planning Area is subject to the completion of a full environmental impact assessment statement

In the BOEM press release the agency mentioned that proposed sale 244 for the Cook Inlet Planning Area, to be conducted in 2016, is subject to the completion of a full environmental impact assessment statement before a final determination can be made to hold the sale. We wonder when this environmental impact statement will be prepared since the government has yet to do one for the Atlantic offshore area targeted in 2009, but not a part of this five-year lease sale program.

Exhibit 6. Record Of 5-Year Offshore Lease Sale Programs

Table 1. OCSLA Section 18 Submissions to Congress 1980 through 2012

Years	Administration Submitting Plan	Congress	Number of Sales Listed in Submission	Number of Sales Held	Approximate Acreage Leased (in millions)
1980-1982[a]	Carter	96th	36	12	4.1
1982-1987	Reagan	97th	40	23	19.4
1987-1992	Reagan	100th	24	17	24.7
1992-1997	George H.W. Bush	102nd	18	12	26.8
1997-2002	Clinton	105th	16	12	18.8
2002-2007	George W. Bush	107th	20	15	24.3
2007-2012	George W. Bush	110th	21; revised to16	11	20.5 (as of 2011)
2012-2017	Obama	112th	15	NA	NA

Source: CRS. Data reflecting approximate acreage leased from one lease sale (Central Gulf of Mexico Sale 216/22 held on June 20, 2012) is not yet available. "NA" indicates Not Applicable.

a. This program was originally referred to as the Comprehensive Program 1980-1985. It was later renamed the Comprehensive Program 1980-1982 due mainly to judicial activity, *California v. Watt*, 688 F.2d 1290 (D.C. Cir. 1981).

Source: Congressional Research Service

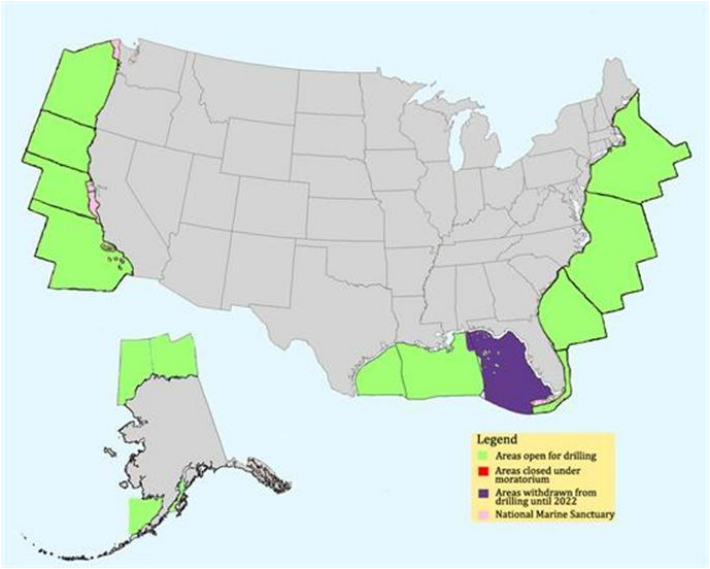
The lowest percentage of sales held to those planned, 33%, occurred during President Jimmy Carter's administration in 1980-1982

The non-partisan Congressional Research Service reported after it examined the Obama administration's offshore lease sale plan compared to those of prior administrations that this new plan will offer the fewest number of sales since the program began in 1980. More importantly, as shown in Exhibit 6, the number of sales held has always been less than the number proposed in the original plan. The lowest percentage of sales held to those planned, 33%, occurred during President Jimmy Carter's administration in 1980-1982. In general, it seems that about two-thirds to three-quarters of

the scheduled sales are held. By applying those percentages to the proposed Obama administration plan, it is likely that only 10-12 sales will actually be held.

Under current legislation, not all U.S. offshore areas are available for leasing. Those areas banned from oil and gas exploration and development are restricted due to long-standing environmental considerations and political decisions. A map of the offshore areas subject to these restrictions is in Exhibit 7.

Exhibit 7. Offshore Area Available For Lease In 2009



Source: House Natural Resources Committee

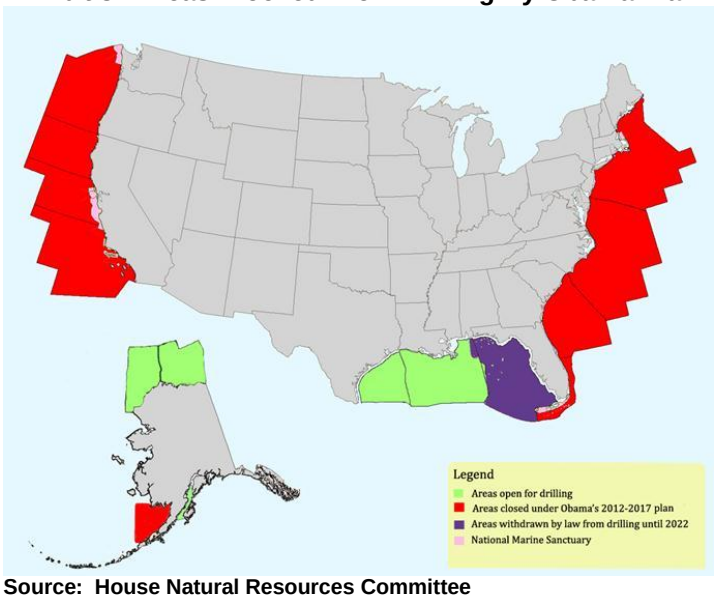
Industry participants are quite concerned about the low number of proposed sales

Industry participants and promoters are quite concerned about the low number of proposed sales given the historic record of fewer actually being held. They are also frustrated by the appearance of a lack of commitment to the oil and gas industry by the Obama administration at a time when the industry has reversed the nation's declining production of hydrocarbons, which is helping to reduce the nation's imported oil volumes.

The House Natural Resources Committee approved, in a bi-partisan vote of 24-17, the Congressional Replacement of President Obama's Energy-Restricting and Job-Limiting Offshore Drilling Plan

In response to these concerns, the offshore energy promoters mobilized to urge Congress to approve legislation to replace the Obama administration's proposed plan with a more expansive offshore lease sale schedule. Under existing legislation for offshore oil and gas leasing, once the Obama administration proposed the final five-year lease sale schedule, the plan entered a mandatory 60-day Congressional review period, after which it will go into effect unless there are changes made to the plan. Historically, this review period has been non-controversial. Not this time. In response to the Obama plan, the House Natural Resources Committee approved, in a bi-partisan vote of 24-17, the Congressional Replacement of President Obama's Energy-Restricting and Job-Limiting Offshore

Exhibit 8. Areas Blocked From Drilling By Obama Plan



Source: House Natural Resources Committee

This alternative plan would hold 13 Gulf sales, seven Alaska sales, six East Coast sales and three West Coast sales

Drilling Plan. H.R. 6082, as the bill is officially known and as amended, would provide for 29 offshore lease sales in 2012-2017. In contrast to the Obama plan with 12 Gulf and three Alaska sales, this alternative plan would hold 13 Gulf sales, seven Alaska sales, six East Coast sales and three West Coast sales. Exhibit 8 shows the offshore areas that would be open for leasing and those off-limits under the Obama plan. In contrast, Exhibit 9 shows the offshore areas available for lease under H.R. 6082.

Exhibit 9. Offshore Areas Available Under H.R. 6082

Source: House Natural Resources Committee

One could legitimately ask why the Obama administration is so opposed to a more aggressive offshore lease sale program if it truly believes in an "all-of-the-above" energy program

After the House Natural Resources Committee approved H.R. 6082, the White House announced it would veto the legislation if it passed Congress. The House voted to replace the Obama administration planned lease sale schedule with the plan contained in H.R. 6082 in a bi-partisan vote of 253-170 late last week. There is little likelihood the U.S. Senate, controlled by the Democrats, will support the new plan. And, should we possibly be wrong, the White House will veto the legislation. One could legitimately ask why the Obama administration is so opposed to a more aggressive offshore lease sale program if it truly believes in an "all-of-the-above" energy program. Could it have something to do with its view of fossil fuel? A reading of oil and gas publications demonstrates the energy industry's intense desire to expand its activity in the Gulf of Mexico due to the basin's high potential for new, large oil and gas deposits. The industry also wants the opportunity to seek new oil and gas resources elsewhere in U.S. waters, but it appears it will not have that opportunity until the end of the decade. As a result, look for more oil and gas industry capital to flow to international offshore markets in the future.

Exhibit 10. Many More Sales Under Alternative Plan

Sale Number	Area	Year
229	Western Gulf of Mexico	2012
220	Mid-Atlantic (Virginia)	2013
225	Eastern Gulf of Mexico	2013
227	Central Gulf of Mexico	2013
249	So. Cal. Existing Infrastructure	2013
233	Western Gulf of Mexico	2013
244	Cook Inlet	2013
212	Chukchi Sea	2013
228	Southern California	2014
230	Mid-Atlantic	2014
231	Central Gulf of Mexico	2014
238	Western Gulf of Mexico	2014
242	Beaufort Sea	2014
221	Chukchi Sea	2014
245	Mid-Atlantic	2015
232	North Atlantic	2015
234	Eastern Gulf of Mexico	2015
235	Central Gulf of Mexico	2015
246	Western Gulf of Mexico	2015
255	South Atlantic (South Carolina)	2015
237	Chukchi Sea	2016
239	North Aleutian Basin	2016
248	Western Gulf of Mexico	2016
241	Central Gulf of Mexico	2016
226	Eastern Gulf of Mexico	2016
217	Beaufort Sea	2016
243	Southern California	2017
250	Mid-Atlantic	2017
247	Central Gulf of Mexico	2017

Source: H.R. 6082, PPHB

Supposedly, the problem with Virginia's offshore area is that the Department of Defense has determined that 80% of the targeted offshore acreage lies in areas that could interfere with military operations

As mentioned above, the Obama administration was once keen to help the state government of Virginia in its quest to open up its offshore area. That was in 2009 when the state's governor was a Democrat and a friend of President Obama. Now that the governor's office is held by a Republican, there seems to be less interest in helping the state. Supposedly, the problem with Virginia's offshore area is that the Department of Defense has determined that 80% of the targeted offshore acreage lies in areas that could interfere with military operations. We find this objection to be quite interesting given the federal government's desire to see the Atlantic Coast waters populated with wind turbines. Wind turbines have to extend above the waterline as opposed to offshore oil and gas facilities that increasingly are being located on the sea floor. One energy source clearly creates a long-term navigation hazard for naval ships while the other source might create a short-term hazard while the wells are being drilled, but then the hazard is removed.

Readers may have forgotten that in the spring of 2009 Secretary of the Interior Ken Salazar was promoting the potential for wind energy off the Atlantic Coast. At that time, Sec. Salazar spoke at four public hearings to discuss resource planning and the role that the nation's offshore energy resources would play in our future. Sec. Salazar said, "With respect to renewable energy, there is tremendous potential concerning wind off the Atlantic." He went on to state, "there is over 1,000 GW [gigawatts] of power or 1,000,000 MW [megawatts] of power developable off the Atlantic coast" that is "the equivalent of energy produced from 3,000 medium-sized coal-fired power plants." At the time he made these statements, the Energy Information Administration (EIA) website showed that there were only 1,470 coal-fired plants throughout the entire United States with a total nameplate capacity of 336 GW. Coal-fired plants accounted for 30.9% of the nation's total power resources with a net summer capability of 996 GW. In 2007, coal-fired power plants supplied over 48.5% of the total electricity generated that year. As of now, coal-fired power is down to about 32% of electricity generated, equal to the amount supplied from natural gas-fired power plants.

The promise of offshore wind power more than replacing all the dirty coal-fired power plants appears to be the core of the Obama administration's energy agenda

The promise of offshore wind power more than replacing all the dirty coal-fired power plants appears to be the core of the Obama administration's energy agenda. A lack of any understanding of the technology of wind power, especially when compared to our existing power generating sources further distorts the reality of the Obama administration's green-energy program. For example, one of the misstatements Sec. Salazar made in his many speeches and even in his testimony on Capitol Hill is that wind power can provide a one-for-one offset to conventionally generated power. We know that is not true, and while we believe Sec. Salazar knows the truth neither he nor anyone else in the administration ever discusses the economics of wind and/or solar power projects based on the requirement for alternative power sources. Wind turbines normally only output between 30% and 40% of their nameplate capacity, and

at some times the output is as low as a single digit percentage, or even non-existent. The low and variable output of wind power forces utilities to maintain backup power sources in order to handle electricity demands at added costs and fuel consumption.

All government estimates for the cost of power generation suggest that offshore wind will be a multiple of the cost of onshore wind power, and deepwater wind is estimated to be a multiple of offshore wind costs, making it the second most costly power generated behind solar

Additionally, the 1,000 GW potential wind power output that Sec. Salazar heralded assumes 770 GW of it comes from deepwater wind turbines (those located in water depths greater than 200-feet). As of now there are no offshore U.S. wind turbines in operation and none worldwide located in deepwater, other than a few test turbines. Thus, it is impossible to comprehend all the issues or challenges of building, operating and maintaining deepwater wind turbines, so estimating the cost of these facilities is highly speculative. This is part of the reason why all government estimates for the cost of power generation suggest that offshore wind will be a multiple of the cost of onshore wind power, and deepwater wind is estimated to be a multiple of offshore wind costs, making it the second most costly power generated behind solar. And we haven't even begun to consider the challenges for building offshore power transmission systems and integrating them into the onshore power grid.

While the Obama administration holds on to its support for green energy as the nation's future power sources, its actions demonstrate minimal support for the nation's successful oil and gas industries, and even distain for dirty coal, which has been targeted for a "death-sentence." It is no wonder then that President Obama would wave his veto pen at the House of Representatives for daring to pass legislation to boost energy sources he opposes, especially when he needs to secure the continuing support of his liberal (environmental) base in order to hope to be re-elected this fall.

Ethanol and the EPA Continue To Make Strange Bedfellows

The EPA doesn't use ethanol in the fuel it uses to test and certify the miles per gallon rating of new vehicles

The answer to a reader's question in the July 17, 2012, "Me and My Car" column in *The Wall Street Journal* drew our attention to an interesting situation. The reader owned a 2010 Nissan Rouge that never came close to achieving the Environmental Protection Agency's (EPA) fuel-efficiency rating. Out of frustration, the reader traded it for a 2012 Jeep Patriot, but after a limited number of miles, he still wasn't getting the miles-per-gallon estimated by the EPA. The column's writer, Jonathan Welsh, answered that the EPA doesn't use ethanol in the fuel it uses to test and certify the miles per gallon rating of new vehicles, which is a legal requirement under the Corporate Average Fuel Economy (CAFE) mandate for automobile companies. According to Mr. Welsh, given the fact that ethanol is blended into gasoline in many parts of the United States, consumers forget about it and that fuel component is the reason why most of the actual fuel ratings fall short of the government's estimates.

We must admit we hadn't thought about the lack of ethanol as the explanation of the difference in theoretical fuel economy and real-

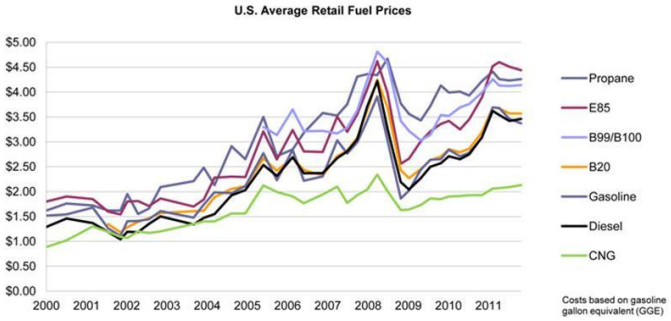
The Department of Energy's web site states that E10, the 10% blend of ethanol and gasoline that we are required to use, will result in 3-4% fewer miles per gallon than on straight gasoline

world experience. It sent us off to do a little research about the current state of vehicle fuel-efficiency performance. On the Department of Energy's web site, www.fueleconomy.gov, it states that E10, the 10% blend of ethanol and gasoline that we are required to use, will result in 3-4% fewer miles per gallon than on straight gasoline. Interestingly, the E85 blend (85% ethanol and 15% gasoline) is estimated to get 25-30% fewer miles per gallon. Prior to 2008, the EPA tested vehicles using only three tests all of which assumed optimal weather and driving conditions. The agency then would subtract 10% for city mileage and 22% for highway to get to its reported mileage estimates. Now they have added five tests and use the average of the five additional tests to adjust their city and highway mileage ratings.

Ethanol was actually the fuel of choice for Henry Ford's first car in 1896

Ethanol as a fuel has a long history in the U.S. It was initially used as an illuminating fuel as far back as Civil War years and when the whaling industry was shrinking. Ethanol was actually the fuel of choice for Henry Ford's first car in 1896, but its role was usurped by gasoline. The Energy Policy Act of 2005 instituted regulations that ensured that all gasoline in the U.S. contained a minimum volume of a renewable fuel, primarily ethanol made from corn. This mandate, known as the Renewable Fuels Standard (RFS), aimed to double U.S. consumption of ethanol by 2012. The use of ethanol was embraced to help fight air pollution from auto exhausts and as an engine anti-knocking agent to replace MTBE, another fuel additive with poisonous consequences when spilled, which was later banned. The Energy Independence and Security Act of 2007 expanded the RFS and required that 36 billion gallons of ethanol be blended in the nation's gasoline, diesel and jet fuels by 2022. In 2007 the nation was consuming 6.8 billion gallons of ethanol.

Exhibit 11. Ethanol Now More Costly Than Gas



Source: EIA

The ethanol folly has continued and now we in a situation where there is too much corn-based ethanol and not enough ethanol derived from cellulosic material

The ethanol folly has continued and now we in a situation where there is too much corn-based ethanol and not enough ethanol derived from cellulosic material as mandated by the law such that refiners are fined for not providing a fuel that commercially can't be produced. Exploding corn prices due to the current Midwest drought and heat wave have squeezed ethanol manufacturers to the point where a number of plants making ethanol are being shut down and

The chart on fuel prices the EIA displays on its web site shows that for an extended period of time, ethanol cost more per gallon than gasoline yet delivers significantly fewer miles per gallon

companies are going out of business. According the Energy Information Administration (EIA) web site, as of April 13, 2012, a gallon of E85 cost $3.47 compared to $4.89 for gasoline and $4.12 for diesel. Of course, that was before the recent jump in corn prices. If the U.S. wasn't consuming 40% of its corn crop for making ethanol, the drought and heat wave would be having little impact on corn prices. At that same time, a gallon of gasoline equivalent for compressed natural gas was only $2.08, a point the natural gas industry is pointing out. The chart on fuel prices the EIA displays on its web site (Exhibit 11, pervious page) shows that for an extended period of time, ethanol cost more per gallon than gasoline yet delivers significantly fewer miles per gallon.

The EPA's testing is done in a laboratory with the vehicle on a dynamometer, the equivalent of an exercise bike, and the fuel consumption is never measured directly but only estimated by capturing the carbon output from the vehicle's tailpipe

What struck us about our research into the EPA testing methodology and ethanol use was that we have a government mandate to blend ethanol into our fuel supply, yet the EPA certifies miles-per-gallon ratings of vehicles while using a fuel containing no ethanol. But then again, the EPA's testing is done in a laboratory with the vehicle on a dynamometer, the equivalent of an exercise bike, and the fuel consumption is never measured directly but only estimated by capturing the carbon output from the vehicle's tailpipe. This is one reason why hybrid vehicles get much higher EPA mileage estimates since the battery power portion of the power doesn't emit any carbon. As comedian Stan Laurel would have said to his partner Oliver Hardy, "Another fine mess you've gotten me into." With these sorts of illogical government policies, we really should be worried about our health care system post 2013.

Random Updates On Energy And Past Musings Topics

Every so often we are hit with a new data point or development on a recent story we have focused on in the *Musings*. We have updated briefly a couple of those stories below.

Unemployment In Rhode Island

Between May and June, Rhode Island lost 900 jobs, so how did the unemployment rate fall you ask?

Rhode Island's unemployment rate improved last month, falling to 10.9% from 11.0%. That was the good news and it was trumpeted by the local media. The numbers, however, tell a story of more pain for citizens and reflect the myopic view of politicians. The situation in Rhode Island is endemic of the labor market in the rest of the United States. Between May and June, Rhode Island lost 900 jobs, so how did the unemployment rate fall you ask? Here's how: The number of employed residents was 495,000, down 400. The size of the labor force was 555,200, down 1,600 from the prior month and 8,200 lower than a year ago. If you subtract the employed residents from the total labor force and then divide by the labor force figure, you get a 10.84% number, which government officials rounded up to 10.9%. If the labor force hadn't shrunk, the unemployment rate actually would have increased to 11.1%. What's that phrase about liars and statistics?

Cape Wind and The Federal Aviation Administration

The demand by Senator Scott Brown (R-Mass.) for an investigation of the judgment that the Cape Wind turbines did not create an aviation safety hazard by the Federal Aviation Administration (FAA) may have been influenced by political considerations has now manifested itself into a letter of inquiry signed by Oversight and Government Reform Committee Chairman Darrel Issa (R-Calif.) and Transportation Infrastructure Committee Chairman John Mica (R-Fla.). The two committee chairmen requested a voluminous amount of documents and correspondence from the 2010 to 2012 period when the FAA considered the safety ruling. The information request came after a federal court ruled that the FAA approval appeared to ignore numerous safety concerns as the agency reached its decision. A Freedom of Information request by Cape Wind opponent Alliance to Save The Bay produced FAA emails and a slide presentation suggesting political concerns on the part of officials who felt pressured to support the Obama administration's green energy agenda.

The information request came after a federal court ruled that the FAA approval appeared to ignore numerous safety concerns as the agency reached its decision

The FAA responded to the Congressional letter with the following statement: "The FAA is currently conducting an aeronautical study on the Cape Wind project and hopes to make a determination soon. The FAA makes obstruction evaluations based on safety considerations and the available solutions to mitigate potential risks." What is interesting is that a statement from Cape Wind when this flap originally surfaced a few weeks ago cited the approval of offshore wind turbines by aviation regulators in the UK and Europe. That reference raised a question about the relative sizes of the general aviation fleets in the various countries and how that might impact the safety determination, or the potential risk of an accident.

"The FAA makes obstruction evaluations based on safety considerations and the available solutions to mitigate potential risks."

In 2010, there were 7,431 planes owned by U.S. commercial air carriers and 223,370 general aviation units in the United States. By contrast, in the UK that same year there were 790 air carrier planes and 26,000 general aviation units. What is interesting was that of the 26,000 general aviation units, there were 7,000 hang gliders, 2,500 gliders, 1,300 helicopters, 1,800 airships or balloons and 4,100 micro-lights. That means there really were only 10,600 general aviation planes in the UK.

Of the 26,000 general aviation units, there were 7,000 hang gliders, 2,500 gliders, 1,300 helicopters, 1,800 airships or balloons and 4,100 micro-lights

Turning to the U.S., when we eliminated the special purpose units, the general aviation fleet shrank by roughly 15,000 units to 208,413. To gain a further view of the potential general aviation traffic that might be traversing the area where the Cape Wind turbines are to be installed, we looked at the neighboring states. There is a grand total of 4,344 planes located in the three states closest to the Cape Wind location (CT, 1,566; RI, 352; and MA, 2,426). New York State, whose Long Island extension is close to Nantucket Sound where the wind turbines will be located, has an additional 6,457 planes. Combined, the four states have a total of nearly 11,000 general

There is roughly the same number of general aviation planes in the neighborhood of Cape Wind as there is throughout all of the UK

aviation units. Because parts of Connecticut, Massachusetts and New York are far away from Cape Wind, we cannot assume that all their general aviation planes will potentially fly near the wind turbines. What we don't know about the general aviation fleet is how many are special purpose units. If we assume special purpose units represent the same percentage as they do of the entire U.S. general aviation fleet, then there would be 10,100 planes in the neighboring states' fleet. The point of the analysis is to show that there is roughly the same number of general aviation planes in the neighborhood of Cape Wind as there is throughout all of the UK. So for Cape Wind representatives to point to the safety of small planes in the UK flying near wind turbines may be disingenuous as the Nantucket Sound activity is likely to be multiples of the number of planes flying over offshore wind turbines in the UK.

Vermont Gasoline Price Disparity Investigation

Senator Bernie Sanders requested an investigation into why gasoline prices in Burlington were $3.63 a gallon at the same time they averaged $3.55 for the entire state and were as low as $3.35 a gallon in Middlebury, Vermont

Last Friday, the Senate Energy and Natural Resources Committee held a field hearing in Burlington, Vermont to probe the issue of gas price discrepancies between the state's largest city, where the meeting was held, and other regions of the state. Senator Bernie Sanders (I-Vt.) earlier this month (July 3rd) wrote Attorney General Eric Holder and Federal Trade Commission chairman Jon Leibowitz requesting an investigation into why gasoline prices in Burlington were $3.63 a gallon at the same time they averaged $3.55 for the entire state and were as low as $3.35 a gallon in Middlebury, Vermont. Prices in neighboring New Hampshire were only $2.36 a gallon, a difference that cannot be explained by the seven-cent difference in tax between the two states.

Profit margins for gas stations in Burlington were more than twice the national average

Senator Sanders also pointed to data from the Oil Price Information Service showing that profit margins for gas stations in Burlington were more than twice the national average. He also has released a letter from Costco, the discount buying club, saying that it could sell gasoline 19-cents a gallon cheaper than the Burlington average if other gas station owners and local regulatory reviews were not blocking the company's plans. With crude oil prices and gasoline pump prices beginning to rise again, expect more of these price gouging investigations in the future, especially in an election year and during the summer when politicians can get the federal government to pay for their weekend trips home.

George Mitchell, Father Of Shale Development, Says Regulate!

George Mitchell advocates tighter regulation of hydraulic fracturing

George Mitchell, the 93 year old wildcatter from Galveston, Texas and the "father" of the shale revolution, gave an interview to *Forbes* magazine in which he advocates tighter regulation of hydraulic fracturing. In the early 1990s, Mitchell Energy, which Mr. Mitchell had founded in 1946 and headed, was desperate for new sources of natural gas to fulfill several long-term supply contracts, began an effort to try to exploit the gas contained in the shale formation that

underlay the Barnett Basin in the Dallas/Ft. Worth area of North Texas. The efforts of Mitchell Energy's team of geologists, petroleum engineers, and drilling and completion technologists overcame the challenges of unlocking the gas trapped in the Barnett Shale formation. The marriage of hydraulic fracturing with horizontal drilling was the key to the puzzle, but harnessing these two technologies together required much trial and error.

He acknowledged that most drillers do fracture wells responsibly, but he still believes federal regulation would be better than individual state regulation

In his interview, Mr. Mitchell favors tighter controls over fracturing saying, "They should have very strict controls. The Department of Energy should do it." He went on to say, "Because if they don't do it right there could be trouble." Suggesting that this technology carries potential environmental risks, Mr. Mitchell said, "There are good techniques to make it safe that should be followed properly." He acknowledged that most drillers do fracture wells responsibly, but he still believes federal regulation would be better than individual state regulation, but we suspect this view goes more to overcoming the perception that the industry is sloppy and takes inordinate risks.

It wasn't that many years ago that George Mitchell, and his brother Johnny, were among a band of small, independent explorers who built today's successful domestic oil and gas business

What we found most interesting were Mr. Mitchell's comments about the need to keep a watchful eye on the smaller, independent explorers who he believes can be "wild." It wasn't that many years ago that George Mitchell, and his brother Johnny, were among a band of small, independent explorers who built today's successful domestic oil and gas business. Under his definition, I believe a "young" George Mitchell would have been considered "wild" given the "geological bets" he made over the years as he successfully built Mitchell Energy into a substantial company. Successful explorers such as Mr. Mitchell and Joe Walters of Houston Oil & Minerals, to name just two, helped redefine the term "wildcatters." We wonder whether he would have liked having a "watchful eye" over his activities during his career.

Shale Gas Production Continues Growing

Year to date, continental U.S. gas shale production is up 5.7%

Thursday, the Energy Information Administration (EIA) will be appearing before the Energy and Commerce Subcommittee on Energy and Power at a hearing dealing with energy development on federal versus non-federal lands. At the hearing, the agency will present May data on natural gas production from shale formations that will show total output at 25.58 billion cubic feet (Bcf) per day, up 1.7% from April and up 24% from a year ago. Year to date, continental U.S. gas shale production is up 5.7%.

Regionally, Marcellus production of 6.85 Bcf per day rose 6.4% from April and was up more than 50% from a year ago. The Haynesville shale, where the drilling rig count has declined the most recently, May's production of 6.92 Bcf per day was flat with the prior month and up about 8% from May 2011. In the Barnett, production averaged 4.67 Bcf per day and was up slightly from April, but down 1.7% from a year ago. Eagle Ford production inched up to 1.52 Bcf

per day from April's output of 1.51 Bcf per day and was nearly double the year ago production. In the Bakken formation, May's gas shale production held steady at 190 million cubic feet per day and was up 19% from May 2011.

If we assume the April percentage figure remains constant, then total Lower 48 gas production will climb to 73.09 Bcf per day, an increase of 0.8%

In April, shale gas accounted for 34.7% of total Lower 48 output, up from 29.8% in May 2011. If we assume the April percentage figure remains constant, then total Lower 48 gas production will climb to 73.09 Bcf per day, an increase of 0.8%. That would represent the second consecutive monthly production increase, which, given the decline in the rig count, has to be discouraging for natural gas price bulls who have been counting on falling production along with increased gas consumption to lift prices. It suggests that the strengthening in gas prices this summer has been short-covering in the commodity futures market, demand increases driven by a hot summer in the Midwest and Northeast. As we reach the weak demand months of early fall, gas prices could be under renewed pressure since producer drilling discipline was overwhelmed by better well output.

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.