
MUSINGS FROM THE OIL PATCH

March 4, 2014

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

Keystone Pipeline: Scorched Earth or Merely A Prairie Fire?

A Nebraska judge's ruling over the constitutionality of the law that allowed the state's governor to approve the pipeline route has become an issue

Barely was the ink dry on our last *Musings From the Oil Patch* edition that discussed one of the first legal roadblocks environmentalists were throwing in front of the approval process for the Keystone XL pipeline when a new, potentially more significant development emerged. Instead of a lawsuit over the Corps of Engineers' failure to release to the public certain documents it considered when reaching its decision that the pipeline would not create any environmental issues becoming a topic of discussion, a Nebraska judge's ruling over the constitutionality of the law that allowed the state's governor to approve the pipeline route has become an issue. Immediately, questions have been raised about whether this decision will derail the federal government's approval process for the pipeline, which appeared to have entered its final stage merely a few weeks ago.

They objected to the right of TransCanada, the sponsor of the pipeline project, to be able to use the power of eminent domain to claim access to their properties in order to construct the pipeline

The lawsuit was brought by three landowners in Nebraska whose property would be crossed by the pipeline. They objected to the right of TransCanada (TRP-NYSE), the sponsor of the pipeline project, to be able to use the power of eminent domain to claim access to their properties in order to construct the pipeline. The lawsuit was filed in January 2013 shortly after the governor approved the revised route of the Keystone pipeline. The lawsuit, *Thompson v. Heineman*, has four main claims: 1) LB 1161 unconstitutionally delegates authority of a common carrier to the Nebraska DEQ (Department of Environmental Quality) when common carriers are assigned already by Nebraska's constitution to the Public Service Commission; 2) LB 1161 violates the separation of powers because it fails to provide for judicial review; 3) LB 1161 violates the separation of powers because it unlawfully delegates to the governor the decision to permit the exercise of eminent domain without adequate and definite standards required to meet

In furtherance of the approval process, the governor had called the Nebraska legislature into session to address streamlining the pipeline approval process within the state

constitutional requirement for due process; and 4) LB 1161 constitutes special legislation for a single company and not persons in general, which violates the Nebraska state constitution. To better understand these issues and the potential impact the decision may have on the fate of the Keystone pipeline we need to review the approval process to date.

A January 22, 2013, letter from Nebraska Governor Dave Heineman (R) to President Barack Obama and Secretary of State Hillary Clinton set out a brief history of the Keystone XL pipeline application for a construction permit in order to cross the Canadian-US border that requires the approval of the United States government. Canada has already approved the crossing. In furtherance of the approval process, the governor had called the Nebraska legislature into session to address streamlining the pipeline approval process within the state. From that session came LB 1, the Major Oil Pipeline Siting Act, and LB 4, legislation providing for Nebraska to participate in the federal government’s supplemental environmental impact statement (SEIS) review process for oil pipelines. Both of those bills were passed and signed into law by Governor Heineman on November 22, 2011.

Exhibit 1. Court Ruling Disrupts Keystone Approval

KEYSTONE XL PIPELINE

The 1,700-mile project would carry crude oil from western Canada’s oil sands region to refineries in Texas. Friday’s study concerns Keystone XL’s northern segment, stretching 1,179 miles from Hardisty, Alberta, to Steele City, Neb.

Keystone XL is separate from the company’s original Keystone Pipeline, which runs from Alberta to Nebraska and Illinois.



SOURCE: TRANSCANADA

Source: TransCanada

The legislation was enacted in anticipation that TransCanada would refile its Keystone XL permit application

The first Keystone XL pipeline permit application, which had been filed in 2008, was denied by President Obama on January 18, 2012. The governor called the Nebraska legislature back into session and had them pass LB 1161 that allowed the Nebraska DEQ (NDEQ) to continue to evaluate pipeline routes through the state. The legislation was enacted in anticipation that TransCanada would refile its Keystone XL permit application, which the company did on April 18, 2012. On May 5, 2012, the NDEQ entered into a Memorandum of Understanding with the Department of State that set forth a framework for timely collaboration in an environmental analysis of pipeline routes within Nebraska that were consistent with the National Environmental Protection Act, the National Historical

The case was not about the issues surrounding the pipeline debate

Preservation Act and all other relevant laws and regulations. From that review effort, in December 2012 the NDEQ ruled that the agreed-to route with TransCanada was in compliance with all environmental, preservation and safety requirements and should be approved. That ruling set in motion a 30-day review process by the governor. Gov. Heineman approved the Keystone pipeline route through the State of Nebraska on January 13, 2013. The lawsuit was filed shortly thereafter.

One article about the lawsuit began its commentary on the judge's ruling by focusing on the introduction to the decision that was meant to demonstrate that the case was not about the issues surrounding the pipeline debate – the transport of bitumen from the oil sands deposits in Canada; how dirty that oil may or may not be; whether the burning of this oil will create worse carbon emissions than burning other, light crude oils, and whether the mining of the oil sands creates environmental problems – but rather the legality of the process in which the pipeline route was approved by the Nebraska governor. The text of that introduction is presented below.

“The constitutional issues before this court will not require consideration of the current pipeline debate, nor will the decision in this case resolve that debate”

“TransCanada's Keystone XL pipeline has become a political lightning rod for both supporters and opponents of the pipeline, but the issues before this court have nothing to do with the merits of that pipeline. This case involves the constitutionality of LB 1161 – a bill passed in 2012 to amend the pipeline siting laws enacted by the Nebraska Legislature in 2011. The constitutional issues before this court will not require consideration of the current pipeline debate, nor will the decision in this case resolve that debate. Decisions regarding the merits of TransCanada's Keystone XL Pipeline are properly left to other. This court's task is to apply settled principles of law to determine whether LB 1161 is constitutional.”

The shift in the pipeline route moved it away from the property of these landowners

While the judge claims only to be interested in resolving the constitutionality of the legislation that established the process in which the Keystone XL pipeline route was approved, we learned that a condition that often results in lawsuits being dismissed – the issue of the “standing” of the parties that brought the case was ignored by the judge. TransCanada made the point in its challenge to the lawsuit that the three landowners who filed the claim would not be hurt by the new Keystone pipeline route. According to a TransCanada source, the property of the three landowners was in the path of the original pipeline route that was rejected by President Obama, thus forcing TransCanada to reapply for a permit for a re-routed pipeline. The shift in the pipeline route moved it away from the property of these landowners. If someone has not been damaged or hurt by the actions of another they do not have the right to seek restitution through court action. It is entirely possible that the next court to hear the case (the appeals court) could rule that there is no case because no issue of harm from the approval of the new pipeline route exists because the parties lack “standing.”

The lawsuit revolves around the issue of separation of powers under the Nebraska constitution and whether LB 1161 violated that separation

Let's assume, however, that the appeals court does not throw out the case on the standing issue. What is the lawsuit all about? The lawsuit revolves around the issue of separation of powers under the Nebraska constitution and whether LB 1161 violated that separation, thus allowing the governor and the NDEQ to approve the pipeline route. To better understand the issue, we went to the Nebraska Unicameral Legislature web site that contains the Nebraska Constitution. We went to Section IV-20 Public Service Commission; membership; terms; powers. This section contains all the language about the Public Service Commission and we have copied two paragraphs that, in our opinion, appear to be crucial to the lawsuit and the case law that relates to the issue.

"Although the Public Service Commission is an independent regulatory body under the Nebraska Constitution, Public Service Commission jurisdiction to regulate common carriers may be restricted by the Legislature through "specific legislation." State ex rel. Spire v. Northwestern Bell Tel. Co., 233 Neb. 262, 445 N.W.2d 284 (1989)."

"The Legislature cannot constitutionally divest the Public Service Commission of jurisdiction over a class of common carriers by vesting a governmental agency, body of government, or branch of government, except the Legislature, with control over the class of common carriers. State ex rel. Spire v. Northwestern Bell Tel. Co., 233 Neb. 262, 445 N.W.2d 284 (1989)."

The legislature does have the ability to restrict the scope of the Public Service Commission's power to regulate common carriers such as the Keystone XL pipeline

It seems clear to us as non-lawyers that LB 1161 specifically granted the authority that resides with the Public Service Commission to approve the route and operating characteristics of the Keystone XL pipeline, a common carrier, to a branch of the state government and/or an agency – the governor and the NDEQ. The legislature does have the ability to restrict the scope of the Public Service Commission's power to regulate common carriers such as the Keystone XL pipeline, which is highlighted in the first paragraph. Exactly what powers and how they are circumscribed needs to be carefully crafted in the legislation quoted above. But those powers cannot be transferred to others, meaning that the legislature would likely have to assume that power. We have been told that four separate Nebraska law firms were involved in drafting the legislation that eventually became LB 1161. We doubt the legislation was a case of that old axiom - "too many chefs spoil the stew," but we may be wrong.

At this point we have no idea how long it will take for an appeal to advance

The Nebraska Attorney General announced within hours of the publication of Lancaster County Judge Stephanie Stacy's decision that the state would appeal. At this point we have no idea how long it will take for an appeal to advance. We suspect that the judge's decision would need to be appealed to the next higher court and then to the Nebraska Supreme Court. We do not know how much time will be required for this process to be completed, although we

Critics of the pipeline claim that the permanent injunction issued by Judge Stacy makes the prior route approval null and void

have seen media reports that the process could consume most of a year's time.

In the interim, the judge's decision raises questions about the continued validity of the January 22, 2013, letter from Governor Heineman to President Obama and Secretary Clinton certifying Nebraska's approval of the Keystone XL pipeline route. Critics of the pipeline claim that the permanent injunction issued by Judge Stacy makes the prior route approval null and void. Does that status disrupt the State Department review process of Keystone? About the only comment from the State Department is that they are continuing with their review process while monitoring the status of the state legislation. We suspect, however, that the court ruling could make it difficult for the federal government to make a final ruling about a pipeline permit if there is the potential that there is no approved pipeline route. Does the decision, if it stands, merely suspend the State Department pipeline review process until the Nebraska legal situation is worked out, or does TransCanada have to begin a new permit process all over with a filing with the Nebraska Public Service Commission?

Environmental opponents of the pipeline must be thrilled with the judge's ruling

It would appear that Judge Stacy's ruling puts off the time for any final Keystone pipeline permit decision until the end of 2014 or even possibly into 2015. One reason for this is that if TransCanada must file an application for a route approval with the Nebraska Public Service Commission, we are told that the process requires a minimum of seven months, and the timetable can be extended. This legal bump in the road for Keystone involves only the issue of the appropriate process that Nebraska must follow before approving the line's route. There still remain battles over the environmental report's support for the pipeline's construction; and all of those battles are before the various lawsuits over the approval process at the federal level are filed. Environmental opponents of the pipeline must be thrilled with the judge's ruling. This gives them support to take the battle to the Nebraska Supreme Court if Judge Stacy's decision is overturned at the next level of judicial review. Time and changes in market conditions represent the greatest enemy for the Keystone pipeline, and neither seems to be working in the pipeline's favor at the present time.

The President told the handful of governors that a decision on Keystone would be rendered in a few months

We were surprised by a statement by Governor Mary Fallin (OK-R), following a meeting with President Obama last Tuesday, in which she indicated that the President told the handful of governors that a decision on Keystone would be rendered in a few months. This was a surprise given all the legal events involving the pipeline approval process. However, we quickly wondered whether this was another one of those definitive statements from President Obama that cannot be taken at face value, for which there are many examples. The issuance last Wednesday of a report by the State Department's Inspector General on the question of conflict of interest issues involving TransCanada and the environmental contractor hired by

It would appear that the odds of the pipeline permit being approved have increased due to the conclusion of the IG’s investigation

the State Department to assess the Keystone XL pipeline that concluded that there were no violations has removed a potential roadblock in the review process. The State Department IG did say that while the guidelines in the selection of the environmental contractor who prepared the Supplemental Environmental Impact Statement were followed, he faulted the State Department for not explaining sufficiently the steps in the selection process.

It would appear that the odds of the pipeline permit being approved have increased due to the conclusion of the IG’s investigation. On the other hand, the legal mess in Nebraska might create a problem for the pace of the pipeline’s approval process. We are not sure that the approval of the permit will be more than a paper milestone, however. We maintain that the wave of legal action that will flow following a positive decision to approve the granting of a construction permit for Keystone will hobble the process for years. Unfortunately, time is probably Keystone’s greatest hurdle, and more time for approval increases the likelihood the line will not be built.

Oil Supply Disruptions Support Global Oil Prices

The production loss further strains the Libyan government’s ability to function as the government relies on oil and gas exports for virtually all its income and to subsidize food imports

On Sunday, February 23rd, the state-owned national oil company in Libya reported that protests had shut down the El-Sharara oil field in the southwest desert region of the country. The field, discovered in 1980 and estimated to contain three billion barrels of oil reserves, is owned and operated by Repsol (REPYO.OTC) and was estimated to be producing in the range of 345,000 barrels a day (b/d). The loss of the output has cut Libyan production to 230,000 b/d. The production loss further strains the Libyan government’s ability to function as the government relies on oil and gas exports for virtually all its income and to subsidize food imports. The protest is a continuation of those that began in 2011 following the fall of former Libyan dictator Muammar Gaddafi. There were also reports that day of heavy shooting near the General National Congress (GNC) building that interrupted a national parliament session and forced

Exhibit 2. Location Of El-Sharara Oil Field



Source: crudeoilpeak.com

He went on to say that vital government services such as health care and electricity supplies were at risk unless the GNC assembly agreed on a budget for 2014

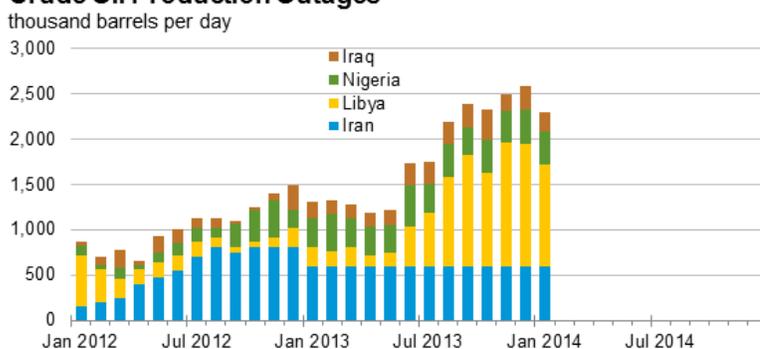
If, as it appears, Libyan oil revenues are cut in half this year, the government may only earn around \$25 billion, but even that level of income would appear to be in jeopardy given the current level of oil output

legislators to evacuate. The government of Libya has seen its oil output fall from 1.4 million b/d last July to less than twice the volume needed for internal consumption. Libya has two refineries - the 120,000 b/d Zawiya refinery and the 20,000 b/d Tobruk refinery.

Reuters news service interviewed Libyan Culture Minister Habib al-Amin, who acts as a government spokesman. He told *Reuters*, "The financial situation of the government is difficult. Some ministries have been unable to pay for expenditures due to a lack of budget and liquidity." He went on to say that vital government services such as health care and electricity supplies were at risk unless the GNC assembly agreed on a budget for 2014. Presumably that was why the GNC assembly was meeting at the time of the heavy shooting. The Libyan government has submitted a draft budget to the GNC but the details have not been released. Two rebel militias have told the Parliament it needs to leave, but the governing body is working on plans for an election later this year to restart the government.

Some Libyan government ministries are already struggling to pay bills due to the lost oil income and analysts say 2014 will be a challenge as the government faces a huge funding gap. If, as it appears, Libyan oil revenues are cut in half this year, the government may only earn around \$25 billion, but even that level of income would appear to be in jeopardy given the current level of oil output. It is this dire financial situation, brought on by the rebel militias and citizen protests that have observers worried that Libya could degenerate into total chaos, further inflaming the North Africa region of the continent and thus opening up more of the region for Al-Qaeda and its affiliates to foment terror.

Exhibit 3. OPEC Production Outages Are Supporting Oil Prices
Estimated Historical Unplanned OPEC Crude Oil Production Outages



Source: Short-Term Energy Outlook, February 2014.

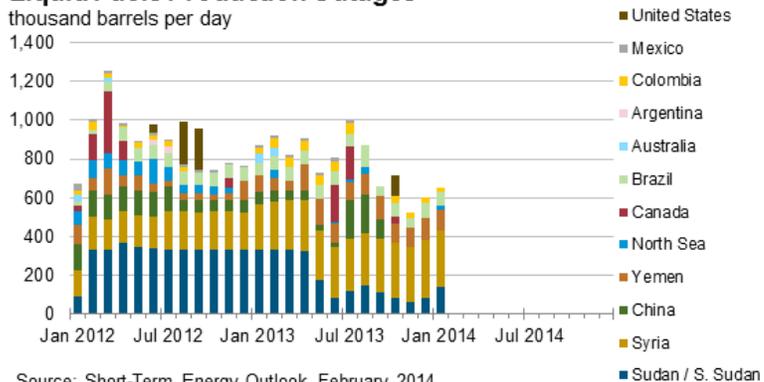
Source: EIA

In the Middle East, civil unrest in Iraq has resulted in its oil output falling by nearly 5% between December and January. The continued unrest prevents a recovery in output further straining the

volume of oil reaching global markets. It has become clear that these oil production disruptions are supporting high oil prices. The Energy Information Administration (EIA) produces two charts that track the volume of unplanned crude oil outages. One chart tracks the outages from OPEC member countries while the other tracks those outages of non-OPEC member countries. We present the most recent versions of those charts in Exhibit 3 on the previous page and Exhibit 4 below.

Exhibit 4. Tracking Non-OPEC Oil Production Outages

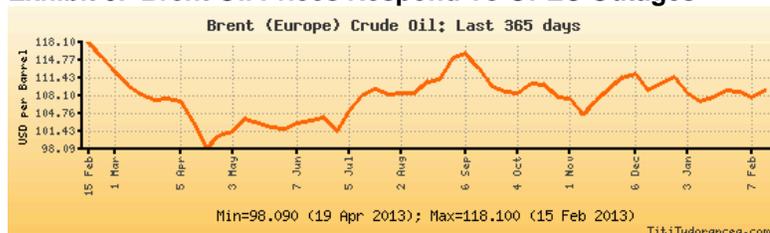
Estimated Historical Unplanned Non-OPEC Liquid Fuels Production Outages



Source: EIA

As of January 2014, OPEC’s production outage had climbed by nearly one million barrels a day since the summer of 2013

What we see from the charts is that after a steady reduction in outages from non-OPEC countries during most of the second half of 2013, there has been a steady increase over the past three months. In particular, the change in trend has been largely due to increased outages in Sudan, Syria and the North Sea. In the near term, there will likely be little improvement in output from the first two countries, but the North Sea could see some improvement as we move into spring. The OPEC outage situation became worse during the second half of 2013 after being at a low volume of outages during the first half of the year. As of January 2014, OPEC’s production outage had climbed by nearly one million barrels a day since the summer of 2013 and now stands at about 2.25 million b/d. Coupled with non-OPEC outages of about 600,000 b/d, the total global crude oil outage is close to three million b/d, or about 3% of total global oil production, and that is before this latest production outage in Libya. If we examine the trend in Brent oil prices over the past 365 days, one can see how the price rose in response to the late summer OPEC production outage increases. The improvement in non-OPEC outages during the fall, coupled with little change in OPEC outages, contributed to a decline in Brent oil prices.

Exhibit 5. Brent Oil Prices Respond To OPEC Outages

Source: The Titi Tudorancea Bulletin

The upcoming months mark what is traditionally the lowest oil demand period of the year

Brent oil prices have moved slightly higher in recent days, probably in sympathy with the growing non-OPEC outages. The prospect of sharply lower Libyan oil output, coupled with reduced oil exports from Iraq, suggests there will be an upward bias to global oil prices over the near-term. A moderating trend, however, is that the Northern Hemisphere, the primary consumer of crude oil, is moving from a bitterly cold winter into what is hoped to be a warm spring. The upcoming months mark what is traditionally the lowest oil demand period of the year. In other words, moderating weather may provide some relief against sharply higher global oil prices. Still, unless there is a dramatic improvement in global oil supplies, the production relief will do little to contribute to sharply lower oil prices.

Fewer December Bakken Wells Point Out Shale Challenge

The production drop in December was 5.3%

Data published by the North Dakota Industrial Commission's Department of Mineral Resources (DMR) showed a 48,305 barrel-a-day decline in the state's production for the month of December. The report attributed the production decline primarily to the severe winter weather that hit the state at the end of last year. According to the DMR, the state experienced low temperatures of 21 to 31 degrees below zero, four major snow storms and five major wind storms in December. Oil production for November had climbed by 31,278 barrels a day to 911,292 barrels a day, for a 3.6% increase over October's level. The production drop in December was 5.3%. The production decline, which was clearly impacted by weather, may also be demonstrating that there is a fundamental slowing in output and activity underway, which is not a good omen for the future for America's oil output.

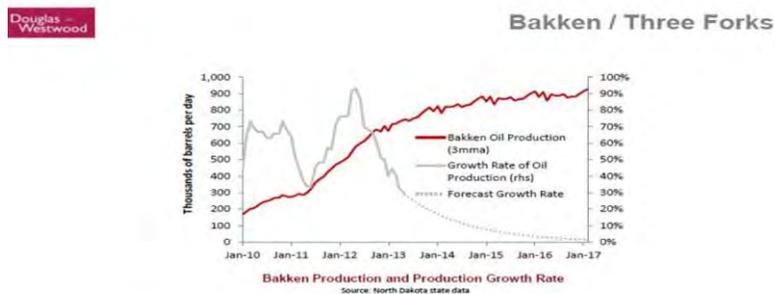
There were 119 wells completed during December, down from the 138 wells reportedly completed in November

During December, the drilling industry, according to the DMR, operated 190 rigs, up from 184 in November. The January rig count was 188. There were 119 wells completed during December, down from the 138 wells reportedly completed in November. The monthly report stated that the days from spud to completion for wells drilled during December increased to 132 days, for an increase of 18 days from the length of time it took to drill wells in November. Another very interesting observation from the DMR report was that there were a total of 635 wells that had been drilled and were awaiting completion at the end of December, an increase of 125 wells during

The December Bakken producing well count showed a 40-well increase from November, which if we compare against the 119 wells reportedly completed during the month of December leaves us with 79 wells that would have been added to the drilled-but-uncompleted total

the month. What the report doesn't show, however, is how many of the wells being drilled were Bakken horizontal wells versus vertical wells in other producing formations. If we assume that 100% of the current drilling activity is for Bakken oil, which is not an unreasonable assumption given how hot the play is, then we can look at the change in the number of producing Bakken wells to see what is actually happening to activity in North Dakota. The December Bakken producing well count showed a 40-well increase from November, which if we compare against the 119 wells reportedly completed during the month of December leaves us with 79 wells that would have been added to the drilled-but-uncompleted total. That leaves us with 46 unaccounted wells from the figures for wells drilled, in production and added to the drilled-but-uncompleted pool. We are not sure whether we should be worried about this number of unaccounted for wells, or attribute them to weather-related counting issues.

Exhibit 6. Is The Bakken Formation Growth Explosion Over?



- Current Bakken production around 750 kbpd
- But growth rates are falling precipitously
- Technical analysis suggests a 900 kbpd peak in 2016/17
- +0.2 mbpd to peak

Source: Douglas-Westwood

An analysis by Douglas-Westwood shows that the growth rate in Bakken production is slowing and that they forecast the basin's output will peak at 900,000 barrels a day in the 2016-2017 timeframe

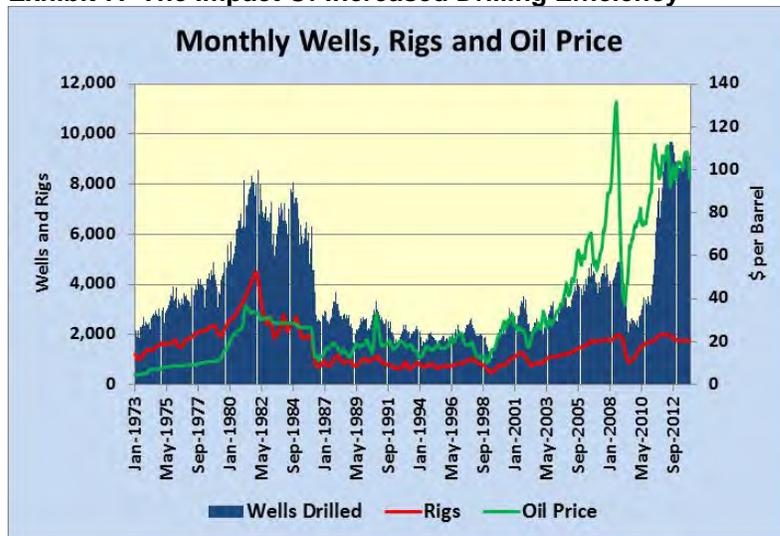
An analysis by Douglas-Westwood shows that the growth rate in Bakken production is slowing and that they forecast the basin's output will peak at 900,000 barrels a day in the 2016-2017 timeframe. Another analysis concludes that the Bakken requires 120 new wells a month merely to sustain the current production level, which was essentially equal to the number of wells drilled in December. That study found that each drilling rig contributed to 0.84 wells being completed in a month, meaning the industry must operate a minimum of 138 rigs per month to sustain its minimum producing well total. The bad weather coupled with slowing oilfield activity, caused by weather-related movement restrictions, contributed to the largest monthly production decline in 30 years in December. Some analysts suggest that what we saw in North Dakota's statistics for December, even though it was partially due to bad weather, may be a precursor of the nation's future shale oil production profile if drilling and well completion activity slows down. The only offset would be if the future production output from wells

The increase in oil prices during the 1970s was accompanied by a sharp rise in the number of wells drilled as the rig count climbed in response to increased profitability from drilling

can be boosted meaningfully either from higher initial production volumes or slowing the steep production decline rates. Technology, wherefore art thou?

To better understand drilling industry dynamics, we assembled the chart in Exhibit 7. We used the chart to illustrate a point in a recent speech we delivered about the impact of the shale revolution and the challenges it faces. The chart shows the number of wells drilled each month from January 1973 through December 2013. (The last three years of wells drilled had to be estimated from Energy Information Administration and Baker Hughes (BHI-NYSE) data.) We also show the average monthly rig count and the average oil price. The increase in oil prices during the 1970s was accompanied by a sharp rise in the number of wells drilled as the rig count climbed in response to increased profitability from drilling. We then moved into a period of a much lower level of wells drilled, rigs working and average monthly oil prices that started in the early 1980s in response to the economic recession caused by the high oil prices of prior years and then the sudden collapse of global oil prices in 1985. As we entered the early 2000s, the well count began rising along with oil prices. The rig count also increased but at a much slower pace than the well count. After recovering from the global financial crisis of 2008-2009, the well count has climbed in response to the high level of shale oil drilling.

Exhibit 7. The Impact Of Increased Drilling Efficiency



Source: EIA, Baker Hughes, PPHB

As the industry has come to better understand how to drill shale wells, both oil and natural gas wells, drilling rig efficiency has increased, thus reducing the need for as many rigs

As the industry has come to better understand how to drill shale wells, both oil and natural gas wells, drilling rig efficiency has increased, thus reducing the need for as many rigs necessary to boost the nation's oil and gas output. Drilling rig efficiency has increased in the past few years, which can be attributed to improvements in drilling rigs, drilling tools, the use of

pads to reduce drilling rig mobilization time and the drilling of multiple lateral producing wells from the same surface wellbore. If this drilling proficiency improvement can be sustained, then as the rig fleet expands through the addition of new modern rigs, the capability of the American drilling rig fleet will continue to grow, meaning we can drill more wells per month in the future than we are drilling now. This shift in drilling rig efficiency is one of the major changes impacting the oilfield service industry as a result of the shale revolution.

Will The Polar Vortex Drive Gas And Propane Prices Higher?

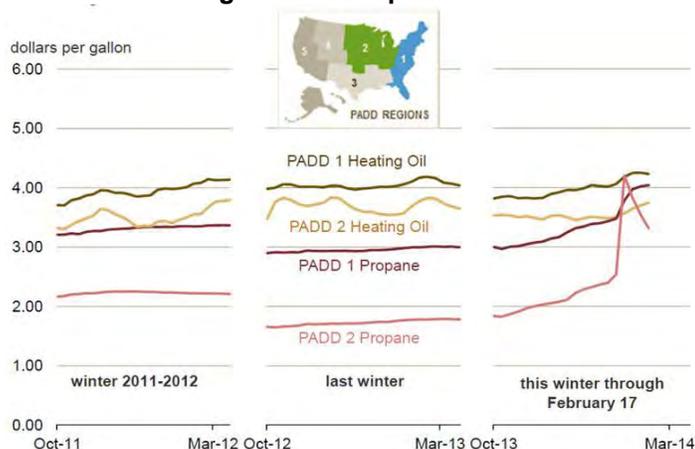
The then-large supply of natural gas in storage and high production volumes provided the market comfort that there would be no shortages that would drive prices substantially higher

After the polar vortex that swept across the central and eastern portions of the United States in late January, we wrote about its impact on natural gas prices and also on the propane market. In the former market, the then-large supply of natural gas in storage and high production volumes provided the market comfort that there would be no shortages that would drive prices substantially higher. That was exactly what was happening. On the other hand, because propane supplies in the Midwest were at lower-than-normal levels as a result of the fall's late grain harvest that needed substantial volumes of the fuel to dry out the crops, retail propane prices shot up rapidly impacting consumer budgets and forcing propane suppliers to ration delivery volumes.

The arrival of warmer winter weather coupled with additional propane supplies from the Gulf Coast has translated into a rather sharp decline in retail prices from over \$4 a gallon to closer to \$3.25

To help alleviate the pain experienced by consumers dependent on propane, the federal government ordered propane suppliers on the Gulf Coast to divert volumes from the petrochemical industry and ship them north to help supply the retail market. The Energy Information Administration (EIA) produced a recent update on the propane market and put its price trends in context with recent winters. The EIA chart is contained in Exhibit 8 on the next page. If one examines the PADD 2 propane price for this winter (right hand panel) the arrival of warmer winter weather coupled with additional propane supplies from the Gulf Coast has translated into a rather sharp decline in retail prices from over \$4 a gallon to closer to \$3.25. The price chart demonstrates the dramatic impact the lack of supply in the region had when the bitterly cold weather descended on the United States. It is also notable that propane prices were rising fairly rapidly starting in October due to the shortages from the crop-drying demand. There was virtually no increase in the fall from crop-drying needs last winter, as shown by the PADD 2 propane price chart in the center panel. The left-hand panel displays data for the winter of 2011-2012 and it shows only a slight increase in propane prices in PADD 2 during the fall as crop-drying demand likely squeezed supply only modestly. What is clear from examining these past winter propane price charts is that the interaction of late fall crop drying demand coupled with the absence of very cold weather kept prices from skyrocketing. This winter has experienced the perfect storm for the retail propane market.

Exhibit 8. Heating Oil And Propane Market Prices



Source: State Heating Oil and Propane Program, data through February 17

Source: EIA

It would appear from the AccuWeather chart that the polar air may not drop as far south into the United States as it did in January

At the beginning of last week, weather forecasts called for very cold weather (another polar vortex) to move into the central and eastern U.S. regions during the week and into this week. It would appear from the AccuWeather chart that the polar air may not drop as far south into the United States as it did in January. That may provide some relief to areas of the country dependent on propane for heating and cooking, but certainly not all regions. The additional supplies shipped from the Gulf Coast should also help to provide a buffer against another spike in propane prices above \$4 a gallon.

Exhibit 9. Here Comes The Next Polar Vortex



Source: AccuWeather.com

The price of natural gas, on the other hand, has soared in recent weeks as continued waves of cold weather and winter storms surged across the United States

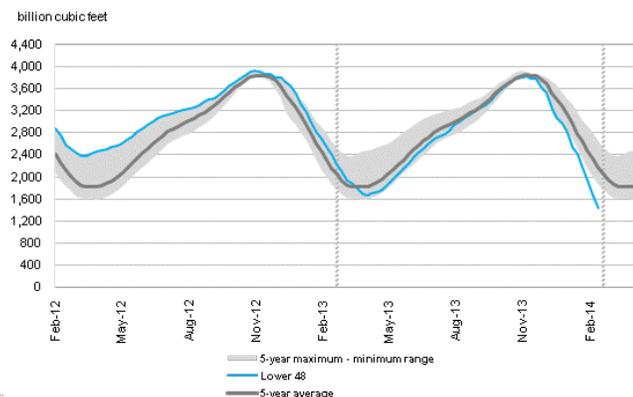
The price of natural gas, on the other hand, has soared in recent weeks as continued waves of cold weather and winter storms surged across the United States. The cold boosted natural gas consumption for heating and for generating electricity that also has been boosted by winter demand. The fallout from these winter storms and the cold weather has been a reduction in crude oil, natural gas and natural gas liquids (NGL) production. Energy

The commodity markets have become convinced that the level of storage at the end of this winter season will be less than originally forecast and that the refilling season will take longer supporting natural gas prices at higher levels than originally thought at the start of the winter season

producers have been reporting disruptions in their production caused by cold weather that freezes wellheads that limits gas flows and restricts necessary oilfield service work to bring new wells into production and to sustain output from existing wells. Abnormally cold temperatures can also prevent the shipment of oil and the movement of NGLs. While the volumes of natural gas drawn from storage during the past few weeks have not met the most optimistic forecasts of gas price bulls, the commodity markets have become convinced that the level of storage at the end of this winter season will be less than originally forecast and that the refilling season will take longer supporting natural gas prices at higher levels than originally thought at the start of the winter season. This view is supported by the gas storage chart in Exhibit 10 produced weekly by the EIA. Current gas storage volumes are well below the five-year average for storage volumes at this point in time and meaningfully below the five-year average minimum storage volumes. It suggests the industry will be working to rebuild storage volumes before the winter of 2014-2015.

Exhibit 10. Gas Storage Volumes Well Below Recent Past

Working gas in underground storage compared with the 5-year maximum and minimum



Source: U.S. Energy Information Administration

Source: EIA

What is clearly seen is the impact of winter weather on spot prices due to demand situations that cannot be forecast and are left to the spot market to handle

With natural gas prices having soared above \$6 per thousand cubic feet, well above even the most optimistic expectations of gas price bulls, prices are now in retreat as the commodity speculators and gas utility buyers that forced prices up in response to the cold weather have reduced their activity. The impact of the bitterly cold weather and gas-supply issues is displayed in Exhibit 11, which shows the price for natural gas purchased from the Algonquin pipeline system in the Northeast region of the country over time. The chart shows the difference between the spot price, reflecting forced distressed buying in response to weather conditions, and the bid-week price that reflects purchases for normal demand. What is clearly seen is the impact of winter weather on spot prices due to demand situations that cannot be forecast and are left to the spot market to handle. Utility buyers recognize they cannot buy all the

Spot prices soared well over \$100 per million Btus forcing the companies to ask for approval to pay such high prices from their regulators

gas that they “might” need, but they must buy the volume of natural gas they are sure they will need. In the January polar vortex cold period, natural gas spot prices hit \$80 per million Btus, the equivalent of \$80 per thousand cubic feet of gas. In other parts of the Northeast, spot prices soared well over \$100 per million Btus forcing the companies to ask for approval to pay such high prices from their regulators. Natural gas prices in the futures market have fallen back below the \$5-per-thousand-cubic-foot level, but one has to wonder what will happen when the next polar vortex arrives.

Exhibit 11. Price Spikes Demonstrate Impact Of Cold Weather
Algonquin Citygate natural gas spot and bidweek prices
 (January 1, 2012-February 18, 2014)

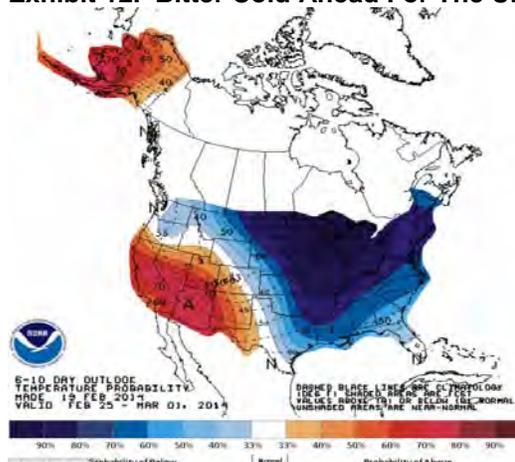


Source: EIA

NOAA is forecasting that two-thirds or more of the nation has a high likelihood of experiencing temperatures well below normal for this time of the year

On February 19th, the National Oceanic and Atmospheric Administration (NOAA), the nation’s weather forecasting service, published the chart in Exhibit 12 showing its projections for temperatures across the United States for the next six to ten days, or valid through the end of February. The chart shows that NOAA is forecasting that two-thirds or more of the nation has a high likelihood of experiencing temperatures well below normal for this time of the year. The darkest areas suggest regions that have a 90% or greater chance of experiencing extremely cold temperatures.

Exhibit 12. Bitter Cold Ahead For The U.S.

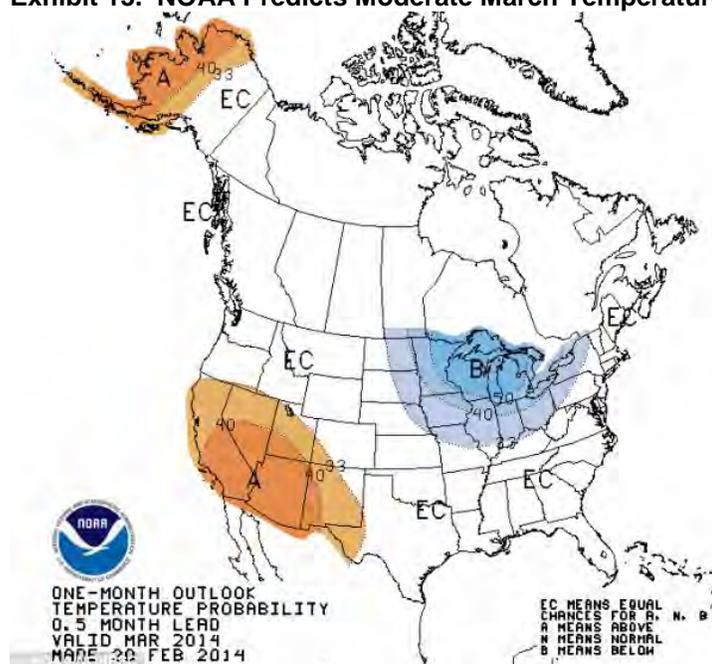


Source: NOAA

The near-term outlook for gas demand is very positive suggesting that gas prices will remain high – likely in the \$4.50 to \$5.00 per thousand cubic feet range for some period of time

The conundrum for the natural gas market is what does the future hold for temperatures. The near-term outlook for gas demand is very positive suggesting that gas prices will remain high – likely in the \$4.50 to \$5.00 per thousand cubic feet range for some period of time. But when we look at NOAA's outlook for national temperatures for March (Exhibit 13), there is less encouragement that gas demand will be greater than normal going forward. Could that mean a meaningful reduction in gas futures prices for later in the spring and summer?

Exhibit 13. NOAA Predicts Moderate March Temperatures



Source: NOAA

Gas production has continued to grow over the past 18 months largely due to natural gas associated with increased crude oil and wet gas volumes

The most interesting question to be asking right now is whether current natural gas prices and the depleted state of natural gas storage will prompt gas producers to step up their drilling. Not only may they step up drilling, but it will be interesting to see if they return to the more gas-prone basins such as the Haynesville and Fayetteville along with the Marcellus to conduct that drilling. Gas production has continued to grow over the past 18 months largely due to natural gas associated with increased crude oil and wet gas volumes. These gas-prone basins offer the potential for very prolific gas wells, meaning that with stepped-up drilling in these basins natural gas output could grow faster than it has in recent months. If this scenario unfolds, then we could be looking at a faster storage build in the spring and summer, thus bringing natural gas futures prices back down to levels that have constrained this type of gas drilling activity in the past. There also remains the ongoing challenge of a lack of pipeline infrastructure in these basins to quickly move greater gas volumes to market.

Will The War On Climate Change Become The Next Syria?

Secretary Kerry, like many of his predecessors, is driven by his desire to leave a lasting imprint on the global geopolitical scene

Mr. Kerry, as the junior senator from Massachusetts, in 1992 voted against allowing the United States to sign the Kyoto Treaty

He was also highlighting the issue of emissions across all of Asia, as the region's living standards rise bringing with it more automobiles and a lifestyle that demands greater energy consumption and producing more carbon emissions

Secretary of State John Kerry delivered a speech on February 16th to a group of students at a cultural center in Jakarta sponsored by the American Embassy. The speech was simultaneously transmitted to similar centers on the islands of Borneo and Sumatra. This speech marked the first in what is envisioned to be a series of addresses in which Secretary Kerry will try to convince developing nations around the world that they have an economic stake in addressing the issue of climate change. Secretary Kerry, like many of his predecessors, is driven by his desire to leave a lasting imprint on the global geopolitical scene, and in his case his goals appear to be creating a lasting peace in the Middle East and brokering a climate treaty in 2015.

In his speech, Secretary Kerry described the climate change issue as "perhaps the world's most fearsome weapon of mass destruction." We found that to be an interesting comparison since Mr. Kerry, as the junior senator from Massachusetts, in 1992 voted against allowing the United States to sign the Kyoto Treaty that would have committed the United States to actions to reduce carbon emissions in an effort to mitigate the effects of climate change, the very same treaty for which he is now hoping to broker a replacement next year. One has to wonder whether this is another case of Mr. Kerry having "actually voted for the \$87 billion before I voted against it" in reference to his vote on funding the Iraq War effort. Not only does Secretary Kerry appear hypocritical in his support for actions to mitigate climate change, but his rhetoric bordered on the extreme.

In delivering his initial climate change speech in Indonesia, Secretary Kerry is highlighting the fact that Indonesia ranks third in the world in emissions behind the United States and China, who recently became the largest carbon emitter. He was also highlighting the issue of emissions across all of Asia, as the region's living standards rise bringing with it more automobiles and a lifestyle that demands greater energy consumption and producing more carbon emissions. The principal reason for the increase in carbon emissions in Indonesia has been deforestation as wood has been used to provide power and for increased agriculture. Now the country is shifting to generating more of its power from coal that will accelerate the rise in carbon emissions. It is also planning to use more natural gas, either produced locally or brought in as liquefied natural gas (LNG).

Secretary Kerry described in apocalyptic-terms some of the problems facing Indonesia from climate change in his speech. He said that warmer and more acidic seawater could reduce Indonesian fish catches by 40%. A three-foot rise in the sea level, caused by global warming and the melting of the glaciers and the polar ice cap would be "enough to put half of Jakarta under water." He cited a World Bank report warning of \$1 trillion a year in flood-related

The use of “denier” is an attempt to seize the moral high-ground against those who question the data and theories behind climate change

economic losses by 2050 unless major efforts are made to improve Asian ports. Of course, the World Bank has a difficult time forecasting what the global economy will do this year and next, let alone forecasting the havoc climate change will bring in 35 years.

Those who disagree with Secretary Kerry are deemed “Flat-Earthers” or “deniers,” both terms popular with those who believe in climate change since the terms conjure up the image of ignorant people. The use of “denier” is an attempt to seize the moral high-ground against those who question the data and theories behind climate change by linking those doubts to people who question the existence of the Jewish holocaust, an event rapidly fading from our history as the survivors of that horrific legacy of the Nazi regime of World War II pass on.

Secretary Kerry trots out the “settled science” argument to bolster his case

It is quite amusing how those questioning climate change are referred to as “Flat-Earthers,” a dismissive term used to suggest that the doubters are equivalent to those in the Middle Ages who believed that the earth truly was flat and if one sailed far enough in one direction he would literally fall off the earth. Like all good climate change speeches, Secretary Kerry trots out the “settled science” argument to bolster his case. That argument requires employing the discredited statistic that 97% of all scientists say climate change is real. The flawed statistic comes from a survey of a small group of scientists who are self-selected to participate in the preparation of the Intergovernmental Panel on Climate Change (IPCC) report on the catastrophe awaiting the world if global temperatures rise by more than 2° Celsius. What Secretary Kerry fails to acknowledge in his use of the term Flat-Earthers is that at one time this was the mainstream view of science, i.e., the 97% of the scientists and explorers of that day. It was only when Galileo was able to demonstrate that the world was round that the Flat Earth position was discredited.

The only problem is that California experienced a similar drought in the late 1970s caused by the same meteorological condition that is impacting the state now

In his speech, like many climate change proponents, Secretary Kerry relied on the weather to demonstrate the bad things that will befall this planet as a result of a warming environment. He cited the drought in California, “where millions of people are now experiencing the 13th month of the worst drought the state has seen in 500 years” as an example of one effect from climate change and the impact of rising temperatures. The only problem is that California experienced a similar drought in the late 1970s caused by the same meteorological condition that is impacting the state now - a ridge of high pressure that is sitting off the California coast and diverting the normal winter storms north. Moreover, most climate scientists dismiss the California drought as being related to global warming.

Secretary Kerry was adamant in arguing that the science of climate change is settled. He said, “And let there be no doubt in anybody’s mind that the science is absolutely certain. It’s something that we understand with absolute assurance of the veracity of that science.”

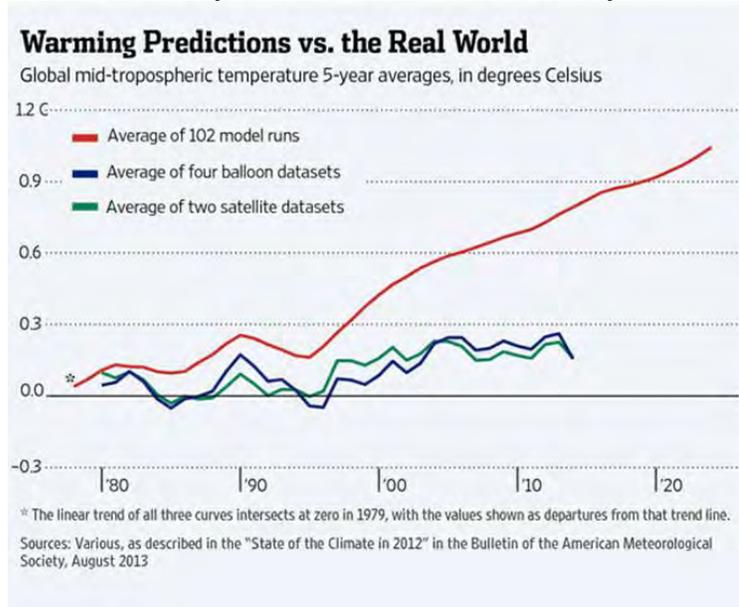
“When 97 percent of scientists agree on anything, we need to listen, and we need to respond”

The two professors demonstrated that the projections about the cataclysmic outcome for the planet’s environment due to the increase in carbon emissions in the atmosphere claimed by the IPCC were derived from computer models that have overstated the projected temperature increase

He equated the science of climate change to the scientific proof that when an apple falls from an apple tree it is because of gravity. He went on to quote the mantra of the climate change movement – “When 97 percent of scientists agree on anything, we need to listen, and we need to respond.” Secretary Kerry discussed how these thousands of scientists have contributed to five reports issued by the IPCC that clearly show how manmade carbon emissions from burning fossil fuels are contributing to global warming that is causing climate change. According to Secretary Kerry this analysis is absolute and with a long history.

Shortly after the Indonesia climate change speech, an op-ed appeared in *The Wall Street Journal* written by Richard McNider and John Christy, professors of atmospheric science at the University of Alabama in Huntsville and fellows of the American Meteorological Society. They challenged the conclusions of Secretary Kerry’s speech. The two professors demonstrated that the projections about the cataclysmic outcome for the planet’s environment due to the increase in carbon emissions in the atmosphere claimed by the IPCC were derived from computer models that have overstated the projected temperature increase. The professors presented a chart showing the forecasted temperature based on the average of 102 computer model runs compared to the average of atmospheric temperatures derived from two satellite datasets and four balloon datasets since the late 1970s.

Exhibit 14. Computer Models Over Predict Temperatures



Source: *The Wall Street Journal*

The professors also pointed out that the climate computer models have failed to get details of the past climate right. They explained

If the climate models cannot replicate the past climate, it raises serious questions about the believability of the models' projections of the future

When we had finished reading Secretary Kerry's speech in Indonesia, we wondered how it differed from his comments about the U.S. government's intelligence regarding the use of chemical weapons by the Syrian government last August and the relationship of his comments to the subsequent actions of President Obama

If those "facts" couldn't prompt the U.S. and President Obama to move forward in addressing this inhumane act, then how can we be confident that the President will move forward on climate change?

that the computer models are predicting that the increases in average temperatures would occur at about the same rate during both day- and night-times. In reality, the observed warming over land during the past century has occurred entirely at night. If the climate models cannot replicate the past climate, it raises serious questions about the believability of the models' projections of the future. That is a fundamental point about the use of computer models, and it is what differentiates modeling from science. The latter is the discipline of replicating events in order to understand the fundamental factors driving them.

When we had finished reading Secretary Kerry's speech in Indonesia, we wondered how it differed from his comments about the U.S. government's intelligence regarding the use of chemical weapons by the Syrian government last August and the relationship of his comments to the subsequent actions of President Obama. If you remember, his comments were made shortly after he had met with President Obama at the White House as the nation anxiously awaited the President's guidance on the actions the United States would take to punish the Syrian government for crossing the President's 'red-line' by using chemical weapons against the Syrian rebels fighting against the Assad regime. Ultimately, nothing happened following the speech as the President decided he wanted to wait for others to lead in dealing with the problem. In Secretary Kerry's Indonesia speech, he highlighted the leadership role of the United States and President Obama in engaging China in dealing with the global carbon emissions issue. But he pointed out how the reality was that there is little the U.S. can do on its own to stop global climate change.

In Secretary Kerry's comments about the intelligence of Syria's use of chemical weapons, he said the following: "In all of these things that I have listed, in all of these things that we know -- all of them -- the American intelligence community has high confidence, high confidence. This is common sense. This is evidence. These are facts." If those "facts" couldn't prompt the U.S. and President Obama to move forward in addressing this inhumane act, then how can we be confident that the President will move forward on climate change? Oh, we forgot, some of President Obama's campaign supporters are beneficiaries of federal money to promote green energy projects that will address the issue.

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

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