PPHB
ENERGY INVESTMENT BANKING

# MUSINGS FROM THE OIL PATCH

**January 12, 2016**

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**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

## 2015 – 2nd Warmest Year On Record Or Just A False Alert?

**The conference sponsors - leading climate activists both in and outside of governments and the media - rejoiced in the consensus reached**

COP21, the United Nations' climate change conference held in Paris last December produced an agreement among the approximately 195 countries in attendance designed to restrict the amount of carbon emissions to be released into the atmosphere in an effort to limit the increase in global temperatures to under 2° Celsius by the end of this century. The agreement also urges all the nations to emphasize environmental actions that will keep the temperature rise to less than 1.5° C. The conference sponsors - leading climate activists both in and outside of governments and the media - rejoiced in the consensus reached. The fact that two major objectives of the meeting – producing a legally-enforceable agreement and a securing commitments from developed nations to provide financial help developing economies in their renewable and clean energy efforts – were absent from the final document was ok.

**The strength of this year's El Niño brought balmy temperatures in the 50s, 60s and 70s degrees Fahrenheit throughout most of the Midwest and Northeast during Christmas week**

The Paris meeting, just over two weeks following the brutal attacks on residents and tourists conducted by Islamic terrorists, was held during the peak of the strongest El Niño weather phenomenon in recent years. This weather anomaly develops when sea surface temperatures near the equator in the South Pacific Ocean become hot and alter water circulation patterns along the coast of South America and in Southeast Asia. The ocean heat warms the atmosphere above, which results in a shifting of the jet stream allowing more warm air to pass over the normally wintery Midwest and Northeast regions of the U.S. In addition, the weather pattern brings increased rains to the country's West Coast and Southern Tier states. The strength of this year's El Niño brought balmy temperatures in the 50s, 60s and 70s degrees Fahrenheit throughout most of the Midwest and Northeast during Christmas week, rivaling temperatures experienced in the late 1990s when the last very strong El Niño was experienced.

**Temperatures in the lower atmosphere, according to satellite measurements, fail to show a similar warming pattern**

The impact of El Niño has lifted temperatures in many areas of the country to such levels that meteorologists, including the scientists at the National Oceanic and Atmospheric Administration (NOAA), have proclaimed 2015 to be the warmest year on record when measured by land-based temperature readings. The problem is that temperatures in the lower atmosphere, according to satellite measurements, fail to show a similar warming pattern. In fact, the atmospheric temperature readings continue what has been described as the "global warming hiatus" that has been evident since 1998, the end of the last strong El Niño. This nearly 18-year lack of global warming at a time when carbon emissions (carbon dioxide – $CO_2$) in the atmosphere have continued increasing and have surpassed a supposedly critical level - 400 parts per million (ppm) - for the future trajectory of the planet's climate.

**So why is 400 ppm critical?**

$CO_2$ is the gas that humans exhale with every breath and trees and plants use in photosynthesis to grow. So why is 400 ppm critical? The leading group battling to eliminate the burning of fossil fuels, the source of $CO_2$, is 350.org. On its web site is the following message about the danger of exceeding 350 ppm.

"This March, global levels of CO2 passed 400 parts per million.

"Although short-term local measurements of 400 ppm have been recorded previously, this marks the first time since record keeping began that CO2 levels were above 400 ppm globally for a month.

"Already we're seeing the deadly effects of climate change in the form of rising seas, monster storms, wildfires, and extreme weather of all kinds. Passing 400 ppm is an ominous sign of what might come next -- and it sends a clear signal that the world must act ahead of the UN climate talks in Paris this December.

"The safe level of carbon dioxide in the atmosphere is 350 parts per million. The only way to get there is to immediately transition the global economy away from fossil fuels and into renewable energy, energy efficiency, and sustainable farming practices.

"The last time CO2 levels were this high, humans did not exist. Our dependence on fossil fuels is fundamentally changing the nature of the planet -- and it's time to act."

**This anti-fossil fuel agenda fails to acknowledge or concede that fossil fuels are the best and fastest way to help billions of people on the planet**

The 350.org manifesto has been embraced by President Barack Obama and underlies his drive to engineer a climate change movement in the United States and globally that involves changing the future mix of our energy fuels. His drive to create a climate legacy for his presidency appears to come without regard for the ability of clean fuel alternatives to supply the necessary energy the country and world needs to run its economy. Moreover, this anti-fossil fuel agenda fails to acknowledge or concede that fossil fuels are the best and fastest way to help billions of people on the planet

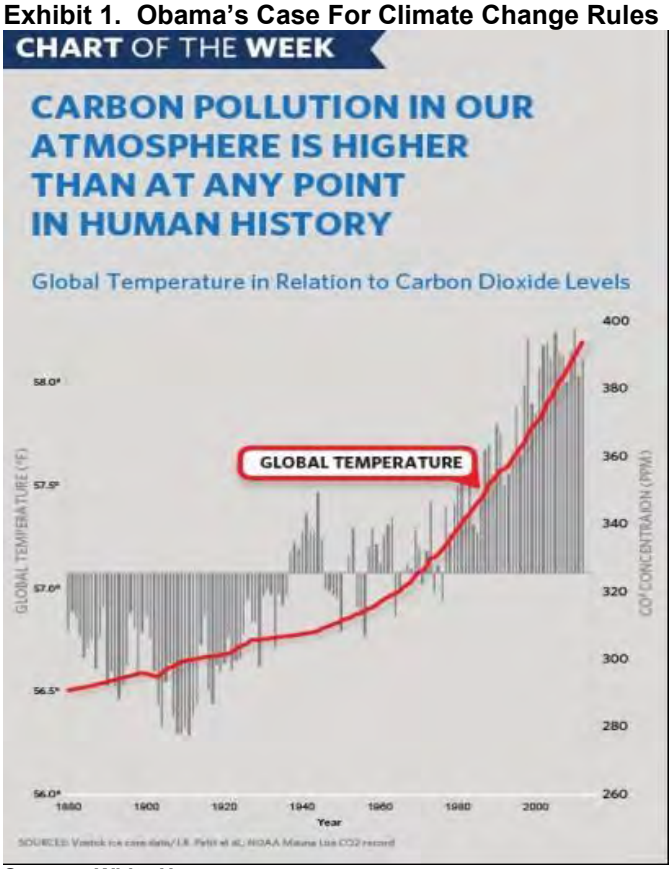
living without electricity and in poverty to raise their living standards. That argument is the moral case for fossil fuels.

**There is a battle over the data being used to promote or challenge the idea of carbon emissions generated by humans as the principle cause of global warming**

At one level there is the moral battle between climate change activists and skeptics over the burning of fossil fuels. At another level there is a battle over the data being used to promote or challenge the idea of carbon emissions generated by humans as the principle cause of global warming, rising seas, melting glaciers, monster storms, wildfires, drought and all the other forms of extreme weather. It is at this level of scientific activity that the battle over climate change is being waged, although the public relations war has already largely been won by the climate change protagonists.

In pushing for his climate change agenda, President Obama had posted on the White House web site a chart showing the rise in global temperatures as compared to the level of carbon emissions in the atmosphere. This chart is similar to the infamous "Hockey Stick" chart developed in 1998 by Professor Michal Mann and his co-authors showing a similar relationship but covering the period from 1000 to recent years as opposed to the President's chart that covers only since 1880.

**Exhibit 1. Obama's Case For Climate Change Rules**

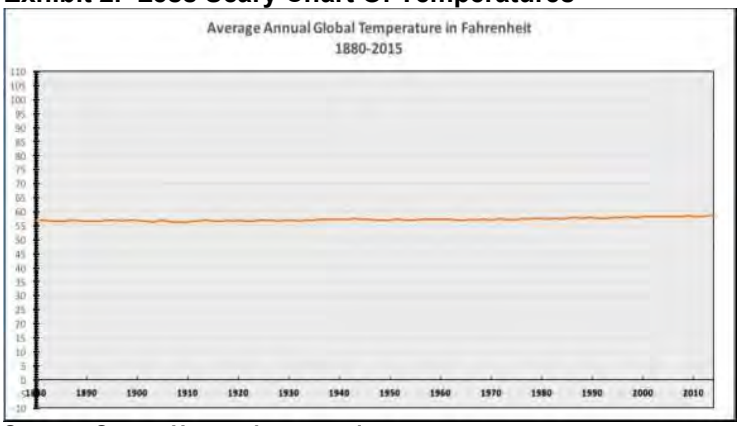



**Source: White House**

**We would also point out that back in the 1940s the CO2 concentration was at about 350 ppm but the average global temperature was much lower than when the CO2 concentration level was reached again in the 1980s**

The chart in Exhibit 1 on the prior page is certainly scary. Of course that is its purpose! If the amount of carbon emissions in the atmosphere remains where it is now, or worse, grows, then there is no reason for the global temperature line to alter direction. Note the way in which the amount of carbon emissions are shown in the chart by using a number around 325 ppm to suggest a baseline from which to measure the change in concentration. We would also point out that back in the 1940s the $CO_2$ concentration was at about 350 ppm but the average global temperature was much lower than when the $CO_2$ concentration level was reached again in the 1980s. Consider how the same temperature chart for 1880-2015 looks when it is plotted on a scale of zero to 110 as shown in Exhibit 2. That chart certainly isn't scary and certainly won't motivate people to clamor to change America's economy and its citizens' lifestyles.

**Exhibit 2. Less Scary Chart Of Temperatures**

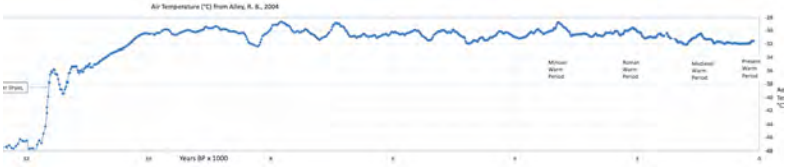



**Source: Steven Hayward, *Power Line***

**There have been several periods of warming in the past much like we are experiencing now**

An even more interesting chart is the one in Exhibit 3 that shows air temperatures since the last ice age up to today. Not only do we reside in a rather cool period vis-à-vis history, but as one can see from the chart, there have been several periods of warming in the past much like we are experiencing now and that saw average temperatures go much higher.

**Exhibit 3. Temperatures Through History**



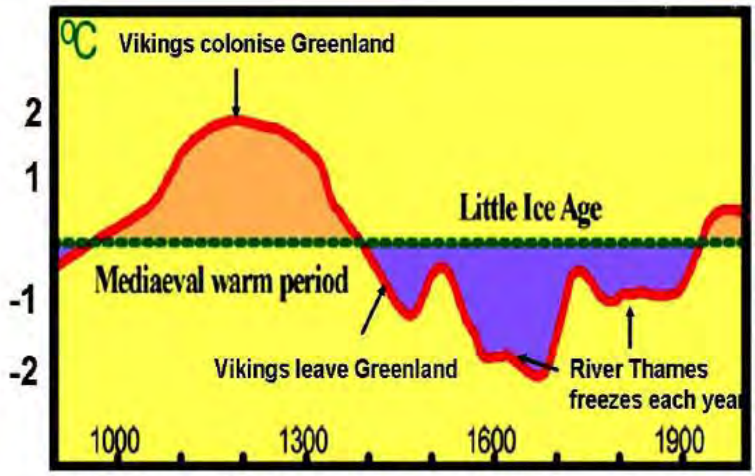
**Source: R. B. Alley, *Power Line***

The Medieval Warm Period, which spanned about 950 to 1250 AD, and the subsequent Little Ice Age that peaked in cold temperatures in the late 1600s was captured in a chart from the UN's Intergovernmental Panel on Climate Change (IPCC) report for 1990 (Exhibit 4, next page). The impact of the Medieval Warm Period

**This is also the period we associate with the Currier & Ives illustrations of winter and holiday scenes of snow, sleds and ice in America**

is associated with the time when the Vikings explored the North Atlantic and colonized Greenland. It is thought this was also the time when the Vikings may have reached North America. Equally interesting is that many of us, through literature, illustrations and history, are familiar with Europe during this time. As the chart shows, there were several times during the Little Ice Age when the River Thames froze completely. Winters in Europe then were associated with snow and cold, including the regular freezing of the waterways in the Netherlands associated with its dikes that control flooding. This is also the period we associate with the Currier & Ives illustrations of winter and holiday scenes of snow, sleds and ice in America.

**Exhibit 4. Medieval Warm And Little Ice Age**



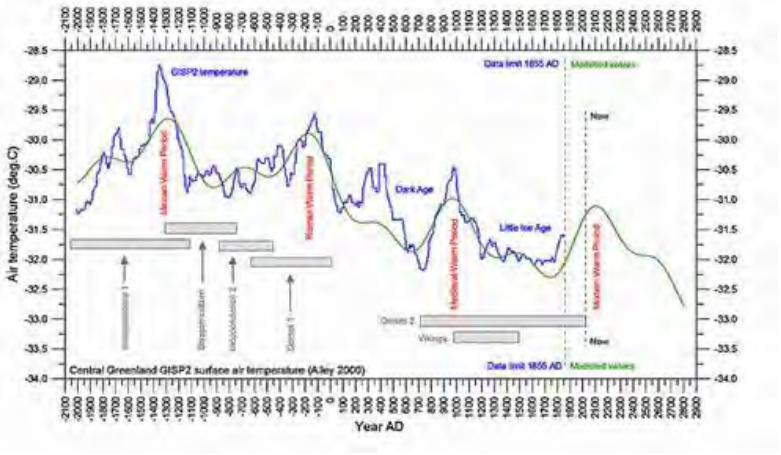

*Medieval warm period? Yes. This drawing of a graph in the IPCC's 1990 report shows it clearly.*

**Source: IPCC**

**What the model shows is that we are approaching another cyclical peak in temperatures that will be followed by another extended period of falling temperatures**

Another chart showing the surface temperatures of Central Greenland from 2100 B.C. until early in this century along with a forecast based on modeling that history is shown in Exhibit 5 (next page). The chart shows the Minoan Warm Period as well as the Roman and Medieval Warm Periods. It also shows the Dark Ages which were associated with cold. The blue line on the chart shows the surface temperature history for 4,000 years. The green line reflects modelling of the natural cycle and a forecast. The coefficient of determination ($r^2$) for the hindcasting period is 0.63. What the model shows is that we are approaching another cyclical peak in temperatures that will be followed by another extended period of falling temperatures, potentially taking us down to lower temperatures than ever experienced during these four centuries.

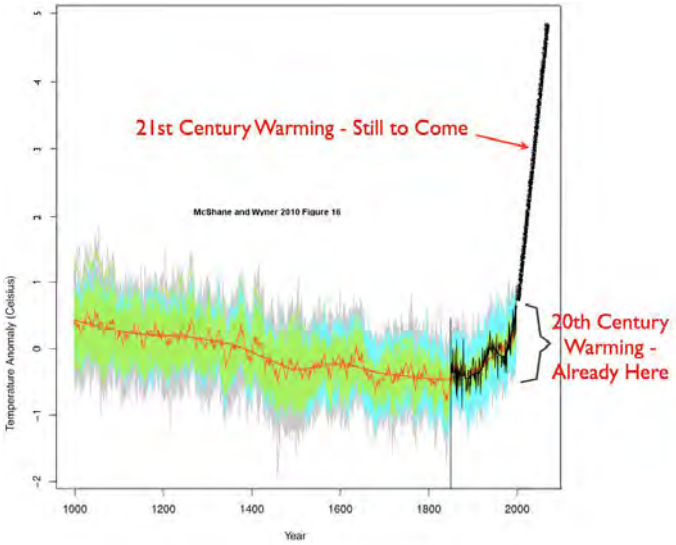
**Exhibit 5. Are We Nearing A Peak In Temperatures**




**Source: R. B. Alley (2000)**

Certainly the climate change activists would not agree with the forecast produced by this model of Greenland's surface temperatures. In fact, they would point to charts such as in Exhibit 6 to see what the planet is doomed to experience, especially if the nations of the world continue to burn fossil fuels allowing more carbon emissions to escape into the atmosphere.

**Exhibit 6. Global Climate Disaster**




**Source: *thinkprogress.org***

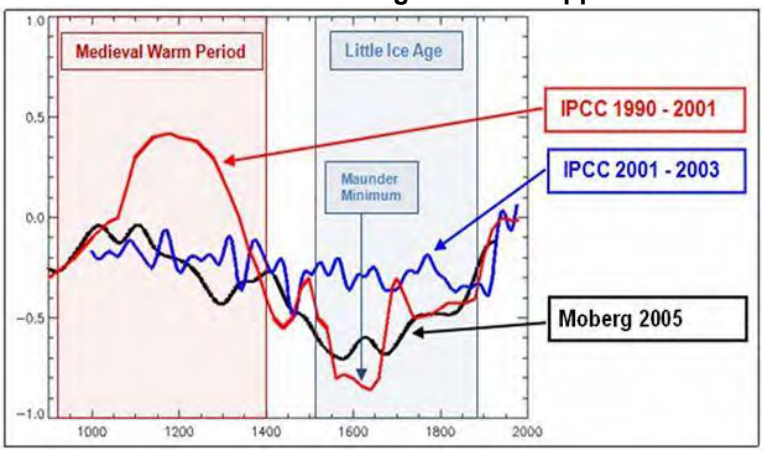
**Climate scientists are beginning to challenge the manipulation of the temperature datasets**

However, as the debate over whether the temperatures show an acceleration in global warming or a hiatus, climate scientists are beginning to challenge the manipulation of the temperature datasets. This issue surfaced several years ago when Climategate in Europe exposed emails among a handful of prominent climate change scientists showing their involvement in trying to manipulate data and

**The updated data shows that the historical temperature data was too warm, which has the impact of making the past appear cooler and recent times warmer**

prevent the public and climate skeptics from gaining access to data, reports and even getting contrary research published. In recent months a similar battle has progressed to the U.S. Congress where Republican House leadership is questioning the objectivity of those scientists at NOAA who published a report last June showing that the warming hiatus had not occurred. The report was based on NOAA's temperature data that has been adjusted to reflect "better" information. Coincidentally, the updated data shows that the historical temperature data was too warm, which has the impact of making the past appear cooler and recent times warmer. This technique has been used by the IPCC in the past to minimize the warmer eras and is clearly demonstrated in the chart in Exhibit 7 that shows the historical temperature graphs presented in the IPCC studies produced during 1990-2001 versus those in the 2001-2003 period. In the earlier period, the Medieval Warm Period was prominent, but after 2001 it essentially disappeared, sharply altering the contrasting warm and cold eras.

**Exhibit 7. How Medieval Warming Period Disappeared**




**Source:** ***Junkscience.com***

**As Dr. Curry points out, climate models cannot predict future major volcanic eruptions, solar cycles, or the long-term oscillations in the ocean, clouds or even the El Niño and La Nina weather phenomena**

The significance of the temperature data adjustments cannot be underestimated. Dr. Judith Curry, Professor and former Chair of the School of Earth and Atmospheric Sciences at the Georgia Institute of Technology, recently authored an article discussing the problems with the Paris agreement and the claims of climate change activists. Dr. Curry is a believer in the existence of global warming but critical of the analysis and recommended solutions, so she has been labeled a "denier." As Dr. Curry points out, climate models cannot predict future major volcanic eruptions, solar cycles, or the long-term oscillations in the ocean, clouds or even the El Niño and La Nina weather phenomena. From studying these factors, scientists know that they do impact weather patterns and temperatures. We even have studies showing that the wobbling angle of the Earth as it revolves around the sun determines the amount of sunlight the planet receives, which can impact our weather.

**The growing discrepancy between climate model predictions and actual observations raises serious questions about the models**

When discussing the global warming hiatus, Dr. Curry points out that the 2013 IPCC assessment made the following statement: "the rate of warming over the past 15 years…is smaller than the rate calculated since 1951." The growing discrepancy between climate model predictions and actual observations raises serious questions about the models that are being used as the basis for national and international energy and climate policies. It is important to acknowledge that reliance on inaccurate climate models for making energy and climate policies will produce policies that may be not only be wrong but significantly damaging to the economy.

**Scientists working with the satellite data of lower atmospheric temperatures do not foresee 2015 as being among the warmest years**

In her article, Dr. Curry showed a graph that compared the NOAA, Hadley Centre/Climate Research Trust and NASA/Goddard Land and Sea temperature anomaly relative to 1991-2010 average temperatures. These data sets demonstrate the rising global temperature. However, scientists working with the global surface temperature data sets have predicted an 85% probability that 2015 will be the warmest year on record. However, scientists working with the satellite data of lower atmospheric temperatures do not foresee 2015 as being among the warmest years. This is a significant difference and the fact that only the surface data is adjusted, something we will touch on later based on a new study, renders these climate models and their claims subject to question.

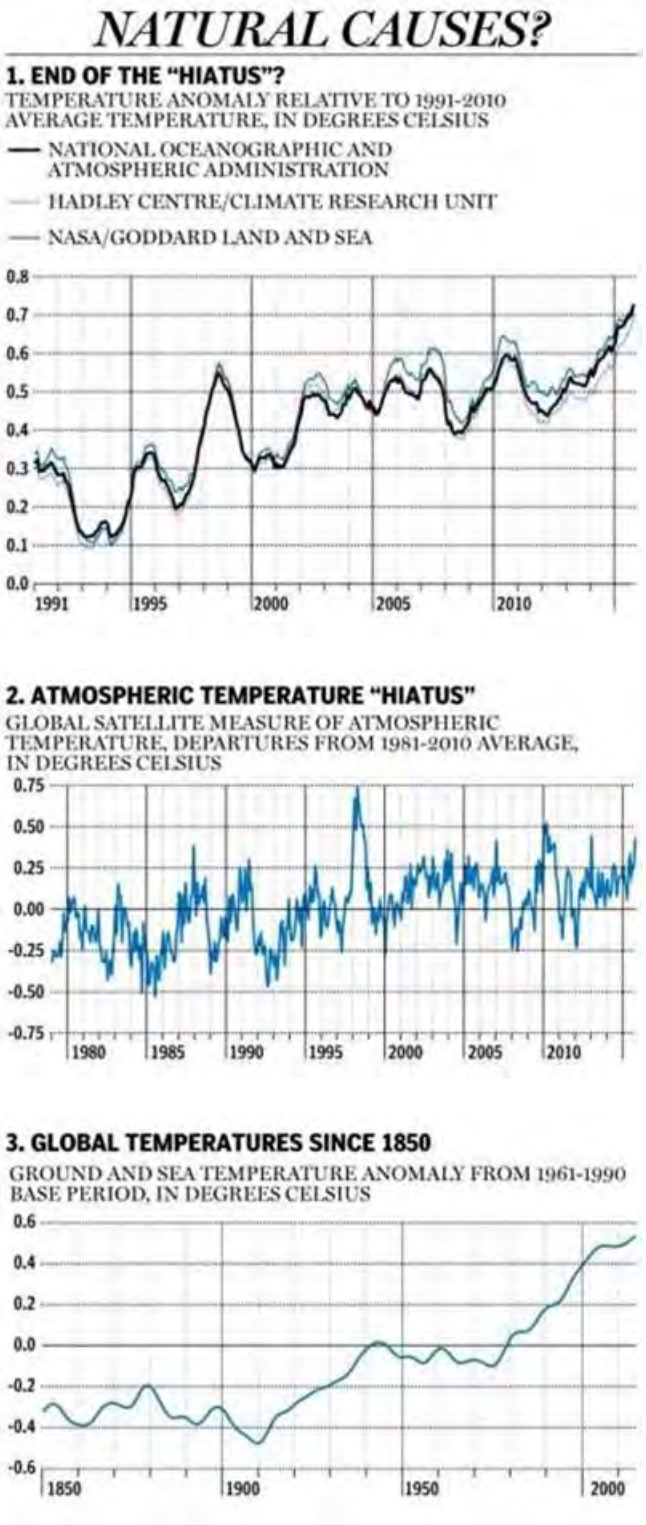
**Over 40% of the warming since 1900 is accounted for by the warming during the 1910-1945 period, yet it is associated with only about a 10% increase in carbon emissions since 1900.**

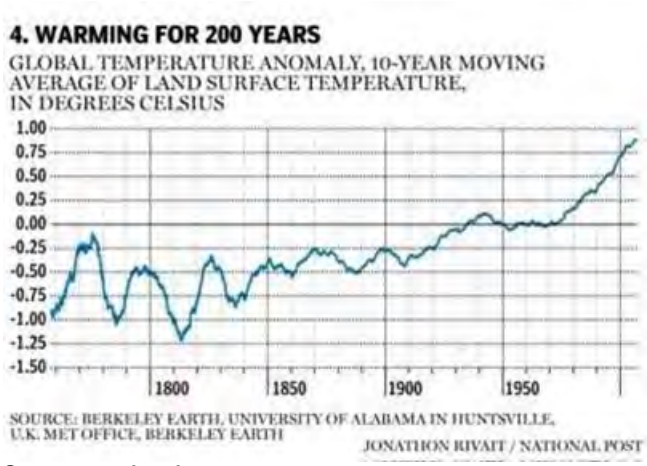
What about the global warming hiatus? The reduced rate of warming that has happened since 1998 came at the same time that 25% of human-caused emissions of $CO_2$ have occurred. The key conclusion of the 2013 Assessment Report of the IPCC is that it is extremely likely that more than half of the warming since 1950 has been caused by humans. The climate models indicate that all of this warming has been caused by humans. Yet, if this is the case, then what caused the warming during the period 1910-1945? As shown in Exhibit 8 (next page), over 40% of the warming since 1900 is accounted for by the warming during the 1910-1945 period, yet it is associated with only about a 10% increase in carbon emissions since 1900. This pattern is not explained by the climate models. Neither is the mid-century period of slight cooling from 1945-1975 (referred to as the "grand hiatus") explained by the climate models. These are troubling challenges for the climate models that call into question their veracity as forecasting tools.

**This data set shows a warming trend back to 1800**

Dr. Curry also showed data from the Berkeley Earth Surface Temperature Project, which has assembled the available land temperature data back to 1760 (chart 4 on page 10). This data set shows a warming trend back to 1800. There was considerable variability in the temperature data in the late 18th century and into the early 19th century. Much of this variability was attributed to large volcanic eruptions. That time period also coincided with the Dalton solar activity minimum (1791-1825). The available data sets that allow for reconstructing Northern Hemisphere climate suggest that global warming has been occurring for the past 300-400 years.

**Exhibit 8. Challenge To Climate Change From Data**






**Source:** ***National Post***

**The scary climate claims by the activists are based on the worst-case climate scenario of all the climate models of the IPCC**

The conclusion of Dr. Curry's article pointed to the problem of these climate models and how they are being used. As she wrote: "The climate models making dire predictions of warming in the 21st century are the same models that predicted too much warming in the early 21st century, and can't explain the warming from 1910-1945 or the mid-century grand hiatus." As Dr. Curry pointed out early in her article, the scary climate claims by the activists are based on the worst-case climate scenario of all the climate models of the IPCC. Virtually all the other scenarios do not predict the cataclysmic outcome that is needed to help push the climate change agenda.

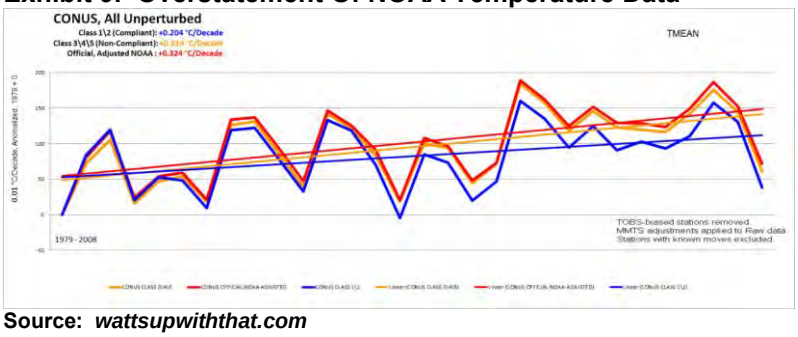
That agenda was further hit by a study unveiled at the mid-December American Geophysical Union meeting that has been submitted to a scientific journal for peer review. The study, conducted by Anthony Watts and Evan Jones of surfacestations.org, John Nielsen-Gammon of Texas A&M (the leading critic of a preliminary version of this paper) and John R. Christy of the University of Alabama, Huntsville, represents years of work in studying the quality of the temperature measurement system of the United States.

**This study demonstrates conclusively that this issue affects temperature trends and that NOAA's methods are not correcting for this problem, resulting in an inflated temperature trend**

Mr. Watts is quoted in a press release announcing the study saying, "The majority of weather stations used by NOAA to detect climate change temperature signal have been compromised by encroachment of artificial surfaces like concrete, asphalt, and heat sources like air conditioner exhausts. This study demonstrates conclusively that this issue affects temperature trends and that NOAA's methods are not correcting for this problem, resulting in an inflated temperature trend. It suggests that the trend for U.S. temperature will need to be corrected." He went on to state: "We also see evidence of this same sort of siting problem around the world at many other official weather stations, suggesting that the same upward bias on trend also manifests itself in the global temperature record." This upward bias is shown in the NOAA data

presented in Exhibit 9. The blue temperature line shows the data for the unperturbed Class 1\2 weather stations; the yellow line shows the unperturbed data for Class 3\4\5 weather stations; and the red line shows NOAA's official homogenized (and official) data set. It should be noted that the NOAA data set produces the warmest temperatures.

**Exhibit 9. Overstatement Of NOAA Temperature Data**

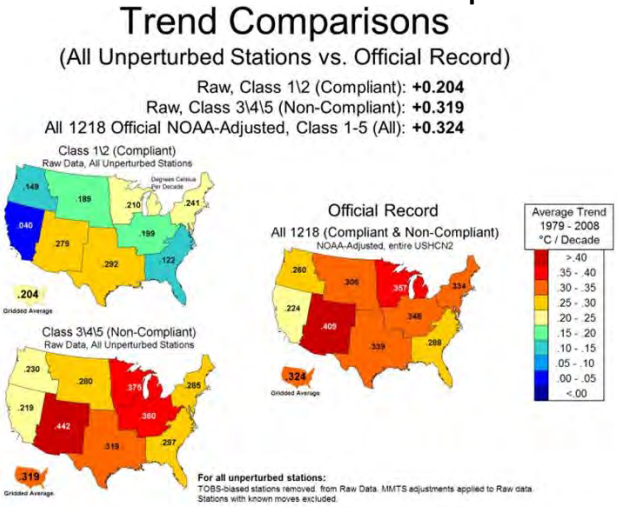



**Source:** ***wattsupwiththat.com***

**The 30-year trend of temperatures for the Continental United States since 1979 are about 2/3rds as strong as officially NOAA temperature trends**

The study concluded that that 30-year trend of temperatures for the Continental United States since 1979 are about 2/3rds as strong as officially NOAA temperature trends. The study, which utilized an army of volunteers, examined all of the 1,218 weather stations in the continental United States that comprise NOAA's climatology network. The researchers were able to identify a 410 station subset of "unperturbed" stations that have not been moved, had equipment changes, or changes in the time of their observations, and thus require no "adjustments" to their temperature record to account for these problems. The purpose of the study was to find if there were trend differences between well-sited versus poorly-sited weather stations using well-established evaluation methods.

**Exhibit 10. Where NOAA Overstates Temperature Data**




**Source:** ***wattsupwiththat.com***

**The conclusions of this study point out the lengths that climate activists will go to promote their agenda.**

The study's authors have not disclosed the scientific journal they have sent the paper to in order to avoid possibly having climate activists try to prevent the paper from being published as confirmed that they did by the Climategate emails. The conclusions of this study point out the lengths that climate activists will go to promote their agenda. Surprisingly, Mr. Jones, a co-author, defended the NOAA scientists in the 356 blog comments to the announcement. He believes the NOAA scientists have made a mistake in their research and deserve the respect to allow them to examine their errors and correct them. He took umbrage at comments calling the NOAA scientists liars and deceitful. If only the other side would hold to the same ethical and civil standards in this debate.

**The debate about whether 2015 was the warmest year on record will go on, but an examination of the data (done by Mr. Watts, et al) seriously challenges that claim**

There are many reasons why we should be pushing for lower carbon emissions, but they need to be balanced against realistic measures of the value fossil fuels provide in lifting people out of poverty and improving their lives. The debate about whether 2015 was the warmest year on record will go on, but an examination of the data (done by Mr. Watts, et al) seriously challenges that claim. By fairly assessing both sides of the climate change issue and accepting that there aren't clear-cut answers, maybe the debate can be elevated and positive solutions achieved.

## Middle East Mess, Weak Global Economy and Oil Outlook

**Gasoline pump prices fell to $1.999 a gallon for regular fuel as of January 6, 2016, the lowest level since March 25, 2009**

Last week we saw Saudi Arabia execute 47 prisoners including a high-profile opposition cleric that sparked protests against the country in numerous Middle Eastern countries. Barely a few days later, North Korea reportedly exploded a hydrogen bomb surprising the Western intelligence community. In the U.S., weekly crude oil inventories fell by over five million barrels, in sharp contrast to analysts' predictions of an increase of 300,000 barrels, while auto sales for 2015 of 17.47 million units surpassed the 15-year peak by 70,000 units. Gasoline pump prices fell to $1.999 a gallon for regular fuel as of January 6, 2016, the lowest level since March 25, 2009.

**In 1965 dollars, today's $1.999 a gallon price equates to 26-cents**

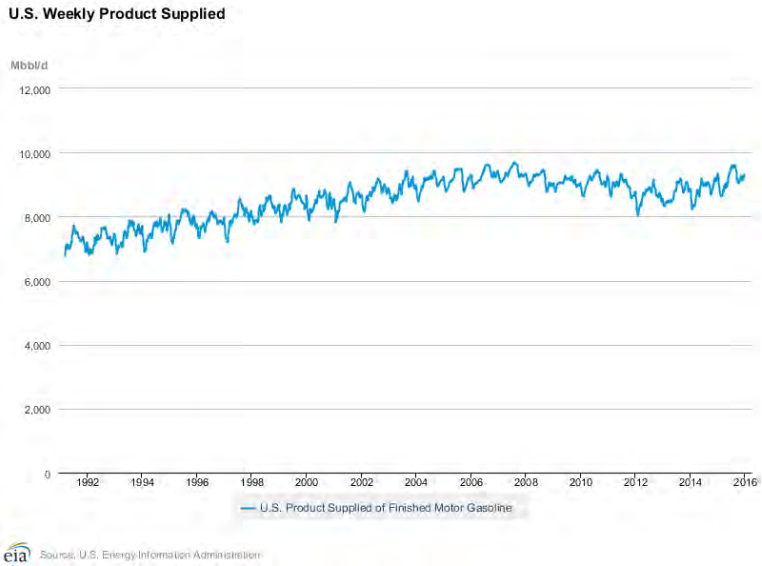
Holman Jenkins, an editorial columnist with the *Wall Street Journal*, pointed out that when measured in 2015 inflation-adjusted dollars, gasoline prices are at an all-time low. He noted that in 1965, gasoline sold for 30-cents a gallon (that also got you an oil-check, tire pressure check and windshield washed). In 1965 dollars, today's $1.999 a gallon price equates to 26-cents, making it an historical low.

The challenge for the oil industry is attempting to make sense of why the political unrest, soaring car sales and the cheapest gasoline prices in decades has failed to send oil prices higher. In the most recent Energy Information Agency (EIA) weekly inventory and consumption report, we find that the four-week average of gasoline

**Gasoline consumption fell below nine million barrels a day for the first time since the end of April**

consumption was down 3.4% from the prior week. The data was for the last week of the year when many people take vacations, so one should be careful about reading too much into the numbers. The four-week average was 8.99 million barrels a day of gasoline consumption, falling below nine million barrels a day for the first time since the end of April.

**Exhibit 11. 4-Week Average Of Gasoline Supplies**




**Source: EIA**

**Not only did oil traders yawn at the geopolitical developments, they actually sold oil down based on weakening industry fundamentals and possibly lower demand from China**

Starting in the geopolitical arena, the Saudi Arabian executions provided the Kingdom with the luxury of sending a message both within the country to potential dissidents and externally to its adversary Iran and the rival super powers who are struggling with who will exercise the greatest influence in Middle East political affairs – Russia or the United States. (We deal with this issue in another article.) The protests against the executions, especially of Sheik Nimr al-Nimr, have highlighted the historical sectarian division within the region that is becoming even more strained. Couple that issue with the battle between the provincial government and rebels in Libya over the control of two ports that are capable of exporting oil, and you have the grounds for a fear premium returning to the world oil market. In reality, not only did oil traders yawn at the geopolitical developments, they actually sold oil down based on weakening industry fundamentals and possibly lower demand from China. Crude oil futures prices fell to a 12-year low!

The oil market appears to be telling us that it believes the current oil oversupply situation is more than sufficient to offset the potential loss of any Middle Eastern and/or North African oil output. What seems to be bothering the oil market more than geopolitical problems is the strength of the global economy, and in particular China's economic health.

**That quarterly performance will ensure that U.S. economic growth for all of 2015 will average somewhere in the 1.8% to 2.0% range**

As we entered the past holiday season, the head of the International Monetary Fund (IMF) pronounced that its outlook for world economic growth was being marked down once again. In just the past couple of days, Joseph Lavorgna, the chief economist for Deutsch Bank (DB-NYSE) cut his estimate for U.S. fourth quarter GDP growth by 0.5% bringing it down to 1.0%. That quarterly performance will ensure that U.S. economic growth for all of 2015 will average somewhere in the 1.8% to 2.0% range. That will be a further continuation of the subpar economy, which is growing well below its average long-term growth rate of 3% per annum achieved since the end of World War II.

**The American consumer has become indoctrinated to the pattern of gasoline prices – when they go down it is followed by them rising**

Crude oil prices were down in 2015. After falling by 50% from the oil price peak of $107 a barrel in June 2014, oil prices dropped into the mid $50s by the start of 2015. Oil prices closed 2015 in the upper $30s a barrel. That fall in oil prices translated into lower gasoline, diesel and home heating oil prices that should have spurred consumer spending. The consumer in America is highly important, accounting for nearly three-quarters of gross domestic product (GDP). The cut in gasoline pump prices that started in the summer of 2014 and accelerated as global oil prices began to collapse following Saudi Arabia's abandonment of its role in supporting OPEC pricing was viewed optimistically for the economy. At the start of July 2014, the U.S. average gasoline pump price was $3.75 a gallon. By the end of 2014, gasoline prices were at $2.39 a gallon, but bottomed at the end of January 2015 at $2.16 a gallon. The $1.36 a gallon savings on approximately nine million barrels a day of gasoline consumption, yields $514 million in daily savings for car owners. For a full year, that would equate to about $185 billion in gasoline savings for the American consumer, which should have provided some lift to consumer discretionary spending. Unfortunately, the American consumer has become indoctrinated to the pattern of gasoline prices – when they go down it is followed by them rising. The only question is when they go back up. American consumers also understand that gasoline prices rise much faster than the fall.

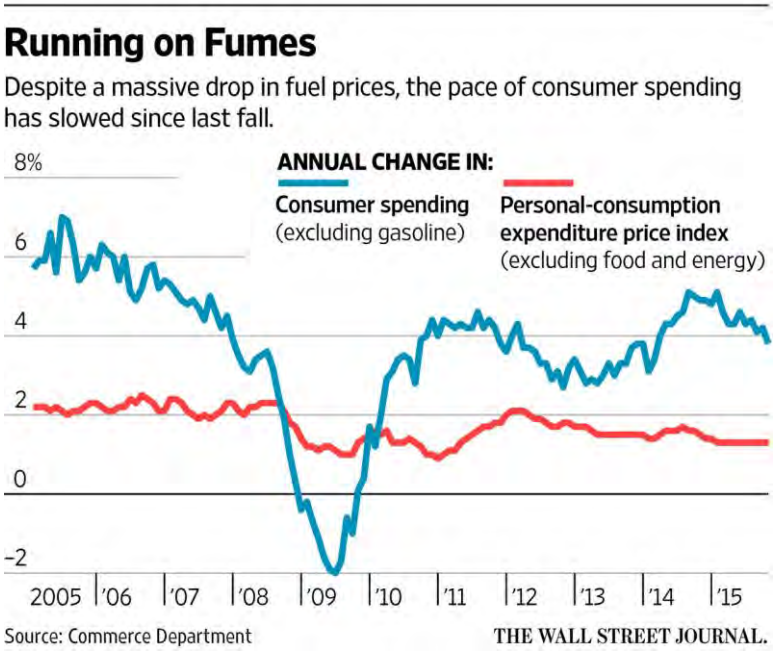
**Consumer spending excluding gasoline expenditures actually fell throughout most of 2015**

Despite the logic with which economists predicted a shot in the arm for the economy from the fall in gasoline prices, Americans elected to pocket the savings. As shown in the chart in Exhibit 12 (next page), consumer spending excluding gasoline expenditures actually fell throughout most of 2015. That was one of the factors that contributed to the weak performance of the U.S economy.

During the second half of December, the financial newspaper Barron's published interviews with two interesting thought-leaders about their views of the U.S. and global economy and the geopolitical scene for 2016. Both interviewees saw troubles ahead.

The first interview was with David Levy, chairman of the Jerome Levy Forecasting Center. Mr. Levy pointed out that the biggest

**Exhibit 12. Low Gas Prices Haven't Boosted Spending**




**Source:** ***Wall Street Journal***

**This time might be different because emerging markets are not just going into recession but are going through secular adjustments**

source of profit growth in recent years was the net investment in emerging market export capacity, but now that growth is slowing. This growth driver is creating a much greater problem for the global economy than many people understand. He pointed out that the U.S. economy is not about to keel over, but rather that international market conditions are becoming more challenging. There has not been a postwar recession when the U.S. economy was doing well only to get knocked over by the rest of the world. This time might be different because emerging markets are not just going into recession but are going through secular adjustments. Using China as the best example, its strategy has been massive investing and exporting. Their problem now is that they are too big to play this game.

**He estimates that China's manufacturing capacity utilization is about 50% and that it continues to derive about 46% of its GDP from investment**

He pointed to the challenge China faces in trying to shift from an export economy to a consumer one since it has so much manufacturing capacity. He estimates that China's manufacturing capacity utilization is about 50% and that it continues to derive about 46% of its GDP from investment. He then pointed to Japan, which engaged in a similar strategy in the 1980s. Public and private investment peaked in 1990 at 33% of its GDP. Even during the biggest investment boom in United States history following World War II when we built our schools and the interstate highway system, our investment only peaked at 25% of our GDP.

In his view, Mr. Levy sees 2016 marked by a global recession accompanied with a general asset deflation, aggravated by the lack of room for major central banks to cut interest rates to boost growth.

**He gives at least 2-to-1 odds that the U.S. will be in a recession at the end of 2016**

For him, this is the key difference between what he expects to see this time compared to past cycles. As a result, he sees the global economy slowly deteriorating and the U.S. expansion slowing, which will force the Federal Reserve to reverse its policy of hiking interest rates. He believes the global recession will eventually overwhelm the entire planet and gives at least 2-to-1 odds that the U.S. will be in a recession at the end of 2016.

While Mr. Levy wasn't asked, nor did he volunteer an answer, one has to wonder whether the economy at the time of the presidential election might be failing rapidly, setting up early 2017 as a repeat of President Barack Obama's 2009 experience. Will that experience create a repeat? Or will the next president embrace the liberal economists' view that the failure of the 2009 economic stimulus effort was that it was too small. On the other hand, maybe we will have a president who decides on a totally different course of action.

**For a one-party state to continue to increase the economic freedom of its citizens forces the party to have to yield power**

Quite possibly the answer to these questions lies in what is happening around the world. An interesting assessment came from *Barron's* interview with Niall Ferguson, the Laurence A. Tisch Professor of History, Harvard University. Summing up his view, he sees China's attempt to move to a true market economy probably failing, primarily because such a move will increase the economic freedom of its citizens and diminish the importance of state-owned enterprises. For a one-party state to continue to increase the economic freedom of its citizens forces the party to have to yield power, something that is difficult to imagine occurring given the history of China's current leader.

**Dr. Ferguson likens Saudi Arabia to Iran in 1979 – a state ripe for destabilization**

Possibly very important for energy investors, Dr. Ferguson likens Saudi Arabia to Iran in 1979 – a state ripe for destabilization. Maybe that is what we are seeing now – the early signs of a destabilizing political structure. That process may take a long time to unfold, but the outcome could bring a radically different country, region and possibly a very different global energy industry.

**Dr. Ferguson also worries about Americans' love-affair with regulation**

Dr. Ferguson also worries about Americans' love-affair with regulation, which in his view is a key reason why our economic growth rate is suffering. He points to Dodd-Frank and the Affordable Care Acts as major contributors to the strangulation of the economy. Now we are facing the prospect of the Trans-Pacific Partnership Agreement, which is a larger document than Dodd-Frank, suggesting it will not bode well for the economy as result of the flood of regulations that will be forthcoming.

When questioned about why U.S. economic growth has remained so anemic, Dr. Ferguson discussed three possible theories to explain it. First is the seven-year hangover effect of the regulatory and policy response to the 2008 financial meltdown. His second theory is that we are just mired in a secular-stagnation phenomenon. Unfortunately, he offered no explanation of why that might be and

**This theory says that American economic growth is strong at times of national strength and low at times of national weakness**

how it could be solved. His third explanation, and his favorite, is the geopolitical one. This theory says that American economic growth is strong at times of national strength and low at times of national weakness. In his view, we are certainly enmeshed in the latter. In discussing this broad topic, Dr. Ferguson offered three thoughts that we are quoting below.

"There are deleterious consequences if the leading power in the world abdicates its leadership role."

"Global order and stability need to be underwritten. It doesn't just happen spontaneously."

"A world in which the U.S. yields regional power to China or Russia is one in which the rule of law is driven back."

**They also have a serious internal problem given the flood of refugees that they cannot stem and which will become a burden and not a demographic savior**

These statements are profound and have implications for how the global economy may evolve in 2016. Dr. Ferguson sees the Middle East being particularly challenging as the threat of violent instability will increase in the region and probably affect Saudi Arabia. That was a prescient observation in light of the past week's events. Whether Saudi Arabia plays out like Iran in 1979 remains to be seen. But these statements also have implications for Europe, where Dr. Ferguson sees serious problems. While Europe would like to play a significant role in Syria, the fact that they have shrunk their military capability means they cannot be a meaningful player. They also have a serious internal problem given the flood of refugees that they cannot stem and which will become a burden and not a demographic savior. He also believes that a major problem is in what he calls the fifth column in Europe – people who are not loyal to their European states even though they are second or third generation citizens. The inability of European countries to assimilate these immigrants and refugees into their populations is an Achilles heel for political stability. Dr. Ferguson flat-out states: "Europe's problems are unsolvable." It is this very issue that is at the heart of America's immigration debate.

**The lack of oil price response may signal that we have crossed a tipping point at which the world foresees oil demand falling in step with or faster than oil production declines**

Surprisingly all these near and long-term problems have not found their way into higher crude oil prices. Historically, they would have injected some fear premium to global oil prices. The lack of oil price response may signal that we have crossed a tipping point at which the world foresees oil demand falling in step with or faster than oil production declines. There are a number of reasons why this could be the case – both short-term and long-term factors. Energy execs need to be considering that possibility in their strategic planning.

## Oil Prices: Darkest Before Dawn Or Entering A Black Hole?

Last Thursday, the near-month crude oil futures price sank to a low of $32.10 a barrel in early morning trading following a collapse in Chinese stock markets. The turmoil in China's financial markets last

week raised fears that the country's energy demand might be weaker in 2016 than forecasters have projected. That possibility, coupled with U.S. oil and product inventory data that surprised oil traders resulted in them driving oil prices down. Year-end inventory data is notoriously squirrely due to reporting deadlines during the holidays and a desire of refiners to minimize inventory levels subject to local taxation at the end of the year.

**Explanations for such a large build include that driving may have been impacted by the bad weather and flooding in the middle of the United States**

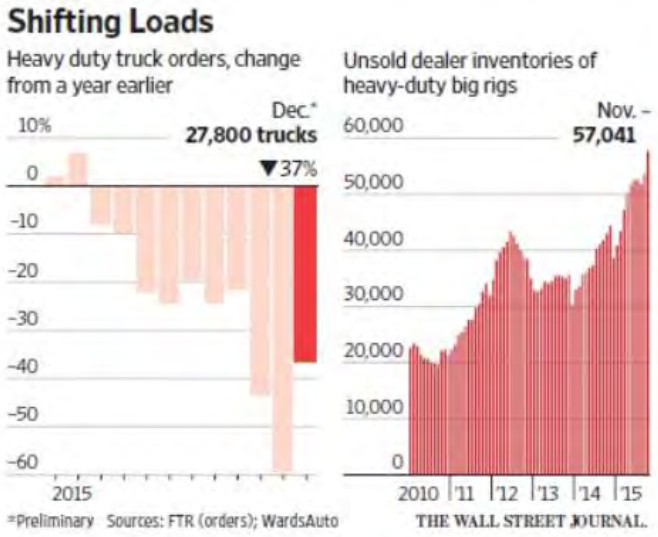
The weekly U.S. oil inventory survey showed a decline of 5.1 million barrels of crude oil compared to analysts' expectation of a small increase. More noteworthy was the fact that crude oil inventories at Cushing, Oklahoma increased by nearly one million barrels. The problem for the oil market last week was that product inventories built. Gasoline inventories increased by 10.6 million barrels, the largest weekly increase since 1993. Explanations for such a large build include that driving may have been impacted by the bad weather and flooding in the middle of the United States. The flooding may also have prevented service stations from being resupplied meaning that inventory, which would normally be in underground tanks at these outlets, remains in above-ground storage tanks at refineries or transshipment points such as Cushing.

**Low diesel prices have encouraged fleet owners to delay purchasing more fuel-efficient trucks as low prices offset the benefit of more fuel-efficient engines, given their cost**

In addition, distillate inventories grew by 6.3 million barrels last week, partly a reflection of the unseasonably warm winter being experienced throughout the Midwest and Northeast, the primary markets for heating oil, which is a component of the distillate figure, and also due to the Midwest flooding. Another interesting point dealing about distillate demand was an article in the *Wall Street Journal* pointing out how over-the-road diesel truck sales have lagged despite, or in response to, low diesel prices. Low diesel prices have encouraged fleet owners to delay purchasing more fuel-efficient trucks as low prices offset the benefit of more fuel-efficient engines, given their cost. A route cause for the diesel truck sales decline has been lagging transportation loads due to a softer than anticipated economy, reflected in weak retail sales. The article pointed out that truck sales improved in December compared to November, which some people believe may be signaling that the truck market is stabilizing. On the other hand, the pick-up in truck sales may reflect companies desiring to capture year-end tax benefits.

After considering the inventory change estimates for other oils, the huge gasoline and diesel fuel builds, combined with the crude oil inventory decline, resulted in an increase in total petroleum inventories in the U.S. of 7.3 million barrels, excluding crude oil in the Strategic Petroleum Reserve, a 14% increase from a year ago.

**Exhibit 13. Truck Sales Not Helped By Low Diesel Prices**




**Source:** ***Wall Street Journal***

**Underlying these optimistic forecasts, however, is the assumption for oil demand to continue growing, albeit at a slower rate than in 2015**

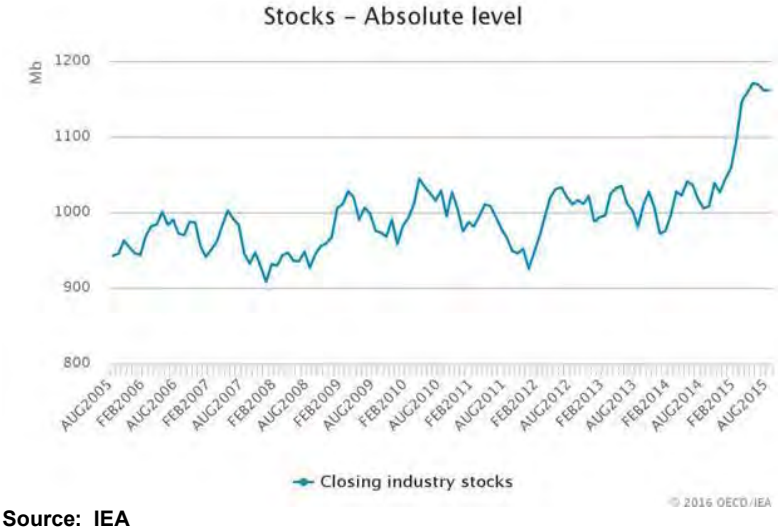
Oil price forecasts are being adjusted. In most cases the price adjustments have been down for 2016, especially given expectations for significantly lower prices in the first quarter. In other cases, forecasters are holding to their previous outlooks even though prices during the latter part of 2015 and in the first week of 2016 have been well-below their predictions. Those forecasters are optimistic, expecting oil prices to reach $70-$80 a barrel by the end of 2016. Their optimism is based on two considerations: the world's oil market is only between 1.5 to 2.0 million barrels-a-day oversupplied, or no more than 2%, and that current low oil prices will result in production falling sharply this year more than offsetting the additional Iranian oil possibly entering the market following the lifting of economic sanctions as a condition of the nuclear agreement. Underlying these optimistic forecasts, however, is the assumption for oil demand to continue growing, albeit at a slower rate than in 2015. For us, that assumption may prove to be the weak point in the optimists' forecasts.

**There remains the overhang of global oil inventories that continue to swell due to the global overproduction**

The creator of the "lower for longer" scenario, BP plc's (BP-NYSE) CEO Robert Dudley was interviewed at year-end by a reporter with the BBC during which he began to qualify his view. "A low point could be in the first quarter [of 2016]." Given developments in the global oil market during the first few days of 2016, this looks like a good call. Mr. Dudley went on to say, "But 2016's third and fourth quarters could witness a more natural balance between supply and demand, after which stock levels could start to wear off." If that proves to be the case, it implies that oil prices should begin rising during the second half of 2016. However, there remains the overhang of global oil inventories that continue to swell due to the global overproduction. According to the International Energy

Agency's (IEA) latest total (crude oil plus refined products) inventory figures for the OECD countries as of October 2015, there were 2,971 million barrels in storage. Crude oil inventory totaled 1,181 million barrels. As shown in Exhibit 14, the amount of crude oil in storage grew dramatically last year.

**Exhibit 14. World Petroleum Inventories**




**Source: IEA**

**If we compared the July data when 2015 was at 30 days and the prior three years that were at 27 days, those three additional days represent nearly 300 million extra barrels of oil**

A different way of looking at the crude oil inventory situation is to measure it on the basis of days of inventory in storage. Exhibit 15 (next page) shows this data for 2012 through August 2015. While one might think that 30-31 days of forward inventory cover is not meaningful, if we compared the July data when 2015 was at 30 days and the prior three years that were at 27 days, those three additional days represent nearly 300 million extra barrels of oil. To eliminate that additional supply, global oil demand needs to increase by nearly one million barrels a day, or 1% growth in existing oil demand, which just happens to be the long-term average increase in global oil consumption experienced since the 1980s. While consistent with the oil market's long-term growth rate, reducing the oversupply assumes that supply stops growing, which we know may not happen due to the return of Iranian production plus efforts of other producing countries to boost output to offset lower oil prices.

BP's Mr. Dudley suggested that this supply overhang will prevent a meaningful snapback in global oil prices. As he told the BBC, "Prices are going to stay lower for longer, we have said it and I think we are in this for a couple of years." He reiterated the obvious when he stated: "For sure, there is a boom-and-bust cycle here."

Mr. Dudley addressed a comment by Mark Carney, the governor of the Bank of England, in a speech last fall about the potential risk that investors face from lost value at energy companies due to limits being placed on the burning of fossil fuels. He said this overstated

**Exhibit 15. 300 Million Barrels Excess Oil Inventories**


**Source: IEA**

**His peers are facing a similar shock as they confront business models that no longer work or industry conditions contrary to expectations**

the case. Mr. Dudley went on to discuss the fallout on BP from the Deepwater Horizon accident in 2010. He called the event "a near-death experience" that shook the company "to its core" and prompted it to make substantive operational changes. "It was a forced focusing down of what we do," said Mr. Dudley. "It was 'this is what we need to do to survive.'" That introspection led BP to dispose of many assets considered non-core for the company's survival. It led to the establishment of an exploration and production unit designed to mimic the operational characteristics of independent E&P companies. Many of Mr. Dudley's peers are now engaged in similar exercises to what BP underwent in order to survive. His peers are facing a similar shock as they confront business models that no longer work or industry conditions contrary to expectations. Fortunately for them, no one has died. Wishing and hoping are no longer appropriate corporate strategies – surviving is the only one that matters now.

# Just When You Thought Keystone XL Was Dead, It Arises

**We offered the observation that there might be legal challenges in the future**

In our last article discussing the denial of the construction permit for building the segment of the Keystone XL pipeline that would have crossed the border between Canada and the United States, we offered the observation that there might be legal challenges in the future. While we had no inside information, the statements made by senior TransCanada Ltd. (TRN-NYSE) officials at the time President Barack Obama rejected the permit application indicated that it would pursue all its options including legal ones.

In an announcement early last week, TransCanada disclosed that it had filed a Notice of Intent to initiate a claim under Chapter 11 of the North American Free Trade Agreement (NAFTA) arguing that the

decision to deny a Presidential Permit for the Keystone XL Pipeline was arbitrary and unjustified. TransCanada is asking for $15 billion in damages. The company also announced that it had filed a lawsuit in the U.S. Federal District Court in Houston asserting that the President's decision to deny construction of Keystone XL exceeded his power under the U.S. Constitution.

**There are over 3,000 operators of pipelines involved in gathering, transmission and distribution of natural gas along with over 200 operators of hazardous liquid pipelines**

While Keystone XL would have added nearly 1,100 miles of new liquid pipeline capacity to the nation's existing pipeline network, it would have been a very small increment. As of 2013, the U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration reported that there were over 2.3 million miles of oil and gas pipeline crisscrossing the continental United States. Most of the pipelines are involved in natural gas, as there are only about 155,000 miles of pipelines transporting hazardous liquids, which includes oil and bitumen such as Keystone would have carried. There are over 3,000 operators of pipelines involved in gathering, transmission and distribution of natural gas along with over 200 operators of hazardous liquid pipelines. Given the organizational structure of companies involved in the pipeline and petroleum transportation business, there are actually many fewer pipeline-owning entities. The point is that Keystone would have been a large and certainly high-profile pipeline project, it represented a small increment to the industry structure in the U.S.

**Understand that we are at the start of this journey, which will take years, not days or weeks to unfold**

Mainstream energy reporters have descended on the legal profession seeking their interpretation of the validity of the filings and estimates for the likely outcomes. Understand that we are at the start of this journey, which will take years, not days or weeks to unfold. As with most legal proceedings, there will be a few moments of high drama with long spells of nothing happening. We know, however, that the lawyers will be working constantly to keep their expense meters running. Therefore, expect (and we are sure TransCanada anticipates) a huge expense by the time this journey ends, whatever the outcome.

**We suspect the federal case was necessary to strengthen the NAFTA claim**

Many of the lawyers quoted by the media believe the federal case has merit since it treads in the political arena and the area of the Constitution dealing with separation of powers between the executive and legislative branches of government. That is an area with little definition and an area federal courts are reluctant to enter. While we tend to agree with that conclusion, we suspect the federal case was necessary to strengthen the NAFTA claim.

**The claim states that the standards used to deny the permit were not the standards required to be met by the pipeline application**

The NAFTA claim will involve arbitration, meaning it is open to arguments that might not meet the legal standards of a court trial. The claim states that the standards used to deny the permit were not the standards required to be met by the pipeline application. In fact, as TransCanada points out, the State Department's environmental reports concluded that Keystone would not significantly increase greenhouse gas emissions. In fact, they would be greater if

**The NAFTA claim opens the door for consideration of the science surrounding global warming and climate change**

alternative methods for transporting the oil and bitumen were used. The denial was based not on the merits of the project, but rather the symbolism of the President's leadership role in the international community considering actions to counter global climate change. The NAFTA claim opens the door for consideration of the science surrounding global warming and climate change, something that has become more tenuous in light of new studies challenging the direct link between carbon emissions and global temperatures. We know that TransCanada officials are passionate about this argument, so we are sure they will welcome that debate.

**"You won't have Nixon to kick around anymore."**

For many people who thought Keystone was dead, they will view these legal challenges as representing a scene from a "Walking Dead" episode. But possibly Keystone will become Lazarus. It is possible Keystone will follow the path of Richard Nixon. In his final press conference in November 1962, after failing to win the California gubernatorial election, he told reporters: "You won't have Nixon to kick around anymore." Au contraire. We did get to kick Nixon around again after he won the presidency, ended the Viet Nam War and established our relationship with China. He then self-destructed with the Watergate burglary and cover-up, becoming the first president to be forced to resign his office. Might Keystone provide as colorful a future for us?

# Other Recent Industry Developments Of Note:

## EPA's Verdict On Fracking Called Into Question

**The study was viewed as vindication of the technique to tap the oil and gas resources trapped in shale formations throughout the United States and the world**

The preliminary results of last June's EPA study that determined hydraulic fracturing causes no widespread harm to drinking water are now being challenged. The study was viewed as vindication of the technique to tap the oil and gas resources trapped in shale formations throughout the United States and the world. These results are being questioned by the EPA Science Advisory Board. The 31 scientists on the panel concluded from their review of the report that "Major findings are ambiguous or are inconsistent with the observations/data presented in the body of the report."

**The EPA has stated it will use these comments along with those from the public to "evaluate" possible changes to the report**

The Advisory Board's official recommendations on the report and its findings are to be released later this month. These recommendations are not binding on the EPA and the agency is not required to change its findings to accommodate them. The EPA has stated it will use these comments along with those from the public to "evaluate" possible changes to the report. David Dzombak, an environmental engineering professor at Carnegie Mellon University and the head of the review panel, said that the main finding of the report that there was no evidence that fracking has led to "widespread systemic impacts on drinking water" requires clarification.

**As expected, the petroleum industry is pushing back on these critical comments**

These comments from the scientists, if reported accurately, seem to question the basic conclusion by pointing to outlier events and "limited" data and studies supposedly available to the agency. As expected, the petroleum industry is pushing back on these critical comments, especially since some of them come from active litigation over possible water contamination by petroleum operations and are obviously presented in a light to help claimants in their trials.

**Current oil prices have done significant damage to the fracking effort and will eventually lead to less domestic oil production**

Current oil prices have done significant damage to the fracking effort and will eventually lead to less domestic oil production. The economic benefit for the nation has suffered, and will suffer further as long as oil prices stay low. If we find that fracking is stifled by these charges against the extensive scientific review conducted by the EPA, our environmental defender, then the nation's economic future could be at greater risk.

## Saudi Aramco To Be Floated On Stock Market?

Last Thursday, Deputy Crown Prince Muhammed Bin Salman, the son of the Saudi Arabian king, gave an interview to the *Economist* magazine in which he said that an initial public offering of Saudi Aramco "is being reviewed." He further stated that "We believe a decision will be made over the next few months. Personally, I'm enthusiastic about this step. I believe it is in the interest of the Saudi market, and it is in the interest of Aramco."

**This is an interesting position and gives further credence to the view that the Prince has become the Kingdom's power broker and is likely the primary driver behind the recent actions initiated by his father, King Salman**

During the interview, Crown Prince Muhammad offered the following view: "It is for the interest of more transparency, and to counter corruption, if any, that may be circling around Aramco." This is an interesting position and gives further credence to the view that the Prince has become the Kingdom's power broker and is likely the primary driver behind the recent actions initiated by his father, King Salman, including the execution of 43 Sunni jihadists, three Shiite jihadists and the dissident Shia cleric Nimr al-Nimr, all of whom were reportedly judged by courts to be terrorists. Those executions, especially that of Sheik al-Nimr, spurred violent reactions among the Shiite population in Saudi Arabia and throughout the Middle East, in particular in Iran, where the Saudi Arabian embassy in Tehran was attacked and burned. In retaliation, Saudi Arabia severed its diplomatic relations with Iran and ordered its diplomats home.

**Only 5% of the company's shares would be sold and they would be sold on the newly-opened Saudi Arabian burse**

Whether the review of Saudi Aramco leads to a recommendation to float the company in a public stock sale or not, the announcement that it is being considered appears to be part of a broader policy move. Saudi Aramco later confirmed the review and floatation consideration. Only 5% of the company's shares would be sold and they would be sold on the newly-opened Saudi Arabian burse, which would boost the importance of that exchange. We have no idea what the transparency standards are for Saudi companies traded on the country's stock exchange. Analyst estimate that because Saudi Aramco has 268 billion barrels of crude oil (this figure seems to

**These claims are ludicrous because they ignore issues of comparability**

ignore any natural gas reserves owned by the company), the world's largest reserves, it would be worth 11-20 times the value of ExxonMobil Corp. (XOM-NYSE), which only has 13.7 billion barrels of oil as of year-end 2014. These claims are ludicrous because they ignore issues of comparability such as the small float, lack of transparency, questions about a dividend, and the geopolitical risks associated with the Middle East and the potential for an overthrow of the Royal Family.

**Image that on the final day of President Barack Obama's term in office next January 21, 2017, we find that Iran has become America's best friend and ally in the Middle East while Saudi Arabia is our enemy**

Although a small floatation would bring additional cash to the Kingdom to help it weather the current low oil prices, the Prince's statement about transparency and corruption around Saudi Aramco plus Sheik al-Nimr's execution are designed to put dissidents on notice that the leadership views harshly people who are dishonest and/or anti-government. We plan on conducting a deeper analysis into these events and the strategy of the Saudi Royal Family. Being provocative, however, image that on the final day of President Barack Obama's term in office next January 21, 2017, we find that Iran has become America's best friend and ally in the Middle East while Saudi Arabia is our enemy.

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