
MUSINGS FROM THE OIL PATCH

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Note: *Musings from the Oil Patch* reflects an eclectic collection of stories and analyses dealing with issues and developments within the energy industry that I feel have potentially significant implications for executives operating and planning for the future. The newsletter is published every two weeks, but periodically events and travel may alter that schedule. As always, I welcome your comments and observations. Allen Brooks

President Trump, The U.S. Dollar And Crude Oil Prices

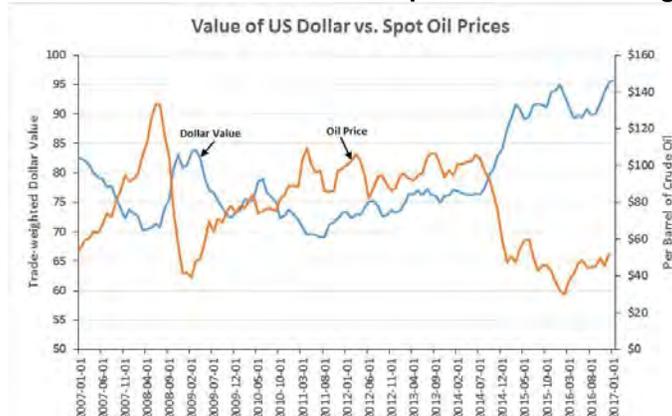
The value of U.S. currency has an impact on the price of crude oil since this global commodity is priced and transacted in U.S. dollars

One of the variables that will influence crude oil prices is the value of the U.S. dollar. In recent years, the change in the dollar's value has become the default explanation for daily movements of oil prices. There is no question that the value of U.S. currency has an impact on the price of crude oil since this global commodity is priced and transacted in U.S. dollars. In recent years, there has been an outsized focus on this relationship because the correlation between the daily changes in the value of the dollar and the price movements of West Texas Intermediate oil prices was extraordinarily high.

The chart in Exhibit 1 shows the relationship between the trade-weighted average value of the U.S. dollar and spot oil prices for the decade 2007-2016. In 2007, you can see the tail end of the long decline in the dollar's value. As seen in the chart, the dollar's value experienced a brief run up during 2008 driven by the fear factor associated with the financial crisis and the rapid response of U.S. government and monetary authorities addressing policies designed to help heal the economy. After that, the value of the dollar began sliding again until 2011, when it hit its all-time low. From that point forward, the dollar's value began rising slowly until it accelerated in 2014.

In early 2016 the dollar's value peaked and fell at exactly the same time that the price of oil stopped declining and began climbing

In a broad context, between 2008 and 2014 there was an extended period of a stable, but low dollar value. At the same time, this period was marked by a fairly stable, but high oil price. It was only during 2014 and thereafter that the dollar's value began shooting higher while oil prices crashed. What is an amazing visual is to see how in early 2016 the dollar's value peaked and fell at exactly the same time that the price of oil stopped declining and began climbing.

Exhibit 1. Dollar Movements Explain Oil Price Changes

Source: EIA, St. Louis Fed, PPHB

There is no question that currency values do play a role in the pricing of all commodities traded worldwide. When the U.S. dollar is rising in value (strong), it takes more foreign currency to acquire a single U.S. dollar, meaning that the commodity becomes more expensive for foreigners to buy. This tends to depress demand for the commodity, in this case crude oil. On the other hand, when the U.S. dollar is declining in value (weak), it takes less foreign currency to acquire a dollar, which tends to increase demand for commodities as they have become cheaper for foreigners to purchase.

The official United States government policy has been that a strong U.S. dollar is a positive for the nation's economy

The recent strengthening of the U.S. dollar since the election of Donald J. Trump as the 45th President of the United States is attributable to the belief that his administration will successfully boost the U.S. economic growth rate. The official United States government policy has been that a strong U.S. dollar is a positive for the nation's economy. This mantra is repeated religiously by government leaders while they also are cheering on economic and monetary policies that produce the opposite result. How can that be? Easy. If the weak dollar economic and/or monetary policies will help with other aspects of an administration's agenda, only lip service will be paid to the strong dollar policy.

The Obama administration cheered on the Fed's policy of pumping money into the domestic economy in order to keep consumers buying houses and automobiles that are dependent on cheap financing

That approach to a strong dollar policy was clearly evident during the Obama administration when the zero-interest rate monetary policy of the Federal Reserve was thought to be much more important for stimulating economic growth. The Obama administration cheered on the Fed's policy of pumping money into the domestic economy in order to keep consumers buying houses and automobiles that are dependent on cheap financing. Unfortunately, that strategy never produced the economic growth the government desired.

Last week, President-elect Trump became involved in the foreign exchange market when he commented to reporters for the *Wall*

The editors pointed out the hypocrisy of the government espousing a strong dollar policy while secretly pushing economic and monetary policies that foster a weaker dollar

“The strong dollar buoyed U.S. living standards while keeping the price of oil and other commodities low”

From the viewpoint of the WSJ editors, Mr. Trump’s focus should be directed to getting the economy growing faster again

Street Journal that the value of the dollar had gotten too strong based on its performance since the election and that its strength was hurting America companies’ competitive position vis-à-vis China. His comments caused a 1% decline in the value of the dollar the following day. Two days later, the *Wall Street Journal* editorialized with “The Trumped-Up Dollar” in which the editors pointed out the hypocrisy of the government espousing a strong dollar policy while secretly pushing economic and monetary policies that foster a weaker dollar. They also suggested this hypocrisy was why presidents didn’t talk about the value of the dollar since their comments could impact its value, best left to the Secretary of the Treasury.

What was most interesting about the editorial was its review of the history of the U.S. economy during a strong dollar period. The editors wrote: “The 1980s and 1990s were eras of rapid U.S. growth—including 4% a year over several years. Foreign capital poured into the U.S. chasing new business opportunities. The strong dollar buoyed U.S. living standards while keeping the price of oil and other commodities low. It isn’t far-fetched to think that a gasoline price of 90 cents a gallon helped Mr. Clinton survive impeachment.”

The editors went on to say: “The point for Mr. Trump to keep in mind is that a strong dollar is likely to follow the passage of his pro-growth policies. Tax reform could bring hundreds of billions of dollars home from overseas. Deregulation will make the U.S. a lower-cost place to do business. Capital will inevitably flow to the U.S.”

In closing, the editors offered some advice to President-elect Trump. Their advice centered on what will happen for middle-class voters who have been struggling with jobs and wages. They pointed out that if the economy can grow at 3% a year, up from the 2% average of the Obama years, the labor market will tighten and wages will take off. This will largely benefit the middle-class voters who helped elect Mr. Trump. From the viewpoint of the *WSJ* editors, Mr. Trump’s focus should be directed to getting the economy growing faster again. About the value of the dollar, the editors suggested, “You can worry about the strong dollar later – or never.”

The recitation of the relationship of the strength of the dollar’s value and economic growth and the price of commodities during the 1980s and 1990s prompted us to go back and look at the history of oil prices. Unfortunately, the dollar value data series only went back to 1973. We decided to plot that data series on a chart we have previously prepared showing the nominal and real price (inflated by the Consumer Price Index) of crude oil from 1947 through April 2016.

What the chart shows is that oil prices peaked in 1980 when the value of the dollar reach a low point. The dollar value rose steadily

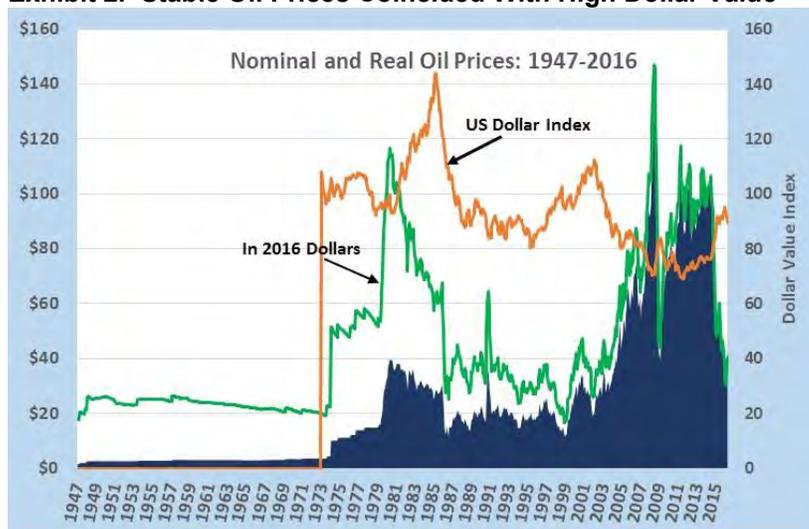
During 1995-2000, the dollar's value rose steadily, but oil prices rebounded from around \$15 a barrel to nearly \$30

Oil prices were relatively stable and the oil industry slowly recovered from its depression

until it peaked in March 1985, about the same time OPEC's resolve to support higher oil prices dissolved and the price subsequently collapsed. By 1986, the dollar value stopped dropping sharply and essentially slid lower over the next decade. During 1995-2000, the dollar's value rose steadily, but oil prices rebounded from around \$15 a barrel to nearly \$30. From that point forward, the dollar's value declined and oil prices began their march to \$140 a barrel.

The history of the dollar and commodity price relationship cited in the *WSJ* editorial showed that the dollar was either flat or rising during the period from the bottom of oil prices in 1985 to the end of the century. During that time span, oil prices were relatively stable and the oil industry slowly recovered from its depression caused by the collapse of OPEC's control over global oil prices.

Exhibit 2. Stable Oil Prices Coincided With High Dollar Value



Source: EIA, St. Louis Fed, PPHB

If faster economic growth and a stronger dollar happens again, don't be surprised if oil prices only trade in the \$50 to \$60 a barrel range for years

Based on the advice of the *WSJ* and the possibility that the new Trump administration is successful instituting a growth strategy for the U.S. economy, what will be the impact on oil prices? Faster economic growth such as experienced during the 1980s and 1990s that led to a stronger U.S. dollar didn't help oil prices, but stability for the industry eventually allowed it to recover from the 1981 bust. If faster economic growth and a stronger dollar happens again, don't be surprised if oil prices only trade in the \$50 to \$60 a barrel range for years. Those commentators seeking to explain daily movements in oil prices might have to find another explanation than the movements in the value of the dollar.

The Regulatory Mess Left By The Obama Administration

Reports have surfaced that the Trump administration is planning a drastic overhaul of our federal bureaucracy both as a cost reduction measure and a return to governing by the rule of law

Our crude oil initially fueled Britain's war efforts and ultimately the America military effort in Europe

After the war, these pipelines became the foundation of our national natural gas transportation infrastructure, which today reaches to every corner of the country

Yes, there was a home on my street that heated with coal until 1958

Donald J. Trump is now the 45th President of the United States. He has embarked on his mission to disrupt the status quo of the “deep state” of America’s government. Reports have surfaced that the Trump administration is planning a drastic overhaul of our federal bureaucracy both as a cost reduction measure and a return to governing by the rule of law. Over the years, various pressure groups have benefited and been harmed by the actions of officials ensconced within the deep state – the energy industry being one.

For many years from the 1950s through the 1990s, the deep state (bureaucracy) worked with the oil and gas industry to foster the industry’s development and expansion as actions and decisions supported a critical sector for U.S. economic growth, improved Americans’ lifestyles and the nation’s international status. The early years of this helped reflect the respect and gratitude Americans felt toward the domestic oil industry in helping to win World War II. Our crude oil initially fueled Britain’s war efforts and ultimately the America military effort in Europe. Eventually, our oil also provided the power for our army, navy and air force to battle Japan in the Pacific. Tankers regularly hauled oil from Texas ports to Europe, risking attacks by German U-boats. Growing up, I remember my mother and father describing days during the war when the waters of Long Island Sound had a sheen from the oil released when tankers on their way to Europe were sunk off Long Island.

In response to that danger the industry constructed the Big Inch and Little Inch pipelines for hauling oil and petroleum products from Texas and Oklahoma to the East Coast to minimize the risk of tankers being attacked on their journeys from the Gulf Coast. After the war, these pipelines became the foundation of our national natural gas transportation infrastructure, which today reaches to every corner of the country. The ability of the natural gas transportation industry to grow and expand was enhanced by the close working relationship the companies established with the regulators – first the Federal Power Commission (FPC) and then with the Federal Energy Regulatory Commission (FERC).

As youngster, I remember when natural gas pipelines reached Connecticut and residents began switching from oil and coal to natural gas for heating homes. Yes, there was a home on my street that heated with coal until 1958 and I watched the coal trucks deliver loads to the basement of that home – coal dust and all. Natural gas for heating was considered a significant improvement over heating oil and coal because gas was cleaner burning, something I learned by reading the billboards and newspaper ads.

During the 1970s two energy crises, there was a close working relationship between the energy industry and the government. It started when Bill Solomon, the nation’s first energy czar as head of

The revamping of the American energy landscape began in earnest, driven by the sudden realization that our energy gluttony could no longer be sustained

the Federal Energy Administration (FEA), became involved in dealing with the U.S. government's response to Arab Oil Embargo during the summer of 1973. The revamping of the American energy landscape began in earnest, driven by the sudden realization that our energy gluttony could no longer be sustained. Huge tailfin cars with mid-single-digit mile-per-gallon performance could no longer be tolerated. Homes with little or no insulation couldn't be sold. More efficient appliances were needed. An energy transformation was underway.

The 1973 oil embargo spurred efforts to further improve the energy efficiency of the nation's transportation system

We would suggest that the fallout from the Arab Oil Embargo marked a turning point in energy regulation. By the time the FEA was created, the Environmental Protection Agency (EPA) was firmly established and, with the enactment of the Clean Air Act in 1970 and the Clean Water Act in 1972, the organization was well on its way to curbing pollution and improving fuel efficiency. The 1973 oil embargo spurred efforts to further improve the energy efficiency of the nation's transportation system. In the fall of 1973, the EPA created new transportation controls over some of the nation's largest cities such as Los Angeles, Boston and Dallas, along with others. It developed a mass transit incentive plan for California employers as well as developing dedicated bus lanes and bypass lanes for busses and carpools.

The methodology of regulation involved determining the appropriate "cost-of-service" and then a "fair" profit rather than the value of the service

As the energy industry discovered over time, regulation of its industry fell into the usual routine of addressing issues after they had become a problem. Often times, the new regulations only hastened the development of new problems for the industry that necessitated additional regulations. Possibly the worst example of this phenomenon was the regulation of natural gas. A 1954 Supreme Court decision extended the regulatory power of the FPC over pipeline contracts with their customers to the contracts between pipelines and their natural gas suppliers. The methodology of regulation involved determining the appropriate "cost-of-service" and then a "fair" profit rather than the value of the service. This approach might have worked if the interstate natural gas industry had remained small, but as it grew and the number of producer contracts mushroomed, rate cases became backlogged. In 1959, there were 1,265 rate cases filed, but the FPC could only resolve 240 of them.

By 1970, only two of the five regions had permanent prices established

To remedy this problem, in 1960 the FPC moved to established natural gas wellhead prices on a regional basis. It established five geographic regions where it would apply one price for all wells in that region. The FPC established interim wellhead price ceilings based on the average contract price paid in the region for 1959-1960. These interim price-ceilings were to remain in place until the FPC was able to determine a "just and reasonable" rate for all the wells in a region. Unfortunately, it took much longer than anticipated for those permanent rates to be established. By 1970, only two of the five regions had permanent prices established, but the prices were

It also recognized that rates based on previous cost-of-service methodology were too low, so it set a national price-ceiling of \$0.42 per thousand cubic feet of natural gas, which doubled the price of 1960

The entire interstate pipeline system was essentially bankrupted and then restructured as a result of the efforts necessary to unwind the financial obligations the companies had assumed

That freedom increasingly allowed regulators to act without needing to, or being obliged to, engage in rule-making procedures

based on 1959 levels, which did not reflect the value of natural gas in the interstate market.

By 1974, the FPC determined that it needed to establish a nationwide natural gas price-ceiling. It also recognized that rates based on previous cost-of-service methodology were too low, so it set a national price-ceiling of \$0.42 per thousand cubic feet of natural gas, which doubled the price of 1960. However, even with the higher price ceiling, that price was not competitive with the value of the gas sold into the interstate gas market. In fact, in states such as Texas and Louisiana there was a growing intrastate natural gas market where prices were unregulated, but readily available. Natural gas was selling for \$5 to \$8 per thousand cubic feet, resulting in gas explorers committing their gas to intrastate buyers rather than interstate buyers. This two-tiered natural gas pricing situation resulted in less gas being dedicated to interstate pipeline companies, and less drilling in areas where gas could only be dedicated to interstate pipelines. With dwindling volumes of natural gas available to interstate pipeline companies, supply shortages developed, especially during the winter months. Since residential gas service was considered a priority, industrial gas users were shifted to interruptible contracts resulting in them losing their gas supply whenever severe cold weather developed. This was an untenable solution and forced industrial customers to seek other fuel supply sources and/or to move their companies from these gas-short regions to those states that had adequate supplies.

Suffice it to say, the backward looking regulatory mechanism was constantly in a state of flux and adjustment. With each new form of regulation introduced, new problems developed shortly thereafter. Some of the pipeline regulatory schemes designed to ensure adequate long-term natural gas supplies arrived shortly before demand for gas fell. Pipeline companies obligated to either take or pay for those contracted volumes of gas suddenly found themselves at risk of failing financially under the mountain of obligations to pay for gas they could not use. The entire interstate pipeline system was essentially bankrupted and then restructured as a result of the efforts necessary to unwind the financial obligations the companies had assumed. Many of the solutions to these failed regulatory programs came as a result of the companies working proactively with the regulators.

Fast forward to the recent administration, we find that many of the deep state officials were enthusiastic supporters of former-President Barack Obama and his philosophy for using regulations to advance his social goals. Over the past 20 years or so, the Congress has done less and less writing of detailed legislation and passing more broadly thematic laws, leaving the details and interpretations of the law up to the regulators entrusted with enforcing the legislation. That freedom increasingly allowed regulators to act without needing to, or being obliged to, engage in rule-making procedures as

prescribed by long-standing administrative law. These government officials were merely following the lead of the president who redefined his powers and enacted many laws on his own, many of which were later rejected by the federal courts, as others remain in limbo in the legal system.

This brings us to one of the more egregious examples of regulatory disdain for the rule of law under which agencies work. According to an article by John Hinderaker in the *PowerLine* newsletter, “In 2014, Murray Energy Corporation and several of its affiliates sued EPA Administrator Gina McCarthy, alleging that the EPA was in violation of 42 U.S.C. § 7621, § 321(a) of the Clean Air Act, which requires the agency to “conduct continuing evaluations of potential loss or shifts of employment which may result from the administration or enforcement of the provision of [the Clean Air Act] and applicable implementation plans, including where appropriate, investigating threatened plant closures or reductions in employment allegedly resulting from such administration or enforcement.””

Judge Bailey ordered the EPA to comply with the Clean Air Act

The case was filed in West Virginia and is being heard by U.S. District Judge John Preston Bailey. In 2016, the parties filed cross motions for summary judgment. On October 17, 2016, Judge Bailey denied the government’s motion and granted Murray’s motion, which means that Murray won the case. Judge Bailey ordered the EPA to comply with the Clean Air Act. He gave the EPA 14 days to file a plan and schedule for compliance with the requirements under the applicable section of the law. This means the judge wants to see a plan from the EPA that will address the issue of the effects of its regulations on the coal industry.

“This response is wholly insufficient, unacceptable, and unnecessary,” Judge Bailey wrote

According to Mr. Hinderaker, the EPA responded to the court with a filing that said it never carries out the sort of economic assessments specified in § 321(a), and it would take two years for it to devise a methodology to do so. The EPA’s response caused Judge Bailey to unload on the agency. “This response is wholly insufficient, unacceptable, and unnecessary,” Judge Bailey wrote.

Judge Bailey said the EPA is required by law to analyze the economic impact on a continuing basis when enforcing the Clean Air Act

Judge Bailey said the EPA is required by law to analyze the economic impact on a continuing basis when enforcing the Clean Air Act and McCarthy’s response “evidences the continued hostility on the part of the EPA to acceptance of the mission established by Congress.” He ordered the EPA to identify facilities harmed by the regulations during the Obama presidency by July 1, including identifying facilities at risk of closure or reductions in employment.

As the judge further wrote, “EPA does not get to decide whether compliance with (the law) is good policy”

The EPA contended that analyzing job loss won’t change global energy trends, but that is not the responsibility of the agency. Judge Bailey wrote that the EPA can recommend amendments to Congress if it feels strongly enough that its mission needs to be modified. As the judge further wrote, “EPA does not get to decide whether compliance with (the law) is good policy, or would lead to

too many difficulties for the agency. It is time for the EPA to recognize that Congress makes the law, and EPA must not only enforce the law, it must obey it.”

As we have learned, as well as Judge Bailey, a critical assessment of the implementation of the environmental laws that the EPA is responsible for enforcing has not been done, largely because it is too time-consuming and difficult. However, if a company failed to comply with just such an analysis, the EPA would be quick to assess fines and penalties.

Mr. Pruitt believes in the rule of law and that the EPA would make better progress by operating within the law rather than trying to make new laws

This brings us to the confirmation hearing before the Senate Environmental and Public Works Committee last week in which Oklahoma Attorney General Scott Pruitt, nominated to head the EPA in the Trump administration, was grilled over his climate change denial position, which is more moderate than the statements by President Trump claiming that it is a hoax. Mr. Pruitt was challenged by Massachusetts Senator Ed Markey (Dem): “So Donald Trump is wrong?” Mr. Pruitt responded, “I do not believe climate change is a hoax.” From his testimony and history of suing the EPA over many of its regulations, Mr. Pruitt believes in the rule of law and that the EPA would make better progress by operating within the law rather than trying to make new laws.

The statement went on to say, “President Trump is committed to eliminating harmful and unnecessary policies such as the Climate Action Plan and the Waters of the U.S. rule”

His view was supported by an initial posting on the White House web site following the inauguration of President Trump. All references to climate change have been removed from the web site. Additionally, the Trump administration announced its America First energy plan on the web site, which included a statement saying “For too long, we’ve been held back by burdensome regulations on our energy industry.” The statement went on to say, “President Trump is committed to eliminating harmful and unnecessary policies such as the Climate Action Plan and the Waters of the U.S. rule. Lifting these restriction will greatly help American workers, increasing wages by more than \$30 billion over the next 7 years.” It looks like a new philosophy regarding America’s energy and environment has begun.

A U.S. District Court in Louisiana ruled in a matter of whether the Department of the Interior’s BSEE has the power to issue a NIC or levy a civil penalty against an offshore contractor

In a different venue, the week before Christmas, a U.S. District Court in Louisiana ruled in a matter of whether the Department of the Interior’s Bureau of Safety & Environmental Enforcement (BSEE) has the power to issue a Notice of Incident of Noncompliance (INC) or levy a civil penalty against an offshore contractor. On June 3, 2012, the contractor, Island Operating Co., Inc. was providing laborers on an offshore platform who were working unloading chemicals that spilled and subsequently caught fire. The workers jumped off the unmanned platform, were rescued and the fire was extinguished. This incident was the first time that BSEE used its newly assumed authority to issue an INC to the contractor rather than to the lease-holder as prescribed by the Outer Continental Shelf Lands Act (OSCLA).

The contractor challenged BSEE's authority to issue the INC under OCSLA, and also sought relief under the Administrative Procedure Act (APA) along with several other defenses

When the INC was initially issued in 2013, Island Operating appealed based on its belief that BSEE lacked the authority to issue it under OCSLA. Once BSEE refused to rescind the INC, the contractor filed a notice of appeal with the Interior Board of Land Appeals (IBLA), which affirmed BSEE's issuance of the INC. As the IBLA was the final verdict of the Department of the Interior, the contractor filed suit in the federal court in Louisiana. The contractor challenged BSEE's authority to issue the INC under OCSLA, and also sought relief under the Administrative Procedure Act (APA) along with several other defenses.

By the industry not appealing BSEE's actions, it left the authority to challenge the power up to an INC recipient and in federal court

The question of BSEE's issuance of INCs against contractors is an issue we have been following and commenting on for some time. When BSEE claimed this authority, the question immediately was why it had not complied with the APA procedure announcing the proposed rule and allowing the industry to comment on it before it became institutionalized. By the industry not appealing BSEE's actions, it left the authority to challenge the power up to an INC recipient and in federal court. The case was tried by briefs and interviews with the respective lawyers.

The ruling is a definitive reading of the law and a restriction on BSEE's and the Department of the Interior's efforts to interpret the law

The judge's decision stated that "the plain language of the applicable provisions of the statute, 43 U.S.C. § 1331. *et seq.* did not grant BSEE the authority to enforce OCSLA's regulations against a non-lease-holder or non-permit-holder; here, Island." Because the judge ruled that the basic law (OSCLA) did not allow BSEE to do what it was attempting to do, she did not need to deal with the other defenses such as the APA. The ruling is a definitive reading of the law and a restriction on BSEE's and the Department of the Interior's efforts to interpret the law. That is an important point since the ruling rejected any claims that BSEE's action could be accorded Chevron deference. That was a Supreme Court decision in a case involving the oil company in which the court ruled it would defer to agency interpretations of ambiguous rules. Once again, a federal judge dealing with a matter involving the deep state's use of its regulatory power to legislate new laws was struck down.

Two weeks after the federal judge's ruling in the BSEE case was handed down, the House of Representatives passed a bill to eliminate the Chevron deference

It would appear from the string of recent court defeats for the overly expansive regulatory reach of the Obama administrative officials that the pendulum against the rule of law is now beginning to swing back in its favor. Two weeks after the federal judge's ruling in the BSEE case was handed down, the House of Representatives passed a bill to eliminate the Chevron deference. It has yet to be addressed in the Senate, and we would expect a heated battle there as that legislative body is nearly evenly split politically. Regardless of that outcome, if Mr. Pruitt is approved to head the EPA, it is likely that there will be an extensive re-examination of the many actions by that agency over the past eight years to see if they are compliant with the relevant laws. Given the rest of President Trump's cabinet appointments, we would expect the rule of law to hold a higher position in all the other departments and agencies. What a

refreshing development this will be, especially for executives attempting to plan their long-term corporate strategies.

Trade Of The Decade Was Bet Against Crude Oil

The returns from owning stocks versus bonds, rebased each year to a 100 index, shows almost similar returns – increases of slightly under 100%

Crude oil was the worst performing asset class and along with industrial metals (the commodities sector) lost money

The *Financial Times* columnist John Authers wrote a year-end column in which he examined the investment performance of a number of asset classes including crude oil over the past decade. It is interesting when one takes a long-term perspective on investment returns how often our perception of performance is shaped by recent performance. For example, the returns from owning stocks versus bonds, rebased each year to a 100 index, shows almost similar returns – increases of slightly under 100%. Who would have thought that these two divergent asset classes would generate similar returns?

Mr. Authers based his column on the performance of an imaginary hedge fund Hindsight Capital that is blessed with perfect foresight. The various asset classes are ranked by percentage change, rebased to 100 at the beginning of each year. He also showed the performance for the entire decade 2007-2016 for all the asset classes. In that ranking, crude oil was the worst performing asset class and along with industrial metals (the commodities sector) lost money. In contrast, industrial metals and crude oil generated returns of 286% and 261%, respectively, over the prior decade of 1995-2006. In 2006, crude oil prices were in the \$100+ per barrel range and money was pouring into commodity funds as the belief of the commodity “super cycle” dominated the investing world. The performance over the next decade saw prices of industrial materials fall by half and crude oil suffered a worse fate.

Exhibit 3. Crude Oil Worst Performing Asset Class 2007-2016

(Blue-Positive/Yellow-Negative)	2007-16	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
US Small Caps	1	9	4	5	2	6	4	1	3	6	2
S&P 500 Index	2	7	5	7	5	3	5	2	2	1	3
10-year US Treasuries	3	6	1	10	7	1	6	8	1	4	10
Gold	4	3	3	6	1	2	7	10	7	7	6
Emerging Markets	5	2	9	1	3	9	1	7	5	8	4
World Excluding US	6	4	7	3	6	8	2	4	6	5	7
Cash	7	8	2	9	10	4	8	6	4	2	9
European Stocks	8	5	6	4	8	7	3	3	8	3	8
Industrial Metals	9	10	8	2	4	10	9	9	9	9	1
Crude Oil	10	1	10	8	9	5	10	5	10	10	5

Source: *Financial Times*, PPHB

The trade of the decade according to Mr. Authers was to short crude oil and put the proceeds into the Russell 2000 index

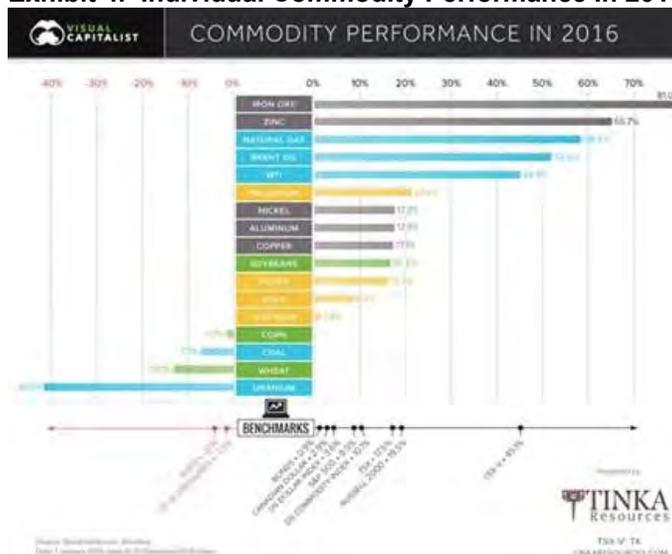
The trade of the decade, according to Mr. Authers, was to short crude oil and put the proceeds into the Russell 2000 index. That trade would have made investors 720%. Interestingly, the first two years of that trade, which included the years of the global financial crisis, would have produced a loss as crude oil prices continued to soar until that crisis exploded on the investment scene. The moral of Mr. Authers’ analysis was that investors shouldn’t try to catch market

For the two months after the election of Donald Trump, the S&P GSCI (formerly the Goldman Sachs (GS-NYSE) Commodity Index) rose 12%

turning points. In the long run, a sensibly diversified portfolio will do fine, especially as money is really made slowly over a long time but can be lost in hurry.

To gain a better understanding of how rapidly commodity markets can change, and also how certain commodities can do well or poorly when the rest of the commodity complex is doing the opposite. For the two months after the election of Donald Trump, the S&P GSCI (formerly the Goldman Sachs (GS-NYSE) Commodity Index) rose 12%. That is a huge move in a matter of 60 days. Importantly, the index remains at only 55% of its peak value since the Great Recession in 2009. That means it is possible the index could continue to trade higher for many years to come.

Exhibit 4. Individual Commodity Performance In 2016



Source: Seeking Alpha

The reality was that in the stock market it was completely different as international coal stocks doubled and clean energy stocks fell by more than 20%

Mr. Authers emphasized that point by showing that entering 2016, the conventional wisdom was that coal was dead and clean energy investments were the future. The conventional wisdom about coal would seem to have been supported by the decline in the price of coal futures as shown in Exhibit 4. The reality was that in the stock market it was completely different as international coal stocks doubled and clean energy stocks fell by more than 20%. Mr. Authers also looked at a popular investment strategy of betting against the latest year's winner. If one shorted last year's winner and went long last year's loser, investors would have lost money in six of the past nine years. So does this mean that commodities may have a better future than the bears on these asset classes are projecting? After finishing in tenth place in returns generated over the last decade, will crude oil wind up at the top of the rankings in 2026?

Making Money In The Oil Patch Is Harder Than You Think

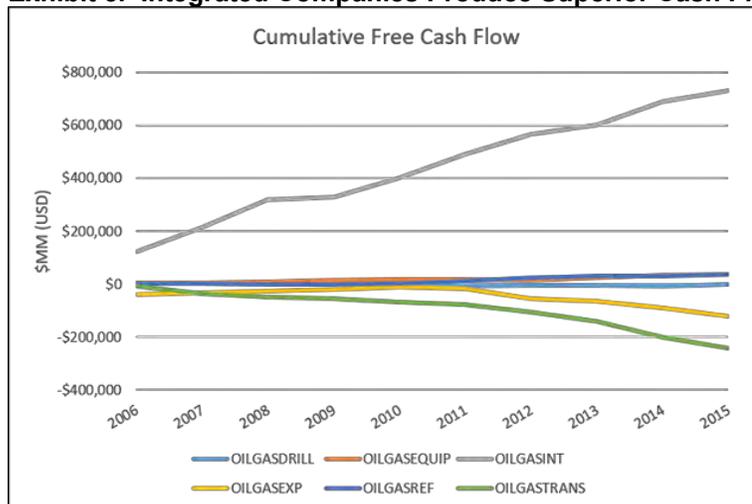
The increase in oilfield activity is starting to drive oilfield costs higher, which may derail expectations of a new era of oil producer profitability

His thesis was that the integrated oil and gas companies are, by virtue of their structure and scope of operations, the best oil and gas investments

Oil prices are up as OPEC member states trumpet their commitment to the oil production reductions agreed to in the Vienna Accord last November. U.S. drilling rig activity climbed throughout the fall until two weeks ago, before resuming its rise last week, as optimism about higher oil prices and lower oilfield costs making more prospects profitable. The increase in oilfield activity is starting to drive oilfield costs higher, which may derail expectations of a new era of oil producer profitability. Given this viewpoint, we were intrigued when we found an article on Seeking Alpha, an investment web site, where the writer undertook an analysis of where the money was made in the oil and gas sector.

The writer decided to dissect the industry sector into subsectors of basically similar companies engaged in specific activities along with one sector reflecting fully integrated oil and gas companies. His thesis was that the integrated oil and gas companies are, by virtue of their structure and scope of operations, the best oil and gas investments. To test this thesis, he examined the six subsectors and measured their cumulative free cash flow over 2006-2015.

Exhibit 5. Integrated Companies Produce Superior Cash Flows



Source: David Addison

The 23 companies in the integrated oil and gas companies produced \$730 billion, 165% of the industry's cumulative free cash flow.

What he found was that the universe of 486 companies with a total market capitalization of \$3.5 trillion generated a total cumulative free cash flow of \$441 billion over the past decade. Of that total free cash flow, the 23 companies in the integrated oil and gas companies produced \$730 billion, 165% of the industry's cumulative free cash flow. Amazingly, of the 23 companies, Exxon Mobil Corp. (XOM-NYSE) generated 34% of the \$730 billion, while the next four largest integrated oil and gas companies – Royal Dutch Shell (RDS.A-NYSE), BP plc (BP-NYSE), Chevron Corp. (CVX-NYSE) and Total

S.A. (TOT-NYSE) – produced an additional 46% of the group's total free cash flow. The remaining 18 companies in the integrated oil and gas sector produced only 20% of the total free cash flow.

Exhibit 6. Financial Performance Of The Energy Sector

GICS Sub-Industry Name	Number of Companies in Sample	Total Market Capitalization (SMM)	Cumulative Free Cash Flow (\$MM)
Oil & Gas Drilling	24	40,619	394.00
Oil & Gas Equipment & Services	86	302,106	37,018.75
Integrated Oil & Gas	23	1,699,022	730,211.47
Oil & Gas Exploration & Production	208	695,639	(120,071.80)
Oil & Gas Refining & Marketing	37	152,106	36,260.77
Oil & gas Storage & Transportation	108	585,711	(242,766.43)
All Oil & Gas Sectors	486	3,475,204	441,046.76

Source: David Addison, PPHB

Combined, these two sectors outspent their cash flow by \$363 billion

The study's results also highlight the poor investment returns from exploration and production companies and those oilfield sectors that require substantial and recurring capital investments such as storage, transportation and drilling equipment

The two worst performing subsectors with respect to generating free cash flow were exploration and production companies and storage and transportation companies. Combined, these two sectors outspent their cash flow by \$363 billion. The oilfield service and equipment companies, along with the refiners, generated \$73 billion in free cash flow, while the drilling sector eked out only a positive \$394 million (M not B) of free cash flow over the decade.

What the results of this analysis suggest is that over long time spans, investors can make money in energy investments. The study's results further suggest that to maximize energy investment returns, one needs to be more of a short-term trader rather than a long-term investor. We were not surprised by the results of the study, but the article was authored by an investor who offers himself as a "prodigal value investor," or someone who seeks undervalued companies that he can patiently invest in for extended time periods in order to maximize returns. The study's results also highlight the poor investment returns from exploration and production companies and those oilfield sectors that require substantial and recurring capital investments such as storage, transportation and drilling equipment. Hopefully, oil industry managers gain a great appreciation for the cyclicity of the business and the need to better marshal capital invested in their companies.

2017: The Year Of The Electric Vehicle, Or Maybe Not

To be included in the universe of vehicles considered for the awards, a vehicle must be new, redesigned or substantially changed

The Detroit automobile show in early January officially kicks off the new vehicle sales year, and as part of that beginning is the ritual of designating the best of the new models to arrive in the marketplace. This year there are three categories of vehicle recognition – car, truck and utility – for the first time ever. The introduction of the utility vehicle of the year is new and reflects the growing popularity of these crossover vehicles. The winners of the awards were chosen by a jury of 57 automotive journalists from a group of three finalists in each category. To be included in the universe of vehicles considered for the awards, a vehicle must be new, redesigned or substantially changed. Chevrolet's Bolt, its new electric vehicle (EV) entrant, was designated the 2017 North American Car of the Year.

Exhibit 7. Chevy Bolt Wins 2017 N.A. Car of the Year



Source: General Motors

The EV selection reflects, in our estimation, the view among influential thought-leaders in the automobile industry of the significant role EVs are going to play in the future

We were surprised to learn that the vehicles of the year are selected by journalists, even if they are automotive journalists who presumably know a lot about what is going on in the industry. We always assumed it was a panel of engineers who were looking at these new and redesigned vehicles and selecting the winner. The selection of the Bolt – the latest and maybe the most prominent plug-in battery-electric vehicle in the industry other than Tesla's (TSLA-NYSE) Model 3 – is significant. The Bolt is rated for 225 miles per battery charge, the most distance on a single charge, slightly further than the Model 3. The EV selection reflects, in our estimation, the view among influential thought-leaders in the automobile industry of the significant role EVs are going to play in the future. Automotive journalists, much like news reporters, shape which news stories are the most "important" for the industry and the public. Therefore, the journalists' selection is confirmation of their view of the EV's importance.

The importance of EVs was highlighted in an advertisement we saw for a new study on road transportation fuel consumption and the impacts of automated mobility systems released by Navigant

“The lengthy lifespan of vehicles relative to other consumer products will, however, spread the revolutionary impact on the existing transportation system and regional fuels markets over decades”

Research. The study, which we have not read, reportedly provides global forecasts and analysis for 2016-2035 of the various vehicle fuels consumed.

According to the advertisement, Navigant Research made the following points: “The next decade of innovations in automotive technologies is likely to dramatically change the process by which passengers and goods are moved. Developments in vehicle electrification, connectivity, and automated driving are creating potential for new business models in transportation services and significant savings in transportation costs. At the confluence of these developments lies a timely, cost efficient, and well-organized transportation system. The lengthy lifespan of vehicles relative to other consumer products will, however, spread the revolutionary impact on the existing transportation system and regional fuels markets over decades.”

While acknowledging that the road transportation industry is on the cusp of significant changes that will upset existing business models, the final point in the paragraph reaches the critical conclusion, which may be at great odds with much of the reporting of the current media. To read the media stories about self-driving cars and trucks, the increased penetration of EVs into the global vehicle fleet, and the popularity of ride-sharing services, one would think that the world’s personal transportation system was about to change overnight. But as Navigant Research concludes, the change will require “decades.”

“The result is likely to increase overall transportation sector energy consumption”

Navigant Research went on to write in its advertisement for the study: “Displacing oil as the leading transportation energy resource has long been a policy goal of global governments. The emergence of automated mobility systems (AMSs) adds a layer of complexity to the prospects of these policies and the various fuels markets. Low-cost, efficient travel is likely to encourage greater use of passenger travel through light duty vehicles (LDVs), which may come at the cost of more efficient public transit options. The result is likely to increase overall transportation sector energy consumption. Vehicle fuels that compete well in small LDV segments will see more demand from this shift than those in large LDV segments because automated services are likely to utilize smaller vehicles.”

Most cars envisioned for use in urban areas will be viewed as limited-use vehicles

Once again, Navigant Research sees conflicting trends at work in the road transportation market, something that is really not that surprising. On one hand, they see low-cost travel encouraging more driving, thereby boosting overall fuel consumption. Yet, they also see substantial growth among smaller vehicles, which will be designed to meet urban consumer demand, and which offer an opportunity for specific fuels for small vehicles to prosper, likely referring to electricity and batteries. Most cars envisioned for use in urban areas will be viewed as limited-use vehicles. That means they will be owned or driven by ride-sharing services or, if owned, there

The article’s headline focused on Navigant Research’s projection that EVs worldwide would surge from about two million on roads now to 38 million in 2025

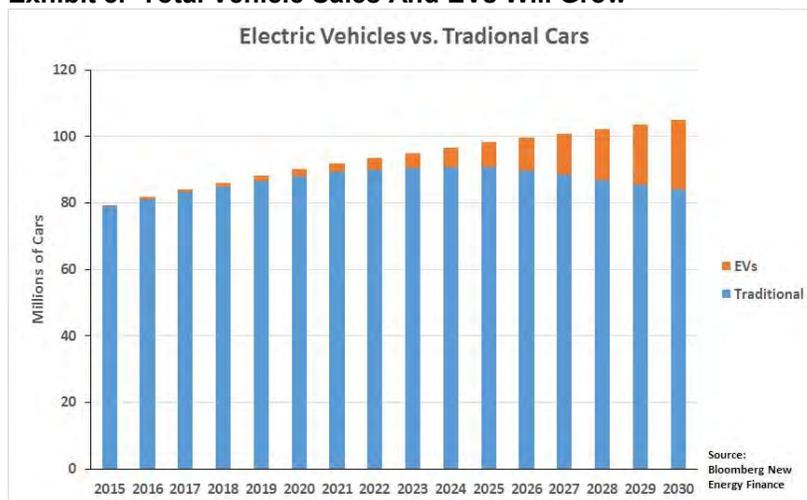
Bloomberg forecasts that in 2025 the global automobile industry will be producing 98.2 million vehicles

will be limited spaces for parking and they will be used in a limited fashion so they don’t need to carry many people or large loads.

With this study in mind, we were intrigued to read another news story that quoted a prediction about EVs by Navigant Research. The article’s headline focused on Navigant Research’s projection that EVs worldwide would surge from about two million on roads now to 38 million in 2025. What we don’t know about this projection is in which year there were two million EVs. Was it 2015 or 2016? Most long-term forecasts measure change for an industry trend over a decade, or at least in five-year increments. Since the study’s target year is 2025, we assume the base year for estimating the number of EVs on the world’s roads was 2015.

According to the recent Bloomberg New Energy Financing forecast for new automobile sales split between conventional and EVs, there were 500,000 EVs sold in 2015. That means that there were 1.5 million EVs on the world’s roads at the end of 2014. We decided to re-examine the Bloomberg study to see what it suggests about the number of EVs that would be on the world’s roads in 2025. Exhibit 8 shows the Bloomberg forecast of new vehicle sales divided between traditional cars and EVs. Bloomberg forecasts that in 2025 the global automobile industry will be producing 98.2 million vehicles. Assuming that all the vehicles produced are registered and remain in the fleet, we estimate the world will have about 1.2 billion vehicles on the road by 2025.

Exhibit 8. Total Vehicle Sales And EVs Will Grow

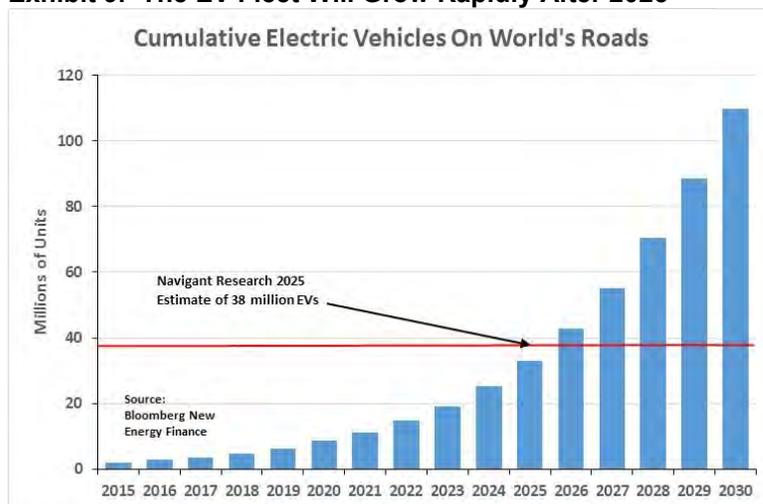


Source: Bloomberg, PPHB

Turning to the EV segment, we started with Bloomberg’s 2015 sales forecast of 500,000 EVs and added 1.5 million to arrive at the 2 million EVs estimated to be on the road by Navigant Research. Then, by adding the Bloomberg estimates of annual EV sales, we arrive at 32.8 million units on the road. The difference between the

Bloomberg EV production forecast and Navigant Research’s estimate of the number of EVs to be on the globe’s roads in 2025 is nearly 16%. Some forecasters might say that a difference of that magnitude between projections is not that large, but if one is attempting to assess the impact of EVs on the world’s oil market, then it becomes very significant.

Exhibit 9. The EV Fleet Will Grow Rapidly After 2025



Source: Bloomberg, PPHB

Bloomberg forecasts that 9.9 million EVs will be produced in 2026 taking the world’s EV fleet on the road to 42.7 million units that year

While the difference between the two forecasts for 2025 is material, because Bloomberg’s projections show EV production starting to grow at an accelerating rate in the mid-2020s, the 2025 estimate of 38 million EVs on the road will be easily surpassed in 2026. Bloomberg forecasts that 9.9 million EVs will be produced in 2026 taking the world’s EV fleet on the road to 42.7 million units that year.

The IEA says the world will have 450 million EVs by 2035, which happens to be 380 million more EVs than BP envisions in its outlook

In a recent paper by BP (BP-NYSE) plc’s economists about EVs and oil demand, we were interested in their take on the number of EVs to be on the road in the future. They highlighted the International Energy Administration’s (IEA) latest 450 scenario. This is the IEA’s prediction on what will be needed in order to hold the global temperature increase to two degrees Celsius by 2100. Under this scenario, the IEA says the world will have 450 million EVs by 2035, which happens to be 380 million more EVs than BP envisions in its outlook. That compares with Bloomberg’s estimate that the world will have about 110 million EVs in 2030, with the fleet growing by more than 21 million units per year, or by about 100 million more EVs by 2035. Is BP too conservative in its forecast? The economists stated that one force driving EV sales is their “cool” factor. As the economists say, “Economists don’t do cool, but it can be a huge factor in how quickly some new technologies are adopted.” Cool is a driver that is impossible to accurately forecast.

What we haven't seen is a forecast that reflects the absence of any federal tax credit for EVs

Navigant Research assumes that long-range EVs are on the verge of becoming more price competitive, which will be led by the Chevy Bolt and Tesla Model 3 cars that will sell in the mid-\$30,000s after the application of the \$7,500 per vehicle tax credit. What we haven't seen is a forecast that reflects the absence of any federal tax credit for EVs. From history, we know that under the tax credit scheme that phased out once a certain number of hybrid vehicles were sold, consumer buying patterns changed. In California, when the Toyota (TM-NYSE) Prius exceeded its threshold of number of units sold to be eligible for the federal and state tax credits, along with the preferential treatment that allowed the use of California's car pool lanes, vehicle sales dropped sharply.

Interestingly, the rationales being offered for these new efforts include both market-driven ones and regulatory pressures

Navigant Research anticipates domestic gasoline consumption will establish another record volume in 2017. It also recognizes that most analysts believe U.S. gasoline demand is nearing its peak as EV use grows as well as other vehicles becoming more fuel efficient. The bigger question is whether the growth of the EV fleet worldwide will translate into a peak in global oil use for transportation.

Another recent article pointed out that Asian car makers, especially the luxury ones, are now considering new EV models. Interestingly, the rationales being offered for these new efforts include both market-driven ones and regulatory pressures. For example, South Korea's Genesis, a luxury car start-up, has planned three new EV models, with the first one to be on the road in 2020, followed by the next two models at roughly three-year intervals, with a goal of having all three models introduced by the end of 2025. Genesis stated it can average its fleet fuel-economy ratings with those of its parent Hyundai in many markets such as the United States and Europe, but in others it must stand on its own fleet's performance. This is similar to the rationale offered by Toyota in its announcement that it is restarting its EV efforts after having shut them down in 2014. Toyota officials specifically cited the need to meet fuel-efficiency standards in the China market as part of why it planned new EV models.

Unfortunately, wherever we went, we were greeted by the same scene – empty EV spaces

Most of the luxury car makers planning new EV models also cited the excitement of driving these cars along with their desire to chase Tesla into this market segment. While the excitement of these cars is high, it may only represent a modest market niche. We were recently in New Zealand where EVs are supposed to be a growing vehicle segment. We saw numerous EV charging stations such as the one pictured in Exhibit 10. The picture shows a high-speed charging station. There were also low-speed charging stations. Unfortunately, wherever we went, we were greeted by the same scene – empty EV spaces. Maybe we were unfortunate in our timing, but we couldn't find any EVs on the road or even any excitement about them from those locals we talked with. We didn't have time to stop in the one EV dealership we saw.

Exhibit 10. Empty EV Charging Stations In New Zealand

Source: Allen Brooks

Auto companies are still under rules they previously agreed to with the government to produce vehicles that get better mileage

This year may be the start of a new era for EVs. However, the commencement of the Trump presidency in the U.S. may usher in a new era for green vehicles as government support may be withdrawn from EVs. If that were to happen, it doesn't mean U.S. gasoline consumption will continue rising. Auto companies are still under rules they previously agreed to with the government to produce vehicles that get better mileage. That trend along with changing demographics and vehicle use patterns in this country are what will limit gasoline consumption. Estimating when the peak in gasoline consumption occurs is difficult to predict because of the interaction of these various forces.

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