

MUSINGS FROM THE OIL PATCH

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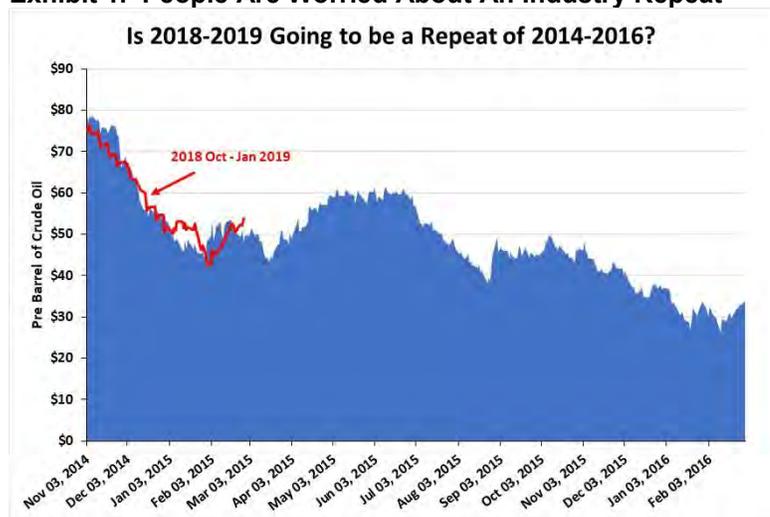
Note: *Musings from the Oil Patch* reflects an eclectic collection of stories and analyses dealing with issues and developments within the energy industry that I feel have potentially significant implications for executives operating and planning for the future. The newsletter is published every two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

Energy: So Far So Good – Will It Be The Star Of 2019?

The best word to describe the fourth quarter of 2018 for energy and investing was chaos

The best word to describe the fourth quarter of 2018 for energy and investing was chaos. For the quarter, West Texas Intermediate (WTI) spot prices fell by 40%, one of the sharpest price declines outside of the 90-day span during 2008 when oil prices collapsed 60%. Even the shock of the decision from OPEC's Thanksgiving Day meeting in 2014 only caused oil prices to fall 35% over the subsequent 90 days. However, the record of shocking oil price declines – all supposedly unexpected – and the pattern of the oil price move, is what has given rise to the idea that last quarter's drop and early January's recovery may be signaling a repeat of the industry's experience of 2014-2016.

Exhibit 1. People Are Worried About An Industry Repeat



Source: EIA, PPHB

For many institutional money managers, energy stocks were becoming irrelevant

The chaos in the oil market provided an easy reason for energy investors to throw oil and oilfield service stocks out of their portfolios. Who wanted to be associated with companies whose fundamentals were being eroded so rapidly? How many of these companies would be heading back to the bankruptcy arena, with the associated destruction of shareholder value? For many institutional money managers, energy stocks were becoming irrelevant. These were tax-loss candidates, especially after investors had taken huge profits from their FANG stocks. The joke from the 2008 financial crisis about individual's 401-K funds having shrunk to 101-K's was revived, as the value of energy companies was rapidly diminishing. Companies with billion-dollar market capitalizations were suddenly fighting as small caps to still be included in prominent investment indices. Getting kicked out of an index forces investment funds structured to mirror the performance of that index to sell the company's shares, further pressuring the share price.

While the last time energy topped the list was in 2016, during the past five-year span of 2014-2018, it ranked dead last three times and second from the worst (tenth place) once!

In the last *Musings*, our part two article on the similarity of energy cycles touched on the performance of energy securities over the past 12 years and the factors that have impacted the results (Exhibit 2, next page). Between 2007 and 2018, the energy sector of the Standard & Poor's 500 Stock Index had only topped the performance rankings twice in that 12-year span – in 2007 and again in 2016. While the last time energy topped the list was in 2016, during the past five-year span of 2014-2018, it ranked dead last three times and second from the worst (tenth place) once! Feast or famine would seem to be the verdict. However, when we look at the performance of energy during the prior seven years, outside of energy's number one ranking in 2007, it never ranked better than fourth. Energy also was the sixth, seventh, eighth, ninth, and tenth ranked performer out of the 11 S&P 500 sectors during that span.

That performance record would seem to represent mediocre investment performance. Now, in fairness, there were years during this span when energy's relative performance was poor, putting it in the lower end of the sector rankings, but it still generated a positive investment return. It was only that energy's performance was not anywhere near the performance achievements of other sectors. If we add all the annual percentage performance results together and average them over the 12 years, energy averaged a 4% positive outcome. Unfortunately, that performance compares with the overall S&P 500 average of a 9% positive record.

The peak weighting came at the end of 1980's third quarter

When considering the energy sector's performance, it is telling to examine the history of the weighting of the sector within the overall stock market composition. Those variations reflect the shifts in importance of energy globally over time. We have tracked the weighting of the energy sector within the S&P 500 since the first quarter of 1979 to the present. Exhibit 3 (next page) shows how that weighting has fluctuated. The peak weighting came at the end of 1980's third quarter. Oil prices had climbed every month of 1980,

Exhibit 2. Energy Has Been A Disappointing Sector

S & P 500 Sector Performance											
2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
ENRS	CONS	INFT	REAL	UTIL	FINL	COND	REAL	COND	ENRS	INFT	HLTH
34.4%	-15.4%	61.7%	32.3%	19.9%	28.8%	43.1%	30.2%	10.1%	27.4%	38.8%	6.5%
MATR	HLTH	MATR	COND	CONS	COND	HLTH	UTIL	HLTH	TELS	MATR	UTIL
22.5%	-22.8%	48.6%	27.7%	14.0%	23.9%	41.5%	29.0%	6.9%	23.5%	23.8%	4.1%
UTIL	UTIL	COND	INDU	HLTH	REAL	INDU	HLTH	CONS	FINL	COND	COND
19.4%	-29.0%	41.3%	26.7%	12.7%	19.7%	40.7%	25.3%	6.6%	22.8%	23.0%	0.8%
INFT	TELS	REAL	MATR	REAL	TELS	FINL	INFT	INFT	INDU	FINL	INFT
16.3%	-30.5%	27.1%	22.2%	11.4%	18.3%	35.6%	20.1%	5.9%	18.9%	22.2%	-0.3%
CONS	COND	S & P	ENRS	TELS	HLTH	S & P	CONS	REAL	MATR	HLTH	REAL
14.2%	-33.5%	26.5%	20.5%	6.3%	17.9%	32.4%	16.0%	4.7%	16.7%	22.1%	-2.2%
INDU	ENRS	INDU	TELS	COND	S & P	INFT	FINL	TELS	UTIL	S & P	S & P
12.0%	-34.9%	20.9%	19.0%	6.1%	16.0%	28.4%	15.2%	3.4%	16.3%	21.8%	-4.4%
TELS	S & P	HLTH	S & P	ENRS	INDU	CONS	S & P	S & P	INFT	INDU	CONS
11.9%	-37.0%	19.7%	15.1%	4.7%	15.4%	26.1%	13.7%	1.4%	13.9%	21.0%	-8.4%
HLTH	INDU	FINL	CONS	INFT	MATR	MATR	INDU	FINL	S & P	CONS	TELS
7.2%	-39.9%	17.2%	14.1%	2.4%	15.0%	25.6%	9.8%	-1.5%	12.0%	13.5%	-12.5%
S & P	REAL	CONS	FINL	S & P	INFT	ENRS	COND	INDU	COND	UTIL	FINL
5.5%	-42.3%	14.9%	12.1%	2.1%	14.8%	25.1%	9.7%	-2.5%	6.0%	12.1%	-13.0%
COND	INFT	ENRS	INFT	INDU	CONS	UTIL	MATR	UTIL	CONS	REAL	INDU
-13.2%	-43.1%	13.8%	10.2%	-0.6%	10.8%	13.2%	6.9%	-4.8%	5.4%	10.9%	-13.3%
REAL	MATR	UTIL	UTIL	MATR	ENRS	TELS	TELS	MATR	REAL	ENRS	MATR
-17.9%	-45.7%	11.9%	5.5%	-9.6%	4.6%	11.5%	3.0%	-8.4%	3.4%	-1.0%	-14.7%
FINL	FINL	TELS	HLTH	FINL	UTIL	REAL	ENRS	ENRS	HLTH	TELS	ENRS
-18.6%	-55.3%	8.9%	2.9%	-17.1%	1.3%	1.6%	-7.8%	-21.1%	-2.7%	-1.3%	-18.1%

Source: S&P, Novel Investor, PPHB

Little did we know that oil prices would peak at \$39 per barrel six months later

as the Iranian Revolution the prior year and the corresponding loss of that country's nearly three million barrels of oil supply was driving up prices. At year-end 1980, domestic oil was selling for \$30.50 a barrel. Little did we know that oil prices would peak at \$39 per barrel six months later. From that peak, oil prices began sliding in response to the growing economic problems created by those high oil prices coupled with escalating interest rates. Together they were eating into global oil demand exactly when the oil industry started delivering new supplies from far flung places like Alaska, the North Sea and West Africa.

Exhibit 3. The Downs And Ups For The Energy Sector



Source: S&P, PPHB

We will opt to stay with our cycle definition that the energy stock market decline went from late 1980 to early 2000

From the 1980 peak, energy's market weighting steadily declined, although it was interrupted occasionally by brief rebounds, largely in response to events suggesting a rebound in oil prices that would improve the fortunes of the sector. In our view, the decline in energy's weighting reached its bottom at the end of the first quarter of 2000, some 19½ years after the peak.

We acknowledge that one could divide our definition of the decline into shorter time frames by adhering strictly to a rule that any uptick in the quarterly weighting represented an end to the previous trend. For example, one would say that the initial decline only lasted from the end of 1980 to the end of 1982. After a rebound that carried on until mid-1984, the next decline lasted only until the first quarter of 1986, at which point the weighting increased slightly before moving sideways or slowly declining until 1995's first quarter. Afterwards, the pace of the decline accelerated, finally bottoming out in the first quarter of 2000. If one is a trader, all these short-time moves might help trade energy stocks from technical patterns. However, we are more interested in the unfolding of long-term industry cycles, since they offer more perspective about shifting industry fundamentals. We will opt to stay with our cycle definition that the energy stock market decline went from late 1980 to early 2000.

Beginning in 2000, the energy sector weighting rose slightly before trading sideways. It then declined and retested the earlier 2000 low in the third quarter of 2003. The 2000 low weighting for energy was 5.82% of the S&P 500 Index, and the re-test of the low stopped at 5.86%. From the 1980 peak to the 2000 low, energy's weighting in the S&P 500 Index fell by 80%. The decline was caused by a number of factors that we will discuss later.

The energy weighting reached 16.2% just as the global financial crisis was unleashed, which created a significant downturn for oil prices

Once the weighting re-test occurred and the market stabilized, there was a recovery that took the weighting up to its most recent peak, which occurred in mid-2008. The energy weighting reached 16.2% just as the global financial crisis was unleashed, which created a significant downturn for oil prices. In fact, in the 90 days between late August and late November 2008, WTI's price dropped by 60% - falling from over \$121 per barrel to slightly over \$49. A month later, the absolute low in the oil price cycle was reached (\$30.28 a barrel) and prices started climbing in response to the recognition that the world's economy had been saved and was actually rebounding, meaning global oil demand would resume growing and producers needed to be back at work meeting that demand.

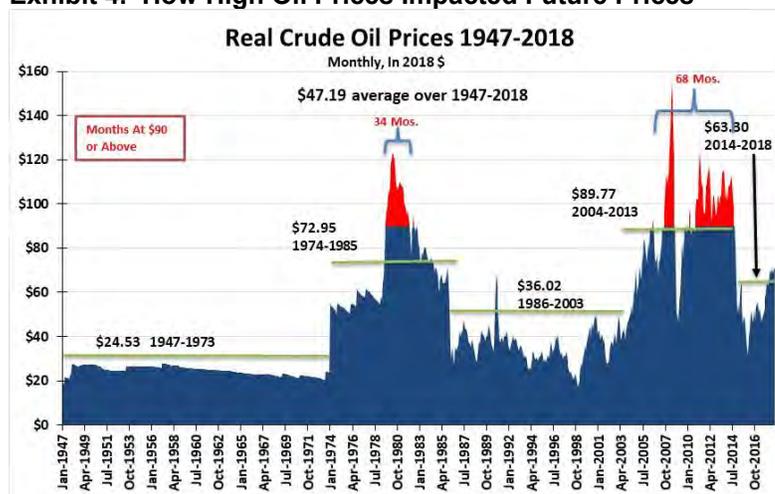
The rebound in oil prices and the global economy stabilized energy's weighting in the S&P 500 Index into early 2009, at which time another slide developed that lasted until late 2010. After jumping up in the first quarter of 2011, the current slide in the weighting began. By the end of 2018, the energy sector weighting was down to the lowest it had reached in modern times at 5.31%. Everyone certainly hopes this is a temporary low as a result of the dive in oil prices and

The early 1980s witnessed various cross-currents in the business that appeared to send signals periodically that the decline was over and better times were returning

the chaos created in the oil and stock markets at year end. The start of 2019 appears to be bringing a better tone to the oil and energy stock market, but we are only a couple of weeks into the new year.

Returning to the issue of the short-term moves in energy's weighting, the early 1980s witnessed various cross-currents in the business that appeared to send signals periodically that the decline was over and better times were returning. Following the initial oil price declines in 1980 and 1981, OPEC, led by Saudi Arabia, pledged to act to support the organization's price target. With confidence that the industry had merely experienced a brief cyclical decline, but has now firmly grasped control over oil prices, activity began to increase.

Exhibit 4. How High Oil Prices Impacted Future Prices



Source: WSJ, EIA, BEA, PPHB

The impact of 34 months of super-high oil prices during the late 1970s and early 1980s was bringing on new oil production that was pushing OPEC oil out of the market

However, OPEC's price target had to be lowered even with Saudi Arabia's aggressive production cuts to support it. The impact of 34 months of super-high oil prices during the late 1970s and early 1980s was bringing on new oil production that was pushing OPEC oil out of the market. Industry confidence began waning again. This came even after the U.S. government conducted its very first area-wide lease sale in the Gulf of Mexico. One cannot underestimate the impact of that policy change. Prior to it, two or more oil companies had to request the inclusion of a particular block in the Gulf to be put into a scheduled lease sale. Area-wide sales allowed oil companies to bid on and acquire any lease they wanted anywhere in the Gulf, assuming the bid price met or exceeded the government's estimate of its value. This new policy enabled oil companies to try new theories about where to explore for oil and gas, which created an offshore drilling boom and ignited a recovery in domestic hydrocarbon output.

Every policy by developed economies was aimed at reducing the pricing power of OPEC

More production from more places around the world threatened OPEC's role in controlling the global oil market. Every policy by developed economies was aimed at reducing the pricing power of OPEC. Policies that boosted domestic production along with those that ordered increased energy efficiency in every-day life became the norm. The new oil supplies, coupled with falling consumption (U.S. oil demand required a decade to recover to its pre-Iranian Revolution levels) put extreme pressure on OPEC. The following are a few OPEC pricing events from a *Wikipedia* article on the energy timeline of the 1980s. They demonstrate how hard OPEC fought to hold the line on prices, before being overwhelmed.

1980:

March – U.S. enacts Windfall Profits Tax

May – Saudi Light raised to \$28 per barrel, retroactive to April 1

September – Iran-Iraq war starts

December – OPEC's pricing structure collapses. Saudi uses \$32, as other use \$36

1981:

January – President Reagan lifts remaining U.S. oil price and allocation controls

October – OPEC agrees to \$32 price through 1982; ceiling set at \$38

1982:

World oil glut causes world oil prices to decline rapidly early in the year

1983:

Oil glut builds. Demand falls. OPEC limits output and cuts price by \$5 per barrel

1984:

October – OPEC cuts production, but negated by cheating

1985:

January – OPEC adjusts light/heavy price gap. Saudi cuts its price by \$1 per barrel

July – OPEC loses customers to cheaper North Sea oil

August – Saudi Arabia links prices to spot market and raises output by 2 million barrels per day

December – OPEC output up 40% from June's 20-year low, boosting glut and starts price war

1986:

Average world oil prices fall by over 50%

Netback pricing becomes popular tool

February – OPEC fails to agree on a production accord

July – Brent price falls under \$9 per barrel
 December – OPEC agrees to 7% production cut for 1987;
 targets \$18 oil price

1987:

January – OPEC price accord deteriorates
 December – OPEC meeting failure

1988:

March – OPEC/non-OPEC meeting failure
 November – OPEC reaches production accord with 2 million
 barrels per day cut

U.S. shale oil and the fear of shale has altered OPEC's pricing power

As we were reading this timeline, we were reminded of how many of these events seemed like events of the past few years as OPEC and its non-OPEC supporters labored, and generally failed, to restore the organization's pricing power. U.S. shale oil and the fear of shale has altered OPEC's pricing power. Does that eight-year timeline suggest we might be facing more years of pricing struggles for oil? Is there really a new sheriff in town, or are we subject to continued oil price volatility?

It would reflect investor expectations for more years with the industry struggling to manage in a volatile oil price environment

Believing as we do in the rhyming of industry cycles, we calculated what would happen if this downturn in energy's sector-weighting were to match the percentage decline of the earlier extended downturn. It would take the energy weighting to only 3.3% at the next low point. There is little doubt that such a low energy weighting would not reflect the significance of energy (oil & gas and oilfield service companies) in the global economy. Rather, it would reflect investor expectations for more years with the industry struggling to manage in a volatile oil price environment.

Industries and companies come into and go out of favor with investors – often rapidly and often without a clear rationale

During our long career in energy investing, we have learned numerous lessons. One of the most important is that industries and companies come into and go out of favor with investors – often rapidly and often without a clear rationale. One cannot tell when these market sentiment shifts will occur, and generally it is only with hindsight that we can appropriately assess what industry/economic events and the perceived impact on the long-term future for the business was the culprit. When we are witnessing the growing or shrinking importance of a company or industry in the stock market, it is generally captured through changes in weightings in the S&P 500 Index, which is a broad measure of the overall economy. Since the S&P 500 Index is a capitalization-weighted market index, larger companies with more shares and higher priced ones tend to dominate the index. This design can magnify the relative performance of each sector within the overall index, and each company within its sector. This phenomenon may help to explain some of the relative sector valuation shifts within the S&P 500 Index, but it doesn't explain them all.

To gain a better understanding of the relative performance of energy in the stock market, Exhibit 5 shows the movement in sector weightings for three other industry sectors besides energy within the S&P 500 Index for 1979-2018. The three non-energy sectors are materials, financials and information technology.

Exhibit 5. Every Sector Is In Favor And Out Of Favor



Source: S&P, PPHB

Materials is representative of the commodity industries as it is composed of companies from the mining, diversified and specialty chemicals, industrial gases, construction materials, fertilizers and paper packaging industries. These businesses are largely driven by shifts in the raw material and commodity markets, but they also reflect periods of strength or weakness in the global economy.

In the case of financials, there are a number of sub-industries such as diversified and regional banks, life and health insurers, consumer finance companies, and reinsurers, along with property and casualty insurers. Likewise, the information technology sector encompasses companies from the computer hardware, software and storage equipment, semiconductor, internet, data processing, communications equipment, and IT consulting industries.

The weightings of the materials and energy sectors generally moved in tandem from 1979 to 2000

What Exhibit 5 demonstrates is that the weightings of the materials and energy sectors generally moved in tandem from 1979 to 2000. After that, while both sectors reflected some recovery, materials never demonstrated the magnitude of improvement experienced by energy. Additionally, the materials sector has been under pressure, much like energy, during the past several years.

In contrast to materials and energy, information technology saw its sector weighting begin to expand in the early 1990s as the dot-com investment era dawned. As these high-flying stocks took off, there developed an inverse relationship between the weightings of

The collapse of the information technology sector coincided with the beginning of the recovery of the energy sector

information technology and energy, at least until the dot-com bubble burst at the turn of this century. The collapse of the information technology sector coincided with the beginning of the recovery of the energy sector. As energy slowly rose, information technology traded sideways, but then saw its weighting increase immediately following the peak in the energy weighting in 2008. Since then, information technology has performed well, while energy has declined.

Turning to the financial sector, it had a long slow rise from its extremely depressed level coming out of the 1970s up until the emergence of the pressures that contributed to the global financial crisis. The early years' low weighting was a function of the earnings problems financial institutions experienced as a result of the high interest rates and soaring inflation of the 1970s, and then the asset busts that resulted: housing, real estate and capital equipment. Over time, as these problems were resolved, financials gained investor favor and the sector's weighting in the S&P 500 increased. When the financial crisis exploded, the valuation of financial institutions imploded because numerous companies experienced serious financial problems forcing mergers and bankruptcies.

Energy and materials, which have a similar economic driver, except for energy experiencing much wider weighting swings

Once the financial sector weighting bottomed at the end of the financial crisis and recession in 2009, even though there was a long tail to the asset clean-up effort, the sector's weighting snapped back to a level it had traded at up until late 2018 when these stocks were caught up in the year-end stock market meltdown. Looking at the history of the financial sector's weighting, it more closely followed the pattern of the changing weightings of information technology, although it did not experience a valuation bust until the financial crisis, as opposed to the 2000 bubble that ended the dot-com investment era. The pattern of these two sector weightings contrasts with that of energy and materials, which have a similar economic driver, except for energy experiencing much wider weighting swings.

Exhibit 6. Energy Weighting Well Below Average



Source: S&P, PPHB

Introduce the concept of “reversion to the mean”

Given the history of the shifts in the weightings of the various sectors within the S&P 500 Index, we would like to introduce the concept of “reversion to the mean.” This concept says that volatility in the valuation of companies/stocks will move away from its central value until industry and/or stock market conditions change and investors begin to reassess the fortunes for the industry or company. These shifts are sometimes rapid, but often require extended periods of time before becoming evident, making them hard to discern while they are underway. In Exhibit 6 (previous page), we show the energy sector weighting, but we now have added a red-dashed line showing the average of the weightings over the 39-year period. If the mean is an 11.4%-weighting, then at 5.3%, the energy sector is currently significantly underweighted, suggesting room for substantial stock price appreciation if it returns to its long-term average weighting. What we don’t know is if this valuation discount will be erased, or how long it may take to be corrected.

During the dot-com boom era of the late 1990s, no investor cared to talk to us

Likewise, Exhibit 6 shows that in the early years (1979-1985), energy was substantially over-valued, measured against the mean value. As we make that statement, we recognize that during the 1970s, energy and natural resource investments were favored for their inflation protection in a period of high inflation and stagnant economic growth. During that time, as a Wall Street energy analyst, we were in constant demand by investors, reporters and news shows, and we were courted by every energy company who needed us to tell their investment story to investors who would hopefully purchase the shares. We were flying high! In contrast, during the dot-com boom era of the late 1990s, no investor cared to talk to us, and, other than energy trade publications, we were like yesterday’s fish catch for the newspapers and TV news shows.

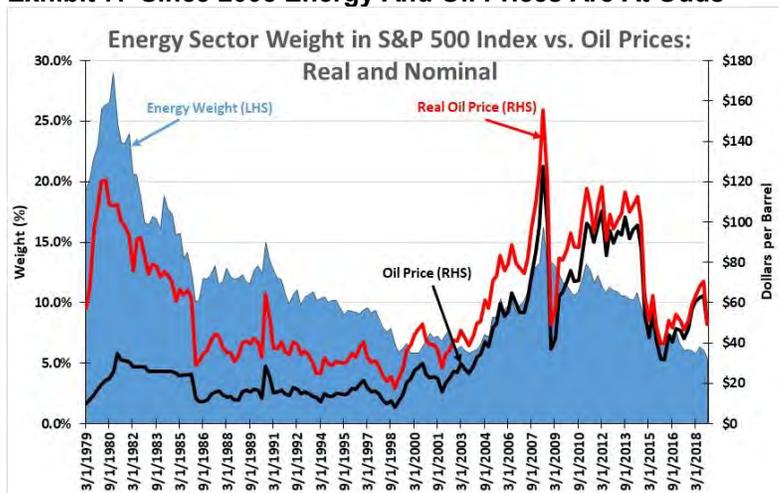
If we calculated the average only up to that last peak, the peak was still above the average, but only because it was a one-quarter spike

What is somewhat surprising is that when the last weighting peak arrived, it was not that far above the average value for the entire period. If we calculated the average only up to that last peak, the peak was still above the average, but only because it was a one-quarter spike. The average up to that point was 12.1%, which would have been in line with the 2006-2008 weightings. This demonstrates how averages can be influenced by a few extreme values. However, this analysis does provide a measure of relative valuation of energy compared to its current weighting.

In Exhibit 5 (page 8), beside each sector label, we provided the average over the entire period for that sector. This allows us to estimate which of the sectors may be over- or under-valued when comparing their current weighting against their average weighting. This is not a recommendation of any investments, but it does show how much energy is currently below its long-term average. This may indicate something about future stock market performance for energy companies, but there certainly is neither a guarantee of better performance nor guidance as to when better performance might occur. To gain a perspective of how and why the energy

sector might perform better, it is necessary to examine some other considerations that can impact valuation, and which may be signaling some important shifts in energy industry fundamentals.

Exhibit 7. Since 2008 Energy And Oil Prices Are At Odds



Source: S&P, EIA, BEA, PPHB

Following the oil price collapse associated with the financial crisis and recession, the subsequent recovery bears no relationship with changes in the weighting of the energy sector

The energy industry's fundamental driver is the price of oil. While it can be either WTI or Brent, the movement of oil prices appears to coincide closely with changes in oil company share prices. Exhibit 7 shows the energy sector weightings against both the nominal U.S. oil price and the price adjusted for inflation, or the real oil price. While the pattern of the nominal price movement mirrors that of the real oil price, the real oil price more closely follows the movements in the energy weighting. That pattern began with the first quarter of 1979 and goes until the most recent weighting peak in 2008. Following the oil price collapse associated with the financial crisis and recession, the subsequent recovery bears no relationship with changes in the weighting of the energy sector. In fact, energy's weighting slowly declines throughout this period before dropping more sharply in concert with the 2014-2015 oil price collapse. Since then, despite oil prices recovering, the energy sector's weighting continued to slide until it reached the 2018 year-end low.

Added to the supply reductions, a weaker U.S. dollar value should further help boost demand and lift crude oil prices

Despite both oil prices and energy share prices rising in the early days of 2019, there is no guarantee this pattern will continue for all of 2019. However, most oil market forecasters are looking for the oversupply of global crude oil that emerged during the second half of 2018 to dissipate during the first part of 2019, given the production cut by the OPEC+ group of oil exporters, Canada's mandatory output reduction, and the continuing decline in Venezuela's output. Added to the supply reductions, a weaker U.S. dollar value should further help boost demand and lift crude oil prices. That is important since this optimistic oil price outlook for 2019 assumes that global oil demand growth remains healthy at 1.2-1.4 million barrels per day.

Oil market forecasters are also counting on the swift price decline experienced during 2018's fourth quarter to negatively impact U.S. oil production growth this year

Should growth be only about one million barrels a day, or less, there will be increased market pressure for the current OPEC+ production cut to be sustained for all of 2019, rather than its planned first six months of the year, and for Canada's output reduction to continue at the high first quarter rate rather than decline as currently programmed. Oil market forecasters are also counting on the swift price decline experienced during 2018's fourth quarter to negatively impact U.S. oil production growth this year. That growth is already being limited by Permian Basin oil shipment constraints, which are not expected to improve until new oil export pipelines start up later in 2019.

Democratic politicians will target energy and fossil fuels for relentless attacks

While not making any investment recommendation, energy appears poised for a recovery in the stock market, at least during the early part of 2019. A reversion to the average weighting for energy would suggest a possible doubling in market value for the stocks composing the sector, which would certainly be welcomed by those in the energy business and people invested in it. The problem with that potential scenario is that the Democratic Party now controls the House of Representatives. Additionally, we are at the start of the 2020 presidential election race, which means Democratic politicians will target energy and fossil fuels for relentless attacks. We expect a steady stream of climate change articles arguing for the immediate replacement of fossil fuels by clean energy, in what is referred to as the 'New Green Deal' by Democrat politicians. These calls carry little credibility, but they will generate lots of headlines.

Thus, even with improving earnings, energy stocks may suffer from lower valuations, meaning that stock price appreciation may be limited

The Democratic campaign will raise issues about the long-term future for energy that may translate into a reduction in the future valuation of energy securities. Thus, even with improving earnings, energy stocks may suffer from lower valuations, meaning that stock price appreciation may be limited. Did the last energy stock market up-cycle in 2003-2008, which saw a peak in the S&P 500 Index energy sector valuation at a substantially lower level than the 1980 peak, reflect a change in investor views about the energy industry? In stock market technical trading vernacular, this would be a pattern of lower highs and lower lows. That pattern is suggesting lower future valuations. Even given this possibility, it doesn't necessarily follow that energy securities cannot still offer a positive return for shareholders in the near-term. Remember, energy markets don't repeat, but they do rhyme.

Judging The Electric Vehicle Revolution's Success

This paucity of EVs models is interesting given the winds of change sweeping through the global auto industry

The Detroit Auto Show is underway, having started last week with media and industry previews. The surprise from the show was that only two new electric vehicle (EV) models were unveiled, and neither is ready for production. This paucity of EVs models is interesting given the winds of change sweeping through the global auto industry. But, never fear, as auto executives were anxious to talk about all they are doing to develop and promote EVs, even if it is all

For EVs, the focus is on the Los Angeles auto show and the Consumer Electronics Show in Las Vegas, largely because they are appealing to techies and California EV buyers

in the future. Surprisingly, there was even an acknowledgement that Elon Musk, the head of Tesla Inc. (TSLA-Nasdaq), has done a good job in promoting EVs and helping them to gain consumer interest. That effort is setting the stage for the rest of the auto industry to move in, which may make Tesla's battles to become a successful automobile manufacturer a greater challenge.

Reading reviews of the show was agonizing, as one auto writer even listed the Detroit show itself as a loser. According to the writer, the show floor was less bustling than in previous years as some car manufacturers, such as Tesla, opted not to participate. The show is moving to June next year rather than January in hopes of stimulating greater interest. For EVs, the focus is on the Los Angeles auto show and the Consumer Electronics Show in Las Vegas, largely because they are appealing to techies and California EV buyers. The biggest news was that General Motors Inc.'s (GM-NYSE) Cadillac division unveiled an EV SUV. The biggest loser was the introduction of Nissan Motor Co. Ltd.'s (NSANY-Nasdaq) Infiniti QX EV concept car that failed to start and was barely able to be pushed onto the stage. These cars are planned to be for sale in 2022.

The automobile business is struggling to find a path to the future given what appears to be a slowdown in global vehicle sales. Combined with a push to electrify the global vehicle fleet in response to government mandates for non-internal combustion engine (ICE) vehicles, auto companies are struggling to design and build new EV models that will appeal to buyers at particular price points in the automobile market. Last year produced some interesting headlines about EVs, but a deeper look shows that there may have been some unique circumstances that prompted them, and raise questions about whether the headlines reflect sustainable market trends.

Within total sales, light duty trucks and Sport Utility Vehicles increased 8.0%, while passenger cars declined 13.1%

In the U.S., total auto sales for 2018 increased 0.3% to 17,274,250 units. The year's total sales were helped by a 1.5% increase in December sales over those in 2017. Within total sales, light duty trucks and Sport Utility Vehicles increased 8.0%, while passenger cars declined 13.1%. This is likely the result of low gasoline prices, and Americans' love of larger and roomier vehicles. It didn't hurt the auto manufacturers who tend to make greater profits on pickups and SUVs than smaller sedans. These trends are leading to manufacturers abandoning the production of sedans, at least until gasoline prices rise to levels that buyers clamor for smaller, more fuel-efficient cars.

EVs experienced a good year in the U.S. in 2018. Sales increased 81% over 2017, rising to 361,307 units according to *InsideEVs*. The increase was largely due to Tesla, which sold a total of 191,627 EVs across its three models – the S, X and 3. They represented over 55% of total EV sales, which in turn represented just over 2% of total U.S. auto sales. Some auto analysts were commenting that the

Exhibit 8. EV Sales Have A Long Way To Go



Source: Statista

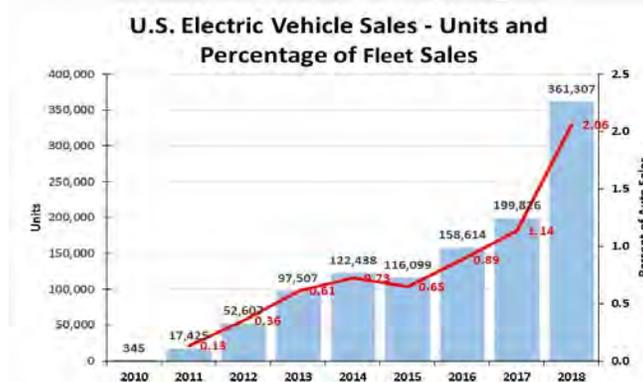
sales performance statistics suggest an inflection point being reached, but the competitive EV landscape is about to change.

He said that he had been expecting an inflection in the rate of EV sales, but didn't think it would be in 2018

Chris Nelder, manager of Rocky Mountain Institute's mobility practice, characterized the results as a pleasant surprise. He commented to a *Greentechmedia* reporter, "I did not expect the growth rate to be over 30 percent. I expected it to be in the 20 percent range, which is where it's been." He said that he had been expecting an inflection in the rate of EV sales, but didn't think it would be in 2018.

Part of the sales growth may have come because of the stock market pressure on Tesla to show that it could ramp up its quarterly manufacturing output and begin to generate a profit – two ingredients necessary to support the company's highly valued stock price. By adding a third assembly line, the company was able to ramp up its output to the delight of Tesla's stock supporters. This year may be a different story.

Exhibit 9. EV Sales In U.S. Are Growing Faster Now



Source: InsideEVs

After 2019, Tesla car buyers will receive no federal tax credit

With the strong sales year, Tesla crossed the 200,000-unit sales figure and is now in the winddown phase of the federal tax credit for EV car buyers. Instead of a buyer getting a \$7,500 income tax credit, the credit has been reduced by half for cars delivered during the first six months of 2019, and then falls to only a quarter for the second half of the year. After 2019, Tesla car buyers will receive no federal tax credit, although they may receive credits in certain states for use against their state income tax bills. In response to the loss of the tax credit, Tesla announced a \$2,000 price reduction for buyers starting January 1, 2019, and just last week said it will cut its work force by 7%.

In the future, buyers of Model S cars will have to move up to a 100-kilowatt (kWh) battery at a cost of \$96,000, versus the \$76,000 75-kWh model

It is interesting that Tesla also announced it was phasing out the lowest-cost options for its Model S and X cars. That means buyers will need to purchase vehicles with larger batteries. On the night of January 9th, Mr. Musk tweeted that anyone interested in buying a low-end S or X model needed to place his/her order by the following Sunday night (Jan. 13th). In the future, buyers of Model S cars will have to move up to a 100-kilowatt (kWh) battery at a cost of \$96,000, versus the \$76,000 75-kWh model. For the Model X, the cheapest car will cost \$97,000 with a 100-kWh battery, versus the \$82,000 75-kWh version. These are not cheap cars, so one has to wonder how many EV enthusiasts and environmentalists are still out there and are willing to pay these high prices?

The biggest challenge for Tesla this year is that it will face more EV competition in the luxury end of the car market. Audi, BMW, Jaguar, Mercedes and Porsche will all be introducing new EVs. According to *InsideEVs'* estimate of sales by manufacturer through November, it projected that both Tesla and GM would reach the 200,000-unit threshold by year-end 2018 and no longer be eligible for the full federal tax credit. BMW, a challenger to Tesla will not reach its 200,000-unit sales before 2023. In 2024, Mercedes will reach its limit, and Audi and Porsche will hit theirs the following year. Jaguar will not reach the cutoff until 2027.

It believes Tesla will not be hurt much by the phase-out, but that GM could be hurt more because of several low-end competitive models

InsideEVs suggested in their Federal EV Tax Credit Phase Out Tracker By Automaker that no one really knows the extent of the impact on EV sales from the tax credit phase out. It believes Tesla will not be hurt much by the phase-out, but that GM could be hurt more because of several low-end competitive models coming from Hyundai and Kia to compete with GM's Chevy Bolt. We thought their observation about the Tesla market impact was strange given the record of EV sales falling in virtually every instance when government subsidies have been reduced or eliminated. Tesla's sales price cut would suggest it expects sales to be hurt.

The auto industry's commitment to EVs in the United States appears to be growing based on company announcements, but environmentalists are concerned that the Trump administration's efforts at freezing or rolling back the fuel-efficiency standards will

Surging U.S. oil production and low gasoline prices seem to be going hand-in-hand

slow the EV effort. In December's sales figures, 72% of total new vehicles sold in the U.S. were SUVs and trucks, up from 49% at the end of 2012. Keep in mind that in December 2012, gasoline pump prices, according to AAA, averaged \$3.29 per gallon versus \$2.24 last month. Surging U.S. oil production and low gasoline prices seem to be going hand-in-hand. Talk about the U.S. become energy self-sufficient is further helping to support the view of gasoline prices remaining low for the foreseeable future, encouraging buyers to opt for trucks and SUVs.

VW's plan to invest \$800 million in an expansion of its Chattanooga plant specifically for EVs, which will add 1,000 new jobs

Ford Motor Company (F-NYSE) is proposing its first hybrid SUV in six years and plans for a fully-electric SUV sometime next year. The company plans to have seven battery-powered vehicles for the U.S. by 2022, including a hybrid pickup truck. Besides GM's Cadillac EV SUV, it plans to have 20 additional models that will run on batteries or hydrogen in four years. The big news, however, was VW's plan to invest \$800 million in an expansion of its Chattanooga plant specifically for EVs, which will add 1,000 new jobs, more than a 25% increase. Following its 'Dieselgate' disaster, the company focused on designing a new platform for manufacturing EVs. Much like its MQB platform that accounts for about 80% of its ICE vehicles now, the company has been developing the MEB platform for EVs. The platform has the flexibility to expand and contract its wheelbase, with the largest battery capable of being spread between the axles of the smallest vehicle. The batteries will be made from either pouches or prismatic cells and assembled into modules that are fit into a battery pack. Scalability is achieved by using more or fewer modules in each battery pack. The plan is for three battery grades from 50 to 80 kWh capacity, which at 90% usable capacity in the cells, produces MEB vehicle ranges from 175 to 300 miles.

Exhibits 10 and 11 (next page) show a stripped down MEB and an overhead view of the battery pack, the axles and drive train. For the first time in 46 years since the original VW Beetle gave way to the Golf, the new platform will be fundamentally rear-wheel drive. Two-wheel drive MEBs will have the drive wheels in back with the engine over the drive axle. That choice was driven by the low center of gravity from the battery pack and the near perfect 50/50 weight distribution, which translates into the purer steering feel that rear-wheel drive cars deliver. All-wheel drive MEBs will merely add a different type motor up front. The front motor will be synchronous in contrast to the rear, which is a permanent magnet motor.

Analysts believe has reduced VW's development time for new models and the assembly time for individual cars by about 30%

The MEB platform is designed to perform like the MQB platform that the company currently uses, which analysts believe has reduced VW's development time for new models and the assembly time for individual cars by about 30%, and will have an impact on its profitability. Time is money, which when coupled with the modular batteries, limited MEB motors and everything VW has learned over the years from its MQB platform, should translate into a cost-competitive vehicle. That will be critical, as EV costs are high

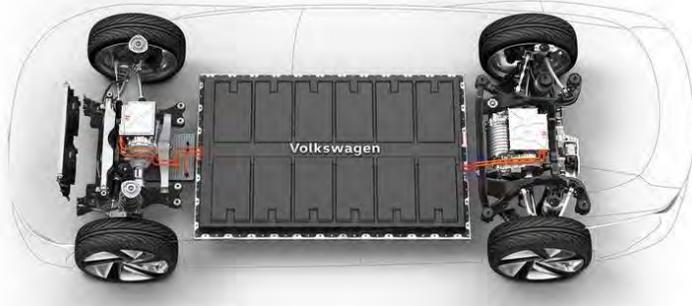
compared to ICE vehicles of similar size. VW plans to sell 150,000 EVs in 2020, or about 1.5% of its annual sales of 10-11 million units.

Exhibit 10. VW's New EV Platform Provides Flexibility



Source: autoweek.com

Exhibit 11. MEB Platform Will Expand And Contract



Source: autoweek.com

VW expects 50-60% to come from China, 20-30% from Europe, and 20% from the United States

In September, EVs accounted for 60%, and the 55% in October, of total Norwegian car sales

VW's plan calls for selling one million EVs in 2025 based on 50 battery-powered and 30 hybrid models. By 2030, every model from every VW brand will have an EV variation available. In terms of where it will target EV sales in 2025, VW expects 50-60% to come from China, 20-30% from Europe, and 20% from the United States.

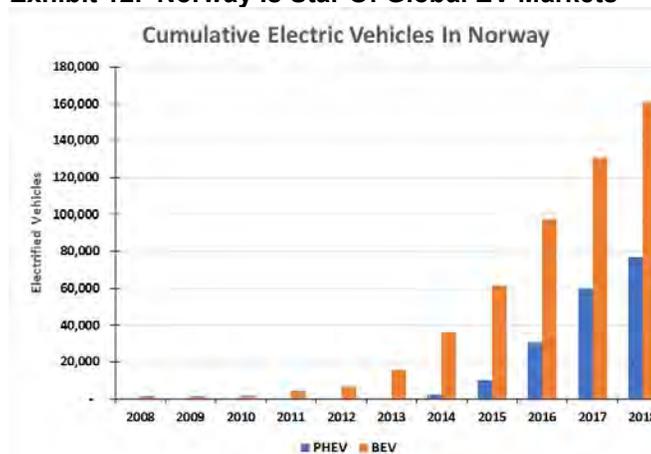
An additional aspect of its business plan is for VW to have EV manufacturing plants across the world, with its initial plants in Europe and North America, and eventually in China. The sales focus is driven by China's strong push for zero-emission vehicles, as well as meeting the increasing demand for them in the U.S. and Europe. In that regard, the EV news from Norway was widely reported because it showed that for certain months during the latter part of 2018, EV sales as a percent of new car sales soared. In September, EVs accounted for 60%, and the 55% in October, of total Norwegian car sales. What wasn't noted was that the overall vehicle market declined during those months. The decline was largely because under European Union rules, traditional ICE vehicles needed to receive new emissions certifications. Because

Many Norwegian families own multiple cars with at least one being an EV

the EU fell behind in certifying new cars, few new ICE cars could be sold in Norway. As a result, in September, the total car market fell by 22.3%, while even EVs fell 2.1%.

Norway is considered the star market for EVs, which is due to the huge incentives the government offers EV owners. We calculated that the \$1 billion or more in annual EV subsidies equates to about \$5,000 per EV on the road. The subsidies come from reduced taxes on vehicle purchases plus free access to high occupancy toll lanes and bus lanes, free parking in central city areas and reduced ferry fees. The latter has already forced ferry owners to petition the government for more funding due to the lost revenue from increased EVs. Many Norwegian families own multiple cars with at least one being an EV. That is the preferred vehicle for in-town travel because of the subsidies. Traditional ICE cars are used for long-distance trips because they eliminate the charging time when an EV's range is exceeded.

Exhibit 12. Norway Is Star Of Global EV Markets



Source: EAFO

One can see how Norway's EV sales took off following the 2011 passage of the first subsidies. In more recent years, the trend reflects faster growth for fully-electric vehicles (BEV) as opposed to plug-in hybrid electric vehicles (PHEV). To some degree, this reflects the entry of Tesla in the market, as well as some other luxury European cars such as BMW.

For European and North American car manufacturers, all sights are on China where EVs are being mandated by both the central government and many municipalities

The rest of Europe is also beginning to follow the Norwegian model, although another early promotor of EVs, Denmark, has pulled back on its vehicle subsidies and has experienced a significant slowdown in EV sales. For European and North American car manufacturers, all sights are on China where EVs are being mandated by both the central government and many municipalities due to air quality concerns and congestion. Exhibit 13 (next page) shows graphically how the growth of the U.S. EV market is being dwarfed by the

Chinese market. China's EV sales are coming despite overall vehicle sales falling sharply. That is attributed to the problems of securing vehicle permits to operate in many of the largest cities in the country, but also due to a weakening economy, plus growing public transport and Mobility-as-a-Service alternatives.

Exhibit 13. China EV Market Dwarfs U.S. Market

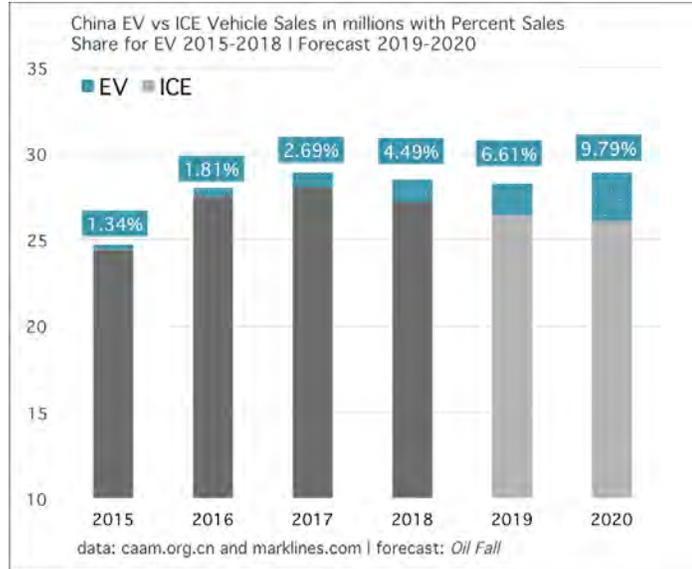


Source: Statista

That marks the first auto market decline in 20 years

An updated chart of China car and EV sales from [Oil Fall](#) by Gregor MacDonald shows how overall sales fell in 2018 due to the softening economy and the expiration of an earlier tax credit designed to stimulate car sales in 2016 and 2017. That marks the first auto market decline in 20 years. EV sales did not appear to suffer from

Exhibit 14. ICE Sales In China Have Peaked



Source: Gregor MacDonald

As of last June, based on data from the Ministry of Public Security, NEVs accounted for 0.6% of all the vehicles on the road in China

the credit expiration, primarily because these vehicles are preferred by municipalities and it is easier to secure a license plate to operate in the city, as opposed to ICE vehicles whose owners often must rely on lotteries to secure one of the few license plates made available each year for new car registrations.

With an automobile market that is roughly 50% larger than the U.S. car market, China is the target for virtually every global car manufacturer. Given the official government policy favoring EVs, those are the vehicles that will be built, either in China or imported from auto plants around the world. The government's goal is for 20% of total car sales in 2025 to be new-energy vehicles (NEVs), or zero-emission vehicles. As of last June, based on data from the Ministry of Public Security, NEVs accounted for 0.6% of all the vehicles on the road in China. Just as in the United States and Europe, EVs are being subsidized and mandated, or promoted via bans on ICE vehicles, which gives them a leg up on the competition in the race to reach a carbon-neutral economy. However, as NEVs represent only 0.6% of the Chinese vehicle fleet, and an even smaller percentage (~0.4%) of the U.S. vehicle fleet, it is going to be many years before EVs threaten the traditional transportation fuels market served by the oil industry. The argument Mr. MacDonald makes in his book is that the key event for the fossil fuel industry is when incremental growth stops. In his view, that marks the beginning of the death watch for fossil fuels.

Canada Energy Policy Swings And The Political Landscape

All of these problems were a direct result of the federal government's opposition to building more oil pipeline export capacity

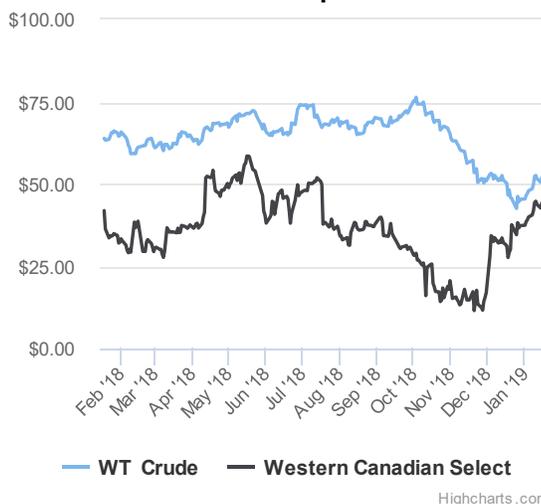
Alberta Premier Rachel Notley's aggressive action last December in mandating an 8.7% production cut for the province's oil producers has accomplished what it was intended to do – lift up wellhead prices. The action, the first time a mandatory production cut had been implemented since Premier Peter Lougheed did in the 1980s, was an extreme reaction to the widening of differentials between Western Canadian Select (WCS) oil price and West Texas Intermediate (WTI) last fall that inflicted significant financial pain on Alberta's oil patch. Premier Notley suggested that the wide differential was costing the province's upwards of \$80 million a day. Not only were producers suffering, as some were having to sell their output below its cost, but the low price was also sucking royalty and income tax money away from the provincial government. All of these problems were a direct result of the federal government's opposition to building more oil pipeline export capacity.

An earlier plan for the Alberta government to increase the province's oil-by-rail export capacity provided only a small lift to wellhead prices. However, it was the early December announcement of a mandatory output cut that drove the price recovery. Exhibit 15 (next page) shows WCS and WTI for the past year. One can clearly see how WCS fell precipitously to extremely low levels in November and December, admittedly at the same time as WTI was crashing due to

When the market assessed the impact of the mandated 322,000 barrels a day output cut, it immediately saw that the current supply glut would start shrinking and thereby narrowing the price differential

the combination of weakened U.S.-Iranian oil sanctions, an increase in OPEC's production, continuing U.S. shale oil production increases and concern about a weakening global economy. When the market assessed the impact of the mandated 322,000 barrels a day output cut, it immediately saw that the current supply glut would start shrinking and thereby narrowing the price differential. That view was helped by the OPEC/non-OPEC production cut agreement, which demonstrated that those member countries' oil ministers were determined to see global oil prices higher in 2019.

Exhibit 15. WCS/WTI Price Gap Has Closed



Source: *Oilprice.com*

Despite a better tone to the crude oil market in Canada, the price recovery has yet to materially improve the province's industry activity and outlook

In the U.S., there are now reports of an emerging shortage of heavy oil because of the inability of Canada to ship more of it to Gulf Coast refineries at the same time Venezuelan heavy oil output continues falling and even Saudi Arabian heavy oil is being restricted by the OPEC production cut and a specific targeting of the U.S. Despite a better tone to the crude oil market in Canada, the price recovery has yet to materially improve the province's industry activity and outlook. The reduced oil output has only temporarily solved the Canadian oil glut issue, which saw crude oil storage volumes reach 35 million barrels, or twice its normal level. Long-term, given the output growth targets planned by Alberta and Saskatchewan producers, more pipelines need to be built, especially if Canadian oil is to get to world markets and higher wellhead prices. Building them is a political issue since the Liberal government in Ottawa, headed by Prime Minister Justin Trudeau, has courted the environmental movement that wants to destroy the fossil fuel industry.

A poll conducted during the final two weeks of 2018 by Angus Reid showed that 53% of Canadians support both the Trans Mountain and the Energy East pipelines. Meanwhile, only 19% oppose both

Pipelines are supported in every province except one

of them. There was a low percentage of support for each of the two pipelines separately, and 17% of respondents didn't indicate what they thought.

What has garnered attention by the media from the survey results is that the pipelines are supported in every province except one – Quebec. The provincial results from the survey were:

BC – 47% support, 19% oppose
 Alberta – 87% support, 2% oppose
 Saskatchewan – 74% support, 8% oppose
 Manitoba – 54% support, 18% oppose
 Ontario – 58% support, 15% oppose
 Quebec – 28% support, 36% oppose
 Atlantic Canada – 57% support, 13% oppose

“There’s no project to invest in at this point” since it needs fresh government approval following the court ruling

A news report about a recent conference of First Nations representatives focused on energy investments highlighted their desire to invest in the Trans Mountain pipeline project. Unfortunately, as pointed out by Ian Anderson, Trans Mountain Corp. president and CEO, a Canadian government-owned corporation, “there’s no project to invest in at this point” since it needs fresh government approval following the court ruling that certain environmental issues were not adequately assessed and the public consultation process was not followed appropriately. Until those issues are resolved, which may not be before this fall or winter, there is no viable project for a First Nations investment.

If Mr. Trudeau’s party wins, then his government will be emboldened to push its energy policy more aggressively, as it will point to two elections in which the public has supported this agenda

The support of First Nations tribes and the polling results about new pipelines should send a pointed message to the Liberal federal government. That does not mean it will accept these events as rationale to alter its environmental policy and stop throttling the future growth of fossil fuels in Canada, the nation’s largest industry. The federal election in October will determine the future of the current energy policy. A Liberal Party defeat will mean the energy policy will be changed to the benefit of the oil and gas industry. If Mr. Trudeau’s party wins, then his government will be emboldened to push its energy policy more aggressively, as it will point to two elections in which the public has supported this agenda. Canada’s 2019 federal election will provide an interesting preview for the 2020 U.S. presidential election.

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