Weekly Fundamental Market Report December 11-15, 2017

Market Update

PRODUCTS	12/11/17	12/12/17	12/13/17	12/14/17	12/15/17
WTI Crude Oil	57.99	57.14	56.60	57.04	57.30
Brent Crude Oil	64.69	63.34	62.44	63.31	63.41
Natural Gas	2.83	2.68	2.72	2.68	2.61

- **CME Group**

Headlines

Local North Dakota

- **Bakken to get new estimate of oil resources. Williston Herald**
  - During the downturn, North Dakota's oil and gas industry buckled down, finding ways to extract more oil than ever from its Bakken, Three Forks wells and drive up the profitability of their operations. They have done so well at this that the United States Geological Survey has agreed to accelerate its timetable for a new study refreshing its estimates of recoverable oil and gas from those formations, as well as several of the other less well-known layers in the Williston Basin. The last study USGS did was in 2013. It found 7.38 billion barrels of technically recoverable oil and gas in the Bakken and Three Forks shale layers. But these days, Bakken oil wells are producing roughly double what a 2011 well did as soon as the seventh month of production. This is a strong indicator that a new estimate will be much higher than the 2013 estimate, state leaders have said. They and North Dakota's Congressional delegation have been pressing the USGS to do a new study sooner than the one scheduled for 2020, and on Monday the agency agreed. Ron Ness, president of the North Dakota Petroleum Association, thanked the delegates for their efforts and said the study is important not just to the oil and gas industry. "When you look at the development of Williston and other communities, this is something that developers can look at and consider," he said, "and hopefully it gives them confidence that there is a tremendous future in the Williston Basin. Not only the Bakken, but other targets as well." The study will look only at new recoverable resources, Ness said, not any that have already been proven and identified. So, the new number could be smaller than the old, but that is on top of what was already here. "This is important across the board as we look at the infrastructure buildout across North Dakota," Ness said. "It's a signal to investors that the Bakken is still a world-class resource." The study is likely to take some time to finish, Ness added, and he hopes that it will look at other layers before the Bakken and Three Forks. "We expect this project will take a while, and that is OK," he said. "Our technology is getting better and better, and I want them to have the best available information when they do this." The study will help the Bakken stay competitive with the Permian Basin, which has been the darling of Wall Street lately, after a USGS study found 20 billion barrels of recoverable oil in its Wolf Camp shale layer alone. Part of the buzz in the Permian has been multiple layers with recoverable oil that developers can tap into, but the Williston Basin also has a lot of layers, too, and the recent technology advances could open some of them up for profitable production. In all, there are 16 potentially productive layers in the Williston Basin. There's the Red River, Mission Canyon, Spearfish and Tyler, which have been mentioned now and again. And there's also the Charles, Lodgepole, Birdbear, Duperow, Winnipegosis, Stony Mountain, Winnipeg and Deadwood, too. The state's geologists have been compiling data on those, Ness said. "There's a lot out there," he said, "and this will get more focus on them, and that is a good thing." Sen. Heidi Heitkamp said that should help the oil and gas industry in North Dakota remain competitive with plays like the Permian, which has lately been attracting a lot of investment capital. "In just the past four years, our state has continued to be at the forefront of the development of innovative energy technologies, and it's likely such a survey will show even more recoverable oil and natural gas is available in the region," she said. "A new USGS survey will help provide more updated data so our state can continue to lead in energy development investment and innovation." U.S. Sen. John Hoeven was likewise pleased with the decision, which followed on the heels of a visit by USGS acting Director William Werkheiser to North Dakota to hear firsthand from the state's energy leaders. "Our state's energy industry continues to develop new and innovative ways to produce more energy with better environmental stewardship," he said. "With these innovations come new assumptions about oil production in the Williston Basin. That's why our producers made

a strong case for this new USGS study. We appreciate the USGS taking a comprehensive look at the region as they work with the state and industry to update the estimate of recoverable oil." Hoeven added that he would continue working through the Appropriations Committee to support federal research programs that empower producers to get more out of oil and gas wells, while at the same time, reducing their environmental footprint. He pointed out the Senate's Fiscal Year 2018 energy funding bill includes $26 million for enhanced oil recovery research, which is a $6 million increase over the previous year. The increased appropriation is something that Heitkamp and Rep. Kevin Cramer have previously said they also support.

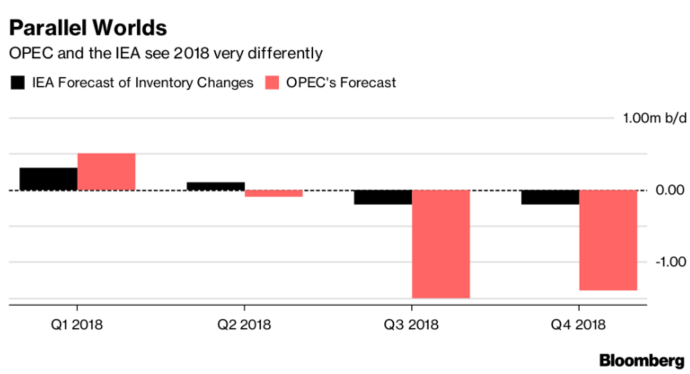
Domestic U.S.

- **Oil prices up on pipeline outage support. Reuters**
    - Oil prices rose on Thursday as a pipeline outage in Britain continued to support prices despite forecasts showing global crude surplus in the beginning of next year. U.S. West Texas Intermediate futures settled up 44 cents, or 0.8 percent, to $57.04 a barrel. Brent crude futures settled up 1.4 percent, or 87 cents, at $63.31 a barrel. Prices have been supported by an outage on the Forties crude pipeline that was expected to last several weeks. "At present you can't ignore the impact of the Forties pipeline outage," said John Kilduff, partner at Again Capital Llc in New York, "It's a significant amount of oil that the market is going to miss and is missing. And it's almost surprising it's not generating more support." A reformer was shut on Thursday after a fire in the East Plant at Citgo Petroleum Corp's 157,500-bpd Corpus Christi, Texas, refinery, said sources familiar with plant operations. The Paris-based International Energy Agency (IEA) expects the oil market to have a surplus of 200,000 barrels per day (bpd) in the first half of next year before reverting to a deficit of about 200,000 bpd in the second half. That means 2018 overall should show "a closely balanced market". The IEA said U.S. crude output next year would increase by 870,000 barrels per day, up from its November forecast of 790,000 bpd. With cash pouring into the U.S. shale oil industry, the United States is on track to deliver up to 80 percent of the world's oil production gains through 2025, the IEA estimates. Yet after lows of $56.09 earlier in the day for U.S. crude and $62.01 for Brent crude, both grades had rallied again by settlement. "The market seems to have digested (the IEA report) and is turning its attention to the fact that we're beginning to tighten," said Gene McGillian, director of market research at Tradition Energy. A fall in U.S. crude inventories last week also lent some support. Stocks fell by 5.1 million barrels in the week to Dec. 8, the fourth consecutive week of decline, to 442.99 million barrels, the lowest since October 2015. The front month of the U.S. crude curve for February and March remains in backwardation. Backwardation, in which the futures contract trades below the crude oil's expected spot price at the contract's maturity, is an indicator of a tight market.

- **Oil holds below two-year highs as focus turns to U.S. output. Reuters**
    - Oil prices were mixed on Friday, lingering below two-year highs on Friday as the continuing outage of a North Sea pipeline and OPEC-led production cuts supported prices, while climbing U.S. output kept a lid on gains. Brent crude futures were down 9 cents at $63.22 a barrel. U.S. West Texas Intermediate (WTI) crude futures were up 23 cents at $57.27 a barrel. WTI hit a two-year high of $59.05 on Nov. 24. Both contracts were on track to end the week broadly flat. "There's a fight in the market," said Gene McGillian, senior analyst at Tradition Energy in Stamford, Connecticut. Speculators have staked out long positions, betting that production cuts will continue to remove oversupply from the market, he said. "Speculators don't seem to be budging," added Rob Haworth, senior investment strategist at U.S. Bank Wealth Management, "They've been long and to some extent right on prices for a while here, so it appears they've continued to press that position." Analysts at Barclays said product inventory levels in industrialized nations were 2 percent below the five-year average at the start of December, compared with 10 percent above the five-year average at the start of 2017, with the drawdown driven by a combination of outages and strong demand growth. On the other side, U.S. production is seen rising in response to higher prices. Goldman Sachs said market conditions allowed major oil companies, or Big Oil, to enter "a positive earnings-revision cycle". It added: "This should allow Big Oil to re-employ capital at double-digit returns." The ongoing outage of the Forties pipeline, which carries North Sea oil to Britain, was the main price support early in the session, traders said. The outage's main physical impact is the North Sea region, but it has global relevance as the crude is used to underpin the Brent price benchmark. Operator INEOS declared force majeure on Forties, the first such declaration in decades. Force majeure is a legal designation that suspends a firm's contractual obligations due to situations beyond its control. Still, U.S. oil production, which has soared 16 percent since mid-2016 to 9.78 million barrels per day (bpd), has undermined OPEC's output curbs. U.S. supply, now close to matching levels of top producers Russia and Saudi Arabia, will likely move oil markets into a supply surplus in the first half of 2018, the International Energy Agency (IEA) said on Thursday. The market will be closely watching the weekly rig report at 1 p.m. EST from General Electric Co's Baker Hughes energy services firm. In the previous week, drillers added two oil rigs.

Global

- **The Biggest Voices in Oil Disagree About 2018.** Bloomberg
  - The two most critical forecasts of global oil markets offer contrasting visions for 2018: one in which OPEC finally succeeds in clearing a supply glut, and another where that goal remains elusive. In the estimation of the Organization of Petroleum Exporting Countries, production curbs by the cartel and its allies will finally eliminate the excess oil inventories that have depressed crude prices for more than three years. But in the view of the International Energy Agency, which advises consumers, that surplus will barely budge. "Both cannot be right," said Ole Sloth Hansen, head of commodity strategy at Saxo Bank A/S in Copenhagen. "Whichever way the pendulum swings will have a significant impact on the market." PEC and Russia have eliminated almost two-thirds of a global glut this year as the former rivals jointly constrict their crude production to offset a boom in U.S. shale oil. At the heart of the clash between the 2018 forecasts is whether the alliance can deplete the rest of the overhang without triggering a new flood of American shale. Late last year, OPEC and Russia set aside decades of rivalry and mistrust to end a slump in global oil markets that has battered their economies. Defying widespread skepticism, they cut oil supplies as promised, and resolved on Nov. 30 to persevere until the end of next year. Brent crude climbed this week to a two-year high above $65 a barrel, although prices had slipped to $63.37 as of 11:32 a.m. in London. Both the IEA and OPEC agree that the coalition's cuts are working. The surplus oil inventories in developed nations -- OPEC's main metric for gauging success -- fell to 111 million barrels in October, from 291 million last November, according to the Paris-based IEA, established in 1974 in the wake of the Arab oil embargo. Where they diverge is on what happens next. OPEC predicts the re-balancing will be complete by late next year as those stockpiles plunge by about 130 million barrels in 2018. By contrast, the IEA sees inventories remaining steady as new supply growth surpasses gains in demand. It warned OPEC on Thursday that it may be deprived of a "Happy New Year." Although both institutions project that demand for OPEC crude will be about 32.3 million barrels a day on average in the first half of 2018, their views drift apart as the year progresses. OPEC expects it will need to pump about 34 million barrels day in the second half, while the IEA sees a requirement of just 32.7 million a day. "They live in the same world for the first half of 2018, but divorce into separate universes for the second half," said Olivier Jakob, managing director at consultants Petromatrix GmbH in Zug, Switzerland. "OPEC believes in strong growth of oil demand; the IEA believes in strong growth of non-OPEC supplies. While OPEC expects rival supplies to expand by 1 million barrels a day next year, the IEA forecasts non-OPEC to grow by 1.6 million a day. The difference partly lies in their conflicting views of the supply source that unleashed the glut OPEC is now battling to clear: U.S. shale oil. OPEC boosted estimates for U.S. crude production this week and now sees an expansion of 720,000 barrels a day next year. Still, the IEA's forecast is about 20 percent higher. "The uncertainty surrounding shale oil production for next year has resulted in very differing views on the 2018 fundamental picture," said Tamas Varga, an analyst at PVM Oil Associates Ltd. in London. When OPEC officials invited a range of experts to brief them on the U.S. shale outlook days before their Nov. 30 meeting, they were dismayed by the divergence of opinions, people familiar with the matter said. One of those experts, veteran crude trader Andy Hall, cited the unpredictability of shale as one reason for shuttering his flagship hedge fund this summer. Saudi Arabian Minister of Energy and Industry Khalid Al-Falih, speaking at the OPEC meeting in Vienna, rejected the IEA's outlook for 2018 as excessively pessimistic. There are signs that the U.S. shale boom is slowing. Drillers may have reached the limits in terms of cutting costs and boosting productivity, and investors are finally insisting that profits are shared out rather than funneled back into supply growth. Yet analysts from Citigroup Inc. to Goldman Sachs Group Inc. and Commerzbank AG warn that OPEC continues to underestimate the magnitude of the shale revolution. American producers are rushing to lock in revenues as U.S. crude approaches $60 a barrel, enabling them to finance a new wave of drilling, data compiled by Bloomberg New Energy Finance show. "The U.S. alone can achieve almost all of the supply growth that OPEC forecasts globally in 2018," said Carsten Fritsch, an analyst at Commerzbank in Frankfurt. "So, without question, the IEA's forecast is more convincing."



Oil and Gas Analysis

o Rotary Rig Count Summary

Location	Date	Week	+/-	Week Ago	+/-	Year Ago
United States	8-Dec-17	931	2	929	307	624
	15-Dec-17	930	-1	931	293	637
North Dakota	8-Dec-17	46	-1	47	14	32
	15-Dec-17	47	1	46	16	31
Canada	8-Dec-17	219	-3	222	-11	230
	15-Dec-17	238	19	219	4	234
International	Nov-17	942	-9	951	17	925

- **Baker Hughes**

o WTI & Bakken Spot Price

December Daily Spot Prices					
	Mon	**Tue**	**Wed**	**Thu**	**Fri**
Bakken (FH)					
2017 November-27 to December-1	51.55	51.55	51.5	51.5	51.5
2017 December-4 to December-8	52.5	52.1	52.25	52.5	52.25
2017 December-11 to December-15	52.31	52.31	52.1	52.15	52.15
WTI					
2017 November-27 to December-1	58.1	57.96	57.25	57.4	58.35
2017 December-4 to December-8	57.48	57.66	55.79	56.5	57.15
2017 December-11 to December-15	57.84				
Differentials					
2017 November-27 to December-1	6.55	5.86	5.15	5.9	6.85
2017 December-4 to December-8	4.98	5.56	3.54	4	4.9
2017 December-11 to December-15	5.53				

- **Flint Hills Resource**
- **EIA**

- ## Weekly Petroleum Status Report

Stocks (Million Barrels)			
	Four Weeks Ending		
	12/8/2017	12/1/2017	12/9/2016
Crude Oil (Excluding SPR)	443.0	448.1	483.2
Motor Gasoline	226.5	220.9	230.0
Distillate Fuel Oil	128.1	129.4	155.9
All Other Oils	449.4	451.2	471.5
Crude Oil in SPR	662.9	662.7	695.1
Total	1,910.0	1,912.3	2,035.7

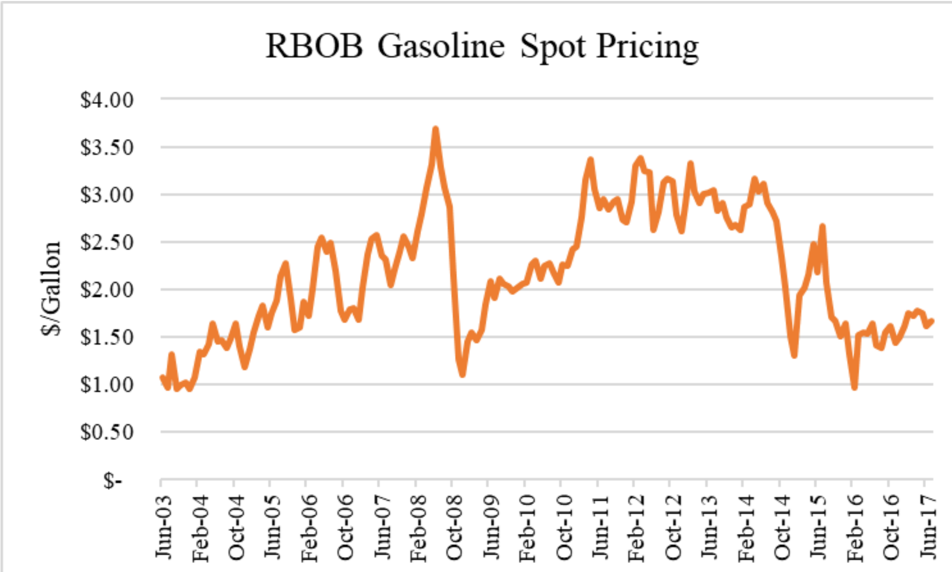
Products Supplied (Thousand Barrels per Day)			
	Four Weeks Ending		
	12/8/2017	12/1/2017	12/9/2016
Motor Gasoline	9,076	9,097	8,934
Distillate Fuel Oil	4,014	3,926	3,924
All Other Products	6,753	6,642	6,585
Total	19,843	19,664	19,443

Refinery Activity (Thousand Barrels per Day)			
	Four Weeks Ending		
	12/8/2017	12/1/2017	12/9/2016
Crude Oil Input to Refineries	16,997	16,919	16,393
Refinery Capacity Utilization	92.8	92.2	90.4
Motor Gasoline Production	10,135	10,066	9,857
Distillate Fuel Oil Production	5,317	5,313	5,097

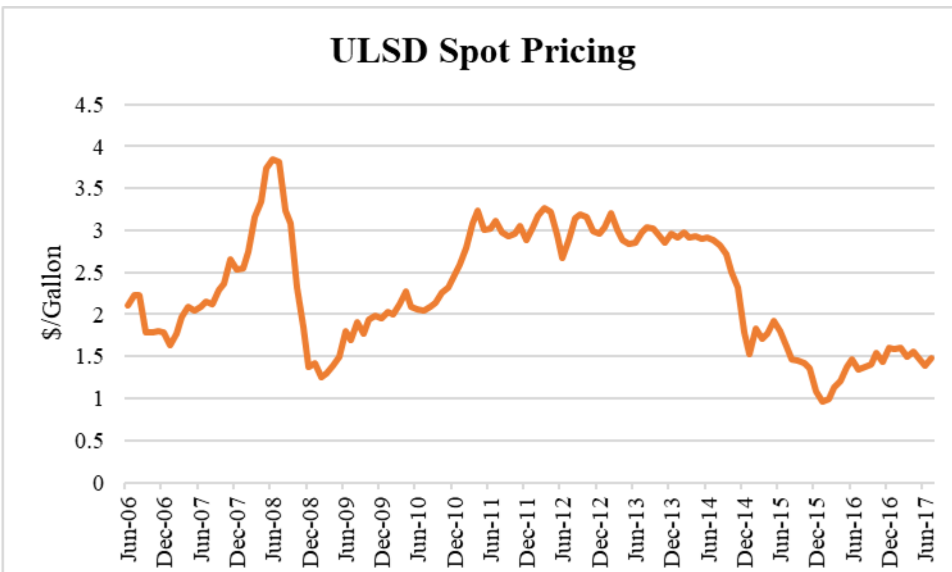
Net Imports (Thousand Barrels per Day)			
	Four Weeks Ending		
	12/8/2017	12/1/2017	12/9/2016
Crude Oil	6,080	6,203	7,216
Petroleum Products	-3,251	-3,412	-2,474
Total	2,829	2,791	4,742

- **EIA**

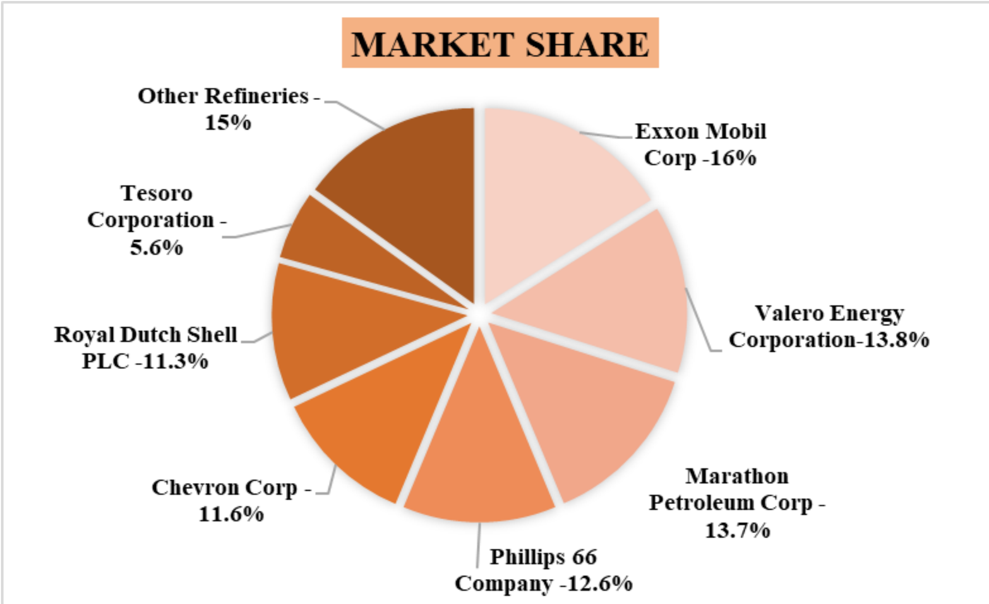
- **RBOB Gasoline**

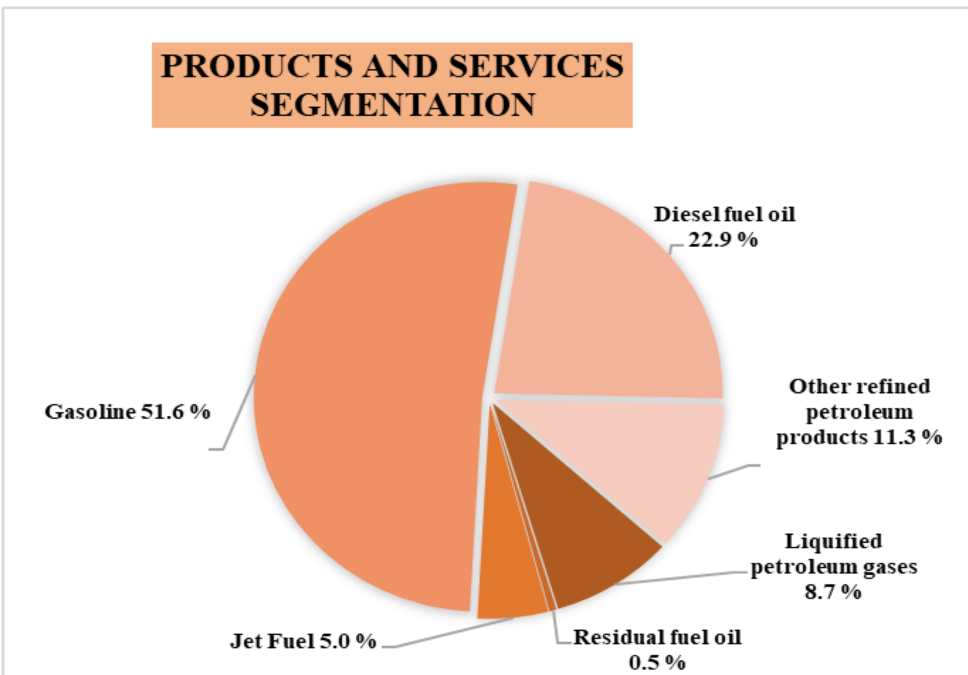


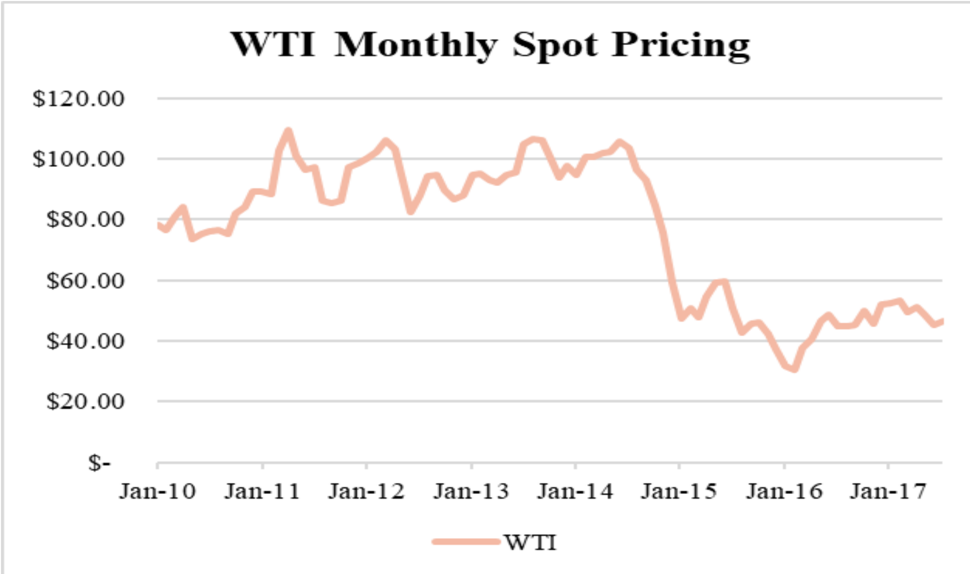
- **Ultra-Low Sulfur Diesel**



- ## US Petroleum Refining at a Glance







- **EIA**

o Key External Drivers

- **World price of crude oil**
  - http://markets.businessinsider.com/commodities/oil-price?type=wti
- **Demand from gasoline and petroleum bulk stations**
  - https://www.reuters.com/article/us-usa-natgas-kemp/u-s-natural-gas-prices-rise-as-winter-stocks-look-tight-kemp-idUSKCN1BU1RK
- **GDP of mainland China**
  - https://tradingeconomics.com/china/gdp
- **Trade-weighted index**
  - https://www.investing.com/news/economy-news/top-5-things-to-know-in-the-market-on-friday-541066
- **Total vehicle miles**
  - https://www.advisorperspectives.com/dshort/updates/2017/08/31/vehicle-miles-traveled-another-look-at-our-evolving-behavior