Weekly Fundamental Market Report December 25-January 5, 2018

Market Update

PRODUCTS	12/25/17	12/26/17	12/27/17	12/28/17	12/29/17	1/1/18	1/2/18	1/3/18	1/4/18	1/5/18
WTI Crude Oil	-	59.97	59.64	59.84	60.42	-	60.37	61.63	62.1	61.44
Brent Crude Oil	-	67.02	66.44	66.72	66.60	-	66.57	67.84	68.07	67.62
Natural Gas	-	2.64	2.74	2.91	2.95	-	3.06	3.01	2.88	2.8

- **CME Group**

Headlines

Local North Dakota

- **ND oil leaders credit Dakota Access Pipeline for 2017 production rebound.** **Dickinson Press**
  - North Dakota oil production returned to near-record levels in 2017, which one industry leader credited in part to the Dakota Access Pipeline. "It has been a game-changer," said Ron Ness, president of the North Dakota Petroleum Council. The pipeline system connecting North Dakota with Gulf Coast markets has lowered transportation costs, making the price for Bakken crude more competitive. Justin Kringstad, director of the North Dakota Pipeline Authority, said before Dakota Access began service in June, the price for a Bakken barrel was about $7 to $8 lower than the West Texas Intermediate price. From June through October, the most recent data available, the average discount was $5 a barrel, Kringstad said. "That means getting more and more revenue out of each barrel," said Ryan Rauschenberger, North Dakota tax commissioner. State tax revenues have increased about $43.5 million for the first five months that Dakota Access operated, according to Kringstad's analysis. That does not include the impact of increased revenue for oil producers and royalty owners. Dakota Access, developed by Energy Transfer Partners, can transport up to 470,000 barrels a day from the Bakken to Patoka, Ill., with the ability to expand to 570,000 barrels a day. From Patoka, oil is transported on the Energy Transfer Crude Oil Pipeline to Nederland, Texas. Native American tribes continue to challenge Dakota Access in federal court. In early December, a judge granted a tribal request to require the U.S. Army Corps of Engineers and Energy Transfer Partners to complete an oil spill response plan for the stretch of pipe beneath the Missouri River. Tribes unsuccessfully sought to shut down the pipeline while additional review is conducted. The response plan is due in April. Kringstad plans to keep watching the impact of Dakota Access, and expects to see some price fluctuations. "I do continue to expect the market to ebb and flow as it readjusts," Kringstad said. Ness said the increased competitiveness of the Bakken is one reason North Dakota oil production increased in 2017. Production was nearly 1.2 million barrels a day in October, the most recent figure available, about 42,000 barrels a day shy of the record set in December 2014. Ness also attributes production gains to advancements in technology and optimism in the industry spurred by President Donald Trump's rollback of regulations. North Dakota is ending the year with about 53 drilling rigs operating, compared with the average rig count in January 2017 of 38. Lynn Helms, director of the Department of Mineral Resources, anticipates the rig count will stay in the mid- to upper 50s in 2018. The state struggled in 2017 to recruit enough qualified workers for hydraulic fracturing crews to keep up with drillers, but caught up in the third quarter to about 30 crews, Helms said. Even with the additional workers, companies still had a backlog of 889 wells that were drilled at the end of October but waiting on fracking crews. Natural gas production continued to break records in 2017, as producers focused more on the core area of the Bakken where wells produce more gas. The state produced more than 2 billion cubic feet per day of natural gas in October, an all-time high. Natural gas flaring also increased in 2017, with more than 320 million cubic feet per day flared in October. Reducing flaring is expected to be a significant challenge for the industry in 2018. The industry was barely meeting the gas capture targets set by the North Dakota Industrial Commission in the fall of 2017, and those targets are scheduled to become more aggressive in November 2018. The Petroleum Council plans to make reducing flaring a priority for 2018, re-forming a flaring taskforce to identify bottlenecks, and will work to encourage additional investments in natural gas processing plants and other infrastructure, Ness said. "We're going to need to have massive investment on the natural gas side," Ness said.

- **2018 looks optimistic for ND energy.** **Dickinson Press**
  - The North Dakota Industrial Commission's Department of Mineral Resources believes 2018 will be a lot like 2017 when it comes to North Dakota energy. That isn't a bad thing, because 2017 ended on a high note with increased oil production toward the end of the year. "Oil production always seems to surprise us and it does look like we're going to end 2017 on an optimistic note," said Alison Ritter, public information officer for the Mineral Resources Department. "We're going to end on a high note (and) we expect that optimism to continue to 2018, but we don't expect companies to add very many more rigs ... that is, unless we get more people in the state." Ritter said a lack of skilled workers and a generally low population, consistent challenges in North Dakota, have resulted in fewer rigs being added to the landscape. The minerals department is focusing its attention on keeping industry on task in terms of capturing waste gas and keeping flaring to acceptable levels, she said. "So right now industry has a target of ... 85 percent capture, and for the most part they are meeting it," she said, unlike a few months ago when it missed its target for the first time in three years. Ritter said an increased capture target of 88 percent is a challenge to the oil and gas industry and an acknowledgment of the increasing hunger for natural gas. "Now that we're seeing record gas production ... it just showcases the need to continue to develop our pipeline infrastructure and have additional investment in pipeline gathering and natural gas processing," she said. The second most pressing area for the department is dealing with federal regulations. Department of Mineral Resources officials have been litigating against certain rule changes they say infringes on North Dakota's rights, Ritter said, pointing to the Bureau of Land Management's 2015 hydraulic fracturing rule. States oppose the rule and environmental groups support it, and Ritter expects a continued battle over it and other rules in 2018. "We expect all of these legal challenges to either wrap up or continue with opposition," she said. "We certainly were very happy to see the BLM rescind the rule. That's something the Trump administration was going to review." The agency is eager to see the results of enhanced oil recovery pilot projects underway in different parts of the state, including one in Mountrail County and another at the McGregor Field straddling Williams and Divide counties. "Each method is a little bit different ... but we certainly are hoping they have positive results," Ritter said.

Domestic U.S.

- **Supply discipline and demand to prop up oil prices in 2018.** **Reuters**
  - OPEC and Russia's efforts to curb oil output, combined with forecasts for strong global demand growth, are expected to keep crude prices close to $60 a barrel in 2018, a Reuters poll of analysts showed on Thursday. A flag with the Organization of the Petroleum Exporting Countries (OPEC) logo is seen before a news conference at OPEC's headquarters in Vienna, Austria, December 10, 2016. The survey of 32 economists and analysts forecast Brent crude LCOc1 would average $59.88 a barrel in 2018, up from the $58.84 forecast in the previous monthly poll. Oil prices, which hit 2-1/2-year highs this week, have rallied by more than 30 percent since the Organization of the Petroleum Exporting Countries (OPEC) and non-OPEC producers agreed to limit production from January 2017. The producers last month extended the deal to curb output throughout 2018. "Oil demand will be high in 2018, with solid economic growth worldwide ... Supply will be relatively tight because of high OPEC commitment," said Frank Schallenberger, head of commodity research at LBBW. Large supplies of crude will head to Asia to satisfy strong demand from the region, analysts said. U.S. exports to Asia have already increased with higher Middle East oil prices because of the OPEC-led output cuts and a wide WTI-Brent spread. Total crude oil imports to China, one of the world's biggest oil consumers, rebounded to the second-highest level on record in November at 9.01 million barrels per day (bpd). U.S. light crude CLc1 was expected to average $55.78 a barrel next year, up from last month's forecast of $54.78. Strong OPEC compliance with the supply pact should lend support to prices, analysts said. However, price rise will be capped by booming shale output in the United States, which is not participating in the global deal to curb production. U.S. oil production C-OUT-T-EIA, which has risen more than 16 percent since mid-2016, is expected to surpass 10 million bpd next year, some analysts said. "We see U.S. supply continuing to grow next year but are less concerned about a sudden supply glut re-emerging as rising D&C (drilling and completion) costs will likely slow production growth," said Ashley Petersen of Stratas Advisors. Production disruptions in Libya and Nigeria and a possible renewal of U.S. sanctions on Iran are also likely to support prices in 2018, analysts said.

- **Oil at highest since 2015 on inventory drawdown, Iran unrest.** **Reuters**
  - Oil rose on Thursday to its highest since May 2015, on concern about supply risks due to unrest in Iran and another decline in U.S. inventories as refining activity hit a 12-year high. U.S. oil stocks fell more than expected, continuing a steady drawdown of supplies in the world's largest oil consumer, though stocks of distillates and gasoline rose on heavy refining activity driven in part by year-end adjustments. However, cold weather across much of the country was expected to keep demand high, as heating oil prices were just off highs not seen since early 2015. Brent crude LCOc1, the international benchmark, settled up 23 cents at $68.07 a barrel after hitting a high of $68.27 earlier in the session. U.S. crude CLc1 settled up 38 cents at $62.01, after

earlier hitting $62.21, its highest since May 2015. Freezing weather in the United States has boosted demand for heating oil. Heating oil futures were down 0.7 percent to $2.0741 a gallon; the contract hit highs not seen since February 2014 earlier in the week. U.S. crude stocks USOILC=ECI fell by 7.4 million barrels in the last week of 2017, exceeding expectations, as refiners boosted activity to their highest rate since 2005, the U.S. Energy Information Administration said on Thursday. “The draw was fairly in line with what we’ve seen in the latter half of 2017,” said Matt Smith, director of commodity research at Clipper Data in Louisville, Kentucky. U.S. crude stocks have dropped more than 78 million barrels since the middle of 2017 to 424.5 million, the lowest since September 2015. Anti-government protests since last week in Iran, OPEC’s third-largest producer, have added a geopolitical risk premium to oil prices, though the country’s production and exports have not been affected, sources said. “The protests don’t put crude oil production at risk; from that perspective it is sort of a moot geopolitical factor,” said Sarp Ozkan, analyst at Drillinginfo.com in Denver. Apart from a spike in May 2015, oil is at its highest since December 2014 - the month after a decision by the Organization of the Petroleum Exporting Countries to stop cutting output to support prices. OPEC, supported by Russia and other non-members, began to reduce output a year ago to remove a glut built up in the previous two years. Compliance has been high, as producers have decided to extend the supply pact until the end of 2018. OPEC’s cuts are helping reduce global inventories, even as production continues to rise in the United States. U.S. production rose to 9.78 million barrels in the last week.

- **U.S. oil prices hit highest since mid-2015 on surprise output drop. Reuters**
  - U.S. oil prices hit their highest since mid-2015 on the final trading day of the year as an unexpected fall in American output and a fall in commercial crude inventories stoked buying. In international markets, Brent crude oil futures also rose, supported by ongoing supply cuts by top producers OPEC and Russia as well as strong demand from China. U.S. West Texas Intermediate (WTI) crude futures were at $60.07 a barrel at 1150 GMT, up 23 cents or 0.4 percent from their last close, after hitting a June 2015 high of $60.32. Brent crude futures - the international benchmark - were also up, rising 23 cents to $66.39 a barrel. Brent broke through $67 earlier this week for the first time since May 2015. Since the start of the year, Brent and WTI have risen by 17 and 12 percent, respectively, although the price rises from mid-2017 are much stronger, at nearly 50 percent. Friday’s WTI price rises were driven by a surprise drop in U.S. oil production, which last week dipped to 9.754 million barrels per day (bpd), down from 9.789 million bpd the previous week, according to data from the Energy Information Administration (EIA) released late on Thursday. U.S. output is still up by almost 16 percent since mid-2016, but most analysts had expected production to break through 10 million bpd by the end of this year - a level only surpassed by top exporter Saudi Arabia and top producer Russia. WTI prices were further boosted by a fall in U.S. commercial crude storage levels, which dropped by 4.6 million barrels in the week to Dec. 22 to 431.9 million barrels, according to the EIA. Inventories are now down by almost 20 percent from their historic highs last March, and well below this time last year or in 2015. In international markets, China has issued crude oil import quotas totaling 121.32 million tonnes for 44 companies in its first batch of allowances for 2018. Based on total expected quotas, China’s imports - which at around 8.5 million bpd are already the world’s biggest - are expected to hit another record in 2018 as new refining capacity is brought online and Beijing allows more independent refiners to import crude. On the supply side, Brent prices have been supported by a year of production cuts led by the Organization of the Petroleum Exporting Countries and Russia. The cuts started last January and are scheduled to cover all of 2018. Pipeline outages in Libya and the North Sea have also supported oil prices, although both disruptions are expected to be resolved by early January. The Forties pipeline was already pumping close to normal levels, trading sources said on Friday.

Global

- **America could become oil king of the world in 2018. CNN**
  - The United States is poised to ramp up crude oil production by 10% in 2018 to about 11 million barrels per day, according to research firm Rystad Energy. Surging shale oil output should allow the United States to dethrone Russia and Saudi Arabia as the planet's leading crude oil producer, Rystad predicted in a recent report. The U.S. hasn't been the global leader, nor ahead of both Russia and Saudi Arabia, since 1975. "The market has completely changed due to the U.S. shale machine," said Nadia Martin Wiggen, Rystad's vice president of markets. The prediction shows how the fracking revolution has turned America into an energy powerhouse -- a transformation that President Trump has vowed to accelerate by cutting regulation. This long-term shift has allowed the U.S. to be less reliant on foreign oil, including from the turbulent Middle East. U.S. oil production slipped -- but didn't completely collapse -- after Saudi-led OPEC launched a price war in late 2015 aimed at reclaiming market share lost to shale and other players. A massive supply glut caused crude to crash from around $100 a barrel to a low of $26. Cheap prices forced shale companies in Texas, North Dakota and elsewhere to dial back. Domestic output bottomed at 8.55 million barrels per day in

September 2016, down 11% from the recent peak in April 2015, according to the U.S. Energy Information Administration. But the resilient oil industry, led by the shale hotbed of the Permian Basin of Western Texas, rebounded nicely last year. The comeback was driven by higher crude prices as well as new technology that makes it cheaper and easier to frack. The EIA recently forecasted that U.S. crude oil production would jump to an average of 10 million barrels per day in 2018. That would take out the previous annual record of 9.6 million barrels set in 1970. Rystad Energy is even bullish on American oil. The Norwegian firm sees U.S. crude output hitting 11 million barrels per day by December, narrowly surpassing global leader Russia and OPEC kingpin Saudi Arabia. Others are skeptical. Byron Wien, vice chairman of Blackstone's (BX) private wealth solutions group, predicted this week that fracking production would be "disappointing" in 2018, lifting crude oil prices above $80 a barrel. Crude climbed above $61 a barrel on Wednesday for the first time in 2-1/2 years. The recent bump in prices has been driven by a pipeline explosion in Libya and protests in Iran. Bigger picture, the oil rebound has been caused by solid demand and the whittling down of the epic supply glut that caused prices to crash in the first place. A big key behind fixing the oversupply problem has been OPEC and Russia dialing back their pumping. In late November, OPEC and Russia agreed to extend oil production cuts until the end of 2018. The production cuts have helped stabilize oil prices, paving the way for U.S. shale output to ramp up. By contrast, Trump has vowed to usher in an era of "American energy dominance," in part by reducing red tape around oil drilling. Last week, a U.S. safety regulator proposed rollback to offshore drilling rules. The Bureau of Safety and Environmental Enforcement, which was formed in the wake of the deadly 2010 BP oil spill, estimates the revisions would slash industry "compliance burdens" by at least $228 million over 10 years. The rule change "moves us forward toward meeting the Administration's goal of achieving energy dominance without sacrificing safety," BSEE director Scott Angelle said in a statement on December 28. Rystad Energy said market forces, not deregulation, has underpinned the upswing in U.S. oil output. "I don't think it's had a significant impact," Rystad's Martin Wiggen said of Trump's efforts to roll back environmental regulations. She added though that there is "not a fear under the Trump administration that he will suddenly outlaw shale." Bernie Sanders called for a national ban on fracking during the 2016 campaign. Regardless of the driver, the ramp-up in oil pumping has lessened the need for the U.S. to rely on oil from unstable places like Venezuela and the Middle East. "The fact that the U.S. produces more oil is a fantastic development in terms of security," said Martin Wiggen. U.S. oil imports have dropped by 25% over the past nine years, according to the EIA. At the same time, the U.S. oil exports have flourished since the 40-year ban on shipping crude overseas was lifted in 2015. Exports have more than tripled over the past year to record highs. The U.S. still imports more oil than it exports, but that gap is shrinking.

Oil and Gas Analysis

Rotary Rig Count Summary

Location	Date	Week	+/-	Week Ago	+/-	Year Ago
United States	29-Dec-17	929	-2	931	271	658
	5-Jan-18	924	-5	929	259	665
North Dakota	29-Dec-17	46	-2	48	15	33
	5-Jan-18	45	-1	46	10	36
Canada	29-Dec-17	136	-74	210	-21	157
	5-Jan-18	174	38	136	-31	205
International	Dec-17	954	12	942	25	929

- Baker Hughes

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
2017 December-18 to December-22	52.29	52.29	52.4	52.59	52.68
2017 December-25 to December-29	-	52.95	52.96	52.97	52.97
2018 January-1 to January-5	-	53.07	53.07	56.63	56.63
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	57.12	56.59	57	57.29
2017 December-18 to December-22	57.17	57.49	58.09	58.34	58.25
2017 December-25 to December-29	-	59.55	59.67	59.84	60.46
2018 January-1 to January-5	-	60.37			
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	4.81	4.19	4.41	5.14
2017 December-18 to December-22	4.88	5.2	5.79	5.75	5.57
2017 December-25 to December-29	-	6.6	6.71	6.87	7.49
2018 January-1 to January-5	-	7.3			

- Flint Hills Resource

- **EIA**

- o **Weekly Petroleum Status Report**

Stocks (Million Barrels)			
	Four Weeks Ending		
	12/29/2017	**12/22/2017**	**12/30/2016**
Crude Oil (Excluding SPR)	424.5	431.9	479.0
Motor Gasoline	233.2	228.4	235.5
Distillate Fuel Oil	138.8	129.9	161.7
All Other Oils	428.8	433.9	445.8
Crude Oil in SPR	663.7	663.4	695.1
Total	1,889.0	1,887.5	2,017.0

Products Supplied (Thousand Barrels per Day)			
	Four Weeks Ending		
	12/29/2017	**12/22/2017**	**12/30/2016**
Motor Gasoline	9,163	9,224	8,972
Distillate Fuel Oil	4,055	4,092	3,835
All Other Products	7,358	7,260	6,787
Total	20,576	20,576	19,593

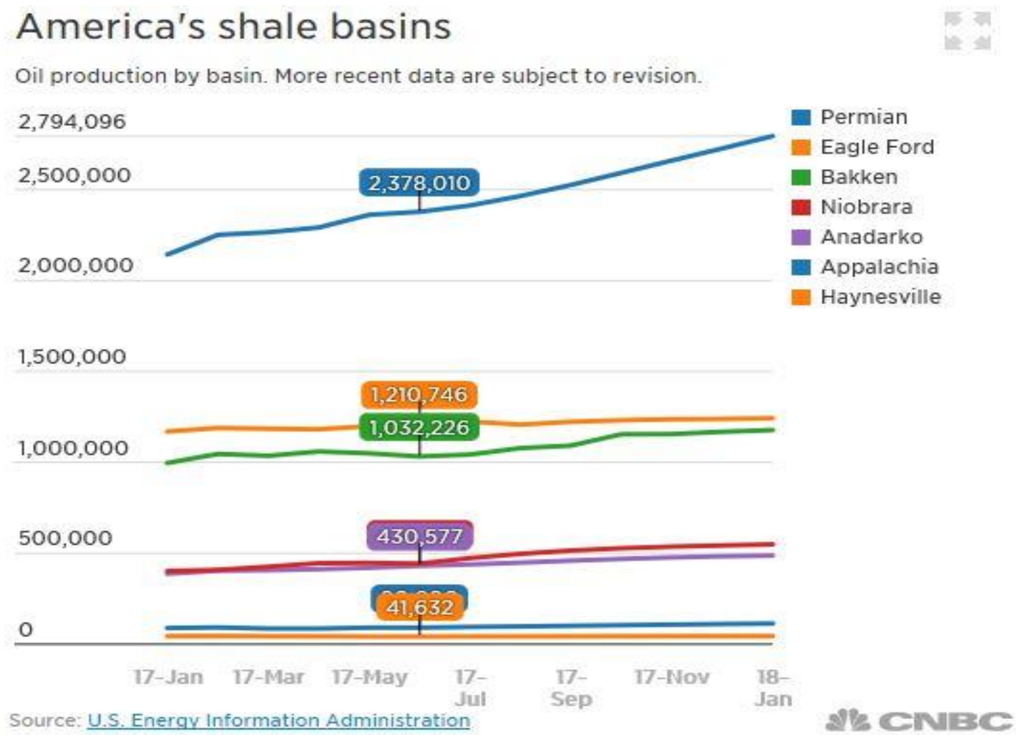
Refinery Activity (Thousand Barrels per Day)			
	Four Weeks Ending		
	12/29/2017	**12/22/2017**	**12/30/2016**
Crude Oil Input to Refineries	17,255	17,152	16,595
Refinery Capacity Utilization	95	94.3	91.2
Motor Gasoline Production	10,031	10,050	9,996
Distillate Fuel Oil Production	5,380	5,333	5,104

Net Imports (Thousand Barrels per Day)			
	Four Weeks Ending		
	12/29/2017	**12/22/2017**	**12/30/2016**
Crude Oil	6,382	6,220	7,207
Petroleum Products	-2,879	-2,999	-3,324
Total	3,503	3,221	3,883

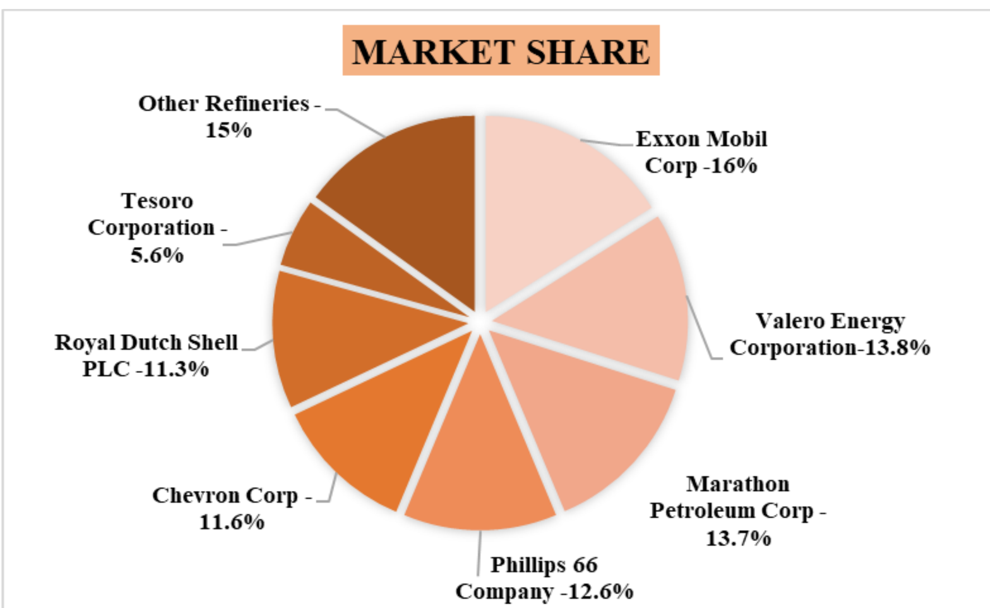
- **EIA**

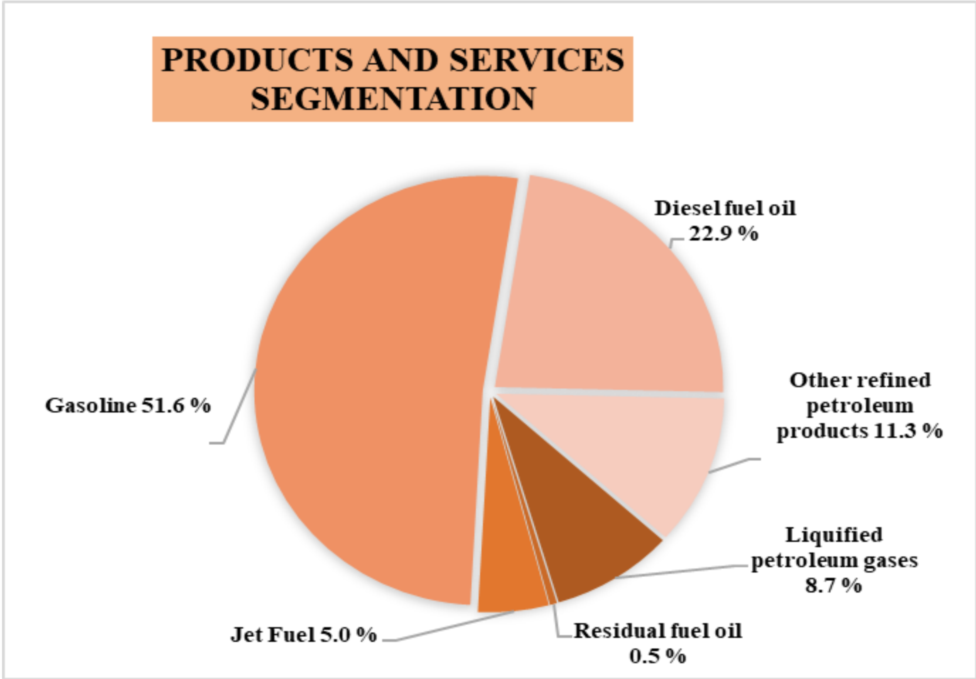
- **US Oil Production**

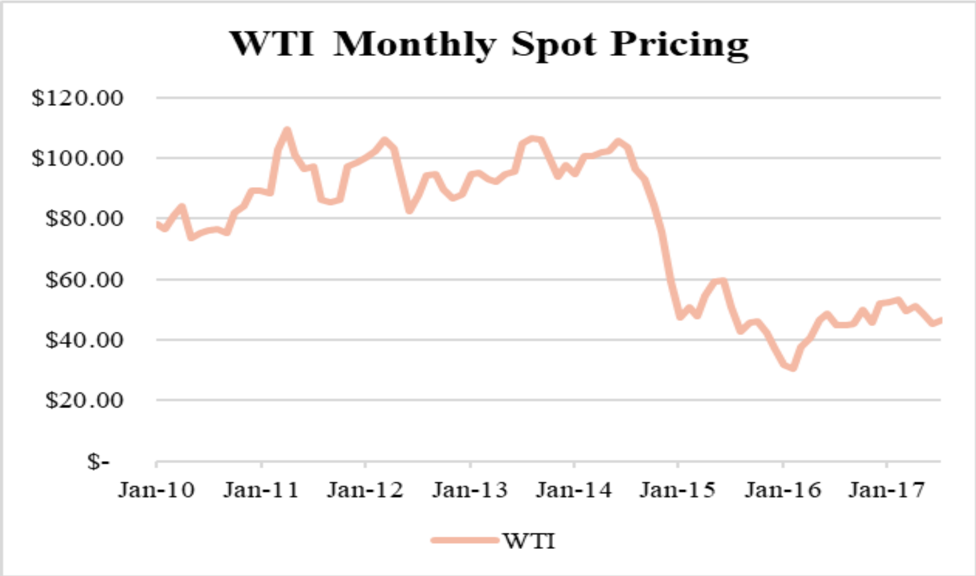
- **Americas Shale Basins**



o 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