

### U.S. Total Crude Oil Supply and Demand

Mbb/d	U.S. Total Crude Oil Supply and Demand					Table: A
	Previous Week	Current Week	Weekly Change	Previous Estimate	Forecast Estimate	
	4/13/18	4/20/18	4/20/18	4/20/18	4/27/18	
<b>Production</b>	10,540	10,586	46	10,600	10,627	
<b>Imports</b>	7,930	8,469	539	7,975	8,244	
<b>Stock Withdrawal</b>	153	-	(153)	258	127	
<b>SPR Withdrawal</b>	-	105	105	-	-	
<b>Unaccounted (Positive)</b>	75	102	27	-	-	
<b>Supply</b>	18,698	19,262	564	18,833	18,997	
<b>Refinery Input</b>	16,949	16,621	(328)	17,099	16,966	
<b>Exports</b>	1,749	2,331	582	1,734	2,031	
<b>Stock Injection</b>	-	310	310	-	-	
<b>SPR Injection</b>	-	-	-	-	-	
<b>Unaccounted (Negative)</b>	-	-	-	-	-	
<b>Demand</b>	18,698	19,262	564	18,833	18,997	
<b>Weekly Stock Change</b>	(1,071)	2,170		(1,806)	(886)	
<b>Weekly Stocks Excluding SPR</b>	427,567	429,737	2,170	425,761	428,852	

#### Weekly Highlights

- » US Commercial Crude Inventories ↓ 2.170 MMbbl
- » Cushing Oil Inventories ↑ 459 Mbbl
- » Total Motor Gasoline Inventories ↑ 840 Mbbl
- » Distillate Fuel Oil Inventories ↓ 2.611 MMbbl
- » SPR Oil Inventories ↓ 738 Mbbl

#### Daily Highlights

- » Domestic Oil Production ↑ 46 Mbb/d to 10.540 MMbbl/d
- » Crude Oil Imports ↑ 539 Mbb/d to 8.469 MMbbl/d
- » Crude Oil Exports ↑ 582 Mbb/d to 2.331 MMbbl/d
- » Refinery Inputs ↓ 328 Mbb/d to 16.621 MMbbl/d

#### Quick Hits

Refinery utilization (down 328 Mbb/d) dropped this week, largely offset by record-setting exports (up by 582 Mbb/d). U.S. exports are ramping up just as Permian grades are having an increasingly hard time getting to the Gulf. The Midland-Magellan East Houston spread blew out to \$10.60/bbl due to continued capacity constraints. Overall, the bearish inventory growth in today's report was compensated by optimism for U.S. export growth and international demand.

#### Report Recap

For the week of April 20th, the American Petroleum Institute (API) predicted a build of 1.099 MMbbl in U.S. crude oil inventories. Analyst expectations were for a draw of 2.648 MMbbl.

The EIA's Weekly Petroleum Status Report showed a build in commercial inventories of 2.170 MMbbl, the fourth week in a row that API and EIA reports have moved in the same direction. Cushing inventories increased slightly by 459 Mbbl to 35.366 MMbbl. U.S. production was up 46 Mbb/d. Gasoline inventories increased by 840 Mbbl to 236.807 MMbbl. Distillate stocks (including diesel and heating oil) fell by 2.611 MMbbl to 122.729 MMbbl.

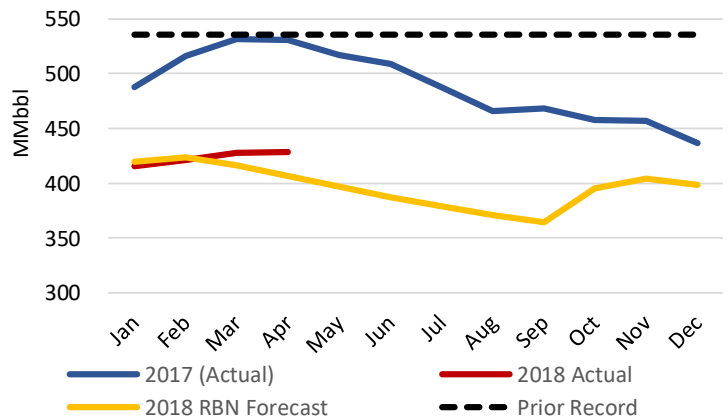
#### SUPPLY

**Production:** The EIA's weekly domestic net oil production was up 46 Mbb/d to 10.586 MMbbl/d. Lower 48 oil production increased by 33 Mbb/d to 10.085 MMbbl/d. U.S. crude production has now risen for 9 straight weeks.

**Rig Count:** The oil rig count increased last week, up by a net 5 oil rigs to a total of 820. Gross additions occurred in the Permian (8),

Figure: 1

#### U.S. Commercial Crude Inventories (Actual and Forecast)



Mississippian (2), and smaller producing basins (4). Decreases occurred in the Cana Woodford (4), Williston (2), DJ (1), and Eagle Ford (1).

**Imports:** U.S. crude oil imports rose by 539 Mbb/d to 8.469 MMbbl/d (Table A). Imports from Canada fell by 304 Mbb/d and Saudi Arabian imports dropped by 76 Mbb/d. Imports from Latin American countries rose by 355 Mbb/d. Enbridge's Line 3 pipeline expansion project faced a setback in a Minnesota court on Tuesday, as a judge ruled that the project is approved pending a route adjustment, which Enbridge has said is not economically feasible. Line 3 runs from Alberta to Wisconsin and is a major artery for Enbridge volume. The expansion would replace the existing line and increase capacity from 410 Mbb/d to 750 Mbb/d. The project now

Mbb/d	U.S. Crude Oil Supply and Demand Outlook									Table: B
	10/17	11/17	12/17	1/18	2/18	3/18	4/18	5/18	6/18	
Production	9,658	10,057	9,949	9,964	10,118	10,376	10,472	10,550	10,637	
Imports	7,275	7,699	7,619	7,672	8,020	7,521	7,742	7,850	7,900	
<b>Total Supply</b>	<b>16,933</b>	<b>17,756</b>	<b>17,568</b>	<b>17,636</b>	<b>18,138</b>	<b>17,897</b>	<b>18,214</b>	<b>18,400</b>	<b>18,537</b>	
Refinery Runs	16,061	16,839	17,274	16,599	15,984	16,678	17,010	17,168	17,200	
Exports	1,781	1,250	1,397	1,360	1,525	1,662	1,633	1,607	1,700	
<b>Total Demand</b>	<b>17,842</b>	<b>18,089</b>	<b>18,671</b>	<b>17,959</b>	<b>17,509</b>	<b>18,340</b>	<b>18,643</b>	<b>18,775</b>	<b>18,900</b>	
SPR +/-	(151)	(209)	34	-	-	-	-	-	-	
Net Storage	(334)	(205)	(1,084)	25	130	(222)	(321)	(325)	(313)	
Per week	(2,337)	(1,434)	(7,590)	172	909	(1,551)	(2,244)	(2,272)	(2,190)	
Per Month	(10,350)	(6,148)	(33,612)	761	3,638	(6,871)	(9,619)	(10,062)	(9,385)	
Crude Storage	458,700	452,552	418,940	419,701	423,339	416,468	406,849	396,787	387,402	
Last Year	491,203	490,734	484,622	504,460	523,569	537,884	523,834	516,868	500,413	
<b>Surplus/Deficit</b>	<b>(32,503)</b>	<b>(38,182)</b>	<b>(65,682)</b>	<b>(84,759)</b>	<b>(100,230)</b>	<b>(121,416)</b>	<b>(116,985)</b>	<b>(120,081)</b>	<b>(113,011)</b>	

- » Commercial inventories fell by 2.170 MMbbl, with Cushing inventories rising by 459 Mbbbl
- » Midland-WTI Cushing and Midland-Magellan East Houston differentials blew out to \$8/bbl and \$10.60/bbl, respectively
- » International crude prices up on OPEC news, Iran sanction debate and Saudi-Yemen missile strikes

goes to Minnesota's Public Utilities Commission board for a final ruling in June.

**SPR:** SPR inventories fell last week, down 738 Mbbbl to 664.718 MMbbl.

### DEMAND

**Refinery Inputs:** Refinery inputs fell for the second week in a row in the final weeks of maintenance season, with total refinery inputs down by 328 Mbbbl/d to 16.621 MMbbl/d. Refinery utilization fell by 1.6% to 90.8% last week. Refining inputs were down across the board as East Coast refiners decreased inputs by 11 Mbbbl/d, Gulf Coast down by 203 Mbbbl/d, Rocky Mountain down by 33 Mbbbl/d, and West Coast down by 106 Mbbbl/d. Midwest refiners were in the positive, adding 26 Mbbbl/d. Midwest and Midcontinent refiners are enjoying the blowout in Permian price spreads as WTI Midland and WTS Midland are both being priced at significant discounts to Cushing grades.

**Exports:** In a Spring of record highs, we saw another all-time high last week, with crude exports increasing by 582 Mbbbl/d to 2.331 MMbbl/d. The April export average is now 1.762 Mbbbl/d, the second highest monthly average ever. The highest monthly average occurred during Hurricane Harvey, when massive refinery outages forced crude out of the Gulf for export to international markets.


### PRICES

At the time of writing, the front-month WTI contract was \$67.78/bbl and Brent was \$73.75/bbl. Brent topped out over

Mbb/d	U.S. Total Crude Oil and Products Inventory				Table: C
	Prev. Wk 4/13/18	Curr Wk 4/20/18	Wkly Chg 4/20/18	Previous Year	Year/ Year
<b>Crude Oil</b>	427,567	429,737	2,170	528,702	(98,965)
<b>Cushing Oil</b>	34,907	35,366	459	67,439	(32,073)
<b>Mogas</b>	235,967	236,807	840	241,041	(4,234)
<b>Distillate</b>	125,340	122,729	(2,611)	150,917	(28,188)

\$75/bbl in early trading Tuesday, its highest since 2014 (Table D). The Brent-WTI spread was \$5.94/bbl at the time of writing (more in Outlook and Trends of Note below). Midland-WTI Cushing and Midland – Magellan East Houston (MEH) differentials have blown back out since last week and pricing is looking dire for Permian operators with production catching back up to recently-added pipeline expansions and refining capacity. The Midland-WTI Cushing spread was minus \$8/bbl at the time of writing and the Midland-MEH spread was minus \$10.60/bbl, the largest ever differential for the Midland-MEH spread.

International crude prices were getting pulled in a bunch of different directions this week, on competing news bytes from Iran, Saudi Arabia and missile strikes in Yemen. Iran's oil minister said this week that sustained increases in international crude prices would eliminate the need for OPEC to continue production cuts into 2019. Saudi Arabian and other OPEC heads said that worldwide demand for crude would withstand any price increase, and that OPEC cuts were still necessary to balance the market. Saudi Arabia has been leading the production cut charge and has a lot invested in higher prices, recently postponing the IPO of its state-owned Saudi Aramco to take advantage of higher future crude prices. Saudi Arabia and Yemen



April 25, 2018

# The Gusher

U.S. Crude Oil Supply and  
Demand Analysis



exchanged missile strikes this week, as the proxy war between Iran and the Saudi kingdom continues.

## OUTLOOK AND TRENDS OF NOTE

After tightening to less than \$3/bbl at the end of February, the Brent-WTI spread has widened back out to \$5.94/bbl at the time of writing, after hitting \$6.15/bbl on Tuesday. As we've noted in the past, the wider Brent-WTI spread, especially over \$5/bbl will incentivize U.S. exporters to fill the demand in the international (especially Asian) markets. U.S. exports are the wild card, especially when more export capacity comes online at the end of 2018 at the LOOP terminal. Exports are going to support WTI prices when rising inventory levels and shale production threaten to drag them down. The question is can exports and refining inputs keep pace with supply growth. As U.S. refineries are preparing for summer driving season this year, higher refining runs will help keep U.S. production in check. We haven't seen a Brent-WTI spread blowout past \$10 since March 2015, when U.S. crude production was exploding, U.S. exports were still banned, and U.S. inventories were climbing towards new highs. If OPEC continues to hold tight to its production output and re-ups for another year of production cuts, it will continue to support higher Brent prices.



Figure: 2

### U.S. Crude Inventories (2017 vs. 2018)

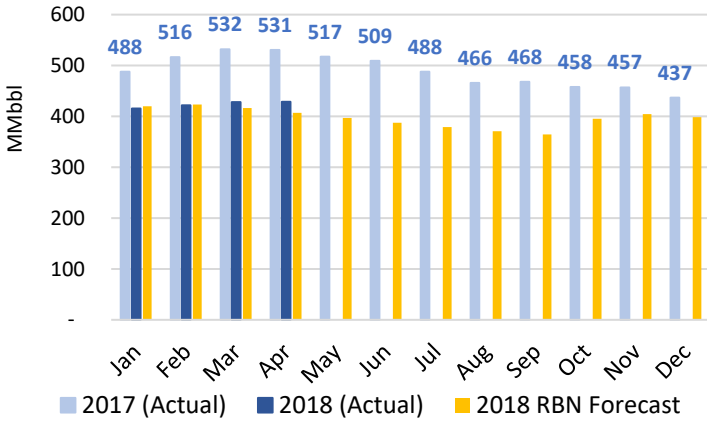


Figure:5

### U.S. Refinery Imports (2017 vs. 2018)

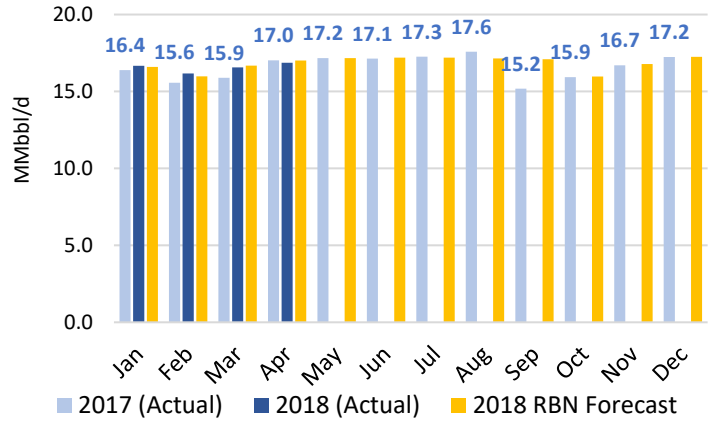


Figure: 3

### U.S. Crude Imports (2017 vs. 2018)

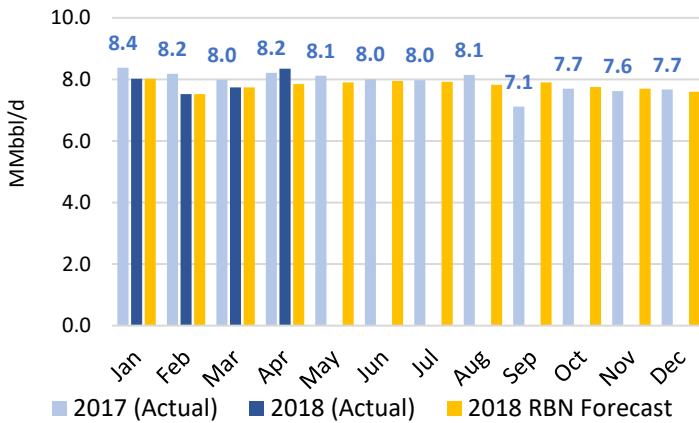


Figure:6

### U.S. Crude Exports (2017 vs. 2018)

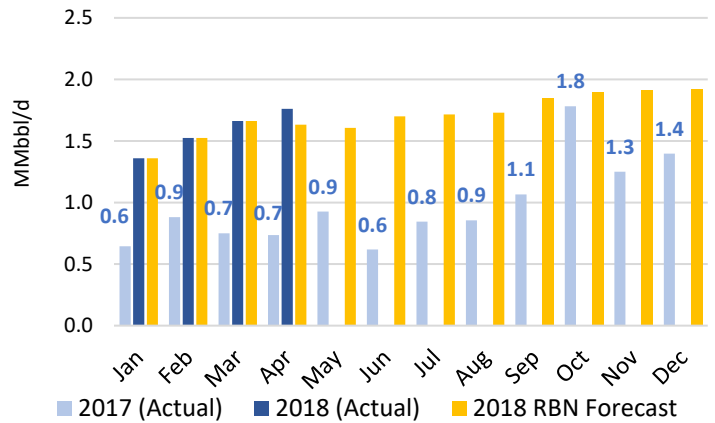


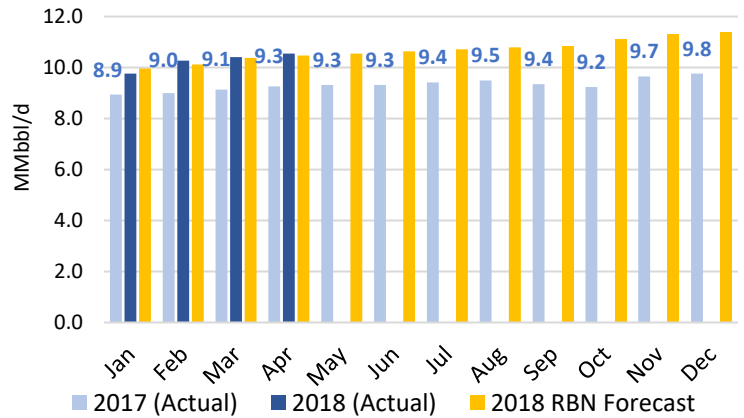
Figure: 4

### 3-2-1 Crackspread



Figure: 7

### U.S. Crude Production (2017 vs. 2018)



WTI Prices	Current	Yr Ago	Table: D 1 Yr Avg
Prompt	\$67.78	\$49.62	\$54.58
cal18	\$66.27	\$48.32	\$54.84
cal19	\$60.75	\$48.73	\$52.94
cal20	\$56.19	\$49.53	\$51.85
cal21	\$53.32	\$50.65	\$51.44

Brent Prices	Current	Yr Ago	Table: F 1 Yr Avg
Prompt	\$73.58	\$48.38	\$59.19
cal18	\$71.30	\$50.65	\$58.77
cal19	\$66.57	\$51.14	\$57.21
cal20	\$62.33	\$52.04	\$56.29
cal21	\$59.63	\$53.32	\$56.09

WTI/ Brent Spreads	Current	Yr Ago	Table: E 1 Yr Avg
Prompt	(\$5.80)	(\$2.46)	(\$4.41)
cal18	(\$5.03)	(\$2.33)	(\$3.93)
cal19	(\$5.82)	(\$2.41)	(\$4.27)
cal20	(\$6.14)	(\$2.51)	(\$4.44)
cal21	(\$6.31)	(\$2.67)	(\$4.64)

Crude Differentials	Current	Yr Ago	Table: G 1 Yr Avg
Midland	(\$8.00)	(\$1.05)	(\$0.72)
LLS	\$3.45	\$1.80	\$3.59
Mars Blend	(\$0.35)	(\$1.35)	\$0.36
Bakken (Clearbrook)	(\$2.10)	(\$0.20)	\$0.07
W. Canada Select	(\$17.10)	(\$9.80)	(\$16.12)

Figure: 8

### Stocks of Total Gasoline

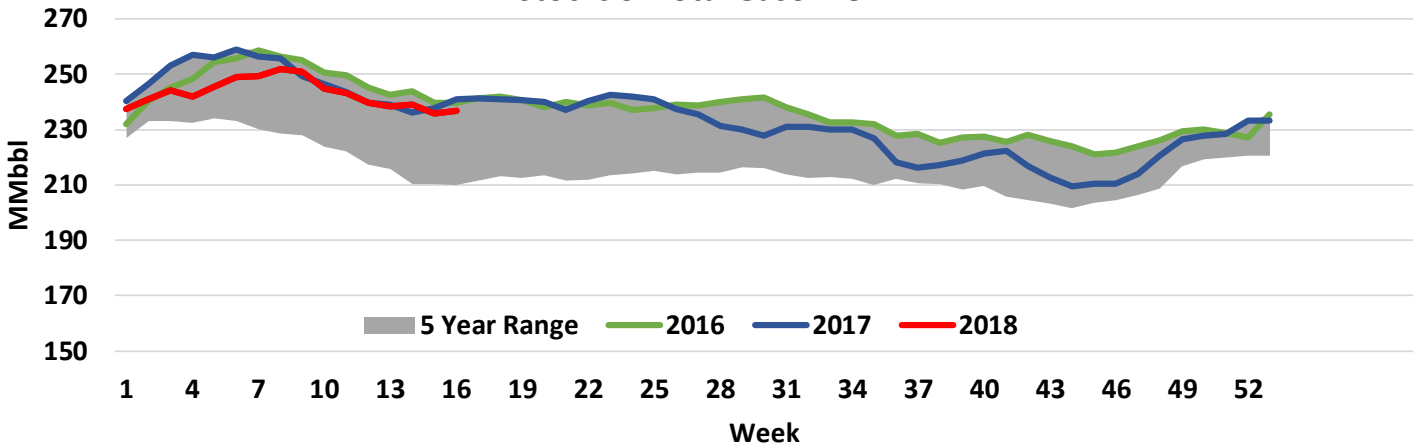
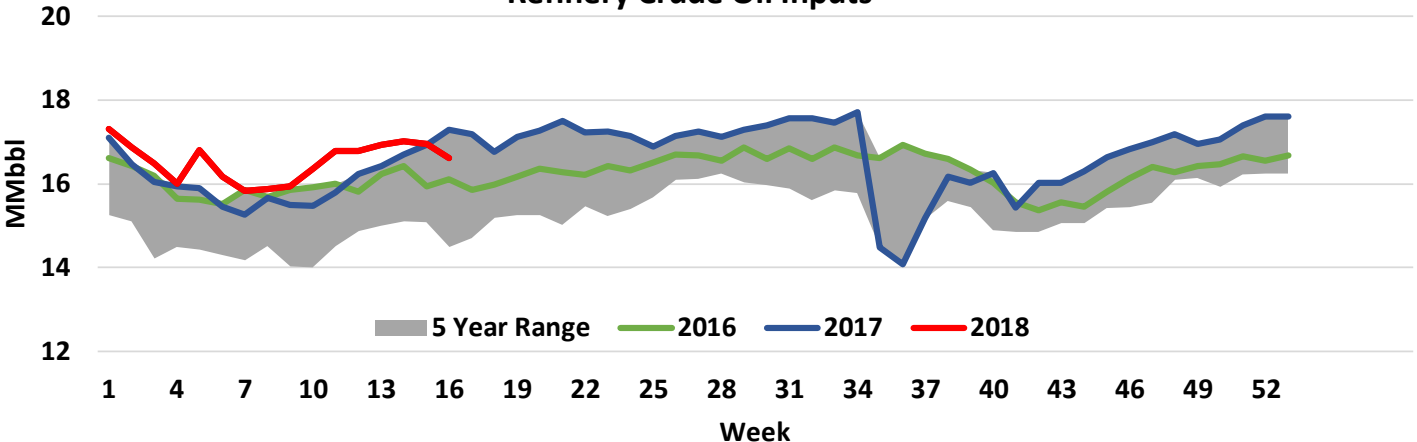
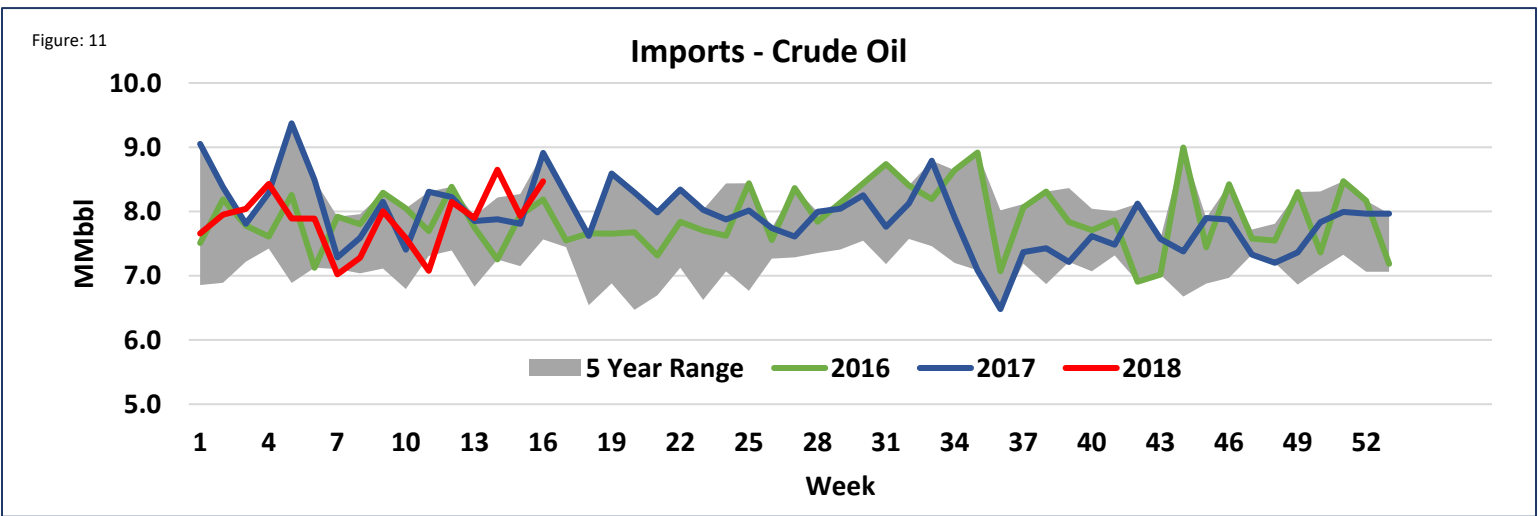
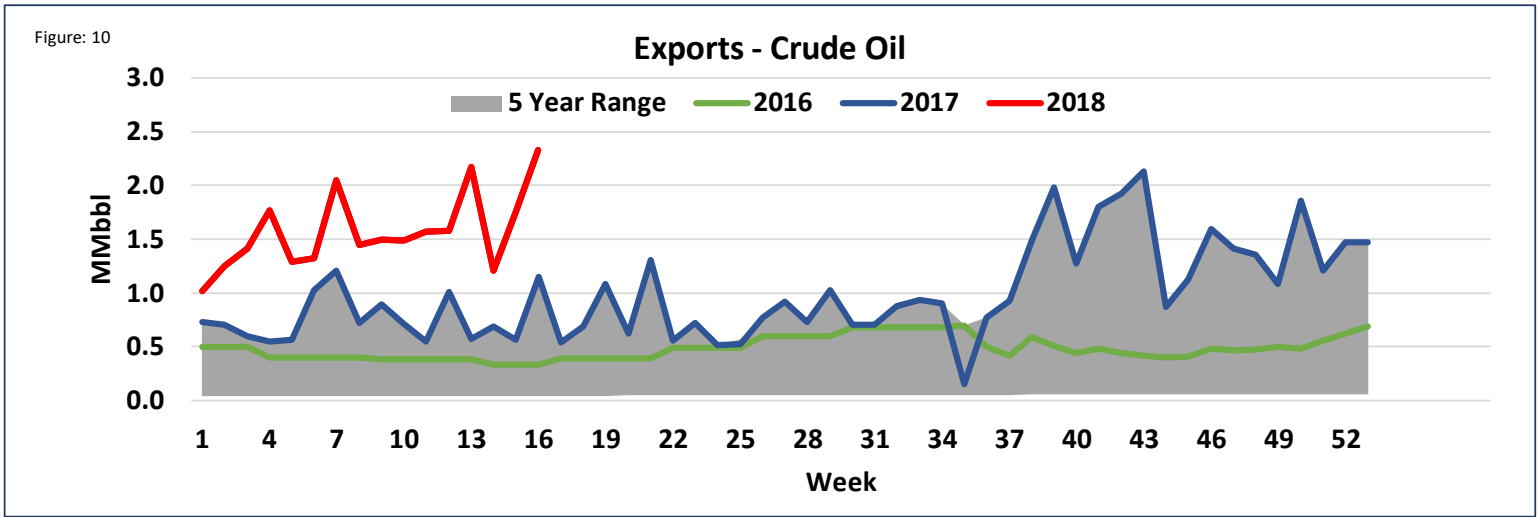


Figure: 9

### Refinery Crude Oil Inputs





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