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May 2019

EXECUTIVE SUMMARY

The story for U.S. petroleum markets in May began with record production:

- ▶ **World-leading** U.S. crude oil production of **12.2 million barrels per day (mb/d)**, including
- ▶ **Texas** crude oil production exceeding **5.0 mb/d** for the first time; and
- ▶ U.S. natural gas liquids (NGL) production of **4.8 mb/d**, the highest ever for May.

These milestones were achieved despite **less** drilling activity, which is testament to productivity but also pipeline infrastructure expansions that helped enable drilled but uncompleted wells (DUCs) to come to market.

Meanwhile, U.S. petroleum **demand fell** to 20.1 mb/d in May, which was a decrease from April and compared with May 2018. The decrease was led by distillates (diesel) demand, which fell 9.0 percent (380 thousand barrels per day, kb/d) year-on-year and suggested weakened industrial, freight and agriculture activities.

With stronger production and weaker demand, crude oil inventories rose by 10.5 percent y/y despite:

- ▶ Record U.S. crude oil exports (3.0 mb/d) and total petroleum exports (8.1 mb/d, highest ever for May); and
- ▶ International crude oil prices at their greatest premium over WTI crude oil prices since January 2014.

Consequently, global oil demand has remained solid. The question is how U.S. petroleum demand and economic growth may unfold over the course of 2019. API's economic indicator, the API D-E-I (Distillate Economic Indicator) decreased by 0.4 percentage points in May with a three-month average level of -0.1, which has accurately captured slowing of U.S. industrial production. Please see the [following chart](#) for comparisons.

MAY HIGHLIGHTS ([Click hyperlinks to advance to any section](#))**Demand**

- **U.S. petroleum demand (20.1 md/d) decreased in May**
 - Gasoline demand (9.5 mb/d) slipped in May.
 - Distillate demand (3.9 mb/d) lowest for May since 2016.
 - Record jet fuel demand for May (1.7 mb/d).
 - Marine shipping drove residual fuel oil demand higher in May.
 - Strongest refinery and petrochemical other oils demand (4.8 mb/d) for May since 2007.

Prices & Macroeconomy

- **Domestic and international crude oil prices diverged in May.**
- **U.S. leading economic indicators continue to point toward solid employment and consumer confidence, weakened industrial activity.**

Supply

- **New oil production records for the U.S. (12.2 mb/d) and Texas (5.0 mb/d); DUCs fall.**

International trade

- **Record U.S. petroleum exports for May (8.1 mb/d).**

Industry operations

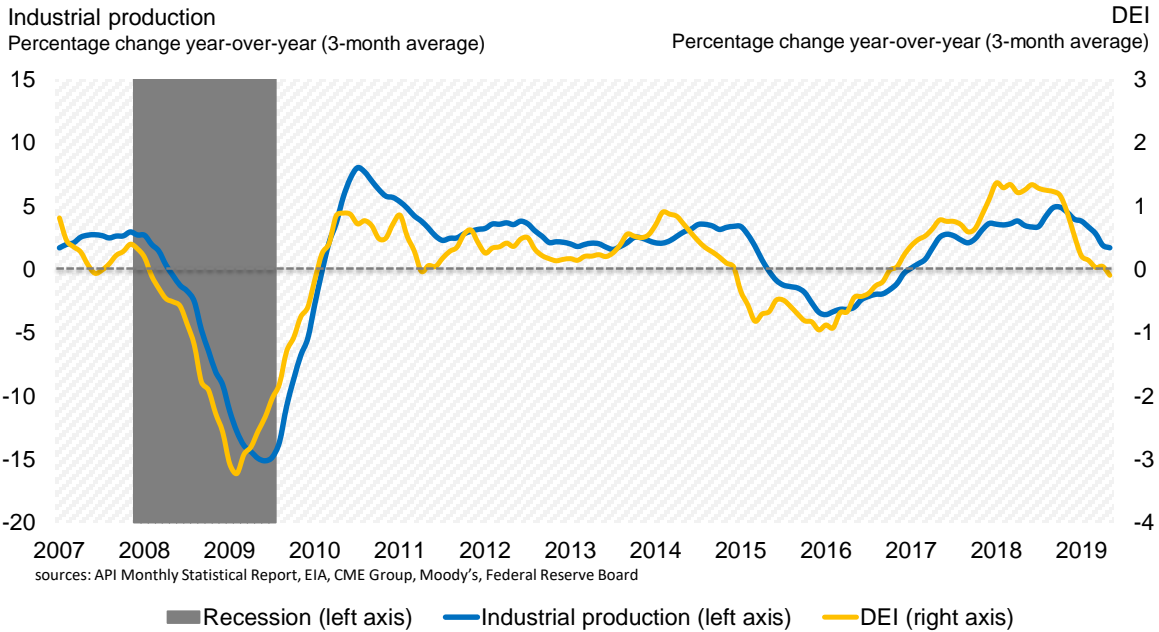
- **Refinery throughput and capacity utilization rose in May but remain below year-ago levels.**

Inventories

- **Total petroleum inventories steady, but crude oil inventories up 10.5 percent y/y despite record exports.**

API DEI (Distillate Economic Indicator) – May 2019

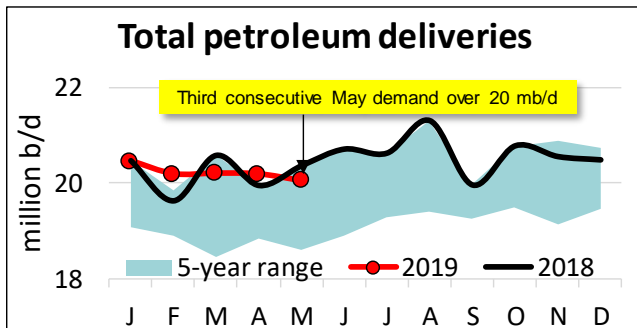
- ▶ The DEI value of -0.4 for May and three-month average of -0.1 suggests a continued slowing of industrial production



Details by section

Demand

U.S. petroleum demand (20.1 mb/d) decreased in May



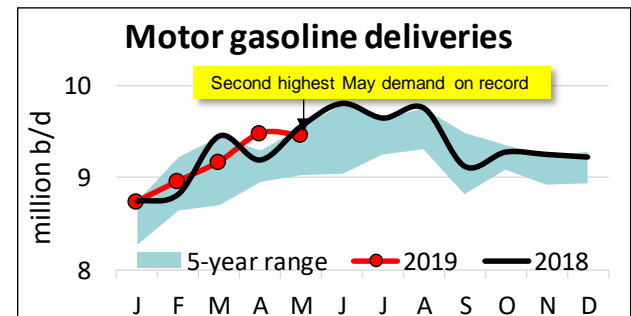
U.S. petroleum demand, as measured by total domestic petroleum deliveries, was 20.1 mb/d in May. This was a decrease of 0.7 percent from April and 1.5 percent compared with May 2018. Year-to-date through May, petroleum demand was flat at 0.1 percent above that of the same period in 2018.

Demand growth slowed despite oil and fuel prices that were lower than a year ago. This suggests

economic growth has weakened, consistent with what API's Distillate Economic Indicator signaled since the beginning of the year.

Gasoline

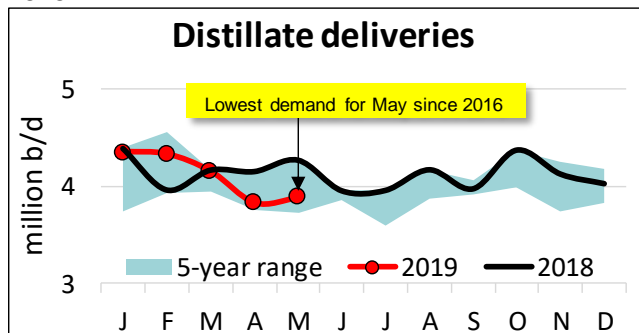
Gasoline demand (9.5 mb/d) slipped in May



Consumer gasoline demand, measured by total motor gasoline deliveries, was 9.5 mb/d in May. This was a decrease of 0.3 percent from April and 1.0 percent versus May 2018. Year-to-date through May, gasoline demand also was flat versus the same period in 2018.

Distillate Fuel Oil

Distillate demand (3.9 mb/d) lowest for May since 2016



In May, distillate deliveries of 3.9 mb/d increased by 1.4 percent from April but were down by 9.0 percent or 380 kb/d compared with May 2018. For the month of May, this was the largest drop in distillate demand since May 2009, during the Financial Crisis. Year-to-date through May, distillate demand averaged 4.1 mb/d, which was a decrease of 2.0 percent from the same period one year ago.

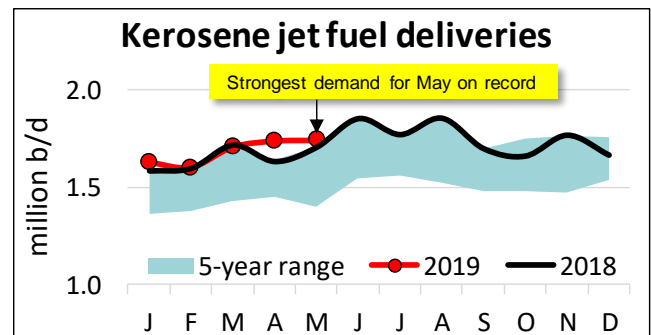
About 97.0 percent of distillate demand in May was for ultra-low sulfur distillate (ULSD), which is mainly used in heavy-duty transportation, including road freight trucking and agriculture. Although freight trucking activity appeared to stabilize in May, agricultural production remained under [duress](#) with a record fall in corn yield and production coupled with trade frictions that [impacted](#) soybean production.

The remainder (3.0 percent) of distillate demand was high-sulfur distillate fuel (HSD), which is a heating fuel in the residential and commercial sectors and a marine fuel when blended to upgrade heavy fuel oil. In May, HSD deliveries of 110 thousand barrels per day (kb/d) decreased seasonally by 19.1 percent between April and May but were up by 25 percent compared with May 2018.

Kerosene Jet Fuel

Record jet fuel demand for May (1.7 mb/d)

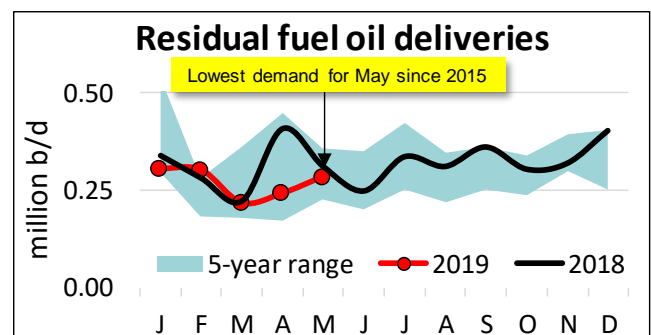
Kerosene jet fuel demand, at 1.7 mb/d in May, increased by 0.2 percent from April and 2.2 percent compared with May 2018. Although this was record demand for the month of May, the pace of growth slowed from April.



Consistent with the solid but slower-growing jet fuel demand, the [International Air Transport Association \(IATA\)](#) reported passenger demand rose at diminished rates. Meanwhile, [air cargo demand](#) was flat in North America and fell globally in response to weaker global trade and economic growth.

Residual Fuel Oil

Marine shipping drove residual fuel oil demand higher in May

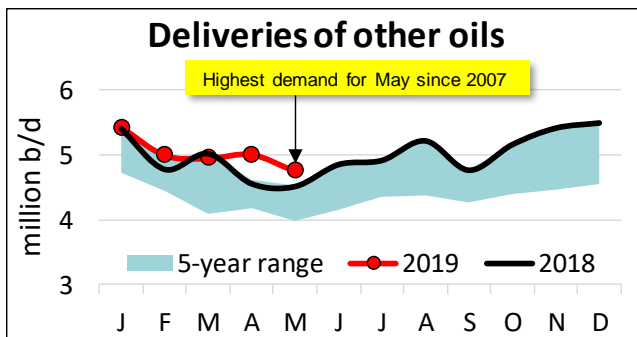


Residual fuel oil demand was 283 kb/d in May, which represented an increase of 17.4 percent from April but a decrease of 9.3 percent versus May 2018.

Residual fuel oil is used in electric power production, space heating, marine vessel bunkering and other industrial applications. Marine shipping is a main driver and showed a similar pattern in May of increasing from April but being down year-on-year. Specifically, the [Baltic Dry Shipping Index](#), an index of ship charter rates, rose 33.9 percent from April but was down 20.0 percent compared with May 2018.

Other Oils

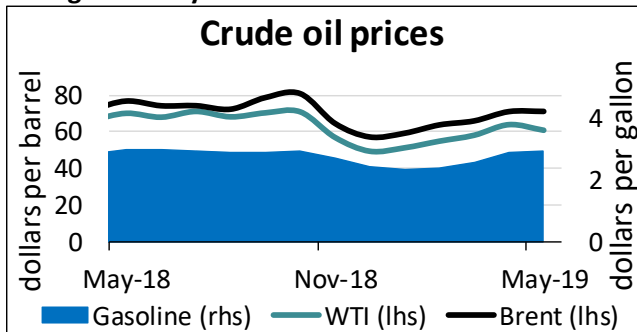
Strongest refinery and petrochemical other oils demand (4.8 mb/d) for May since 2007



Refining and petrochemical demand for liquid feedstocks, naphtha, and gasoil (“other oils”) was 4.8 mb/d in May, a decrease of 5.0 percent from April but an increase of 4.7 percent above May 2018. This was the highest other oils demand for May since 2007, and the combination of a monthly decline but annual increase appeared to be consistent with petrochemical industry growth reported by the American Chemistry Council in its [Chemical Activity Barometer](#).

Prices

Domestic and international crude oil prices diverged in May



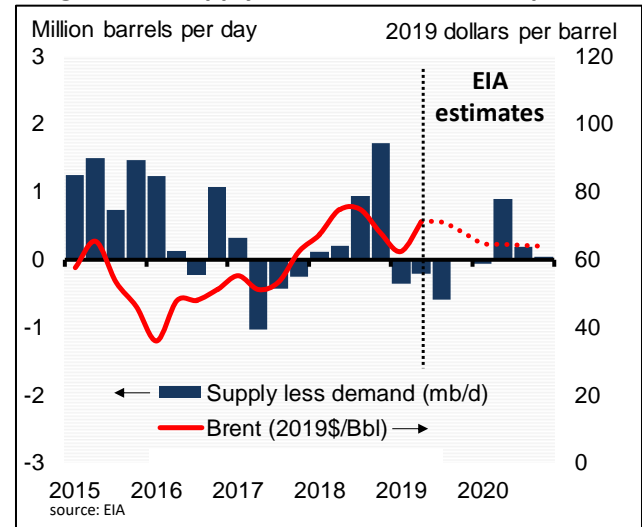
Domestic WTI crude oil prices averaged \$60.83 per barrel in May, a decrease of 4.7 percent (\$3.03 per barrel) from April and 13.1 percent (\$9.15 per barrel) from May 2018. By contrast, international Brent crude oil prices averaged \$71.32 per barrel, up 0.1 percent (\$0.09 per barrel) from April.

The divergence between domestic and international crude oil prices to \$10.49 per barrel in May was the largest monthly difference since January 2014 – driven entirely by the fall in WTI prices, which speaks to domestic oil supply/demand conditions rather than global economic growth.

As domestic and international crude oil prices were mixed in May and the summer driving season kicked

off, the average U.S. gasoline price increased to \$2.95 per gallon in May from \$2.88 per gallon in April, according to [AAA](#) reports. Gasoline prices rose between April and May in nine of the past 12 years.

EIA global oil supply/demand balance and prices



[EIA estimates](#) that global oil markets have recently been balanced and that Brent crude oil prices could ease toward \$60 per barrel in coming quarters.

Macroeconomy

U.S. leading economic indicators continue to point toward solid employment and consumer confidence, weakened industrial activity

API’s D-E-I (Distillate Economic Indicator), which includes industry fundamentals, prices and interest rates, decreased by 0.4 percentage points in May with a three-month average of -0.1, which suggested a continued slowing in industrial production.

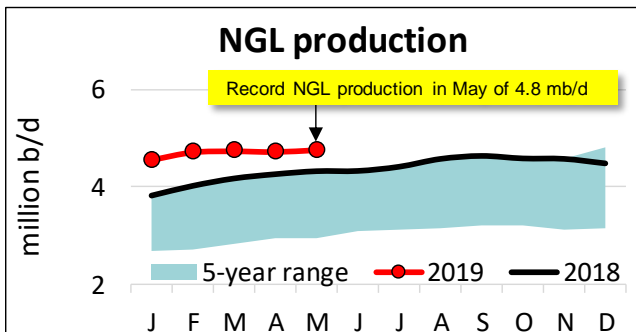
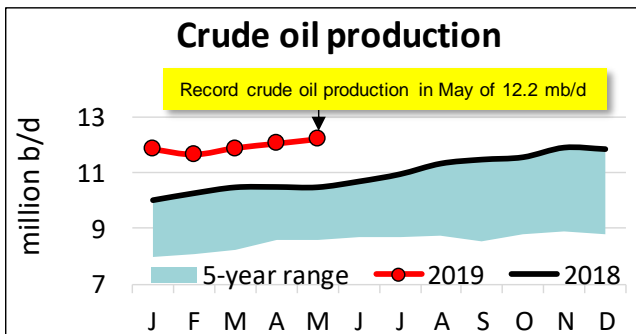
The [Institute for Supply Management’s Purchasing Managers Index \(PMI\)](#) registered 52.1 in May, which was an decrease of 0.7 percentage points from a reading of 52.8 in April. Any value above 50.0 suggests an expansion. New orders, production and employment increased. Growth occurred in 11 of the 18 manufacturing sectors surveyed, which was two fewer than in April.

The [University of Michigan's consumer sentiment index](#) slipped to a preliminary June reading of 97.9 from a final reading of 100.0 in May. Overall consumer sentiment has remained at relatively favorable levels, and the survey suggested some consumption activity was recently accelerated due to “buy-in-advance” efforts to get ahead of rising tariffs on Chinese imports.

According to the [Bureau of Labor Statistics \(BLS\)](#), labor markets tightened in May, as the unemployment rate held steady at 3.6 percent, and U.S. non-farm payrolls grew by 75,000.

Supply

New oil production records for the U.S. (12.2 mb/d) and Texas (5.0 mb/d); DUCs fall!



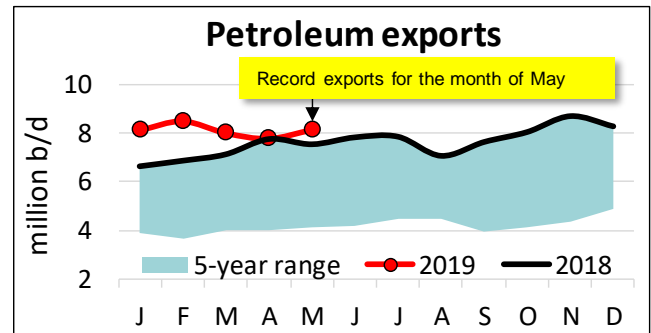
In May, the U.S. enhanced its world-leading and record U.S. crude oil production to 12.2 mb/d as well as natural gas liquids production of 4.8 mb/d. Oil production in Texas also reached a new record and a notable milestone of 5.0 mb/d in May.

The rise in oil production came despite less drilling activity this quarter. [Baker Hughes](#) reported an average of 807 oil-targeted rigs so far in Q2 2019, down from 848 oil-targeted rigs in Q1 2019. However, as highlighted in the latest [API Industry](#)

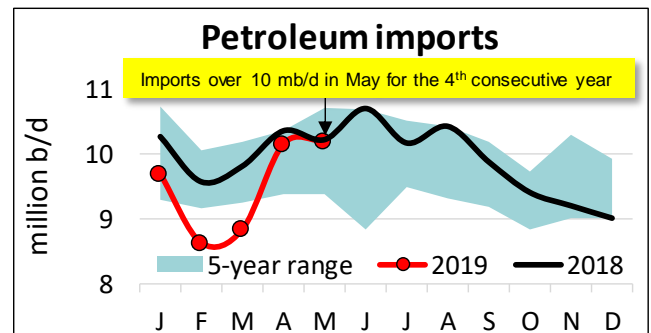
[Outlook](#), the expansion of pipeline infrastructure in the Permian basin should enable wells that have been drilled but uncompleted (DUCs) to be brought to market. The [U.S. Energy Information Administration \(EIA\)](#) reported that the backlog of DUCs eased in April.

International trade

Record U.S. petroleum exports for May (8.1 mb/d)

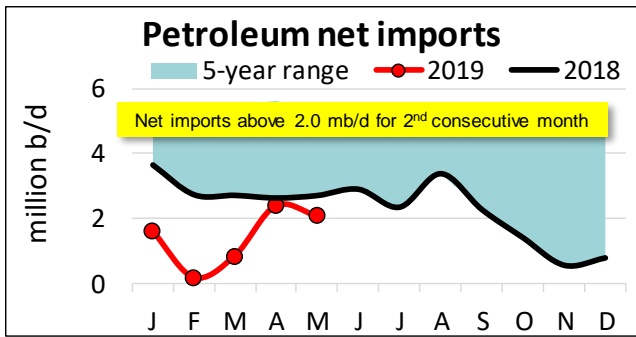


Total U.S. petroleum exports – crude oil and refined products – hit a record for the month of May at 8.1 mb/d. This was an increase of 4.4 percent from April and 8.0 percent versus May 2018. Within the May total, however, growth in crude oil exports more than offset a decline in refined product exports.



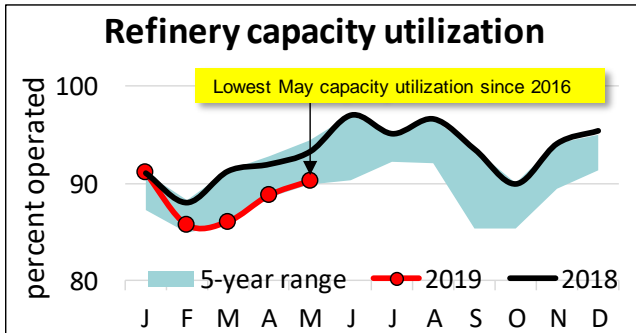
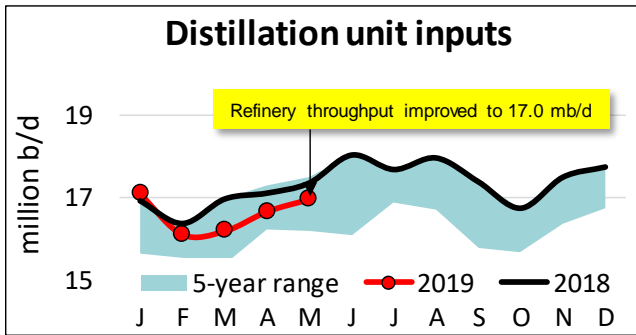
By comparison, U.S. petroleum imports were little changed in May and eclipsed 10.0 mb/d in the month of May for the fourth consecutive year, even as domestic production has expanded. This speaks to the specific crude oil needs that some U.S. refiners have as well as the reliance on imports among parts of the U.S. that are relatively less connected by pipelines.

Overall, U.S. petroleum net imports were 2.1 mb/d in May and fell by more than 0.6 mb/d compared with May 2018.



Industry operations

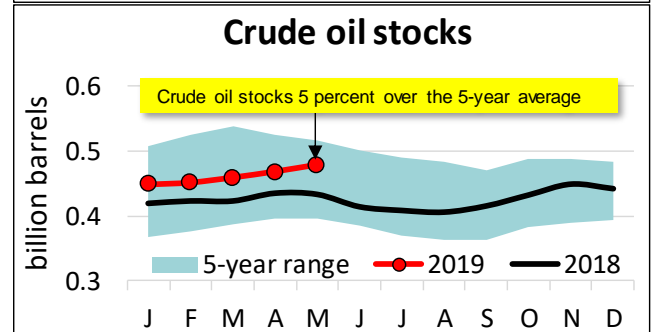
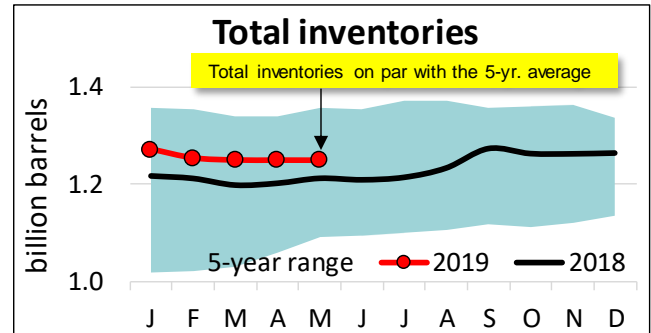
Refinery throughput and capacity utilization rose May but remain below year-ago levels



In May, gross inputs to U.S. refineries were 17.0 mb/d and an implied a capacity utilization rate of 90.3 percent. This capacity utilization rate remained at the lower bound of the five-year range but improved from April as refinery outages fell by 0.4 mb/d to 1.0 mb/d in May, according to Bloomberg. The lowest capacity utilization has been in the U.S. Gulf Coast, which has been [short of Venezuelan heavy oil](#) needed to run their complex refinery units at full capacity.

Inventories

Total petroleum inventories steady, but crude oil inventories up 10.5 percent y/y despite record exports



In May, total petroleum inventories, including crude oil and refined products but excluding the Strategic Petroleum Reserve, were 1.25 billion barrels. This level was steady from April but increased 3.2 percent from May 2018 to remain on par with the average of the 5-year range.

Within the May total, crude oil inventories of 0.48 billion barrels increased by 2.2 percent from April and 10.5 percent versus May 2018. With the accumulation in May, crude oil inventories stood 5.1 percent above the 5-year average. This stock building resulted from strong domestic crude oil production exceeding the growth in crude oil exports and domestic refinery demand.

ESTIMATED UNITED STATES PETROLEUM BALANCE¹
(Daily average in thousands of 42 gallon barrels)

Disposition and Supply	May			Year-to-Date		
	2019 ²	2018	% Change	2019 ³	2018	% Change
Disposition:						
Total motor gasoline.....	9,457	9,550	(1.0)	9,166	9,155	0.1
Finished reformulated.....	3,130	3,214	(2.6)	2,967	3,066	(3.2)
Finished conventional.....	6,327	6,336	(0.1)	6,199	6,088	1.8
Kerosene-jet.....	1,744	1,707	2.2	1,686	1,650	2.2
Distillate fuel oil.....	3,890	4,273	(9.0)	4,111	4,195	(2.0)
≤ 500 ppm sulfur.....	3,780	4,186	(9.7)	4,000	4,024	(0.6)
≤ 15 ppm sulfur.....	3,775	4,178	(9.6)	3,984	4,011	(0.7)
> 500 ppm sulfur.....	110	88	25.0	111	171	(35.1)
Residual fuel oil.....	283	312	(9.3)	269	313	(14.1)
All other oils (including crude losses).....	4,757	4,542	4.7	5,047	4,839	4.3
Reclassified ⁴	(74)	(27)	na	(58)	52	na
Total domestic product supplied.....	20,057	20,357	(1.5)	20,220	20,203	0.1
Exports.....	8,121	7,517	8.0	8,085	7,165	12.8
Total disposition.....	28,178	27,873	1.1	28,305	27,368	3.4
Supply:						
Domestic liquids production						
Crude oil (including condensate).....	12,235	10,464	16.9	11,965	10,329	15.8
Natural gas liquids.....	4,753	4,321	10.0	4,689	4,121	13.8
Other supply ⁵	1,193	1,238	(3.7)	1,195	1,226	(2.5)
Total domestic supply.....	18,181	16,024	13.5	17,849	15,677	13.9
Imports:						
Crude oil (excluding SPR imports).....	7,371	7,825	(5.8)	7,121	7,842	(9.2)
From Canada.....	3,968	3,867	2.6	3,848	3,701	4.0
All other.....	3,403	3,958	(14.0)	3,273	4,141	(21.0)
Products.....	2,825	2,404	17.5	2,394	2,219	7.9
Total motor gasoline (incl. blend.comp)....	1,078	933	15.5	741	701	5.7
All other.....	1,747	1,471	18.8	1,654	1,518	8.9
Total imports.....	10,196	10,228	(0.3)	9,515	10,061	(5.4)
Total supply.....	28,377	26,252	8.1	27,364	25,738	6.3
Stock change, all oils.....	199	(1,621)	na	(941)	(1,630)	na
Refinery Operations:						
Input to crude distillation units.....	16,965	17,357	(2.3)	16,614	16,951	(2.0)
Gasoline production.....	10,179	10,130	0.5	9,946	9,894	0.5
Kerosene-jet production.....	1,735	1,808	(4.0)	1,733	1,755	(1.2)
Distillate fuel production.....	5,213	5,213	0.0	5,075	4,956	2.4
Residual fuel production.....	362	415	(12.8)	364	439	(17.1)
Operable capacity.....	18,778	18,598	1.0	18,775	18,584	1.0
Refinery utilization ⁶	90.3%	93.3%	na	88.5%	91.2%	na
Crude oil runs.....	16,635	16,989	(2.1)	16,317	16,602	(1.7)

1. Total supply, i.e., production plus imports adjusted for net stock change is equal to total disposition from primary storage. Total disposition from primary storage less exports equals total domestic products supplied. Information contained in this report is derived from information published in the API *Weekly Statistical Bulletin* and is based on historical analysis of the industry. All data reflect the most current information available to the API and include all previously published revisions.

2. Based on API estimated data converted to a monthly basis.

3. Data for most current two months are API estimates. Other data come from U.S. Energy Information Administration (including any adjustments).

4. An adjustment to avoid double counting resulting from differences in product classifications among different refineries and blenders.

5. Includes unaccounted-for crude oil, withdrawals from the SPR when they occur, processing gain, field production of other hydrocarbons and alcohol, and downstream blending of ethanol.

6. Represents "Input to crude oil distillation units" as a percent of "Operable capacity".

R: Revised. na: Not available.

ESTIMATED UNITED STATES PETROLEUM BALANCE¹
(Daily average in thousands of 42 gallon barrels)

	May 2019	April 2019	May 2018	% Change From	
				Month Ago	Year Ago
Stocks (at month-end, in millions of barrels):					
Crude oil (excluding lease & SPR stocks).....	478.7	468.4	433.3	2.2	10.5
Unfinished oils.....	99.7	96.3	94.1	3.5	5.9
Total motor gasoline.....	232.8	227.2	242.2	2.5	(3.9)
Finished reformulated.....	0.0	0.0	0.1	0.0	(4.0)
Finished conventional.....	22.6	21.0	23.8	7.6	(5.2)
Blending components.....	210.2	206.2	218.3	1.9	(3.7)
Kerosene-jet.....	38.8	40.5	41.4	(4.2)	(6.3)
Distillate fuel oil.....	130.3	125.0	115.2	4.2	13.1
≤ 500 ppm sulfur.....	120.1	114.1	106.6	5.3	12.7
≤ 15 ppm sulfur.....	117.6	111.2	102.9	5.8	14.2
> 500 ppm sulfur.....	10.2	10.9	8.6	(6.4)	18.4
Residual fuel oil.....	28.9	29.5	31.9	(2.0)	(9.4)
All other oils.....	239.4	261.9 R	252.2	(8.6)	(5.1)
Total all oils.....	1,248.6	1248.8 R	1,210.3	(0.0)	3.2