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March 2019

## EXECUTIVE SUMMARY

The dominant theme of U.S. petroleum markets in March was slower growth from strong absolute levels.

- ▶ Crude oil production sustained a record-tying 12.1 million barrels per day (mb/d); and,
- ▶ Total petroleum demand—the highest for the month since 2005 at 20.7 mb/d—slowed to growth of 0.4 percent y/y in March from an unusually strong 3.8 percent y/y in February.

Among the major refined products, the United States' demand for gasoline, distillates and jet fuel was solid. With the starting point of the demand comparison to last year, March 2018, having itself been seasonally high, we generally would not read much into the slower current growth. However, consider also that:

- ▶ U.S. exports of crude oil and refined products fell by 4.0 percent between February and March; and,
- ▶ Petroleum inventories increased by 6.4 percent y/y and were 4.7 percent above the 5-year average.

This combination of factors could be a response to recent increases in crude oil and refined product prices, but it also could signal weaker U.S. and global economic growth. API's economic indicator, the API DEI (Distillate Economic Indicator) decreased by 0.1 percentage points in March with a three-month average level of zero, which has reflected the slowing of U.S. total industrial production. The API DEI has correctly identified the slower annual growth of U.S. industrial production for the past four consecutive months. Please see the [following chart](#) for comparisons.

### MARCH HIGHLIGHTS [\(Click hyperlinks to advance to any section\)](#)

#### Demand

- **Solid U.S. petroleum demand (20.7 mb/d) in March, but growth slowed to 0.4 percent y/y.**
  - Gasoline demand (9.2 mb/d) in March decreased 2.1 percent y/y.
  - Strongest March distillate demand since 2007, but growth halved from 2018.
  - Strong March jet fuel demand, yet growth slowed.
  - Residual fuel demand decreased.
  - Refinery and petrochemical other oils' demand (5.2 mb/d) highest for March on record.

#### Prices & Macroeconomy

- **March furthered the oil price rebound.**
- **U.S. leading economic indicators suggest slow growth of industrial production, steady consumer confidence.**

#### Supply

- **Sustained record U.S. crude oil production (12.1 mb/d).**

#### International trade

- **U.S. petroleum exports and imports fell in March.**

#### Industry operations

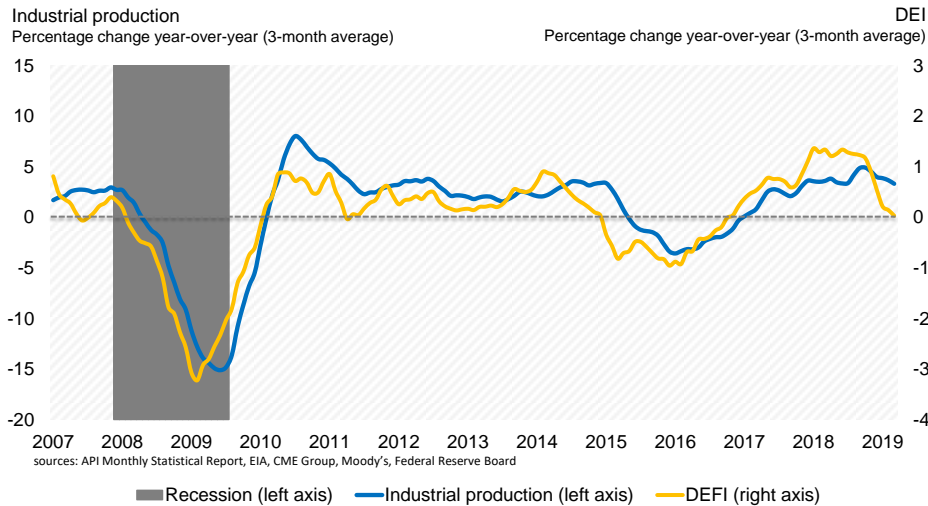
- **Refinery throughput and capacity utilization slowed in March, compared with March 2018.**

#### Inventories

- **Total petroleum inventories grew to 4.7 percent above the 5-year average.**

## API DEI (Distillate Economic Indicator) – March 2019

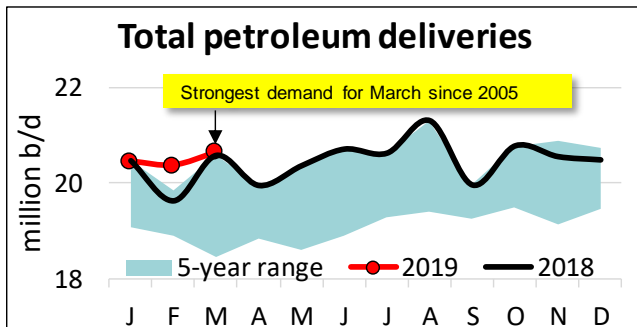
- The DEI value of -0.1 for March and three-month average of 0.03 suggests a continued slowing of industrial production



### Details by section

#### Demand

Solid U.S. petroleum demand (20.7 mb/d) in March, but growth slowed to 0.4 percent y/y

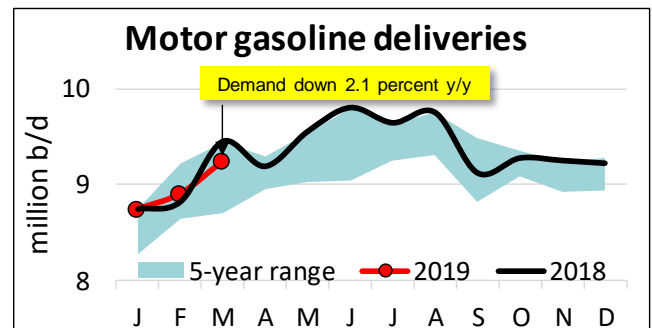


U.S. petroleum demand, as measured by total domestic petroleum deliveries, was 20.7 mb/d in March, which was up by 1.4 percent from February and 0.4 percent compared with March 2018 to the strongest level for the month of March since 2005.

However, with the exception of relative strength in February 2019, the pace of year-on-year growth slowed to 0.4 percent on average over three of the past four months, which could suggest a moderation in economic activity.

#### Gasoline

Gasoline demand (9.2 mb/d) in March decreased 2.1 percent y/y

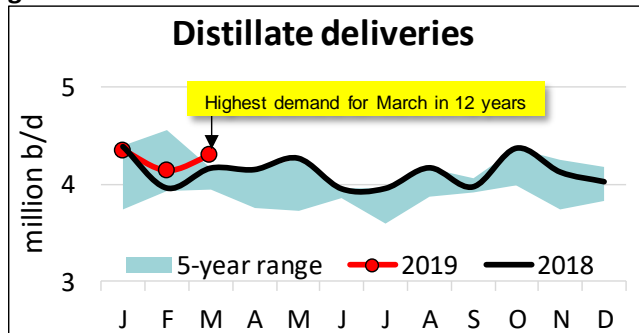


Consumer gasoline demand, measured by total motor gasoline deliveries, was 9.2 mb/d in March. This was a seasonal increase of 3.8 percent above the demand in February, but a decrease of 2.1 percent compared with March 2018.

The downshift in annual gasoline demand growth appeared to be broad-based. The demand for reformulated-type gasoline, which is consumed primarily in urban areas, decreased by 1.5 percent y/y to 3.1 mb/d in March. By contrast, conventional gasoline is used more in rural areas and decreased by 2.5 percent y/y to 6.2 mb/d.

### Distillate Fuel Oil

**Strongest March distillate demand since 2007, but growth halved from 2018**



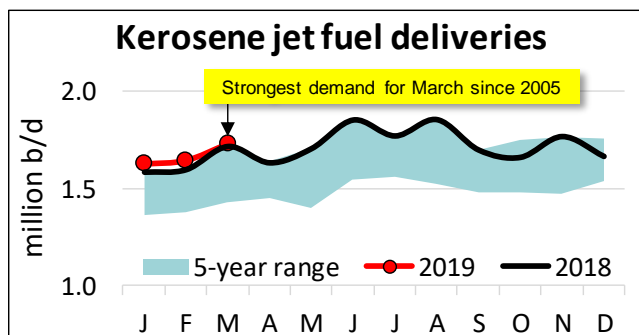
In March, distillate deliveries of 4.3 mb/d increased by 3.8 percent from February and 3.3 percent compared with March 2018. This was the highest demand for the month of March since 2007. For the first quarter, however, the 2.3 percent y/y pace of growth paled in comparison with the 5.1 percent y/y pace of growth through 2018 as a whole.

Driven mainly by road freight transportation activity, 95.0 percent of distillate demand in March was for ultra-low sulfur distillate (ULSD). Freight trucking activity was solid in March, with the Bureau of Labor Statistics' (BLS) Producer Price Index for freight trucking up by 5.7 percent y/y.

The remaining 5.0 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 March, HSD deliveries of 196 thousand barrels per day (kb/d) increased seasonally between February and March but fell by 18.7 percent compared with March 2018, a potential sign of structurally lower demand for high-sulfur fuel.

### Kerosene Jet Fuel

**Strong March jet fuel demand, yet growth slowed.**

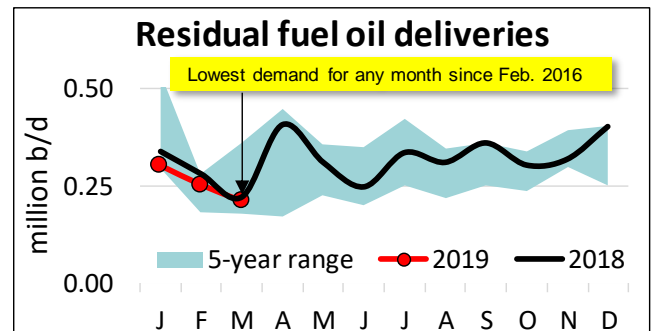


Kerosene jet fuel demand, at 1.7 mb/d in March, was above the 5-year range and generally tends to be a reliable contemporaneous economic indicator.

This was an increase of 0.8 percent versus March 2018 – less than half the pace of annual growth shown on average over the past year. This could be an impact of canceled flights in conjunction with [grounding of the Boeing 737 Max](#) jet or, more fundamentally, recently moderated passenger demand as reported by the [International Air Transport Association \(IATA\)](#).

### Residual Fuel Oil

**Residual fuel demand decreased**



Residual fuel oil demand was 212 kb/d in March, a decrease of 16.5 percent from February and 4.9 percent versus March 2018. Residual fuel oil is used in electric power production, space heating, marine vessel bunkering and other industrial applications.

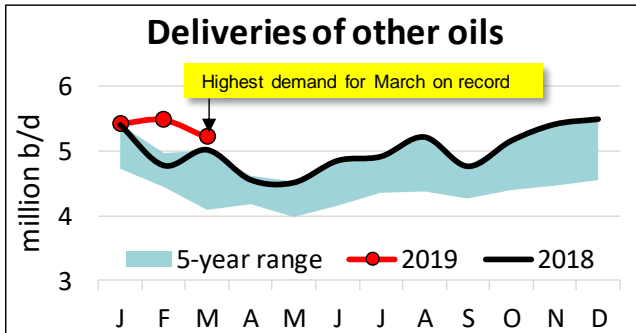
In particular, marine shipping has remained under pressure. The [Baltic Dry Shipping Index](#), an index of ship charter rates, decreased by 35 percent y/y in March, presumably due to [slowing global trade and growth](#). Furthermore, although residual fuel oil demand was within the 5-year range, it is expected to diminish this year as [marine fuel sulfur regulations tighten](#) at the beginning of 2020.

### Other Oils

**Refinery and petrochemical feedstock demand (5.2 mb/d) highest for March on record**

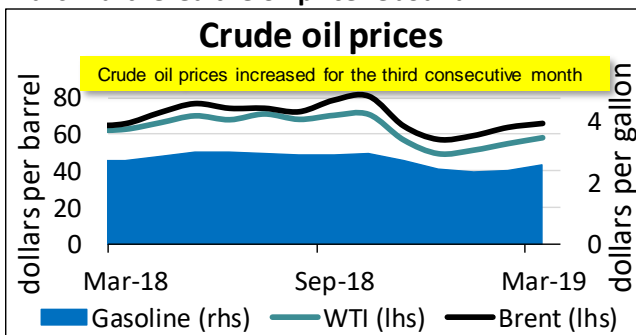
Refining and petrochemical demand for liquid feedstocks, naphtha, and gasoil ("other oils") was 5.2 mb/d in March, a decrease of 3.6 percent from February but an increase of 6.6 percent — 0.3 mb/d — above March 2018. This was the highest other

oil's demand for the month of March and reflected annual growth that generally was consistent with that shown on average through 2018.



**Prices**

**March furthered the oil price rebound**



Domestic WTI crude oil prices averaged \$58.15 per barrel in March, an increase of 5.8 percent (\$3.20 per barrel) from February but a decrease of 7.3 percent (\$4.58 per barrel) from March 2018.

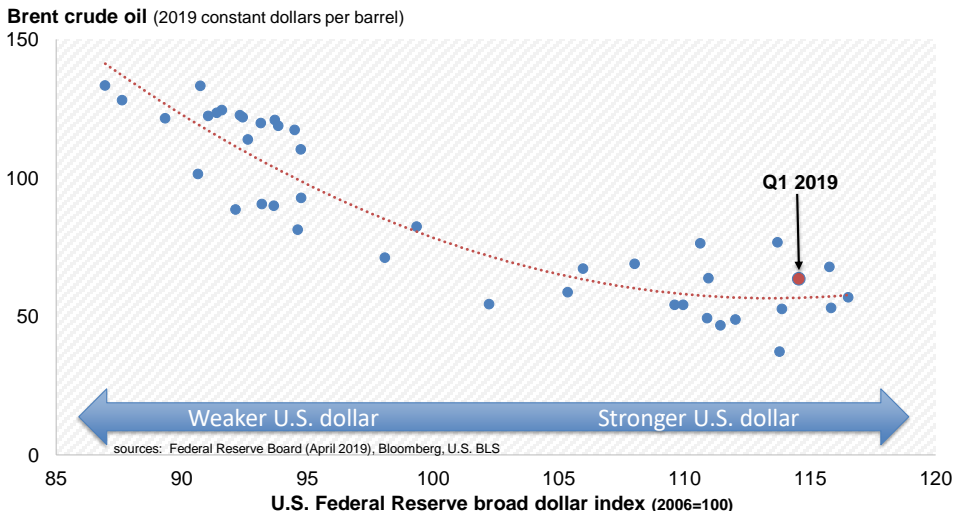
Similarly, international Brent crude oil prices averaged \$66.14 per barrel, up 3.4 percent (\$2.18 per barrel) from February. As prices rose for the third consecutive month, the difference between Brent and WTI crude oil prices edged down by \$1.0 per barrel to \$8.0 per barrel in March from \$9.0 per barrel in February. As crude oil prices rose, the average U.S. gasoline price increased to \$2.59 per gallon in March from \$2.39 per gallon in February, according to [AAA](#) reports.

Oil prices through the first quarter of 2019 could have been higher but, on the heels of U.S. interest rate increases and relatively strong economic growth, were held in check partly by a strong U.S. dollar exchange rate that was near its highest levels in a decade. Notably, with the U.S. Federal Reserve now [expected to maintain current interest rates on hold through 2021](#), the relatively dovish economic growth outlook may have much to say about whether the U.S. dollar's exchange value – and its beneficial correlation with lower oil prices – will be sustained going forward.

**U.S. dollar appreciation toward a decade high represents a potential catalyst with oil and financial market implications**

- Although many factors contribute to oil prices, a strong U.S. dollar has tended to correlate with low oil prices over the last decade

**U.S. broad dollar index and Brent crude oil prices, 2009-2019**



**U.S. leading economic indicators suggest growth of industrial production, steady consumer confidence**

API’s DEI (Distillate Economic Indicator), which combines industry fundamentals with prices and interest rates, decreased by 0.1 percentage points in March with a three-month average of zero suggests continued slowing in industrial production. The API DEI correctly identified the slowing growth of U.S. industrial production for the past four consecutive months.

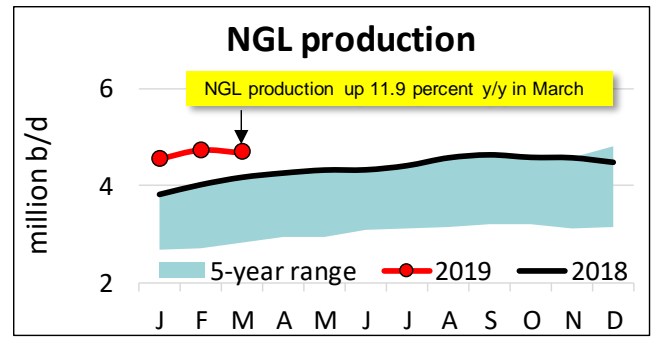
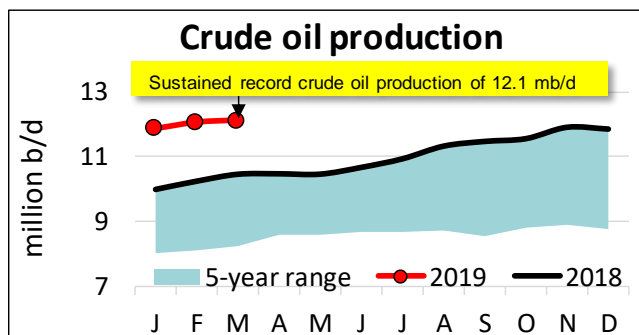
The [Institute for Supply Management’s Purchasing Managers Index \(PMI\)](#) registered 55.3 in March, which was an increase of 1.1 percentage points from a reading of 54.2 in February. Any value above 50.0 suggests an expansion. Demand, production and employment increased. Growth occurred in 16 of the 18 manufacturing sectors surveyed (the same as in February).

The [University of Michigan’s consumer sentiment index](#) slipped to a preliminary April reading of 96.9 from final readings of 98.4 in March and 98.8 in February. Overall consumer sentiment remains at relatively favorable levels, but the survey notes the impact of the U.S. tax reform legislation on consumer confidence has now all but disappeared.

According to the [Bureau of Labor Statistics \(BLS\)](#), labor markets remained tight in March, as the unemployment rates remained at 3.8 percent and U.S. non-farm payrolls grew by 196,000.

**Supply**

**Sustained record U.S. oil production (12.1 mb/d)**

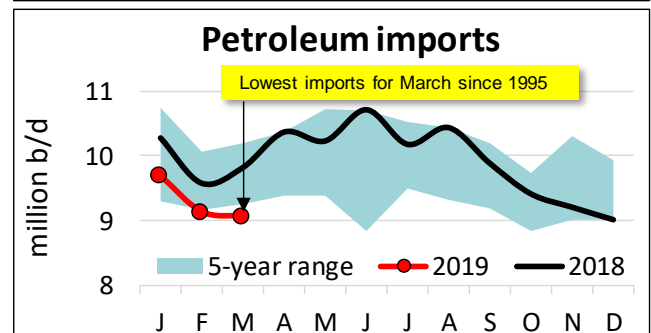
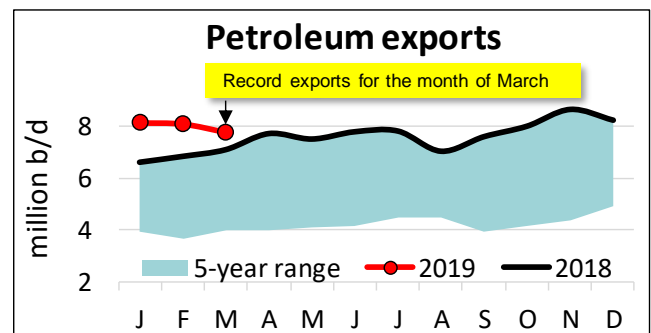


In March, the U.S. sustained its world-leading and record U.S. crude oil production of 12.1 mb/d as well as natural gas liquids production of 4.7 mb/d.

The production remained flat despite recent slowing in drilling activity over the past quarter, which [Baker Hughes](#) reported an average of 848 oil-targeted rigs in Q1 2019, down from 878 oil-targeted rigs in Q4 2018. The EIA also revised its estimate of the backlog of drilled but uncompleted wells (DUCs) to 8,500 as of February from 8,800 as reported last month.

**International trade**

**U.S. petroleum net exports and imports fell**



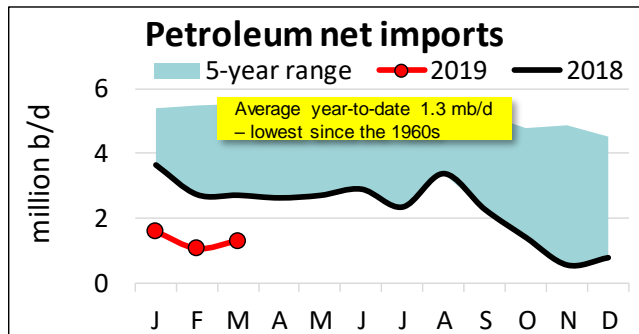
Given the growth in U.S. petroleum exports – crude oil and refined products – since last year, the U.S. saw record exports for the month of March. However, total U.S. petroleum exports fell by 4.0



percent or 320 kb/d between February and March, slowing for the fourth consecutive month.

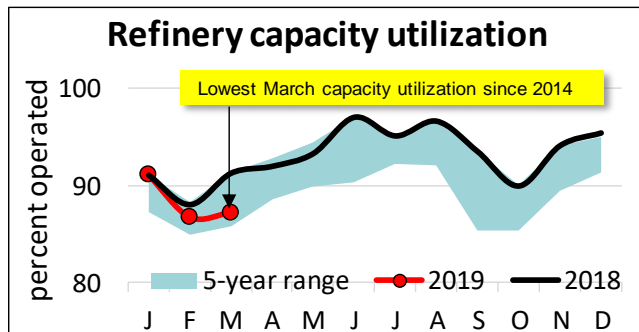
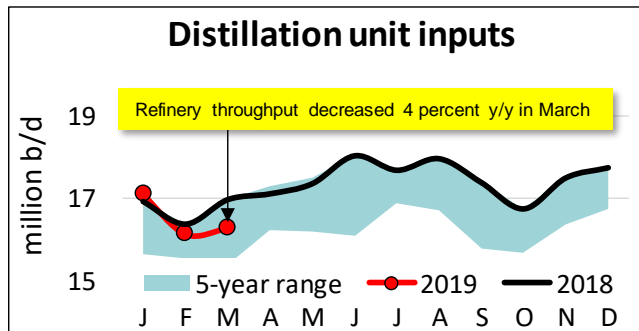
Over the same period, total U.S. petroleum imports fell to 9.1 mb/d, which for the month of March were the lowest imports since 1995.

Consequently, with exports falling relatively more than imports in March, the U.S. petroleum trade balance increased to 1.3 mb/d of net imports from 1.1 mb/d in February.



**Industry operations**

**Refinery throughput and capacity utilization slowed in March, compared with March 2018**

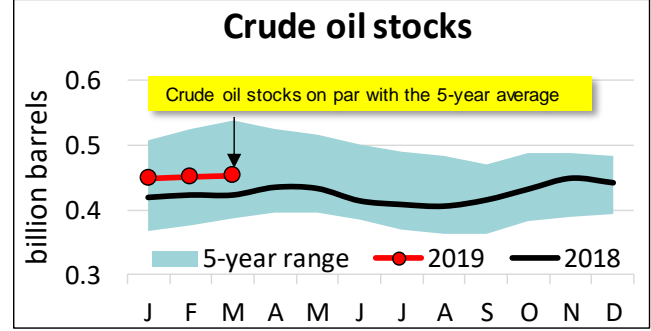
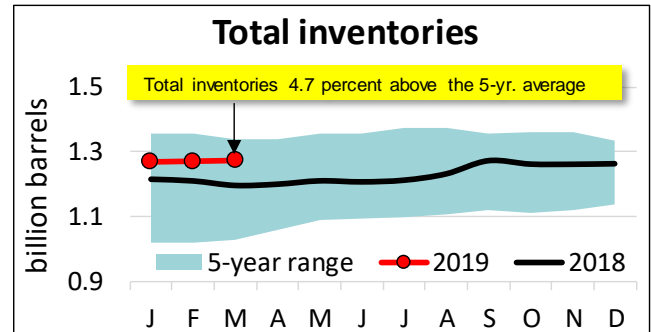


In March, gross inputs to U.S. refineries were 16.3 mb/d, implying a capacity utilization rate of 87.2 percent. These rates increased seasonally over their respective levels in February and were within

the 5-year ranges. However, the rates reflect slowing compared with one year ago, with refinery throughput down 1.5 percent or about 250 kb/d through the first quarter of 2019, which with a backdrop of moderated domestic demand growth and decreased exports suggest solid inventories.

**Inventories**

**Total petroleum inventories grew to 4.7 percent above the 5-year average**



In March, total petroleum inventories were 1.27 billion barrels, which is an increase of 0.1 percent from February and 6.4 percent over March 2018. Total inventories were 4.7 percent above the average of the 5-year range. Within the March total, however, crude oil inventories of 0.45 billion barrels were just 0.1 percent above the 5-year average.

**ESTIMATED UNITED STATES PETROLEUM BALANCE<sup>1</sup>**  
(Daily average in thousands of 42 gallon barrels)

Disposition and Supply	March			Year-to-Date		
	2019 <sup>2</sup>	2018	% Change	2019 <sup>3</sup>	2018	% Change
<b>Disposition:</b>						
Total motor gasoline.....	9,244	9,446	(2.1)	8,966	9,008	(0.5)
Finished reformulated.....	3,074	3,120	(1.5)	2,973	2,990	(0.6)
Finished conventional.....	6,170	6,326	(2.5)	5,993	6,018	(0.4)
Kerosene-jet.....	1,732	1,718	0.8	1,670	1,635	2.1
Distillate fuel oil.....	4,307	4,169	3.3	4,275	4,182	2.2
≤ 500 ppm sulfur.....	4,111	3,927	4.7	4,126	3,973	3.9
≤ 15 ppm sulfur.....	4,092	3,916	4.5	4,096	3,954	3.6
> 500 ppm sulfur.....	196	241	(18.7)	148	209	(29.2)
Residual fuel oil.....	212	223	(4.9)	257	282	(8.9)
All other oils (including crude losses) .....	5,214	4,892	6.6	5,372	4,997	7.5
Reclassified <sup>4</sup> .....	(55)	126	na	(44)	134	na
Total domestic product supplied.....	20,654	20,573	0.4	20,496	20,238	1.3
Exports.....	7,736	7,105	8.9	7,963	6,855	16.2
Total disposition.....	28,390	27,678	2.6	28,458	27,093	5.0
<b>Supply:</b>						
Domestic liquids production						
Crude oil (including condensate).....	12,121	10,461	15.9	12,016	10,234	17.4
Natural gas liquids.....	4,668	4,173	11.9	4,643	4,007	15.9
Other supply <sup>5</sup> .....	1,191	1,222	(2.6)	1,199	1,226	(2.1)
Total domestic supply.....	17,980	15,856	13.4	17,858	15,466	15.5
Imports:						
Crude oil (excluding SPR imports).....	6,634	7,616	(12.9)	6,954	7,714	(9.9)
From Canada.....	3,632	3,532	2.8	3,648	3,634	0.4
All other.....	3,002	4,084	(26.5)	3,306	4,080	(19.0)
Products.....	2,424	2,205	9.9	2,345	2,188	7.2
Total motor gasoline (incl. blend.comp)....	721	691	4.3	582	578	0.7
All other.....	1,703	1,514	12.5	1,763	1,610	9.5
Total imports.....	9,058	9,821	(7.8)	9,298	9,902	(6.1)
Total supply.....	27,038	25,677	5.3	27,157	25,369	7.0
Stock change, all oils.....	(1,352)	(2,001)	na	(1,302)	(1,724)	na
<b>Refinery Operations:</b>						
Input to crude distillation units.....	16,274	16,963	(4.1)	16,511	16,760	(1.5)
Gasoline production.....	9,925	10,052	(1.3)	9,816	9,790	0.3
Kerosene-jet production.....	1,745	1,784	(2.2)	1,740	1,722	1.0
Distillate fuel production.....	4,848	4,825	0.5	4,988	4,814	3.6
Residual fuel production.....	336	403	(16.6)	345	443	(22.3)
Operable capacity.....	18,655	18,588	0.4	18,676	18,574	0.5
Refinery utilization <sup>6</sup> .....	87.2%	91.3%	na	88.4%	90.2%	na
Crude oil runs.....	15,938	16,665	(4.4)	16,206	16,414	(1.3)

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 BALANCE<sup>1</sup>**  
(Daily average in thousands of 42 gallon barrels)

	March 2019	February 2019	March 2018	% Change From	
				Month Ago	Year Ago
<b>Stocks (at month-end, in millions of barrels):</b>					
Crude oil (excluding lease & SPR stocks).....	453.5	451.5	423.4	0.4	7.1
Unfinished oils.....	91.8	89.2	98.3	2.9	(6.6)
Total motor gasoline.....	235.4	253.1	239.6	(7.0)	(1.8)
Finished reformulated.....	0.0	0.1	0.0	(0.1)	2.1
Finished conventional.....	21.6	25.5	23.1	(15.3)	(6.4)
Blending components.....	213.8	227.5	216.5	(6.0)	(1.2)
Kerosene-jet.....	40.8	42.6	40.4	(4.2)	1.1
Distillate fuel oil.....	127.5	135.8	130.4	(6.1)	(2.2)
≤ 500 ppm sulfur.....	116.9	124.6	118.9	(6.2)	(1.7)
≤ 15 ppm sulfur.....	114.3	121.5	114.4	(5.9)	(0.1)
> 500 ppm sulfur.....	10.6	11.2	11.5	(5.4)	(8.0)
Residual fuel oil.....	29.4	28.6	35.0	2.8	(16.1)
All other oils.....	294.7	271 R	229.1	8.8	28.7
Total all oils.....	1,273.1	1271.8 R	1,196.3	0.1	6.4