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EXECUTIVE SUMMARY

In December 2020, U.S. oil markets achieved two milestones despite a year of severe challenges:

- Record-high refining and petrochemical demand for naphtha and gasoil (5.9 million barrels per day, mb/d).
- The U.S. was a petroleum net exporter on an annual basis for the first time in more than 60 years.

The 5.9 mb/d of naphtha and gasoil in refining and petrochemicals reflected increased needs through the COVID-19 pandemic for packaging, single-use plastics, and propylene-based products.

By contrast, U.S. petroleum net exports were positive despite COVID-19, which curbed imports at the same time as exports remained relatively solid. Specifically, total petroleum exports of 8.3 mb/d outpaced imports of 7.7 mb/d, which were driven by the lowest U.S. crude oil imports for the month of December since 1991.

Consequently, as U.S. refiners utilized relatively more light sweet domestic crude oil in 2020, the average API gravity of crude oil input to refineries (33.0) was the highest / lightest on record since 1985 per [EIA](#).

Other December highlights:

- U.S. petroleum demand slowed with relatively weak seasonal demand.
- Productivity gains sustained U.S. crude oil production of 11.0 mb/d while NGLs held steady (4.9 mb/d).
- Refinery throughput (14.6 mb/d, 79.3% capacity utilization) rose along with refining margins.

Leading economic indicators continued to improve, including API's D-E-I™ (distillate/diesel economic indicator). Please see the following [chart](#) for details.

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- **U.S. petroleum demand (18.6 mb/d) slowed.**
 - Weak holiday travel lowered motor gasoline demand.
 - Distillate demand dropped at year-end.
 - Jet fuel deliveries rose along with flight activity.
 - Weakest residual fuel oil deliveries for December since 2013.
 - Record-high refining and petrochemical demand for naphtha and gasoil (5.9 mb/d).

Prices & Macroeconomy

- **Crude oil prices rose; Brent-WTI spread widened.**
- **Leading economic indicators improved.**

Supply

- **Productivity gains sustained crude oil production of 11.0 mb/d.**

International trade

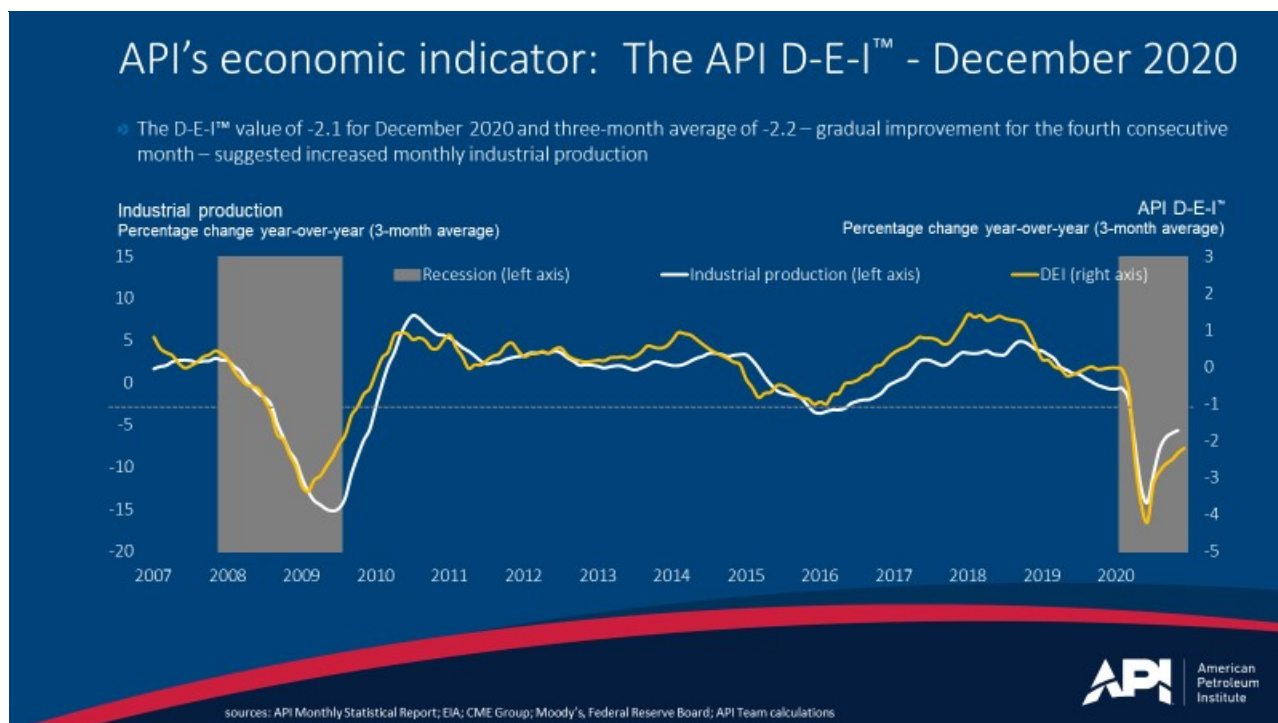
- **U.S. was a petroleum net exporter for 6th consecutive month and on an annual basis in 2020.**

Industry operations

- **Refinery activity increased for the second consecutive month.**

Inventories

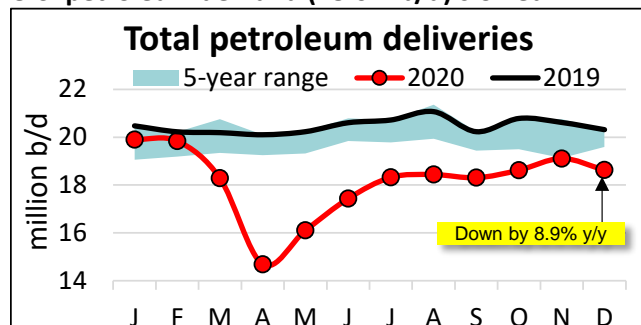
- **Record-high monthly crude oil and refined product inventories for December.**



Details by section

Demand

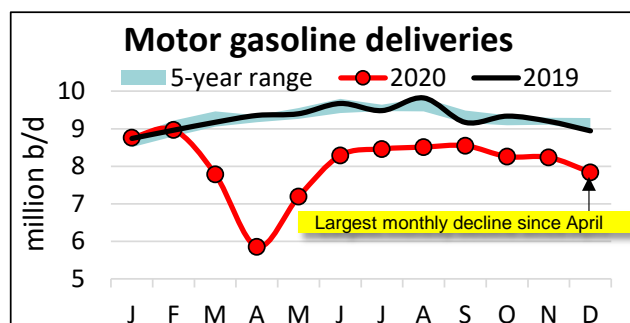
U.S. petroleum demand (18.6 mb/d) slowed



In December, U.S. petroleum demand, as measured by total domestic petroleum deliveries, was 18.6 mb/d and reflected decreases of 2.5% from November and 8.9% compared with December 2019. The slowing likely reflected less holiday travel and industrial activities at year-end and with major holidays falling on weekdays in December.

Gasoline

Weak holiday travel lowered gasoline demand

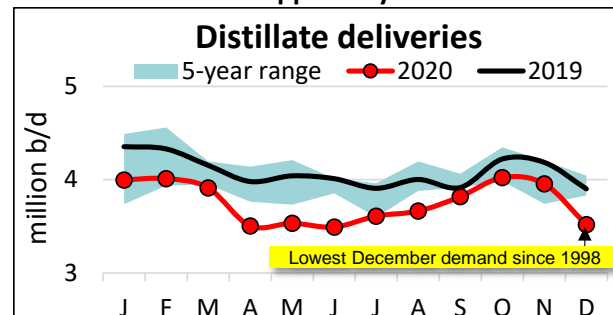


Consumer gasoline demand, measured by motor gasoline deliveries, was 7.8 mb/d in December. This was a decrease of 4.8% (0.4 mb/d) from November and 12.6% (1.1 mb/d) below the level in December 2019. In each of the past three years, gasoline demand decreased between November and December, but the percentage decline in December 2020 was 2.5 times greater than the average in 2018 and 2019, likely due to less holiday travel with the COVID-19 pandemic. High-frequency mobility indicators, such as those from [Apple](#) and [Google](#), also suggested less driving activity in December.

Deliveries of reformulated-type gasoline (consumed primarily in urban areas) and conventional gasoline (mainly in rural areas) fell by 17.5% y/y and 10.4% y/y, respectively. This marked notably weaker urban demand (down from -9.4% y/y in November), but relative strength for rural gasoline demand.

Distillate Fuel Oil

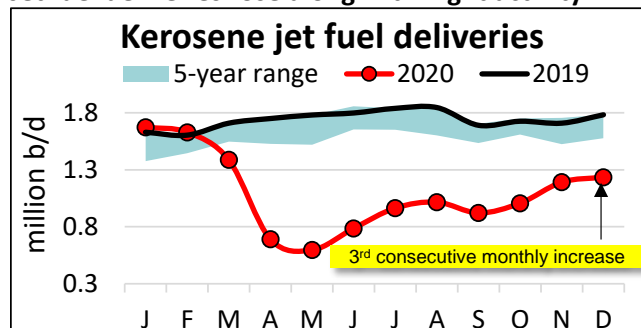
Distillate demand dropped at year-end



In December, distillate deliveries of 3.5 mb/d decreased by 11.1% from November and 10.4% y/y (0.4 mb/d) with an apparent drop-off of 1.2 mb/d over the last two weeks of the year.

Kerosene Jet Fuel

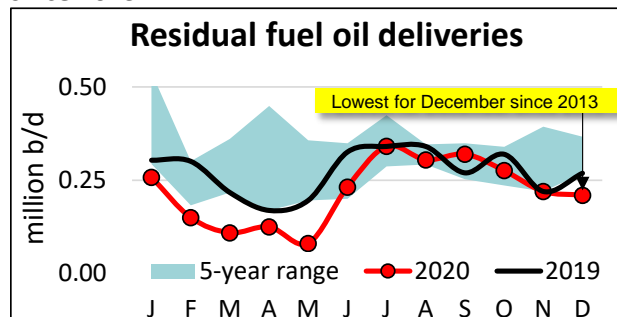
Jet fuel deliveries rose along with flight activity



'K-Jet' deliveries of 1.2 mb/d increased by 3.7% m/m in December but were down by 31.7% versus December 2019. Since jet fuel deliveries were down by more than 40% y/y as recently as October months, December represented gradual improvement that was consistent with higher reported total flight activity per [Flightradar24](#).

Residual Fuel Oil

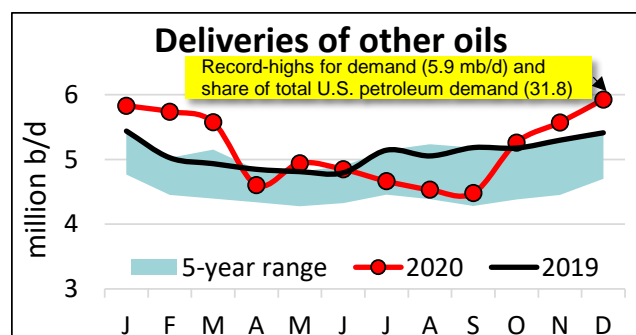
Weakest residual fuel oil deliveries for December since 2013



Deliveries of residual fuel oil, which is used in electric power production, space heating, industrial applications and as a marine bunker fuel, were 0.21 mb/d in December. This represented decreases of 4.5% from November and 26.1% compared with December 2019 for its weakest December reading since 2013.

Naphtha & Gasoil "Other Oils"

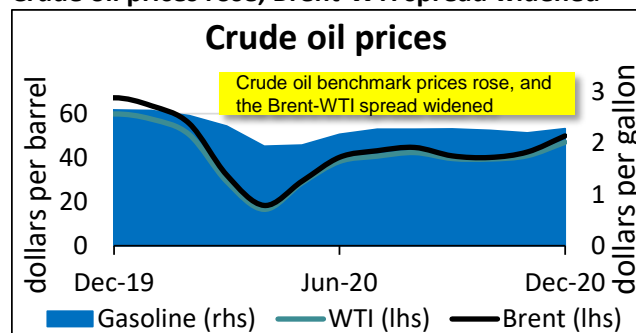
Record-high refining and petrochemical demand for naphtha and gasoil (5.9 mb/d)



Deliveries of liquid feedstocks, such as naphtha and gasoil ("other oils") used in refining and petrochemical manufacturing, were 5.9 mb/d in December, up by 6.4% m/m and 10.3% y/y. The 5.9 mb/d represents record highs for demand (versus for any month on record since 1965) and other oils' share of total U.S. petroleum demand (31.8%).

Prices

Crude oil prices rose; Brent-WTI spread widened



In December, West Texas Intermediate (WTI) crude oil prices rose to \$47.02 per barrel, a 14.9% increase m/m and its strongest month since February. By comparison, Brent crude oil spot price averages increased by 17.1% m/m to \$49.99 per barrel, widening the Brent-WTI price differential to \$2.97 per barrel from \$1.75 in November.

Although they remain historically low, the increased crude prices corresponded with higher gasoline prices. The U.S. average conventional gasoline price was \$2.28 per gallon in December, up by 3.8% (\$0.08 per gallon) from November but down by 13.6% y/y (\$0.36 per gallon) from December 2019, according to [AAA](#).

Macroeconomy

Leading economic indicators improved

API's economic indicator, The D-E-I™, which is based primarily on diesel/distillate supply, demand, and inventories, had a reading of -2.1 in December and a three-month average of -2.2. This suggested that

the year-on-year change in U.S. industrial production strengthened for the sixth consecutive month along with broader economic activity.

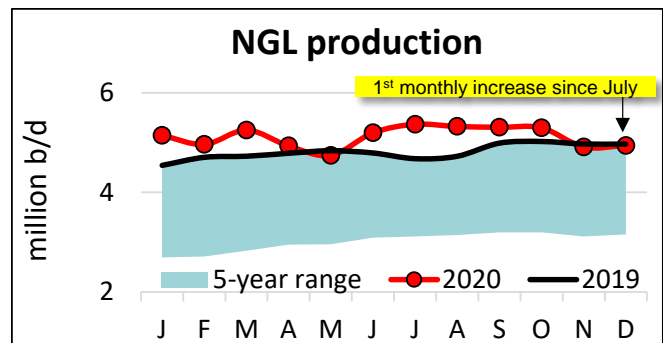
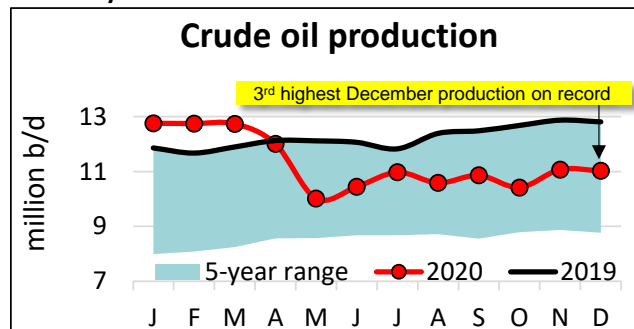
The Institute for Supply Management's Purchasing Managers Index (PMI) had a reading of 60.7 in December, a 3.2 percentage point increase from November. Index values above 50.0 suggest an expansion. New orders, production, employment, and prices grew, while new exports decreased. This month's PMI reading is a 12.9% year-on-year increase. Among the 18 manufacturing industries surveyed, 16 reported growth.

Based on [University of Michigan's consumer sentiment index](#), consumer sentiment increased as the index rose to 80.7 in December from 76.9 in November. This was a 4.9% monthly increase but remained 18.7% below December 2019 levels. The survey noted that respondents were increasingly polarized across political party lines on economic recovery sentiment. Additionally, growing inequality was highlighted in survey sections highlighting personal finance expectations. However, Americans generally remained optimistic about vaccine deployment and an incoming administration that could prioritize stimulus efforts in 1H 2021.

According to the [Bureau of Labor Statistics \(BLS\)](#), non-farm payrolls decreased by 140 thousand, and the unemployment rate held at 6.7% in December. While both measures have recovered broadly from April highs, they are nearly double that of pre-pandemic February levels.

Supply

Productivity sustained U.S. crude oil production of 11.0 mb/d



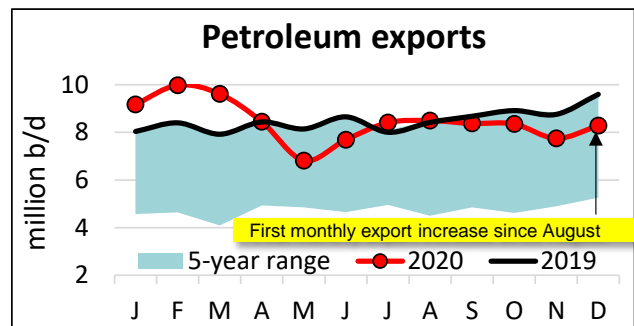
In December, U.S. crude oil production was 11.0 mb/d, a decrease of 0.4% (0.1 mb/d) m/m with historically low drilling activity.

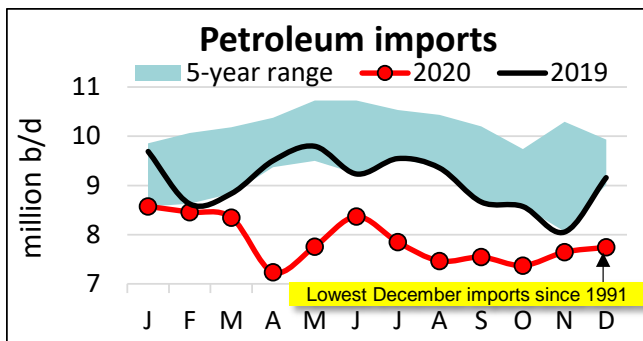
Specifically, [Baker Hughes](#) reported 260 active oil-directed rigs in December, which was an 11% monthly increase but 61% below the 673 rigs in December 2019. However, crude oil production has remained relatively steady due to estimated productivity gains as well as bringing drilled but uncompleted wells on stream per [EIA](#).

By comparison, natural gas-directed drilling rose by 8.0% from November but remained down 37.3% y/y in December. Similarly, productivity gains supported natural gas marketed production of about 102 billion cubic feet per day in December per [EIA](#), which corresponded with the extraction of 4.9 mb/d of natural gas liquids (NGLs) by API estimates. These figures appeared to reflect solid demand, increased NGL prices, and the continued recovery of U.S. industrial production.

International trade

U.S. was a petroleum net exporter for 6th consecutive month and on an annual basis in 2020



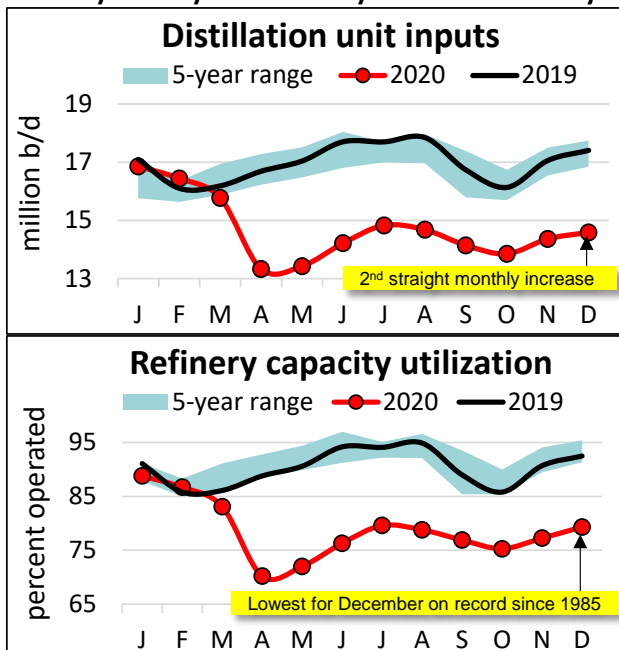


Driven by relatively strong exports, the U.S. was a petroleum net exporter in December for the sixth consecutive month – as it was for 10 of 12 months in 2020 and the first time on an annual basis in more than 60 years.

The U.S. imported 5.6 mb/d of crude oil and 2.1 mb/d of refined products in December – the lowest monthly petroleum imports for the month since 1991 (29 years). Meanwhile, the U.S. exported 3.1 mb/d of crude oil and 5.2 mb/d of refined products in December. These were respective increases of 10.4% m/m and 4.9% m/m and reinforced petroleum net exports of 0.5 mb/d for the month.

Industry operations

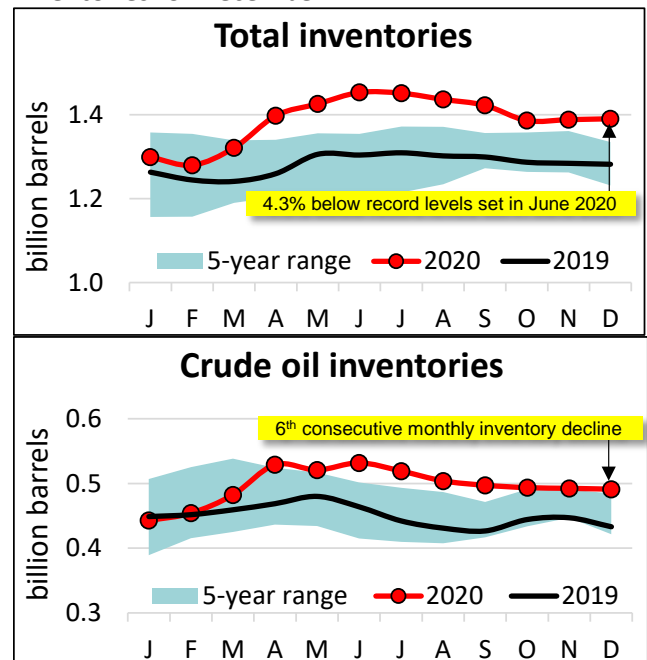
Refinery activity first monthly increase since July



U.S. refinery throughput was 14.6 mb/d in December, a 1.6% m/m increase but a decrease of 16.2% y/y. This implied a capacity utilization rate of 79.3% for the month, which rose by 2.1 points from November but was the lowest monthly value on record since 1985.

Inventories

Record-high crude oil and refined product monthly inventories for December.



U.S. total petroleum inventories, including crude oil and refined products but excluding the Strategic Petroleum Reserve were 1.39 billion barrels in December. This was an increase of 0.2% m/m and the highest inventory on record for the month of December, but 4.3% below the record set in June 2020. Within the total, crude oil stocks of 490.3 million barrels decreased (0.4% m/m) for the sixth consecutive month.

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

Disposition and Supply	December			Year-to-Date		
	2020 ²	2019	% Change	2020 ³	2019	% Change
Disposition:						
Total motor gasoline.....	7,837	8,971	(12.6)	8,055	9,309	(13.5)
Finished reformulated.....	2,354	2,854	(17.5)	2,472	3,014	(18.0)
Finished conventional.....	5,483	6,118	(10.4)	5,583	6,296	(11.3)
Kerosene-jet.....	1,235	1,809	(31.7)	1,091	1,743	(37.4)
Distillate fuel oil.....	3,517	3,927	(10.4)	3,752	4,103	(8.6)
≤ 500 ppm sulfur.....	3,443	3,830	(10.1)	3,719	4,027	(7.6)
≤ 15 ppm sulfur.....	3,433	3,805	(9.8)	3,705	4,018	(7.8)
> 500 ppm sulfur.....	74	97	(23.7)	33	76	(56.6)
Residual fuel oil.....	210	284	(26.1)	219	275	(20.4)
All other oils (including crude losses)	5,928	5,374	10.3	4,977	5,048	(1.4)
Reclassified ⁴	(99)	77	na	46	63	na
Total domestic product supplied.....	18,628	20,443	(8.9)	18,140	20,543	(11.7)
Exports.....	8,283	9,331	(11.2)	8,447	8,471	(0.3)
Total disposition.....	26,911	29,774	(9.6)	26,587	29,014	(8.4)
Supply:						
Domestic liquids production						
Crude oil (including condensate).....	11,025	12,802	(13.9)	11,298	12,248	(7.8)
Natural gas liquids.....	4,943	4,992	(1.0)	5,118	4,825	6.1
Other supply ⁵	1,093	1,175	(7.0)	1,018	1,142	(10.8)
Total domestic supply.....	17,061	18,969	(10.1)	17,434	18,214	(4.3)
Imports:						
Crude oil (excluding SPR imports).....	5,622	6,833	(17.7)	5,868	6,801	(13.7)
From Canada.....	3,448	4,137	(16.6)	3,530	3,814	(7.4)
All other.....	2,174	2,697	(19.4)	2,338	2,987	(21.7)
Products.....	2,120	2,326	(8.9)	1,993	2,340	(14.9)
Total motor gasoline (incl. blend.comp)....	642	587	9.4	590	795	(25.8)
All other.....	1,478	1,739	(15.0)	1,403	1,546	(9.2)
Total imports.....	7,742	9,159	(15.5)	7,861	9,141	(14.0)
Total supply.....	24,803	28,128	(11.8)	25,294	27,355	(7.5)
Stock change, all oils.....	(2,108)	(1,645)	na	(1,293)	(1,659)	na
Refinery Operations:						
Input to crude distillation units.....	14,585	17,395	(16.2)	14,703	16,993	(13.5)
Gasoline production.....	8,655	9,992	(13.4)	8,734	10,095	(13.5)
Kerosene-jet production.....	1,149	1,890	(39.2)	1,022	1,796	(43.1)
Distillate fuel production.....	4,645	5,309	(12.5)	4,733	5,137	(7.9)
Residual fuel production.....	164	249	(34.1)	193	361	(46.7)
Operable capacity.....	18,386	18,808	(2.2)	18,679	18,808	(0.7)
Refinery utilization ⁶	79.3%	92.5%	na	78.7%	90.3%	na
Crude oil runs.....	14,168	16,793	(15.6)	14,196	16,563	(14.3)

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 BALANCE¹
(Daily average in thousands of 42 gallon barrels)

	December 2020	November 2020	December 2019	% Change From	
				Month Ago	Year Ago
Stocks (at month-end, in millions of barrels):					
Crude oil (excluding lease & SPR stocks).....	490.3	492.5	432.8	(0.4)	13.3
Unfinished oils.....	78.6	78.6	89.8	0.0	(12.5)
Total motor gasoline.....	242.8	234.6	254.1	3.5	(4.4)
Finished reformulated.....	0.0	0.0	0.0	0.1	14.3
Finished conventional.....	25.9	26.0	26.1	(0.4)	(0.7)
Blending components.....	216.9	208.6	228.0	4.0	(4.9)
Kerosene-jet.....	37.7	37.5	40.5	0.5	(6.8)
Distillate fuel oil.....	158.3	146.2	140.1	8.3	13.0
≤ 500 ppm sulfur.....	150.1	137.3	129.1	9.3	16.2
≤ 15 ppm sulfur.....	147.0	134.7	124.9	9.1	17.7
> 500 ppm sulfur.....	8.2	8.9	10.9	(7.9)	(25.0)
Residual fuel oil.....	30.6	31.5	30.5	(2.9)	0.3
All other oils.....	351.7	367.0 R	301.5	(4.2)	16.6
Total all oils.....	1,390.0	1,387.9 R	1,289.3	0.2	7.8