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November 2022

EXECUTIVE SUMMARY

API's industry data for November showed a strong combination of solid demand, increased supplies, a record pull for U.S. exports, yet lower consumer prices:

- Solid U.S. petroleum demand at 20.5 million barrels per day (mb/d), including the highest "other oils" (that is, naphtha, gasoil, propane/propylene) for the month of November on record since 1965.
- Crude oil production rose to 12.25 mb/d, and natural gas liquids (NGL) production achieved a record high at 6.2 mb/d.
- Highest petroleum exports (10.3 mb/d) and net exports (2.1 mb/d) on record for any month since 1947.
- Gasoline prices fell along with crude oil prices in November.
- Distillate stocks increased towards their historical norms.

U.S. petroleum demand edged up to 20.5 mb/d in November and remained within 1.3% of its highest level for the month of November in the past five years. The growth was led by other oils used in refining and petrochemical manufacturing and vital to consumer products, including plastics, films and packaging.

For supply, U.S. crude oil production of 12.25 mb/d in November rose 0.2 mb/d from October and by 0.5 mb/d compared with November 2021, but remained 0.75 mb/d below the U.S. record high of 13.0 mb/d in November 2019.

Due to Russia's war in Ukraine, the pull for U.S. petroleum exports has never been higher: 10.3 mb/d of total crude and refined product exports and 2.1 mb/d of petroleum net exports – the highest levels for any month on record since 1947.

It is notable that crude oil and gasoline prices at the pump continued to fall in November, and the inventories of distillates, which have spurred substantial media [coverage](#), have increased towards their historical norms.

API's Distillate Economic Indicator™ had a reading of +1.0 in November – down from +1.3 in October – and a three-month average of +1.1, which showed continued growth of U.S. industrial production and broader economic activity. (Please see the following [chart](#) for details).

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Demand

- **U.S. petroleum demand (20.5 mb/d) within 1.3% of its highest for November in five years.**
 - Motor gasoline solid at 8.7 mb/d.
 - Distillate demand (3.9 mb/d) fell as potential concerns for alternative freight modes eased.
 - Jet fuel demand (1.6 mb/d) at its highest for November since 2019.
 - Residual fuel oil demand steady within its 5-year range.
 - Highest other oils demand for November on record since 1965.

Prices & Macroeconomy

- **Gasoline prices fell along with crude oil prices in November.**
- **Leading indicators reinforced industrial growth but weak consumer sentiment.**

Supply

- **U.S. crude oil production up to 12.25 mb/d; NGL production rose to a record 6.2 mb/d.**

International trade

- **Highest petroleum exports (10.3 mb/d) and net exports (2.1 mb/d) for any month on record since 1947.**

Industry operations

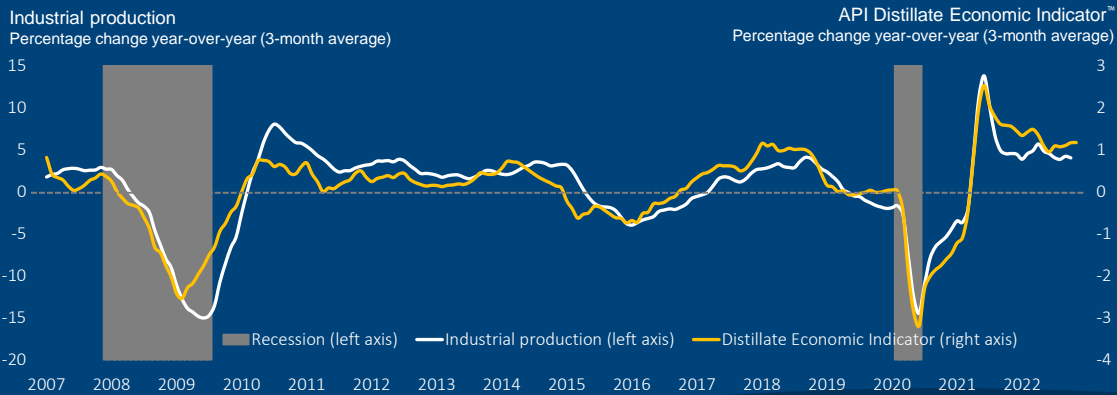
- **Refining throughput and capacity utilization rates accelerated in November.**

Inventories

- **Crude oil inventories fell in November (m/m and y/y).**

API's Distillate Economic Indicator™ - November 2022

➤ The Distillate Economic Indicator™ value of +1.0 for November 2022 slipped from a reading of +1.3 in October but resulted in a three-month average of +1.2, which showed continued growth of U.S. industrial production and broader economic activity



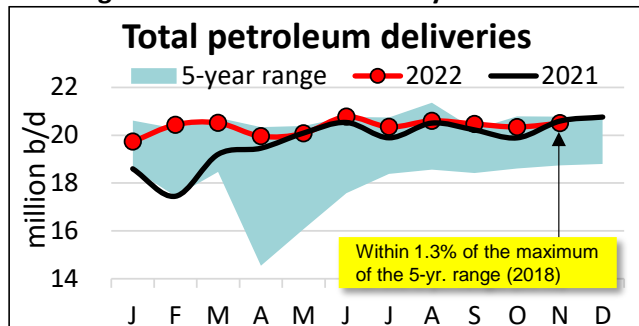
sources: API Monthly Statistical Report; EIA; CME Group; Moody's, Federal Reserve Board; API Team calculations

API American Petroleum Institute

Details by section

Demand

U.S. petroleum demand (20.5 mb/d) within 1.3% of its highest for November in five years



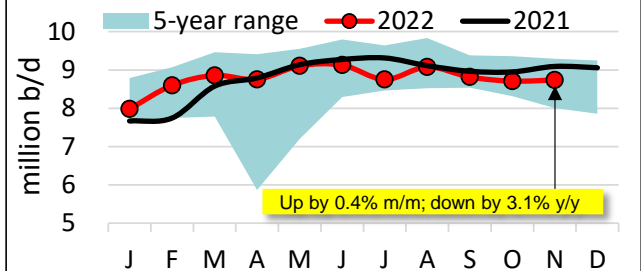
U.S. petroleum demand, as measured by total domestic petroleum deliveries, was 20.5 mb/d in November. This reflected an increase of 0.8% from October but was 0.3% y/y below the level of November 2021. The 20.5 mb/d was 1.3% less than that of November 2018, which was the top of the five-year range.

Gasoline

Motor gasoline demand at 8.7 mb/d

Consumer gasoline demand, measured by motor gasoline deliveries, was 8.7 mb/d in November. This reflected an increase of 0.4% from October but a decrease of 3.1% y/y compared with November 2021.

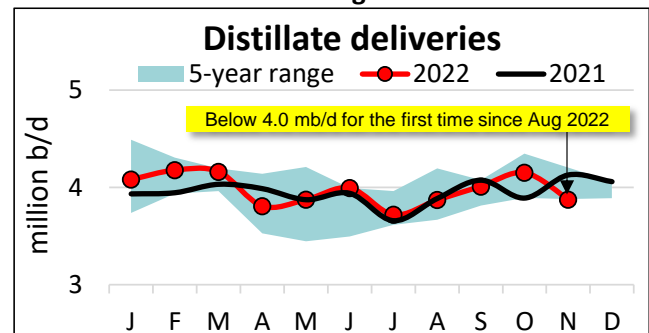
Motor gasoline deliveries



A return of urban commuting remained evident. Deliveries of reformulated-type gasoline (consumed primarily in urban areas) rose by 5.2% y/y to 3.0 mb/d, while those of conventional gasoline (consumed mainly in rural areas) decreased by 6.9% y/y to 5.8 mb/d.

Distillate Fuel Oil

Distillate demand (3.9 mb/d) fell as potential concerns for alternative freight modes eased



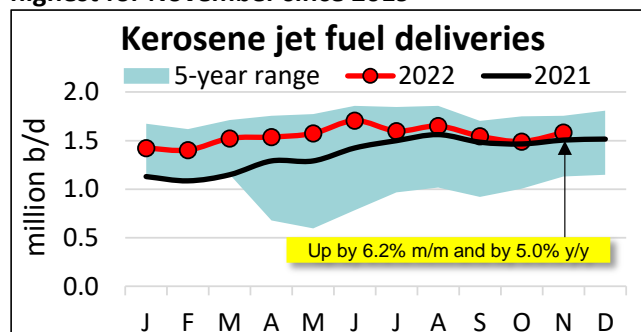
Following a large increase in October, distillate deliveries of 3.9 mb/d in November fell by 6.6% m/m and by 7.5% y/y.

As discussed last month, a combination of low east coast inventories, the drought-stricken Mississippi River, and a potential rail strike appeared to bring some distillates' demand forward into October. Also, [DAT IQ industry trendlines](#) showed that the quantity of spot trucks decreased by 0.2% m/m in November and the number of spot load posts fell by 13.3% m/m, which reflected a deceleration in freight trucking.

A two-month average for October and November, however, shows deliveries over 4.0 mb/d and within 1.6% of their level for the same period a year ago.

Kerosene Jet Fuel

Kerosene-type jet fuel demand (1.6 mb/d) at its highest for November since 2019

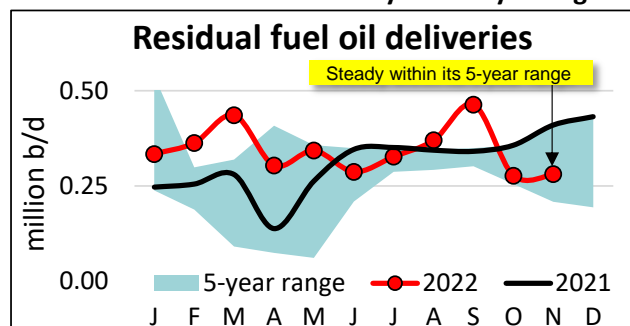


Kerosene-type jet fuel deliveries of 1.6 mb/d in November rose by 6.2% m/m from October and by 5.0% y/y versus November 2021 to their highest for the month since 2019.

High-frequency data from [Flightradar24](#) and [TSA](#) showed that the total numbers of flights and air passengers increased by 1.1% y/y and 12.3% y/y, respectively. International Air Transport Association (IATA) also showed a continued [recovery](#) in air passenger traffic.

Residual Fuel Oil

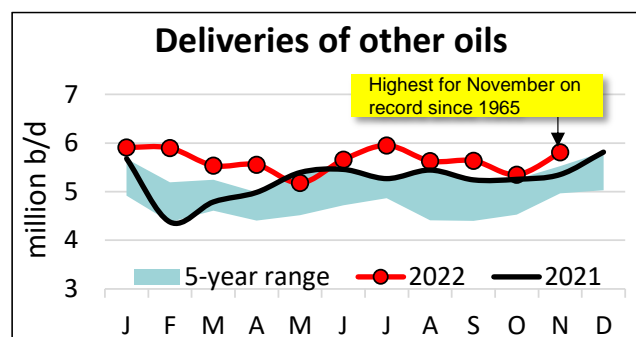
Residual fuel oil demand steady in its 5-yr. range



Deliveries of residual fuel oil, which is used as a marine bunker fuel and internationally in electric power production, space heating, and industrial applications, were 0.3 mb/d in November, which reflected an increase of 1.4% m/m from October but a 31.5% y/y decreases versus November 2021. This was consistent with reports of [easing](#) for shipping market conditions.

Other Oils – Naphtha, Gasoil, Propane & Propylene

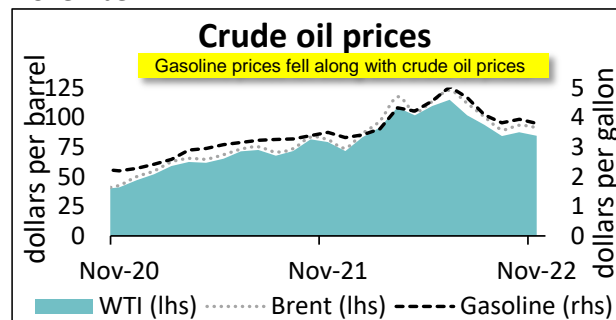
Highest other oils demand for November on record since 1965



Deliveries of refinery and petrochemical liquid feedstocks – that is, naphtha, gasoil, and propane/propylene (“other oils”) – were 5.8 mb/d in November, the highest reading for the month of November on record since 1965. This reflected increases of 8.6% m/m and 8.5% y/y – as well as continued solid demand for [plastics](#), films and packaging.

Prices

Gasoline prices fell along with crude oil prices in November



In November, West Texas Intermediate (WTI) crude oil prices decreased by 3.6% m/m to \$84.37 per barrel. Brent crude oil spot prices decreased by 2.1% m/m to \$91.42 per barrel, which implied a Brent-WTI crude oil price differential of \$7.05 per

barrel in November, up from \$5.78 per barrel in October.

Crude oil remained the top input cost in making gasoline per [EIA](#). The U.S. average conventional gasoline price was \$3.80 per gallon in November, down by 3.5% m/m from October per [EIA](#).

Macroeconomy

Leading indicators reinforced industrial growth but weak consumer sentiment

API's Distillate Economic Indicator™, which is based primarily on diesel/distillate supply, demand, and inventories, had a reading of +1.0 in November – down from +1.3 in October – and a three-month average of +1.1, which showed continued growth of U.S. industrial production and broader economic activity.

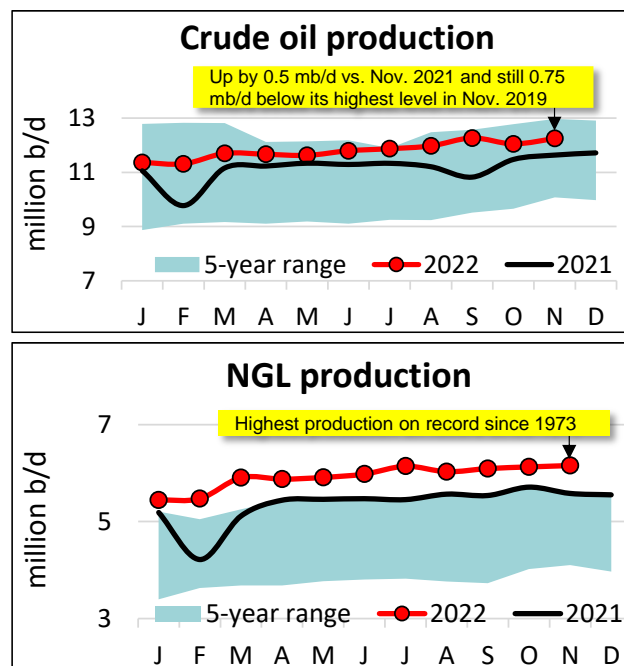
The Institute for Supply Management's manufacturing Purchasing Managers Index ([PMI](#)) had a reading of 49.0 in November – 1.2 percentage points lower than in October. Index values above 50.0 suggest an expansion in the overall economy, and the manufacturing PMI fell below that threshold after 29 straight months. Within the index, there were monthly increases in the index's measures of supplier deliveries, customers' inventories and new export orders. And there were monthly decreases in the index's measures of new orders, production, employment, inventories, prices, backlog of orders, and imports. Six manufacturing industries surveyed reported growth in November, while twelve industries reported contractions in November compared with October.

The [University of Michigan's consumer sentiment index](#) showed a reading of 56.8 in November, down from 59.9 in October. The survey noted that consumers have expressed continued concern for high price inflation.

According to the [Bureau of Labor Statistics \(BLS\)](#), the unemployment rate was unchanged at 3.7% in November. Non-farm payrolls rose by a preliminary estimate of 263,000 m/m, the weakest monthly gain for any month since April 2021.

Supply

U.S. crude oil production up to 12.25 mb/d; NGL production rose to a record 6.2 mb/d



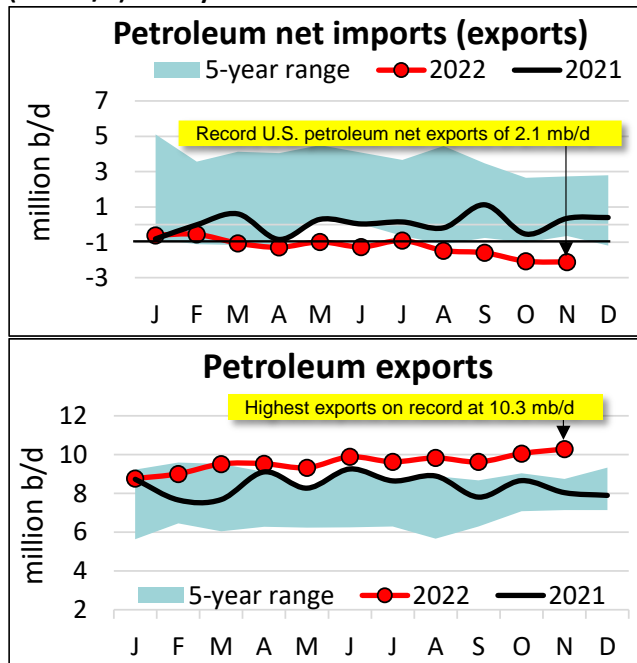
U.S. crude oil production of 12.25 mb/d in November increased by 1.7% m/m (0.2 mb/d) from October and by 3.9% y/y (0.5 mb/d) compared with November 2021. The 12.25 mb/d remained 0.75 mb/d below the U.S. record high of 13.0 mb/d in November 2019.

[Baker Hughes](#) reported 623 active oil-directed rigs in November, a 2.3% m/m (14 rigs) increase from October but remained 7.6% (51 rigs) lower than the 674 rigs that ran in November 2019.

Natural gas-directed drilling of 155 rigs in November fell by 0.9% m/m (2 rigs) from October. The extraction of natural gas liquids (NGLs) depends on the relative values of ethane, propane, and butane, which historically have tended to correspond with those of crude oil. NGL production increased by 0.5% m/m and 6.7% y/y to 6.2 mb/d, its highest level on record for any month since 1973.

International trade

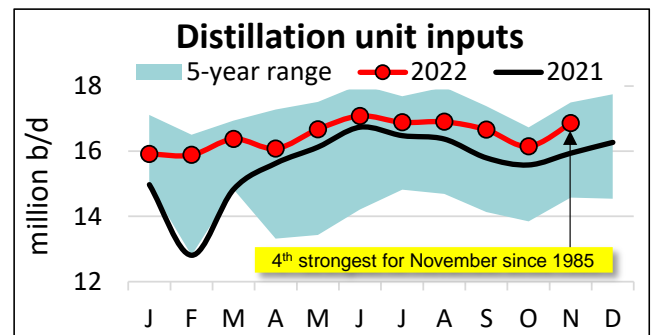
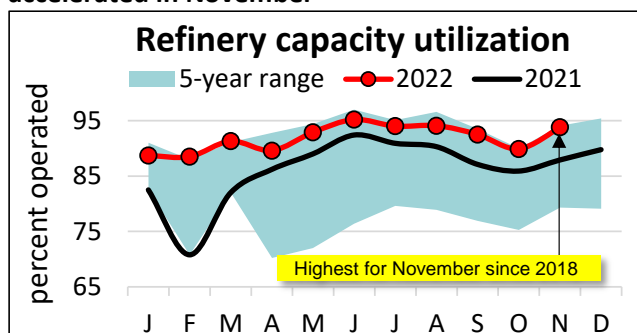
Highest petroleum exports (10.3 mb/d) and net exports (2.1 mb/d) for any month on record since 1947



U.S. petroleum exports of 10.3 mb/d, including 4.1 mb/d of crude oil 6.2 mb/d of refined products) in November were the highest total on record for any month since 1947. Total exports increased by 11.9% y/y (1.1 mb/d) at the same time as total imports fell by 3.6% y/y (0.3 mb/d). Consequently, the U.S. was a petroleum net exporter of over 2.1 mb/d in November, the highest monthly petroleum net exports on record since 1947.

Industry operations

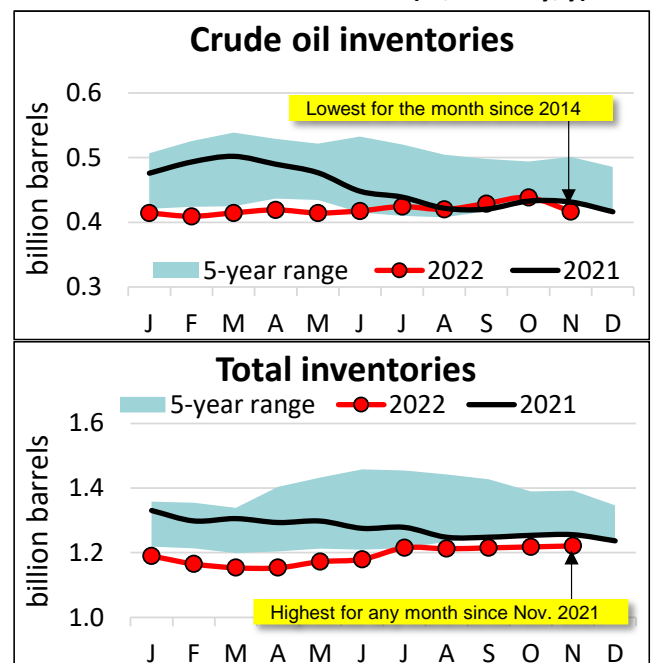
Refining throughput and capacity utilization rates accelerated in November



In November, U.S. refinery throughput, measured by gross inputs into crude distillation units, was 16.9 mb/d and implied a capacity utilization rate of 93.8%. The throughput increased by 4.4% m/m (0.7 mb/d) and by 4.3% y/y (0.7 mb/d) – to its fourth highest for November since 1985.

Inventories

Crude oil inventories fell in Nov. (m/m and y/y)



U.S. crude oil inventories 416.6 million barrels in November fell by 4.9% m/m (21.6 million barrels) from October and by 3.9% y/y (16.8 million barrels) versus November 2021. Separately, crude oil in the U.S. Strategic Petroleum Reserve (SPR) fell by 4.6% m/m (38.3 million barrels) to its lowest level since March 1984.

Total inventories of crude and refined products, however, rose by 0.3% m/m to 1.22 billion barrels, their highest level since Nov. 2021.

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

Disposition and Supply	November			Year-to-Date		
	2022 ²	2021	% Change	2022 ³	2021	% Change
Disposition:						
Total motor gasoline.....	8,739	9,021	(3.1)	8,775	8,810	(0.4)
Finished reformulated.....	2,970	2,824	5.2	2,828	2,779	1.8
Finished conventional.....	5,769	6,197	(6.9)	5,946	6,031	(1.4)
Kerosene-jet.....	1,583	1,507	5.0	1,549	1,356	14.2
Distillate fuel oil.....	3,875	4,190	(7.5)	3,973	3,974	(0.0)
≤ 500 ppm sulfur.....	3,871	4,188	(7.6)	3,954	3,965	(0.3)
≤ 15 ppm sulfur.....	3,859	4,179	(7.7)	3,945	3,933	0.3
> 500 ppm sulfur.....	4	3	33.3	19	9	111.1
Residual fuel oil.....	281	410	(31.5)	344	303	13.5
All other oils (including crude losses)	5,809	5,353	8.5	5,456	5,211	4.7
Reclassified ⁴	216	92	na	241	164	na
Total domestic product supplied.....	20,503	20,573	(0.3)	20,339	19,819	2.6
Exports.....	10,280	9,185	11.9	9,585	8,426	13.7
Total disposition.....	30,783	29,758	3.4	29,923	28,245	5.9
Supply:						
Domestic liquids production						
Crude oil (including condensate).....	12,250	11,790	3.9	11,826	11,218	5.4
Natural gas liquids.....	6,158	5,773	6.7	5,926	5,396	20.0
Other supply ⁵	1,153	1,274	(9.5)	1,193	1,140	4.6
Total domestic supply.....	19,561	18,837	3.8	18,945	17,754	6.7
Imports:						
Crude oil (excluding SPR imports).....	6,109	6,334	(3.5)	6,280	6,085	3.2
From Canada.....	3,418	3,938	(13.2)	3,763	3,729	0.9
All other.....	2,691	2,396	12.3	2,517	2,356	6.8
Products.....	2,059	2,141	(3.8)	2,038	2,382	(14.4)
Total motor gasoline (incl. blend.comp).....	615	605	1.7	644	824	(21.8)
All other.....	1,444	1,536	(6.0)	1,394	1,558	(10.5)
Total imports.....	8,168	8,475	(3.6)	8,318	8,467	(1.8)
Total supply.....	27,729	27,312	1.5	27,263	26,221	4.0
Stock change, all oils.....	(3,054)	(2,446)	na	(2,660)	(2,024)	na
Refinery Operations:						
Input to crude distillation units.....	16,860	16,160	4.3	16,502	15,615	5.7
Gasoline production.....	9,648	9,731	(0.9)	9,580	9,516	0.7
Kerosene-jet production.....	1,633	1,424	14.7	1,609	1,292	24.5
Distillate fuel production.....	5,192	4,950	4.9	4,994	4,644	7.5
Residual fuel production.....	237	246	(3.7)	248	213	16.3
Operable capacity.....	17,974	18,132	(0.9)	17,958	18,129	(0.9)
Refinery utilization ⁶	93.8%	89.1%	na	91.9%	86.1%	na
Crude oil runs.....	16,361	15,684	4.3	15,976	15,090	5.9

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)

	November 2022	October 2022	November 2021	% Change From	
				Month Ago	Year Ago
Stocks (at month-end, in millions of barrels):					
Crude oil (excluding lease & SPR stocks).....	416.6	438.2	433.4	(4.9)	(3.9)
Unfinished oils.....	83.3	85.2	87.7	(2.2)	(5.0)
Total motor gasoline.....	217.2	206.9	220.6	5.0	(1.5)
Finished reformulated.....	0.0	0.0	0.0	(0.2)	37.5
Finished conventional.....	16.0	15.1	18.2	6.0	(11.9)
Blending components.....	201.2	191.8	202.4	4.9	(0.6)
Kerosene-jet.....	37.2	36.7	36.8	1.4	1.2
Distillate fuel oil.....	115.5	107.3	131.7	7.6	(12.3)
≤ 500 ppm sulfur.....	107.3	99.3	123.0	8.1	(12.8)
≤ 15 ppm sulfur.....	104.6	96.5	119.8	8.3	(12.7)
> 500 ppm sulfur.....	8.2	8.0	8.7	2.5	(5.5)
Residual fuel oil.....	29.9	29.9	27.9	0.0	7.2
All other oils.....	321.4	313.8	295.7	2.4	8.7
Total all oils.....	1,221.1	1,218.0	1,233.7	0.3	(1.0)