



Short-Term Energy Outlook (STEO)

Forecast highlights

Global liquid fuels

- Although revisions to EIA's forecasts in the June STEO are generally smaller than they have been in recent months, this forecast remains subject to heightened levels of uncertainty because mitigation and reopening efforts related to the [2019 novel coronavirus disease \(COVID-19\)](#) continue to evolve. Reduced economic activity related to the COVID-19 pandemic has caused changes in energy supply and demand patterns in 2020, particularly for petroleum and other liquid fuels. Uncertainties persist across EIA's outlook for other energy sources, including natural gas, electricity, coal, and renewables.
- Daily Brent crude oil spot prices averaged \$29 per barrel (b) in May, up \$11/b from the average in April. Oil prices rose in May as initial data show global oil demand was higher than EIA had forecast and as adherence to [announced production cuts](#) by Organization of the Petroleum Exporting Countries (OPEC) and partner countries (OPEC+) was high. EIA expects monthly Brent prices will average \$37/b during the second half of 2020 and rise to an average of \$48/b in 2021. The forecast of rising crude oil prices reflects expected declines in global oil inventories during the second half of 2020 and through 2021. EIA expects high inventory levels and spare crude oil production capacity will limit upward price pressures in the coming months, but as inventories decline into 2021, those upward price pressures will increase.
- EIA forecasts that demand for global petroleum and liquid fuels will average 83.8 million barrels per day (b/d) in the second quarter of 2020, 16.6 million b/d lower than at the same time last year. Lower demand is the result of COVID-19-related shutdowns throughout much of the world. As stay-at-home orders are eased, EIA expects liquid fuels consumption will rise to an average of 94.9 million b/d in the third quarter (down 6.7 million b/d year over year). EIA forecasts that consumption of petroleum and liquid fuels globally will average 92.5 million b/d for all of 2020, down 8.3 million b/d from 2019, before increasing by 7.2 million b/d in 2021.
- EIA expects the supply of liquid fuels globally will average 92.6 million b/d in the second quarter of 2020, down 7.9 million b/d year over year. The declines reflect voluntary supply cuts by OPEC+ and [reductions in drilling activity](#) in the United States because of low oil prices. Supply of oil fell by less than demand in the second

quarter, and EIA expects supply to be slower to increase. In the forecast, the global supply of oil declines to 92.0 million b/d in the third quarter before rising to an annual average of 97.4 million b/d in 2021. EIA expects OPEC to drive supply growth in 2021.

- EIA expects that global liquid fuels inventories will grow by an average of 2.2 million b/d in 2020. EIA estimates inventories rose from January through May at an average rate of 9.4 million b/d. The builds, which peaked during April, were the result of a sharp decline in global oil demand because of widespread travel limitations and reduced economic activity. EIA estimates that global oil inventories at the end of May stood 1.4 billion barrels higher than they were at the end of 2019. However, EIA now expects global oil inventories will begin declining in June, a month earlier than previously forecast, with draws continuing through the end of 2021. The sooner-than-expected draws are the result of sharper declines in global oil production during June and higher global oil demand than previously expected. EIA expects global liquid fuels inventories will fall at an average rate of 2.5 million b/d from June 2020 through the end of 2021.
- EIA forecasts U.S. liquid fuels consumption will average 15.7 million b/d in the second quarter of 2020, down 4.6 million b/d (23%) from the same period in 2019. The decline reflects travel restrictions and reduced economic activity related to COVID-19 mitigation efforts. EIA expects the largest declines in U.S. oil consumption have already occurred and demand will generally rise during the next 18 months. EIA forecasts U.S. liquid fuels consumption will average 18.4 million b/d in the third quarter of 2020 (down 2.3 million b/d year-over-year) before rising to an average of 19.5 million b/d in 2021. Although that level would be 1.4 million b/d more than EIA's forecast 2020 consumption, it would be 1.0 million b/d less than the 2019 average.
- Declines in U.S. liquid fuels consumption vary across products. EIA expects jet fuel consumption to fall by 64% year-over-year in the second quarter of 2020, while gasoline consumption falls by 26% and distillate consumption falls by 17%. EIA forecasts the consumption of all three fuels to rise in the third quarter and into 2021 but to remain lower than 2019 levels.
- EIA estimates U.S. crude oil production fell from a record 12.9 million b/d in November 2019 to 11.4 million b/d in May 2020 as [Baker Hughes](#) reported the fewest active drilling wells in the United States in their records which go back to 1987. EIA expects U.S. crude oil production will continue to decline, to 10.6 million b/d in March 2021, then increase slightly through the end of 2021. EIA forecasts that U.S. crude oil production will average 11.6 million b/d in 2020, down 0.7 million b/d from 2019. In 2021, EIA expects U.S. crude oil production will average 10.8 million b/d. This 2020 production decline would mark the first annual decline since 2016. Typically, price changes affect production after about a six-month lag.

However, current market conditions have shortened this lag as many producers have already curtailed production and reduced capital spending and drilling in response to lower prices.

Natural Gas

- In May, the Henry Hub natural gas spot price averaged \$1.75 per million British thermal units (MMBtu). EIA forecasts that relatively low natural gas demand will keep spot prices lower than \$2/MMBtu through August. However, EIA expects prices will generally rise through the end of 2021. EIA expects that natural gas price increases will be sharpest this fall and winter when they rise from an average of \$2.06/MMBtu in September to \$3.08/MMBtu in January. Despite EIA's forecast of record end-of-October storage levels, EIA expects that rising demand heading into winter, combined with reduced production, will cause upward price pressures. EIA forecasts that Henry Hub natural gas spot prices will average \$2.04/MMBtu in 2020 and \$3.08/MMBtu in 2021.
- EIA expects that total U.S. consumption of natural gas will average 81.9 billion cubic feet per day (Bcf/d) in 2020, down 3.6% from 2019. The decline primarily reflects less consumption in the industrial-sector, which EIA forecasts will average 21.0 Bcf/d in 2020, down 8.7% from 2019 as a result of reduced manufacturing activity.
- U.S. dry natural gas production [set an annual record in 2019](#), averaging 92.2 Bcf/d. EIA forecasts dry natural gas production will average 89.7 Bcf/d in 2020, with monthly production falling from 96.2 Bcf/d in November 2019 to 83.6 Bcf/d in March 2021, before increasing slightly. Natural gas production declines the most in the Appalachian and Permian regions. In the Appalachian region, low natural gas prices are discouraging producers from engaging in natural gas-directed drilling, and in the Permian region, low crude oil prices reduce associated natural gas output from oil-directed wells. In 2021, EIA's forecast production of dry natural gas in the United States averages 85.4 Bcf/d. EIA expects production to begin rising in the second quarter of 2021 in response to higher prices.
- EIA estimates that total U.S. working natural gas in storage ended May at almost 2.8 trillion cubic feet (Tcf), 18% more than the five-year (2015–19) average. In the forecast, inventories rise by 2.1 Tcf during the April-through-October injection season to reach more than 4.1 Tcf on October 31, which would be a record.
- EIA forecasts that U.S. liquefied natural gas exports will average 5.6 Bcf/d in the second quarter of 2020 and 3.7 Bcf/d in the third quarter of 2020. EIA expects that U.S. liquefied natural gas exports will decline through the end of the summer as a result of reduced global demand for natural gas.

Electricity, coal, renewables, and emissions

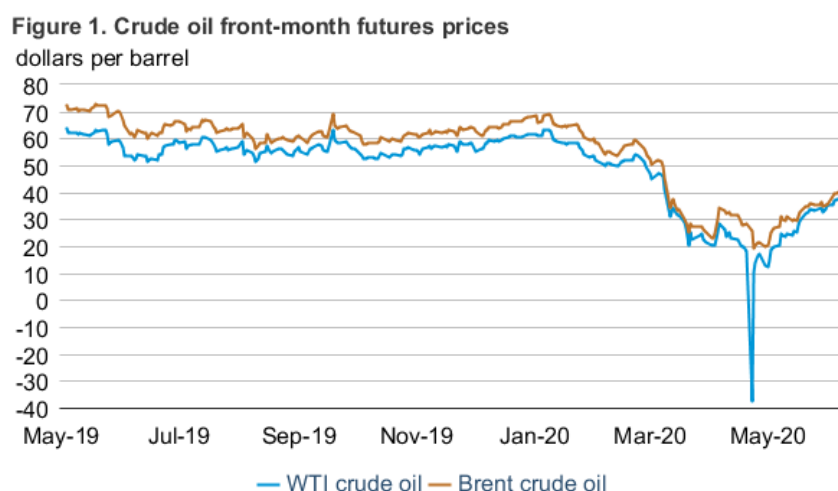
- EIA forecasts 5.7% less electricity consumption in the United States in 2020, compared with 2019. The largest decline by consumption sector on a percentage basis occurs in the commercial sector, where EIA expects retail sales of electricity to fall by 9.1% this year. Forecast industrial retail electricity sales fall by 6.7%. EIA forecasts residential sector retail sales will decrease by 1.5% in 2020. Milder expected temperatures compared with 2019 reduce EIA's forecast of electricity consumption for space heating and cooling, but that effect is partly offset by an assumed increase in electricity use by more people who are working from home. In 2021, EIA forecasts total U.S. electricity consumption will rise by 1.0%.
- EIA expects the share of U.S. utility-scale electricity generation from natural gas-fired power plants will increase from 37% in 2019 to 41% this year. In 2021, the forecast natural gas share declines to 36% in response to higher natural gas prices. Coal's forecast share of electricity generation falls from 24% in 2019 to 17% in 2020 and then increases to 20% in 2021. Electricity generation from renewable energy sources rise from 17% in 2019 to 21% in 2020 and to 23% in 2021. The increase in the share from renewables is the result of expected additions to wind and solar generating capacity. Expected nuclear generation declines slightly in both 2020 and 2021, but its generation share rises from 20% in 2019 to an average of 22% in 2020 and 21% in 2021 because total U.S. generation falls by more than nuclear generation.
- EIA forecasts that renewable energy will be the fastest-growing source of electricity generation in 2020. EIA expects the electric power sector will add 23.2 gigawatts of new wind capacity and 12.6 gigawatts of utility-scale solar capacity in 2020. However, these future capacity additions are subject to a high degree of uncertainty, and EIA continues to monitor reported planned capacity builds.
- EIA expects coal production will decrease by 25% to 530 million short tons (MMst) in 2020. Metallurgical coal mines in Appalachia have slowed production based on reduced demand from global steel production and coking coal, and EIA forecasts production in that region will decline by 35% this year. EIA forecasts Western region production to decline by 25%, partly because of slowing demand for steam coal from key importers such as India and a decline in U.S. coal-fired generation in 2020. In 2021, EIA forecasts coal production will rise to 549 MMst because of forecast rising natural gas prices and rising demand for U.S. exports.
- After [decreasing by 2.8% in 2019](#), EIA forecasts that U.S. energy-related carbon dioxide (CO₂) emissions will decrease by 14% (714 million metric tons) in 2020. This record decline is the result of less energy consumption related to restrictions on business and travel activity and slowing economic growth related to COVID-19 mitigation efforts. CO₂ emissions decline with reduced consumption of all fossil

fuels, particularly coal (33%) and petroleum (13%). In 2021, EIA forecasts that energy-related CO₂ emissions will increase by 5%, as the economy recovers and stay-at-home orders are lifted, for a net decrease in energy-related CO₂ emissions of 9% for 2020 and 2021 combined. Energy-related CO₂ emissions are sensitive to changes in weather, economic growth, energy prices, and fuel mix.

Petroleum and natural gas markets review

Crude oil

Prices: The front-month futures price for Brent crude oil settled at \$39.99 per barrel (b) on June 4, 2020, an increase of \$13.55/b from May 1, 2020. The front-month futures price for West Texas Intermediate (WTI) crude oil for delivery at Cushing, Oklahoma, increased by \$17.63/b during the same period, settling at \$37.41/b on June 4 (Figure 1).



Source: CME Group and Intercontinental Exchange, as compiled by Bloomberg L.P.
Note: WTI=West Texas Intermediate

The average daily settlement price for Brent front-month futures contracts increased by 22% from April to May, the largest percentage increase for any month since March 1999. However, even with this increase, prices remain significantly lower than the first-quarter 2020 average. Several factors likely provided support to crude oil prices. Initial oil consumption data and additional efforts by major oil producers indicate that the oversupply in global oil markets has not been as severe as EIA had forecast in the May STEO. As U.S. states and countries in the Organization of Economic Cooperation and Development (OECD) began to reopen from lockdown, early indicators of petroleum consumption have shown increases from the low April levels. EIA estimates that the global consumption of petroleum and other liquid fuels averaged 82.9 million barrels per day (b/d) in May, up 3.7 million b/d from April consumption and 2.9 million b/d more than forecast in the May STEO.

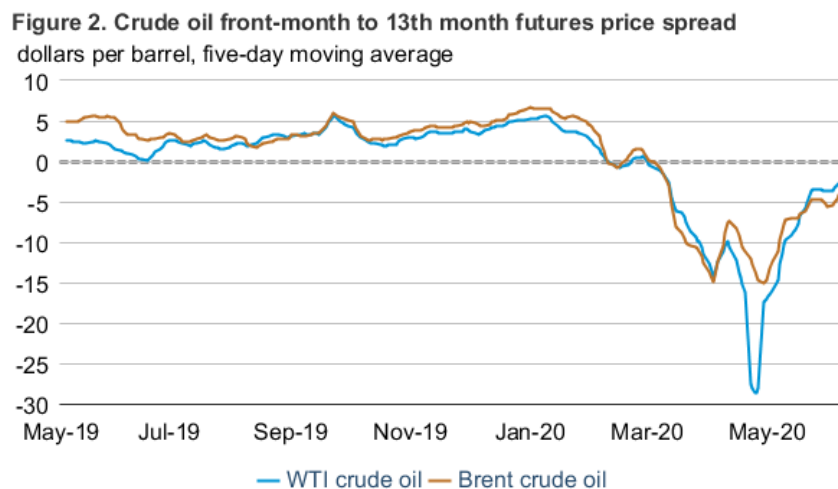
In addition, global oil production has been declining as a result of voluntary production cuts from members of the Organization of the Petroleum Exporting Countries and partner countries

(OPEC+), as well as from rapid declines in tight oil production in the United States. EIA's estimate of global liquid fuels supply in May is 0.5 million b/d lower than forecast in last month's STEO. In addition to OPEC+'s [initial production cuts](#)—totaling 9.7 million b/d—Saudi Arabia, Kuwait, and the United Arab Emirates announced additional [reductions](#) of approximately 1.2 million b/d for June 2020 beyond their initial commitments. Partly based on these cuts, EIA has revised down the forecast for supply of petroleum liquids globally during June by 2.2 million b/d compared with last month's forecast.

EIA completed this forecast before [OPEC+ announced on June 6](#) that it would extend production cuts from May and June through July. Leading up to this decision, talks of extended production management contributed to higher crude oil prices. This STEO does not reflect an extension of the May and June cuts.

Taken together, the faster recovery of global oil demand and steeper declines in global oil production are bringing markets closer to balance sooner than EIA forecast in the May STEO. EIA forecasts global petroleum inventory withdrawals in June 2020, averaging 1.9 million b/d, compared with a 1.6 million b/d inventory build EIA had forecast in the May STEO. EIA forecasts global inventory withdrawals will average 3.0 million b/d for the second half of 2020.

The Brent and WTI futures curves have returned to shapes similar to those observed in early March, before many countries entered lockdown and before the OPEC+ production agreement. From May 1 to June 4, the five-day moving average of the Brent 1st–13th spreads increased by \$8.19/b to settle at -\$4.27/b and WTI 1st–13th spreads increased by \$13.17/b to settle at -\$2.79/b, respectively (**Figure 2**). The structure of the futures curve remains in contango (when near-term prices are lower than longer-dated ones), reflecting high levels of oil inventories but also suggesting that storing oil on vessels may no longer be necessary to balance the markets.

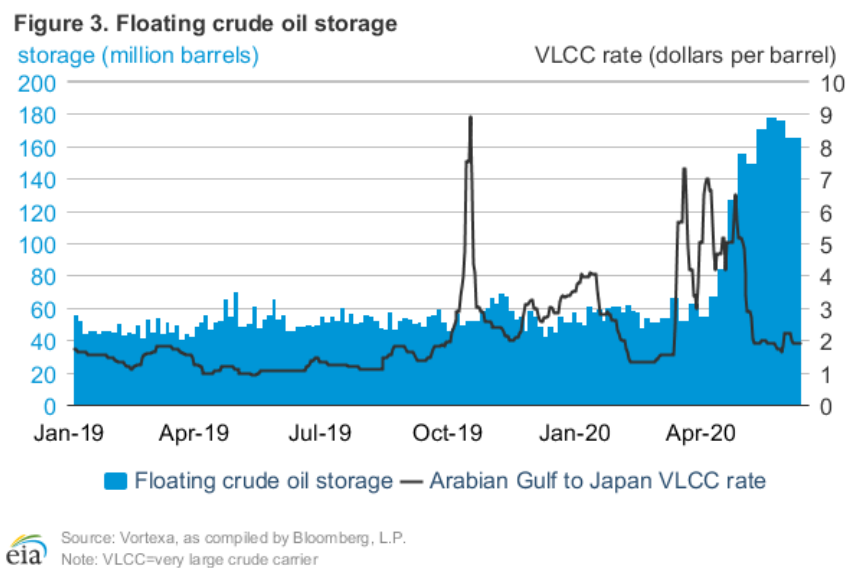


Source: CME Group and Intercontinental Exchange, as compiled by Bloomberg L.P.
Note: WTI=West Texas Intermediate

Floating crude oil stocks: According to energy analytics company Vortexa, global stocks of crude oil stored in waterborne tankers reached 181 million barrels in May 2020, the most since

data collection began in January 2016 (**Figure 3**). Storing crude oil in tankers is more expensive than storing it onshore, and floating storage is typically only used as a last resort because tanker owners must be compensated for both the operational costs of their vessels and the revenues they would have otherwise collected from delivering crude oil. The rapid increase of relatively expensive floating storage volumes is further evidence of the magnitude and speed of the global liquid fuels stock builds in the first half of 2020, which EIA estimates peaked in April at 21.5 million b/d.

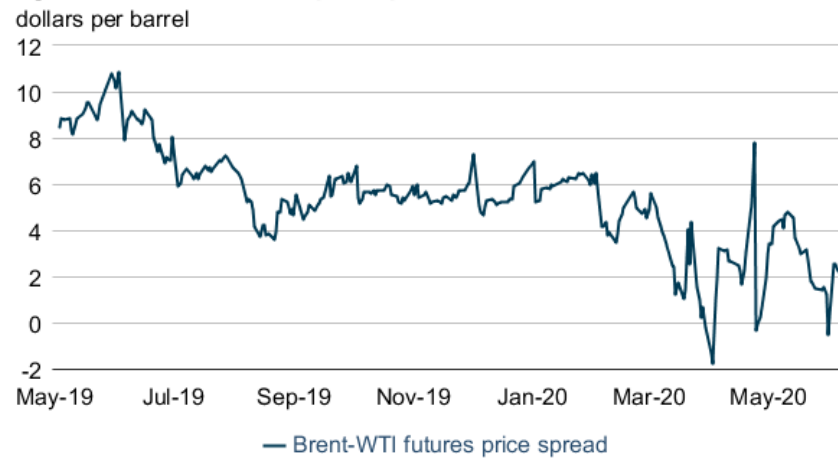
Floating storage volumes have already begun declining as global supply and demand balances return to equilibrium. After reaching 181 million barrels in the week of May 15, floating volumes fell to 178 million barrels on May 22 and 164 million barrels on May 29. Tanker rates have also declined, which is often a leading indicator of floating storage volumes because charter rates are set in advance of physical loading. Although tanker rates rose in March and remained elevated throughout most of April, rates declined sharply in late April. The benchmark rate to ship crude oil on the Arabian Gulf to Japan route aboard a Very Large Crude Carrier (VLCC) declined from \$6.48/b on April 22 to \$1.97/b on June 4.



Brent–WTI spread: Rapid declines in U.S. crude oil production could be contributing to a narrowing of the Brent–WTI futures price spread. The Brent–WTI spread decreased by \$1.88/b since May 1, 2020, settling at \$2.27/b on June 4 (**Figure 4**). The Brent–WTI spread (calculated as front-month Brent crude oil futures prices minus second-month WTI prices, which compares crude oils by [aligned delivery date](#)) generally reflects the cost of exporting U.S. crude oil to Asia relative to the cost of exporting North Sea crude oil to Asia. This spread regularly traded lower than \$2/b in 2016, another year in which U.S. crude oil production [declined](#). This year, the rapid decline in U.S. crude oil production is reducing the supply of exportable crude oil and could be increasing the relative value of U.S. crude oil compared with other waterborne crude oils such as Brent, particularly now that European and Asian refiners have begun increasing crude oil runs. In addition, crude oil production from the North Sea is generally less price responsive than onshore

U.S. crude oil production, keeping Brent-linked crude oil production comparatively elevated. EIA estimates that, of the 4.5 million b/d decline in total non-OPEC liquids production from April to May, 1.0 million b/d of the decline was from United States crude oil production. EIA forecasts further declines in U.S. crude oil production through March 2021, when it will average 10.6 million b/d, a decline of 2.2 million b/d from its November 2019 peak.

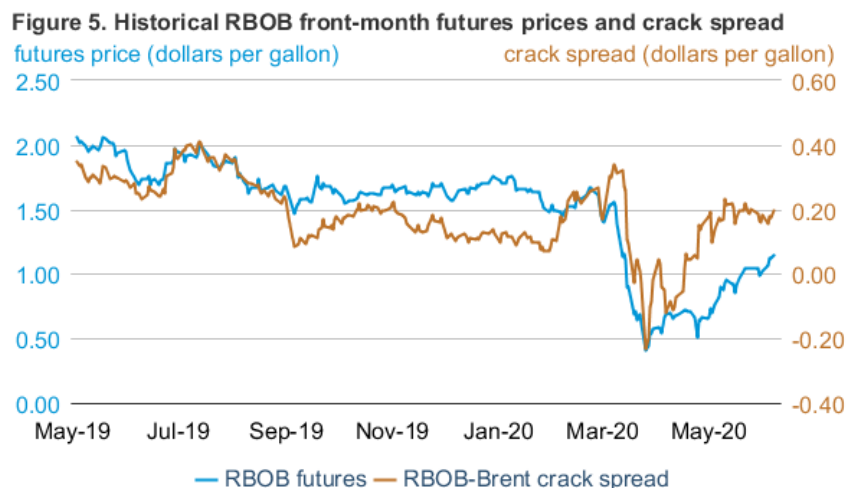
Figure 4. Brent-WTI futures price spread



Source: CME Group and Intercontinental Exchange, as compiled by Bloomberg L.P.
Note: WTI=West Texas Intermediate

Petroleum products

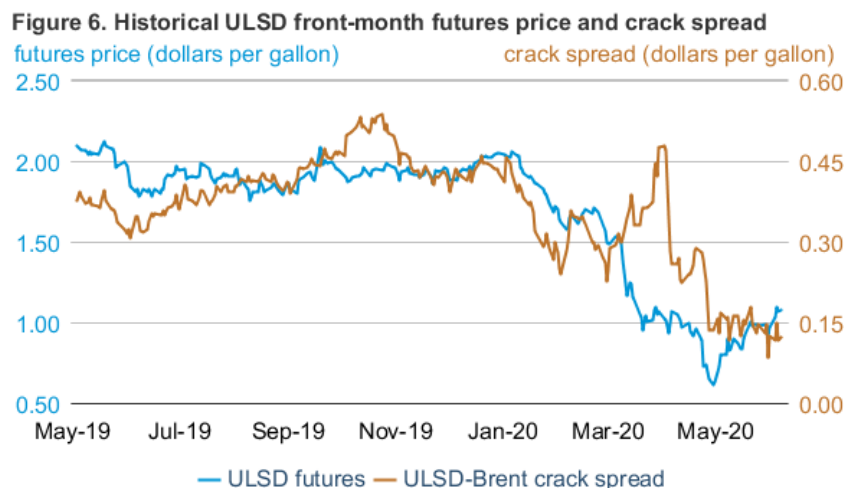
Gasoline prices: The front-month futures price of reformulated blendstock for oxygenate blending (RBOB, the petroleum component of gasoline used in many parts of the country) settled at \$1.15 per gallon (gal) on June 4, up 38 cents/gal from May 1, 2020 (**Figure 5**). The RBOB–Brent crack spread (the difference between the price of RBOB and the price of Brent crude oil) increased by 6 cents/gal to settle at 20 cents/gal during the same period. In May, crack spreads ranged from a minimum of 14 cents/gal, a record-low crack spread for that month since 2006 (when RBOB contracts began selling), to a maximum of 23 cents/gal.



Source: CME Group, as compiled by Bloomberg L.P.
 Note: RBOB=reformulated blendstock for oxygenate blending

May marked the first time the crack spread was positive for each trading day of a month since February, the last complete month before the March 13 proclamation of a national state of emergency in the United States. Increasing gasoline demand and relaxed lockdowns related to COVID-19 mitigation efforts provided some strength to the crack spread. EIA estimates that the consumption of finished motor gasoline increased to 7.3 million b/d in May from 5.7 million b/d in April. Personal travel numbers matched the trend of motor gasoline consumption. According to INRIX, compared with the last pre-lockdown week ending February 29, weekly [personal travel was down 16%](#) on May 29—compared with [47% on April 3](#). This increase in consumption, along with reduced refinery runs, contributed to gasoline inventories decreasing from record high levels in mid-April to an estimated 256 million barrels at the end of May. Increased net imports of gasoline partly offset the effect of rising consumption on gasoline inventories. EIA estimates a 0.7 million b/d increase in month-over-month net imports to 0.3 million b/d.

Ultra-low sulfur diesel prices: The ultra-low sulfur diesel (ULSD) front-month futures price for delivery in New York Harbor settled at \$1.07/gal on June 4, 2020, up 28 cents/gal from May 1, 2020 (**Figure 6**). The ULSD–Brent crack spread (the difference between the price of ULSD and the price of Brent crude oil) decreased by 4 cents/gal to settle at 12 cents/gal during the same period. The average ULSD–Brent crack spread for May at 14 cents/gal was less than the five-year (2015–19) average of 34 cents/gal.

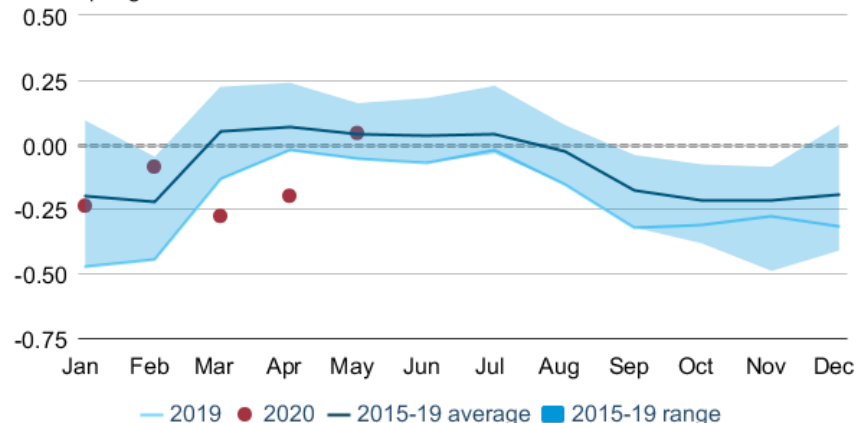


Source: CME Group, as compiled by Bloomberg L.P.
 Note: ULSD=ultra-low sulfur diesel

EIA estimates May 2020 distillate consumption was 3.4 million b/d, down 0.7 million b/d (17%) from May 2019, but up 0.3 million b/d (11%) from April 2020. This increase can partially be explained by the increase in long-haul trucking as economic activity begins to recover. According to INRIX, which compared traffic data for the week ending May 22 with that of the week ending February 29, trucking was [down 5% from pre-lockdown levels](#). Meanwhile, if confirmed by EIA's *Petroleum Supply Monthly*, distillate imports for the four weeks ending May 29 increased to their highest May levels since 2007, and exports decreased to their lowest May levels since 2011. Overall, net exports of distillate in May were 0.8 million b/d, down 0.6 million b/d from April. This decrease likely contributed to the increase in inventories, with distillate inventories rising to 174 million barrels at the end of May, 44 million barrels more than in May 2019 and the highest May-ending level since 1980.

RBOB–ULSD product spread: RBOB front-month futures averaged 4 cents/gal more than ULSD front-month futures in May 2020 after averaging 20 cents/gal less in April (**Figure 7**). Although a positive spread has historically occurred during the summer months, the monthly average RBOB–ULSD front-month futures spread has not been positive since March 2018.

Figure 7. Monthly average RBOB-ULSD spread
dollars per gallon



Source: CME Group, as compiled by Bloomberg L.P.
Note: RBOB=reformulated blendstock for oxygenate blending, ULSD=ultra-low sulfur diesel

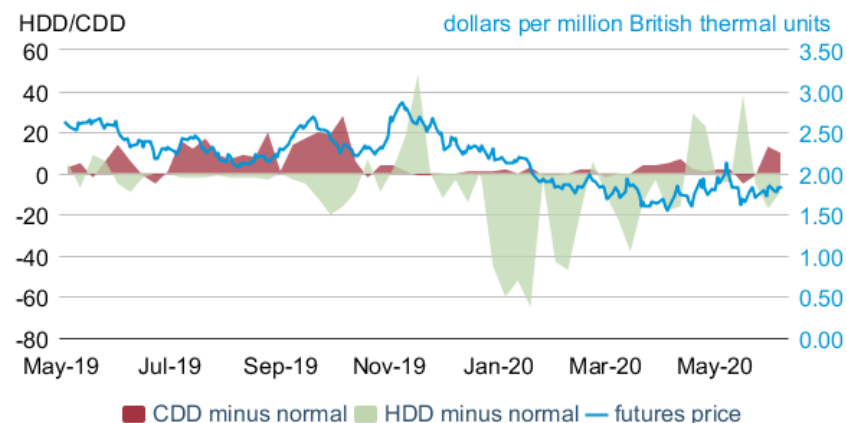
The reversion to the five-year average, after two consecutive months of being lower than it had been in the past five years, indicates a shift in the relative strength of gasoline markets compared with diesel markets. Although diesel demand decreased less than gasoline demand during the initial stages of COVID-19-related restrictions, gasoline demand has recently begun to increase more than diesel. This shift back toward gasoline demand is also reflected by refinery yields.

April refinery yields were unusual because the initial drop in distillate consumption relative to gasoline consumption was small, which supported distillate refining margins that encouraged refineries to increase distillate production. May refinery gasoline yields reverted back to levels similar to historical yields as the recent shift toward gasoline demand has supported increased gasoline production. EIA estimates that the May refinery gasoline yield increased to 46% compared with 40% in April, while the refinery distillate yield decreased to 36%, compared with 39% a month ago. Retail prices have reflected the same trend as front-month futures prices. Regular gasoline retail prices have increased every week in May, but regular diesel retail prices [decreased every week until May 25](#).

Natural Gas

Prices: The front-month natural gas futures contract at the Henry Hub settled at \$1.82 per million British thermal units (MMBtu) on June 4, down 7 cents/MMBtu compared with May 1 (**Figure 8**).

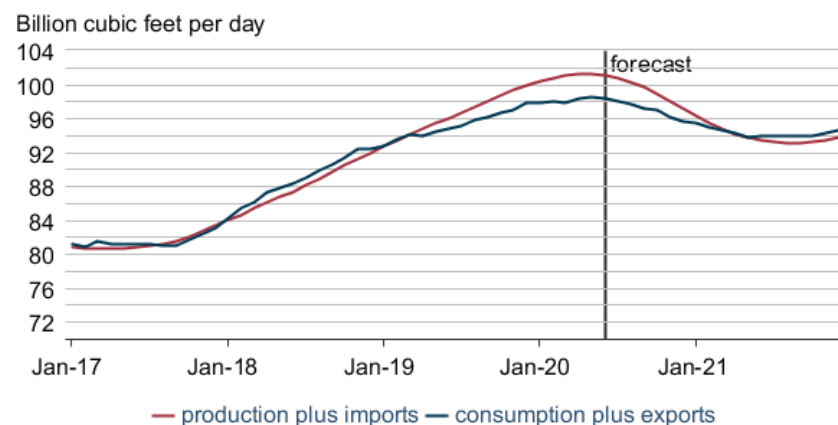
Figure 8. Natural gas front-month futures prices and actual minus historical average HDD and CDD



Source: CME Group and National Oceanic and Atmospheric Administration, as compiled by Bloomberg L.P.
Note: HDD stands for heating degree days, CDD stands for cooling degree days

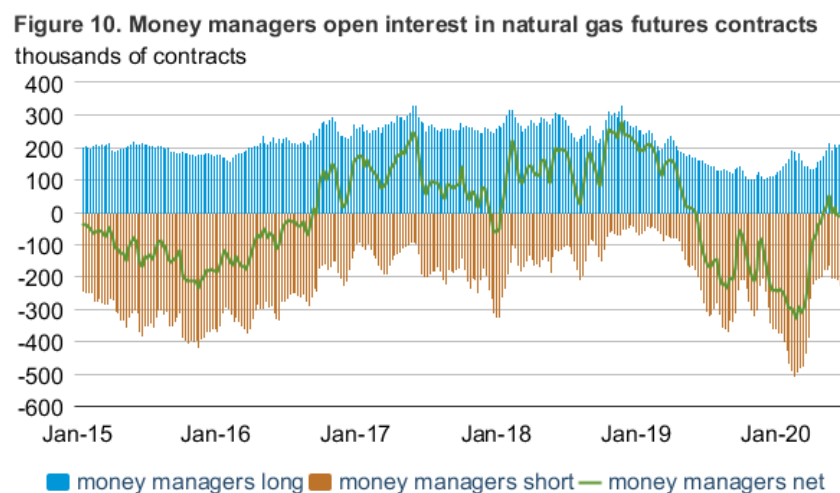
EIA estimates that total U.S. natural gas consumption in May 2020 was slightly higher than in May 2019 because of more residential and electric power sector natural gas consumption relative to the same time in 2019. These increases were partly offset by year-over-year decreases in industrial natural gas consumption, which likely occurred because of a slowdown in economic activity related to COVID-19 mitigation efforts. EIA forecasts that both production (including imports) and consumption (including exports) will begin to decline from the middle of 2020 to the end of 2021 and that this version of consumption will exceed production by the end of 2021 (seen as a 12-month moving average in Figure 9). The more rapid decline in production plus imports is expected to provide support for natural gas prices. EIA forecasts that Henry Hub natural gas spot prices will increase for the rest of 2020 and will average \$3.08 /MMBtu in 2021, which is higher than the \$2.04/MMBtu average for 2020.

Figure 9. Natural gas production plus imports and consumption plus exports, 12-month moving average



Source: U.S. Energy Information Administration

Money managers open interest: The net positions taken by money managers in natural gas futures markets reveal these traders' expectations regarding future movements in contract prices for this market participant category. A short position—selling a futures contract—typically indicates expected price declines because the trader would profit from a decline in prices. Meanwhile, a long position—buying a futures contract—typically indicates expected price increases because a trader would profit from the higher price in the future. On February 4, 2020, following a very mild winter, money managers had accumulated the largest net short position in the history of the Commodity Futures Trading Commission's (CFTC) weekly report on the commitments of traders. Over the course of April and May 2020, net positions reversed from net short to a marginal net long (**Figure 10**). The movement was fueled primarily by reduced gross short positions, and the relatively even split between gross short and gross long positions indicates the likely heightened uncertainty in futures markets at the present time.



Source: Commodity Futures Trading Commission, as compiled by Bloomberg, L.P.

Notable forecast changes

- Because of the rapidly changing situation in energy markets, EIA's current forecast includes a significant number of notable forecast changes. You can find more information in the [detailed table of forecast changes](#).
- EIA used the May 2020 IHS Markit macroeconomic forecast in this STEO. Using this forecast, EIA assumes U.S. gross domestic product (GDP) will decline by 7.4% in 2020, compared with a decline of 5.4% in the May STEO. In addition, the IHS forecast used in the June STEO includes average non-farm employment of 130.6 million for 2020 and 136.0 for 2021, down by 13.0 million jobs and 6.3 million jobs, respectively, from the May STEO.
- The Brent crude oil spot price forecast for 2020 in this month's STEO is \$38 per barrel (b), up from a forecast of \$34/b last month. The higher Brent crude oil price forecast reflects

increases in crude oil prices during May from their multiyear low levels in April. The higher prices were driven by a combination of announced OPEC+ cuts to oil production, declining U.S. crude oil production, and rising oil demand related to relaxed COVID-19 stay-at-home orders.

- In the June STEO, EIA forecasts U.S. crude oil production to average 11.6 million b/d in 2020 and 10.8 million b/d in 2021. Both forecasts are about 0.1 million b/d lower than in the May STEO. Lower drilling activity offsets the effect of higher forecast crude oil prices, resulting in the lower forecast production. Drilling activity during May fell by more than EIA expected, lowering the starting point for active drilling rigs in the forecast.
- EIA expects U.S. gasoline consumption to average 8.1 million b/d in 2020 and 8.7 million b/d in 2021. These forecasts are 0.2 million b/d and 0.1 million b/d lower, respectively, than forecast in the May STEO and reflect lower assumed employment levels compared with last month.
- Overall U.S. petroleum and other liquids consumption in this forecast averages 18.1 million b/d in 2020 (0.2 million b/d lower than in the May STEO) and 19.5 million b/d in 2021 (0.3 million b/d lower than in the May STEO). The lower forecast is the result of both less gasoline consumption and less distillate and jet fuel consumption, which results from a lower assumed GDP.
- EIA forecasts industrial natural gas consumption to decline 8.7% in 2020 in the June STEO. This change compares with a forecast 7.1% decline in the May STEO. The downward revision in industrial natural gas consumption is primarily driven by lower levels of assumed economic activity in this forecast, with the natural gas-weighted manufacturing index declining by 11% in 2020 in the June STEO compared with a 9% decline in the May STEO.
- EIA forecasts that U.S. liquefied natural gas exports will average 3.7 Bcf/d in the third quarter of 2020, down by 1.2 Bcf/d from the May STEO, based on lower global demand for natural gas.
- EIA lowered its forecast for Henry Hub natural gas spot prices for the rest of 2020, while raising the price forecast for 2021. EIA forecast prices to average \$2.26/MMBtu for the second half of 2020, down 15 cents/MMBtu from the May STEO. The lower forecast is the result of lower-than-expected natural gas consumption (including exports) during this period. For 2021, EIA expects Henry Hub prices to average \$3.08/MMBtu, up 19 cents/MMBtu from the May STEO. With lower production in 2020 because of lower prices, EIA expects prices will move higher to encourage more production to balance the market in 2021.
- EIA forecasts that total U.S. retail sales electricity in 2020 will decline by 5.5% relative to 2019 in the current STEO, compared with a forecast decline of 4.5% in the previous STEO. Most of the decline is attributable to the updated macroeconomic projections, which assume a larger decline in the GDP than previously expected. EIA continues to assume that

social distancing guidelines will magnify the economic-related decline in retail sales of electricity to the commercial sector. EIA believes that the forecast decline in industrial electricity sales this year is fully captured by the assumed decline in overall manufacturing activity. An assumption about increased use by households of electricity for electronics, appliances, and other devices is reflected in EIA's forecast for residential retail electricity sales, as in the previous STEO.

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Short-Term Energy Outlook Chart Gallery



June 9, 2020

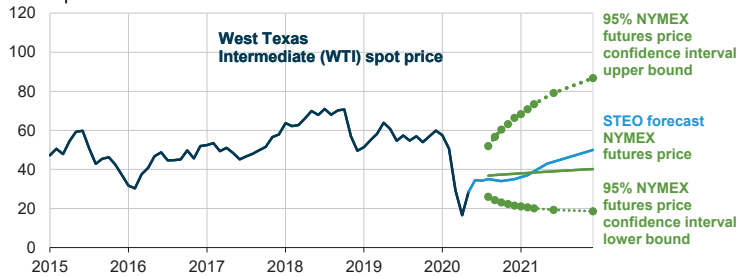


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West Texas Intermediate (WTI) crude oil price and NYMEX confidence intervals

dollars per barrel



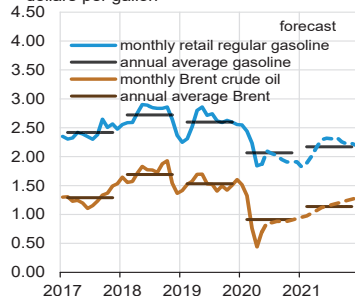
Note: Confidence interval derived from options market information for the five trading days ending Jun 4, 2020. Intervals not calculated for months with sparse trading in near-the-money options contracts.

Sources: Short-Term Energy Outlook, June 2020, CME Group, and Bloomberg, L.P.



U.S. gasoline and crude oil prices

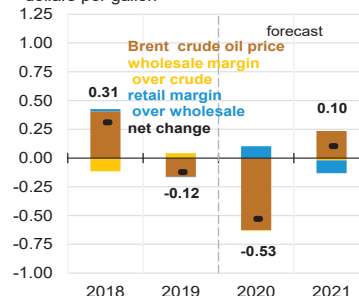
dollars per gallon



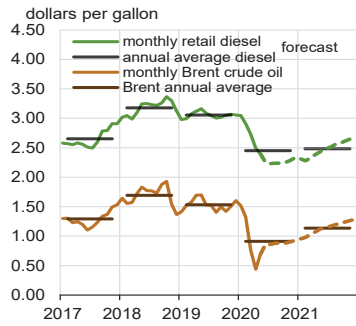
Source: Short-Term Energy Outlook, June 2020

Components of annual gasoline price changes

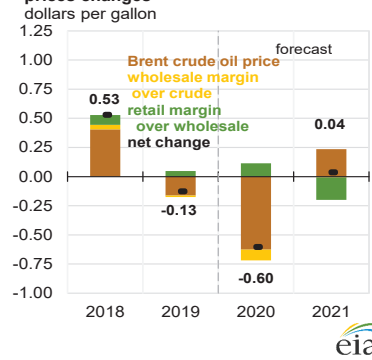
dollars per gallon



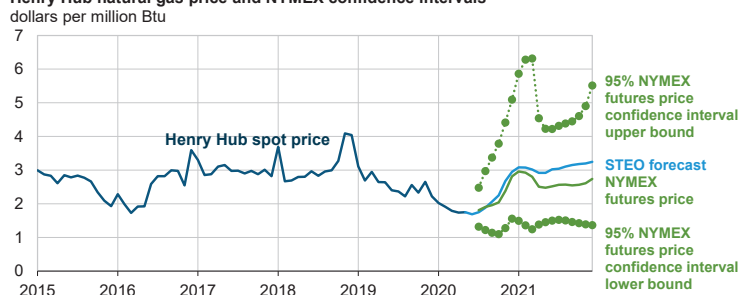
U.S. diesel and crude oil prices



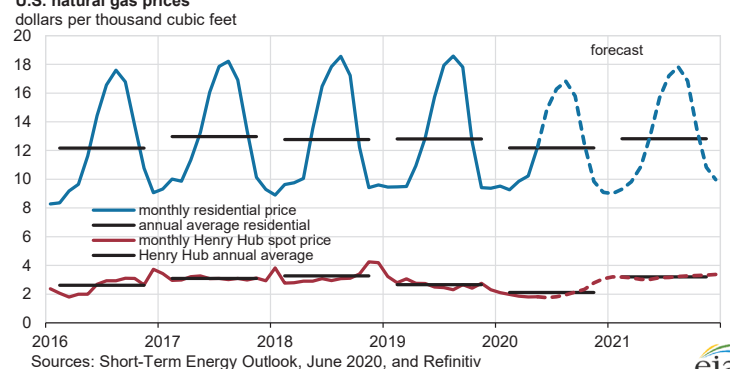
Components of annual diesel prices changes



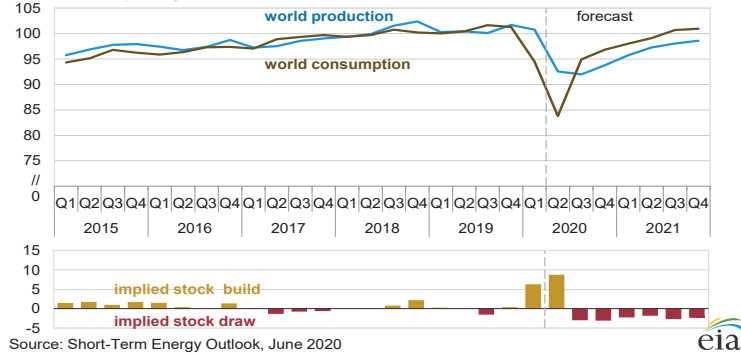
Henry Hub natural gas price and NYMEX confidence intervals



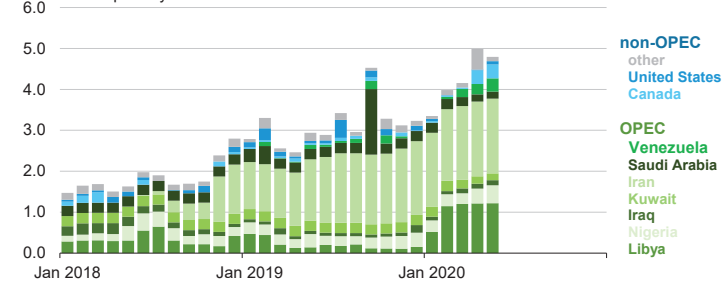
U.S. natural gas prices



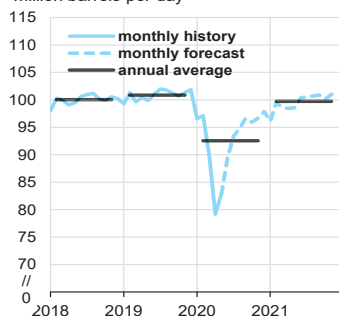
World liquid fuels production and consumption balance
million barrels per day



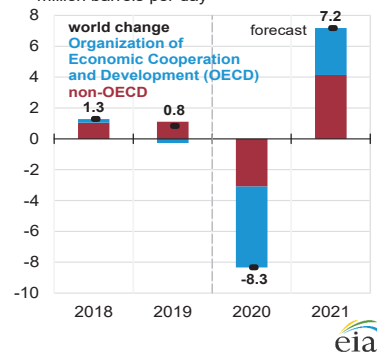
Estimated unplanned liquid fuels production outages among OPEC and non-OPEC producers
million barrels per day



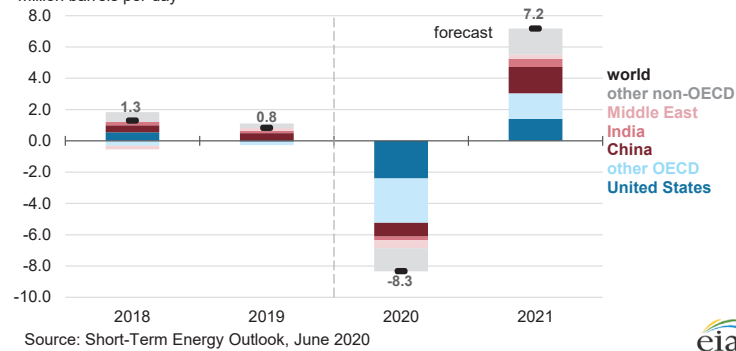
World liquid fuels consumption
million barrels per day



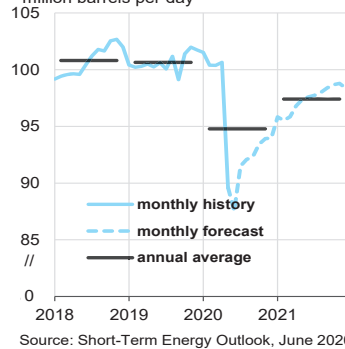
Components of annual change
million barrels per day



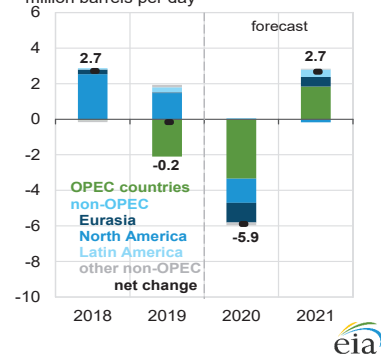
Annual change in world liquid fuels consumption
million barrels per day



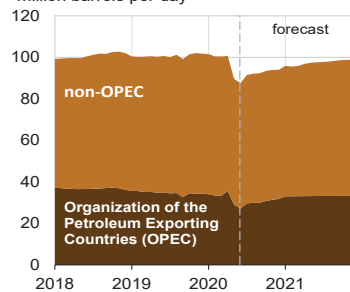
World crude oil and liquid fuels production
million barrels per day



Components of annual change
million barrels per day

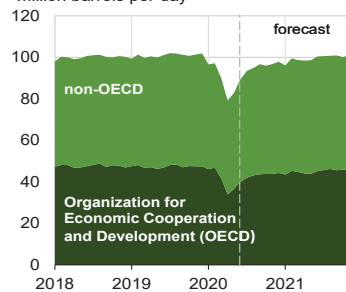


World liquid fuels production
million barrels per day

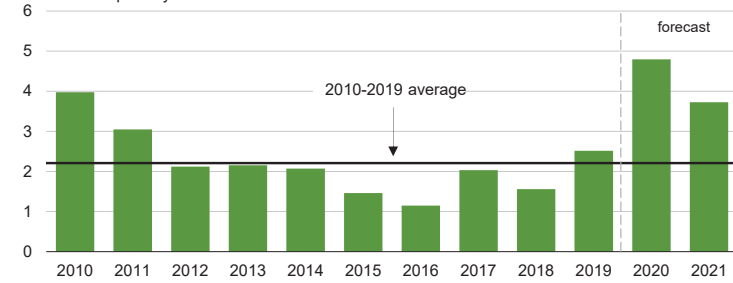


Source: Short-Term Energy Outlook, June 2020

World liquid fuels consumption
million barrels per day



Organization of the Petroleum Exporting Countries (OPEC)
surplus crude oil production capacity
 million barrels per day

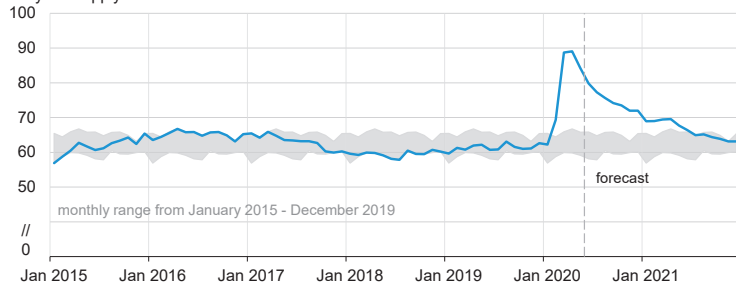


Note: Black line represents 2010-2019 average (2.2 million barrels per day).

Source: Short-Term Energy Outlook, June 2020



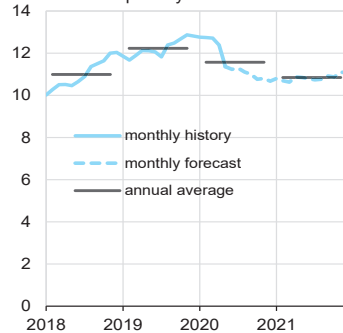
Organization for Economic Cooperation and Development (OECD)
commercial inventories of crude oil and other liquids
 days of supply



Source: Short-Term Energy Outlook, June 2020

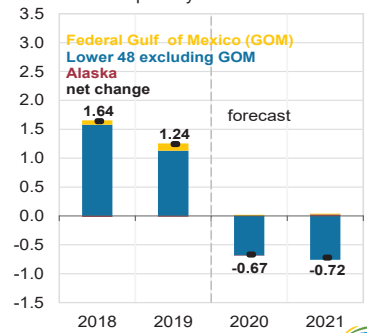


U.S. crude oil production
 million barrels per day

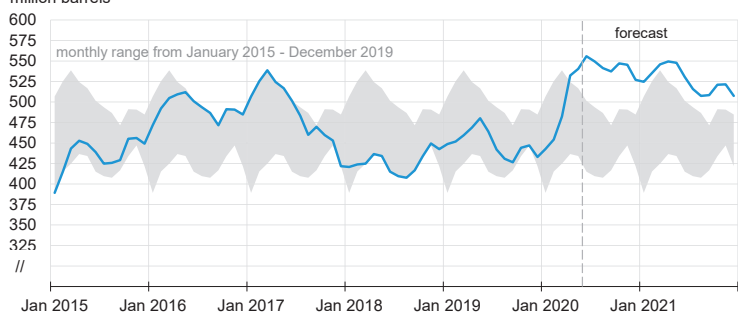


Source: Short-Term Energy Outlook, June 2020

Components of annual change
 million barrels per day



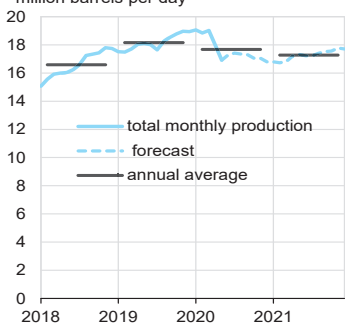
U.S. commercial crude oil inventories



Source: Short-Term Energy Outlook, June 2020

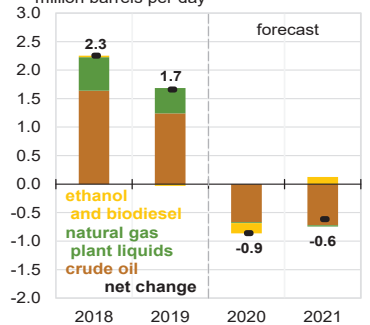


U.S. crude oil and liquid fuels production

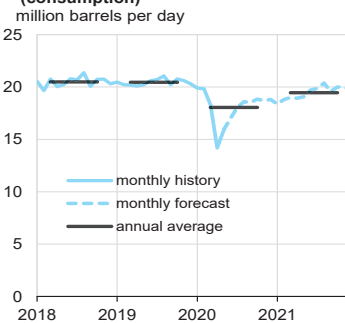


Source: Short-Term Energy Outlook, June 2020

Components of annual change

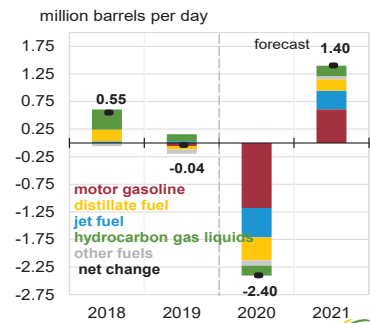


U.S. liquid fuels product supplied (consumption)



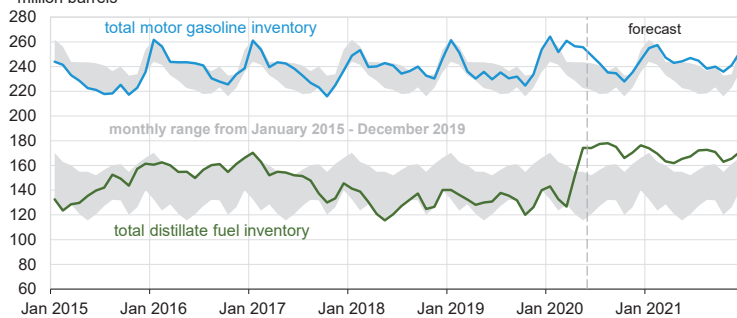
Source: Short-Term Energy Outlook, June 2020

Components of annual change



U.S. gasoline and distillate inventories

million barrels

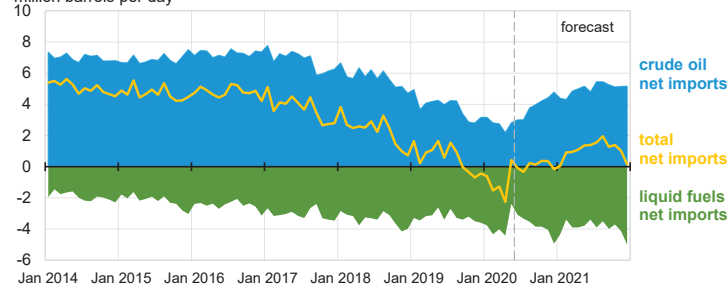


Source: Short-Term Energy Outlook, June 2020



U.S. net imports of crude oil and liquid fuels

million barrels per day



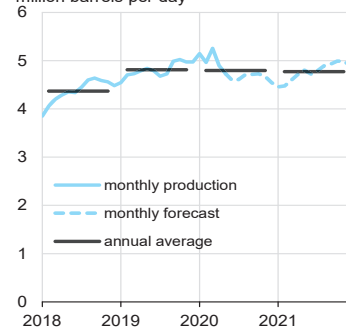
Note: Liquids fuels include: gasoline, distillate fuels, hydrocarbon gas liquids, jet fuel, residual fuel oil, unfinished oils, other hydrocarbons/oxygenates, and other oils.

Source: Short-Term Energy Outlook, June 2020



U.S. natural gas plant liquids production

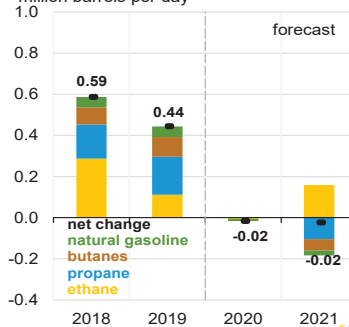
million barrels per day



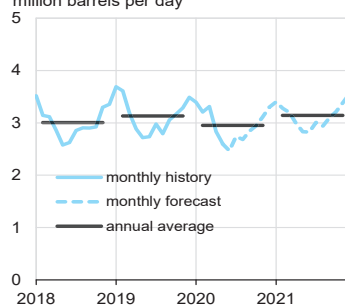
Source: Short-Term Energy Outlook, June 2020

Components of annual change

million barrels per day

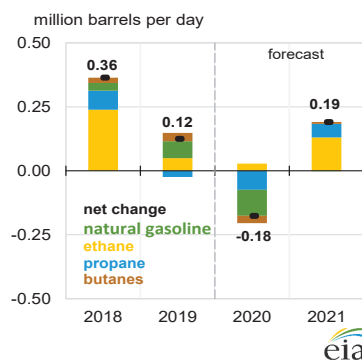


**U.S. hydrocarbon gas liquids
product supplied (consumption)**
million barrels per day



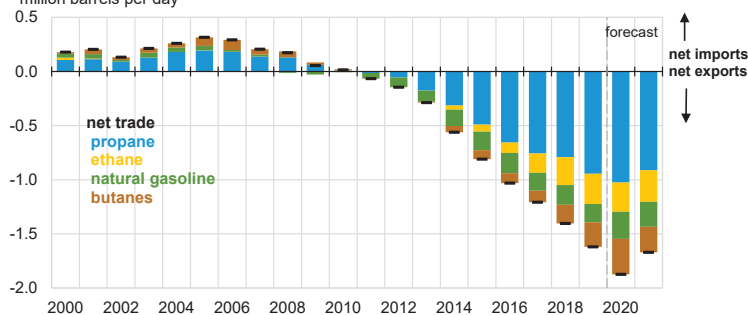
Source: Short-Term Energy Outlook, June 2020

Components of annual change



eia

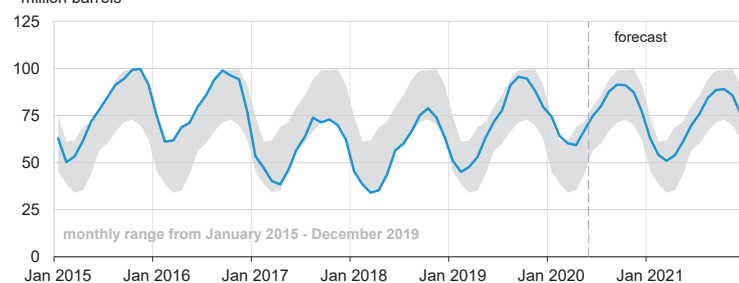
U.S. net trade of hydrocarbon gas liquids (HGL)
million barrels per day



Source: Short-Term Energy Outlook, June 2020

eia

U.S. commercial propane inventories
million barrels

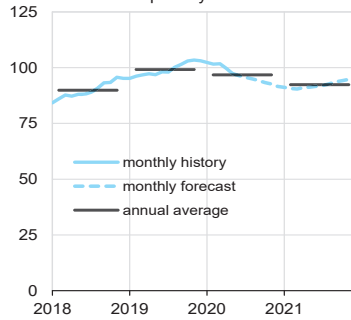


Note: Excludes refinery propylene.

Source: Short-Term Energy Outlook, June 2020

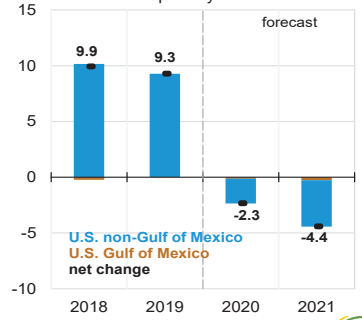
eia

U.S. marketed natural gas production
billion cubic feet per day



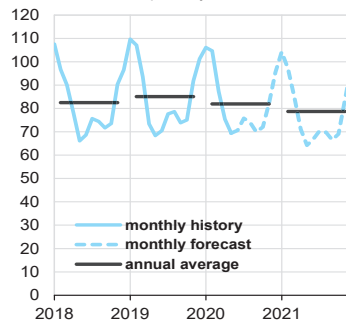
Source: Short-Term Energy Outlook, June 2020

Components of annual change
billion cubic feet per day



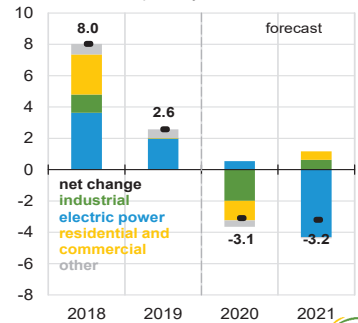
eia

U.S. natural gas consumption
billion cubic feet per day



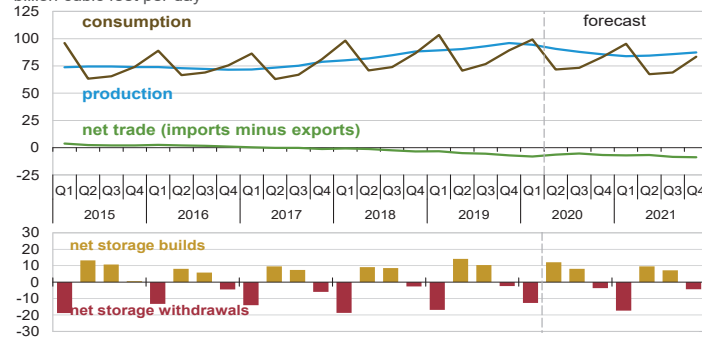
Source: Short-Term Energy Outlook, June 2020

Components of annual change
billion cubic feet per day



eia

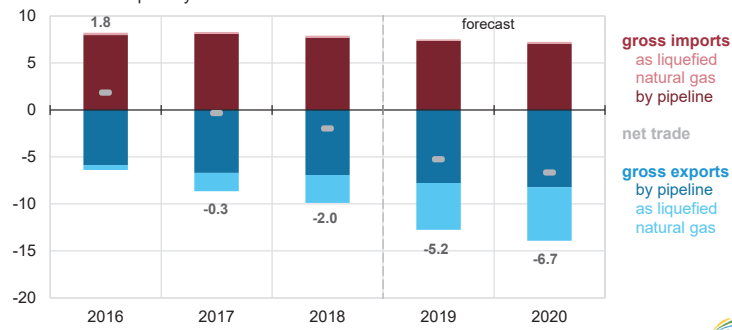
U.S. natural gas production, consumption, and net imports
billion cubic feet per day



Source: Short-Term Energy Outlook, June 2020

eia

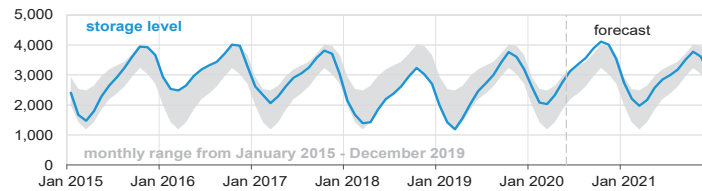
U.S. annual natural gas trade
billion cubic feet per day



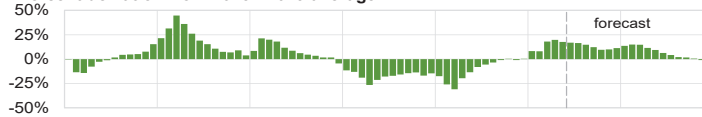
Source: Short-Term Energy Outlook, June 2020



U.S. working natural gas in storage
billion cubic feet



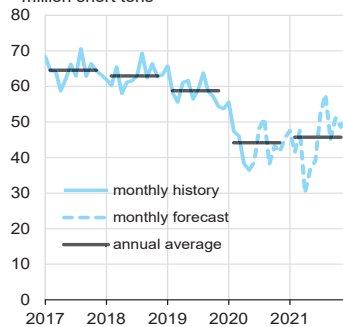
Percent deviation from 2015 - 2019 average



Source: Short-Term Energy Outlook, June 2020

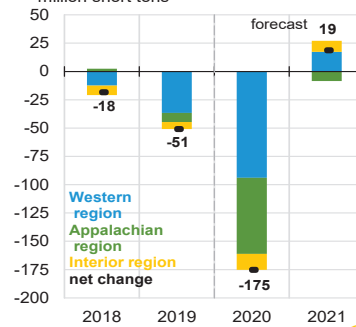


U.S. coal production
million short tons

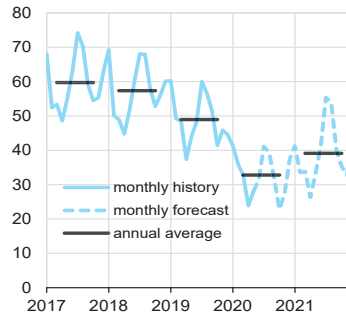


Source: Short-Term Energy Outlook, June 2020

Components of annual change
million short tons

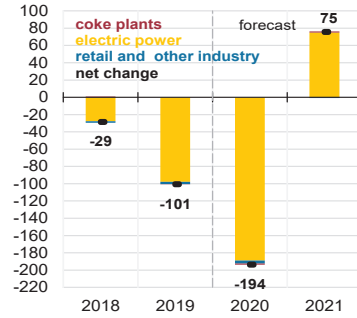


U.S. coal consumption
million short tons



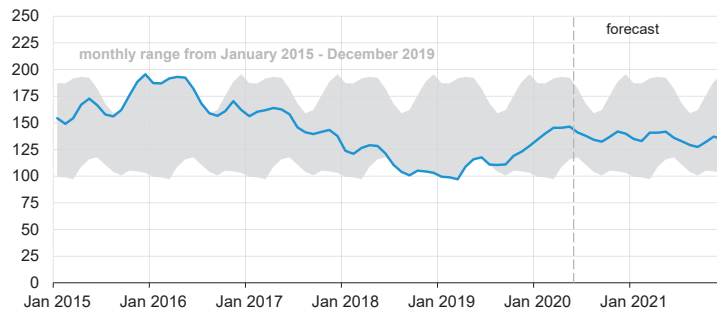
Source: Short-Term Energy Outlook, June 2020

Components of annual change
million short tons



eia

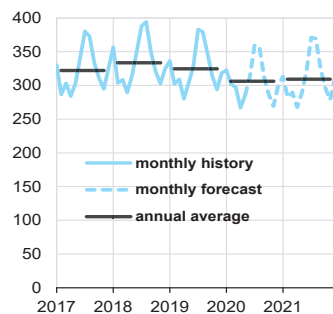
U.S. electric power coal inventories
million short tons



Source: Short-Term Energy Outlook, June 2020

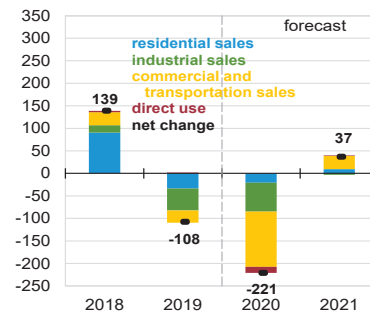
eia

U.S. electricity consumption
billion kilowatthours



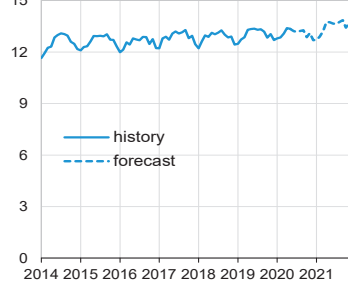
Source: Short-Term Energy Outlook, June 2020

Components of annual change
billion kilowatthours



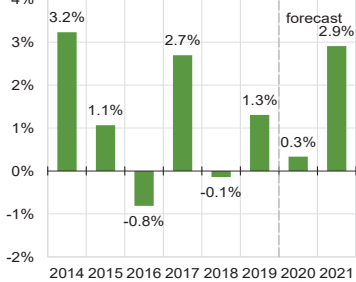
eia

U.S. monthly residential electricity price
cents per kilowatthour



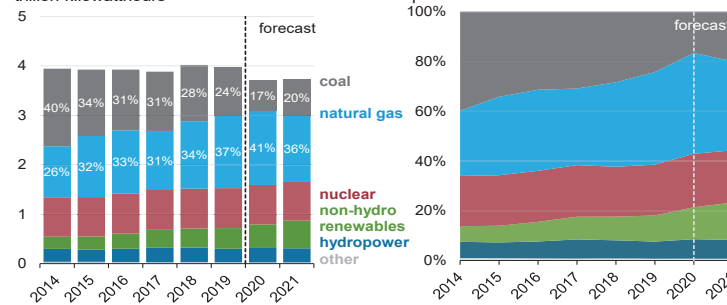
Source: Short-Term Energy Outlook, June 2020

Annual growth in residential electricity prices
percent



eia

U.S. electricity generation by fuel, all sectors
trillion kilowatthours

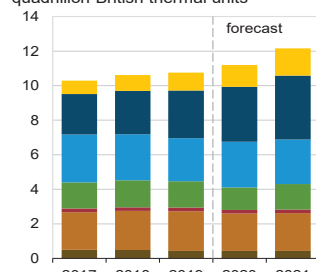


Note: Labels show percentage share of total generation provided by coal and natural gas.

Source: Short-Term Energy Outlook, June 2020

eia

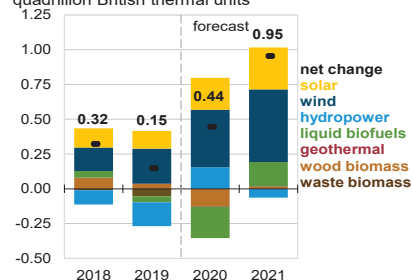
U.S. renewable energy supply
quadrillion British thermal units



Note: Hydropower excludes pumped storage generation. Liquid biofuels include ethanol and biodiesel. Other biomass includes municipal waste from biogenic sources, landfill gas, and other non-wood waste.

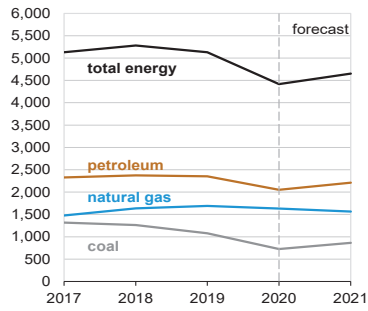
Source: Short-Term Energy Outlook, June 2020

Components of annual change
quadrillion British thermal units



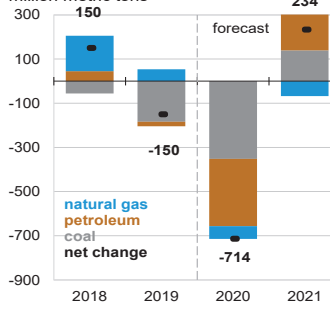
eia

U.S. annual carbon emissions by source
million metric tons

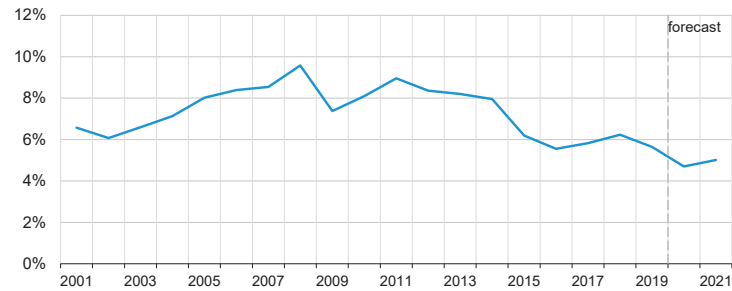


Source: Short-Term Energy Outlook, June 2020

Components of annual change
million metric tons



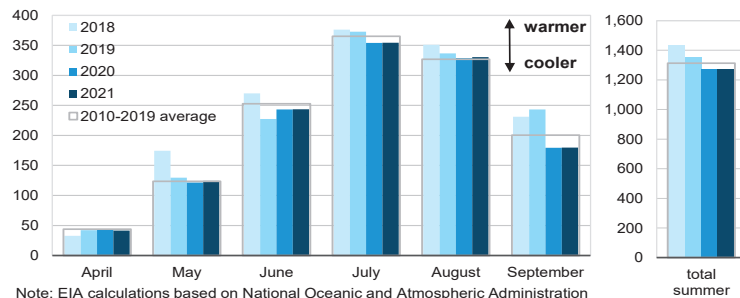
U.S. annual energy expenditures
share of gross domestic product



Source: Short-Term Energy Outlook, June 2020



U.S. summer cooling degree days
population-weighted

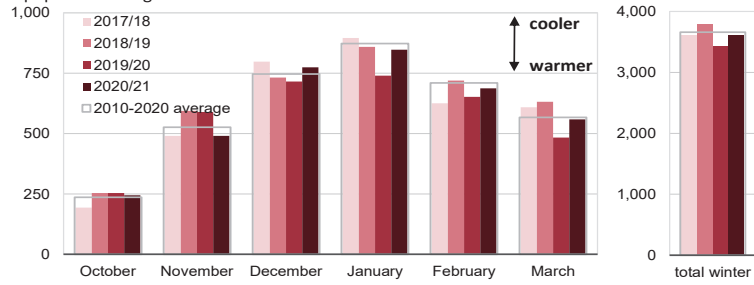


Note: EIA calculations based on National Oceanic and Atmospheric Administration (NOAA) data. Projections reflect NOAA's 14-16 month outlook.

Source: Short-Term Energy Outlook, June 2020



U.S. winter heating degree days population-weighted

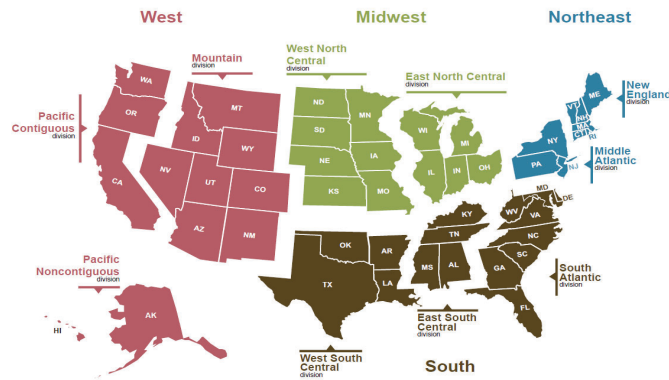


Note: EIA calculations based on National Oceanic and Atmospheric Administration (NOAA) data. Projections reflect NOAA's 14-16 month outlook.

Source: Short-Term Energy Outlook, June 2020



U.S. Census regions and divisions



Source: U.S. Energy Information Administration, *Short-Term Energy Outlook*



Table 1. U.S. Energy Markets Summary

U.S. Energy Information Administration | Short-Term Energy Outlook - June 2020

	2019				2020				2021				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2019	2020	2021
Energy Supply															
Crude Oil Production (a) (million barrels per day)	11.81	12.10	12.23	12.78	12.74	<i>11.65</i>	<i>11.13</i>	<i>10.74</i>	<i>10.71</i>	<i>10.83</i>	<i>10.80</i>	<i>11.02</i>	12.23	<i>11.56</i>	<i>10.84</i>
Dry Natural Gas Production (billion cubic feet per day)	89.32	90.50	92.98	95.97	94.47	<i>90.60</i>	<i>87.95</i>	<i>85.66</i>	<i>83.96</i>	<i>84.44</i>	<i>85.75</i>	<i>87.34</i>	92.21	<i>89.65</i>	<i>85.39</i>
Coal Production (million short tons)	180	179	181	165	149	<i>113</i>	<i>137</i>	<i>130</i>	<i>137</i>	<i>106</i>	<i>155</i>	<i>151</i>	705	<i>530</i>	<i>549</i>
Energy Consumption															
Liquid Fuels (million barrels per day)	20.30	20.31	20.67	20.57	19.33	<i>15.72</i>	<i>18.39</i>	<i>18.79</i>	<i>18.73</i>	<i>19.24</i>	<i>19.95</i>	<i>19.90</i>	20.46	<i>18.06</i>	<i>19.46</i>
Natural Gas (billion cubic feet per day)	103.32	70.74	76.74	89.33	99.25	<i>71.78</i>	<i>73.24</i>	<i>83.30</i>	<i>95.27</i>	<i>67.37</i>	<i>68.91</i>	<i>83.35</i>	84.97	<i>81.87</i>	<i>78.66</i>
Coal (b) (million short tons)	158	130	168	132	110	<i>84</i>	<i>112</i>	<i>88</i>	<i>108</i>	<i>101</i>	<i>149</i>	<i>110</i>	587	<i>394</i>	<i>469</i>
Electricity (billion kilowatt hours per day)	10.53	10.02	12.06	10.07	10.13	<i>9.53</i>	<i>11.19</i>	<i>9.30</i>	<i>9.83</i>	<i>9.65</i>	<i>11.57</i>	<i>9.61</i>	10.67	<i>10.04</i>	<i>10.17</i>
Renewables (c) (quadrillion Btu)	2.81	3.08	2.80	2.79	2.92	<i>3.07</i>	<i>2.88</i>	<i>2.94</i>	<i>3.18</i>	<i>3.40</i>	<i>3.13</i>	<i>3.14</i>	11.48	<i>11.81</i>	<i>12.84</i>
Total Energy Consumption (d) (quadrillion Btu)	26.54	23.43	24.97	25.22	25.01	<i>20.16</i>	<i>22.23</i>	<i>22.81</i>	<i>24.12</i>	<i>21.97</i>	<i>23.42</i>	<i>23.83</i>	100.17	<i>90.22</i>	<i>93.34</i>
Energy Prices															
Crude Oil West Texas Intermediate Spot (dollars per barrel)	54.82	59.94	56.35	56.86	45.34	<i>26.47</i>	<i>34.57</i>	<i>34.50</i>	<i>37.44</i>	<i>42.66</i>	<i>45.98</i>	<i>49.03</i>	57.02	<i>35.14</i>	<i>43.88</i>
Natural Gas Henry Hub Spot (dollars per million Btu)	2.92	2.56	2.38	2.40	1.91	<i>1.73</i>	<i>1.90</i>	<i>2.62</i>	<i>3.06</i>	<i>2.96</i>	<i>3.10</i>	<i>3.21</i>	2.57	<i>2.04</i>	<i>3.08</i>
Coal (dollars per million Btu)	2.08	2.05	2.00	1.95	1.92	<i>2.04</i>	<i>2.00</i>	<i>2.00</i>	<i>2.03</i>	<i>2.04</i>	<i>2.03</i>	<i>2.04</i>	2.02	<i>1.98</i>	<i>2.03</i>
Macroeconomic															
Real Gross Domestic Product (billion chained 2012 dollars - SAAR)	18,927	19,022	19,121	19,222	18,988	<i>16,940</i>	<i>17,175</i>	<i>17,551</i>	<i>18,064</i>	<i>18,487</i>	<i>18,753</i>	<i>18,928</i>	19,073	<i>17,664</i>	<i>18,558</i>
Percent change from prior year	2.7	2.3	2.1	2.3	0.3	<i>-10.9</i>	<i>-10.2</i>	<i>-8.7</i>	<i>-4.9</i>	<i>9.1</i>	<i>9.2</i>	<i>7.8</i>	2.3	<i>-7.4</i>	<i>5.1</i>
GDP Implicit Price Deflator (Index, 2012=100)	111.5	112.2	112.7	113.0	113.4	<i>113.2</i>	<i>113.6</i>	<i>113.7</i>	<i>113.8</i>	<i>113.9</i>	<i>114.0</i>	<i>114.1</i>	112.3	<i>113.5</i>	<i>114.0</i>
Percent change from prior year	2.0	1.8	1.7	1.6	1.7	<i>0.9</i>	<i>0.8</i>	<i>0.6</i>	<i>0.3</i>	<i>0.7</i>	<i>0.4</i>	<i>0.3</i>	1.8	<i>1.0</i>	<i>0.4</i>
Real Disposable Personal Income (billion chained 2012 dollars - SAAR)	14,878	14,934	15,012	15,073	15,093	<i>15,380</i>	<i>15,851</i>	<i>15,407</i>	<i>15,327</i>	<i>15,452</i>	<i>15,532</i>	<i>15,511</i>	14,974	<i>15,433</i>	<i>15,455</i>
Percent change from prior year	3.3	3.0	2.7	2.4	1.4	<i>3.0</i>	<i>5.6</i>	<i>2.2</i>	<i>1.6</i>	<i>0.5</i>	<i>-2.0</i>	<i>0.7</i>	2.9	<i>3.1</i>	<i>0.1</i>
Manufacturing Production Index (Index, 2012=100)	106.5	105.7	105.9	105.8	104.1	<i>81.4</i>	<i>87.2</i>	<i>89.4</i>	<i>93.3</i>	<i>97.0</i>	<i>98.9</i>	<i>99.9</i>	106.0	<i>90.5</i>	<i>97.3</i>
Percent change from prior year	1.6	0.1	-0.6	-1.1	-2.2	<i>-23.0</i>	<i>-17.6</i>	<i>-15.5</i>	<i>-10.3</i>	<i>19.2</i>	<i>13.4</i>	<i>11.7</i>	0.0	<i>-14.6</i>	<i>7.5</i>
Weather															
U.S. Heating Degree-Days	2,210	480	56	1,558	1,875	<i>547</i>	<i>70</i>	<i>1,509</i>	<i>2,093</i>	<i>483</i>	<i>72</i>	<i>1,507</i>	4,305	<i>4,001</i>	<i>4,154</i>
U.S. Cooling Degree-Days	46	399	953	106	71	<i>408</i>	<i>862</i>	<i>95</i>	<i>46</i>	<i>409</i>	<i>865</i>	<i>96</i>	1,503	<i>1,437</i>	<i>1,416</i>

- = no data available

Prices are not adjusted for inflation.

(a) Includes lease condensate.

(b) Total consumption includes Independent Power Producer (IPP) consumption.

(c) Renewable energy includes minor components of non-marketed renewable energy that is neither bought nor sold, either directly or indirectly, as inputs to marketed energy.

EIA does not estimate or project end-use consumption of non-marketed renewable energy.

(d) The conversion from physical units to Btu is calculated using a subset of conversion factors used in the calculations of gross energy consumption in EIA's Monthly Energy Review (MER). Consequently, the historical data may not precisely match those published in the MER or the Annual Energy Review (AER).

Notes: The approximate break between historical and forecast values is shown with historical data printed in bold; estimates and forecasts in italics.

Historical data: Latest data available from Energy Information Administration databases supporting the following reports: *Petroleum Supply Monthly*, DOE/EIA-0109; *Petroleum Supply Annual*, DOE/EIA-0340/2; *Weekly Petroleum Status Report*, DOE/EIA-0208; *Petroleum Marketing Monthly*, DOE/EIA-0380; *Natural Gas Monthly*, DOE/EIA-0130; *Electric Power Monthly*, DOE/EIA-0226; *Quarterly Coal Report*, DOE/EIA-0121; and *International Petroleum Monthly*, DOE/EIA-0520.

Minor discrepancies with published historical data are due to independent rounding.

Projections: EIA Regional Short-Term Energy Model. U.S. macroeconomic projections are based on the IHS Markit model of the U.S. Economy.

Weather projections from National Oceanic and Atmospheric Administration.

Table 2. Energy Prices

U.S. Energy Information Administration | Short-Term Energy Outlook - June 2020

	2019				2020				2021				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2019	2020	2021
Crude Oil (dollars per barrel)															
West Texas Intermediate Spot Average	54.82	59.94	56.35	56.86	45.34	26.47	34.57	34.50	37.44	42.66	45.98	49.03	57.02	35.14	43.88
Brent Spot Average	63.14	69.07	61.90	63.30	49.97	27.87	36.65	38.00	41.44	46.66	49.98	53.03	64.37	38.02	47.88
U.S. Imported Average	55.25	62.98	57.30	55.57	43.45	23.88	31.54	31.45	34.91	40.17	43.49	46.51	57.94	32.55	41.54
U.S. Refiner Average Acquisition Cost	56.93	63.55	58.67	58.05	47.51	25.59	34.02	33.94	36.35	41.70	44.99	48.03	59.33	35.71	42.91
U.S. Liquid Fuels (cents per gallon)															
Refiner Prices for Resale															
Gasoline	167	205	189	182	152	98	120	117	122	151	154	147	186	123	144
Diesel Fuel	192	203	192	197	160	99	114	119	125	144	154	161	196	124	147
Heating Oil	189	195	184	191	160	90	101	111	126	138	150	160	190	116	135
Refiner Prices to End Users															
Jet Fuel	193	204	194	197	165	76	93	97	115	132	143	154	197	115	137
No. 6 Residual Fuel Oil (a)	153	163	155	162	176	97	113	117	90	98	105	112	158	122	102
Retail Prices Including Taxes															
Gasoline Regular Grade (b)	236	279	265	259	241	195	201	191	191	226	230	221	260	207	218
Gasoline All Grades (b)	245	288	274	269	251	204	213	204	204	239	243	235	269	218	231
On-highway Diesel Fuel	302	312	302	306	289	237	224	229	231	243	254	264	306	245	249
Heating Oil	300	305	290	301	280	206	207	225	233	240	253	273	300	243	250
Natural Gas															
Henry Hub Spot (dollars per thousand cubic feet)	3.03	2.66	2.47	2.49	1.98	1.79	1.97	2.72	3.17	3.07	3.22	3.33	2.66	2.12	3.20
Henry Hub Spot (dollars per million Btu)	2.92	2.56	2.38	2.40	1.91	1.73	1.90	2.62	3.06	2.96	3.10	3.21	2.57	2.04	3.08
U.S. Retail Prices (dollars per thousand cubic feet)															
Industrial Sector	4.67	3.74	3.30	3.74	3.52	2.65	2.69	3.65	4.41	3.94	4.03	4.51	3.91	3.16	4.24
Commercial Sector	7.59	7.97	8.40	7.22	7.21	7.39	7.71	7.09	7.35	8.07	8.66	7.99	7.62	7.26	7.80
Residential Sector	9.47	12.48	18.10	9.88	9.51	11.62	16.29	9.87	9.32	12.28	17.26	10.82	10.56	10.46	10.67
U.S. Electricity															
Power Generation Fuel Costs (dollars per million Btu)															
Coal	2.08	2.05	2.00	1.95	1.92	2.04	2.00	2.00	2.03	2.04	2.03	2.04	2.02	1.98	2.03
Natural Gas	3.71	2.73	2.51	2.78	2.40	1.79	1.82	2.83	3.59	3.18	3.29	3.59	2.88	2.17	3.40
Residual Fuel Oil (c)	12.21	13.39	12.79	12.52	12.50	7.47	6.84	7.09	7.79	9.29	9.31	9.60	12.72	8.29	8.85
Distillate Fuel Oil	14.83	15.77	15.01	15.10	13.45	8.35	9.15	9.60	9.99	11.34	11.99	12.68	15.16	10.09	11.54
Retail Prices (cents per kilowatthour)															
Industrial Sector	6.66	6.71	7.25	6.66	6.38	6.62	7.25	6.79	6.69	6.92	7.59	6.94	6.83	6.76	7.05
Commercial Sector	10.43	10.64	11.00	10.53	10.35	10.54	10.88	10.47	10.42	10.75	11.24	10.90	10.66	10.57	10.85
Residential Sector	12.68	13.33	13.27	12.85	12.90	13.31	13.21	12.87	12.92	13.70	13.73	13.45	13.04	13.08	13.46

- = no data available

Prices are not adjusted for inflation.

(a) Average for all sulfur contents.

(b) Average self-service cash price.

(c) Includes fuel oils No. 4, No. 5, No. 6, and topped crude.

Notes: The approximate break between historical and forecast values is shown with historical data printed in bold; estimates and forecasts in italics.

Prices exclude taxes unless otherwise noted.

Historical data: Latest data available from Energy Information Administration databases supporting the following reports: *Petroleum Marketing Monthly*, DOE/EIA-0380;*Weekly Petroleum Status Report*, DOE/EIA-0208; *Natural Gas Monthly*, DOE/EIA-0130; *Electric Power Monthly*, DOE/EIA-0226; and *Monthly Energy Review*, DOE/EIA-0035.WTI and Brent crude oils, and Henry Hub natural gas spot prices from Reuter's News Service (<http://www.reuters.com>).

Minor discrepancies with published historical data are due to independent rounding.

Projections: EIA Regional Short-Term Energy Model.