

Short-Term Energy Outlook

STEO

October 2023



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Short-Term Energy Outlook

Overview

U.S. energy market indicators	2022	2023	2024
Brent crude oil spot price (dollars per barrel)	\$101	\$84	\$95
Retail gasoline price (dollars per gallon)	\$3.97	\$3.62	\$3.69
U.S. crude oil production (million barrels per day)	11.91	12.92	13.12
Natural gas price at Henry Hub (dollars per million British thermal units)	\$6.42	\$2.61	\$3.23
U.S. liquefied natural gas gross exports (billion cubic feet per day)	10.6	11.6	13.2
Shares of U.S. electricity generation			
Natural gas	39%	42%	41%
Coal	20%	16%	15%
Renewables	22%	22%	25%
Nuclear	19%	19%	20%
U.S. GDP (percentage change)	2.1%	2.3%	1.6%
U.S. CO₂ emissions (billion metric tons)	4.94	4.75	4.71

Data source: U.S. Energy Information Administration, *Short-Term Energy Outlook*, October 2023

- Winter Fuels Outlook.** This month we are publishing our [Winter Fuels Outlook](#), which discusses our expectations of household energy consumption and expenditures for the upcoming 2023–24 winter season. We expect U.S. households that use natural gas, electricity, or propane as their main heating fuel to spend less on heating this winter compared with last winter. Households that use heating oil are expected to spend slightly more.
- OPEC+ production.** Beginning this month, our *Short-Term Energy Outlook* (STEO) OPEC crude oil production table will feature a new OPEC+ crude oil production forecast. The estimate includes combined crude oil production from the 10 members of OPEC subject to production targets ([OPEC-10](#)), as well as all non-OPEC crude oil production within the OPEC+ group. We expect OPEC+ members will decrease their crude oil production by 0.3 million barrels per day (b/d) in 2024 compared with this year.
- Global oil markets.** Global oil inventories in our forecast fall by 0.2 million b/d in the second half of 2023 (2H23) because a voluntary production cut from Saudi Arabia and reduced production targets among OPEC+ countries keep global oil production below global oil consumption. As a result, we expect upward pressure on crude oil prices, with the Brent spot price increasing to average \$95 per barrel (b) in 2024.
- U.S. jet fuel consumption.** We forecast that U.S. jet fuel consumption will increase by 6% in 2024 from 2023. The growth mainly reflects strong consumer demand for air travel, which has returned

to pre-pandemic levels. Despite the increased demand for travel compared to pre-pandemic levels, we expect slightly less jet fuel consumption for the same volume of passengers due to an industry shift to larger aircrafts.

- **Natural gas inventories.** At the end of October, we expect U.S. natural gas inventories to total 3,854 billion cubic feet, 6% more than the five-year (2018–2022) average for the end of October.
- **Electricity generation.** We forecast that electricity generation from natural gas will account for about 42% of U.S. generation in 2023, an increase from 39% in 2022. This increase is the result of relatively low prices for natural gas; the retirement of 10 gigawatts (GW) of coal-fired generating capacity this year; and 5 GW of new, highly efficient natural gas-turbine capacity entering service. We expect natural gas-fired electricity generation to fall slightly to a 41% share in 2024. Despite a forecast increase in overall electricity generation in 2024, we expect generation from both natural gas and coal will fall next year in part because of increasing generating capacity from renewable sources. Our forecast assumes 40 GW of solar and wind generating capacity will enter service next year, an increase of 16% from this year, leading to the share of electricity provided by renewables rising from 22% in 2023 to 25% in 2024.
- **Noncombustible renewable energy methodology.** Beginning this month, STEO will calculate consumption of noncombustible renewable energy for electricity generation using a constant conversion factor of 3,412 British thermal units per kilowatthour (Btu/kWh), the heat content of electricity. You can find more information on this change, in the announcement of [changes to the Monthly Energy Review](#).

Notable forecast changes

Current forecast: October 11, 2023; previous forecast: September 12, 2023	2023	2024
Brent crude oil spot price (dollars per barrel)	\$84	\$95
Previous forecast	\$84	\$88
Percentage change	-0.4%	7.6%
U.S. crude oil inventories (million barrels)	420	428
Previous forecast	421	440
Percentage change	-0.3%	-2.7%

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

Global Oil Markets

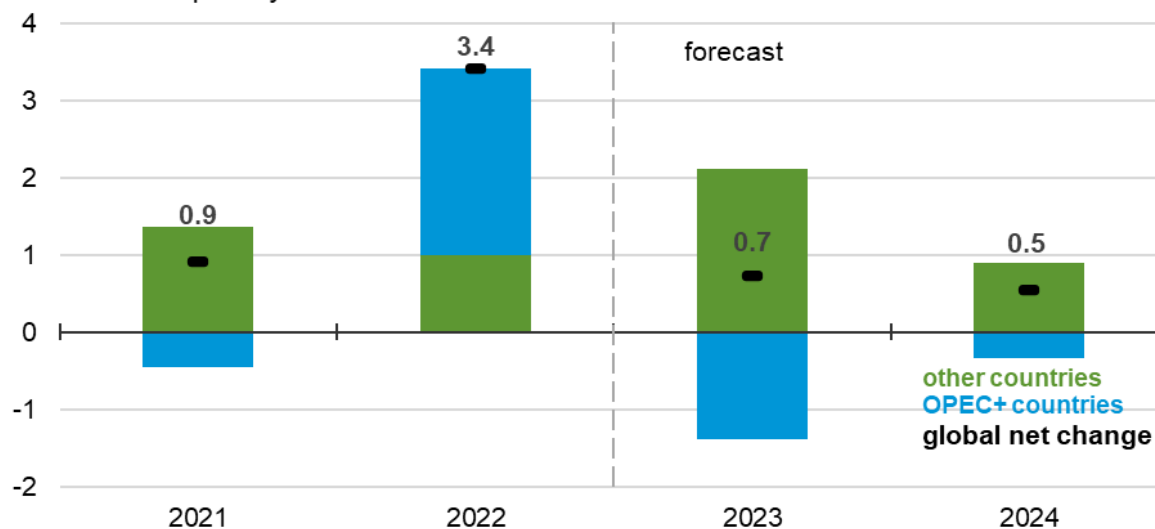
Global oil prices and inventory levels

The Brent crude oil spot price increased over much of the past month before falling below \$90 per barrel (b) during the first week of October. We forecast crude oil prices will rise in the coming months, reflecting our expectations of tightening balances in global oil markets. The Brent crude oil price averaged \$94/b in September, \$8/b higher than in August and \$19/b higher than in June. Oil prices increased in September after Saudi Arabia extended its voluntary crude oil production cuts through the end of the year and [U.S. commercial crude oil inventories](#) fell to the lowest since early 2022 at the end of September.

Global crude oil supply growth has been limited in 2023 because of voluntary production cuts from Saudi Arabia and reduced production targets from other [OPEC+ countries](#). We expect countries within the OPEC+ agreement will have lowered crude oil production by 1.4 million barrels per day (b/d) in 2023, partly offsetting production growth of 2.7 million b/d by non-OPEC+ producers. We forecast that OPEC+ crude oil production will fall by an additional 0.3 million b/d on average in 2024. This forecast assumes some extension of voluntary production cuts from Saudi Arabia into 2024 and overall production from OPEC+ countries remaining below targets.

Global crude oil production growth

million barrels per day



Data source: U.S. Energy Information Administration, *Short-Term Energy Outlook*, October 2023

Note: Some non-OPEC crude totals include lease condensate



Our current assessment is that global oil inventories are falling by 0.2 million b/d in the second half of 2023 (2H23). Inventory draws in our forecast continue at that pace in the first quarter of 2024 (1Q24) because OPEC+ cuts keep global oil production lower than global oil demand. Inventories are largely balanced for the remaining three quarters of 2024 as global oil consumption growth generally slows while production growth accelerates. As a result, we expect the Brent spot price will average \$91/b in 4Q23 and increase to average \$96/b in 2Q24 before some modest downward price pressures emerge in

2H24. Our forecast for the annual average Brent spot price in 2024 is \$95/b, \$7/b higher than in last month's STEO.

Although the [recent attacks on Israel](#) have not affected physical oil markets, they raise the potential for oil supply disruptions and higher oil prices. The situation in Israel began developing after we ran our models, so it remains a source of uncertainty in our forecasts. In addition to these new developments, growth in global oil production remains a key uncertainty in our forecast for next year. Current OPEC+ production targets are set to expire at the end of 2024, and we assume that continuing voluntary cuts and other factors will keep actual OPEC+ crude oil production well below targets as the group tries to limit increases in global oil inventories. However, should OPEC+ produce closer to target levels than we currently assume, it could reduce prices in 2024. Also, the rate at which U.S. tight oil producers add drilling rigs and improve well-level efficiency is highly uncertain and could cause global oil production to vary significantly from our forecast. Finally, the global economic outlook remains uncertain, and unexpected changes in GDP growth in the coming months could affect oil demand.

Global oil supply

Beginning with this month's STEO, we are introducing a new OPEC+ crude oil production estimate as part of our [data tables](#). This value includes total crude oil production from OPEC-10 members and all non-OPEC crude oil production within the OPEC+ group. Russia, the largest non-OPEC producer within the group, and Saudi Arabia have steadily reduced production over the year, contributing to falling global oil inventories and limiting global crude oil production growth in 2023.

Other OPEC+ members have struggled to sustain production at agreed-upon targets, further limiting global crude oil supply in 2023. We estimate that OPEC+ crude oil production will average 38.2 million b/d in 2023, about 1.4 million b/d less than in 2022, before falling further to 37.8 million b/d in 2024.

We forecast global liquid fuels production (crude oil and other liquids) will increase by 1.3 million b/d in 2023 and by 0.9 million b/d in 2024. We forecast that non-OPEC production will increase by 2.2 million b/d in 2023, more than offsetting the decline in OPEC output. Production growth outside OPEC is driven by new project starts in North America and South America. Forecast non-OPEC production grows by 1.0 million b/d in 2024 as new projects in Guyana and Brazil continue to add supply and the United States and Canada increase production.

Table 1: OPEC+ crude oil production, 2023 (million barrels per day)

	2023				
	Q1	Q2	Jul	Aug	Sep
OPEC-10 Crude Oil Production	24.02	23.74	22.70	22.23	22.74
Saudi Arabia	10.02	10.18	9.17	8.70	9.10
Non-OPEC Crude Oil Production	15.27	14.86	14.71	14.71	14.92
Azerbaijan	0.52	0.50	0.50	0.50	0.53
Bahrain	0.17	0.15	0.13	0.13	0.13
Brunei Darussalam	0.08	0.06	0.08	0.07	0.07
Kazakhstan	1.61	1.58	1.48	1.46	1.60
Malaysia	0.39	0.36	0.38	0.38	0.38
Mexico	1.67	1.67	1.64	1.66	1.68
Oman	0.84	0.82	0.80	0.80	0.80
Russia	9.78	9.52	9.48	9.48	9.50
South Sudan	0.13	0.13	0.16	0.16	0.16
Sudan	0.07	0.07	0.07	0.07	0.07
Total OPEC+ Crude Oil Production	39.29	38.60	37.41	36.93	37.66

Source: U.S. Energy Information Administration, *Short-Term Energy Outlook*, October 2023

Note: OPEC-10 represents OPEC members excluding Iran, Libya, and Venezuela, who are exempt from OPEC+ agreement

Petroleum Products

U.S. jet fuel consumption

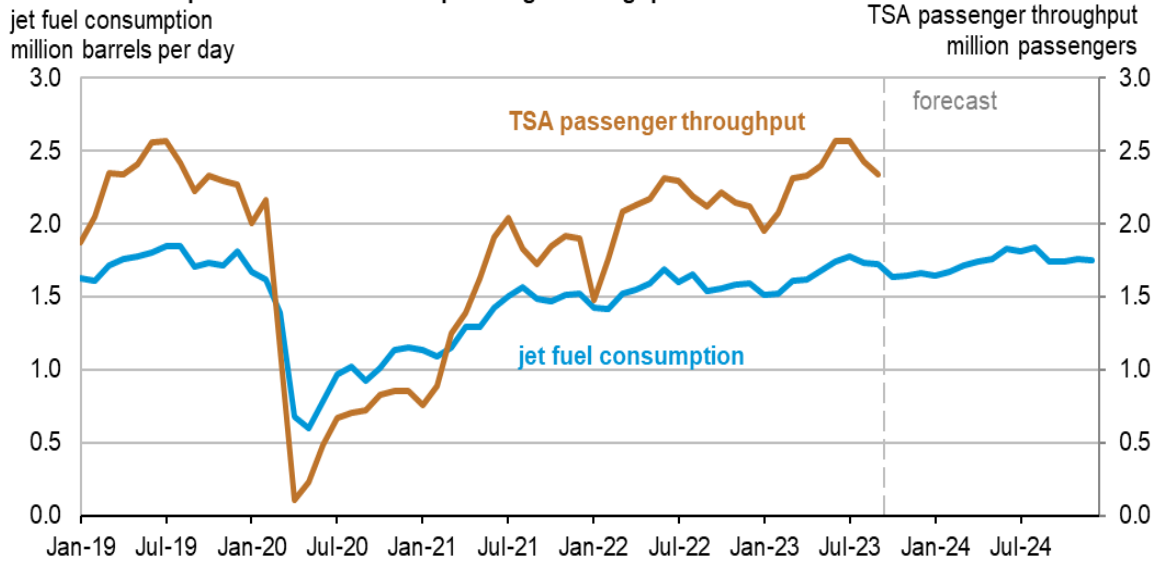
In our October STEO, we forecast that jet fuel consumption will increase by 6% in 2024 to more than 1.7 million b/d compared with 2023. Consumption of jet fuel is growing faster than other transportation fuels. Over the same period, we expect distillate fuel consumption will remain fairly flat, and gasoline consumption will decline by 2%.

If our forecast is realized in 2024, U.S. jet fuel consumed in 2024 would equal pre-pandemic consumption in 2019. Jet fuel is the only transportation fuel that we expect will equal 2019 consumption in our forecast.

Jet fuel consumption has been driven by a strong return of passengers following the most acute effects of the pandemic. According to [TSA passenger volumes](#), total U.S. passengers in 2023 through September is essentially equal to the 2019 volume over the same period. However, changes to the airline fleet appear to have reduced jet fuel consumption for the same number of passengers.

According to the September 26 [Industry Review and Outlook](#) from Airlines for America, U.S. airlines have shifted to larger (or denser) aircraft, and the average number of seats per domestic departure has increased. This shift likely reduced jet fuel consumption as the number of passengers returned to pre-pandemic levels. Our economic growth forecast suggests increasing travel demand will contribute to rising jet fuel consumption in 2024.

Jet fuel consumption forecast and TSA passenger throughput



Data source: U.S. Energy Information Administration, *Short-Term Energy Outlook*, October 2023



U.S. petroleum and other liquid fuels consumption

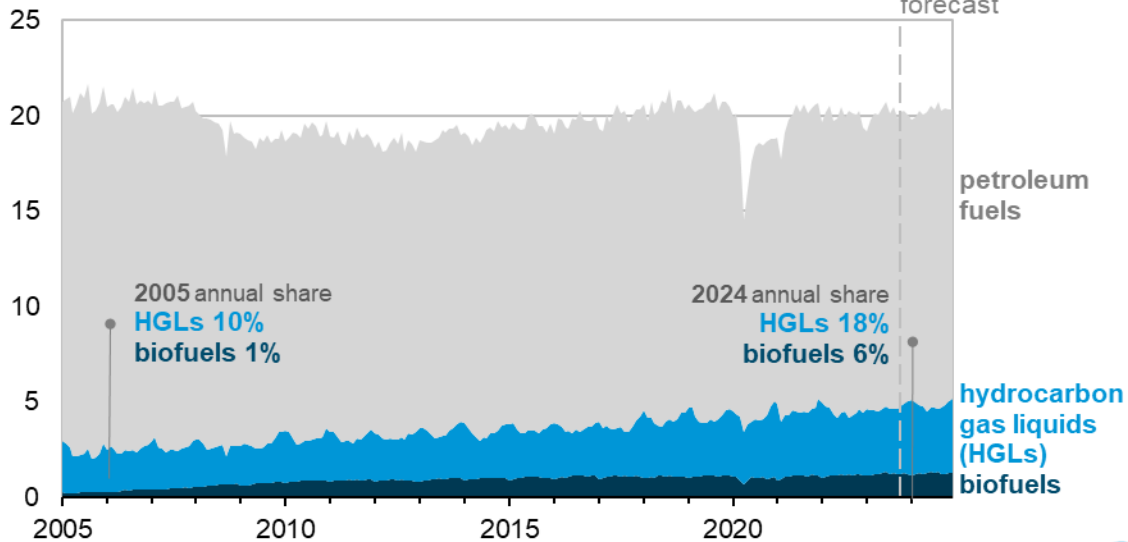
We forecast consumption of petroleum and other liquid fuels will rise in the United States to 20.2 million b/d in 2024, 2% less than 2019 and 3% less than the record high in 2005. Despite an increase in total U.S. liquid fuels consumption in our forecast, we forecast the share of refinery-produced petroleum fuels will decline in 2024. Biofuels partially substitute for petroleum-based fuels in transportation in our forecast. We expect the consumption of renewable diesel to increase by more than 30% (60,000 b/d) in 2024, most of which will directly replace petroleum-based diesel, particularly in California. Hydrocarbon gas liquids (HGLs) consumption in our forecast grows because of its use as feedstock for petrochemical production. We forecast the share of biofuels in U.S. liquid fuels consumption will average 6% in 2024, up from 1% in 2005, and the share from HGLs will average 18%, up from 10% in 2005.

Among biofuels, fuel ethanol blended into motor gasoline makes up about 10% of every gallon sold, and some states increasingly sell higher blends (up to 85%).

In addition, financial incentives aimed at increasing the use of renewable diesel in California and other West Coast states have led several refiners to convert their facilities to renewable diesel production. As a result, [petroleum-based diesel consumption](#) on the West Coast has decreased. Although HGLs are not substitutes for transportation fuels like gasoline and diesel, low prices and rising production in the United States have contributed to petrochemical expansions, particularly facilities that use [ethane](#) as a major feedstock.

Monthly U.S. petroleum and other liquid fuels consumption

million barrels per day



Data source: U.S. Energy Information Administration, *Short-Term Energy Outlook*, October 2023



Natural Gas

Natural gas trade

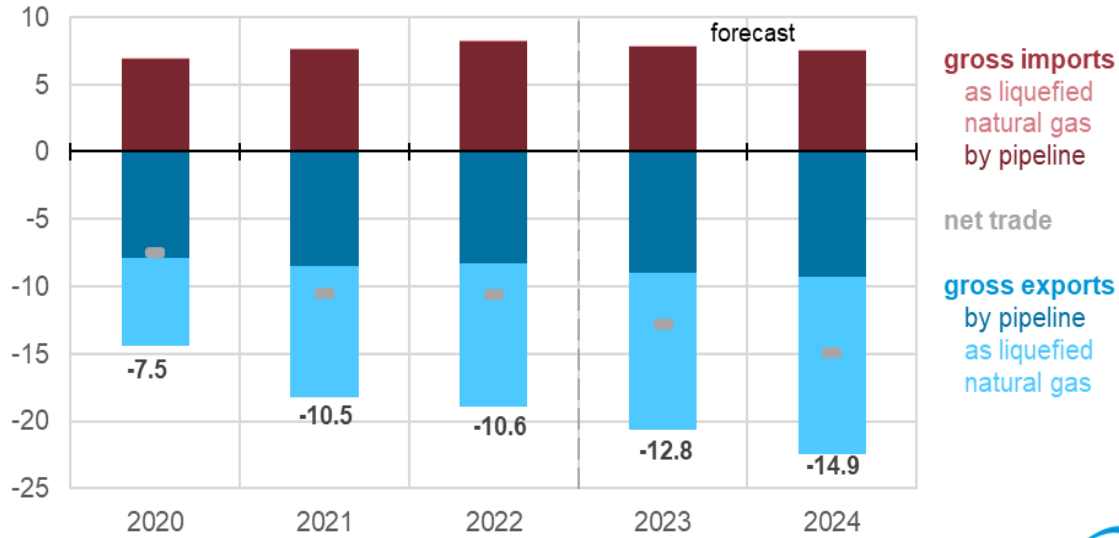
We forecast U.S. natural gas exports will [reach an annual record in 2023](#) and will continue to grow in 2024. U.S. net exports of natural gas in our forecast increase 20% this year compared with last year to average 12.8 billion cubic feet per day (Bcf/d). Increases in liquefied natural gas (LNG) exports and pipeline exports to Mexico drive the overall increase in net natural gas exports, while natural gas imports decline from 2022.

The [United States exported more LNG than any other country in the first half of 2023](#), averaging 11.6 Bcf/d, 10% more than the average for all of 2022. After a decline in 3Q23, we forecast LNG exports to increase during 4Q23 and continue increasing into 2024, averaging 12.7 Bcf/d for the first nine months of 2024. In 4Q24, we expect LNG exports to approach 15.0 Bcf/d as a result of [three new export projects](#) that are set to begin operations and expand U.S. export capacity.

We expect U.S. natural gas pipeline exports, which go to both Canada and Mexico, to increase 9% this year (0.7 Bcf/d) from last year, averaging 9.0 Bcf/d for all of 2023. Pipeline exports to Mexico reached a new [record in June](#) and have remained high throughout the summer. We expect natural gas pipeline exports to Mexico to continue increasing as [pipeline projects in Mexico are completed](#) and [demand in Mexico's electric power sector rises](#).

U.S. natural gas imports in our forecast decline by 6%, or 0.5 Bcf/d, in 2023 compared with 2022. The decline is driven by warmer winter weather in the northern United States, resulting in less natural gas imported from Canada to meet space-heating demand.

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



Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023

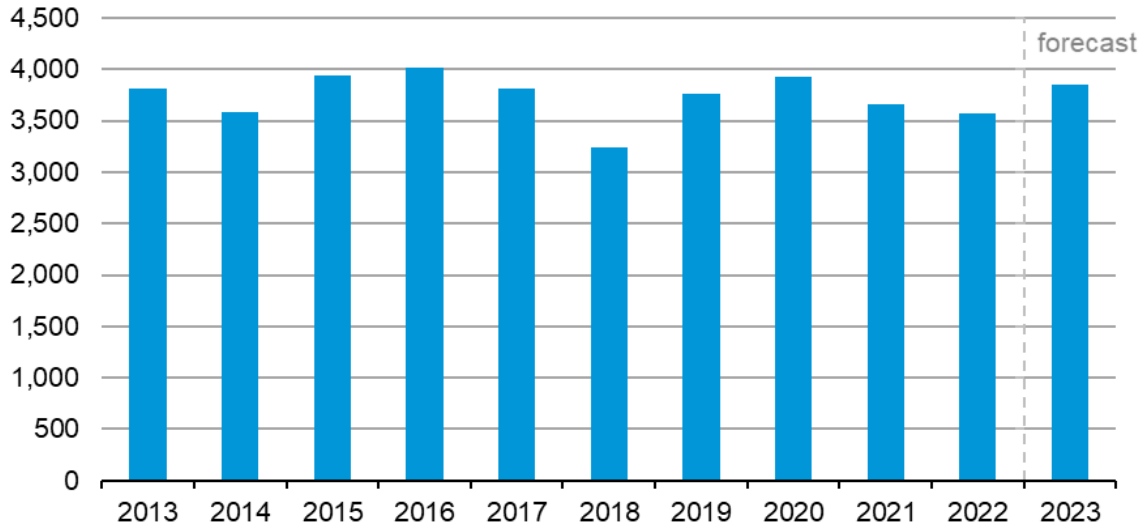


Natural gas storage

We forecast U.S. natural gas in underground storage to total 3,854 billion cubic feet (Bcf) at the end of October—the end of summer injection season and the start of winter heating season—6% more than the five-year average (2018—2022). We forecast natural gas inventories will increase by about 360 Bcf in October due to a combination of U.S. dry natural gas production growing to nearly 105 Bcf/d and overall U.S. demand for natural gas declining as seasonal temperature patterns emerge in October. Natural gas inventories began the injection season with a 19% surplus to the five-year average. However, for 12 of the past 13 weeks, net injections into U.S. underground storage have been below the five-year average, dropping storage inventories closer to the five-year average. Our forecast shows the most U.S. natural gas inventories entering the winter heating season since 2020 and the fourth-most in the past 10 years.

U.S. natural gas in underground storage at the end of October

billion cubic feet

Data source: U.S. Energy Information Administration, *Short-Term Energy Outlook*, October 2023

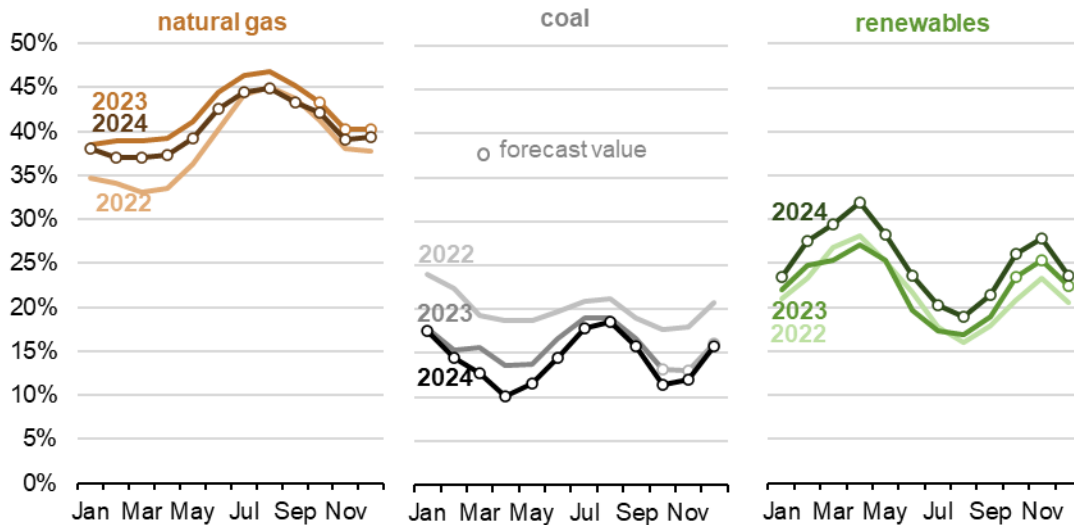
Electricity, Coal, and Renewables

Electricity generation

We forecast that natural gas will supply 41% of total U.S. generation in 2024, down from an average of 42% in 2023. This decline is offset by a forecast increase in the share of renewable generation from 22% this year to 25% in 2024.

In the forecast, natural gas-fired generation is more likely to be affected by the increasing availability of renewable generation than by fuel costs because growing renewable capacity, which generally has lower operating costs than thermal generation, will lead to less need to generate from natural gas and coal. Much of the increase in renewable generation is the result of new solar generating capacity added by the electric power sector, which we expect will rise by 25 gigawatts (GW) in 2023. An expected 8 GW increase in wind-generating capacity also helps increase generation from renewables. The share of combined solar and wind generation tends to peak in the spring months when overall electricity demand is low. The new renewable-generating capacity should reduce the share of natural gas- and coal-fired capacity in spring 2024 compared with last spring.

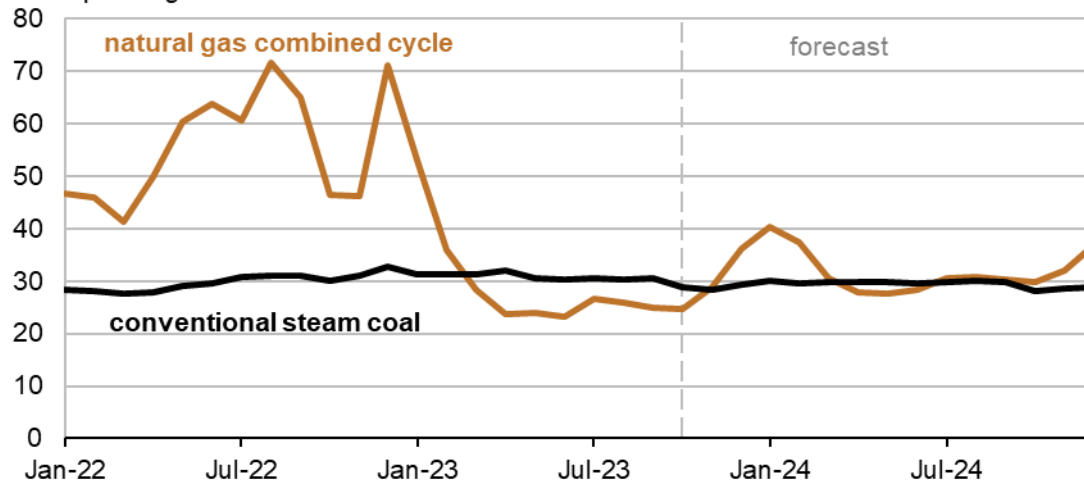
U.S. electric power sector generation share for selected energy sources
percentage of total



Data source: U.S. Energy Information Administration, *Short-Term Energy Outlook*, October 2023

Although we expect the increase in renewables capacity to be the main driver of relative electricity generation shares next year, **low natural gas prices**, compared with coal, are also changing the relative use of the two fuels. Costs for generating power from natural gas have been much more volatile than the costs for coal. Between March and July 2023, we estimate that the cost of producing power from combined-cycle natural gas power plants averaged \$25 per megawatthour (MWh), lower than the estimated \$31/MWh cost for generation from coal-fired power plants. During the same months in 2022, the cost of operating combined-cycle plants (\$55/MWh) was 90% higher than for coal-fired power plants (\$29/MWh).

Simulated U.S. average monthly baseload generator dispatch costs
dollars per megawatthour



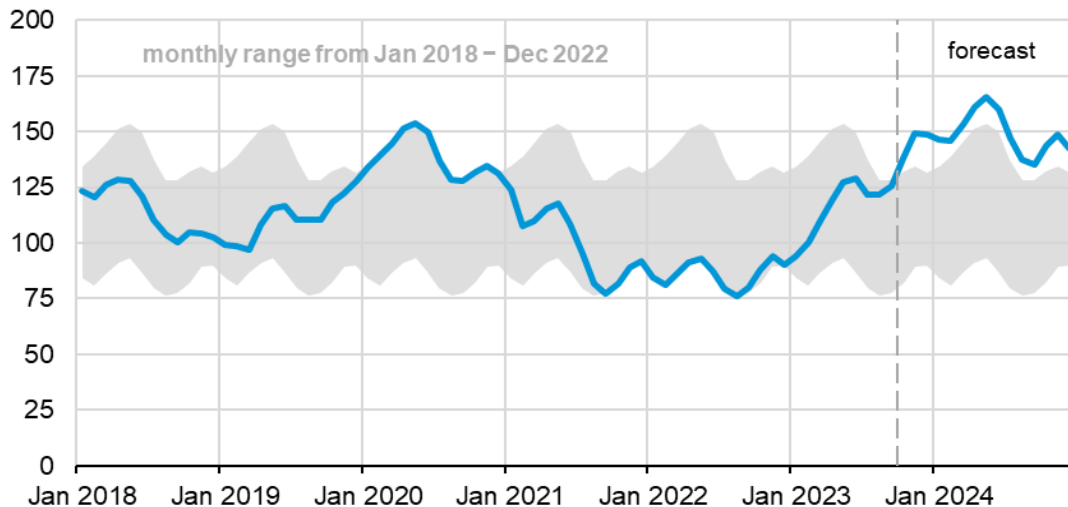
Data source: U.S. Energy Information Administration, *Short-Term Energy Outlook*, October 2023
Note: Simulated costs represent monthly average variable costs (fuel, operating, and maintenance costs) for the generating units that are selected for dispatch in the STEO electricity supply model.

We expect natural gas prices to increase in 2024, which should bring the costs of generating electricity from coal and natural gas closer together. For all of 2024, our estimated cost of natural gas-fired electricity averages \$32/MWh compared with an average \$29/MWh for coal. We expect these similar costs will keep the share of U.S. generation from coal near 15% on average in 2024.

Coal inventories

We forecast that coal inventories held by the electric power sector will reach almost 150 million short tons (MMst) in December 2023, a 66% jump over December 2022. The rising coal inventories this year are a result of a delayed response in production to the drop in coal-fired generation as coal producers fulfill supply contracts already in place. Although forecast natural gas prices rise slightly over the next few months, we expect coal inventories will increase until the spring of 2024, peaking near 170 MMst in May as the electric power industry gears up for summer power consumption. We forecast coal stocks will decrease from May 2024 levels back below 150 MMst in late 2024 as coal consumption goes through its normal seasonal drop in the fall.

U.S. electric power coal inventories
million short tons



Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023



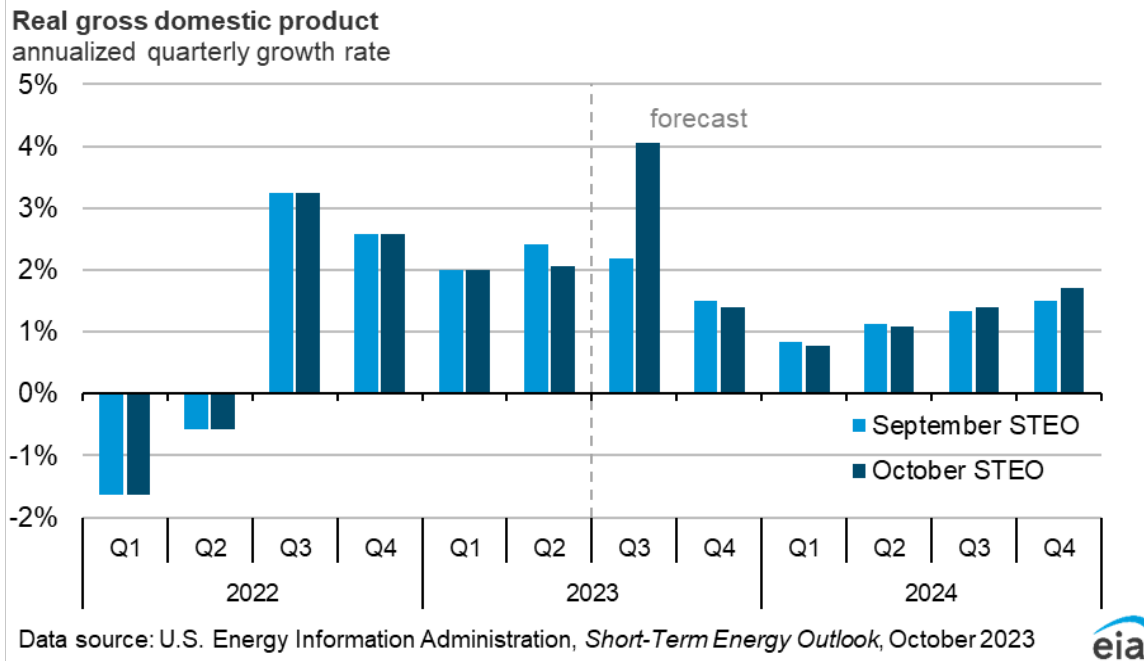
Economy, Weather, and CO₂

U.S. macroeconomics

Our U.S. macroeconomic forecasts are based on S&P Global’s macroeconomic model. We incorporate STEO energy price forecasts into the model to obtain our final macroeconomic assumptions.

Our forecast assumes real GDP growth will average 2.3% in 2023 and 1.6% in 2024. Overall, the current outlook for the U.S. economy is similar to last month, except 3Q23. Our forecast now estimates that GDP grew at an annualized rate of 4.0% in 3Q23, up from 2.2% growth from last month’s outlook.

S&P Global revised its outlook for 3Q23 after data on July retail sales, construction outlays, and business inventory accumulation showed unexpected strength. The data releases resulted in S&P Global revising annualized 3Q23 consumer spending growth from 1.8% to 3.9% and fixed private investment growth from 1.8% to 3.0%. The primary contributors to the increase in fixed private investment were increased spending on single-family home construction and on manufacturing construction projects.

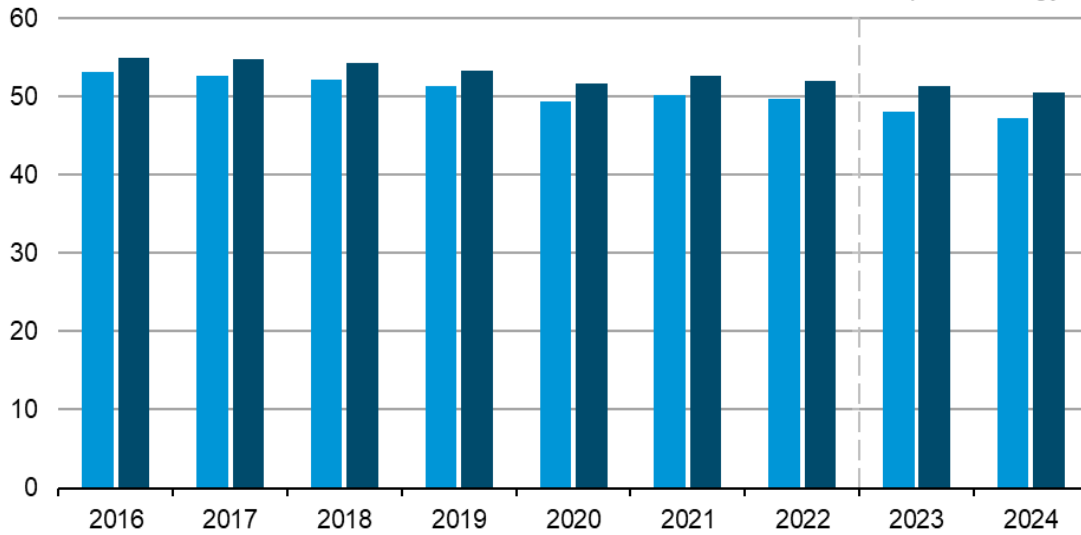


Emissions

Starting with the release of the September 2023 *Monthly Energy Review*, we calculate consumption of noncombustible renewable energy for electricity generation using the *captured energy* approach, which applies a constant conversion factor of 3,412 British thermal units per kilowatt-hour (Btu/kWh), the heat content of electricity. Those changes are incorporated in our forecasts beginning with the October STEO. Previously, we used the *fossil fuel equivalency* approach.

This approach is strictly an accounting change. The carbon intensity of energy consumption is the ratio of total emissions over total primary energy consumption. The captured energy approach assumes that the amount of energy consumed from renewable sources is less than assumed using the fossil fuel equivalent approach. Carbon emissions in both approaches remain the same. Mathematically, a smaller estimate of energy used and the same amount of emissions leads to an emissions intensity that is between 6% and 7% higher in both 2023 and 2024, due to the nature of the calculation, not because of changes in the activity the variables represent.

Carbon intensity of U.S. energy consumption
 million metric tons of CO₂ per quadrillion British thermal units



Data source: U.S. Energy Information Administration, *Short-Term Energy Outlook*, October 2023



Weather

We forecast that the United States will average about 3,220 **heating degree days** (HDDs) this winter (November through March), which would be the same as last winter and slightly warmer than the average winter over the past decade, with 4% fewer HDDs than the 10-winter average. Other factors equal, consumers tend to use less energy for space heating when there are fewer HDD. We expect 2023 to end with about 3,900 HDDs, 8% fewer than in 2022. In 1Q23, weather was warmer with 10% fewer HDDs than the same period in 2022. In addition, we expect a warmer 4Q23 compared to 4Q22 with 7% fewer HDDs.

Short-Term Energy Outlook Chart Gallery



October 11, 2023

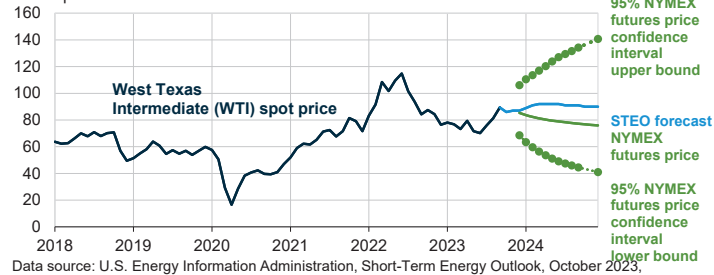


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West Texas Intermediate (WTI) crude oil price and NYMEX confidence intervals

dollars per barrel



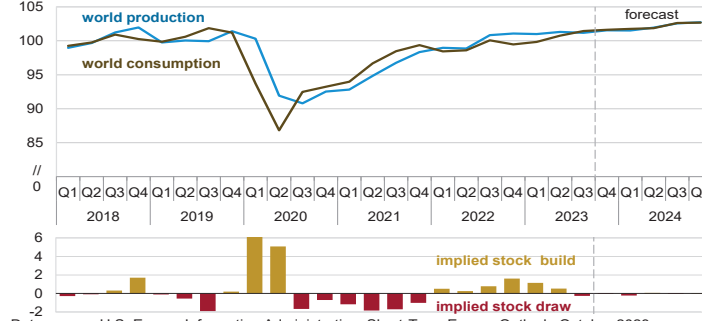
Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023, CME Group, Bloomberg, L.P., and Refinitiv an LSEG Business

Note: Confidence interval derived from options market information for the five trading days ending October 5, 2023. Intervals not calculated for months with sparse trading in near-the-money options contracts.



World liquid fuels production and consumption balance

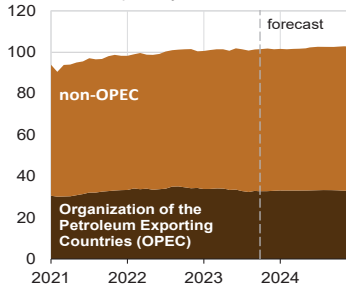
million barrels per day



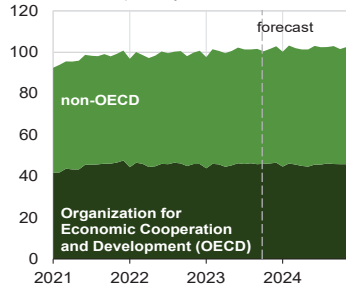
Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023



World liquid fuels production
million barrels per day



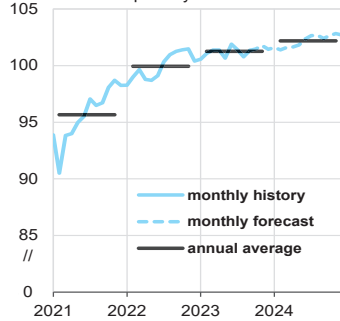
World liquid fuels consumption
million barrels per day



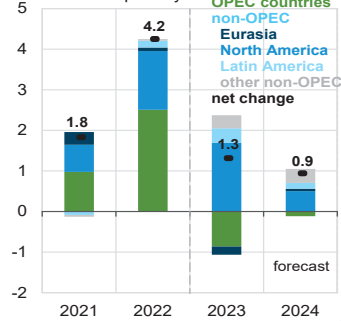
Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023



World crude oil and liquid fuels production
million barrels per day



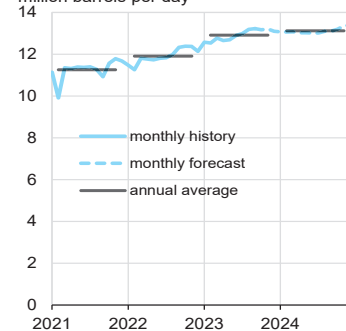
Components of annual change
million barrels per day



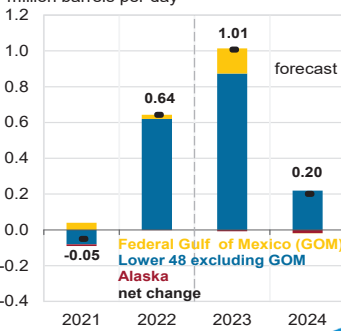
Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023



U.S. crude oil production
million barrels per day



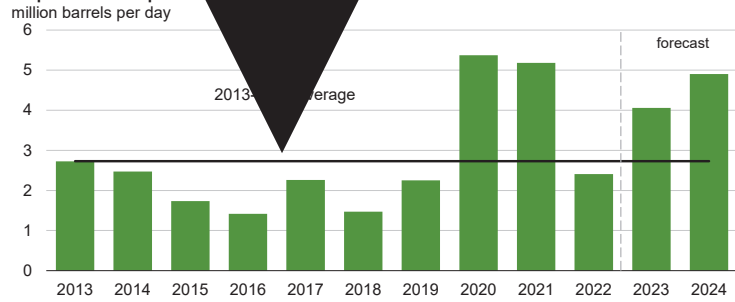
Components of annual change
million barrels per day



Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023



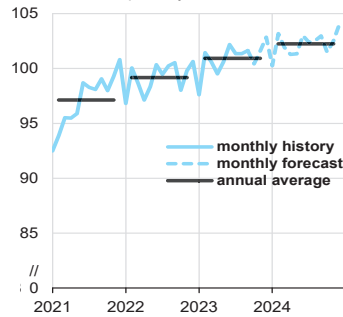
Organization of the Petroleum Exporting Countries (OPEC)



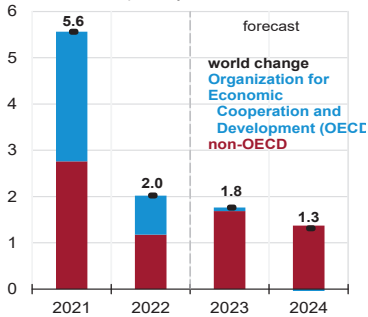
Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023
 Note: Black line represents 2013-2022 average (2.7 million barrels per day).



World liquid fuels consumption



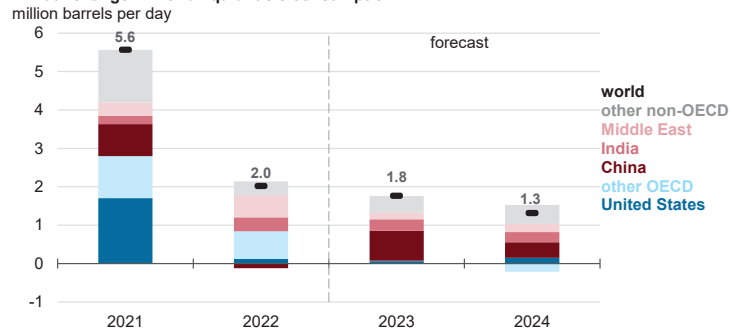
Components of annual change



Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023



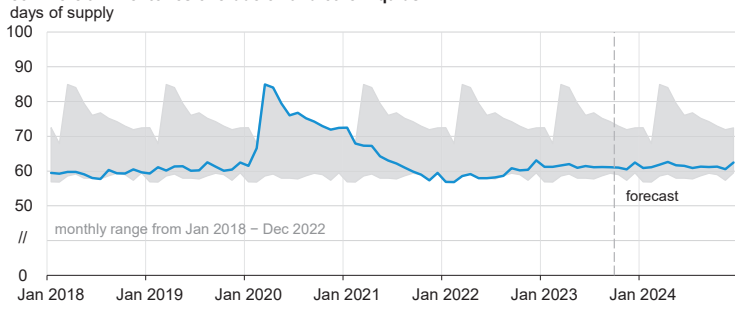
Annual change in world liquid fuels consumption



Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023



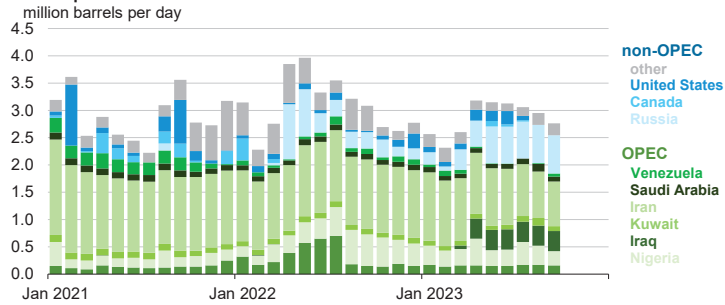
Organization for Economic Cooperation and Development (OECD)
commercial inventories of crude oil and other liquids



Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023



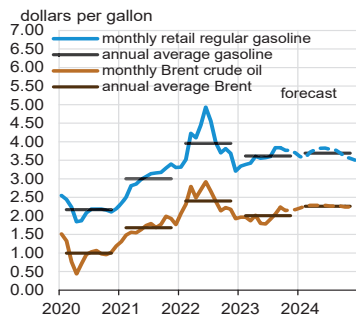
Estimated unplanned liquid fuels production outages among OPEC and non-OPEC producers



Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023

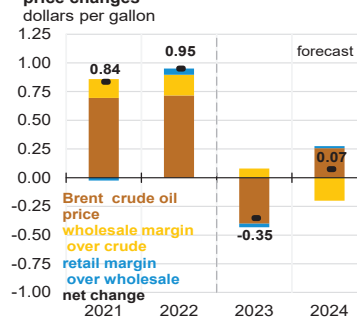


U.S. gasoline and crude oil prices

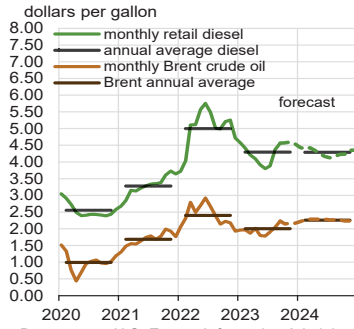


Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023, and Refinitiv an LSEG Business

Components of annual gasoline price changes

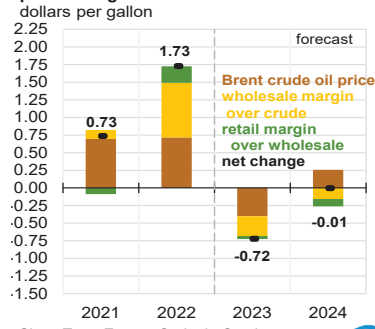


U.S. diesel and crude oil prices

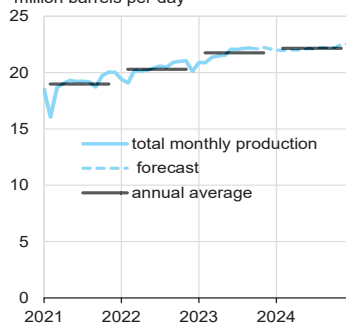


Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023, and Refinitiv an LSEG Business

Components of annual diesel price changes

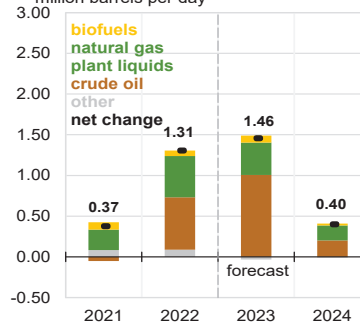


U.S. crude oil and liquid fuels production

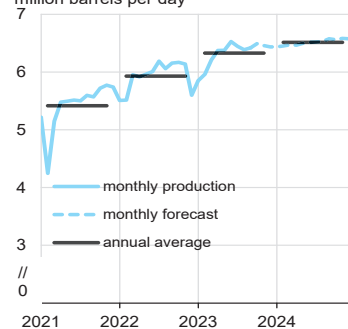


Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023

Components of annual change

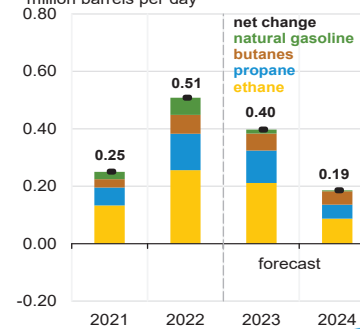


U.S. natural gas plant liquids production

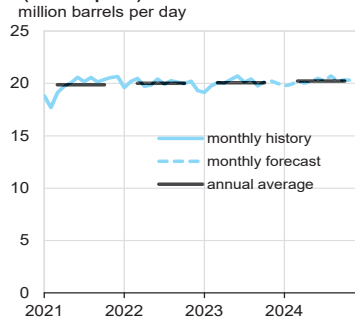


Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023

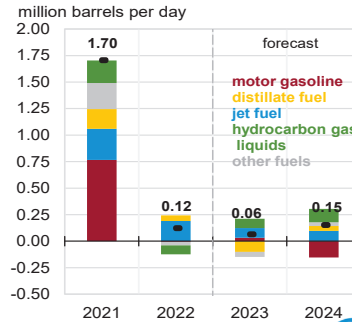
Components of annual change



U.S. liquid fuels product supplied (consumption)



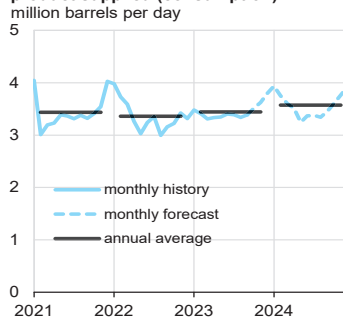
Components of annual change



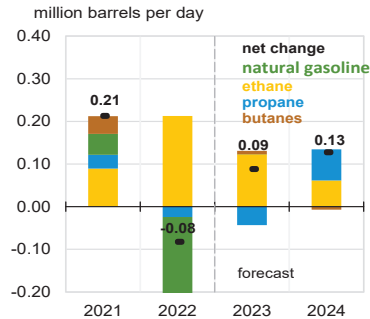
Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023



U.S. hydrocarbon gas liquids product supplied (consumption)



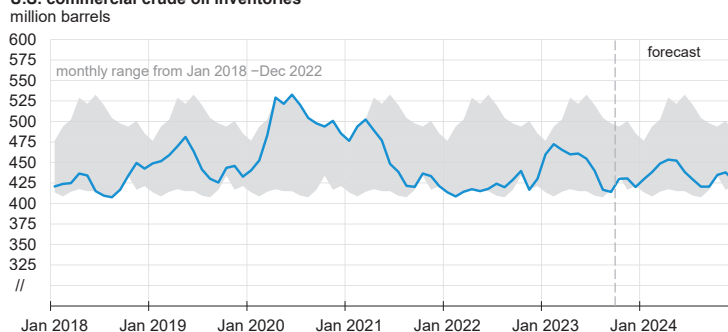
Components of annual change



Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023



U.S. commercial crude oil inventories

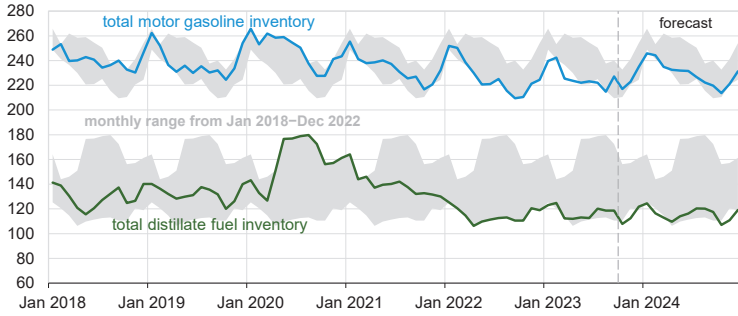


Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023



U.S. gasoline and distillate inventories

million barrels

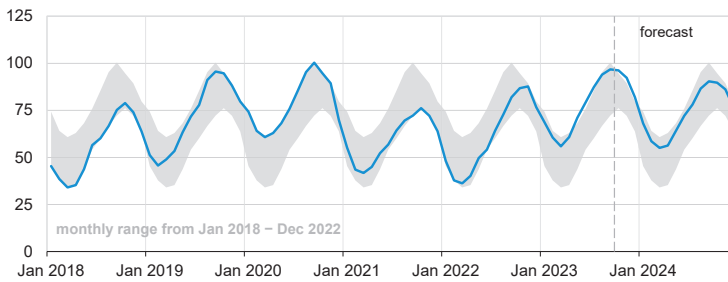


Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023



U.S. commercial propane inventories

million barrels



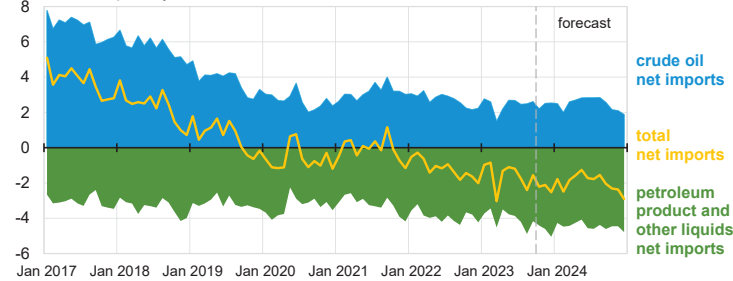
Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023

Note: Excludes propylene.



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

million barrels per day



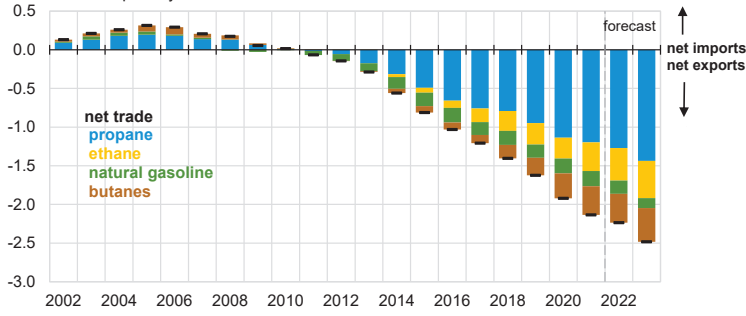
Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023

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



U.S. net trade of hydrocarbon gas liquids (HGL)

million barrels per day



Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023



Henry Hub natural gas price and NYMEX confidence intervals

dollars per million British thermal units



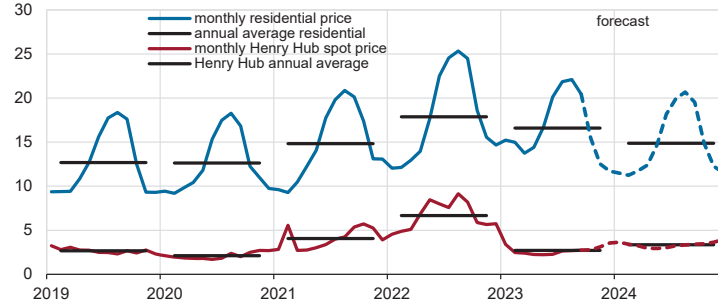
Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023, CME Group, and Refinitiv an LSEG Business

Note: Confidence interval derived from options market information for the five trading days ending October 5, 2023. Intervals not calculated for months with sparse trading in near-the-money options contracts.



U.S. natural gas prices

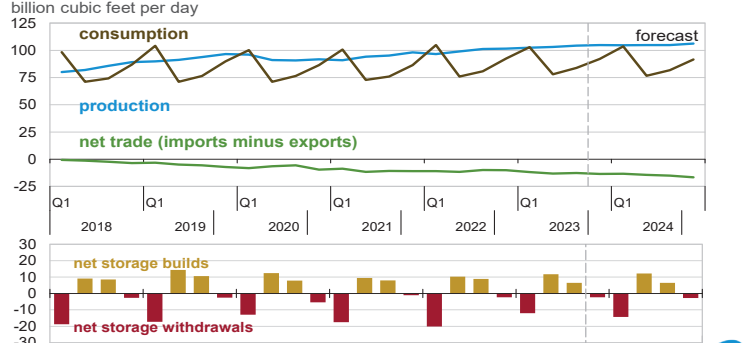
dollars per thousand cubic feet



Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023, and Refinitiv an LSEG Business

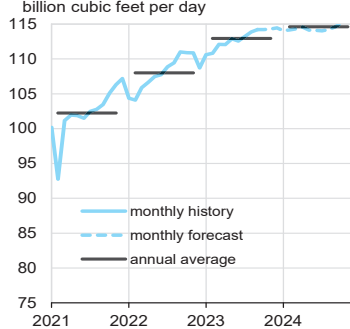


U.S. natural gas production, consumption, and net imports



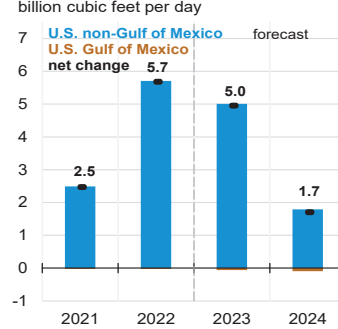
Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023

U.S. marketed natural gas production



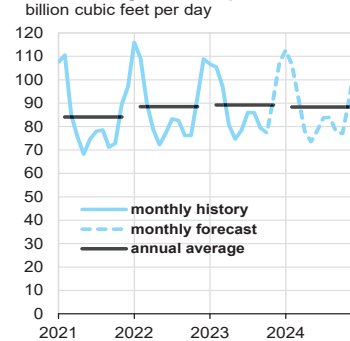
Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023

Components of annual change



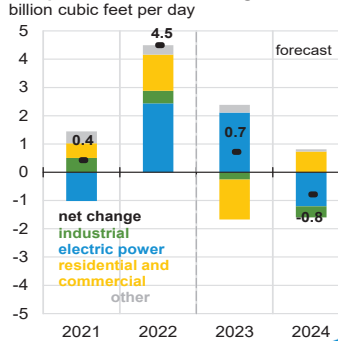
Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023

U.S. natural gas consumption



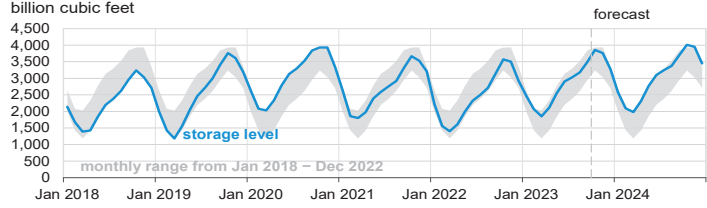
Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023

Components of annual change

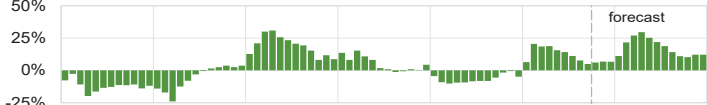


Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023

U.S. working natural gas in storage



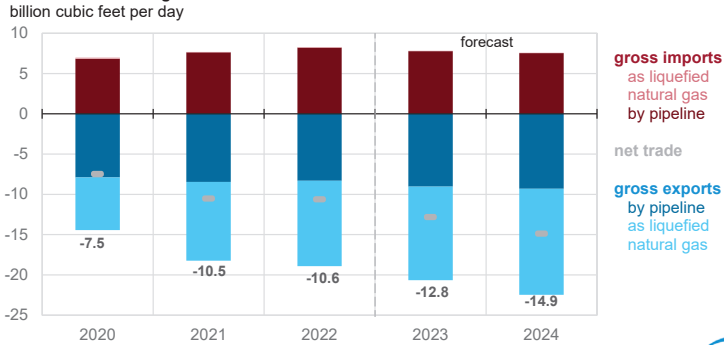
Percentage deviation from 2018 – 2022 average



Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023



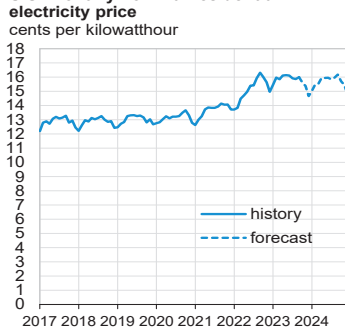
U.S. annual natural gas trade



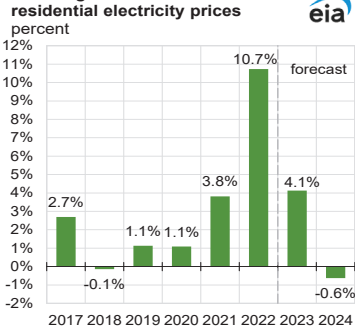
Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023



U.S. monthly nominal residential electricity price



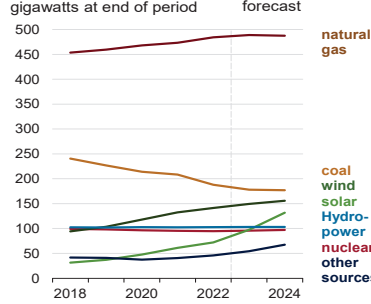
Annual growth in nominal residential electricity prices



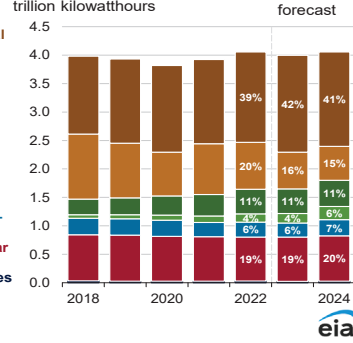
Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023



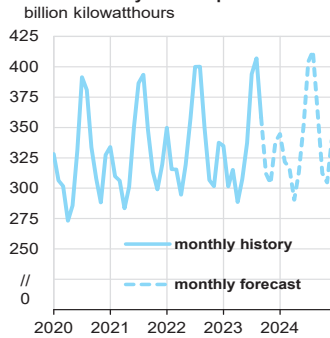
U.S. electric power sector generating capacity



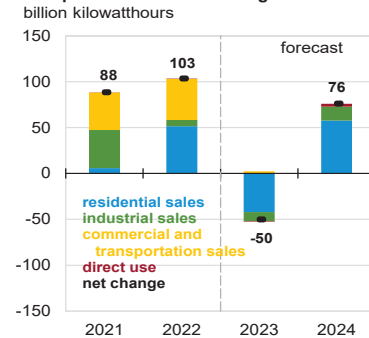
U.S. electricity generation by source



U.S. electricity consumption

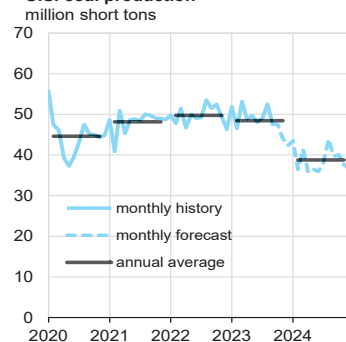


Components of annual change

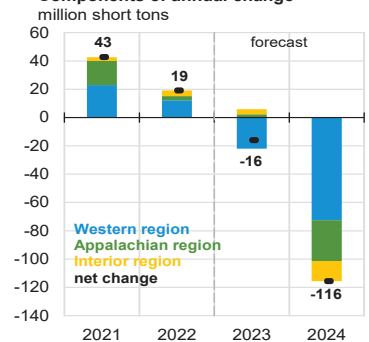


Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023

U.S. coal production

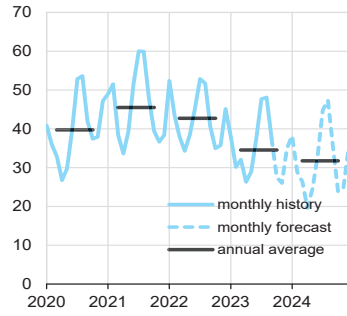


Components of annual change

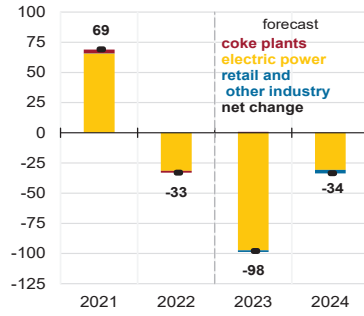


Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023

U.S. coal consumption
million short tons



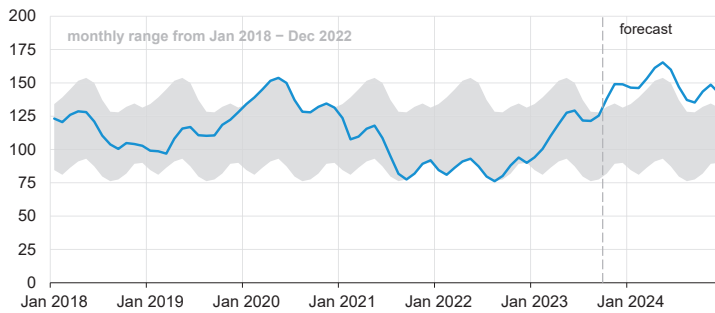
Components of annual change
million short tons



Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023



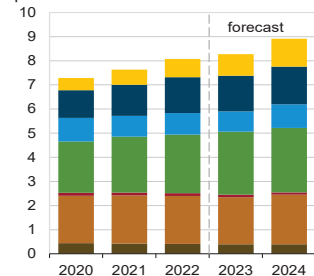
U.S. electric power coal inventories
million short tons



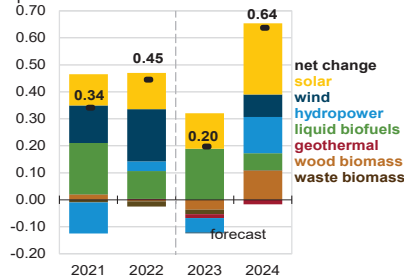
Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023



U.S. renewable energy supply
quadrillion British thermal units



Components of annual change
quadrillion British thermal units

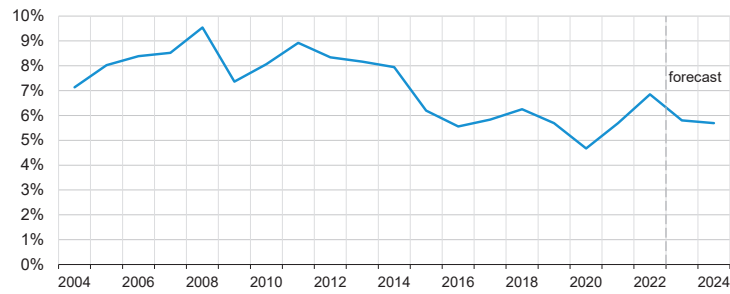


Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023

Note: Hydropower excludes pumped storage generation. Liquids include ethanol, biodiesel, renewable diesel, other biofuels, and biofuel losses and coproducts. Waste biomass includes municipal waste from biogenic sources, landfill gas, and non-wood waste.



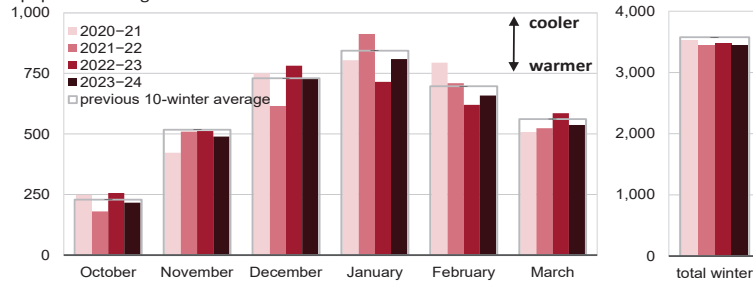
U.S. annual energy expenditures
share of gross domestic product



Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023



U.S. winter heating degree days
population-weighted

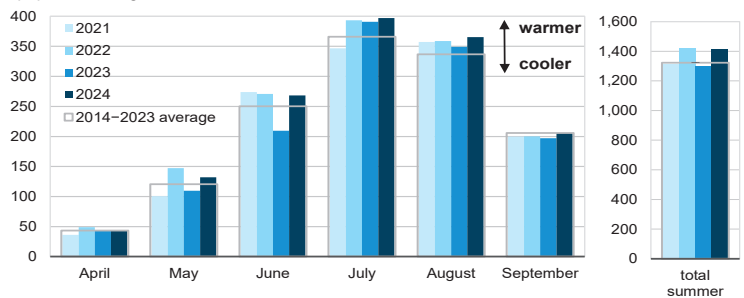


Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023

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



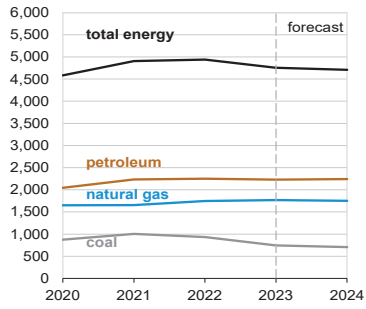
U.S. summer cooling degree days
population-weighted



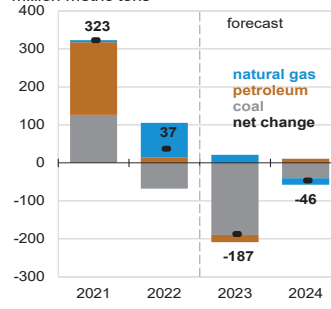
Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023
Note: EIA calculations based on National Oceanic and Atmospheric Administration (NOAA) data. Projections reflect NOAA's 14-16 month outlook.



U.S. annual CO2 emissions by source
million metric tons



Components of annual change
million metric tons



Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, October 2023



Table 1. U.S. Energy Markets Summary

U.S. Energy Information Administration | Short-Term Energy Outlook - October 2023

	2022				2023				2024				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2022	2023	2024
Energy Production															
Crude Oil Production (a) (million barrels per day)	11.52	11.77	12.05	12.30	12.63	12.75	13.13	13.16	<i>13.07</i>	<i>13.02</i>	<i>13.07</i>	<i>13.31</i>	11.91	12.92	13.12
Dry Natural Gas Production (billion cubic feet per day)	96.6	98.9	101.2	101.6	102.4	103.2	104.4	104.9	<i>104.7</i>	<i>104.8</i>	<i>104.8</i>	<i>106.1</i>	99.6	103.7	105.1
Coal Production (million short tons)	149	146	154	148	151	147	149	134	<i>121</i>	<i>108</i>	<i>122</i>	<i>114</i>	597	581	465
Energy Consumption															
Liquid Fuels (million barrels per day)	20.09	20.00	20.11	19.85	19.66	20.38	20.12	20.13	<i>19.97</i>	<i>20.23</i>	<i>20.40</i>	<i>20.30</i>	20.01	20.07	20.22
Natural Gas (billion cubic feet per day)	104.8	76.0	80.8	92.5	103.0	78.0	83.8	92.1	<i>103.6</i>	<i>76.6</i>	<i>81.8</i>	<i>91.5</i>	88.5	89.2	88.4
Coal (b) (million short tons)	134	118	145	116	100	93	133	88	<i>93</i>	<i>78</i>	<i>127</i>	<i>83</i>	513	415	381
Electricity (billion kilowatt hours per day)	10.90	10.68	12.50	10.28	10.57	10.25	12.60	10.37	<i>10.81</i>	<i>10.50</i>	<i>12.82</i>	<i>10.40</i>	11.09	10.95	11.13
Renewables (c) (quadrillion Btu)	2.02	2.12	1.96	1.98	2.03	2.09	2.03	2.10	<i>2.21</i>	<i>2.30</i>	<i>2.21</i>	<i>2.19</i>	8.08	8.25	8.91
Total Energy Consumption (d) (quadrillion Btu)	24.95	22.32	23.85	24.09	23.93	21.80	23.53	23.40	<i>24.49</i>	<i>21.81</i>	<i>23.60</i>	<i>23.40</i>	95.21	92.67	93.30
Energy Prices															
Crude Oil West Texas Intermediate Spot (dollars per barrel)	95.18	108.93	93.07	82.69	75.96	73.49	82.25	86.65	<i>90.64</i>	<i>92.00</i>	<i>91.00</i>	<i>90.00</i>	94.91	79.59	90.91
Natural Gas Henry Hub Spot (dollars per million Btu)	4.66	7.48	7.99	5.55	2.65	2.16	2.59	3.03	<i>3.31</i>	<i>2.86</i>	<i>3.20</i>	<i>3.55</i>	6.42	2.61	3.23
Coal (dollars per million Btu)	2.18	2.26	2.50	2.55	2.57	2.49	2.48	2.42	<i>2.42</i>	<i>2.41</i>	<i>2.41</i>	<i>2.37</i>	2.37	2.49	2.40
Macroeconomic															
Real Gross Domestic Product (billion chained 2012 dollars - SAAR)	19,924	19,895	20,055	20,182	20,283	20,386	20,590	20,662	<i>20,701</i>	<i>20,757</i>	<i>20,829</i>	<i>20,917</i>	20,014	20,480	20,801
Percent change from prior year	3.7	1.8	1.9	0.9	1.8	2.5	2.7	2.4	<i>2.1</i>	<i>1.8</i>	<i>1.2</i>	<i>1.2</i>	2.1	2.3	1.6
GDP Implicit Price Deflator (Index, 2012=100)	124.2	126.9	128.3	129.5	130.8	131.5	132.2	133.2	<i>134.2</i>	<i>134.9</i>	<i>135.7</i>	<i>136.5</i>	127.2	131.9	135.3
Percent change from prior year	6.9	7.6	7.1	6.4	5.3	3.6	3.1	2.8	<i>2.5</i>	<i>2.6</i>	<i>2.6</i>	<i>2.5</i>	7.0	3.7	2.6
Real Disposable Personal Income (billion chained 2012 dollars - SAAR)	15,109	15,022	15,141	15,236	15,550	15,677	15,697	15,785	<i>15,962</i>	<i>16,095</i>	<i>16,199</i>	<i>16,278</i>	15,127	15,677	16,133
Percent change from prior year	-12.8	-5.7	-3.8	-1.9	2.9	4.4	3.7	3.6	<i>2.7</i>	<i>2.7</i>	<i>3.2</i>	<i>3.1</i>	-6.2	3.6	2.9
Manufacturing Production Index (Index, 2017=100)	100.1	100.8	100.9	100.0	99.9	100.2	100.0	99.3	<i>99.0</i>	<i>98.9</i>	<i>99.3</i>	<i>99.9</i>	100.5	99.9	99.3
Percent change from prior year	4.5	3.6	2.8	0.7	-0.2	-0.7	-0.9	-0.7	<i>-0.9</i>	<i>-1.2</i>	<i>-0.7</i>	<i>0.6</i>	2.9	-0.6	-0.6
Weather															
U.S. Heating Degree-Days	2,145	490	54	1,551	1,921	486	66	1,435	<i>2,004</i>	<i>472</i>	<i>75</i>	<i>1,454</i>	4,240	3,908	4,005
U.S. Cooling Degree-Days	47	467	952	90	69	363	937	121	<i>50</i>	<i>444</i>	<i>968</i>	<i>105</i>	1,556	1,490	1,567

(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.

- = no data available

Notes: EIA completed modeling and analysis for this report on October 5, 2023.

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

Prices are not adjusted for inflation.

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.

Forecasts: EIA Short-Term Integrated Forecasting System. U.S. macroeconomic forecasts are based on the S&P Global model of the U.S. Economy.

Weather forecasts from National Oceanic and Atmospheric Administration and Energy Information Administration.

Table 2. Energy Prices

U.S. Energy Information Administration | Short-Term Energy Outlook - October 2023

	2022				2023				2024				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2022	2023	2024
Crude Oil (dollars per barrel)															
West Texas Intermediate Spot Average	95.18	108.93	93.07	82.69	75.96	73.49	82.25	<i>86.65</i>	<i>90.64</i>	<i>92.00</i>	<i>91.00</i>	<i>90.00</i>	94.91	<i>79.59</i>	<i>90.91</i>
Brent Spot Average	101.17	113.84	100.53	88.44	81.04	78.02	86.64	<i>90.65</i>	<i>94.64</i>	<i>96.00</i>	<i>95.00</i>	<i>94.00</i>	100.94	<i>84.09</i>	<i>94.91</i>
U.S. Imported Average	90.06	108.10	92.18	78.14	69.58	70.96	80.02	<i>83.94</i>	<i>87.91</i>	<i>89.25</i>	<i>88.25</i>	<i>87.25</i>	92.83	<i>76.25</i>	<i>88.24</i>
U.S. Refiner Average Acquisition Cost	92.68	110.12	95.19	83.11	74.44	73.94	81.75	<i>86.18</i>	<i>90.16</i>	<i>91.50</i>	<i>90.50</i>	<i>89.50</i>	95.33	<i>79.16</i>	<i>90.42</i>
U.S. Liquid Fuels (cents per gallon)															
Refiner Prices for Resale															
Gasoline	278	376	311	267	262	265	296	<i>283</i>	<i>275</i>	<i>295</i>	<i>289</i>	<i>269</i>	309	<i>276</i>	<i>282</i>
Diesel Fuel	301	418	357	364	295	245	308	<i>321</i>	<i>310</i>	<i>297</i>	<i>295</i>	<i>307</i>	360	<i>292</i>	<i>302</i>
Fuel Oil	284	419	344	359	278	233	284	<i>305</i>	<i>300</i>	<i>283</i>	<i>279</i>	<i>296</i>	352	<i>268</i>	<i>296</i>
Refiner Prices to End Users															
Jet Fuel	283	400	340	332	305	233	291	<i>305</i>	<i>304</i>	<i>294</i>	<i>291</i>	<i>302</i>	340	<i>283</i>	<i>298</i>
No. 6 Residual Fuel Oil (a)	251	259	228	201	196	189	202	<i>220</i>	<i>229</i>	<i>231</i>	<i>231</i>	<i>229</i>	234	<i>202</i>	<i>230</i>
Retail Prices Including Taxes															
Gasoline Regular Grade (b)	371	450	408	357	338	358	376	<i>374</i>	<i>363</i>	<i>381</i>	<i>376</i>	<i>355</i>	397	<i>362</i>	<i>369</i>
Gasoline All Grades (b)	380	460	419	369	349	369	387	<i>387</i>	<i>375</i>	<i>393</i>	<i>388</i>	<i>368</i>	408	<i>373</i>	<i>381</i>
On-highway Diesel Fuel	431	549	516	508	439	394	428	<i>457</i>	<i>442</i>	<i>425</i>	<i>417</i>	<i>431</i>	501	<i>429</i>	<i>429</i>
Heating Oil	415	553	497	493	406	353	384	<i>426</i>	<i>418</i>	<i>392</i>	<i>379</i>	<i>418</i>	466	<i>402</i>	<i>410</i>
Propane															
Mont Belvieu Spot	130	125	108	80	82	68	68	<i>72</i>	<i>78</i>	<i>83</i>	<i>82</i>	<i>82</i>	111	<i>73</i>	<i>81</i>
Natural Gas															
Henry Hub Spot (dollars per thousand cubic feet)	4.84	7.77	8.30	5.76	2.76	2.25	2.69	<i>3.15</i>	<i>3.43</i>	<i>2.97</i>	<i>3.33</i>	<i>3.68</i>	6.67	<i>2.71</i>	<i>3.35</i>
Henry Hub Spot (dollars per million Btu)	4.66	7.48	7.99	5.55	2.65	2.16	2.59	<i>3.03</i>	<i>3.31</i>	<i>2.86</i>	<i>3.20</i>	<i>3.55</i>	6.42	<i>2.61</i>	<i>3.23</i>
U.S. Retail Prices (dollars per thousand cubic feet)															
Industrial Sector	6.64	7.97	8.93	7.33	6.06	3.76	3.85	<i>4.51</i>	<i>5.17</i>	<i>4.14</i>	<i>4.20</i>	<i>4.95</i>	7.66	<i>4.61</i>	<i>4.65</i>
Commercial Sector	9.99	11.65	14.05	12.11	11.80	10.48	10.60	<i>8.82</i>	<i>8.79</i>	<i>9.29</i>	<i>9.94</i>	<i>8.79</i>	11.32	<i>10.54</i>	<i>9.00</i>
Residential Sector	12.30	16.51	24.78	15.56	14.70	16.19	21.41	<i>12.56</i>	<i>11.47</i>	<i>14.22</i>	<i>20.01</i>	<i>12.34</i>	14.77	<i>14.73</i>	<i>12.77</i>
U.S. Electricity															
Power Generation Fuel Costs (dollars per million Btu)															
Coal	2.18	2.26	2.50	2.55	2.57	2.49	2.48	<i>2.42</i>	<i>2.42</i>	<i>2.41</i>	<i>2.41</i>	<i>2.37</i>	2.37	<i>2.49</i>	<i>2.40</i>
Natural Gas	5.95	7.39	8.23	6.90	4.99	2.64	2.81	<i>3.32</i>	<i>3.83</i>	<i>3.01</i>	<i>3.27</i>	<i>3.85</i>	7.24	<i>3.36</i>	<i>3.46</i>
Residual Fuel Oil (c)	16.81	26.17	26.53	21.27	19.24	17.89	16.52	<i>17.37</i>	<i>17.59</i>	<i>18.36</i>	<i>17.53</i>	<i>17.49</i>	21.80	<i>17.78</i>	<i>17.69</i>
Distillate Fuel Oil	21.23	30.71	26.79	24.48	22.84	38.29	22.50	<i>24.25</i>	<i>23.74</i>	<i>22.73</i>	<i>22.40</i>	<i>23.39</i>	24.89	<i>26.64</i>	<i>23.20</i>
Prices to Ultimate Customers (cents per kilowatthour)															
Industrial Sector	7.42	8.41	9.38	8.52	8.12	7.87	8.59	<i>8.09</i>	<i>8.20</i>	<i>7.91</i>	<i>8.52</i>	<i>8.18</i>	8.45	<i>8.17</i>	<i>8.21</i>
Commercial Sector	11.63	12.35	13.38	12.66	12.69	12.46	13.16	<i>12.04</i>	<i>12.08</i>	<i>12.22</i>	<i>13.34</i>	<i>12.34</i>	12.55	<i>12.61</i>	<i>12.53</i>
Residential Sector	13.98	15.07	15.85	15.48	15.74	16.12	15.92	<i>15.18</i>	<i>15.32</i>	<i>15.95</i>	<i>15.98</i>	<i>15.26</i>	15.12	<i>15.75</i>	<i>15.65</i>

(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.

- = no data available

Notes: EIA completed modeling and analysis for this report on October 5, 2023.

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

Prices are not adjusted for inflation; 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 oil spot prices, the Mt. Belvieu propane spot price, and the Henry Hub natural gas spot price are from

Refinitiv, an LSEG company, via EIA (https://www.eia.gov/dnav/pet/pet_pri_spt_s1_d.htm).

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

Forecasts: EIA Short-Term Integrated Forecasting System.

Table 3a. International Petroleum and Other Liquids Production, Consumption, and Inventories

U.S. Energy Information Administration | Short-Term Energy Outlook - October 2023

	2022				2023				2024				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2022	2023	2024
Production (million barrels per day) (a)															
OECD	31.75	32.00	32.59	33.03	33.48	33.72	34.40	34.89	34.78	34.38	34.58	35.26	32.35	34.13	34.75
U.S. (50 States)	19.57	20.24	20.65	20.72	21.05	21.69	22.12	22.14	22.00	22.05	22.16	22.40	20.30	21.76	22.16
Canada	5.66	5.51	5.72	5.91	5.79	5.41	5.73	5.97	5.97	5.64	5.83	6.05	5.70	5.73	5.87
Mexico	1.91	1.89	1.90	1.90	2.07	2.16	2.11	2.11	2.11	2.08	2.06	2.03	1.90	2.11	2.07
Other OECD	4.61	4.35	4.32	4.49	4.56	4.46	4.44	4.67	4.71	4.61	4.52	4.78	4.44	4.53	4.65
Non-OECD	67.21	66.86	68.26	68.06	67.52	67.58	66.77	66.67	66.75	67.56	68.00	67.47	67.60	67.13	67.44
OPEC	33.75	33.76	34.71	34.43	33.95	33.69	32.73	32.86	33.14	33.18	33.33	33.10	34.17	33.30	33.19
Crude Oil Portion	28.19	28.33	29.23	28.92	28.46	28.38	27.38	27.48	27.65	27.82	27.95	27.68	28.67	27.92	27.78
Other Liquids (b)	5.56	5.43	5.48	5.52	5.49	5.31	5.35	5.39	5.48	5.35	5.38	5.42	5.50	5.38	5.41
Eurasia	14.39	13.39	13.56	13.90	14.00	13.56	13.39	13.53	13.62	13.68	13.67	13.74	13.81	13.62	13.68
China	5.18	5.18	5.05	5.09	5.32	5.32	5.22	5.32	5.27	5.29	5.29	5.33	5.12	5.29	5.29
Other Non-OECD	13.90	14.53	14.94	14.65	14.26	15.01	15.44	14.96	14.72	15.40	15.71	15.29	14.51	14.92	15.28
Total World Production	98.96	98.86	100.85	101.09	101.00	101.30	101.17	101.56	101.53	101.94	102.58	102.73	99.95	101.26	102.19
Non-OPEC Production	65.22	65.10	66.14	66.65	67.05	67.61	68.44	68.70	68.39	68.76	69.24	69.62	65.78	67.96	69.01
Consumption (million barrels per day) (c)															
OECD	45.63	45.11	46.22	45.63	45.19	45.39	46.04	46.26	45.53	45.13	45.94	46.04	45.65	45.72	45.66
U.S. (50 States)	20.09	20.00	20.11	19.85	19.66	20.38	20.12	20.13	19.97	20.23	20.40	20.30	20.01	20.07	20.22
U.S. Territories	0.11	0.12	0.13	0.12	0.12	0.12	0.12	0.12	0.11	0.11	0.11	0.11	0.12	0.12	0.11
Canada	2.24	2.21	2.38	2.30	2.24	2.25	2.34	2.32	2.27	2.22	2.32	2.29	2.28	2.29	2.28
Europe	13.19	13.43	14.04	13.35	13.06	13.36	13.96	13.73	13.18	13.33	13.74	13.51	13.50	13.53	13.44
Japan	3.70	3.03	3.19	3.56	3.72	3.02	3.12	3.45	3.57	2.96	3.06	3.38	3.37	3.32	3.24
Other OECD	6.30	6.33	6.37	6.45	6.39	6.27	6.38	6.52	6.43	6.28	6.30	6.44	6.36	6.39	6.36
Non-OECD	52.83	53.49	53.86	53.85	54.65	55.38	55.40	55.35	56.23	56.74	56.68	56.65	53.51	55.20	56.57
Eurasia	4.28	4.43	4.73	4.65	4.34	4.49	4.81	4.72	4.46	4.62	4.94	4.85	4.53	4.59	4.72
Europe	0.74	0.76	0.76	0.77	0.74	0.76	0.77	0.77	0.75	0.77	0.77	0.78	0.76	0.76	0.77
China	15.12	15.10	15.09	15.28	15.89	16.08	15.76	15.97	16.29	16.49	16.16	16.38	15.15	15.93	16.33
Other Asia	13.74	13.75	13.41	13.84	14.30	14.38	13.79	14.10	14.87	14.85	14.24	14.56	13.69	14.14	14.63
Other Non-OECD	18.95	19.45	19.86	19.32	19.38	19.67	20.27	19.80	19.85	20.02	20.57	20.09	19.39	19.78	20.13
Total World Consumption	98.46	98.60	100.08	99.48	99.84	100.77	101.44	101.62	101.75	101.87	102.62	102.69	99.16	100.92	102.24
Total Crude Oil and Other Liquids Inventory Net Withdrawals (million barrels per day)															
U.S. (50 States)	0.80	0.51	0.45	0.41	-0.08	-0.11	-0.06	0.34	-0.03	-0.33	0.02	0.38	0.54	0.02	0.01
Other OECD	-0.09	-0.29	-0.48	-0.26	0.32	-0.48	0.10	-0.09	0.08	0.08	0.01	-0.13	-0.28	-0.04	0.01
Other Stock Draws and Balance	-1.21	-0.49	-0.75	-1.74	-1.39	0.06	0.22	-0.19	0.17	0.18	0.02	-0.29	-1.05	-0.32	0.02
Total Stock Draw	-0.51	-0.26	-0.77	-1.60	-1.15	-0.53	0.27	0.06	0.22	-0.06	0.05	-0.04	-0.79	-0.33	0.04
End-of-period Commercial Crude Oil and Other Liquids Inventories (million barrels)															
U.S. Commercial Inventory	1,154	1,180	1,216	1,223	1,231	1,264	1,266	1,234	1,236	1,266	1,264	1,229	1,223	1,234	1,229
OECD Commercial Inventory	2,604	2,657	2,736	2,767	2,746	2,824	2,816	2,792	2,787	2,810	2,807	2,784	2,767	2,792	2,784

(a) Supply includes production of crude oil (including lease condensates), natural gas plant liquids, biofuels, other liquids, and refinery processing gains.

(b) Includes lease condensate, natural gas plant liquids, other liquids, and refinery processing gain. Includes other unaccounted-for liquids.

 (c) Consumption of petroleum by the OECD countries is synonymous with "petroleum product supplied," defined in the glossary of the EIA *Petroleum Supply Monthly*,

DOE/EIA-0109. Consumption of petroleum by the non-OECD countries is "apparent consumption," which includes internal consumption, refinery fuel and loss, and bunkering.

- = no data available

OECD = Organization for Economic Cooperation and Development: Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Latvia, Lithuania, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovakia, Slovenia, South Korea, Spain, Sweden, Switzerland, Türkiye, United Kingdom, and United States.

OPEC = Organization of the Petroleum Exporting Countries: Algeria, Angola, Congo (Brazzaville), Equatorial Guinea, Gabon, Iran, Iraq, Kuwait, Libya, Nigeria, Saudi Arabia, United Arab Emirates, Venezuela.

Notes: EIA completed modeling and analysis for this report on October 5, 2023.

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 *International Energy Statistics* (<https://www.eia.gov/international/data/world>).

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

Forecasts: EIA Short-Term Integrated Forecasting System.

Table 3b. Non-OPEC Petroleum and Other Liquids Production (million barrels per day)

U.S. Energy Information Administration | Short-Term Energy Outlook - October 2023

	2022				2023				2024				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2022	2023	2024
North America	27.14	27.65	28.27	28.54	28.91	29.26	29.97	30.22	30.08	29.77	30.06	30.49	27.90	29.59	30.10
Canada	5.66	5.51	5.72	5.91	5.79	5.41	5.73	5.97	5.97	5.64	5.83	6.05	5.70	5.73	5.87
Mexico	1.91	1.89	1.90	1.90	2.07	2.16	2.11	2.11	2.11	2.08	2.06	2.03	1.90	2.11	2.07
United States	19.57	20.24	20.65	20.72	21.05	21.69	22.12	22.14	22.00	22.05	22.16	22.40	20.30	21.76	22.16
Central and South America	5.83	6.41	6.87	6.58	6.31	6.98	7.39	6.93	6.69	7.39	7.69	7.27	6.43	6.91	7.26
Argentina	0.77	0.78	0.79	0.82	0.81	0.81	0.83	0.87	0.85	0.87	0.89	0.92	0.79	0.83	0.88
Brazil	3.33	3.79	4.15	3.78	3.55	4.18	4.56	4.04	3.76	4.32	4.60	4.15	3.76	4.09	4.21
Colombia	0.77	0.77	0.78	0.79	0.79	0.81	0.80	0.79	0.78	0.78	0.77	0.78	0.78	0.80	0.78
Ecuador	0.48	0.47	0.49	0.49	0.46	0.48	0.48	0.49	0.49	0.49	0.49	0.50	0.48	0.48	0.49
Guyana	0.12	0.24	0.32	0.35	0.35	0.37	0.40	0.42	0.49	0.61	0.61	0.61	0.26	0.38	0.58
Europe	4.04	3.76	3.81	3.93	4.01	3.92	3.90	4.13	4.16	4.06	3.98	4.24	3.89	3.99	4.11
Norway	1.97	1.74	1.91	1.99	2.03	2.03	1.96	2.08	2.10	2.03	2.04	2.21	1.90	2.02	2.09
United Kingdom	0.97	0.91	0.80	0.84	0.87	0.79	0.83	0.92	0.92	0.91	0.81	0.89	0.88	0.85	0.88
Eurasia	14.39	13.39	13.56	13.90	14.00	13.56	13.39	13.53	13.62	13.68	13.67	13.74	13.81	13.62	13.68
Azerbaijan	0.70	0.67	0.65	0.67	0.65	0.62	0.63	0.63	0.64	0.63	0.64	0.65	0.67	0.63	0.64
Kazakhstan	2.01	1.77	1.62	1.92	2.02	1.97	1.88	1.97	1.97	2.03	2.02	2.08	1.83	1.96	2.03
Russia	11.30	10.59	10.92	10.95	10.95	10.57	10.47	10.52	10.61	10.61	10.62	10.62	10.94	10.63	10.61
Turkmenistan	0.26	0.26	0.26	0.26	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.26	0.27	0.27
Middle East	3.23	3.29	3.34	3.28	3.22	3.22	3.18	3.18	3.21	3.21	3.20	3.20	3.28	3.20	3.21
Oman	1.05	1.07	1.10	1.08	1.07	1.06	1.04	1.03	1.03	1.03	1.03	1.03	1.07	1.05	1.03
Qatar	1.85	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86
Asia and Oceania	9.17	9.16	8.87	9.00	9.21	9.26	9.19	9.28	9.24	9.24	9.23	9.26	9.05	9.23	9.24
Australia	0.44	0.47	0.39	0.43	0.41	0.42	0.41	0.42	0.41	0.41	0.40	0.39	0.43	0.42	0.40
China	5.18	5.18	5.05	5.09	5.32	5.32	5.22	5.32	5.27	5.29	5.29	5.33	5.12	5.29	5.29
India	0.88	0.89	0.87	0.85	0.85	0.90	0.91	0.89	0.91	0.91	0.90	0.90	0.87	0.89	0.91
Indonesia	0.84	0.83	0.81	0.83	0.82	0.85	0.82	0.82	0.81	0.81	0.80	0.80	0.83	0.83	0.81
Malaysia	0.62	0.60	0.58	0.62	0.61	0.58	0.59	0.59	0.59	0.58	0.57	0.57	0.60	0.59	0.58
Africa	1.40	1.43	1.44	1.44	1.38	1.41	1.43	1.43	1.39	1.40	1.41	1.42	1.43	1.41	1.41
Egypt	0.66	0.68	0.67	0.67	0.66	0.67	0.66	0.65	0.61	0.61	0.61	0.61	0.67	0.66	0.61
South Sudan	0.15	0.15	0.16	0.15	0.13	0.13	0.16	0.16	0.16	0.16	0.15	0.15	0.16	0.14	0.15
Total non-OPEC liquids	65.22	65.10	66.14	66.65	67.05	67.61	68.44	68.70	68.39	68.76	69.24	69.62	65.78	67.96	69.01
OPEC non-crude liquids	5.56	5.43	5.48	5.52	5.49	5.31	5.35	5.39	5.48	5.35	5.38	5.42	5.50	5.38	5.41
Non-OPEC + OPEC non-crude	70.77	70.54	71.62	72.17	72.54	72.92	73.79	74.08	73.88	74.11	74.63	75.04	71.28	73.34	74.42
Unplanned non-OPEC Production Outages	0.76	1.31	0.78	0.56	0.56	1.02	0.93	-	-	-	-	-	0.85	-	-

- = no data available

OPEC = Organization of the Petroleum Exporting Countries: Algeria, Angola, Congo (Brazzaville), Equatorial Guinea, Gabon, Iran, Iraq, Kuwait, Libya, Nigeria, Saudi Arabia, United Arab Emirates, Venezuela.

Notes: EIA completed modeling and analysis for this report on October 5, 2023.

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

Supply includes production of crude oil (including lease condensates), natural gas plant liquids, biofuels, other liquids, and refinery processing gains.

Not all countries are shown in each region, and sum of reported country volumes may not equal regional volumes.

Historical data: Latest data available from Energy Information Administration *International Energy Statistics* (<https://www.eia.gov/international/data/world>).

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

Forecasts: EIA Short-Term Integrated Forecasting System.

Table 3c. OPEC Crude Oil (excluding condensates) Production (million barrels per day)
U.S. Energy Information Administration | Short-Term Energy Outlook - October 2023

	2022				2023				2024				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2022	2023	2024
Crude Oil															
Algeria	0.97	1.00	1.02	1.02	1.01	0.98	0.95	-	-	-	-	-	1.00	-	-
Angola	1.15	1.19	1.16	1.10	1.08	1.14	1.14	-	-	-	-	-	1.15	-	-
Congo (Brazzaville)	0.27	0.29	0.28	0.26	0.27	0.25	0.26	-	-	-	-	-	0.27	-	-
Equatorial Guinea	0.09	0.09	0.09	0.07	0.06	0.06	0.06	-	-	-	-	-	0.09	-	-
Gabon	0.19	0.19	0.20	0.21	0.20	0.21	0.20	-	-	-	-	-	0.20	-	-
Iran	2.55	2.53	2.53	2.56	2.60	2.74	2.93	-	-	-	-	-	2.54	-	-
Iraq	4.30	4.42	4.55	4.51	4.41	4.19	4.29	-	-	-	-	-	4.45	-	-
Kuwait	2.61	2.69	2.80	2.72	2.68	2.59	2.55	-	-	-	-	-	2.71	-	-
Libya	1.06	0.76	0.95	1.14	1.14	1.15	1.13	-	-	-	-	-	0.98	-	-
Nigeria	1.27	1.11	0.97	1.07	1.24	1.19	1.21	-	-	-	-	-	1.10	-	-
Saudi Arabia	10.08	10.30	10.85	10.50	10.02	10.18	8.99	-	-	-	-	-	10.43	-	-
United Arab Emirates	2.94	3.04	3.17	3.09	3.06	2.94	2.91	-	-	-	-	-	3.06	-	-
Venezuela	0.70	0.72	0.66	0.69	0.70	0.75	0.77	-	-	-	-	-	0.69	-	-
OPEC Total	28.19	28.33	29.23	28.92	28.46	28.38	27.38	27.48	27.65	27.82	27.95	27.68	28.67	27.92	27.78
Other Liquids (a)	5.56	5.43	5.48	5.52	5.49	5.31	5.35	5.39	5.48	5.35	5.38	5.42	5.50	5.38	5.41
Total OPEC Production	33.75	33.76	34.71	34.43	33.95	33.69	32.73	32.86	33.14	33.18	33.33	33.10	34.17	33.30	33.19
OPEC+ Crude Oil Production	39.43	38.99	40.06	39.78	39.29	38.60	37.33	37.54	37.72	37.90	37.99	37.75	39.57	38.18	37.84
Crude Oil Production Capacity															
Middle East	25.48	25.46	25.55	25.66	25.90	26.17	26.36	26.41	26.89	27.01	27.06	27.08	25.54	26.21	27.01
Other	5.83	5.45	5.35	5.55	5.71	5.78	5.80	5.78	5.72	5.69	5.65	5.61	5.54	5.77	5.67
OPEC Total	31.31	30.91	30.89	31.21	31.61	31.95	32.15	32.19	32.61	32.70	32.72	32.69	31.08	31.98	32.68
Surplus Crude Oil Production Capacity															
Middle East	3.00	2.47	1.65	2.28	3.13	3.52	4.69	4.65	4.90	4.82	4.71	4.95	2.35	4.00	4.84
Other	0.12	0.11	0.01	0.01	0.02	0.05	0.08	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.06
OPEC Total	3.12	2.58	1.67	2.29	3.15	3.57	4.77	4.72	4.96	4.88	4.77	5.01	2.41	4.06	4.90
Unplanned OPEC Production Outages	1.98	2.42	2.50	2.14	1.94	2.13	2.00	-	-	-	-	-	2.26	-	-

(a) Includes lease condensate, natural gas plant liquids, other liquids, refinery processing gain, and other unaccounted-for liquids.

OPEC = Organization of the Petroleum Exporting Countries: Iran, Iraq, Kuwait, Saudi Arabia, and United Arab Emirates (Middle East); Algeria, Angola, Congo (Brazzaville), Equatorial Guinea, Gabon, Libya, Nigeria, and Venezuela (Other).

OPEC+ = OPEC (excluding Iran, Libya, and Venezuela) plus Azerbaijan, Bahrain, Brunei, Kazakhstan, Malaysia, Mexico, Oman, Russia, South Sudan, and Sudan.

Notes: EIA completed modeling and analysis for this report on October 5, 2023.

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

Forecasts are not published for individual OPEC countries.

Historical data: Latest data available from Energy Information Administration *International Energy Statistics* (<https://www.eia.gov/international/data/world>).

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

Forecasts: EIA Short-Term Integrated Forecasting System.

Table 3d. World Petroleum and Other Liquids Consumption (million barrels per day)

U.S. Energy Information Administration | Short-Term Energy Outlook - October 2023

	2022				2023				2024				2022	2023	2024
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4			
North America	24.10	24.20	24.46	24.11	23.78	24.54	24.41	24.42	24.13	24.37	24.64	24.53	24.22	24.29	24.42
Canada	2.24	2.21	2.38	2.30	2.24	2.25	2.34	2.32	2.27	2.22	2.32	2.29	2.28	2.29	2.28
Mexico	1.76	1.99	1.96	1.95	1.87	1.90	1.95	1.96	1.88	1.91	1.91	1.93	1.92	1.92	1.91
United States	20.09	20.00	20.11	19.85	19.66	20.38	20.12	20.13	19.97	20.23	20.40	20.30	20.01	20.07	20.22
Central and South America	6.27	6.43	6.57	6.54	6.41	6.56	6.66	6.59	6.45	6.59	6.70	6.63	6.45	6.56	6.59
Brazil	2.85	2.93	3.02	3.02	2.98	3.03	3.11	3.09	2.98	3.04	3.12	3.10	2.96	3.05	3.06
Europe	13.93	14.19	14.80	14.11	13.81	14.12	14.73	14.50	13.93	14.10	14.52	14.28	14.26	14.29	14.21
Eurasia	4.28	4.43	4.73	4.65	4.34	4.49	4.81	4.72	4.46	4.62	4.94	4.85	4.53	4.59	4.72
Russia	3.27	3.36	3.64	3.50	3.30	3.39	3.69	3.54	3.39	3.48	3.78	3.63	3.44	3.48	3.57
Middle East	8.92	9.28	9.67	9.02	9.16	9.27	9.86	9.28	9.48	9.49	10.03	9.43	9.23	9.39	9.61
Asia and Oceania	36.50	35.62	35.50	36.58	37.82	37.24	36.51	37.49	38.67	38.06	37.24	38.25	36.05	37.26	38.05
China	15.12	15.10	15.09	15.28	15.89	16.08	15.76	15.97	16.29	16.49	16.16	16.38	15.15	15.93	16.33
Japan	3.70	3.03	3.19	3.56	3.72	3.02	3.12	3.45	3.57	2.96	3.06	3.38	3.37	3.32	3.24
India	5.08	5.07	4.84	5.18	5.31	5.48	5.12	5.45	5.66	5.73	5.35	5.69	5.04	5.34	5.61
Africa	4.45	4.45	4.34	4.48	4.53	4.55	4.46	4.62	4.63	4.64	4.56	4.72	4.43	4.54	4.64
Total OECD Liquid Fuels Consumption	45.63	45.11	46.22	45.63	45.19	45.39	46.04	46.26	45.53	45.13	45.94	46.04	45.65	45.72	45.66
Total non-OECD Liquid Fuels Consumption	52.83	53.49	53.86	53.85	54.65	55.38	55.40	55.35	56.23	56.74	56.68	56.65	53.51	55.20	56.57
Total World Liquid Fuels Consumption	98.46	98.60	100.08	99.48	99.84	100.77	101.44	101.62	101.75	101.87	102.62	102.69	99.16	100.92	102.24
Real Gross Domestic Product (a)															
World Index, 2015 Q1 = 100	121.9	122.3	123.5	124.2	125.2	126.5	127.0	127.5	128.0	129.2	130.4	131.7	123.0	126.6	129.8
Percent change from prior year	4.4	3.4	3.3	2.2	2.7	3.5	2.8	2.7	2.2	2.1	2.7	3.3	3.3	2.9	2.6
OECD Index, 2015 = 100	113.4	115.0	115.7	115.7	115.7	115.7	115.7	115.7	115.7	115.7	115.7	115.7	113.4	115.0	115.7
Percent change from prior year	2.9	1.4	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	2.9	1.4	0.7
Non-OECD Index, 2015 = 100	128.9	134.2	139.7	139.7	139.7	139.7	139.7	139.7	139.7	139.7	139.7	139.7	128.9	134.2	139.7
Percent change from prior year	3.6	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	3.6	4.1	4.1
Nominal U.S. Dollar Index (b)															
Index, 2015 Q1 = 100	109.5	112.8	117.1	118.4	114.1	113.5	114.1	115.3	115.3	115.1	114.7	114.2	114.5	114.2	114.8
Percent change from prior year	2.8	6.4	9.0	8.6	4.2	0.6	-2.5	-2.6	1.0	1.5	0.5	-1.0	6.7	-0.2	0.5

(a) GDP values for the individual countries in the indexes are converted to U.S. dollars at purchasing power parity and then summed to create values for the world, OECD, and non-OECD. Historical and forecast data are from Oxford Economics, and quarterly values are reindexed to 2015 Q1 by EIA.

(b) Data source is the Board of Governors of the U.S. Federal Reserve System Nominal Broad Trade-Weighted Dollar Index. An increase in the index indicates an appreciation of the U.S. dollar against a basket of currencies and a decrease in the index indicates a depreciation of the U.S. dollar against a basket of currencies. Historical and forecast data are from Oxford Economics, and quarterly values are reindexed to 2015 Q1 by EIA.

- = no data available

OECD = Organization for Economic Cooperation and Development: Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Latvia, Lithuania, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovakia, Slovenia, South Korea, Spain, Sweden, Switzerland, Türkiye, United Kingdom, and United States.

Notes: EIA completed modeling and analysis for this report on October 5, 2023.

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

Historical data: Energy Information Administration *International Energy Statistics* (<https://www.eia.gov/international/data/world>) and Oxford Economics.

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

Forecasts: EIA Short-Term Integrated Forecasting System.

Table 4a. U.S. Petroleum and Other Liquids Supply, Consumption, and Inventories
U.S. Energy Information Administration | Short-Term Energy Outlook - October 2023

	2022				2023				2024				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2022	2023	2024
Supply (million barrels per day)															
Crude Oil Supply															
Domestic Production (a)	11.52	11.77	12.05	12.30	12.63	12.75	13.13	13.16	<i>13.07</i>	<i>13.02</i>	<i>13.07</i>	<i>13.31</i>	11.91	12.92	13.12
Alaska	0.45	0.44	0.42	0.44	0.44	0.43	0.42	0.43	<i>0.43</i>	<i>0.41</i>	<i>0.40</i>	<i>0.41</i>	0.44	0.43	0.41
Federal Gulf of Mexico (b)	1.66	1.70	1.77	1.79	1.87	1.77	1.95	1.90	<i>1.90</i>	<i>1.88</i>	<i>1.83</i>	<i>1.88</i>	1.73	1.87	1.87
Lower 48 States (excl GOM)	9.42	9.63	9.85	10.06	10.31	10.55	10.77	10.82	<i>10.74</i>	<i>10.73</i>	<i>10.84</i>	<i>11.02</i>	9.74	10.62	10.84
Transfers to Crude Oil Supply	0.41	0.37	0.42	0.48	0.39	0.51	0.48	0.38	<i>0.35</i>	<i>0.36</i>	<i>0.36</i>	<i>0.34</i>	0.42	0.44	0.35
Crude Oil Net Imports (c)	3.06	2.81	2.75	2.20	2.27	2.51	2.51	2.40	<i>2.36</i>	<i>2.78</i>	<i>2.74</i>	<i>2.04</i>	2.71	2.43	2.48
SPR Net Withdrawals	0.31	0.80	0.84	0.48	0.01	0.26	-0.05	-0.01	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	0.61	0.05	0.00
Commercial Inventory Net Withdrawals	0.08	-0.04	-0.12	-0.01	-0.39	0.12	0.44	-0.06	<i>-0.32</i>	<i>0.11</i>	<i>0.19</i>	<i>-0.08</i>	-0.02	0.03	-0.02
Crude Oil Adjustment (d)	0.20	0.45	0.38	0.41	0.34	0.00	-0.04	0.31	<i>0.37</i>	<i>0.37</i>	<i>0.36</i>	<i>0.39</i>	0.36	0.15	0.37
Total Crude Oil Input to Refineries	15.58	16.15	16.31	15.86	15.25	16.15	16.48	15.80	<i>15.49</i>	<i>16.28</i>	<i>16.37</i>	<i>15.66</i>	15.98	15.92	15.95
Other Supply															
Refinery Processing Gain	0.97	1.08	1.06	1.01	0.97	1.01	1.04	1.01	<i>0.98</i>	<i>1.01</i>	<i>1.01</i>	<i>1.00</i>	1.03	1.01	1.00
Natural Gas Plant Liquids Production	5.66	5.96	6.13	5.97	6.01	6.42	6.42	6.46	<i>6.45</i>	<i>6.49</i>	<i>6.54</i>	<i>6.57</i>	5.93	6.33	6.52
Renewables and Oxygenate Production (e)	1.20	1.20	1.18	1.23	1.24	1.29	1.31	1.29	<i>1.29</i>	<i>1.31</i>	<i>1.32</i>	<i>1.30</i>	1.20	1.29	1.31
Fuel Ethanol Production	1.02	1.01	0.97	1.01	1.00	1.00	1.03	1.00	<i>0.98</i>	<i>0.98</i>	<i>0.99</i>	<i>0.97</i>	1.00	1.01	0.98
Petroleum Products Adjustment (f)	0.22	0.23	0.22	0.22	0.20	0.22	0.22	0.22	<i>0.21</i>	<i>0.22</i>	<i>0.22</i>	<i>0.22</i>	0.22	0.21	0.22
Petroleum Products Transfers to Crude Oil Supply	-0.41	-0.37	-0.42	-0.48	-0.39	-0.51	-0.48	-0.38	<i>-0.35</i>	<i>-0.36</i>	<i>-0.36</i>	<i>-0.34</i>	-0.42	-0.44	-0.35
Product Net Imports (c)	-3.54	-4.02	-4.12	-3.90	-3.91	-3.71	-4.42	-4.69	<i>-4.39</i>	<i>-4.29</i>	<i>-4.53</i>	<i>-4.57</i>	-3.90	-4.19	-4.45
Hydrocarbon Gas Liquids	-2.07	-2.36	-2.25	-2.26	-2.47	-2.39	-2.49	-2.59	<i>-2.66</i>	<i>-2.62</i>	<i>-2.61</i>	<i>-2.61</i>	-2.24	-2.48	-2.63
Unfinished Oils	0.17	0.29	0.29	0.30	0.28	0.27	0.26	0.28	<i>0.24</i>	<i>0.30</i>	<i>0.32</i>	<i>0.21</i>	0.26	0.27	0.27
Other HC/Oxygenates	-0.07	-0.10	-0.06	-0.02	-0.05	-0.07	-0.07	-0.06	<i>-0.07</i>	<i>-0.05</i>	<i>-0.04</i>	<i>-0.04</i>	-0.06	-0.06	-0.05
Motor Gasoline Blend Comp.	0.38	0.60	0.48	0.40	0.45	0.67	0.56	0.28	<i>0.48</i>	<i>0.65</i>	<i>0.51</i>	<i>0.33</i>	0.46	0.49	0.49
Finished Motor Gasoline	-0.69	-0.75	-0.79	-0.84	-0.75	-0.58	-0.74	-0.72	<i>-0.86</i>	<i>-0.75</i>	<i>-0.75</i>	<i>-0.76</i>	-0.77	-0.70	-0.78
Jet Fuel	-0.03	-0.06	-0.10	-0.03	-0.05	0.01	-0.04	-0.03	<i>0.01</i>	<i>0.03</i>	<i>-0.01</i>	<i>0.00</i>	-0.06	-0.03	0.01
Distillate Fuel Oil	-0.74	-1.08	-1.24	-1.00	-0.76	-0.97	-1.11	-1.03	<i>-0.84</i>	<i>-1.10</i>	<i>-1.17</i>	<i>-0.98</i>	-1.02	-0.97	-1.02
Residual Fuel Oil	0.09	0.08	0.10	0.09	0.01	-0.04	-0.06	-0.01	<i>0.02</i>	<i>0.02</i>	<i>-0.03</i>	<i>0.08</i>	0.09	-0.02	0.02
Other Oils (g)	-0.58	-0.64	-0.53	-0.54	-0.58	-0.61	-0.73	-0.81	<i>-0.71</i>	<i>-0.77</i>	<i>-0.74</i>	<i>-0.79</i>	-0.57	-0.68	-0.75
Product Inventory Net Withdrawals	0.42	-0.25	-0.26	-0.06	0.30	-0.49	-0.46	0.41	<i>0.29</i>	<i>-0.44</i>	<i>-0.17</i>	<i>0.46</i>	-0.04	-0.06	0.03
Total Supply	20.09	20.00	20.11	19.85	19.67	20.38	20.12	20.13	<i>19.97</i>	<i>20.23</i>	<i>20.40</i>	<i>20.30</i>	20.01	20.08	20.22
Consumption (million barrels per day)															
Hydrocarbon Gas Liquids	3.77	3.18	3.17	3.32	3.40	3.36	3.37	3.65	<i>3.76</i>	<i>3.37</i>	<i>3.39</i>	<i>3.76</i>	3.36	3.45	3.57
Other HC/Oxygenates	0.14	0.17	0.17	0.19	0.22	0.28	0.24	0.24	<i>0.25</i>	<i>0.27</i>	<i>0.26</i>	<i>0.28</i>	0.17	0.25	0.27
Unfinished Oils	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	0.00	0.00	0.00
Motor Gasoline	8.57	9.00	8.93	8.74	8.67	9.13	8.87	8.70	<i>8.41</i>	<i>8.85</i>	<i>8.92</i>	<i>8.57</i>	8.81	8.84	8.69
Fuel Ethanol blended into Motor Gasoline	0.88	0.93	0.92	0.93	0.90	0.94	0.94	0.90	<i>0.87</i>	<i>0.92</i>	<i>0.93</i>	<i>0.89</i>	0.91	0.92	0.90
Jet Fuel	1.45	1.61	1.60	1.58	1.55	1.67	1.74	1.64	<i>1.67</i>	<i>1.78</i>	<i>1.80</i>	<i>1.75</i>	1.56	1.65	1.75
Distillate Fuel Oil	4.22	3.97	3.91	4.00	4.01	3.93	3.80	3.97	<i>4.05</i>	<i>3.94</i>	<i>3.88</i>	<i>4.01</i>	4.03	3.92	3.97
Residual Fuel Oil	0.33	0.30	0.38	0.30	0.29	0.22	0.24	0.27	<i>0.25</i>	<i>0.24</i>	<i>0.25</i>	<i>0.29</i>	0.33	0.26	0.26
Other Oils (g)	1.61	1.78	1.94	1.70	1.53	1.79	1.86	1.66	<i>1.55</i>	<i>1.77</i>	<i>1.90</i>	<i>1.64</i>	1.76	1.71	1.72
Total Consumption	20.09	20.00	20.11	19.85	19.66	20.38	20.12	20.13	<i>19.97</i>	<i>20.23</i>	<i>20.40</i>	<i>20.30</i>	20.01	20.07	20.22
Total Petroleum and Other Liquids Net Imports	-0.48	-1.21	-1.37	-1.69	-1.64	-1.20	-1.91	-2.28	<i>-2.02</i>	<i>-1.51</i>	<i>-1.79</i>	<i>-2.53</i>	-1.19	-1.76	-1.96
End-of-period Inventories (million barrels)															
Commercial Inventory															
Crude Oil (excluding SPR)	414.2	417.8	429.0	430.1	465.4	454.7	414.2	419.9	<i>448.6</i>	<i>438.3</i>	<i>420.4</i>	<i>427.7</i>	430.1	419.9	427.7
Hydrocarbon Gas Liquids	142.1	186.7	243.7	211.1	174.3	225.4	269.1	227.3	<i>188.0</i>	<i>235.0</i>	<i>274.0</i>	<i>228.3</i>	211.1	227.3	228.3
Unfinished Oils	88.1	88.9	82.3	86.4	88.6	87.0	84.3	80.1	<i>90.7</i>	<i>87.9</i>	<i>86.5</i>	<i>78.8</i>	86.4	80.1	78.8
Other HC/Oxygenates	34.4	29.7	27.3	31.6	34.3	30.1	29.7	30.0	<i>32.1</i>	<i>30.8</i>	<i>30.5</i>	<i>30.8</i>	31.6	30.0	30.8
Total Motor Gasoline	238.5	221.0	209.5	224.4	225.3	223.2	227.1	234.9	<i>234.9</i>	<i>231.6</i>	<i>219.7</i>	<i>231.3</i>	224.4	234.9	231.3
Finished Motor Gasoline	17.3	17.1	17.6	17.2	14.7	17.6	17.6	20.0	<i>17.3</i>	<i>17.9</i>	<i>19.3</i>	<i>21.6</i>	17.2	20.0	21.6
Motor Gasoline Blend Comp.	221.2	203.9	191.9	207.2	210.6	205.6	209.5	214.9	<i>217.5</i>	<i>213.7</i>	<i>200.3</i>	<i>209.7</i>	207.2	214.9	209.7
Jet Fuel	35.6	39.4	36.5	35.0	37.7	42.7	42.6	39.0	<i>38.4</i>	<i>38.1</i>	<i>38.3</i>	<i>35.4</i>	35.0	39.0	35.4
Distillate Fuel Oil	114.7	111.3	110.5	118.9	112.3	112.6	118.7	121.8	<i>112.9</i>	<i>116.3</i>	<i>117.6</i>	<i>119.1</i>	118.9	121.8	119.1
Residual Fuel Oil	28.1	29.3	27.4	30.7	29.6	30.4	27.5	26.9	<i>28.1</i>	<i>27.9</i>	<i>26.1</i>	<i>25.4</i>	30.7	26.9	25.4
Other Oils (g)	58.6	56.3	49.3	54.3	63.3	58.3	52.5	53.6	<i>62.5</i>	<i>60.1</i>	<i>50.7</i>	<i>52.0</i>	54.3	53.6	52.0
Total Commercial Inventory	1154.2	1180.4	1215.6	1222.6	1230.8	1264.4	1265.7	1233.5	<i>1236.2</i>	<i>1266.1</i>	<i>1263.9</i>	<i>1228.8</i>	1222.6	1233.5	1228

Table 4b. U.S. Hydrocarbon Gas Liquids (HGL) and Petroleum Refinery Balances (million barrels per day, except inventories and utilization factor)
 U.S. Energy Information Administration | Short-Term Energy Outlook - October 2023

	2022				2023				2024				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2022	2023	2024
HGL Production															
Natural Gas Processing Plants															
Ethane	2.35	2.45	2.42	2.39	2.49	2.65	2.64	2.69	2.68	2.70	2.71	2.72	2.41	2.62	2.70
Propane	1.79	1.86	1.94	1.90	1.89	2.00	2.02	2.02	2.02	2.02	2.03	2.06	1.87	1.98	2.03
Butanes	0.93	0.99	1.03	1.00	0.99	1.06	1.08	1.07	1.09	1.09	1.09	1.11	0.99	1.05	1.09
Natural Gasoline (Pentanes Plus)	0.59	0.67	0.74	0.67	0.64	0.73	0.68	0.68	0.66	0.69	0.71	0.69	0.67	0.68	0.69
Refinery and Blender Net Production															
Ethane/Ethylene	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01
Propane	0.27	0.29	0.29	0.27	0.27	0.29	0.29	0.27	0.26	0.27	0.28	0.26	0.28	0.28	0.27
Propylene (refinery-grade)	0.28	0.28	0.26	0.23	0.24	0.26	0.26	0.28	0.28	0.28	0.27	0.27	0.26	0.26	0.28
Butanes/Butylenes	-0.07	0.26	0.19	-0.15	-0.05	0.28	0.19	-0.19	-0.08	0.27	0.20	-0.19	0.06	0.06	0.05
Renewable Fuels and Oxygenate Plant Net Production															
Natural Gasoline (Pentanes Plus)	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
HGL Net Imports															
Ethane	-0.40	-0.40	-0.42	-0.45	-0.50	-0.49	-0.47	-0.47	-0.49	-0.49	-0.49	-0.52	-0.42	-0.48	-0.50
Propane/Propylene	-1.20	-1.34	-1.27	-1.27	-1.40	-1.40	-1.48	-1.48	-1.50	-1.44	-1.45	-1.42	-1.27	-1.44	-1.45
Butanes/Butylenes	-0.29	-0.45	-0.37	-0.38	-0.42	-0.41	-0.44	-0.47	-0.46	-0.51	-0.50	-0.49	-0.37	-0.44	-0.49
Natural Gasoline (Pentanes Plus)	-0.17	-0.17	-0.19	-0.15	-0.15	-0.09	-0.10	-0.17	-0.21	-0.17	-0.18	-0.19	-0.17	-0.13	-0.19
HGL Refinery and Blender Net Inputs															
Butanes/Butylenes	0.43	0.29	0.33	0.54	0.48	0.29	0.32	0.50	0.42	0.29	0.32	0.52	0.40	0.40	0.39
Natural Gasoline (Pentanes Plus)	0.17	0.17	0.19	0.17	0.18	0.20	0.20	0.18	0.17	0.17	0.18	0.18	0.17	0.19	0.18
HGL Consumption															
Ethane/Ethylene	2.10	2.06	1.99	1.94	1.99	2.19	2.20	2.19	2.20	2.19	2.20	2.22	2.02	2.14	2.20
Propane	1.16	0.59	0.64	0.95	0.98	0.62	0.63	0.96	1.06	0.64	0.64	1.04	0.83	0.79	0.85
Propylene (refinery-grade)	0.30	0.29	0.28	0.24	0.25	0.27	0.28	0.29	0.30	0.30	0.29	0.29	0.28	0.27	0.29
Butanes/Butylenes	0.21	0.23	0.26	0.20	0.18	0.28	0.28	0.21	0.21	0.24	0.26	0.21	0.23	0.24	0.23
Natural Gasoline (Pentanes Plus)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HGL Inventories (million barrels)															
Ethane	51.2	51.7	49.9	54.3	53.0	54.2	48.5	51.5	52.2	53.4	55.6	55.7	51.8	51.8	54.2
Propane	36.3	54.1	82.0	76.7	55.8	79.2	96.7	81.9	55.1	72.1	90.4	76.4	76.7	81.9	76.4
Propylene (at refineries only)	1.1	1.2	1.1	1.3	1.1	1.1	1.4	1.5	1.4	1.7	1.8	1.7	1.3	1.5	1.7
Butanes/Butylenes	35.7	58.8	81.3	54.5	40.2	70.1	90.2	61.3	52.3	79.9	98.0	69.1	54.5	61.3	69.1
Natural Gasoline (Pentanes Plus)	19.4	22.7	27.2	25.1	22.9	23.4	31.9	30.2	27.0	27.5	27.6	26.1	25.1	30.2	26.1
Refinery and Blender Net Inputs															
Crude Oil	15.58	16.15	16.31	15.86	15.25	16.15	16.48	15.80	15.49	16.28	16.37	15.66	15.98	15.92	15.95
Hydrocarbon Gas Liquids	0.59	0.45	0.52	0.70	0.66	0.49	0.52	0.68	0.59	0.46	0.50	0.70	0.57	0.59	0.56
Other Hydrocarbons/Oxygenates	1.13	1.20	1.19	1.17	1.13	1.20	1.22	1.17	1.14	1.20	1.21	1.16	1.17	1.18	1.18
Unfinished Oils	-0.06	0.21	0.24	0.15	0.19	0.21	0.10	0.28	0.09	0.31	0.32	0.29	0.14	0.20	0.25
Motor Gasoline Blend Components	0.30	0.81	0.64	0.29	0.34	0.85	0.68	0.45	0.57	0.80	0.75	0.45	0.51	0.58	0.64
Aviation Gasoline Blend Components	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Refinery and Blender Net Inputs	17.53	18.83	18.91	18.17	17.58	18.90	18.99	18.39	17.88	19.05	19.16	18.25	18.36	18.47	18.59
Refinery Processing Gain	0.97	1.08	1.06	1.01	0.97	1.01	1.04	1.01	0.98	1.01	1.01	1.00	1.03	1.01	1.00
Refinery and Blender Net Production															
Hydrocarbon Gas Liquids	0.49	0.84	0.75	0.36	0.47	0.83	0.75	0.36	0.46	0.83	0.76	0.36	0.61	0.60	0.60
Finished Motor Gasoline	9.21	9.74	9.74	9.58	9.28	9.83	9.74	9.62	9.33	9.67	9.74	9.52	9.57	9.62	9.57
Jet Fuel	1.48	1.71	1.67	1.60	1.62	1.72	1.78	1.64	1.65	1.75	1.81	1.71	1.62	1.69	1.73
Distillate Fuel	4.79	5.01	5.15	5.09	4.69	4.91	4.97	5.03	4.79	5.08	5.07	5.01	5.01	4.90	4.99
Residual Fuel	0.27	0.23	0.26	0.25	0.27	0.27	0.27	0.27	0.25	0.22	0.25	0.21	0.25	0.27	0.23
Other Oils (a)	2.26	2.40	2.40	2.30	2.21	2.35	2.53	2.48	2.36	2.52	2.55	2.44	2.34	2.39	2.47
Total Refinery and Blender Net Production	18.50	19.92	19.97	19.18	18.54	19.91	20.03	19.40	18.86	20.06	20.18	19.25	19.40	19.48	19.59
Refinery Distillation Inputs	16.12	16.66	16.82	16.34	15.78	16.75	16.94	16.19	15.89	16.66	16.80	16.05	16.48	16.42	16.35
Refinery Operable Distillation Capacity	17.93	17.93	17.98	18.01	18.12	18.27	18.30	18.31	18.31	18.31	18.32	18.33	17.96	18.25	18.32
Refinery Distillation Utilization Factor	0.90	0.93	0.94	0.91	0.87	0.92	0.93	0.88	0.87	0.91	0.92	0.88	0.92	0.90	0.89

(a) "Other Oils" includes aviation gasoline blend components, finished aviation gasoline, kerosene, petrochemical feedstocks, special naphthas, lubricants, waxes, petroleum coke, asphalt and road oil, still gas, and miscellaneous products.

- = no data available

Notes: EIA completed modeling and analysis for this report on October 5, 2023.

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.

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

Forecasts: EIA Short-Term Integrated Forecasting System.

Table 4c. U.S. Regional Motor Gasoline Prices and Inventories

U.S. Energy Information Administration | Short-Term Energy Outlook - October 2023

	2022				2023				2024				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2022	2023	2024
Prices (cents per gallon)															
Refiner Wholesale Price	278	376	311	267	262	265	296	283	275	295	289	269	309	276	282
Gasoline Regular Grade Retail Prices Including Taxes															
PADD 1	364	438	393	341	330	344	361	355	351	367	361	347	384	348	356
PADD 2	352	436	397	345	324	348	360	354	349	369	364	341	383	347	356
PADD 3	341	413	358	300	302	315	334	327	322	341	336	315	353	320	329
PADD 4	360	446	434	358	357	359	392	385	360	382	383	361	401	373	372
PADD 5	452	543	511	478	418	452	480	492	452	469	463	433	497	461	454
U.S. Average	371	450	408	357	338	358	376	374	363	381	376	355	397	362	369
Gasoline All Grades Including Taxes	380	460	419	369	349	369	387	387	375	393	388	368	408	373	381
End-of-period Inventories (million barrels)															
Total Gasoline Inventories															
PADD 1	57.0	53.6	54.3	56.4	52.7	57.1	59.4	63.0	60.9	63.7	57.7	60.3	56.4	63.0	60.3
PADD 2	56.5	46.7	44.1	46.6	49.5	45.2	45.8	49.6	48.6	43.7	44.0	51.6	46.6	49.6	51.6
PADD 3	87.0	83.9	80.2	81.4	84.1	85.0	85.7	83.8	87.1	87.2	81.4	81.0	81.4	83.8	81.0
PADD 4	8.1	6.4	6.4	7.4	7.8	6.8	6.8	8.1	8.4	7.2	7.2	7.8	7.4	8.1	7.8
PADD 5	29.9	30.3	24.5	32.6	31.2	29.0	29.4	30.3	29.8	29.9	29.4	30.6	32.6	30.3	30.6
U.S. Total	238.5	221.0	209.5	224.4	225.3	223.2	227.1	234.9	234.9	231.6	219.7	231.3	224.4	234.9	231.3
Finished Gasoline Inventories															
U.S. Total	17.3	17.1	17.6	17.2	14.7	17.6	17.6	20.0	17.3	17.9	19.3	21.6	17.2	20.0	21.6
Gasoline Blending Components Inventories															
U.S. Total	221.2	203.9	191.9	207.2	210.6	205.6	209.5	214.9	217.5	213.7	200.3	209.7	207.2	214.9	209.7

- = no data available

Notes: EIA completed modeling and analysis for this report on October 5, 2023.

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

Prices are not adjusted for inflation.

PADD = Petroleum Administration for Defense District (PADD).

See "Petroleum for Administration Defense District" in EIA's Energy Glossary (<http://www.eia.doe.gov/glossary/index.html>) for a list of States in each region.

Historical data: Latest data available from Energy Information Administration databases supporting the following reports: *Petroleum Marketing Monthly*, DOE/EIA-0380;

Petroleum Supply Monthly, DOE/EIA-0109; *Petroleum Supply Annual*, DOE/EIA-0340/2; and *Weekly Petroleum Status Report*, DOE/EIA-0208.

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

Forecasts: EIA Short-Term Integrated Forecasting System.

Table 5a. U.S. Natural Gas Supply, Consumption, and Inventories
U.S. Energy Information Administration | Short-Term Energy Outlook - October 2023

	2022				2023				2024				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2022	2023	2024
Supply (billion cubic feet per day)															
Total Marketed Production	104.80	107.29	109.76	110.16	111.18	112.52	113.76	<i>114.32</i>	<i>114.18</i>	<i>114.26</i>	<i>114.28</i>	<i>115.72</i>	108.02	<i>112.96</i>	<i>114.61</i>
Alaska	1.06	1.00	0.96	1.07	1.08	1.01	0.92	<i>1.02</i>	<i>1.03</i>	<i>0.95</i>	<i>0.87</i>	<i>1.00</i>	1.02	<i>1.01</i>	<i>0.96</i>
Federal GOM (a)	2.06	2.10	2.16	2.12	2.13	1.89	2.09	<i>2.10</i>	<i>2.04</i>	<i>1.99</i>	<i>1.90</i>	<i>1.92</i>	2.11	<i>2.05</i>	<i>1.96</i>
Lower 48 States (excl GOM)	101.69	104.19	106.64	106.97	107.97	109.63	110.75	<i>111.19</i>	<i>111.11</i>	<i>111.32</i>	<i>111.51</i>	<i>112.81</i>	104.89	<i>109.90</i>	<i>111.69</i>
Total Dry Gas Production	96.63	98.92	101.20	101.57	102.44	103.18	104.37	<i>104.87</i>	<i>104.74</i>	<i>104.81</i>	<i>104.83</i>	<i>106.15</i>	99.60	<i>103.72</i>	<i>105.13</i>
LNG Gross Imports	0.15	0.01	0.07	0.05	0.09	0.02	0.04	<i>0.06</i>	<i>0.10</i>	<i>0.04</i>	<i>0.04</i>	<i>0.06</i>	0.07	<i>0.05</i>	<i>0.06</i>
LNG Gross Exports	11.50	10.80	9.74	10.35	11.45	11.76	11.37	<i>11.90</i>	<i>12.30</i>	<i>12.61</i>	<i>13.09</i>	<i>14.61</i>	10.59	<i>11.62</i>	<i>13.15</i>
Pipeline Gross Imports	8.89	7.73	7.84	8.41	8.45	7.32	7.75	<i>7.58</i>	<i>8.36</i>	<i>7.02</i>	<i>7.26</i>	<i>7.50</i>	8.22	<i>7.77</i>	<i>7.53</i>
Pipeline Gross Exports	8.46	8.52	8.13	8.19	8.91	8.73	9.16	<i>9.31</i>	<i>9.52</i>	<i>8.89</i>	<i>9.21</i>	<i>9.64</i>	8.32	<i>9.03</i>	<i>9.32</i>
Supplemental Gaseous Fuels	0.19	0.20	0.20	0.20	0.22	0.17	0.21	<i>0.20</i>	<i>0.20</i>	<i>0.20</i>	<i>0.20</i>	<i>0.21</i>	0.20	<i>0.20</i>	<i>0.20</i>
Net Inventory Withdrawals	20.14	-10.25	-8.94	2.33	11.97	-11.69	-6.48	<i>2.35</i>	<i>14.24</i>	<i>-12.24</i>	<i>-6.54</i>	<i>2.74</i>	0.74	<i>-1.00</i>	<i>-0.46</i>
Total Supply	106.04	77.30	82.49	94.03	102.81	78.50	85.35	<i>93.85</i>	<i>105.82</i>	<i>78.33</i>	<i>83.49</i>	<i>92.41</i>	89.91	<i>90.09</i>	<i>90.00</i>
Balancing Item (b)	-1.24	-1.28	-1.73	-1.57	0.18	-0.54	-1.51	<i>-1.78</i>	<i>-2.23</i>	<i>-1.71</i>	<i>-1.67</i>	<i>-0.86</i>	-1.46	<i>-0.92</i>	<i>-1.62</i>
Total Primary Supply	104.81	76.02	80.76	92.46	102.99	77.95	83.84	<i>92.08</i>	<i>103.59</i>	<i>76.62</i>	<i>81.82</i>	<i>91.55</i>	88.46	<i>89.17</i>	<i>88.38</i>
Consumption (billion cubic feet per day)															
Residential	25.97	7.80	3.56	17.28	23.50	7.29	3.72	<i>16.07</i>	<i>24.74</i>	<i>7.60</i>	<i>3.85</i>	<i>16.40</i>	13.60	<i>12.60</i>	<i>13.13</i>
Commercial	15.55	6.65	4.74	11.61	14.51	6.43	4.92	<i>11.03</i>	<i>14.74</i>	<i>6.54</i>	<i>5.13</i>	<i>11.25</i>	9.61	<i>9.20</i>	<i>9.41</i>
Industrial	25.73	22.46	21.68	23.72	24.83	22.42	21.68	<i>23.62</i>	<i>24.55</i>	<i>21.55</i>	<i>21.28</i>	<i>23.57</i>	23.39	<i>23.13</i>	<i>22.73</i>
Electric Power (c)	28.39	30.99	42.36	30.94	30.78	33.34	44.76	<i>32.25</i>	<i>29.99</i>	<i>32.41</i>	<i>42.83</i>	<i>31.14</i>	33.20	<i>35.31</i>	<i>34.11</i>
Lease and Plant Fuel	5.00	5.12	5.24	5.26	5.31	5.37	5.43	<i>5.46</i>	<i>5.45</i>	<i>5.46</i>	<i>5.46</i>	<i>5.53</i>	5.16	<i>5.39</i>	<i>5.47</i>
Pipeline and Distribution Use	3.98	2.83	3.01	3.48	3.87	2.93	3.14	<i>3.47</i>	<i>3.92</i>	<i>2.87</i>	<i>3.07</i>	<i>3.46</i>	3.32	<i>3.35</i>	<i>3.33</i>
Vehicle Use	0.17	0.17	0.17	0.17	0.18	0.18	0.18	<i>0.18</i>	<i>0.20</i>	<i>0.20</i>	<i>0.20</i>	<i>0.20</i>	0.17	<i>0.18</i>	<i>0.20</i>
Total Consumption	104.81	76.02	80.76	92.46	102.99	77.95	83.84	<i>92.08</i>	<i>103.59</i>	<i>76.62</i>	<i>81.82</i>	<i>91.55</i>	88.46	<i>89.17</i>	<i>88.38</i>
End-of-period Inventories (billion cubic feet)															
Working Gas Inventory	1,401	2,325	3,146	2,925	1,850	2,900	3,495	<i>3,279</i>	<i>1,982</i>	<i>3,097</i>	<i>3,698</i>	<i>3,446</i>	2,925	<i>3,279</i>	<i>3,446</i>
East Region (d)	242	482	759	698	334	646	851	<i>779</i>	<i>382</i>	<i>684</i>	<i>871</i>	<i>798</i>	698	<i>779</i>	<i>798</i>
Midwest Region (d)	296	557	917	831	417	701	996	<i>904</i>	<i>442</i>	<i>736</i>	<i>1,018</i>	<i>921</i>	831	<i>904</i>	<i>921</i>
South Central Region (d)	587	885	1,006	1,042	919	1,136	1,094	<i>1,122</i>	<i>838</i>	<i>1,201</i>	<i>1,236</i>	<i>1,210</i>	1,042	<i>1,122</i>	<i>1,210</i>
Mountain Region (d)	90	137	184	158	79	171	240	<i>192</i>	<i>117</i>	<i>160</i>	<i>223</i>	<i>194</i>	158	<i>192</i>	<i>194</i>
Pacific Region (d)	165	240	247	167	74	216	278	<i>250</i>	<i>180</i>	<i>287</i>	<i>317</i>	<i>293</i>	167	<i>250</i>	<i>293</i>
Alaska	21	25	32	30	27	30	37	<i>31</i>	<i>25</i>	<i>28</i>	<i>33</i>	<i>29</i>	30	<i>31</i>	<i>29</i>

(a) Marketed production from U.S. Federal leases in the Gulf of Mexico.

(b) The balancing item represents the difference between the sum of the components of natural gas supply and the sum of components of natural gas demand.

(c) Natural gas used for electricity generation and (a limited amount of) useful thermal output by electric utilities and independent power producers.

(d) For a list of States in each inventory region refer to *Weekly Natural Gas Storage Report, Notes and Definitions* (<http://ir.eia.gov/ngs/notes.html>).

- = no data available

LNG: liquefied natural gas.

Notes: EIA completed modeling and analysis for this report on October 5, 2023.

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: *Natural Gas Monthly*, DOE/EIA-0130; and *Electric Power Monthly*, Minor discrepancies with published historical data are due to independent rounding.

Forecasts: EIA Short-Term Integrated Forecasting System.

Table 5b. U.S. Regional Natural Gas Prices (dollars per thousand cubic feet)

U.S. Energy Information Administration | Short-Term Energy Outlook - October 2023

	2022				2023				2024				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2022	2023	2024
Wholesale/Spot															
Henry Hub Spot Price	4.84	7.77	8.30	5.76	2.76	2.25	2.69	3.15	3.43	2.97	3.33	3.68	6.67	2.71	3.35
Residential Retail															
New England	17.69	20.92	26.28	21.48	21.06	20.48	22.38	17.10	16.69	17.65	20.96	16.52	19.77	19.75	17.09
Middle Atlantic	12.78	15.58	23.79	16.88	15.61	16.05	20.48	13.13	11.92	13.54	18.93	12.78	15.15	15.24	12.92
E. N. Central	9.85	14.88	25.94	13.23	11.06	13.35	21.81	9.92	8.69	12.07	20.64	9.73	12.51	11.62	10.22
W. N. Central	11.30	15.08	24.74	13.24	13.34	15.53	22.75	11.35	9.85	12.76	20.51	10.58	13.09	13.48	11.07
S. Atlantic	13.85	21.38	31.73	17.21	17.32	20.87	27.48	14.62	13.69	18.59	26.31	14.83	17.11	17.61	15.66
E. S. Central	11.69	17.04	26.25	15.32	13.80	16.69	21.83	11.76	10.68	14.75	21.72	11.96	14.20	13.94	12.24
W. S. Central	12.55	20.70	30.82	17.46	14.59	19.75	27.24	13.74	10.66	15.88	22.93	13.10	16.25	16.07	13.05
Mountain	10.31	12.82	19.22	13.40	12.50	13.86	17.99	11.66	10.90	13.11	17.81	11.57	12.36	12.83	11.98
Pacific	17.02	17.75	20.46	18.89	20.22	17.09	17.39	15.50	16.02	15.59	16.41	15.40	18.14	18.00	15.80
U.S. Average	12.30	16.51	24.78	15.56	14.70	16.19	21.41	12.56	11.47	14.22	20.01	12.34	14.77	14.73	12.77
Commercial Retail															
New England	12.68	14.64	16.13	15.77	15.20	13.67	12.70	11.31	11.45	11.79	11.90	11.14	14.24	13.47	11.46
Middle Atlantic	10.34	10.75	11.98	11.97	11.95	9.26	7.79	7.92	8.65	8.00	7.59	8.22	11.09	9.73	8.29
E. N. Central	8.19	10.61	14.94	10.42	9.17	8.74	10.11	6.78	6.78	7.90	9.74	7.05	9.61	8.40	7.23
W. N. Central	9.97	11.43	14.68	10.99	11.69	11.46	11.53	8.51	8.35	8.80	9.94	7.84	10.82	10.69	8.38
S. Atlantic	10.75	12.25	14.25	13.13	13.00	11.29	11.14	9.85	9.60	10.18	10.44	9.71	12.17	11.45	9.84
E. S. Central	10.32	12.73	15.50	13.38	11.93	11.03	11.65	9.62	8.99	10.01	11.00	9.71	12.17	10.97	9.60
W. S. Central	9.97	12.69	14.80	12.67	11.11	9.84	10.14	8.37	7.66	8.45	9.20	8.33	11.89	9.94	8.21
Mountain	8.77	9.96	12.52	11.29	10.77	10.79	11.57	10.16	10.04	10.51	11.24	9.91	10.17	10.67	10.21
Pacific	13.08	13.56	15.52	14.41	16.91	12.60	12.72	11.70	12.30	11.48	11.72	11.38	13.95	13.90	11.77
U.S. Average	9.99	11.65	14.05	12.11	11.80	10.48	10.60	8.82	8.79	9.29	9.94	8.79	11.32	10.54	9.00
Industrial Retail															
New England	11.27	12.14	12.21	13.60	13.53	10.05	7.25	8.07	9.19	8.44	7.26	8.43	12.22	10.03	8.50
Middle Atlantic	10.73	10.85	12.16	12.54	7.84	4.95	7.37	8.04	8.51	7.50	7.73	8.56	11.35	7.14	8.24
E. N. Central	7.67	8.90	10.71	10.33	9.24	6.60	6.65	6.05	6.25	6.20	6.22	6.26	8.92	7.44	6.24
W. N. Central	7.57	8.15	9.10	8.16	8.80	4.87	4.01	4.54	5.49	4.51	4.44	5.13	8.20	5.69	4.94
S. Atlantic	7.26	8.61	10.84	8.89	7.00	4.83	5.12	5.00	5.62	4.90	5.08	5.53	8.82	5.54	5.31
E. S. Central	6.23	8.29	10.13	7.65	5.70	3.92	4.17	4.50	5.10	4.38	4.54	5.07	7.95	4.61	4.80
W. S. Central	5.33	7.33	8.05	5.60	3.59	2.30	2.80	3.36	3.70	3.07	3.38	3.87	6.60	3.02	3.50
Mountain	7.10	8.39	10.47	9.87	9.39	7.81	7.43	6.55	6.39	6.17	6.33	6.11	8.85	7.97	6.26
Pacific	8.83	9.03	9.60	9.44	10.75	8.14	7.53	7.40	8.12	7.05	7.02	7.30	9.20	8.46	7.44
U.S. Average	6.64	7.97	8.93	7.33	6.06	3.76	3.85	4.51	5.17	4.14	4.20	4.95	7.66	4.61	4.65

- = no data available

Notes: EIA completed modeling and analysis for this report on October 5, 2023.

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

Prices are not adjusted for inflation.

Regions refer to U.S. Census divisions.

See "Census division" in EIA's Energy Glossary (<http://www.eia.doe.gov/glossary/index.html>) for a list of States in each region.

Historical data: Latest data available from Energy Information Administration databases supporting the *Natural Gas Monthly*, DOE/EIA-0130.

Natural gas Henry Hub spot price is from Refinitiv, an LSEG company, via EIA (https://www.eia.gov/dnav/pet/pet_pri_spt_s1_d.htm).

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

Forecasts: EIA Short-Term Integrated Forecasting System.

Table 6. U.S. Coal Supply, Consumption, and Inventories

U.S. Energy Information Administration | Short-Term Energy Outlook - October 2023

	2022				2023				2024				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2022	2023	2024
Supply (million short tons)															
Production	149.0	145.7	154.3	148.3	151.5	146.6	149.1	133.9	121.3	108.2	121.6	114.4	597.2	581.1	465.5
Appalachia	40.2	40.2	40.0	38.4	41.1	40.6	41.4	38.0	36.8	34.1	31.0	30.3	158.8	161.0	132.2
Interior	23.8	26.0	24.7	22.9	25.5	26.1	25.9	23.6	23.3	20.9	22.2	20.5	97.4	101.1	86.9
Western	85.0	79.5	89.5	86.9	84.9	79.9	81.8	72.4	61.2	53.1	68.5	63.6	340.9	319.0	246.4
Primary Inventory Withdrawals	-1.9	0.0	3.4	-0.3	-2.0	0.0	3.4	-0.1	-1.7	0.2	3.6	0.0	1.2	1.3	2.1
Imports	1.3	1.6	2.0	1.4	1.0	1.0	1.0	1.0	0.6	0.7	1.1	0.7	6.3	4.1	3.2
Exports	20.4	23.4	21.1	21.0	24.6	24.1	22.9	24.6	25.1	26.4	25.3	26.8	86.0	96.3	103.5
Metallurgical Coal	10.5	13.1	11.5	11.4	12.4	12.6	12.9	12.9	13.2	14.2	13.4	14.0	46.5	50.8	54.8
Steam Coal	9.9	10.3	9.6	9.6	12.2	11.5	10.0	11.7	11.8	12.1	11.9	12.9	39.5	45.4	48.7
Total Primary Supply	128.0	123.9	138.5	128.4	125.9	123.5	130.6	110.1	95.1	82.8	101.0	88.4	518.8	490.2	367.2
Secondary Inventory Withdrawals	5.9	-1.0	7.0	-9.8	-20.1	-19.4	3.4	-23.5	-3.5	-7.0	24.4	-7.2	2.1	-59.6	6.7
Waste Coal (a)	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	7.5	7.2	7.2
Total Supply	135.7	124.8	147.4	120.5	107.6	105.9	135.8	88.4	93.4	77.5	127.2	83.0	528.4	437.8	381.1
Consumption (million short tons)															
Coke Plants	4.2	3.9	3.9	4.0	4.0	4.4	4.1	4.2	4.1	4.2	4.2	4.3	16.0	16.8	16.9
Electric Power Sector (b)	122.7	107.3	134.8	105.3	89.8	81.5	123.3	78.1	83.2	68.3	117.8	72.7	469.9	372.7	341.9
Retail and Other Industry	6.9	6.7	6.5	6.6	6.5	6.7	5.9	6.2	6.1	5.1	5.1	6.0	26.7	25.2	22.3
Residential and Commercial	0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.2	0.3	0.1	0.1	0.2	0.8	0.7	0.8
Other Industrial	6.7	6.6	6.3	6.3	6.3	6.5	5.8	6.0	5.8	4.9	5.0	5.7	25.9	24.5	21.5
Total Consumption	133.7	117.9	145.2	115.8	100.3	92.6	133.3	88.4	93.4	77.5	127.2	83.0	512.6	414.6	381.1
Discrepancy (c)	2.0	6.9	2.3	4.6	7.3	13.3	2.5	0.0	0.0	0.0	0.0	0.0	15.8	23.1	0.0
End-of-period Inventories (million short tons)															
Primary Inventories (d)	21.0	20.9	17.5	17.8	19.8	19.7	16.4	16.5	18.2	18.0	14.5	14.4	17.8	16.5	14.4
Secondary Inventories	90.5	91.5	84.5	94.3	114.3	133.7	130.3	153.8	157.3	164.4	140.0	147.1	94.3	153.8	147.1
Electric Power Sector	86.3	87.3	80.1	90.0	110.1	129.2	125.4	148.9	153.2	160.0	135.3	142.4	90.0	148.9	142.4
Retail and General Industry	2.4	2.4	2.5	2.5	2.5	2.6	2.9	3.0	2.5	2.6	2.9	2.9	2.5	3.0	2.9
Coke Plants	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.5	1.6	1.6	1.6	1.6	1.7	1.6
Commercial & Institutional	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Coal Market Indicators															
Coal Miner Productivity															
(Tons per hour)	6.05	6.05	6.05	6.05	5.98	5.98	5.98	5.98	5.80	5.80	5.80	5.80	6.05	5.98	5.80
Total Raw Steel Production															
(Million short tons per day)	0.253	0.253	0.247	0.235	0.236	0.244	0.245	0.249	0.245	0.244	0.251	0.257	0.247	0.243	0.249
Cost of Coal to Electric Utilities															
(Dollars per million Btu)	2.18	2.26	2.50	2.55	2.57	2.49	2.48	2.42	2.42	2.41	2.41	2.37	2.37	2.49	2.40

(a) Waste coal includes waste coal and coal slurry reprocessed into briquettes.

(b) Coal used for electricity generation and (a limited amount of) useful thermal output by electric utilities and independent power producers.

(c) The discrepancy reflects an unaccounted-for shipper and receiver reporting difference, assumed to be zero in the forecast period.

(d) Primary stocks are held at the mines and distribution points.

- = no data available

Notes: EIA completed modeling and analysis for this report on October 5, 2023.

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: *Quarterly Coal Report*, DOE/EIA-0121; and *Electric Power Monthly*,

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

Forecasts: EIA Short-Term Integrated Forecasting System.

Table 7a. U.S. Electricity Industry Overview

U.S. Energy Information Administration | Short-Term Energy Outlook - October 2023

	2022				2023				2024				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2022	2023	2024
Electricity Supply (billion kilowatthours)															
Electricity generation (a)	1,029	1,026	1,187	1,001	987	985	1,212	<i>994</i>	<i>1,016</i>	<i>1,011</i>	<i>1,220</i>	<i>994</i>	4,243	<i>4,179</i>	<i>4,242</i>
Electric power sector	990	989	1,148	963	950	949	1,173	<i>956</i>	<i>978</i>	<i>974</i>	<i>1,180</i>	<i>955</i>	4,090	<i>4,027</i>	<i>4,086</i>
Industrial sector	36	34	36	35	35	33	36	<i>35</i>	<i>35</i>	<i>34</i>	<i>37</i>	<i>36</i>	140	<i>139</i>	<i>141</i>
Commercial sector	3	3	3	3	3	4	4	<i>3</i>	<i>4</i>	<i>4</i>	<i>4</i>	<i>3</i>	13	<i>14</i>	<i>15</i>
Net imports	7	10	15	10	8	6	11	<i>9</i>	<i>11</i>	<i>12</i>	<i>14</i>	<i>11</i>	41	<i>34</i>	<i>47</i>
Total utility-scale power supply	1,036	1,036	1,203	1,010	995	992	1,224	<i>1,003</i>	<i>1,027</i>	<i>1,023</i>	<i>1,235</i>	<i>1,005</i>	4,284	<i>4,214</i>	<i>4,289</i>
Losses and Unaccounted for (b)	55	64	53	64	44	58	64	<i>49</i>	<i>44</i>	<i>67</i>	<i>56</i>	<i>48</i>	236	<i>216</i>	<i>215</i>
Small-scale solar generation (c)	12	17	17	12	15	22	22	<i>15</i>	<i>17</i>	<i>25</i>	<i>25</i>	<i>17</i>	59	<i>74</i>	<i>85</i>
Residential sector	7	11	11	8	10	15	15	<i>10</i>	<i>11</i>	<i>17</i>	<i>17</i>	<i>12</i>	37	<i>49</i>	<i>57</i>
Commercial sector	4	5	5	3	4	6	6	<i>4</i>	<i>5</i>	<i>7</i>	<i>7</i>	<i>5</i>	17	<i>20</i>	<i>23</i>
Industrial sector	1	1	1	1	1	1	1	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	4	<i>4</i>	<i>5</i>
Electricity Consumption (billion kilowatthours unless noted)															
Sales to Ultimate Customers	945	938	1,114	911	917	900	1,123	<i>919</i>	<i>948</i>	<i>921</i>	<i>1,142</i>	<i>921</i>	3,909	<i>3,859</i>	<i>3,932</i>
Residential Sector	380	347	458	338	357	320	461	<i>342</i>	<i>379</i>	<i>336</i>	<i>477</i>	<i>345</i>	1,522	<i>1,480</i>	<i>1,538</i>
Commercial Sector	322	335	389	327	321	330	395	<i>329</i>	<i>326</i>	<i>332</i>	<i>393</i>	<i>324</i>	1,373	<i>1,375</i>	<i>1,375</i>
Industrial Sector	242	255	266	245	238	248	266	<i>246</i>	<i>241</i>	<i>251</i>	<i>270</i>	<i>250</i>	1,008	<i>998</i>	<i>1,013</i>
Transportation Sector	2	2	2	2	2	2	2	<i>2</i>	<i>2</i>	<i>2</i>	<i>2</i>	<i>2</i>	7	<i>7</i>	<i>7</i>
Direct Use (d)	35	34	36	35	35	33	36	<i>35</i>	<i>35</i>	<i>34</i>	<i>37</i>	<i>36</i>	139	<i>139</i>	<i>142</i>
Total Consumption	981	972	1,150	946	952	933	1,159	<i>954</i>	<i>983</i>	<i>955</i>	<i>1,179</i>	<i>956</i>	4,048	<i>3,998</i>	<i>4,074</i>
Average residential electricity usage per customer (kWh)	2,711	2,476	3,268	2,411	2,522	2,264	3,256	<i>2,418</i>	<i>2,653</i>	<i>2,353</i>	<i>3,341</i>	<i>2,415</i>	10,866	<i>10,460</i>	<i>10,761</i>
End-of-period Fuel Inventories Held by Electric Power Sector															
Coal (mmst)	86.3	87.3	80.1	90.0	110.1	129.2	125.4	<i>148.9</i>	<i>153.2</i>	<i>160.0</i>	<i>135.3</i>	<i>142.4</i>	90.0	<i>148.9</i>	<i>142.4</i>
Residual Fuel (mmb)	5.6	5.9	5.7	5.4	5.7	5.7	4.5	<i>4.7</i>	<i>3.1</i>	<i>3.1</i>	<i>1.3</i>	<i>2.0</i>	5.4	<i>4.7</i>	<i>2.0</i>
Distillate Fuel (mmb)	17.6	17.7	16.7	15.9	17.0	17.2	17.0	<i>17.1</i>	<i>16.9</i>	<i>16.6</i>	<i>16.5</i>	<i>16.7</i>	15.9	<i>17.1</i>	<i>16.7</i>
Prices															
Power Generation Fuel Costs (dollars per million Btu)															
Coal	2.18	2.26	2.50	2.55	2.57	2.49	2.48	<i>2.42</i>	<i>2.42</i>	<i>2.41</i>	<i>2.41</i>	<i>2.37</i>	2.37	<i>2.49</i>	<i>2.40</i>
Natural Gas	5.95	7.39	8.23	6.90	4.99	2.64	2.81	<i>3.32</i>	<i>3.83</i>	<i>3.01</i>	<i>3.27</i>	<i>3.85</i>	7.24	<i>3.36</i>	<i>3.46</i>
Residual Fuel Oil	16.81	26.17	26.53	21.27	19.24	17.89	16.52	<i>17.37</i>	<i>17.59</i>	<i>18.36</i>	<i>17.53</i>	<i>17.49</i>	21.80	<i>17.78</i>	<i>17.69</i>
Distillate Fuel Oil	21.23	30.71	26.79	24.48	22.84	38.29	22.50	<i>24.25</i>	<i>23.74</i>	<i>22.73</i>	<i>22.40</i>	<i>23.39</i>	24.89	<i>26.64</i>	<i>23.20</i>
Prices to Ultimate Customers (cents per kilowatthour)															
Residential Sector	13.98	15.07	15.85	15.48	15.74	16.12	15.92	<i>15.18</i>	<i>15.32</i>	<i>15.95</i>	<i>15.98</i>	<i>15.26</i>	15.12	<i>15.75</i>	<i>15.65</i>
Commercial Sector	11.63	12.35	13.38	12.66	12.69	12.46	13.16	<i>12.04</i>	<i>12.08</i>	<i>12.22</i>	<i>13.34</i>	<i>12.34</i>	12.55	<i>12.61</i>	<i>12.53</i>
Industrial Sector	7.42	8.41	9.38	8.52	8.12	7.87	8.59	<i>8.09</i>	<i>8.20</i>	<i>7.91</i>	<i>8.52</i>	<i>8.18</i>	8.45	<i>8.17</i>	<i>8.21</i>
Wholesale Electricity Prices (dollars per megawatthour)															
ERCOT North hub	42.73	83.19	130.71	53.01	28.05	57.27	188.81	<i>39.57</i>	<i>39.62</i>	<i>34.51</i>	<i>47.31</i>	<i>41.17</i>	77.41	<i>78.43</i>	<i>40.65</i>
CAISO SP15 zone	45.20	60.34	110.03	135.13	92.54	30.00	67.59	<i>55.67</i>	<i>56.90</i>	<i>46.62</i>	<i>61.23</i>	<i>54.41</i>	87.67	<i>61.45</i>	<i>54.79</i>
ISO-NE Internal hub	116.48	73.28	99.14	80.77	52.63	32.55	40.41	<i>46.90</i>	<i>72.97</i>	<i>36.08</i>	<i>63.21</i>	<i>53.89</i>	92.42	<i>43.13</i>	<i>56.54</i>
NYISO Hudson Valley zone	100.10	79.72	104.71	77.17	44.65	31.38	39.45	<i>39.26</i>	<i>49.07</i>	<i>36.19</i>	<i>59.16</i>	<i>40.67</i>	90.42	<i>38.69</i>	<i>46.27</i>
PJM Western hub	58.33	93.00	110.99	71.60	36.49	35.41	43.27	<i>35.96</i>	<i>39.15</i>	<i>34.48</i>	<i>41.28</i>	<i>35.95</i>	83.48	<i>37.78</i>	<i>37.71</i>
Midcontinent ISO Illinois hub	47.88	89.21	101.80	57.87	31.39	32.13	40.60	<i>36.11</i>	<i>37.50</i>	<i>34.34</i>	<i>40.22</i>	<i>36.02</i>	74.19	<i>35.06</i>	<i>37.02</i>
SPP ISO South hub	37.25	72.85	109.97	55.87	28.96	34.56	46.96	<i>36.82</i>	<i>37.37</i>	<i>36.26</i>	<i>41.48</i>	<i>36.89</i>	68.98	<i>36.82</i>	<i>38.00</i>
SERC index, Into Southern	42.45	84.96	94.82	59.33	30.53	31.66	36.45	<i>31.63</i>	<i>32.82</i>	<i>30.99</i>	<i>33.99</i>	<i>32.01</i>	70.39	<i>32.57</i>	<i>32.45</i>
FRCC index, Florida Reliability	41.11	78.70	92.71	58.54	30.31	33.06	36.79	<i>31.81</i>	<i>32.89</i>	<i>32.51</i>	<i>35.04</i>	<i>34.03</i>	67.77	<i>32.99</i>	<i>33.62</i>
Northwest index, Mid-Columbia	39.85	59.39	137.82	151.39	105.99	58.61	82.36	<i>66.88</i>	<i>77.80</i>	<i>67.54</i>	<i>67.01</i>	<i>59.86</i>	97.11	<i>78.46</i>	<i>68.05</i>
Southwest index, Palo Verde	39.02	60.50	128.25	130.12	84.19	31.60	71.95	<i>59.94</i>	<i>62.05</i>	<i>56.00</i>	<i>52.21</i>	<i>58.13</i>	89.47	<i>61.92</i>	<i>57.10</i>

Notes: EIA completed modeling and analysis for this report on October 5, 2023.

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

kWh = kilowatthours. Btu = British thermal units.

Prices are not adjusted for inflation.

(a) Generation supplied by utility-scale power plants with capacity of at least one megawatt.

(b) Includes transmission and distribution losses, data collection time-frame differences, and estimation error.

(c) Solar photovoltaic systems smaller than one megawatt such as those installed on rooftops.

(d) Direct use represents commercial and industrial facility use of onsite net electricity generation; and electrical sales or transfers to adjacent or collocated facilities for which revenue information is not available. See Table 7.6 of the EIA Monthly Energy Review.

Historical data: Latest data available from EIA databases supporting the following reports: Electric Power Monthly and Electric Power Annual (electricity supply and consumption, fuel inventories and costs, and retail electricity prices); S&P Global Market Intelligence (wholesale electricity prices).

Minor discrepancies with published historical data are due to independent rounding and possible revisions not yet reflected in the STEO.

Forecast data: EIA Short-Term Integrated Forecasting System.

Table 7b. U.S. Regional Electricity Sales to Ultimate Customers (billion kilowatthours)

U.S. Energy Information Administration | Short-Term Energy Outlook - October 2023

	2022				2023				2024				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2022	2023	2024
Residential Sector															
New England	13.1	10.5	13.9	10.9	12.2	9.8	13.5	11.1	13.1	10.2	14.2	11.2	48.4	46.6	48.7
Middle Atlantic	36.1	30.0	42.6	30.3	33.2	27.5	40.6	30.4	35.4	28.9	43.4	30.3	138.9	131.8	138.0
E. N. Central	50.8	43.8	54.8	43.1	46.5	39.8	53.9	44.5	50.9	42.5	58.8	44.5	192.5	184.7	196.8
W. N. Central	30.6	24.7	31.3	25.7	29.4	24.1	31.4	26.2	30.7	24.4	33.2	26.5	112.3	111.1	114.7
S. Atlantic	96.0	91.5	116.3	87.7	88.4	85.0	118.8	88.8	96.9	91.8	124.8	90.4	391.4	381.0	403.9
E. S. Central	32.6	27.7	37.0	26.5	29.2	25.4	37.4	27.2	32.9	26.5	39.0	27.2	123.8	119.2	125.7
W. S. Central	56.9	58.8	81.3	51.3	52.0	52.9	87.3	54.3	56.3	54.0	82.0	54.1	248.3	246.4	246.4
Mountain	24.1	26.2	36.1	24.3	25.2	24.5	36.8	23.6	24.5	26.2	38.3	24.2	110.7	110.1	113.1
Pacific contiguous	38.4	32.4	43.2	36.8	39.4	30.2	39.9	34.7	37.2	30.5	42.5	35.4	150.7	144.1	145.5
AK and HI	1.3	1.1	1.2	1.3	1.2	1.1	1.1	1.3	1.3	1.1	1.1	1.3	4.8	4.8	4.8
Total	379.8	346.7	457.7	337.7	356.8	320.3	460.7	342.0	379.1	336.1	477.4	345.0	1,521.9	1,479.8	1,537.6
Commercial Sector															
New England	12.1	11.8	13.9	11.7	11.9	11.5	14.0	11.7	12.1	11.6	13.9	11.5	49.4	49.1	49.0
Middle Atlantic	36.0	34.3	40.5	34.6	35.0	33.1	40.5	34.3	35.3	33.4	41.2	34.0	145.3	143.0	143.9
E. N. Central	43.3	42.9	48.8	42.2	42.4	41.9	49.0	42.2	43.0	42.3	49.8	41.6	177.1	175.5	176.7
W. N. Central	25.1	24.5	28.0	24.7	25.0	25.0	28.5	25.0	25.4	24.8	28.7	24.7	102.4	103.5	103.7
S. Atlantic	75.1	82.5	93.5	78.9	75.5	83.1	95.4	80.1	77.8	85.5	96.0	79.8	330.0	334.0	339.2
E. S. Central	21.0	22.4	26.8	21.0	20.5	21.8	27.1	21.6	21.1	21.9	27.0	21.1	91.3	91.0	91.1
W. S. Central	47.0	52.1	61.2	48.6	46.7	50.7	63.2	49.3	47.2	49.2	58.8	46.7	208.9	209.8	201.9
Mountain	23.2	25.4	29.6	24.3	23.7	25.0	30.3	24.5	23.8	25.5	30.5	24.5	102.6	103.5	104.3
Pacific contiguous	37.7	37.9	45.4	39.7	38.8	37.0	45.4	39.1	38.8	36.8	45.4	38.8	160.7	160.3	159.8
AK and HI	1.3	1.3	1.4	1.4	1.3	1.3	1.4	1.4	1.3	1.3	1.4	1.4	5.4	5.3	5.4
Total	321.8	335.2	389.0	327.0	320.8	330.4	394.8	329.2	325.9	332.3	392.7	324.1	1,373.0	1,375.2	1,375.0
Industrial Sector															
New England	3.9	3.9	4.1	3.8	3.7	3.7	4.1	3.8	3.7	3.6	4.1	3.7	15.7	15.3	15.1
Middle Atlantic	17.5	18.2	19.4	18.2	17.3	17.8	19.7	18.2	17.6	18.0	19.9	18.5	73.3	72.9	74.1
E. N. Central	45.9	47.0	48.8	45.3	44.9	46.1	49.1	45.3	45.2	46.1	49.4	45.8	187.1	185.4	186.5
W. N. Central	24.0	24.8	26.9	25.0	24.4	25.7	26.6	25.0	24.8	26.2	27.2	25.7	100.7	101.7	103.9
S. Atlantic	36.3	37.5	38.7	36.4	34.6	35.8	37.0	36.2	35.0	36.2	37.4	36.9	148.9	143.5	145.5
E. S. Central	24.7	25.8	25.6	23.4	23.3	23.9	24.7	23.2	23.3	23.8	24.6	23.1	99.5	95.1	94.8
W. S. Central	49.8	53.3	53.8	50.6	50.3	53.0	56.6	52.3	52.3	55.4	59.5	54.2	207.6	212.2	221.4
Mountain	19.9	21.7	24.0	20.9	19.8	21.6	24.4	21.5	20.4	22.0	24.7	21.8	86.5	87.3	89.0
Pacific contiguous	19.0	21.0	23.4	20.0	18.4	19.3	22.4	19.4	17.9	18.7	21.8	19.0	83.4	79.4	77.5
AK and HI	1.1	1.2	1.3	1.2	1.1	1.2	1.3	1.2	1.2	1.2	1.3	1.3	4.8	4.8	4.9
Total	242.2	254.5	265.9	244.9	237.7	248.1	265.8	246.0	241.4	251.2	270.0	250.1	1,007.5	997.6	1,012.7
Total All Sectors (a)															
New England	29.2	26.3	32.0	26.5	27.9	25.1	31.8	26.7	29.0	25.5	32.2	26.6	114.0	111.5	113.3
Middle Atlantic	90.4	83.3	103.3	84.0	86.4	79.3	101.8	83.8	89.3	81.2	105.4	83.7	360.9	351.2	359.6
E. N. Central	140.2	133.8	152.5	130.7	133.9	127.9	152.2	132.2	139.3	131.0	158.2	132.1	557.2	546.1	560.6
W. N. Central	79.7	74.1	86.3	75.4	78.8	74.8	86.5	76.2	80.9	75.4	89.1	76.9	315.4	316.3	322.4
S. Atlantic	207.7	211.8	248.7	203.2	198.7	204.2	251.5	205.4	210.0	213.7	258.6	207.3	871.3	859.7	889.7
E. S. Central	78.4	76.0	89.4	70.9	73.0	71.1	89.2	71.9	77.3	72.2	90.7	71.4	314.6	305.2	311.6
W. S. Central	153.7	164.2	196.4	150.5	149.0	156.6	207.1	155.9	155.8	158.7	200.4	155.0	664.9	668.6	669.8
Mountain	67.2	73.4	89.8	69.5	68.8	71.2	91.5	69.7	68.7	73.8	93.5	70.6	299.9	301.2	306.6
Pacific contiguous	95.3	91.6	112.2	96.6	96.8	86.7	107.8	93.3	94.1	86.3	109.9	93.4	395.7	384.7	383.7
AK and HI	3.7	3.6	3.8	3.9	3.7	3.6	3.8	3.9	3.8	3.6	3.8	3.9	15.0	14.9	15.0
Total	945.5	938.0	1,114.3	911.2	917.1	900.3	1,123.1	919.0	948.2	921.3	1,141.8	920.9	3,909.1	3,859.4	3,932.3

Notes: EIA completed modeling and analysis for this report on October 5, 2023.

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

Electricity sales to ultimate customers are sold by electric utilities and power marketers for direct consumption by the customer and not available for resale. Includes electric sales to end users by third-party owners of behind-the-meter solar photovoltaic systems.

Regions refer to U.S. Census divisions (https://www.eia.gov/tools/glossary/index.php?id=C# census_division).

(a) Total includes sales of electricity to ultimate customers in transportation sector (not shown), as well as residential, commercial, and industrial sectors.

Historical data: Latest data available from EIA databases supporting the following reports: Electric Power Monthly and Electric Power Annual.

Minor discrepancies with published historical data are due to independent rounding and possible revisions not yet reflected in the STEO.

Forecast data: EIA Short-Term Integrated Forecasting System.

Table 7c. U.S. Regional Electricity Prices to Ultimate Customers (Cents per Kilowatthour)

U.S. Energy Information Administration | Short-Term Energy Outlook - October 2023

	2022				2023				2024				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2022	2023	2024
Residential Sector															
New England	23.96	24.31	24.76	26.39	30.63	29.56	29.13	27.74	<i>30.49</i>	<i>28.60</i>	<i>28.13</i>	<i>27.43</i>	24.81	29.28	28.70
Middle Atlantic	17.20	18.29	18.95	19.50	19.68	19.10	19.57	19.22	<i>19.53</i>	<i>19.33</i>	<i>20.03</i>	<i>19.92</i>	18.47	19.42	19.73
E. N. Central	14.21	15.50	16.18	16.13	16.12	16.56	16.15	15.59	<i>15.32</i>	<i>15.93</i>	<i>15.78</i>	<i>15.67</i>	15.49	16.09	15.67
W. N. Central	11.28	13.26	14.36	12.39	11.85	13.52	14.01	12.04	<i>11.63</i>	<i>13.55</i>	<i>13.90</i>	<i>11.97</i>	12.83	12.87	12.77
S. Atlantic	12.68	13.61	14.27	13.85	14.34	14.80	14.25	13.28	<i>13.42</i>	<i>14.07</i>	<i>13.80</i>	<i>13.03</i>	13.63	14.17	13.60
E. S. Central	11.97	13.08	13.78	13.40	13.17	13.20	13.08	12.80	<i>12.93</i>	<i>13.43</i>	<i>13.20</i>	<i>13.05</i>	13.06	13.07	13.14
W. S. Central	11.86	12.97	13.84	13.97	13.57	13.57	13.46	13.86	<i>13.66</i>	<i>13.87</i>	<i>13.81</i>	<i>13.84</i>	13.21	13.59	13.80
Mountain	12.14	12.85	13.23	12.98	12.96	13.89	14.09	13.52	<i>13.15</i>	<i>13.80</i>	<i>13.90</i>	<i>13.54</i>	12.85	13.66	13.64
Pacific	18.12	20.60	22.03	18.82	19.40	22.32	23.05	18.77	<i>19.44</i>	<i>23.16</i>	<i>24.22</i>	<i>19.48</i>	19.95	20.87	21.62
U.S. Average	13.98	15.07	15.85	15.48	15.74	16.12	15.92	15.18	<i>15.32</i>	<i>15.95</i>	<i>15.98</i>	<i>15.26</i>	15.12	15.75	15.65
Commercial Sector															
New England	18.47	17.46	18.32	18.55	20.55	18.41	19.19	18.30	<i>19.68</i>	<i>17.67</i>	<i>18.89</i>	<i>18.63</i>	18.21	19.12	18.74
Middle Atlantic	14.05	14.96	16.60	15.26	14.84	14.85	16.16	13.94	<i>13.69</i>	<i>14.51</i>	<i>16.42</i>	<i>14.31</i>	15.26	15.00	14.81
E. N. Central	11.06	11.84	12.12	11.87	12.01	12.06	11.64	11.02	<i>11.23</i>	<i>11.76</i>	<i>11.73</i>	<i>11.28</i>	11.73	11.68	11.51
W. N. Central	9.65	10.71	11.70	10.15	10.02	10.71	11.25	9.57	<i>9.71</i>	<i>10.87</i>	<i>11.50</i>	<i>9.67</i>	10.59	10.42	10.47
S. Atlantic	10.30	10.87	11.52	11.23	11.37	10.91	10.89	10.24	<i>10.28</i>	<i>10.24</i>	<i>10.53</i>	<i>10.04</i>	11.01	10.85	10.28
E. S. Central	11.69	12.20	13.02	12.59	12.60	12.10	12.61	12.24	<i>12.51</i>	<i>12.39</i>	<i>13.03</i>	<i>12.59</i>	12.41	12.40	12.65
W. S. Central	8.68	9.63	10.47	9.91	9.51	8.95	9.38	8.90	<i>8.97</i>	<i>9.19</i>	<i>10.16</i>	<i>9.61</i>	9.73	9.19	9.52
Mountain	9.57	10.32	10.97	10.42	10.35	11.08	11.53	10.68	<i>10.34</i>	<i>10.88</i>	<i>11.43</i>	<i>10.73</i>	10.36	10.95	10.88
Pacific	16.13	17.81	20.34	18.00	18.07	18.90	22.41	19.02	<i>18.37</i>	<i>18.75</i>	<i>22.81</i>	<i>19.88</i>	18.18	19.72	20.09
U.S. Average	11.63	12.35	13.38	12.66	12.69	12.46	13.16	12.04	<i>12.08</i>	<i>12.22</i>	<i>13.34</i>	<i>12.34</i>	12.55	12.61	12.53
Industrial Sector															
New England	15.12	15.17	15.93	15.36	16.21	15.19	15.80	14.80	<i>15.34</i>	<i>14.44</i>	<i>15.41</i>	<i>14.94</i>	15.40	15.51	15.04
Middle Atlantic	7.88	8.29	9.30	8.46	8.31	7.89	7.98	7.70	<i>8.14</i>	<i>7.81</i>	<i>8.04</i>	<i>7.66</i>	8.51	7.97	7.91
E. N. Central	7.72	8.55	8.99	8.50	8.33	7.97	8.03	8.00	<i>8.39</i>	<i>8.02</i>	<i>8.09</i>	<i>8.09</i>	8.45	8.08	8.14
W. N. Central	7.17	8.00	8.70	7.46	7.39	7.75	8.38	7.38	<i>7.62</i>	<i>7.89</i>	<i>8.45</i>	<i>7.47</i>	7.85	7.74	7.87
S. Atlantic	6.85	8.10	9.11	8.05	7.70	7.37	8.06	7.49	<i>7.84</i>	<i>7.42</i>	<i>8.08</i>	<i>7.57</i>	8.04	7.66	7.73
E. S. Central	6.35	7.36	8.41	7.53	6.98	6.66	7.17	6.90	<i>7.00</i>	<i>6.68</i>	<i>7.19</i>	<i>6.98</i>	7.42	6.93	6.96
W. S. Central	6.19	7.28	8.08	7.37	6.71	6.12	7.09	6.88	<i>6.92</i>	<i>5.99</i>	<i>6.59</i>	<i>6.93</i>	7.25	6.71	6.60
Mountain	6.58	7.27	8.41	7.88	7.66	7.62	8.51	7.93	<i>7.79</i>	<i>8.02</i>	<i>8.60</i>	<i>8.12</i>	7.57	7.95	8.15
Pacific	10.37	11.98	14.16	12.65	11.78	12.47	14.51	12.93	<i>12.14</i>	<i>13.21</i>	<i>15.12</i>	<i>13.49</i>	12.38	13.00	13.57
U.S. Average	7.42	8.41	9.38	8.52	8.12	7.87	8.59	8.09	<i>8.20</i>	<i>7.91</i>	<i>8.52</i>	<i>8.18</i>	8.45	8.17	8.21
All Sectors (a)															
New England	20.46	19.83	20.79	21.27	24.35	22.25	22.95	21.69	<i>23.97</i>	<i>21.57</i>	<i>22.48</i>	<i>21.78</i>	20.59	22.84	22.49
Middle Atlantic	14.09	14.68	16.17	15.29	15.39	14.76	15.92	14.49	<i>14.90</i>	<i>14.72</i>	<i>16.30</i>	<i>14.86</i>	15.10	15.19	15.26
E. N. Central	11.10	11.88	12.57	12.10	12.20	11.98	12.07	11.52	<i>11.80</i>	<i>11.80</i>	<i>12.10</i>	<i>11.65</i>	11.93	11.95	11.85
W. N. Central	9.53	10.65	11.73	10.02	9.89	10.60	11.37	9.70	<i>9.80</i>	<i>10.70</i>	<i>11.47</i>	<i>9.72</i>	10.51	10.42	10.45
S. Atlantic	10.79	11.56	12.43	11.79	12.05	11.90	12.06	11.07	<i>11.32</i>	<i>11.40</i>	<i>11.75</i>	<i>10.91</i>	11.68	11.78	11.37
E. S. Central	10.12	10.88	12.01	11.22	11.04	10.66	11.30	10.73	<i>11.03</i>	<i>10.89</i>	<i>11.52</i>	<i>10.95</i>	11.09	10.95	11.12
W. S. Central	9.05	10.06	11.21	10.44	9.98	9.55	10.47	9.95	<i>9.97</i>	<i>9.66</i>	<i>10.60</i>	<i>10.15</i>	10.25	10.02	10.13
Mountain	9.60	10.32	11.19	10.55	10.53	11.00	11.75	10.79	<i>10.58</i>	<i>11.06</i>	<i>11.69</i>	<i>10.89</i>	10.47	11.07	11.11
Pacific	15.77	17.45	19.69	17.19	17.41	18.65	21.00	17.65	<i>17.59</i>	<i>19.09</i>	<i>21.81</i>	<i>18.41</i>	17.62	18.75	19.34
U.S. Average	11.49	12.28	13.44	12.59	12.69	12.50	13.21	12.15	<i>12.38</i>	<i>12.40</i>	<i>13.30</i>	<i>12.30</i>	12.49	12.67	12.64

Notes: EIA completed modeling and analysis for this report on October 5, 2023.

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

Historical data for average price of electricity to ultimate consumers represents the cost per unit of electricity sold and is calculated by dividing electric revenue from ultimate consumers by the corresponding sales of electricity.

Prices are not adjusted for inflation.

Regions refer to U.S. Census divisions (https://www.eia.gov/tools/glossary/index.php?id=C#census_division).

(a) Average price to all sectors is weighted by sales of electricity to ultimate customers in the residential, commercial, industrial and transportation (not shown) sectors.

Historical data: Latest data available from EIA databases supporting the following reports: Electric Power Monthly and Electric Power Annual.

Minor discrepancies with published historical data are due to independent rounding and possible revisions not yet reflected in the STEO.

Forecast data: EIA Short-Term Integrated Forecasting System.

Table 7d part 1. U.S. Regional Electricity Generation, Electric Power Sector (billion kilowatthours), continues on Table 7d part 2

U.S. Energy Information Administration | Short-Term Energy Outlook - October 2023

	2022				2023				2024				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2022	2023	2024
United States															
Natural Gas	336.4	365.3	509.3	375.2	368.1	395.9	541.1	394.0	365.3	388.2	522.0	383.4	1,586.2	1,699.2	1,658.9
Coal	217.6	189.1	234.6	182.1	155.1	140.1	214.4	135.3	146.4	118.8	206.3	125.6	823.4	645.0	597.2
Nuclear	195.6	184.4	201.5	190.1	194.5	182.9	205.6	194.0	199.8	194.0	209.0	194.1	771.5	777.0	797.0
Renewable Energy Sources:	233.0	245.1	197.8	207.2	227.5	226.4	206.6	226.1	261.2	269.1	237.8	246.2	883.1	886.6	1,014.3
Conventional Hydropower	74.2	69.2	62.4	55.0	62.6	65.3	58.8	59.0	74.4	81.5	66.8	61.3	260.8	245.7	284.0
Wind	119.0	121.0	80.6	113.9	125.4	102.3	84.7	121.2	134.7	109.1	87.6	126.5	434.5	433.6	457.9
Solar (a)	29.2	44.4	43.4	27.6	29.6	49.5	52.9	36.0	42.3	69.2	73.0	48.6	144.6	167.9	233.1
Biomass	6.6	6.5	7.1	6.5	6.0	5.5	6.1	5.9	6.2	5.8	6.5	6.0	26.7	23.5	24.6
Geothermal	4.1	3.9	4.2	4.2	3.9	3.9	4.0	4.1	3.5	3.5	3.9	3.7	16.5	15.9	14.7
Pumped Storage Hydropower	-1.2	-1.3	-2.0	-1.5	-1.6	-1.4	-1.8	-1.4	-1.7	-1.4	-1.9	-1.5	-6.0	-6.1	-6.5
Petroleum (b)	6.4	4.1	4.5	7.4	3.8	3.4	4.5	5.2	5.0	3.4	4.4	5.6	22.4	16.9	18.4
Other gases	0.8	0.9	1.0	0.8	0.8	0.7	0.9	0.8	0.8	0.8	0.9	0.8	3.5	3.2	3.3
Other Nonrenewable Fuels (c)	1.6	1.6	1.6	1.5	1.3	1.2	1.3	1.4	1.1	0.9	0.9	1.0	6.2	5.3	3.9
Total Generation	990.0	989.3	1,148.2	962.7	949.6	949.3	1,172.5	955.5	977.8	973.9	1,179.7	955.1	4,090.3	4,026.9	4,086.4
New England (ISO-NE)															
Natural Gas	12.1	12.6	17.4	11.4	11.7	12.6	16.2	11.5	11.4	10.5	17.1	11.9	53.4	52.0	50.8
Coal	0.3	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.4	0.0	0.2	0.1	0.3	0.3	0.7
Nuclear	7.1	5.6	7.3	7.4	7.1	3.4	6.9	6.2	7.1	7.1	7.2	5.6	27.4	23.6	27.1
Conventional hydropower	1.7	1.5	1.0	1.3	1.7	1.2	1.1	1.7	2.0	2.2	1.2	1.7	5.5	5.7	7.1
Nonhydro renewables (d)	3.2	3.2	3.0	3.0	2.9	3.0	2.8	2.8	2.9	3.3	3.2	3.6	12.4	11.6	13.1
Other energy sources (e)	1.4	0.3	0.3	0.8	0.4	0.3	0.3	0.5	0.7	0.3	0.3	0.5	2.8	1.5	1.9
Total generation	25.7	23.1	29.2	23.9	24.0	20.5	27.4	22.8	24.5	23.4	29.3	23.5	101.8	94.7	100.6
Net energy for load (f)	30.6	26.8	33.5	28.0	29.0	25.6	32.4	27.9	29.9	27.3	33.9	28.9	118.9	114.8	120.1
New York (NYISO)															
Natural Gas	14.1	15.5	21.2	14.3	13.3	14.1	20.4	13.2	13.4	13.0	20.6	13.8	65.0	61.0	60.7
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nuclear	6.4	7.0	6.4	7.0	6.8	6.6	7.0	7.2	6.4	7.1	7.0	6.5	26.8	27.6	27.0
Conventional hydropower	7.3	6.9	6.6	6.6	7.1	6.5	6.8	7.0	6.9	6.9	6.9	7.1	27.4	27.4	27.7
Nonhydro renewables (d)	2.2	2.1	1.8	2.2	2.2	2.2	2.0	2.6	2.7	2.7	2.4	2.9	8.2	9.0	10.7
Other energy sources (e)	1.1	0.1	0.1	0.8	0.3	0.1	0.2	0.4	0.6	0.1	0.2	0.4	2.2	0.9	1.4
Total generation	31.0	31.6	36.1	30.9	29.7	29.5	36.4	30.3	30.0	29.8	37.1	30.7	129.6	125.9	127.5
Net energy for load (f)	38.1	35.0	44.0	35.6	36.1	33.3	41.7	35.1	37.1	35.7	45.2	36.4	152.7	146.2	154.3
Mid-Atlantic (PJM)															
Natural Gas	76.8	74.3	103.8	79.9	86.0	82.0	111.9	86.1	84.6	81.5	109.1	81.9	334.8	366.0	357.1
Coal	48.6	35.3	42.2	30.7	27.9	22.5	35.4	23.2	33.4	23.3	33.1	21.7	156.8	109.0	111.5
Nuclear	69.0	65.1	69.7	66.8	67.6	65.7	70.6	68.5	69.0	64.8	71.9	68.6	270.6	272.4	274.3
Conventional hydropower	2.7	2.4	1.4	2.0	2.7	1.8	1.8	2.1	2.7	2.6	1.7	2.1	8.6	8.5	9.0
Nonhydro renewables (d)	13.2	13.0	9.7	12.5	12.9	11.9	10.2	13.6	15.5	14.9	13.2	15.7	48.4	48.6	59.2
Other energy sources (e)	0.7	0.4	0.2	1.3	0.3	0.0	0.0	0.8	0.4	0.2	0.1	0.9	2.6	1.2	1.7
Total generation	211.1	190.3	227.1	193.3	197.4	183.9	229.9	194.3	205.6	187.2	229.1	191.0	821.8	805.5	812.9
Net energy for load (f)	203.4	185.4	216.7	189.7	192.5	176.2	215.5	185.1	198.3	180.5	220.6	184.0	795.1	769.4	783.4
Southeast (SERC)															
Natural Gas	63.0	66.9	86.2	64.5	64.1	65.9	83.3	68.3	71.2	76.0	92.3	76.0	280.6	281.7	315.6
Coal	32.3	32.8	32.0	28.1	23.6	26.4	37.9	19.7	22.9	18.0	33.1	14.1	125.1	107.7	88.1
Nuclear	51.4	51.1	55.4	51.1	51.7	52.7	57.4	56.2	55.9	57.6	59.5	54.7	209.0	218.0	227.6
Conventional hydropower	10.3	8.3	6.1	8.0	10.3	6.5	7.6	9.0	11.5	9.0	8.1	9.1	32.7	33.5	37.7
Nonhydro renewables (d)	5.0	7.0	6.6	4.7	5.0	7.2	7.7	5.8	5.9	8.3	8.5	6.6	23.3	25.7	29.3
Other energy sources (e)	-0.2	-0.3	-0.6	-0.1	-0.3	-0.2	-0.5	-0.3	-0.3	-0.3	-0.6	-0.4	-1.2	-1.3	-1.6
Total generation	161.8	165.8	185.7	156.3	154.4	158.6	193.5	158.7	167.1	168.7	201.0	160.0	669.6	665.2	696.8
Net energy for load (f)	157.0	158.2	170.6	151.0	149.1	149.2	171.6	149.2	157.7	157.3	187.1	152.0	636.7	619.0	654.1
Florida (FRCC)															
Natural Gas	38.7	47.8	57.3	41.3	37.9	49.2	58.3	43.1	37.8	46.0	56.2	41.5	185.0	188.5	181.5
Coal	3.5	4.2	3.7	4.1	2.8	2.5	3.8	2.7	2.2	2.1	2.2	2.0	15.5	11.8	8.4
Nuclear	7.3	7.9	7.5	8.1	7.4	7.5	8.0	7.5	7.3	7.9	8.0	6.7	30.8	30.3	29.9
Conventional hydropower	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.2	0.2	0.2
Nonhydro renewables (d)	2.9	3.8	3.5	2.7	3.5	4.3	3.8	3.0	4.8	5.7	5.0	4.0	12.9	14.7	19.6
Other energy sources (e)	0.7	0.6	0.7	0.7	0.7	0.6	0.7	0.6	0.7	0.6	0.6	0.6	2.6	2.5	2.5
Total generation	53.2	64.2	72.7	56.8	52.3	64.1	74.7	56.9	52.8	62.4	72.0	54.9	247.0	248.0	242.1
Net energy for load (f)	52.2	63.6	73.9	57.8	54.4	65.5	76.4	56.9	52.2	63.2	73.4	55.2	247.5	253.3	244.1

Notes: EIA completed modeling and analysis for this report on October 5, 2023.

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

The electric power sector includes utility-scale generating power plants (total capacity is larger than 1 megawatt) operated by electric utilities and independent power producers whose primary business is to sell electricity over the transmission grid for consumption by the public.

(a) Generation from utility-scale (larger than 1 megawatt) solar photovoltaic and solar thermal power plants. Excludes generation from small-scale solar photovoltaic systems (see Table 7a).

(b) Residual fuel oil, distillate fuel oil, petroleum coke, and other petroleum liquids.

(c) Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, nonrenewable waste, and miscellaneous technologies.

(d) Wind, large-scale solar, biomass, and geothermal

(e) Pumped storage hydroelectric, petroleum, other gases, batteries, and other nonrenewable fuels. See notes (b) and (c).

(f) Includes regional generation from generating units operated by electric power sector, plus energy receipts from neighboring U.S. balancing authorities outside region minus energy deliveries to neighboring balancing authorities.

Historical data: Latest data available from EIA databases supporting the following reports: Electric Power Monthly and Electric Power Annual.

Minor discrepancies with published historical data are due to independent rounding and possible revisions not yet reflected in the STEO.

Table 7d part 2. U.S. Regional Electricity Generation, Electric Power Sector (billion kilowatthours), continued from Table 7d part 1
 U.S. Energy Information Administration | Short-Term Energy Outlook - October 2023

	2022				2023				2024				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2022	2023	2024
Midwest (MISO)															
Natural Gas	39.4	45.6	57.3	41.8	45.4	54.2	65.6	47.5	50.3	56.0	68.9	48.9	184.1	212.8	224.2
Coal	60.4	51.0	65.0	49.3	43.0	38.0	55.6	41.2	42.0	34.1	54.7	37.7	225.8	177.8	168.5
Nuclear	23.8	19.6	24.3	23.7	23.4	21.1	24.3	19.5	23.2	22.4	24.2	23.1	91.4	88.2	93.0
Conventional hydropower	2.8	2.7	2.5	2.3	2.5	2.2	2.1	2.1	2.5	2.9	2.4	2.2	10.3	8.9	9.9
Nonhydro renewables (d)	31.2	28.0	19.8	30.4	29.9	26.2	20.9	33.2	33.3	29.6	24.6	36.4	109.4	110.3	123.8
Other energy sources (e)	1.4	1.6	1.3	1.8	0.9	0.7	1.4	1.6	1.4	1.2	1.4	1.6	6.1	4.6	5.6
Total generation	159.0	148.5	170.2	149.3	145.0	142.5	169.9	145.1	152.7	146.2	176.2	149.9	627.0	602.6	625.0
Net energy for load (f)	167.1	163.4	182.5	158.8	158.6	157.9	185.4	160.4	164.5	159.5	189.9	159.4	671.8	662.2	673.3
Central (Southwest Power Pool)															
Natural Gas	12.5	15.3	24.8	16.4	15.4	21.1	29.7	16.2	14.5	20.9	24.2	14.4	69.0	82.3	74.0
Coal	26.2	23.5	33.8	22.8	20.4	17.2	28.5	17.9	18.0	16.8	30.5	17.4	106.3	84.0	82.7
Nuclear	4.3	4.3	3.9	2.1	4.3	4.3	4.4	4.3	4.3	2.9	4.3	3.5	14.6	17.2	15.0
Conventional hydropower	4.3	3.9	3.2	3.1	3.5	3.2	3.0	2.8	3.5	4.2	3.7	3.1	14.6	12.5	14.4
Nonhydro renewables (d)	29.5	30.4	21.8	28.5	31.1	25.6	22.2	29.6	32.6	26.9	22.7	30.3	110.2	108.5	112.3
Other energy sources (e)	0.3	0.4	0.2	0.4	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.3	1.3	0.9	0.9
Total generation	77.0	77.7	87.7	73.5	74.8	71.4	88.0	71.1	73.1	71.8	85.5	68.9	316.0	305.3	299.4
Net energy for load (f)	67.4	67.7	81.7	66.0	66.6	66.6	82.1	64.9	66.0	66.0	79.9	63.0	282.8	280.2	275.0
Texas (ERCOT)															
Natural Gas	33.4	42.8	64.7	40.9	36.2	49.8	73.1	43.4	34.6	42.3	59.1	37.3	181.9	202.5	173.4
Coal	17.7	16.8	20.2	16.6	10.5	15.2	20.0	12.2	8.2	10.0	15.8	11.9	71.2	57.9	45.8
Nuclear	11.0	9.9	10.7	10.0	10.5	9.0	11.0	10.9	11.0	10.7	11.0	10.8	41.6	41.3	43.4
Conventional hydropower	0.2	0.1	0.0	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.5	0.5	0.6
Nonhydro renewables (d)	30.8	39.2	28.1	29.3	36.5	33.8	33.4	33.0	42.3	43.8	42.1	39.0	127.4	136.7	167.2
Other energy sources (e)	0.4	0.5	0.4	0.3	0.2	0.3	0.4	0.4	0.3	0.3	0.2	0.2	1.5	1.3	1.0
Total generation	93.5	109.3	124.1	97.2	94.1	108.2	138.0	99.9	96.4	107.4	128.4	99.3	424.1	440.2	431.4
Net energy for load (f)	95.1	111.3	126.4	97.1	94.1	109.8	139.6	99.9	96.4	107.4	128.4	99.3	429.9	443.5	431.4
Northwest															
Natural Gas	20.2	15.9	27.3	24.6	25.6	18.9	30.9	27.6	22.8	15.0	25.6	22.4	88.1	103.1	85.8
Coal	21.7	18.1	26.9	22.1	20.0	14.5	24.0	13.6	12.9	10.3	25.1	14.3	88.8	72.2	62.5
Nuclear	2.5	2.3	2.5	2.6	2.4	1.0	2.5	2.4	2.4	2.4	2.4	2.4	9.9	8.4	9.7
Conventional hydropower	38.7	35.7	34.0	26.9	26.4	30.2	24.3	24.2	33.8	40.1	30.7	28.2	135.2	105.0	132.7
Nonhydro renewables (d)	19.2	20.4	16.0	18.0	19.1	19.4	18.9	21.2	21.7	21.0	20.9	22.2	73.6	78.7	85.8
Other energy sources (e)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.8	0.6	0.6
Total generation	102.5	92.6	106.9	94.4	93.7	84.3	100.8	89.2	93.8	88.9	104.7	89.8	396.3	368.0	377.2
Net energy for load (f)	85.2	76.8	87.4	86.8	88.7	76.7	87.6	81.1	84.1	75.6	87.7	81.5	336.1	334.0	328.9
Southwest															
Natural Gas	9.7	13.2	19.0	13.9	11.5	15.7	22.7	17.1	10.9	15.1	22.1	16.0	55.8	67.1	64.1
Coal	6.1	6.3	8.1	6.2	5.5	3.1	7.0	2.7	4.0	3.5	8.4	3.7	26.7	18.3	19.7
Nuclear	8.2	7.5	8.7	7.6	8.6	6.8	8.6	7.5	8.5	7.4	8.6	7.5	31.9	31.4	32.0
Conventional hydropower	2.0	2.1	1.8	1.4	1.5	2.5	2.0	1.4	1.9	2.2	2.0	1.6	7.4	7.4	7.7
Nonhydro renewables (d)	5.8	7.0	5.2	5.6	6.4	6.6	5.4	6.1	8.3	8.2	7.0	7.3	23.6	24.6	30.8
Other energy sources (e)	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.2	0.1
Total generation	31.8	36.0	43.0	34.7	33.6	34.7	45.7	34.9	33.7	36.4	48.1	36.1	145.5	148.9	154.3
Net energy for load (f)	27.4	34.8	42.0	28.8	28.3	32.9	45.8	29.3	28.1	34.2	46.2	29.2	133.0	136.3	137.7
California															
Natural Gas	15.7	15.2	29.4	25.5	20.4	11.6	27.9	19.1	12.8	11.2	26.3	18.4	85.9	79.0	68.8
Coal	0.5	0.7	2.4	1.9	1.1	0.6	1.8	1.6	2.2	0.5	2.7	2.3	5.5	5.0	7.6
Nuclear	4.6	4.2	5.0	3.8	4.7	4.9	4.9	4.0	4.7	3.6	4.8	4.8	17.6	18.6	17.8
Conventional hydropower	3.6	5.2	5.2	2.8	6.4	10.6	9.6	8.1	9.1	10.8	9.8	5.7	16.9	34.8	35.4
Nonhydro renewables (d)	15.4	21.5	19.4	14.8	14.9	20.6	19.8	15.5	16.3	22.6	20.9	16.4	71.2	70.8	76.2
Other energy sources (e)	0.0	-0.2	0.1	-0.2	-0.6	-0.3	0.2	-0.1	-0.6	-0.5	0.0	-0.3	-0.2	-0.7	-1.4
Total generation	39.8	46.6	61.6	48.7	46.9	48.0	64.3	48.3	44.4	48.2	64.5	47.3	196.7	207.5	204.5
Net energy for load (f)	59.2	64.4	81.3	63.6	60.5	59.9	77.1	61.9	59.7	63.7	83.5	62.4	268.4	259.4	269.4

Notes: EIA completed modeling and analysis for this report on October 5, 2023.

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

The electric power sector includes utility-scale generating power plants (total capacity is larger than 1 megawatt) operated by electric utilities and independent power producers whose primary business is to sell electricity over the transmission grid for consumption by the public.

(a) Generation from utility-scale (larger than 1 megawatt) solar photovoltaic and solar thermal power plants. Excludes generation from small-scale solar photovoltaic systems (see Table 7a).

(b) Residual fuel oil, distillate fuel oil, petroleum coke, and other petroleum liquids.

(c) Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, nonrenewable waste, and miscellaneous technologies.

(d) Wind, large-scale solar, biomass, and geothermal

(e) Pumped storage hydroelectric, petroleum, other gases, batteries, and other nonrenewable fuels. See notes (b) and (c).

(f) Includes regional generation from generating units operated by electric power sector, plus energy receipts from neighboring U.S. balancing authorities outside region minus energy deliveries to neighboring balancing authorities.

Historical data: Latest data available from EIA databases supporting the following reports: Electric Power Monthly and Electric Power Annual.

Minor discrepancies with published historical data are due to independent rounding and possible revisions not yet reflected in the STEO.

Table 7e. U.S. Electric Generating Capacity (gigawatts at end of period)
 U.S. Energy Information Administration | Short-Term Energy Outlook - October 2023

	2022				2023				2024				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2022	2023	2024
Electric power sector (power plants larger than one megawatt)															
Fossil fuel energy sources															
Natural gas	480.0	483.5	484.4	484.4	487.0	489.0	488.9	489.0	488.2	486.6	487.2	487.4	484.4	489.0	487.4
Coal	199.4	194.4	191.0	187.9	186.3	182.6	181.4	178.1	177.5	177.0	177.0	177.0	187.9	178.1	177.0
Petroleum	29.1	28.8	28.7	28.6	27.7	27.6	27.6	27.2	27.2	27.2	27.1	27.1	28.6	27.2	27.1
Other gases	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Renewable energy sources															
Wind	135.0	137.9	137.9	141.3	143.1	144.5	146.2	149.6	150.1	152.8	152.8	155.7	141.3	149.6	155.7
Solar photovoltaic	62.1	64.5	66.6	70.8	73.1	76.7	84.2	95.9	102.9	111.0	114.3	130.2	70.8	95.9	130.2
Solar thermal	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Geothermal	2.6	2.6	2.7	2.6	2.6	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.6	2.7	2.7
Waste biomass	3.0	3.0	3.0	2.9	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.9	3.0	3.0
Wood biomass	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Conventional hydroelectric	79.8	79.8	79.8	79.8	79.8	79.8	79.8	79.8	79.8	79.8	79.8	79.8	79.8	79.8	79.8
Pumped storage hydroelectric	23.0	23.0	23.0	23.0	23.2	23.2	23.2	23.2	23.3	23.3	23.3	23.3	23.0	23.2	23.3
Nuclear	95.4	94.7	94.7	94.7	94.8	94.8	95.9	95.9	97.0	97.0	97.0	97.0	94.7	95.9	97.0
Battery storage	5.3	6.6	8.0	9.0	9.4	10.8	15.0	18.8	19.9	24.1	25.8	31.7	9.0	18.8	31.7
Other nonrenewable sources (a)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Industrial and commercial sectors (combined heat and power plants larger than one megawatt)															
Fossil fuel energy sources															
Natural gas	18.8	18.8	18.8	18.8	18.8	18.8	18.8	18.8	18.8	18.9	18.9	18.9	18.8	18.8	18.9
Coal	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Petroleum	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Other gases	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.3	1.3
Renewable energy sources															
Wood biomass	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4
Waste biomass	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.3	1.3
Solar	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.8	0.8	0.8	0.8	0.8	0.6	0.8	0.8
Wind	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Geothermal	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Conventional hydroelectric	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Battery storage	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Other nonrenewable sources (a)	1.3	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.3	1.3
Small-scale solar photovoltaic capacity (systems smaller than one megawatt)															
Residential sector	22.3	23.5	24.9	26.3	28.2	29.7	31.1	32.4	33.7	35.1	36.5	37.9	26.3	32.4	37.9
Commercial sector	10.2	10.4	10.7	10.9	11.6	11.9	12.3	12.7	13.2	13.6	14.1	14.6	10.9	12.7	14.6
Industrial sector	2.2	2.3	2.3	2.3	2.4	2.5	2.5	2.6	2.6	2.7	2.7	2.8	2.3	2.6	2.8
All sectors total	34.7	36.2	37.9	39.5	42.1	44.1	45.9	47.7	49.5	51.4	53.3	55.3	39.5	47.7	55.3

Notes: EIA completed modeling and analysis for this report on October 5, 2023.

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

Capacity values represent the amount of generating capacity that is operating (or expected to be operating) at the end of each period.

Changes in capacity reflect various factors including new generators coming online, retiring generators, capacity uprates and derates, delayed planned capacity projects, cancelled projects, and other factors.

(a) Other sources include hydrogen, pitch, chemicals, sulfur, purchased steam, nonrenewable waste, and miscellaneous technologies.

Historical data: Form EIA-860 Annual Electric Generator Report (final data for utility-scale capacity through 2021); Form EIA-860M Preliminary Monthly Electric Generator Inventory, June 2023 edition (preliminary utility-scale capacity estimates for recent months); and Form EIA-861M Monthly Electric Power Industry Report (small-scale solar capacity).

Historical capacity data may differ from other EIA publications due to frequent updates to the Preliminary Monthly Electric Generator Inventory.

Table 8a. U.S. Renewable Energy Consumption (Quadrillion Btu)
 U.S. Energy Information Administration | Short-Term Energy Outlook - October 2023

	2022				2023				2024				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2022	2023	2024
Electric Power Sector															
Geothermal	0.014	0.013	0.014	0.014	0.005	0.005	0.008	<i>0.008</i>	<i>0.006</i>	<i>0.006</i>	<i>0.007</i>	<i>0.006</i>	0.056	<i>0.026</i>	<i>0.025</i>
Hydroelectric Power (a)	0.253	0.236	0.213	0.188	0.214	0.223	0.198	<i>0.201</i>	<i>0.254</i>	<i>0.278</i>	<i>0.228</i>	<i>0.209</i>	0.890	<i>0.836</i>	<i>0.969</i>
Solar (b)	0.100	0.152	0.148	0.094	0.101	0.169	0.180	<i>0.123</i>	<i>0.144</i>	<i>0.236</i>	<i>0.249</i>	<i>0.166</i>	0.493	<i>0.573</i>	<i>0.795</i>
Waste Biomass (c)	0.055	0.053	0.053	0.052	0.051	0.046	0.046	<i>0.047</i>	<i>0.049</i>	<i>0.047</i>	<i>0.048</i>	<i>0.048</i>	0.213	<i>0.189</i>	<i>0.192</i>
Wood Biomass	0.051	0.046	0.055	0.047	0.045	0.039	0.048	<i>0.044</i>	<i>0.048</i>	<i>0.043</i>	<i>0.053</i>	<i>0.046</i>	0.200	<i>0.177</i>	<i>0.190</i>
Wind	0.406	0.413	0.275	0.388	0.428	0.349	0.289	<i>0.413</i>	<i>0.459</i>	<i>0.372</i>	<i>0.299</i>	<i>0.432</i>	1.483	<i>1.479</i>	<i>1.562</i>
Subtotal	0.879	0.914	0.759	0.784	0.843	0.831	0.770	<i>0.837</i>	<i>0.961</i>	<i>0.983</i>	<i>0.884</i>	<i>0.907</i>	3.335	<i>3.281</i>	<i>3.734</i>
Industrial Sector															
Biofuel Losses and Co-products (d)	0.203	0.202	0.197	0.206	0.199	0.202	0.200	<i>0.203</i>	<i>0.198</i>	<i>0.197</i>	<i>0.202</i>	<i>0.198</i>	0.808	<i>0.804</i>	<i>0.795</i>
Geothermal	0.001	0.001	0.001	0.001	0.001	0.001	0.001	<i>0.001</i>	<i>0.001</i>	<i>0.001</i>	<i>0.001</i>	<i>0.001</i>	0.004	<i>0.004</i>	<i>0.004</i>
Hydroelectric Power (a)	0.001	0.001	0.001	0.001	0.001	0.001	0.001	<i>0.001</i>	<i>0.002</i>	<i>0.001</i>	<i>0.001</i>	<i>0.001</i>	0.003	<i>0.004</i>	<i>0.005</i>
Solar (b)	0.003	0.004	0.004	0.003	0.003	0.005	0.005	<i>0.003</i>	<i>0.004</i>	<i>0.005</i>	<i>0.005</i>	<i>0.004</i>	0.015	<i>0.016</i>	<i>0.018</i>
Waste Biomass (c)	0.042	0.040	0.037	0.042	0.042	0.040	0.039	<i>0.041</i>	<i>0.041</i>	<i>0.040</i>	<i>0.039</i>	<i>0.041</i>	0.161	<i>0.162</i>	<i>0.161</i>
Wood Biomass	0.319	0.324	0.322	0.314	0.309	0.292	0.315	<i>0.336</i>	<i>0.331</i>	<i>0.330</i>	<i>0.342</i>	<i>0.344</i>	1.278	<i>1.252</i>	<i>1.347</i>
Subtotal (e)	0.573	0.577	0.567	0.571	0.559	0.545	0.566	<i>0.590</i>	<i>0.581</i>	<i>0.579</i>	<i>0.595</i>	<i>0.594</i>	2.288	<i>2.261</i>	<i>2.349</i>
Commercial Sector															
Geothermal	0.005	0.005	0.005	0.005	0.005	0.005	0.005	<i>0.005</i>	<i>0.005</i>	<i>0.005</i>	<i>0.005</i>	<i>0.005</i>	0.022	<i>0.022</i>	<i>0.022</i>
Solar (b)	0.013	0.018	0.018	0.012	0.014	0.021	0.021	<i>0.015</i>	<i>0.017</i>	<i>0.024</i>	<i>0.024</i>	<i>0.017</i>	0.061	<i>0.071</i>	<i>0.082</i>
Waste Biomass (c)	0.009	0.009	0.009	0.009	0.010	0.011	0.009	<i>0.009</i>	<i>0.010</i>	<i>0.012</i>	<i>0.012</i>	<i>0.009</i>	0.037	<i>0.040</i>	<i>0.044</i>
Wood Biomass	0.020	0.021	0.021	0.021	0.020	0.020	0.021	<i>0.021</i>	<i>0.020</i>	<i>0.020</i>	<i>0.021</i>	<i>0.021</i>	0.083	<i>0.082</i>	<i>0.082</i>
Subtotal (e)	0.054	0.060	0.061	0.054	0.056	0.065	0.064	<i>0.057</i>	<i>0.059</i>	<i>0.069</i>	<i>0.070</i>	<i>0.059</i>	0.230	<i>0.242</i>	<i>0.257</i>
Residential Sector															
Geothermal	0.010	0.010	0.010	0.010	0.010	0.010	0.010	<i>0.010</i>	<i>0.010</i>	<i>0.010</i>	<i>0.010</i>	<i>0.010</i>	0.040	<i>0.039</i>	<i>0.039</i>
Solar (f)	0.038	0.057	0.057	0.041	0.046	0.069	0.069	<i>0.048</i>	<i>0.052</i>	<i>0.078</i>	<i>0.078</i>	<i>0.054</i>	0.192	<i>0.233</i>	<i>0.261</i>
Wood Biomass	0.104	0.105	0.106	0.106	0.111	0.112	0.106	<i>0.106</i>	<i>0.111</i>	<i>0.112</i>	<i>0.106</i>	<i>0.106</i>	0.422	<i>0.436</i>	<i>0.436</i>
Subtotal	0.152	0.172	0.173	0.157	0.167	0.192	0.186	<i>0.164</i>	<i>0.173</i>	<i>0.200</i>	<i>0.194</i>	<i>0.170</i>	0.654	<i>0.709</i>	<i>0.737</i>
Transportation Sector															
Biodiesel, Renewable Diesel, and Other (g)	0.099	0.118	0.118	0.126	0.140	0.173	0.162	<i>0.174</i>	<i>0.175</i>	<i>0.187</i>	<i>0.185</i>	<i>0.190</i>	0.462	<i>0.649</i>	<i>0.737</i>
Ethanol (g)	0.262	0.281	0.281	0.283	0.268	0.284	0.286	<i>0.276</i>	<i>0.263</i>	<i>0.278</i>	<i>0.285</i>	<i>0.273</i>	1.108	<i>1.114</i>	<i>1.098</i>
Subtotal	0.361	0.399	0.400	0.410	0.408	0.457	0.448	<i>0.450</i>	<i>0.437</i>	<i>0.465</i>	<i>0.470</i>	<i>0.463</i>	1.569	<i>1.763</i>	<i>1.835</i>
All Sectors Total															
Biodiesel, Renewable Diesel, and Other (g)	0.099	0.118	0.118	0.126	0.140	0.173	0.162	<i>0.174</i>	<i>0.175</i>	<i>0.187</i>	<i>0.185</i>	<i>0.190</i>	0.462	<i>0.649</i>	<i>0.737</i>
Biofuel Losses and Co-products (d)	0.203	0.202	0.197	0.206	0.199	0.202	0.200	<i>0.203</i>	<i>0.198</i>	<i>0.197</i>	<i>0.202</i>	<i>0.198</i>	0.808	<i>0.804</i>	<i>0.795</i>
Ethanol (f)	0.273	0.293	0.293	0.295	0.279	0.296	0.298	<i>0.287</i>	<i>0.273</i>	<i>0.289</i>	<i>0.297</i>	<i>0.284</i>	1.153	<i>1.160</i>	<i>1.143</i>
Geothermal	0.030	0.030	0.031	0.031	0.030	0.030	0.024	<i>0.024</i>	<i>0.022</i>	<i>0.022</i>	<i>0.023</i>	<i>0.023</i>	0.122	<i>0.107</i>	<i>0.090</i>
Hydroelectric Power (a)	0.254	0.237	0.214	0.189	0.215	0.224	0.200	<i>0.203</i>	<i>0.256</i>	<i>0.280</i>	<i>0.229</i>	<i>0.211</i>	0.894	<i>0.841</i>	<i>0.975</i>
Solar (b)(f)	0.153	0.231	0.228	0.150	0.164	0.264	0.276	<i>0.189</i>	<i>0.217</i>	<i>0.343</i>	<i>0.356</i>	<i>0.240</i>	0.761	<i>0.893</i>	<i>1.156</i>
Waste Biomass (c)	0.106	0.102	0.099	0.103	0.103	0.098	0.096	<i>0.098</i>	<i>0.100</i>	<i>0.099</i>	<i>0.099</i>	<i>0.098</i>	0.411	<i>0.394</i>	<i>0.396</i>
Wood Biomass	0.494	0.496	0.505	0.489	0.486	0.464	0.491	<i>0.507</i>	<i>0.510</i>	<i>0.505</i>	<i>0.522</i>	<i>0.518</i>	1.984	<i>1.948</i>	<i>2.055</i>
Wind	0.406	0.413	0.275	0.388	0.428	0.349	0.289	<i>0.413</i>	<i>0.459</i>	<i>0.372</i>	<i>0.299</i>	<i>0.432</i>	1.483	<i>1.479</i>	<i>1.562</i>
Total Consumption	2.019	2.122	1.960	1.976	2.034	2.089	2.033	<i>2.098</i>	<i>2.210</i>	<i>2.295</i>	<i>2.213</i>	<i>2.193</i>	8.077	<i>8.255</i>	<i>8.911</i>

Notes: EIA completed modeling and analysis for this report on October 5, 2023.

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

(a) Energy consumption for conventional hydroelectric power only. Hydroelectricity generated by pumped storage is not included in renewable energy and energy consumption by small-scale solar photovoltaic systems (less than 1 megawatts in size).

(c) Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass.

(d) Losses and co-products from the production of fuel ethanol and biomass-based diesel

(e) Subtotals for the industrial and commercial sectors might not equal the sum of the components. The subtotal for the industrial sector includes ethanol consumption that is not shown separately. The subtotal for the commercial sector includes ethanol and hydroelectric consumption that are not shown separately.

(f) Solar consumption in the residential sector includes energy from small-scale solar photovoltaic systems (<1 megawatt), and it includes solar heating consumption in all sectors. Some biomass-based diesel may be consumed in the residential sector in heating oil.

Historical data: Latest data available from EIA databases supporting the following reports: Electric Power Monthly, Electric Power Annual, Minor discrepancies with published historical data are due to independent rounding and possible revisions not yet reflected in the STEO.

Forecast data: EIA Short-Term Integrated Forecasting System.

Table 8b. U.S. Renewable Electricity Generation and Capacity
 U.S. Energy Information Administration | Short-Term Energy Outlook - April 2023

	2022				2023				2024				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2022	2023	2024

Table 8b has been discontinued. Renewable electricity information can be found on the following tables:
 U.S. electric power sector generation [Table 7d](#)
 U.S. electric generating capacity [Table 7e](#)

Table 9a. U.S. Macroeconomic Indicators and CO2 Emissions

U.S. Energy Information Administration | Short-Term Energy Outlook - October 2023

	2022				2023				2024				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2022	2023	2024
Macroeconomic															
Real Gross Domestic Product (billion chained 2012 dollars - SAAR)	19,924	19,895	20,055	20,182	20,283	20,386	20,590	20,662	20,701	20,757	20,829	20,917	20,014	20,480	20,801
Real Personal Consumption Expend. (billion chained 2012 dollars - SAAR)	14,028	14,099	14,179	14,215	14,360	14,420	14,559	14,617	14,641	14,678	14,721	14,778	14,130	14,489	14,704
Real Private Fixed Investment (billion chained 2012 dollars - SAAR)	3,629	3,582	3,550	3,516	3,512	3,546	3,573	3,592	3,604	3,612	3,625	3,642	3,569	3,556	3,621
Business Inventory Change (billion chained 2012 dollars - SAAR)	257	145	71	162	12	8	39	33	39	44	54	68	159	23	51
Real Government Expenditures (billion chained 2012 dollars - SAAR)	3,393	3,379	3,411	3,442	3,484	3,513	3,530	3,543	3,555	3,566	3,572	3,577	3,406	3,518	3,568
Real Exports of Goods & Services (billion chained 2012 dollars - SAAR)	2,437	2,517	2,604	2,580	2,628	2,555	2,601	2,640	2,670	2,703	2,738	2,773	2,534	2,606	2,721
Real Imports of Goods & Services (billion chained 2012 dollars - SAAR)	3,926	3,947	3,873	3,818	3,837	3,768	3,816	3,890	3,943	3,982	4,017	4,057	3,891	3,828	4,000
Real Disposable Personal Income (billion chained 2012 dollars - SAAR)	15,109	15,022	15,141	15,236	15,550	15,677	15,697	15,785	15,962	16,095	16,199	16,278	15,127	15,677	16,133
Non-Farm Employment (millions)	150.8	152.0	153.3	154.3	155.2	155.9	156.4	156.6	156.6	156.5	156.3	156.3	152.6	156.0	156.4
Civilian Unemployment Rate (percent)	3.8	3.6	3.6	3.6	3.5	3.6	3.7	3.7	3.8	3.9	4.0	4.1	3.6	3.6	4.0
Housing Starts (millions - SAAR)	1.72	1.64	1.45	1.41	1.39	1.45	1.39	1.41	1.38	1.39	1.40	1.41	1.55	1.41	1.40
Industrial Production Indices (Index, 2017=100)															
Total Industrial Production	101.7	102.8	103.3	102.7	102.6	102.8	103.1	102.2	101.9	101.7	101.8	102.1	102.6	102.6	101.9
Manufacturing	100.1	100.8	100.9	100.0	99.9	100.2	100.0	99.3	99.0	98.9	99.3	99.9	100.5	99.9	99.3
Food	105.1	105.1	104.8	104.5	105.1	103.7	101.9	102.6	102.8	103.2	103.6	104.1	104.9	103.3	103.5
Paper	95.9	96.2	92.7	89.1	87.8	86.7	85.8	85.6	85.6	85.6	85.8	86.1	93.5	86.5	85.7
Petroleum and Coal Products	89.8	89.6	90.1	89.8	88.5	89.9	90.5	90.7	90.6	90.5	90.5	90.6	89.8	89.9	90.5
Chemicals	102.1	102.3	102.4	100.9	103.2	103.2	103.5	104.2	104.4	104.6	105.2	105.8	101.9	103.5	105.0
Nonmetallic Mineral Products	107.1	108.0	109.7	110.6	111.4	108.8	108.1	108.6	109.2	110.1	111.1	112.2	108.9	109.2	110.7
Primary Metals	94.9	96.4	95.7	92.5	92.7	95.3	95.1	95.0	94.4	94.7	96.2	97.9	94.9	94.5	95.8
Coal-weighted Manufacturing (a)	97.4	97.7	97.2	95.2	95.7	95.8	95.7	95.9	95.8	96.0	96.8	97.7	96.9	95.8	96.5
Distillate-weighted Manufacturing (a)	100.0	100.5	100.4	99.2	99.3	99.0	98.8	99.0	99.0	99.3	100.0	100.8	100.0	99.0	99.8
Electricity-weighted Manufacturing (a)	98.5	98.8	98.2	96.0	96.4	96.5	96.6	96.8	96.7	96.9	97.6	98.5	97.9	96.6	97.4
Natural Gas-weighted Manufacturing (a)	97.0	96.7	95.6	92.7	94.0	93.4	93.8	94.0	93.8	93.8	94.4	95.0	95.5	93.8	94.3
Price Indexes															
Consumer Price Index (all urban consumers) (index, 1982-1984=1.00)	2.85	2.92	2.95	2.99	3.01	3.03	3.06	3.08	3.10	3.11	3.12	3.14	2.93	3.05	3.12
Producer Price Index: All Commodities (index, 1982=1.00)	2.53	2.72	2.70	2.63	2.59	2.54	2.52	2.53	2.52	2.49	2.49	2.49	2.64	2.54	2.50
Producer Price Index: Petroleum (index, 1982=1.00)	3.16	4.21	3.74	3.44	3.09	2.91	3.08	2.94	2.88	2.94	2.92	2.85	3.64	3.00	2.90
GDP Implicit Price Deflator (index, 2012=100)	124.2	126.9	128.3	129.5	130.8	131.5	132.2	133.2	134.2	134.9	135.7	136.5	127.2	131.9	135.3
Miscellaneous															
Vehicle Miles Traveled (b) (million miles/day)	8,142	8,910	9,066	8,604	8,363	9,080	9,057	8,682	8,165	8,953	9,173	8,613	8,683	8,797	8,727
Air Travel Capacity (Available ton-miles/day, thousands)	656	686	692	700	683	734	739	718	696	730	749	727	684	719	725
Aircraft Utilization (Revenue ton-miles/day, thousands)	356	419	422	407	390	440	461	442	408	445	462	442	401	434	439
Airline Ticket Price Index (index, 1982-1984=100)	225.6	328.7	293.1	285.2	277.6	290.8	245.8	256.5	266.8	317.9	282.7	280.7	283.1	267.6	287.0
Raw Steel Production (million short tons per day)	0.253	0.253	0.247	0.235	0.236	0.244	0.245	0.249	0.245	0.244	0.251	0.257	0.247	0.243	0.249
Carbon Dioxide (CO2) Emissions (million metric tons)															
Petroleum	557	559	569	564	548	563	559	561	555	557	565	564	2,250	2,231	2,242
Natural Gas	510	374	401	461	502	383	423	459	511	376	407	456	1,746	1,767	1,750
Coal	244	215	264	212	184	171	227	163	173	145	234	154	935	745	705
Total Energy (c)	1,314	1,150	1,237	1,239	1,237	1,119	1,212	1,186	1,241	1,081	1,208	1,177	4,941	4,753	4,707

(a) Fuel share weights of individual sector indices based on EIA *Manufacturing Energy Consumption Survey*.

(b) Total highway travel includes gasoline and diesel fuel vehicles.

(c) Includes electric power sector use of geothermal energy and non-biomass waste.

- = no data available

SAAR = Seasonally-adjusted annual rate

Notes: EIA completed modeling and analysis for this report on October 5, 2023.

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 U.S. Department of Commerce, Bureau of Economic Analysis; Federal Reserve System, Statistical release G17; Federal Highway Administration; and Federal

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

Forecasts: EIA Short-Term Integrated Forecasting System. U.S. macroeconomic forecasts are based on the S&P Global model of the U.S. Economy.

Table 9b. U.S. Regional Macroeconomic Data

U.S. Energy Information Administration | Short-Term Energy Outlook - October 2023

	2022				2023				2024				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2022	2023	2024
Real Gross State Product (Billion \$2012)															
New England	1,032	1,024	1,031	1,037	1,041	1,044	1,055	1,058	1,058	1,061	1,064	1,068	1,031	1,049	1,063
Middle Atlantic	2,858	2,858	2,879	2,886	2,896	2,905	2,935	2,944	2,948	2,955	2,965	2,977	2,870	2,920	2,961
E. N. Central	2,596	2,583	2,592	2,596	2,603	2,615	2,640	2,648	2,650	2,655	2,662	2,669	2,592	2,626	2,659
W. N. Central	1,220	1,215	1,220	1,221	1,236	1,242	1,249	1,253	1,256	1,259	1,264	1,269	1,219	1,245	1,262
S. Atlantic	3,578	3,578	3,601	3,627	3,644	3,663	3,705	3,721	3,730	3,741	3,754	3,771	3,596	3,683	3,749
E. S. Central	884	883	887	895	900	903	912	915	916	918	920	923	887	908	919
W. S. Central	2,377	2,383	2,424	2,460	2,476	2,495	2,525	2,536	2,542	2,551	2,562	2,576	2,411	2,508	2,558
Mountain	1,359	1,354	1,366	1,378	1,387	1,394	1,406	1,412	1,415	1,420	1,426	1,433	1,364	1,400	1,423
Pacific	3,805	3,802	3,838	3,865	3,881	3,905	3,939	3,952	3,962	3,974	3,987	4,006	3,828	3,919	3,982
Industrial Output, Manufacturing (Index, Year 2017=100)															
New England	97.6	97.9	97.5	96.2	96.1	96.2	95.7	94.9	94.6	94.6	94.9	95.5	97.3	95.7	94.9
Middle Atlantic	95.9	96.6	96.4	95.4	95.1	95.2	94.9	94.1	93.6	93.5	93.7	94.3	96.1	94.8	93.8
E. N. Central	97.4	97.8	97.8	96.6	96.2	96.4	96.2	95.7	95.4	95.4	95.8	96.3	97.4	96.1	95.7
W. N. Central	100.9	101.7	101.8	101.3	101.4	101.8	101.5	100.8	100.5	100.4	100.8	101.4	101.5	101.4	100.8
S. Atlantic	102.5	103.2	103.2	102.3	102.1	102.4	102.4	101.8	101.6	101.5	101.9	102.6	102.8	102.2	101.9
E. S. Central	100.2	101.2	101.5	100.5	100.3	101.0	101.2	100.7	100.2	100.0	100.3	100.7	100.9	100.8	100.3
W. S. Central	102.4	103.6	104.3	104.1	104.1	104.7	105.2	104.5	104.3	104.4	104.9	105.6	103.6	104.6	104.8
Mountain	111.6	112.5	112.7	111.3	111.6	111.8	111.4	110.5	110.2	110.1	110.6	111.2	112.0	111.3	110.5
Pacific	97.7	98.3	98.4	97.5	97.3	97.2	96.8	96.0	95.6	95.5	95.8	96.4	98.0	96.8	95.9
Real Personal Income (Billion \$2012)															
New England	950	940	941	955	951	954	957	959	966	971	975	979	946	955	973
Middle Atlantic	2,414	2,392	2,397	2,393	2,396	2,403	2,409	2,415	2,433	2,447	2,459	2,471	2,399	2,406	2,453
E. N. Central	2,449	2,430	2,437	2,438	2,444	2,450	2,455	2,462	2,482	2,495	2,508	2,518	2,438	2,453	2,501
W. N. Central	1,164	1,161	1,174	1,171	1,182	1,179	1,180	1,183	1,192	1,199	1,205	1,210	1,168	1,181	1,202
S. Atlantic	3,396	3,385	3,422	3,447	3,466	3,485	3,496	3,511	3,544	3,569	3,593	3,614	3,413	3,489	3,580
E. S. Central	943	937	943	944	949	952	953	954	960	964	968	971	942	952	966
W. S. Central	2,084	2,085	2,112	2,119	2,129	2,142	2,149	2,157	2,177	2,192	2,206	2,218	2,100	2,144	2,198
Mountain	1,308	1,307	1,326	1,328	1,333	1,338	1,338	1,342	1,353	1,362	1,370	1,377	1,317	1,338	1,366
Pacific	2,956	2,929	2,944	2,956	2,944	2,962	2,973	2,984	3,013	3,034	3,054	3,073	2,946	2,966	3,043
Households (Thousands)															
New England	6,101	6,100	6,098	6,100	6,118	6,127	6,139	6,149	6,157	6,164	6,170	6,177	6,100	6,149	6,177
Middle Atlantic	16,124	16,119	16,108	16,111	16,152	16,176	16,203	16,232	16,256	16,276	16,295	16,315	16,111	16,232	16,315
E. N. Central	19,058	19,063	19,061	19,068	19,111	19,137	19,171	19,206	19,233	19,254	19,275	19,294	19,068	19,206	19,294
W. N. Central	8,655	8,668	8,678	8,689	8,721	8,744	8,769	8,795	8,818	8,836	8,853	8,870	8,689	8,795	8,870
S. Atlantic	27,104	27,219	27,317	27,398	27,533	27,635	27,739	27,838	27,922	27,994	28,064	28,127	27,398	27,838	28,127
E. S. Central	7,825	7,847	7,864	7,885	7,924	7,954	7,985	8,016	8,043	8,066	8,088	8,108	7,885	8,016	8,108
W. S. Central	15,856	15,922	15,980	16,030	16,109	16,171	16,238	16,303	16,358	16,407	16,462	16,513	16,030	16,303	16,513
Mountain	9,792	9,826	9,858	9,882	9,933	9,972	10,014	10,057	10,095	10,131	10,166	10,202	9,882	10,057	10,202
Pacific	19,052	19,064	19,068	19,075	19,127	19,156	19,188	19,219	19,246	19,267	19,291	19,318	19,075	19,219	19,318
Total Non-farm Employment (Millions)															
New England	7.4	7.5	7.5	7.5	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.5	7.6	7.6
Middle Atlantic	19.6	19.7	19.9	20.0	20.1	20.2	20.2	20.2	20.2	20.2	20.2	20.2	19.8	20.2	20.2
E. N. Central	21.9	22.0	22.2	22.3	22.4	22.5	22.5	22.6	22.6	22.5	22.5	22.4	22.1	22.5	22.5
W. N. Central	10.7	10.7	10.8	10.9	10.9	11.0	11.0	11.0	11.0	11.0	11.0	10.9	10.8	11.0	11.0
S. Atlantic	29.6	29.9	30.2	30.4	30.6	30.7	30.8	30.9	30.9	30.9	30.9	30.9	30.0	30.8	30.9
E. S. Central	8.4	8.5	8.5	8.6	8.6	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.5	8.7	8.7
W. S. Central	18.1	18.3	18.6	18.7	18.9	19.0	19.1	19.1	19.1	19.1	19.1	19.1	18.4	19.0	19.1
Mountain	11.5	11.6	11.7	11.7	11.8	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.6	11.9	11.9
Pacific	23.8	24.1	24.2	24.4	24.5	24.7	24.7	24.8	24.7	24.7	24.7	24.7	24.1	24.7	24.7

- = no data available

Notes: EIA completed modeling and analysis for this report on October 5, 2023.

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

Regions refer to U.S. Census divisions.

See "Census division" in EIA's Energy Glossary (<http://www.eia.doe.gov/glossary/index.html>) for a list of States in each region.

Historical data: Latest data available from U.S. Department of Commerce, Bureau of Economic Analysis; Federal Reserve System, Statistical release G17.

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

Forecasts: U.S. macroeconomic forecasts are based on the IHS Markit model of the U.S. Economy.

Table 9c. U.S. Regional Weather Data

U.S. Energy Information Administration | Short-Term Energy Outlook - October 2023

	2022				2023				2024				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2022	2023	2024
Heating Degree Days															
New England	3,133	784	113	1,977	2,706	814	132	2,011	2,979	828	132	2,053	6,007	5,663	5,992
Middle Atlantic	2,933	670	73	1,961	2,450	655	90	1,845	2,755	662	87	1,881	5,636	5,041	5,385
E. N. Central	3,267	754	99	2,222	2,723	700	119	2,118	3,038	710	122	2,155	6,342	5,661	6,025
W. N. Central	3,486	792	111	2,517	3,169	656	101	2,313	3,183	708	154	2,360	6,907	6,240	6,406
South Atlantic	1,341	189	13	979	1,058	190	16	889	1,295	181	13	891	2,522	2,153	2,379
E. S. Central	1,825	250	23	1,339	1,393	259	10	1,236	1,712	236	19	1,242	3,436	2,898	3,209
W. S. Central	1,337	56	2	803	930	93	1	768	1,106	86	5	772	2,198	1,791	1,968
Mountain	2,297	732	84	2,013	2,559	726	110	1,795	2,138	701	152	1,815	5,127	5,191	4,806
Pacific	1,397	604	49	1,294	1,839	660	82	1,122	1,423	576	94	1,143	3,343	3,703	3,236
U.S. Average	2,145	490	54	1,551	1,921	486	66	1,435	2,004	472	75	1,454	4,240	3,908	4,005
Heating Degree Days, Prior 10-year Average															
New England	3,100	853	107	2,103	3,150	859	106	2,093	3,109	855	102	2,064	6,163	6,207	6,131
Middle Atlantic	2,881	681	70	1,904	2,939	689	69	1,907	2,889	686	65	1,885	5,536	5,604	5,525
E. N. Central	3,133	727	97	2,162	3,215	741	93	2,168	3,158	735	93	2,134	6,119	6,217	6,121
W. N. Central	3,221	726	125	2,358	3,319	754	121	2,374	3,295	729	121	2,333	6,430	6,569	6,479
South Atlantic	1,381	187	11	907	1,403	190	10	905	1,357	188	10	895	2,486	2,508	2,450
E. S. Central	1,764	244	15	1,229	1,811	251	14	1,231	1,757	248	14	1,213	3,251	3,307	3,232
W. S. Central	1,144	93	3	753	1,188	95	3	762	1,163	91	3	738	1,993	2,048	1,994
Mountain	2,173	681	131	1,810	2,193	696	128	1,834	2,208	696	126	1,814	4,794	4,851	4,844
Pacific	1,457	523	79	1,138	1,441	523	75	1,149	1,469	539	75	1,139	3,196	3,189	3,222
U.S. Average	2,095	478	62	1,472	2,132	485	60	1,477	2,102	483	59	1,454	4,107	4,154	4,098
Cooling Degree Days															
New England	0	81	567	0	0	54	508	7	0	99	510	1	648	569	610
Middle Atlantic	0	152	686	1	0	90	591	22	0	185	663	5	839	704	853
E. N. Central	1	257	556	2	0	179	504	40	1	249	608	7	816	723	865
W. N. Central	3	305	735	8	1	320	703	43	5	298	736	11	1,051	1,067	1,049
South Atlantic	157	712	1,200	234	204	590	1,245	259	138	712	1,286	257	2,302	2,298	2,393
E. S. Central	28	599	1,064	36	64	440	1,096	95	34	545	1,129	68	1,727	1,695	1,776
W. S. Central	56	1,097	1,664	169	150	899	1,838	246	104	923	1,626	210	2,987	3,133	2,862
Mountain	17	474	1,025	67	3	350	998	81	21	457	1,032	84	1,583	1,432	1,593
Pacific	31	223	760	80	26	107	608	86	28	205	720	79	1,094	826	1,032
U.S. Average	47	467	952	90	69	363	937	121	50	444	968	105	1,556	1,490	1,567
Cooling Degree Days, Prior 10-year Average															
New England	0	87	472	2	0	87	480	2	0	83	487	3	561	569	572
Middle Atlantic	0	163	612	8	0	160	617	8	0	153	624	10	783	785	787
E. N. Central	3	238	571	9	1	234	561	10	1	230	564	13	821	805	809
W. N. Central	7	299	682	11	4	292	675	12	4	301	679	15	999	982	1,000
South Atlantic	146	667	1,188	268	144	674	1,192	272	153	674	1,213	273	2,269	2,283	2,313
E. S. Central	44	517	1,056	83	36	520	1,058	83	41	519	1,076	87	1,701	1,697	1,723
W. S. Central	113	852	1,537	224	101	861	1,549	222	109	872	1,581	231	2,726	2,733	2,793
Mountain	24	463	954	85	24	461	959	83	22	447	967	86	1,526	1,526	1,522
Pacific	31	208	664	85	32	214	675	86	32	203	676	90	988	1,006	1,000
U.S. Average	53	413	890	109	50	416	895	109	53	414	908	113	1,464	1,470	1,489

- = no data available

Notes: EIA completed modeling and analysis for this report on October 5, 2023.

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

Regional degree days for each period are calculated by EIA as contemporaneous period population-weighted averages of state degree day data published by the National See *Change in Regional and U.S. Degree-Day Calculations* (http://www.eia.gov/forecasts/steo/special/pdf/2012_sp_04.pdf) for more information.

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

Regions refer to U.S. Census divisions. See "Census division" in EIA's Energy Glossary (<http://www.eia.gov/tools/glossary/>) for a list of states in each region.

Historical data: Latest data available from U.S. Department of Commerce, National Oceanic and Atmospheric Association (NOAA).

Forecasts: Current month based on forecasts by the NOAA Climate Prediction Center (<http://www.cpc.ncep.noaa.gov/pacdir/DDdir/NHOME3.shtml>). Remaining months based on the 30-year trend.

Appendix to the October 2023 Short-Term Energy Outlook

This appendix is prepared in fulfillment of section 1245(d)(4)(A) of the National Defense Authorization Act (NDAA) for Fiscal Year 2012, as amended. The law requires the U.S. Energy Information Administration (EIA), the statistical and analytical agency within the U.S. Department of Energy, to submit to Congress a report on the availability and price of petroleum and petroleum products produced in countries other than Iran in the two-month period preceding the submission of the report. By law, EIA's data, analyses, and forecasts are independent of approval by any other officer or employee of the U.S. Government. The data in this appendix, therefore, should not be construed as representing those of the U.S. Department of Energy or other federal agencies.

EIA consulted with the U.S. Department of the Treasury, the U.S. Department of State, and the intelligence community in the process of developing the NDAA report, which was previously published as a stand-alone report. Detailed background and contextual information not repeated here can be found in [early editions of the NDAA report](#).

This appendix is published in the *Short-Term Energy Outlook* in even numbered months.

Table a1. Summary of Estimated Petroleum and Other Liquids Quantities

	Aug 2023	Sep 2023	Aug 2023 – Sep 2023 Average	Aug 2022 – Sep 2022 Average	2020 – 2022 Average
Global Petroleum and Other Liquids (million barrels per day)					
Global Petroleum and Other Liquids Production (a)	101.3	100.8	101.1	101.1	96.5
Global Petroleum and Other Liquids Consumption (b)	101.6	101.4	101.5	100.4	96.0
Biofuels Production (c)	3.2	3.0	3.1	3.1	2.6
Biofuels Consumption (c)	2.7	2.7	2.7	2.7	2.6
Iran Liquid Fuels Production	4.1	4.1	4.1	3.6	3.4
Iran Liquid Fuels Consumption	2.1	2.1	2.1	2.1	2.0
Petroleum and Petroleum Products Produced and Consumed in Countries Other Than Iran (million barrels per day)					
Production (d)	94.1	93.7	93.9	94.4	90.5
Consumption (d)	96.8	96.6	96.7	95.7	91.3
Production minus Consumption	-2.8	-2.9	-2.8	-1.3	-0.8
World Inventory Net Withdrawals Including Iran	0.3	0.6	0.4	-0.7	-0.6
Estimated OECD Inventory Level (e) (million barrels)	2,816	2,805	2,810	2,723	2,878
Surplus Production Capacity (million barrels per day)					
OPEC Surplus Crude Oil Production Capacity (f)	4.7	5.1	4.9	1.5	4.3

Note: The term "petroleum and other liquids" encompasses crude oil, lease condensate, natural gas liquids, biofuels, coal-to-liquids, gas-to-liquids, and refinery processing gains, which are important to consider in concert due to the inter-related supply, demand, and price dynamics of petroleum, petroleum products, and related fuels.

(a) Production includes crude oil (including lease condensates), natural gas liquids, other liquids, and refinery processing gains.

(b) Consumption of petroleum by the OECD countries is synonymous with "products supplied," defined in the glossary of the EIA Petroleum Supply Monthly, DOE/EIA-0109. Consumption of petroleum by the non-OECD countries is "apparent consumption," which includes internal consumption, refinery fuel, and loss, and bunkering.

(c) Biofuels production and consumption are based on EIA estimates as published in the International Energy Statistics. Biofuels production in the third quarter tends to be at its highest level in the year as ethanol production in Brazil reaches its seasonal peak and is typically lowest in the first quarter as seasonal production falls in the South/South-Central region of Brazil.

(d) Global production of petroleum and petroleum products outside of Iran is derived by subtracting biofuels production and Iran liquid fuels production from global liquid fuels production. The same method is used to calculate global consumption outside of Iran.

(e) Estimated inventory level is for OECD countries only.

(f) EIA defines surplus oil production capacity as potential oil production that could be brought online within 30 days and sustained for at least 90 days, consistent with sound business practices. This does not include oil production increases that could not be sustained without degrading the future production capacity of a field.

Data source: U.S. Energy Information Administration.

Table a2. Crude Oil and Petroleum Product Price Data

Item	Aug 2023	Sep 2023	Aug 2023 – Sep 2023 Average	Aug 2022 – Sep 2022 Average	2020 – 2022 Average
Brent Front Month Futures Price (\$ per barrel)	85.10	92.59	88.58	94.32	71.07
WTI Front Month Futures Price (\$ per barrel)	81.32	89.43	85.09	87.81	67.25
Dubai Front Month Futures Price (\$ per barrel)	86.46	93.18	89.59	93.97	69.66
Brent 1st - 13th Month Futures Spread (\$ per barrel)	4.82	9.05	6.79	10.03	5.09
WTI 1st - 13th Month Futures Spread (\$ per barrel)	5.29	10.08	7.52	8.52	5.09
RBOB Front Month Futures Price (\$ per gallon)	2.83	2.62	2.73	2.69	2.08
Heating Oil Front Month Futures Price (\$ per gallon)	3.11	3.31	3.20	3.51	2.29
RBOB - Brent Futures Crack Spread (\$ per gallon)	0.80	0.42	0.62	0.44	0.39
Heating Oil - Brent Futures Crack Spread (\$ per gallon)	1.09	1.10	1.10	1.26	0.60

(a) Brent refers to Brent crude oil traded on the Intercontinental Exchange (ICE).

(b) WTI refers to West Texas Intermediate crude oil traded on the New York Mercantile Exchange (NYMEX), owned by Chicago Mercantile Exchange (CME) Group.

(c) RBOB refers to *reformulated blendstock for oxygenate blending traded on the NYMEX*.

Data source: U.S. Energy Information Administration, based on Chicago Mercantile Exchange (CME), Intercontinental Exchange (ICE), and Dubai Mercantile Exchange (DME).