

Short-Term Energy Outlook

STEO

December 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	\$82	\$83
Retail gasoline price (dollars per gallon)	\$3.97	\$3.53	\$3.36
U.S. crude oil production (million barrels per day)	11.91	12.93	13.11
Natural gas price at Henry Hub (dollars per million British thermal units)	\$6.42	\$2.56	\$2.79
U.S. liquefied natural gas gross exports (billion cubic feet per day)	10.6	11.8	12.4
Shares of U.S. electricity generation			
Natural gas	39%	42%	42%
Coal	20%	17%	15%
Renewables	21%	22%	24%
Nuclear	19%	19%	19%
U.S. GDP (percentage change)	1.9%	2.4%	1.3%
U.S. CO₂ emissions (billion metric tons)	4.94	4.80	4.75

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

- Natural gas prices.** The Henry Hub spot price in our forecast averages close to \$2.80 per million British thermal units this winter (November—March), down more than 60 cents from our November *Short-Term Energy Outlook* (STEO). The downward revision reflects both a warmer-than-average start to the winter, which has reduced demand for space heating in the residential and commercial sectors, and high natural gas production. These two factors have increased natural gas storage inventories. We forecast U.S. natural gas inventories will end the winter 22% above the five-year average (2018–2022), with more than 2,000 billion cubic feet in storage.
- Crude oil prices.** We forecast the Brent crude oil spot price will increase from an average of \$78 per barrel (b) in December to an average of \$84/b in the first half of 2024, partly driven by [recently announced OPEC+ production cuts](#). Despite the announced cuts, we lowered our forecast for the Brent price in 2024. We expect the Brent spot price will average \$83/b next year, down from our forecast of \$93/b in last month's STEO.
- U.S. petroleum and other liquids net exports.** We expect net exports of U.S. crude oil and petroleum products to reach a record high of almost 2.0 million barrels per day (b/d) in 2024, up from around 1.8 million b/d this year and 1.2 million b/d in 2022. This growth is primarily driven by an increase in U.S. crude oil and hydrocarbon gas liquids production.
- Electricity generation.** We expect that the 23 gigawatts (GW) in 2023 and 37 GW in 2024 of new solar capacity scheduled to come online will help U.S. solar generation grow by 15% in 2023 and by

39% in 2024. We expect solar and wind generation together in 2024 to overtake electric power generation from coal for the first year ever, exceeding coal by nearly 90 billion kilowatthours.

Notable forecast changes

Current forecast: December 12, 2023; previous forecast: November 7, 2023

	2023	2024
Henry Hub spot price (dollars per million British thermal units)	\$2.56	\$2.79
Previous forecast	\$2.67	\$3.25
Percentage change	-4.1%	-14.3%
Brent crude oil spot price (dollars per barrel)	\$82	\$83
Previous forecast	\$84	\$93
Percentage change	-1.9%	-11.4%
U.S. motor gasoline retail price (dollars per gallon)	\$3.53	\$3.36
Previous forecast	\$3.55	\$3.61
Percentage change	-0.8%	-6.8%
U.S. crude oil inventories (million barrels)	435	439
Previous forecast	416	427
Percentage change	4.7%	2.9%

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

Global Oil Markets

Global oil supply and oil prices

The Brent crude oil spot price averaged \$83 per barrel (b) in November, a decrease of \$8/b compared with October. This decrease was largely the result of ongoing concerns around global oil demand growth. Although crude oil prices declined further during the first week of December, with the Brent spot price closing close to \$76/b on December 8, we expect upward crude oil price pressures in the coming months as global oil inventories decline in our forecast in the first quarter of 2024 (1Q24). The forecast decline in oil inventories is driven in part by the [recently announced OPEC+ production cuts on November 30](#).

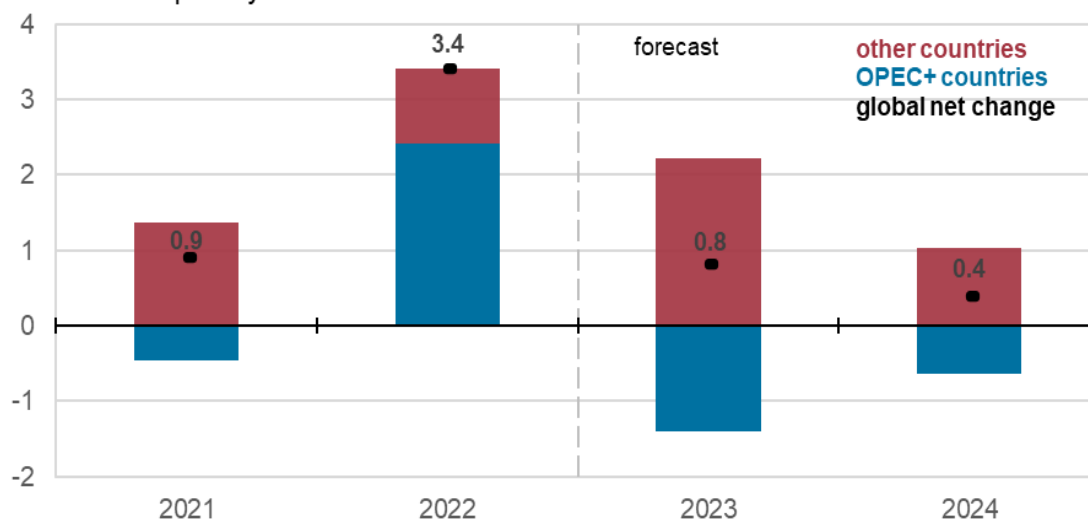
We forecast the Brent price will increase from an average of \$78/b in December 2023 to an average of \$83/b for all of 2024. Our forecast annual peak in the mid-\$80/b range at the end of 1Q24, was about \$10/b higher than futures contracts for delivery during that period when we closed STEO forecast runs. We expect OPEC+ production cuts will offset lower global demand growth, prevent increases in global oil inventories, and keep Brent prices above \$80/b next year. Although we forecast crude oil prices to increase from the current price, we reduced our forecast for the 2024 annual average Brent price by \$11/b from our November STEO.

We forecast global liquid fuels production will increase by 0.6 million barrels per day (b/d) in 2024, slowing from growth of 1.6 million b/d in 2023. We now forecast 0.4 million b/d less growth in 2024 compared with last month's STEO. The lower forecast is the mostly the result of less expected production from OPEC+ and a slight drop in expected production growth in the United States.

Growth in global crude oil supply has been limited in 2023 because of voluntary production cuts from Saudi Arabia and reduced production targets from other OPEC+ countries. We estimate countries within the OPEC+ agreement have lowered crude oil production by 1.4 million b/d in 2023, partly offsetting production growth of 2.4 million b/d by non-OPEC+ producers. We forecast OPEC+ crude oil production to fall by an additional 0.6 million b/d on average in 2024. This forecast assumes some voluntary production cuts from Saudi Arabia will be extended through 2024 and overall production from OPEC+ countries will remain below targets.

Global crude oil production growth

million barrels per day

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

Note: Some Non-OPEC crude oil totals include lease condensate.

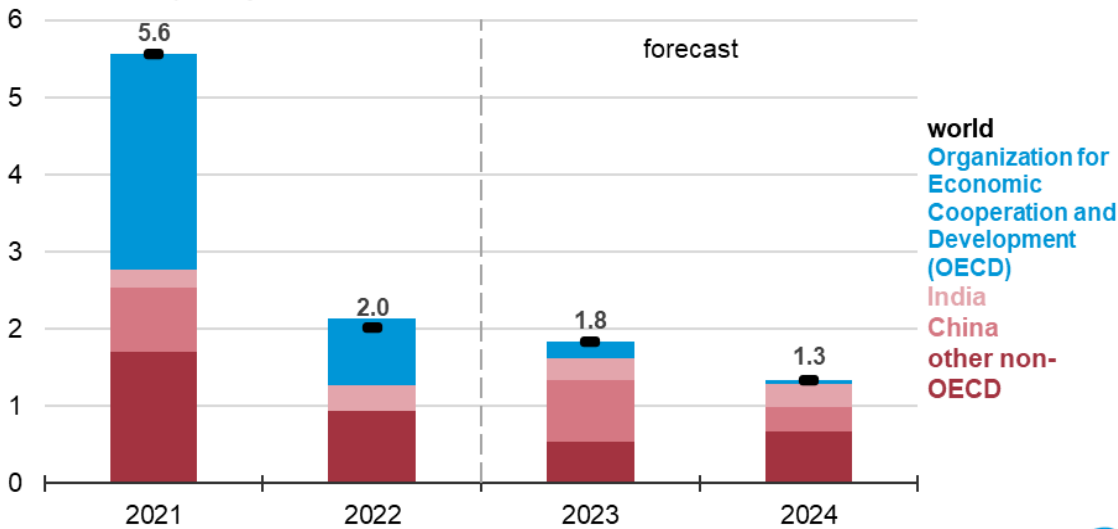


Our current assessment is that global oil inventories have increased by an average of 0.6 million b/d in 2023. Inventory draws materialize in 1Q24, averaging 0.8 million b/d before the oil market returns to balance for the remainder of 2024. However, the potential for OPEC+ production to increase after the voluntary cuts expire in 1Q24 creates some downside risk for our expected oil prices.

Global oil consumption and inventories

Global liquid fuels consumption in our forecast increases by 1.8 million b/d in 2023 and by 1.3 million b/d in 2024. Most of the expected growth in liquid fuels demand is in non-OECD Asia, led by China and India. We expect China's liquid fuels consumption to rise by 0.8 million b/d in 2023 and by 0.3 million b/d in 2024. India's liquid fuels consumption in our forecast increases by an average of 0.3 million b/d in both 2023 and 2024. Outside of China and India, we forecast non-OECD consumption to increase by about 0.7 million b/d on average in 2023 and 2024. This growth contrasts with OECD liquid fuels consumption, which is up only slightly over the forecast period. If expected growth in liquid fuels consumption in non-OECD countries fails to materialize, global oil prices could fall below our assumption.

Annual change in world liquid fuels consumption
million barrels per day



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



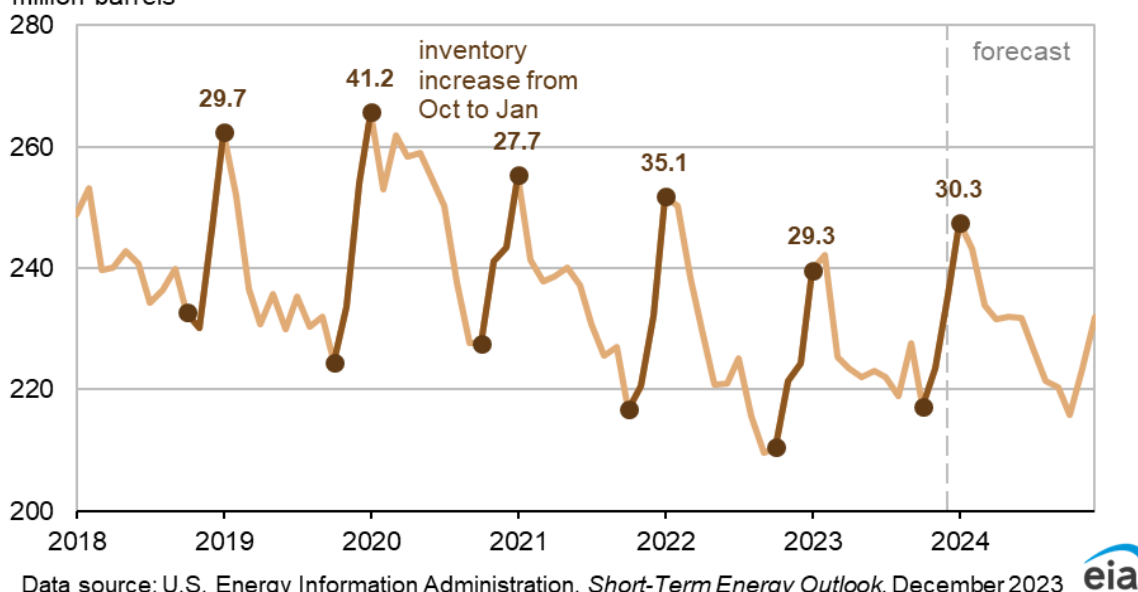
Petroleum Products

U.S. motor gasoline inventories

U.S. gasoline inventories typically build from the end of October to the end of January because refiners have completed scheduled maintenance and are increasing runs at a time when motor gasoline demand is at its lowest for the year. The increase in motor gasoline inventories helps smooth production and consumption when refinery maintenance increases in February and motor gasoline consumption picks up in the spring. This season, we forecast inventories will build by 30 million barrels from end-October 2023 to end-January 2024. Although we expect a below-average inventory build, U.S. gasoline inventories are now higher than this time last year, which we expect to be true in January 2024 as well.

U.S. total motor gasoline inventory

million barrels



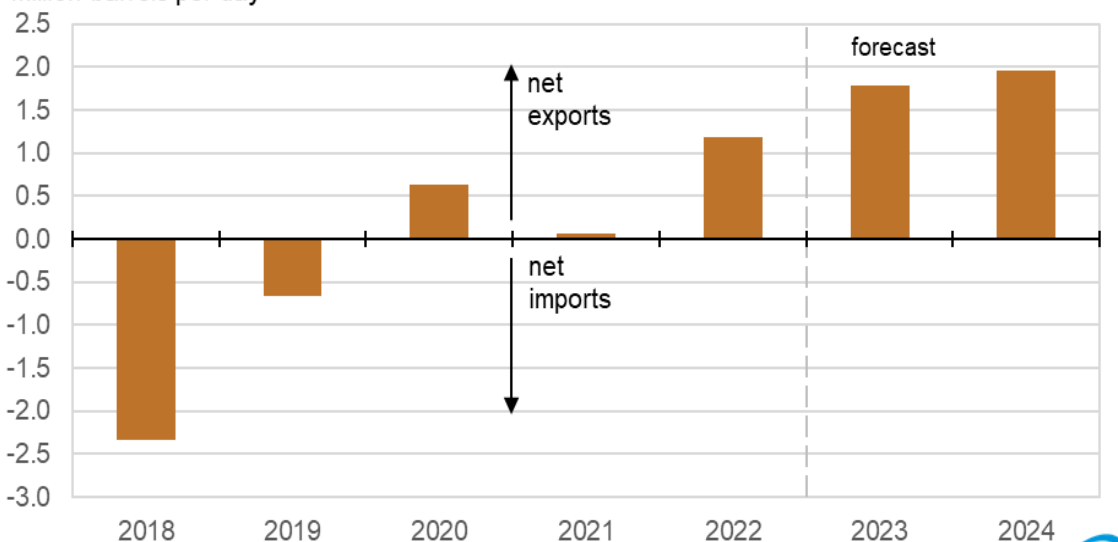
Futures prices for RBOB, the [gasoline blendstock](#) used in many parts of the country, are higher for delivery in spring 2024 than in the upcoming winter, which encourages refiners and storage operators to increase inventories and sell when prices are higher. For the five trading days ending December 7, the RBOB futures price for April 2024 delivery averaged \$2.29 per gallon (gal), compared with \$2.08/gal for the RBOB futures price for January 2024. We expect more gasoline in U.S. inventories to contribute to U.S. gasoline [crack spreads](#) falling by 15 cents/gal in 2024 compared with 2023. Lower crack spreads reduce our forecast of the annual average U.S. retail gasoline price from more than \$3.50/gal this year to less than \$3.40/gal in 2024.

U.S. petroleum and other liquids net exports

We forecast net U.S. exports of crude oil and petroleum products (exports minus imports) to establish a new record next year. Net export growth in 2023 was driven by growth in crude oil production and field production of hydrocarbon gas liquids (HGLs). We estimate production of these HGLs—ethane, propane, butane, and natural gasoline—all grew between 6% and 10% in 2023. In 2024, growth in overall HGL net exports will slow, driven by rising U.S. HGL consumption growth. Forecast increases in refinery runs next year support increases in refined product output, contributing to slight growth in net refined product exports, mainly distillate fuel and gasoline.

U.S. total petroleum and other liquids net exports

million barrels per day



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



The United States will remain a net importer of crude oil next year, averaging about 2.2 million barrels per day (b/d). However, net crude oil imports will decline slightly from 2023. Growing U.S. crude oil production continues to support increased crude oil exports, which averaged more than 4.0 million b/d in 2023 through September. Although some U.S. refiners have added capacity to process additional light and sweet crude oil, such as the ExxonMobil Beaumont [expansion](#), demand for U.S.-produced crude oil increasingly comes from refiners in Europe and Asia. Growth in refinery processing from overseas refiners means the growth in U.S. crude oil production in 2024 will mostly be exported, increasing net U.S. petroleum exports.

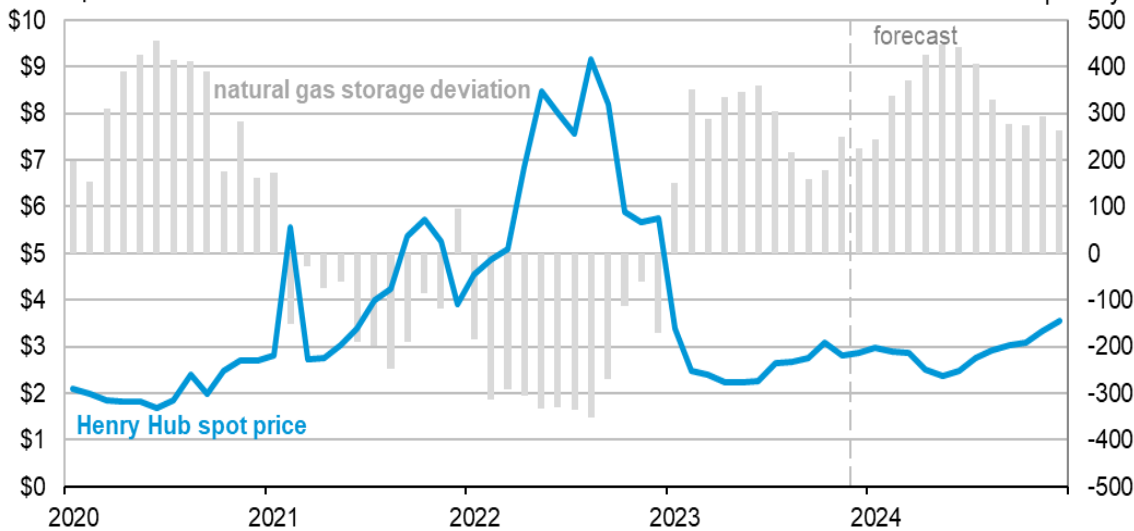
Natural Gas

Natural gas prices

We forecast the U.S. benchmark Henry Hub spot price to average about \$2.80 per million British thermal units (MMBtu) for the rest of the winter heating season which ends in March. We lowered our forecast for natural gas prices this winter by more than 60 cents compared with our November STEO forecast. The lower price forecast is due to recent increases in natural gas production, which reduced natural gas prices in November, and high natural gas storage inventory levels.

The Henry Hub spot price averaged \$2.71/MMBtu in November, down 27 cents from October. Increased U.S. natural gas production in October and November 2023 contributed to the natural gas price decline in November. U.S. dry natural gas production averaged about 105 billion cubic feet per day (Bcf/d) in November, the most for any month on record. U.S. dry natural gas production averaged almost 103 Bcf/d in 1H23 and has increased in most months during 2H23. We forecast dry natural gas production to remain close to 105 Bcf/d for the rest of winter.

Monthly U.S. Henry Hub natural gas price and natural gas storage deviation from the five-year average
dollars per million British thermal units



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

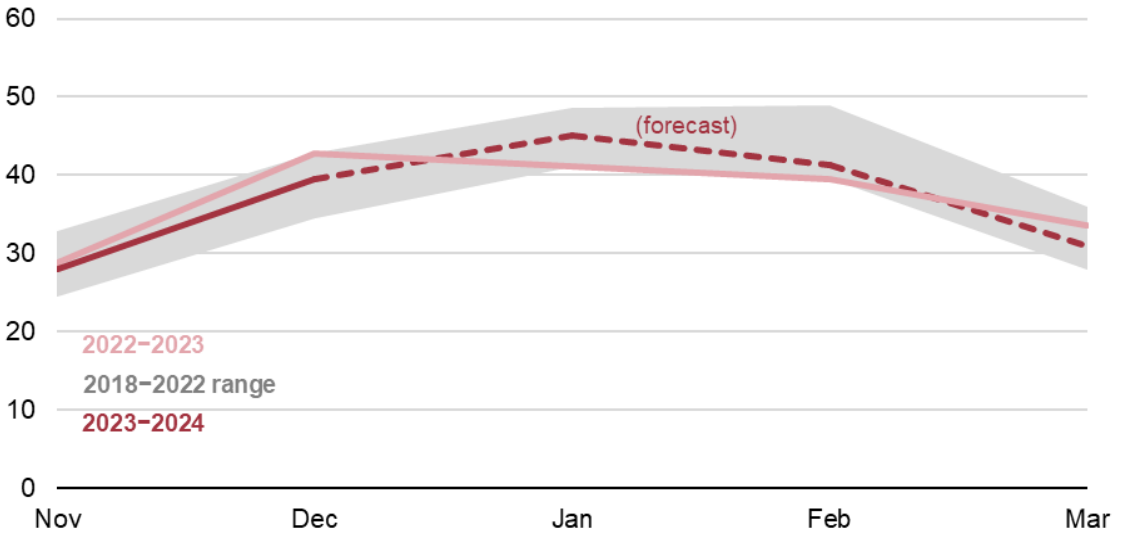


Increased natural gas production throughout all of 2023 contributed to more natural gas in U.S. storage to start the winter heating season. High inventories at the end of November reduced our forecast natural gas prices for this winter heating season compared with our November STEO. Storage inventories started the winter heating season at more than 3,800 billion cubic feet (Bcf), 5% more than the five-year (2018–2022) average. Mild winter weather in the United States in November reduced natural gas consumption. Less natural gas consumption along with increased natural gas production help increase storage inventories to 3,771 Bcf at the end of November, 7% more than the five-year average. We forecast natural gas storage inventories to remain above the five-year average throughout winter and for all of 2024.

Natural gas consumption

We forecast U.S. natural gas consumption in the residential and commercial sectors to average almost 40 Bcf/d for the rest of the winter heating season, 2% less than the five-year average. Our forecast of close-to-average residential and commercial sector consumption is based mostly on our winter weather forecast. For the rest of the winter heating season, we forecast close-to-normal weather with 44 fewer heating [degree days](#) (HHDs) than the five-year average. If temperatures are colder-than-forecast, the residential and commercial sectors will likely consume more natural gas than our forecast. Extreme [winter weather events](#) or [prolonged cold temperatures](#) have the potential to cause more significant disruptions to markets.

U.S. residential and commercial sector winter heating season natural gas consumption billion cubic feet per day



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



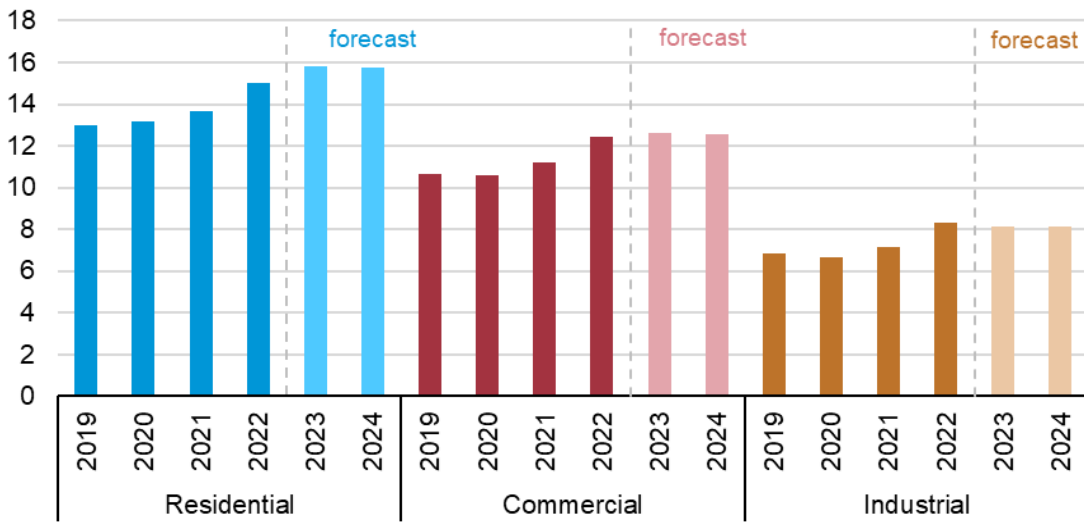
Electricity, Coal, and Renewables


Electricity prices

Wholesale power prices have fallen in recent months, suggesting lower costs, a notion that is consistent with natural gas prices that are lower than the same time last year. For example, the wholesale electricity price in the PJM (Mid-Atlantic) region averaged \$39 per megawatthour during the first 10 months of 2023, less than half the average price last year. However, power prices are likely to rise as winter weather arrives. We assume a colder January 2024 than in 2023, with 26% more heating degree days in the Mid-Atlantic region, will increase the region's wholesale electricity price about 5% higher than in January last year.

Average retail electricity prices charged to ultimate customers tend to be less volatile than wholesale power prices. We forecast the price of electricity to U.S. residential customers in 2024 will average 15.8 cents per kilowatthour (kWh), about the same as in 2023, as reduced generation costs are offset by increases in [distribution and transmission costs](#). Lower wholesale electricity prices earlier this year will likely slow future growth in retail electricity prices through 2024. Our forecast retail electricity prices in the commercial and industrial sector for 2024 are likewise relatively unchanged from this year.

U.S. average annual electricity price to ultimate customers, by sector
cents per kilowatthour

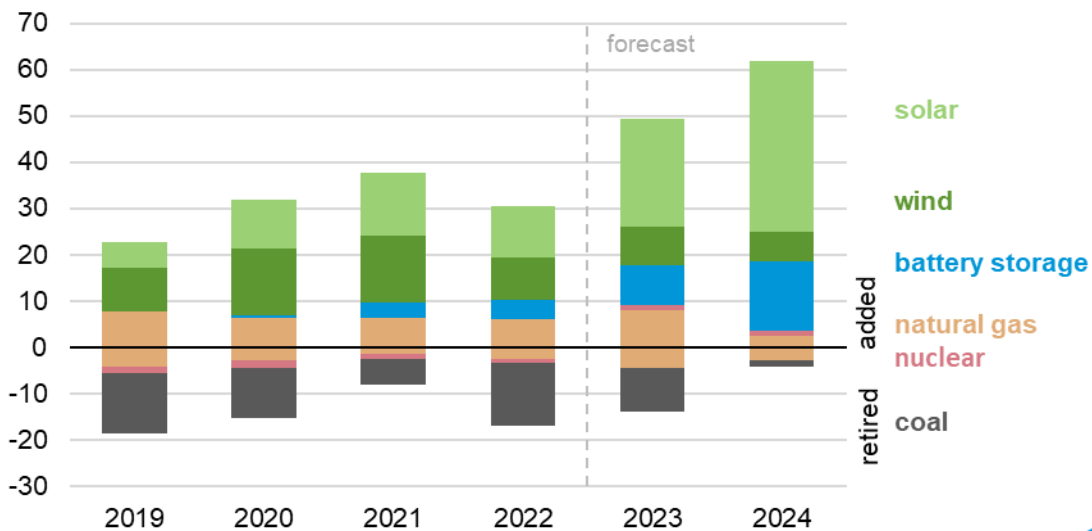



Data source: U.S. Energy Information Administration, *Short-Term Energy Outlook*, December 2023 

Electricity generation

Investment in solar photovoltaic (PV) generating capacity contributes to [solar being the fastest growing source](#) of U.S. electric power generation. We expect 23 gigawatts of new solar generating will come online in 2023 (a 33% increase from 2022) and 37 GW will come online in 2024 (up 39% from 2023). This new solar generating capacity is accompanied by 9 GW of new U.S. battery storage capacity in 2023, doubling the total amount compared with what was operating at the end of 2022.

Annual change in U.S. electric power sector generating capacity by source
gigawatts



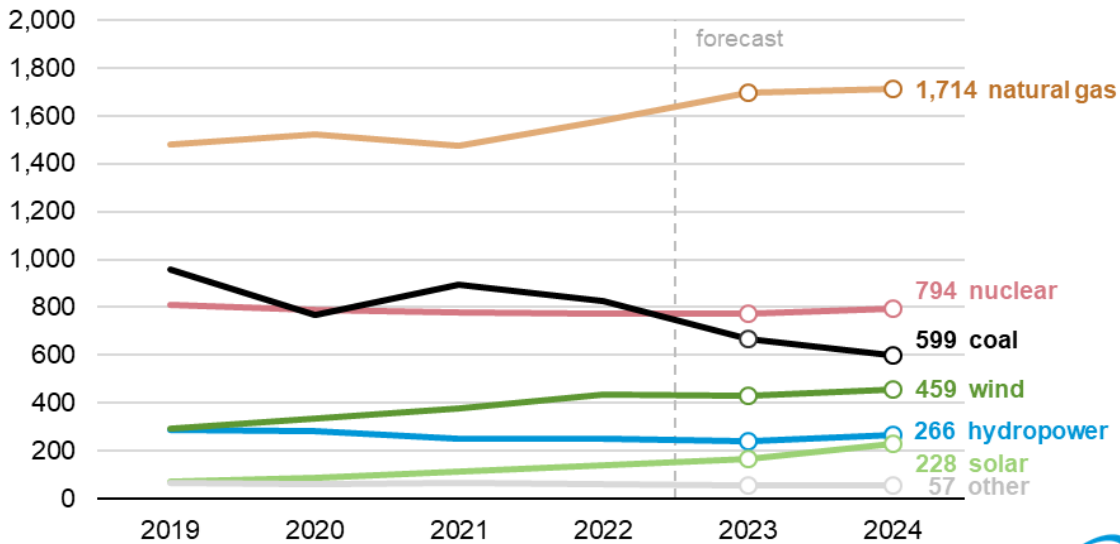
Data source: U.S. Energy Information Administration, *Short-Term Energy Outlook*, December 2023 


The large increase in solar capacity will likely slow growth in electricity generation from [natural gas-fired power plants](#), which had been the largest source of growth in recent years. After growing 7% this year from last year, we forecast U.S. natural gas generation in 2024 to grow 1% from 2023, reaching about 1,714 billion kilowatthours (kWh).

Generation from coal-fired power plants has the sharpest decline in the forecast as a result of growing renewable energy sources, low natural gas prices, and continuing retirements of coal-fired power plants. We forecast that coal-fired power plants will generate less in 2024 (599 billion kWh) than the combined generation from solar and wind (688 billion kWh) for the first time on record.

U.S. annual electric power sector generation by energy source

billion kilowatthours



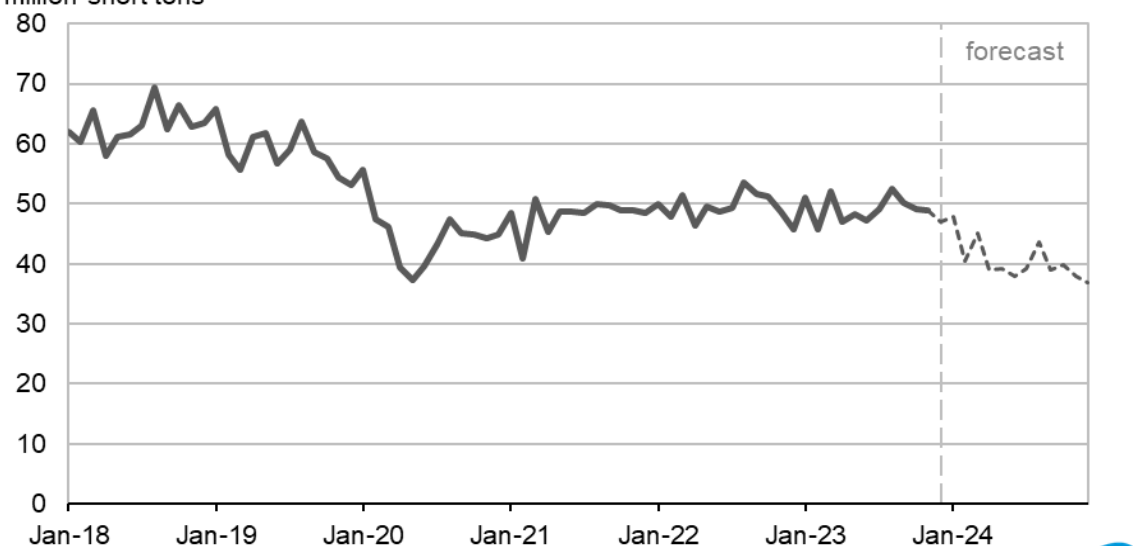
Data source: U.S. Energy Information Administration, *Short-Term Energy Outlook*, December 2023 

Coal markets

We forecast U.S. coal production to fall to 486 MMst in 2024, down more than 100 MMst from 2023 and the least annual U.S. coal production since the early 1960s. The sharp decline in U.S. coal production corresponds with a 10% drop in consumption and a 12% increase in stocks. Exports offset declining domestic consumption in our forecast, increasing 17% in 2023, but falling 7% in 2024, mainly due to a 15% reduction in steam coal exports.

In our forecast, the cost of coal for electric power plants gradually falls to \$2.41/MMBtu in December 2024 from \$2.50 in January 2024 due to persistent weak demand compared to an increase of nearly 40 cents from January to December 2024 (\$3.83/MMBtu) for the cost of natural gas for electric power generation. Coal production is becoming even less cost competitive in power markets as more renewable capacity comes online and [Inflation Reduction Act](#) policies further bolster zero-carbon generation.

U.S. monthly coal production
million short tons



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



Economy, Weather, and CO₂

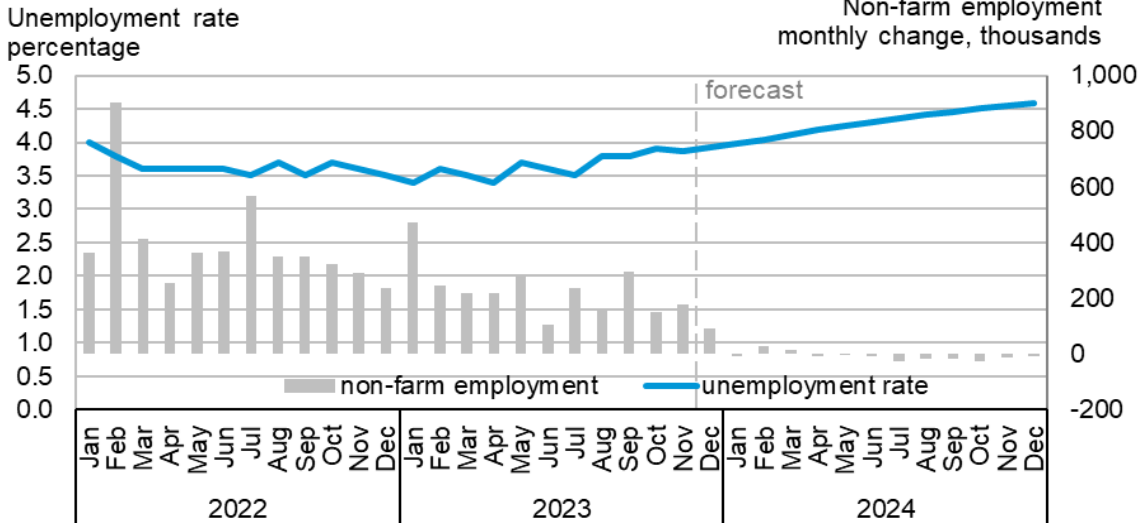
U.S. macroeconomics

Our forecast assumes real U.S. GDP grows by 2.4% in 2023 and 1.3% in 2024. We revised both estimates down from last month. We now assume a slightly slower quarterly GDP growth in 4Q23, at an annualized rate of 1.0%. We assume U.S. GDP growth decelerates through 2Q24 before recovering in 2H24. 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 the final macroeconomic assumptions.

Additions to non-farm payroll employment totaled 150,000 jobs in October, which was less than the average monthly additions of almost 259,000 per month through the first three quarters of the year, as well as the average for all of 2022 of almost 400,000 per month. Our forecast assumes employment growth will slow further in 2023 and 2024. We expect the unemployment rate to rise to 4.3% by the end of 2024, a 0.4% increase from our November forecast. On December 8, the Bureau of Labor Statistics [announced](#) that nonfarm employment additions totaled 199,000 jobs and unemployment fell to 3.7% in November. These results have not yet been incorporated into our STEO forecast because we closed our STEO model runs on December 7.

Our labor market outlook affects our forecast of liquid fuels consumption. More employed workers generally leads to more vehicle miles traveled and, therefore, more gasoline consumption. In addition, the impact of tighter monetary policy and its eventual effect on the labor market is a source of uncertainty in our outlook. Further downward revisions to non-farm employment could lead us to revise our forecast of U.S. liquid fuels consumption lower.

U.S. labor market indicators



Data source: U.S. Energy Information Administration, *Short-Term Energy Outlook*, December 2023, Bureau of Labor Statistics, *Employment Situation Summary*



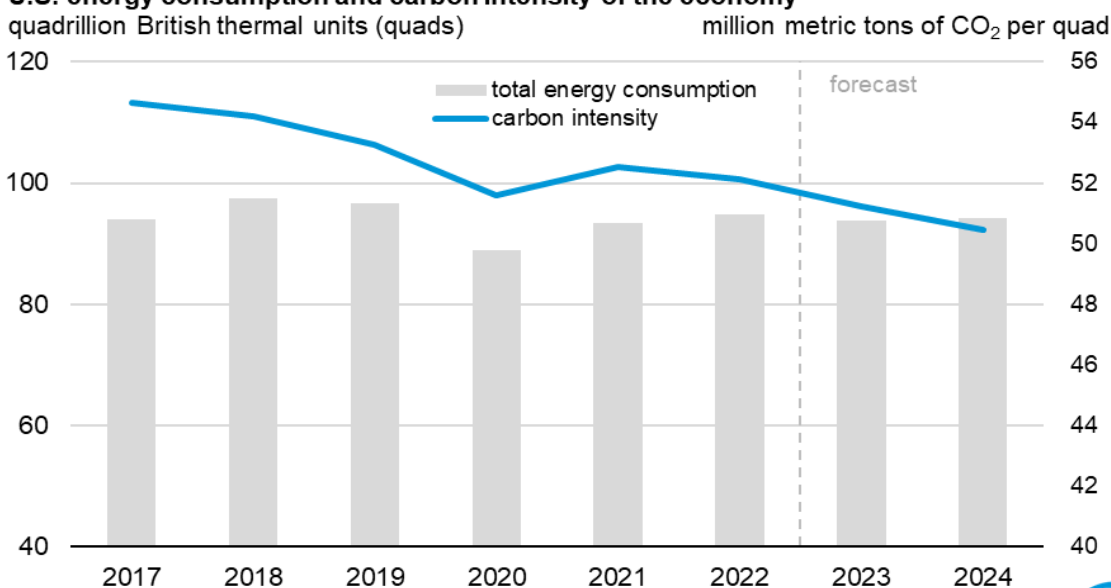
Emissions

U.S. energy-related carbon dioxide (CO₂) emissions decrease in 2023 in our forecast by 3%. Most of this reduction in CO₂ emissions is due to less use of coal, with coal-related CO₂ emissions declining by 18% from 2022. Emissions from petroleum use remain unchanged, and emissions from natural gas increase by 1% in 2023.

We expect total CO₂ emissions to fall by 1% in 2024. The decline is primarily because continued reductions in coal consumption result in a 7% decrease in coal-related emissions. Our forecast of emissions from natural gas and petroleum remain the same as in 2023.

Decreases in U.S. coal consumption in 2023 and 2024 are consistent with the downward trend in recent years. Much of the decline in coal consumption has been offset by increased natural gas consumption and renewable energy as a generation source.

Forecast decreases in coal consumption imply a reduced carbon intensity of the U.S. economy. The carbon intensity of an economy is a metric which indicates the amount of CO₂ emitted to produce a unit of electricity. Coal emits the most **CO₂ per unit of energy** consumed of any fossil fuel. When coal consumption decreases, so do coal-related emissions and overall carbon intensity. These reductions are most pronounced when the energy provided by coal is substituted with a non-emitting energy source, like solar or wind power, or displaced by greater energy efficiency. However, these reductions also occur to a lesser extent if the energy from coal is replaced with other fossil fuels, such as natural gas, which emit less CO₂ when combusted than coal per unit of energy consumed.

U.S. energy consumption and carbon intensity of the economy**Weather**

Our forecast assumes a slightly warmer December in the United States than last year. We expect an average of 725 HDDs in December, 7% fewer HDDs than in December 2022. The United States will average 3,900 HDDs in 2023, down 8% from 2022. We expect an average of around 3,230 HDDs in the United States this winter, about the same as last winter and 4% fewer than the previous 10-winter average.

Short-Term Energy Outlook

Chart Gallery



December 12, 2023

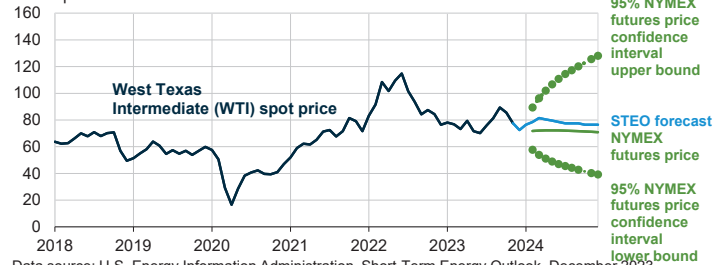


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West Texas Intermediate (WTI) crude oil price and NYMEX confidence intervals

dollars per barrel



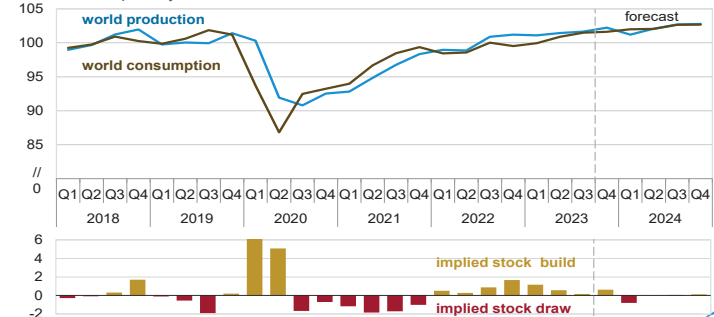
Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, December 2023, CME Group, Bloomberg, L.P., and Refinitiv an LSEG Business

Note: Confidence interval derived from options market information for the five trading days ending December 7, 2023. Intervals not calculated for months with sparse trading in near-the-money options contracts.



World liquid fuels production and consumption balance

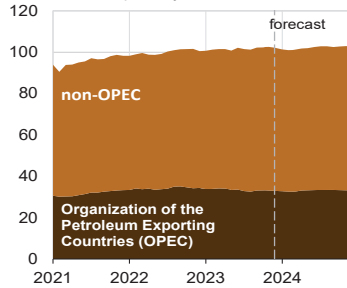
million barrels per day



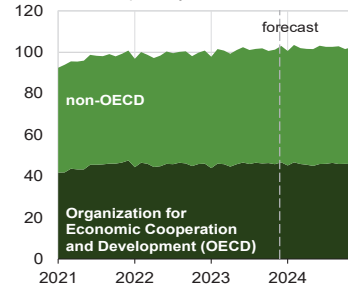
Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, December 2023



World liquid fuels production
million barrels per day

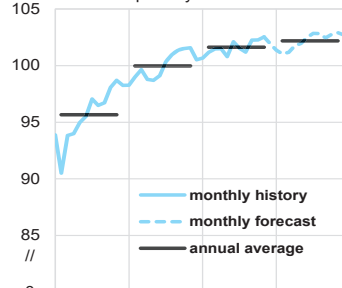


World liquid fuels consumption
million barrels per day

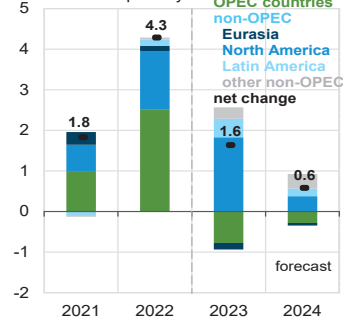


Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, December 2023

World crude oil and liquid fuels production
million barrels per day

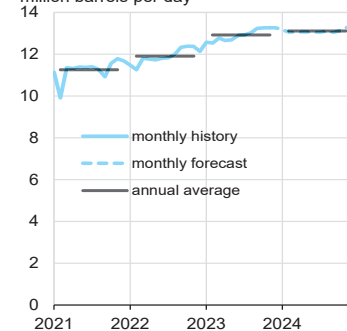


Components of annual change
million barrels per day

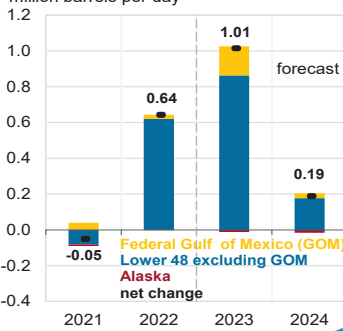


Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, December 2023

U.S. crude oil production
million barrels per day

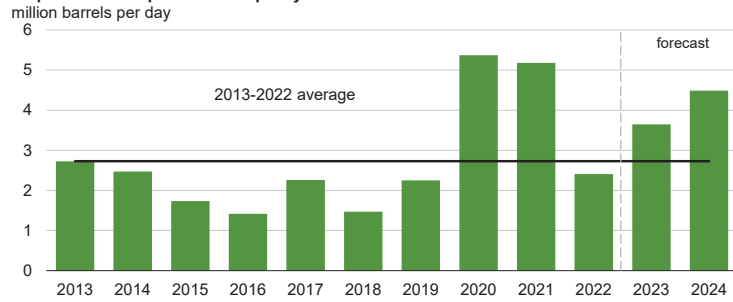


Components of annual change
million barrels per day



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

Organization of the Petroleum Exporting Countries (OPEC)
surplus crude oil production capacity

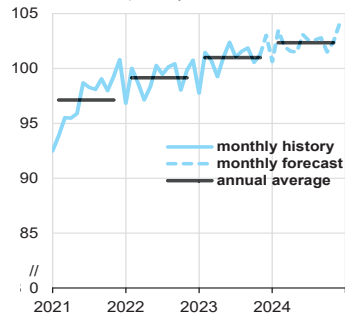


Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, December 2023

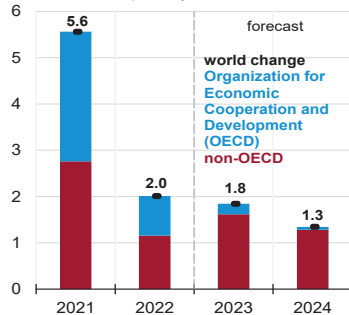
Note: Black line represents 2013-2022 average (2.7 million barrels per day).



World liquid fuels consumption
million barrels per day



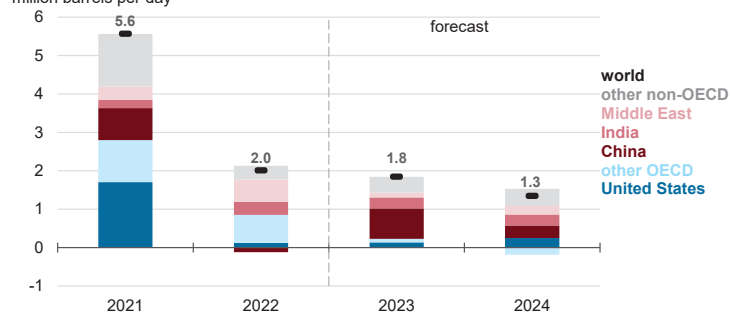
Components of annual change
million barrels per day



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



Annual change in world liquid fuels consumption
million barrels per day

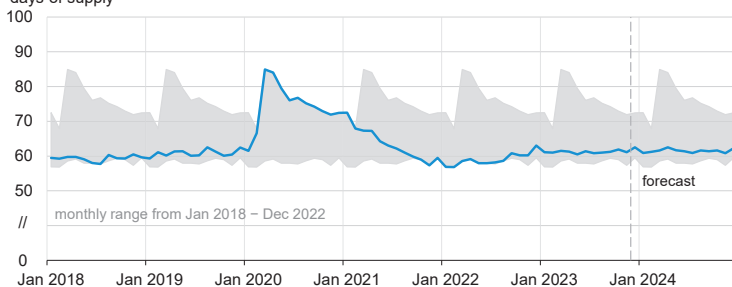


Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, December 2023



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

days of supply

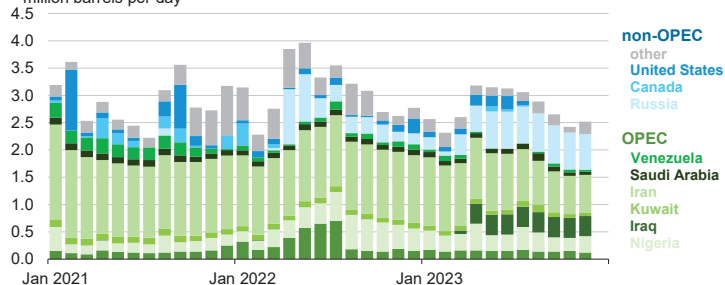


Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, December 2023



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

million barrels per day

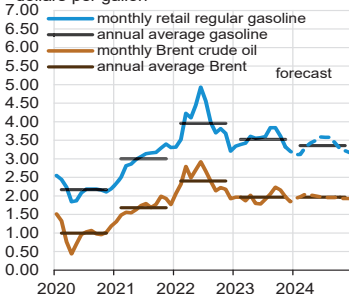


Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, December 2023



U.S. gasoline and crude oil prices

dollars per gallon

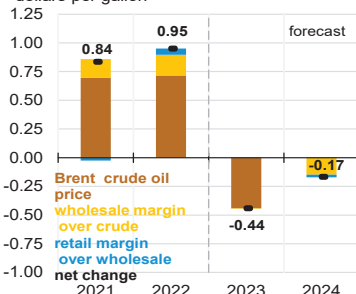


Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, December 2023, and Refinitiv an LSEG Business

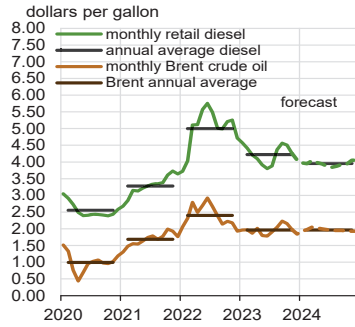


Components of annual gasoline price changes

dollars per gallon

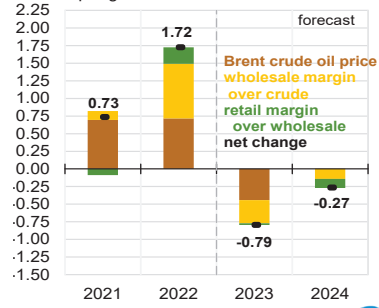


U.S. diesel and crude oil prices

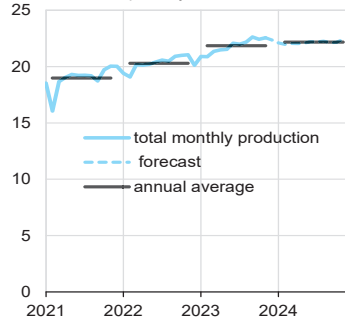


Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, December 2023, and Refinitiv an LSEG Business

Components of annual diesel price changes

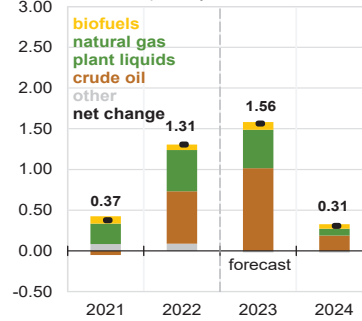


U.S. crude oil and liquid fuels production

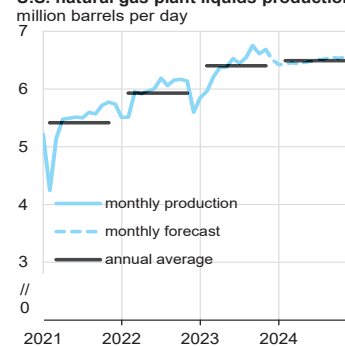


Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, December 2023

Components of annual change

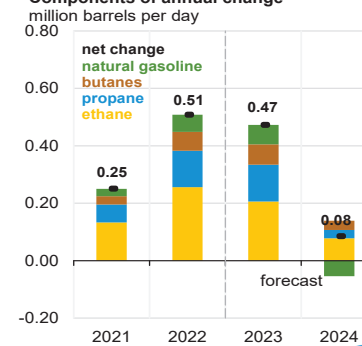


U.S. natural gas plant liquids production



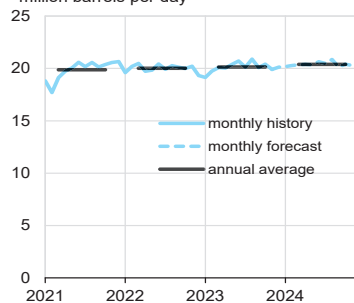
Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, December 2023

Components of annual change



U.S. liquid fuels product supplied (consumption)

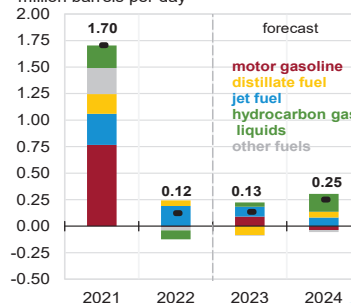
million barrels per day



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

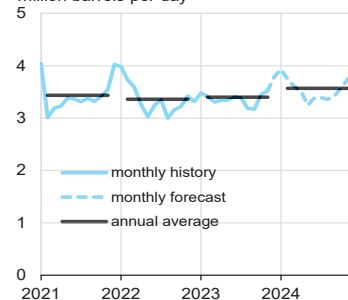
Components of annual change

million barrels per day



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

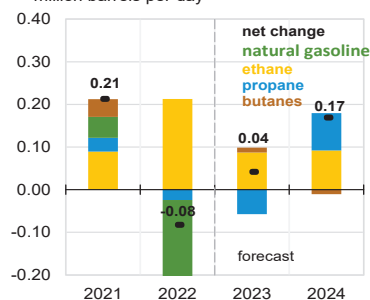
million barrels per day



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

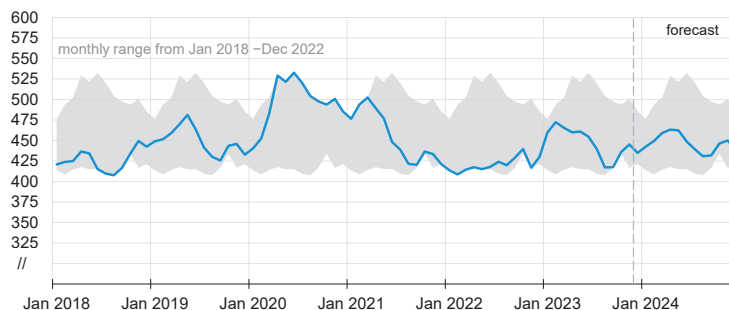
Components of annual change

million barrels per day



U.S. commercial crude oil inventories

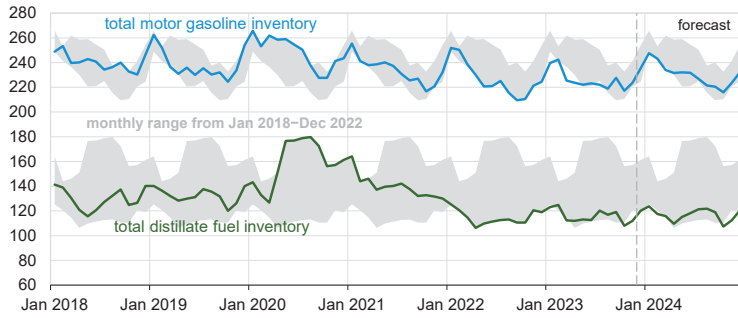
million barrels



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

U.S. gasoline and distillate inventories

million barrels

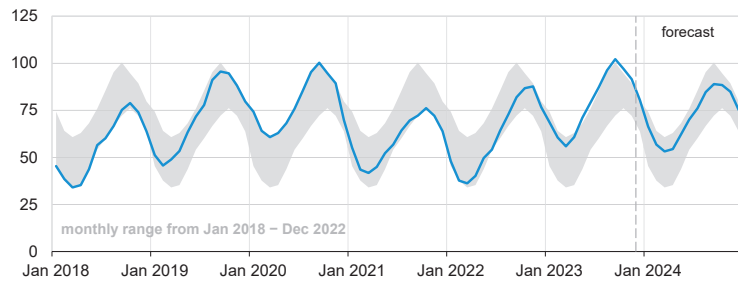


Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, December 2023



U.S. commercial propane inventories

million barrels



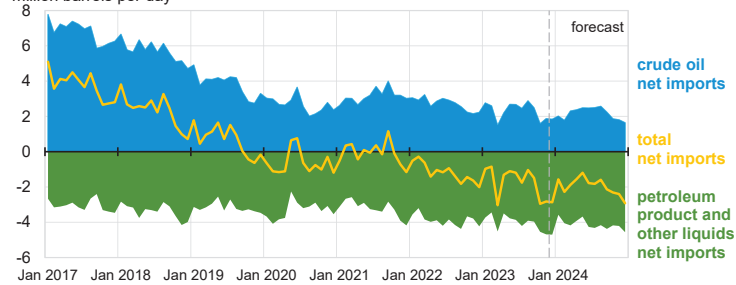
Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, December 2023

Note: Excludes propylene.



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

million barrels per day



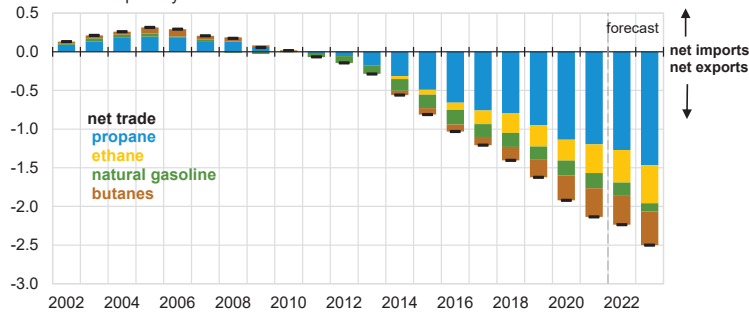
Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, December 2023

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, December 2023



Henry Hub natural gas price and NYMEX confidence intervals

dollars per million British thermal units



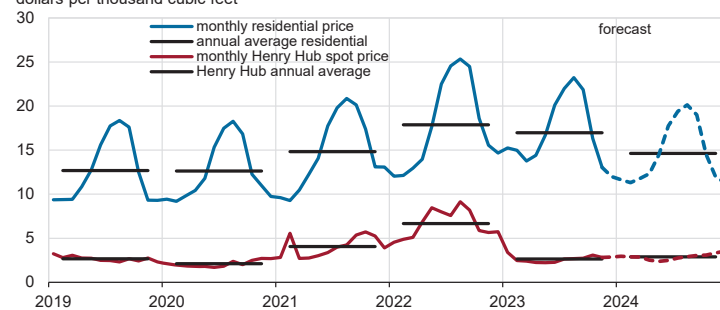
Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, December 2023, CME Group, and Refinitiv an LSEG Business

Note: Confidence interval derived from options market information for the five trading days ending December 7, 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

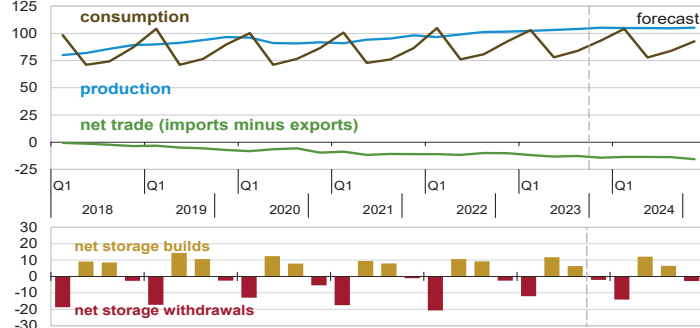


Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, December 2023, and Refinitiv an LSEG Business



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

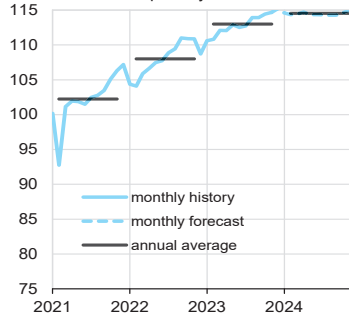
billion cubic feet per day



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

U.S. marketed natural gas production

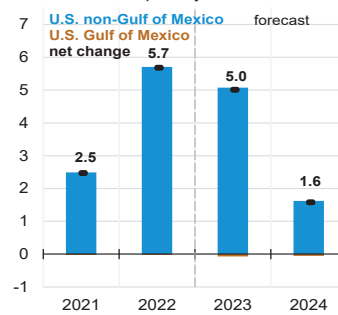
billion cubic feet per day



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

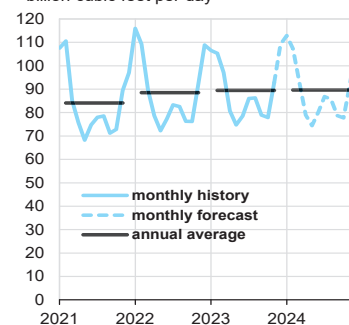
Components of annual change

billion cubic feet per day



U.S. natural gas consumption

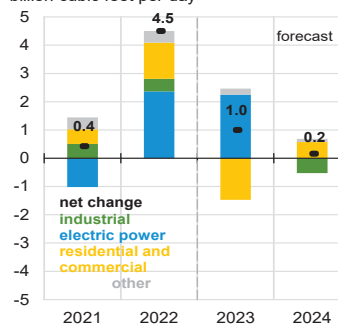
billion cubic feet per day



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

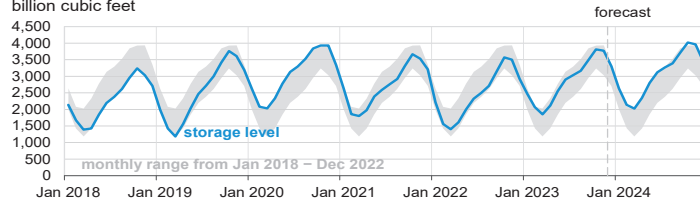
Components of annual change

billion cubic feet per day



U.S. working natural gas in storage

billion cubic feet



Percentage deviation from 2018 – 2022 average

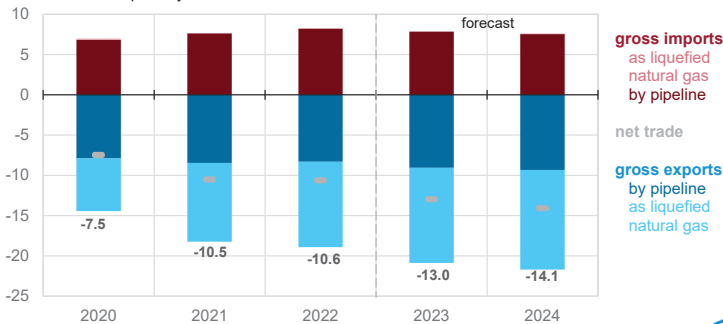


Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, December 2023



U.S. annual natural gas trade

billion cubic feet per day

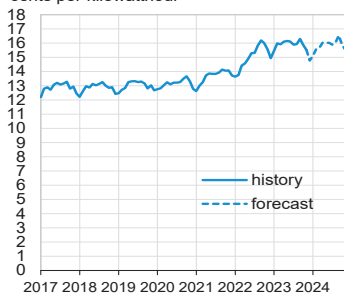


Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, December 2023



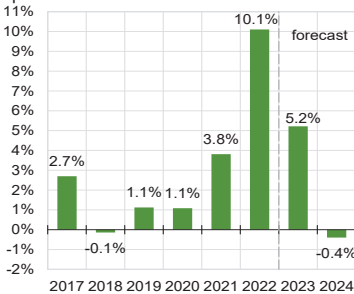
U.S. monthly nominal residential electricity price

cents per kilowatthour



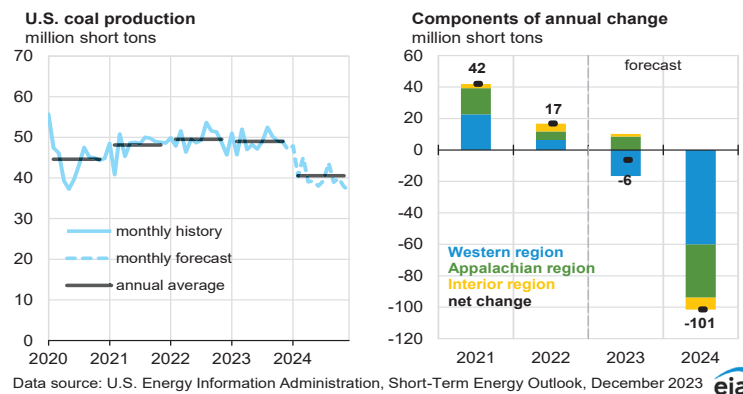
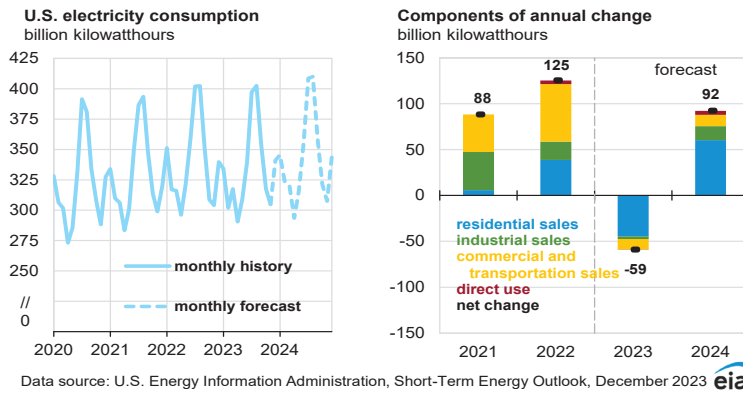
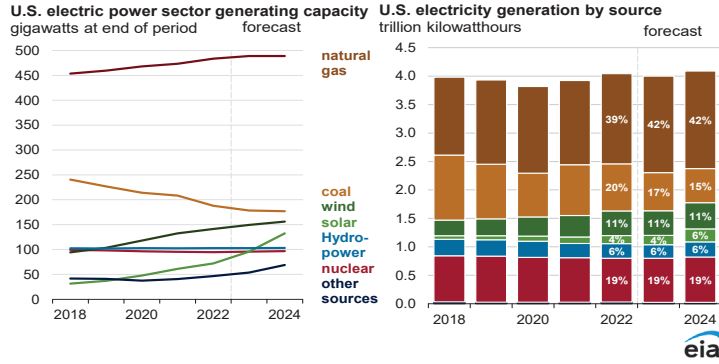
Annual growth in nominal residential electricity prices

percent

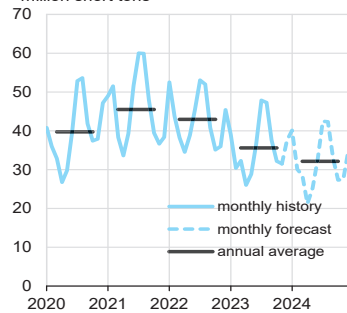


Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, December 2023

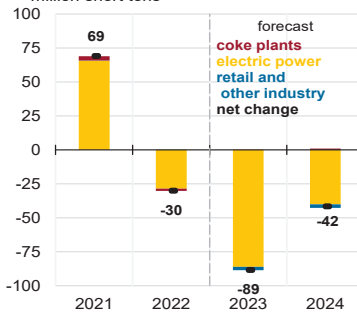




U.S. coal consumption
million short tons

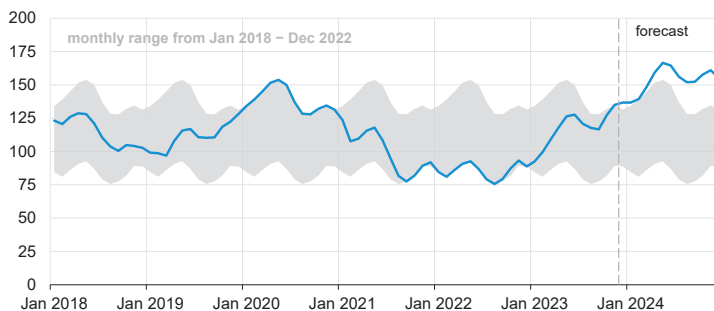


Components of annual change
million short tons



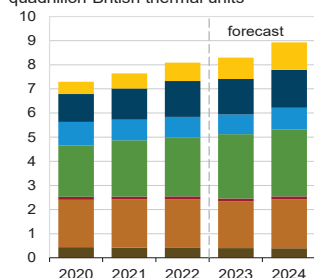
Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, December 2023

U.S. electric power coal inventories
million short tons

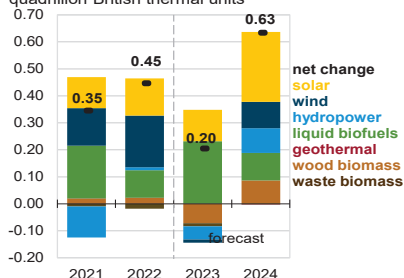


Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, December 2023

U.S. renewable energy supply
quadrillion British thermal units



Components of annual change
quadrillion British thermal units

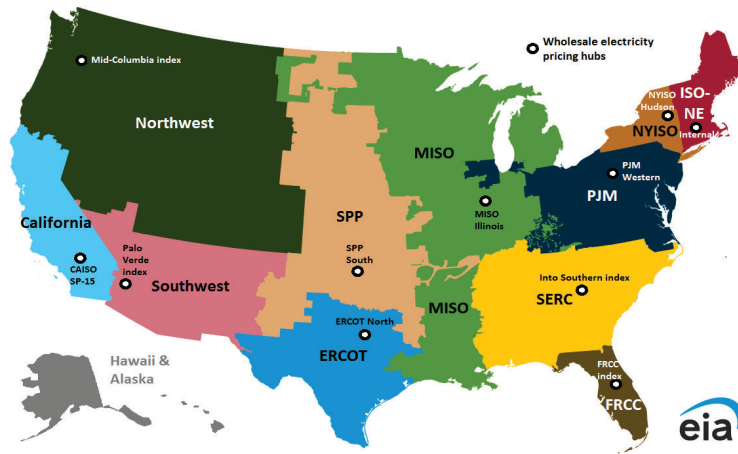


Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, December 2023

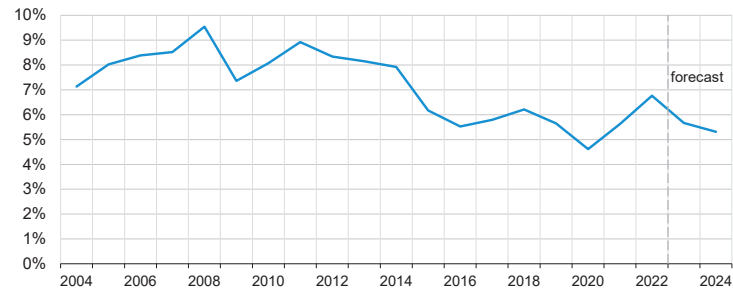
Note: Hydropower excludes pumped storage generation. Liquids include ethanol, biodiesel, renewable diesel, other biofuels, and biofuel losses and coproducts. Waste biomass includes municipal waste from biogenic sources, landfill gas, and non-wood waste.



Short-Term Energy Outlook electricity supply regions



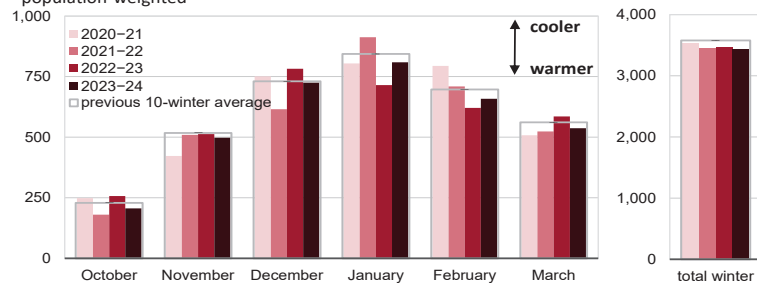
U.S. annual energy expenditures
share of gross domestic product



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



U.S. winter heating degree days
population-weighted

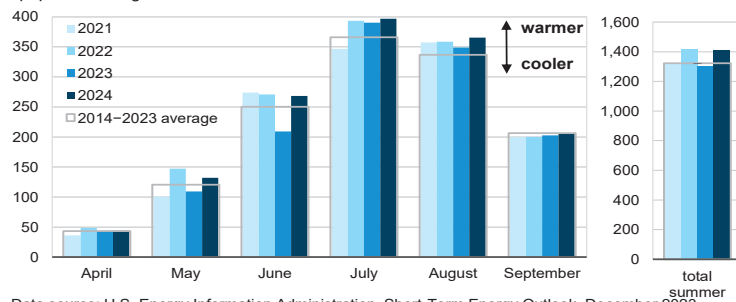


Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, December

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



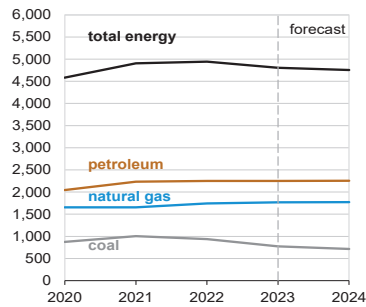
U.S. summer cooling degree days population-weighted



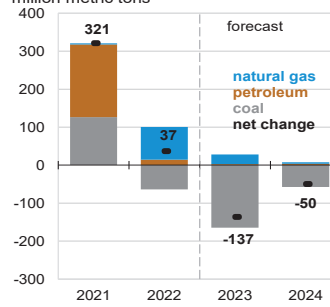
Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, December 2023
 Note: EIA calculations based on National Oceanic and Atmospheric Administration (NOAA) data.
 Projections reflect NOAA's 14-16 month outlook.



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, December 2023



Table 1. U.S. Energy Markets Summary

U.S. Energy Information Administration | Short-Term Energy Outlook - December 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	13.06	<i>13.26</i>	<i>13.09</i>	<i>13.07</i>	<i>13.07</i>	<i>13.23</i>	11.91	<i>12.93</i>	<i>13.11</i>
Dry Natural Gas Production (billion cubic feet per day)	96.6	98.9	101.2	101.6	102.3	103.2	104.0	<i>105.1</i>	<i>104.8</i>	<i>104.8</i>	<i>104.7</i>	<i>105.3</i>	99.6	<i>103.7</i>	<i>104.9</i>
Coal Production (million short tons)	149	145	154	146	149	142	152	<i>145</i>	<i>133</i>	<i>116</i>	<i>122</i>	<i>115</i>	594	<i>588</i>	<i>486</i>
Energy Consumption															
Liquid Fuels (million barrels per day)	20.09	20.00	20.11	19.85	19.66	20.38	20.37	<i>20.15</i>	<i>20.27</i>	<i>20.46</i>	<i>20.49</i>	<i>20.35</i>	20.01	<i>20.14</i>	<i>20.39</i>
Natural Gas (billion cubic feet per day)	104.8	76.0	80.8	92.5	102.9	78.0	83.8	<i>93.3</i>	<i>104.2</i>	<i>77.8</i>	<i>83.8</i>	<i>92.6</i>	88.5	<i>89.5</i>	<i>89.6</i>
Coal (b) (million short tons)	134	119	146	116	102	91	133	<i>101</i>	<i>99</i>	<i>79</i>	<i>118</i>	<i>90</i>	516	<i>427</i>	<i>385</i>
Electricity (billion kilowatt hours per day)	10.94	10.73	12.57	10.35	10.60	10.32	12.55	<i>10.47</i>	<i>10.87</i>	<i>10.60</i>	<i>12.79</i>	<i>10.57</i>	11.15	<i>10.99</i>	<i>11.21</i>
Renewables (c) (quadrillion Btu)	2.01	2.13	1.97	1.97	2.04	2.10	2.06	<i>2.09</i>	<i>2.21</i>	<i>2.30</i>	<i>2.22</i>	<i>2.20</i>	8.09	<i>8.29</i>	<i>8.93</i>
Total Energy Consumption (d) (quadrillion Btu)	25.07	22.30	23.60	23.82	24.11	22.01	23.81	<i>23.84</i>	<i>24.82</i>	<i>22.08</i>	<i>23.68</i>	<i>23.66</i>	94.79	<i>93.77</i>	<i>94.24</i>
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	<i>78.82</i>	<i>78.80</i>	<i>79.53</i>	<i>77.50</i>	<i>76.50</i>	94.91	<i>77.63</i>	<i>78.07</i>
Natural Gas Henry Hub Spot (dollars per million Btu)	4.66	7.48	7.99	5.55	2.65	2.16	2.59	<i>2.81</i>	<i>2.80</i>	<i>2.36</i>	<i>2.80</i>	<i>3.20</i>	6.42	<i>2.56</i>	<i>2.79</i>
Coal (dollars per million Btu)	2.18	2.25	2.49	2.54	2.57	2.49	2.50	<i>2.50</i>	<i>2.49</i>	<i>2.47</i>	<i>2.45</i>	<i>2.41</i>	2.37	<i>2.51</i>	<i>2.46</i>
Macroeconomic															
Real Gross Domestic Product (billion chained 2017 dollars - SAAR)	21,739	21,708	21,851	21,990	22,112	22,225	22,492	<i>22,549</i>	<i>22,587</i>	<i>22,583</i>	<i>22,642</i>	<i>22,706</i>	21,822	<i>22,345</i>	<i>22,629</i>
Percent change from prior year	3.6	1.9	1.7	0.7	1.7	2.4	2.9	<i>2.5</i>	<i>2.1</i>	<i>1.6</i>	<i>0.7</i>	<i>0.7</i>	1.9	<i>2.4</i>	<i>1.3</i>
GDP Implicit Price Deflator (Index, 2017=100)	115.2	117.7	119.0	120.1	121.3	121.8	122.8	<i>123.7</i>	<i>124.7</i>	<i>125.7</i>	<i>126.5</i>	<i>127.3</i>	118.0	<i>122.4</i>	<i>126.0</i>
Percent change from prior year	6.9	7.7	7.2	6.4	5.3	3.5	3.2	<i>3.0</i>	<i>2.8</i>	<i>3.2</i>	<i>2.9</i>	<i>2.9</i>	7.1	<i>3.7</i>	<i>3.0</i>
Real Disposable Personal Income (billion chained 2017 dollars - SAAR)	16,067	16,010	16,152	16,239	16,663	16,808	16,767	<i>16,800</i>	<i>16,948</i>	<i>17,050</i>	<i>17,178</i>	<i>17,288</i>	16,117	<i>16,759</i>	<i>17,116</i>
Percent change from prior year	-12.6	-5.6	-3.5	-1.5	3.7	5.0	3.8	<i>3.5</i>	<i>1.7</i>	<i>1.4</i>	<i>2.5</i>	<i>2.9</i>	-6.0	<i>4.0</i>	<i>2.1</i>
Manufacturing Production Index (Index, 2017=100)	100.1	100.8	100.9	100.0	99.9	100.1	100.1	<i>99.2</i>	<i>100.1</i>	<i>99.5</i>	<i>99.4</i>	<i>99.7</i>	100.5	<i>99.9</i>	<i>99.7</i>
Percent change from prior year	4.5	3.6	2.8	0.7	-0.2	-0.7	-0.8	<i>-0.8</i>	<i>0.2</i>	<i>-0.7</i>	<i>-0.7</i>	<i>0.5</i>	2.9	<i>-0.6</i>	<i>-0.2</i>
Weather															
U.S. Heating Degree-Days	2,146	490	54	1,551	1,921	487	61	<i>1,429</i>	<i>2,004</i>	<i>472</i>	<i>75</i>	<i>1,454</i>	4,241	<i>3,898</i>	<i>4,005</i>
U.S. Cooling Degree-Days	46	467	952	89	68	362	942	<i>100</i>	<i>50</i>	<i>444</i>	<i>968</i>	<i>105</i>	1,555	<i>1,472</i>	<i>1,567</i>

(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 December 7, 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 - December 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	78.82	78.80	79.53	77.50	76.50	94.91	77.63	78.07
Brent Spot Average	101.17	113.84	100.53	88.44	81.04	78.02	86.64	83.89	83.30	84.03	82.00	81.00	100.94	82.40	82.57
U.S. Imported Average	90.06	108.10	92.18	78.14	69.58	71.08	81.06	75.53	76.23	76.74	74.75	73.75	92.83	74.44	75.45
U.S. Refiner Average Acquisition Cost	92.68	110.12	95.19	83.11	74.44	73.99	82.14	78.01	78.36	78.99	77.00	76.00	95.33	77.23	77.59
U.S. Liquid Fuels (cents per gallon)															
Refiner Prices for Resale															
Gasoline	278	376	311	267	262	265	296	233	230	265	267	235	309	264	250
Diesel Fuel	301	418	357	364	295	245	309	285	269	267	266	277	360	283	270
Fuel Oil	280	411	343	350	279	231	292	277	259	253	248	266	328	272	259
Refiner Prices to End Users															
Jet Fuel	283	400	340	332	305	233	291	271	255	265	262	272	340	275	264
No. 6 Residual Fuel Oil (a)	251	259	228	201	196	189	202	207	201	202	199	197	234	199	200
Retail Prices Including Taxes															
Gasoline Regular Grade (b)	371	450	408	357	338	358	376	338	318	350	353	322	397	353	336
Gasoline All Grades (b)	380	460	419	369	349	369	387	351	330	361	365	334	408	364	348
On-highway Diesel Fuel	431	549	516	508	439	394	428	428	399	393	388	401	501	422	395
Heating Oil	415	553	497	493	407	353	387	399	379	361	349	388	469	394	376
Propane															
Mont Belvieu Spot	130	125	108	80	82	68	68	63	66	69	68	66	111	70	67
Natural Gas															
Henry Hub Spot (dollars per thousand cubic feet)	4.84	7.77	8.30	5.76	2.76	2.25	2.69	2.92	2.91	2.46	2.91	3.32	6.67	2.65	2.90
Henry Hub Spot (dollars per million Btu)	4.66	7.48	7.99	5.55	2.65	2.16	2.59	2.81	2.80	2.36	2.80	3.20	6.42	2.56	2.79
U.S. Retail Prices (dollars per thousand cubic feet)															
Industrial Sector	6.64	7.97	8.93	7.33	6.06	3.76	3.87	4.49	4.82	3.70	3.81	4.58	7.66	4.60	4.27
Commercial Sector	9.99	11.65	14.05	12.11	11.81	10.48	10.90	9.12	8.70	9.04	9.57	8.42	11.32	10.66	8.77
Residential Sector	12.30	16.51	24.78	15.56	14.72	16.19	22.33	13.02	11.57	14.04	19.48	12.05	14.77	14.93	12.66
U.S. Electricity															
Power Generation Fuel Costs (dollars per million Btu)															
Coal	2.18	2.25	2.49	2.54	2.57	2.49	2.50	2.50	2.49	2.47	2.45	2.41	2.37	2.51	2.46
Natural Gas	5.93	7.39	8.23	6.86	4.98	2.60	2.92	3.13	3.31	2.61	2.84	3.48	7.23	3.33	3.04
Residual Fuel Oil (c)	16.59	25.86	26.65	21.22	19.23	17.88	19.26	17.90	15.71	16.55	15.59	15.49	21.58	18.62	15.79
Distillate Fuel Oil	21.32	30.71	26.71	24.73	22.84	19.91	22.12	21.56	20.54	20.50	20.28	21.21	25.00	21.61	20.70
Prices to Ultimate Customers (cents per kilowatthour)															
Industrial Sector	7.28	8.28	9.25	8.36	8.06	7.74	8.57	8.07	8.17	7.78	8.50	8.15	8.32	8.12	8.15
Commercial Sector	11.52	12.21	13.24	12.50	12.64	12.45	13.21	12.04	12.09	12.28	13.44	12.34	12.41	12.61	12.58
Residential Sector	13.91	14.96	15.74	15.44	15.77	16.12	16.02	15.33	15.42	16.02	16.13	15.37	15.04	15.82	15.76

(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 December 7, 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 - December 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	33.76	34.57	35.17	34.83	34.43	34.59	35.18	32.35	34.25	34.76
U.S. (50 States)	19.57	20.24	20.65	20.72	21.05	21.69	22.25	22.44	22.04	22.11	22.18	22.34	20.30	21.86	22.17
Canada	5.66	5.51	5.72	5.91	5.79	5.44	5.80	6.00	5.99	5.65	5.84	6.06	5.70	5.76	5.89
Mexico	1.91	1.89	1.90	1.90	2.07	2.16	2.11	2.10	2.09	2.06	2.04	2.01	1.90	2.11	2.05
Other OECD	4.61	4.35	4.32	4.49	4.56	4.47	4.41	4.63	4.70	4.61	4.52	4.77	4.44	4.52	4.65
Non-OECD	67.21	66.86	68.30	68.17	67.63	67.70	67.09	67.07	66.37	67.64	68.12	67.61	67.64	67.37	67.44
OPEC	33.75	33.76	34.71	34.43	33.95	33.69	32.85	33.10	32.60	33.21	33.39	33.24	34.17	33.39	33.11
Crude Oil Portion	28.19	28.33	29.23	28.92	28.46	28.38	27.50	27.72	27.11	27.85	28.01	27.82	28.67	28.01	27.70
Other Liquids (b)	5.56	5.43	5.48	5.52	5.49	5.31	5.35	5.39	5.49	5.35	5.38	5.42	5.50	5.38	5.41
Eurasia	14.39	13.39	13.59	14.01	14.11	13.67	13.45	13.54	13.63	13.62	13.60	13.67	13.84	13.69	13.63
China	5.18	5.18	5.05	5.09	5.32	5.32	5.19	5.27	5.27	5.30	5.29	5.33	5.12	5.27	5.30
Other Non-OECD	13.90	14.53	14.94	14.65	14.26	15.02	15.60	15.15	14.87	15.52	15.85	15.37	14.51	15.01	15.40
Total World Production	98.96	98.86	100.88	101.20	101.11	101.46	101.65	102.24	101.20	102.07	102.71	102.79	99.99	101.62	102.19
Non-OPEC Production	65.22	65.10	66.18	66.76	67.16	67.77	68.80	69.13	68.60	68.86	69.31	69.55	65.82	68.22	69.08
Consumption (million barrels per day) (c)															
OECD	45.63	45.11	46.22	45.68	45.28	45.71	46.23	46.32	45.95	45.49	46.15	46.21	45.66	45.89	45.95
U.S. (50 States)	20.09	20.00	20.11	19.85	19.66	20.38	20.37	20.15	20.27	20.46	20.49	20.35	20.01	20.14	20.39
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	2.35	2.33	2.47	2.59	2.34	2.36	2.31	2.41	2.39	2.29	2.43	2.37
Europe	13.19	13.43	14.04	13.37	13.10	13.54	13.72	13.65	13.17	13.33	13.73	13.50	13.51	13.50	13.43
Japan	3.70	3.03	3.19	3.57	3.73	3.10	3.12	3.49	3.59	2.98	3.08	3.41	3.37	3.36	3.27
Other OECD	6.30	6.33	6.37	6.43	6.34	6.10	6.32	6.57	6.44	6.30	6.32	6.45	6.36	6.33	6.38
Non-OECD	52.82	53.48	53.80	53.86	54.67	55.19	55.27	55.30	56.05	56.55	56.50	56.46	53.49	55.11	56.39
Eurasia	4.28	4.43	4.73	4.65	4.32	4.47	4.79	4.70	4.47	4.62	4.94	4.85	4.53	4.57	4.72
Europe	0.74	0.76	0.76	0.77	0.74	0.76	0.76	0.77	0.75	0.76	0.77	0.77	0.76	0.76	0.76
China	15.12	15.10	15.09	15.28	15.90	16.09	15.78	15.99	16.23	16.42	16.10	16.31	15.15	15.94	16.27
Other Asia	13.74	13.74	13.35	13.84	14.36	14.24	13.71	14.08	14.83	14.81	14.20	14.52	13.67	14.10	14.59
Other Non-OECD	18.95	19.45	19.86	19.32	19.34	19.62	20.22	19.76	19.77	19.94	20.49	20.01	19.39	19.74	20.05
Total World Consumption	98.45	98.59	100.01	99.53	99.95	100.90	101.49	101.62	102.00	102.04	102.65	102.67	99.15	101.00	102.34
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	-0.25	0.37	-0.09	-0.32	0.00	0.38	0.54	-0.02	0.00
Other OECD	-0.09	-0.29	-0.48	-0.26	0.32	-0.45	0.03	-0.32	0.28	0.09	-0.02	-0.16	-0.28	-0.11	0.05
Other Stock Draws and Balance	-1.22	-0.50	-0.85	-1.80	-1.40	0.00	0.06	-0.67	0.61	0.20	-0.04	-0.35	-1.09	-0.50	0.10
Total Stock Draw	-0.51	-0.28	-0.87	-1.66	-1.16	-0.56	-0.16	-0.62	0.80	-0.03	-0.06	-0.12	-0.83	-0.62	0.15
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	1,283	1,246	1,247	1,276	1,276	1,241	1,223	1,246	1,241
OECD Commercial Inventory	2,604	2,657	2,736	2,767	2,746	2,821	2,837	2,829	2,805	2,826	2,827	2,807	2,767	2,829	2,807

(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 December 7, 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 - December 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	29.29	30.16	<i>30.54</i>	<i>30.13</i>	<i>29.82</i>	<i>30.07</i>	<i>30.41</i>	27.90	<i>29.73</i>	<i>30.11</i>
Canada	5.66	5.51	5.72	5.91	5.79	5.44	5.80	<i>6.00</i>	<i>5.99</i>	<i>5.65</i>	<i>5.84</i>	<i>6.06</i>	5.70	<i>5.76</i>	<i>5.89</i>
Mexico	1.91	1.89	1.90	1.90	2.07	2.16	2.11	<i>2.10</i>	<i>2.09</i>	<i>2.06</i>	<i>2.04</i>	<i>2.01</i>	1.90	<i>2.11</i>	<i>2.05</i>
United States	19.57	20.24	20.65	20.72	21.05	21.69	22.25	<i>22.44</i>	<i>22.04</i>	<i>22.11</i>	<i>22.18</i>	<i>22.34</i>	20.30	<i>21.86</i>	<i>22.17</i>
Central and South America	5.83	6.41	6.87	6.58	6.31	7.00	7.58	<i>7.12</i>	<i>6.92</i>	<i>7.52</i>	<i>7.84</i>	<i>7.35</i>	6.43	<i>7.01</i>	<i>7.41</i>
Argentina	0.77	0.78	0.79	0.82	0.81	0.81	0.82	<i>0.84</i>	<i>0.84</i>	<i>0.86</i>	<i>0.88</i>	<i>0.91</i>	0.79	<i>0.82</i>	<i>0.87</i>
Brazil	3.33	3.79	4.15	3.78	3.55	4.19	4.74	<i>4.24</i>	<i>3.90</i>	<i>4.45</i>	<i>4.76</i>	<i>4.28</i>	3.76	<i>4.19</i>	<i>4.35</i>
Colombia	0.77	0.77	0.78	0.79	0.79	0.81	0.81	<i>0.80</i>	<i>0.79</i>	<i>0.79</i>	<i>0.78</i>	<i>0.77</i>	0.78	<i>0.80</i>	<i>0.78</i>
Ecuador	0.48	0.47	0.49	0.49	0.46	0.48	0.48	<i>0.49</i>	<i>0.49</i>	<i>0.49</i>	<i>0.49</i>	<i>0.46</i>	0.48	<i>0.48</i>	<i>0.48</i>
Guyana	0.12	0.24	0.32	0.35	0.35	0.37	0.40	<i>0.44</i>	<i>0.56</i>	<i>0.61</i>	<i>0.61</i>	<i>0.61</i>	0.26	<i>0.39</i>	<i>0.60</i>
Europe	4.04	3.76	3.81	3.93	4.01	3.92	3.88	<i>4.09</i>	<i>4.15</i>	<i>4.05</i>	<i>3.97</i>	<i>4.23</i>	3.89	<i>3.98</i>	<i>4.10</i>
Norway	1.97	1.74	1.91	1.99	2.03	2.03	1.98	<i>2.04</i>	<i>2.09</i>	<i>2.02</i>	<i>2.03</i>	<i>2.20</i>	1.90	<i>2.02</i>	<i>2.08</i>
United Kingdom	0.97	0.91	0.80	0.84	0.87	0.79	0.78	<i>0.92</i>	<i>0.92</i>	<i>0.91</i>	<i>0.81</i>	<i>0.89</i>	0.88	<i>0.84</i>	<i>0.88</i>
Eurasia	14.39	13.39	13.59	14.01	14.11	13.67	13.45	<i>13.54</i>	<i>13.63</i>	<i>13.62</i>	<i>13.60</i>	<i>13.67</i>	13.84	<i>13.69</i>	<i>13.63</i>
Azerbaijan	0.70	0.67	0.65	0.67	0.65	0.62	0.62	<i>0.60</i>	<i>0.59</i>	<i>0.60</i>	<i>0.60</i>	<i>0.61</i>	0.67	<i>0.62</i>	<i>0.60</i>
Kazakhstan	2.01	1.77	1.62	1.92	2.02	1.97	1.85	<i>1.86</i>	<i>1.91</i>	<i>1.90</i>	<i>1.87</i>	<i>1.94</i>	1.83	<i>1.92</i>	<i>1.91</i>
Russia	11.30	10.59	10.95	11.06	11.06	10.68	10.58	<i>10.68</i>	<i>10.72</i>	<i>10.72</i>	<i>10.72</i>	<i>10.73</i>	10.97	<i>10.75</i>	<i>10.72</i>
Turkmenistan	0.26	0.26	0.26	0.26	0.27	0.27	0.27	<i>0.27</i>	<i>0.27</i>	<i>0.27</i>	<i>0.27</i>	<i>0.27</i>	0.26	<i>0.27</i>	<i>0.27</i>
Middle East	3.23	3.29	3.34	3.28	3.22	3.22	3.19	<i>3.17</i>	<i>3.16</i>	<i>3.21</i>	<i>3.21</i>	<i>3.21</i>	3.28	<i>3.20</i>	<i>3.20</i>
Oman	1.05	1.07	1.10	1.08	1.07	1.06	1.05	<i>1.04</i>	<i>0.99</i>	<i>1.03</i>	<i>1.03</i>	<i>1.03</i>	1.07	<i>1.05</i>	<i>1.02</i>
Qatar	1.85	1.86	1.86	1.86	1.86	1.86	1.86	<i>1.86</i>	<i>1.86</i>	<i>1.86</i>	<i>1.86</i>	<i>1.86</i>	1.86	<i>1.86</i>	<i>1.86</i>
Asia and Oceania	9.17	9.16	8.87	9.00	9.21	9.26	9.11	<i>9.21</i>	<i>9.22</i>	<i>9.22</i>	<i>9.21</i>	<i>9.25</i>	9.05	<i>9.20</i>	<i>9.23</i>
Australia	0.44	0.47	0.39	0.43	0.41	0.42	0.40	<i>0.42</i>	<i>0.41</i>	<i>0.41</i>	<i>0.40</i>	<i>0.39</i>	0.43	<i>0.41</i>	<i>0.40</i>
China	5.18	5.18	5.05	5.09	5.32	5.32	5.19	<i>5.27</i>	<i>5.27</i>	<i>5.30</i>	<i>5.29</i>	<i>5.33</i>	5.12	<i>5.27</i>	<i>5.30</i>
India	0.88	0.89	0.87	0.85	0.85	0.90	0.91	<i>0.89</i>	<i>0.92</i>	<i>0.91</i>	<i>0.91</i>	<i>0.90</i>	0.87	<i>0.89</i>	<i>0.91</i>
Indonesia	0.84	0.83	0.81	0.83	0.82	0.85	0.82	<i>0.83</i>	<i>0.82</i>	<i>0.82</i>	<i>0.81</i>	<i>0.81</i>	0.83	<i>0.83</i>	<i>0.81</i>
Malaysia	0.62	0.60	0.58	0.62	0.61	0.58	0.58	<i>0.59</i>	<i>0.59</i>	<i>0.58</i>	<i>0.57</i>	<i>0.57</i>	0.60	<i>0.59</i>	<i>0.58</i>
Africa	1.40	1.43	1.44	1.44	1.38	1.41	1.44	<i>1.46</i>	<i>1.40</i>	<i>1.41</i>	<i>1.41</i>	<i>1.43</i>	1.43	<i>1.42</i>	<i>1.41</i>
Egypt	0.66	0.68	0.67	0.67	0.66	0.67	0.67	<i>0.66</i>	<i>0.62</i>	<i>0.62</i>	<i>0.62</i>	<i>0.62</i>	0.67	<i>0.66</i>	<i>0.62</i>
South Sudan	0.15	0.15	0.16	0.15	0.13	0.13	0.16	<i>0.17</i>	<i>0.16</i>	<i>0.16</i>	<i>0.15</i>	<i>0.15</i>	0.16	<i>0.15</i>	<i>0.15</i>
Total non-OPEC liquids	65.22	65.10	66.18	66.76	67.16	67.77	68.80	<i>69.13</i>	<i>68.60</i>	<i>68.86</i>	<i>69.31</i>	<i>69.55</i>	65.82	<i>68.22</i>	<i>69.08</i>
OPEC non-crude liquids	5.56	5.43	5.48	5.52	5.49	5.31	5.35	<i>5.39</i>	<i>5.49</i>	<i>5.35</i>	<i>5.38</i>	<i>5.42</i>	5.50	<i>5.38</i>	<i>5.41</i>
Non-OPEC + OPEC non-crude	70.77	70.54	71.66	72.28	72.65	73.08	74.15	<i>74.52</i>	<i>74.09</i>	<i>74.22</i>	<i>74.70</i>	<i>74.97</i>	71.32	<i>73.61</i>	<i>74.49</i>
Unplanned non-OPEC Production Outages	0.76	1.31	0.78	0.56	0.56	1.02	0.92	-	-	-	-	-	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 December 7, 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 - December 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	2.97	-	-	-	-	-	2.54	-	-
Iraq	4.30	4.42	4.55	4.51	4.41	4.19	4.32	-	-	-	-	-	4.45	-	-
Kuwait	2.61	2.69	2.80	2.72	2.68	2.59	2.56	-	-	-	-	-	2.71	-	-
Libya	1.06	0.76	0.95	1.14	1.14	1.15	1.15	-	-	-	-	-	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	9.02	-	-	-	-	-	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	0.76	-	-	-	-	-	0.69	-	-
OPEC Total	28.19	28.33	29.23	28.92	28.46	28.38	27.50	27.72	27.11	27.85	28.01	27.82	28.67	28.01	27.70
Other Liquids (a)															
	5.56	5.43	5.48	5.52	5.49	5.31	5.35	5.39	5.49	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	32.85	33.10	32.60	33.21	33.39	33.24	34.17	33.39	33.11
OPEC+ Crude Oil Production	39.43	38.99	40.06	39.78	39.29	38.60	37.34	37.51	37.01	37.72	37.80	37.61	39.57	38.18	37.54
Crude Oil Production Capacity															
Middle East	25.48	25.46	25.55	25.66	25.88	25.67	25.90	26.00	26.29	26.31	26.39	26.70	25.54	25.86	26.42
Other	5.83	5.45	5.35	5.55	5.71	5.78	5.81	5.89	5.78	5.77	5.76	5.75	5.54	5.80	5.77
OPEC Total	31.31	30.91	30.89	31.21	31.59	31.45	31.70	31.89	32.07	32.08	32.15	32.45	31.08	31.66	32.19
Surplus Crude Oil Production Capacity															
Middle East	3.00	2.47	1.65	2.28	3.10	3.02	4.12	4.10	4.85	4.16	4.08	4.57	2.35	3.59	4.42
Other	0.12	0.11	0.01	0.01	0.02	0.05	0.08	0.07	0.11	0.06	0.06	0.06	0.06	0.06	0.07
OPEC Total	3.12	2.58	1.67	2.29	3.13	3.07	4.20	4.17	4.96	4.22	4.14	4.63	2.41	3.65	4.49
Unplanned OPEC Production Outages	1.98	2.42	2.50	2.14	1.94	2.13	1.95	-	-	-	-	-	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 December 7, 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 - December 2023

	2022				2023				2024						
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2022	2023	2024
North America	24.10	24.20	24.46	24.16	23.89	24.73	24.91	24.49	24.54	24.72	24.84	24.69	24.23	24.51	24.70
Canada	2.24	2.21	2.38	2.35	2.33	2.47	2.59	2.34	2.36	2.31	2.41	2.39	2.29	2.43	2.37
Mexico	1.76	1.99	1.96	1.96	1.89	1.87	1.95	1.99	1.90	1.93	1.93	1.95	1.92	1.92	1.93
United States	20.09	20.00	20.11	19.85	19.66	20.38	20.37	20.15	20.27	20.46	20.49	20.35	20.01	20.14	20.39
Central and South America	6.27	6.43	6.57	6.53	6.42	6.55	6.65	6.60	6.43	6.57	6.68	6.61	6.45	6.55	6.57
Brazil	2.85	2.93	3.02	3.02	2.98	3.04	3.11	3.10	2.98	3.03	3.11	3.09	2.96	3.06	3.05
Europe	13.93	14.19	14.80	14.13	13.84	14.30	14.48	14.42	13.92	14.09	14.50	14.27	14.27	14.26	14.20
Eurasia	4.28	4.43	4.73	4.65	4.32	4.47	4.79	4.70	4.47	4.62	4.94	4.85	4.53	4.57	4.72
Russia	3.27	3.36	3.64	3.50	3.30	3.39	3.69	3.54	3.41	3.50	3.80	3.65	3.44	3.48	3.59
Middle East	8.92	9.28	9.67	9.02	9.11	9.23	9.81	9.24	9.45	9.45	9.99	9.39	9.22	9.35	9.57
Asia and Oceania	36.50	35.60	35.43	36.57	37.87	37.09	36.39	37.57	38.60	37.98	37.16	38.17	36.02	37.22	37.97
China	15.12	15.10	15.09	15.28	15.90	16.09	15.78	15.99	16.23	16.42	16.10	16.31	15.15	15.94	16.27
Japan	3.70	3.03	3.19	3.57	3.73	3.10	3.12	3.49	3.59	2.98	3.08	3.41	3.37	3.36	3.27
India	5.07	5.06	4.77	5.18	5.38	5.35	5.05	5.45	5.65	5.72	5.34	5.68	5.02	5.31	5.60
Africa	4.45	4.45	4.34	4.48	4.51	4.53	4.44	4.60	4.60	4.62	4.53	4.70	4.43	4.52	4.61
Total OECD Liquid Fuels Consumption	45.63	45.11	46.22	45.68	45.28	45.71	46.23	46.32	45.95	45.49	46.15	46.21	45.66	45.89	45.95
Total non-OECD Liquid Fuels Consumption	52.82	53.48	53.80	53.86	54.67	55.19	55.27	55.30	56.05	56.55	56.50	56.46	53.49	55.11	56.39
Total World Liquid Fuels Consumption	98.45	98.59	100.01	99.53	99.95	100.90	101.49	101.62	102.00	102.04	102.65	102.67	99.15	101.00	102.34
Real Gross Domestic Product (a)															
World Index, 2015 Q1 = 100	122.2	122.3	123.9	124.7	125.6	126.6	127.6	128.3	128.9	129.7	130.7	131.8	123.3	127.0	130.3
Percent change from prior year	4.4	3.5	3.3	2.2	2.7	3.5	3.0	2.9	2.6	2.5	2.4	2.7	3.3	3.0	2.6
OECD Index, 2015 = 100													113.9	115.7	116.8
Percent change from prior year													2.9	1.6	0.9
Non-OECD Index, 2015 = 100													129.0	134.3	139.5
Percent change from prior year													3.6	4.1	3.8
Nominal U.S. Dollar Index (b)															
Index, 2015 Q1 = 100	109.5	112.8	117.1	118.4	114.1	113.5	114.2	117.0	118.4	118.6	118.0	117.2	114.5	114.7	118.1
Percent change from prior year	2.8	6.4	9.0	8.6	4.2	0.6	-2.5	-1.1	3.8	4.5	3.4	0.1	6.7	0.2	2.9

(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 December 7, 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 - December 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	13.06	13.26	13.09	13.07	13.07	13.23	11.91	12.93	13.11
Alaska	0.45	0.44	0.42	0.44	0.44	0.43	0.40	0.43	0.43	0.41	0.39	0.41	0.44	0.43	0.41
Federal Gulf of Mexico (b)	1.66	1.70	1.77	1.79	1.87	1.77	1.94	1.99	1.96	1.93	1.88	1.92	1.73	1.89	1.92
Lower 48 States (excl GOM)	9.42	9.63	9.85	10.06	10.31	10.55	10.71	10.84	10.71	10.73	10.80	10.90	9.74	10.61	10.78
Transfers to Crude Oil Supply	0.41	0.37	0.42	0.48	0.39	0.51	0.70	0.66	0.52	0.55	0.58	0.57	0.42	0.57	0.56
Crude Oil Net Imports (c)	3.06	2.81	2.75	2.20	2.27	2.51	2.61	1.76	2.04	2.44	2.44	1.77	2.71	2.29	2.17
SPR Net Withdrawals	0.31	0.80	0.84	0.48	0.01	0.26	-0.04	-0.04	-0.07	0.00	0.00	0.00	0.61	0.05	-0.02
Commercial Inventory Net Withdrawals	0.08	-0.04	-0.12	-0.01	-0.39	0.12	0.41	-0.19	-0.26	0.11	0.18	-0.08	-0.02	-0.01	-0.01
Crude Oil Adjustment (d)	0.20	0.45	0.38	0.41	0.34	0.00	-0.21	0.23	0.21	0.18	0.15	0.17	0.36	0.09	0.18
Total Crude Oil Input to Refineries	15.58	16.15	16.31	15.86	15.25	16.15	16.51	15.68	15.52	16.36	16.42	15.65	15.98	15.90	15.99
Other Supply															
Refinery Processing Gain	0.97	1.08	1.06	1.01	0.97	1.01	1.07	1.02	0.98	1.01	1.02	1.00	1.03	1.02	1.00
Natural Gas Plant Liquids Production	5.66	5.96	6.13	5.97	6.01	6.42	6.58	6.60	6.44	6.46	6.53	6.54	5.93	6.41	6.49
Renewables and Oxygenate Production (e)	1.20	1.20	1.18	1.23	1.24	1.29	1.31	1.34	1.33	1.35	1.35	1.36	1.20	1.30	1.35
Fuel Ethanol Production	1.02	1.01	0.97	1.01	1.00	1.00	1.02	1.03	1.01	1.00	1.00	1.01	1.00	1.01	1.00
Petroleum Products Adjustment (f)	0.22	0.23	0.22	0.22	0.20	0.22	0.23	0.22	0.21	0.22	0.22	0.22	0.22	0.22	0.22
Petroleum Products Transfers to Crude Oil Supply	-0.41	-0.37	-0.42	-0.48	-0.39	-0.51	-0.70	-0.66	-0.52	-0.55	-0.58	-0.57	-0.42	-0.57	-0.56
Product Net Imports (c)	-3.54	-4.02	-4.12	-3.90	-3.91	-3.71	-4.03	-4.64	-3.93	-3.95	-4.28	-4.32	-3.90	-4.08	-4.12
Hydrocarbon Gas Liquids	-2.07	-2.36	-2.25	-2.26	-2.47	-2.39	-2.42	-2.73	-2.58	-2.50	-2.50	-2.50	-2.24	-2.50	-2.52
Unfinished Oils	0.17	0.29	0.29	0.30	0.28	0.27	0.22	0.30	0.34	0.41	0.46	0.36	0.26	0.26	0.39
Other HC/Oxygenates	-0.07	-0.10	-0.06	-0.02	-0.05	-0.07	-0.04	-0.06	-0.06	-0.05	-0.04	-0.04	-0.06	-0.05	-0.05
Motor Gasoline Blend Comp.	0.38	0.60	0.48	0.40	0.45	0.67	0.57	0.37	0.47	0.66	0.51	0.40	0.46	0.52	0.51
Finished Motor Gasoline	-0.69	-0.75	-0.79	-0.84	-0.75	-0.58	-0.67	-0.79	-0.74	-0.65	-0.71	-0.86	-0.77	-0.70	-0.74
Jet Fuel	-0.03	-0.06	-0.10	-0.03	-0.05	0.01	-0.05	-0.07	0.01	-0.02	-0.05	0.00	-0.06	-0.04	-0.01
Distillate Fuel Oil	-0.74	-1.08	-1.24	-1.00	-0.76	-0.97	-1.01	-0.98	-0.70	-1.07	-1.16	-0.95	-1.02	-0.93	-0.97
Residual Fuel Oil	0.09	0.08	0.10	0.09	0.01	-0.04	-0.03	0.00	0.01	0.01	-0.05	0.03	0.09	-0.01	0.00
Other Oils (g)	-0.58	-0.64	-0.53	-0.54	-0.58	-0.61	-0.59	-0.68	-0.68	-0.75	-0.73	-0.76	-0.57	-0.62	-0.73
Product Inventory Net Withdrawals	0.42	-0.25	-0.26	-0.06	0.30	-0.49	-0.61	0.60	0.25	-0.44	-0.18	0.46	-0.04	-0.05	0.03
Total Supply	20.09	20.00	20.11	19.85	19.67	20.38	20.37	20.15	20.27	20.46	20.49	20.35	20.01	20.15	20.39
Consumption (million barrels per day)															
Hydrocarbon Gas Liquids	3.77	3.18	3.17	3.32	3.40	3.36	3.25	3.59	3.76	3.38	3.39	3.74	3.36	3.40	3.57
Other HC/Oxygenates	0.14	0.17	0.17	0.19	0.22	0.28	0.28	0.24	0.26	0.29	0.29	0.30	0.17	0.26	0.28
Unfinished Oils	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
Motor Gasoline	8.57	9.00	8.93	8.74	8.67	9.13	9.05	8.76	8.66	9.07	9.03	8.69	8.81	8.90	8.86
Fuel Ethanol blended into Motor Gasoline	0.88	0.93	0.92	0.93	0.90	0.94	0.94	0.94	0.90	0.94	0.94	0.93	0.91	0.93	0.93
Jet Fuel	1.45	1.61	1.60	1.58	1.55	1.67	1.72	1.66	1.67	1.75	1.78	1.74	1.56	1.65	1.73
Distillate Fuel Oil	4.22	3.97	3.91	4.00	4.01	3.93	3.90	3.93	4.12	3.98	3.89	3.99	4.03	3.94	4.00
Residual Fuel Oil	0.33	0.30	0.38	0.30	0.29	0.22	0.27	0.29	0.24	0.22	0.21	0.24	0.33	0.27	0.23
Other Oils (g)	1.61	1.78	1.94	1.70	1.53	1.79	1.89	1.69	1.56	1.78	1.90	1.63	1.76	1.73	1.72
Total Consumption	20.09	20.00	20.11	19.85	19.66	20.38	20.37	20.15	20.27	20.46	20.49	20.35	20.01	20.14	20.39
Total Petroleum and Other Liquids Net Imports	-0.48	-1.21	-1.37	-1.69	-1.64	-1.20	-1.42	-2.88	-1.90	-1.51	-1.85	-2.55	-1.19	-1.79	-1.95
End-of-period Inventories (million barrels)															
Commercial Inventory															
Crude Oil (excluding SPR)	414.2	417.8	429.0	430.1	465.4	454.7	417.5	434.9	459.0	448.6	431.8	439.1	430.1	434.9	439.1
Hydrocarbon Gas Liquids	142.1	186.7	243.7	211.1	174.3	225.4	279.1	230.9	190.4	236.5	275.5	230.1	211.1	230.9	230.1
Unfinished Oils	88.1	88.9	82.3	86.4	88.6	87.0	88.3	80.8	90.9	88.0	86.9	79.1	86.4	80.8	79.1
Other HC/Oxygenates	34.4	29.7	27.3	31.6	34.3	30.1	30.3	30.2	32.3	31.1	30.8	31.1	31.6	30.2	31.1
Total Motor Gasoline	238.5	221.0	209.5	224.4	225.3	223.2	227.6	235.5	234.0	231.8	220.4	232.1	224.4	235.5	232.1
Finished Motor Gasoline	17.3	17.1	17.6	17.2	14.7	17.6	15.3	18.7	15.9	16.7	18.4	19.6	17.2	18.7	19.6
Motor Gasoline Blend Comp.	221.2	203.9	191.9	207.2	210.6	205.6	212.3	216.8	218.1	215.1	202.1	212.5	207.2	216.8	212.5
Jet Fuel	35.6	39.4	36.5	35.0	37.7	42.7	43.5	36.5	37.2	36.8	37.2	33.3	35.0	36.5	33.3
Distillate Fuel Oil	114.7	111.3	110.5	118.9	112.3	112.6	119.2	120.2	115.8	118.2	119.0	120.4	118.9	120.2	120.4
Residual Fuel Oil	28.1	29.3	27.4	30.7	29.6	30.4	27.5	25.2	26.6	26.7	25.1	24.7	30.7	25.2	24.7
Other Oils (g)	58.6	56.3	49.3	54.3	63.3	58.3	50.5	51.8	60.9	58.7	49.4	50.7	54.3	51.8	50.7
Total Commercial Inventory	1154.2	1180.4	1215.6	1222.6	1230.8	1264.4	1283.4	1246.1	1247.0	1276.4	1276.0	1240.7	1222.6	1246.1	1240.7
Crude Oil in SPR	566.1	493.3	416.4	372.0	371.2	347.2	351.3	354.9	361.8	361.8	361.8	361.8	372.0	354.9	361.8

(a) Includes lease condensate.

(b) Crude oil production from U.S. Federal leases in the Gulf of Mexico (GOM).

(c) Net imports equal gross imports minus gross exports.

(d) Crude oil adjustment equals the sum of disposition items (e.g. refinery inputs) minus the sum of supply items (e.g. production).

(e) Renewables and oxygenate production includes pentanes plus, oxygenates (excluding fuel ethanol), and renewable fuels. Beginning in January 2021, renewable fuels includes biodiesel, renewable diesel, renewable jet fuel, renewable heating oil, renewable naphtha and gasoline, and other renewable fuels. For December 2020 and prior, renewable fuels includes only biodiesel.

(f) Petroleum products adjustment includes hydrogen/oxygenates/renewables/other hydrocarbons, motor gasoline blending components, and finished motor gasoline.

(g) "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

SPR: Strategic Petroleum Reserve

HC: Hydrocarbons

Notes: EIA completed modeling and analysis for this report on December 7, 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; 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 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 - December 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	2.63	2.68	2.67	2.69	2.69	2.71	2.41	2.61	2.69
Propane	1.79	1.86	1.94	1.90	1.89	2.00	2.05	2.06	2.02	2.01	2.03	2.05	1.87	2.00	2.03
Butanes	0.93	0.99	1.03	1.00	0.99	1.06	1.09	1.10	1.09	1.08	1.10	1.10	0.99	1.06	1.09
Natural Gasoline (Pentanes Plus)	0.59	0.67	0.74	0.67	0.64	0.73	0.81	0.76	0.66	0.68	0.71	0.68	0.67	0.74	0.68
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	0.28	0.26	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	0.25	0.28	0.28	0.28	0.28	0.28	0.26	0.26	0.28
Butanes/Butylenes	-0.07	0.26	0.19	-0.15	-0.05	0.28	0.21	-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	-0.50	-0.48	-0.50	-0.50	-0.49	-0.52	-0.42	-0.49	-0.50
Propane/Propylene	-1.20	-1.34	-1.27	-1.27	-1.40	-1.40	-1.45	-1.63	-1.51	-1.43	-1.44	-1.42	-1.27	-1.47	-1.45
Butanes/Butylenes	-0.29	-0.45	-0.37	-0.38	-0.42	-0.41	-0.42	-0.49	-0.46	-0.50	-0.50	-0.48	-0.37	-0.44	-0.48
Natural Gasoline (Pentanes Plus)	-0.17	-0.17	-0.19	-0.15	-0.15	-0.09	-0.06	-0.13	-0.13	-0.08	-0.08	-0.09	-0.17	-0.11	-0.10
HGL Refinery and Blender Net Inputs															
Butanes/Butylenes	0.43	0.29	0.33	0.54	0.48	0.29	0.35	0.50	0.43	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	0.21	0.18	0.17	0.17	0.19	0.18	0.17	0.19	0.18
HGL Consumption															
Ethane/Ethylene	2.10	2.06	1.99	1.94	1.99	2.19	2.07	2.17	2.20	2.19	2.20	2.21	2.02	2.11	2.20
Propane	1.16	0.59	0.64	0.95	0.98	0.62	0.62	0.91	1.06	0.65	0.65	1.03	0.83	0.78	0.85
Propylene (refinery-grade)	0.30	0.29	0.28	0.24	0.25	0.27	0.27	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	0.29	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	52.4	60.0	59.4	59.5	60.9	60.6	51.8	54.9	60.1
Propane	36.3	54.1	82.0	76.6	55.8	79.2	102.2	80.4	53.2	70.1	89.0	75.2	76.6	80.4	75.2
Propylene (at refineries only)	1.1	1.2	1.1	1.3	1.1	1.1	1.2	1.3	1.3	1.6	1.8	1.6	1.3	1.3	1.6
Butanes/Butylenes	35.7	58.8	81.3	54.5	40.2	70.1	90.2	62.9	53.9	81.3	99.3	70.4	54.5	62.9	70.4
Natural Gasoline (Pentanes Plus)	19.4	22.7	27.2	25.1	22.9	23.4	27.4	25.9	23.0	23.8	24.2	23.0	25.1	25.9	23.0
Refinery and Blender Net Inputs															
Crude Oil	15.58	16.15	16.31	15.86	15.25	16.15	16.51	15.68	15.52	16.36	16.42	15.65	15.98	15.90	15.99
Hydrocarbon Gas Liquids	0.59	0.45	0.52	0.70	0.66	0.49	0.56	0.68	0.59	0.47	0.51	0.70	0.57	0.60	0.57
Other Hydrocarbons/Oxygenates	1.13	1.20	1.19	1.17	1.13	1.20	1.21	1.21	1.17	1.22	1.23	1.20	1.17	1.19	1.21
Unfinished Oils	-0.06	0.21	0.24	0.15	0.19	0.21	0.00	0.18	0.09	0.31	0.32	0.29	0.14	0.15	0.25
Motor Gasoline Blend Components	0.30	0.81	0.64	0.29	0.34	0.85	0.64	0.43	0.57	0.80	0.75	0.37	0.51	0.57	0.62
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	18.92	18.19	17.96	19.15	19.24	18.21	18.36	18.40	18.64
Refinery Processing Gain	0.97	1.08	1.06	1.01	0.97	1.01	1.07	1.02	0.98	1.01	1.02	1.00	1.03	1.02	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	9.81	9.63	9.45	9.79	9.82	9.59	9.57	9.64	9.67
Jet Fuel	1.48	1.71	1.67	1.60	1.62	1.72	1.78	1.65	1.67	1.76	1.83	1.70	1.62	1.70	1.74
Distillate Fuel	4.79	5.01	5.15	5.09	4.69	4.91	4.99	4.93	4.77	5.08	5.06	4.96	5.01	4.88	4.97
Residual Fuel	0.27	0.23	0.26	0.25	0.27	0.27	0.27	0.26	0.24	0.21	0.25	0.20	0.25	0.27	0.22
Other Oils (a)	2.26	2.40	2.40	2.30	2.21	2.35	2.40	2.38	2.34	2.50	2.54	2.41	2.34	2.33	2.45
Total Refinery and Blender Net Production	18.50	19.92	19.97	19.18	18.54	19.91	19.99	19.21	18.93	20.17	20.26	19.21	19.40	19.42	19.64
Refinery Distillation Inputs	16.12	16.66	16.82	16.34	15.78	16.75	17.02	16.06	15.92	16.73	16.85	16.05	16.48	16.41	16.39
Refinery Operable Distillation Capacity	17.93	17.93	17.98	18.01	18.12	18.27	18.27	18.31	18.31	18.31	18.32	18.33	17.96	18.24	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 December 7, 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 - December 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	233	230	265	267	235	309	264	250
Gasoline Regular Grade Retail Prices Including Taxes															
PADD 1	364	438	393	341	330	344	361	326	307	336	339	314	384	340	324
PADD 2	352	436	397	345	324	348	360	316	303	338	339	306	383	337	322
PADD 3	341	413	358	300	302	315	334	287	276	310	313	282	353	310	296
PADD 4	360	446	434	358	357	359	393	334	311	348	360	329	401	362	337
PADD 5	452	543	511	478	418	452	480	458	408	437	441	401	497	453	422
U.S. Average	371	450	408	357	338	358	376	338	318	350	353	322	397	353	336
Gasoline All Grades Including Taxes	380	460	419	369	349	369	387	351	330	361	365	334	408	364	348
End-of-period Inventories (million barrels)															
Total Gasoline Inventories															
PADD 1	57.0	53.6	54.3	56.4	52.7	57.1	58.8	59.2	58.9	62.7	57.5	59.3	56.4	59.2	59.3
PADD 2	56.5	46.7	44.1	46.6	49.5	45.2	46.9	51.4	49.8	45.7	45.3	52.4	46.6	51.4	52.4
PADD 3	87.0	83.9	80.2	81.4	84.1	85.0	84.9	88.1	87.4	86.4	80.9	82.3	81.4	88.1	82.3
PADD 4	8.1	6.4	6.4	7.4	7.8	6.8	7.2	8.0	8.4	7.1	7.2	7.8	7.4	8.0	7.8
PADD 5	29.9	30.3	24.5	32.6	31.2	29.0	29.9	28.8	29.5	29.8	29.5	30.3	32.6	28.8	30.3
U.S. Total	238.5	221.0	209.5	224.4	225.3	223.2	227.6	235.5	234.0	231.8	220.4	232.1	224.4	235.5	232.1
Finished Gasoline Inventories															
U.S. Total	17.3	17.1	17.6	17.2	14.7	17.6	15.3	18.7	15.9	16.7	18.4	19.6	17.2	18.7	19.6
Gasoline Blending Components Inventories															
U.S. Total	221.2	203.9	191.9	207.2	210.6	205.6	212.3	216.8	218.1	215.1	202.1	212.5	207.2	216.8	212.5

- = no data available

Notes: EIA completed modeling and analysis for this report on December 7, 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 - December 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	112.50	113.52	<i>114.78</i>	<i>114.46</i>	<i>114.47</i>	<i>114.29</i>	<i>114.93</i>	108.02	<i>113.01</i>	<i>114.54</i>
Alaska	1.06	1.00	0.96	1.07	1.08	1.01	0.91	<i>1.03</i>	<i>1.03</i>	<i>0.95</i>	<i>0.88</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	2.02	<i>2.12</i>	<i>2.06</i>	<i>2.01</i>	<i>1.93</i>	<i>1.96</i>	2.11	<i>2.04</i>	<i>1.99</i>
Lower 48 States (excl GOM)	101.69	104.19	106.64	106.97	107.97	109.60	110.59	<i>111.64</i>	<i>111.37</i>	<i>111.51</i>	<i>111.48</i>	<i>111.98</i>	104.89	<i>109.96</i>	<i>111.59</i>
Total Dry Gas Production	96.63	98.92	101.20	101.57	102.27	103.19	104.03	<i>105.15</i>	<i>104.84</i>	<i>104.85</i>	<i>104.68</i>	<i>105.27</i>	99.60	<i>103.67</i>	<i>104.91</i>
LNG Gross Imports	0.15	0.01	0.07	0.05	0.09	0.02	0.02	<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	11.40	<i>12.62</i>	<i>12.51</i>	<i>11.64</i>	<i>11.82</i>	<i>13.47</i>	10.59	<i>11.81</i>	<i>12.36</i>
Pipeline Gross Imports	8.89	7.73	7.84	8.41	8.45	7.32	7.94	<i>7.71</i>	<i>8.38</i>	<i>7.02</i>	<i>7.26</i>	<i>7.50</i>	8.22	<i>7.85</i>	<i>7.54</i>
Pipeline Gross Exports	8.46	8.52	8.13	8.19	8.93	8.75	9.19	<i>9.36</i>	<i>9.54</i>	<i>8.90</i>	<i>9.22</i>	<i>9.64</i>	8.32	<i>9.06</i>	<i>9.32</i>
Supplemental Gaseous Fuels	0.19	0.20	0.20	0.20	0.22	0.17	0.16	<i>0.19</i>	<i>0.19</i>	<i>0.19</i>	<i>0.19</i>	<i>0.19</i>	0.20	<i>0.18</i>	<i>0.19</i>
Net Inventory Withdrawals	20.63	-10.60	-9.20	2.54	11.97	-11.69	-6.41	<i>2.06</i>	<i>14.04</i>	<i>-12.09</i>	<i>-6.44</i>	<i>2.80</i>	0.77	<i>-1.06</i>	<i>-0.43</i>
Total Supply	106.53	76.95	82.24	94.24	102.62	78.49	85.15	<i>93.19</i>	<i>105.50</i>	<i>79.47</i>	<i>84.70</i>	<i>92.72</i>	89.94	<i>89.82</i>	<i>90.59</i>
Balancing Item (b)	-1.72	-0.93	-1.47	-1.78	0.29	-0.50	-1.34	<i>0.09</i>	<i>-1.28</i>	<i>-1.64</i>	<i>-0.90</i>	<i>-0.07</i>	-1.48	<i>-0.37</i>	<i>-0.97</i>
Total Primary Supply	104.81	76.03	80.76	92.46	102.91	77.99	83.81	<i>93.28</i>	<i>104.22</i>	<i>77.83</i>	<i>83.79</i>	<i>92.64</i>	88.46	<i>89.46</i>	<i>89.62</i>
Consumption (billion cubic feet per day)															
Residential	25.97	7.80	3.56	17.28	23.50	7.29	3.57	<i>16.11</i>	<i>24.37</i>	<i>7.30</i>	<i>3.84</i>	<i>16.20</i>	13.60	<i>12.57</i>	<i>12.91</i>
Commercial	15.55	6.65	4.74	11.61	14.51	6.43	4.72	<i>11.23</i>	<i>14.69</i>	<i>6.52</i>	<i>5.13</i>	<i>11.37</i>	9.61	<i>9.20</i>	<i>9.42</i>
Industrial	25.73	22.46	21.68	23.72	24.83	22.40	21.98	<i>24.25</i>	<i>24.83</i>	<i>21.66</i>	<i>21.31</i>	<i>23.55</i>	23.39	<i>23.36</i>	<i>22.84</i>
Electric Power (c)	28.11	30.88	42.50	30.88	30.71	33.39	44.79	<i>32.50</i>	<i>30.70</i>	<i>33.76</i>	<i>44.70</i>	<i>32.33</i>	33.13	<i>35.38</i>	<i>35.39</i>
Lease and Plant Fuel	5.00	5.12	5.24	5.26	5.31	5.37	5.42	<i>5.48</i>	<i>5.47</i>	<i>5.47</i>	<i>5.46</i>	<i>5.49</i>	5.16	<i>5.40</i>	<i>5.47</i>
Pipeline and Distribution Use	3.98	2.83	3.01	3.48	3.86	2.93	3.15	<i>3.53</i>	<i>3.96</i>	<i>2.92</i>	<i>3.15</i>	<i>3.51</i>	3.32	<i>3.37</i>	<i>3.39</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	76.03	80.76	92.46	102.91	77.99	83.81	<i>93.28</i>	<i>104.22</i>	<i>77.83</i>	<i>83.79</i>	<i>92.64</i>	88.46	<i>89.46</i>	<i>89.62</i>
End-of-period Inventories (billion cubic feet)															
Working Gas Inventory	1,401	2,325	3,146	2,925	1,850	2,900	3,490	<i>3,300</i>	<i>2,023</i>	<i>3,123</i>	<i>3,715</i>	<i>3,457</i>	2,925	<i>3,300</i>	<i>3,457</i>
East Region (d)	242	482	759	698	334	646	853	<i>766</i>	<i>375</i>	<i>680</i>	<i>868</i>	<i>796</i>	698	<i>766</i>	<i>796</i>
Midwest Region (d)	296	557	917	831	417	701	993	<i>924</i>	<i>455</i>	<i>744</i>	<i>1,023</i>	<i>924</i>	831	<i>924</i>	<i>924</i>
South Central Region (d)	587	885	1,006	1,042	919	1,136	1,092	<i>1,117</i>	<i>846</i>	<i>1,207</i>	<i>1,240</i>	<i>1,213</i>	1,042	<i>1,117</i>	<i>1,213</i>
Mountain Region (d)	90	137	184	158	79	171	239	<i>207</i>	<i>126</i>	<i>166</i>	<i>227</i>	<i>196</i>	158	<i>207</i>	<i>196</i>
Pacific Region (d)	165	240	247	167	74	216	278	<i>256</i>	<i>197</i>	<i>299</i>	<i>325</i>	<i>298</i>	167	<i>256</i>	<i>298</i>
Alaska	21	25	32	30	27	30	35	<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 December 7, 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 - December 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	2.92	2.91	2.46	2.91	3.32	6.67	2.65	2.90
Residential Retail															
New England	17.69	20.92	26.28	21.48	21.04	20.48	22.57	17.53	16.90	17.62	20.57	16.18	19.77	19.86	17.06
Middle Atlantic	12.78	15.58	23.79	16.88	15.60	16.03	20.75	13.23	11.80	13.20	18.19	12.36	15.15	15.28	12.63
E. N. Central	9.85	14.88	25.94	13.23	11.06	13.26	22.96	10.53	8.92	12.01	19.99	9.49	12.51	11.87	10.20
W. N. Central	11.30	15.08	24.74	13.24	13.24	15.44	22.07	11.16	9.70	12.40	19.66	10.26	13.09	13.33	10.81
S. Atlantic	13.85	21.38	31.73	17.21	17.33	20.92	30.33	15.09	13.49	18.13	25.59	14.52	17.11	17.97	15.36
E. S. Central	11.69	17.04	26.25	15.32	13.63	16.66	23.38	12.22	10.65	14.51	21.20	11.77	14.20	14.12	12.10
W. S. Central	12.55	20.70	30.82	17.46	14.58	19.81	28.71	14.57	10.83	15.68	22.03	12.70	16.25	16.41	12.92
Mountain	10.31	12.82	19.22	13.40	12.61	13.86	18.75	12.42	11.53	13.63	18.31	11.80	12.36	13.16	12.47
Pacific	17.02	17.75	20.46	18.89	20.13	17.11	18.10	15.92	16.11	15.30	16.04	14.96	18.14	18.18	15.61
U.S. Average	12.30	16.51	24.78	15.56	14.72	16.19	22.33	13.02	11.57	14.04	19.48	12.05	14.77	14.93	12.66
Commercial Retail															
New England	12.68	14.64	16.13	15.77	15.19	13.66	12.53	11.22	11.14	11.36	11.38	10.62	14.24	13.40	11.04
Middle Atlantic	10.34	10.75	11.98	11.97	11.94	9.25	8.05	7.83	8.29	7.54	7.11	7.77	11.09	9.71	7.87
E. N. Central	8.19	10.61	14.94	10.42	9.20	8.63	10.72	7.08	6.59	7.50	9.26	6.59	9.61	8.56	6.91
W. N. Central	9.97	11.43	14.68	10.99	11.58	11.33	11.77	8.91	8.35	8.54	9.49	7.34	10.82	10.77	8.16
S. Atlantic	10.75	12.25	14.25	13.13	12.97	11.26	11.39	10.02	9.57	9.95	10.08	9.32	12.17	11.51	9.63
E. S. Central	10.32	12.73	15.50	13.38	11.89	10.94	11.70	9.59	8.62	9.55	10.52	9.28	12.17	10.95	9.19
W. S. Central	9.97	12.69	14.80	12.67	11.01	9.68	10.37	8.50	7.35	7.96	8.61	7.77	11.89	9.95	7.76
Mountain	8.77	9.96	12.52	11.29	10.76	10.77	12.16	11.15	10.87	11.18	11.75	10.29	10.17	11.01	10.84
Pacific	13.08	13.56	15.52	14.41	16.85	12.61	13.49	12.52	12.57	11.44	11.47	11.06	13.95	14.26	11.73
U.S. Average	9.99	11.65	14.05	12.11	11.81	10.48	10.90	9.12	8.70	9.04	9.57	8.42	11.32	10.66	8.77
Industrial Retail															
New England	11.27	12.14	12.21	13.60	13.55	10.07	7.87	8.70	9.27	8.22	6.84	7.95	12.22	10.40	8.27
Middle Atlantic	10.73	10.85	12.16	12.54	7.52	8.97	7.89	8.17	8.12	7.10	7.27	8.18	11.35	7.91	7.89
E. N. Central	7.67	8.90	10.71	10.33	9.18	6.67	6.91	6.49	6.11	5.84	5.73	5.80	8.92	7.63	5.93
W. N. Central	7.57	8.15	9.10	8.16	8.23	4.55	4.33	4.83	5.22	4.07	3.94	4.68	8.20	5.65	4.54
S. Atlantic	7.26	8.61	10.84	8.89	6.92	4.78	5.03	4.89	5.09	4.34	4.55	5.09	8.82	5.46	4.79
E. S. Central	6.23	8.29	10.13	7.65	5.46	3.74	4.10	4.37	4.58	3.87	4.07	4.68	7.95	4.45	4.32
W. S. Central	5.33	7.33	8.05	5.60	3.39	2.21	2.71	3.13	3.19	2.58	2.97	3.52	6.60	2.87	3.07
Mountain	7.10	8.39	10.47	9.87	8.86	7.73	8.05	7.52	6.81	6.24	6.16	5.83	8.85	8.12	6.30
Pacific	8.83	9.03	9.60	9.44	10.84	8.16	8.03	7.90	8.26	6.99	6.85	7.08	9.20	8.80	7.36
U.S. Average	6.64	7.97	8.93	7.33	6.06	3.76	3.87	4.49	4.82	3.70	3.81	4.58	7.66	4.60	4.27

- = no data available

Notes: EIA completed modeling and analysis for this report on December 7, 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 - December 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	149.3	144.6	154.5	145.8	148.7	142.3	151.7	145.0	133.4	116.3	121.9	114.7	594.2	587.8	486.3
Appalachia	40.3	40.2	40.2	40.3	42.9	42.5	42.3	41.8	40.2	35.7	30.5	29.4	161.0	169.5	135.7
Interior	23.9	25.2	24.7	24.6	25.4	23.5	26.1	25.1	25.6	22.9	23.0	21.1	98.4	100.1	92.5
Western	85.1	79.3	89.5	80.9	80.4	76.4	83.3	78.1	67.6	57.7	68.5	64.3	334.8	318.2	258.0
Primary Inventory Withdrawals	-0.7	-0.9	0.2	-0.4	-1.6	0.3	3.6	0.0	-1.7	0.2	3.6	0.1	-1.8	2.3	2.2
Imports	1.3	1.6	2.0	1.4	1.0	1.0	1.0	1.2	0.9	0.9	1.1	0.7	6.3	4.3	3.6
Exports	20.4	23.4	21.1	21.0	24.6	24.1	24.9	27.0	23.9	23.2	22.1	24.3	86.0	100.6	93.5
Metallurgical Coal	10.5	13.1	11.5	11.4	12.4	12.6	13.6	12.6	12.6	13.4	12.4	13.0	46.5	51.2	51.4
Steam Coal	9.9	10.3	9.6	9.6	12.2	11.5	11.3	14.4	11.3	9.8	9.7	11.3	39.5	49.4	42.1
Total Primary Supply	129.6	121.9	135.5	125.8	123.5	119.5	131.4	119.2	108.6	94.2	104.5	91.3	512.7	493.7	398.7
Secondary Inventory Withdrawals	6.0	-0.7	7.3	-9.4	-20.1	-19.0	10.8	-20.1	-11.2	-16.2	11.9	-2.7	3.2	-48.4	-18.2
Waste Coal (a)	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.2	1.2	1.2	1.2	7.0	7.0	4.8
Total Supply	137.4	122.9	144.6	118.1	105.2	102.3	144.0	100.9	98.7	79.2	117.7	89.8	522.9	452.4	385.3
Consumption (million short tons)															
Coke Plants	4.2	3.9	3.9	4.0	4.0	3.9	4.1	4.1	4.2	4.3	4.3	4.4	16.0	16.1	17.1
Electric Power Sector (b)	123.4	108.1	135.4	105.9	91.2	82.0	122.7	90.9	88.5	70.0	108.4	79.7	472.8	386.7	346.5
Retail and Other Industry	6.9	6.7	6.5	6.6	6.5	5.6	6.0	6.1	6.0	5.0	5.0	5.8	26.7	24.2	21.7
Residential and Commercial	0.2	0.1	0.2	0.2	0.2	0.1	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	5.5	5.8	5.9	5.7	4.8	4.8	5.5	25.9	23.5	20.9
Total Consumption	134.4	118.7	145.9	116.5	101.7	91.5	132.7	101.1	98.7	79.2	117.7	89.8	515.5	427.0	385.3
Discrepancy (c)	2.9	4.2	-1.3	1.6	3.5	10.8	11.3	-0.2	0.0	0.0	0.0	0.0	7.4	25.4	0.0
End-of-period Inventories (million short tons)															
Primary Inventories (d)	19.7	20.6	20.4	20.8	22.4	22.1	18.5	18.5	20.3	20.1	16.5	16.3	20.8	18.5	16.3
Secondary Inventories	90.3	91.0	83.7	93.2	113.3	132.3	121.5	141.6	152.7	168.9	157.0	159.7	93.2	141.6	159.7
Electric Power Sector	86.1	86.9	79.4	88.9	109.0	127.7	116.6	136.7	148.6	164.5	152.3	155.0	88.9	136.7	155.0
Retail and General Industry	2.4	2.4	2.5	2.5	2.5	2.8	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	0.243	0.250	0.250	0.251	0.253	0.247	0.242	0.251
Cost of Coal to Electric Utilities															
(Dollars per million Btu)	2.18	2.25	2.49	2.54	2.57	2.49	2.50	2.50	2.49	2.47	2.45	2.41	2.37	2.51	2.46

(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 December 7, 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 - December 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)	1,023	1,025	1,187	996	987	984	1,208	1,009	1,026	1,023	1,219	1,011	4,231	4,188	4,279
Electric power sector	984	987	1,146	957	948	947	1,167	969	986	984	1,177	970	4,074	4,031	4,118
Industrial sector	35	34	36	35	35	33	36	36	36	34	37	36	140	140	143
Commercial sector	4	4	5	4	4	4	5	4	4	4	5	5	17	17	18
Net imports	7	10	15	10	10	10	8	3	8	10	13	10	41	32	41
Total utility-scale power supply	1,029	1,035	1,202	1,006	997	994	1,216	1,012	1,033	1,033	1,232	1,021	4,272	4,220	4,320
Losses and Unaccounted for (b)	45	58	45	53	43	55	61	49	44	68	56	49	202	209	217
Small-scale solar generation (c)	12	18	18	13	14	22	22	15	17	25	25	17	61	73	85
Residential sector	8	12	12	8	10	15	15	10	11	17	17	12	40	49	58
Commercial sector	4	5	5	3	4	6	6	4	5	7	7	5	18	20	23
Industrial sector	1	1	1	1	1	1	1	1	1	1	1	1	4	4	5
Electricity Consumption (billion kilowatthours unless noted)															
Sales to Ultimate Customers	949	942	1,119	917	918	906	1,117	926	953	930	1,139	936	3,927	3,868	3,956
Residential Sector	377	344	454	334	355	319	455	335	377	334	471	342	1,509	1,465	1,525
Commercial Sector	325	339	394	333	322	330	390	338	330	334	391	336	1,391	1,379	1,392
Industrial Sector	245	257	270	249	239	256	270	252	244	259	274	256	1,020	1,018	1,033
Transportation Sector	2	2	2	2	2	2	2	2	2	2	2	2	7	7	7
Direct Use (d)	36	35	37	35	35	33	37	37	37	35	38	37	143	143	147
Total Consumption	984	976	1,157	952	954	939	1,155	963	989	965	1,177	972	4,070	4,011	4,103
Average residential electricity usage per customer (kWh)	2,698	2,459	3,246	2,391	2,530	2,268	3,241	2,388	2,664	2,358	3,325	2,414	10,794	10,427	10,761
End-of-period Fuel Inventories Held by Electric Power Sector															
Coal (mmst)	86.1	86.9	79.4	88.9	109.0	127.7	116.6	136.7	148.6	164.5	152.3	155.0	88.9	136.7	155.0
Residual Fuel (mmb)	5.8	6.1	5.8	5.8	6.1	6.3	6.2	6.0	4.2	4.0	2.1	2.9	5.8	6.0	2.9
Distillate Fuel (mmb)	17.3	17.3	16.2	16.5	17.0	16.9	19.6	19.5	19.0	18.6	18.3	18.4	16.5	19.5	18.4
Prices															
Power Generation Fuel Costs (dollars per million Btu)															
Coal	2.18	2.25	2.49	2.54	2.57	2.49	2.50	2.50	2.49	2.47	2.45	2.41	2.37	2.51	2.46
Natural Gas	5.93	7.39	8.23	6.86	4.98	2.60	2.92	3.13	3.31	2.61	2.84	3.48	7.23	3.33	3.04
Residual Fuel Oil	16.59	25.86	26.65	21.22	19.23	17.88	19.26	17.90	15.71	16.55	15.59	15.49	21.58	18.62	15.79
Distillate Fuel Oil	21.32	30.71	26.71	24.73	22.84	19.91	22.12	21.56	20.54	20.50	20.28	21.21	25.00	21.61	20.70
Prices to Ultimate Customers (cents per kilowatthour)															
Residential Sector	13.91	14.96	15.74	15.44	15.77	16.12	16.02	15.33	15.42	16.02	16.13	15.37	15.04	15.82	15.76
Commercial Sector	11.52	12.21	13.24	12.50	12.64	12.45	13.21	12.04	12.09	12.28	13.44	12.34	12.41	12.61	12.58
Industrial Sector	7.28	8.28	9.25	8.36	8.06	7.74	8.57	8.07	8.17	7.78	8.50	8.15	8.32	8.12	8.15
Wholesale Electricity Prices (dollars per megawatt-hour)															
ERCOT North hub	42.73	83.19	130.71	53.01	28.05	57.27	188.81	37.76	31.90	29.26	37.44	36.17	77.41	77.97	33.69
CAISO SP15 zone	45.20	60.34	110.03	135.13	92.54	30.00	67.59	53.23	50.35	34.27	46.74	48.03	87.67	60.84	44.85
ISO-NE Internal hub	116.48	73.28	99.14	80.77	52.63	32.55	40.41	42.27	74.20	45.92	72.05	57.68	92.42	41.97	62.46
NYISO Hudson Valley zone	100.10	79.72	104.71	77.17	44.65	31.38	39.45	39.78	51.30	40.94	67.86	44.63	90.42	38.82	51.18
PJM Western hub	58.33	93.00	110.99	71.60	36.49	35.41	43.27	43.89	42.95	40.77	50.28	42.84	83.48	39.77	44.21
Midcontinent ISO Illinois hub	47.88	89.21	101.80	57.87	31.39	32.13	40.60	36.06	36.92	34.54	41.91	37.79	74.19	35.04	37.79
SPP ISO South hub	37.25	72.85	109.97	55.87	28.96	34.56	46.96	31.77	35.50	33.99	43.18	35.48	68.98	35.56	37.04
SERC index, Into Southern	42.45	84.96	94.82	59.33	30.53	31.66	36.45	32.71	32.80	30.86	34.50	32.67	70.39	32.84	32.71
FRCC index, Florida Reliability	41.11	78.70	92.71	58.54	30.31	33.06	36.79	73.75	32.57	32.70	35.93	34.75	67.77	43.48	33.99
Northwest index, Mid-Columbia	39.85	59.39	137.82	151.39	105.99	58.61	82.36	88.46	80.83	58.03	68.15	77.73	97.11	83.86	71.18
Southwest index, Palo Verde	39.02	60.50	128.25	130.12	84.19	31.60	71.95	54.26	54.73	46.50	43.49	52.73	89.47	60.50	49.36

Notes: EIA completed modeling and analysis for this report on December 7, 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 colocated 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 - December 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	13.7	11.2	13.1	10.2	14.6	11.3	48.5	46.9	49.3
Middle Atlantic	35.9	29.9	42.5	30.3	33.3	27.5	40.1	30.5	35.4	28.8	43.1	30.6	138.7	131.5	137.9
E. N. Central	50.6	43.6	54.6	42.9	46.5	39.8	52.5	43.8	50.9	42.6	57.0	44.6	191.8	182.6	195.0
W. N. Central	30.5	24.6	31.2	25.6	29.4	24.1	30.8	25.3	30.6	24.4	32.5	26.3	111.9	109.6	113.7
S. Atlantic	94.5	89.6	113.7	85.9	87.2	83.8	117.9	85.5	95.8	90.3	124.1	88.1	383.8	374.3	398.3
E. S. Central	32.2	27.3	36.6	26.2	29.3	25.4	37.3	26.2	33.1	26.5	38.9	26.6	122.3	118.1	125.1
W. S. Central	56.6	58.5	80.7	51.0	51.6	52.4	86.7	54.0	56.0	53.7	81.5	53.9	246.8	244.6	245.0
Mountain	24.1	26.2	36.1	24.3	25.3	24.5	36.4	23.9	24.5	26.1	37.2	24.1	110.8	110.1	111.9
Pacific contiguous	38.4	32.4	43.1	36.1	39.5	30.2	38.7	33.9	37.0	30.5	41.1	35.4	150.0	142.2	144.0
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	4.7	4.8
Total	377.3	343.8	453.8	334.3	355.4	318.6	455.2	335.5	377.5	334.2	471.1	342.1	1,509.2	1,464.6	1,524.9
Commercial Sector															
New England	12.2	11.9	14.0	11.8	11.9	11.5	13.6	11.9	12.1	11.6	13.6	11.8	49.9	48.9	49.0
Middle Atlantic	36.5	34.6	40.9	34.9	35.0	33.1	39.7	35.2	35.4	33.5	40.6	35.1	146.8	143.1	144.5
E. N. Central	43.3	42.9	48.8	42.2	42.4	41.9	48.0	42.4	43.1	42.3	48.9	42.1	177.2	174.7	176.4
W. N. Central	25.2	24.8	28.6	24.9	25.3	25.1	28.6	25.1	25.8	25.1	28.8	25.2	103.5	104.1	105.0
S. Atlantic	76.4	83.6	94.7	80.1	75.4	81.7	96.2	81.1	77.7	84.0	97.1	81.3	334.8	334.3	340.1
E. S. Central	21.2	22.6	27.0	21.2	20.6	21.8	27.1	21.5	21.3	22.0	27.1	21.2	91.9	91.0	91.6
W. S. Central	48.2	54.0	63.5	52.6	47.4	51.2	62.2	55.3	50.2	52.1	60.4	54.6	218.3	216.1	217.3
Mountain	23.2	25.4	29.6	24.3	23.8	25.0	29.9	24.4	23.8	25.5	29.9	24.2	102.4	103.0	103.5
Pacific contiguous	37.8	38.0	45.5	39.2	38.8	37.0	43.6	39.4	39.0	37.0	43.6	39.3	160.6	158.8	158.9
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	325.3	339.1	393.8	332.6	321.9	329.6	390.2	337.6	329.8	334.4	391.5	336.2	1,390.9	1,379.3	1,391.8
Industrial Sector															
New England	3.9	3.9	4.1	3.8	3.7	3.7	3.9	3.8	3.7	3.6	3.9	3.7	15.6	15.0	14.9
Middle Atlantic	17.6	18.4	19.5	18.3	17.3	17.7	18.9	18.5	17.6	17.8	19.1	18.7	73.8	72.5	73.2
E. N. Central	45.8	46.8	48.6	45.2	44.8	45.8	48.3	45.5	45.1	45.7	48.3	45.7	186.4	184.4	184.9
W. N. Central	24.1	24.7	26.7	24.8	24.1	25.5	27.2	24.8	24.4	25.9	27.6	25.4	100.3	101.6	103.2
S. Atlantic	35.2	35.8	37.1	34.9	33.6	35.2	36.3	34.8	33.8	35.3	36.5	35.3	143.0	139.8	140.9
E. S. Central	24.7	25.8	25.5	23.3	23.2	23.9	24.8	23.3	23.2	23.7	24.6	23.2	99.3	95.2	94.7
W. S. Central	52.4	57.0	59.0	55.4	53.6	62.4	63.6	57.6	55.9	65.3	67.0	59.9	223.8	237.3	248.2
Mountain	19.7	21.5	23.8	20.7	19.8	21.5	24.1	21.1	20.4	21.9	24.4	21.5	85.8	86.5	88.1
Pacific contiguous	20.1	22.1	24.5	20.9	18.3	19.2	21.9	21.1	18.3	19.0	21.7	21.0	87.7	80.6	80.0
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	1.2	4.8	4.8	4.8
Total	244.6	257.2	270.1	248.6	239.5	256.2	270.2	251.7	243.6	259.5	274.3	255.6	1,020.5	1,017.6	1,032.9
Total All Sectors (a)															
New England	29.3	26.5	32.1	26.6	27.9	25.1	31.4	27.0	29.0	25.5	32.2	26.9	114.5	111.3	113.7
Middle Atlantic	90.9	83.7	103.8	84.3	86.4	79.2	99.7	85.1	89.3	80.9	103.6	85.3	362.7	350.5	359.0
E. N. Central	139.9	133.5	152.2	130.4	133.8	127.6	149.0	131.7	139.3	130.8	154.3	132.5	555.9	542.1	556.8
W. N. Central	79.9	74.1	86.5	75.3	78.7	74.8	86.5	75.3	80.8	75.4	88.9	76.8	315.8	315.2	321.9
S. Atlantic	206.4	209.3	245.8	201.1	196.4	200.9	250.7	201.5	207.5	209.9	258.0	204.9	862.5	849.5	880.2
E. S. Central	78.0	75.7	89.1	70.6	73.1	71.1	89.1	71.0	77.6	72.2	90.6	71.1	313.5	304.3	311.4
W. S. Central	157.2	169.5	203.2	159.1	152.6	166.0	212.6	166.9	162.2	171.1	208.9	168.5	689.0	698.2	710.7
Mountain	67.1	73.2	89.5	69.3	68.9	71.1	90.4	69.4	68.7	73.6	91.6	69.9	299.1	299.8	303.7
Pacific contiguous	96.5	92.7	113.4	96.5	96.8	86.6	104.4	94.6	94.5	86.7	106.6	95.8	399.1	382.5	383.7
AK and HI	3.7	3.6	3.8	3.9	3.7	3.6	3.7	3.9	3.8	3.6	3.8	3.9	15.0	14.9	15.0
Total	948.8	941.7	1,119.4	917.2	918.4	905.9	1,117.5	926.5	952.6	929.6	1,138.6	935.5	3,927.2	3,868.3	3,956.2

Notes: EIA completed modeling and analysis for this report on December 7, 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 - December 2023

	2022				2023				2024				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2022	2023	2024
Residential Sector															
New England	23.90	24.21	24.66	26.31	30.65	29.58	27.16	26.61	30.26	28.59	26.27	26.49	24.73	28.44	27.86
Middle Atlantic	17.19	18.23	18.89	19.44	19.70	19.13	19.85	19.37	19.67	19.53	20.57	20.23	18.43	19.55	20.05
E. N. Central	14.11	15.38	16.01	16.00	16.14	16.58	15.97	15.49	15.36	15.99	15.66	15.61	15.36	16.03	15.64
W. N. Central	11.12	13.09	14.13	12.18	11.85	13.52	14.23	11.93	11.63	13.53	14.12	11.83	12.63	12.90	12.79
S. Atlantic	12.52	13.41	14.05	13.68	14.31	14.74	14.54	13.56	13.71	14.34	14.29	13.28	13.44	14.31	13.94
E. S. Central	11.88	12.96	13.66	13.30	13.17	13.20	12.94	12.89	12.97	13.46	13.07	13.12	12.96	13.04	13.14
W. S. Central	12.02	13.14	14.03	14.16	13.57	13.57	13.51	13.97	13.58	13.74	13.74	13.81	13.39	13.64	13.72
Mountain	12.09	12.78	13.17	12.92	12.96	13.89	14.10	13.71	13.29	13.87	13.91	13.64	12.79	13.71	13.71
Pacific	17.89	20.12	21.59	19.06	19.60	22.32	23.93	19.30	19.58	22.96	24.82	19.76	19.72	21.29	21.84
U.S. Average	13.91	14.96	15.74	15.44	15.77	16.12	16.02	15.33	15.42	16.02	16.13	15.37	15.04	15.82	15.76
Commercial Sector															
New England	18.41	17.38	18.26	18.47	20.56	18.40	18.74	17.88	19.57	17.63	18.46	18.34	18.13	18.89	18.51
Middle Atlantic	13.95	14.88	16.50	15.17	14.86	14.89	16.40	14.31	13.99	14.81	16.98	14.92	15.17	15.16	15.24
E. N. Central	10.95	11.71	11.97	11.76	12.01	12.06	11.90	11.07	11.27	11.80	12.02	11.35	11.61	11.76	11.62
W. N. Central	9.57	10.59	11.43	10.06	9.95	10.67	11.38	9.74	9.67	10.80	11.59	9.82	10.44	10.46	10.50
S. Atlantic	10.14	10.69	11.32	11.04	11.31	10.95	10.91	10.23	10.50	10.59	10.78	9.98	10.83	10.85	10.48
E. S. Central	11.49	12.00	12.81	12.38	12.57	12.10	12.07	12.09	12.48	12.39	12.47	12.41	12.21	12.20	12.44
W. S. Central	8.54	9.47	10.36	9.60	9.36	8.84	9.62	8.64	8.69	8.96	10.43	9.54	9.56	9.13	9.45
Mountain	9.55	10.31	11.07	10.42	10.35	11.09	11.65	10.67	10.33	10.87	11.52	10.68	10.38	10.98	10.89
Pacific	16.12	17.80	20.35	18.24	18.06	18.85	22.70	19.52	18.39	18.68	22.94	20.16	18.24	19.88	20.14
U.S. Average	11.52	12.21	13.24	12.50	12.64	12.45	13.21	12.04	12.09	12.28	13.44	12.34	12.41	12.61	12.58
Industrial Sector															
New England	14.85	14.74	15.48	15.01	16.24	15.24	15.72	14.65	15.46	14.53	15.40	14.89	15.02	15.46	15.08
Middle Atlantic	7.80	8.25	9.21	8.36	8.20	7.72	7.88	7.60	8.05	7.71	8.02	7.58	8.42	7.85	7.84
E. N. Central	7.52	8.35	8.77	8.28	8.31	7.89	8.06	8.00	8.50	8.06	8.24	8.14	8.24	8.06	8.23
W. N. Central	7.10	7.94	8.66	7.47	7.44	7.79	8.43	7.39	7.66	7.92	8.54	7.53	7.82	7.78	7.93
S. Atlantic	6.57	7.90	8.83	7.80	7.72	7.37	8.07	7.71	7.98	7.47	8.14	7.61	7.79	7.72	7.80
E. S. Central	6.16	7.14	8.16	7.31	6.98	6.67	6.91	6.71	6.99	6.68	6.93	6.79	7.20	6.82	6.85
W. S. Central	6.09	7.23	8.13	7.26	6.56	5.95	7.20	6.74	6.70	5.76	6.63	6.80	7.21	6.62	6.46
Mountain	6.55	7.24	8.44	7.84	7.65	7.65	8.45	7.76	7.68	7.94	8.50	7.92	7.56	7.90	8.03
Pacific	10.28	11.84	13.94	12.50	11.81	12.47	14.85	13.06	12.24	13.15	15.38	13.59	12.23	13.12	13.66
U.S. Average	7.28	8.28	9.25	8.36	8.06	7.74	8.57	8.07	8.17	7.78	8.50	8.15	8.32	8.12	8.15
All Sectors (a)															
New England	20.37	19.68	20.66	21.14	24.39	22.26	22.02	21.01	23.86	21.55	21.60	21.25	20.47	22.42	22.08
Middle Atlantic	14.03	14.60	16.08	15.20	15.38	14.75	16.16	14.68	15.07	14.92	16.81	15.20	15.02	15.29	15.57
E. N. Central	10.97	11.73	12.39	11.95	12.20	11.97	12.08	11.47	11.86	11.85	12.18	11.67	11.77	11.94	11.90
W. N. Central	9.41	10.53	11.55	9.93	9.89	10.60	11.47	9.70	9.80	10.69	11.57	9.75	10.38	10.45	10.49
S. Atlantic	10.62	11.38	12.21	11.60	12.03	11.90	12.20	11.21	11.57	11.68	12.09	10.99	11.48	11.86	11.61
E. S. Central	9.97	10.70	11.82	11.05	11.04	10.66	11.00	10.62	11.05	10.90	11.23	10.84	10.91	10.84	11.02
W. S. Central	8.97	9.99	11.17	10.25	9.80	9.24	10.48	9.71	9.69	9.24	10.50	9.93	10.16	9.85	9.88
Mountain	9.58	10.29	11.22	10.52	10.53	11.01	11.78	10.83	10.60	11.06	11.69	10.85	10.46	11.09	11.10
Pacific	15.60	17.18	19.43	17.29	17.49	18.63	21.49	17.98	17.65	18.95	22.10	18.55	17.46	18.96	19.41
U.S. Average	11.37	12.14	13.29	12.45	12.66	12.41	13.23	12.16	12.41	12.37	13.36	12.30	12.35	12.64	12.65

Notes: EIA completed modeling and analysis for this report on December 7, 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 - December 2023

	2022				2023				2024				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2022	2023	2024
United States															
Natural Gas	336.5	363.2	507.3	375.8	367.4	395.2	536.6	398.0	373.2	402.7	539.2	398.3	1,582.7	1,697.3	1,713.5
Coal	218.2	190.0	235.2	182.7	156.7	140.5	215.9	156.3	152.8	120.6	190.4	135.3	826.1	669.4	599.1
Nuclear	195.6	184.4	201.5	190.1	194.5	183.1	205.2	191.5	199.8	193.2	208.7	192.8	771.5	774.3	794.4
Renewable Energy Sources:	226.0	244.9	197.5	201.8	225.5	224.7	204.6	217.7	254.9	264.0	234.8	239.0	870.3	872.5	992.6
Conventional Hydropower	69.6	69.1	62.5	52.4	60.9	64.1	58.6	55.4	69.2	76.5	62.7	57.8	253.6	239.0	266.2
Wind	118.0	122.0	81.5	112.5	125.7	102.5	84.5	117.9	135.1	109.5	90.1	124.6	434.0	430.6	459.3
Solar (a)	28.4	44.3	43.3	26.9	29.1	48.9	51.8	34.8	40.3	69.0	72.0	46.9	142.9	164.7	228.3
Biomass	6.0	5.7	6.3	5.7	5.6	5.1	5.7	5.6	5.9	5.4	6.0	5.6	23.7	21.9	22.9
Geothermal	4.0	3.9	4.0	4.2	4.2	4.0	4.0	4.1	4.4	3.5	3.9	4.0	16.1	16.3	15.9
Pumped Storage Hydropower	-1.2	-1.3	-2.0	-1.5	-1.6	-1.3	-1.8	-1.3	-1.6	-1.3	-1.8	-1.4	-6.0	-6.0	-6.1
Petroleum (b)	6.6	4.0	4.5	6.7	3.9	3.5	4.8	5.2	5.1	3.5	4.5	5.4	21.8	17.3	18.5
Other Gases	0.8	0.9	0.9	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)	1.1	1.0	1.0	0.9	0.9	0.9	0.8	0.8	0.7	0.7	0.6	0.4	4.0	3.3	2.4
Total Generation	983.7	987.3	1,146.0	957.4	948.1	947.3	1,167.0	969.0	985.7	984.2	1,177.4	970.5	4,074.3	4,031.3	4,117.7
New England (ISO-NE)															
Natural Gas	11.4	12.5	18.2	11.3	11.5	12.4	15.8	12.8	12.2	11.3	17.7	12.5	53.3	52.4	53.7
Coal	0.3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.4	0.0	0.3	0.4	0.3	0.2	1.1
Nuclear	7.1	5.6	7.3	7.4	7.1	3.4	6.9	6.1	7.2	7.2	7.2	5.6	27.4	23.5	27.2
Conventional hydropower	2.0	2.2	0.7	1.6	1.9	1.4	1.6	1.9	2.0	2.2	1.2	1.7	6.5	6.8	7.1
Nonhydro renewables (d)	2.9	2.8	2.7	2.5	2.6	2.8	2.6	2.5	2.7	3.0	3.1	3.3	10.9	10.5	12.0
Other energy sources (e)	1.4	0.2	0.2	0.6	0.3	0.2	0.2	0.4	0.6	0.2	0.2	0.4	2.5	1.2	1.5
Total generation	25.1	23.3	29.1	23.5	23.6	20.1	27.1	23.7	25.1	23.9	29.6	23.9	101.0	94.6	102.6
Net energy for load (f)	30.6	26.8	33.5	28.0	29.0	25.6	32.2	28.4	30.3	27.7	34.3	29.4	118.9	115.2	121.6
New York (NYISO)															
Natural Gas	14.3	15.6	21.1	14.3	13.5	14.2	21.1	14.6	14.1	13.7	21.0	14.6	65.3	63.4	63.4
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	6.9	7.3	6.4	7.1	7.0	6.5	26.8	27.6	27.0
Conventional hydropower	7.1	6.8	6.8	6.6	7.1	6.6	6.9	7.2	7.0	6.9	6.9	7.1	27.4	27.8	28.0
Nonhydro renewables (d)	1.9	1.8	1.5	2.0	2.1	2.0	1.8	2.6	2.6	2.6	2.3	2.9	7.2	8.5	10.4
Other energy sources (e)	1.1	0.0	0.0	0.5	0.2	0.0	0.0	0.2	0.6	0.0	0.1	0.2	1.6	0.4	0.9
Total generation	30.8	31.3	35.9	30.4	29.7	29.4	36.7	31.8	30.7	30.3	37.3	31.3	128.3	127.7	129.6
Net energy for load (f)	38.1	35.0	44.0	35.6	36.1	33.3	42.1	35.8	37.7	36.3	45.5	37.1	152.7	147.4	156.7
Mid-Atlantic (PJM)															
Natural Gas	76.0	73.1	102.3	79.3	85.1	81.6	112.2	84.4	84.6	82.6	111.3	85.6	330.8	363.3	364.1
Coal	48.9	35.7	42.5	31.1	28.3	22.9	36.2	29.4	37.1	25.1	31.4	21.9	158.2	116.9	115.6
Nuclear	69.0	65.1	69.7	66.8	67.6	65.7	70.6	68.3	69.0	64.8	71.9	68.6	270.6	272.1	274.3
Conventional hydropower	2.5	2.3	1.6	1.9	2.6	1.8	2.0	2.2	2.7	2.6	1.7	2.1	8.4	8.6	9.0
Nonhydro renewables (d)	13.4	13.1	9.3	12.6	12.9	11.9	9.6	13.8	15.3	15.0	12.2	15.6	48.4	48.2	58.1
Other energy sources (e)	0.6	0.3	0.2	1.1	0.3	0.1	0.2	0.6	0.5	0.2	0.2	0.7	2.1	1.3	1.5
Total generation	210.5	189.5	225.6	192.9	196.9	183.9	230.9	198.7	209.2	190.3	228.7	194.5	818.5	810.3	822.8
Net energy for load (f)	203.4	185.4	216.7	189.7	192.5	176.2	214.4	188.5	199.0	181.7	218.7	186.8	795.1	771.6	786.3
Southeast (SERC)															
Natural Gas	63.5	66.7	86.0	64.6	64.1	65.7	82.3	63.3	71.6	78.5	96.5	74.5	280.8	275.4	321.2
Coal	32.3	32.8	32.0	28.1	23.6	26.5	39.7	22.9	20.0	14.3	29.3	16.1	125.1	112.7	79.7
Nuclear	51.4	51.1	55.4	51.1	51.7	52.9	57.4	55.6	55.8	57.6	59.5	54.7	209.0	217.5	227.6
Conventional hydropower	9.6	7.8	7.7	6.9	9.9	6.2	8.0	9.2	11.6	9.0	8.1	9.1	32.0	33.3	37.8
Nonhydro renewables (d)	5.0	7.2	6.4	4.7	4.9	7.2	7.4	5.6	5.7	8.2	8.0	6.5	23.3	25.2	28.4
Other energy sources (e)	-0.2	-0.2	-0.6	0.0	-0.3	-0.2	-0.5	-0.3	-0.2	-0.3	-0.4	-0.3	-1.1	-1.2	-1.1
Total generation	161.5	165.3	187.0	155.3	154.0	158.2	194.4	156.3	164.6	167.3	201.0	160.6	669.2	662.8	693.5
Net energy for load (f)	157.0	158.2	170.6	151.0	149.1	149.2	171.6	152.3	158.2	157.2	188.1	152.6	636.7	622.2	656.2
Florida (FRCC)															
Natural Gas	38.8	47.8	56.7	41.1	37.7	48.8	58.7	42.6	38.8	47.7	56.5	41.7	184.3	187.7	184.7
Coal	3.5	4.2	3.7	4.1	2.7	2.6	3.9	3.0	1.6	0.8	2.1	2.4	15.5	12.2	6.9
Nuclear	7.3	7.9	7.5	8.1	7.4	7.5	8.0	7.2	7.3	7.9	8.0	6.7	30.8	30.0	29.9
Conventional hydropower	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.2	0.2	0.2
Nonhydro renewables (d)	2.8	3.7	3.4	2.6	3.5	4.2	4.1	3.0	4.7	5.6	5.3	3.9	12.5	14.8	19.6
Other energy sources (e)	0.6	0.5	0.6	0.5	0.6	0.5	0.6	0.5	0.6	0.5	0.5	0.5	2.2	2.2	2.1
Total generation	53.1	64.1	71.9	56.4	51.9	63.6	75.3	56.3	53.1	62.6	72.5	55.3	245.5	247.1	243.5
Net energy for load (f)	52.2	63.6	73.9	57.8	54.4	65.5	77.2	56.6	52.4	63.4	73.9	55.5	247.5	253.8	245.2

Notes: EIA completed modeling and analysis for this report on December 7, 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 - December 2023

	2022				2023				2024				Year		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2022	2023	2024
Midwest (MISO)															
Natural Gas	39.3	46.4	56.1	40.5	45.4	54.7	67.3	50.3	51.3	57.5	72.7	50.7	182.3	217.7	232.1
Coal	60.5	51.2	65.0	49.3	43.0	38.0	57.3	40.1	41.0	34.9	52.4	38.8	226.1	178.4	167.1
Nuclear	23.8	19.6	24.3	23.7	23.4	21.1	24.3	19.0	23.2	22.4	24.3	23.1	91.4	87.7	93.0
Conventional hydropower	2.1	2.8	2.1	2.1	2.2	2.0	1.9	1.9	2.4	2.9	2.4	2.2	9.1	8.0	9.9
Nonhydro renewables (d)	30.9	28.0	20.0	30.5	30.3	26.5	19.4	32.7	33.3	28.9	21.8	36.2	109.4	109.0	120.2
Other energy sources (e)	1.4	1.6	1.2	1.7	0.8	0.7	1.3	1.6	1.3	1.2	1.4	1.6	5.9	4.4	5.5
Total generation	158.0	149.7	168.8	147.8	145.1	143.0	171.4	145.6	152.5	147.7	174.9	152.6	624.2	605.1	627.7
Net energy for load (f)	167.1	163.4	182.5	158.8	158.6	157.9	184.3	160.4	165.3	162.0	189.7	162.9	671.8	661.1	679.9
Central (Southwest Power Pool)															
Natural Gas	12.8	13.7	25.1	17.2	15.8	21.5	30.3	16.8	16.0	21.5	29.5	16.4	68.8	84.4	83.4
Coal	24.0	21.4	31.2	20.5	20.4	17.2	27.4	18.9	18.5	17.9	25.4	15.6	97.1	83.9	77.3
Nuclear	4.3	4.3	3.9	2.1	4.3	4.3	4.3	4.3	4.3	2.9	4.3	3.5	14.6	17.2	15.1
Conventional hydropower	3.0	3.8	2.9	2.6	2.9	2.8	2.7	2.6	3.4	4.1	3.7	3.1	12.3	11.0	14.3
Nonhydro renewables (d)	30.7	31.1	22.6	29.5	31.3	25.6	22.5	30.4	33.0	26.9	24.1	31.3	113.9	109.8	115.3
Other energy sources (e)	0.3	0.4	0.2	0.2	0.2	0.1	0.2	0.3	0.2	0.1	0.1	0.3	1.1	0.8	0.8
Total generation	75.1	74.7	85.8	72.2	74.9	71.6	87.4	73.3	75.4	73.5	87.0	70.1	307.9	307.1	306.0
Net energy for load (f)	67.4	67.7	81.7	66.0	66.6	66.6	81.8	66.4	67.6	67.4	80.9	64.0	282.8	281.5	279.9
Texas (ERCOT)															
Natural Gas	33.7	42.9	65.3	40.9	36.4	49.6	70.0	43.7	34.1	46.2	59.0	43.6	182.8	199.8	182.9
Coal	17.2	16.2	19.5	15.9	11.4	15.2	19.7	14.8	10.5	10.1	16.3	11.6	68.8	61.1	48.5
Nuclear	11.0	9.9	10.7	10.0	10.5	9.0	10.9	10.3	11.0	9.8	10.6	9.4	41.6	40.7	40.8
Conventional hydropower	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.4	0.5	0.6
Nonhydro renewables (d)	30.8	39.1	27.7	28.9	36.6	33.8	33.6	31.8	42.0	44.2	44.1	38.4	126.6	135.8	168.7
Other energy sources (e)	0.4	0.4	0.3	0.3	0.2	0.4	0.3	0.4	0.3	0.3	0.2	0.2	1.5	1.3	1.1
Total generation	93.2	108.6	123.7	96.2	95.4	108.1	134.6	101.1	98.0	110.9	130.3	103.3	421.6	439.1	442.6
Net energy for load (f)	95.1	111.3	126.4	97.1	94.1	109.8	140.6	101.1	98.0	110.9	130.3	103.3	429.9	445.6	442.6
Northwest															
Natural Gas	20.2	15.4	27.7	26.3	24.3	17.9	27.8	27.1	22.6	15.2	25.4	21.1	89.6	97.1	84.3
Coal	24.1	20.5	29.7	24.7	20.2	14.3	23.4	21.2	17.4	12.9	24.0	20.9	99.0	79.2	75.2
Nuclear	2.5	2.3	2.5	2.6	2.4	1.0	2.5	2.5	2.4	2.4	2.4	2.4	9.9	8.5	9.7
Conventional hydropower	37.1	35.5	33.0	25.9	25.8	29.9	23.6	23.6	31.0	36.4	27.7	26.0	131.5	102.9	121.1
Nonhydro renewables (d)	17.9	20.0	16.0	16.6	18.9	19.1	17.8	19.3	21.9	22.1	21.4	20.2	70.5	75.1	85.7
Other energy sources (e)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.8	0.6	0.6
Total generation	102.0	93.9	109.2	96.1	91.8	82.6	95.2	93.8	95.6	89.1	101.1	90.8	401.2	363.5	376.6
Net energy for load (f)	85.2	76.8	87.4	86.8	88.7	76.7	86.5	83.2	84.8	75.9	85.8	82.3	336.1	335.1	328.8
Southwest															
Natural Gas	9.7	13.0	18.8	13.9	12.5	16.5	23.0	17.8	11.2	15.8	23.0	15.1	55.5	69.9	65.1
Coal	6.6	6.9	8.8	6.9	5.5	3.1	6.5	3.8	4.2	3.4	6.4	5.2	29.2	18.9	19.1
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	31.5	32.0
Conventional hydropower	1.9	2.1	1.8	1.4	1.4	2.5	2.0	1.4	1.8	2.1	1.9	1.4	7.1	7.4	7.2
Nonhydro renewables (d)	5.8	7.0	5.1	5.6	6.4	6.5	6.1	5.4	8.0	7.7	7.9	7.6	23.5	24.4	31.2
Other energy sources (e)	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1
Total generation	32.1	36.6	43.3	35.4	34.5	35.4	46.2	36.0	33.7	36.5	47.7	36.7	147.4	152.1	154.7
Net energy for load (f)	27.4	34.8	42.0	28.8	28.3	32.9	45.8	30.7	28.6	34.4	44.9	29.3	133.0	137.7	137.2
California															
Natural Gas	15.9	15.2	29.2	25.5	20.2	11.5	27.2	23.8	15.9	12.3	26.0	21.6	85.9	82.8	75.8
Coal	0.5	0.7	2.4	1.9	1.1	0.6	1.7	1.8	1.6	0.8	2.5	1.9	5.5	5.2	6.9
Nuclear	4.6	4.2	5.0	3.8	4.7	4.9	4.9	3.5	4.7	3.6	4.8	4.8	17.6	18.0	17.8
Conventional hydropower	3.7	5.2	5.3	3.0	6.5	10.5	9.4	4.8	6.6	9.5	8.8	4.6	17.2	31.3	29.6
Nonhydro renewables (d)	13.9	21.6	19.9	13.4	14.8	20.3	20.5	14.8	16.0	22.7	21.3	14.8	68.8	70.3	74.8
Other energy sources (e)	-0.1	-0.2	0.1	-0.2	-0.6	-0.2	0.0	-0.2	-0.6	-0.3	0.0	-0.4	-0.4	-1.0	-1.4
Total generation	38.5	46.7	61.8	47.5	46.7	47.7	63.7	48.5	44.2	48.6	63.4	47.3	194.6	206.6	203.5
Net energy for load (f)	59.2	64.4	81.3	63.6	60.5	59.9	76.7	62.9	60.2	64.0	81.5	63.2	268.4	260.0	268.8

Notes: EIA completed modeling and analysis for this report on December 7, 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 - December 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	479.4	482.7	483.7	483.6	486.2	488.2	488.6	488.9	489.6	488.2	488.7	489.0	483.6	488.9	489.0
Coal	199.4	194.4	191.0	187.9	186.3	182.6	181.4	178.6	177.9	177.4	177.4	177.0	187.9	178.6	177.0
Petroleum	29.7	29.4	29.4	29.2	28.4	28.2	28.2	27.8	27.8	27.8	27.8	27.8	29.2	27.8	27.8
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	144.6	149.6	150.1	153.1	153.3	156.1	141.3	149.6	156.1
Solar photovoltaic	62.1	64.5	66.6	70.8	73.1	76.7	80.4	94.2	100.9	109.8	113.3	130.9	70.8	94.2	130.9
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	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
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	94.7	94.7	95.8	95.8	96.9	96.9	96.9	96.9	94.7	95.8	96.9
Battery storage	5.3	6.6	8.0	9.0	9.4	10.8	13.3	17.5	20.0	25.0	26.1	32.4	9.0	17.5	32.4
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	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Renewable energy sources															
Wood biomass	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.3	5.3	5.3	5.3	5.3	5.4	5.3	5.3
Waste biomass	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
Solar	0.6	0.6	0.6	0.6	0.6	0.6	0.6	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	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.2	1.2	1.3
Small-scale solar photovoltaic capacity (systems smaller than one megawatt)															
Residential sector	22.2	23.4	24.7	26.3	27.8	29.6	31.5	32.7	34.0	35.3	36.6	37.9	26.3	32.7	37.9
Commercial sector	10.4	10.7	11.0	11.2	11.5	11.8	12.2	12.7	13.1	13.5	14.0	14.5	11.2	12.7	14.5
Industrial sector	2.2	2.2	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	34.8	36.3	38.0	39.8	41.7	43.9	46.2	47.9	49.7	51.5	53.3	55.2	39.8	47.9	55.2

Notes:
EIA completed modeling and analysis for this report on December 7, 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.

Data sources:
- Utility-scale capacity (power plants larger than one megawatt): EIA-860M Preliminary Monthly Electric Generator Inventory, September 2023.
- Small-scale solar capacity (systems smaller than one megawatt): Form EIA-861M Monthly Electric Power Industry Report.
Historical capacity data may differ from other EIA publications due to frequent updates to the Preliminary Monthly Electric Generator Inventory.

Table 8. U.S. Renewable Energy Consumption (Quadrillion Btu)
U.S. Energy Information Administration | Short-Term Energy Outlook - December 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	0.014	0.014	0.014	<i>0.014</i>	<i>0.015</i>	<i>0.012</i>	<i>0.013</i>	<i>0.014</i>	0.055	<i>0.056</i>	<i>0.054</i>
Hydroelectric Power (a)	0.238	0.236	0.213	0.179	0.208	0.219	0.201	<i>0.189</i>	<i>0.236</i>	<i>0.261</i>	<i>0.214</i>	<i>0.197</i>	0.865	<i>0.817</i>	<i>0.908</i>
Solar (b)	0.097	0.151	0.148	0.092	0.099	0.167	0.177	<i>0.119</i>	<i>0.138</i>	<i>0.236</i>	<i>0.246</i>	<i>0.160</i>	0.487	<i>0.562</i>	<i>0.779</i>
Waste Biomass (c)	0.047	0.043	0.044	0.043	0.043	0.041	0.042	<i>0.042</i>	<i>0.044</i>	<i>0.042</i>	<i>0.042</i>	<i>0.042</i>	0.176	<i>0.168</i>	<i>0.169</i>
Wood Biomass	0.051	0.046	0.053	0.047	0.044	0.040	0.044	<i>0.045</i>	<i>0.048</i>	<i>0.043</i>	<i>0.051</i>	<i>0.046</i>	0.198	<i>0.172</i>	<i>0.187</i>
Wind	0.403	0.416	0.278	0.384	0.429	0.350	0.288	<i>0.402</i>	<i>0.461</i>	<i>0.374</i>	<i>0.308</i>	<i>0.425</i>	1.481	<i>1.469</i>	<i>1.567</i>
Subtotal	0.848	0.905	0.750	0.759	0.837	0.830	0.766	<i>0.810</i>	<i>0.941</i>	<i>0.966</i>	<i>0.874</i>	<i>0.884</i>	3.263	<i>3.244</i>	<i>3.665</i>
Industrial Sector															
Biofuel Losses and Co-products (d)	0.203	0.202	0.197	0.206	0.199	0.202	0.210	<i>0.210</i>	<i>0.203</i>	<i>0.202</i>	<i>0.204</i>	<i>0.206</i>	0.808	<i>0.821</i>	<i>0.815</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>0.001</i>	<i>0.001</i>	<i>0.001</i>	<i>0.001</i>	0.003	<i>0.003</i>	<i>0.003</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>0.017</i>
Waste Biomass (c)	0.042	0.040	0.037	0.042	0.042	0.040	0.038	<i>0.041</i>	<i>0.040</i>	<i>0.039</i>	<i>0.038</i>	<i>0.040</i>	0.161	<i>0.160</i>	<i>0.158</i>
Wood Biomass	0.327	0.330	0.331	0.321	0.318	0.299	0.305	<i>0.323</i>	<i>0.323</i>	<i>0.323</i>	<i>0.335</i>	<i>0.337</i>	1.308	<i>1.245</i>	<i>1.317</i>
Subtotal (e)	0.581	0.583	0.576	0.578	0.568	0.553	0.564	<i>0.583</i>	<i>0.576</i>	<i>0.575</i>	<i>0.589</i>	<i>0.594</i>	2.318	<i>2.269</i>	<i>2.334</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>	0.020	<i>0.020</i>	<i>0.020</i>
Solar (b)	0.013	0.019	0.019	0.012	0.014	0.021	0.021	<i>0.014</i>	<i>0.017</i>	<i>0.024</i>	<i>0.024</i>	<i>0.017</i>	0.063	<i>0.070</i>	<i>0.081</i>
Waste Biomass (c)	0.018	0.019	0.019	0.019	0.017	0.017	0.019	<i>0.019</i>	<i>0.017</i>	<i>0.018</i>	<i>0.018</i>	<i>0.019</i>	0.075	<i>0.072</i>	<i>0.072</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)	0.063	0.070	0.071	0.064	0.063	0.070	0.072	<i>0.066</i>	<i>0.066</i>	<i>0.074</i>	<i>0.075</i>	<i>0.068</i>	0.268	<i>0.272</i>	<i>0.283</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>0.040</i>	<i>0.040</i>
Solar (f)	0.039	0.059	0.059	0.042	0.046	0.069	0.070	<i>0.048</i>	<i>0.052</i>	<i>0.078</i>	<i>0.078</i>	<i>0.054</i>	0.200	<i>0.233</i>	<i>0.262</i>
Wood Biomass	0.104	0.105	0.106	0.106	0.111	0.112	0.111	<i>0.106</i>	<i>0.111</i>	<i>0.112</i>	<i>0.111</i>	<i>0.106</i>	0.422	<i>0.441</i>	<i>0.441</i>
Subtotal	0.153	0.174	0.176	0.159	0.166	0.191	0.191	<i>0.164</i>	<i>0.173</i>	<i>0.200</i>	<i>0.199</i>	<i>0.170</i>	0.662	<i>0.713</i>	<i>0.742</i>
Transportation Sector															
Biodiesel, Renewable Diesel, and Other (g)	0.099	0.118	0.118	0.126	0.140	0.173	0.175	<i>0.178</i>	<i>0.180</i>	<i>0.195</i>	<i>0.197</i>	<i>0.203</i>	0.462	<i>0.666</i>	<i>0.775</i>
Ethanol (g)	0.264	0.284	0.284	0.286	0.270	0.286	0.288	<i>0.288</i>	<i>0.271</i>	<i>0.285</i>	<i>0.289</i>	<i>0.285</i>	1.117	<i>1.131</i>	<i>1.129</i>
Subtotal	0.363	0.402	0.402	0.412	0.410	0.459	0.463	<i>0.466</i>	<i>0.451</i>	<i>0.480</i>	<i>0.486</i>	<i>0.488</i>	1.579	<i>1.797</i>	<i>1.904</i>
All Sectors Total															
Biodiesel, Renewable Diesel, and Other (g)	0.099	0.118	0.118	0.126	0.140	0.173	0.175	<i>0.178</i>	<i>0.180</i>	<i>0.195</i>	<i>0.197</i>	<i>0.203</i>	0.462	<i>0.666</i>	<i>0.775</i>
Biofuel Losses and Co-products (d)	0.203	0.202	0.197	0.206	0.199	0.202	0.210	<i>0.210</i>	<i>0.203</i>	<i>0.202</i>	<i>0.204</i>	<i>0.206</i>	0.808	<i>0.821</i>	<i>0.815</i>
Ethanol (f)	0.275	0.295	0.295	0.297	0.281	0.298	0.299	<i>0.300</i>	<i>0.282</i>	<i>0.296</i>	<i>0.301</i>	<i>0.296</i>	1.163	<i>1.177</i>	<i>1.176</i>
Geothermal	0.029	0.029	0.030	0.030	0.030	0.029	0.030	<i>0.030</i>	<i>0.031</i>	<i>0.028</i>	<i>0.029</i>	<i>0.030</i>	0.118	<i>0.119</i>	<i>0.118</i>
Hydroelectric Power (a)	0.239	0.237	0.214	0.180	0.209	0.220	0.202	<i>0.190</i>	<i>0.237</i>	<i>0.262</i>	<i>0.215</i>	<i>0.198</i>	0.869	<i>0.820</i>	<i>0.912</i>
Solar (b)(f)	0.152	0.233	0.230	0.150	0.162	0.261	0.272	<i>0.185</i>	<i>0.210</i>	<i>0.343</i>	<i>0.353</i>	<i>0.234</i>	0.765	<i>0.881</i>	<i>1.139</i>
Waste Biomass (c)	0.107	0.102	0.100	0.104	0.102	0.098	0.098	<i>0.102</i>	<i>0.101</i>	<i>0.098</i>	<i>0.099</i>	<i>0.101</i>	0.412	<i>0.400</i>	<i>0.399</i>
Wood Biomass	0.503	0.502	0.512	0.496	0.493	0.472	0.481	<i>0.494</i>	<i>0.502</i>	<i>0.498</i>	<i>0.518</i>	<i>0.510</i>	2.012	<i>1.940</i>	<i>2.027</i>
Wind	0.403	0.416	0.278	0.384	0.429	0.350	0.288	<i>0.402</i>	<i>0.461</i>	<i>0.374</i>	<i>0.308</i>	<i>0.425</i>	1.481	<i>1.469</i>	<i>1.567</i>
Total Consumption	2.009	2.135	1.974	1.972	2.045	2.103	2.057	<i>2.090</i>	<i>2.207</i>	<i>2.295</i>	<i>2.223</i>	<i>2.203</i>	8.090	<i>8.294</i>	<i>8.928</i>

Notes: EIA completed modeling and analysis for this report on December 7, 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 9a. U.S. Macroeconomic Indicators and CO2 Emissions

U.S. Energy Information Administration | Short-Term Energy Outlook - December 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 2017 dollars - SAAR)	21,739	21,708	21,851	21,990	22,112	22,225	22,492	22,549	22,587	22,583	22,642	22,706	21,822	22,345	22,629
Real Personal Consumption Expend. (billion chained 2017 dollars - SAAR)	14,995	15,069	15,127	15,171	15,313	15,344	15,494	15,584	15,642	15,667	15,709	15,755	15,091	15,434	15,693
Real Private Fixed Investment (billion chained 2017 dollars - SAAR)	3,976	3,974	3,931	3,876	3,906	3,956	3,964	3,976	3,980	3,970	3,971	3,984	3,939	3,950	3,976
Business Inventory Change (billion chained 2017 dollars - SAAR)	249	120	82	178	24	19	105	51	49	24	33	39	157	50	36
Real Government Expenditures (billion chained 2017 dollars - SAAR)	3,659	3,641	3,667	3,715	3,759	3,790	3,833	3,838	3,847	3,854	3,859	3,862	3,670	3,805	3,856
Real Exports of Goods & Services (billion chained 2017 dollars - SAAR)	2,354	2,414	2,506	2,484	2,525	2,465	2,502	2,544	2,556	2,580	2,609	2,635	2,440	2,509	2,595
Real Imports of Goods & Services (billion chained 2017 dollars - SAAR)	3,495	3,530	3,487	3,450	3,460	3,393	3,440	3,498	3,552	3,590	3,616	3,647	3,491	3,448	3,601
Real Disposable Personal Income (billion chained 2017 dollars - SAAR)	16,067	16,010	16,152	16,239	16,663	16,808	16,767	16,800	16,948	17,050	17,178	17,288	16,117	16,759	17,116
Non-Farm Employment (millions)	150.8	152.0	153.3	154.3	155.2	155.9	156.5	157.1	157.2	157.2	157.2	157.1	152.6	156.2	157.2
Civilian Unemployment Rate (percent)	3.8	3.6	3.6	3.6	3.5	3.6	3.7	3.9	4.0	4.2	4.4	4.5	3.6	3.7	4.3
Housing Starts (millions - SAAR)	1.72	1.64	1.45	1.41	1.39	1.45	1.36	1.39	1.34	1.31	1.32	1.33	1.55	1.40	1.32
Industrial Production Indices (Index, 2017=100)															
Total Industrial Production	101.7	102.8	103.3	102.7	102.6	102.8	103.4	102.6	103.2	102.5	102.3	102.4	102.6	102.9	102.6
Manufacturing	100.1	100.8	100.9	100.0	99.9	100.1	100.1	99.2	100.1	99.5	99.4	99.7	100.5	99.9	99.7
Food	105.1	105.1	104.8	104.5	105.1	103.7	101.9	102.7	103.1	103.4	103.8	104.2	104.9	103.3	103.6
Paper	95.9	96.2	92.7	89.1	87.8	86.7	83.3	81.3	81.1	80.9	80.9	81.0	93.5	84.7	81.0
Petroleum and Coal Products	89.8	89.6	90.1	89.8	88.5	89.9	90.0	90.2	90.4	90.1	90.0	89.8	89.8	89.7	90.1
Chemicals	102.1	102.3	102.4	100.9	103.2	103.0	103.4	104.2	104.6	104.7	105.0	105.5	101.9	103.5	105.0
Nonmetallic Mineral Products	107.1	108.0	109.7	110.6	111.4	108.9	108.3	108.2	108.3	108.7	109.6	110.5	108.9	109.2	109.3
Primary Metals	94.9	96.4	95.7	92.5	92.7	95.9	95.5	95.9	95.6	95.3	96.2	96.7	94.9	95.0	95.9
Coal-weighted Manufacturing (a)	97.4	97.7	97.2	95.2	95.7	95.9	95.6	95.6	95.5	95.4	95.8	96.2	96.9	95.7	95.7
Distillate-weighted Manufacturing (a)	100.0	100.5	100.4	99.2	99.3	98.9	98.6	98.3	98.5	98.7	99.0	99.5	100.0	98.8	98.9
Electricity-weighted Manufacturing (a)	98.5	98.8	98.2	96.0	96.4	96.5	96.5	96.4	96.6	96.7	97.1	97.5	97.9	96.4	97.0
Natural Gas-weighted Manufacturing (a)	97.0	96.7	95.6	92.7	94.0	93.3	93.6	93.5	93.6	93.3	93.6	93.9	95.5	93.6	93.6
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	3.12	3.14	3.16	2.93	3.05	3.13
Producer Price Index: All Commodities (index, 1982=1.00)	2.53	2.72	2.70	2.63	2.59	2.54	2.57	2.54	2.53	2.51	2.52	2.53	2.64	2.56	2.52
Producer Price Index: Petroleum (index, 1982=1.00)	3.16	4.21	3.74	3.44	3.09	2.91	3.17	2.70	2.48	2.65	2.65	2.54	3.64	2.97	2.58
GDP Implicit Price Deflator (index, 2017=100)	115.2	117.7	119.0	120.1	121.3	121.8	122.8	123.7	124.7	125.7	126.5	127.3	118.0	122.4	126.0
Miscellaneous															
Vehicle Miles Traveled (b) (million miles/day)	8,142	8,910	9,066	8,604	8,364	9,080	9,251	8,762	8,415	9,195	9,331	8,764	8,683	8,867	8,927
Air Travel Capacity (Available ton-miles/day, thousands)	656	686	692	700	683	734	739	711	680	712	722	703	684	717	704
Aircraft Utilization (Revenue ton-miles/day, thousands)	356	419	422	407	390	440	446	428	404	444	453	437	401	426	435
Airline Ticket Price Index (index, 1982-1984=100)	225.6	328.7	293.1	285.2	277.6	290.8	248.6	255.8	257.8	309.6	288.7	285.4	283.1	268.2	285.4
Raw Steel Production (million short tons per day)	0.253	0.253	0.247	0.235	0.236	0.244	0.245	0.243	0.250	0.250	0.251	0.253	0.247	0.242	0.251
Carbon Dioxide (CO2) Emissions (million metric tons)															
Petroleum	557	559	569	564	548	563	573	569	562	563	566	565	2,249	2,252	2,256
Natural Gas	509	372	402	459	501	383	421	464	513	382	416	461	1,742	1,768	1,771
Coal	245	216	265	213	187	168	231	188	184	148	216	168	939	774	716
Total Energy (c)	1,314	1,150	1,239	1,239	1,238	1,116	1,227	1,223	1,261	1,096	1,201	1,196	4,941	4,805	4,754

 (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 December 7, 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 - December 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 \$2017)															
New England	1,032	1,024	1,031	1,036	1,041	1,045	1,058	1,059	1,060	1,059	1,061	1,064	1,031	1,051	1,061
Middle Atlantic	2,858	2,858	2,879	2,886	2,898	2,906	2,943	2,949	2,952	2,951	2,958	2,966	2,870	2,924	2,957
E. N. Central	2,596	2,583	2,591	2,596	2,604	2,616	2,647	2,652	2,654	2,651	2,656	2,658	2,592	2,630	2,655
W. N. Central	1,220	1,215	1,220	1,221	1,237	1,243	1,253	1,255	1,257	1,257	1,261	1,264	1,219	1,247	1,260
S. Atlantic	3,578	3,577	3,601	3,626	3,646	3,665	3,714	3,727	3,734	3,735	3,745	3,757	3,596	3,688	3,743
E. S. Central	884	882	887	894	900	904	915	917	917	916	918	919	887	909	918
W. S. Central	2,377	2,383	2,424	2,460	2,477	2,496	2,531	2,540	2,545	2,547	2,556	2,566	2,411	2,511	2,553
Mountain	1,359	1,354	1,366	1,378	1,388	1,395	1,410	1,414	1,417	1,418	1,422	1,427	1,364	1,402	1,421
Pacific	3,805	3,802	3,838	3,865	3,883	3,907	3,948	3,958	3,967	3,967	3,978	3,991	3,827	3,924	3,976
Industrial Output, Manufacturing (Index, Year 2017=100)															
New England	97.5	97.9	97.6	96.0	95.9	95.9	95.6	94.6	95.4	94.8	94.8	95.1	97.2	95.5	95.0
Middle Atlantic	95.9	96.6	96.5	95.1	94.8	95.0	94.8	93.8	94.4	93.7	93.6	93.9	96.0	94.6	93.9
E. N. Central	97.3	97.8	97.8	96.4	96.0	96.2	96.0	95.4	96.2	95.6	95.7	95.9	97.3	95.9	95.8
W. N. Central	100.8	101.8	101.9	101.1	101.1	101.5	101.4	100.5	101.3	100.7	100.7	100.9	101.4	101.1	100.9
S. Atlantic	102.5	103.2	103.2	102.0	101.8	102.1	102.3	101.5	102.4	101.8	101.8	102.2	102.7	101.9	102.0
E. S. Central	100.2	101.2	101.5	100.2	100.1	100.7	101.1	100.4	101.1	100.3	100.2	100.3	100.8	100.6	100.5
W. S. Central	102.3	103.6	104.3	103.9	103.9	104.4	105.1	104.2	105.2	104.7	104.7	105.1	103.5	104.4	104.9
Mountain	111.5	112.5	112.8	111.0	111.3	111.5	111.2	110.1	111.1	110.4	110.4	110.8	111.9	111.0	110.7
Pacific	97.6	98.4	98.5	97.2	97.0	96.9	96.7	95.7	96.4	95.8	95.7	96.0	97.9	96.6	96.0
Real Personal Income (Billion \$2017)															
New England	950	940	941	955	955	958	960	961	968	972	977	982	946	958	975
Middle Atlantic	2,414	2,392	2,397	2,393	2,405	2,413	2,416	2,421	2,439	2,451	2,465	2,478	2,399	2,414	2,458
E. N. Central	2,449	2,430	2,437	2,437	2,454	2,461	2,463	2,468	2,488	2,499	2,514	2,525	2,438	2,461	2,507
W. N. Central	1,165	1,161	1,174	1,171	1,186	1,184	1,183	1,186	1,195	1,201	1,208	1,214	1,168	1,185	1,204
S. Atlantic	3,396	3,386	3,422	3,447	3,479	3,500	3,508	3,520	3,552	3,575	3,602	3,625	3,413	3,502	3,589
E. S. Central	943	938	943	944	953	956	956	957	962	966	970	974	942	955	968
W. S. Central	2,084	2,085	2,112	2,118	2,137	2,151	2,156	2,163	2,182	2,195	2,211	2,225	2,100	2,152	2,203
Mountain	1,308	1,307	1,326	1,328	1,338	1,343	1,343	1,346	1,357	1,364	1,373	1,382	1,317	1,342	1,369
Pacific	2,956	2,929	2,944	2,956	2,955	2,974	2,982	2,992	3,020	3,039	3,061	3,082	2,946	2,976	3,050
Households (Thousands)															
New England	6,101	6,090	6,081	6,076	6,073	6,082	6,093	6,103	6,108	6,113	6,118	6,124	6,076	6,103	6,124
Middle Atlantic	16,124	16,093	16,063	16,047	16,033	16,057	16,084	16,110	16,126	16,141	16,158	16,176	16,047	16,110	16,176
E. N. Central	19,058	19,033	19,008	18,992	18,971	18,997	19,030	19,062	19,080	19,094	19,112	19,129	18,992	19,062	19,129
W. N. Central	8,655	8,654	8,654	8,654	8,657	8,680	8,705	8,729	8,748	8,763	8,779	8,794	8,654	8,729	8,794
S. Atlantic	27,104	27,175	27,241	27,289	27,331	27,433	27,534	27,629	27,700	27,762	27,827	27,886	27,289	27,629	27,886
E. S. Central	7,825	7,834	7,842	7,854	7,865	7,896	7,926	7,956	7,979	7,999	8,020	8,039	7,854	7,956	8,039
W. S. Central	15,856	15,897	15,935	15,966	15,991	16,053	16,118	16,180	16,228	16,271	16,323	16,372	15,966	16,180	16,372
Mountain	9,792	9,811	9,831	9,843	9,861	9,899	9,941	9,981	10,015	10,047	10,080	10,115	9,843	9,981	10,115
Pacific	19,052	19,033	19,015	18,999	18,987	19,016	19,047	19,075	19,092	19,108	19,128	19,153	18,999	19,075	19,153
Total Non-farm Employment (Millions)															
New England	7.4	7.5	7.5	7.5	7.6	7.6	7.6	7.6	7.7	7.7	7.7	7.7	7.5	7.6	7.7
Middle Atlantic	19.5	19.7	19.9	20.0	20.1	20.1	20.2	20.3	20.3	20.3	20.3	20.3	19.8	20.2	20.3
E. N. Central	21.9	22.0	22.2	22.2	22.3	22.4	22.5	22.6	22.6	22.6	22.6	22.5	22.1	22.5	22.6
W. N. Central	10.7	10.7	10.8	10.9	10.9	10.9	11.0	11.0	11.0	11.0	11.0	11.0	10.8	11.0	11.0
S. Atlantic	29.6	29.9	30.2	30.3	30.5	30.7	30.8	30.9	31.0	31.0	31.0	31.0	30.0	30.7	31.0
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	18.8	19.0	19.1	19.1	19.2	19.2	19.2	19.2	18.4	19.0	19.2
Mountain	11.5	11.6	11.7	11.7	11.8	11.8	11.9	11.9	12.0	12.0	12.0	12.0	11.6	11.9	12.0
Pacific	23.8	24.0	24.2	24.4	24.5	24.6	24.7	24.8	24.8	24.8	24.8	24.8	24.1	24.7	24.8

- = no data available

Notes: EIA completed modeling and analysis for this report on December 7, 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 - December 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	3,136	786	115	1,983	2,712	817	89	2,047	2,980	828	132	2,054	6,019	5,665	5,994
Middle Atlantic	2,933	669	72	1,961	2,454	655	73	1,870	2,755	662	87	1,880	5,635	5,052	5,385
E. N. Central	3,265	753	100	2,224	2,726	700	96	2,092	3,038	710	122	2,155	6,342	5,614	6,025
W. N. Central	3,484	792	111	2,517	3,168	656	93	2,245	3,183	708	154	2,360	6,904	6,162	6,406
South Atlantic	1,343	188	13	981	1,058	191	10	919	1,295	181	13	891	2,525	2,177	2,380
E. S. Central	1,826	249	22	1,338	1,389	259	14	1,224	1,712	236	19	1,242	3,435	2,886	3,209
W. S. Central	1,339	55	2	803	929	93	1	788	1,106	86	5	772	2,199	1,812	1,969
Mountain	2,295	733	84	2,012	2,555	727	127	1,796	2,138	701	152	1,815	5,123	5,206	4,805
Pacific	1,397	606	49	1,293	1,835	664	99	1,054	1,423	576	94	1,144	3,344	3,653	3,236
U.S. Average	2,146	490	54	1,551	1,921	487	61	1,429	2,004	472	75	1,454	4,241	3,898	4,005
Heating Degree Days, Prior 10-year Average															
New England	3,100	853	107	2,103	3,150	859	106	2,093	3,110	856	98	2,069	6,163	6,209	6,133
Middle Atlantic	2,881	681	70	1,904	2,939	689	69	1,907	2,890	685	64	1,887	5,536	5,604	5,526
E. N. Central	3,133	727	97	2,162	3,215	741	93	2,169	3,158	735	91	2,132	6,119	6,218	6,117
W. N. Central	3,221	726	125	2,358	3,319	754	121	2,374	3,295	729	120	2,326	6,430	6,568	6,470
South Atlantic	1,381	187	11	907	1,403	190	10	905	1,357	188	9	898	2,486	2,508	2,452
E. S. Central	1,764	244	15	1,229	1,811	251	14	1,231	1,756	248	14	1,212	3,251	3,307	3,230
W. S. Central	1,144	93	3	753	1,188	95	3	762	1,164	90	3	740	1,993	2,048	1,997
Mountain	2,173	681	131	1,810	2,193	696	128	1,834	2,207	696	128	1,814	4,794	4,851	4,845
Pacific	1,457	523	79	1,138	1,441	523	75	1,149	1,469	540	77	1,132	3,196	3,189	3,218
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	4,097
Cooling Degree Days															
New England	0	81	566	0	0	53	473	5	0	99	510	1	647	531	610
Middle Atlantic	0	154	687	1	0	90	577	10	0	185	664	5	841	677	854
E. N. Central	1	256	555	2	0	178	522	10	1	249	608	7	814	710	865
W. N. Central	3	306	736	8	1	319	709	14	5	298	736	11	1,052	1,043	1,050
South Atlantic	155	711	1,198	232	203	588	1,241	227	138	711	1,286	257	2,296	2,259	2,392
E. S. Central	28	599	1,064	37	64	439	1,093	70	34	545	1,129	68	1,728	1,666	1,776
W. S. Central	55	1,094	1,665	169	149	899	1,865	219	104	923	1,625	210	2,983	3,131	2,862
Mountain	17	474	1,024	67	3	353	1,031	99	21	457	1,032	84	1,582	1,486	1,593
Pacific	31	221	762	80	26	105	609	65	28	205	720	79	1,095	805	1,032
U.S. Average	46	467	952	89	68	362	942	100	50	444	968	105	1,555	1,472	1,567
Cooling Degree Days, Prior 10-year Average															
New England	0	87	472	2	0	87	480	2	0	83	483	2	561	569	568
Middle Atlantic	0	163	612	8	0	160	617	8	0	154	623	8	783	785	785
E. N. Central	3	238	571	9	1	234	561	10	1	230	566	10	821	805	807
W. N. Central	7	299	682	11	4	292	675	12	4	301	680	12	999	982	997
South Atlantic	146	667	1,188	268	143	674	1,192	272	153	674	1,212	269	2,269	2,282	2,308
E. S. Central	44	517	1,056	83	36	520	1,058	83	41	519	1,076	85	1,701	1,697	1,720
W. S. Central	113	852	1,537	224	101	860	1,549	222	108	872	1,584	228	2,726	2,733	2,792
Mountain	24	463	954	85	24	461	959	83	22	448	970	88	1,526	1,526	1,528
Pacific	31	208	664	85	32	214	675	86	32	202	677	87	988	1,006	998
U.S. Average	53	413	890	109	50	416	895	109	53	414	909	111	1,464	1,470	1,487

- = no data available

Notes: EIA completed modeling and analysis for this report on December 7, 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 December 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

	Oct 2023	Nov 2023	Oct 2023 – Nov 2023 Average	Oct 2022 – Nov 2022 Average	2020 – 2022 Average
Global Petroleum and Other Liquids (million barrels per day)					
Global Petroleum and Other Liquids Production (a)	102.3	102.5	102.4	101.5	96.5
Global Petroleum and Other Liquids Consumption (b)	100.6	101.3	100.9	98.9	96.0
Biofuels Production (c)	3.0	2.7	2.8	2.9	2.6
Biofuels Consumption (c)	2.7	2.7	2.7	2.7	2.6
Iran Liquid Fuels Production	4.2	4.2	4.2	3.6	3.4
Iran Liquid Fuels Consumption	2.1	2.3	2.2	2.0	2.0
Petroleum and Petroleum Products Produced and Consumed in Countries Other Than Iran (million barrels per day)					
Production (d)	95.1	95.6	95.4	95.0	93.9
Consumption (d)	95.8	96.3	96.0	94.2	91.3
Production minus Consumption	-0.7	-0.7	-0.7	0.8	2.6
World Inventory Net Withdrawals Including Iran	-1.7	-1.3	-1.5	-2.6	-0.6
Estimated OECD Inventory Level (e) (million barrels)	2,841	2,853	2,841	2,771	2,878
Surplus Production Capacity (million barrels per day)					
OPEC Surplus Crude Oil Production Capacity (f)	4.1	4.2	4.2	2.2	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

			Oct 2023 – Nov	Oct 2022 – Nov	2020 – 2022
	Oct 2023	Nov 2023	2023 Average	2022 Average	Average
Item					
Brent Front Month Futures Price (\$ per barrel)	88.70	82.03	85.37	92.22	71.07
WTI Front Month Futures Price (\$ per barrel)	85.47	77.38	81.43	85.71	67.25
Dubai Front Month Futures Price (\$ per barrel)	89.31	83.05	86.18	88.35	69.66
Brent 1st - 13th Month Futures Spread (\$ per barrel)	7.53	3.66	5.60	10.32	5.09
WTI 1st - 13th Month Futures Spread (\$ per barrel)	8.60	3.29	5.94	9.08	5.09
RBOB Front Month Futures Price (\$ per gallon)	2.27	2.20	2.24	2.62	2.08
Heating Oil Front Month Futures Price (\$ per gallon)	3.07	2.85	2.96	3.75	2.29
RBOB - Brent Futures Crack Spread (\$ per gallon)	0.16	0.25	0.20	0.42	0.39
Heating Oil - Brent Futures Crack Spread (\$ per gallon)	0.95	0.90	0.93	1.56	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).