

Table 5.5 End uses of fuel consumption, 2022

Level: National and regional data
Row: End uses
Column: Energy sources, including net electricity
Unit: Physical units or British thermal units (Btu)

End use	Total (trillion Btu)	Net electricity ^a (million kilowatthours)	Residual fuel oil (million barrels)	Distillate fuel oil and diesel fuel ^b (million barrels)	Natural gas ^c (billion cubic feet)	HGL (excluding natural gasoline) ^d (million barrels)	Coal (excluding coal coke and breeze) (million short tons)	Other ^e (trillion Btu)
Total United States								
Total fuel consumption	15,742	783,620	2	14	6,827	24	19	5,405
Indirect Uses—Boiler Fuel	--	13,886	1	2	2,883	4	5	--
Conventional Boiler Use	--	13,886	*	*	837	2	1	--
CHP and/or Cogeneration Process	--	0	1	2	2,046	2	4	--
Direct Uses—Total Process	--	594,593	*	4	3,383	13	11	--
Process Heating	--	70,657	*	1	2,838	11	10	--
Process Cooling and Refrigeration	--	63,573	*	*	42	*	*	--
Machine Drive	--	396,282	*	2	241	1	*	--
Electro-Chemical Processes	--	38,861	--	--	--	--	--	--
Other Process Use	--	25,219	*	2	263	1	1	--
Direct Uses—Total Nonprocess	--	155,606	*	7	524	7	*	--
Facility HVAC ^f	--	80,000	*	*	397	1	*	--
Facility Lighting	--	48,783	--	--	--	--	--	--
Other Facility Support	--	15,747	*	*	54	*	*	--
Onsite Transportation	--	6,724	--	5	7	5	--	--
Conventional Electricity Generation	--	--	*	*	41	*	*	--
Other Nonprocess Use	--	4,352	*	1	25	*	*	--
End use not reported	5,593	19,534	*	1	36	*	4	5,405
Northeast Census Region								
Total fuel consumption	1,274	81,779	1	2	512	3	1	422
Indirect Uses—Boiler Fuel	--	1,603	*	*	195	*	*	--
Conventional Boiler Use	--	1,603	*	*	79	*	0	--
CHP and/or Cogeneration Process	--	0	*	*	116	*	*	--
Direct Uses—Total Process	--	57,958	*	1	244	2	1	--
Process Heating	--	7,710	*	*	215	2	1	--
Process Cooling and Refrigeration	--	6,650	*	*	4	*	0	--
Machine Drive	--	36,669	*	*	19	*	0	--
Electro-Chemical Processes	--	4,363	--	--	--	--	--	--
Other Process Use	--	2,566	*	*	6	*	*	--
Direct Uses—Total Nonprocess	--	16,470	*	1	65	1	*	--
Facility HVAC ^f	--	8,197	*	*	50	*	*	--
Facility Lighting	--	4,934	--	--	--	--	--	--
Other Facility Support	--	2,157	*	*	6	*	0	--
Onsite Transportation	--	602	--	*	1	*	--	--
Conventional Electricity Generation	--	--	*	*	5	*	0	--
Other Nonprocess Use	--	581	0	*	2	*	0	--
End use not reported	451	Q	*	*	8	*	0	422
Midwest Census Region								
Total fuel consumption	4,213	256,007	*	3	1,952	5	8	1,103
Indirect Uses—Boiler Fuel	--	5,473	*	*	712	1	2	--
Conventional Boiler Use	--	5,473	*	*	301	Q	*	--
CHP and/or Cogeneration Process	--	0	*	*	411	*	2	--
Direct Uses—Total Process	--	191,920	*	1	967	2	3	--
Process Heating	--	23,104	0	*	827	1	3	--
Process Cooling and Refrigeration	--	21,214	*	*	17	*	0	--
Machine Drive	--	132,553	*	*	56	*	*	--
Electro-Chemical Processes	--	4,958	--	--	--	--	--	--
Other Process Use	--	10,092	0	1	67	*	*	--
Direct Uses—Total Nonprocess	--	53,291	*	2	257	3	*	--
Facility HVAC ^f	--	26,505	0	*	213	1	0	--
Facility Lighting	--	17,433	--	--	--	--	--	--
Other Facility Support	--	5,177	0	*	25	*	0	--
Onsite Transportation	--	2,493	--	1	3	2	--	--
Conventional Electricity Generation	--	--	0	*	2	*	0	--
Other Nonprocess Use	--	1,683	*	*	14	*	*	--
End use not reported	1,199	5,322	0	*	17	*	3	1,103
South Census Region								
Total fuel consumption	8,306	353,173	1	7	3,645	11	5	3,127
Indirect Uses—Boiler Fuel	--	5,608	*	1	1,707	2	2	--

Conventional Boiler Use	--	5,608	*	*	369	1	*	--
CHP and/or Cogeneration Process	--	0	*	1	1,338	1	2	--
Direct Uses—Total Process	--	274,557	*	2	1,783	6	3	--
Process Heating	--	30,958	*	*	1,472	5	3	--
Process Cooling and Refrigeration	--	25,555	0	*	18	*	*	--
Machine Drive	--	181,457	0	1	154	*	*	--
Electro-Chemical Processes	--	27,539	--	--	--	--	--	--
Other Process Use	--	9,048	0	Q	140	1	*	--
Direct Uses—Total Nonprocess	--	66,009	*	3	150	2	*	--
Facility HVAC ^f	--	35,038	*	*	100	*	*	--
Facility Lighting	--	20,330	--	--	--	--	--	--
Other Facility Support	--	6,433	0	*	15	*	*	--
Onsite Transportation	--	3,029	--	3	3	2	--	--
Conventional Electricity Generation	--	--	0	*	28	*	*	--
Other Nonprocess Use	--	1,178	*	*	4	*	0	--
End use not reported	3,160	7,000	*	*	5	*	*	3,127

West Census Region								
Total fuel consumption	1,948	92,661	*	2	718	4	5	752
Indirect Uses—Boiler Fuel	--	1,202	*	*	269	1	*	--
Conventional Boiler Use	--	1,202	*	*	88	*	*	--
CHP and/or Cogeneration Process	--	0	*	*	181	*	*	--
Direct Uses—Total Process	--	70,158	*	Q	390	3	4	--
Process Heating	--	8,885	*	*	324	2	3	--
Process Cooling and Refrigeration	--	10,154	0	*	3	*	0	--
Machine Drive	--	45,604	0	*	12	*	*	--
Electro-Chemical Processes	--	2,001	--	--	--	--	--	--
Other Process Use	--	3,514	0	*	50	*	*	--
Direct Uses—Total Nonprocess	--	19,836	*	1	52	1	*	--
Facility HVAC ^f	--	10,259	*	*	33	*	*	--
Facility Lighting	--	6,086	--	--	--	--	--	--
Other Facility Support	--	1,980	0	*	7	*	0	--
Onsite Transportation	--	600	--	1	1	1	--	--
Conventional Electricity Generation	--	--	0	*	6	*	0	--
Other Nonprocess Use	--	910	0	*	5	*	*	--
End use not reported	783	1,464	0	*	7	*	1	752

Data source: U.S. Energy Information Administration, Office of Energy Demand and Integrated Statistics, Form EIA-846, *2022 Manufacturing Energy Consumption Survey*

Notes: Totals may not equal sum of components because of independent rounding. The estimates presented in this table are for the total consumption of energy (formerly total inputs of energy) for the production of heat, power, and electricity generation, regardless of where the energy was produced. Specifically, the estimates include the quantities of energy that were originally produced offsite and purchased by or transferred to the establishment, plus those that were produced onsite from other energy or input materials not classified as energy or were extracted from captive (onsite) mines or wells. CHP is defined as combined heat and power. Allocations to specific end uses are made based on reasonable approximations by respondents.

^a *Net electricity* is obtained by summing purchases, transfers in, and generation from noncombustible renewable resources, minus quantities sold and transferred out. It does not include electricity inputs from onsite cogeneration or generation from combustible fuels because that energy has already been included as generating fuel (for example, coal).

^b *Distillate fuel oil* includes Nos. 1, 2, and 4 fuel oils and Nos. 1, 2, and 4 diesel fuels.

^c *Natural gas* includes natural gas obtained from utilities, local distribution companies, and any other supplier(s), such as independent gas producers, gas brokers, marketers, and any marketing subsidiaries of utilities.

^d Hydrocarbon Gas Liquids (*HGL*) include ethane, ethylene, propane, propylene, normal butane, butylene, ethane-propane mixtures, propane-butane mixtures, and isobutane produced at refineries or natural gas processing plants, including plants that fractionate raw natural gas liquids (NGL).

^e *Other* includes net steam (the sum of purchases, generation from renewables, and net transfers) and other energy that respondents indicated was used to produce heat and power.

^f Facility heating, ventilation, and air conditioning (*facility HVAC*) excludes steam and hot water.

* Estimate less than 0.5.

D=Withheld to avoid disclosing data for individual establishments.

Q=Withheld because relative standard error (RSE) is greater than 50%.

NA=Not available.

-- Estimation is not applicable.

S=Negative value.

The Census Bureau has reviewed this data product to ensure appropriate access, use, and disclosure protection of the confidential source data (Project No. 7504703, Disclosure Review Board (DRB) approval number: CBDRB-FY25-0054).

RSE Table 5.5 Relative standard errors for table 5.5
Unit: Percentage

End use	Total	Net electricity ^a	Residual fuel oil	Distillate fuel oil and diesel fuel ^b	Natural gas ^c	HGL (excluding natural gasoline) ^d	Coal (excluding coal coke and breeze)	Other ^e
Total United States								
Total fuel consumption	1.5	3.1	3.5	7.0	2.2	4.1	5.1	1.9
Indirect Uses—Boiler Fuel	--	9.2	3.5	11.2	3.3	9.3	0.3	--
Conventional Boiler Use	--	9.2	10.6	6.2	1.8	17.4	0.0	--
CHP and/or Cogeneration Process	--	X	1.8	13.9	4.6	6.2	0.3	--
Direct Uses—Total Process	--	3.0	13.0	17.7	2.1	3.7	9.1	--
Process Heating	--	4.5	13.1	6.1	2.5	4.0	10.0	--
Process Cooling and Refrigeration	--	3.4	69.0	75.5	12.2	41.1	1.7	--
Machine Drive	--	3.9	44.8	17.8	3.7	19.8	0.3	--
Electro-Chemical Processes	--	1.7	--	--	--	--	--	--
Other Process Use	--	12.6	0.0	39.4	1.8	5.8	0.0	--
Direct Uses—Total Nonprocess	--	4.3	6.7	6.2	3.8	7.2	0.6	--
Facility HVAC ^f	--	4.1	71.5	23.3	4.8	19.9	2.3	--
Facility Lighting	--	5.8	--	--	--	--	--	--
Other Facility Support	--	3.6	0.0	22.2	5.7	40.4	0.0	--
Onsite Transportation	--	14.6	--	5.9	6.0	7.1	--	--
Conventional Electricity Generation	--	--	0.0	31.2	1.2	52.7	0.0	--
Other Nonprocess Use	--	8.2	0.0	27.4	8.1	29.6	0.0	--
End use not reported	1.9	22.3	0.0	28.2	10.8	37.1	0.0	1.9
Northeast Census Region								
Total fuel consumption	6.1	6.7	8.5	16.0	4.5	10.8	0.1	16.3
Indirect Uses—Boiler Fuel	--	16.2	10.3	35.7	5.5	7.1	0.0	--
Conventional Boiler Use	--	16.2	20.5	0.4	9.0	9.0	X	--
CHP and/or Cogeneration Process	--	X	4.9	38.0	6.9	8.0	0.0	--
Direct Uses—Total Process	--	6.9	23.2	29.5	7.2	9.7	0.1	--
Process Heating	--	11.2	24.0	4.4	8.0	10.0	0.1	--
Process Cooling and Refrigeration	--	7.4	19.6	1.9	11.9	50.6	X	--
Machine Drive	--	10.0	49.9	42.5	8.6	51.5	X	--
Electro-Chemical Processes	--	2.2	--	--	--	--	--	--
Other Process Use	--	24.5	0.0	3.8	26.2	42.3	0.0	--
Direct Uses—Total Nonprocess	--	5.9	9.0	10.5	6.0	20.7	66.3	--
Facility HVAC ^f	--	6.3	47.6	32.2	6.7	32.2	66.3	--
Facility Lighting	--	6.3	--	--	--	--	--	--
Other Facility Support	--	10.0	0.0	23.1	12.8	39.2	X	--
Onsite Transportation	--	10.8	--	7.0	22.4	15.8	--	--
Conventional Electricity Generation	--	--	0.0	13.4	2.3	31.8	X	--
Other Nonprocess Use	--	38.2	X	10.6	42.9	73.8	X	--
End use not reported	15.6	69.2	0.0	93.0	9.3	69.9	X	16.3
Midwest Census Region								
Total fuel consumption	2.3	5.3	9.7	11.5	3.3	15.2	0.2	4.1
Indirect Uses—Boiler Fuel	--	22.2	9.8	3.0	7.1	42.1	0.6	--
Conventional Boiler Use	--	22.2	0.2	35.3	3.0	60.7	0.0	--
CHP and/or Cogeneration Process	--	X	26.2	0.2	12.2	20.3	0.7	--
Direct Uses—Total Process	--	5.4	99.0	28.6	2.3	20.9	0.0	--
Process Heating	--	5.6	X	6.3	2.4	24.7	0.0	--
Process Cooling and Refrigeration	--	7.1	99.0	62.1	24.6	8.0	X	--
Machine Drive	--	5.8	99.0	11.2	9.9	25.9	0.0	--
Electro-Chemical Processes	--	8.6	--	--	--	--	--	--
Other Process Use	--	29.5	X	47.8	3.6	51.0	0.0	--
Direct Uses—Total Nonprocess	--	5.8	0.0	12.3	5.9	13.8	X	--
Facility HVAC ^f	--	5.0	X	0.4	6.6	34.4	X	--
Facility Lighting	--	9.7	--	--	--	--	--	--
Other Facility Support	--	7.1	X	9.5	10.7	67.4	X	--
Onsite Transportation	--	19.8	--	6.9	7.4	14.5	--	--
Conventional Electricity Generation	--	--	X	31.4	11.0	0.8	X	--
Other Nonprocess Use	--	10.2	0.0	53.1	3.7	44.3	X	--

End use not reported	3.8	17.3	X	14.4	19.4	26.2	0.0	4.1
South Census Region								
Total fuel consumption	2.0	5.4	4.8	10.5	3.7	3.7	2.2	0.2
Indirect Uses—Boiler Fuel	--	5.5	0.0	4.4	4.7	5.9	0.1	--
Conventional Boiler Use	--	5.5	0.0	6.6	2.8	9.8	0.0	--
CHP and/or Cogeneration Process	--	X	0.0	5.5	5.9	7.1	0.1	--
Direct Uses—Total Process	--	5.0	19.2	28.9	3.6	3.2	3.2	--
Process Heating	--	8.8	19.2	10.8	4.4	1.1	3.6	--
Process Cooling and Refrigeration	--	3.9	X	24.6	15.6	72.9	1.7	--
Machine Drive	--	7.1	X	23.1	4.2	43.1	2.1	--
Electro-Chemical Processes	--	1.1	--	--	--	--	--	--
Other Process Use	--	9.4	X	59.3	2.1	3.6	0.0	--
Direct Uses—Total Nonprocess	--	8.7	7.6	9.5	8.4	10.0	0.1	--
Facility HVAC ^f	--	8.3	96.5	59.0	12.5	33.4	0.4	--
Facility Lighting	--	10.8	--	--	--	--	--	--
Other Facility Support	--	5.8	X	12.6	6.5	83.6	0.0	--
Onsite Transportation	--	28.0	--	10.1	7.7	9.4	--	--
Conventional Electricity Generation	--	--	X	15.5	0.2	65.2	0.0	--
Other Nonprocess Use	--	13.6	0.0	36.2	27.5	27.2	X	--
End use not reported	0.3	19.2	0.0	38.8	18.7	65.6	0.0	0.2
West Census Region								
Total fuel consumption	5.4	5.3	4.4	21.1	2.8	5.0	19.6	8.3
Indirect Uses—Boiler Fuel	--	9.6	0.0	64.7	2.1	9.4	0.0	--
Conventional Boiler Use	--	9.6	0.0	24.2	3.0	0.1	0.0	--
CHP and/or Cogeneration Process	--	X	0.0	78.6	2.5	29.3	0.0	--
Direct Uses—Total Process	--	5.5	20.4	56.2	4.6	4.9	26.2	--
Process Heating	--	7.3	20.4	13.8	5.1	5.2	29.5	--
Process Cooling and Refrigeration	--	10.6	X	94.6	17.8	69.2	X	--
Machine Drive	--	5.7	X	52.9	19.3	14.2	0.0	--
Electro-Chemical Processes	--	20.3	--	--	--	--	--	--
Other Process Use	--	6.8	X	5.0	4.7	23.9	0.0	--
Direct Uses—Total Nonprocess	--	6.6	41.7	15.0	5.4	15.1	0.0	--
Facility HVAC ^f	--	7.5	41.7	44.6	6.2	26.7	0.0	--
Facility Lighting	--	9.2	--	--	--	--	--	--
Other Facility Support	--	6.4	X	39.4	11.1	45.2	X	--
Onsite Transportation	--	8.9	--	12.6	16.1	16.1	--	--
Conventional Electricity Generation	--	--	X	45.6	6.6	35.0	X	--
Other Nonprocess Use	--	17.4	X	51.1	26.3	35.3	0.0	--
End use not reported	8.1	20.5	X	68.2	26.6	37.8	0.0	8.3

Data source: U.S. Energy Information Administration, Office of Energy Demand and Integrated Statistics, Form EIA-846, *2022 Manufacturing Energy Consumption Survey*

Notes: Totals may not equal sum of components because of independent rounding. The estimates presented in this table are for the total consumption of energy (formerly total inputs of energy) for the production of heat, power, and electricity generation, regardless of where the energy was produced. Specifically, the estimates include the quantities of energy that were originally produced offsite and purchased by or transferred to the establishment, plus those that were produced onsite from other energy or input materials not classified as energy or were extracted from captive (onsite) mines or wells. CHP is defined as combined heat and power. Allocations to specific end uses are made based on reasonable approximations by respondents.

^a *Net electricity* is obtained by summing purchases, transfers in, and generation from noncombustible renewable resources, minus quantities sold and transferred out. It does not include electricity inputs from onsite cogeneration or generation from combustible fuels because that energy has already been included as generating fuel (for example, coal).

^b *Distillate fuel oil* includes Nos. 1, 2, and 4 fuel oils and Nos. 1, 2, and 4 diesel fuels.

^c *Natural gas* includes natural gas obtained from utilities, local distribution companies, and any other supplier(s), such as independent gas producers, gas brokers, marketers, and any marketing subsidiaries of utilities.

^d Hydrocarbon Gas Liquids (*HGL*) include ethane, ethylene, propane, propylene, normal butane, butylene, ethane-propane mixtures, propane-butane mixtures, and isobutane produced at refineries or natural gas processing plants, including plants that fractionate raw natural gas liquids (NGL).

^e *Other* includes net steam (the sum of purchases, generation from renewables, and net transfers) and other energy that respondents indicated was used to produce heat and power.

^f Facility heating, ventilation, and air conditioning (*facility HVAC*) excludes steam and hot water.

* Estimate less than 0.5.

D=Withheld to avoid disclosing data for individual establishments.

Q=Withheld because relative standard error (RSE) is greater than 50%.

NA=Not available.

-- Estimation is not applicable.

S=Negative value.

X=Not defined because RSE corresponds to a data table value of zero.

The Census Bureau has reviewed this data product to ensure appropriate access, use, and disclosure protection of the confidential source data (Project No. 7504703, Disclosure Review Board (DRB) approval number: CBDRB-FY25-0054).