

Released: May 2021
 Next MECS will be fielded in 2023.

Table 1.3 First Use of Energy for All Purposes (Fuel and Nonfuel), 2018;

Level: National and Regional Data;
Row: Values of Shipments and Employment Sizes;
Column: Energy Sources and Shipments;
Unit: Trillion Btu.

Economic Characteristic(a)	Total(b)	Net Electricity(c)	Residual Fuel Oil	Distillate Fuel Oil(d)	Natural Gas(e)	HGL (excluding natural gasoline)(f)	Coke and Breeze			Shipments of Energy Sources Produced Onsite(h)
							Coal	Breeze	Other(g)	
Total United States										
Value of Shipments and Receipts (million dollars)										
Under 20	1,412	321	1	36	577	16	30	3	440	11
20-49	993	268	1	7	484	11	44	7	202	31
50-99	1,571	400	34	D	D	88	97	4	278	47
100-249	2,551	509	12	14	D	47	D	37	561	74
250-499	2,104	342	5	D	D	72	D	2	695	44
500 and Over	10,275	751	7	19	3,390	2,664	375	208	3,520	660
Subtotal	18,907	2,591	59	92	7,320	2,898	857	262	5,695	867
Not Ascertained(i)	529	0	0	0	0	0	0	0	529	0
Total	19,436	2,591	59	92	7,320	2,898	857	262	6,224	867
Employment Size										
Under 50	1,985	316	1	32	910	156	52	2	563	48
50-99	1,497	276	27	11	761	141	85	5	287	96
100-249	3,436	642	18	19	1,403	409	266	23	732	77
250-499	3,911	576	4	11	1,382	670	121	3	1,279	136
500-999	4,470	460	6	9	1,462	763	63	8	2,006	308
1000 and Over	3,609	320	2	9	1,402	759	269	222	828	203
Subtotal	18,907	2,591	59	92	7,320	2,898	857	262	5,695	867
Not Ascertained(i)	529	0	0	0	0	0	0	0	529	0
Total	19,436	2,591	59	92	7,320	2,898	857	262	6,224	867
Northeast Census Region										
Value of Shipments and Receipts (million dollars)										
Under 20	243	46	*	10	80	4	1	*	103	0
20-49	112	38	*	1	45	2	1	*	25	1
50-99	153	54	*	Q	82	1	2	0	11	0
100-249	176	44	*	*	91	1	1	1	36	0
250-499	141	22	2	*	56	*	7	*	53	0
500 and Over	397	46	1	1	161	1	135	0	139	85
Total	1,223	250	4	16	515	9	148	1	366	86
Employment Size										
Under 50	213	39	*	6	72	4	2	0	91	0
50-99	117	34	*	Q	53	2	1	*	22	1
100-249	259	78	*	Q	116	2	2	1	57	0
250-499	161	36	*	1	84	1	2	*	37	0
500-999	232	31	3	1	71	*	9	0	119	0
1000 and Over	240	32	*	1	118	1	133	0	40	85
Total	1,223	250	4	16	515	9	148	1	366	86
Midwest Census Region										
Value of Shipments and Receipts (million dollars)										
Under 20	420	117	D	D	D	D	9	1	108	*
20-49	281	89	0	D	137	D	16	1	33	*
50-99	416	130	5	D	D	D	23	1	42	2
100-249	960	170	*	2	D	D	D	34	134	1
250-499	482	96	*	D	D	D	D	2	87	34
500 and Over	1,742	233	*	D	645	D	D	207	415	24
Total	4,300	834	D	22	1,931	D	388	247	819	61
Employment Size										
Under 50	632	110	*	9	332	D	D	1	D	3
50-99	558	112	D	1	346	D	D	1	69	*
100-249	D	169	*	2	358	2	139	15	133	D
250-499	778	184	*	D	300	D	D	2	D	*
500-999	626	144	*	3	212	4	5	6	250	0
1000 and Over	D	114	*	D	383	D	96	220	D	D

Total	4,300	834	D	22	1,931	D	388	247	819	61
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South Census Region

Value of Shipments and Receipts (million dollars)										
Under 20	509	106	D	D	D	D	3	0	139	11
20-49	471	110	*	D	255	D	18	5	106	28
50-99	779	139	29	D	338	D	46	3	173	35
100-249	1,136	232	10	7	531	D	D	2	317	74
250-499	1,281	160	2	D	D	D	24	*	522	10
500 and Over	7,115	396	4	D	2,257	D	D	2	2,376	551
Total	11,292	1,143	D	D	4,147	2,756	230	11	3,633	709

Employment Size										
Under 50	867	115	*	10	419	D	D	*	D	33
50-99	713	104	D	2	316	D	D	4	175	95
100-249	D	285	17	9	796	401	78	4	424	D
250-499	2,293	272	1	D	751	D	D	1	D	136
500-999	3,149	229	3	4	1,014	758	37	1	1,409	308
1000 and Over	D	138	2	D	851	D	40	1	D	D
Total	11,292	1,143	D	D	4,147	2,756	230	11	3,633	709

West Census Region

Value of Shipments and Receipts (million dollars)										
Under 20	241	52	1	6	68	4	Q	Q	91	0
20-49	129	32	*	2	47	3	8	*	38	2
50-99	223	78	0	2	75	1	25	*	52	10
100-249	279	63	1	5	116	1	19	*	74	0
250-499	200	65	*	1	94	*	8	*	32	0
500 and Over	1,021	76	2	D	327	D	13	0	591	0
Total	2,092	365	4	D	727	D	91	3	877	12

Employment Size										
Under 50	273	52	1	7	88	4	2	*	130	12
50-99	108	26	*	2	45	Q	12	*	21	0
100-249	422	111	*	5	133	3	48	Q	119	0
250-499	679	84	3	2	247	7	16	0	320	0
500-999	463	56	0	2	165	1	12	*	227	0
1000 and Over	148	36	0	D	49	D	*	0	61	0
Total	2,092	365	4	D	727	D	91	3	877	12

- (a) *Value of Shipments and Receipts* and *Employment Size* categories were supplied by the Bureau of the Census.
- (b) *Total* is the sum of all of the listed energy sources, including *Other*, minus the *Shipments of Energy Sources Produced Onsite*. It is the total amount of first use of energy for all (fuel and nonfuel) purposes.
- (c) *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).
- (d) *Distillate Fuel Oil* includes Nos. 1, 2, and 4 fuel oils and Nos. 1, 2, and 4 diesel fuels.
- (e) *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.
- (f) 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*).
- (g) *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 or as feedstock/raw material inputs. See also Footnote *i*.
- (h) *Shipments of Energy Sources Produced Onsite* are those shipments produced or transformed onsite from the nonfuel use of other energy sources. For example, at an establishment that processes coal to make coke for later use, the entire quantity of coal is counted as first use. Any onsite consumption of coke is not counted as first use because it would duplicate the coal use. If some of the coke is then sold to another establishment, that second establishment will consider this coke to be a shipment of an offsite-produced energy source. Hence, the second establishment will count this coke as its first use, thereby resulting in double counting. In order to eliminate the double counting, the energy equivalent of the coke shipment must be subtracted from first use.
- (i) Previously, the Manufacturing Energy Consumption Survey (*MECS*) had accounted for energy consumed in petroleum refineries by measuring their own fuel use, assuming shipments of fuel products would later be counted in the industries that use them, and assigning the heat equivalent of the nonfuel products to the petroleum refinery (for a more detailed explanation see, *Feedstock and Offsite-Produced Fuel at Petroleum Refineries*). Starting with the 2014 *MECS*, however, EIA began collecting asphalt and petrochemical feedstock data from establishments that use those nonfuel products. These data are included in the *Other* column. However, other *Miscellaneous Nonfuel Products* (i.e. lubricants, solvents, waxes, and special naphthas) from refineries, and used elsewhere throughout the manufacturing sector as energy are not collected on the *MECS*. An estimate of the *Miscellaneous Nonfuel Products* used in manufacturing was derived using EIA's [U.S. Product Supplied for Crude Oil and Petroleum Products](#) data.

* 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 percent.

NA=Not available.

Notes: Totals may not equal sum of components because of independent rounding. The derived estimates presented in this table are for the first use (formerly primary consumption) of energy for heat and power and as feedstocks or raw material inputs. First use is defined as the consumption of the energy that was originally produced offsite or was produced onsite from input materials not classified as energy. Examples of the latter are hydrogen produced from the electrolysis of brine; the output of captive (onsite) mines or wells; wood chips, bark, and wood waste from wood purchased as a raw material input; and waste materials, such as wastepaper and packing materials. First use excludes quantities of energy that are produced from other energy inputs and, therefore, avoids double counting.

Sources: U.S. Energy Information Administration, Office of Energy Consumption and Efficiency Statistics, Form EIA-846, *2018 Manufacturing Energy Consumption Survey*, and the Bureau of the Census, data files for the *2018 Annual Survey of Manufactures*.

The Census Bureau has reviewed this data product for unauthorized disclosure of confidential information and has approved the disclosure avoidance practices applied (Approval ID: CBDRB-FY20-260).

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RSE Table 1.3 Relative Standard Errors for Table 1.3;

Unit: Percents.

Economic Characteristic(a)	Total(b)	Net Electricity(c)	Residual Fuel Oil	Distillate Fuel Oil(d)	Natural Gas(e)	HGL (excluding natural gasoline)(f)	Coke and Breeze			Shipments of Energy Sources Produced Onsite(h)
							Coal	Breeze	Other(g)	
Total United States										
Value of Shipments and Receipts (million dollars)										
Under 20	4.4	6.3	25.4	17.5	6.3	9.2	47.5	42.5	7.2	0.0
20-49	5.2	4.9	2.7	12.0	9.4	16.4	4.1	6.9	6.6	4.4
50-99	3.8	9.3	0.1	D	D	4.0	0.2	6.5	2.7	1.8
100-249	2.7	3.2	0.1	22.2	D	45.7	D	0.0	1.6	0.0
250-499	1.8	3.8	1.2	D	D	1.7	D	0.0	2.6	0.0
500 and Over	0.4	1.1	2.7	3.2	0.4	1.4	0.0	0.1	0.3	0.0
Subtotal	0.7	1.8	0.6	8.0	1.1	1.5	1.7	0.5	0.7	0.2
Not Ascertained(i)	0.0	X	X	X	X	X	X	X	0.0	X
Total	0.7	1.8	0.6	8.0	1.1	1.5	1.7	0.5	0.7	0.2
Employment Size										
Under 50	3.6	5.1	22.9	15.6	6.0	2.4	3.5	23.9	6.1	2.8
50-99	3.6	5.9	0.1	37.7	4.3	24.1	0.2	10.9	3.2	0.9
100-249	2.5	6.0	0.2	18.1	2.8	6.7	5.3	5.0	2.9	0.0
250-499	1.0	2.8	0.1	9.8	1.8	0.1	0.4	0.0	0.2	0.0
500-999	0.5	2.3	0.9	1.0	0.9	0.1	0.4	0.0	0.1	0.0
1000 and Over	0.5	2.4	8.1	6.2	0.7	0.1	0.0	0.1	0.7	0.0
Subtotal	0.7	1.8	0.6	8.0	1.1	1.5	1.7	0.5	0.7	0.2
Not Ascertained(i)	0.0	X	X	X	X	X	X	X	0.0	X
Total	0.7	1.8	0.6	8.0	1.1	1.5	1.7	0.5	0.7	0.2
Northeast Census Region										
Value of Shipments and Receipts (million dollars)										
Under 20	7.5	8.2	7.8	41.4	16.8	8.6	12.4	51.6	7.3	X
20-49	7.9	13.4	0.0	12.7	10.9	26.7	0.0	0.0	5.0	0.0
50-99	12.9	18.6	0.0	67.5	14.3	33.1	0.0	X	2.9	X
100-249	5.4	11.2	1.7	34.0	6.5	24.7	0.0	0.0	0.1	X
250-499	2.3	7.1	0.0	6.4	2.6	12.8	0.0	0.0	1.9	X
500 and Over	1.3	4.6	21.0	5.6	2.2	23.0	0.0	X	0.1	0.0
Total	2.5	5.2	5.3	28.3	3.8	8.6	0.1	1.6	2.1	0.0
Employment Size										
Under 50	7.3	6.5	5.6	16.0	16.8	12.5	3.8	X	8.2	X
50-99	6.7	12.0	0.0	80.0	6.2	12.5	0.0	8.1	1.6	0.0
100-249	8.9	14.4	0.0	59.2	12.4	25.0	0.0	0.0	0.4	X
250-499	4.5	10.1	0.0	30.1	4.4	10.6	0.0	0.0	3.5	X
500-999	1.9	8.6	0.2	3.9	2.9	5.5	0.0	X	0.1	X
1000 and Over	1.9	5.1	52.1	8.4	2.7	28.8	0.0	X	0.1	0.0
Total	2.5	5.2	5.3	28.3	3.8	8.6	0.1	1.6	2.1	0.0
Midwest Census Region										
Value of Shipments and Receipts (million dollars)										
Under 20	9.4	11.7	D	D	D	D	1.6	31.1	15.2	0.0
20-49	8.1	8.9	X	D	13.2	D	0.0	2.6	6.0	0.0
50-99	4.8	7.3	0.0	D	D	D	0.0	0.0	0.6	0.0
100-249	2.5	5.1	0.6	30.0	D	D	D	0.0	1.3	0.0
250-499	3.2	6.0	6.7	D	D	D	D	0.0	10.3	0.0
500 and Over	0.7	2.5	0.1	D	1.2	D	D	0.1	0.1	0.0
Total	1.3	2.5	D	18.8	2.1	D	0.1	0.2	2.3	0.0
Employment Size										
Under 50	6.7	11.8	3.8	42.1	9.5	D	D	32.9	D	0.0
50-99	3.2	6.7	D	14.8	3.8	D	D	0.0	0.5	0.0
100-249	D	6.4	67.2	14.6	4.2	24.5	0.0	0.2	6.6	D
250-499	2.5	4.3	0.0	D	4.2	D	D	0.0	D	0.0
500-999	2.5	4.8	0.0	0.8	4.5	5.1	0.0	0.0	0.1	X
1000 and Over	D	4.6	0.1	D	1.4	D	0.0	0.1	D	D
Total	1.3	2.5	D	18.8	2.1	D	0.1	0.2	2.3	0.0
South Census Region										
Value of Shipments and Receipts (million dollars)										
Under 20	5.6	13.3	D	D	D	D	2.9	X	10.2	0.0
20-49	9.7	8.3	18.1	D	16.3	D	9.9	9.8	12.3	4.7
50-99	4.2	5.8	0.1	D	7.8	D	0.4	10.4	4.3	2.4
100-249	5.6	5.4	0.0	37.9	6.2	D	D	0.0	2.7	0.0
250-499	1.5	3.0	2.3	D	D	D	0.0	0.0	3.0	0.0
500 and Over	0.6	1.4	0.1	D	0.4	D	D	0.0	0.4	0.0

Total	0.9	2.0	D	D	1.5	1.6	0.8	5.1	0.8	0.2
Employment Size										
Under 50	5.7	8.0	20.0	20.8	10.2	D	D	57.4	D	4.0
50-99	7.1	13.1	D	7.0	9.4	D	D	14.0	5.2	0.9
100-249	D	4.1	0.2	29.7	4.0	6.8	0.2	6.3	4.5	D
250-499	0.7	3.1	0.1	D	1.4	D	D	0.0	D	0.0
500-999	0.4	3.1	1.6	2.0	0.7	0.1	0.6	0.0	0.1	0.0
1000 and Over	D	4.0	0.1	D	0.9	D	0.0	0.0	D	D
Total	0.9	2.0	D	D	1.5	1.6	0.8	5.1	0.8	0.2

West Census Region

Value of Shipments and Receipts (million dollars)										
Under 20	14.3	7.1	41.5	32.9	8.3	31.7	79.2	78.9	24.4	X
20-49	5.5	9.2	0.0	35.1	8.9	41.6	2.2	9.3	5.3	0.0
50-99	18.3	43.4	X	14.4	10.0	10.6	0.0	0.0	0.1	0.0
100-249	3.8	7.0	0.0	31.6	4.8	13.3	0.0	0.0	4.3	X
250-499	14.8	16.2	0.0	42.9	20.2	16.2	0.0	0.0	0.6	X
500 and Over	0.3	1.5	0.0	D	0.5	D	0.0	X	0.1	X
Total	3.0	9.8	6.7	D	3.0	D	15.6	42.9	2.6	0.0

Employment Size										
Under 50	9.9	6.1	38.4	30.0	6.8	28.8	7.7	10.2	17.1	0.0
50-99	5.5	10.9	0.0	49.7	6.5	60.3	0.0	0.0	1.9	X
100-249	11.1	30.4	0.0	22.5	6.6	6.9	29.8	52.5	3.2	X
250-499	4.4	13.1	0.0	15.1	7.7	1.4	0.0	X	0.1	X
500-999	1.2	3.3	X	0.7	2.3	15.2	0.0	0.0	0.1	X
1000 and Over	1.5	2.8	X	D	2.6	D	0.0	X	0.1	X
Total	3.0	9.8	6.7	D	3.0	D	15.6	42.9	2.6	0.0

(a) Value of Shipments and Receipts and Employment Size categories were supplied by the Bureau of the Census.

(b) Total is the sum of all of the listed energy sources, including Other, minus the Shipments of Energy Sources Produced Onsite. It is the total amount of first use of energy for all (fuel and nonfuel) purposes.

(c) 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).

(d) Distillate Fuel Oil includes Nos. 1, 2, and 4 fuel oils and Nos. 1, 2, and 4 diesel fuels.

(e) 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.

(f) 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).

(g) 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 or as feedstock/raw material inputs. See also Footnote i.

(h) Shipments of Energy Sources Produced Onsite are those shipments produced or transformed onsite from the nonfuel use of other energy sources. For example, at an establishment that processes coal to make coke for later use, the entire quantity of coal is counted as first use. Any onsite consumption of coke is not counted as first use because it would duplicate the coal use. If some of the coke is then sold to another establishment, that second establishment will consider this coke to be a shipment of an offsite-produced energy source. Hence, the second establishment will count this coke as its first use, thereby resulting in double counting. In order to eliminate the double counting, the energy equivalent of the coke shipment must be subtracted from first use.

(i) Previously, the Manufacturing Energy Consumption Survey (MECS) had accounted for energy consumed in petroleum refineries by measuring their own fuel use, assuming shipments of fuel products would later be counted in the industries that use them, and assigning the heat equivalent of the nonfuel products to the petroleum refinery (for a more detailed explanation see, Feedstock and Offsite-Produced Fuel at Petroleum Refineries). Starting with the 2014 MECS, however, EIA began collecting asphalt and petrochemical feedstock data from establishments that use those nonfuel products. These data are included in the Other column. However, other Miscellaneous Nonfuel Products (i.e. lubricants, solvents, waxes, and special naphthas) from refineries, and used elsewhere throughout the manufacturing sector as energy are not collected on the MECS. An estimate of the Miscellaneous Nonfuel Products used in manufacturing was derived using EIA's U.S. Product Supplied for Crude Oil and Petroleum Products data.

* 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 percent.
X=Not defined because RSE corresponds to a data table value of zero.
NA=Not available.

Notes: Totals may not equal sum of components because of independent rounding. The derived estimates presented in this table are for the first use (formerly primary consumption) of energy for heat and power and as feedstocks or raw material inputs. First use is defined as the consumption of the energy that was originally produced offsite or was produced onsite from input materials not classified as energy. Examples of the latter are hydrogen produced from the electrolysis of brine; the output of captive (onsite) mines or wells; wood chips, bark, and wood waste from wood purchased as a raw material input; and waste materials, such as wastepaper and packing materials. First use excludes quantities of energy that are produced from other energy inputs and, therefore, avoids double counting.

Sources: U.S. Energy Information Administration, Office of Energy Consumption and Efficiency Statistics, Form EIA-846, 2018 Manufacturing Energy Consumption Survey, and the Bureau of the Census, data files for the 2018 Annual Survey of Manufactures.

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