

Table 25. Food Industry Energy Consumption

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Value of Shipments (billion 1996 dollars)	439.58	430.78	435.46	449.62	457.47	465.40	480.44	491.85	500.57	508.82	515.73	522.89	530.66
Energy Consumption (trillion Btu)													
Residual Oil	11.0	13.8	15.1	14.8	13.8	13.7	13.4	13.6	13.6	13.6	13.7	13.9	14.3
Distillate Oil	14.2	17.2	18.5	18.4	17.4	17.3	16.9	17.1	17.0	17.0	17.2	17.5	18.0
Liquefied Petroleum Gas	5.0	5.0	4.8	5.0	5.4	5.4	5.4	5.6	5.6	5.6	5.7	5.8	6.0
Other Petroleum 2/	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
Petroleum Subtotal	30.2	35.9	38.3	38.3	36.7	36.4	35.8	36.3	36.1	36.2	36.6	37.2	38.2
Natural Gas	559.5	528.6	528.1	541.2	550.1	558.0	575.3	587.0	596.1	603.8	609.5	615.2	621.3
Steam Coal	159.8	156.6	156.5	156.5	156.5	156.5	156.7	156.7	156.6	156.6	156.5	156.5	156.4
Renewables	125.4	125.4	127.2	131.7	134.5	137.3	142.2	146.0	149.2	152.2	154.8	157.6	160.5
Purchased Electricity	211.9	209.6	210.8	216.5	219.1	221.8	227.6	232.0	235.2	238.2	240.5	242.9	245.4
Total	1086.8	1056.1	1060.9	1084.2	1097.0	1110.0	1137.5	1158.0	1173.2	1187.0	1198.0	1209.3	1221.8
Energy Consumption per Unit of Output (thousand Btu per 1996 dollar shipments)													
Residual Oil	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Distillate Oil	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.03	0.03
Liquefied Petroleum Gas	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Other Petroleum 2/	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
Petroleum Subtotal	0.07	0.08	0.09	0.09	0.08	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Natural Gas	1.27	1.23	1.21	1.20	1.20	1.20	1.20	1.19	1.19	1.19	1.18	1.18	1.17
Steam Coal	0.36	0.36	0.36	0.35	0.34	0.34	0.33	0.32	0.31	0.31	0.30	0.30	0.29
Renewables	0.29	0.29	0.29	0.29	0.29	0.29	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Purchased Electricity	0.48	0.49	0.48	0.48	0.48	0.48	0.47	0.47	0.47	0.47	0.47	0.46	0.46
Total	2.47	2.45	2.44	2.41	2.40	2.38	2.37	2.35	2.34	2.33	2.32	2.31	2.30
Carbon Dioxide Emissions 3/ (million metric tons)	87.1	85.5	85.4	87.1	87.9	89.0	90.9	92.2	93.1	93.9	94.4	95.1	95.8
Combined Heat and Power 4/ Generating Capacity (gigawatts)													
Petroleum	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Natural Gas	0.51	0.51	0.55	0.58	0.61	0.64	0.68	0.73	0.78	0.82	0.87	0.93	0.99
Coal	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Other 5/	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Total	1.52	1.52	1.55	1.58	1.61	1.64	1.68	1.73	1.78	1.83	1.88	1.93	1.99
Net Generation (billion kilowatthours)													
Petroleum	0.07	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Natural Gas	2.17	1.96	2.21	2.43	2.66	2.90	3.21	3.55	3.91	4.27	4.63	5.03	5.46
Coal	3.66	3.52	3.52	3.52	3.52	3.52	3.52	3.52	3.52	3.52	3.52	3.52	3.52
Other 5/	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Total	6.14	5.86	6.11	6.33	6.55	6.80	7.10	7.44	7.81	8.16	8.53	8.92	9.35
Disposition													
Sales to the Grid	0.32	0.30	0.45	0.58	0.72	0.86	1.05	1.25	1.47	1.68	1.90	2.14	2.39
Generation for Own Use	5.82	5.56	5.66	5.75	5.84	5.94	6.06	6.19	6.34	6.48	6.63	6.79	6.96
Thermal Output (trillion Btu)	99.6	104.2	104.9	105.4	106.0	106.6	107.4	108.3	109.2	110.2	111.1	112.2	113.3
Energy Input (trillion Btu)													
Petroleum	1.2	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
Natural Gas	51.7	51.0	53.2	55.1	57.0	59.1	61.7	64.6	67.7	70.7	73.9	77.3	80.9
Coal	133.5	130.9	130.9	130.9	130.9	130.9	130.9	130.9	130.9	130.9	130.9	130.9	130.9
Other 5/	11.7	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5
Total	198.1	197.3	199.5	201.4	203.3	205.4	208.0	210.9	214.0	217.0	220.2	223.6	227.2
Efficiency 6/	0.608	0.629	0.630	0.631	0.631	0.632	0.633	0.634	0.635	0.636	0.637	0.638	0.639
Power-to-Heat Ratio 7/	0.210	0.192	0.199	0.205	0.211	0.218	0.226	0.235	0.244	0.253	0.262	0.271	0.282

Table 25. Food Industry Energy Consumption

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2003-2025
Value of Shipments (billion 1996 dollars)	539.73	549.96	560.50	569.71	577.85	585.96	594.55	604.06	614.38	624.79	635.44	1.8%
Energy Consumption (trillion Btu)												
Residual Oil	14.7	14.6	14.8	15.2	15.7	16.0	16.2	16.3	16.3	16.5	16.7	0.9%
Distillate Oil	18.5	18.5	18.7	19.2	19.8	20.3	20.6	20.8	20.9	21.2	21.5	1.0%
Liquefied Petroleum Gas	6.0	6.1	6.2	6.3	6.5	6.6	6.7	6.7	6.8	6.9	7.0	1.5%
Other Petroleum 2/	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A
Petroleum Subtotal	39.2	39.1	39.7	40.8	41.9	42.8	43.5	43.8	43.9	44.5	45.1	1.0%
Natural Gas	629.7	642.2	655.5	666.7	676.8	687.3	698.4	711.2	725.1	738.6	752.0	1.6%
Steam Coal	156.4	156.4	156.5	156.5	156.4	156.4	156.4	156.4	156.4	156.4	156.5	0.0%
Renewables	163.8	167.6	171.4	174.9	178.1	181.3	184.6	188.3	192.3	196.3	200.5	2.2%
Purchased Electricity	248.5	251.9	255.4	258.6	260.9	263.5	266.1	269.2	272.6	276.1	279.7	1.3%
Total	1237.6	1257.3	1278.5	1297.4	1314.2	1331.2	1349.0	1368.8	1390.4	1412.0	1433.8	1.4%
Energy Consumption per Unit of Output (thousand Btu per 1996 dollar shipments)												
Residual Oil	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	-0.9%
Distillate Oil	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	-0.7%
Liquefied Petroleum Gas	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	-0.2%
Other Petroleum 2/	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A
Petroleum Subtotal	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	-0.7%
Natural Gas	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.18	1.18	1.18	1.18	-0.2%
Steam Coal	0.29	0.28	0.28	0.27	0.27	0.27	0.26	0.26	0.25	0.25	0.25	-1.8%
Renewables	0.30	0.30	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.32	0.4%
Purchased Electricity	0.46	0.46	0.46	0.45	0.45	0.45	0.45	0.45	0.44	0.44	0.44	-0.5%
Total	2.29	2.29	2.28	2.28	2.27	2.27	2.27	2.27	2.26	2.26	2.26	-0.4%
Carbon Dioxide Emissions 3/ (million metric tons)	96.6	97.7	99.0	100.2	101.2	102.3	103.5	104.9	106.5	108.1	109.7	1.1%
Combined Heat and Power 4/ Generating Capacity (gigawatts)												
Petroleum	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	N/A
Natural Gas	1.05	1.11	1.19	1.27	1.36	1.44	1.53	1.62	1.71	1.81	1.90	6.1%
Coal	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	N/A
Other 5/	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	N/A
Total	2.05	2.12	2.19	2.27	2.36	2.44	2.53	2.62	2.72	2.81	2.91	3.0%
Net Generation (billion kilowatthours)												
Petroleum	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	N/A
Natural Gas	5.90	6.39	6.94	7.53	8.14	8.78	9.42	10.08	10.74	11.43	12.12	8.6%
Coal	3.52	3.52	3.52	3.52	3.52	3.52	3.52	3.52	3.52	3.52	3.52	N/A
Other 5/	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	N/A
Total	9.80	10.29	10.84	11.42	12.04	12.67	13.32	13.97	14.64	15.32	16.01	4.7%
Disposition												
Sales to the Grid	2.66	2.96	3.29	3.64	4.01	4.39	4.78	5.17	5.57	5.98	6.39	14.9%
Generation for Own Use	7.13	7.33	7.55	7.78	8.03	8.29	8.54	8.80	9.07	9.34	9.62	2.5%
Thermal Output (trillion Btu)	114.5	115.8	117.3	118.9	120.6	122.3	124.1	125.8	127.6	129.5	131.3	1.1%
Energy Input (trillion Btu)												
Petroleum	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	N/A
Natural Gas	84.8	89.0	93.7	98.7	104.0	109.4	115.0	120.5	126.2	132.0	137.9	4.6%
Coal	130.9	130.9	130.9	130.9	130.9	130.9	130.9	130.9	130.9	130.9	130.9	N/A
Other 5/	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	N/A
Total	231.0	235.3	240.0	245.0	250.3	255.7	261.3	266.8	272.5	278.3	284.2	1.7%
Efficiency 6/	0.640	0.642	0.643	0.644	0.646	0.647	0.649	0.650	0.652	0.653	0.654	0.2%
Power-to-Heat Ratio 7/	0.292	0.303	0.315	0.328	0.341	0.354	0.366	0.379	0.391	0.404	0.416	3.6%

Table 25. Food Industry Energy Consumption

1/ Fuel consumption includes consumption for combined heat and power.

2/ Includes petroleum coke, lubricants, and miscellaneous petroleum products.

3/ Includes emissions attributable to the fuels consumed to generate the purchased electricity.

4/ Includes industrial-owned generators not classified as combined heat and power, such as standby generators.

5/ Includes wood and other biomass, waste heat, municipal solid waste, and renewable sources.

6/ Efficiency is calculated as the sum of the thermal output and electrical generation in Btus divided by the energy input.

7/ Power-to-Heat is calculated as the electrical generation in Btus divided by the thermal output.

Btu = British thermal unit.

N/A = Not applicable.

Note: Totals may not equal sum of components due to independent rounding. Data for 2003 are model results and may differ slightly from official EIA data reports.

Source: 2002 and 2003 nonutility and CHP summer capacity, net generation, fuel use, and thermal output: Energy Information Administration (EIA), Form EIA-860: "Annual Electric Generator Report," 2004 (preliminary). Other 2002 and 2003 data based on: EIA, Manufacturing Energy Consumption Survey, 1998. Projections: EIA, AEO2005 National Energy Modeling System run aeo2005.d102004a.