

Table 21. Residential Sector Equipment Stock and Efficiency

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Equipment Stock (million units)													
Main Space Heaters													
Electric Heat Pumps	10.38	10.71	11.03	11.32	11.60	11.83	12.09	12.35	12.60	12.86	13.13	13.39	13.64
Electric Other	21.53	21.59	21.64	21.69	21.72	21.78	21.87	21.96	22.07	22.18	22.30	22.41	22.53
Natural Gas Heat Pumps	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
Natural Gas Other	59.99	60.71	61.44	62.11	62.81	63.56	64.34	65.12	65.90	66.68	67.46	68.22	68.97
Distillate	8.02	8.02	8.03	8.04	8.04	8.05	8.06	8.07	8.07	8.08	8.09	8.10	8.11
Liquefied Petroleum Gas	4.95	5.00	5.03	5.05	5.08	5.12	5.17	5.21	5.26	5.31	5.36	5.41	5.45
Kerosene	0.82	0.81	0.80	0.79	0.78	0.77	0.76	0.75	0.75	0.74	0.74	0.74	0.73
Wood Stoves	2.05	2.05	2.04	2.03	2.02	2.00	1.99	1.98	1.97	1.96	1.95	1.94	1.94
Geothermal Heat Pumps	0.06	0.07	0.09	0.10	0.12	0.13	0.15	0.16	0.18	0.20	0.23	0.25	0.28
Total	107.82	108.97	110.09	111.13	112.17	113.25	114.41	115.62	116.82	118.03	119.26	120.46	121.65
Space Cooling (million units)													
Electric Heat Pumps	10.38	10.71	11.03	11.32	11.60	11.83	12.09	12.35	12.60	12.86	13.13	13.39	13.64
Natural Gas Heat Pumps	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
Geothermal Heat Pumps	0.06	0.07	0.09	0.10	0.12	0.13	0.15	0.16	0.18	0.20	0.23	0.25	0.28
Central Air Conditioners	47.69	48.79	50.02	51.18	52.35	53.59	54.89	56.20	57.52	58.83	60.14	61.43	62.71
Room Air Conditioners	34.99	34.85	34.71	34.58	34.44	34.32	34.20	34.08	33.97	33.86	33.76	33.65	33.55
Total	93.12	94.42	95.85	97.18	98.51	99.87	101.31	102.79	104.27	105.75	107.26	108.72	110.18
Water Heaters (million units)													
Electric	41.70	41.93	42.15	42.34	42.49	42.63	42.81	43.03	43.25	43.49	43.75	43.99	44.24
Natural Gas	59.13	60.02	60.90	61.74	62.61	63.53	64.49	65.44	66.38	67.32	68.26	69.18	70.08
Distillate	4.61	4.59	4.57	4.55	4.52	4.50	4.47	4.45	4.42	4.40	4.37	4.35	4.33
Liquefied Petroleum Gas	2.94	2.99	3.03	3.05	3.08	3.12	3.16	3.21	3.26	3.31	3.37	3.41	3.46
Solar Thermal	0.34	0.35	0.35	0.36	0.37	0.38	0.38	0.39	0.40	0.40	0.41	0.42	0.42
Total	108.73	109.88	111.00	112.04	113.07	114.15	115.32	116.52	117.72	118.93	120.16	121.35	122.54
Cooking Equipment (million units) 1/													
Electric	66.42	67.18	67.91	68.58	69.22	69.87	70.58	71.33	72.07	72.81	73.57	74.29	75.00
Natural Gas	37.96	38.31	38.67	39.03	39.41	39.81	40.23	40.65	41.07	41.50	41.94	42.38	42.82
Liquefied Petroleum Gas	4.69	4.72	4.74	4.75	4.76	4.79	4.81	4.85	4.88	4.92	4.95	4.98	5.01
Total	109.06	110.21	111.32	112.36	113.39	114.46	115.63	116.82	118.02	119.23	120.45	121.65	122.83
Clothes Dryers (million units)													
Electric	61.45	62.25	63.20	64.09	64.98	65.88	66.84	67.82	68.79	69.75	70.71	71.63	72.53
Natural Gas	16.99	17.49	17.99	18.48	18.98	19.49	20.01	20.53	21.05	21.58	22.12	22.67	23.22
Total	78.44	79.74	81.19	82.58	83.96	85.37	86.85	88.35	89.84	91.33	92.84	94.30	95.75
Other Appliances (million units)													
Refrigerators	128.11	129.36	130.57	131.70	132.82	133.98	135.24	136.54	137.83	139.13	140.46	141.76	143.04
Freezers	34.34	34.68	35.01	35.32	35.64	35.96	36.31	36.67	37.02	37.37	37.73	38.08	38.43
Stock Average Equipment Efficiency													
Main Space Heaters													
Electric Heat Pumps (HSPF)	7.16	7.21	7.25	7.29	7.31	7.38	7.44	7.49	7.53	7.57	7.61	7.64	7.67
Natural Gas Heat Pumps (GCOP)	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
Geothermal Heat Pumps (COP)	3.40	3.41	3.42	3.42	3.42	3.42	3.43	3.43	3.43	3.43	3.44	3.44	3.45
Natural Gas Furnace (AFUE)	0.79	0.80	0.80	0.81	0.81	0.82	0.82	0.82	0.82	0.83	0.83	0.83	0.83
Distillate Furnace (AFUE)	0.80	0.81	0.81	0.81	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Space Cooling													

Table 21. Residential Sector Equipment Stock and Efficiency

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Electric Heat Pumps (SEER)	10.54	10.64	10.73	10.81	10.88	11.08	11.25	11.40	11.54	11.68	11.81	11.94	12.06
Natural Gas Heat Pumps (GCOP)	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Geothermal Heat Pumps (EER)	13.50	13.58	13.65	13.70	13.71	13.72	13.72	13.73	13.73	13.77	13.79	13.81	13.84
Cent. Air Conditioners (SEER)	10.37	10.49	10.60	10.71	10.81	11.02	11.22	11.41	11.59	11.75	11.91	12.05	12.19
Room Air Conditioners (EER)	8.99	9.11	9.19	9.27	9.34	9.39	9.45	9.50	9.56	9.62	9.67	9.71	9.74
Water Heaters													
Electric (EF)	0.87	0.87	0.88	0.88	0.88	0.88	0.89	0.89	0.89	0.89	0.90	0.90	0.90
Natural Gas (EF)	0.55	0.55	0.55	0.56	0.56	0.57	0.57	0.57	0.58	0.58	0.58	0.59	0.59
Distillate (EF)	0.54	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55
Liquefied Petroleum Gas (EF)	0.55	0.55	0.55	0.56	0.56	0.57	0.57	0.58	0.58	0.58	0.59	0.59	0.59
Other Appliances (kilowatthours per year) 2/													
Refrigerators	782.32	756.43	732.45	710.51	690.53	672.02	654.56	638.01	622.72	608.92	596.64	585.69	576.10
Freezers	579.89	556.63	535.31	516.01	499.56	486.41	475.66	466.46	458.70	452.16	447.00	442.98	439.71
Building Shell Efficiency Index													
Space Heating													
Pre-1998 Homes	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.98	0.98	0.98	0.98
New Construction	N/A	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.80	0.80	0.80
All Homes	1.00	1.00	0.99	0.99	0.98	0.98	0.97	0.97	0.96	0.96	0.96	0.95	0.95
Space Cooling													
Pre-1998 Homes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99
New Construction	N/A	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
All Homes	1.00	1.00	0.99	0.99	0.99	0.99	0.99	0.98	0.98	0.98	0.98	0.97	0.97

Table 21. Residential Sector Equipment Stock and Efficiency

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2002-2025
Equipment Stock (million units)													
Main Space Heaters													
Electric Heat Pumps	13.90	14.15	14.40	14.65	14.90	15.14	15.37	15.59	15.81	16.03	16.25	16.46	1.9%
Electric Other	22.65	22.75	22.86	22.98	23.09	23.20	23.30	23.40	23.50	23.59	23.69	23.78	0.4%
Natural Gas Heat Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.0%
Natural Gas Other	69.72	70.44	71.16	71.87	72.57	73.26	74.02	74.77	75.52	76.26	76.99	77.71	1.1%
Distillate	8.12	8.13	8.14	8.15	8.15	8.16	8.16	8.16	8.16	8.16	8.16	8.16	0.1%
Liquefied Petroleum Gas	5.49	5.54	5.58	5.61	5.65	5.69	5.71	5.74	5.76	5.79	5.81	5.83	0.7%
Kerosene	0.73	0.72	0.72	0.72	0.71	0.71	0.70	0.70	0.69	0.69	0.68	0.68	-0.8%
Wood Stoves	1.93	1.92	1.91	1.90	1.89	1.88	1.87	1.85	1.84	1.83	1.82	1.81	-0.5%
Geothermal Heat Pumps	0.30	0.33	0.35	0.37	0.40	0.42	0.44	0.46	0.49	0.51	0.53	0.55	9.1%
Total	122.84	123.98	125.12	126.24	127.35	128.45	129.57	130.67	131.76	132.85	133.93	134.98	0.9%
Space Cooling (million units)													
Electric Heat Pumps	13.90	14.15	14.40	14.65	14.90	15.14	15.37	15.59	15.81	16.03	16.25	16.46	1.9%
Natural Gas Heat Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.0%
Geothermal Heat Pumps	0.30	0.33	0.35	0.37	0.40	0.42	0.44	0.46	0.49	0.51	0.53	0.55	9.1%
Central Air Conditioners	63.98	65.22	66.45	67.67	68.86	70.06	71.28	72.49	73.69	74.89	76.06	77.22	2.0%
Room Air Conditioners	33.44	33.34	33.24	33.14	33.04	32.94	32.85	32.75	32.66	32.57	32.48	32.38	-0.3%
Total	111.63	113.04	114.44	115.83	117.20	118.57	119.94	121.30	122.65	123.99	125.31	126.62	1.3%
Water Heaters (million units)													
Electric	44.48	44.72	44.95	45.19	45.43	45.67	45.87	46.07	46.28	46.49	46.69	46.89	0.5%
Natural Gas	70.98	71.86	72.72	73.58	74.41	75.25	76.14	77.02	77.89	78.76	79.61	80.45	1.3%
Distillate	4.31	4.29	4.28	4.26	4.24	4.22	4.20	4.18	4.16	4.14	4.12	4.10	-0.5%
Liquefied Petroleum Gas	3.51	3.56	3.60	3.64	3.68	3.73	3.75	3.78	3.81	3.84	3.87	3.89	1.2%
Solar Thermal	0.43	0.44	0.45	0.45	0.46	0.47	0.47	0.48	0.48	0.49	0.49	0.50	1.6%
Total	123.72	124.86	126.00	127.12	128.22	129.33	130.43	131.53	132.63	133.72	134.78	135.84	0.9%
Cooking Equipment (million units) 1/													
Electric	75.71	76.37	77.04	77.69	78.31	78.96	79.62	80.29	80.97	81.67	82.35	83.02	0.9%
Natural Gas	43.27	43.71	44.16	44.61	45.06	45.49	45.93	46.34	46.73	47.09	47.46	47.82	1.0%
Liquefied Petroleum Gas	5.04	5.06	5.09	5.11	5.13	5.15	5.17	5.18	5.20	5.22	5.24	5.26	0.5%
Total	124.01	125.15	126.28	127.40	128.50	129.60	130.71	131.81	132.90	133.99	135.05	136.10	0.9%
Clothes Dryers (million units)													
Electric	73.41	74.27	75.12	75.97	76.81	77.65	78.50	79.35	80.21	81.06	81.89	82.69	1.2%
Natural Gas	23.77	24.31	24.84	25.35	25.85	26.34	26.81	27.27	27.72	28.16	28.61	29.05	2.2%
Total	97.18	98.58	99.96	101.32	102.66	103.99	105.31	106.63	107.93	109.22	110.49	111.74	1.5%
Other Appliances (million units)													
Refrigerators	144.32	145.56	146.79	148.01	149.21	150.41	151.61	152.81	154.00	155.18	156.35	157.49	0.9%
Freezers	38.77	39.10	39.42	39.74	40.05	40.36	40.68	40.98	41.29	41.59	41.89	42.18	0.9%
Stock Average Equipment Efficiency													
Main Space Heaters													
Electric Heat Pumps (HSPF)	7.70	7.73	7.75	7.78	7.80	7.82	7.85	7.87	7.90	7.93	7.95	7.97	0.4%
Natural Gas Heat Pumps (GCOP)	1.40	1.40	1.40	1.40	1.40	1.40	1.41	1.42	1.43	1.44	1.45	1.45	0.2%
Geothermal Heat Pumps (COP)	3.45	3.45	3.46	3.46	3.46	3.47	3.50	3.52	3.55	3.57	3.60	3.62	0.3%
Natural Gas Furnace (AFUE)	0.83	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.85	0.85	0.3%
Distillate Furnace (AFUE)	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.1%
Space Cooling													

Table 21. Residential Sector Equipment Stock and Efficiency

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2002-2025
Electric Heat Pumps (SEER)	12.18	12.28	12.38	12.46	12.54	12.61	12.71	12.80	12.88	12.96	13.02	13.08	0.9%
Natural Gas Heat Pumps (GCOP)	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	N/A
Geothermal Heat Pumps (EER)	13.86	13.88	13.90	13.92	13.94	13.96	14.14	14.28	14.42	14.56	14.69	14.82	0.4%
Cent. Air Conditioners (SEER)	12.31	12.43	12.53	12.62	12.70	12.77	12.86	12.93	12.99	13.05	13.09	13.13	1.0%
Room Air Conditioners (EER)	9.77	9.79	9.80	9.80	9.80	9.80	9.83	9.85	9.88	9.91	9.94	9.97	0.4%
Water Heaters													
Electric (EF)	0.90	0.90	0.90	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.2%
Natural Gas (EF)	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.3%
Distillate (EF)	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.0%
Liquefied Petroleum Gas (EF)	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.3%
Other Appliances (kilowatthours per year) 2/													
Refrigerators	567.71	560.48	554.31	549.14	544.78	541.14	537.90	535.09	532.70	530.74	529.23	528.17	-1.5%
Freezers	437.11	435.13	433.70	432.77	432.24	432.00	432.06	432.29	432.67	433.20	433.88	434.50	-1.1%
Building Shell Efficiency Index													
Space Heating													
Pre-1998 Homes	0.98	0.97	0.97	0.97	0.97	0.97	0.97	0.96	0.96	0.96	0.96	0.96	-0.2%
New Construction	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.0%
All Homes	0.94	0.94	0.94	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.91	0.91	-0.4%
Space Cooling													
Pre-1998 Homes	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.98	0.98	0.98	-0.1%
New Construction	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.0%
All Homes	0.97	0.97	0.97	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.95	0.95	-0.2%

Table 21. Residential Sector Equipment Stock and Efficiency

1/ Does not include microwave ovens or outdoor grills.

2/ Kilowatthours per year to run the appliance under certain test conditions as specified by the Department of Energy.

HSPF = Heating Seasonal Performance Factor: The total heating output of a heat pump in Btu during its normal annual usage period for heating divided by total electric input in watt-hours during the same period.

COP = Coefficient of Performance: Energy efficiency rating measure determined, under specific testing conditions, by dividing the energy output by the energy input.

GCOP = Gas Coefficient of Performance: Energy efficiency rating measure determined, under specific testing conditions, by dividing the energy output by the energy input.

AFUE = Annual Fuel Utilization Efficiency: Efficiency rating based on average usage, including on and off cycling, as set out in the standardized Department of Energy test procedures.

SEER = Seasonal Energy Efficiency Ratio: The total cooling of a central unitary air conditioner or a unitary heat pump in Btu during its normal annual usage period for cooling divided by the total electric energy input in watt-hours during the same period.

EER = Energy Efficiency Ratio: A ratio calculated by dividing the cooling capacity in Btu per hour by the power input in watts at any given set of rating conditions, expressed in Btu per hour per watt.

EF = Efficiency Factor: Efficiency (measured in Btu out / Btu in) of water heaters under certain test conditions specified by the Department of Energy.

Btu = British thermal unit.

N/A = Not applicable.

Note: Totals may not equal sum of components due to independent rounding.

Source: Energy Information Administration, AEO2004 National Energy Modeling System run aeo2004.d101703e.

Table 22. Commercial Sector Energy Consumption, Floorspace and Equipment Efficiency

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Commercial Building Delivered													
Energy Consumption (quadrillion Btu) 1/													
Assembly	0.51	0.52	0.53	0.53	0.54	0.55	0.56	0.57	0.58	0.59	0.59	0.60	0.61
Education	0.68	0.70	0.71	0.72	0.74	0.76	0.77	0.79	0.80	0.81	0.83	0.84	0.85
Food Sales	0.20	0.21	0.21	0.22	0.22	0.22	0.22	0.23	0.23	0.24	0.24	0.24	0.24
Food Service	0.44	0.46	0.45	0.46	0.47	0.47	0.48	0.48	0.49	0.50	0.51	0.52	0.52
Health Care	0.45	0.46	0.47	0.48	0.50	0.52	0.54	0.55	0.57	0.59	0.60	0.62	0.63
Lodging	0.45	0.47	0.47	0.48	0.49	0.50	0.52	0.53	0.54	0.55	0.57	0.58	0.59
Office - Large	0.73	0.75	0.75	0.78	0.80	0.83	0.86	0.88	0.90	0.92	0.93	0.95	0.97
Office - Small	0.41	0.43	0.44	0.45	0.47	0.48	0.50	0.51	0.52	0.53	0.54	0.55	0.56
Mercantile/Service	1.22	1.27	1.30	1.32	1.34	1.37	1.39	1.41	1.44	1.47	1.49	1.50	1.52
Warehouse	0.54	0.57	0.60	0.62	0.63	0.64	0.65	0.66	0.66	0.67	0.68	0.70	0.71
Other	0.37	0.39	0.40	0.42	0.44	0.45	0.47	0.49	0.50	0.52	0.53	0.55	0.56
Total	6.01	6.23	6.34	6.46	6.64	6.80	6.95	7.09	7.23	7.39	7.53	7.65	7.76
Commercial Building Floorspace													
(billion square feet)													
Assembly	7.95	8.04	8.14	8.24	8.33	8.43	8.51	8.60	8.68	8.77	8.86	8.94	9.02
Education	9.03	9.27	9.53	9.76	9.99	10.20	10.39	10.58	10.76	10.94	11.10	11.26	11.41
Food Sales	1.04	1.06	1.08	1.10	1.11	1.12	1.13	1.14	1.16	1.18	1.20	1.21	1.22
Food Service	1.93	1.97	2.01	2.04	2.06	2.07	2.08	2.10	2.13	2.16	2.19	2.21	2.22
Health Care	1.93	1.98	2.04	2.09	2.14	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55
Lodging	4.71	4.82	4.93	5.06	5.19	5.30	5.40	5.50	5.60	5.71	5.82	5.93	6.04
Office - Large	7.52	7.64	7.77	7.95	8.12	8.28	8.42	8.55	8.66	8.77	8.86	8.95	9.04
Office - Small	5.86	5.97	6.08	6.22	6.35	6.48	6.59	6.69	6.78	6.87	6.96	7.04	7.13
Mercantile/Service	14.29	14.60	14.92	15.18	15.36	15.51	15.65	15.84	16.08	16.34	16.57	16.74	16.86
Warehouse	11.33	11.91	12.59	13.11	13.44	13.66	13.83	13.97	14.10	14.26	14.51	14.84	15.18
Other	4.64	4.84	5.05	5.25	5.46	5.67	5.86	6.05	6.23	6.41	6.58	6.75	6.93
Total	70.22	72.09	74.14	76.01	77.57	78.91	80.12	81.32	82.54	83.82	85.10	86.37	87.61
Stock Average Equipment Efficiency 2/													
Space Heating													
Electricity	1.06	1.07	1.08	1.09	1.10	1.10	1.10	1.11	1.11	1.12	1.12	1.12	1.12
Natural Gas	0.73	0.73	0.74	0.74	0.75	0.75	0.76	0.76	0.76	0.76	0.77	0.77	0.77
Distillate	0.74	0.75	0.75	0.76	0.76	0.76	0.77	0.77	0.77	0.77	0.78	0.78	0.78
Space Cooling													
Electricity	2.73	2.76	2.80	2.83	2.86	2.89	2.92	2.95	2.98	3.01	3.03	3.06	3.08
Natural Gas	0.92	0.95	0.95	0.97	0.98	0.99	1.00	1.01	1.02	1.02	1.03	1.03	1.04
Water Heating													
Electricity	0.98	0.98	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	1.00	1.00	1.00
Natural Gas	0.78	0.79	0.80	0.81	0.81	0.82	0.82	0.82	0.83	0.83	0.83	0.83	0.83
Distillate	0.75	0.75	0.75	0.76	0.76	0.76	0.76	0.76	0.77	0.77	0.77	0.77	0.77
Ventilation (cubic feet per minute per Btu) 3/													
Electricity	0.34	0.35	0.35	0.36	0.37	0.37	0.37	0.38	0.38	0.39	0.39	0.40	0.40
Cooking													
Electricity	0.71	0.72	0.72	0.73	0.73	0.73	0.73	0.74	0.74	0.74	0.74	0.74	0.74
Natural Gas	0.51	0.51	0.51	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52

Table 22. Commercial Sector Energy Consumption, Floorspace and Equipment Efficiency

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Lighting Efficacy 4/ (efficacy in lumens per watt) Electricity	48.76	48.87	48.95	48.94	49.04	49.17	49.32	49.40	49.49	49.56	49.68	49.82	49.96
Refrigeration Electricity	1.38	1.39	1.40	1.40	1.40	1.41	1.41	1.41	1.42	1.42	1.42	1.43	1.43

Table 22. Commercial Sector Energy Consumption, Floorspace and Equipment Efficiency

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2002-2025
Commercial Building Delivered													
Energy Consumption (quadrillion Btu) 1/													
Assembly	0.61	0.62	0.62	0.63	0.64	0.65	0.65	0.66	0.67	0.68	0.69	0.69	1.2%
Education	0.85	0.86	0.87	0.88	0.89	0.90	0.90	0.91	0.91	0.92	0.92	0.92	1.2%
Food Sales	0.25	0.25	0.25	0.25	0.25	0.26	0.26	0.26	0.26	0.26	0.27	0.27	1.0%
Food Service	0.52	0.52	0.53	0.53	0.54	0.55	0.56	0.57	0.57	0.58	0.58	0.59	1.1%
Health Care	0.65	0.66	0.68	0.70	0.72	0.74	0.76	0.78	0.80	0.82	0.84	0.87	2.8%
Lodging	0.60	0.62	0.63	0.64	0.65	0.67	0.68	0.70	0.71	0.73	0.74	0.76	2.2%
Office - Large	0.99	1.00	1.02	1.04	1.06	1.08	1.11	1.13	1.15	1.17	1.20	1.22	2.2%
Office - Small	0.57	0.58	0.59	0.60	0.61	0.63	0.64	0.65	0.66	0.67	0.68	0.70	2.1%
Mercantile/Service	1.52	1.53	1.54	1.56	1.58	1.61	1.63	1.64	1.65	1.66	1.67	1.69	1.2%
Warehouse	0.73	0.74	0.75	0.77	0.79	0.80	0.82	0.83	0.85	0.88	0.90	0.92	2.1%
Other	0.58	0.60	0.61	0.63	0.65	0.67	0.68	0.70	0.72	0.74	0.76	0.78	3.0%
Total	7.88	7.98	8.11	8.24	8.39	8.55	8.70	8.83	8.96	9.10	9.25	9.41	1.8%
Commercial Building Floorspace (billion square feet)													
Assembly	9.11	9.19	9.28	9.36	9.44	9.52	9.60	9.70	9.78	9.87	9.97	10.06	1.0%
Education	11.55	11.69	11.82	11.93	12.03	12.12	12.20	12.27	12.32	12.36	12.40	12.44	1.3%
Food Sales	1.22	1.22	1.23	1.24	1.25	1.27	1.28	1.29	1.29	1.29	1.29	1.29	0.9%
Food Service	2.22	2.23	2.24	2.26	2.29	2.32	2.35	2.37	2.37	2.38	2.38	2.40	0.9%
Health Care	2.61	2.66	2.72	2.78	2.83	2.89	2.95	3.02	3.08	3.15	3.22	3.28	2.2%
Lodging	6.16	6.28	6.39	6.50	6.60	6.71	6.82	6.94	7.05	7.17	7.30	7.43	1.9%
Office - Large	9.14	9.23	9.33	9.42	9.50	9.59	9.68	9.79	9.88	9.98	10.10	10.23	1.3%
Office - Small	7.22	7.30	7.40	7.48	7.57	7.65	7.74	7.83	7.92	8.02	8.13	8.24	1.4%
Mercantile/Service	16.95	17.03	17.16	17.33	17.56	17.79	18.01	18.18	18.26	18.32	18.41	18.57	1.1%
Warehouse	15.52	15.80	16.06	16.32	16.58	16.85	17.11	17.37	17.70	18.10	18.47	18.79	2.0%
Other	7.11	7.29	7.47	7.64	7.80	7.97	8.15	8.33	8.51	8.69	8.88	9.07	2.8%
Total	88.79	89.93	91.08	92.25	93.46	94.68	95.90	97.07	98.19	99.33	100.52	101.81	1.5%
Stock Average Equipment Efficiency 2/													
Space Heating													
Electricity	1.12	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	0.2%
Natural Gas	0.77	0.78	0.78	0.78	0.78	0.78	0.78	0.79	0.79	0.79	0.79	0.79	0.3%
Distillate	0.78	0.78	0.78	0.78	0.78	0.78	0.79	0.79	0.79	0.79	0.79	0.79	0.2%
Space Cooling													
Electricity	3.10	3.12	3.13	3.15	3.17	3.19	3.21	3.23	3.25	3.26	3.28	3.29	0.8%
Natural Gas	1.05	1.05	1.06	1.06	1.07	1.07	1.08	1.09	1.10	1.11	1.11	1.12	0.7%
Water Heating													
Electricity	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.1%
Natural Gas	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.85	0.85	0.3%
Distillate	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.78	0.78	0.78	0.78	0.78	0.1%
Ventilation (cubic feet per minute per Btu) 3/													
Electricity	0.41	0.41	0.42	0.42	0.42	0.43	0.43	0.43	0.44	0.44	0.44	0.45	1.1%
Cooking													
Electricity	0.74	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.2%
Natural Gas	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.1%

Table 22. Commercial Sector Energy Consumption, Floorspace and Equipment Efficiency

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2002-2025
Lighting Efficacy 4/ (efficacy in lumens per watt) Electricity	50.14	50.54	50.95	51.29	51.61	51.91	52.24	52.59	52.98	53.33	53.70	53.98	0.4%
Refrigeration Electricity	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.42	0.1%

Table 22. Commercial Sector Energy Consumption, Floorspace, and Equipment Efficiency

1/ Excludes commercial sector energy consumption (from uses such as street lights) that is not attributable to buildings.

2/ Unless noted otherwise, the efficiency measures are in the terms of Btu of energy output divided by Btu of energy input.

3/ The efficiency measure for ventilation is in terms of cubic feet per minute (cfm) of ventilation air delivered divided by Btu of energy input.

4/ A measurement of the ratio of light produced by a light source to the electrical power used to produce that quality of light, expressed in lumens per watt.

Btu = British thermal unit.

Note: Totals may not equal sum of components due to independent rounding.

Source: Energy Information Administration, AEO2004 National Energy Modeling System run aeo2004.d101703e.

Table 23. Industrial Sector Macroeconomic Indicators

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
GDP (billion 1996 dollars)	9214.5	9439.9	9656.6	10018.6	10402.0	10764.0	11128.5	11495.8	11839.3	12189.9	12542.6	12906.1	13313.5
Nonfarm Employment (millions)	131.6	130.5	130.1	131.6	134.1	136.5	138.8	141.1	143.1	145.0	146.8	148.3	150.2
Value of Shipments (billion 1996 dollars)													
Nonmanufacturing Sector													
Agricultural	282.0	290.2	287.4	290.5	293.4	297.8	301.0	304.5	308.4	312.7	317.2	322.1	327.4
Mining	139.6	134.3	132.5	135.0	138.1	140.2	142.8	144.3	145.1	146.0	147.1	148.2	149.3
Construction	887.3	797.0	762.7	785.1	836.3	856.6	874.6	902.1	935.9	966.8	992.9	1013.7	1050.4
Manufacturing Sector													
Food and Kindred Products	441.2	459.0	447.3	459.3	469.4	476.6	482.1	488.8	496.9	508.6	518.6	529.0	539.3
Beverages and Tobacco Products	104.8	106.2	103.9	106.2	107.9	109.6	111.4	113.5	115.9	118.4	121.1	124.1	127.3
Textile Mill Products	70.6	68.5	64.0	64.3	64.8	64.6	64.4	64.2	64.0	63.9	63.9	64.0	63.9
Apparel and Other Textile Products	75.8	73.1	69.2	68.5	68.2	67.6	67.0	66.1	64.9	64.1	63.5	62.9	62.1
Lumber and Wood Products	99.2	96.6	93.7	91.2	89.6	90.4	93.0	93.6	94.8	96.3	97.5	96.7	96.4
Furniture and Fixtures	61.5	59.3	58.0	60.4	62.7	64.5	66.0	67.3	68.7	70.5	72.3	74.1	75.7
Paper and Allied Products	154.5	155.2	155.6	161.6	167.3	171.2	173.7	175.9	179.1	183.3	187.6	192.3	197.2
Printing and Publishing	192.0	181.4	184.8	192.1	199.7	204.0	205.8	207.3	210.1	214.0	217.6	221.5	225.5
Chemical and Allied Products	388.8	386.3	395.2	414.5	429.3	441.3	455.0	468.5	479.2	491.3	504.2	516.3	530.0
Bulk Chemicals	194.0	189.0	186.5	194.0	199.5	204.0	209.1	213.1	215.4	218.3	222.3	226.1	230.6
Other Chemical and Allied Products	194.7	197.4	208.7	220.5	229.7	237.3	245.9	255.4	263.8	273.1	281.9	290.2	299.4
Petroleum and Coal Products	183.6	199.1	197.7	201.5	205.8	210.3	215.0	218.9	222.1	225.5	229.1	233.8	239.2
Petroleum Refining	167.0	182.9	181.6	185.1	188.8	192.9	197.3	200.8	203.6	206.6	209.8	214.0	218.8
Other Petroleum and Coal Products	16.6	16.2	16.1	16.4	17.0	17.4	17.7	18.1	18.5	18.9	19.3	19.8	20.3
Rubber and Miscellaneous Plastic Products	160.6	162.2	162.1	168.6	174.9	179.8	184.2	188.5	193.2	198.4	204.5	210.6	216.6
Leather and Leather Products	7.2	6.6	6.2	6.1	6.0	5.8	5.7	5.6	5.5	5.5	5.4	5.4	5.3
Stone, Clay, and Glass Products	89.0	88.7	89.5	92.9	98.2	100.3	102.3	103.0	104.4	106.7	108.9	110.9	113.8
Glass and Glass Products	24.5	25.3	25.5	26.5	27.7	28.6	29.7	30.5	31.4	32.8	34.1	35.1	36.3
Cement and Hydraulic Products	6.1	6.1	6.1	6.2	6.5	6.6	6.7	6.8	6.9	7.1	7.3	7.5	7.6
Other Stone, Clay, and Glass Products	58.4	57.3	57.9	60.1	64.0	65.0	65.8	65.8	66.1	66.7	67.5	68.3	69.9
Primary Metals Industry													
Blast Furnace and Basic Steel Products	67.4	72.9	72.7	75.5	78.2	78.9	80.3	81.8	82.7	83.8	85.0	85.8	86.1
Aluminum	30.2	29.7	27.5	28.1	28.5	30.1	31.2	31.7	31.9	32.1	32.4	32.6	32.9
Other Primary Metal Products	77.5	72.2	69.6	73.0	77.6	80.3	82.7	84.2	85.3	86.2	87.4	88.7	89.6
Fabricated Metal Products	217.9	216.4	213.1	222.9	233.2	240.3	243.2	245.5	251.0	258.9	265.4	272.4	280.5
Industrial Machinery and Equipment	421.8	403.3	407.1	432.5	457.7	478.6	494.7	509.7	525.2	542.6	558.9	577.2	596.0
Electronic and Other Electric Equipment	435.1	398.5	419.5	459.0	488.7	517.6	544.4	574.0	604.6	637.3	669.3	705.7	745.4
Transportation Equipment	527.1	574.1	559.8	583.4	596.9	617.6	649.1	667.9	689.2	708.3	734.8	755.0	775.1
Instruments and Related Products	189.2	188.2	181.7	189.5	196.3	203.1	209.9	216.2	222.2	229.2	236.2	244.3	253.1
Miscellaneous Manufacturing Industries	63.9	66.0	65.1	68.1	71.7	75.2	78.7	82.0	85.0	88.2	91.2	94.3	97.5
Total Industrial Value of Shipments	5367.8	5285.2	5225.8	5429.6	5640.4	5802.5	5957.8	6105.2	6265.4	6438.6	6612.2	6781.5	6975.8

Table 23. Industrial Sector Macroeconomic Indicators

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2002-2025
GDP (billion 1996 dollars)	13715.0	14101.1	14496.6	14918.3	15351.0	15755.9	16188.0	16589.2	17035.3	17500.4	17980.3	18520.2	3.0%
Nonfarm Employment (millions)	152.0	153.4	154.9	156.4	158.1	159.7	161.2	162.6	164.1	165.5	167.0	168.6	1.1%
Value of Shipments (billion 1996 dollars)													
Nonmanufacturing Sector													
Agricultural	332.1	336.0	339.3	343.1	347.2	351.8	355.9	360.6	365.3	370.0	375.7	381.2	1.2%
Mining	150.3	151.6	152.0	153.4	156.8	159.2	160.2	160.3	160.7	163.0	165.4	166.6	0.9%
Construction	1078.9	1097.4	1113.3	1131.4	1159.6	1167.5	1193.5	1208.7	1237.2	1265.4	1284.0	1306.9	2.2%
Manufacturing Sector													
Food and Kindred Products	549.0	558.1	567.5	577.5	587.3	596.0	605.5	614.5	624.7	635.6	646.9	659.7	1.6%
Beverages and Tobacco Products	130.0	132.3	135.0	137.5	140.1	142.5	145.1	148.0	151.1	154.6	158.0	161.5	1.8%
Textile Mill Products	64.1	65.1	66.4	67.6	69.0	70.0	71.3	72.1	73.5	74.9	76.4	78.3	0.6%
Apparel and Other Textile Products	61.6	62.1	63.3	64.8	66.3	67.3	68.7	69.5	71.0	72.5	74.3	76.3	0.2%
Lumber and Wood Products	96.7	96.9	97.4	98.8	100.2	100.1	99.8	98.4	97.7	97.1	95.5	95.0	-0.1%
Furniture and Fixtures	77.1	77.4	78.1	79.6	81.2	81.7	83.2	84.3	86.1	88.0	89.3	91.2	1.9%
Paper and Allied Products	201.5	204.7	207.9	211.5	214.9	217.5	220.0	222.4	224.9	227.7	230.3	233.2	1.8%
Printing and Publishing	229.9	233.9	238.0	242.7	247.2	251.2	255.4	259.4	263.4	268.0	272.4	277.5	1.9%
Chemical and Allied Products	540.8	553.4	567.7	583.0	597.7	611.5	624.9	635.5	647.3	659.6	672.4	686.3	2.5%
Bulk Chemicals	232.5	235.6	239.9	244.4	248.4	252.2	255.8	258.3	261.6	265.2	268.4	272.0	1.6%
Other Chemical and Allied Products	308.3	317.8	327.9	338.6	349.3	359.3	369.1	377.2	385.7	394.5	404.0	414.3	3.3%
Petroleum and Coal Products	244.1	247.4	248.9	251.0	253.8	256.8	260.0	263.7	266.0	268.8	271.0	273.1	1.4%
Petroleum Refining	223.4	226.4	227.5	229.2	231.6	234.3	237.1	240.5	242.2	244.6	246.3	247.9	1.3%
Other Petroleum and Coal Products	20.7	21.0	21.4	21.8	22.2	22.5	22.9	23.3	23.8	24.2	24.7	25.2	1.9%
Rubber and Miscellaneous Plastic Products	223.6	230.8	239.3	248.3	257.2	264.2	271.6	278.6	287.3	296.3	305.8	316.2	2.9%
Leather and Leather Products	5.2	5.1	5.1	5.0	4.9	4.8	4.7	4.7	4.6	4.5	4.4	4.4	-1.7%
Stone, Clay, and Glass Products	116.1	118.0	120.1	122.7	125.0	126.7	129.1	130.8	133.2	135.7	137.8	140.5	2.0%
Glass and Glass Products	37.2	38.1	39.1	40.3	41.2	42.1	43.4	44.3	45.4	46.5	47.4	48.4	2.9%
Cement and Hydraulic Products	7.8	7.8	7.9	8.1	8.3	8.3	8.4	8.5	8.7	8.8	8.9	9.1	1.8%
Other Stone, Clay, and Glass Products	71.1	72.0	73.0	74.4	75.6	76.3	77.3	78.1	79.2	80.4	81.5	83.0	1.6%
Primary Metals Industry													
Blast Furnace and Basic Steel Products	86.7	87.7	88.7	89.6	91.1	91.8	93.1	94.1	95.7	97.4	99.1	101.3	1.4%
Aluminum	33.5	34.2	34.8	35.5	36.0	36.3	36.6	36.9	37.3	37.7	38.2	38.7	1.2%
Other Primary Metal Products	90.4	90.9	91.6	92.3	93.5	93.8	94.6	95.0	95.9	97.0	97.7	99.3	1.4%
Fabricated Metal Products													
Industrial Machinery and Equipment	616.6	639.4	664.1	689.0	715.7	741.7	769.8	799.4	832.2	867.7	906.4	941.9	3.8%
Electronic and Other Electric Equipment	787.5	831.1	870.6	914.8	954.9	985.6	1022.1	1064.7	1111.7	1158.2	1212.7	1277.7	5.2%
Transportation Equipment	794.5	817.9	853.6	893.3	928.6	961.0	995.8	1022.4	1060.0	1099.1	1135.4	1177.7	3.2%
Instruments and Related Products	263.4	273.9	283.9	295.2	307.4	317.4	329.0	340.2	353.1	366.3	379.3	395.2	3.3%
Miscellaneous Manufacturing Industries	100.1	103.9	107.7	111.5	115.7	119.7	124.3	127.3	130.7	135.4	142.2	150.4	3.6%
Total Industrial Value of Shipments	7162.3	7344.7	7536.4	7749.4	7970.2	8140.3	8344.0	8525.9	8751.6	8988.1	9224.3	9490.9	2.6%

Table 23. Industrial Sector Macroeconomic Indicators

GDP = Gross domestic product.

Note: Totals may not equal sum of components due to independent rounding.

Source: 2002: Global Insight macroeconomic model T250803. Projections: Energy Information Administration, AEO2004 National Energy Modeling System run aeo2004.d101703e.

Table 24. Refining Industry Energy Consumption

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Value of Shipments (billion 1996 dollars)	166.96	182.89	181.64	185.14	188.82	192.92	197.31	200.79	203.59	206.62	209.80	213.99	218.84	223.38	226.41
Energy Consumption (trillion Btu)															
Residual Oil	39.8	30.3	30.6	31.3	37.7	39.0	40.0	40.9	41.2	41.0	40.9	40.8	40.8	40.8	48.0
Distillate Oil	6.2	4.9	5.0	5.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Liquefied Petroleum Gas	17.8	12.4	12.5	12.8	14.1	15.5	17.0	18.7	20.6	22.7	24.9	27.4	30.2	33.2	36.5
Petroleum Coke	532.6	531.6	538.1	549.2	624.8	621.1	622.9	615.2	627.0	639.2	666.8	708.0	755.5	797.5	813.5
Still Gas	1441.3	1399.4	1416.7	1446.0	1519.6	1596.3	1628.3	1684.3	1718.5	1651.0	1574.4	1574.7	1573.1	1596.9	1603.8
Other Petroleum 2/	33.5	30.2	30.6	31.2	124.8	165.2	183.7	179.4	185.3	190.3	189.1	180.5	181.6	184.2	184.4
Petroleum Subtotal	2071.3	2008.7	2033.5	2075.6	2320.9	2437.1	2492.0	2538.5	2592.6	2544.1	2496.1	2531.4	2581.1	2652.6	2686.2
Natural Gas	785.4	776.9	786.5	802.7	777.9	748.1	742.7	736.6	724.8	817.2	918.6	939.9	959.3	946.8	935.6
Steam Coal 3/	0.8	0.7	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Purchased Electricity	116.6	118.5	119.9	122.4	130.8	140.6	145.6	145.9	144.0	142.3	141.4	141.3	140.8	141.6	139.5
Total	2974.2	2904.7	2940.7	3000.7	3229.7	3325.8	3380.3	3420.9	3461.4	3503.6	3556.1	3612.6	3681.3	3741.0	3761.3
Energy Consumption per Unit of Output (thousand Btu per 1996 dollar shipments)															
Residual Oil	0.24	0.17	0.17	0.17	0.20	0.20	0.20	0.20	0.20	0.20	0.19	0.19	0.19	0.18	0.21
Distillate Oil	0.04	0.03	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Liquefied Petroleum Gas	0.11	0.07	0.07	0.07	0.07	0.08	0.09	0.09	0.10	0.11	0.12	0.13	0.14	0.15	0.16
Petroleum Coke	3.19	2.91	2.96	2.97	3.31	3.22	3.16	3.06	3.08	3.09	3.18	3.31	3.45	3.57	3.59
Still Gas	8.63	7.65	7.80	7.81	8.05	8.27	8.25	8.39	8.44	7.99	7.50	7.36	7.19	7.15	7.08
Other Petroleum 2/	0.20	0.17	0.17	0.17	0.66	0.86	0.93	0.89	0.91	0.92	0.90	0.84	0.83	0.82	0.81
Petroleum Subtotal	12.41	10.98	11.20	11.21	12.29	12.63	12.63	12.64	12.73	12.31	11.90	11.83	11.79	11.88	11.86
Natural Gas	4.70	4.25	4.33	4.34	4.12	3.88	3.76	3.67	3.56	3.96	4.38	4.39	4.38	4.24	4.13
Steam Coal	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
Purchased Electricity	0.70	0.65	0.66	0.66	0.69	0.73	0.74	0.73	0.71	0.69	0.67	0.66	0.64	0.63	0.62
Total	17.81	15.88	16.19	16.21	17.10	17.24	17.13	17.04	17.00	16.96	16.95	16.88	16.82	16.75	16.61
Carbon Dioxide Emissions 4/ (million metric tons)	190.4	185.7	188.0	191.3	207.3	215.6	220.0	222.8	225.1	226.3	228.0	230.7	234.1	237.5	238.5
Combined Heat and Power															
Generating Capacity (gigawatts)															
Petroleum	0.39	0.39	0.39	0.39	0.60	0.75	0.75	0.83	0.93	1.04	1.14	1.20	1.26	1.32	1.34
Natural Gas	2.34	2.34	2.34	2.34	2.51	2.64	2.64	2.71	2.80	2.89	2.98	3.05	3.13	3.21	3.28
Coal	0.03	0.03	0.03	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Other 5/	0.94	0.94	0.94	0.94	1.21	1.27	1.27	1.30	1.33	1.37	1.41	1.45	1.48	1.52	1.55
Total	3.70	3.70	3.70	3.70	4.32	4.66	4.66	4.84	5.07	5.30	5.54	5.71	5.88	6.05	6.18
Net Generation (billion kilowatthours)															
Petroleum	1.02	0.90	1.28	1.28	4.26	4.98	5.53	6.16	7.04	7.91	8.79	9.28	9.77	10.26	10.45
Natural Gas	17.74	17.87	16.26	16.26	16.61	17.61	17.67	18.20	18.92	19.63	20.35	20.96	21.57	22.18	22.75
Coal	0.21	0.23	0.00	0.00	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.05
Other 5/	3.78	4.90	5.93	5.93	7.99	8.45	8.45	8.68	8.98	9.29	9.60	9.87	10.15	10.42	10.70
Total	22.75	23.90	23.47	23.47	28.90	31.08	31.68	33.08	34.98	36.89	38.79	40.16	41.54	42.91	43.95
Disposition															
Sales to the Grid	5.96	5.80	6.09	6.09	5.04	6.08	6.67	7.48	8.53	9.59	10.64	11.23	11.82	12.41	12.68
Generation for Own Use	16.80	18.10	17.38	17.38	23.85	25.00	25.02	25.60	26.45	27.30	28.15	28.93	29.71	30.49	31.27
Energy Input (trillion Btu)															
Petroleum	37	37	37	37	57	65	70	77	86	95	104	110	115	121	124
Natural Gas	330	330	330	330	371	400	400	414	434	454	473	491	509	527	545
Coal	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1
Other 5/	156	156	156	156	181	195	194	201	210	220	229	237	246	254	263
Total	523	523	523	523	610	661	665	692	731	769	807	840	872	904	933
Energy Consumed at Ethanol Plants															

Table 24. Refining Industry Energy Consumption

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
(trillion Btu)															
Natural Gas	26.4	31.0	41.1	45.4	66.6	68.9	70.7	72.5	74.4	75.3	77.1	75.7	77.1	78.2	79.1
Coal	53.0	62.7	83.8	93.2	68.5	68.5	68.4	68.3	68.3	68.2	68.1	68.1	68.0	67.9	67.9
Electricity	3.2	3.8	5.2	5.8	7.4	7.7	7.9	8.1	8.3	8.4	8.6	8.5	8.7	8.8	8.9
Total	82.6	97.5	130.1	144.4	142.5	145.1	147.0	149.0	151.0	152.0	153.8	152.3	153.8	154.9	155.9

Table 24. Refining Industry Energy Consumption

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2002-2025
Value of Shipments (billion 1996 dollars)	227.51	229.23	231.60	234.31	237.06	240.45	242.24	244.58	246.33	247.91	1.3%
Energy Consumption (trillion Btu)											
Residual Oil	41.0	40.2	40.2	40.5	40.5	40.8	40.9	40.9	41.1	41.2	1.3%
Distillate Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A
Liquefied Petroleum Gas	40.2	44.2	48.6	53.5	58.8	64.7	71.2	78.3	86.1	94.7	9.2%
Petroleum Coke	831.0	848.0	852.7	872.4	893.1	912.1	935.4	950.5	953.4	956.0	2.6%
Still Gas	1619.6	1628.1	1636.4	1649.5	1671.4	1691.8	1705.9	1711.3	1715.4	1726.1	0.9%
Other Petroleum 2/	180.7	171.6	178.4	181.7	156.4	152.4	147.8	137.5	131.0	117.8	6.1%
Petroleum Subtotal	2712.5	2732.0	2756.4	2797.5	2820.2	2861.8	2901.2	2918.5	2927.1	2935.8	1.7%
Natural Gas	937.0	938.2	931.4	942.4	944.2	933.7	928.2	945.1	949.2	951.2	0.9%
Steam Coal 3/	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A
Purchased Electricity	137.0	131.8	121.1	115.3	109.1	108.2	108.1	107.5	106.3	104.8	-0.5%
Total	3786.5	3802.1	3808.9	3855.2	3873.5	3903.6	3937.6	3971.1	3982.6	3991.9	1.4%
Energy Consumption per Unit of Output (thousand Btu per 1996 dollar shipments)											
Residual Oil	0.18	0.18	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.0%
Distillate Oil	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A
Liquefied Petroleum Gas	0.18	0.19	0.21	0.23	0.25	0.27	0.29	0.32	0.35	0.38	7.8%
Petroleum Coke	3.65	3.70	3.68	3.72	3.77	3.79	3.86	3.89	3.87	3.86	1.2%
Still Gas	7.12	7.10	7.07	7.04	7.05	7.04	7.04	7.00	6.96	6.96	-0.4%
Other Petroleum 2/	0.79	0.75	0.77	0.78	0.66	0.63	0.61	0.56	0.53	0.48	4.7%
Petroleum Subtotal	11.92	11.92	11.90	11.94	11.90	11.90	11.98	11.93	11.88	11.84	0.3%
Natural Gas	4.12	4.09	4.02	4.02	3.98	3.88	3.83	3.86	3.85	3.84	-0.4%
Steam Coal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A
Purchased Electricity	0.60	0.58	0.52	0.49	0.46	0.45	0.45	0.44	0.43	0.42	-1.8%
Total	16.64	16.59	16.45	16.45	16.34	16.23	16.26	16.24	16.17	16.10	0.1%
Carbon Dioxide Emissions 4/ (million metric tons)	239.4	239.4	238.6	240.6	240.5	242.2	244.2	245.9	246.3	246.6	1.2%
Combined Heat and Power											
Generating Capacity (gigawatts)											
Petroleum	1.36	1.39	1.48	1.57	1.67	1.67	1.68	1.69	1.69	1.70	6.6%
Natural Gas	3.35	3.43	3.51	3.59	3.67	3.72	3.77	3.82	3.87	3.92	2.3%
Coal	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	-5.4%
Other 5/	1.59	1.62	1.66	1.69	1.73	1.75	1.77	1.80	1.82	1.85	3.0%
Total	6.31	6.44	6.65	6.86	7.07	7.15	7.23	7.31	7.39	7.47	3.1%
Net Generation (billion kilowatthours)											
Petroleum	10.64	10.83	11.61	12.39	13.18	13.22	13.27	13.31	13.35	13.40	12.4%
Natural Gas	23.33	23.90	24.54	25.18	25.82	26.22	26.62	27.01	27.41	27.81	1.9%
Coal	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.07	-5.4%
Other 5/	10.97	11.24	11.52	11.79	12.07	12.26	12.45	12.65	12.84	13.04	4.3%
Total	44.99	46.03	47.73	49.43	51.13	51.76	52.40	53.03	53.67	54.30	3.6%
Disposition											
Sales to the Grid	12.94	13.21	14.12	15.03	15.95	15.95	15.96	15.97	15.97	15.98	4.5%
Generation for Own Use	32.04	32.82	33.61	34.39	35.18	35.81	36.44	37.07	37.70	38.33	3.3%
Energy Input (trillion Btu)											
Petroleum	127	130	138	146	154	155	157	158	159	160	6.6%
Natural Gas	562	579	597	614	631	642	653	664	675	685	3.2%
Coal	1	1	1	1	2	2	2	2	2	2	N/A
Other 5/	271	280	288	296	304	310	315	320	325	331	3.3%
Total	961	990	1024	1058	1092	1109	1126	1144	1161	1178	3.6%

Energy Consumed at Ethanol Plants

Table 24. Refining Industry Energy Consumption

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2002- 2025
(trillion Btu)											
Natural Gas	79.6	80.1	80.6	80.7	80.8	80.5	80.7	80.7	80.5	80.1	4.2%
Coal	67.8	67.7	67.7	67.6	67.5	67.5	67.5	67.5	67.5	67.5	0.3%
Electricity	9.0	9.1	9.2	9.2	9.3	9.2	9.2	9.2	9.2	9.2	3.9%
Total	156.4	156.8	157.4	157.4	157.6	157.2	157.4	157.4	157.2	156.8	2.1%

Table 24. Refining Industry Energy Consumption

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

2/ Includes lubricants and miscellaneous petroleum products.

3/ Where coal-to-liquids (CTL) technology is adopted in the forecast, the plants are assumed to produce oil products and to generate electricity. A portion of the coal use is attributed to feedstock use to produce the liquids. The feedstock portion is assumed to be equal to the Btu content of the liquids produced. The rest of the coal used in CTL plants is accounted for in industrial steam coal consumption, a portion of which is reflected in energy used for end-use sector combined heat and power.

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

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

Btu = British thermal unit.

N/A = Not applicable.

Note: Totals may not equal sum of components due to independent rounding. Data for 2002 are model results and may differ slightly from official EIA data reports.

Source: 2001 and 2002 nonutility and CHP summer capacity, net generation, fuel use, and thermal output: Energy Information Administration (EIA), Form EIA-860: "Annual Electric Generator Report," 2002 (preliminary). 2001 and 2002 coal and natural gas consumption at ethanol plants: "Carbon Dioxide Emissions from the Production and Combustion of Fuel Ethanol from Corn," Marland, G. and A.F. Turhollow, 1991. 2001 and 2002 electricity consumption at ethanol plants: U.S. Department of Agriculture, 1998 Ethanol Cost-of-Production Survey, Agricultural Economic Report Number 808. Other 2001 and 2002 data based on: EIA, Manufacturing Energy Consumption Survey 1998. Projections: EIA, AEO2004 National Energy Modeling System run aeo2004.d101703e.

Table 25. Food Industry Energy Consumption

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Value of Shipments (billion 1996 dollars)	441.18	459.01	447.29	459.29	469.41	476.61	482.09	488.79	496.88	508.61	518.65	528.98	539.28	549.00	558.06
Energy Consumption (trillion Btu)															
Residual Oil	14.4	11.0	12.8	12.3	12.2	12.0	12.0	12.2	11.9	11.9	12.3	12.7	13.2	13.4	13.8
Distillate Oil	17.6	14.1	16.2	15.6	15.5	15.3	15.4	15.6	15.3	15.3	15.8	16.3	16.8	17.2	17.6
Liquefied Petroleum Gas	5.1	5.2	5.4	5.1	5.4	5.3	5.4	5.4	5.4	5.4	5.5	5.7	5.8	5.9	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	0.0	0.0
Petroleum Subtotal	37.1	30.4	34.4	32.9	33.0	32.7	32.8	33.3	32.6	32.7	33.6	34.7	35.8	36.5	37.4
Natural Gas	544.6	576.6	547.1	563.4	574.2	581.2	584.8	589.4	597.9	610.1	618.4	626.7	634.3	641.8	648.3
Steam Coal	155.5	159.2	158.7	158.7	158.7	158.6	158.5	158.4	158.3	158.3	158.3	158.3	158.3	158.3	158.3
Renewables	134.5	140.4	137.4	141.4	145.0	147.8	150.1	152.8	156.0	160.3	164.1	168.0	171.9	175.7	179.4
Purchased Electricity	217.4	222.3	218.5	221.5	224.8	227.1	228.7	230.8	233.1	237.5	241.4	245.5	249.7	253.3	256.6
Total	1089.1	1128.8	1096.0	1118.0	1135.8	1147.4	1155.0	1164.7	1178.0	1198.8	1215.7	1233.2	1250.0	1265.6	1280.0
Energy Consumption per Unit of Output (thousand Btu per 1996 dollar shipments)															
Residual Oil	0.03	0.02	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Distillate Oil	0.04	0.03	0.04	0.03	0.03	0.03	0.03	0.03	0.03	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	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	0.00	0.00
Petroleum Subtotal	0.08	0.07	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.07	0.07	0.07	0.07
Natural Gas	1.23	1.26	1.22	1.23	1.22	1.22	1.21	1.21	1.20	1.20	1.19	1.18	1.18	1.17	1.16
Steam Coal	0.35	0.35	0.35	0.35	0.34	0.33	0.33	0.32	0.32	0.31	0.31	0.30	0.29	0.29	0.28
Renewables	0.30	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.32	0.32	0.32	0.32	0.32	0.32
Purchased Electricity	0.49	0.48	0.49	0.48	0.48	0.48	0.47	0.47	0.47	0.47	0.47	0.46	0.46	0.46	0.46
Total	2.47	2.46	2.45	2.43	2.42	2.41	2.40	2.38	2.37	2.36	2.34	2.33	2.32	2.31	2.29
Carbon Dioxide Emissions 3/ (million metric tons)	87.8	89.4	87.5	87.8	89.2	90.2	90.9	91.4	92.2	93.5	94.5	95.7	96.7	97.7	98.6
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	0.07	0.07
Natural Gas	0.53	0.53	0.55	0.59	0.64	0.69	0.74	0.79	0.85	0.91	0.97	1.02	1.07	1.12	1.16
Coal	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Other 5/	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	0.01	0.01
Total	1.46	1.46	1.48	1.52	1.57	1.62	1.67	1.72	1.78	1.84	1.90	1.96	2.00	2.05	2.10
Net Generation (billion kilowatthours)															
Petroleum	0.13	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Natural Gas	1.99	2.14	2.28	2.58	2.94	3.31	3.67	4.05	4.49	4.93	5.34	5.73	6.07	6.40	6.75
Coal	3.42	3.71	3.71	3.71	3.71	3.71	3.71	3.71	3.71	3.71	3.71	3.71	3.71	3.71	3.71
Other 5/	0.21	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
Total	5.75	6.16	6.30	6.60	6.96	7.33	7.70	8.07	8.51	8.95	9.36	9.76	10.09	10.43	10.77
Disposition															
Sales to the Grid	0.31	0.30	0.38	0.56	0.78	1.00	1.22	1.45	1.71	1.97	2.22	2.46	2.66	2.86	3.07
Generation for Own Use	5.45	5.86	5.92	6.04	6.18	6.33	6.48	6.63	6.80	6.98	7.14	7.30	7.43	7.57	7.71
Thermal Output (trillion Btu)	108.2	108.3	108.8	109.9	111.1	112.3	113.5	114.7	116.2	117.6	118.8	120.1	121.1	122.1	123.1
Energy Input (trillion Btu)															
Petroleum	3.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
Natural Gas	50.7	54.5	55.8	58.6	61.9	65.4	68.7	72.2	76.2	80.2	83.9	87.4	90.4	93.4	96.4
Coal	130.0	133.2	133.2	133.2	133.2	133.2	133.2	133.2	133.2	133.2	133.2	133.2	133.2	133.2	133.2
Other 5/	13.1	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2
Total	196.9	202.1	203.4	206.2	209.5	213.0	216.3	219.8	223.8	227.8	231.5	235.0	238.0	241.0	244.0
Efficiency 6/	0.649	0.640	0.641	0.642	0.643	0.645	0.646	0.647	0.649	0.650	0.651	0.652	0.653	0.654	0.655
Power-to-Heat Ratio 7/	0.181	0.194	0.197	0.205	0.214	0.223	0.231	0.240	0.250	0.260	0.269	0.277	0.284	0.291	0.299

Table 25. Food Industry Energy Consumption

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2002-2025
Value of Shipments (billion 1996 dollars)	567.54	577.45	587.32	596.02	605.47	614.49	624.73	635.56	646.89	659.66	1.6%
Energy Consumption (trillion Btu)											
Residual Oil	13.8	13.9	13.9	13.9	14.1	14.6	14.6	14.6	14.8	15.0	1.3%
Distillate Oil	17.7	17.8	17.8	17.8	18.1	18.6	18.7	18.8	19.0	19.2	1.3%
Liquefied Petroleum Gas	6.1	6.1	6.2	6.2	6.3	6.4	6.4	6.5	6.6	6.6	1.1%
Other Petroleum 2/	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A
Petroleum Subtotal	37.6	37.8	37.8	37.9	38.4	39.5	39.7	39.9	40.4	40.8	1.3%
Natural Gas	657.1	667.8	679.4	689.7	700.3	709.3	721.3	734.1	747.3	762.4	1.2%
Steam Coal	158.3	158.3	158.3	158.4	158.4	158.4	158.5	158.6	158.6	158.7	0.0%
Renewables	183.1	187.0	190.8	194.3	198.0	201.5	205.4	209.5	213.7	218.4	1.9%
Purchased Electricity	259.9	263.4	266.6	269.4	272.5	275.7	279.2	282.9	286.9	291.4	1.2%
Total	1296.0	1314.3	1333.0	1349.6	1367.5	1384.4	1404.0	1424.9	1446.8	1471.7	1.2%
Energy Consumption per Unit of Output (thousand Btu per 1996 dollar shipments)											
Residual Oil	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	-0.2%
Distillate Oil	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	-0.2%
Liquefied Petroleum Gas	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	-0.5%
Other Petroleum 2/	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	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	-0.3%
Natural Gas	1.16	1.16	1.16	1.16	1.16	1.15	1.15	1.15	1.16	1.16	-0.4%
Steam Coal	0.28	0.27	0.27	0.27	0.26	0.25	0.25	0.25	0.25	0.24	-1.6%
Renewables	0.32	0.32	0.32	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.3%
Purchased Electricity	0.46	0.46	0.45	0.45	0.45	0.45	0.45	0.45	0.44	0.44	-0.4%
Total	2.28	2.28	2.27	2.26	2.26	2.25	2.25	2.24	2.24	2.23	-0.4%
Carbon Dioxide Emissions 3/ (million metric tons)	99.6	100.8	101.9	102.9	104.1	105.4	107.0	108.7	110.3	112.1	1.0%
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	N/A
Natural Gas	1.22	1.27	1.33	1.40	1.46	1.53	1.59	1.66	1.73	1.81	5.5%
Coal	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	N/A
Other 5/	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	N/A
Total	2.15	2.20	2.26	2.33	2.40	2.46	2.53	2.59	2.67	2.74	2.8%
Net Generation (billion kilowatthours)											
Petroleum	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	N/A
Natural Gas	7.13	7.52	7.97	8.43	8.93	9.39	9.86	10.34	10.87	11.43	7.6%
Coal	3.71	3.71	3.71	3.71	3.71	3.71	3.71	3.71	3.71	3.71	N/A
Other 5/	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	N/A
Total	11.15	11.54	11.99	12.46	12.95	13.41	13.88	14.36	14.89	15.45	4.1%
Disposition											
Sales to the Grid	3.30	3.53	3.80	4.08	4.37	4.65	4.93	5.22	5.54	5.87	13.8%
Generation for Own Use	7.86	8.01	8.19	8.38	8.58	8.76	8.95	9.14	9.35	9.58	2.2%
Thermal Output (trillion Btu)	124.2	125.3	126.6	127.9	129.2	130.5	131.7	132.9	134.3	135.6	1.0%
Energy Input (trillion Btu)											
Petroleum	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	N/A
Natural Gas	99.8	103.2	107.0	111.0	115.3	119.1	123.1	127.1	131.5	136.0	4.1%
Coal	133.2	133.2	133.2	133.2	133.2	133.2	133.2	133.2	133.2	133.2	N/A
Other 5/	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	N/A
Total	247.4	250.8	254.6	258.6	262.9	266.7	270.7	274.7	279.1	283.6	1.5%
Efficiency 6/	0.656	0.657	0.658	0.659	0.660	0.661	0.661	0.662	0.663	0.664	0.2%
Power-to-Heat Ratio 7/	0.306	0.314	0.323	0.332	0.342	0.351	0.360	0.369	0.378	0.389	3.1%

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 2002 are model results and may differ slightly from official EIA data reports.

Source: 2001 and 2002 nonutility and CHP summer capacity, net generation, fuel use, and thermal output: Energy Information Administration (EIA), Form EIA-860: "Annual Electric Generator Report," 2002 (preliminary). Other 2001 and 2002 data based on: EIA, Manufacturing Energy Consumption Survey 1998. Projections: EIA, AEO2004 National Energy Modeling System run aeo2004.d101703e.

Table 26. Paper Industry Energy Consumption

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Value of Shipments (billion 1996 dollars)	154.49	155.23	155.63	161.61	167.34	171.19	173.67	175.94	179.09	183.30	187.58	192.27	197.20	201.45	204.75
Energy Consumption (trillion Btu)															
Residual Oil	147.6	122.2	126.8	125.9	124.8	123.8	123.3	123.0	121.8	121.1	121.4	122.0	122.6	122.7	123.1
Distillate Oil	9.4	8.4	8.7	8.6	8.7	8.7	8.8	8.8	8.8	8.8	8.9	9.0	9.0	9.1	9.2
Liquefied Petroleum Gas	5.3	5.4	5.4	5.2	5.5	5.5	5.5	5.5	5.5	5.5	5.6	5.7	5.8	5.9	5.9
Petroleum Subtotal	162.3	135.9	140.9	139.7	139.0	138.0	137.6	137.3	136.1	135.4	135.9	136.7	137.4	137.7	138.1
Natural Gas	490.1	526.3	511.2	520.5	529.5	535.4	538.0	539.9	545.8	552.5	557.2	561.9	566.1	570.2	573.0
Steam Coal	248.1	244.5	244.2	244.2	244.1	244.0	243.8	243.6	243.4	243.3	243.2	243.2	243.1	243.0	242.9
Renewables	1123.1	1133.3	1139.0	1185.4	1230.3	1261.3	1282.5	1302.6	1329.0	1363.1	1398.4	1436.1	1475.8	1510.9	1539.1
Purchased Electricity	219.9	208.6	207.8	211.6	215.9	217.6	217.2	216.6	216.9	219.1	221.7	225.0	228.5	231.0	232.2
Total	2243.4	2248.7	2243.2	2301.3	2358.8	2396.2	2419.0	2440.0	2471.1	2513.5	2556.4	2602.9	2651.0	2692.8	2725.4
Energy Consumption per Unit of Output (thousand Btu per 1996 dollar shipments)															
Residual Oil	0.96	0.79	0.81	0.78	0.75	0.72	0.71	0.70	0.68	0.66	0.65	0.63	0.62	0.61	0.60
Distillate Oil	0.06	0.05	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.04
Liquefied Petroleum Gas	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	0.03	0.03
Petroleum Subtotal	1.05	0.88	0.91	0.86	0.83	0.81	0.79	0.78	0.76	0.74	0.72	0.71	0.70	0.68	0.67
Natural Gas	3.17	3.39	3.28	3.22	3.16	3.13	3.10	3.07	3.05	3.01	2.97	2.92	2.87	2.83	2.80
Steam Coal	1.61	1.58	1.57	1.51	1.46	1.43	1.40	1.38	1.36	1.33	1.30	1.26	1.23	1.21	1.19
Renewables	7.27	7.30	7.32	7.34	7.35	7.37	7.38	7.40	7.42	7.44	7.45	7.47	7.48	7.50	7.52
Purchased Electricity	1.42	1.34	1.34	1.31	1.29	1.27	1.25	1.23	1.21	1.20	1.18	1.17	1.16	1.15	1.13
Total	14.52	14.49	14.41	14.24	14.10	14.00	13.93	13.87	13.80	13.71	13.63	13.54	13.44	13.37	13.31
Carbon Dioxide Emissions 2/ (million metric tons)	103.9	100.4	99.9	100.0	101.4	102.2	102.4	102.2	102.4	103.0	103.6	104.4	105.1	105.6	105.9
Combined Heat and Power 4/ Generating Capacity (gigawatts)															
Petroleum	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Natural Gas	1.86	1.99	2.04	2.13	2.25	2.37	2.48	2.59	2.72	2.84	2.96	3.07	3.17	3.27	3.37
Coal	1.35	1.44	1.44	1.44	1.44	1.44	1.44	1.44	1.44	1.44	1.44	1.44	1.44	1.44	1.44
Other 5/ Total	3.88	3.98	4.03	4.32	4.60	4.79	4.92	5.04	5.20	5.41	5.63	5.86	6.11	6.33	6.50
	7.27	7.60	7.69	8.08	8.47	8.78	9.02	9.26	9.55	9.88	10.21	10.56	10.90	11.22	11.49
Net Generation (billion kilowatthours)															
Petroleum	3.58	3.29	3.29	3.29	3.29	3.29	3.29	3.29	3.29	3.29	3.29	3.29	3.29	3.29	3.29
Natural Gas	8.32	9.93	10.26	10.99	11.88	12.79	13.64	14.46	15.40	16.34	17.21	18.06	18.80	19.55	20.28
Coal	7.12	6.73	6.73	6.73	6.73	6.73	6.73	6.73	6.73	6.73	6.73	6.73	6.73	6.73	6.73
Other 5/ Total	27.17	28.98	29.29	30.96	32.58	33.69	34.46	35.18	36.13	37.36	38.63	39.99	41.42	42.68	43.70
	46.19	48.92	49.57	51.97	54.47	56.50	58.11	59.66	61.55	63.72	65.85	68.06	70.23	72.24	73.99
Disposition															
Sales to the Grid	2.20	2.27	2.59	4.03	5.53	6.75	7.71	8.64	9.78	11.08	12.36	13.69	14.99	16.20	17.24
Generation for Own Use	43.98	46.66	46.98	47.94	48.94	49.75	50.39	51.01	51.77	52.64	53.49	54.37	55.24	56.05	56.75
Thermal Output (trillion Btu)	836.4	804.3	810.5	838.0	865.0	884.3	898.0	911.1	927.9	948.9	970.4	993.2	1016.8	1037.9	1055.1
Energy Input (trillion Btu)															
Petroleum	115.0	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4
Natural Gas	254.1	261.4	264.2	270.3	277.6	285.2	292.1	298.9	306.6	314.3	321.3	328.3	334.3	340.3	346.3
Coal	230.8	224.5	224.5	224.5	224.5	224.5	224.5	224.5	224.5	224.5	224.5	224.5	224.5	224.5	224.5
Other 5/ Total	1035.3	1092.9	1103.7	1157.1	1208.7	1244.3	1268.6	1291.8	1322.1	1361.4	1401.8	1445.2	1490.8	1531.2	1563.6
	1635.3	1678.2	1691.8	1751.3	1810.2	1853.4	1884.7	1914.5	1952.6	1999.5	2047.1	2097.4	2149.0	2195.5	2233.7
Efficiency 6/ Power-to-Heat Ratio 7/	0.608	0.579	0.579	0.580	0.581	0.581	0.582	0.582	0.583	0.583	0.583	0.584	0.584	0.585	0.585
	0.188	0.208	0.209	0.212	0.215	0.218	0.221	0.223	0.226	0.229	0.232	0.234	0.236	0.237	0.239

Table 26. Paper Industry Energy Consumption

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2002-2025
Value of Shipments (billion 1996 dollars)	207.93	211.48	214.92	217.50	220.05	222.42	224.93	227.69	230.28	233.22	1.8%
Energy Consumption (trillion Btu)											
Residual Oil	122.7	122.5	122.2	121.9	122.0	122.7	122.2	121.9	121.8	121.8	0.0%
Distillate Oil	9.2	9.2	9.1	9.1	9.2	9.2	9.2	9.2	9.3	9.3	0.5%
Liquefied Petroleum Gas	5.9	5.9	6.0	6.0	6.0	6.0	6.0	6.0	6.1	6.1	0.5%
Petroleum Subtotal	137.8	137.6	137.3	137.0	137.2	138.0	137.4	137.2	137.1	137.2	0.0%
Natural Gas	578.6	586.1	595.2	603.2	610.9	617.0	625.2	633.5	641.8	650.7	0.9%
Steam Coal	242.8	242.8	242.7	242.7	242.6	242.6	242.5	242.5	242.5	242.4	0.0%
Renewables	1566.1	1595.9	1624.9	1647.6	1671.1	1694.1	1718.1	1744.3	1769.4	1797.4	2.0%
Purchased Electricity	233.0	234.3	235.2	234.9	234.7	234.6	234.4	234.7	234.6	235.0	0.5%
Total	2758.2	2796.7	2835.3	2865.4	2896.6	2926.2	2957.8	2992.2	3025.4	3062.6	1.4%
Energy Consumption per Unit of Output (thousand Btu per 1996 dollar shipments)											
Residual Oil	0.59	0.58	0.57	0.56	0.55	0.55	0.54	0.54	0.53	0.52	-1.8%
Distillate Oil	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	-1.3%
Liquefied Petroleum Gas	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	-1.2%
Petroleum Subtotal	0.66	0.65	0.64	0.63	0.62	0.62	0.61	0.60	0.60	0.59	-1.7%
Natural Gas	2.78	2.77	2.77	2.77	2.78	2.77	2.78	2.78	2.79	2.79	-0.8%
Steam Coal	1.17	1.15	1.13	1.12	1.10	1.09	1.08	1.07	1.05	1.04	-1.8%
Renewables	7.53	7.55	7.56	7.58	7.59	7.62	7.64	7.66	7.68	7.71	0.2%
Purchased Electricity	1.12	1.11	1.09	1.08	1.07	1.05	1.04	1.03	1.02	1.01	-1.2%
Total	13.27	13.22	13.19	13.17	13.16	13.16	13.15	13.14	13.14	13.13	-0.4%
Carbon Dioxide Emissions 2/ (million metric tons)	106.3	106.9	107.4	107.7	108.1	108.6	109.2	110.0	110.4	111.1	0.4%
Combined Heat and Power 4/ Generating Capacity (gigawatts)											
Petroleum	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	N/A
Natural Gas	3.47	3.58	3.71	3.83	3.97	4.09	4.22	4.35	4.48	4.63	3.7%
Coal	1.44	1.44	1.44	1.44	1.44	1.44	1.44	1.44	1.44	1.44	N/A
Other 5/	6.67	6.85	7.03	7.17	7.31	7.45	7.60	7.76	7.92	8.09	3.1%
Total	11.76	12.05	12.36	12.63	12.91	13.17	13.45	13.74	14.03	14.34	2.8%
Net Generation (billion kilowatthours)											
Petroleum	3.29	3.29	3.29	3.29	3.29	3.29	3.29	3.29	3.29	3.29	N/A
Natural Gas	21.08	21.88	22.81	23.76	24.77	25.68	26.63	27.59	28.62	29.68	4.9%
Coal	6.73	6.73	6.73	6.73	6.73	6.73	6.73	6.73	6.73	6.73	N/A
Other 5/	44.67	45.74	46.78	47.60	48.45	49.27	50.14	51.08	51.99	52.99	2.7%
Total	75.75	77.63	79.61	81.38	83.23	84.97	86.79	88.68	90.61	92.68	2.8%
Disposition											
Sales to the Grid	18.30	19.43	20.62	21.68	22.79	23.83	24.92	26.06	27.22	28.46	11.6%
Generation for Own Use	57.45	58.20	58.99	59.70	60.44	61.14	61.86	62.62	63.40	64.22	1.4%
Thermal Output (trillion Btu)	1071.8	1090.0	1108.1	1122.7	1137.8	1152.4	1167.6	1184.0	1199.9	1217.4	1.8%
Energy Input (trillion Btu)											
Petroleum	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	N/A
Natural Gas	352.7	359.2	366.6	374.2	382.2	389.5	397.0	404.5	412.6	420.8	2.1%
Coal	224.5	224.5	224.5	224.5	224.5	224.5	224.5	224.5	224.5	224.5	N/A
Other 5/	1594.5	1628.8	1662.1	1688.2	1715.3	1741.6	1769.3	1799.3	1828.2	1860.3	2.3%
Total	2271.1	2311.8	2352.7	2386.3	2421.4	2455.0	2490.2	2527.8	2564.6	2605.0	1.9%
Efficiency 6/	0.586	0.586	0.586	0.587	0.587	0.587	0.588	0.588	0.588	0.589	0.1%
Power-to-Heat Ratio 7/	0.241	0.243	0.245	0.247	0.250	0.252	0.254	0.256	0.258	0.260	1.0%

Table 26. Paper Industry Energy Consumption

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

2/ 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 2002 are model results and may differ slightly from official EIA data reports.

Source: 2001 and 2002 nonutility and CHP summer capacity, net generation, fuel use, and thermal output: Energy Information Administration (EIA), Form EIA-860: "Annual Electric Generator Report," 2002 (preliminary). Other 2001 and 2002 data based on: EIA, Manufacturing Energy Consumption Survey 1998. Projections: EIA, AEO2004 National Energy Modeling System run aeo2004.d101703e.

Table 27. Bulk Chemical Industry Energy Consumption

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Value of Shipments (billion 1996 dollars)	194.04	188.96	186.48	194.05	199.51	204.04	209.10	213.11	215.41	218.25	222.35	226.07	230.64
Energy Consumption (trillion Btu)													
Heat and Power													
Residual Oil	39.5	29.7	33.9	34.3	34.1	34.1	34.9	35.7	34.9	34.6	35.7	37.0	38.3
Distillate Oil	2.0	1.6	2.4	2.1	2.2	2.2	2.2	2.3	2.3	2.3	2.4	2.5	2.6
Liquefied Petroleum Gas	38.8	43.0	53.4	44.4	45.1	44.3	45.4	46.6	44.9	44.1	45.6	48.3	50.5
Petroleum Coke	319.9	283.3	300.5	306.9	309.4	312.4	319.8	326.2	322.7	321.8	329.7	338.3	347.2
Other Petroleum 2/	287.2	254.4	269.8	275.5	277.8	280.5	287.1	292.9	289.7	288.9	295.9	303.7	311.7
Petroleum Subtotal	687.3	612.0	660.0	663.1	668.5	673.4	689.3	703.7	694.5	691.7	709.3	729.7	750.4
Natural Gas	1640.6	1650.2	1554.6	1631.6	1673.7	1705.7	1730.8	1746.7	1772.4	1797.0	1811.1	1818.7	1833.0
Steam Coal	232.1	233.0	231.6	232.8	233.1	233.2	233.4	233.2	232.6	232.1	232.0	231.8	231.9
Purchased Electricity	459.1	438.2	437.2	453.0	464.0	474.0	486.0	495.0	497.5	502.1	511.0	518.9	529.1
Total Heat and Power	3019.1	2933.5	2883.4	2980.5	3039.3	3086.2	3139.4	3178.6	3197.0	3222.9	3263.5	3299.1	3344.5
Feedstock													
Liquefied Petroleum Gas	1674.7	1627.4	1602.4	1661.4	1700.1	1731.2	1766.6	1793.5	1806.8	1824.7	1852.7	1877.8	1909.6
Petrochemical Feedstocks	1368.7	1329.3	1307.8	1355.9	1387.9	1413.8	1443.2	1465.3	1476.3	1490.9	1513.6	1533.9	1559.6
Natural Gas	599.4	581.8	540.8	542.5	552.2	560.4	568.6	572.2	572.9	575.4	578.6	582.4	586.5
Total Feedstocks	3642.9	3538.5	3451.0	3559.8	3640.2	3705.4	3778.4	3831.1	3856.0	3890.9	3944.9	3994.0	4055.7
Total	6662.0	6472.0	6334.3	6540.4	6679.5	6791.6	6917.8	7009.7	7053.0	7113.8	7208.4	7293.2	7400.2
Energy Consumption per Unit of Output (thousand Btu per 1996 dollar shipments)													
Heat and Power													
Residual Oil	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
Distillate Oil	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
Liquefied Petroleum Gas	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Petroleum Coke	1.6	1.5	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Other Petroleum	1.5	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.4
Petroleum Subtotal	3.5	3.2	3.5	3.4	3.4	3.3	3.3	3.3	3.2	3.2	3.2	3.2	3.3
Natural Gas	8.5	8.7	8.3	8.4	8.4	8.4	8.3	8.2	8.2	8.2	8.1	8.0	7.9
Steam Coal	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0
Purchased Electricity	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Total Heat and Power	15.6	15.5	15.5	15.4	15.2	15.1	15.0	14.9	14.8	14.8	14.7	14.6	14.5
Feedstock													
Liquefied Petroleum Gas	8.6	8.6	8.6	8.6	8.5	8.5	8.4	8.4	8.4	8.4	8.3	8.3	8.3
Petrochemical Feedstocks	7.1	7.0	7.0	7.0	7.0	6.9	6.9	6.9	6.9	6.8	6.8	6.8	6.8
Natural Gas	3.1	3.1	2.9	2.8	2.8	2.7	2.7	2.7	2.7	2.6	2.6	2.6	2.5
Total Feedstocks	18.8	18.7	18.5	18.3	18.2	18.2	18.1	18.0	17.9	17.8	17.7	17.7	17.6
Total	34.3	34.3	34.0	33.7	33.5	33.3	33.1	32.9	32.7	32.6	32.4	32.3	32.1
Carbon Dioxide Emissions 3/ (million metric tons)	304.6	292.7	288.3	295.1	301.4	306.8	313.0	317.0	318.4	320.5	324.4	328.1	332.6
Combined Heat and Power 4/ Generating Capacity (gigawatts)													
Petroleum	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
Natural Gas	7.20	7.26	7.29	7.39	7.53	7.67	7.80	7.94	8.10	8.27	8.43	8.58	8.71
Coal	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48
Other 5/	0.28	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29
Total	7.97	8.04	8.07	8.18	8.31	8.45	8.59	8.72	8.88	9.06	9.21	9.36	9.50
Net Generation (billion kilowatthours)													

Table 27. Bulk Chemical Industry Energy Consumption

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Petroleum	0.07	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Natural Gas	43.71	41.77	41.97	42.74	43.74	44.79	45.77	46.76	47.98	49.26	50.40	51.51	52.52
Coal	3.00	3.09	3.09	3.09	3.09	3.09	3.09	3.09	3.09	3.09	3.09	3.09	3.09
Other 5/	4.93	6.33	6.33	6.33	6.33	6.33	6.33	6.33	6.33	6.33	6.33	6.33	6.33
Total	51.71	51.27	51.47	52.24	53.24	54.29	55.28	56.27	57.49	58.76	59.90	61.02	62.02
Disposition													
Sales to the Grid	8.67	8.49	8.60	9.03	9.63	10.26	10.85	11.45	12.18	12.95	13.63	14.30	14.90
Generation for Own Use	43.04	42.78	42.87	43.21	43.61	44.03	44.42	44.82	45.31	45.82	46.27	46.72	47.12
Thermal Output (trillion Btu)	293.6	263.7	264.5	266.8	269.7	272.6	275.3	278.0	281.3	284.7	287.7	290.7	293.3
Energy Input (trillion Btu)													
Petroleum	2.6	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Natural Gas	587.6	548.9	550.8	557.8	566.5	575.5	584.0	592.6	603.0	613.9	623.6	633.1	641.6
Coal	103.6	103.1	103.1	103.1	103.1	103.1	103.1	103.1	103.1	103.1	103.1	103.1	103.1
Other 5/	98.4	113.0	113.0	113.0	113.0	113.0	113.0	113.0	113.0	113.0	113.0	113.0	113.0
Total	792.2	767.1	769.1	776.1	784.8	793.9	802.4	810.9	821.4	832.3	841.9	851.4	859.9
Efficiency 6/	0.593	0.572	0.572	0.573	0.575	0.577	0.578	0.580	0.581	0.583	0.584	0.586	0.587
Power-to-Heat Ratio 7/	0.601	0.663	0.664	0.668	0.674	0.680	0.685	0.690	0.697	0.704	0.710	0.716	0.722

Table 27. Bulk Chemical Industry Energy Consumption

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2002-2025
Value of Shipments (billion 1996 dollars)	232.51	235.58	239.87	244.38	248.41	252.20	255.80	258.34	261.64	265.17	268.36	272.01	1.6%
Energy Consumption (trillion Btu)													
Heat and Power													
Residual Oil	38.7	39.8	40.1	40.5	40.7	41.0	41.8	42.9	42.8	42.9	43.3	43.8	1.7%
Distillate Oil	2.7	2.8	2.8	2.8	2.7	2.7	2.7	2.8	2.9	2.9	3.0	3.0	2.6%
Liquefied Petroleum Gas	51.7	53.4	53.6	54.0	53.9	54.4	55.9	58.5	57.8	57.9	58.5	59.5	1.4%
Petroleum Coke	349.1	355.2	359.5	365.1	368.8	373.2	379.2	385.7	387.9	391.5	395.5	400.6	1.5%
Other Petroleum 2/	313.4	318.9	322.7	327.7	331.1	335.0	340.4	346.2	348.2	351.5	355.0	359.6	1.5%
Petroleum Subtotal	755.5	770.0	778.7	790.1	797.1	806.3	820.0	836.2	839.6	846.7	855.3	866.5	1.5%
Natural Gas	1837.6	1844.6	1873.2	1905.3	1939.6	1969.1	1992.7	2002.3	2033.8	2063.8	2090.2	2118.0	1.1%
Steam Coal	231.5	231.3	231.5	231.7	231.8	231.9	231.9	231.8	231.8	231.9	231.8	231.9	0.0%
Purchased Electricity	531.3	537.1	545.2	554.1	560.8	567.3	573.2	577.2	581.9	587.4	591.8	597.5	1.4%
Total Heat and Power	3356.0	3383.1	3428.5	3481.3	3529.3	3574.5	3617.8	3647.4	3687.2	3729.8	3769.1	3813.9	1.1%
Feedstock													
Liquefied Petroleum Gas	1919.8	1939.7	1969.2	2003.5	2034.6	2063.8	2091.6	2111.1	2136.7	2164.3	2189.5	2218.2	1.4%
Petrochemical Feedstocks	1567.8	1584.3	1608.5	1634.2	1657.2	1678.8	1699.3	1714.3	1734.2	1755.1	1773.9	1795.6	1.3%
Natural Gas	594.1	601.8	610.7	619.2	627.9	638.2	645.7	656.4	664.5	673.7	683.6	691.3	0.8%
Total Feedstocks	4081.7	4125.8	4188.5	4256.9	4319.7	4380.8	4436.6	4481.8	4535.5	4593.2	4647.0	4705.2	1.2%
Total	7437.7	7508.8	7617.0	7738.1	7849.0	7955.3	8054.3	8129.2	8222.6	8323.0	8416.1	8519.1	1.2%
Energy Consumption per Unit of Output (thousand Btu per 1996 dollar shipments)													
Heat and Power													
Residual Oil	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1%
Distillate Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0%
Liquefied Petroleum Gas	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%
Petroleum Coke	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	-0.1%
Other Petroleum	1.3	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	-0.1%
Petroleum Subtotal	3.2	3.3	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	-0.1%
Natural Gas	7.9	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	-0.5%
Steam Coal	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	-1.6%
Purchased Electricity	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	-0.2%
Total Heat and Power	14.4	14.4	14.3	14.2	14.2	14.2	14.1	14.1	14.1	14.1	14.0	14.0	-0.4%
Feedstock													
Liquefied Petroleum Gas	8.3	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	-0.2%
Petrochemical Feedstocks	6.7	6.7	6.7	6.7	6.7	6.7	6.6	6.6	6.6	6.6	6.6	6.6	-0.3%
Natural Gas	2.6	2.6	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	-0.8%
Total Feedstocks	17.6	17.5	17.5	17.4	17.4	17.4	17.3	17.3	17.3	17.3	17.3	17.3	-0.3%
Total	32.0	31.9	31.8	31.7	31.6	31.5	31.5	31.5	31.4	31.4	31.4	31.3	-0.4%
Carbon Dioxide Emissions 3/ (million metric tons)	333.6	336.5	341.1	346.2	350.4	354.9	359.1	362.5	366.7	371.6	375.4	380.0	1.1%
Combined Heat and Power 4/ Generating Capacity (gigawatts)													
Petroleum	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.3%
Natural Gas	8.85	8.98	9.14	9.29	9.48	9.67	9.87	10.05	10.24	10.43	10.65	10.86	1.8%
Coal	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	N/A
Other 5/	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	N/A
Total	9.63	9.77	9.92	10.08	10.27	10.46	10.66	10.83	11.02	11.22	11.43	11.64	1.6%
Net Generation (billion kilowatthours)													

Table 27. Bulk Chemical Industry Energy Consumption

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2002-2025
Petroleum	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.3%
Natural Gas	53.53	54.51	55.64	56.78	58.17	59.56	61.02	62.32	63.72	65.13	66.69	68.26	2.2%
Coal	3.09	3.09	3.09	3.09	3.09	3.09	3.09	3.09	3.09	3.09	3.09	3.09	N/A
Other 5/	6.33	6.33	6.33	6.33	6.33	6.33	6.33	6.33	6.33	6.33	6.33	6.33	N/A
Total	63.03	64.01	65.15	66.29	67.67	69.06	70.53	71.82	73.22	74.64	76.19	77.76	1.8%
Disposition													
Sales to the Grid	15.51	16.10	16.78	17.46	18.29	19.13	20.01	20.78	21.62	22.47	23.40	24.35	4.7%
Generation for Own Use	47.52	47.92	48.37	48.83	49.38	49.94	50.52	51.04	51.60	52.16	52.79	53.42	1.0%
Thermal Output (trillion Btu)	295.9	298.4	301.3	304.2	307.6	310.9	314.4	317.5	320.7	323.9	327.4	330.8	1.0%
Energy Input (trillion Btu)													
Petroleum	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	0.3%
Natural Gas	650.1	658.4	667.9	677.4	688.9	700.4	712.5	723.1	734.5	745.9	758.4	771.0	1.5%
Coal	103.1	103.1	103.1	103.1	103.1	103.1	103.1	103.1	103.1	103.1	103.1	103.1	N/A
Other 5/	113.0	113.0	113.0	113.0	113.0	113.0	113.0	113.0	113.0	113.0	113.0	113.0	N/A
Total	868.5	876.7	886.2	895.8	907.3	918.8	930.8	941.4	952.8	964.3	976.8	989.3	1.1%
Efficiency 6/	0.588	0.590	0.591	0.592	0.593	0.595	0.596	0.598	0.599	0.600	0.601	0.603	0.2%
Power-to-Heat Ratio 7/	0.727	0.732	0.738	0.744	0.751	0.758	0.765	0.772	0.779	0.786	0.794	0.802	0.8%

Table 27. Bulk Chemical 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 2002 are model results and may differ slightly from official EIA data reports.

Source: 2001 and 2002 nonutility and CHP summer capacity, net generation, fuel use, and thermal output: Energy Information Administration (EIA), Form EIA-860: "Annual Electric Generator Report," 2002 (preliminary). Other 2001 and 2002 data based on: EIA, Manufacturing Energy Consumption Survey 1998. Projections: EIA, AEO2004 National Energy Modeling System run aeo2004.d101703e.

Table 28. Glass Industry Energy Consumption

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Value of Shipments (billion 1996 dollars)	24.53	25.34	25.52	26.50	27.73	28.64	29.75	30.45	31.43	32.83	34.06	35.11	36.29
Energy Consumption (trillion Btu)													
Residual Oil	2.5	1.6	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.3
Distillate Oil	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
Liquefied Petroleum Gas	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	2.5	1.6	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.3
Natural Gas	144.1	149.0	146.7	150.7	154.7	157.3	160.4	161.6	164.2	168.3	171.5	173.8	176.5
Steam Coal	10.2	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
Purchased Electricity	40.2	40.9	41.8	42.6	44.0	45.1	46.5	47.4	48.4	50.2	51.7	53.0	54.6
Total	197.1	203.0	201.8	206.6	212.2	215.9	220.4	222.5	226.1	232.0	236.9	240.6	244.9
Energy Consumption per Unit of Output (thousand Btu per 1996 dollar shipments)													
Residual Oil	0.10	0.06	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.06
Distillate Oil	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
Liquefied Petroleum Gas	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	0.10	0.06	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.06
Natural Gas	5.88	5.88	5.75	5.69	5.58	5.49	5.39	5.31	5.22	5.13	5.03	4.95	4.86
Steam Coal	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3
Purchased Electricity	1.64	1.61	1.64	1.61	1.59	1.58	1.56	1.56	1.54	1.53	1.52	1.51	1.50
Total	8.04	8.01	7.91	7.80	7.65	7.54	7.41	7.31	7.19	7.07	6.95	6.85	6.75
Carbon Dioxide Emissions 2/ (million metric tons)	16.5	16.8	16.9	17.0	17.6	17.9	18.4	18.6	18.9	19.4	19.9	20.2	20.6
Combined Heat and Power 4/ Generating Capacity (gigawatts)													
Petroleum	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
Natural Gas	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
Coal	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Other 5/ Total	0.00 0.07	0.00 0.07	0.00 0.07	0.00 0.07	0.00 0.07	0.00 0.07	0.00 0.07	0.00 0.07	0.00 0.07	0.00 0.07	0.00 0.07	0.00 0.07	0.00 0.07
Net Generation (billion kilowatthours)													
Petroleum	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
Natural Gas	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Coal	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32
Other 5/ Total	0.00 0.34	0.00 0.33	0.00 0.33	0.00 0.33	0.00 0.33	0.00 0.33	0.00 0.33	0.00 0.33	0.00 0.33	0.00 0.33	0.00 0.33	0.00 0.33	0.00 0.33
Disposition													
Sales to the Grid	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Generation for own use	0.30	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29
Thermal Output (trillion Btu)	6.0	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
Energy Input (trillion Btu)													
Petroleum	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
Natural Gas	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
Coal	10.2	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
Other 5/ Total	0.0 10.6	0.0 11.9	0.0 11.9	0.0 11.9	0.0 11.9	0.0 11.9	0.0 11.9	0.0 11.9	0.0 11.9	0.0 11.9	0.0 11.9	0.0 11.9	0.0 11.9
Efficiency 6/	0.675	0.696	0.696	0.696	0.696	0.696	0.696	0.696	0.696	0.696	0.696	0.696	0.696
Power-to-Heat Ratio 7/	0.191	0.159	0.159	0.159	0.159	0.159	0.159	0.159	0.159	0.159	0.159	0.159	0.159

Table 28. Glass Industry Energy Consumption

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2002-2025
Value of Shipments (billion 1996 dollars)	37.22	38.15	39.12	40.25	41.16	42.14	43.36	44.29	45.39	46.50	47.37	48.36	2.9%
Energy Consumption (trillion Btu)													
Residual Oil	2.4	2.5	2.6	2.6	2.6	2.6	2.6	2.8	2.8	2.9	2.9	2.9	2.6%
Distillate Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A
Liquefied Petroleum Gas	0.0	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	2.4	2.5	2.6	2.6	2.6	2.6	2.6	2.8	2.8	2.9	2.9	2.9	2.6%
Natural Gas	178.2	180.0	182.7	186.5	189.6	192.9	197.1	199.9	203.6	207.4	210.3	213.7	1.6%
Steam Coal	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	N/A
Purchased Electricity	55.7	56.8	57.8	59.1	60.1	61.2	62.6	63.7	65.0	66.2	67.1	68.2	2.3%
Total	247.7	250.7	254.6	259.7	263.8	268.2	273.8	277.9	282.9	288.0	291.9	296.4	1.7%
Energy Consumption per Unit of Output (thousand Btu per 1996 dollar shipments)													
Residual Oil	0.06	0.06	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	-0.2%
Distillate Oil	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A
Liquefied Petroleum Gas	0.00	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	0.06	0.06	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	-0.2%
Natural Gas	4.79	4.72	4.67	4.63	4.61	4.58	4.54	4.51	4.49	4.46	4.44	4.42	-1.2%
Steam Coal	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	-2.8%
Purchased Electricity	1.50	1.49	1.48	1.47	1.46	1.45	1.44	1.44	1.43	1.42	1.42	1.41	-0.6%
Total	6.65	6.57	6.51	6.45	6.41	6.36	6.31	6.27	6.23	6.19	6.16	6.13	-1.2%
Carbon Dioxide Emissions 2/ (million metric tons)	20.9	21.1	21.5	21.9	22.2	22.6	23.1	23.5	24.0	24.5	24.8	25.3	1.8%
Combined Heat and Power 4/ Generating Capacity (gigawatts)													
Petroleum	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	N/A
Natural Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A
Coal	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	N/A
Other 5/	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A
Total	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	N/A
Net Generation (billion kilowatthours)													
Petroleum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A
Natural Gas	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	N/A
Coal	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	N/A
Other 5/	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A
Total	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	N/A
Disposition													
Sales to the Grid	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	N/A
Generation for own use	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	N/A
Thermal Output (trillion Btu)	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	N/A
Energy Input (trillion Btu)													
Petroleum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A
Natural Gas	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	N/A
Coal	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	N/A
Other 5/	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A
Total	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	N/A
Efficiency 6/	0.696	0.696	0.696	0.696	0.696	0.696	0.696	0.696	0.696	0.696	0.696	0.696	N/A
Power-to-Heat Ratio 7/	0.159	0.159	0.159	0.159	0.159	0.159	0.159	0.159	0.159	0.159	0.159	0.159	N/A

Table 28. Glass Industry Energy Consumption

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

2/ 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 2002 are model results and may differ slightly from official EIA data reports.

Source: 2001 and 2002 nonutility and CHP summer capacity, net generation, fuel use, and thermal output: Energy Information Administration (EIA), Form EIA-860: "Annual Electric Generator Report," 2002 (preliminary). Other 2001 and 2002 data based on: EIA, Manufacturing Energy Consumption Survey 1998. Projections: EIA, AEO2004 National Energy Modeling System run aeo2004.d101703e.

Table 29. Cement Industry Energy Consumption

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Value of Shipments (billion 1996 dollars)	6.13	6.07	6.08	6.23	6.50	6.60	6.72	6.78	6.91	7.13	7.31	7.46	7.65
Energy Consumption (trillion Btu)													
Residual Oil	2.1	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Distillate Oil	1.9	1.8	2.0	1.9	2.0	2.0	2.1	2.1	2.1	2.1	2.2	2.2	2.3
Petroleum Coke	31.6	31.0	30.8	31.0	31.8	32.0	32.2	32.2	32.4	33.0	33.4	33.7	34.2
Other Petroleum 2/	21.1	20.7	20.5	20.7	21.2	21.3	21.4	21.3	21.5	21.8	22.0	22.2	22.5
Petroleum Subtotal	56.7	56.0	55.7	56.1	57.5	57.7	58.0	58.0	58.4	59.3	60.0	60.6	61.4
Natural Gas	23.3	23.4	22.6	23.2	23.8	23.9	24.1	24.1	24.3	24.8	25.1	25.3	25.6
Steam Coal	219.1	215.7	214.6	217.1	223.0	224.3	226.2	226.3	228.6	233.0	236.4	239.1	242.6
Metallurgical Coal	7.6	7.5	7.4	7.5	7.6	7.7	7.7	7.7	7.7	7.8	7.9	8.0	8.0
Coal Subtotal	226.7	223.2	222.0	224.5	230.7	232.0	233.9	234.0	236.3	240.8	244.3	247.1	250.7
Purchased Electricity	37.9	37.0	37.2	37.6	38.7	39.0	39.4	39.5	39.9	40.8	41.5	42.1	42.9
Total	344.6	339.5	337.6	341.3	350.6	352.7	355.5	355.6	358.9	365.8	370.9	375.1	380.5
Energy Consumption per Unit of Output (thousand Btu per 1996 dollar shipments)													
Residual Oil	0.34	0.40	0.40	0.39	0.37	0.37	0.36	0.36	0.35	0.34	0.33	0.32	0.32
Distillate Oil	0.32	0.29	0.33	0.31	0.31	0.31	0.31	0.31	0.30	0.30	0.30	0.30	0.30
Petroleum Coke	5.15	5.11	5.05	4.98	4.90	4.85	4.79	4.74	4.69	4.63	4.57	4.52	4.47
Other Petroleum 2/	3.45	3.42	3.38	3.33	3.27	3.22	3.18	3.15	3.10	3.06	3.02	2.98	2.94
Petroleum Subtotal	9.26	9.22	9.16	9.00	8.85	8.75	8.64	8.55	8.44	8.32	8.21	8.12	8.02
Natural Gas	3.81	3.85	3.72	3.72	3.66	3.63	3.59	3.55	3.52	3.48	3.43	3.39	3.35
Steam Coal	35.76	35.53	35.27	34.87	34.34	34.00	33.67	33.40	33.07	32.68	32.35	32.04	31.73
Metallurgical Coal	1.24	1.23	1.22	1.20	1.18	1.16	1.14	1.13	1.12	1.10	1.08	1.07	1.05
Coal Subtotal	37.00	36.76	36.49	36.07	35.51	35.16	34.81	34.53	34.18	33.78	33.43	33.11	32.78
Purchased Electricity	6.18	6.10	6.12	6.03	5.96	5.92	5.87	5.83	5.78	5.73	5.68	5.65	5.61
Total	56.25	55.93	55.48	54.83	53.99	53.45	52.91	52.47	51.93	51.31	50.76	50.27	49.76
Carbon Dioxide Emissions 3/ (million metric tons)	33.1	32.4	32.3	32.5	33.4	33.7	34.0	34.0	34.3	34.9	35.4	35.8	36.3
Combined Heat and Power 4/ Generating Capacity (gigawatts)													
Petroleum	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
Natural 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
Coal	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
Other 5/	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	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Net Generation (billion kilowatthours)													
Petroleum	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Natural Gas	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Coal	0.10	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Other 5/	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	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Disposition													
Sales to the Grid	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
Generation for Own Use	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Thermal Output (trillion Btu)	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4
Energy Input (trillion Btu)													
Petroleum	2.1	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Natural Gas	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Coal	5.0	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
Other 5/	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
Total	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4
Efficiency 6/	0.718	0.713	0.713	0.713	0.713	0.713	0.713	0.713	0.713	0.713	0.713	0.713	0.713
Power-to-Heat Ratio 7/	0.121	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123

Table 29. Cement Industry Energy Consumption

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2002-2025
Value of Shipments (billion 1996 dollars)	7.81	7.84	7.92	8.06	8.29	8.29	8.41	8.46	8.65	8.82	8.94	9.14	1.8%
Energy Consumption (trillion Btu)													
Residual Oil	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	N/A
Distillate Oil	2.3	2.3	2.3	2.3	2.4	2.3	2.4	2.4	2.4	2.4	2.5	2.5	1.5%
Petroleum Coke	34.6	34.5	34.6	34.9	35.6	35.5	35.7	35.8	36.5	37.0	37.4	38.0	0.9%
Other Petroleum 2/	22.7	22.5	22.5	22.6	23.0	22.9	23.1	23.1	23.4	23.7	23.9	24.2	0.7%
Petroleum Subtotal	62.0	61.8	61.9	62.3	63.3	63.1	63.6	63.7	64.7	65.6	66.2	67.2	0.8%
Natural Gas	25.9	25.8	26.0	26.4	27.0	27.1	27.4	27.5	28.1	28.6	28.9	29.5	1.0%
Steam Coal	245.7	245.2	245.9	248.3	252.7	251.7	253.4	253.4	257.1	260.0	261.9	265.5	0.9%
Metallurgical Coal	8.1	8.1	8.0	8.1	8.2	8.1	8.1	8.1	8.1	8.2	8.2	8.3	0.4%
Coal Subtotal	253.8	253.2	254.0	256.4	260.9	259.8	261.5	261.4	265.3	268.2	270.0	273.8	0.9%
Purchased Electricity	43.5	43.5	43.7	44.2	45.0	44.9	45.2	45.3	46.0	46.6	46.9	47.7	1.1%
Total	385.2	384.2	385.5	389.2	396.3	394.9	397.7	397.9	404.1	409.0	412.1	418.1	0.9%
Energy Consumption per Unit of Output (thousand Btu per 1996 dollar shipments)													
Residual Oil	0.31	0.31	0.31	0.30	0.29	0.29	0.29	0.29	0.28	0.27	0.27	0.26	-1.8%
Distillate Oil	0.30	0.30	0.30	0.29	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.27	-0.3%
Petroleum Coke	4.42	4.40	4.37	4.33	4.29	4.27	4.25	4.24	4.22	4.20	4.18	4.16	-0.9%
Other Petroleum 2/	2.90	2.87	2.84	2.81	2.77	2.76	2.74	2.73	2.71	2.69	2.67	2.65	-1.1%
Petroleum Subtotal	7.93	7.88	7.81	7.73	7.64	7.61	7.56	7.53	7.48	7.44	7.40	7.35	-1.0%
Natural Gas	3.31	3.29	3.28	3.27	3.26	3.27	3.26	3.25	3.24	3.24	3.24	3.23	-0.8%
Steam Coal	31.45	31.26	31.05	30.79	30.50	30.35	30.13	29.96	29.71	29.48	29.29	29.06	-0.9%
Metallurgical Coal	1.04	1.03	1.02	1.00	0.99	0.98	0.96	0.95	0.94	0.93	0.92	0.90	-1.3%
Coal Subtotal	32.48	32.29	32.06	31.80	31.49	31.32	31.10	30.92	30.65	30.41	30.21	29.97	-0.9%
Purchased Electricity	5.57	5.55	5.51	5.48	5.43	5.41	5.38	5.35	5.31	5.28	5.25	5.22	-0.7%
Total	49.30	49.00	48.66	48.27	47.82	47.60	47.29	47.06	46.69	46.37	46.09	45.76	-0.9%
Carbon Dioxide Emissions 3/ (million metric tons)	36.8	36.6	36.8	37.1	37.8	37.6	37.9	37.9	38.6	39.1	39.4	40.0	0.9%
Combined Heat and Power 4/ Generating Capacity (gigawatts)													
Petroleum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A
Natural 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	N/A
Coal	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	N/A
Other 5/	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A
Total	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	N/A
Net Generation (billion kilowatthours)													
Petroleum	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	N/A
Natural Gas	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	N/A
Coal	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	N/A
Other 5/	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A
Total	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	N/A
Disposition													
Sales to the Grid	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A
Generation for Own Use	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	N/A
Thermal Output (trillion Btu)	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	N/A
Energy Input (trillion Btu)													
Petroleum	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	N/A
Natural Gas	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	N/A
Coal	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	N/A
Other 5/	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A
Total	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	N/A
Efficiency 6/	0.713	0.713	0.713	0.713	0.713	0.713	0.713	0.713	0.713	0.713	0.713	0.713	N/A
Power-to-Heat Ratio 7/	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	N/A

Table 29. Cement 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 2002 are model results and may differ slightly from official EIA data reports.

Source: 2001 and 2002 nonutility and CHP summer capacity, net generation, fuel use, and thermal output: Energy Information Administration (EIA), Form EIA-860: "Annual Electric Generator Report," 2002 (preliminary). Other 2001 and 2002 data based on: EIA, Manufacturing Energy Consumption Survey 1998. Projections: EIA, AEO2004 National Energy Modeling System run aeo2004.d101703e.

Table 30. Iron and Steel Industries Energy Consumption

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Value of Shipments (billion 1996 dollars)	67.40	72.90	72.71	75.48	78.18	78.94	80.25	81.81	82.74	83.82	85.03	85.78	86.11
Energy Consumption (trillion Btu)													
Distillate Oil	4.6	4.8	4.6	4.8	4.9	4.9	4.9	5.0	5.0	5.0	5.0	5.0	5.0
Residual Oil	34.1	20.6	27.0	24.8	24.3	23.0	22.6	22.5	21.3	20.6	20.8	21.1	21.4
Other Petroleum 2/ Petroleum Subtotal	7.9 46.5	7.7 33.1	7.6 39.2	7.5 37.1	7.3 36.5	7.2 35.2	7.1 34.6	7.0 34.5	6.9 33.2	6.8 32.4	6.7 32.5	6.6 32.6	6.4 32.8
Natural Gas	400.9	421.1	400.6	409.2	414.8	413.3	412.9	413.0	412.9	412.6	411.4	408.4	403.9
Metallurgical Coal	695.8	681.9	665.2	650.4	636.7	623.5	610.6	597.9	585.5	573.4	561.4	549.5	537.6
Net Coke Imports	24.4	27.0	21.3	20.3	19.6	17.4	16.1	15.3	13.9	12.8	12.1	10.4	8.2
Steam Coal	63.5	65.9	64.6	63.7	62.9	62.1	61.3	60.5	59.7	59.0	58.3	57.5	56.7
Coal Subtotal	783.7	774.9	751.1	734.4	719.3	702.9	687.9	673.7	659.1	645.2	631.8	617.4	602.5
Purchased Electricity	148.8	160.7	163.9	170.8	178.7	181.2	185.5	190.5	193.3	196.7	200.8	203.6	205.3
Total	1379.9	1389.7	1354.8	1351.5	1349.3	1332.6	1321.0	1311.7	1298.4	1286.8	1276.6	1262.0	1244.5
Energy Consumption per Unit of Output (thousand Btu per 1996 dollar shipments)													
Distillate Oil	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Residual Oil	0.51	0.28	0.37	0.33	0.31	0.29	0.28	0.28	0.26	0.25	0.24	0.25	0.25
Other Petroleum 2/ Petroleum Subtotal	0.12 0.69	0.11 0.45	0.10 0.54	0.10 0.49	0.09 0.47	0.09 0.45	0.09 0.43	0.09 0.42	0.08 0.40	0.08 0.39	0.08 0.38	0.08 0.38	0.07 0.38
Natural Gas	5.95	5.78	5.51	5.42	5.31	5.24	5.15	5.05	4.99	4.92	4.84	4.76	4.69
Metallurgical Coal	10.32	9.35	9.15	8.62	8.14	7.90	7.61	7.31	7.08	6.84	6.60	6.41	6.24
Net Coke Imports	0.36	0.37	0.29	0.27	0.25	0.22	0.20	0.19	0.17	0.15	0.14	0.12	0.10
Steam Coal	0.94	0.90	0.89	0.84	0.81	0.79	0.76	0.74	0.72	0.70	0.69	0.67	0.66
Coal Subtotal	11.63	10.63	10.33	9.73	9.20	8.90	8.57	8.23	7.97	7.70	7.43	7.20	7.00
Purchased Electricity	2.21	2.20	2.25	2.26	2.29	2.29	2.31	2.33	2.34	2.35	2.36	2.37	2.38
Total	20.47	19.06	18.63	17.91	17.26	16.88	16.46	16.03	15.69	15.35	15.01	14.71	14.45
Carbon Dioxide Emissions 3/ (million metric tons)	126.1	127.0	124.8	124.1	124.6	123.5	123.0	122.6	121.5	120.7	120.0	118.9	117.5
Combined Heat and Power 4/ Generating Capacity (gigawatts)													
Petroleum	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
Natural Gas	0.16	0.16	0.16	0.17	0.18	0.18	0.19	0.20	0.21	0.22	0.22	0.23	0.24
Coal	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Other 5/ Total	0.69 1.18	0.88 1.37	0.88 1.37	0.88 1.38	0.88 1.39	0.88 1.40	0.88 1.40	0.88 1.41	0.88 1.42	0.88 1.43	0.88 1.43	0.88 1.44	0.88 1.45
Net Generation (billion kilowatthours)													
Petroleum	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
Natural Gas	0.81	0.75	0.76	0.80	0.86	0.92	0.98	1.03	1.09	1.16	1.21	1.27	1.31
Coal	1.42	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60
Other 5/ Total	3.53 5.78	4.75 7.11	4.75 7.12	4.75 7.16	4.75 7.22	4.75 7.28	4.75 7.34	4.75 7.39	4.75 7.45	4.75 7.52	4.75 7.57	4.75 7.63	4.75 7.67
Disposition													
Sales to the Grid	0.56	0.68	0.68	0.68	0.69	0.69	0.70	0.70	0.71	0.72	0.72	0.73	0.73
Generation for Own Use	5.22	6.43	6.44	6.48	6.53	6.59	6.64	6.68	6.74	6.80	6.85	6.90	6.94
Thermal Output (trillion Btu)	41.3	52.2	52.2	52.4	52.5	52.7	52.8	52.9	53.1	53.3	53.4	53.5	53.6
Energy Input (trillion Btu)													
Petroleum	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
Natural Gas	20.2	15.8	15.8	16.2	16.7	17.2	17.7	18.1	18.7	19.2	19.7	20.1	20.5

Table 30. Iron and Steel Industries Energy Consumption

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Coal	18.8	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.7
Other 5/	74.1	111.2	111.2	111.2	111.2	111.2	111.2	111.2	111.2	111.2	111.2	111.2	111.2
Total	113.3	148.8	148.9	149.3	149.8	150.3	150.8	151.2	151.8	152.3	152.8	153.2	153.6
Efficiency 6/	0.538	0.514	0.514	0.514	0.515	0.516	0.516	0.517	0.517	0.518	0.519	0.519	0.520
Power-to-Heat Ratio 7/	0.477	0.465	0.465	0.467	0.469	0.472	0.474	0.476	0.479	0.482	0.484	0.486	0.488

Table 30. Iron and Steel Industries Energy Consumption

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2002-2025
Value of Shipments (billion 1996 dollars)	86.70	87.74	88.75	89.64	91.07	91.77	93.07	94.09	95.67	97.38	99.08	101.26	1.4%
Energy Consumption (trillion Btu)													
Distillate Oil	5.0	4.9	5.0	5.0	5.0	5.0	5.0	5.0	5.1	5.1	5.2	5.3	0.5%
Residual Oil	21.3	21.4	21.0	20.4	19.6	18.9	18.7	19.0	18.5	18.1	17.8	17.6	-0.7%
Other Petroleum 2/	6.3	6.2	6.1	6.0	5.9	5.8	5.7	5.6	5.5	5.4	5.3	5.2	-1.7%
Petroleum Subtotal	32.6	32.6	32.0	31.4	30.5	29.7	29.4	29.6	29.1	28.6	28.3	28.0	-0.7%
Natural Gas	400.8	399.4	400.1	401.0	404.5	405.3	407.7	408.3	412.1	416.6	420.9	427.0	0.1%
Metallurgical Coal	525.8	514.2	502.7	491.6	480.6	470.0	459.6	449.2	439.1	429.2	419.5	410.1	-2.2%
Net Coke Imports	6.6	5.6	4.8	4.0	4.0	3.4	3.6	3.7	4.6	5.9	7.2	9.4	-4.5%
Steam Coal	55.9	55.2	54.5	53.8	53.2	52.5	52.0	51.4	50.9	50.5	50.1	49.7	-1.2%
Coal Subtotal	588.3	575.0	562.0	549.3	537.9	525.9	515.2	504.3	494.6	485.6	476.8	469.2	-2.2%
Purchased Electricity	207.6	211.2	214.4	217.4	221.7	224.1	228.2	231.8	236.7	241.9	247.0	253.5	2.0%
Total	1229.4	1218.2	1208.5	1199.1	1194.6	1185.0	1180.5	1174.0	1172.6	1172.7	1173.1	1177.7	-0.7%
Energy Consumption per Unit of Output (thousand Btu per 1996 dollar shipments)													
Distillate Oil	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	-1.0%
Residual Oil	0.25	0.24	0.24	0.23	0.22	0.21	0.20	0.20	0.19	0.19	0.18	0.17	-2.1%
Other Petroleum 2/	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.05	0.05	-3.1%
Petroleum Subtotal	0.38	0.37	0.36	0.35	0.34	0.32	0.32	0.31	0.30	0.29	0.29	0.28	-2.1%
Natural Gas	4.62	4.55	4.51	4.47	4.44	4.42	4.38	4.34	4.31	4.28	4.25	4.22	-1.4%
Metallurgical Coal	6.06	5.86	5.67	5.48	5.28	5.12	4.94	4.77	4.59	4.41	4.23	4.05	-3.6%
Net Coke Imports	0.08	0.06	0.05	0.04	0.04	0.04	0.04	0.04	0.05	0.06	0.07	0.09	-5.9%
Steam Coal	0.64	0.63	0.61	0.60	0.58	0.57	0.56	0.55	0.53	0.52	0.51	0.49	-2.6%
Coal Subtotal	6.79	6.55	6.33	6.13	5.91	5.73	5.54	5.36	5.17	4.99	4.81	4.63	-3.5%
Purchased Electricity	2.39	2.41	2.42	2.43	2.43	2.44	2.45	2.46	2.47	2.48	2.49	2.50	0.6%
Total	14.18	13.88	13.62	13.38	13.12	12.91	12.68	12.48	12.26	12.04	11.84	11.63	-2.1%
Carbon Dioxide Emissions 3/ (million metric tons)	116.3	115.5	114.9	114.2	113.9	113.3	113.1	112.9	113.3	114.0	114.4	115.3	-0.4%
Combined Heat and Power 4/ Generating Capacity (gigawatts)													
Petroleum	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	N/A
Natural Gas	0.24	0.25	0.26	0.26	0.27	0.28	0.29	0.29	0.30	0.31	0.32	0.32	3.1%
Coal	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	N/A
Other 5/	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	N/A
Total	1.45	1.46	1.47	1.47	1.48	1.49	1.50	1.50	1.51	1.52	1.53	1.53	0.5%
Net Generation (billion kilowatthours)													
Petroleum	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	N/A
Natural Gas	1.36	1.40	1.45	1.50	1.55	1.61	1.67	1.72	1.78	1.83	1.89	1.95	4.2%
Coal	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	N/A
Other 5/	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75	N/A
Total	7.72	7.76	7.81	7.86	7.91	7.97	8.03	8.08	8.14	8.19	8.25	8.31	0.7%
Disposition													
Sales to the Grid	0.74	0.74	0.75	0.75	0.76	0.76	0.77	0.77	0.78	0.78	0.79	0.80	0.7%
Generation for Own Use	6.98	7.02	7.06	7.11	7.16	7.21	7.26	7.31	7.36	7.41	7.46	7.52	0.7%
Thermal Output (trillion Btu)	53.7	53.9	54.0	54.1	54.2	54.3	54.5	54.6	54.7	54.8	55.0	55.1	0.2%
Energy Input (trillion Btu)													
Petroleum	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	N/A
Natural Gas	20.9	21.2	21.6	22.0	22.5	22.9	23.4	23.9	24.3	24.7	25.2	25.7	2.1%

Table 30. Iron and Steel Industries Energy Consumption

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2002-2025
Coal	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.7	N/A
Other 5/	111.2	111.2	111.2	111.2	111.2	111.2	111.2	111.2	111.2	111.2	111.2	111.2	N/A
Total	153.9	154.3	154.7	155.1	155.6	156.0	156.5	156.9	157.4	157.8	158.3	158.8	0.3%
Efficiency 6/	0.520	0.521	0.521	0.521	0.522	0.523	0.523	0.524	0.524	0.525	0.525	0.526	0.1%
Power-to-Heat Ratio 7/	0.490	0.492	0.494	0.496	0.498	0.500	0.503	0.505	0.507	0.510	0.512	0.515	0.4%

Table 30. Iron and Steel Industries 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 2002 are model results and may differ slightly from official EIA data reports.

Source: 2001 and 2002 nonutility and CHP summer capacity, net generation, fuel use, and thermal output: Energy Information Administration (EIA), Form EIA-860: "Annual Electric Generator Report," 2002 (preliminary). Other 2001 and 2002 data based on: EIA, Manufacturing Energy Consumption Survey 1998. Projections: EIA, AEO2004 National Energy Modeling System run aeo2004.d101703e.

Table 31. Aluminum Industry Energy Consumption

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Value of Shipments (billion 1996 dollars)	30.23	29.68	27.50	28.14	28.47	30.08	31.23	31.68	31.89	32.07	32.39	32.64	32.89	33.47	34.18
Energy Consumption (trillion Btu)															
Distillate Oil	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
Liquefied Petroleum Gas	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
Petroleum Coke	5.3	5.2	5.2	5.1	5.0	4.9	4.8	4.7	4.7	4.6	4.5	4.4	4.4	4.3	4.2
Other Petroleum	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
Petroleum Subtotal	5.8	5.7	5.5	5.5	5.4	5.3	5.2	5.2	5.1	5.0	4.9	4.9	4.8	4.7	4.7
Natural Gas	156.4	152.4	142.2	142.3	141.4	144.6	146.2	145.3	143.7	142.1	140.8	139.2	137.5	136.6	136.1
Steam Coal	32.5	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6
Purchased Electricity	218.4	215.0	208.5	206.6	204.2	203.9	202.8	200.7	198.1	195.6	193.4	191.1	188.8	186.8	185.0
Total	413.0	402.7	385.9	384.0	380.7	383.4	383.9	380.8	376.6	372.4	368.7	364.8	360.7	357.8	355.4
Energy Consumption per Unit of Output (thousand Btu per 1996 dollar shipments)															
Distillate Oil	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	0.01	0.01
Liquefied Petroleum Gas	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
Petroleum Coke	0.18	0.18	0.19	0.18	0.18	0.16	0.15	0.15	0.15	0.14	0.14	0.14	0.13	0.13	0.12
Other Petroleum	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
Petroleum Subtotal	0.19	0.19	0.20	0.19	0.19	0.18	0.17	0.16	0.16	0.16	0.15	0.15	0.15	0.14	0.14
Natural Gas	5.17	5.13	5.17	5.06	4.97	4.81	4.68	4.59	4.51	4.43	4.35	4.26	4.18	4.08	3.98
Steam Coal	1.07	1.00	1.08	1.05	1.04	0.99	0.95	0.94	0.93	0.92	0.92	0.91	0.90	0.89	0.87
Purchased Electricity	7.22	7.25	7.58	7.34	7.17	6.78	6.49	6.33	6.21	6.10	5.97	5.85	5.74	5.58	5.41
Total	13.67	13.57	14.03	13.64	13.37	12.75	12.29	12.02	11.81	11.61	11.38	11.18	10.97	10.69	10.40
Carbon Dioxide Emissions 2/ (million metric tons)	53.7	51.7	50.0	48.7	48.4	48.7	48.7	48.2	47.6	46.9	46.2	45.7	45.0	44.4	44.0
Combined Heat and Power 4/ Generating Capacity (gigawatts)															
Petroleum	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
Natural Gas	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04
Coal	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39
Other 5/ Total	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53
Net Generation (billion kilowatthours)															
Petroleum	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
Natural Gas	0.20	0.19	0.19	0.20	0.21	0.22	0.22	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.29
Coal	2.79	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56
Other 5/ Total	1.14	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72
Disposition															
Sales to the Grid	1.14	1.72	1.72	1.72	1.72	1.73	1.73	1.73	1.73	1.74	1.74	1.74	1.75	1.75	1.75
Generation for Own Use	2.99	2.75	2.75	2.76	2.76	2.77	2.78	2.78	2.79	2.80	2.80	2.81	2.81	2.82	2.82
Thermal Output (trillion Btu)	3.7	3.5	3.5	3.5	3.6	3.6	3.6	3.7	3.7	3.7	3.8	3.8	3.8	3.9	3.9
Energy Input (trillion Btu)															
Petroleum	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
Natural Gas	5.8	5.6	5.7	5.7	5.8	5.9	6.0	6.1	6.2	6.3	6.4	6.4	6.5	6.6	6.6
Coal	32.5	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6
Other 5/ Total	11.5	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4
Efficiency 6/ Power-to-Heat Ratio 7/	0.356	0.356	0.356	0.357	0.357	0.358	0.359	0.359	0.360	0.361	0.361	0.362	0.362	0.363	0.363
	3.850	4.360	4.352	4.328	4.294	4.261	4.232	4.206	4.172	4.137	4.110	4.085	4.065	4.045	4.027

Table 31. Aluminum Industry Energy Consum

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2002-2025
Value of Shipments (billion 1996 dollars)	34.82	35.47	36.03	36.29	36.57	36.88	37.27	37.72	38.19	38.73	1.2%
Energy Consumption (trillion Btu)											
Distillate Oil	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.2%
Liquefied Petroleum Gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A
Petroleum Coke	4.2	4.1	4.1	4.0	3.9	3.9	3.9	3.8	3.8	3.7	-1.5%
Other Petroleum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A
Petroleum Subtotal	4.6	4.5	4.5	4.4	4.4	4.3	4.3	4.2	4.2	4.1	-1.3%
Natural Gas	136.1	136.7	137.1	137.0	136.9	136.8	136.9	137.2	137.6	138.0	-0.4%
Steam Coal	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	N/A
Purchased Electricity	183.2	181.4	179.5	177.3	175.2	173.1	171.1	169.3	167.5	165.8	-1.1%
Total	353.5	352.2	350.8	348.4	346.1	343.9	342.0	340.4	338.8	337.6	-0.8%
Energy Consumption per Unit of Output (thousand Btu per 1996 dollar shipments)											
Distillate Oil	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	-0.9%
Liquefied Petroleum Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A
Petroleum Coke	0.12	0.12	0.11	0.11	0.11	0.11	0.10	0.10	0.10	0.10	-2.6%
Other Petroleum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A
Petroleum Subtotal	0.13	0.13	0.12	0.12	0.12	0.12	0.11	0.11	0.11	0.11	-2.5%
Natural Gas	3.91	3.85	3.81	3.78	3.74	3.71	3.67	3.64	3.60	3.56	-1.6%
Steam Coal	0.85	0.84	0.82	0.82	0.81	0.80	0.80	0.79	0.78	0.77	-1.2%
Purchased Electricity	5.26	5.11	4.98	4.89	4.79	4.69	4.59	4.49	4.38	4.28	-2.3%
Total	10.15	9.93	9.74	9.60	9.46	9.32	9.18	9.02	8.87	8.72	-1.9%
Carbon Dioxide Emissions 2/ (million metric tons)	43.6	43.3	42.9	42.5	42.1	41.8	41.6	41.5	41.2	41.0	-1.0%
Combined Heat and Power 4/ Generating Capacity (gigawatts)											
Petroleum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A
Natural Gas	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.05	3.6%
Coal	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	N/A
Other 5/	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	N/A
Total	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.97	0.97	0.97	0.1%
Net Generation (billion kilowatthours)											
Petroleum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A
Natural Gas	0.30	0.31	0.32	0.33	0.34	0.35	0.36	0.37	0.39	0.40	3.3%
Coal	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	2.56	N/A
Other 5/	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	N/A
Total	4.58	4.59	4.60	4.61	4.62	4.63	4.64	4.65	4.67	4.68	0.2%
Disposition											
Sales to the Grid	1.75	1.76	1.76	1.76	1.77	1.77	1.77	1.78	1.78	1.79	0.2%
Generation for Own Use	2.83	2.83	2.84	2.85	2.86	2.86	2.87	2.88	2.89	2.89	0.2%
Thermal Output (trillion Btu)	3.9	3.9	4.0	4.0	4.0	4.1	4.1	4.1	4.1	4.2	0.8%
Energy Input (trillion Btu)											
Petroleum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A
Natural Gas	6.7	6.8	6.9	7.0	7.1	7.2	7.3	7.4	7.5	7.6	1.3%
Coal	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	29.6	N/A
Other 5/	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	N/A
Total	53.7	53.8	53.9	54.0	54.1	54.2	54.3	54.4	54.5	54.6	0.2%
Efficiency 6/	0.364	0.364	0.365	0.365	0.366	0.367	0.367	0.368	0.368	0.369	0.2%
Power-to-Heat Ratio 7/	4.007	3.988	3.964	3.941	3.918	3.899	3.879	3.860	3.839	3.819	-0.6%

Table 31. Aluminum Industry Energy Consumption

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

2/ 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 2002 are model results and may differ slightly from official EIA data reports.

Source: 2001 and 2002 nonutility and CHP summer capacity, net generation, fuel use, and thermal output: Energy Information Administration (EIA), Form EIA-860: "Annual Electric Generator Report," 2002 (preliminary). Other 2001 and 2002 data based on: EIA, Manufacturing Energy Consumption Survey 1998. Projections: EIA, AEO2004 National Energy Modeling System run aeo2004.d101703e.

Table 32. Other Industrial Sector Energy Consumption

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Agriculture													
Distillate Oil	469.3	483.2	478.5	482.0	484.9	489.8	493.2	497.5	502.1	507.3	513.0	519.0	525.7
Liquefied Petroleum Gas	109.6	112.5	111.3	112.1	112.8	114.1	114.9	115.8	116.9	118.1	119.4	120.8	122.4
Motor Gasoline	93.9	96.4	95.4	96.1	96.8	97.8	98.5	99.3	100.3	101.3	102.4	103.6	105.0
Other Petroleum	21.7	22.3	22.1	22.2	22.4	22.6	22.8	23.0	23.2	23.4	23.7	24.0	24.3
Petroleum Subtotal	694.6	714.5	707.3	712.4	716.9	724.3	729.4	735.7	742.5	750.2	758.5	767.4	777.3
Natural Gas	226.2	233.3	231.2	232.9	234.3	236.6	238.3	240.5	242.8	245.4	248.2	251.1	254.4
Steam 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
Renewables	25.5	26.6	26.5	26.8	27.1	27.4	27.7	28.1	28.5	28.9	29.4	29.8	30.4
Purchased Electricity	172.9	177.4	175.5	176.9	178.1	180.2	181.5	183.1	184.9	186.8	189.0	191.3	193.8
Total	1119.3	1151.8	1140.5	1148.9	1156.4	1168.5	1177.0	1187.4	1198.6	1211.3	1225.0	1239.6	1256.0
Value of Shipments (billion 1996 dollars)	281.99	290.21	287.39	290.51	293.44	297.84	300.95	304.55	308.40	312.65	317.23	322.09	327.43
Energy Consumption per Unit of Output (thousand Btu per 1996 dollar shipments)	3.97	3.97	3.97	3.95	3.94	3.92	3.91	3.90	3.89	3.87	3.86	3.85	3.84
Carbon Dioxide Emissions 1/ (million metric tons)	94.4	96.3	95.4	95.3	96.1	97.3	98.1	98.9	99.8	100.7	101.7	102.8	104.0
Construction													
Distillate Oil	229.7	205.9	196.6	202.1	215.1	219.6	223.3	229.0	236.1	242.5	247.8	251.9	259.6
Motor Gasoline	68.3	61.3	58.5	60.2	64.0	65.4	66.5	68.2	70.3	72.3	73.8	75.1	77.4
Asphalt and Road Oil	1246.6	1117.5	1067.4	1097.3	1167.6	1192.2	1212.4	1243.4	1282.0	1316.8	1345.7	1368.0	1409.5
Petroleum Subtotal	1544.6	1384.7	1322.6	1359.6	1446.7	1477.2	1502.3	1540.6	1588.4	1631.6	1667.4	1695.0	1746.5
Natural Gas	258.7	232.0	221.6	227.8	242.3	247.4	251.6	258.0	266.0	273.2	279.2	283.8	292.4
Purchased Electricity	106.2	95.2	91.0	93.6	99.6	101.8	103.6	106.3	109.6	112.7	115.2	117.2	120.8
Total	1909.5	1711.9	1635.1	1680.9	1788.7	1826.4	1857.5	1904.9	1964.1	2017.5	2061.8	2096.1	2159.8
Value of Shipments (billion 1996 dollars)	887.26	797.01	762.71	785.10	836.33	856.58	874.55	902.05	935.90	966.77	992.88	1013.74	1050.36
Energy Consumption per Unit of Output (thousand Btu per 1996 dollar shipments)	2.15	2.15	2.14	2.14	2.14	2.13	2.12	2.11	2.10	2.09	2.08	2.07	2.06
Carbon Dioxide Emissions 1/ (million metric tons)	55.6	49.4	47.3	48.2	51.3	52.5	53.5	54.9	56.5	58.0	59.2	60.1	61.9
Mining													
Residual Oil	52.5	50.5	49.8	50.5	51.5	52.0	52.8	53.1	53.2	53.4	53.6	53.8	54.0
Distillate Oil	198.3	186.6	181.6	185.8	191.0	194.4	197.1	198.9	200.7	202.2	204.0	205.7	207.5
Motor Gasoline	21.4	20.7	20.5	20.8	21.2	21.4	21.7	21.8	21.8	21.9	21.9	22.0	22.1
Other Petroleum	8.5	8.4	8.4	8.5	8.6	8.6	8.7	8.8	8.7	8.7	8.7	8.7	8.7
Petroleum Subtotal	280.8	266.2	260.4	265.6	272.2	276.4	280.2	282.7	284.4	286.1	288.2	290.2	292.2
Natural Gas	741.3	741.9	735.1	746.5	762.5	770.8	780.9	788.0	790.6	794.4	799.6	804.9	809.5
Lease and Plant Fuel	1118.17	1352.98	1027.37	1018.10	1083.57	1144.41	1210.57	1276.67	1332.69	1400.16	1419.43	1439.09	1453.44
Steam Coal	141.2	131.3	126.9	131.1	136.7	140.1	141.9	144.0	146.1	148.1	150.6	152.9	155.3
Renewables	1.1	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Purchased Electricity	215.0	205.6	201.6	205.7	211.2	214.3	217.3	219.3	220.6	222.0	223.7	225.4	227.2
Total	2497.6	2699.0	2352.5	2368.1	2467.2	2547.1	2632.0	2711.7	2775.5	2851.9	2882.6	2913.6	2938.7
Value of Shipments (billion 1996 dollars)	139.65	134.32	132.54	134.98	138.14	140.19	142.76	144.33	145.14	146.04	147.13	148.25	149.30
Energy Consumption per Unit of Output (thousand Btu per 1996 dollar shipments)	17.88	20.09	17.75	17.54	17.86	18.17	18.44	18.79	19.12	19.53	19.59	19.65	19.68
Carbon Dioxide Emissions 1/ (million metric tons)	114.3	109.7	107.8	109.1	112.1	114.0	115.7	116.7	117.3	118.0	118.8	119.6	120.4
Metal-Based Durables Consumption													

Table 32. Other Industrial Sector Energy Consumption

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Residual Oil	5.3	4.5	5.1	5.1	5.1	5.1	5.3	5.4	5.4	5.4	5.6	5.9	6.1
Distillate Oil	25.7	21.6	25.9	24.9	25.8	26.6	27.8	28.9	29.1	29.7	31.1	32.9	34.6
Liquefied Petroleum Gas	13.9	13.5	14.3	13.4	14.5	14.7	15.1	15.6	15.7	16.0	16.5	17.2	18.0
Petroleum Subtotal	44.9	39.6	45.3	43.3	45.4	46.4	48.1	49.8	50.1	51.1	53.3	56.0	58.7
Natural Gas	641.1	642.3	605.3	646.4	672.1	695.1	716.0	731.1	752.5	774.0	793.0	811.2	829.9
Steam Coal	55.9	55.8	55.6	55.8	55.8	55.9	55.9	56.0	56.0	56.1	56.1	56.2	56.2
Renewables	44.3	44.3	44.4	47.0	49.1	51.2	53.3	55.1	57.1	59.2	61.4	63.7	66.1
Purchased Electricity	661.2	648.9	647.0	673.1	697.3	721.8	746.6	766.5	788.0	811.9	837.3	863.6	890.6
Total	1447.4	1430.9	1397.7	1465.6	1519.6	1570.5	1620.0	1658.6	1703.7	1752.2	1801.2	1850.7	1901.5
Value of Shipments (billion 1996 dollars)	1791.04	1780.55	1781.08	1887.25	1972.86	2057.19	2141.31	2213.33	2292.26	2376.32	2464.58	2554.61	2650.15
Energy Consumption per Unit of Output (thousand Btu per 1996 dollar shipments)	0.81	0.80	0.78	0.78	0.77	0.76	0.76	0.75	0.74	0.74	0.73	0.72	0.72
Carbon Dioxide Emissions 1/ (million metric tons)	169.6	164.3	162.6	166.7	173.2	179.7	186.2	190.6	195.4	200.5	205.8	211.5	216.9
Other Manufacturing Consumption													
Residual Oil	49.7	33.3	40.5	39.8	39.6	39.2	39.8	40.6	39.9	39.8	41.2	42.9	44.5
Distillate Oil	59.1	47.4	57.6	53.9	55.0	55.5	56.7	58.0	57.5	57.9	59.8	62.0	64.3
Liquefied Petroleum Gas	29.7	30.0	35.1	29.6	31.9	31.4	31.8	32.6	31.8	31.7	32.6	34.1	35.5
Petroleum Subtotal	138.5	110.6	133.2	123.3	126.6	126.1	128.3	131.2	129.2	129.4	133.6	139.0	144.3
Natural Gas	1200.1	1202.1	1149.1	1205.3	1239.8	1264.9	1284.1	1298.3	1321.2	1345.8	1364.3	1379.6	1395.5
Steam Coal	229.1	224.9	224.3	225.2	225.9	226.1	226.3	226.3	226.4	226.6	226.9	227.1	227.5
Renewables	280.6	276.8	275.4	283.9	293.0	299.9	306.7	312.6	318.8	326.1	333.5	340.5	347.9
Purchased Electricity	861.4	839.7	842.6	858.1	878.3	893.9	909.1	921.6	933.1	948.8	965.6	981.5	998.3
Total	2709.6	2654.0	2624.6	2695.8	2763.6	2811.0	2854.4	2890.1	2928.6	2976.6	3023.9	3067.8	3113.4
Value of Shipments (billion 1996 dollars)	1182.88	1163.00	1159.21	1195.34	1233.72	1261.74	1288.10	1311.57	1335.77	1364.21	1393.20	1420.55	1449.63
Energy Consumption per Unit of Output (thousand Btu per 1996 dollar shipments)	2.29	2.28	2.26	2.26	2.24	2.23	2.22	2.20	2.19	2.18	2.17	2.16	2.15
Carbon Dioxide Emissions 1/ (million metric tons)	260.7	250.8	250.4	251.9	258.4	263.5	268.3	271.3	274.1	277.7	281.4	285.2	288.8
Agriculture, Mining, Construction, Metals Based Durables, and Other Manufacturing:													
Combined Heat and Power 2/ Generating Capacity (gigawatts)													
Petroleum	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Natural Gas	0.36	0.36	0.38	0.44	0.52	0.60	0.68	0.76	0.86	0.96	1.06	1.16	1.24
Coal	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
Other 3/	0.39	0.40	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
Total	1.38	1.40	1.44	1.50	1.57	1.65	1.73	1.81	1.92	2.02	2.12	2.21	2.30
Net Generation (billion kilowatthours)													
Petroleum	0.23	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Natural Gas	1.17	0.96	1.14	1.57	2.10	2.67	3.23	3.82	4.55	5.29	5.98	6.67	7.27
Coal	1.97	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72
Other 3/	2.04	1.97	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05
Total	5.41	4.83	5.10	5.52	6.05	6.62	7.18	7.77	8.50	9.24	9.93	10.62	11.22
Disposition													
Sales to the Grid	1.57	1.41	1.54	1.76	2.02	2.31	2.59	2.88	3.25	3.62	3.96	4.31	4.61
Generation for Own Use	3.84	3.42	3.55	3.77	4.03	4.31	4.59	4.89	5.25	5.62	5.97	6.31	6.61

Table 32. Other Industrial Sector Energy Consumption

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Thermal Output (trillion Btu)	53.3	50.7	52.1	53.7	55.8	57.9	60.0	62.2	64.9	67.5	69.9	72.3	74.3
Energy Input (trillion Btu)													
Petroleum	4.8	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Natural Gas	19.2	16.7	18.5	22.8	28.1	33.8	39.3	45.1	52.3	59.5	66.1	72.7	78.4
Coal	51.7	49.3	49.3	49.3	49.3	49.3	49.3	49.3	49.3	49.3	49.3	49.3	49.3
Other 3/	59.9	49.4	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3
Total	135.7	119.2	123.0	127.4	132.7	138.3	143.9	149.7	156.9	164.1	170.7	177.3	182.9
Efficiency 4/	0.529	0.563	0.564	0.570	0.576	0.582	0.588	0.593	0.599	0.604	0.608	0.612	0.616
Power-to-Heat Ratio 5/	0.347	0.325	0.334	0.351	0.370	0.390	0.408	0.426	0.447	0.467	0.485	0.501	0.515

Table 32. Other Industrial Sector Energy Consumption

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2002-2025
Agriculture													
Distillate Oil	531.5	535.8	539.6	544.1	549.0	554.7	559.5	565.4	571.0	576.6	583.9	590.6	0.9%
Liquefied Petroleum Gas	123.7	124.7	125.6	126.7	127.9	129.3	130.5	131.9	133.3	134.7	136.4	138.1	0.9%
Motor Gasoline	106.1	107.0	107.7	108.6	109.6	110.8	111.8	113.1	114.3	115.5	117.0	118.4	0.9%
Other Petroleum	24.5	24.8	24.9	25.1	25.4	25.6	25.9	26.2	26.4	26.7	27.1	27.4	0.9%
Petroleum Subtotal	785.9	792.3	797.8	804.5	811.8	820.4	827.7	836.5	845.0	853.4	864.4	874.5	0.9%
Natural Gas	257.2	259.4	261.2	263.4	265.7	268.5	270.8	273.7	276.4	279.0	282.6	285.8	0.9%
Steam 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	N/A
Renewables	30.8	31.2	31.5	31.9	32.2	32.6	33.0	33.4	33.8	34.2	34.7	35.2	1.2%
Purchased Electricity	196.0	197.8	199.2	200.9	202.7	204.8	206.6	208.8	210.9	213.0	215.6	218.2	0.9%
Total	1270.0	1280.7	1289.6	1300.6	1312.4	1326.3	1338.1	1352.3	1366.0	1379.7	1397.3	1413.7	0.9%
Value of Shipments (billion 1996 dollars)	332.15	335.96	339.25	343.06	347.21	351.80	355.93	360.64	365.27	369.97	375.69	381.19	1.2%
Energy Consumption per Unit of Output (thousand Btu per 1996 dollar shipments)	3.82	3.81	3.80	3.79	3.78	3.77	3.76	3.75	3.74	3.73	3.72	3.71	-0.3%
Carbon Dioxide Emissions 1/ (million metric tons)	105.0	105.8	106.5	107.4	108.3	109.4	110.4	111.7	113.0	114.4	115.9	117.4	0.9%
Construction													
Distillate Oil	265.4	268.9	272.1	275.8	281.8	283.3	288.8	291.9	298.0	304.0	307.9	312.7	1.8%
Motor Gasoline	79.1	80.2	81.1	82.1	83.9	84.3	86.0	86.9	88.7	90.5	91.6	93.1	1.8%
Asphalt and Road Oil	1441.1	1460.6	1477.1	1496.8	1529.3	1537.4	1567.0	1583.6	1616.2	1648.4	1669.2	1695.0	1.8%
Petroleum Subtotal	1785.6	1809.7	1830.2	1854.6	1895.0	1905.0	1941.8	1962.4	2002.8	2042.9	2068.7	2100.8	1.8%
Natural Gas	298.9	302.9	306.5	310.7	317.4	319.1	325.3	328.8	335.7	342.4	346.8	352.2	1.8%
Purchased Electricity	123.6	125.3	126.8	128.5	131.2	131.8	134.3	135.7	138.4	141.1	142.8	145.0	1.8%
Total	2208.2	2238.0	2263.5	2293.8	2343.7	2355.9	2401.4	2426.9	2476.9	2526.4	2558.4	2598.0	1.8%
Value of Shipments (billion 1996 dollars)	1078.91	1097.35	1113.30	1131.35	1159.60	1167.52	1193.52	1208.71	1237.19	1265.36	1284.03	1306.87	2.2%
Energy Consumption per Unit of Output (thousand Btu per 1996 dollar shipments)	2.05	2.04	2.03	2.03	2.02	2.02	2.01	2.01	2.00	2.00	1.99	1.99	-0.3%
Carbon Dioxide Emissions 1/ (million metric tons)	63.2	64.0	64.7	65.6	66.9	67.3	68.6	69.4	70.9	72.5	73.5	74.7	1.8%
Mining													
Residual Oil	54.1	54.4	54.3	54.7	55.7	56.4	56.6	56.5	56.4	57.0	57.7	58.0	0.6%
Distillate Oil	209.4	211.6	213.4	216.1	219.8	222.8	225.1	227.0	229.5	233.3	236.6	239.5	1.1%
Motor Gasoline	22.1	22.2	22.1	22.2	22.7	23.0	23.0	22.9	22.8	23.1	23.3	23.4	0.5%
Other Petroleum	8.7	8.7	8.6	8.6	8.8	8.9	8.9	8.7	8.6	8.7	8.8	8.7	0.2%
Petroleum Subtotal	294.3	296.8	298.4	301.6	307.0	311.1	313.6	315.1	317.4	322.0	326.4	329.7	0.9%
Natural Gas	813.8	819.4	821.0	827.8	844.0	854.4	858.1	857.0	856.8	864.9	875.2	880.5	0.7%
Lease and Plant Fuel	1464.04	1478.11	1480.90	1505.05	1569.44	1629.85	1648.52	1641.81	1638.44	1654.18	1681.31	1691.50	1.0%
Steam Coal	158.1	160.6	163.1	166.1	169.1	171.5	174.0	176.2	178.9	181.8	184.5	187.5	1.6%
Renewables	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.2%
Purchased Electricity	229.0	231.0	232.1	234.4	238.7	241.6	243.2	243.8	244.8	247.8	250.9	253.0	0.9%
Total	2960.2	2987.1	2996.7	3036.0	3129.4	3209.6	3238.4	3235.0	3237.5	3271.8	3319.4	3343.2	0.9%
Value of Shipments (billion 1996 dollars)	150.26	151.62	152.00	153.42	156.85	159.21	160.15	160.26	160.72	162.98	165.39	166.64	0.9%
Energy Consumption per Unit of Output (thousand Btu per 1996 dollar shipments)	19.70	19.70	19.72	19.79	19.95	20.16	20.22	20.19	20.14	20.07	20.07	20.06	0.0%
Carbon Dioxide Emissions 1/ (million metric tons)	121.2	122.2	122.8	124.0	126.2	127.9	128.8	129.2	130.1	132.0	133.7	135.1	0.9%
Metal-Based Durables Consumption													

Table 32. Other Industrial Sector Energy Consumption

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2002-2025
Residual Oil	6.3	6.5	6.7	6.8	6.9	7.0	7.2	7.5	7.6	7.8	8.0	8.2	2.6%
Distillate Oil	36.2	38.0	38.9	39.9	40.4	41.2	42.6	44.9	45.9	47.2	49.0	50.8	3.8%
Liquefied Petroleum Gas	18.6	19.3	19.8	20.4	20.9	21.3	21.9	22.8	23.4	23.9	24.7	25.5	2.8%
Petroleum Subtotal	61.1	63.8	65.4	67.1	68.3	69.6	71.8	75.2	76.9	79.0	81.6	84.5	3.3%
Natural Gas	850.3	872.2	900.6	933.2	965.9	992.8	1020.9	1044.7	1079.5	1115.3	1151.7	1192.9	2.7%
Steam Coal	56.3	56.4	56.5	56.6	56.6	56.7	56.8	56.8	56.9	57.0	57.1	57.2	0.1%
Renewables	68.6	71.3	74.3	77.5	80.6	83.2	86.2	89.1	92.6	96.2	99.9	104.1	3.8%
Purchased Electricity	917.9	947.1	979.1	1014.5	1048.0	1076.1	1107.6	1138.5	1175.6	1214.0	1253.9	1298.6	3.1%
Total	1954.2	2010.8	2075.7	2148.9	2219.5	2278.4	2343.2	2404.4	2481.5	2561.4	2644.3	2737.3	2.9%
Value of Shipments (billion 1996 dollars)	2750.84	2857.72	2974.32	3102.70	3225.46	3329.91	3446.48	3561.06	3697.87	3838.87	3987.53	4153.34	3.8%
Energy Consumption per Unit of Output (thousand Btu per 1996 dollar shipments)	0.71	0.70	0.70	0.69	0.69	0.68	0.68	0.68	0.67	0.67	0.66	0.66	-0.9%
Carbon Dioxide Emissions 1/ (million metric tons)	222.5	228.7	236.1	244.3	251.6	258.4	265.9	273.6	283.5	294.2	304.0	315.4	2.9%
Other Manufacturing Consumption													
Residual Oil	45.7	47.2	47.8	48.4	48.7	49.0	49.9	51.6	51.8	52.2	53.0	53.9	2.1%
Distillate Oil	66.1	68.0	68.6	69.3	69.3	69.6	70.9	73.4	74.0	74.8	76.2	77.7	2.2%
Liquefied Petroleum Gas	36.6	37.6	37.8	38.4	39.2	39.4	40.2	41.7	41.7	42.0	42.9	43.7	1.7%
Petroleum Subtotal	148.3	152.8	154.1	156.2	157.2	158.0	161.0	166.7	167.5	169.0	172.1	175.3	2.0%
Natural Gas	1413.1	1432.3	1462.6	1499.2	1539.2	1571.3	1604.5	1626.7	1662.6	1701.2	1740.0	1786.6	1.7%
Steam Coal	227.8	228.2	228.7	229.4	230.2	230.6	231.1	231.4	232.0	232.7	233.4	234.4	0.2%
Renewables	355.3	363.3	372.2	382.3	392.5	400.7	409.9	417.3	426.5	436.6	446.9	459.2	2.2%
Purchased Electricity	1014.0	1031.0	1049.7	1071.1	1092.1	1108.1	1126.4	1141.2	1159.2	1179.3	1199.5	1224.2	1.7%
Total	3158.5	3207.6	3267.4	3338.2	3411.2	3468.7	3532.9	3583.4	3647.8	3718.8	3791.9	3879.6	1.7%
Value of Shipments (billion 1996 dollars)	1478.62	1509.38	1544.08	1582.93	1622.35	1653.36	1688.16	1715.79	1750.03	1787.46	1826.21	1872.52	2.1%
Energy Consumption per Unit of Output (thousand Btu per 1996 dollar shipments)	2.14	2.13	2.12	2.11	2.10	2.10	2.09	2.09	2.08	2.08	2.08	2.07	-0.4%
Carbon Dioxide Emissions 1/ (million metric tons)	292.2	296.1	301.2	307.1	312.6	317.4	322.9	327.7	334.2	341.6	348.0	356.0	1.5%
Agriculture, Mining, Construction, Metals Based Durables, and Other Manufacturing:													
Combined Heat and Power 2/													
Generating Capacity (gigawatts)													
Petroleum	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	N/A
Natural Gas	1.33	1.42	1.53	1.65	1.79	1.94	2.11	2.27	2.45	2.63	2.83	3.06	9.8%
Coal	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	N/A
Other 3/	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.2%
Total	2.39	2.48	2.59	2.71	2.85	3.00	3.17	3.33	3.50	3.68	3.89	4.12	4.8%
Net Generation (billion kilowatthours)													
Petroleum	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	N/A
Natural Gas	7.90	8.56	9.34	10.18	11.18	12.26	13.45	14.59	15.82	17.10	18.55	20.15	14.1%
Coal	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	N/A
Other 3/	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05	0.2%
Total	11.85	12.51	13.29	14.13	15.13	16.21	17.40	18.54	19.77	21.05	22.51	24.11	7.2%
Disposition													
Sales to the Grid	4.92	5.25	5.64	6.06	6.56	7.10	7.70	8.27	8.88	9.51	10.24	11.04	9.4%
Generation for Own Use	6.93	7.26	7.65	8.07	8.57	9.11	9.71	10.28	10.89	11.53	12.26	13.06	6.0%

Table 32. Other Industrial Sector Energy Consumption

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2002-2025
Thermal Output (trillion Btu)	76.4	78.6	81.1	83.8	86.9	90.1	93.7	97.0	100.4	104.0	107.9	112.1	3.5%
Energy Input (trillion Btu)													
Petroleum	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	N/A
Natural Gas	84.3	90.4	97.7	105.3	114.4	124.1	134.8	144.9	155.6	166.7	179.2	192.8	11.2%
Coal	49.3	49.3	49.3	49.3	49.3	49.3	49.3	49.3	49.3	49.3	49.3	49.3	N/A
Other 3/	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3	0.2%
Total	188.8	195.0	202.2	209.9	219.0	228.7	239.3	249.4	260.1	271.2	283.7	297.3	4.1%
Efficiency 4/	0.619	0.622	0.626	0.629	0.633	0.636	0.639	0.642	0.645	0.648	0.651	0.654	0.6%
Power-to-Heat Ratio 5/	0.529	0.543	0.559	0.575	0.594	0.614	0.634	0.652	0.671	0.691	0.712	0.734	3.6%

Table 32. Other Industrial Sector Energy Consumption

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

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

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

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

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

Btu = British thermal unit.

Note: Totals may not equal sum of components due to independent rounding. Data for 2002 are model results and may differ slightly from official EIA data reports.

Source: 2001 and 2002 nonutility and CHP summer capacity, net generation, fuel use, and thermal output: Energy Information Administration (EIA), Form EIA-860: "Annual Electric Generator Report," 2002 (preliminary). Other 2001 and 2002 data based on: EIA, Manufacturing Energy Consumption Survey 1998. Projections: EIA, AEO2004 National Energy Modeling System run aeo2004.d101703e.