

Table 29. Cement Industry Energy Consumption

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Value of Shipments (billion 1996 dollars)	6.74	6.98	7.42	7.85	8.06	8.27	8.53	8.60	8.64	8.79	8.83	8.89	9.00
Energy Consumption (trillion Btu)													
Residual Oil	2.4	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Distillate Oil	1.9	2.0	2.0	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.2
Petroleum Coke	33.5	34.1	35.5	36.9	37.4	37.8	38.6	38.5	38.4	38.7	38.6	38.5	38.7
Other Petroleum 2/ Petroleum Subtotal	22.8 60.6	23.1 61.4	24.1 63.8	25.0 66.2	25.3 67.0	25.6 67.9	26.1 69.0	26.1 69.0	26.0 68.8	26.2 69.2	26.1 69.0	26.1 68.9	26.1 69.1
Natural Gas	24.9	24.8	25.9	26.7	27.1	27.5	28.2	28.2	28.2	28.4	28.4	28.3	28.4
Steam Coal	231.7	237.1	247.6	257.7	261.6	265.5	271.1	271.4	271.1	273.5	273.3	273.3	274.8
Metallurgical Coal Coal Subtotal	7.9 239.6	8.0 245.1	8.3 255.9	8.7 266.3	8.8 270.4	8.9 274.5	9.1 280.2	9.1 280.5	9.1 280.2	9.2 282.7	9.1 282.4	9.1 282.4	9.2 284.0
Purchased Electricity	40.2	41.5	43.6	45.6	46.4	47.1	48.2	48.2	48.1	48.7	48.6	48.6	49.0
Total	365.4	372.9	389.1	404.9	411.0	417.0	425.6	425.9	425.3	429.0	428.4	428.2	430.4
Energy Consumption per Unit of Output (thousand Btu per 1996 dollar shipments)													
Residual Oil	0.36	0.31	0.29	0.27	0.26	0.26	0.25	0.25	0.25	0.24	0.24	0.24	0.24
Distillate Oil	0.28	0.29	0.27	0.28	0.28	0.27	0.26	0.26	0.25	0.24	0.24	0.24	0.24
Petroleum Coke	4.97	4.89	4.79	4.70	4.63	4.58	4.52	4.48	4.45	4.40	4.37	4.34	4.30
Other Petroleum 2/ Petroleum Subtotal	3.38 8.99	3.32 8.81	3.25 8.60	3.18 8.43	3.14 8.32	3.10 8.21	3.06 8.09	3.04 8.02	3.01 7.96	2.98 7.87	2.96 7.81	2.93 7.75	2.90 7.68
Natural Gas	3.70	3.56	3.49	3.41	3.37	3.33	3.30	3.28	3.26	3.23	3.21	3.18	3.15
Steam Coal	34.36	33.99	33.39	32.82	32.45	32.12	31.77	31.56	31.37	31.12	30.94	30.75	30.53
Metallurgical Coal Coal Subtotal	1.17 35.54	1.15 35.14	1.12 34.51	1.10 33.92	1.09 33.55	1.08 33.20	1.07 32.84	1.06 32.62	1.05 32.42	1.04 32.16	1.04 31.97	1.03 31.78	1.02 31.55
Purchased Electricity	5.96	5.94	5.87	5.81	5.76	5.70	5.64	5.60	5.57	5.54	5.51	5.47	5.44
Total	54.19	53.45	52.47	51.57	50.99	50.45	49.88	49.52	49.20	48.80	48.50	48.18	47.83
Carbon Dioxide Emissions 3/ (million metric tons)	35.1	35.9	37.5	39.0	39.6	40.2	41.0	41.0	40.9	41.3	41.2	41.1	41.3
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/ Total	0.00 0.04												
Net Generation (billion kilowatthours)													
Petroleum	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Natural Gas	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Coal	0.09	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Other 5/ Total	0.00 0.20	0.00 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	0.20	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	2.4	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Natural Gas	1.4	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Coal	4.8	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
Other 5/ Total	0.0 8.6	0.0 8.5											
Efficiency 6/	0.708	0.716	0.716	0.716	0.716	0.716	0.716	0.716	0.716	0.716	0.716	0.716	0.716
Power-to-Heat Ratio 7/	0.125	0.118	0.118	0.118	0.118	0.118	0.118	0.118	0.118	0.118	0.118	0.118	0.118

Table 29. Cement Industry Energy Consumption

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2003-2025
Value of Shipments (billion 1996 dollars)	9.03	9.15	9.27	9.38	9.46	9.54	9.63	9.72	9.82	9.93	10.03	1.7%
Energy Consumption (trillion Btu)												
Residual Oil	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	N/A
Distillate Oil	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	0.6%
Petroleum Coke	38.6	38.8	39.0	39.3	39.5	39.7	40.0	40.1	40.4	40.6	40.9	0.8%
Other Petroleum 2/ Petroleum Subtotal	26.0 68.9	26.1 69.2	26.3 69.6	26.5 70.1	26.6 70.5	26.7 70.8	26.9 71.2	27.0 71.5	27.2 72.0	27.3 72.4	27.5 72.8	0.8%
Natural Gas	28.3	28.6	28.9	29.2	29.3	29.5	29.7	29.9	30.1	30.3	30.5	0.9%
Steam Coal	274.3	275.8	277.5	279.0	279.6	280.4	281.5	282.3	283.5	284.9	286.5	0.9%
Metallurgical Coal Coal Subtotal	9.1 283.5	9.2 284.9	9.2 286.7	9.2 288.2	9.2 288.9	9.2 289.6	9.3 290.7	9.3 291.6	9.3 292.8	9.3 294.2	9.3 295.9	0.9%
Purchased Electricity	48.9	49.2	49.5	49.8	49.9	50.1	50.4	50.6	50.9	51.3	51.7	1.0%
Total	429.6	431.9	434.7	437.3	438.5	440.1	442.0	443.5	445.8	448.2	450.8	0.9%
Energy Consumption per Unit of Output (thousand Btu per 1996 dollar shipments)												
Residual Oil	0.24	0.23	0.23	0.23	0.23	0.22	0.22	0.22	0.22	0.22	0.21	-1.6%
Distillate Oil	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.23	0.23	-1.0%
Petroleum Coke	4.27	4.24	4.21	4.19	4.18	4.16	4.15	4.13	4.11	4.09	4.07	-0.8%
Other Petroleum 2/ Petroleum Subtotal	2.88 7.63	2.85 7.57	2.84 7.52	2.82 7.48	2.81 7.45	2.80 7.42	2.79 7.39	2.78 7.36	2.77 7.33	2.75 7.29	2.74 7.26	-0.9%
Natural Gas	3.14	3.13	3.12	3.11	3.10	3.09	3.08	3.07	3.06	3.05	3.04	-0.7%
Steam Coal	30.36	30.16	29.95	29.75	29.57	29.40	29.22	29.05	28.87	28.69	28.56	-0.8%
Metallurgical Coal Coal Subtotal	1.01 31.37	1.00 31.16	0.99 30.94	0.98 30.73	0.98 30.55	0.97 30.36	0.96 30.18	0.95 30.00	0.95 29.81	0.94 29.63	0.93 29.49	-0.8%
Purchased Electricity	5.41	5.37	5.34	5.31	5.28	5.25	5.23	5.20	5.18	5.16	5.15	-0.6%
Total	47.55	47.23	46.92	46.62	46.37	46.13	45.88	45.64	45.39	45.14	44.94	-0.8%
Carbon Dioxide Emissions 3/ (million metric tons)	41.2	41.4	41.6	41.9	42.0	42.1	42.3	42.5	42.8	43.0	43.3	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	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	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	N/A
Other 5/ Total	0.00 0.04	N/A										
Net Generation (billion kilowatthours)												
Petroleum	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	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	N/A
Coal	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	N/A
Other 5/ Total	0.00 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	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	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	N/A
Energy Input (trillion Btu)												
Petroleum	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	N/A
Natural Gas	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	N/A
Coal	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	N/A
Other 5/ Total	0.0 8.5	N/A										
Efficiency 6/	0.716	0.716	0.716	0.716	0.716	0.716	0.716	0.716	0.716	0.716	0.716	N/A
Power-to-Heat Ratio 7/	0.118	0.118	0.118	0.118	0.118	0.118	0.118	0.118	0.118	0.118	0.118	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 2003 are model results and may differ slightly from official EIA data reports.

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