

Appendix E

Carbon Dioxide Emission Factors for Coal

The need for accurate estimates of carbon dioxide emissions produced during the combustion of coal has led the Energy Information Administration (EIA) to develop basic emission factors. Basic emission factors reflect the carbon-to-heat-content ratio of coal, a ratio that measures carbon dioxide emissions per unit of energy (pounds per million Btu), assuming complete combustion. These basic factors are derived from 5,426 sample analyses maintained in EIA's Coal Analysis File. Variations in the carbon-to-heat-content of different coals were observed to follow coal rank and geographic

origin, leading EIA to develop basic emission factors specific to the rank and the State of origin of the coal.

On the basis of these rank- and State-specific basic emission factors for coal, EIA has also developed emission factors by sector. These sectoral emission factors weight the coal consumed in a given sector by its rank and State of origin. Tables E1 through E5 present the U.S. average carbon dioxide emission factors for coal by sector for 1980 through 1999. Factors for 2000 are not yet available.

Table E1. Average Carbon Dioxide Emission Factors for Coal Consumed by the Residential and Commercial Sector, Selected Years, 1980-1999
(Pounds of Carbon Dioxide per Million Btu)

State	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Alabama	205.4	205.4	205.4	205.9	205.9	205.7	206.0	205.6	205.5	205.7	205.7	205.7	205.5	205.3	205.5	205.5
Alaska	—	214.0	214.0	214.0	214.0	214.0	214.0	214.0	214.0	214.0	214.0	214.0	214.0	214.0	214.0	214.0
Arizona	—	209.7	209.9	212.1	210.8	206.2	208.3	218.3	208.6	212.0	227.4	212.7	206.9	206.8	210.2	212.7
Arkansas	205.3	205.4	227.4	201.3	203.8	205.4	205.9	205.9	222.3	209.9	207.2	—	—	227.4	—	227.4
California	204.5	204.1	209.7	203.7	204.2	203.6	204.1	204.2	204.1	204.1	204.1	204.1	204.1	204.1	204.1	204.1
Colorado	212.6	212.4	212.5	212.5	212.5	212.5	212.4	212.4	211.0	212.0	211.2	211.6	211.8	212.2	211.0	206.2
Connecticut	226.1	227.2	226.9	226.9	226.5	226.3	226.7	227.3	220.2	226.9	226.3	211.9	226.4	226.6	224.0	226.9
Delaware	221.8	214.2	213.9	207.0	207.1	206.4	206.7	206.0	221.1	203.0	203.4	227.4	209.7	209.2	208.5	218.1
Dist. of Columbia	205.5	204.9	205.2	205.1	205.3	205.4	206.4	205.5	206.3	206.4	206.5	207.8	207.2	207.2	207.4	206.2
Florida	205.0	204.8	204.8	206.9	214.3	215.2	207.5	227.4	205.7	205.1	205.0	207.8	204.8	—	204.8	204.9
Georgia	204.7	205.3	205.2	205.0	205.0	205.4	205.1	206.3	204.9	205.1	206.0	205.9	204.8	206.2	206.2	205.7
Hawaii	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Idaho	205.4	204.8	204.5	205.0	204.7	205.7	204.9	204.7	205.0	204.9	205.0	206.0	205.9	204.6	207.3	204.1
Illinois	203.9	203.6	203.6	203.7	203.6	203.7	203.5	203.9	203.9	203.6	203.6	203.6	203.8	204.1	203.6	203.7
Indiana	203.7	203.6	203.6	203.7	203.6	203.8	203.7	203.8	203.8	204.1	204.1	204.1	204.1	204.1	204.2	204.1
Iowa	205.1	202.9	202.0	205.0	206.9	204.2	204.1	203.7	204.2	204.5	204.6	204.8	—	203.9	204.8	204.4
Kansas	202.2	201.3	201.3	201.3	201.5	203.6	203.2	203.8	202.9	203.9	203.6	202.8	202.8	202.8	204.1	204.9
Kentucky	204.6	204.2	204.4	204.6	204.3	204.0	204.3	204.3	204.6	205.1	205.0	204.7	205.0	203.2	205.0	205.2
Louisiana	201.3	—	227.4	—	227.4	204.8	—	227.4	—	227.4	—	204.8	—	207.1	—	227.4
Maine	216.2	211.9	210.1	213.0	210.9	213.6	212.0	223.9	213.0	212.2	226.8	226.7	227.4	226.2	227.4	227.2
Maryland	210.6	207.3	207.1	206.8	207.8	207.5	207.8	208.1	211.7	212.1	208.6	207.9	207.8	208.2	207.6	208.2
Massachusetts	218.2	219.1	219.9	223.7	218.1	217.6	213.8	221.5	214.1	217.0	225.8	217.7	214.2	215.9	213.3	210.6
Michigan	205.0	204.6	204.7	204.9	204.8	204.8	204.9	204.9	205.0	204.6	204.3	204.3	204.8	204.6	204.9	205.9
Minnesota	208.6	210.8	210.8	211.8	211.6	209.5	212.0	212.2	212.3	211.7	209.4	208.6	212.5	211.0	205.8	208.3
Mississippi	202.6	205.2	204.8	204.0	202.8	206.2	208.4	227.4	227.4	227.4	—	—	—	227.4	—	—
Missouri	202.1	204.4	203.9	201.9	201.8	203.4	202.7	202.8	203.4	204.1	203.5	203.1	203.3	203.8	203.5	204.5
Montana	205.6	213.3	213.1	213.1	213.2	209.3	211.7	213.4	213.3	211.3	213.4	207.2	213.4	211.8	209.2	209.3
Nebraska	212.6	212.6	212.7	212.7	212.5	212.7	212.7	217.4	219.2	212.7	212.7	210.1	227.0	212.7	212.7	212.7
Nevada	208.4	204.1	204.1	204.1	204.1	204.1	212.3	204.1	204.1	204.1	204.1	204.3	204.1	204.1	204.1	204.2
New Hampshire	227.2	227.4	227.2	227.4	226.1	226.6	226.4	226.9	225.4	227.4	227.4	217.7	215.5	223.5	222.4	227.4
New Jersey	227.2	225.0	226.7	226.9	227.4	226.1	227.2	226.9	227.1	227.3	227.0	227.3	227.2	227.1	227.4	227.4
New Mexico	209.8	209.7	209.7	209.7	209.7	208.1	205.7	205.8	206.3	206.5	206.6	206.6	207.1	206.3	209.0	205.7
New York	218.9	216.4	213.3	216.1	214.6	215.5	214.0	215.4	218.0	218.8	214.8	216.0	214.1	213.7	212.2	209.9
North Carolina	204.9	205.0	204.8	204.9	204.8	204.9	206.7	206.1	206.2	205.9	206.0	206.4	206.0	205.6	205.9	205.8
North Dakota	218.5	218.6	218.6	218.7	218.8	218.8	217.6	217.6	216.8	216.5	216.4	215.7	216.9	216.4	216.2	215.0
Ohio	203.8	203.9	203.6	203.8	204.3	203.9	204.2	204.4	205.5	204.2	204.5	204.4	203.4	204.1	205.5	204.4
Oklahoma	205.7	205.7	202.6	204.8	212.3	203.0	206.2	205.9	207.0	205.9	206.9	205.9	205.9	212.7	205.9	205.9
Oregon	205.6	205.1	207.2	204.7	204.7	204.6	204.1	204.1	204.1	214.2	213.6	204.1	204.1	204.1	207.1	204.1
Pennsylvania	221.2	219.3	218.9	218.1	218.7	218.8	219.0	218.2	219.7	218.6	220.1	220.4	220.3	221.7	221.3	221.0
Rhode Island	223.9	227.1	225.8	227.4	227.4	227.4	227.3	227.4	227.4	227.2	227.4	227.4	227.4	227.2	227.4	227.4
South Carolina	204.8	205.2	204.8	204.8	204.8	204.8	204.9	205.1	205.3	207.0	207.0	209.5	206.8	204.8	206.2	207.1
South Dakota	212.0	209.9	208.3	211.9	213.2	212.9	211.6	212.8	212.8	212.7	209.9	212.2	208.9	212.7	212.7	212.7
Tennessee	204.5	204.2	203.7	204.0	204.4	204.8	205.4	206.3	204.6	205.1	205.0	205.5	204.8	204.9	204.5	204.6
Texas	213.7	207.5	205.4	204.3	204.5	206.8	206.8	207.1	211.0	213.3	227.0	—	213.0	205.9	206.2	206.3
Utah	204.1	204.1	204.1	204.1	204.2	204.2	204.1	204.1	204.1	204.1	204.1	204.1	204.1	204.1	204.1	204.1
Vermont	227.4	210.4	226.1	227.2	227.4	227.1	227.2	227.1	227.4	227.3	227.2	227.4	227.1	227.2	227.4	227.4
Virginia	205.0	205.2	205.1	205.2	205.3	205.1	205.9	206.2	206.3	206.0	206.4	206.7	206.5	205.9	206.0	205.7
Washington	204.3	204.2	208.5	204.8	205.2	204.8	206.8	207.5	206.9	207.6	209.2	208.1	204.4	204.4	204.2	204.1
West Virginia	205.0	206.8	206.1	206.5	205.3	206.3	206.2	207.0	210.2	208.3	207.0	208.4	207.1	207.4	207.2	207.2
Wisconsin	205.8	205.6	205.3	203.8	205.3	205.8	211.8	205.0	204.9	204.9	204.9	204.9	204.9	205.1	204.8	204.8
Wyoming	212.3	212.7	212.7	212.7	212.7	212.3	212.7	212.7	212.7	212.8	212.8	213.0	212.9	212.8	213.0	212.7
U.S. Average ^a	210.6	209.3	209.2	209.4	209.1	209.7	209.5	210.2	211.2	209.9	209.8	210.2	209.5	210.2	209.7	208.8

^a Weighted average. The weights used are consumption values by State.
— =Not applicable.

Source: Energy Information Administration, Office of Coal, Nuclear, Electric and Alternate Fuels.

Table E2. Average Carbon Dioxide Emission Factors for Coal Consumed^a by Coke Plants, Selected Years, 1980-1999
(Pounds of Carbon Dioxide per Million Btu)

State	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Alabama	205.5	205.4	205.5	205.3	205.3	205.4	206.0	206.2	206.1	206.2	206.2	206.2	206.1	206.2	206.4	206.5
Alaska	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Arizona	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Arkansas	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
California	208.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Colorado	212.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Connecticut	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Delaware	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dist. of Columbia ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Florida	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Georgia	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hawaii	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Idaho	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Illinois	205.2	204.6	205.0	204.6	204.7	204.5	205.8	206.4	206.5	206.4	206.8	206.6	206.6	206.7	206.8	206.7
Indiana	205.0	205.1	205.0	204.9	204.9	204.9	205.8	206.0	206.0	206.1	206.3	206.4	206.3	206.9	206.8	206.8
Iowa	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Kansas	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Kentucky	204.6	204.9	204.8	204.8	204.8	205.0	206.7	206.8	206.3	206.4	206.7	206.8	206.5	206.4	206.6	206.5
Louisiana	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Maine	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Maryland	205.9	205.5	205.5	205.5	205.3	205.1	206.2	205.9	—	—	—	—	—	—	—	—
Massachusetts	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Michigan	205.5	205.4	205.5	205.8	205.4	205.3	206.4	206.7	207.8	207.6	205.7	206.0	206.4	206.1	206.1	206.2
Minnesota	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mississippi	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Missouri	205.2	205.4	204.9	206.0	205.3	—	—	—	—	—	—	—	—	—	—	—
Montana	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Nebraska	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Nevada	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
New Hampshire	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
New Jersey	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
New Mexico	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
New York	205.5	205.5	205.5	205.4	205.5	205.6	206.2	206.1	206.1	206.8	206.7	206.7	206.7	206.1	207.0	206.8
North Carolina	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
North Dakota	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ohio	205.4	205.3	205.2	205.1	205.1	205.1	206.6	206.4	206.4	206.0	206.4	206.6	206.6	206.4	206.6	206.6
Oklahoma	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Oregon	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Pennsylvania	205.7	205.7	205.6	205.6	205.5	205.4	206.2	206.2	206.1	206.2	206.2	206.2	206.3	206.5	206.6	206.7
Rhode Island	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
South Carolina	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
South Dakota	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tennessee	210.2	205.3	205.2	205.1	204.8	204.8	207.6	207.6	206.2	—	204.8	—	—	—	—	—
Texas	209.8	212.7	212.7	—	—	—	—	—	—	—	—	—	—	—	—	—
Utah	210.8	212.5	207.9	208.3	209.7	209.9	208.2	206.0	205.6	205.5	205.8	207.3	208.4	209.0	206.4	206.4
Vermont	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Virginia	206.2	206.2	206.2	206.2	206.2	206.2	206.2	206.2	206.2	206.2	206.2	206.2	206.2	206.2	206.2	206.2
Washington	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
West Virginia	205.4	205.3	205.0	205.1	204.9	205.1	206.7	206.8	206.7	206.8	206.8	207.0	206.8	206.8	207.1	207.1
Wisconsin	205.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Wyoming	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
U.S. Average ^b	205.8	205.6	205.4	205.2	205.3	205.3	206.2	206.2	206.2	206.2	206.3	206.4	206.5	206.6	206.7	206.7

^a No allowances have been made for carbon retained in non-energy coal chemical byproducts from the coal carbonization process.

— =Not applicable.

Source: Energy Information Administration, Office of Coal, Nuclear, Electric and Alternate Fuels.

^b Weighted average. The weights used are consumption values by State.

Table E3. Average Carbon Dioxide Emission Factors for Coal Consumed by Other Industrial Users, Selected Years, 1980-1999
(Pounds of Carbon Dioxide per Million Btu)

State	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Alabama	205.5	205.5	205.5	205.4	205.4	205.4	205.5	205.6	205.7	205.4	205.4	205.4	205.4	205.5	205.4	205.4
Alaska	—	—	—	—	—	—	—	—	—	—	227.4	—	—	—	—	—
Arizona	209.2	210.1	209.9	210.1	209.4	209.6	207.5	207.0	206.7	206.9	207.2	206.7	207.0	206.4	208.0	208.1
Arkansas	201.4	201.6	203.7	203.2	202.4	203.9	205.3	205.1	205.2	206.0	206.3	205.9	206.0	205.8	206.0	205.7
California	205.6	204.7	205.0	204.4	204.6	204.7	204.6	204.6	204.2	204.1	204.1	204.1	204.1	204.3	204.6	204.6
Colorado	212.6	212.7	212.7	212.1	212.8	212.6	212.0	212.6	212.5	212.7	213.1	213.0	213.1	213.2	206.3	206.2
Connecticut	225.4	209.2	208.2	212.8	207.5	224.8	227.4	205.9	204.7	207.1	207.1	227.4	207.1	—	207.1	205.0
Delaware	205.9	205.9	205.9	205.9	205.8	205.9	206.1	206.0	207.4	208.0	207.7	207.6	208.0	208.0	205.2	205.7
Dist. of Columbia ..	205.0	—	—	—	—	—	—	—	—	—	—	—	227.4	—	208.4	208.5
Florida	204.2	205.0	205.0	205.0	205.2	205.2	205.4	205.2	205.1	205.2	205.1	205.4	205.3	205.2	204.9	204.8
Georgia	204.9	204.9	204.9	204.9	204.8	204.8	205.1	205.0	204.9	204.9	205.0	205.0	205.0	205.1	204.9	205.1
Hawaii	—	204.4	204.4	204.4	204.4	204.4	204.4	204.4	204.4	204.4	204.4	204.4	204.4	204.3	204.1	—
Idaho	212.6	211.9	211.4	212.0	211.8	212.4	212.1	212.1	212.2	211.1	212.1	209.7	211.1	212.7	212.2	207.9
Illinois	204.2	204.0	203.9	203.9	203.7	203.7	203.9	205.1	203.7	203.9	203.9	204.0	204.3	204.5	204.0	204.0
Indiana	203.7	203.7	203.7	203.7	203.7	203.8	204.2	204.4	204.5	204.2	204.1	204.3	204.1	204.4	204.4	204.6
Iowa	205.7	203.6	203.9	203.9	204.1	204.6	205.0	206.1	208.3	208.2	208.6	207.8	204.4	208.3	207.7	207.7
Kansas	201.9	201.8	201.3	201.6	201.4	201.8	203.4	205.2	205.3	203.3	203.2	203.6	205.3	205.4	203.2	203.0
Kentucky	205.4	204.7	204.9	205.1	205.4	205.2	205.5	205.6	205.4	205.3	205.1	205.1	205.0	205.5	205.1	205.2
Louisiana	203.9	204.4	204.3	205.2	209.9	207.5	208.0	211.3	210.9	211.5	211.3	212.3	207.7	206.9	204.8	204.8
Maine	206.0	207.9	206.0	206.5	207.0	205.2	207.0	204.9	204.9	204.9	204.8	205.0	205.0	204.8	204.9	205.0
Maryland	206.1	205.8	205.5	205.8	205.6	205.9	207.8	207.8	208.4	208.7	208.2	208.6	208.3	208.0	208.4	208.5
Massachusetts	206.3	206.4	206.8	207.0	207.1	207.4	208.0	206.7	207.0	206.7	206.6	206.8	206.7	206.9	207.1	205.0
Michigan	204.8	205.0	204.9	204.9	204.8	204.8	204.9	204.9	205.3	205.6	205.6	205.9	205.3	205.2	205.3	205.5
Minnesota	211.6	208.9	208.9	209.8	210.8	210.3	211.6	211.1	211.8	212.1	211.7	211.2	211.2	211.5	209.3	209.7
Mississippi	204.0	204.0	204.4	204.0	204.0	204.0	203.7	204.2	204.6	205.2	205.2	205.2	204.9	204.8	204.8	204.3
Missouri	203.6	203.5	203.6	203.8	203.7	203.3	204.1	204.1	204.5	204.6	204.2	204.4	203.9	203.7	204.1	204.0
Montana	211.2	212.6	213.4	213.1	211.8	211.6	211.7	211.6	211.4	212.1	212.8	213.4	213.4	212.9	215.5	214.8
Nebraska	212.3	213.1	213.2	213.2	213.1	212.9	213.3	213.3	213.1	213.2	212.9	213.2	210.9	211.1	209.3	209.7
Nevada	204.5	204.1	204.1	204.1	204.1	206.7	204.1	204.1	204.1	204.1	204.1	208.2	208.3	204.8	205.4	204.4
New Hampshire	207.0	219.5	218.6	218.8	218.6	207.0	216.2	206.8	207.1	204.8	—	227.4	227.4	—	207.1	205.0
New Jersey	218.3	217.5	210.8	210.0	209.1	207.9	207.9	207.7	207.3	208.0	210.3	227.3	227.4	227.4	221.2	220.1
New Mexico	212.0	212.6	212.7	212.7	212.7	212.7	212.7	212.7	212.7	212.7	212.7	212.7	212.7	212.7	206.2	206.2
New York	206.9	206.9	206.9	207.1	207.4	206.9	206.9	206.9	207.0	206.8	207.0	207.2	207.3	207.2	206.6	206.1
North Carolina	204.8	204.8	204.8	204.8	204.8	204.8	205.7	205.4	205.7	205.4	205.6	205.5	205.4	205.4	205.4	205.5
North Dakota	218.8	218.6	218.5	218.4	218.5	218.5	218.3	218.3	218.3	218.4	218.2	218.4	218.5	218.5	218.4	218.3
Ohio	204.0	204.3	204.3	204.2	204.4	204.3	204.6	204.7	204.5	204.8	204.9	204.5	204.7	204.5	203.6	203.8
Oklahoma	202.2	202.4	202.5	202.2	203.1	205.7	207.8	207.5	207.5	207.5	209.1	207.8	208.1	208.0	203.4	206.0
Oregon	212.7	211.8	211.9	211.7	212.7	212.2	212.7	212.7	211.5	212.8	210.4	213.0	212.5	212.5	212.7	204.7
Pennsylvania	207.9	207.3	207.4	207.1	208.8	208.8	207.8	208.4	208.5	206.4	206.9	207.1	207.0	207.3	208.2	208.1
Rhode Island	210.0	205.7	206.9	219.6	204.8	204.8	227.4	—	—	227.4	—	—	—	—	207.1	205.0
South Carolina	205.0	205.0	205.1	205.1	205.1	205.0	205.3	205.3	205.3	205.3	205.5	205.4	205.4	205.5	205.5	205.5
South Dakota	210.5	212.7	212.6	212.7	212.7	212.7	212.7	212.6	212.7	212.7	212.7	212.7	212.7	212.6	210.0	208.9
Tennessee	204.8	204.7	204.6	204.7	204.7	204.8	205.2	205.2	205.5	205.4	205.2	205.3	205.3	205.1	205.2	205.3
Texas	212.3	213.1	213.0	213.2	213.3	213.2	212.5	212.1	212.3	212.1	212.1	212.5	212.0	212.0	210.3	210.4
Utah	205.2	205.6	206.0	206.2	204.9	204.6	204.2	204.1	204.1	204.6	206.1	206.0	204.1	204.7	204.4	204.4
Vermont	207.8	216.3	227.4	226.6	223.8	218.5	226.3	206.2	212.2	205.7	—	—	—	—	207.1	205.0
Virginia	205.1	205.1	205.1	205.1	205.1	205.1	205.9	205.9	206.2	205.9	206.0	206.0	205.9	205.9	206.0	206.5
Washington	206.3	206.1	208.7	209.7	208.9	208.7	207.9	206.6	205.8	205.5	206.1	206.4	206.3	205.3	204.2	204.3
West Virginia	205.4	205.5	205.8	205.6	205.4	205.4	206.4	206.5	206.6	206.5	206.8	206.9	207.0	207.1	206.6	206.6
Wisconsin	205.5	205.0	205.4	205.6	206.3	206.0	206.1	205.9	206.1	206.5	206.0	205.9	206.2	209.7	205.5	205.4
Wyoming	212.0	212.7	212.7	212.6	212.4	212.1	212.2	212.3	212.5	212.6	212.6	212.5	212.7	212.7	212.2	212.3
U.S. Average ^a	205.9	206.4	206.5	206.4	206.4	206.6	206.8	206.9	207.1	207.0	207.2	207.2	207.0	207.2	206.9	207.0

^a Weighted average. The weights used are consumption values by State.
— =Not applicable.

Source: Energy Information Administration, Office of Coal, Nuclear, Electric and Alternate Fuels.

Table E4. Average Carbon Dioxide Emission Factors for Coal Consumed by Electric Utilities, Selected Years, 1980-1999
(Pounds of Carbon Dioxide per Million Btu)

State	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Alabama	205.0	204.9	205.0	204.9	204.9	204.9	205.1	205.3	205.3	205.3	205.3	205.8	205.8	206.2	203.1	203.0
Alaska	214.0	214.0	214.0	214.0	214.0	214.0	214.0	214.0	214.0	214.0	—	214.0	214.0	—	206.1	206.1
Arizona	208.0	207.8	207.9	208.0	207.8	207.9	207.7	207.7	207.7	207.5	207.5	207.6	207.6	207.5	204.0	205.8
Arkansas	212.7	212.7	212.7	212.7	212.7	212.7	211.0	212.7	212.7	212.7	212.7	212.7	212.7	212.7	206.1	206.1
California	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Colorado	211.5	212.0	211.9	211.9	210.3	210.3	209.9	209.8	209.8	209.9	209.7	209.8	210.1	209.9	204.0	204.8
Connecticut	—	204.8	204.8	204.8	204.8	204.9	204.8	204.8	204.8	204.9	205.0	205.0	204.8	204.8	205.2	203.1
Delaware	206.0	206.5	206.1	206.8	206.6	206.7	206.7	206.8	206.9	206.9	207.1	207.3	207.3	206.9	203.1	204.7
Dist. of Columbia	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Florida	204.0	204.3	204.3	204.4	204.6	204.5	204.5	204.4	204.4	204.5	204.6	204.5	204.6	204.8	203.7	203.0
Georgia	204.3	204.7	204.7	204.7	204.8	204.8	205.2	205.2	204.8	205.3	206.2	206.6	206.6	206.4	203.2	203.2
Hawaii	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Idaho	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Illinois	207.1	206.6	206.6	206.1	206.3	205.8	205.6	205.9	206.2	206.9	207.3	207.8	207.9	208.0	204.3	203.5
Indiana	204.0	204.6	204.7	204.5	204.6	205.0	205.4	205.6	205.6	205.8	206.0	206.5	206.5	206.3	203.1	202.3
Iowa	207.2	210.2	210.1	210.4	209.9	210.5	210.7	210.8	211.1	211.9	211.5	211.9	211.9	211.9	205.0	205.3
Kansas	209.2	210.5	210.7	210.6	210.7	210.8	210.7	210.6	210.9	211.9	211.4	211.5	211.1	211.4	204.9	204.3
Kentucky	204.0	203.9	204.1	204.0	204.1	204.0	204.1	204.3	204.1	204.3	204.3	204.3	204.5	204.6	203.2	202.9
Louisiana	212.7	212.7	212.9	212.7	212.7	212.7	212.7	212.8	212.9	212.9	212.9	212.9	212.9	212.9	206.2	207.1
Maine	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Maryland	206.6	206.9	207.0	207.1	207.0	207.0	207.2	207.2	207.0	206.8	207.0	207.0	207.0	207.0	203.1	204.6
Massachusetts	206.4	206.4	206.5	206.5	206.7	206.4	206.5	206.7	206.8	206.8	206.7	206.6	206.6	206.4	203.1	203.1
Michigan	206.0	207.0	207.3	207.8	207.9	208.5	208.7	208.9	208.9	209.1	209.0	209.4	209.8	209.6	203.5	204.1
Minnesota	212.9	213.0	212.9	212.9	213.0	213.0	213.0	213.0	213.0	213.0	213.0	213.0	213.0	213.0	206.1	206.0
Mississippi	204.7	205.2	204.9	204.9	204.6	204.2	204.2	204.5	204.5	204.8	206.9	206.9	207.3	208.9	204.3	202.9
Missouri	204.5	204.4	204.4	204.7	205.4	205.5	205.7	206.2	206.2	208.4	208.7	210.6	211.1	211.5	204.8	204.7
Montana	213.9	213.6	213.6	213.6	213.5	213.6	213.5	213.5	213.5	213.6	213.5	213.6	213.5	213.5	206.3	206.3
Nebraska	211.7	212.4	212.4	212.6	212.6	212.6	212.7	212.7	212.7	212.7	212.6	212.7	212.7	212.7	205.8	206.0
Nevada	208.2	206.3	207.6	207.8	208.2	207.9	207.7	208.0	208.4	208.4	208.4	208.1	207.7	207.6	203.1	205.2
New Hampshire	206.9	206.8	206.8	207.0	206.9	206.7	206.7	206.2	206.3	206.3	206.1	206.1	206.2	206.2	203.1	203.8
New Jersey	206.6	206.9	206.9	206.9	206.8	206.7	206.7	206.7	206.6	206.7	206.5	206.4	206.7	206.6	203.1	204.6
New Mexico	205.7	205.7	205.7	205.7	205.7	205.7	205.9	205.7	205.7	205.7	205.7	205.7	205.7	205.7	206.1	206.1
New York	205.7	206.1	206.1	206.2	206.0	206.1	206.3	206.2	206.1	206.0	206.0	206.3	206.2	206.4	203.1	203.9
North Carolina	205.6	205.8	205.8	205.8	205.8	205.7	205.8	205.8	205.8	205.8	205.8	205.8	205.7	205.7	203.1	203.6
North Dakota	218.8	218.8	218.8	218.8	218.8	218.8	214.9	218.8	218.8	218.8	218.8	218.8	218.7	218.7	213.1	216.6
Ohio	204.4	204.3	204.4	204.4	204.5	204.5	204.5	204.4	204.4	204.5	204.6	205.0	205.0	205.0	203.1	202.9
Oklahoma	210.5	212.7	212.5	212.1	212.2	212.2	212.1	212.4	212.6	212.7	212.6	212.6	212.7	212.7	205.5	205.6
Oregon	212.7	212.7	—	212.7	212.7	212.7	212.7	212.7	212.9	212.4	212.2	212.7	212.7	212.7	206.1	202.1
Pennsylvania	206.1	205.9	205.8	206.0	206.1	206.1	206.2	206.2	206.2	206.0	206.0	206.2	206.2	206.2	203.1	202.2
Rhode Island	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
South Carolina	204.9	204.9	205.0	205.0	205.0	205.0	205.0	205.0	205.0	205.0	205.0	205.0	205.0	205.0	203.2	202.3
South Dakota	218.1	218.8	218.8	218.8	218.3	218.8	218.7	218.8	218.8	218.8	218.8	216.9	213.4	213.4	206.1	206.1
Tennessee	204.0	204.2	204.0	204.1	204.1	204.2	204.1	204.0	204.0	204.3	204.1	204.0	204.2	204.7	203.4	202.5
Texas	213.0	212.9	212.9	212.9	213.1	212.9	212.9	212.9	212.9	212.9	213.1	212.8	212.9	213.0	209.1	208.3
Utah	204.1	204.1	204.5	204.3	204.2	204.3	204.3	204.3	204.3	204.3	204.3	204.2	204.3	204.4	203.1	202.2
Vermont	205.7	205.7	205.7	—	—	—	—	—	—	—	—	—	—	—	—	—
Virginia	205.9	205.8	206.0	206.0	206.1	205.9	206.0	206.0	206.0	205.9	205.9	205.9	206.0	206.1	203.1	203.8
Washington	208.7	208.7	208.7	208.8	209.0	209.2	209.0	208.7	209.3	209.4	209.2	209.2	208.8	209.1	206.1	206.1
West Virginia	206.9	207.0	207.1	207.1	207.2	207.0	206.9	207.1	207.0	207.1	207.1	207.1	207.0	207.0	203.1	204.9
Wisconsin	207.0	208.6	209.3	209.2	209.3	209.5	209.8	209.7	209.9	210.7	210.4	210.8	211.2	210.9	205.2	205.4
Wyoming	212.7	212.7	212.7	212.7	212.7	212.6	212.0	212.0	212.0	212.0	211.9	211.9	211.9	211.9	205.8	205.9
U.S. Average ^a	206.7	207.3	207.3	207.3	207.6	207.5	207.6	207.7	207.7	207.8	207.9	208.1	208.1	208.2	204.4	204.6

^a Weighted average. The weights used are consumption values by State.
— =Not applicable.

Source: Energy Information Administration, Office of Coal, Nuclear, Electric and Alternate Fuels.

Table E5. Average Carbon Dioxide Emission Factors for Total Coal Consumed, Selected Years, 1980-1999
(Pounds of Carbon Dioxide per Million Btu)

State	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Alabama	205.1	205.0	205.1	205.0	205.0	205.0	205.3	205.4	205.4	205.4	205.4	205.9	205.8	206.2	205.4	203.4
Alaska	214.0	214.0	214.0	214.0	214.0	214.0	214.0	214.0	214.0	214.0	214.1	214.0	214.0	214.0	212.1	212.0
Arizona	208.1	208.1	208.2	208.1	207.9	207.9	207.7	207.7	207.6	207.4	207.5	207.6	207.5	207.4	208.0	205.9
Arkansas	210.7	212.3	212.4	212.4	209.5	212.4	212.5	212.5	212.5	212.5	212.5	212.5	212.5	212.5	206.0	206.1
California	207.5	204.7	205.0	204.4	204.6	204.7	204.6	204.6	204.1	204.1	204.1	204.1	204.1	204.3	204.6	204.6
Colorado	211.7	212.0	212.0	211.9	210.4	210.4	210.0	210.0	209.9	210.0	209.9	210.0	210.1	210.1	206.2	204.9
Connecticut	226.1	205.7	205.8	205.5	205.2	205.2	205.1	205.1	205.2	205.5	205.3	205.0	204.9	205.3	203.3	226.9
Delaware	206.0	206.4	206.5	206.7	206.6	206.7	206.6	206.7	207.0	206.9	207.1	207.3	207.3	207.0	207.4	206.2
Dist. of Columbia	205.4	204.9	205.2	205.1	205.3	205.4	206.4	205.5	206.3	206.4	206.5	207.8	207.2	—	—	—
Florida	204.0	204.3	204.3	204.4	204.6	204.5	204.5	204.5	204.5	204.5	204.6	204.6	204.6	204.8	204.8	203.0
Georgia	204.3	204.7	204.7	204.8	204.8	204.8	205.2	205.2	204.8	205.3	206.1	206.1	206.5	206.3	204.9	203.3
Hawaii	—	204.4	204.4	204.4	204.4	204.4	204.4	204.4	204.4	204.4	204.4	204.4	204.4	204.3	204.1	204.1
Idaho	210.7	211.1	210.7	211.6	210.6	211.2	211.1	211.1	211.3	210.5	211.4	209.3	210.7	211.8	212.2	207.4
Illinois	206.7	206.2	206.2	205.7	205.8	205.4	205.4	205.8	205.9	206.5	206.9	207.3	207.4	207.6	204.1	203.8
Indiana	204.3	204.6	204.7	204.5	204.6	204.8	205.4	205.5	205.5	205.7	205.9	206.3	206.3	206.2	204.4	203.1
Iowa	207.0	209.2	209.1	209.3	209.0	209.4	209.7	209.9	210.7	211.3	211.0	211.2	211.1	211.1	207.7	205.6
Kansas	209.0	210.2	210.5	210.4	210.5	210.6	210.6	210.5	210.8	211.8	211.3	211.4	211.0	211.3	203.3	204.3
Kentucky	204.1	204.0	204.2	204.1	204.2	204.2	204.3	204.4	204.2	204.4	204.4	204.5	204.6	204.7	205.1	203.1
Louisiana	212.1	212.2	212.6	212.3	212.6	212.4	212.4	212.7	212.8	212.8	212.8	212.9	212.8	212.9	205.0	207.1
Maine	207.9	208.8	206.7	207.6	207.6	206.0	207.8	205.6	205.3	205.3	205.1	205.2	205.3	205.2	204.9	206.2
Maryland	206.3	206.5	206.6	206.7	206.7	206.7	207.1	207.1	207.1	207.0	207.1	207.2	207.1	207.0	208.3	204.9
Massachusetts	207.6	206.8	206.8	206.8	206.8	206.6	206.6	206.8	206.9	206.9	206.8	206.6	206.7	206.5	206.8	203.8
Michigan	205.7	206.6	206.8	207.4	207.4	208.0	208.2	208.5	208.5	208.7	208.5	208.8	209.2	209.1	205.3	204.2
Minnesota	212.7	212.6	212.5	212.7	212.9	212.8	212.9	212.9	212.9	212.9	212.8	212.9	212.9	212.9	209.3	206.2
Mississippi	204.7	205.1	204.8	204.8	204.5	204.2	204.2	204.4	204.5	204.8	206.7	206.7	207.2	208.8	204.7	202.9
Missouri	204.5	204.4	204.4	204.7	205.3	205.4	205.6	206.0	206.1	208.1	208.5	210.3	210.7	211.1	204.1	204.6
Montana	213.7	213.5	213.6	213.6	213.5	213.5	213.5	213.5	213.5	213.5	213.5	213.5	213.5	213.5	214.8	206.4
Nebraska	211.7	212.4	212.4	212.6	212.6	212.6	212.7	212.7	212.7	212.7	212.6	212.7	212.7	212.6	209.2	206.1
Nevada	208.1	206.2	207.6	207.7	208.1	207.9	207.6	207.9	208.3	208.3	208.3	208.1	207.7	207.6	205.3	205.1
New Hampshire	207.0	207.2	207.1	207.2	207.1	206.9	207.1	206.5	206.5	206.3	206.2	206.2	206.2	206.3	203.2	203.9
New Jersey	207.1	208.2	207.6	207.3	207.1	206.9	206.9	206.9	206.8	206.8	206.7	206.5	206.8	206.7	217.8	204.7
New Mexico	205.7	205.8	205.8	205.7	205.7	205.7	205.7	205.7	205.7	205.7	205.8	205.8	205.8	205.8	206.2	206.1
New York	206.3	206.6	206.5	206.5	206.4	206.4	206.5	206.5	206.5	206.5	206.4	206.6	206.6	206.6	206.6	205.0
North Carolina	205.6	205.7	205.7	205.6	205.6	205.6	205.8	205.8	205.8	205.7	205.8	205.7	205.7	205.7	205.4	203.7
North Dakota	218.8	218.7	218.7	218.7	218.7	218.7	218.6	218.6	218.6	218.7	218.6	218.7	218.7	218.7	218.4	217.0
Ohio	204.5	204.4	204.5	204.4	204.6	204.5	204.7	204.6	204.6	204.6	204.8	205.0	205.0	205.0	203.6	203.1
Oklahoma	210.0	211.9	211.8	211.5	211.8	211.9	211.9	212.1	212.3	212.3	212.5	212.2	212.4	212.5	206.3	205.7
Oregon	212.5	212.4	211.9	212.3	212.6	212.4	212.7	212.7	212.8	212.4	212.1	212.8	212.7	212.7	212.4	202.2
Pennsylvania	206.4	206.2	206.2	206.3	206.5	206.5	206.6	206.7	206.7	206.4	206.4	206.6	206.5	206.7	208.2	203.6
Rhode Island	217.2	217.9	210.1	226.6	205.3	207.5	227.3	227.4	227.4	227.3	227.4	227.4	227.4	227.2	227.4	227.4
South Carolina	204.9	205.0	205.0	205.0	205.0	205.0	205.0	205.0	205.0	205.1	205.1	205.1	205.0	205.0	205.5	202.8
South Dakota	217.6	217.8	217.7	217.1	217.7	217.9	218.0	217.9	217.9	217.7	217.5	216.1	213.3	213.3	210.0	206.7
Tennessee	204.1	204.3	204.1	204.2	204.2	204.3	204.3	204.2	204.2	204.5	204.3	204.2	204.3	204.7	205.2	202.9
Texas	212.8	212.9	212.9	212.9	213.1	212.9	212.9	212.9	212.9	212.9	213.0	212.8	212.9	212.9	210.3	208.4
Utah	205.7	205.6	204.9	204.3	204.8	204.8	204.6	204.4	204.4	204.4	204.5	204.5	204.6	204.8	204.4	202.5
Vermont	216.0	209.2	216.6	227.1	226.3	222.7	227.1	215.2	216.8	226.9	227.2	227.4	227.1	227.2	227.4	227.4
Virginia	205.7	205.6	205.7	205.8	205.8	205.7	206.0	206.0	206.1	205.9	205.9	206.0	206.0	206.1	206.0	204.4
Washington	208.3	208.3	208.7	208.8	208.9	209.1	208.9	208.6	209.1	209.3	209.1	209.0	208.7	208.9	204.3	206.1
West Virginia	206.6	206.8	206.9	206.9	206.9	206.7	206.9	207.0	207.0	207.0	207.1	207.0	207.0	207.0	206.5	205.1
Wisconsin	206.8	208.1	208.8	208.8	208.9	209.1	209.4	209.3	209.5	210.3	209.9	210.3	210.8	210.8	205.5	205.4
Wyoming	212.6	212.7	212.7	212.7	212.7	212.6	212.0	212.1	212.1	212.1	212.0	212.0	212.0	212.0	212.2	206.4
U.S. Average ^a	206.5	207.1	207.1	207.2	207.3	207.3	207.4	207.5	207.6	207.7	207.8	207.9	208.0	208.0	206.9	204.8

^a Weighted average. The weights used are consumption values by sector and State.
— =Not applicable.

Source: Energy Information Administration, Office of Coal, Nuclear, Electric and Alternate Fuels.