

Table 8. Electricity Supply, Disposition, and Prices
(Billion Kilowatthours, Unless Otherwise Noted)

Supply, Disposition, and Prices	1996	Projections								
		2005			2010			2020		
		Low Technology	9 Percent Above	High Technology	Low Technology	9 Percent Above	High Technology	Low Technology	9 Percent Above	High Technology
Generation by Fuel Type										
Electric Generators¹										
Coal	1758	1576	1681	1781	835	977	1348	222	508	1140
Petroleum	80	36	36	32	31	25	24	169	64	16
Natural Gas	288	827	777	664	1567	1518	1031	2270	2243	1597
Nuclear Power	675	698	683	683	693	654	639	694	552	449
Pumped Storage	-2	-3	-3	-3	-3	-3	-3	-3	-3	-3
Renewable Sources ²	392	395	385	399	431	409	446	560	571	539
Total	3191	3529	3559	3556	3554	3581	3486	3912	3935	3738
Non-Utility Generation for Own Use	6	6	6	6	5	5	5	5	5	5
Cogenerators³										
Coal	51	51	50	50	51	50	48	51	49	47
Petroleum	6	6	6	6	6	6	6	11	7	6
Natural Gas	196	215	222	224	221	233	245	212	228	274
Other Gaseous Fuels ⁴	7	7	7	7	7	7	7	7	7	7
Renewable Sources ²	42	46	46	47	48	49	52	51	53	59
Other ⁵	3	3	3	3	3	3	3	3	3	3
Total	305	329	335	337	337	349	362	335	348	397
Sales to Utilities	156	161	162	162	162	164	166	162	164	172
Generation for Own Use	149	169	174	175	175	185	196	173	184	225
Net Imports⁶	38	21	21	21	10	10	10	4	4	4
Electricity Sales by Sector										
Residential	1079	1189	1210	1210	1206	1228	1216	1389	1414	1397
Commercial	988	1052	1084	1091	1014	1078	1103	1103	1177	1249
Industrial	1014	1173	1149	1136	1215	1157	1050	1279	1210	965
Transportation	17	24	24	27	31	29	35	42	36	46
Total	3098	3438	3467	3464	3466	3492	3404	3813	3837	3658
End-Use Prices (1996 cents per kilowatthour) ⁷										
Residential	8.3	10.2	9.1	8.8	12.5	10.7	9.7	12.4	10.0	7.7
Commercial	7.5	9.4	8.3	8.0	11.7	9.8	8.8	11.2	8.9	6.6
Industrial	4.6	5.6	5.0	4.8	6.9	5.8	5.3	6.5	5.2	4.0
Transportation	5.2	4.9	4.8	4.7	5.2	5.0	4.8	4.7	4.5	4.1
All Sectors Average	6.8	8.4	7.4	7.2	10.2	8.8	8.0	10.0	8.1	6.3

¹Includes grid-connected generation at all utilities and nonutilities except for cogenerators. Includes small power producers, exempt wholesale generators, and generators at industrial and commercial facilities which provide electricity for on-site use and for sales to utilities.

²Includes conventional hydroelectric, geothermal, wood, wood waste, municipal solid waste, landfill gas, other biomass, solar, and wind power.

³Cogenerators produce electricity and other useful thermal energy. Includes sales to utilities and generation for own use.

⁴Other gaseous fuels include refinery and still gas.

⁵Other includes hydrogen, sulfur, batteries, chemicals, fish oil, and spent sulfite liquor.

⁶In 1996 approximately two-thirds of the U.S. electricity imports were provided by renewable sources (hydroelectricity); EIA does not project future proportions.

⁷Prices represent average revenue per kilowatthour.

Kwh = kilowatthour.

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

Sources: 1996 commercial and transportation sales derived from: Total transportation plus commercial sales come from Energy Information Administration (EIA), *State Energy Data Report 1994*. Online. <ftp://ftp.eia.doe.gov/pub/state.data/021494.pdf> (August 26, 1997), but individual sectors do not match because sales taken from commercial and placed in transportation, according to Oak Ridge National Laboratories, *Transportation Energy Data Book 16* (July 1996) which indicates the transportation value should be higher. 1996 generation by electric utilities, nonutilities, and cogenerators, net electricity imports, residential sales, and industrial sales: EIA, *Annual Energy Review 1996*, DOE/EIA-0384(96) (Washington, DC, July 1997). 1996 residential electricity prices derived from EIA, *Short Term Energy Outlook, August 1997*, Online. <http://www.eia.doe.gov/emeu/teo/pub/upd/aug97/index.html> (August 21, 1997). **1996 electricity prices for commercial, industrial, and transportation; price components; and projections:** EIA, AEO98 National Energy Modeling System runs FREEZE09.D080798A, FD09ABV.D080398B, and HITECH09.D080698A.

Table 9. Electricity Generating Capability
(Thousand Megawatts)

Net Summer Capability ¹	1996	Projections								
		2005			2010			2020		
		Low Technology	9 Percent Above	High Technology	Low Technology	9 Percent Above	High Technology	Low Technology	9 Percent Above	High Technology
Electric Generators²										
Capability										
Coal Steam	303.7	301.9	302.1	302.1	266.6	275.8	286.7	145.2	197.5	257.3
Other Fossil Steam ³	136.6	127.6	125.4	124.8	113.6	92.7	84.8	60.9	49.7	62.5
Combined Cycle	15.2	73.9	74.7	62.9	189.8	186.7	115.5	343.4	318.0	218.8
Combustion Turbine/Diesel	61.7	96.6	99.0	105.6	95.4	100.1	109.9	111.6	109.3	122.6
Nuclear Power	100.8	96.1	94.1	94.1	95.4	88.8	85.2	93.4	73.8	59.6
Pumped Storage	19.9	19.9	19.9	19.9	19.5	19.5	19.2	19.5	19.5	19.2
Fuel Cells	0.0	0.0	0.0	0.4	0.0	0.0	0.4	0.0	0.0	0.4
Renewable Sources ⁴	87.8	95.6	93.1	95.8	107.0	100.1	106.5	147.3	140.3	126.5
Total	725.6	811.7	808.2	805.6	887.3	863.7	808.2	921.2	908.2	866.9
Cumulative Planned Additions⁵										
Coal Steam	2.1	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
Other Fossil Steam ³	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Combined Cycle	2.0	2.7	2.7	2.7	3.0	3.0	3.0	3.0	3.0	3.0
Combustion Turbine/Diesel	3.8	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
Nuclear Power	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Pumped Storage	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Fuel Cells	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Renewable Sources ⁴	0.7	3.1	3.1	3.1	3.2	3.2	3.2	3.2	3.2	3.2
Total	11.1	16.3	16.3	16.3	16.7	16.7	16.7	16.7	16.7	16.7
Cumulative Unplanned Additions⁵										
Coal Steam	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Fossil Steam ³	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Combined Cycle	0.0	57.4	58.2	46.4	173.0	169.9	99.0	326.6	301.5	202.2
Combustion Turbine/Diesel	5.8	40.8	43.3	49.0	40.8	45.6	55.4	57.3	55.2	68.1
Nuclear Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pumped Storage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fuel Cells	0.0	0.0	0.0	0.4	0.0	0.0	0.4	0.0	0.0	0.4
Renewable Sources ⁴	0.8	5.9	3.4	6.1	17.4	10.5	16.8	58.1	51.1	37.3
Total	6.7	104.1	104.9	102.0	231.2	226.0	171.6	442.1	407.8	308.1
Cumulative Total Additions	17.7	120.4	121.2	118.3	247.8	242.7	188.3	458.7	424.5	324.8
Cumulative Retirements⁶	15.2	34.2	38.5	38.1	86.1	104.5	105.1	263.1	241.8	182.9

Table 9. Electricity Generating Capability (Continued)
(Thousand Megawatts)

Net Summer Capability ¹	1996	Projections								
		2005			2010			2020		
		Low Technology	9 Percent Above	High Technology	Low Technology	9 Percent Above	High Technology	Low Technology	9 Percent Above	High Technology
Cogenerators⁷										
Capability										
Coal	9.2	9.9	9.9	9.8	10.0	9.9	9.8	10.0	10.0	9.9
Petroleum	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4
Natural Gas	31.4	35.1	36.0	36.2	35.9	37.5	39.1	35.3	37.0	43.3
Other Gaseous Fuels	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Renewable Sources ⁴	5.9	6.8	6.8	6.9	7.0	7.1	7.3	7.3	7.4	8.0
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	48.8	54.2	55.0	55.3	55.3	56.9	58.7	55.1	56.9	63.7
Cumulative Additions⁵	18.2	23.6	24.4	24.7	24.6	26.3	28.1	24.5	26.2	33.1

¹Net summer capability is the steady hourly output that generating equipment is expected to supply to system load (exclusive of auxiliary power), as demonstrated by tests during summer peak demand.

²Includes grid-connected utilities and nonutilities except for cogenerators. Includes small power producers, exempt wholesale generators, and generators at industrial and commercial facilities which produce electricity for on-site use and sales to utilities.

³Includes oil-, gas-, and dual-fired capability.

⁴Includes conventional hydroelectric, geothermal, wood, wood waste, municipal solid waste, landfill gas, other biomass, solar and wind power.

⁵Cumulative additions after December 31, 1995. Non-zero utility planned additions in 1995 indicate units operational in 1995 but not supplying power to the grid.

⁶Cumulative total retirements from 1990.

⁷Nameplate capacity is reported for nonutilities on Form EIA-867, "Annual Power Producer Report." Nameplate capacity is designated by the manufacturer. The nameplate capacity has been converted to the net summer capability based on historic relationships.

N/A = Not applicable.

Notes: Totals may not equal sum of components due to independent rounding. Net summer capability has been estimated for nonutility generators for AEO98. Net summer capacity is used to be consistent with electric utility capacity estimates. Data for electric utility capacity are the most recent data available as of August 25, 1997. Therefore, capacity estimates may differ from other Energy Information Administration sources.

Sources: 1996 net summer capability at electric utilities and planned additions: Energy Information Administration (EIA), Form EIA-860, "Annual Electric Generator Report." Net summer capability for nonutilities and cogeneration in 1996 and planned additions estimated based on EIA, Form EIA-867, "Annual Nonutility Power Producer Report."

Projections: EIA, AEO98 National Energy Modeling System runs FREEZE09.D080798A , FD09ABV.D080398B, and HITECH09.D080698A.

Table 10. Electricity Trade
(Billion Kilowatthours, Unless Otherwise Noted)

Electricity Trade	1996	Projections								
		2005			2010			2020		
		Low Technology	9 Percent Above	High Technology	Low Technology	9 Percent Above	High Technology	Low Technology	9 Percent Above	High Technology
Interregional Electricity Trade										
Gross Domestic Firm Power Sales	173.4	139.2	139.2	139.2	139.2	139.2	139.2	139.2	139.2	139.2
Gross Domestic Economy Sales	54.4	49.2	49.8	62.2	21.3	27.2	64.2	52.9	44.2	53.7
Gross Domestic Trade	227.8	188.4	189.0	201.4	160.5	166.4	203.4	192.1	183.4	192.9
Gross Domestic Firm Power Sales (million 1996 dollars)	8050.2	6462.9	6462.9	6462.9	6462.9	6462.9	6462.9	6462.9	6462.9	6462.9
Gross Domestic Economy Sales (million 1996 dollars)	1272.2	2420.6	1914.1	2175.2	1538.4	1467.6	2878.2	3454.2	2013.1	1400.7
Gross Domestic Sales (million 1996 dollars)	9322.5	8883.5	8377.0	8638.1	8001.3	7930.5	9341.1	9917.1	8475.9	7863.6
International Electricity Trade										
Firm Power Imports From Canada and Mexico ¹	26.1	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
Economy Imports From Canada and Mexico ¹	20.7	35.7	35.9	35.9	25.5	25.5	25.5	19.6	19.6	19.6
Gross Imports From Canada and Mexico¹	46.8	41.4	41.5	41.5	31.1	31.1	31.1	25.2	25.2	25.2
Firm Power Exports To Canada and Mexico	2.8	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4
Economy Exports To Canada and Mexico	6.4	7.0	7.0	7.0	7.7	7.7	7.7	7.7	7.7	7.7
Gross Exports To Canada and Mexico	9.3	20.3	20.3	20.3	21.0	21.0	21.0	21.0	21.0	21.0

¹Historically electric imports were primarily from renewable resources, principally hydroelectric.

Note: Totals may not equal sum of components due to independent rounding. Firm Power Sales are capacity sales, meaning the delivery of the power is scheduled as part of the normal operating conditions of the affected electric systems. Economy Sales are subject to curtailment or cessation of delivery by the supplier in accordance with prior agreements or under specified conditions.

Sources: 1996 interregional electricity trade data: Energy Information Administration (EIA), Bulk Power Data System. 1996 international electricity trade data: DOE Form FE-718R, "Annual Report of International Electrical Export/Import Data." Firm/economy share: National Energy Board, *Annual Report 1993*. Planned interregional and international firm power sales: DOE Form IE-411, "Coordinated Bulk Power Supply Program Report," April 1995. Projections: EIA, AEO98 National Energy Modeling System runs FREEZE09.D080798A, FD09ABV.D080398B, and HITECH09.D080698A.

Table 11. Petroleum Supply and Disposition Balance
(Million Barrels per Day, Unless Otherwise Noted)

Supply and Disposition	1996	Projections								
		2005			2010			2020		
		Low Technology	9 Percent Above	High Technology	Low Technology	9 Percent Above	High Technology	Low Technology	9 Percent Above	High Technology
Crude Oil										
Domestic Crude Production ¹	6.48	6.02	6.00	5.99	5.76	5.74	5.66	4.98	4.93	4.75
Alaska	1.40	0.93	0.93	0.93	0.74	0.74	0.74	0.47	0.47	0.47
Lower 48 States	5.08	5.08	5.07	5.05	5.01	4.99	4.92	4.51	4.46	4.29
Net Imports	7.40	9.74	9.72	9.71	10.06	10.03	10.04	11.49	11.32	11.13
Gross Imports	7.51	9.89	9.82	9.81	10.16	10.10	10.04	11.60	11.36	11.18
Exports	0.11	0.15	0.10	0.10	0.10	0.08	0.00	0.11	0.04	0.05
Other Crude Supply ²	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Crude Supply	13.87	15.76	15.73	15.70	15.82	15.77	15.70	16.47	16.25	15.89
Natural Gas Plant Liquids	1.83	2.05	2.00	1.90	2.43	2.35	2.03	2.78	2.67	2.24
Other Inputs ³	0.39	0.23	0.23	0.22	0.28	0.28	0.26	0.48	0.31	0.43
Refinery Processing Gain ⁴	0.84	0.81	0.81	0.83	0.76	0.78	0.82	0.61	0.66	0.78
Net Product Imports ⁵	1.10	1.82	1.87	1.76	1.88	1.86	1.44	3.52	2.99	1.45
Gross Refined Prod. Imports	1.39	1.89	1.94	1.85	1.95	1.93	1.58	3.33	2.81	1.45
Unfinished Oil Imports	0.37	0.68	0.68	0.67	0.69	0.70	0.67	0.94	0.88	0.75
Ethers Imported	0.05	0.05	0.05	0.05	0.06	0.05	0.03	0.04	0.07	0.00
Blending Components Imported	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Exports	0.87	0.80	0.80	0.82	0.82	0.82	0.85	0.79	0.77	0.75
Total Primary Supply ⁶	18.03	20.67	20.63	20.42	21.18	21.04	20.26	23.85	22.88	20.79
Refined Petroleum Products Supplied										
Motor Gasoline ⁷	7.99	9.04	9.00	8.85	8.95	8.88	8.55	9.62	9.38	8.80
Jet Fuel ⁸	1.58	2.05	2.08	2.09	2.19	2.26	2.25	2.75	2.74	2.58
Distillate Fuel ⁹	3.32	3.80	3.77	3.73	3.95	3.84	3.68	4.78	4.12	3.60
Residual Fuel	0.90	0.82	0.81	0.79	0.88	0.85	0.81	1.02	0.99	0.91
Other ¹⁰	4.66	5.00	5.03	5.01	5.25	5.26	5.01	5.75	5.68	4.93
Total	18.45	20.71	20.69	20.47	21.22	21.09	20.30	23.92	22.92	20.81
Refined Petroleum Products Supplied										
Residential and Commercial	1.13	1.00	1.01	1.01	0.93	0.96	0.96	0.90	0.95	0.97
Industrial ¹¹	4.87	5.22	5.24	5.21	5.50	5.49	5.14	6.09	5.94	4.92
Transportation	12.12	14.33	14.28	14.11	14.66	14.54	14.10	16.34	15.81	14.85
Electric Generators ¹²	0.33	0.15	0.15	0.14	0.13	0.11	0.10	0.59	0.22	0.07
Total	18.45	20.71	20.69	20.47	21.22	21.09	20.30	23.92	22.92	20.81
Discrepancy ¹³	-0.42	-0.05	-0.05	-0.05	-0.05	-0.05	-0.04	-0.07	-0.04	-0.03
World Oil Price										
(1996 dollars per barrel) ¹⁴	20.48	20.04	19.96	19.74	18.78	18.72	18.09	20.02	19.73	18.74
Import Share of Product Supplied ...	0.46	0.56	0.56	0.56	0.56	0.56	0.57	0.63	0.62	0.60
Net Expenditures for Imported Crude Products (billion 1996 dollars)	62.27	85.86	85.69	83.50	82.41	81.85	75.87	110.80	103.12	86.16
Domestic Refinery Distillation										
Capacity	15.4	16.6	16.6	16.5	16.7	16.6	16.5	17.4	17.2	16.7
Capacity Utilization Rate (percent) ...	94.0	95.3	95.3	95.2	95.0	95.0	95.2	95.2	95.1	95.2

¹Includes lease condensate.

²Strategic petroleum reserve stock additions plus unaccounted for crude oil and crude stock withdrawals minus crude products supplied.

³Includes alcohols, ethers, petroleum product stock withdrawals, domestic sources of blending components, and other hydrocarbons.

⁴Represents volumetric gain in refinery distillation and cracking processes.

⁵Includes net imports of finished petroleum products, unfinished oils, other hydrocarbons, alcohols, ethers, and blending components.

⁶Total crude supply plus natural gas plant liquids, other inputs, refinery processing gain, and net petroleum imports.

⁷Includes ethanol and ethers blended into gasoline.

⁸Includes naphtha and kerosene types.

⁹Includes distillate and kerosene.

¹⁰Includes aviation gasoline, liquefied petroleum gas, petrochemical feedstocks, lubricants, waxes, asphalt, road oil, still gas, special naphthas, petroleum coke, crude oil product supplied, and miscellaneous petroleum products.

¹¹Includes consumption by cogenerators.

¹²Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy.

¹³Balancing item. Includes unaccounted for supply, losses and gains.

¹⁴Average refiner acquisition cost for imported crude oil.

N/A = Not applicable.

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

Sources: 1996 expenditures for imported crude oil and petroleum products based on internal calculations. Other 1996 data: Energy Information Administration (EIA), *Petroleum Supply Annual 1996*, DOE/EIA-0340(96) (Washington, DC, June 1997). **Projections:** EIA, AEO98 National Energy Modeling System runs FREEZE09.D080798A, FD09ABV.D080398B, and HITECH09.D080698A.

Table 12. Petroleum Product Prices
(1996 Cents per Gallon Unless Otherwise Noted)

Sector and Fuel	1996	Projections								
		2005			2010			2020		
		Low Technology	9 Percent Above	High Technology	Low Technology	9 Percent Above	High Technology	Low Technology	9 Percent Above	High Technology
World Oil Price (1996 dollars per barrel)	20.48	20.04	19.96	19.74	18.78	18.72	18.09	20.02	19.73	18.74
Delivered Sector Product Prices										
Residential										
Distillate Fuel	98.4	137.0	124.8	119.6	167.4	145.2	131.7	174.4	141.6	113.4
Liquefied Petroleum Gas	100.0	120.6	114.1	111.7	134.0	123.1	115.9	140.7	120.7	106.2
Commercial										
Distillate Fuel	73.1	106.4	94.2	88.8	136.8	114.5	100.7	144.7	110.7	82.4
Residual Fuel	48.4	84.1	70.0	64.1	119.5	93.8	79.0	125.7	90.7	62.1
Residual Fuel (1996 dollars per barrel)	20.35	35.34	29.39	26.90	50.18	39.38	33.17	52.81	38.08	26.07
Industrial¹										
Distillate Fuel	76.3	107.6	95.2	89.8	138.3	115.8	101.6	147.6	112.3	83.9
Liquefied Petroleum Gas	67.3	73.9	67.3	64.9	86.5	75.6	68.5	93.8	73.1	58.7
Residual Fuel	44.8	79.0	64.9	58.9	114.7	89.2	73.8	122.7	85.9	56.2
Residual Fuel (1996 dollars per barrel)	18.81	33.20	27.27	24.76	48.18	37.47	30.98	51.53	36.10	23.60
Transportation										
Diesel Fuel (distillate) ²	123.5	149.6	137.2	131.5	177.1	155.1	140.9	179.5	144.6	115.9
Jet Fuel ³	74.6	103.2	91.6	86.2	131.1	110.1	96.8	139.3	108.2	81.1
Motor Gasoline ⁴	122.5	152.0	140.6	135.9	174.7	155.5	141.7	177.7	149.3	123.6
Liquefied Petroleum Gas	109.0	127.9	121.5	119.0	139.3	128.6	121.5	142.2	123.2	108.9
Residual Fuel	38.2	78.3	64.3	58.1	114.8	89.2	73.6	122.2	85.3	56.2
Residual Fuel (1996 dollars per barrel)	16.04	32.88	27.00	24.39	48.22	37.45	30.92	51.33	35.83	23.59
E85	141.7	151.7	149.2	147.9	164.3	146.5	139.7	171.0	147.9	131.4
M85	89.6	106.8	100.9	98.2	118.0	107.7	100.6	120.2	105.6	92.2
Electric Generators⁵										
Distillate Fuel	68.1	101.8	89.5	83.9	134.0	111.4	96.6	139.0	104.3	79.3
Residual Fuel	45.9	84.9	70.4	64.6	122.1	97.6	83.8	136.8	100.6	69.6
Residual Fuel (1996 dollars per barrel)	19.27	35.65	29.58	27.15	51.28	41.00	35.20	57.48	42.25	29.25
Refined Petroleum Product Prices⁶										
Distillate Fuel	108.7	139.4	126.9	121.2	168.1	145.6	131.5	168.7	135.7	108.7
Jet Fuel ³	74.6	103.2	91.6	86.2	131.1	110.1	96.8	139.3	108.2	81.1
Liquefied Petroleum Gas	73.6	84.2	77.5	75.3	97.0	86.3	79.8	104.0	84.6	71.9
Motor Gasoline ⁴	122.5	151.8	140.4	135.7	174.6	155.3	141.5	177.6	149.2	123.5
Residual Fuel	42.5	79.9	65.8	59.6	116.0	90.4	75.1	123.2	86.4	57.3
Residual Fuel (1996 dollars per barrel)	17.87	33.55	27.63	25.02	48.72	37.95	31.52	51.74	36.27	24.07
Average	102.8	130.0	119.0	114.2	152.5	133.4	120.9	156.2	127.5	103.7

¹Includes cogenerators. Includes Federal and State taxes while excluding county and state taxes.

²Low sulfur diesel fuel. Includes Federal and State taxes while excluding county and local taxes.

³Kerosene-type jet fuel.

⁴Sales weighted-average price for all grades. Includes Federal and State taxes while excluding county and local taxes.

⁵Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy.

⁶Weighted averages of end-use fuel prices are derived from the prices in each sector and the corresponding sectoral consumption.

Sources: 1996 prices for gasoline, distillate, and jet fuel are based on prices in various issues of Energy Information Administration, *Petroleum Marketing Monthly*, DOE/EIA-0380(96/03-97/04) (Washington, DC, 1996-97). 1996 prices for all other petroleum products are derived from EIA, *State Energy Price and Expenditures Report: 1994*, DOE/EIA-0376(94) (Washington, DC, June 1997). **Projections:** EIA, AEO98 National Energy Modeling System runs FREEZE09.D080798A, FD09ABV.D080398B, and HITECH09.D080698A.

Table 13. Natural Gas Supply and Disposition
(Trillion Cubic Feet per Year)

Supply, Disposition, and Prices	1996	Projections								
		2005			2010			2020		
		Low Technology	9 Percent Above	High Technology	Low Technology	9 Percent Above	High Technology	Low Technology	9 Percent Above	High Technology
Production										
Dry Gas Production ¹	19.02	22.49	21.91	20.84	26.86	25.94	22.36	30.67	29.44	24.72
Supplemental Natural Gas ²	0.12	0.11	0.11	0.11	0.06	0.05	0.05	0.07	0.06	0.05
Net Imports										
Canada	2.72	5.16	4.68	4.45	5.78	5.23	4.52	6.48	5.83	4.52
Mexico	2.76	4.59	4.37	4.24	5.13	4.89	4.34	5.76	5.41	4.56
Liquefied Natural Gas	-0.02	0.30	0.04	-0.06	0.32	0.06	-0.12	0.36	0.09	-0.34
	-0.03	0.27	0.27	0.27	0.33	0.29	0.29	0.37	0.33	0.29
Total Supply	21.86	27.77	26.70	25.40	32.70	31.23	26.93	37.22	35.33	29.29
Consumption by Sector										
Residential	5.23	5.09	5.10	5.07	4.84	4.86	4.81	5.10	4.95	5.14
Commercial	3.20	3.20	3.33	3.37	2.86	3.13	3.33	2.78	3.18	3.65
Industrial ³	8.43	9.60	9.35	9.27	9.87	9.56	9.06	9.50	9.11	8.77
Electric Generators ⁴	2.98	7.18	6.27	5.13	12.03	10.63	6.99	16.25	14.61	8.66
Lease and Plant Fuel ⁵	1.25	1.48	1.45	1.39	1.71	1.66	1.48	1.94	1.88	1.64
Pipeline Fuel	0.71	0.81	0.80	0.75	0.95	0.93	0.80	1.13	1.07	0.90
Transportation ⁶	0.01	0.17	0.17	0.17	0.21	0.22	0.22	0.28	0.30	0.29
Total	21.82	27.53	26.46	25.16	32.47	31.00	26.69	36.98	35.11	29.05
Discrepancy⁷	0.04	0.24	0.24	0.24	0.23	0.23	0.24	0.24	0.22	0.24

¹Marketed production (wet) minus extraction losses.

²Synthetic natural gas, propane air, coke oven gas, refinery gas, biomass gas, air injected for Btu stabilization, and manufactured gas commingled and distributed with natural gas.

³Includes consumption by cogenerators.

⁴Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy.

⁵Represents natural gas used in the field gathering and processing plant machinery.

⁶Compressed natural gas used as vehicle fuel.

⁷Balancing item. Natural gas lost as a result of converting flow data measured at varying temperatures and pressures to a standard temperature and pressure and the merger of different data reporting systems which vary in scope, format, definition, and respondent type. In addition, 1996 values include net storage injections.

Btu = British thermal unit.

N/A = Not applicable.

Note: Totals may not equal sum of components due to independent rounding. Figures for 1996 may differ from published data due to internal conversion factors.

Sources: 1996 supplemental natural gas: Energy Information Administration (EIA), *Natural Gas Monthly*, DOE/EIA-0130(97/6) (Washington, DC, June 1997). 1996 imports and dry gas production derived from: EIA, *Natural Gas Annual 1996*, DOE/EIA-0131(96) (Washington, DC, November 1997). 1996 transportation sector consumption: EIA, AEO98 National Energy Modeling System runs FREEZE09.D080798A, FD09ABV.D080398B, and HITECH09.D080698A. Other 1996 consumption: EIA, *Short-Term Energy Outlook August 1997*. Online. <http://www.eia.doe.gov/emeu/steo/pub/upd/aug97/index.html> (August 21, 1997) with adjustments to end-use sector consumption levels for consumption of natural gas by electric wholesale generators based on EIA, AEO98 National Energy Modeling System runs FREEZE09.D080798A, FD09ABV.D080398B, and HITECH09.D080698A.

Projections: EIA, AEO98 National Energy Modeling System runs FREEZE09.D080798A, FD09ABV.D080398B, and HITECH09.D080698A.

Table 14. Natural Gas Prices, Margins, and Revenue
(1996 Dollars per Thousand Cubic Feet, Unless Otherwise Noted)

Prices, Margins, and Revenue	1996	Projections								
		2005			2010			2020		
		Low Technology	9 Percent Above	High Technology	Low Technology	9 Percent Above	High Technology	Low Technology	9 Percent Above	High Technology
Source Price										
Average Lower 48 Wellhead Price ¹	2.24	2.28	2.21	2.16	3.10	2.78	2.25	4.37	3.71	2.28
Average Import Price	1.98	2.17	2.12	2.09	3.10	2.82	2.21	4.44	3.82	2.35
Average²	2.21	2.26	2.20	2.15	3.10	2.79	2.24	4.38	3.73	2.29
Delivered Prices										
Residential	6.37	7.81	7.05	6.73	10.42	8.83	7.56	11.70	9.42	6.55
Commercial	5.43	6.90	6.11	5.77	9.49	7.82	6.48	10.52	8.10	5.20
Industrial ³	3.05	4.80	4.04	3.72	7.46	5.91	4.70	8.83	6.53	3.80
Electric Generators ⁴	2.70	4.58	3.82	3.48	7.43	5.83	4.43	8.80	6.44	3.58
Transportation ⁵	5.57	7.95	7.18	6.92	11.19	9.66	8.52	12.71	10.44	7.79
Average⁶	4.26	5.64	4.93	4.66	8.16	6.63	5.47	9.44	7.14	4.50
Transmission and Distribution										
Residential	4.17	5.55	4.85	4.59	7.32	6.04	5.31	7.32	5.69	4.25
Commercial	3.23	4.64	3.91	3.62	6.39	5.03	4.24	6.14	4.37	2.91
Industrial ³	0.84	2.54	1.85	1.57	4.35	3.12	2.46	4.45	2.81	1.51
Electric Generators ⁴	0.49	2.32	1.62	1.33	4.33	3.04	2.19	4.42	2.72	1.28
Transportation ⁵	3.37	5.69	4.98	4.77	8.09	6.87	6.28	8.33	6.72	5.50
Average⁶	2.05	3.38	2.73	2.51	5.06	3.84	3.23	5.06	3.42	2.21
Transmission and Distribution (billion 1996 dollars)										
Residential	21.81	28.25	24.76	23.24	35.42	29.37	25.56	37.34	28.20	21.88
Commercial	10.34	14.88	13.00	12.21	18.27	15.77	14.13	17.07	13.89	10.62
Industrial ³	7.10	24.38	17.26	14.60	42.95	29.83	22.26	42.25	25.59	13.22
Electric Generators ⁴	1.47	16.69	10.18	6.83	52.05	32.35	15.33	71.76	39.69	11.12
Transportation ⁵	0.04	0.95	0.84	0.80	1.73	1.54	1.37	2.31	2.00	1.61
Total	40.76	85.15	66.04	57.67	150.42	108.86	78.65	170.73	109.38	58.44

¹Represents lower 48 onshore and offshore supplies.

²Quantity-weighted average of the average lower 48 wellhead price and the average price of imports at the U.S. border.

³Includes consumption by cogenerators.

⁴Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy.

⁵Compressed natural gas used as a vehicle fuel. Price includes estimated motor vehicle fuel taxes.

⁶Weighted average prices and margins. Weights used are the sectoral consumption values excluding lease, plant, and pipeline fuel.

⁷Within the table, "transmission and distribution" margins equal the difference between the delivered price and the source price (average of the wellhead price and the price of imports at the U.S. border) of natural gas and, thus, reflect the total cost of bringing natural gas to market. When the term "transmission and distribution" margins is used in today's natural gas market, it generally does not include the cost of independent natural gas marketers or costs associated with aggregation of supplies, provisions of storage, and other services. As used here, the term includes the cost of all services and the cost of pipeline fuel used in compressor stations.

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

Sources: 1996 industrial delivered prices based on Energy Information Administration (EIA), *Manufacturing Energy Consumption Survey 1991*. 1996 residential and commercial delivered prices, average lower 48 wellhead price, and average import price: EIA, *Natural Gas Monthly*, DOE/EIA-0130(97/06) (Washington, DC, June 1997). **Other 1995 values, other 1996 values, and projections:** EIA, AEO98 National Energy Modeling System runs FREEZE09.D080798A, FD09ABV.D080398B, and HITECH09.D080698A.

Table 15. Oil and Gas Supply

Production and Supply	1996	Projections								
		2005			2010			2020		
		Low Technology	9 Percent Above	High Technology	Low Technology	9 Percent Above	High Technology	Low Technology	9 Percent Above	High Technology
Crude Oil										
Lower 48 Average Wellhead Price ¹ (1996 dollars per barrel)	19.41	19.49	19.44	19.19	18.10	18.09	17.50	18.95	18.67	17.73
Production (million barrels per day)²										
U.S. Total	6.48	6.02	6.00	5.99	5.76	5.74	5.66	4.98	4.93	4.75
Lower 48 Onshore	3.76	3.39	3.38	3.37	3.42	3.40	3.35	3.18	3.16	3.03
Conventional	3.15	2.76	2.75	2.75	2.71	2.70	2.66	2.63	2.61	2.53
Enhanced Oil Recovery	0.61	0.63	0.63	0.63	0.70	0.70	0.69	0.55	0.55	0.50
Lower 48 Offshore	1.32	1.69	1.69	1.68	1.59	1.59	1.57	1.33	1.31	1.26
Alaska	1.40	0.93	0.93	0.93	0.74	0.74	0.74	0.47	0.47	0.47
Lower 48 End of Year Reserves (billion barrels)	16.82	15.29	15.23	15.19	15.26	15.20	14.98	14.08	13.97	13.47
Natural Gas										
Lower 48 Average Wellhead Price ¹ (1996 dollars per thousand cubic feet)	2.24	2.28	2.21	2.16	3.10	2.78	2.25	4.37	3.71	2.28
Production (trillion cubic feet)³										
U.S. Total	19.01	22.49	21.91	20.84	26.86	25.94	22.36	30.67	29.44	24.72
Lower 48 Onshore	13.07	15.28	14.87	14.15	18.82	18.14	15.30	21.58	20.55	17.24
Associated-Dissolved ⁴	1.84	1.52	1.52	1.52	1.45	1.44	1.43	1.31	1.30	1.27
Non-Associated	11.23	13.76	13.35	12.63	17.38	16.70	13.87	20.26	19.24	15.97
Conventional	7.96	9.65	9.34	8.75	11.62	11.05	9.43	13.75	13.19	10.94
Unconventional	3.27	4.11	4.02	3.88	5.76	5.65	4.44	6.51	6.05	5.03
Lower 48 Offshore	5.50	6.69	6.51	6.16	7.48	7.25	6.50	8.48	8.29	6.87
Associated-Dissolved ⁴	0.80	0.92	0.92	0.92	0.91	0.91	0.90	0.84	0.84	0.83
Non-Associated	4.70	5.76	5.59	5.24	6.57	6.34	5.60	7.64	7.45	6.05
Alaska	0.43	0.53	0.53	0.53	0.55	0.56	0.55	0.61	0.61	0.60
Lower 48 End of Year Reserves (trillion cubic feet)	157.23	171.04	171.58	172.67	180.19	178.60	181.27	197.61	189.12	180.42
Supplemental Gas Supplies (trillion cubic feet) ⁵	0.12	0.11	0.11	0.11	0.06	0.05	0.05	0.07	0.06	0.05
Total Lower 48 Wells (thousands)	22.07	28.40	28.04	27.83	32.97	31.46	28.33	41.39	37.85	30.10

Ft. = feet.

¹Represents lower 48 onshore and offshore supplies.

²Includes lease condensate.

³Market production (wet) minus extraction losses.

⁴Gas which occurs in crude oil reserves either as free gas (associated) or as gas in solution with crude oil (dissolved).

⁵Synthetic natural gas, propane air, coke oven gas, refinery gas, biomass gas, air injected for Btu stabilization, and manufactured gas commingled and distributed with natural gas.

Note: Totals may not equal sum of components due to independent rounding. Figures for 1996 may differ from published data due to internal conversion factors.

Sources: 1996 crude oil lower 48 average wellhead price: Energy Information Administration (EIA), Office of Integrated Analysis and Forecasting. 1996 total wells completed: EIA, Office of Integrated Analysis and Forecasting. 1996 lower 48 onshore, lower 48 offshore, Alaska crude oil production: EIA, *Petroleum Supply Annual 1996*, DOE/EIA-0340(96) (Washington, DC, June 1997). 1996 natural gas lower 48 average wellhead price, Alaska and total natural gas production, and supplemental gas supplies. EIA, *Natural Gas Monthly*, DOE/EIA-0130(97/06) (Washington, DC, June 1997). Other 1996 values: EIA, Office of Integrated Analysis and Forecasting. Projections: EIA, AEO98 National Energy Modeling System runs FREEZE09.D080798A, FD09ABV.D080398B, and HITECH09.D080698A.

Table 16. Coal Supply, Disposition, and Prices
(Million Short Tons per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	1996	Projections								
		2005			2010			2020		
		Low Technology	9 Percent Above	High Technology	Low Technology	9 Percent Above	High Technology	Low Technology	9 Percent Above	High Technology
Production¹										
Appalachia	452	422	415	425	310	306	370	192	238	328
Interior	173	131	142	133	77	89	100	27	45	75
West	439	385	432	481	179	229	320	72	123	315
East of the Mississippi	564	523	516	511	377	378	452	212	274	388
West of the Mississippi	500	415	473	528	189	246	338	79	131	330
Total	1064	938	989	1039	566	624	790	292	405	718
Net Imports										
Imports	7	4	6	6	1	4	4	1	4	4
Exports	90	89	89	89	89	89	89	93	93	93
Total	-83	-85	-83	-83	-88	-85	-85	-92	-89	-89
Total Supply²	981	853	906	956	478	539	705	199	316	629
Consumption by Sector										
Residential and Commercial	6	5	6	6	5	5	5	5	5	6
Industrial ³	70	69	56	54	67	48	39	72	57	49
Coke Plants	32	28	28	27	26	23	19	23	15	11
Electric Generators ⁴	896	762	829	882	379	460	645	102	235	562
Total	1003	865	918	969	477	537	709	201	312	628
Discrepancy and Stock Change⁵	-23	-12	-12	-13	0	3	-3	-1	4	1
Average Minemouth Price										
(1996 dollars per short ton)	18.50	16.59	16.10	15.80	17.34	16.42	15.90	17.83	16.24	13.77
(1996 dollars per million Btu)	0.87	0.77	0.76	0.75	0.77	0.75	0.73	0.77	0.72	0.65
Delivered Prices										
(1996 dollars per short ton) ⁶										
Industrial	32.28	96.77	72.61	63.17	163.34	119.45	96.31	163.03	104.28	57.53
Coke Plants	47.33	125.95	96.41	84.78	206.61	152.49	124.29	207.87	135.28	78.80
Electric Generators										
(1996 dollars per short ton)	26.45	88.48	64.24	55.48	156.80	109.56	87.04	152.59	95.33	49.20
(1996 dollars per million Btu)	1.29	4.25	3.13	2.71	7.28	5.23	4.16	7.28	4.52	2.41
Average	27.52	90.38	65.73	56.72	160.50	112.28	88.57	162.80	98.93	50.36
Exports ⁷	40.77	36.80	36.96	36.80	35.35	35.51	35.57	32.83	32.82	32.21

¹Includes anthracite, bituminous coal, and lignite.

²Production plus net imports and net storage withdrawals.

³Includes consumption by cogenerators.

⁴Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy.

⁵Balancing item: the sum of production, net imports, and net storage minus total consumption.

⁶Sectoral prices weighted by consumption tonnage; weighted average excludes residential/ commercial prices and export free-alongside-ship (f.a.s.) prices.

⁷F.a.s. price at U.S. port of exit.

N/A = Not applicable.

Btu = British thermal unit.

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

Sources: 1996 data derived from: Energy Information Administration (EIA), *Coal Industry Annual 1996*, DOE/EIA-0584(96) (Washington, DC, November 1997). **Projections:** EIA, AEO98 National Energy Modeling System runs FREEZE09.D080798A, FD09ABV.D080398B, and HITECH09.D080698A.

Table 17. Renewable Energy Generating Capability and Generation
(Thousand Megawatts, Unless Otherwise Noted)

Capacity and Generation	1996	Projections								
		2005			2010			2020		
		Low Technology	9 Percent Above	High Technology	Low Technology	9 Percent Above	High Technology	Low Technology	9 Percent Above	High Technology
Electric Generators¹										
(excluding cogenerators)										
Net Summer Capability										
Conventional Hydropower	77.66	80.70	79.74	79.73	81.84	79.80	79.78	82.61	79.80	79.78
Geothermal ²	3.02	3.46	3.11	3.49	4.50	3.51	4.04	7.53	4.95	4.76
Municipal Solid Waste ³	3.26	3.66	3.66	3.78	3.97	3.99	4.21	4.42	4.41	4.74
Wood and Other Biomass ⁴	1.64	1.76	1.93	2.18	1.76	2.70	4.43	1.76	11.95	9.87
Solar Thermal	0.36	0.38	0.38	0.38	0.44	0.44	0.44	0.54	0.54	0.54
Solar Photovoltaic	0.01	0.08	0.08	0.08	0.22	0.22	0.22	0.56	0.56	0.56
Wind	1.85	5.58	4.22	6.20	14.24	9.44	13.34	49.87	38.08	26.22
Total	87.81	95.60	93.12	95.81	106.97	100.10	106.46	147.29	140.29	126.46
Generation (billion kilowatthours)										
Conventional Hydropower	346.28	317.03	312.53	312.47	322.00	312.96	312.88	324.53	313.12	313.01
Geothermal ²	15.70	21.03	18.61	21.20	28.65	21.72	25.45	51.40	33.35	31.97
Municipal Solid Waste ³	18.85	24.53	24.53	25.33	26.67	26.78	28.29	29.75	29.75	31.95
Wood and Other Biomass ⁴	7.27	17.20	18.30	20.32	13.82	21.01	34.79	10.81	83.07	71.46
Solar Thermal	0.82	0.96	0.96	0.96	1.15	1.15	1.15	1.47	1.47	1.47
Solar Photovoltaic	0.00	0.20	0.20	0.20	0.60	0.60	0.60	1.45	1.45	1.45
Wind	3.17	14.00	10.14	18.06	38.32	24.73	42.82	140.50	108.33	87.73
Total	392.09	394.94	385.27	398.54	431.21	408.95	446.01	559.92	570.54	539.05
Cogenerators⁵										
Net Summer Capability										
Municipal Solid Waste	0.43	0.44	0.44	0.44	0.45	0.45	0.45	0.45	0.45	0.45
Biomass	5.44	6.35	6.35	6.41	6.53	6.60	6.87	6.83	6.93	7.57
Total	5.87	6.79	6.80	6.85	6.98	7.05	7.32	7.28	7.38	8.02
Generation (billion kilowatthours)										
Municipal Solid Waste	2.21	2.27	2.27	2.27	2.29	2.29	2.29	2.32	2.32	2.32
Biomass	39.40	43.80	44.21	44.76	45.62	46.94	50.19	48.47	50.20	56.95
Total	41.61	46.07	46.48	47.03	47.91	49.23	52.49	50.79	52.51	59.27

¹Includes grid-connected utilities and nonutilities other than cogenerators. These nonutility facilities include small power producers, exempt wholesale generators and generators at industrial and commercial facilities which do not produce steam for other uses.

²Includes hydrothermal resources only (hot water and steam).

³Includes landfill gas.

⁴Includes projections for energy crops after 2010.

⁵Cogenerators produce electricity and other useful thermal energy.

Notes: Totals may not equal sum of components due to independent rounding. Net summer capability has been estimated for nonutility generators for AEO98. Net summer capability is used to be consistent with electric utility capacity estimates. Data for electric utility capacity are the most recently available as of August 25, 1997. Additional retirements are also determined on the basis of the size and age of the units. Therefore, capacity estimates may differ from other Energy Information Administration sources.

Sources: 1996 electric utility capability: Energy Information Administration (EIA), Form EIA-860 "Annual Electric Utility Report," 1996 nonutility and cogenerator capability: Form EIA-867, "Annual Nonutility Power Producer Report." 1996 generation: EIA, *Annual Energy Review 1996*, DOE/EIA-0384(96) (Washington, DC, July 1997). Projections: EIA, AEO98 National Energy Modeling System runs FREEZE09.D080798A, FD09ABV.D080398B, and HITECH09.D080698A.

Table 18. Renewable Energy Consumption by Sector and Source¹
(Quadrillion Btu per Year)

Sector and Source	1996	Projections								
		2005			2010			2020		
		Low Technology	9 Percent Above	High Technology	Low Technology	9 Percent Above	High Technology	Low Technology	9 Percent Above	High Technology
Marketed Renewable Energy²										
Residential	0.61	0.62	0.61	0.60	0.64	0.62	0.62	0.67	0.64	0.64
Wood	0.61	0.62	0.61	0.60	0.64	0.62	0.62	0.67	0.64	0.64
Commercial³	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Biomass	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Industrial⁴	1.82	2.08	2.10	2.11	2.18	2.23	2.32	2.32	2.39	2.57
Conventional Hydroelectric	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Municipal Solid Waste	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Biomass	1.78	2.04	2.06	2.08	2.14	2.20	2.29	2.28	2.35	2.53
Transportation	0.10	0.13	0.13	0.13	0.23	0.22	0.23	0.69	0.40	0.60
Ethanol used in E85 ⁵	0.00	0.06	0.06	0.07	0.10	0.10	0.13	0.14	0.14	0.20
Ethanol used in Gasoline Blending	0.10	0.07	0.07	0.06	0.13	0.12	0.09	0.55	0.26	0.40
Electric Generators⁶	4.40	4.60	4.42	4.63	5.17	4.75	5.22	7.03	6.58	6.28
Conventional Hydroelectric	3.56	3.26	3.21	3.21	3.31	3.22	3.22	3.34	3.22	3.22
Geothermal	0.43	0.62	0.54	0.63	0.88	0.64	0.78	1.65	1.01	1.00
Municipal Solid Waste	0.30	0.39	0.39	0.41	0.43	0.43	0.45	0.48	0.48	0.51
Biomass	0.06	0.18	0.16	0.18	0.14	0.19	0.31	0.11	0.74	0.64
Solar Thermal	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00
Solar Photovoltaic	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01
Wind	0.03	0.14	0.10	0.19	0.39	0.25	0.44	1.44	1.11	0.90
Total Marketed Renewable Energy ...	6.94	7.43	7.26	7.47	8.22	7.83	8.38	10.71	10.01	10.09
Non-Marketed Renewable Energy⁷										
Selected Consumption										
Residential	0.02	0.02	0.02	0.03	0.03	0.03	0.06	0.03	0.05	0.13
Solar Hot Water Heating	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Geothermal Heat Pumps	0.01	0.01	0.01	0.02	0.02	0.02	0.05	0.02	0.04	0.12
Commercial	0.01	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04
Solar Thermal	0.01	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04

¹Actual heat rates used to determine fuel consumption for all renewable fuels except hydropower, solar, and wind. Consumption at hydroelectric, solar, and wind facilities determined by using the fossil fuel equivalent of 10,280 Btu per kilowatthour.

²Includes nonelectric renewable energy groups for which the energy source is bought and sold in the marketplace, although all transactions may not necessarily be marketed, and marketed renewable energy inputs for electricity entering the marketplace on the electric power grid. Excludes electricity imports; see Table 8.

³Value is less than 0.005 quadrillion Btu per year and rounds to zero.

⁴Includes all electricity production by industrial and other cogenerators for the grid and for own use.

⁵Excludes motor gasoline component of E85.

⁶Includes renewable energy delivered to the grid from electric utilities and nonutilities. Renewable energy used in generating electricity for own use is included in the individual sectoral electricity energy consumption values.

⁷Includes selected renewable energy consumption data for which the energy is not bought or sold, either directly or indirectly as an input to marketed energy. The Energy Information Administration does not estimate or project total consumption of nonmarketed renewable energy.

N/A = Not applicable.

Btu = British thermal unit.

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

Sources: 1996 electric generators: Energy Information Administration (EIA), Form EIA-860, "Annual Electric Utility Report" and EIA, Form EIA-867, "Annual Nonutility Power Producer Report." 1996 ethanol: EIA, *Petroleum Supply Annual 1996*, DOE/EIA-0340(96/1) (Washington, DC, June 1997). Other 1996: EIA, Office of Integrated Analysis and Forecasting. **Projections:** EIA, AEO98 National Energy Modeling System runs FREEZE09.D080798A, FD09ABV.D080398B, and HITECH09.D080698A.

Table 19. Carbon Emissions by Sector and Source
(Million Metric Tons per Year)

Sector and Source	1996	Projections								
		2005			2010			2020		
		Low Technology	9 Percent Above	High Technology	Low Technology	9 Percent Above	High Technology	Low Technology	9 Percent Above	High Technology
Residential										
Petroleum	27.3	23.1	23.1	22.9	21.2	21.4	21.2	20.2	20.6	20.8
Natural Gas	77.4	75.4	75.6	75.1	71.7	72.0	71.3	75.6	73.4	76.2
Coal	1.4	1.1	1.2	1.2	0.9	1.0	1.1	0.9	1.0	1.1
Electricity	179.9	180.0	187.5	191.2	136.5	143.9	162.2	116.2	129.5	162.7
Total	286.0	279.6	287.3	290.3	230.3	238.3	255.7	212.9	224.4	260.9
Commercial										
Petroleum	15.3	11.7	12.0	12.2	10.7	11.3	11.7	10.2	11.1	11.8
Natural Gas	47.4	47.5	49.3	50.0	42.4	46.4	49.4	41.2	47.1	54.1
Coal	2.1	2.1	2.2	2.2	1.9	2.1	2.2	1.8	2.1	2.4
Electricity	164.8	159.2	168.0	172.5	114.7	126.3	147.1	92.3	107.8	145.6
Total	229.6	220.5	231.5	236.9	169.7	186.1	210.4	145.5	168.1	213.9
Industrial¹										
Petroleum	104.8	108.6	108.2	108.0	114.7	113.5	105.4	130.2	127.0	101.3
Natural Gas ²	142.8	162.1	158.0	156.0	169.4	164.1	154.2	167.3	160.7	152.3
Coal	59.3	61.3	54.0	51.8	60.1	48.4	37.8	61.6	50.4	37.3
Electricity	169.2	177.6	178.0	179.6	137.5	135.6	140.1	107.0	110.8	112.5
Total	476.1	509.6	498.2	495.4	481.6	461.5	437.6	466.1	449.0	403.3
Transportation										
Petroleum ³	457.9	544.8	543.0	536.7	557.2	552.6	536.2	614.6	598.9	559.4
Natural Gas ⁴	10.5	14.5	14.3	13.6	17.3	17.1	15.0	20.9	20.3	17.6
Other ⁵	0.0	1.5	1.5	1.8	2.6	2.5	3.4	4.0	3.7	5.4
Electricity	2.8	3.6	3.7	4.2	3.5	3.4	4.7	3.5	3.3	5.4
Total³	471.2	564.5	562.5	556.4	580.6	575.6	559.2	643.0	626.3	587.8
Total Carbon Emissions⁶										
Petroleum ³	605.3	688.2	686.3	679.8	703.7	698.7	674.5	775.3	757.6	693.3
Natural Gas	278.1	299.5	297.2	294.7	300.8	299.7	289.9	305.0	301.6	300.2
Coal	62.8	64.5	57.4	55.2	62.9	51.4	41.0	64.3	53.6	40.8
Other ⁵	0.0	1.5	1.5	1.8	2.6	2.5	3.4	4.0	3.7	5.4
Electricity	516.7	520.4	537.1	547.5	392.2	409.1	454.1	319.0	351.3	426.2
Total³	1462.9	1574.2	1579.5	1579.0	1462.2	1461.5	1462.9	1467.6	1467.8	1466.0
Electric Generators⁷										
Petroleum	15.5	7.4	7.3	6.5	6.1	5.0	4.8	25.3	9.3	3.3
Natural Gas	40.3	105.7	92.3	75.5	177.0	156.4	102.9	239.1	215.0	127.5
Coal	460.9	407.3	437.5	465.5	209.1	247.7	346.4	54.6	127.0	295.5
Total	516.7	520.4	537.1	547.5	392.2	409.1	454.1	319.0	351.3	426.2
Total Carbon Emissions⁸										
Petroleum ³	620.8	695.6	693.6	686.3	709.8	703.8	679.3	800.6	767.0	696.6
Natural Gas	318.4	405.2	389.4	370.2	477.8	456.1	392.8	544.1	516.5	427.7
Coal	523.7	471.9	494.9	520.7	272.0	299.1	387.4	118.9	180.5	336.3
Other ⁵	0.0	1.5	1.5	1.8	2.6	2.5	3.4	4.0	3.7	5.4
Total³	1462.9	1574.2	1579.5	1579.0	1462.2	1461.5	1462.9	1467.6	1467.8	1466.0
Carbon Emissions (tons per person)										
	5.5	5.5	5.5	5.5	4.9	4.9	4.9	4.5	4.5	4.5

¹Includes consumption by cogenerators.

²Includes lease and plant fuel.

³This includes international bunker fuels which, by convention, are excluded from the international accounting of carbon emissions. In the years from 1989 through 1996, international bunker fuels account for 22 to 24 million metric tons of carbon annually.

⁴Includes pipeline fuel natural gas and compressed natural gas used as vehicle fuel.

⁵Includes methanol and liquid hydrogen.

⁶Measured for delivered energy consumption.

⁷Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy.

⁸Measured for total energy consumption, with emissions for electric power generators distributed to the primary fuels.

N/A = Not applicable

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

Sources: Carbon coefficients from Energy Information Administration, (EIA) *Emissions of Greenhouse Gases in the United States 1996*, DOE/EIA-0573(96) (Washington, DC, October 1997). 1996 consumption estimates based on: EIA, *Short Term Energy Outlook, August 1997*, Online. <http://www.eia.doe.gov/emeu/steo/pub/upd/aug97/index.html> (August 21, 1997). **Projections:** EIA, AEO98 National Energy Modeling System run FREEZE09.D080798A, FD09ABV.D080398B, and HITECH09.D080698A.