

Economic Growth Case Comparisons

Table B1. Total Energy Supply and Disposition Summary
(Quadrillion Btu per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	2002	Projections								
		2010			2020			2025		
		Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
Production										
Crude Oil and Lease Condensate . . .	11.91	12.52	12.56	12.60	10.49	10.49	10.62	9.29	9.77	9.98
Natural Gas Plant Liquids	2.56	3.05	3.10	3.20	3.25	3.47	3.62	3.30	3.47	3.62
Dry Natural Gas	19.56	20.69	21.05	21.87	22.70	24.43	25.64	23.31	24.64	25.84
Coal	22.70	24.76	25.25	25.52	27.08	27.92	28.20	28.62	31.10	32.26
Nuclear Power	8.15	8.29	8.29	8.29	8.53	8.53	8.53	8.53	8.53	8.53
Renewable Energy ¹	5.84	6.97	7.18	7.39	7.96	8.45	9.18	8.36	9.00	10.14
Other ²	1.13	0.85	0.88	0.91	0.79	0.81	0.82	0.82	0.84	0.86
Total	71.85	77.13	78.30	79.79	80.81	84.09	86.62	82.23	87.33	91.22
Imports										
Crude Oil ³	19.84	23.66	24.51	25.38	30.65	31.55	33.27	32.65	34.21	35.63
Petroleum Products ⁴	4.75	4.96	5.76	6.39	5.41	7.83	9.63	7.20	9.63	12.21
Natural Gas	4.10	5.87	6.54	6.79	6.90	7.56	8.40	7.45	8.29	9.35
Other Imports ⁵	0.52	0.93	0.95	0.97	1.10	1.12	1.14	1.17	1.18	1.20
Total	29.21	35.42	37.76	39.53	44.07	48.06	52.44	48.46	53.30	58.39
Exports										
Petroleum ⁶	2.03	2.14	2.15	2.15	2.16	2.13	2.17	2.14	2.15	2.16
Natural Gas	0.52	0.92	0.91	0.90	1.02	0.93	0.82	1.06	0.88	0.65
Coal	1.03	0.90	0.89	0.89	0.74	0.69	0.66	0.64	0.56	0.52
Total	3.58	3.96	3.95	3.94	3.93	3.75	3.65	3.85	3.59	3.33
Discrepancy⁷	-0.24	0.28	0.34	0.38	0.45	0.48	0.51	0.52	0.56	0.58
Consumption										
Petroleum Products ⁸	38.11	42.46	44.15	45.79	47.82	51.35	55.09	50.41	54.99	59.41
Natural Gas	23.37	25.77	26.82	27.90	28.73	31.21	33.37	29.85	32.21	34.70
Coal	22.18	24.72	25.23	25.49	27.41	28.30	28.64	29.16	31.73	32.90
Nuclear Power	8.15	8.29	8.29	8.29	8.53	8.53	8.53	8.53	8.53	8.53
Renewable Energy ¹	5.84	6.98	7.18	7.39	7.97	8.46	9.18	8.36	9.00	10.14
Other ⁹	0.07	0.09	0.11	0.12	0.06	0.07	0.08	0.03	0.03	0.03
Total	97.72	108.32	111.77	114.99	120.51	127.92	134.89	126.33	136.48	145.70
Net Imports - Petroleum	22.56	26.48	28.13	29.62	33.90	37.25	40.72	37.70	41.69	45.69
Prices (2002 dollars per unit)										
World Oil Price (dollars per barrel) ¹⁰ . .	23.68	23.64	24.17	24.67	24.77	26.02	27.27	25.30	27.00	28.55
Natural Gas Wellhead Price (dollars per thousand cubic feet) ¹¹ . .	2.95	3.31	3.40	3.61	3.97	4.28	4.71	4.28	4.40	4.94
Coal Minemouth Price (dollars per ton)	17.90	16.53	16.88	17.47	15.78	16.32	16.92	15.67	16.57	17.95
Average Electricity Price (cents per kilowatthour)	7.2	6.5	6.6	6.9	6.5	6.9	7.3	6.6	6.9	7.3

¹Includes grid-connected electricity from conventional hydroelectric; wood and wood waste; landfill gas; municipal solid waste; other biomass; wind; photovoltaic and solar thermal sources; non-electric energy from renewable sources, such as active and passive solar systems, and wood; and both the ethanol and gasoline components of E85, but not the ethanol components of blends less than 85 percent. Excludes electricity imports using renewable sources and nonmarketed renewable energy. See Table B18 for selected nonmarketed residential and commercial renewable energy.

²Includes liquid hydrogen, methanol, supplemental natural gas, and some domestic inputs to refineries.

³Includes imports of crude oil for the Strategic Petroleum Reserve.

⁴Includes imports of finished petroleum products, unfinished oils, alcohols, ethers, and blending components.

⁵Includes coal, coal coke (net), and electricity (net).

⁶Includes crude oil and petroleum products.

⁷Balancing item. Includes unaccounted for supply, losses, gains, net storage withdrawals, heat loss when natural gas is converted to liquid fuel, and heat loss when coal is converted to liquid fuel.

⁸Includes natural gas plant liquids, crude oil consumed as a fuel, and nonpetroleum-based liquids for blending, such as ethanol.

⁹Includes net electricity imports, methanol, and liquid hydrogen.

¹⁰Average refiner acquisition cost for imported crude oil.

¹¹Represents lower 48 onshore and offshore supplies.

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.

Sources: 2002 natural gas supply values: Energy Information Administration (EIA), *Natural Gas Monthly*, DOE/EIA-0130(2003/06) (Washington, DC, June 2003). 2002 petroleum supply values: EIA, *Petroleum Supply Annual 2002*, DOE/EIA-0340(2002)/1 (Washington, DC, June 2003). Other 2002 values: EIA, *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, October 2002) and EIA, *Quarterly Coal Report, October-December 2002*, DOE/EIA-0121(2002/4Q) (Washington, DC, March 2003). Projections: EIA, AEO2004 National Energy Modeling System runs LM2004.D101703A, AEO2004.D101703E, and HM2004.D101703A.

Economic Growth Case Comparisons

Table B2. Energy Consumption by Sector and Source
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	2002	Projections								
		2010			2020			2025		
		Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
Energy Consumption										
Residential										
Distillate Fuel	0.89	0.93	0.93	0.93	0.85	0.85	0.85	0.80	0.80	0.80
Kerosene	0.07	0.11	0.11	0.11	0.10	0.10	0.10	0.09	0.09	0.09
Liquefied Petroleum Gas	0.53	0.56	0.56	0.56	0.60	0.61	0.63	0.62	0.64	0.65
Petroleum Subtotal	1.48	1.60	1.60	1.61	1.56	1.56	1.58	1.51	1.53	1.54
Natural Gas	5.06	5.65	5.69	5.74	5.91	6.08	6.18	5.99	6.26	6.43
Coal	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Renewable Energy ¹	0.39	0.40	0.40	0.41	0.40	0.41	0.41	0.39	0.41	0.41
Electricity	4.33	4.85	4.87	4.89	5.49	5.60	5.68	5.75	5.96	6.08
Delivered Energy	11.28	12.51	12.58	12.66	13.36	13.66	13.86	13.66	14.17	14.47
Electricity Related Losses	9.60	10.48	10.48	10.47	11.41	11.43	11.37	11.77	11.95	11.91
Total	20.88	23.00	23.06	23.13	24.77	25.10	25.23	25.43	26.12	26.38
Commercial										
Distillate Fuel	0.49	0.62	0.62	0.63	0.67	0.67	0.69	0.68	0.70	0.72
Residual Fuel	0.08	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Kerosene	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Liquefied Petroleum Gas	0.09	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Motor Gasoline ²	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Petroleum Subtotal	0.72	0.92	0.92	0.92	0.97	0.97	1.00	0.99	1.00	1.02
Natural Gas	3.21	3.55	3.57	3.59	3.83	3.94	4.02	3.98	4.16	4.30
Coal	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Renewable Energy ³	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Electricity	4.12	5.02	5.05	5.06	6.10	6.24	6.36	6.59	6.83	7.03
Delivered Energy	8.25	9.68	9.74	9.77	11.09	11.35	11.57	11.75	12.19	12.54
Electricity Related Losses	9.15	10.84	10.86	10.83	12.68	12.73	12.73	13.49	13.70	13.77
Total	17.40	20.53	20.60	20.60	23.77	24.07	24.30	25.24	25.89	26.31
Industrial⁴										
Distillate Fuel	1.16	1.10	1.17	1.25	1.20	1.34	1.49	1.25	1.43	1.62
Liquefied Petroleum Gas	2.22	2.12	2.35	2.52	2.22	2.74	3.20	2.28	2.94	3.53
Petrochemical Feedstock	1.22	1.21	1.35	1.44	1.24	1.54	1.79	1.25	1.62	1.95
Residual Fuel	0.20	0.20	0.21	0.22	0.21	0.22	0.24	0.21	0.23	0.25
Motor Gasoline ²	0.16	0.15	0.16	0.17	0.16	0.18	0.20	0.16	0.19	0.22
Other Petroleum ⁵	4.03	4.15	4.38	4.63	4.45	4.93	5.38	4.58	5.17	5.67
Petroleum Subtotal	9.00	8.93	9.63	10.23	9.48	10.95	12.30	9.73	11.59	13.25
Natural Gas	7.43	8.08	8.62	9.11	8.69	9.84	10.93	9.02	10.58	12.02
Lease and Plant Fuel ⁶	1.35	1.38	1.40	1.44	1.54	1.65	1.72	1.61	1.69	1.75
Natural Gas Subtotal	8.78	9.46	10.02	10.55	10.23	11.49	12.65	10.64	12.27	13.77
Metallurgical Coal	0.62	0.64	0.64	0.64	0.52	0.52	0.52	0.47	0.47	0.46
Steam Coal	1.47	1.36	1.41	1.45	1.37	1.45	1.52	1.38	1.47	1.62
Net Coal Coke Imports	0.03	0.01	0.01	0.02	0.00	0.00	0.02	0.00	0.01	0.03
Coal Subtotal	2.12	2.01	2.06	2.11	1.90	1.97	2.05	1.86	1.95	2.11
Renewable Energy ⁷	1.66	1.83	2.00	2.13	2.16	2.48	2.79	2.32	2.70	3.08
Electricity	3.39	3.53	3.82	4.10	3.93	4.47	5.06	4.12	4.85	5.63
Delivered Energy	24.94	25.76	27.53	29.12	27.68	31.36	34.85	28.66	33.35	37.85
Electricity Related Losses	7.53	7.62	8.22	8.76	8.17	9.12	10.13	8.43	9.72	11.03
Total	32.47	33.38	35.75	37.88	35.85	40.48	44.98	37.09	43.07	48.88

Economic Growth Case Comparisons

Table B2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	2002	Projections								
		2010			2020			2025		
		Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
Transportation										
Distillate Fuel ⁸	5.12	6.00	6.42	6.84	7.16	8.02	8.92	7.83	8.94	10.12
Jet Fuel ⁹	3.34	3.87	3.93	4.02	4.57	4.69	4.75	4.72	4.91	5.00
Motor Gasoline ²	16.62	19.45	19.88	20.33	22.06	23.11	24.14	23.58	24.98	26.33
Residual Fuel	0.71	0.79	0.79	0.80	0.80	0.82	0.83	0.81	0.83	0.84
Liquefied Petroleum Gas	0.02	0.05	0.06	0.06	0.07	0.08	0.08	0.08	0.08	0.09
Other Petroleum ¹⁰	0.24	0.24	0.25	0.27	0.27	0.30	0.32	0.28	0.32	0.36
Petroleum Subtotal	26.06	30.40	31.34	32.32	34.94	37.00	39.05	37.30	40.07	42.74
Pipeline Fuel Natural Gas	0.65	0.68	0.69	0.72	0.75	0.83	0.88	0.80	0.86	0.89
Compressed Natural Gas	0.01	0.05	0.06	0.06	0.09	0.10	0.10	0.10	0.11	0.12
Renewable Energy (E85) ¹¹	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Liquid Hydrogen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.08	0.09	0.09	0.09	0.11	0.11	0.11	0.12	0.12	0.12
Delivered Energy	26.79	31.22	32.18	33.20	35.88	38.05	40.15	38.32	41.16	43.89
Electricity Related Losses	0.17	0.19	0.19	0.19	0.22	0.22	0.22	0.24	0.24	0.24
Total	26.96	31.41	32.37	33.39	36.11	38.27	40.37	38.56	41.40	44.13
Delivered Energy Consumption for All Sectors										
Distillate Fuel	7.66	8.65	9.15	9.64	9.89	10.88	11.95	10.56	11.88	13.27
Kerosene	0.09	0.16	0.16	0.16	0.15	0.14	0.14	0.13	0.13	0.13
Jet Fuel ⁹	3.34	3.87	3.93	4.02	4.57	4.69	4.75	4.72	4.91	5.00
Liquefied Petroleum Gas	2.86	2.82	3.07	3.24	3.00	3.53	4.00	3.08	3.76	4.37
Motor Gasoline ²	16.83	19.65	20.09	20.55	22.26	23.34	24.39	23.79	25.22	26.60
Petrochemical Feedstock	1.22	1.21	1.35	1.44	1.24	1.54	1.79	1.25	1.62	1.95
Residual Fuel	1.00	1.12	1.13	1.15	1.14	1.17	1.20	1.15	1.19	1.23
Other Petroleum ¹²	4.26	4.37	4.61	4.87	4.70	5.21	5.68	4.84	5.46	6.01
Petroleum Subtotal	37.26	41.84	43.48	45.08	46.94	50.50	53.92	49.53	54.18	58.56
Natural Gas	15.71	17.33	17.94	18.50	18.51	19.95	21.23	19.09	21.11	22.86
Lease and Plant Fuel Plant ⁶	1.35	1.38	1.40	1.44	1.54	1.65	1.72	1.61	1.69	1.75
Pipeline Natural Gas	0.65	0.68	0.69	0.72	0.75	0.83	0.88	0.80	0.86	0.89
Natural Gas Subtotal	17.72	19.39	20.03	20.66	20.80	22.43	23.83	21.50	23.66	25.51
Metallurgical Coal	0.62	0.64	0.64	0.64	0.52	0.52	0.52	0.47	0.47	0.46
Steam Coal	1.58	1.47	1.52	1.56	1.48	1.56	1.63	1.49	1.58	1.73
Net Coal Coke Imports	0.03	0.01	0.01	0.02	0.00	0.00	0.02	0.00	0.01	0.03
Coal Subtotal	2.23	2.12	2.17	2.22	2.00	2.08	2.16	1.96	2.06	2.22
Renewable Energy ¹³	2.15	2.34	2.50	2.64	2.66	2.99	3.30	2.82	3.21	3.60
Liquid Hydrogen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	11.92	13.49	13.83	14.14	15.61	16.41	17.22	16.58	17.77	18.86
Delivered Energy	71.27	79.18	82.03	84.74	88.01	94.42	100.44	92.39	100.87	108.75
Electricity Related Losses	26.45	29.14	29.75	30.25	32.49	33.50	34.46	33.93	35.61	36.95
Total	97.72	108.32	111.77	114.99	120.50	127.92	134.89	126.32	136.48	145.70
Electric Power¹⁴										
Distillate Fuel	0.16	0.15	0.16	0.16	0.32	0.26	0.56	0.31	0.27	0.32
Residual Fuel	0.69	0.47	0.51	0.55	0.56	0.59	0.61	0.57	0.54	0.53
Petroleum Subtotal	0.85	0.62	0.66	0.71	0.88	0.85	1.17	0.89	0.81	0.85
Natural Gas	5.65	6.38	6.79	7.24	7.93	8.78	9.54	8.34	8.55	9.19
Steam Coal	19.96	22.60	23.05	23.27	25.41	26.22	26.48	27.19	29.67	30.68
Nuclear Power	8.15	8.29	8.29	8.29	8.53	8.53	8.53	8.53	8.53	8.53
Renewable Energy ¹⁵	3.69	4.64	4.68	4.75	5.30	5.47	5.88	5.55	5.79	6.54
Electricity Imports	0.07	0.09	0.11	0.12	0.06	0.07	0.08	0.03	0.03	0.03
Total	38.36	42.63	43.58	44.39	48.10	49.92	51.67	50.52	53.37	55.81

Economic Growth Case Comparisons

Table B2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	2002	Projections								
		2010			2020			2025		
		Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
Total Energy Consumption										
Distillate Fuel	7.82	8.80	9.31	9.80	10.20	11.14	12.51	10.88	12.15	13.59
Kerosene	0.09	0.16	0.16	0.16	0.15	0.14	0.14	0.13	0.13	0.13
Jet Fuel ⁹	3.34	3.87	3.93	4.02	4.57	4.69	4.75	4.72	4.91	5.00
Liquefied Petroleum Gas	2.86	2.82	3.07	3.24	3.00	3.53	4.00	3.08	3.76	4.37
Motor Gasoline ²	16.83	19.65	20.09	20.55	22.26	23.34	24.39	23.79	25.22	26.60
Petrochemical Feedstock	1.22	1.21	1.35	1.44	1.24	1.54	1.79	1.25	1.62	1.95
Residual Fuel	1.69	1.59	1.64	1.70	1.70	1.76	1.81	1.72	1.72	1.76
Other Petroleum ¹²	4.26	4.37	4.61	4.87	4.70	5.21	5.68	4.84	5.46	6.01
Petroleum Subtotal	38.11	42.46	44.15	45.79	47.82	51.35	55.09	50.41	54.99	59.41
Natural Gas	21.36	23.72	24.73	25.74	26.44	28.73	30.77	27.43	29.66	32.05
Lease and Plant Fuel ⁶	1.35	1.38	1.40	1.44	1.54	1.65	1.72	1.61	1.69	1.75
Pipeline Natural Gas	0.65	0.68	0.69	0.72	0.75	0.83	0.88	0.80	0.86	0.89
Natural Gas Subtotal	23.37	25.77	26.82	27.90	28.73	31.21	33.37	29.85	32.21	34.70
Metallurgical Coal	0.62	0.64	0.64	0.64	0.52	0.52	0.52	0.47	0.47	0.46
Steam Coal	21.54	24.07	24.57	24.83	26.89	27.78	28.11	28.68	31.25	32.41
Net Coal Coke Imports	0.03	0.01	0.01	0.02	0.00	0.00	0.02	0.00	0.01	0.03
Coal Subtotal	22.18	24.72	25.23	25.49	27.41	28.30	28.64	29.16	31.73	32.90
Nuclear Power	8.15	8.29	8.29	8.29	8.53	8.53	8.53	8.53	8.53	8.53
Renewable Energy ¹⁶	5.84	6.98	7.18	7.39	7.97	8.46	9.18	8.36	9.00	10.14
Liquid Hydrogen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity Imports	0.07	0.09	0.11	0.12	0.06	0.07	0.08	0.03	0.03	0.03
Total	97.72	108.32	111.77	114.99	120.51	127.92	134.89	126.33	136.48	145.70
Energy Use and Related Statistics										
Delivered Energy Use	71.27	79.18	82.03	84.74	88.01	94.42	100.44	92.39	100.87	108.75
Total Energy Use	97.72	108.32	111.77	114.99	120.50	127.92	134.89	126.32	136.48	145.70
Population (millions)	288.93	304.13	309.28	314.42	322.17	334.61	347.05	331.35	347.53	363.71
Gross Domestic Product (billion 1996 dollars)	9440	11727	12190	12858	14722	16188	17603	16280	18520	20685
Carbon Dioxide Emissions (million metric tons)	5729.3	6367.8	6558.8	6729.6	7136.5	7535.6	7886.3	7537.9	8142.0	8614.9

¹Includes wood used for residential heating. See Table B18 for estimates of nonmarketed renewable energy consumption for geothermal heat pumps, solar thermal hot water heating, and solar photovoltaic electricity generation.

²Includes ethanol (blends of 10 percent or less) and ethers blended into gasoline.

³Includes commercial sector consumption of wood and wood waste, landfill gas, municipal solid waste, and other biomass for combined heat and power. See Table B18 for estimates of nonmarketed renewable energy consumption for solar thermal hot water heating and solar photovoltaic electricity generation.

⁴Fuel consumption includes consumption for combined heat and power, which produces electricity, both for sale to the grid and for own use, and other useful thermal energy.

⁵Includes petroleum coke, asphalt, road oil, lubricants, still gas, and miscellaneous petroleum products.

⁶Represents natural gas used in the field gathering and processing plant machinery.

⁷Includes consumption of energy from hydroelectric, wood and wood waste, municipal solid waste, and other biomass.

⁸Diesel fuel containing 500 parts per million (ppm) or 15 ppm sulfur.

⁹Includes only kerosene type.

¹⁰Includes aviation gasoline and lubricants.

¹¹E85 refers to a blend of 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable). To address cold starting issues, the percentage of ethanol actually varies seasonally. The annual average ethanol content of 74 percent is used for this forecast.

¹²Includes unfinished oils, natural gasoline, motor gasoline blending components, aviation gasoline, lubricants, still gas, asphalt, road oil, petroleum coke, and miscellaneous petroleum products.

¹³Includes electricity generated for sale to the grid and for own use from renewable sources, and non-electric energy from renewable sources. Excludes nonmarketed renewable energy consumption for geothermal heat pumps, buildings photovoltaic systems, and solar thermal hot water heaters.

¹⁴Includes consumption of energy by electricity-only and combined heat and power plants whose primary business is to sell electricity, or electricity and heat, to the public. Includes small power producers and exempt wholesale generators.

¹⁵Includes conventional hydroelectric, geothermal, wood and wood waste, municipal solid waste, other biomass, petroleum coke, wind, photovoltaic and solar thermal sources. Excludes net electricity imports.

¹⁶Includes hydroelectric, geothermal, wood and wood waste, municipal solid waste, other biomass, wind, photovoltaic and solar thermal sources. Includes ethanol components of E85; excludes ethanol blends (10 percent or less) in motor gasoline. Excludes net electricity imports and nonmarketed renewable energy consumption for geothermal heat pumps, buildings photovoltaic systems, and solar thermal hot water heaters.

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. Consumption values of 0.00 are values that round to 0.00, because they are less than 0.005.

Sources: 2002 consumption based on: Energy Information Administration (EIA), *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, October 2002). 2002 population and gross domestic product: Global Insight macroeconomic model T250803. 2002 carbon dioxide emissions: EIA, *Emissions of Greenhouse Gases in the United States 2002*, DOE/EIA-0573(2002) (Washington, DC, October 2003). Projections: EIA, AEO2004 National Energy Modeling System runs LM2004.D101703A, AEO2004.D101703E, and HM2004.D101703A.

Economic Growth Case Comparisons

Table B3. Energy Prices by Sector and Source
(2002 Dollars per Million Btu, Unless Otherwise Noted)

Sector and Source	2002	Projections								
		2010			2020			2025		
		Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
Residential	14.73	13.86	14.21	14.77	14.26	15.08	16.06	14.63	15.38	16.43
Primary Energy ¹	8.14	8.04	8.15	8.36	8.44	8.76	9.20	8.68	8.89	9.39
Petroleum Products ²	9.87	9.75	9.90	10.08	10.30	10.86	11.18	10.72	11.26	11.93
Distillate Fuel	8.23	7.73	7.82	7.94	7.94	8.39	8.61	8.19	8.53	9.01
Liquefied Petroleum Gas	12.92	13.64	13.89	14.16	14.16	14.79	15.20	14.49	15.19	16.05
Natural Gas	7.65	7.57	7.67	7.89	7.96	8.24	8.71	8.18	8.32	8.79
Electricity	24.73	22.56	23.30	24.41	22.20	23.73	25.45	22.39	23.88	25.67
Commercial	14.68	13.39	13.77	14.39	14.09	14.93	15.87	14.54	15.28	16.20
Primary Energy ¹	6.35	6.37	6.48	6.68	6.78	7.11	7.52	7.01	7.22	7.70
Petroleum Products ²	6.88	6.22	6.34	6.48	6.39	6.83	7.06	6.61	6.98	7.44
Distillate Fuel	6.07	5.36	5.45	5.57	5.54	6.01	6.23	5.81	6.15	6.62
Residual Fuel	4.21	4.05	4.13	4.21	4.22	4.41	4.60	4.30	4.55	4.78
Natural Gas	6.37	6.53	6.64	6.87	7.02	7.31	7.77	7.25	7.41	7.89
Electricity	22.82	19.77	20.39	21.41	19.95	21.21	22.58	20.31	21.48	22.75
Industrial³	6.31	6.19	6.44	6.74	6.65	7.21	7.73	6.94	7.42	8.08
Primary Energy	4.77	4.95	5.14	5.33	5.40	5.88	6.27	5.67	6.07	6.64
Petroleum Products ²	6.35	6.60	6.84	6.99	6.95	7.54	7.86	7.25	7.81	8.41
Distillate Fuel	6.21	5.57	5.68	5.79	5.75	6.24	6.47	6.06	6.40	6.88
Liquefied Petroleum Gas	8.28	9.29	9.72	10.00	9.90	10.66	11.18	10.20	11.11	12.11
Residual Fuel	3.89	3.66	3.74	3.83	3.84	4.03	4.22	3.92	4.17	4.41
Natural Gas ⁴	3.75	3.94	4.05	4.28	4.55	4.89	5.34	4.82	4.99	5.54
Metallurgical Coal	1.87	1.92	1.96	2.01	1.79	1.84	1.90	1.70	1.77	1.84
Steam Coal	1.52	1.54	1.58	1.64	1.45	1.53	1.60	1.42	1.53	1.65
Electricity	14.74	12.88	13.36	14.11	13.05	13.99	15.03	13.31	14.09	15.09
Transportation	9.91	10.30	10.50	10.80	10.09	10.54	10.97	10.14	10.69	11.21
Primary Energy	9.88	10.28	10.48	10.77	10.06	10.52	10.94	10.11	10.67	11.18
Petroleum Products ²	9.88	10.28	10.48	10.78	10.07	10.52	10.94	10.11	10.67	11.19
Distillate Fuel ⁵	9.41	9.98	10.12	10.52	9.38	10.00	10.45	9.40	10.03	10.58
Jet Fuel ⁶	5.97	5.64	5.76	5.92	5.62	6.06	6.33	5.77	6.21	6.67
Motor Gasoline ⁷	11.15	11.64	11.87	12.18	11.50	11.90	12.33	11.49	12.06	12.56
Residual Fuel	3.77	3.52	3.60	3.68	3.68	3.88	4.07	3.76	4.02	4.26
Liquefied Petroleum Gas ⁸	15.00	14.65	14.96	15.34	14.73	15.51	16.11	14.94	15.83	16.87
Natural Gas ⁹	7.38	8.12	8.26	8.56	8.66	9.06	9.63	8.86	9.09	9.68
Ethanol (E85) ¹⁰	15.19	17.12	17.22	17.33	17.47	18.28	18.45	18.41	18.58	18.83
Electricity	21.10	19.07	19.57	20.40	18.96	20.03	21.27	19.00	19.92	21.07
Average End-Use Energy	10.10	10.03	10.23	10.54	10.28	10.76	11.25	10.50	10.96	11.53
Primary Energy	7.70	8.07	8.22	8.44	8.26	8.64	9.01	8.44	8.82	9.30
Electricity	21.20	18.97	19.47	20.33	19.00	20.10	21.30	19.28	20.26	21.40
Electric Power¹¹										
Fossil Fuel Average	1.89	1.85	1.92	2.03	2.01	2.18	2.41	2.06	2.11	2.33
Petroleum Products	4.32	4.13	4.21	4.28	4.41	4.67	5.09	4.58	4.88	5.27
Distillate Fuel	5.58	4.80	4.92	5.03	4.97	5.47	5.74	5.28	5.62	6.12
Residual Fuel	4.04	3.92	3.99	4.06	4.10	4.31	4.50	4.20	4.50	4.77
Natural Gas	3.77	3.95	4.04	4.28	4.52	4.85	5.32	4.78	4.92	5.47
Steam Coal	1.26	1.19	1.22	1.26	1.15	1.20	1.24	1.14	1.22	1.30

Economic Growth Case Comparisons

Table B3. Energy Prices by Sector and Source (Continued)
(2002 Dollars per Million Btu, Unless Otherwise Noted)

Sector and Source	2002	Projections								
		2010			2020			2025		
		Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
Average Price to All Users¹²										
Petroleum Products ²	8.94	9.40	9.57	9.80	9.36	9.81	10.14	9.49	10.01	10.51
Distillate Fuel	8.52	8.78	8.93	9.27	8.45	9.07	9.41	8.58	9.18	9.73
Jet Fuel	5.97	5.64	5.76	5.92	5.62	6.06	6.33	5.77	6.21	6.67
Liquefied Petroleum Gas	9.27	10.33	10.65	10.89	10.95	11.55	11.96	11.25	11.96	12.84
Motor Gasoline ⁷	11.15	11.64	11.87	12.18	11.50	11.90	12.33	11.49	12.06	12.56
Residual Fuel	3.92	3.70	3.78	3.86	3.88	4.08	4.27	3.96	4.23	4.48
Natural Gas	5.07	5.20	5.27	5.46	5.67	5.93	6.34	5.91	6.03	6.50
Coal	1.28	1.22	1.25	1.29	1.16	1.22	1.26	1.16	1.24	1.33
Ethanol (E85) ¹⁰	15.19	17.12	17.22	17.33	17.47	18.28	18.45	18.41	18.58	18.83
Electricity	21.20	18.97	19.47	20.33	19.00	20.10	21.30	19.28	20.26	21.40
Non-Renewable Energy Expenditures by Sector (billion 2002 dollars)										
Residential	160.37	167.84	173.01	180.96	184.85	199.98	216.04	194.06	211.69	230.97
Commercial	119.67	128.35	132.72	139.12	154.83	167.90	182.08	169.38	184.74	201.55
Industrial	120.96	117.85	132.71	148.55	134.70	169.02	205.02	145.04	185.61	234.80
Transportation	259.11	314.69	330.65	350.71	354.55	392.36	430.65	380.37	430.99	481.97
Total Non-Renewable Expenditures	660.11	728.73	769.08	819.34	828.93	929.26	1033.79	888.85	1013.03	1149.30
Transportation Renewable Expenditures	0.01	0.03	0.03	0.04	0.05	0.06	0.06	0.06	0.07	0.08
Total Expenditures	660.12	728.76	769.11	819.38	828.98	929.32	1033.86	888.91	1013.10	1149.38

¹Weighted average price includes fuels below as well as coal.

²This quantity is the weighted average for all petroleum products, not just those listed below.

³Includes combined heat and power, which produces electricity and other useful thermal energy.

⁴Excludes use for lease and plant fuel.

⁵Diesel fuel containing 500 parts per million (ppm) or 15 ppm sulfur. Price includes Federal and State taxes while excluding county and local taxes.

⁶Kerosene-type jet fuel. Price includes Federal and State taxes while excluding county and local taxes.

⁷Sales weighted-average price for all grades. Includes Federal, State and local taxes.

⁸Includes Federal and State taxes while excluding county and local taxes.

⁹Compressed natural gas used as a vehicle fuel. Price includes estimated motor vehicle fuel taxes.

¹⁰E85 refers to a blend of 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable). To address cold starting issues, the percentage of ethanol actually varies seasonally. The annual average ethanol content of 74 percent is used for this forecast.

¹¹Includes electricity-only and combined heat and power plants whose primary business is to sell electricity, or electricity and heat, to the public.

¹²Weighted averages of end-use fuel prices are derived from the prices shown in each sector and the corresponding sectoral consumption.

Btu = British thermal unit.

Note: Data for 2002 are model results and may differ slightly from official EIA data reports.

Sources: 2002 prices for motor gasoline, distillate, and jet fuel are based on: Energy Information Administration (EIA), *Petroleum Marketing Annual 2002*, http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/petroleum_marketing_annual/current/pdf/pmaall.pdf (August 2003). 2002 residential, commercial, and transportation natural gas delivered prices: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2003/06) (Washington, DC, June 2003). 2002 electric power sector natural gas prices: Federal Energy Regulatory Commission, FERC Form 423, "Monthly Report of Cost and Quality of Fuels for Electric Plants." 2002 industrial natural gas delivered prices based on: EIA, *Manufacturing Energy Consumption Survey 1998*. 2002 coal prices based on EIA, *Quarterly Coal Report, October-December 2002*, DOE/EIA-0121(2002/4Q) (Washington, DC, March 2003) and EIA, AEO2004 National Energy Modeling System run AEO2004.D101703E. 2002 electricity prices: EIA, *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, October 2002). 2002 ethanol prices derived from weekly spot prices in the Oxy Fuel News. Projections: EIA, AEO2004 National Energy Modeling System runs LM2004.D101703A, AEO2004.D101703E, and HM2004.D101703A.

Economic Growth Case Comparisons

Table B4. Residential Sector Key Indicators and End-Use Consumption
(Quadrillion Btu per Year, Unless Otherwise Noted)

Key Indicators and Consumption	2002	Projections								
		2010			2020			2025		
		Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
Key Indicators										
Households (millions)										
Single-Family	74.77	82.01	82.87	83.92	88.91	92.09	94.65	91.66	96.32	99.73
Multifamily	29.20	30.50	30.71	31.19	32.34	33.07	34.10	33.30	34.36	35.75
Mobile Homes	6.31	6.21	6.25	6.32	6.68	6.88	6.94	6.81	7.12	7.17
Total	110.28	118.72	119.84	121.43	127.93	132.04	135.69	131.77	137.79	142.64
Average House Square Footage	1689	1728	1731	1733	1761	1771	1776	1774	1788	1794
Energy Intensity										
(million Btu per household)										
Delivered Energy Consumption	102.3	105.4	105.0	104.2	104.4	103.5	102.2	103.6	102.8	101.5
Total Energy Consumption	189.4	193.7	192.4	190.4	193.6	190.1	186.0	193.0	189.5	184.9
(thousand Btu per square foot)										
Delivered Energy Consumption	60.6	61.0	60.6	60.1	59.3	58.4	57.5	58.4	57.5	56.6
Total Energy Consumption	112.1	112.1	111.1	109.9	109.9	107.3	104.7	108.8	106.0	103.1
Delivered Energy Consumption by Fuel										
Electricity										
Space Heating	0.40	0.43	0.43	0.43	0.44	0.45	0.45	0.44	0.46	0.46
Space Cooling	0.71	0.69	0.69	0.70	0.74	0.76	0.78	0.77	0.80	0.82
Water Heating	0.37	0.37	0.37	0.37	0.36	0.36	0.36	0.34	0.35	0.35
Refrigeration	0.42	0.37	0.37	0.37	0.35	0.36	0.37	0.35	0.37	0.38
Cooking	0.10	0.11	0.11	0.11	0.12	0.12	0.13	0.12	0.13	0.13
Clothes Dryers	0.24	0.25	0.25	0.25	0.26	0.26	0.27	0.27	0.27	0.28
Freezers	0.13	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.13
Lighting	0.75	0.86	0.87	0.87	0.95	0.97	0.98	0.99	1.02	1.03
Clothes Washers ¹	0.03	0.04	0.04	0.04	0.06	0.06	0.06	0.06	0.06	0.07
Dishwashers ¹	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Color Televisions	0.12	0.18	0.18	0.19	0.25	0.26	0.26	0.26	0.27	0.28
Personal Computers	0.06	0.08	0.08	0.08	0.11	0.11	0.12	0.13	0.14	0.14
Furnace Fans	0.08	0.09	0.09	0.09	0.10	0.10	0.11	0.11	0.11	0.11
Other Uses ²	0.88	1.24	1.25	1.26	1.59	1.63	1.65	1.77	1.83	1.87
Delivered Energy	4.33	4.85	4.87	4.89	5.49	5.60	5.68	5.75	5.96	6.08
Natural Gas										
Space Heating	3.54	3.98	4.01	4.04	4.20	4.33	4.40	4.28	4.48	4.60
Space Cooling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Heating	1.15	1.24	1.25	1.26	1.24	1.27	1.29	1.23	1.28	1.31
Cooking	0.21	0.23	0.23	0.23	0.25	0.26	0.26	0.26	0.27	0.27
Clothes Dryers	0.07	0.09	0.09	0.09	0.10	0.11	0.11	0.11	0.11	0.12
Other Uses ³	0.10	0.11	0.11	0.11	0.12	0.12	0.12	0.12	0.12	0.13
Delivered Energy	5.06	5.65	5.69	5.74	5.91	6.08	6.18	5.99	6.26	6.43
Distillate										
Space Heating	0.77	0.81	0.81	0.81	0.75	0.75	0.75	0.71	0.71	0.71
Water Heating	0.12	0.12	0.12	0.12	0.10	0.10	0.10	0.09	0.09	0.10
Other Uses ⁴	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Delivered Energy	0.89	0.93	0.93	0.93	0.85	0.85	0.85	0.80	0.80	0.80
Liquefied Petroleum Gas										
Space Heating	0.30	0.30	0.30	0.30	0.30	0.31	0.31	0.30	0.31	0.31
Water Heating	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Cooking	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Other Uses ³	0.15	0.18	0.18	0.18	0.22	0.23	0.23	0.24	0.25	0.26
Delivered Energy	0.53	0.56	0.56	0.56	0.60	0.61	0.63	0.62	0.64	0.65
Marketed Renewables (wood) ⁵	0.39	0.40	0.40	0.41	0.40	0.41	0.41	0.39	0.41	0.41
Other Fuels ⁶	0.08	0.12	0.12	0.12	0.11	0.11	0.11	0.10	0.10	0.10

Economic Growth Case Comparisons

Table B4. Residential Sector Key Indicators and End-Use Consumption (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Key Indicators and Consumption	2002	Projections								
		2010			2020			2025		
		Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
Delivered Energy Consumption by End-Use										
Space Heating	5.48	6.05	6.08	6.12	6.21	6.35	6.44	6.23	6.46	6.60
Space Cooling	0.71	0.69	0.69	0.70	0.74	0.76	0.78	0.77	0.80	0.82
Water Heating	1.69	1.78	1.79	1.80	1.74	1.78	1.81	1.70	1.77	1.81
Refrigeration	0.42	0.37	0.37	0.37	0.35	0.36	0.37	0.35	0.37	0.38
Cooking	0.34	0.37	0.37	0.37	0.40	0.41	0.42	0.41	0.42	0.44
Clothes Dryers	0.31	0.34	0.34	0.34	0.36	0.37	0.38	0.38	0.39	0.40
Freezers	0.13	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.13
Lighting	0.75	0.86	0.87	0.87	0.95	0.97	0.98	0.99	1.02	1.03
Clothes Washers	0.03	0.04	0.04	0.04	0.06	0.06	0.06	0.06	0.06	0.07
Dishwashers	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Color Televisions	0.12	0.18	0.18	0.19	0.25	0.26	0.26	0.26	0.27	0.28
Personal Computers	0.06	0.08	0.08	0.08	0.11	0.11	0.12	0.13	0.14	0.14
Furnace Fans	0.08	0.09	0.09	0.09	0.10	0.10	0.11	0.11	0.11	0.11
Other Uses ⁷	1.13	1.53	1.54	1.55	1.93	1.97	2.00	2.13	2.20	2.25
Delivered Energy	11.28	12.51	12.58	12.66	13.36	13.66	13.86	13.66	14.17	14.47
Electricity Related Losses	9.60	10.48	10.48	10.47	11.41	11.43	11.37	11.77	11.95	11.91
Total Energy Consumption by End-Use										
Space Heating	6.36	6.96	6.99	7.03	7.14	7.27	7.35	7.13	7.37	7.50
Space Cooling	2.29	2.18	2.19	2.19	2.29	2.32	2.33	2.34	2.41	2.42
Water Heating	2.51	2.58	2.58	2.59	2.49	2.52	2.54	2.40	2.46	2.49
Refrigeration	1.37	1.15	1.16	1.17	1.08	1.09	1.11	1.08	1.11	1.13
Cooking	0.57	0.60	0.61	0.62	0.64	0.66	0.67	0.65	0.68	0.69
Clothes Dryers	0.83	0.89	0.89	0.89	0.90	0.91	0.91	0.92	0.94	0.94
Freezers	0.43	0.36	0.37	0.37	0.36	0.36	0.37	0.36	0.37	0.37
Lighting	2.41	2.73	2.73	2.72	2.94	2.95	2.94	3.01	3.07	3.05
Clothes Washers	0.10	0.12	0.12	0.13	0.17	0.18	0.18	0.18	0.19	0.19
Dishwashers	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.10	0.10
Color Televisions	0.40	0.58	0.58	0.58	0.78	0.78	0.78	0.81	0.82	0.82
Personal Computers	0.21	0.25	0.25	0.25	0.34	0.35	0.35	0.39	0.41	0.42
Furnace Fans	0.25	0.28	0.28	0.28	0.31	0.32	0.32	0.32	0.33	0.34
Other Uses ⁷	3.09	4.22	4.22	4.23	5.25	5.29	5.31	5.74	5.87	5.91
Total	20.88	23.00	23.06	23.13	24.77	25.10	25.23	25.43	26.12	26.38
Non-Marketed Renewables										
Geothermal ⁸	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01
Solar ⁹	0.02	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04
Total	0.02	0.03	0.03	0.03	0.04	0.04	0.05	0.05	0.05	0.05

¹Does not include electric water heating portion of load.

²Includes small electric devices, heating elements, and motors.

³Includes such appliances as swimming pool heaters, outdoor grills, and outdoor lighting (natural gas).

⁴Includes such appliances as swimming pool and hot tub heaters.

⁵Includes wood used for primary and secondary heating in wood stoves or fireplaces as reported in the *Residential Energy Consumption Survey 2001*.

⁶Includes kerosene and coal.

⁷Includes all other uses listed above.

⁸Includes primary energy displaced by geothermal heat pumps in space heating and cooling applications.

⁹Includes primary energy displaced by solar thermal water heaters and electricity generated using photovoltaics.

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.

Sources: 2002 based on: Energy Information Administration (EIA), *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, October 2002). Projections: EIA, AEO2004 National Energy Modeling System runs LM2004.D101703A, AEO2004.D101703E, and HM2004.D101703A.

Economic Growth Case Comparisons

Table B5. Commercial Sector Key Indicators and Consumption
(Quadrillion Btu per Year, Unless Otherwise Noted)

Key Indicators and Consumption	2002	Projections								
		2010			2020			2025		
		Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
Key Indicators										
Total Floorspace (billion square feet)										
Surviving	68.9	80.3	81.1	81.8	90.0	93.1	96.2	94.3	98.8	103.1
New Additions	3.2	2.5	2.7	3.0	2.5	2.8	3.1	2.6	3.0	3.3
Total	72.1	82.8	83.8	84.8	92.5	95.9	99.3	96.9	101.8	106.4
Energy Consumption Intensity (thousand Btu per square foot)										
Delivered Energy Consumption	114.5	116.9	116.2	115.3	119.9	118.3	116.5	121.2	119.7	117.9
Electricity Related Losses	126.9	130.9	129.6	127.7	137.1	132.7	128.2	139.2	134.6	129.4
Total Energy Consumption	241.4	247.8	245.8	243.0	256.9	251.0	244.8	260.4	254.3	247.3
Delivered Energy Consumption by Fuel										
Purchased Electricity										
Space Heating ¹	0.15	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.16	0.16
Space Cooling ¹	0.46	0.45	0.45	0.45	0.47	0.48	0.48	0.48	0.49	0.50
Water Heating ¹	0.14	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Ventilation	0.16	0.18	0.18	0.18	0.18	0.18	0.19	0.18	0.19	0.19
Cooking	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Lighting	1.12	1.30	1.30	1.29	1.39	1.40	1.39	1.41	1.43	1.42
Refrigeration	0.20	0.22	0.22	0.22	0.24	0.24	0.25	0.24	0.25	0.25
Office Equipment (PC)	0.14	0.24	0.24	0.24	0.32	0.34	0.35	0.35	0.37	0.38
Office Equipment (non-PC)	0.31	0.46	0.46	0.47	0.68	0.71	0.74	0.82	0.87	0.91
Other Uses ²	1.41	1.84	1.86	1.87	2.47	2.55	2.63	2.78	2.91	3.03
Delivered Energy	4.12	5.02	5.05	5.06	6.10	6.24	6.36	6.59	6.83	7.03
Natural Gas										
Space Heating ¹	1.42	1.56	1.56	1.57	1.61	1.64	1.66	1.64	1.69	1.72
Space Cooling ¹	0.01	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03
Water Heating ¹	0.59	0.69	0.70	0.70	0.77	0.79	0.80	0.81	0.84	0.85
Cooking	0.26	0.30	0.30	0.31	0.34	0.34	0.35	0.35	0.36	0.37
Other Uses ³	0.93	0.98	0.99	1.00	1.08	1.14	1.19	1.15	1.24	1.33
Delivered Energy	3.21	3.55	3.57	3.59	3.83	3.94	4.02	3.98	4.16	4.30
Distillate										
Space Heating ¹	0.17	0.24	0.24	0.25	0.28	0.29	0.31	0.30	0.31	0.33
Water Heating ¹	0.07	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09	0.09
Other Uses ⁴	0.24	0.30	0.30	0.29	0.30	0.29	0.29	0.30	0.29	0.29
Delivered Energy	0.49	0.62	0.62	0.63	0.67	0.67	0.69	0.68	0.70	0.72
Other Fuels⁵	0.33	0.39	0.39	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Marketed Renewable Fuels										
Biomass	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Delivered Energy	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Delivered Energy Consumption by End-Use										
Space Heating ¹	1.74	1.96	1.97	1.97	2.05	2.09	2.12	2.09	2.16	2.21
Space Cooling ¹	0.48	0.47	0.47	0.47	0.50	0.50	0.51	0.51	0.52	0.53
Water Heating ¹	0.80	0.92	0.93	0.93	1.01	1.03	1.04	1.05	1.08	1.09
Ventilation	0.16	0.18	0.18	0.18	0.18	0.18	0.19	0.18	0.19	0.19
Cooking	0.29	0.33	0.34	0.34	0.37	0.37	0.38	0.38	0.39	0.39
Lighting	1.12	1.30	1.30	1.29	1.39	1.40	1.39	1.41	1.43	1.42
Refrigeration	0.20	0.22	0.22	0.22	0.24	0.24	0.25	0.24	0.25	0.25
Office Equipment (PC)	0.14	0.24	0.24	0.24	0.32	0.34	0.35	0.35	0.37	0.38
Office Equipment (non-PC)	0.31	0.46	0.46	0.47	0.68	0.71	0.74	0.82	0.87	0.91
Other Uses ⁶	3.01	3.60	3.63	3.66	4.35	4.48	4.61	4.72	4.94	5.15
Delivered Energy	8.25	9.68	9.74	9.77	11.09	11.35	11.57	11.75	12.19	12.54

Economic Growth Case Comparisons

Table B5. Commercial Sector Key Indicators and Consumption (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Key Indicators and Consumption	2002	Projections								
		2010			2020			2025		
		Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
Electricity Related Losses	9.15	10.84	10.86	10.83	12.68	12.73	12.73	13.49	13.70	13.77
Total Energy Consumption by End-Use										
Space Heating ¹	2.07	2.30	2.31	2.31	2.38	2.41	2.44	2.41	2.47	2.52
Space Cooling ¹	1.51	1.43	1.43	1.42	1.48	1.48	1.48	1.48	1.50	1.51
Water Heating ¹	1.11	1.24	1.25	1.24	1.32	1.33	1.34	1.35	1.37	1.39
Ventilation	0.52	0.56	0.56	0.55	0.56	0.56	0.56	0.56	0.57	0.57
Cooking	0.36	0.40	0.40	0.40	0.43	0.43	0.43	0.43	0.44	0.45
Lighting	3.60	4.12	4.10	4.05	4.30	4.25	4.17	4.29	4.30	4.21
Refrigeration	0.65	0.70	0.70	0.70	0.73	0.73	0.74	0.73	0.75	0.75
Office Equipment (PC)	0.44	0.75	0.76	0.77	1.00	1.03	1.05	1.06	1.10	1.14
Office Equipment (non-PC)	1.00	1.45	1.46	1.47	2.11	2.16	2.21	2.51	2.61	2.69
Other Uses ⁶	6.14	7.57	7.63	7.67	9.49	9.69	9.88	10.42	10.77	11.08
Total	17.40	20.53	20.60	20.60	23.77	24.07	24.30	25.24	25.89	26.31
Non-Marketed Renewable Fuels										
Solar ⁷	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04
Total	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04

¹Includes fuel consumption for district services.

²Includes miscellaneous uses, such as service station equipment, automated teller machines, telecommunications equipment, and medical equipment.

³Includes miscellaneous uses, such as pumps, emergency electric generators, combined heat and power in commercial buildings, and manufacturing performed in commercial buildings.

⁴Includes miscellaneous uses, such as cooking, emergency electric generators, and combined heat and power in commercial buildings.

⁵Includes residual fuel oil, liquefied petroleum gas, coal, motor gasoline, and kerosene.

⁶Includes miscellaneous uses, such as service station equipment, automated teller machines, telecommunications equipment, medical equipment, pumps, emergency electric generators, combined heat and power in commercial buildings, manufacturing performed in commercial buildings, and cooking (distillate), plus residual fuel oil, liquefied petroleum gas, coal, motor gasoline, and kerosene.

⁷Includes primary energy displaced by solar thermal space heating and water heating, and electricity generation by solar photovoltaic systems.

Btu = British thermal unit.

PC = Personal computer.

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.

Sources: 2002 based on: Energy Information Administration (EIA), *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, October 2002). Projections: EIA, AEO2004 National Energy Modeling System runs LM2004.D101703A, AEO2004.D101703E, and HM2004.D101703A.

Economic Growth Case Comparisons

Table B6. Industrial Sector Key Indicators and Consumption
(Quadrillion Btu per Year, Unless Otherwise Noted)

Key Indicators and Consumption	2002	Projections								
		2010			2020			2025		
		Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
Key Indicators										
Value of Shipments (billion 1996 dollars)										
Manufacturing	4064	4627	5013	5399	5830	6634	7582	6483	7636	8962
Nonmanufacturing	1222	1300	1425	1587	1462	1710	1955	1503	1855	2204
Total	5285	5927	6439	6986	7292	8344	9537	7987	9491	11166
Energy Prices (2002 dollars per million Btu)										
Distillate Oil	6.21	5.57	5.68	5.79	5.75	6.24	6.47	6.06	6.40	6.88
Liquefied Petroleum Gas	8.28	9.29	9.72	10.00	9.90	10.66	11.18	10.20	11.11	12.11
Residual Oil	3.89	3.66	3.74	3.83	3.84	4.03	4.22	3.92	4.17	4.41
Motor Gasoline	11.04	11.61	11.84	12.14	11.47	11.87	12.31	11.46	12.03	12.54
Natural Gas	3.75	3.94	4.05	4.28	4.55	4.89	5.34	4.82	4.99	5.54
Metallurgical Coal	1.87	1.92	1.96	2.01	1.79	1.84	1.90	1.70	1.77	1.84
Steam Coal	1.52	1.54	1.58	1.64	1.45	1.53	1.60	1.42	1.53	1.65
Electricity	14.74	12.88	13.36	14.11	13.05	13.99	15.03	13.31	14.09	15.09
Energy Consumption¹										
Distillate	1.16	1.10	1.17	1.25	1.20	1.34	1.49	1.25	1.43	1.62
Liquefied Petroleum Gas	2.22	2.12	2.35	2.52	2.22	2.74	3.20	2.28	2.94	3.53
Petrochemical Feedstocks	1.22	1.21	1.35	1.44	1.24	1.54	1.79	1.25	1.62	1.95
Residual Fuel	0.20	0.20	0.21	0.22	0.21	0.22	0.24	0.21	0.23	0.25
Other Petroleum ²	4.19	4.30	4.54	4.80	4.61	5.12	5.58	4.74	5.36	5.89
Petroleum Subtotal	9.00	8.93	9.63	10.23	9.48	10.95	12.30	9.73	11.59	13.25
Natural Gas	7.43	8.08	8.62	9.11	8.69	9.84	10.93	9.02	10.58	12.02
Lease and Plant Fuel ³	1.35	1.38	1.40	1.44	1.54	1.65	1.72	1.61	1.69	1.75
Natural Gas Subtotal	8.78	9.46	10.02	10.55	10.23	11.49	12.65	10.64	12.27	13.77
Metallurgical Coal and Coke ⁴	0.65	0.65	0.66	0.66	0.52	0.52	0.54	0.47	0.48	0.49
Steam Coal	1.47	1.36	1.41	1.45	1.37	1.45	1.52	1.38	1.47	1.62
Coal Subtotal	2.12	2.01	2.06	2.11	1.90	1.97	2.05	1.86	1.95	2.11
Renewables ⁵	1.66	1.83	2.00	2.13	2.16	2.48	2.79	2.32	2.70	3.08
Purchased Electricity	3.39	3.53	3.82	4.10	3.93	4.47	5.06	4.12	4.85	5.63
Delivered Energy	24.94	25.76	27.53	29.12	27.69	31.36	34.85	28.67	33.35	37.85
Electricity Related Losses	7.53	7.62	8.22	8.76	8.17	9.12	10.13	8.43	9.72	11.03
Total	32.47	33.38	35.75	37.88	35.86	40.48	44.98	37.09	43.07	48.88
Energy Consumption per dollar of Shipments¹ (thousand Btu per 1996 dollars)										
Distillate	0.22	0.19	0.18	0.18	0.16	0.16	0.16	0.16	0.15	0.15
Liquefied Petroleum Gas	0.42	0.36	0.37	0.36	0.30	0.33	0.34	0.29	0.31	0.32
Petrochemical Feedstocks	0.23	0.20	0.21	0.21	0.17	0.18	0.19	0.16	0.17	0.17
Residual Fuel	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.02
Other Petroleum ²	0.79	0.73	0.71	0.69	0.63	0.61	0.59	0.59	0.56	0.53
Petroleum Subtotal	1.70	1.51	1.50	1.46	1.30	1.31	1.29	1.22	1.22	1.19
Natural Gas	1.41	1.36	1.34	1.30	1.19	1.18	1.15	1.13	1.11	1.08
Lease and Plant Fuel ³	0.26	0.23	0.22	0.21	0.21	0.20	0.18	0.20	0.18	0.16
Natural Gas Subtotal	1.66	1.60	1.56	1.51	1.40	1.38	1.33	1.33	1.29	1.23
Metallurgical Coal and Coke ⁴	0.12	0.11	0.10	0.09	0.07	0.06	0.06	0.06	0.05	0.04
Steam Coal	0.28	0.23	0.22	0.21	0.19	0.17	0.16	0.17	0.15	0.14
Coal Subtotal	0.40	0.34	0.32	0.30	0.26	0.24	0.22	0.23	0.21	0.19
Renewables ⁵	0.31	0.31	0.31	0.30	0.30	0.30	0.29	0.29	0.28	0.28
Purchased Electricity	0.64	0.60	0.59	0.59	0.54	0.54	0.53	0.52	0.51	0.50
Delivered Energy	4.72	4.35	4.28	4.17	3.80	3.76	3.65	3.59	3.51	3.39
Electricity Related Losses	1.42	1.29	1.28	1.25	1.12	1.09	1.06	1.06	1.02	0.99
Total	6.14	5.63	5.55	5.42	4.92	4.85	4.72	4.64	4.54	4.38

¹Fuel consumption includes energy for combined heat and power plants, except those whose primary business is to sell electricity, or electricity and heat, to the public.

²Represents natural gas used in the field gathering and processing plant machinery.

³Includes net coal coke imports.

⁴Includes petroleum coke, asphalt, road oil, lubricants, motor gasoline, still gas, and miscellaneous petroleum products.

⁵Includes consumption of energy from hydroelectric, wood and wood waste, municipal solid waste, and other biomass.

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.

Sources: 2002 prices for motor gasoline and distillate are based on: Energy Information Administration (EIA), *Petroleum Marketing Annual 2002*, http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/petroleum_marketing_annual/current/pdf/pmaall.pdf (August 2003). 2002 coal prices are based on EIA, *Quarterly Coal Report, October-December 2002*, DOE/EIA-0121(2002/4Q) (Washington, DC, March 2003) and EIA, AEO2004 National Energy Modeling System run AEO2004.D101703E. 2002 electricity prices: EIA, *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, October 2002). 2002 natural gas prices based on: EIA, *Manufacturing Energy Consumption Survey 1998*. 2002 consumption values based on: EIA, *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, October 2002). 2002 shipments: Global Insight macroeconomic model T250803. **Projections:** EIA, AEO2004 National Energy Modeling System runs LM2004.D101703A, AEO2004.D101703E, and HM2004.D101703A.

Economic Growth Case Comparisons

Table B7. Transportation Sector Key Indicators and Delivered Energy Consumption

Key Indicators and Consumption	2002	Projections								
		2010			2020			2025		
		Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
Key Indicators										
Level of Travel (billions)										
Light-Duty Vehicles <8,500 pounds (VMT)	2504	2982	3041	3108	3597	3768	3936	3937	4173	4403
Commercial Light Trucks (VMT) ¹	65	75	79	84	91	101	112	100	114	129
Freight Trucks >10,000 pounds (VMT)	196	224	242	259	274	313	353	305	354	410
Air (seat miles available)	909	1103	1122	1148	1455	1455	1455	1521	1521	1521
Rail (ton miles traveled)	1336	1460	1545	1610	1687	1852	1998	1810	2056	2266
Domestic Shipping (ton miles traveled)	724	773	805	848	838	918	999	867	977	1082
Energy Efficiency Indicators										
New Light-Duty Vehicle (miles per gallon) ²	23.8	25.3	25.3	25.3	26.4	26.5	26.6	26.8	26.9	27.0
New Car (miles per gallon) ²	28.2	28.8	28.8	28.8	30.3	30.4	30.5	30.6	30.8	31.0
New Light Truck (miles per gallon) ²	20.5	22.8	22.8	22.8	24.1	24.1	24.2	24.6	24.7	24.8
Light-Duty Fleet (miles per gallon) ³	19.7	19.6	19.6	19.6	20.5	20.5	20.5	20.8	20.9	21.0
New Commercial Light Truck (MPG) ¹	13.9	15.1	15.1	15.1	16.0	16.0	16.1	16.3	16.4	16.5
Stock Commercial Light Truck (MPG) ¹	13.8	14.5	14.5	14.5	15.4	15.5	15.5	15.8	15.9	16.0
Aircraft Efficiency (seat miles per gallon)	54.8	59.4	59.9	60.3	64.9	65.4	66.9	66.2	67.0	69.3
Freight Truck Efficiency (miles per gallon)	6.0	6.0	6.0	6.0	6.4	6.4	6.4	6.5	6.5	6.5
Rail Efficiency (ton miles per thousand Btu)	2.9	3.1	3.1	3.1	3.4	3.4	3.4	3.6	3.6	3.6
(ton miles per thousand Btu)	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4
Energy Use by Mode										
(quadrillion Btu)										
Light-Duty Vehicles	15.58	18.53	18.91	19.32	21.35	22.34	23.28	22.97	24.28	25.51
Commercial Light Trucks ¹	0.59	0.64	0.68	0.72	0.74	0.82	0.90	0.79	0.90	1.01
Bus Transportation	0.24	0.25	0.25	0.26	0.26	0.26	0.26	0.26	0.26	0.27
Freight Trucks	4.09	4.64	5.03	5.40	5.40	6.15	6.96	5.86	6.82	7.87
Rail, Passenger	0.11	0.13	0.13	0.13	0.15	0.16	0.16	0.17	0.17	0.17
Rail, Freight	0.47	0.47	0.50	0.52	0.49	0.54	0.58	0.50	0.57	0.63
Shipping, Domestic	0.32	0.33	0.35	0.36	0.35	0.39	0.42	0.36	0.41	0.45
Shipping, International	0.64	0.72	0.72	0.72	0.73	0.73	0.73	0.73	0.74	0.74
Recreational Boats	0.31	0.33	0.34	0.34	0.36	0.37	0.38	0.38	0.39	0.40
Air	2.84	3.29	3.35	3.44	3.97	4.09	4.15	4.11	4.30	4.39
Military Use	0.66	0.77	0.77	0.77	0.81	0.81	0.81	0.83	0.82	0.82
Lubricants	0.20	0.20	0.21	0.23	0.23	0.25	0.28	0.24	0.28	0.32
Pipeline Fuel	0.65	0.68	0.69	0.72	0.75	0.83	0.88	0.80	0.86	0.89
Total	26.70	31.00	31.93	32.94	35.59	37.73	39.81	37.99	40.79	43.47
(million barrels per day oil equivalent)										
Light-Duty Vehicles	8.20	9.76	9.96	10.17	11.22	11.74	12.24	12.07	12.75	13.40
Commercial Light Trucks ¹	0.31	0.34	0.36	0.38	0.39	0.43	0.48	0.42	0.47	0.53
Bus Transportation	0.11	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.13
Freight Trucks	1.94	2.20	2.38	2.55	2.55	2.91	3.29	2.77	3.22	3.72
Rail, Passenger	0.05	0.06	0.06	0.06	0.07	0.07	0.08	0.08	0.08	0.08
Rail, Freight	0.22	0.22	0.24	0.24	0.23	0.25	0.27	0.24	0.27	0.30
Shipping, Domestic	0.15	0.15	0.16	0.17	0.16	0.18	0.19	0.17	0.19	0.21
Shipping, International	0.28	0.31	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32
Recreational Boats	0.16	0.18	0.18	0.18	0.19	0.19	0.20	0.20	0.20	0.21
Air	1.38	1.59	1.62	1.66	1.92	1.98	2.01	1.99	2.08	2.12
Military Use	0.32	0.37	0.37	0.37	0.39	0.39	0.39	0.40	0.39	0.39
Lubricants	0.09	0.09	0.10	0.11	0.11	0.12	0.13	0.11	0.13	0.15
Pipeline Fuel	0.33	0.34	0.35	0.36	0.38	0.42	0.45	0.41	0.43	0.45
Total	13.54	15.74	16.20	16.71	18.06	19.13	20.17	19.28	20.63	22.02

¹Commercial trucks 8,500 to 10,000 pounds.
²Environmental Protection Agency rated miles per gallon.
³Combined car and light truck "on-the-road" estimate.
 Btu = British thermal unit.
 VMT=Vehicle miles traveled.
 MPG = Miles per gallon.

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.

Sources: 2002: Energy Information Administration (EIA), *Natural Gas Annual 2001*, DOE/EIA-0131(2001) (Washington, DC, February 2003); Federal Highway Administration, *Highway Statistics 2000* (Washington, DC, November 2001); Oak Ridge National Laboratory, *Transportation Energy Data Book: Edition 22 and Annual* (Oak Ridge, TN, September 2002); National Highway Traffic and Safety Administration, *Summary of Fuel Economy Performance* (Washington, DC, February 2000); EIA, *Household Vehicle Energy Consumption 1994*, DOE/EIA-0464(94) (Washington, DC, August 1997); U.S. Department of Commerce, Bureau of the Census, "Vehicle Inventory and Use Survey" EC97TV (Washington, DC, October 1999); EIA, *Describing Current and Potential Markets for Alternative-Fuel Vehicles*, DOE/EIA-0604(96) (Washington, DC, March 1996); EIA, *Alternatives to Traditional Transportation Fuels 1998*, http://www.eia.doe.gov/ceat/alt_trans98/table1.html; EIA, *State Energy Data Report 2000*, DOE/EIA-0214(2000) (Washington, DC, August 2003); U.S. Department of Transportation, Research and Special Programs Administration, *Air Carrier Statistics Monthly, December 2002/2001* (Washington, DC, 2002); EIA, *Fuel Oil and Kerosene Sales 2001*, http://www.eia.doe.gov/oil_gas/petroleum/data_publications/fuel_oil_and_kerosene_sales/historical/foks.html; and United States Department of Defense, Defense Fuel Supply Center. Projections: EIA, AEO2004 National Energy Modeling System runs LM2004.D101703A, AEO2004.D101703E, and HM2004.D101703A.

Economic Growth Case Comparisons

Table B8. Electricity Supply, Disposition, Prices, and Emissions
(Billion Kilowatthours, Unless Otherwise Noted)

Supply, Disposition, and Prices	2002	Projections								
		2010			2020			2025		
		Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
Generation by Fuel Type										
Electric Power Sector¹										
Power Only²										
Coal	1875	2159	2201	2219	2468	2560	2592	2681	2975	3111
Petroleum	77	58	62	67	85	82	121	86	77	84
Natural Gas ³	450	594	642	699	847	972	1098	929	969	1081
Nuclear Power	780	794	794	794	816	816	816	816	816	816
Pumped Storage/Other	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9
Renewable Sources ⁴	304	398	400	405	429	442	478	440	460	528
Distributed Generation (Natural Gas)	0	0	0	0	2	3	5	4	5	7
Non-Utility Generation for Own Use	-34	-37	-37	-37	-37	-37	-37	-37	-37	-37
Total	3443	3956	4054	4137	4602	4829	5063	4911	5257	5581
Combined Heat and Power⁵										
Coal	32	33	33	33	33	33	33	33	33	34
Petroleum	6	1	1	1	3	2	4	3	2	2
Natural Gas	148	171	174	179	160	159	160	153	149	144
Renewable Sources	5	4	4	4	4	4	4	4	4	4
Non-Utility Generation for Own Use	-11	-24	-24	-24	-24	-24	-24	-24	-24	-24
Total	183	184	188	194	176	175	178	169	164	160
Net Available to the Grid	3626	4141	4242	4331	4778	5004	5241	5079	5421	5741
End-Use Sector Generation										
Combined Heat and Power⁶										
Coal	21	21	21	21	21	21	21	21	21	24
Petroleum	5	12	12	12	13	17	19	14	18	19
Natural Gas	84	106	109	114	134	153	172	151	181	211
Other Gaseous Fuels ⁷	5	9	9	9	11	12	12	12	13	13
Renewable Sources ⁴	30	35	39	42	43	50	56	46	54	62
Other ⁸	11	11	11	11	11	11	11	11	11	11
Total	157	194	202	209	233	264	291	256	299	342
Other End-Use Generators ⁹	4	5	5	5	5	5	6	6	7	7
Generation for Own Use	-134	-155	-158	-162	-177	-190	-202	-190	-210	-230
Total Sales to the Grid	27	44	48	52	62	80	95	72	95	120
Total Electricity Generation	3831	4401	4510	4607	5078	5335	5599	5402	5787	6152
Net Imports	22	28	31	35	18	21	24	7	8	8
Electricity Sales by Sector										
Residential	1268	1422	1428	1434	1608	1641	1665	1686	1747	1781
Commercial	1208	1472	1480	1483	1787	1828	1865	1932	2003	2059
Industrial	994	1034	1120	1200	1151	1310	1484	1207	1422	1650
Transportation	22	26	26	27	31	32	33	35	35	36
Total	3492	3954	4055	4144	4576	4811	5046	4861	5207	5527
End-Use Prices¹⁰ (2002 cents per kilowatthour)										
Residential	8.4	7.7	7.9	8.3	7.6	8.1	8.7	7.6	8.1	8.8
Commercial	7.8	6.7	7.0	7.3	6.8	7.2	7.7	6.9	7.3	7.8
Industrial	5.0	4.4	4.6	4.8	4.5	4.8	5.1	4.5	4.8	5.1
Transportation	7.2	6.5	6.7	7.0	6.5	6.8	7.3	6.5	6.8	7.2
All Sectors Average	7.2	6.5	6.6	6.9	6.5	6.9	7.3	6.6	6.9	7.3
Prices by Service Category¹⁰ (2002 cents per kilowatthour)										
Generation	4.6	4.0	4.1	4.4	4.1	4.5	4.8	4.2	4.5	4.9
Transmission	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7
Distribution	2.0	1.9	1.9	2.0	1.7	1.8	1.8	1.7	1.7	1.7

Economic Growth Case Comparisons

Table B8. Electricity Supply, Disposition, Prices, and Emissions (Continued)
(Billion Kilowatthours, Unless Otherwise Noted)

Supply, Disposition, and Prices	2002	Projections								
		2010			2020			2025		
		Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
Electric Power Sector Emissions¹										
Sulfur Dioxide (million tons)	10.54	9.98	9.90	10.11	8.94	8.94	8.96	8.95	8.95	8.95
Nitrogen Oxide (million tons)	4.39	3.45	3.50	3.54	3.62	3.67	3.68	3.67	3.75	3.75
Mercury (tons)	50.95	52.57	52.20	53.99	53.49	53.59	54.55	53.54	54.37	55.35

¹Includes electricity-only and combined heat and power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public.

²Includes plants that only produce electricity.

³Includes electricity generation from fuel cells.

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

⁵Includes combined heat and power plants whose primary business is to sell electricity and heat to the public (i.e., those that report NAICS code 22).

⁶Includes combined heat and power plants and electricity-only plants in the commercial and industrial sectors.

⁷Other gaseous fuels include refinery and still gas.

⁸Other includes batteries, chemicals, hydrogen, pitch, purchased steam, sulfur and miscellaneous technologies.

⁹Other end-use generators include small on-site generating systems in the residential, commercial, and industrial sectors used primarily for own-use generation, but which may also sell some power to the grid.

¹⁰Prices represent average revenue per kilowatthour.

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: 2002 power only and combined heat and power generation, sales to utilities, net imports, residential, industrial, and total electricity sales, and emissions: Energy Information Administration (EIA), *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, October 2002), and supporting databases. 2002 commercial and transportation electricity sales: EIA estimates based on Oak Ridge National Laboratory, *Transportation Energy Data Book 21* (Oak Ridge, TN, September 2001). 2002 prices: EIA, National Energy Modeling System run AEO2004.D101703E. **Projections:** EIA, AEO2004 National Energy Modeling System runs LM2004.D101703A, AEO2004.D101703E, and HM2004.D101703A.

Economic Growth Case Comparisons

Table B9. Electricity Generating Capacity
(Gigawatts)

Net Summer Capacity ¹	2002	Projections								
		2010			2020			2025		
		Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
Electric Power Sector²										
Power Only³										
Coal Steam	305.7	302.6	305.1	305.3	337.7	348.4	350.9	367.4	407.2	422.2
Other Fossil Steam ⁴	132.5	100.4	105.0	104.0	93.2	100.0	100.3	90.7	95.4	97.4
Combined Cycle	81.0	124.5	127.1	131.1	169.6	184.4	211.3	191.6	202.3	227.0
Combustion Turbine/Diesel	123.5	128.7	131.1	131.6	164.0	163.9	169.9	176.4	175.0	181.4
Nuclear Power ⁵	98.7	100.6	100.6	100.6	102.6	102.6	102.6	102.6	102.6	102.6
Pumped Storage	20.2	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3
Fuel Cells	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Renewable Sources ⁶	91.4	96.8	97.1	97.9	102.4	105.7	114.9	104.6	109.9	125.7
Distributed Generation ⁷	0.0	0.4	0.5	0.6	5.5	7.6	11.1	9.4	12.4	15.4
Total	853.1	874.4	886.8	891.4	995.4	1032.9	1081.4	1063.2	1125.1	1192.1
Combined Heat and Power⁸										
Coal Steam	5.2	5.0	5.1	5.1	5.0	5.1	5.1	5.0	5.1	5.1
Other Fossil Steam ⁴	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Combined Cycle	29.4	32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9	32.9
Combustion Turbine/Diesel	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4
Renewable Sources ⁶	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Total	41.4	44.7	44.8	44.8	44.7	44.8	44.8	44.7	44.8	44.8
Total Electric Power Industry	894.5	919.1	931.7	936.3	1040.1	1077.7	1126.3	1107.9	1169.9	1236.9
Cumulative Planned Additions⁹										
Coal Steam	0.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Other Fossil Steam ⁴	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Combined Cycle	0.0	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5	43.5
Combustion Turbine/Diesel	0.0	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1
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	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Renewable Sources ⁶	0.0	4.3	4.3	4.3	4.7	4.7	4.7	4.8	4.8	4.8
Distributed Generation ⁷	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.0	57.1	57.1	57.1	57.5	57.5	57.5	57.6	57.6	57.6
Cumulative Unplanned Additions⁹										
Coal Steam	0.0	3.1	5.7	5.8	40.1	50.7	53.3	70.9	110.6	125.7
Other Fossil Steam ⁴	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Combined Cycle	0.0	4.6	6.6	10.6	49.7	64.0	90.9	71.7	81.9	106.5
Combustion Turbine/Diesel	0.0	8.7	10.5	10.9	45.6	46.0	53.3	58.0	59.1	66.7
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	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Renewable Sources ⁶	0.0	0.8	1.1	1.9	6.0	9.3	18.5	8.1	13.3	29.2
Distributed Generation ⁷	0.0	0.4	0.5	0.6	5.5	7.6	11.1	9.4	12.4	15.4
Total	0.0	17.6	24.3	29.9	146.8	177.5	227.1	218.1	277.2	343.3
Cumulative Total Additions	0.0	74.7	81.4	86.9	204.3	235.0	284.6	275.7	334.8	400.9
Cumulative Retirements¹⁰										
Coal Steam	0.0	7.6	7.5	7.5	9.5	9.3	9.3	10.6	10.4	10.4
Other Fossil Steam ⁴	0.0	30.2	25.6	26.6	37.4	30.6	30.3	39.9	35.2	33.2
Combined Cycle	0.0	1.7	1.1	1.1	1.7	1.1	1.1	1.7	1.1	1.1
Combustion Turbine/Diesel	0.0	10.8	10.2	10.2	12.4	13.0	14.3	12.4	14.9	16.1
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	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Renewable Sources ⁶	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total	0.0	50.5	44.6	45.5	61.1	54.2	55.2	64.7	61.8	60.9

Economic Growth Case Comparisons

Table B9. Electricity Generating Capacity (Continued)
(Gigawatts)

Net Summer Capacity ¹	2002	Projections								
		2010			2020			2025		
		Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
End-Use Sector										
Combined Heat and Power ¹¹										
Coal	4.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.6
Petroleum	1.0	1.6	1.6	1.6	1.8	2.2	2.4	1.9	2.3	2.5
Natural Gas	14.1	17.3	17.8	18.4	21.1	23.7	26.2	23.5	27.6	31.7
Other Gaseous Fuels	1.8	2.2	2.2	2.2	2.5	2.6	2.6	2.5	2.7	2.7
Renewable Sources ⁶	4.2	5.0	5.6	6.1	6.3	7.5	8.6	6.9	8.3	9.6
Other	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Total	25.5	30.5	31.7	32.8	36.1	40.5	44.3	39.2	45.3	51.5
Other End-Use Generators¹²										
Renewable Sources ¹³	1.1	1.4	1.4	1.4	1.5	1.6	1.7	1.9	2.1	2.6
Cumulative Additions⁹										
Combined Heat and Power ¹¹	0.0	5.1	6.2	7.3	10.6	15.0	18.8	13.7	19.8	26.0
Other End-Use Generators ¹²	0.0	0.3	0.3	0.3	0.4	0.5	0.7	0.8	1.1	1.5

¹Net summer capacity 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 electricity-only and combined heat and power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public.

³Includes plants that only produce electricity. Includes capacity increases (uprates) at existing units.

⁴Includes oil-, gas-, and dual-fired capability.

⁵Nuclear capacity reflects operating capacity of existing units, including 3.9 gigawatts of uprates through 2025.

⁶Includes conventional hydroelectric, geothermal, wood, wood waste, municipal solid waste, landfill gas, other biomass, solar, and wind power. Facilities co-firing biomass and coal are classified as coal.

⁷Primarily peak-load capacity fueled by natural gas

⁸Includes combined heat and power plants whose primary business is to sell electricity and heat to the public (i.e., those that report NAICS code 22).

⁹Cumulative additions after December 31, 2002.

¹⁰Cumulative total retirements after December 31, 2002.

¹¹Includes combined heat and power plants and electricity-only plants in the commercial and industrial sectors.

¹²Other end-use generators include small on-site generating systems in the residential, commercial, and industrial sectors used primarily for own-use generation, but which may also sell some power to the grid.

¹³See Table B17 for more detail.

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

Source: 2002 electric generating capacity and projected planned additions: Energy Information Administration (EIA), Form EIA-860: "Annual Electric Generator Report" (preliminary). Projections: EIA, AEO2004 National Energy Modeling System runs LM2004.D101703A, AEO2004.D101703E, and HM2004.D101703A.

Economic Growth Case Comparisons

Table B10. Electricity Trade
(Billion Kilowatthours, Unless Otherwise Noted)

Electricity Trade	2002	Projections								
		2010			2020			2025		
		Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
Interregional Electricity Trade										
Gross Domestic Firm Power Trade	138.9	107.1	107.1	107.1	41.5	41.5	41.5	41.5	41.5	41.5
Gross Domestic Economy Trade	209.9	243.1	229.7	225.1	221.7	218.4	203.5	205.1	183.4	180.0
Gross Domestic Trade	348.8	350.2	336.8	332.2	263.2	259.9	245.1	246.7	224.9	221.5
Gross Domestic Firm Power Sales (million 2002 dollars)	6932.4	5345.8	5345.8	5345.8	2074.2	2074.2	2074.2	2074.2	2074.2	2074.2
Gross Domestic Economy Sales (million 2002 dollars)	6809.8	7817.6	7629.6	7994.4	8127.5	8663.8	8812.3	7892.8	7319.5	7568.5
Gross Domestic Sales (million 2002 dollars)	13742.1	13163.3	12975.3	13340.1	10201.7	10738.0	10886.5	9967.0	9393.7	9642.7
International Electricity Trade										
Firm Power Imports From Canada and Mexico	9.5	5.8	5.8	5.8	0.0	0.0	0.0	0.0	0.0	0.0
Economy Imports From Canada and Mexico ..	26.8	38.3	41.3	45.0	25.7	28.9	31.3	15.0	15.1	15.2
Gross Imports From Canada and Mexico ..	36.3	44.2	47.2	50.9	25.7	28.9	31.3	15.0	15.2	15.3
Firm Power Exports To Canada and Mexico ..	5.6	8.7	8.7	8.7	0.0	0.0	0.0	0.0	0.0	0.0
Economy Exports To Canada and Mexico	8.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7
Gross Exports To Canada and Mexico	14.3	16.4	16.4	16.4	7.7	7.7	7.7	7.7	7.7	7.7

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. 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.

Source: Energy Information Administration, AEO2004 National Energy Modeling System runs LM2004.D101703A, AEO2004.D101703E, and HM2004.D101703A.

Economic Growth Case Comparisons

Table B11. Petroleum Supply and Disposition Balance
(Million Barrels per Day, Unless Otherwise Noted)

Supply and Disposition	2002	Projections								
		2010			2020			2025		
		Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
Crude Oil										
Domestic Crude Production ¹	5.62	5.91	5.93	5.95	4.96	4.95	5.02	4.39	4.61	4.72
Alaska	0.98	0.92	0.92	0.92	0.72	0.72	0.73	0.50	0.51	0.52
Lower 48 States	4.64	5.00	5.01	5.03	4.24	4.23	4.28	3.89	4.11	4.20
Net Imports	9.13	10.82	11.21	11.61	14.08	14.50	15.29	15.03	15.74	16.39
Gross Imports	9.14	10.90	11.29	11.69	14.12	14.53	15.32	15.04	15.76	16.41
Exports	0.01	0.08	0.08	0.08	0.03	0.03	0.04	0.01	0.02	0.02
Other Crude Supply ²	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Crude Supply	14.83	16.74	17.15	17.56	19.04	19.45	20.30	19.42	20.35	21.11
Natural Gas Plant Liquids	1.88	2.21	2.24	2.32	2.33	2.48	2.58	2.35	2.47	2.57
Other Inputs³	0.67	0.45	0.47	0.49	0.44	0.46	0.47	0.47	0.48	0.52
Refinery Processing Gain⁴	0.98	0.88	0.88	0.88	1.00	1.00	1.01	1.04	1.04	1.02
Net Product Imports⁵	1.41	1.53	1.95	2.28	1.71	2.99	3.96	2.58	3.94	5.37
Gross Refined Product Imports ⁶	1.92	1.85	2.17	2.49	2.01	2.82	3.67	2.69	3.60	4.98
Unfinished Oil Imports	0.41	0.61	0.72	0.74	0.69	1.15	1.30	0.90	1.34	1.40
Ether Imports	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Exports	0.97	0.94	0.94	0.95	0.99	0.98	1.01	1.01	1.01	1.02
Total Primary Supply⁷	19.77	21.81	22.69	23.53	24.52	26.38	28.32	25.85	28.27	30.58
Refined Petroleum Products Supplied										
Motor Gasoline ⁸	8.86	10.36	10.59	10.84	11.74	12.30	12.86	12.54	13.30	14.02
Jet Fuel ⁹	1.61	1.87	1.90	1.94	2.21	2.27	2.30	2.28	2.37	2.41
Distillate Fuel ¹⁰	3.68	4.14	4.38	4.61	4.80	5.24	5.88	5.12	5.71	6.39
Residual Fuel	0.74	0.69	0.71	0.74	0.74	0.77	0.79	0.75	0.75	0.77
Other ¹¹	4.72	4.77	5.13	5.43	5.06	5.84	6.53	5.19	6.16	7.02
Total	19.61	21.83	22.71	23.56	24.54	26.41	28.36	25.87	28.30	30.62
Refined Petroleum Products Supplied										
Residential and Commercial	1.22	1.37	1.38	1.38	1.39	1.40	1.42	1.38	1.40	1.42
Industrial ¹²	4.80	4.74	5.14	5.46	5.02	5.86	6.61	5.16	6.21	7.15
Transportation	13.21	15.44	15.91	16.40	17.74	18.77	19.79	18.94	20.32	21.66
Electric Generators ¹³	0.38	0.27	0.29	0.32	0.39	0.38	0.53	0.40	0.36	0.38
Total	19.61	21.83	22.71	23.56	24.54	26.41	28.36	25.87	28.30	30.62
Discrepancy¹⁴	0.16	-0.02	-0.02	-0.02	-0.02	-0.04	-0.04	-0.02	-0.03	-0.04
World Oil Price (2002 dollars per barrel)¹⁵	23.68	23.64	24.17	24.67	24.77	26.02	27.27	25.30	27.00	28.55
Import Share of Product Supplied	0.54	0.57	0.58	0.59	0.64	0.66	0.68	0.68	0.70	0.71
Net Expenditures for Imported Crude Oil and Petroleum Products (billion 2002 dollars)	90.38	108.26	118.31	128.45	144.55	168.99	195.83	166.08	200.24	236.71
Domestic Refinery Distillation Capacity¹⁶	16.8	18.2	18.7	19.0	20.4	20.8	21.7	20.8	21.8	22.6
Capacity Utilization Rate (percent)	91.0	93.4	93.1	93.5	94.7	94.8	94.8	94.8	94.8	94.8

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, other hydrocarbons, natural gas converted to liquid fuel, and coal converted to liquid fuel.

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.

⁶Includes other hydrocarbons, alcohols, and blending components.

⁷Total crude supply plus natural gas plant liquids, other inputs, refinery processing gain, and net product imports.

⁸Includes ethanol and ethers blended into gasoline.

⁹Includes only kerosene type.

¹⁰Includes distillate and kerosene.

¹¹Includes 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.

¹²Includes consumption for combined heat and power, which produces electricity and other useful thermal energy.

¹³Includes consumption of energy by electricity-only and combined heat and power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public. Includes small power producers and exempt wholesale generators.

¹⁴Balancing item. Includes unaccounted for supply, losses, and gains.

¹⁵Average refiner acquisition cost for imported crude oil.

¹⁶End-of-year capacity.

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.

Sources: 2002 product supplied based on: Energy Information Administration (EIA), *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, October 2002). Other 2002 data: EIA, *Petroleum Supply Annual 2002*, DOE/EIA-0340(2002)/1 (Washington, DC, June 2003). Projections: EIA, AEO2004 National Energy Modeling System runs LM2004.D101703A, AEO2004.D101703E, and HM2004.D101703A.

Economic Growth Case Comparisons

Table B12. Petroleum Product Prices
(2002 Cents per Gallon, Unless Otherwise Noted)

Sector and Fuel	2002	Projections								
		2010			2020			2025		
		Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
World Oil Price (2002 dollars per barrel)	23.68	23.64	24.17	24.67	24.77	26.02	27.27	25.30	27.00	28.55
Delivered Sector Product Prices										
Residential										
Distillate Fuel	114.2	107.2	108.4	110.1	110.1	116.4	119.4	113.6	118.4	125.0
Liquefied Petroleum Gas	110.8	117.0	119.1	121.4	121.5	126.9	130.4	124.3	130.3	137.7
Commercial										
Distillate Fuel	84.1	74.3	75.6	77.3	76.8	83.3	86.4	80.6	85.3	91.8
Residual Fuel	63.1	60.6	61.8	63.0	63.2	66.1	68.9	64.3	68.1	71.6
Residual Fuel (2002 dollars per barrel)	26.48	25.43	25.97	26.48	26.54	27.75	28.93	27.02	28.59	30.06
Industrial¹										
Distillate Fuel	86.2	77.2	78.8	80.3	79.8	86.6	89.7	84.0	88.8	95.4
Liquefied Petroleum Gas	71.1	79.7	83.4	85.8	85.0	91.4	95.9	87.5	95.3	103.8
Residual Fuel	58.3	54.8	56.0	57.3	57.4	60.3	63.2	58.6	62.4	66.0
Residual Fuel (2002 dollars per barrel)	24.48	23.01	23.54	24.06	24.12	25.34	26.55	24.62	26.22	27.72
Transportation										
Diesel Fuel (distillate) ²	130.6	138.4	140.3	145.9	130.1	138.6	145.0	130.3	139.0	146.7
Jet Fuel ³	80.6	76.1	77.8	80.0	75.9	81.8	85.4	77.9	83.9	90.0
Motor Gasoline ⁴	138.1	144.0	146.9	150.7	142.3	147.3	152.6	142.2	149.2	155.5
Liquid Petroleum Gas	128.7	125.7	128.3	131.6	126.4	133.0	138.2	128.2	135.8	144.7
Residual Fuel	56.5	52.6	53.9	55.0	55.1	58.0	60.9	56.3	60.2	63.8
Residual Fuel (2002 dollars per barrel)	23.71	22.11	22.62	23.12	23.15	24.37	25.58	23.63	25.28	26.79
Ethanol (E85) ⁵	135.8	153.0	153.9	154.9	156.2	163.4	164.9	164.5	166.1	168.3
Electric Power⁶										
Distillate Fuel	77.4	66.5	68.2	69.8	68.9	75.8	79.6	73.3	77.9	84.8
Residual Fuel	60.4	58.7	59.7	60.8	61.4	64.5	67.3	62.8	67.4	71.3
Residual Fuel (2002 dollars per barrel)	25.38	24.63	25.07	25.54	25.81	27.07	28.27	26.37	28.30	29.96
Refined Petroleum Product Prices⁷										
Distillate Fuel	118.1	121.7	123.8	128.5	117.1	125.9	130.5	119.0	127.3	135.0
Jet Fuel ³	80.6	76.1	77.8	80.0	75.9	81.8	85.4	77.9	83.9	90.0
Liquefied Petroleum Gas	79.6	88.6	91.3	93.4	94.0	99.1	102.6	96.5	102.6	110.1
Motor Gasoline ⁴	138.1	144.0	146.9	150.7	142.3	147.3	152.6	142.2	149.2	155.5
Residual Fuel	58.6	55.3	56.6	57.8	58.1	61.1	64.0	59.3	63.3	67.0
Residual Fuel (2002 dollars per barrel)	24.62	23.24	23.76	24.29	24.40	25.65	26.86	24.92	26.60	28.14
Average	116.1	121.7	123.9	127.1	120.8	126.3	130.6	122.2	128.6	135.0

¹Includes combined heat and power, which produces electricity and other useful thermal energy.

²Diesel fuel containing 500 part per million (ppm) or 15 ppm sulfur. Includes Federal and State taxes while excluding county and local taxes.

³Kerosene-type jet fuel.

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

⁵E85 refers to a blend of 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable). To address cold starting issues, the percentage of ethanol actually varies seasonally. The annual average ethanol content of 74 percent is used for this forecast.

⁶Includes electricity-only and combined heat and power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public. Includes small power producers and exempt wholesale generators.

⁷Weighted averages of end-use fuel prices are derived from the prices in each sector and the corresponding sectoral consumption.

Note: Data for 2002 are model results and may differ slightly from official EIA data reports.

Sources: 2002 prices for motor gasoline, distillate, and jet fuel are based on: EIA, *Petroleum Marketing Annual 2002*, http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/petroleum_marketing_annual/current/pdf/pmaall.pdf (August 2003). 2002 residential, commercial, industrial, and transportation sector petroleum product prices are derived from: EIA, Form EIA-782A: "Refiners'/Gas Plant Operators' Monthly Petroleum Product Sales Report." 2002 electric power prices based on: Federal Energy Regulatory Commission, FERC Form 423, "Monthly Report of Cost and Quality of Fuels for Electric Plants." 2002 ethanol prices derived from weekly spot prices in the Oxy Fuel News. 2002 world oil price: EIA, *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, October 2002). Projections: EIA, AEO2004 National Energy Modeling System runs LM2004.D101703A, AEO2004.D101703E, and HM2004.D101703A.

Economic Growth Case Comparisons

Table B13. Natural Gas Supply and Disposition
(Trillion Cubic Feet per Year)

Supply and Disposition	2002	Projections								
		2010			2020			2025		
		Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
Production										
Dry Gas Production ¹	19.05	20.15	20.50	21.30	22.10	23.79	24.96	22.70	23.99	25.16
Supplemental Natural Gas ²	0.08	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Net Imports	3.49	4.83	5.50	5.75	5.74	6.47	7.40	6.23	7.24	8.50
Canada	3.59	3.53	3.68	3.89	2.44	2.51	2.64	2.37	2.56	2.81
Mexico	-0.26	-0.35	-0.34	-0.33	-0.27	-0.18	-0.07	-0.31	-0.12	0.22
Liquefied Natural Gas	0.17	1.64	2.16	2.19	3.56	4.14	4.83	4.17	4.80	5.46
Total Supply	22.62	25.07	26.09	27.15	27.94	30.36	32.46	29.03	31.33	33.75
Consumption by Sector										
Residential	4.92	5.50	5.53	5.58	5.75	5.92	6.01	5.83	6.09	6.26
Commercial	3.12	3.45	3.48	3.49	3.72	3.83	3.91	3.87	4.04	4.18
Industrial ³	7.23	7.86	8.39	8.86	8.45	9.57	10.63	8.78	10.29	11.69
Electric Generators ⁴	5.55	6.26	6.66	7.11	7.78	8.61	9.36	8.18	8.39	9.01
Transportation ⁵	0.01	0.05	0.06	0.06	0.09	0.10	0.10	0.10	0.11	0.12
Pipeline Fuel	0.63	0.66	0.67	0.70	0.73	0.81	0.86	0.78	0.84	0.87
Lease and Plant Fuel ⁶	1.32	1.35	1.36	1.40	1.50	1.61	1.67	1.57	1.65	1.71
Total	22.78	25.13	26.15	27.21	28.01	30.44	32.55	29.11	31.41	33.84
Natural Gas to Liquids	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discrepancy⁷	-0.16	-0.06	-0.06	-0.06	-0.08	-0.08	-0.09	-0.08	-0.09	-0.09

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 for combined heat and power, which produces electricity and other useful thermal energy.

⁴Includes consumption of energy by electricity-only and combined heat and power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public. Includes small power producers and exempt wholesale generators.

⁵Compressed natural gas used as vehicle fuel.

⁶Represents natural gas used in the field gathering and processing plant machinery.

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, 2002 values include net storage injections.

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.

Sources: 2002 supply values: Energy Information Administration (EIA), *Natural Gas Monthly*, DOE/EIA-0130(2003/06) (Washington, DC, June 2003). 2002 consumption based on: EIA, *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, October 2002). Projections: EIA, AEO2004 National Energy Modeling System runs LM2004.D101703A, AEO2004.D101703E, and HM2004.D101703A.

Economic Growth Case Comparisons

Table B14. Natural Gas Prices, Margins, and Revenue
(2002 Dollars per Thousand Cubic Feet, Unless Otherwise Noted)

Prices, Margins, and Revenue	2002	Projections								
		2010			2020			2025		
		Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
Source Price										
Average Lower 48 Wellhead Price ¹	2.95	3.31	3.40	3.61	3.97	4.28	4.71	4.28	4.40	4.94
Average Import Price	3.14	3.63	3.78	4.00	4.28	4.58	4.98	4.48	4.67	5.13
Average²	2.98	3.38	3.49	3.70	4.04	4.35	4.78	4.33	4.47	4.99
Delivered Prices										
Residential	7.86	7.78	7.88	8.11	8.18	8.47	8.95	8.41	8.56	9.04
Commercial	6.55	6.72	6.83	7.06	7.21	7.52	7.99	7.45	7.62	8.12
Industrial ³	3.85	4.05	4.16	4.40	4.68	5.02	5.49	4.95	5.13	5.69
Electric Generators ⁴	3.85	4.02	4.12	4.36	4.61	4.94	5.42	4.87	5.01	5.57
Transportation ⁵	7.58	8.35	8.49	8.80	8.90	9.32	9.90	9.11	9.34	9.95
Average⁶	5.21	5.34	5.41	5.60	5.83	6.09	6.51	6.07	6.19	6.68
Transmission & Distribution Margins⁷										
Residential	4.88	4.40	4.40	4.41	4.14	4.11	4.17	4.08	4.09	4.05
Commercial	3.56	3.33	3.34	3.36	3.17	3.17	3.21	3.12	3.15	3.12
Industrial ³	0.87	0.67	0.68	0.70	0.63	0.67	0.71	0.63	0.66	0.70
Electric Generators ⁴	0.86	0.64	0.63	0.66	0.56	0.59	0.64	0.54	0.54	0.58
Transportation ⁵	4.60	4.97	5.00	5.10	4.85	4.96	5.12	4.78	4.87	4.96
Average⁶	2.23	1.96	1.92	1.90	1.78	1.74	1.73	1.74	1.72	1.69
Transmission & Distribution Revenue (billion 2002 dollars)										
Residential	24.02	24.18	24.33	24.62	23.78	24.34	25.08	23.80	24.89	25.32
Commercial	11.12	11.51	11.61	11.73	11.81	12.13	12.55	12.08	12.72	13.05
Industrial ³	6.27	5.23	5.67	6.22	5.35	6.42	7.52	5.51	6.80	8.18
Electric Generators ⁴	4.78	4.01	4.21	4.66	4.36	5.10	6.02	4.43	4.54	5.25
Transportation ⁵	0.06	0.27	0.28	0.31	0.43	0.48	0.54	0.47	0.54	0.60
Total	46.25	45.19	46.11	47.54	45.73	48.46	51.70	46.30	49.49	52.41

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 for combined heat and power, which produces electricity and other useful thermal energy.

⁴Includes consumption of energy by electricity-only and combined heat and power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public. Includes small power producers and exempt wholesale generators.

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

Sources: 2002 electric generators delivered price: Federal Energy Regulatory Commission, FERC Form 423, "Monthly Report of Cost and Quality of Fuels for Electric Plants." 2002 industrial delivered prices based on Energy Information Administration (EIA), *Manufacturing Energy Consumption Survey 1998*. 2002 residential, commercial, and transportation delivered prices, average lower 48 wellhead price, and average import price: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2003/06) (Washington, DC, June 2003). Other 2002 values: EIA, Office of Integrated Analysis and Forecasting. **Projections:** EIA, AEO2004 National Energy Modeling System runs LM2004.D101703A, AEO2004.D101703E, and HM2004.D101703A.

Economic Growth Case Comparisons

Table B15. Oil and Gas Supply

Production and Supply	2002	Projections								
		2010			2020			2025		
		Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
Crude Oil										
Lower 48 Average Wellhead Price¹ (2002 dollars per barrel)	24.54	23.02	23.61	24.20	24.27	25.82	26.96	24.83	26.72	28.45
Production (million barrels per day)²										
U.S. Total	5.62	5.91	5.93	5.95	4.96	4.95	5.02	4.39	4.61	4.72
Lower 48 Onshore	3.11	2.60	2.61	2.62	2.17	2.20	2.23	2.01	2.04	2.07
Lower 48 Offshore	1.53	2.40	2.40	2.41	2.07	2.03	2.06	1.88	2.06	2.13
Alaska	0.98	0.92	0.92	0.92	0.72	0.72	0.73	0.50	0.51	0.52
Lower 48 End of Year Reserves (billion barrels)² .	19.05	18.29	18.36	18.42	16.05	16.20	16.21	14.42	14.98	15.29
Natural Gas										
Lower 48 Average Wellhead Price¹ (2002 dollars per thousand cubic feet)	2.95	3.31	3.40	3.61	3.97	4.28	4.71	4.28	4.40	4.94
Dry Production (trillion cubic feet)³										
U.S. Total	19.05	20.15	20.50	21.30	22.10	23.79	24.97	22.70	23.99	25.16
Lower 48 Onshore	13.76	14.18	14.48	15.13	15.48	16.41	17.21	15.86	16.26	17.28
Associated-Dissolved ⁴	1.60	1.40	1.41	1.41	1.22	1.23	1.24	1.16	1.17	1.18
Non-Associated	12.16	12.78	13.08	13.72	14.26	15.18	15.97	14.71	15.09	16.10
Conventional	6.23	5.72	5.80	6.07	5.70	6.07	6.41	5.70	5.92	6.30
Unconventional	5.93	7.06	7.28	7.65	8.55	9.11	9.55	9.00	9.16	9.80
Lower 48 Offshore	4.86	5.37	5.41	5.57	5.15	5.09	5.09	4.51	5.03	5.17
Associated-Dissolved ⁴	1.05	1.61	1.61	1.61	1.34	1.34	1.33	1.23	1.43	1.48
Non-Associated	3.81	3.76	3.80	3.96	3.80	3.75	3.76	3.29	3.60	3.69
Alaska	0.43	0.60	0.60	0.60	1.48	2.29	2.67	2.32	2.71	2.71
Lower 48 End of Year Dry Reserves³ (trillion cubic feet)	180.03	198.58	201.20	202.86	198.82	200.97	201.88	188.97	193.51	192.74
Supplemental Gas Supplies (trillion cubic feet)⁵ . .	0.08	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Total Lower 48 Wells (thousands)	24.47	23.94	24.78	25.99	25.79	26.83	27.68	25.40	26.00	27.45

¹Represents lower 48 onshore and offshore supplies.

²Includes lease condensate.

³Marketed 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. Data for 2002 are model results and may differ slightly from official EIA data reports.

Sources: 2002 lower 48 onshore, lower 48 offshore, and Alaska crude oil production: Energy Information Administration (EIA), *Petroleum Supply Annual 2002*, DOE/EIA-0340(2002)/1 (Washington, DC, June 2003). 2002 natural gas lower 48 average wellhead price, Alaska and total natural gas production, and supplemental gas supplies: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2003/06) (Washington, DC, June 2003). Other 2002 values: EIA, Office of Integrated Analysis and Forecasting. Projections: EIA, AEO2004 National Energy Modeling System runs LM2004.D101703A, AEO2004.D101703E, and HM2004.D101703A.

Economic Growth Case Comparisons

Table B16. Coal Supply, Disposition, and Prices
(Million Short Tons per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	2002	Projections								
		2010			2020			2025		
		Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
Production¹										
Appalachia	408	401	408	421	385	402	426	378	419	462
Interior	147	165	169	181	161	170	177	144	178	192
West	550	642	653	640	791	805	779	898	946	931
East of the Mississippi	504	513	524	541	497	522	553	492	547	605
West of the Mississippi	601	694	706	702	840	854	829	929	996	981
Total	1105	1208	1230	1242	1337	1377	1382	1420	1543	1586
Net Imports										
Imports	17	33	33	33	42	42	42	46	46	46
Exports	40	36	35	35	29	27	26	26	23	21
Total	-23	-2	-2	-2	12	14	16	20	23	25
Total Supply²	1083	1205	1228	1240	1349	1391	1398	1440	1566	1611
Consumption by Sector										
Residential and Commercial	4	5	5	5	5	5	5	5	5	5
Industrial ³	63	62	65	67	63	66	70	63	67	79
of which: Coal to Liquids	0	0	0	0	0	0	0	0	0	8
Coke Plants	22	23	23	23	19	19	19	17	17	17
Electric Generators ⁴	976	1115	1136	1145	1263	1301	1305	1355	1477	1510
Total	1066	1205	1229	1240	1349	1391	1399	1441	1567	1612
Discrepancy and Stock Change⁵	17	-0	-0	0	-0	-0	-1	-1	-1	-1
Average Minemouth Price										
(2002 dollars per short ton)	17.90	16.53	16.88	17.47	15.78	16.32	16.92	15.67	16.57	17.95
(2002 dollars per million Btu)	0.87	0.81	0.82	0.85	0.78	0.80	0.83	0.78	0.82	0.88
Delivered Prices (2002 dollars per short ton)⁶										
Industrial	33.24	33.54	34.46	35.76	31.62	33.43	34.96	31.01	33.33	33.61
Coke Plants	51.27	52.75	53.68	55.04	48.98	50.45	52.22	46.67	48.42	50.50
Electric Generators										
(2002 dollars per short ton)	25.96	24.03	24.67	25.52	22.87	24.01	25.03	22.75	24.31	26.29
(2002 dollars per million Btu)	1.26	1.19	1.22	1.26	1.15	1.20	1.24	1.14	1.22	1.30
Average	26.93	25.09	25.74	26.63	23.65	24.83	25.90	23.40	24.96	26.91
Exports ⁷	40.44	35.68	36.47	37.22	33.43	34.13	35.20	31.67	32.34	33.74

¹Includes anthracite, bituminous coal, lignite, and waste coal delivered to independent power producers. Waste coal deliveries totaled 11.1 million tons in 2002.

²Production plus net imports plus net storage withdrawals.

³Includes consumption for combined heat and power plants, except those plants whose primary business is to sell electricity, or electricity and heat, to the public.

⁴Includes all electricity-only and combined heat and power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public.

⁵Balancing item: the sum of production, net imports, and net storage withdrawals 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.

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.

Sources: 2002 data based on Energy Information Administration (EIA), *Quarterly Coal Report, October-December 2002*; DOE/EIA-0121(2002/4Q) (Washington, DC, March 2003); EIA, *Annual Coal Report 2002*, DOE/EIA-0584(2002) (Washington, DC, November 2003); and EIA, AEO2004 National Energy Modeling System run AEO2004.D101703E.

Projections: EIA, AEO2004 National Energy Modeling System runs LM2004.D101703A, AEO2004.D101703E, and HM2004.D101703A.

Economic Growth Case Comparisons

Table B17. Renewable Energy Generating Capacity and Generation
(Gigawatts, Unless Otherwise Noted)

Capacity and Generation	2002	Projections								
		2010			2020			2025		
		Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
Electric Power Sector¹										
Net Summer Capacity										
Conventional Hydropower	78.29	78.69	78.69	78.69	78.68	78.68	78.68	78.68	78.68	78.68
Geothermal ²	2.89	3.94	4.01	4.11	5.91	6.06	6.36	6.63	6.84	7.30
Municipal Solid Waste ³	3.49	3.89	3.92	3.89	3.92	3.95	4.06	3.92	3.95	4.07
Wood and Other Biomass ^{4,5}	1.83	2.17	2.20	2.14	2.55	3.04	4.62	2.65	3.74	8.13
Solar Thermal	0.33	0.43	0.43	0.43	0.49	0.49	0.49	0.52	0.52	0.52
Solar Photovoltaic ⁵	0.02	0.15	0.15	0.15	0.32	0.32	0.32	0.41	0.41	0.41
Wind	4.83	7.82	8.01	8.74	10.77	13.39	20.65	12.09	15.99	26.84
Total	91.69	97.09	97.42	98.15	102.65	105.93	115.18	104.90	110.13	125.95
Generation (billion kilowatthours)										
Conventional Hydropower	255.78	304.35	304.37	304.40	304.57	304.63	304.69	304.72	304.80	304.88
Geothermal ²	13.36	22.67	23.25	24.03	38.92	40.14	42.51	45.01	46.66	50.32
Municipal Solid Waste ³	20.02	27.89	28.11	27.94	28.18	28.44	29.32	28.22	28.50	29.49
Wood and Other Biomass ⁵	8.67	22.68	23.53	25.40	25.16	27.64	33.30	25.21	29.16	51.55
Dedicated Plants	6.32	13.09	13.26	13.11	15.66	18.47	27.29	16.52	22.90	49.87
Cofiring	2.35	9.59	10.26	12.29	9.50	9.17	6.01	8.68	6.25	1.68
Solar Thermal	0.54	0.84	0.84	0.84	1.04	1.04	1.04	1.11	1.11	1.11
Solar Photovoltaic ⁵	0.00	0.36	0.36	0.36	0.79	0.79	0.79	1.02	1.02	1.02
Wind	10.51	23.41	24.07	26.63	34.10	43.54	70.33	38.91	53.16	93.54
Total	308.87	402.20	404.52	409.59	432.77	446.22	481.98	444.18	464.40	531.90
End-Use Sector										
Net Summer Capacity										
Combined Heat and Power⁷										
Municipal Solid Waste	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Biomass	3.91	4.71	5.36	5.83	6.02	7.26	8.37	6.60	8.03	9.38
Total	4.16	4.96	5.61	6.09	6.27	7.51	8.62	6.86	8.29	9.64
Other End-Use Generators⁸										
Conventional Hydropower ⁹	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solar Photovoltaic	0.04	0.39	0.39	0.39	0.49	0.58	0.70	0.89	1.13	1.55
Total	1.06	1.41	1.41	1.41	1.51	1.61	1.72	1.91	2.15	2.57
Generation (billion kilowatthours)										
Combined Heat and Power⁷										
Municipal Solid Waste	1.84	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
Biomass	28.16	32.85	36.63	39.42	40.51	47.72	54.23	43.92	52.26	60.14
Total	30.00	34.95	38.73	41.52	42.61	49.82	56.33	46.02	54.36	62.24
Other End-Use Generators⁸										
Conventional Hydropower ⁹	4.11	4.11	4.11	4.11	4.11	4.11	4.11	4.11	4.11	4.11
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solar Photovoltaic	0.09	0.82	0.82	0.82	1.05	1.26	1.50	1.92	2.42	3.31
Total	4.20	4.93	4.93	4.93	5.16	5.37	5.61	6.02	6.53	7.42

¹Includes electricity-only and combined heat and power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public.

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

³Includes landfill gas.

⁴Facilities co-firing biomass and coal are classified as coal.

⁵Includes projections for energy crops after 2010.

⁶Does not include off-grid photovoltaics (PV). See Annual Energy Review 2002 Table 10.6 for estimates of 1989-2001 PV shipments, including exports, for both grid-connected and off-grid applications.

⁷Includes combined heat and power plants and electricity-only plants in the commercial and industrial sectors.

⁸Includes small on-site generating systems in the residential, commercial, and industrial sectors used primarily for own-use generation, but which may also sell some power to the grid.

⁹Represents own-use industrial hydroelectric power.

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. Net summer capacity has been estimated for nonutility generators for AEO2004. Net summer capacity is used to be consistent with electric utility capacity estimates. Additional retirements are determined on the basis of the size and age of the units.

Sources: 2002 capacity: Energy Information Administration (EIA), Form EIA-860: "Annual Electric Generator Report" (preliminary). 2002 generation: EIA, *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, October 2002). Projections: EIA, AEO2004 National Energy Modeling System runs LM2004.D101703A, AEO2004.D101703E, and HM2004.D101703A.

Economic Growth Case Comparisons

Table B18. Renewable Energy Consumption by Sector and Source¹
(Quadrillion Btu per Year)

Sector and Source	2002	Projections								
		2010			2020			2025		
		Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
Marketed Renewable Energy²										
Residential	0.39	0.40	0.40	0.41	0.40	0.41	0.41	0.39	0.41	0.41
Wood	0.39	0.40	0.40	0.41	0.40	0.41	0.41	0.39	0.41	0.41
Commercial	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Biomass	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Industrial³	1.66	1.83	2.00	2.13	2.16	2.48	2.79	2.32	2.70	3.08
Conventional Hydroelectric	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Municipal Solid Waste	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Biomass	1.60	1.78	1.95	2.07	2.11	2.43	2.73	2.27	2.65	3.03
Transportation	0.17	0.28	0.29	0.30	0.32	0.33	0.35	0.34	0.35	0.38
Ethanol used in E85 ⁴	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ethanol used in Gasoline Blending	0.17	0.28	0.29	0.30	0.31	0.33	0.34	0.33	0.35	0.37
Electric Generators⁵	3.69	4.64	4.68	4.75	5.30	5.47	5.88	5.55	5.79	6.54
Conventional Hydroelectric	2.75	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13
Geothermal	0.30	0.59	0.61	0.64	1.11	1.15	1.23	1.30	1.36	1.49
Municipal Solid Waste ⁶	0.34	0.38	0.39	0.38	0.39	0.39	0.40	0.39	0.39	0.40
Biomass	0.17	0.28	0.29	0.31	0.30	0.33	0.37	0.30	0.34	0.53
Dedicated Plants	0.11	0.15	0.15	0.15	0.18	0.21	0.30	0.19	0.26	0.51
Cofiring	0.06	0.13	0.14	0.17	0.13	0.12	0.07	0.12	0.08	0.02
Solar Thermal	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02
Solar Photovoltaic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wind	0.13	0.24	0.25	0.27	0.35	0.45	0.72	0.40	0.55	0.96
Total Marketed Renewable Energy	6.01	7.26	7.47	7.68	8.28	8.78	9.53	8.70	9.35	10.51
Sources of Ethanol										
From Corn	0.17	0.28	0.29	0.30	0.29	0.31	0.32	0.29	0.31	0.32
From Cellulose	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.05	0.05	0.05
Total	0.17	0.28	0.29	0.30	0.32	0.33	0.35	0.34	0.35	0.38
Non-Marketed Renewable Energy⁷										
Selected Consumption										
Residential	0.02	0.03	0.03	0.03	0.04	0.04	0.05	0.05	0.05	0.05
Solar Hot Water Heating	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04
Geothermal Heat Pumps	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01
Solar Photovoltaic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Commercial	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04
Solar Thermal	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Solar Photovoltaic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01

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 kilowatt-hour.

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 B8.

³Includes all electricity production by industrial and other combined heat and power for the grid and for own use.

⁴Excludes motor gasoline component of E85.

⁵Includes consumption of energy by electricity-only and combined heat and power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public. Includes small power producers and exempt wholesale generators.

⁶Includes landfill gas.

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.

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.

Sources: 2002 ethanol: Energy Information Administration (EIA), *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, October 2002). 2002 electric generators: EIA, Form EIA-860: "Annual Electric Generator Report" (preliminary). Other 2002 values: EIA, Office of Integrated Analysis and Forecasting. Projections: EIA, AEO2004 National Energy Modeling System runs LM2004.D101703A, AEO2004.D101703E, and HM2004.D101703A.

Economic Growth Case Comparisons

Table B19. Carbon Dioxide Emissions by Sector and Source
(Million Metric Tons)

Sector and Source	2002	Projections								
		2010			2020			2025		
		Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth
Residential										
Petroleum	104.0	110.2	110.4	110.7	106.7	107.1	108.0	103.2	104.5	105.1
Natural Gas	267.2	298.3	300.4	302.9	311.9	321.2	326.3	316.3	330.7	339.5
Coal	1.1	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1
Electricity	816.7	900.4	905.3	906.1	1008.2	1019.9	1014.6	1062.2	1106.7	1104.4
Total	1189.0	1310.1	1317.2	1320.9	1427.8	1449.2	1449.9	1482.8	1543.0	1550.1
Commercial										
Petroleum	52.6	66.0	66.2	66.5	69.8	70.2	71.7	71.0	72.2	73.9
Natural Gas	169.4	187.5	188.7	189.5	202.2	207.9	212.1	210.0	219.4	226.8
Coal	9.2	9.2	9.3	9.3	9.2	9.2	9.3	9.2	9.2	9.3
Electricity	778.0	931.6	938.4	937.0	1120.3	1135.5	1136.1	1217.1	1269.2	1276.7
Total	1009.1	1194.3	1202.5	1202.3	1401.4	1422.9	1429.2	1507.2	1570.1	1586.6
Industrial¹										
Petroleum	412.8	346.2	365.4	381.2	366.9	408.0	446.5	380.0	428.4	471.2
Natural Gas ²	432.7	493.3	522.1	549.7	533.7	598.6	658.8	554.9	639.4	717.4
Coal	185.1	186.9	191.9	196.6	175.6	183.3	191.1	171.9	181.1	196.4
Electricity	640.0	654.5	710.3	758.2	721.5	813.8	904.1	760.4	900.7	1023.3
Total	1670.6	1680.9	1789.6	1885.8	1797.7	2003.6	2200.4	1867.2	2149.5	2408.3
Transportation										
Petroleum ³	1811.2	2127.3	2193.2	2262.6	2445.6	2590.9	2734.7	2611.2	2805.8	2993.7
Natural Gas ⁴	35.2	38.6	39.5	41.3	44.1	49.1	52.2	47.7	51.3	53.8
Other ⁵	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electricity	14.2	16.6	16.7	16.8	19.8	19.9	19.9	21.8	22.4	22.4
Total	1860.6	2182.5	2249.5	2320.6	2509.5	2659.9	2806.8	2680.7	2879.5	3069.9
Total Carbon Dioxide Emissions by Delivered Fuel										
Petroleum ³	2380.5	2649.7	2735.2	2820.9	2989.0	3176.2	3360.9	3165.4	3410.9	3643.9
Natural Gas	904.4	1017.7	1050.7	1083.5	1091.9	1176.8	1249.3	1128.9	1240.8	1337.6
Coal	195.4	197.3	202.4	207.0	185.9	193.6	201.4	182.1	191.4	206.7
Other ⁵	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electricity	2249.0	2503.1	2570.6	2618.1	2869.7	2989.0	3074.6	3061.5	3299.0	3426.7
Total	5729.3	6367.8	6558.8	6729.6	7136.5	7535.6	7886.3	7537.9	8142.0	8614.9
Electric Power⁶										
Petroleum	72.2	47.4	51.0	54.8	66.8	65.2	87.9	67.4	61.6	64.8
Natural Gas	299.1	336.9	358.5	382.4	418.5	463.3	503.6	440.3	451.6	485.0
Coal	1877.8	2118.8	2161.2	2181.0	2384.4	2460.5	2483.0	2553.8	2785.8	2877.0
Total	2249.0	2503.1	2570.6	2618.1	2869.7	2989.0	3074.6	3061.5	3299.0	3426.7
Total Carbon Dioxide Emissions by Primary Fuel⁷										
Petroleum ³	2452.7	2697.1	2786.1	2875.7	3055.8	3241.4	3448.9	3232.8	3472.5	3708.7
Natural Gas	1203.4	1354.6	1409.2	1465.9	1510.4	1640.1	1753.0	1569.2	1692.4	1822.6
Coal	2073.2	2316.1	2363.6	2388.0	2570.3	2654.1	2684.5	2735.9	2977.1	3083.7
Other ⁵	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	5729.3	6367.8	6558.8	6729.6	7136.5	7535.6	7886.3	7537.9	8142.0	8614.9
Carbon Dioxide Emissions (tons per person)										
	19.8	20.9	21.2	21.4	22.2	22.5	22.7	22.7	23.4	23.7

¹Fuel consumption includes energy for combined heat and power plants, except those plants whose primary business is to sell electricity, or electricity and heat, to the public.

²Includes lease and plant fuel.

³This includes international bunker fuel, which by convention are excluded from the international accounting of carbon dioxide emissions. In the years from 1990 through 2000, international bunker fuels accounted for 24 to 30 million metric tons of carbon dioxide annually.

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

⁵Includes methanol and liquid hydrogen.

⁶Includes electricity-only and combined heat and power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public. Does not include emissions from the nonbiogenic component of municipal solid waste because under international guidelines these are accounted for as waste, not energy.

⁷Emissions from electric power generators are distributed to the primary fuels.

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.

Sources: 2002 emissions and emission factors: Energy Information Administration (EIA), *Emissions of Greenhouse Gases in the United States 2002*, DOE/EIA-0573(2002) (Washington, DC, October 2003). Projections: EIA, AEO2004 National Energy Modeling System runs LM2004.D101703A, AEO2004.D101703E, and HM2004.D101703A.

Economic Growth Case Comparisons

Table B20. Macroeconomic Indicators
(Billion 1996 Chain-Weighted Dollars, Unless Otherwise Noted)

Indicators	2002	Projections								
		2010			2020			2025		
		Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High Economic Growth	Low Economic Growth	Reference	High.5 Economic Growth
Real Gross Domestic Product	9440	11727	12190	12858	14722	16188	17603	16280	18520	20685
Real Potential Gross Domestic Product	9726	12001	12313	12745	15028	16186	17586	16645	18520	20598
Real Disposable Personal Income	7032	8619	8894	9264	11030	11864	12658	12643	13826	14969
Components of Real Gross Domestic Product										
Real Consumption	6576	8162	8437	8801	10329	11296	12010	11483	12946	14089
Real Investment	1590	2209	2387	2638	3125	3726	4210	3627	4661	5483
Real Government Spending	1713	1879	1961	2009	2072	2265	2387	2172	2423	2599
Real Exports	1059	1751	1838	1974	2969	3376	3857	3773	4546	5347
Real Imports	1547	2278	2436	2529	3713	4433	4676	5058	6015	6492
Energy Intensity (thousand Btu per 1996 dollar of GDP)										
Delivered Energy	7.55	6.76	6.73	6.60	5.98	5.84	5.71	5.68	5.45	5.26
Total Energy	10.36	9.24	9.17	8.95	8.19	7.91	7.67	7.76	7.37	7.05
Price Indices										
GDP Chain-Type Price Index (1996=1.000)	1.107	1.356	1.301	1.210	2.012	1.774	1.564	2.493	2.121	1.790
Consumer Price Index (1982-4=1)	1.80	2.21	2.11	1.96	3.33	2.89	2.54	4.23	3.49	2.93
Wholesale Price Index (1982=1.00)										
All Commodities	1.31	1.53	1.46	1.36	2.03	1.74	1.52	2.38	1.94	1.62
Fuel and Power	0.93	1.08	1.06	1.04	1.51	1.33	1.19	1.85	1.52	1.27
Interest Rates (percent, nominal)										
Federal Funds Rate	1.67	5.86	5.42	5.04	7.08	6.30	5.59	8.06	7.00	6.04
10-Year Treasury Note	4.61	6.95	6.60	6.27	7.79	7.07	6.42	9.02	7.95	6.95
AA Utility Bond Rate	7.19	8.41	7.99	7.61	9.53	8.59	7.75	10.69	9.27	7.99
Unemployment Rate (percent)	5.78	5.45	4.93	4.38	5.01	4.41	3.84	5.08	4.44	3.80
Housing Starts (millions)	1.88	1.74	1.97	2.24	1.57	1.94	2.16	1.49	1.92	2.20
Commercial Floorspace, Total (billion square feet)	72.1	82.8	83.8	84.8	92.5	95.9	99.3	96.9	101.8	106.4
Unit Sales of Light-Duty Vehicles (millions)	16.78	17.01	18.01	19.08	18.41	20.25	22.16	18.08	21.32	24.91
Value of Shipments (billion 1996 dollars)										
Total Industrial	5285	5927	6439	6986	7292	8344	9537	7987	9491	11166
Non-manufacturing	1222	1300	1425	1587	1462	1710	1955	1503	1855	2204
Manufacturing	4064	4627	5013	5399	5830	6634	7582	6483	7636	8962
Energy-Intensive	1120	1181	1273	1348	1321	1500	1679	1393	1610	1830
Non-Energy Intensive	2944	3446	3741	4051	4508	5135	5903	5090	6026	7132
Population and Employment (millions)										
Population with Armed Forces Overseas	288.9	304.1	309.3	314.4	322.2	334.6	347.1	331.4	347.5	363.7
Population (aged 16 and over)	224.3	240.3	244.1	247.9	255.2	264.3	273.3	262.3	274.3	286.3
Employment, Non-Agriculture	130.5	136.7	145.0	150.9	148.5	161.2	169.2	160.5	168.6	181.1
Employment, Manufacturing	16.7	15.3	16.1	16.9	15.3	16.0	17.0	15.3	16.2	17.3
Labor Force	145.1	156.8	159.8	163.6	164.2	171.3	178.8	167.1	176.8	186.8

GDP = Gross domestic product.

Btu = British thermal unit.

Sources: 2002: Global Insight macroeconomic model T250803. Projections: Energy Information Administration, AEO2004 National Energy Modeling System runs LM2004.D101703A, AEO2004.D101703E, and HM2004.D101703A.

Economic Growth Case Comparisons

Table B21. International Petroleum Supply and Disposition Summary
(Million Barrels per Day, Unless Otherwise Noted)

Supply and Disposition	2002	Projections								
		2010			2020			2025		
		Low Economic Growth	Reference Case	High Economic Growth	Low Economic Growth	Reference Case	High Economic Growth	Low Economic Growth	Reference Case	High Economic Growth
World Oil Price¹ (2002 dollars per barrel)	23.68	23.64	24.17	24.67	24.77	26.02	27.27	25.30	27.00	28.55
Production² (Conventional)										
Industrialized Countries										
U.S. (50 states)	9.16	9.46	9.53	9.64	8.73	8.89	9.07	8.24	8.59	8.79
Canada	2.14	1.83	1.83	1.83	1.59	1.60	1.61	1.55	1.57	1.58
Mexico	3.61	4.20	4.20	4.20	4.58	4.60	4.62	4.79	4.82	4.84
Western Europe ³	6.76	6.33	6.34	6.34	5.47	5.48	5.49	4.96	4.97	4.99
Japan	0.08	0.08	0.08	0.08	0.06	0.06	0.07	0.06	0.06	0.06
Australia and New Zealand	0.75	0.95	0.96	0.96	0.88	0.88	0.89	0.85	0.86	0.86
Total Industrialized	22.51	22.85	22.93	23.05	21.32	21.52	21.75	20.46	20.87	21.13
Eurasia										
Former Soviet Union										
Russia	7.67	9.90	9.92	9.93	10.72	10.77	10.80	10.87	10.93	10.98
Caspian Area ⁴	1.66	3.11	3.12	3.12	5.13	5.15	5.17	6.08	6.11	6.14
Eastern Europe ⁵	0.23	0.33	0.33	0.33	0.41	0.41	0.41	0.45	0.45	0.45
Total Eurasia	9.56	13.35	13.37	13.38	16.26	16.32	16.38	17.39	17.48	17.57
Developing Countries	44.24	49.32	49.94	50.51	63.37	64.32	65.32	73.18	74.05	75.20
Total Production (Conventional)	76.30	85.52	86.24	86.95	100.94	102.17	103.45	111.03	112.41	113.89
Production⁶ (Nonconventional)										
U.S. (50 states)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
Other North America	0.79	1.69	1.69	1.69	3.20	3.20	3.20	3.28	3.28	3.28
Western Europe	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Asia	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Middle East ⁷	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.03
Africa	0.16	0.19	0.19	0.19	0.25	0.25	0.25	0.28	0.28	0.28
South and Central America	0.54	0.85	0.85	0.85	1.42	1.42	1.42	1.45	1.45	1.45
Total Production (Nonconventional)	1.55	2.81	2.81	2.81	4.97	4.97	4.97	5.11	5.11	5.11
Total Production	77.85	88.33	89.05	89.76	105.91	107.13	108.41	116.14	117.53	119.03
Consumption⁸										
Industrialized Countries										
U.S. (50 states)	19.61	21.83	22.71	23.56	24.54	26.41	28.36	25.87	28.30	30.62
U.S. Territories	0.29	0.38	0.38	0.38	0.43	0.43	0.42	0.48	0.47	0.46
Canada	1.96	2.25	2.23	2.23	2.40	2.36	2.33	2.50	2.44	2.40
Mexico	2.01	2.66	2.65	2.65	3.69	3.62	3.57	4.20	4.09	3.99
Western Europe ³	14.02	14.39	14.36	14.33	14.90	14.80	14.70	15.41	15.26	15.14
Japan	5.45	5.82	5.79	5.77	6.38	6.26	6.15	6.73	6.54	6.38
Australia and New Zealand	1.04	1.28	1.28	1.28	1.59	1.58	1.57	1.76	1.75	1.74
Total Industrialized	44.39	48.61	49.41	50.18	53.94	55.47	57.11	56.95	58.85	60.73
Eurasia										
Former Soviet Union	4.05	5.11	5.10	5.09	5.76	5.73	5.70	6.29	6.25	6.21
Eastern Europe ⁵	1.44	1.74	1.74	1.74	2.22	2.21	2.21	2.55	2.54	2.53
Total Eurasia	5.49	6.85	6.84	6.83	7.98	7.94	7.90	8.85	8.79	8.74
Developing Countries										
China	5.11	6.50	6.48	6.46	9.48	9.39	9.30	11.03	10.88	10.76
India	2.16	2.81	2.80	2.80	4.52	4.47	4.43	5.55	5.48	5.41
South Korea	2.20	2.76	2.75	2.74	3.18	3.15	3.12	3.37	3.32	3.27
Other Asia	5.63	6.66	6.65	6.64	8.97	8.93	8.89	10.24	10.17	10.12
Middle East ⁷	5.34	6.20	6.19	6.18	7.89	7.87	7.85	8.92	8.88	8.86
Africa	2.56	2.69	2.68	2.68	3.18	3.16	3.15	3.52	3.50	3.47
South and Central America	4.91	5.54	5.54	5.53	7.06	7.03	7.00	8.03	7.99	7.95
Total Developing Countries	27.91	33.17	33.10	33.04	44.27	44.00	43.74	50.66	50.22	49.84
Total Consumption	77.79	88.63	89.35	90.05	106.20	107.40	108.75	116.45	117.86	119.31

¹Average refiner acquisition cost of imported crude oil.

²Includes production of crude oil (including lease condensates, natural gas plant liquids, other hydrogen and hydrocarbons for refinery feedstocks, alcohol and other sources.

³Western Europe = Austria, Belgium, Bosnia and Herzegovina, Croatia, Denmark, Finland, France, the unified Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Macedonia, Netherlands, Norway, Portugal, Slovenia, Spain, Sweden, Switzerland, United Kingdom, and Yugoslavia.

⁴Caspian area includes Other Former Soviet Union.

⁵Eastern Europe = Albania, Bulgaria, Czech Republic, Hungary, Poland, Romania, and Slovakia.

⁶Includes liquids produced from energy crops, natural gas, coal, oil sands, and shale. Includes both OPEC and non-OPEC producers in the regional breakdown.

⁷Includes Turkey.

⁸Includes both OPEC and non-OPEC consumers in the regional breakdown.

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.

Sources: Energy Information Administration, AEO2004 National Energy Modeling System runs LM2004.D101703A, AEO2004.D101703E, and HM2004.D101703A.