

Appendix A

**Letters from the Subcommittee on National Economic Growth,
Natural Resources, and Regulatory Affairs**

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ONE HUNDRED SIXTH CONGRESS

Congress of the United States

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COMMITTEE ON GOVERNMENT REFORM

2157 RAYBURN HOUSE OFFICE BUILDING

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MAJORITY (205) 325-3274
MINORITY (205) 325-3271
TTY (202) 325-8852

June 29, 2000

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BY FACSIMILE

The Honorable Larry Pettis
Acting Administrator
Energy Information Administration
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, DC 20585

Dear Mr. Pettis:

I am writing to request that the Energy Information Administration (EIA) analyze the potential costs of various "multi-pollutant" strategies to reduce air emissions from electric power plants.

Many "stakeholders" in the debates over New Source Review reform and Clean Air Act reauthorization advocate "integrated, market-based, multi-pollutant" strategies to reduce air emissions from electric power generation. Utilities and environmental activists alike argue that the current approach, which imposes numerous, uncoordinated, pollutant-by-pollutant requirements, is costly, rife with litigation, and fraught with compliance delays. Utilities in particular complain that the resulting lack of "regulatory certainty" discourages long-term planning, investment, and innovation, shortchanging both consumers and the environment. Proponents of multi-pollutant strategies typically advocate emission caps for nitrogen oxides (NO_x), sulfur dioxide (SO₂), mercury, and carbon dioxide (CO₂), with emissions banking, trading, and credit for early reductions to provide flexibility and lower costs.

I have two concerns about the proposed multi-pollutant strategies. First, flexibility is purchased at the price of extending the Environmental Protection Agency's (EPA's) regulatory web to encompass CO₂. I believe this would set a dangerous precedent, because CO₂ is the most ubiquitous byproduct of industrial society. The power to control CO₂ emissions is potentially the power to eliminate coal as a fuel source, restructure the electric power industry by political fiat, and regulate vast numbers of small- and mid-sized users of fossil fuels.

Second, the proposed emission reductions are very steep. Under one such proposal, for example, electric utilities would be required to reduce NO_x and SO₂ emissions 75 percent below

1997 levels, reduce mercury emissions 90 percent below 1997 levels, and reduce CO₂ emissions to 1990 levels – all by 2005. Another proposal would require comparable reductions and, in addition, phase in a 10 percent renewable energy portfolio standard (RPS) by 2010 and a 20 percent RPS by 2020. By way of comparison, the Clinton-Gore Administration's "Comprehensive Electricity Competition Act" (CECA) would phase in a 7.5 percent RPS by 2010. In short, multi-pollutant strategies may prove to be quite costly, notwithstanding their utilization of emissions trading.

Therefore, pursuant to the Constitution and Rules X and XI of the United States House of Representatives, I request that EIA analyze the cost implications – the likely impacts on both consumers and energy markets – of the following multi-pollutant emission control scenarios for power plants. Please provide results through 2020, in periods of five years or less, using EIA's latest Annual Energy Outlook as the baseline.

Scenario 1a: Assume a starting date of 2001. By 2005, reduce NO_x and SO₂ emissions 75 percent below 1997 levels, reduce mercury emissions 90 percent below 1997 levels, and reduce CO₂ emissions to 1990 levels.

Scenario 1b: In addition to Scenario 1a, phase in a 5 percent RPS by 2005, a 10 percent RPS by 2010, and a 20 percent RPS by 2020.

Scenario 1c: In addition to Scenario 1a, reduce CO₂ emissions 7 percent below 1990 levels by 2008-2012.

Scenario 1d: In addition to Scenario 1b, reduce CO₂ emissions 7 percent below 1990 levels by 2008-2012.

Scenario 2a: Assume a starting date of 2001. By 2008, reduce NO_x and SO₂ emissions 75 percent below 1997 levels, reduce mercury emissions 90 percent below 1997 levels, and reduce CO₂ emissions to 1990 levels.

Scenario 2b: In addition to Scenario 2a, phase in a 5 percent RPS by 2005, a 10 percent RPS by 2010, and a 20 percent RPS by 2020.

Scenario 2c: In addition to Scenario 2a, reduce CO₂ emissions 7 percent below 1990 levels by 2008-2012.

Scenario 2d: In addition to Scenario 2b, reduce CO₂ emissions 7 percent below 1990 levels by 2008-2012.

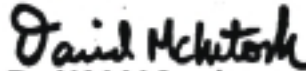
For Scenarios 1d and 2d, please estimate the individual impacts of each provision as well as the combined impacts of all provisions. For example, to what extent would meeting the CO₂ targets achieve the other requirements, including the RPS? I am aware that the mercury

provisions will be difficult to analyze due to limitations in the available data. However, if EIA is unable to model the mercury provisions directly, perhaps EIA would be able to infer the costs of mercury reductions from the projected impacts of other provisions on mercury emissions.

Please deliver your analysis to the Subcommittee majority staff in B-377 Rayburn House Office Building and the minority staff in B-350A Rayburn House Office Building by October 1, 2000. If EIA is unable to analyze the costs of the mercury provisions by October 1st, then please prepare a follow-up paper analyzing those costs – both individually and in combination with the other proposed emission control requirements – as soon as possible after October 1st.

If you have any questions about this request, please call Subcommittee Staff Director Marlo Lewis at 225-1962. Thank you for your attention to this request.

Sincerely,



David M. McIntosh

Chairman

Subcommittee on National Economic Growth
Natural Resources, and Regulatory Affairs

cc: The Honorable Dan Burton
The Honorable Dennis Kucinich

DAN BURTON, INDIANA,
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BERNARD SANDERS, VERMONT
INDEPENDENT

August 17, 2000

BY FACSIMILE

The Honorable Larry Pettis
Acting Administrator
Energy Information Administration
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, DC 20585

Dear Mr. Pettis:

This letter is in the nature of a clarification. On June 29, 2000, Subcommittee Chairman David McIntosh requested that the Energy Information Administration (EIA) analyze the potential costs of various "multi-pollutant" strategies to reduce air emissions from electric power plants. All modeling exercises depend upon assumptions. In its analysis, EIA may find that "multi-pollutant" strategies, especially emission controls for carbon dioxide (CO₂), are so expensive as to encourage new investment in nuclear power. If so, EIA will need to make one of two assumptions: Either (1) the nuclear option is limited to life extension of existing nuclear units, or (2) it also includes construction of new units.

EIA should use assumption (1). Although the proposed "multi-pollutant" strategies may be costly enough to make construction of new nuclear capacity attractive from a strictly economic point of view, public opinion and other political factors are likely to preclude such construction in the foreseeable future. For example, utilities will be disinclined to invest in new nuclear units as long as substantial numbers of policymakers and citizens oppose the transport and remote disposal of spent nuclear fuel.

In addition, some of the leading advocates of CO₂ emission reductions are staunch opponents of nuclear power. For example, in *Earth in the Balance*, Vice President Al Gore, citing safety concerns regarding both reactors and nuclear waste, asserts: "It is a mistake, therefore, to argue that nuclear power holds the key to solving global warming." In Mr. Gore's view, "the present generation of nuclear technology ... seems now rather obviously at a technological dead end," and, consequently, "the proportion of world energy use that could practically be derived from nuclear power is fairly small and is likely to remain so" (p. 328).

Presumably, most supporters of "multi-pollutant" strategies within the environmental community are of the same mind.

In summary, EIA should assume that the nuclear option will be limited to life extension of existing nuclear plants, if they are economically viable. If you have any questions about this letter, please contact me at 225-1962.

Sincerely,



Marlo Lewis, Jr.
Staff Director
Subcommittee on National Economic Growth,
Natural Resources, and Regulatory Affairs

cc: Mr. Kevin Binger
Mr. Phil Schiliro

Appendix B

Tables for NO_x and SO₂ Cap Cases

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

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008
Production										
Crude Oil and Lease Condensate . . .	12.45	11.98	12.01	11.98	11.27	11.22	11.27	11.12	11.11	11.14
Natural Gas Plant Liquids	2.62	3.12	3.12	3.10	3.37	3.38	3.38	4.16	4.17	4.18
Dry Natural Gas	19.16	21.95	21.94	21.83	24.04	24.13	24.14	30.24	30.30	30.39
Coal	23.08	25.45	25.26	25.45	26.55	26.29	26.21	27.16	26.93	27.06
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.74	7.74	6.54	6.59	6.54
Renewable Energy ¹	6.53	7.13	7.13	7.18	7.90	7.91	8.04	8.42	8.44	8.55
Other ²	1.65	0.35	0.35	0.35	0.31	0.30	0.54	0.33	0.32	0.33
Total	73.29	77.88	77.72	77.80	81.19	80.97	81.33	87.97	87.85	88.18
Imports										
Crude Oil ³	18.96	21.42	21.42	21.43	22.38	22.45	22.39	25.82	25.88	25.82
Petroleum Products ⁴	4.14	6.28	6.22	6.21	8.65	8.61	8.38	10.80	10.73	10.68
Natural Gas	3.63	5.13	5.13	5.12	5.55	5.56	5.61	6.59	6.59	6.63
Other Imports ⁵	0.64	1.11	1.11	1.11	0.96	0.96	0.96	0.96	0.96	0.96
Total	27.37	33.93	33.88	33.87	37.54	37.58	37.35	44.18	44.16	44.09
Exports										
Petroleum ⁶	1.98	1.73	1.74	1.74	1.69	1.69	1.73	1.85	1.83	1.86
Natural Gas	0.17	0.33	0.33	0.33	0.43	0.43	0.43	0.63	0.63	0.63
Coal	1.48	1.51	1.51	1.51	1.45	1.46	1.45	1.41	1.41	1.38
Total	3.62	3.57	3.57	3.57	3.58	3.58	3.61	3.89	3.87	3.88
Discrepancy⁷	0.69	0.43	0.42	0.42	0.04	0.04	0.13	0.11	0.14	0.15
Consumption										
Petroleum Products ⁸	38.02	41.34	41.31	41.27	44.44	44.42	44.28	50.45	50.44	50.37
Natural Gas	22.21	26.44	26.43	26.31	29.00	29.10	29.15	36.06	36.09	36.23
Coal	21.42	24.39	24.21	24.40	25.64	25.38	25.34	26.42	26.18	26.31
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.74	7.74	6.54	6.59	6.54
Renewable Energy ¹	6.54	7.13	7.14	7.19	7.91	7.91	8.05	8.43	8.45	8.55
Other ⁹	0.35	0.61	0.61	0.61	0.38	0.38	0.38	0.25	0.25	0.25
Total	96.33	107.81	107.61	107.68	115.11	114.94	114.94	128.16	128.00	128.25
Net Imports - Petroleum	21.12	25.96	25.90	25.90	29.34	29.37	29.05	34.78	34.78	34.65
Prices (1999 dollars per unit)										
World Oil Price (dollars per barrel) ¹⁰ . .	17.22	20.83	20.83	20.83	21.37	21.37	21.37	22.41	22.41	22.41
Gas Wellhead Price (dollars per Mcf) ¹¹	2.08	2.96	2.95	2.95	2.87	2.88	2.86	3.22	3.20	3.22
Coal Minemouth Price (dollars per ton)	17.17	15.05	15.06	15.49	14.08	14.18	14.81	12.87	13.02	13.00
Average Electric Price (cents per Kwh)	6.6	6.4	6.5	6.3	6.1	6.2	6.2	6.2	6.2	6.2

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.

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, imports of 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, and net storage withdrawals.

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.

Mcf = Thousand cubic feet.

Kwh = Kilowatt-hour.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 natural gas values: Energy Information Administration (EIA), *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). 1999 petroleum values: EIA, *Petroleum Supply Annual 1999*, DOE/EIA-0340(99/1) (Washington, DC, June 2000). Other 1999 values: EIA, *Annual Energy Review 1999*, DOE/EIA-0384(99) (Washington, DC, July 2000) and EIA, *Quarterly Coal Report*, DOE/EIA-0121(2000/1Q) (Washington, DC, August 2000). Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NOX08.D060801A, M2SO208P.D061201A.

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

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008
Energy Consumption										
Residential										
Distillate Fuel	0.86	0.87	0.87	0.87	0.80	0.80	0.80	0.76	0.76	0.76
Kerosene	0.10	0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.07	0.07
Liquefied Petroleum Gas	0.46	0.45	0.45	0.45	0.42	0.42	0.42	0.40	0.40	0.40
Petroleum Subtotal	1.42	1.40	1.41	1.40	1.30	1.30	1.30	1.23	1.23	1.23
Natural Gas	4.88	5.57	5.58	5.57	5.61	5.61	5.61	6.23	6.24	6.24
Coal	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Renewable Energy ¹	0.41	0.42	0.42	0.42	0.42	0.42	0.42	0.44	0.44	0.44
Electricity	3.91	4.57	4.54	4.57	4.95	4.94	4.93	5.79	5.78	5.79
Delivered Energy	10.66	12.01	11.99	12.02	12.34	12.32	12.32	13.74	13.74	13.74
Electricity Related Losses	8.44	9.67	9.59	9.62	10.10	10.05	10.03	10.85	10.79	10.88
Total	19.10	21.68	21.59	21.64	22.44	22.37	22.34	24.59	24.54	24.62
Commercial										
Distillate Fuel	0.36	0.37	0.37	0.37	0.38	0.38	0.38	0.37	0.37	0.37
Residual Fuel	0.10	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Kerosene	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Liquefied Petroleum Gas	0.08	0.09	0.09	0.09	0.09	0.09	0.09	0.10	0.10	0.10
Motor Gasoline ²	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Petroleum Subtotal	0.60	0.60	0.61	0.61	0.62	0.62	0.62	0.62	0.62	0.62
Natural Gas	3.14	3.99	3.99	3.99	4.17	4.17	4.17	4.44	4.44	4.44
Coal	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Renewable Energy ³	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Electricity	3.66	4.39	4.37	4.40	4.91	4.89	4.90	5.62	5.61	5.62
Delivered Energy	7.55	9.13	9.12	9.15	9.85	9.83	9.85	10.83	10.83	10.83
Electricity Related Losses	7.91	9.30	9.23	9.26	10.01	9.96	9.98	10.51	10.47	10.57
Total	15.46	18.44	18.35	18.41	19.86	19.79	19.83	21.34	21.30	21.40
Industrial⁴										
Distillate Fuel	1.13	1.22	1.22	1.22	1.31	1.31	1.31	1.49	1.49	1.49
Liquefied Petroleum Gas	2.32	2.45	2.45	2.45	2.53	2.53	2.51	2.85	2.86	2.85
Petrochemical Feedstock	1.29	1.36	1.36	1.36	1.53	1.53	1.53	1.70	1.70	1.70
Residual Fuel	0.22	0.16	0.16	0.16	0.25	0.25	0.25	0.28	0.28	0.28
Motor Gasoline ²	0.21	0.23	0.23	0.23	0.25	0.25	0.25	0.28	0.28	0.28
Other Petroleum ⁵	4.29	4.44	4.45	4.45	4.71	4.71	4.70	5.02	5.04	5.03
Petroleum Subtotal	9.45	9.86	9.87	9.87	10.57	10.57	10.54	11.63	11.65	11.62
Natural Gas ⁶	9.80	10.46	10.46	10.43	11.27	11.29	11.31	12.73	12.74	12.74
Metallurgical Coal	0.75	0.67	0.67	0.67	0.61	0.61	0.61	0.50	0.50	0.50
Steam Coal	1.73	1.81	1.81	1.80	1.83	1.83	1.80	1.87	1.88	1.86
Net Coal Coke Imports	0.06	0.12	0.12	0.12	0.16	0.16	0.16	0.22	0.22	0.22
Coal Subtotal	2.54	2.59	2.60	2.59	2.59	2.59	2.56	2.60	2.60	2.58
Renewable Energy ⁷	2.15	2.42	2.42	2.42	2.64	2.64	2.64	3.08	3.08	3.08
Electricity	3.61	3.90	3.89	3.90	4.17	4.15	4.16	4.76	4.73	4.75
Delivered Energy	27.56	29.23	29.24	29.21	31.24	31.25	31.22	34.80	34.81	34.78
Electricity Related Losses	7.80	8.25	8.20	8.20	8.50	8.44	8.47	8.91	8.84	8.94
Total	35.36	37.48	37.44	37.42	39.74	39.70	39.70	43.71	43.65	43.72

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

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008
Transportation										
Distillate Fuel	5.13	6.28	6.28	6.27	7.00	7.00	6.99	8.22	8.22	8.22
Jet Fuel ⁸	3.46	3.90	3.90	3.90	4.51	4.51	4.51	5.97	5.97	5.97
Motor Gasoline ²	15.92	17.67	17.68	17.68	18.97	18.97	18.97	21.26	21.27	21.26
Residual Fuel	0.74	0.85	0.85	0.85	0.85	0.85	0.85	0.87	0.87	0.87
Liquefied Petroleum Gas	0.02	0.03	0.03	0.03	0.04	0.04	0.05	0.06	0.06	0.06
Other Petroleum ⁹	0.26	0.30	0.30	0.29	0.31	0.31	0.31	0.35	0.35	0.35
Petroleum Subtotal	25.54	29.03	29.03	29.03	31.68	31.68	31.67	36.73	36.73	36.73
Pipeline Fuel Natural Gas	0.66	0.83	0.84	0.83	0.91	0.91	0.91	1.10	1.10	1.11
Compressed Natural Gas	0.02	0.06	0.06	0.06	0.09	0.09	0.09	0.16	0.16	0.16
Renewable Energy (E85) ¹⁰	0.01	0.02	0.02	0.02	0.03	0.03	0.03	0.04	0.04	0.04
Methanol (M85) ¹¹	0.00	0.00	0.00	0.00	0.01	0.01	0.01	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	0.06	0.09	0.09	0.09	0.12	0.12	0.12	0.17	0.17	0.17
Delivered Energy	26.28	30.03	30.04	30.03	32.83	32.84	32.83	38.20	38.20	38.20
Electricity Related Losses	0.13	0.19	0.19	0.19	0.24	0.24	0.24	0.31	0.31	0.31
Total	26.41	30.22	30.22	30.22	33.07	33.08	33.07	38.51	38.51	38.52
Delivered Energy Consumption for All Sectors										
Distillate Fuel	7.48	8.74	8.74	8.74	9.49	9.48	9.48	10.85	10.85	10.84
Kerosene	0.15	0.13	0.13	0.13	0.12	0.12	0.12	0.12	0.12	0.12
Jet Fuel ⁸	3.46	3.90	3.90	3.90	4.51	4.51	4.51	5.97	5.97	5.97
Liquefied Petroleum Gas	2.88	3.02	3.03	3.03	3.08	3.08	3.06	3.41	3.42	3.41
Motor Gasoline ²	16.17	17.93	17.93	17.93	19.24	19.24	19.24	21.57	21.57	21.57
Petrochemical Feedstock	1.29	1.36	1.36	1.36	1.53	1.53	1.53	1.70	1.70	1.70
Residual Fuel	1.05	1.10	1.10	1.10	1.20	1.20	1.20	1.24	1.24	1.24
Other Petroleum ¹²	4.53	4.71	4.72	4.72	4.99	4.99	4.99	5.35	5.37	5.36
Petroleum Subtotal	37.01	40.90	40.92	40.91	44.16	44.17	44.13	50.21	50.23	50.20
Natural Gas ⁶	18.50	20.91	20.92	20.88	22.05	22.07	22.10	24.66	24.69	24.67
Metallurgical Coal	0.75	0.67	0.67	0.67	0.61	0.61	0.61	0.50	0.50	0.50
Steam Coal	1.84	1.92	1.92	1.92	1.95	1.95	1.92	2.00	2.00	1.98
Net Coal Coke Imports	0.06	0.12	0.12	0.12	0.16	0.16	0.16	0.22	0.22	0.22
Coal Subtotal	2.65	2.71	2.71	2.71	2.71	2.72	2.68	2.72	2.72	2.71
Renewable Energy ¹³	2.65	2.94	2.94	2.94	3.18	3.18	3.18	3.65	3.65	3.65
Methanol (M85) ¹¹	0.00	0.00	0.00	0.00	0.01	0.01	0.01	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	11.24	12.95	12.89	12.96	14.15	14.10	14.12	16.34	16.29	16.32
Delivered Energy	72.05	80.41	80.39	80.41	86.27	86.25	86.21	97.57	97.59	97.56
Electricity Related Losses	24.29	27.40	27.22	27.27	28.84	28.69	28.72	30.58	30.41	30.69
Total	96.33	107.81	107.61	107.68	115.11	114.94	114.94	128.16	128.00	128.25
Electric Generators¹⁴										
Distillate Fuel	0.06	0.06	0.06	0.05	0.06	0.06	0.03	0.06	0.06	0.04
Residual Fuel	0.96	0.38	0.33	0.31	0.22	0.19	0.12	0.19	0.15	0.13
Petroleum Subtotal	1.02	0.44	0.40	0.36	0.28	0.25	0.15	0.25	0.21	0.16
Natural Gas	3.71	5.53	5.51	5.43	6.94	7.03	7.05	11.40	11.40	11.56
Steam Coal	18.77	21.68	21.50	21.70	22.93	22.66	22.65	23.70	23.46	23.60
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.74	7.74	6.54	6.59	6.54
Renewable Energy ¹⁵	3.88	4.19	4.19	4.24	4.73	4.73	4.86	4.78	4.80	4.91
Electricity Imports ¹⁶	0.35	0.61	0.61	0.61	0.37	0.37	0.37	0.24	0.24	0.24
Total	35.52	40.35	40.11	40.24	42.99	42.79	42.84	46.92	46.70	47.01

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

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008
Total Energy Consumption										
Distillate Fuel	7.54	8.80	8.80	8.78	9.54	9.54	9.51	10.91	10.90	10.88
Kerosene	0.15	0.13	0.13	0.13	0.12	0.12	0.12	0.12	0.12	0.12
Jet Fuel ⁸	3.46	3.90	3.90	3.90	4.51	4.51	4.51	5.97	5.97	5.97
Liquefied Petroleum Gas	2.88	3.02	3.03	3.03	3.08	3.08	3.06	3.41	3.42	3.41
Motor Gasoline ⁹	16.17	17.93	17.93	17.93	19.24	19.24	19.24	21.57	21.57	21.57
Petrochemical Feedstock	1.29	1.36	1.36	1.36	1.53	1.53	1.53	1.70	1.70	1.70
Residual Fuel	2.01	1.48	1.43	1.41	1.42	1.39	1.32	1.42	1.39	1.36
Other Petroleum ¹²	4.53	4.71	4.72	4.72	4.99	4.99	4.99	5.35	5.37	5.36
Petroleum Subtotal	38.02	41.34	41.31	41.27	44.44	44.42	44.28	50.45	50.44	50.37
Natural Gas	22.21	26.44	26.43	26.31	29.00	29.10	29.15	36.06	36.09	36.23
Metallurgical Coal	0.75	0.67	0.67	0.67	0.61	0.61	0.61	0.50	0.50	0.50
Steam Coal	20.61	23.60	23.43	23.61	24.88	24.62	24.57	25.70	25.46	25.58
Net Coal Coke Imports	0.06	0.12	0.12	0.12	0.16	0.16	0.16	0.22	0.22	0.22
Coal Subtotal	21.42	24.39	24.21	24.40	25.64	25.38	25.34	26.42	26.18	26.31
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.74	7.74	6.54	6.59	6.54
Renewable Energy ¹⁷	6.54	7.13	7.14	7.19	7.91	7.91	8.05	8.43	8.45	8.56
Methanol (M85) ¹¹	0.00	0.00	0.00	0.00	0.01	0.01	0.01	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 Imports ¹⁶	0.35	0.61	0.61	0.61	0.37	0.37	0.37	0.24	0.24	0.24
Total	96.33	107.81	107.61	107.68	115.11	114.94	114.94	128.16	128.00	128.25
Energy Use and Related Statistics										
Delivered Energy Use	72.05	80.41	80.39	80.41	86.27	86.25	86.21	97.57	97.59	97.56
Total Energy Use	96.33	107.81	107.61	107.68	115.11	114.94	114.94	128.16	128.00	128.25
Population (millions)	273.13	288.02	288.02	288.02	300.17	300.17	300.17	325.24	325.24	325.24
Gross Domestic Product (billion 1996 dollars)	8876	10960	10960	10960	12667	12667	12667	16515	16515	16515
Total Carbon Dioxide Emissions (million metric tons carbon equivalent)	1510.8	1705.0	1699.7	1701.5	1825.7	1820.2	1816.4	2051.2	2045.3	2049.0

¹Includes wood used for residential heating.

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

³Includes commercial sector electricity cogenerated by using wood and wood waste, landfill gas, municipal solid waste, and other biomass.

⁴Fuel consumption includes consumption for cogeneration, which produces electricity and other useful thermal energy.

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

⁶Includes lease and plant fuel and consumption by cogenerators, excludes consumption by nonutility generators.

⁷Includes consumption of energy from hydroelectric, wood and wood waste, municipal solid waste, and other biomass; includes cogeneration, both for sale to the grid and for own use.

⁸Includes only kerosene type.

⁹Includes aviation gas and lubricants.

¹⁰E85 is 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable).

¹¹M85 is 85 percent methanol and 15 percent motor gasoline.

¹²Includes unfinished oils, natural gasoline, motor gasoline blending compounds, 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 all electric power generators for grid-connected power except cogenerators, which produce electricity and other useful thermal energy.

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 cogeneration. Excludes net electricity imports.

¹⁶In 1998 approximately 70 percent of the U.S. electricity imports were provided by renewable sources (hydroelectricity); EIA does not project future proportions for the fuel source of imported electricity.

¹⁷Includes 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.

SO₂ = Sulfur dioxide.

NO_x = Nitrogen oxide.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 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: 1999 electric utility fuel consumption: Energy Information Administration, (EIA) *Electric Power Annual 1998, Volume 1*, DOE/EIA-0348(98)/1 (Washington, DC, April 1999). 1999 nonutility consumption estimates: EIA, Form EIA-860B: "Annual Electric Generator Report - Nonutility." Other 1999 values: EIA, *Short-Term Energy Outlook, September 2000*, <http://www.eia.doe.gov/pub/forecasting/steo/oldsteos/sep00.pdf>. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NOX08.D060801A, M2SO208P.D061201A.

Table B3. Energy Prices by Sector and Source
(1999 Dollars per Million Btu, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008
Residential	13.10	13.27	13.39	13.19	13.46	13.56	13.57	13.77	13.81	13.79
Primary Energy ¹	6.71	7.49	7.48	7.47	7.18	7.19	7.17	7.08	7.07	7.08
Petroleum Products ²	7.55	9.20	9.15	9.15	9.37	9.36	9.35	9.47	9.46	9.42
Distillate Fuel	6.27	7.45	7.38	7.38	7.57	7.57	7.57	7.78	7.78	7.76
Liquefied Petroleum Gas	10.36	12.60	12.60	12.60	12.86	12.84	12.78	12.75	12.74	12.63
Natural Gas	6.52	7.11	7.11	7.10	6.72	6.74	6.73	6.65	6.64	6.66
Electricity	23.47	22.16	22.54	21.99	22.30	22.53	22.61	22.44	22.59	22.52
Commercial	13.18	12.70	12.89	12.53	12.25	12.40	12.24	12.69	12.71	12.65
Primary Energy ¹	5.22	5.57	5.56	5.55	5.68	5.70	5.68	5.79	5.77	5.79
Petroleum Products ²	4.99	6.13	6.08	6.09	6.29	6.29	6.27	6.40	6.39	6.37
Distillate Fuel	4.37	5.24	5.17	5.17	5.36	5.36	5.36	5.53	5.53	5.52
Residual Fuel	2.63	3.65	3.64	3.64	3.71	3.71	3.69	3.86	3.85	3.85
Natural Gas ³	5.34	5.55	5.54	5.54	5.66	5.68	5.66	5.78	5.76	5.78
Electricity	21.45	20.26	20.71	19.93	18.76	19.06	18.74	19.00	19.07	18.91
Industrial⁴	5.27	5.76	5.78	5.69	5.67	5.70	5.64	5.90	5.90	5.87
Primary Energy	3.91	4.47	4.45	4.45	4.49	4.49	4.46	4.68	4.68	4.65
Petroleum Products ²	5.54	6.00	5.97	5.97	6.13	6.12	6.07	6.16	6.17	6.10
Distillate Fuel	4.65	5.40	5.34	5.34	5.56	5.56	5.55	5.73	5.72	5.71
Liquefied Petroleum Gas	8.50	7.74	7.74	7.74	7.88	7.85	7.74	7.76	7.78	7.64
Residual Fuel	2.78	3.38	3.37	3.37	3.44	3.43	3.42	3.59	3.58	3.58
Natural Gas ⁵	2.79	3.64	3.63	3.63	3.50	3.51	3.49	3.85	3.83	3.84
Metallurgical Coal	1.65	1.58	1.59	1.58	1.54	1.55	1.55	1.44	1.44	1.43
Steam Coal	1.43	1.35	1.35	1.36	1.31	1.31	1.31	1.21	1.21	1.21
Electricity	13.00	12.80	13.10	12.50	12.08	12.31	12.08	12.22	12.29	12.25
Transportation	8.30	9.39	9.34	9.33	9.69	9.69	9.70	9.20	9.19	9.19
Primary Energy	8.29	9.38	9.32	9.32	9.68	9.67	9.68	9.18	9.17	9.17
Petroleum Products ²	8.28	9.37	9.32	9.31	9.67	9.67	9.68	9.18	9.17	9.16
Distillate Fuel ⁶	8.22	8.98	8.90	8.90	8.95	8.98	8.95	8.83	8.83	8.83
Jet Fuel ⁷	4.70	5.29	5.23	5.23	5.49	5.52	5.49	5.72	5.72	5.72
Motor Gasoline ⁸	9.45	10.81	10.76	10.75	11.31	11.29	11.32	10.60	10.58	10.58
Residual Fuel	2.46	3.11	3.11	3.10	3.18	3.18	3.18	3.33	3.33	3.33
Liquid Petroleum Gas ⁹	12.87	14.07	14.06	14.06	14.07	14.06	13.96	13.70	13.70	13.59
Natural Gas ¹⁰	7.02	7.28	7.27	7.26	7.21	7.22	7.21	7.41	7.39	7.41
Ethanol (E85) ¹¹	14.42	19.21	19.19	19.19	19.16	19.16	19.16	19.36	19.35	19.35
Methanol (M85) ¹²	10.38	13.13	13.11	13.10	13.83	13.82	13.83	14.35	14.35	14.35
Electricity	15.59	14.52	14.73	14.50	13.62	13.69	13.92	13.22	13.18	13.28
Average End-Use Energy	8.49	9.17	9.19	9.09	9.22	9.25	9.22	9.21	9.21	9.19
Primary Energy	6.31	7.19	7.16	7.15	7.35	7.34	7.34	7.23	7.23	7.22
Electricity	19.41	18.65	19.02	18.38	17.99	18.25	18.09	18.19	18.29	18.19
Electric Generators¹³										
Fossil Fuel Average	1.48	1.64	1.63	1.62	1.59	1.61	1.59	1.88	1.88	1.88
Petroleum Products	2.49	3.61	3.65	3.61	3.90	3.97	4.17	4.17	4.27	4.34
Distillate Fuel	4.04	4.72	4.66	4.69	4.87	4.87	4.89	5.06	5.07	5.08
Residual Fuel	2.40	3.42	3.46	3.45	3.65	3.69	3.97	3.89	3.99	4.12
Natural Gas	2.58	3.44	3.43	3.45	3.26	3.25	3.29	3.71	3.68	3.72
Steam Coal	1.21	1.14	1.14	1.13	1.06	1.07	1.04	0.98	0.98	0.96

Table B3. Energy Prices by Sector and Source (Continued)
(1999 Dollars per Million Btu, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008
Average Price to All Users¹⁴										
Petroleum Products ²	7.44	8.53	8.49	8.49	8.81	8.81	8.81	8.49	8.49	8.48
Distillate Fuel	7.25	8.14	8.07	8.08	8.20	8.22	8.21	8.20	8.20	8.20
Jet Fuel	4.70	5.29	5.23	5.23	5.49	5.52	5.49	5.72	5.72	5.72
Liquefied Petroleum Gas	8.84	8.63	8.63	8.63	8.74	8.71	8.63	8.54	8.56	8.42
Motor Gasoline ⁸	9.45	10.80	10.76	10.75	11.31	11.29	11.32	10.60	10.58	10.58
Residual Fuel	2.47	3.25	3.25	3.25	3.33	3.33	3.33	3.49	3.49	3.49
Natural Gas	4.05	4.72	4.71	4.71	4.47	4.47	4.47	4.60	4.58	4.60
Coal	1.23	1.16	1.16	1.15	1.08	1.09	1.06	1.00	1.00	0.98
Ethanol (E85) ¹¹	14.42	19.21	19.19	19.19	19.16	19.16	19.16	19.36	19.35	19.35
Methanol (M85) ¹²	10.38	13.13	13.11	13.10	13.83	13.82	13.83	14.35	14.35	14.35
Electricity	19.41	18.65	19.02	18.38	17.99	18.25	18.09	18.19	18.29	18.19
Non-Renewable Energy Expenditures by Sector (billion 1999 dollars)										
Residential	134.28	153.83	154.98	153.01	160.41	161.32	161.37	183.27	183.76	183.49
Commercial	98.42	114.97	116.49	113.61	119.69	120.93	119.51	136.41	136.59	135.93
Industrial	111.66	127.05	127.73	125.50	133.28	134.08	132.61	154.57	154.64	153.94
Transportation	212.64	273.84	272.37	272.14	308.81	308.71	308.89	340.45	340.15	340.03
Total Non-Renewable Expenditures	556.99	669.69	671.57	664.26	722.19	725.04	722.39	814.69	815.14	813.39
Transportation Renewable Expenditures	0.14	0.42	0.42	0.42	0.64	0.63	0.64	0.85	0.85	0.85
Total Expenditures	557.13	670.11	671.99	664.68	722.82	725.68	723.02	815.54	815.99	814.24

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.

³Excludes independent power producers.

⁴Includes cogenerators.

⁵Excludes uses for lease and plant fuel.

⁶Low sulfur diesel fuel. Price includes Federal and State taxes while excluding county and local taxes.

⁷Kerosene-type jet fuel. Price includes Federal and State taxes while excluding county and local taxes.

⁸Sales weighted-average price for all grades. Includes Federal and State taxes and excludes county and local taxes.

⁹Includes Federal and State taxes while excluding county and local taxes.

¹⁰Compressed natural gas used as a vehicle fuel. Price includes estimated motor vehicle fuel taxes.

¹¹E85 is 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable).

¹²M85 is 85 percent methanol and 15 percent motor gasoline.

¹³Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy. Includes small power producers and exempt wholesale generators.

¹⁴Weighted averages of end-use fuel prices are derived from the prices shown in each sector and the corresponding sectoral consumption.

Btu = British thermal unit.

SO₂ = Sulfur dioxide.

NO_x = Nitrogen oxide.

Note: Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 prices for gasoline, distillate, and jet fuel are based on prices in various issues of Energy Information Administration (EIA), *Petroleum Marketing Monthly*, DOE/EIA-0380 (99/03-2000/04) (Washington, DC, 1999-2000). 1999 prices for all other petroleum products are derived from the EIA, *State Energy Price and Expenditure Report 1997*, DOE/EIA-0376(97) (Washington, DC, July 2000). 1999 industrial gas delivered prices are based on EIA, *Manufacturing Energy Consumption Survey 1994*. 1999 residential and commercial natural gas delivered prices: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). 1999 coal prices based on EIA, *Quarterly Coal Report*, DOE/EIA-0121(2000/1Q) (Washington, DC, August 2000), and EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NOX08.D060801A, M2SO208P.D061201A. 1999 electricity prices for commercial, industrial, and transportation: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NOX08.D060801A, M2SO208P.D061201A. **Projections:** EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NOX08.D060801A, M2SO208P.D061201A.

Table B4. Electricity Supply, Disposition, Prices, and Emissions
(Billion Kilowatthours, Unless Otherwise Noted)

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008
Generation by Fuel Type										
Electric Generators¹										
Coal	1831	2106	2092	2104	2245	2218	2187	2315	2288	2270
Petroleum	94	43	39	35	28	25	16	25	21	17
Natural Gas ²	359	583	584	595	825	839	878	1495	1503	1535
Nuclear Power	730	740	740	740	725	725	725	613	617	613
Pumped Storage	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Renewable Sources ³	355	373	373	377	397	396	406	400	400	409
Total	3369	3844	3827	3850	4219	4203	4211	4847	4829	4842
Non-Utility Generation for Own Use	16	17	17	17	17	17	16	17	17	16
Distributed Generation	0	0	0	0	1	1	1	5	5	5
Cogenerators⁴										
Coal	47	53	53	53	52	52	50	52	52	51
Petroleum	9	10	10	10	10	10	10	10	10	10
Natural Gas	207	237	240	235	261	266	257	318	329	319
Other Gaseous Fuels ⁵	4	6	6	6	7	7	7	8	9	8
Renewable Sources ³	31	34	34	34	39	39	39	48	48	48
Other ⁶	5	5	5	5	5	5	5	6	6	5
Total	303	345	348	343	373	379	368	441	452	442
Other End-Use Generators										
Sales to Utilities	151	172	173	171	180	181	176	208	211	207
Generation for Own Use	156	178	180	177	198	203	197	238	246	240
Net Imports⁸	33	57	57	57	35	35	35	23	23	23
Electricity Sales by Sector										
Residential	1145	1339	1332	1340	1452	1447	1444	1698	1694	1696
Commercial	1073	1288	1282	1290	1439	1434	1437	1646	1644	1647
Industrial	1058	1142	1139	1143	1222	1216	1221	1395	1387	1393
Transportation	17	26	26	26	35	35	35	49	49	49
Total	3294	3794	3779	3799	4147	4132	4137	4788	4774	4784
End-Use Prices (1999 cents per kwh)⁹										
Residential	8.0	7.6	7.7	7.5	7.6	7.7	7.7	7.7	7.7	7.7
Commercial	7.3	6.9	7.1	6.8	6.4	6.5	6.4	6.5	6.5	6.5
Industrial	4.4	4.4	4.5	4.3	4.1	4.2	4.1	4.2	4.2	4.2
Transportation	5.3	5.0	5.0	4.9	4.6	4.7	4.7	4.5	4.5	4.5
All Sectors Average	6.6	6.4	6.5	6.3	6.1	6.2	6.2	6.2	6.2	6.2
Prices by Service Category⁹										
(1999 cents/kwh)										
Generation	4.1	3.8	3.9	3.7	3.5	3.5	3.5	3.6	3.6	3.6
Transmission	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7
Distribution	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Emissions (million short tons)										
Sulfur Dioxide	13.71	10.38	10.39	9.46	9.70	9.70	3.57	8.95	8.95	3.27
Nitrogen Oxide	5.45	4.30	3.12	4.27	4.34	1.62	4.26	4.49	1.64	4.49

¹Includes grid-connected generation at all utilities and nonutilities except for cogenerators. Includes small power producers and exempt wholesale generators.

²Includes electricity generation by fuel cells.

³Includes conventional hydroelectric, geothermal, wood, wood waste, municipal solid waste, landfill gas, other biomass, solar, and wind power.

⁴Cogenerators produce electricity and other useful thermal energy. Includes sales to utilities and generation for own use.

⁵Other gaseous fuels include refinery and still gas.

⁶Other includes hydrogen, sulfur, batteries, chemicals, fish oil, and spent sulfite liquor.

⁷Includes 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.

⁸In 1998 approximately 70 percent of the U.S. electricity imports were provided by renewable sources (hydroelectricity); EIA does not project future proportions for the fuel source of imported electricity.

⁹Prices represent average revenue per kilowatthour.

Kwh = Kilowatthour.

SO₂ = Sulfur dioxide.

NO_x = Nitrogen oxide.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Source: Energy Information Administration, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NOX08.D060801A, M2SO208P.D061201A.

**Table B5. Electricity Generating Capability
(Gigawatts)**

Net Summer Capability ¹	1999	Projections								
		2005			2010			2020		
		Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008
Electric Generators²										
Capability										
Coal Steam	305.1	303.9	303.6	304.1	318.6	314.3	317.0	318.5	313.8	316.3
Other Fossil Steam ³	137.4	127.8	127.5	124.6	119.2	116.4	109.8	116.9	114.6	108.7
Combined Cycle	21.0	53.2	54.9	71.3	107.8	110.6	130.9	202.2	208.0	213.2
Combustion Turbine/Diesel	74.3	123.1	119.3	115.4	147.2	147.6	134.2	199.5	199.8	197.9
Nuclear Power	97.4	97.5	97.5	97.5	94.8	94.8	94.8	76.3	76.9	76.3
Pumped Storage	19.3	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5
Fuel Cells	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.3	0.3
Renewable Sources ⁴	88.8	94.8	94.8	94.8	98.0	98.0	98.4	99.5	99.5	99.9
Distributed Generation ⁵	0.0	0.7	0.7	0.4	2.5	2.5	2.2	11.5	11.4	12.2
Total	743.4	820.4	817.7	827.6	907.8	904.0	907.0	1044.2	1043.7	1044.2
Cumulative Planned Additions⁶										
Coal Steam	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Fossil Steam ³	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Combined Cycle	0.0	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7
Combustion Turbine/Diesel	0.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
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	0.1	0.1	0.1	0.3	0.3	0.3
Renewable Sources ⁴	0.0	5.1	5.1	5.1	6.7	6.7	6.7	8.1	8.1	8.1
Distributed Generation ⁵	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.0	32.0	32.0	32.0	33.7	33.7	33.7	35.3	35.3	35.3
Cumulative Unplanned Additions⁶										
Coal Steam	0.0	1.1	0.8	1.3	18.9	14.6	19.1	20.5	15.8	20.3
Other Fossil Steam ³	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Combined Cycle	0.0	19.4	21.1	37.5	74.2	77.0	97.3	168.6	174.3	179.6
Combustion Turbine/Diesel	0.0	38.9	35.3	31.4	64.7	65.2	51.6	117.2	117.6	115.4
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 ⁴	0.0	0.4	0.5	0.5	2.0	2.0	2.4	2.0	2.1	2.5
Distributed Generation ⁵	0.0	0.7	0.7	0.4	2.5	2.5	2.2	11.5	11.4	12.2
Total	0.0	60.6	58.4	71.1	162.2	161.4	172.6	319.8	321.2	329.8
Cumulative Total Additions	0.0	92.6	90.4	103.1	195.9	195.1	206.3	355.1	356.5	365.1
Cumulative Retirements⁷										
Coal Steam	0.0	2.3	2.3	2.3	5.4	5.4	7.3	7.2	7.1	9.1
Other Fossil Steam ³	0.0	9.9	10.1	13.1	18.4	21.2	27.8	20.7	23.0	29.0
Combined Cycle	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2
Combustion Turbine/Diesel	0.0	4.4	4.5	4.5	6.0	6.2	5.9	6.3	6.3	6.0
Nuclear Power	0.0	0.0	0.0	0.0	2.6	2.6	2.6	21.2	20.6	21.2
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 ⁴	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total	0.0	16.7	17.1	20.1	32.8	35.7	44.0	55.6	57.4	65.6
Cogenerators⁸										
Capability										
Coal	8.4	8.9	8.9	8.9	8.6	8.6	8.4	8.6	8.6	8.4
Petroleum	2.7	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
Natural Gas	34.6	39.9	40.2	39.8	43.3	44.0	43.1	51.4	52.7	51.6
Other Gaseous Fuels	0.2	0.8	0.8	0.8	0.9	0.9	0.9	1.1	1.1	1.1
Renewable Sources ⁴	5.4	5.9	5.9	5.9	6.8	6.8	6.8	8.2	8.2	8.2
Other	1.1	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Total	52.4	59.2	59.5	59.1	63.3	64.0	62.9	73.2	74.5	73.2
Cumulative Additions⁶	0.0	6.8	7.1	6.7	10.9	11.6	10.4	20.7	22.1	20.8

Table B5. Electricity Generating Capability (Continued)
(Gigawatts)

Net Summer Capability ¹	1999	Projections								
		2005			2010			2020		
		Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008
Other End-Use Generators⁹										
Renewable Sources	1.0	1.1	1.1	1.1	1.3	1.3	1.3	1.3	1.3	1.3
Cumulative Additions	0.0	0.1	0.1	0.1	0.3	0.3	0.3	0.3	0.3	0.3

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

²Includes grid-connected utilities and nonutilities except for cogenerators. Includes small power producers and exempt wholesale generators.

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

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

⁵Primarily peak-load capacity fueled by natural gas.

⁶Cumulative additions after December 31, 1999.

⁷Cumulative total retirements after December 31, 1999.

⁸Nameplate capacity is reported for nonutilities on EIA-860B: "Annual Electric Generator Report - Nonutility." Nameplate capacity is designated by the manufacturer. The nameplate capacity has been converted to the net summer capability based on historic relationships.

⁹Includes 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. Excludes off-grid photovoltaics and other generators not connected to the distribution or transmission systems.

SO₂ = Sulfur dioxide.

NO_x = Nitrogen oxide.

Notes: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports. Net summer capability has been estimated for nonutility generators to be consistent with capability for electric utility generators.

Source: Energy Information Administration, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NOX08.D060801A, M2SO208P.D061201A.

Table B6. Electricity Trade
(Billion Kilowatthours, Unless Otherwise Noted)

Electricity Trade	1999	Projections								
		2005			2010			2020		
		Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008
Interregional Electricity Trade										
Gross Domestic Firm Power Trade	182.2	125.3	125.3	125.3	102.9	102.9	102.9	0.0	0.0	0.0
Gross Domestic Economy Trade	152.0	202.3	196.1	226.4	155.5	157.0	141.5	147.9	146.4	127.9
Gross Domestic Trade	334.2	327.6	321.4	351.7	258.4	260.0	244.5	147.9	146.4	127.9
Gross Domestic Firm Power Sales										
(million 1999 dollars)	8588.1	5905.8	5905.8	5905.8	4851.2	4851.2	4851.2	0.0	0.0	0.0
Gross Domestic Economy Sales										
(million 1999 dollars)	4413.9	6468.6	6609.7	6918.8	4510.4	4665.6	4000.2	4605.1	4603.1	3975.6
Gross Domestic Sales										
(million 1999 dollars)	13002.0	12374.4	12515.5	12824.6	9361.6	9516.8	8851.5	4605.1	4603.1	3975.6
International Electricity Trade										
Firm Power Imports From Canada and Mexico ¹	27.0	10.7	10.7	10.7	5.8	5.8	5.8	0.0	0.0	0.0
Economy Imports From Canada and Mexico ¹ ..	21.9	63.5	63.5	63.5	45.9	45.9	45.9	30.6	30.6	30.6
Gross Imports From Canada and Mexico¹ ..	48.9	74.1	74.1	74.1	51.7	51.7	51.7	30.6	30.6	30.6
Gross Exports To Canada and Mexico										
Firm Power Exports To Canada and Mexico ...	9.2	9.7	9.7	9.7	8.7	8.7	8.7	0.0	0.0	0.0
Economy Exports To Canada and Mexico	6.3	7.0	7.0	7.0	7.7	7.7	7.7	7.7	7.7	7.7
Gross Exports To Canada and Mexico	15.5	16.7	16.7	16.7	16.4	16.4	16.4	7.7	7.7	7.7

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

SO₂ = Sulfur dioxide.

NO_x = Nitrogen oxide.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 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, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NOX08.D060801A, M2SO208P.D061201A.

Table B7. Natural Gas Supply and Disposition
(Trillion Cubic Feet per Year)

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008
Production										
Dry Gas Production ¹	18.67	21.40	21.39	21.27	23.43	23.52	23.53	29.47	29.53	29.62
Supplemental Natural Gas ² . . .	0.10	0.11	0.11	0.11	0.06	0.06	0.06	0.06	0.06	0.06
Net Imports	3.38	4.69	4.69	4.69	5.00	5.01	5.06	5.82	5.82	5.86
Canada	3.29	4.48	4.48	4.47	4.72	4.73	4.77	5.43	5.42	5.46
Mexico	-0.01	-0.18	-0.18	-0.18	-0.25	-0.25	-0.25	-0.40	-0.40	-0.40
Liquefied Natural Gas	0.10	0.39	0.39	0.39	0.53	0.53	0.53	0.79	0.80	0.80
Total Supply	22.15	26.20	26.19	26.07	28.49	28.59	28.65	35.35	35.40	35.53
Consumption by Sector										
Residential	4.75	5.42	5.43	5.43	5.46	5.47	5.47	6.07	6.08	6.07
Commercial	3.06	3.88	3.88	3.88	4.06	4.06	4.06	4.32	4.33	4.32
Industrial ³	8.31	8.81	8.81	8.79	9.48	9.49	9.51	10.53	10.54	10.53
Electric Generators ⁴	3.64	5.43	5.41	5.33	6.81	6.90	6.92	11.19	11.19	11.34
Lease and Plant Fuel ⁵	1.23	1.38	1.38	1.37	1.50	1.50	1.50	1.87	1.87	1.88
Pipeline Fuel	0.64	0.81	0.82	0.81	0.88	0.89	0.89	1.07	1.08	1.08
Transportation ⁶	0.02	0.05	0.05	0.05	0.09	0.09	0.09	0.15	0.15	0.15
Total	21.65	25.79	25.78	25.66	28.29	28.39	28.44	35.20	35.24	35.37
Discrepancy ⁷	0.50	0.42	0.41	0.41	0.20	0.20	0.21	0.14	0.16	0.16

¹Marketed production (wet) minus extraction losses.

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

³Includes consumption by cogenerators.

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

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

⁶Compressed natural gas used as vehicle fuel.

⁷Balancing item. Natural gas lost as a result of converting flow data measured at varying temperatures and pressures to a standard temperature and pressure and the merger of different data reporting systems which vary in scope, format, definition, and respondent type. In addition, 1999 values include net storage injections.

Btu = British thermal unit.

SO₂ = Sulfur dioxide.

NO_x = Nitrogen oxide.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 supplemental natural gas: Energy Information Administration (EIA), *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). 1999 transportation sector consumption: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NOX08.D060801A, M2SO208P.D061201A. Other 1999 consumption: EIA, *Short-Term Energy Outlook, September 2000*, <http://www.eia.doe.gov/pub/forecasting/steo/oldsteos/sep00.pdf> with adjustments to end-use sector consumption levels for consumption of natural gas by electric wholesale generators based on EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NOX08.D060801A, M2SO208P.D061201A. **Projections:** EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NOX08.D060801A, M2SO208P.D061201A.

Table B8. Natural Gas Prices, Margins, and Revenue
(1999 Dollars per Thousand Cubic Feet, Unless Otherwise Noted)

Prices, Margins, and Revenue	1999	Projections								
		2005			2010			2020		
		Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008
Source Price										
Average Lower 48 Wellhead Price ¹	2.08	2.96	2.95	2.95	2.87	2.88	2.86	3.22	3.20	3.22
Average Import Price	2.29	2.95	2.95	2.94	2.64	2.65	2.65	2.72	2.72	2.73
Average²	2.11	2.96	2.95	2.95	2.82	2.84	2.82	3.13	3.11	3.13
Delivered Prices										
Residential	6.69	7.31	7.30	7.29	6.91	6.92	6.91	6.83	6.82	6.83
Commercial	5.49	5.70	5.69	5.69	5.82	5.83	5.82	5.93	5.92	5.94
Industrial ³	2.87	3.74	3.73	3.72	3.59	3.60	3.58	3.95	3.93	3.95
Electric Generators ⁴	2.63	3.50	3.49	3.51	3.32	3.31	3.35	3.78	3.75	3.79
Transportation ⁵	7.21	7.48	7.47	7.46	7.40	7.42	7.40	7.61	7.59	7.61
Average⁶	4.15	4.84	4.83	4.84	4.59	4.59	4.58	4.72	4.70	4.72
Transmission & Distribution Margins⁷										
Residential	4.58	4.35	4.34	4.35	4.08	4.09	4.09	3.70	3.70	3.71
Commercial	3.37	2.74	2.74	2.74	2.99	3.00	3.00	2.81	2.81	2.81
Industrial ³	0.76	0.78	0.78	0.78	0.77	0.77	0.76	0.82	0.82	0.82
Electric Generators ⁴	0.52	0.54	0.54	0.57	0.49	0.48	0.53	0.65	0.64	0.66
Transportation ⁵	5.10	4.51	4.51	4.51	4.58	4.58	4.58	4.48	4.48	4.48
Average⁶	2.04	1.88	1.88	1.89	1.76	1.75	1.77	1.59	1.59	1.59
Transmission & Distribution Revenue (billion 1999 dollars)										
Residential	21.77	23.57	23.59	23.59	22.30	22.33	22.35	22.48	22.52	22.50
Commercial	10.32	10.63	10.64	10.64	12.16	12.16	12.18	12.12	12.14	12.12
Industrial ³	6.28	6.86	6.86	6.83	7.26	7.27	7.26	8.65	8.62	8.61
Electric Generators ⁴	1.88	2.94	2.91	3.01	3.36	3.28	3.66	7.24	7.12	7.50
Transportation ⁵	0.08	0.24	0.24	0.24	0.41	0.41	0.41	0.68	0.68	0.68
Total	40.32	44.25	44.23	44.31	45.49	45.45	45.85	51.18	51.08	51.41

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 by cogenerators.

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

SO₂ = Sulfur dioxide.

NO_x = Nitrogen oxide.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 industrial delivered prices based on Energy Information Administration (EIA), *Manufacturing Energy Consumption Survey 1994*. 1999 residential and commercial delivered prices, average lower 48 wellhead price, and average import price: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). Other 1999 values, and projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NOX08.D060801A, M2SO208P.D061201A.

Table B9. Oil and Gas Supply

Production and Supply	1999	Projections								
		2005			2010			2020		
		Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008
Crude Oil										
Lower 48 Average Wellhead Price¹ (1999 dollars per barrel)	16.49	21.43	20.56	21.92	20.73	20.77	20.79	21.47	21.48	21.49
Production (million barrels per day)²										
U.S. Total	5.88	5.66	5.67	5.66	5.32	5.30	5.32	5.25	5.25	5.26
Lower 48 Onshore	3.27	2.81	2.81	2.81	2.52	2.51	2.51	2.75	2.74	2.75
Conventional	2.59	2.18	2.18	2.18	1.81	1.81	1.81	1.98	1.98	1.98
Enhanced Oil Recovery	0.68	0.63	0.63	0.63	0.70	0.69	0.70	0.76	0.76	0.77
Lower 48 Offshore	1.56	2.06	2.07	2.06	2.16	2.15	2.16	1.87	1.87	1.87
Alaska	1.05	0.79	0.79	0.79	0.65	0.65	0.65	0.64	0.64	0.64
Lower 48 End of Year Reserves (billion barrels)² ..	18.33	15.75	15.73	15.76	14.55	14.47	14.52	14.11	14.09	14.15
Natural Gas										
Lower 48 Average Wellhead Price¹ (1999 dollars per thousand cubic feet)	2.08	2.96	2.95	2.95	2.87	2.88	2.86	3.22	3.20	3.22
Production (trillion cubic feet)³										
U.S. Total	18.67	21.40	21.39	21.27	23.43	23.52	23.53	29.47	29.53	29.62
Lower 48 Onshore	12.83	14.46	14.44	14.38	16.71	16.77	16.81	21.31	21.13	21.21
Associated-Dissolved ⁴	1.80	1.51	1.51	1.51	1.32	1.32	1.32	1.39	1.39	1.40
Non-Associated	11.03	12.95	12.93	12.86	15.39	15.45	15.48	19.91	19.74	19.82
Conventional	6.64	7.67	7.67	7.62	7.93	7.98	8.06	11.14	10.95	11.03
Unconventional	4.39	5.27	5.26	5.25	7.45	7.47	7.42	8.78	8.78	8.79
Lower 48 Offshore	5.43	6.47	6.48	6.43	6.22	6.24	6.22	7.59	7.83	7.83
Associated-Dissolved ⁴	0.93	1.06	1.06	1.06	1.09	1.09	1.09	1.04	1.04	1.04
Non-Associated	4.50	5.41	5.42	5.37	5.13	5.15	5.13	6.56	6.79	6.80
Alaska	0.42	0.47	0.47	0.47	0.50	0.50	0.50	0.57	0.57	0.57
Lower 48 End of Year Reserves³ (trillion cubic feet)	157.41	167.88	167.98	167.97	185.55	184.76	184.95	200.71	200.33	199.99
Supplemental Gas Supplies (trillion cubic feet)⁵ ..	0.10	0.11	0.11	0.11	0.06	0.06	0.06	0.06	0.06	0.06
Total Lower 48 Wells (thousands)	17.93	28.87	28.97	28.69	29.86	30.05	30.02	39.36	39.44	39.60

¹Represents lower 48 onshore and offshore supplies.

²Includes lease condensate.

³Market production (wet) minus extraction losses.

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

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

Btu = British thermal unit.

SO₂ = Sulfur dioxide.

NO_x = Nitrogen oxide.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 lower 48 onshore, lower 48 offshore, and Alaska crude oil production: Energy Information Administration (EIA), *Petroleum Supply Annual 1999*, DOE/EIA-0340(99/1) (Washington, DC, June 2000). 1999 natural gas lower 48 average wellhead price, Alaska and total natural gas production, and supplemental gas supplies: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). Other 1999 values: EIA, Office of Integrated Analysis and Forecasting. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NOX08.D060801A, M2SO208P.D061201A.

Table B10. Coal Supply, Disposition, and Prices
(Million Short Tons per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008
Production¹										
Appalachia	433	426	424	437	421	420	449	396	396	397
Interior	185	182	181	193	180	177	180	161	167	168
West	486	624	619	593	694	682	636	783	763	764
East of the Mississippi	559	561	557	583	557	554	586	524	529	536
West of the Mississippi	544	672	667	641	738	725	678	817	797	793
Total	1103	1233	1224	1223	1295	1279	1265	1340	1325	1329
Net Imports										
Imports	9	16	16	16	17	17	17	20	20	20
Exports	58	60	60	60	58	58	57	56	56	55
Total	-49	-44	-44	-44	-40	-40	-40	-36	-36	-36
Total Supply²	1054	1189	1180	1179	1254	1239	1224	1304	1289	1294
Consumption by Sector										
Residential and Commercial	5	5	5	5	5	5	5	5	5	5
Industrial ³	79	82	83	82	83	84	82	86	86	85
Coke Plants	28	25	25	25	23	23	23	19	19	19
Electric Generators ⁴	921	1077	1068	1068	1145	1129	1117	1196	1181	1185
Total	1032	1189	1181	1180	1256	1241	1228	1306	1291	1294
Discrepancy and Stock Change⁵	21	-1	-1	-1	-2	-2	-3	-2	-2	-1
Average Minemouth Price										
(1999 dollars per short ton)	17.17	15.05	15.06	15.49	14.08	14.18	14.81	12.87	13.02	13.00
(1999 dollars per million Btu)	0.82	0.73	0.73	0.74	0.69	0.69	0.71	0.64	0.64	0.64
Delivered Prices (1999 dollars per short ton)⁶										
Industrial	31.39	29.67	29.67	29.81	28.61	28.69	28.69	26.50	26.55	26.38
Coke Plants	44.28	42.39	42.51	42.37	41.36	41.42	41.45	38.52	38.65	38.42
Electric Generators										
(1999 dollars per short ton)	24.73	22.90	22.91	22.96	21.28	21.45	21.05	19.41	19.52	19.09
(1999 dollars per million Btu)	1.21	1.14	1.14	1.13	1.06	1.07	1.04	0.98	0.98	0.96
Average	25.77	23.78	23.80	23.85	22.13	22.31	21.94	20.15	20.27	19.85
Exports ⁷	37.44	36.39	36.45	36.41	35.66	35.72	35.52	33.09	33.18	32.66

¹Includes anthracite, bituminous coal, lignite, and waste coal delivered to independent power producers. Waste coal deliveries totaled 8.5 million tons in 1995, 8.8 million tons in 1996, 8.1 million tons in 1997, 8.6 million tons in 1998, and are projected to reach 9.6 million tons in 1999, and 12.2 million tons in 2000.

²Production plus net imports and net storage withdrawals.

³Includes consumption by cogenerators.

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

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

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

⁷F.a.s. price at U.S. port of exit.

Btu = British thermal unit.

SO₂ = Sulfur dioxide.

NO_x = Nitrogen oxide.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 data based on Energy Information Administration (EIA), *Quarterly Coal Report*, DOE/EIA-0121(2000/1Q) (Washington, DC, August 2000), and EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NOX08.D060801A, M2SO208P.D061201A. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NOX08.D060801A, M2SO208P.D061201A.

Table B11. Renewable Energy Generating Capability and Generation
(Gigawatts, Unless Otherwise Noted)

Capacity and Generation	1999	Projections								
		2005			2010			2020		
		Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008
Electric Generators¹										
(excluding cogenerators)										
Net Summer Capability										
Conventional Hydropower	78.77	79.26	79.26	79.26	79.38	79.38	79.38	79.38	79.38	79.38
Geothermal ²	2.87	3.43	3.46	3.53	4.93	5.01	5.13	4.95	5.07	5.15
Municipal Solid Waste ³	2.61	2.96	2.96	2.91	3.42	3.36	3.65	3.93	3.87	4.16
Wood and Other Biomass ⁴	1.57	1.75	1.75	1.75	2.12	2.12	2.12	2.45	2.45	2.45
Solar Thermal	0.33	0.35	0.35	0.35	0.40	0.40	0.40	0.48	0.48	0.48
Solar Photovoltaic	0.01	0.08	0.08	0.08	0.21	0.21	0.21	0.54	0.54	0.54
Wind	2.66	6.92	6.92	6.92	7.52	7.52	7.52	7.76	7.76	7.77
Total	88.83	94.75	94.79	94.80	97.98	97.99	98.41	99.49	99.55	99.92
Generation (billion kilowatthours)										
Conventional Hydropower	309.55	301.20	301.20	301.20	301.13	301.13	301.13	300.07	300.07	300.07
Geothermal ²	13.21	18.34	18.59	19.10	30.94	31.56	32.58	31.16	32.12	32.79
Municipal Solid Waste ³	18.12	20.68	20.70	20.33	23.88	23.35	25.69	27.76	27.23	29.57
Wood and Other Biomass ⁴	9.02	14.94	14.88	18.47	21.30	20.31	26.98	19.78	19.43	24.57
Dedicated Plants	7.73	9.16	9.16	9.16	11.36	11.36	11.37	13.82	13.82	13.82
Cofiring	1.29	5.78	5.72	9.31	9.94	8.95	15.61	5.95	5.61	10.74
Solar Thermal	0.89	0.96	0.96	0.96	1.11	1.11	1.11	1.37	1.37	1.37
Solar Photovoltaic	0.03	0.20	0.20	0.20	0.51	0.51	0.51	1.36	1.36	1.36
Wind	4.61	16.30	16.30	16.30	18.16	18.16	18.16	18.83	18.84	18.84
Total	355.43	372.61	372.82	376.55	397.03	396.12	406.16	400.32	400.42	408.57
Cogenerators⁵										
Net Summer Capability										
Municipal Solid Waste	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Biomass	4.65	5.17	5.17	5.17	6.06	6.06	6.06	7.54	7.54	7.54
Total	5.35	5.87	5.87	5.87	6.76	6.76	6.76	8.24	8.24	8.24
Generation (billion kilowatthours)										
Municipal Solid Waste	4.04	4.04	4.04	4.04	4.04	4.04	4.04	4.04	4.04	4.04
Biomass	27.08	29.92	29.92	29.92	35.01	35.01	35.01	43.52	43.52	43.52
Total	31.12	33.97	33.97	33.97	39.05	39.05	39.05	47.57	47.57	47.57
Other End-Use Generators⁶										
Net Summer Capability										
Conventional Hydropower ⁷	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solar Photovoltaic	0.01	0.10	0.10	0.10	0.35	0.35	0.35	0.35	0.35	0.35
Total	1.00	1.09	1.09	1.09	1.34	1.34	1.34	1.34	1.34	1.34
Generation (billion kilowatthours)										
Conventional Hydropower ⁷	4.57	4.44	4.44	4.44	4.43	4.43	4.43	4.41	4.41	4.41
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solar Photovoltaic	0.02	0.20	0.20	0.20	0.75	0.75	0.75	0.75	0.75	0.75
Total	4.59	4.64	4.64	4.64	5.18	5.18	5.18	5.17	5.17	5.17

¹Includes grid-connected utilities and nonutilities other than cogenerators. These nonutility facilities include small power producers and exempt wholesale generators.

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

³Includes landfill gas.

⁴Includes projections for energy crops after 2010.

⁵Cogenerators produce electricity and other useful thermal energy.

⁶Includes 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. Excludes off-grid photovoltaics and other generators not connected to the distribution or transmission systems.

⁷Represents own-use industrial hydroelectric power.

SO₂ = Sulfur dioxide.

NO_x = Nitrogen oxide.

Notes: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports. Net summer capability has been estimated for nonutility generators for AEO2001. Net summer capability 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: 1999 electric utility capability: Energy Information Administration (EIA), Form EIA-860A: "Annual Electric Generator Report - Utility." 1999 nonutility and cogenerator capability: EIA, Form EIA-860B: "Annual Electric Generator Report - Nonutility." 1999 generation: EIA, *Annual Energy Review 1999*, DOE/EIA-0384(99) (Washington, DC, July 2000). Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NOX08.D060801A, M2SO208P.D061201A.

Table B12. Renewable Energy Consumption by Sector and Source¹
(Quadrillion Btu per Year)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008
Marketed Renewable Energy²										
Residential	0.41	0.42	0.42	0.42	0.42	0.42	0.42	0.44	0.44	0.44
Wood	0.41	0.42	0.42	0.42	0.42	0.42	0.42	0.44	0.44	0.44
Commercial	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Biomass	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Industrial³	2.15	2.42	2.42	2.42	2.64	2.64	2.64	3.08	3.08	3.08
Conventional Hydroelectric	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Municipal Solid Waste	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Biomass	1.97	2.23	2.23	2.23	2.46	2.46	2.46	2.90	2.90	2.90
Transportation	0.12	0.20	0.20	0.20	0.22	0.21	0.22	0.24	0.24	0.24
Ethanol used in E85 ⁴	0.00	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03
Ethanol used in Gasoline Blending	0.12	0.18	0.18	0.18	0.19	0.19	0.19	0.21	0.20	0.21
Electric Generators⁵	3.88	4.19	4.19	4.24	4.73	4.73	4.86	4.78	4.80	4.91
Conventional Hydroelectric	3.19	3.10	3.10	3.10	3.10	3.10	3.10	3.08	3.08	3.08
Geothermal	0.28	0.44	0.45	0.47	0.85	0.87	0.90	0.85	0.88	0.90
Municipal Solid Waste ⁶	0.25	0.28	0.28	0.28	0.32	0.32	0.35	0.38	0.37	0.40
Biomass	0.12	0.18	0.18	0.22	0.26	0.24	0.32	0.25	0.24	0.30
Dedicated Plants	0.10	0.11	0.11	0.11	0.14	0.14	0.13	0.17	0.17	0.17
Cofiring	0.02	0.07	0.07	0.11	0.12	0.11	0.18	0.07	0.07	0.13
Solar Thermal	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.03
Solar Photovoltaic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wind	0.05	0.17	0.17	0.17	0.19	0.19	0.19	0.19	0.19	0.19
Total Marketed Renewable Energy	6.64	7.31	7.31	7.36	8.10	8.09	8.23	8.62	8.64	8.75
Non-Marketed Renewable Energy⁷										
Selected Consumption										
Residential	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04
Solar Hot Water Heating	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Geothermal Heat Pumps	0.02	0.02	0.02	0.02	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	0.00	0.00	0.00
Commercial	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03
Solar Thermal	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03
Solar Photovoltaic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ethanol										
From Corn	0.12	0.19	0.19	0.19	0.20	0.19	0.20	0.17	0.17	0.17
From Cellulose	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.07	0.07	0.07
Total	0.12	0.20	0.20	0.20	0.22	0.21	0.22	0.24	0.24	0.24

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.

³Includes all electricity production by industrial and other cogenerators for the grid and for own use.

⁴Excludes motor gasoline component of E85.

⁵Includes renewable energy delivered to the grid from electric utilities and nonutilities. Renewable energy used in generating electricity for own use is included in the individual sectoral electricity energy consumption values.

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.

SO₂ = Sulfur dioxide.

NO_x = Nitrogen oxide.

Notes: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 ethanol: Energy Information Administration (EIA), *Annual Energy Review 1999*, DOE/EIA-0384(99) (Washington, DC, July 2000). 1999 electric generators: EIA, Form EIA-860A: "Annual Electric Generator Report - Utility," and EIA, Form EIA-860B: "Annual Electric Generator Report - Nonutility." Other 1999: EIA, Office of Integrated Analysis and Forecasting. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NOX08.D060801A, M2SO208P.D061201A

Table B13. Carbon Dioxide Emissions by Sector and Source
(Million Metric Tons Carbon Equivalent per Year)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008
Residential										
Petroleum	26.0	26.5	26.5	26.5	24.5	24.5	24.5	23.2	23.3	23.3
Natural Gas	69.5	80.2	80.3	80.3	80.8	80.8	80.8	89.8	89.9	89.8
Coal	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3
Electricity	193.4	227.1	224.8	225.8	242.6	240.5	238.9	275.6	273.2	274.6
Total	290.1	335.0	332.8	333.8	349.2	347.1	345.5	389.8	387.6	388.9
Commercial										
Petroleum	13.7	11.8	11.8	11.8	12.0	12.0	12.0	12.1	12.0	12.0
Natural Gas	45.4	57.4	57.4	57.4	60.1	60.0	60.1	63.9	64.0	63.9
Coal	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.9	1.9	1.9
Electricity	181.3	218.4	216.4	217.5	240.4	238.3	237.7	267.1	265.1	266.7
Total	242.1	289.4	287.4	288.5	314.3	312.2	311.6	345.0	343.0	344.6
Industrial¹										
Petroleum	104.2	99.2	99.4	99.3	105.3	105.5	104.8	113.6	114.0	113.5
Natural Gas ²	141.6	148.4	148.4	148.0	159.8	160.0	160.4	180.3	180.7	180.6
Coal	55.9	65.8	65.8	65.7	65.6	65.7	64.9	65.8	66.0	65.5
Electricity	178.8	193.6	192.2	192.6	204.1	202.1	201.8	226.4	223.7	225.6
Total	480.4	507.0	505.9	505.6	534.8	533.3	532.0	586.1	584.3	585.3
Transportation										
Petroleum ³	485.8	556.3	556.4	556.3	607.2	607.3	607.1	704.2	704.3	704.1
Natural Gas ⁴	9.5	12.8	12.8	12.8	14.4	14.4	14.4	18.1	18.1	18.2
Other ⁵	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Electricity	2.9	4.4	4.4	4.4	5.8	5.7	5.7	7.9	7.8	7.9
Total³	498.2	573.6	573.6	573.5	627.5	627.6	627.3	730.2	730.3	730.2
Total Carbon Dioxide Emissions by Delivered Fuel										
Petroleum ³	629.7	693.8	694.1	694.0	749.0	749.3	748.4	853.1	853.5	853.0
Natural Gas	266.0	298.8	299.0	298.4	315.1	315.3	315.7	352.0	352.8	352.5
Coal	58.8	68.8	68.8	68.7	68.8	68.9	68.1	69.0	69.1	68.7
Other ⁵	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Electricity	556.3	643.6	637.8	640.3	692.8	686.6	684.1	777.0	769.8	774.7
Total³	1510.8	1705.0	1699.7	1701.5	1825.7	1820.2	1816.4	2051.2	2045.3	2049.0
Electric Generators⁶										
Petroleum	20.0	9.4	8.3	7.6	5.8	5.3	3.2	5.2	4.4	3.4
Natural Gas	45.8	79.6	79.3	78.2	100.0	101.2	101.5	164.1	164.2	166.4
Coal	490.5	554.6	550.1	554.6	587.0	580.2	579.3	607.7	601.2	604.9
Total	556.3	643.6	637.8	640.3	692.8	686.6	684.1	777.0	769.8	774.7
Total Carbon Dioxide Emissions by Primary Fuel⁷										
Petroleum ³	649.7	703.1	702.4	701.6	754.8	754.6	751.6	858.3	857.9	856.4
Natural Gas	311.8	378.4	378.3	376.6	415.0	416.4	417.3	516.2	517.0	518.9
Coal	549.3	623.3	618.9	623.2	655.8	649.1	647.4	676.7	670.4	673.6
Other ⁵	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total³	1510.8	1705.0	1699.7	1701.5	1825.7	1820.2	1816.4	2051.2	2045.3	2049.0
Carbon Dioxide Emissions (tons carbon equivalent per person)	5.5	5.9	5.9	5.9	6.1	6.1	6.1	6.3	6.3	6.3

¹Includes consumption by cogenerators.

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 1998, international bunker fuels accounted for 25 to 30 million metric tons carbon equivalent of carbon dioxide annually.

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

⁵Includes methanol and liquid hydrogen.

⁶Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy. Includes small power producers and exempt wholesale generators. 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.

SO₂ = Sulfur dioxide.

NO_x = Nitrogen oxide.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 emissions and emission factors: Energy Information Administration (EIA), *Emissions of Greenhouse Gases in the United States 1999*, DOE/EIA-0573(99), (Washington, DC, October 2000). Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NOX08.D060801A, M2SO208P.D061201A.

Table B14. Emissions, Allowance Costs, and Retrofits: Electric Generators, Excluding Cogenerators

Impacts	1999	Projections								
		2005			2010			2020		
		Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008	Reference	NO _x 2008	SO ₂ 2008
Emissions										
Nitrogen Oxide (million tons)	5.45	4.30	3.12	4.27	4.34	1.62	4.26	4.49	1.64	4.49
Sulfur Dioxide (million tons)	13.71	10.38	10.39	9.46	9.70	9.70	3.57	8.95	8.95	3.27
Mercury (tons)	43.60	45.24	44.70	42.53	45.60	44.07	31.86	45.07	43.53	32.51
Carbon Dioxide (million metric tons carbon equivalent)	556.31	643.58	637.78	640.32	692.78	686.63	684.10	776.99	769.78	774.73
Allowance Prices										
Nitrogen Oxide (1999 dollars per ton) . . .	0	4352	2144	1302	4391	2405	3668	5037	3201	5229
Sulfur Dioxide (1999 dollars per ton) . . .	0	190	192	162	187	198	794	241	203	983
Mercury (million 1999 dollars per ton) . .	0	0	0	0	0	0	0	0	0	0
Carbon Dioxide (1999 dollars per ton carbon equivalent)	0	0	0	0	0	0	0	0	0	0
Retrofits (gigawatts)										
Scrubber ¹	0.0	6.5	6.1	25.0	7.1	6.1	124.7	14.8	18.7	139.4
Combustion	0.0	39.9	53.4	41.2	42.1	62.4	46.2	46.1	68.7	49.2
SCR Post-combustion	0.0	92.8	87.7	84.7	92.9	236.5	84.8	93.0	242.3	85.8
SNCR Post-combustion	0.0	25.2	0.3	38.3	26.3	22.3	38.5	43.4	31.9	45.0
Coal Production by Sulfur Category (million tons)										
Low Sulfur (< .61 lbs. S/mmBtu)	472	594	589	561	642	639	527	721	705	636
Medium Sulfur (.61-1.67 lbs. S/mmBtu) . .	432	454	451	464	464	456	509	440	439	494
High Sulfur (> 1.67 lbs. S/mmBtu)	199	185	184	198	188	184	229	179	182	199

¹Represents scrubbers added by the model. Planned scrubbers added by electricity generators are not shown here.

SO₂ = Sulfur dioxide.

NO_x = Nitrogen oxide.

lbs. S/mmBtu = Pounds sulfur per million British thermal units.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Source: Energy Information Administration, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NOX08.D060801A, M2SO208P.D061201A.

Appendix C

Tables for CO₂ 1990-7% Cap Case

Table C1. Total Energy Supply and Disposition Summary
(Quadrillion Btu per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	1999	Projections					
		2005		2010		2020	
		Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008
Production							
Crude Oil and Lease Condensate	12.45	11.98	12.02	11.27	11.19	11.12	11.31
Natural Gas Plant Liquids	2.62	3.12	3.02	3.37	3.57	4.16	4.30
Dry Natural Gas	19.16	21.95	21.28	24.04	25.48	30.24	31.31
Coal	23.08	25.45	24.30	26.55	15.16	27.16	13.52
Nuclear Power	7.79	7.90	7.90	7.74	7.95	6.54	7.44
Renewable Energy ¹	6.53	7.13	8.29	7.90	10.08	8.42	10.94
Other ²	1.65	0.35	0.58	0.31	0.31	0.33	0.33
Total	73.29	77.88	77.40	81.19	73.73	87.97	79.16
Imports							
Crude Oil ³	18.96	21.42	21.38	22.38	22.51	25.82	25.80
Petroleum Products ⁴	4.14	6.28	5.87	8.65	8.01	10.80	10.25
Natural Gas	3.63	5.13	5.10	5.55	6.84	6.59	8.18
Other Imports ⁵	0.64	1.11	1.02	0.96	0.89	0.96	0.81
Total	27.37	33.93	33.37	37.54	38.24	44.18	45.03
Exports							
Petroleum ⁶	1.98	1.73	1.75	1.69	1.71	1.85	1.83
Natural Gas	0.17	0.33	0.33	0.43	0.12	0.63	0.12
Coal	1.48	1.51	1.51	1.45	1.44	1.41	1.44
Total	3.62	3.57	3.59	3.58	3.27	3.89	3.40
Discrepancy⁷	0.69	0.43	0.56	0.04	0.03	0.11	-0.04
Consumption							
Petroleum Products ⁸	38.02	41.34	40.92	44.44	44.03	50.45	50.25
Natural Gas	22.21	26.44	25.74	29.00	32.01	36.06	39.21
Coal	21.42	24.39	23.16	25.64	14.08	26.42	12.62
Nuclear Power	7.79	7.90	7.90	7.74	7.95	6.54	7.44
Renewable Energy ¹	6.54	7.13	8.30	7.91	10.08	8.43	10.95
Other ⁹	0.35	0.61	0.61	0.38	0.52	0.25	0.38
Total	96.33	107.81	106.63	115.11	108.68	128.16	120.84
Net Imports - Petroleum	21.12	25.96	25.50	29.34	28.81	34.78	34.21
Prices (1999 dollars per unit)							
World Oil Price (dollars per barrel) ¹⁰	17.22	20.83	20.83	21.37	21.37	22.41	22.41
Gas Wellhead Price (dollars per Mcf) ¹¹	2.08	2.96	2.79	2.87	3.36	3.22	3.74
Coal Minemouth Price (dollars per ton)	17.17	15.05	14.74	14.08	14.22	12.87	12.77
Average Electric Price (cents per Kwh)	6.6	6.4	6.8	6.1	8.8	6.2	8.6

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.

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, imports of 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, and net storage withdrawals.

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.

Mcf = Thousand cubic feet.

Kwh = Kilowatt-hour.

CO₂ = Carbon dioxide.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 natural gas values: Energy Information Administration (EIA), *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). 1999 petroleum values: EIA, *Petroleum Supply Annual 1999*, DOE/EIA-0340(99/1) (Washington, DC, June 2000). Other 1999 values: EIA, *Annual Energy Review 1999*, DOE/EIA-0384(99) (Washington, DC, July 2000) and EIA, *Quarterly Coal Report*, DOE/EIA-0121(2000/1Q) (Washington, DC, August 2000). Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2C7B08.D060801A.

Table C2. Energy Consumption by Sector and Source
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1999	Projections					
		2005		2010		2020	
		Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008
Energy Consumption							
Residential							
Distillate Fuel	0.86	0.87	0.87	0.80	0.81	0.76	0.77
Kerosene	0.10	0.08	0.08	0.07	0.07	0.07	0.07
Liquefied Petroleum Gas	0.46	0.45	0.45	0.42	0.42	0.40	0.41
Petroleum Subtotal	1.42	1.40	1.40	1.30	1.30	1.23	1.25
Natural Gas	4.88	5.57	5.60	5.61	5.55	6.23	6.25
Coal	0.04	0.05	0.05	0.05	0.05	0.05	0.05
Renewable Energy ¹	0.41	0.42	0.42	0.42	0.42	0.44	0.43
Electricity	3.91	4.57	4.49	4.95	4.51	5.79	5.26
Delivered Energy	10.66	12.01	11.96	12.34	11.84	13.74	13.24
Electricity Related Losses	8.44	9.67	9.38	10.10	8.28	10.85	8.78
Total	19.10	21.68	21.35	22.44	20.12	24.59	22.02
Commercial							
Distillate Fuel	0.36	0.37	0.37	0.38	0.38	0.37	0.39
Residual Fuel	0.10	0.09	0.09	0.09	0.09	0.09	0.09
Kerosene	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Liquefied Petroleum Gas	0.08	0.09	0.09	0.09	0.09	0.10	0.10
Motor Gasoline ²	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Petroleum Subtotal	0.60	0.60	0.60	0.62	0.62	0.62	0.63
Natural Gas	3.14	3.99	4.01	4.17	4.15	4.44	5.09
Coal	0.07	0.07	0.07	0.07	0.07	0.07	0.08
Renewable Energy ³	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Electricity	3.66	4.39	4.33	4.91	4.51	5.62	4.96
Delivered Energy	7.55	9.13	9.10	9.85	9.44	10.83	10.85
Electricity Related Losses	7.91	9.30	9.05	10.01	8.28	10.51	8.28
Total	15.46	18.44	18.15	19.86	17.72	21.34	19.13
Industrial⁴							
Distillate Fuel	1.13	1.22	1.21	1.31	1.29	1.49	1.49
Liquefied Petroleum Gas	2.32	2.45	2.42	2.53	2.56	2.85	2.88
Petrochemical Feedstock	1.29	1.36	1.36	1.53	1.52	1.70	1.69
Residual Fuel	0.22	0.16	0.16	0.25	0.26	0.28	0.29
Motor Gasoline ²	0.21	0.23	0.23	0.25	0.24	0.28	0.28
Other Petroleum ⁵	4.29	4.44	4.41	4.71	4.73	5.02	5.09
Petroleum Subtotal	9.45	9.86	9.79	10.57	10.60	11.63	11.72
Natural Gas ⁶	9.80	10.46	10.44	11.27	11.37	12.73	13.49
Metallurgical Coal	0.75	0.67	0.67	0.61	0.61	0.50	0.50
Steam Coal	1.73	1.81	1.80	1.83	1.78	1.87	1.83
Net Coal Coke Imports	0.06	0.12	0.11	0.16	0.15	0.22	0.22
Coal Subtotal	2.54	2.59	2.59	2.59	2.53	2.60	2.55
Renewable Energy ⁷	2.15	2.42	2.41	2.64	2.63	3.08	3.08
Electricity	3.61	3.90	3.83	4.17	3.84	4.76	3.95
Delivered Energy	27.56	29.23	29.05	31.24	30.97	34.80	34.79
Electricity Related Losses	7.80	8.25	8.00	8.50	7.04	8.91	6.59
Total	35.36	37.48	37.05	39.74	38.01	43.71	41.38

Table C2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1999	Projections					
		2005		2010		2020	
		Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008
Transportation							
Distillate Fuel	5.13	6.28	6.23	7.00	6.86	8.22	8.10
Jet Fuel ⁸	3.46	3.90	3.88	4.51	4.48	5.97	5.96
Motor Gasoline ²	15.92	17.67	17.63	18.97	18.88	21.26	21.19
Residual Fuel	0.74	0.85	0.85	0.85	0.85	0.87	0.86
Liquefied Petroleum Gas	0.02	0.03	0.03	0.04	0.04	0.06	0.06
Other Petroleum ⁹	0.26	0.30	0.29	0.31	0.31	0.35	0.35
Petroleum Subtotal	25.54	29.03	28.92	31.68	31.42	36.73	36.53
Pipeline Fuel Natural Gas	0.66	0.83	0.81	0.91	0.95	1.10	1.14
Compressed Natural Gas	0.02	0.06	0.05	0.09	0.09	0.16	0.15
Renewable Energy (E85) ¹⁰	0.01	0.02	0.02	0.03	0.03	0.04	0.04
Methanol (M85) ¹¹	0.00	0.00	0.00	0.01	0.01	0.00	0.00
Liquid Hydrogen	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.06	0.09	0.09	0.12	0.12	0.17	0.17
Delivered Energy	26.28	30.03	29.90	32.83	32.62	38.20	38.04
Electricity Related Losses	0.13	0.19	0.18	0.24	0.22	0.31	0.28
Total	26.41	30.22	30.08	33.07	32.83	38.51	38.31
Delivered Energy Consumption for All Sectors							
Distillate Fuel	7.48	8.74	8.68	9.49	9.34	10.85	10.74
Kerosene	0.15	0.13	0.13	0.12	0.13	0.12	0.12
Jet Fuel ⁸	3.46	3.90	3.88	4.51	4.48	5.97	5.96
Liquefied Petroleum Gas	2.88	3.02	3.00	3.08	3.11	3.41	3.45
Motor Gasoline ²	16.17	17.93	17.89	19.24	19.15	21.57	21.50
Petrochemical Feedstock	1.29	1.36	1.36	1.53	1.52	1.70	1.69
Residual Fuel	1.05	1.10	1.10	1.20	1.21	1.24	1.24
Other Petroleum ¹²	4.53	4.71	4.68	4.99	5.01	5.35	5.42
Petroleum Subtotal	37.01	40.90	40.72	44.16	43.94	50.21	50.14
Natural Gas ⁶	18.50	20.91	20.91	22.05	22.11	24.66	26.13
Metallurgical Coal	0.75	0.67	0.67	0.61	0.61	0.50	0.50
Steam Coal	1.84	1.92	1.92	1.95	1.90	2.00	1.95
Net Coal Coke Imports	0.06	0.12	0.11	0.16	0.15	0.22	0.22
Coal Subtotal	2.65	2.71	2.70	2.71	2.66	2.72	2.67
Renewable Energy ¹³	2.65	2.94	2.93	3.18	3.17	3.65	3.64
Methanol (M85) ¹¹	0.00	0.00	0.00	0.01	0.01	0.00	0.00
Liquid Hydrogen	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	11.24	12.95	12.74	14.15	12.98	16.34	14.35
Delivered Energy	72.05	80.41	80.01	86.27	84.86	97.57	96.92
Electricity Related Losses	24.29	27.40	26.62	28.84	23.81	30.58	23.92
Total	96.33	107.81	106.63	115.11	108.68	128.16	120.84
Electric Generators¹⁴							
Distillate Fuel	0.06	0.06	0.03	0.06	0.02	0.06	0.02
Residual Fuel	0.96	0.38	0.17	0.22	0.07	0.19	0.09
Petroleum Subtotal	1.02	0.44	0.20	0.28	0.09	0.25	0.11
Natural Gas	3.71	5.53	4.83	6.94	9.90	11.40	13.08
Steam Coal	18.77	21.68	20.46	22.93	11.43	23.70	9.95
Nuclear Power	7.79	7.90	7.90	7.74	7.95	6.54	7.44
Renewable Energy ¹⁵	3.88	4.19	5.36	4.73	6.92	4.78	7.32
Electricity Imports ¹⁶	0.35	0.61	0.61	0.37	0.51	0.24	0.37
Total	35.52	40.35	39.36	42.99	36.79	46.92	38.27

Table C2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1999	Projections					
		2005		2010		2020	
		Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008
Total Energy Consumption							
Distillate Fuel	7.54	8.80	8.71	9.54	9.35	10.91	10.76
Kerosene	0.15	0.13	0.13	0.12	0.13	0.12	0.12
Jet Fuel ⁸	3.46	3.90	3.88	4.51	4.48	5.97	5.96
Liquefied Petroleum Gas	2.88	3.02	3.00	3.08	3.11	3.41	3.45
Motor Gasoline ²	16.17	17.93	17.89	19.24	19.15	21.57	21.50
Petrochemical Feedstock	1.29	1.36	1.36	1.53	1.52	1.70	1.69
Residual Fuel	2.01	1.48	1.28	1.42	1.28	1.42	1.34
Other Petroleum ¹²	4.53	4.71	4.68	4.99	5.01	5.35	5.42
Petroleum Subtotal	38.02	41.34	40.92	44.44	44.03	50.45	50.25
Natural Gas	22.21	26.44	25.74	29.00	32.01	36.06	39.21
Metallurgical Coal	0.75	0.67	0.67	0.61	0.61	0.50	0.50
Steam Coal	20.61	23.60	22.37	24.88	13.33	25.70	11.90
Net Coal Coke Imports	0.06	0.12	0.11	0.16	0.15	0.22	0.22
Coal Subtotal	21.42	24.39	23.16	25.64	14.08	26.42	12.62
Nuclear Power	7.79	7.90	7.90	7.74	7.95	6.54	7.44
Renewable Energy ¹⁷	6.54	7.13	8.30	7.91	10.09	8.43	10.95
Methanol (M85) ¹¹	0.00	0.00	0.00	0.01	0.01	0.00	0.00
Liquid Hydrogen	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity Imports ¹⁶	0.35	0.61	0.61	0.37	0.51	0.24	0.37
Total	96.33	107.81	106.63	115.11	108.68	128.16	120.84
Energy Use and Related Statistics							
Delivered Energy Use	72.05	80.41	80.01	86.27	84.86	97.57	96.92
Total Energy Use	96.33	107.81	106.63	115.11	108.68	128.16	120.84
Population (millions)	273.13	288.02	288.02	300.17	300.17	325.24	325.24
Gross Domestic Product (billion 1996 dollars)	8876	10960	10903	12667	12611	16515	16523
Total Carbon Dioxide Emissions (million metric tons carbon equivalent)	1510.8	1705.0	1655.8	1825.7	1564.5	2051.2	1737.7

¹Includes wood used for residential heating.

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

³Includes commercial sector electricity cogenerated by using wood and wood waste, landfill gas, municipal solid waste, and other biomass.

⁴Fuel consumption includes consumption for cogeneration, which provides electricity and other useful thermal energy.

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

⁶Includes lease and plant fuel and consumption by cogenerators, excludes consumption by nonutility generators.

⁷Includes consumption of energy from hydroelectric, wood and wood waste, municipal solid waste, and other biomass; includes cogeneration, both for sale to the grid and for own use.

⁸Includes only kerosene type.

⁹Includes aviation gas and lubricants.

¹⁰E85 is 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable).

¹¹M85 is 85 percent methanol and 15 percent motor gasoline.

¹²Includes unfinished oils, natural gasoline, motor gasoline blending compounds, 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 all electric power generators for grid-connected power except cogenerators, which produce electricity and other useful thermal energy. 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 cogeneration. Excludes net electricity imports.

¹⁶In 1998 approximately 70 percent of the U.S. electricity imports were provided by renewable sources (hydroelectricity); EIA does not project future proportions for the fuel source of imported electricity.

¹⁷Includes 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.

CO₂ = Carbon dioxide.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 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: 1999 electric utility fuel consumption: Energy Information Administration, (EIA) *Electric Power Annual 1998, Volume 1*, DOE/EIA-0348(98)/1 (Washington, DC, April 1999). 1999 nonutility consumption estimates: EIA, Form EIA-860B: "Annual Electric Generator Report - Nonutility." Other 1999 values: EIA, *Short-Term Energy Outlook, September 2000*, <http://www.eia.doe.gov/pub/forecasting/steo/oldsteos/sep00.pdf>. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2C7B08.D060801A.

Table C3. Energy Prices by Sector and Source
(1999 Dollars per Million Btu, Unless Otherwise Noted)

Sector and Source	1999	Projections					
		2005		2010		2020	
		Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008
Residential	13.10	13.27	13.62	13.46	16.45	13.77	16.28
Primary Energy ¹	6.71	7.49	7.37	7.18	7.55	7.08	7.45
Petroleum Products ²	7.55	9.20	9.15	9.37	9.37	9.47	9.43
Distillate Fuel	6.27	7.45	7.37	7.57	7.56	7.78	7.74
Liquefied Petroleum Gas	10.36	12.60	12.59	12.86	12.91	12.75	12.65
Natural Gas	6.52	7.11	6.97	6.72	7.18	6.65	7.11
Electricity	23.47	22.16	23.45	22.30	30.07	22.44	28.95
Commercial	13.18	12.70	13.33	12.25	16.44	12.69	15.59
Primary Energy ¹	5.22	5.57	5.44	5.68	6.06	5.79	6.16
Petroleum Products ²	4.99	6.13	6.08	6.29	6.27	6.40	6.32
Distillate Fuel	4.37	5.24	5.16	5.36	5.32	5.53	5.48
Residual Fuel	2.63	3.65	3.62	3.71	3.69	3.86	3.84
Natural Gas ³	5.34	5.55	5.41	5.66	6.11	5.78	6.21
Electricity	21.45	20.26	21.86	18.76	27.59	19.00	26.61
Industrial⁴	5.27	5.76	5.83	5.67	6.74	5.90	6.66
Primary Energy	3.91	4.47	4.38	4.49	4.69	4.68	4.85
Petroleum Products ²	5.54	6.00	5.95	6.13	6.11	6.16	6.10
Distillate Fuel	4.65	5.40	5.33	5.56	5.49	5.73	5.69
Liquefied Petroleum Gas	8.50	7.74	7.72	7.88	7.94	7.76	7.71
Residual Fuel	2.78	3.38	3.35	3.44	3.42	3.59	3.58
Natural Gas ⁵	2.79	3.64	3.49	3.50	3.97	3.85	4.33
Metallurgical Coal	1.65	1.58	1.58	1.54	1.55	1.44	1.44
Steam Coal	1.43	1.35	1.35	1.31	1.21	1.21	1.09
Electricity	13.00	12.80	13.92	12.08	18.93	12.22	18.34
Transportation	8.30	9.39	9.35	9.69	9.77	9.20	9.22
Primary Energy	8.29	9.38	9.33	9.68	9.74	9.18	9.19
Petroleum Products ²	8.28	9.37	9.33	9.67	9.73	9.18	9.18
Distillate Fuel ⁶	8.22	8.98	8.89	8.95	8.94	8.83	8.82
Jet Fuel ⁷	4.70	5.29	5.23	5.49	5.48	5.72	5.72
Motor Gasoline ⁸	9.45	10.81	10.77	11.31	11.42	10.60	10.61
Residual Fuel	2.46	3.11	3.10	3.18	3.17	3.33	3.32
Liquid Petroleum Gas ⁹	12.87	14.07	14.04	14.07	14.17	13.70	13.61
Natural Gas ¹⁰	7.02	7.28	7.13	7.21	7.67	7.41	7.83
Ethanol (E85) ¹¹	14.42	19.21	19.19	19.16	19.31	19.36	19.43
Methanol (M85) ¹²	10.38	13.13	12.99	13.83	13.84	14.35	14.42
Electricity	15.59	14.52	15.12	13.62	18.08	13.22	16.65
Average End-Use Energy	8.49	9.17	9.30	9.22	10.51	9.21	10.15
Primary Energy	6.31	7.19	7.11	7.35	7.50	7.23	7.32
Electricity	19.41	18.65	19.99	17.99	25.81	18.19	25.08
Electric Generators¹³							
Fossil Fuel Average	1.48	1.64	1.53	1.59	2.39	1.88	2.89
Petroleum Products	2.49	3.61	3.75	3.90	4.37	4.17	4.44
Distillate Fuel	4.04	4.72	4.74	4.87	4.89	5.06	5.09
Residual Fuel	2.40	3.42	3.59	3.65	4.24	3.89	4.30
Natural Gas	2.58	3.44	3.37	3.26	4.05	3.71	4.44
Steam Coal	1.21	1.14	1.07	1.06	0.93	0.98	0.84

Table C3. Energy Prices by Sector and Source (Continued)
(1999 Dollars per Million Btu, Unless Otherwise Noted)

Sector and Source	1999	Projections					
		2005		2010		2020	
		Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008
Average Price to All Users¹⁴							
Petroleum Products ²	7.44	8.53	8.51	8.81	8.86	8.49	8.49
Distillate Fuel	7.25	8.14	8.07	8.20	8.19	8.20	8.18
Jet Fuel	4.70	5.29	5.23	5.49	5.48	5.72	5.72
Liquefied Petroleum Gas	8.84	8.63	8.62	8.74	8.80	8.54	8.49
Motor Gasoline ⁸	9.45	10.80	10.77	11.31	11.42	10.60	10.61
Residual Fuel	2.47	3.25	3.23	3.33	3.32	3.49	3.48
Natural Gas	4.05	4.72	4.63	4.47	4.91	4.60	5.13
Coal	1.23	1.16	1.10	1.08	0.97	1.00	0.88
Ethanol (E85) ¹¹	14.42	19.21	19.19	19.16	19.31	19.36	19.43
Methanol (M85) ¹²	10.38	13.13	12.99	13.83	13.84	14.35	14.42
Electricity	19.41	18.65	19.99	17.99	25.81	18.19	25.08
Non-Renewable Energy Expenditures by Sector (billion 1999 dollars)							
Residential	134.28	153.83	157.22	160.41	187.74	183.27	208.65
Commercial	98.42	114.97	120.19	119.69	153.84	136.41	167.83
Industrial	111.66	127.05	128.36	133.28	158.77	154.57	175.72
Transportation	212.64	273.84	271.56	308.81	308.69	340.45	339.36
Total Non-Renewable Expenditures	556.99	669.69	677.32	722.19	809.05	814.69	891.56
Transportation Renewable Expenditures	0.14	0.42	0.42	0.64	0.64	0.85	0.85
Total Expenditures	557.13	670.11	677.74	722.82	809.68	815.54	892.41

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.

³Excludes independent power producers.

⁴Includes cogenerators.

⁵Excludes uses for lease and plant fuel.

⁶Low sulfur diesel fuel. Price includes Federal and State taxes while excluding county and local taxes.

⁷Kerosene-type jet fuel. Price includes Federal and State taxes while excluding county and local taxes.

⁸Sales weighted-average price for all grades. Includes Federal and State taxes and excludes county and local taxes.

⁹Includes Federal and State taxes while excluding county and local taxes.

¹⁰Compressed natural gas used as a vehicle fuel. Price includes estimated motor vehicle fuel taxes.

¹¹E85 is 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable).

¹²M85 is 85 percent methanol and 15 percent motor gasoline.

¹³Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy. Includes small power producers and exempt wholesale generators.

¹⁴Weighted averages of end-use fuel prices are derived from the prices shown in each sector and the corresponding sectoral consumption.

Btu = British thermal unit.

CO₂ = Carbon dioxide.

Note: Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 prices for gasoline, distillate, and jet fuel are based on prices in various issues of Energy Information Administration (EIA), *Petroleum Marketing Monthly*, DOE/EIA-0380 (99/03-2000/04) (Washington, DC, 1999-2000). 1999 prices for all other petroleum products are derived from the EIA, *State Energy Price and Expenditure Report 1997*, DOE/EIA-0376(97) (Washington, DC, July 2000). 1999 industrial gas delivered prices are based on EIA, *Manufacturing Energy Consumption Survey 1994*. 1999 residential and commercial natural gas delivered prices: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). 1999 coal prices based on EIA, *Quarterly Coal Report*, DOE/EIA-0121(2000/1Q) (Washington, DC, August 2000), and EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2C7B08.D060801A. 1999 electricity prices for commercial, industrial, and transportation: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2C7B08.D060801A. **Projections:** EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2C7B08.D060801A.

Table C4. Electricity Supply, Disposition, Prices, and Emissions
(Billion Kilowatthours, Unless Otherwise Noted)

Supply, Disposition, and Prices	1999	Projections					
		2005		2010		2020	
		Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008
Generation by Fuel Type							
Electric Generators¹							
Coal	1831	2106	2002	2245	1148	2315	1001
Petroleum	94	43	21	28	10	25	12
Natural Gas ²	359	583	593	825	1421	1495	1924
Nuclear Power	730	740	740	725	744	613	696
Pumped Storage	-1	-1	-1	-1	-1	-1	-1
Renewable Sources ³	355	373	429	397	515	400	543
Total	3369	3844	3783	4219	3837	4847	4177
Non-Utility Generation for Own Use ..	16	17	21	17	20	17	19
Distributed Generation	0	0	0	1	1	5	1
Cogenerators⁴							
Coal	47	53	52	52	45	52	40
Petroleum	9	10	10	10	10	10	11
Natural Gas	207	237	243	261	331	318	668
Other Gaseous Fuels ⁵	4	6	6	7	7	8	9
Renewable Sources ³	31	34	34	39	39	48	48
Other ⁶	5	5	5	5	5	6	6
Total	303	345	350	373	437	441	781
Other End-Use Generators⁷							
	5	5	5	5	5	5	5
Sales to Utilities	151	172	170	180	185	208	290
Generation for Own Use	156	178	185	198	257	238	496
Net Imports⁸	33	57	57	35	49	23	35
Electricity Sales by Sector							
Residential	1145	1339	1316	1452	1323	1698	1542
Commercial	1073	1288	1270	1439	1322	1646	1455
Industrial	1058	1142	1122	1222	1124	1395	1158
Transportation	17	26	26	35	34	49	48
Total	3294	3794	3733	4147	3803	4788	4204
End-Use Prices (1999 cents per kwh)⁹							
Residential	8.0	7.6	8.0	7.6	10.3	7.7	9.9
Commercial	7.3	6.9	7.5	6.4	9.4	6.5	9.1
Industrial	4.4	4.4	4.7	4.1	6.5	4.2	6.3
Transportation	5.3	5.0	5.2	4.6	6.2	4.5	5.7
All Sectors Average	6.6	6.4	6.8	6.1	8.8	6.2	8.6
Prices by Service Category⁹ (1999 cents per kwh)							
Generation	4.1	3.8	4.2	3.5	6.0	3.6	5.9
Transmission	0.6	0.6	0.6	0.7	0.8	0.7	0.7
Distribution	2.0	2.0	2.0	2.0	2.1	2.0	2.0
Emissions (million short tons)							
Sulfur Dioxide	13.71	10.38	10.39	9.70	8.20	8.95	7.34
Nitrogen Oxide	5.45	4.30	4.01	4.34	2.44	4.49	2.17

¹Includes grid-connected generation at all utilities and nonutilities except for cogenerators. Includes small power producers and exempt wholesale generators.

²Includes electricity generation by fuel cells.

³Includes conventional hydroelectric, geothermal, wood, wood waste, municipal solid waste, landfill gas, other biomass, solar, and wind power.

⁴Cogenerators produce electricity and other useful thermal energy. Includes sales to utilities and generation for own use.

⁵Other gaseous fuels include refinery and still gas.

⁶Other includes hydrogen, sulfur, batteries, chemicals, fish oil, and spent sulfite liquor.

⁷Includes 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.

⁸In 1998 approximately 70 percent of the U.S. electricity imports were provided by renewable sources (hydroelectricity); EIA does not project future proportions for the fuel source of imported electricity.

⁹Prices represent average revenue per kilowatthour.

Kwh = Kilowatthour.

CO₂ = Carbon dioxide.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Source: Energy Information Administration, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2C7B08.D060801A.

**Table C5. Electricity Generating Capability
(Gigawatts)**

Net Summer Capability ¹	1999	Projections					
		2005		2010		2020	
		Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008
Electric Generators²							
Capability							
Coal Steam	305.1	303.9	302.8	318.6	267.2	318.5	218.4
Other Fossil Steam ³	137.4	127.8	119.3	119.2	102.7	116.9	92.3
Combined Cycle	21.0	53.2	78.4	107.8	196.3	202.2	268.0
Combustion Turbine/Diesel	74.3	123.1	118.2	147.2	121.5	199.5	134.2
Nuclear Power	97.4	97.5	97.5	94.8	97.5	76.3	90.1
Pumped Storage	19.3	19.5	19.5	19.5	19.5	19.5	19.5
Fuel Cells	0.0	0.0	0.0	0.1	0.1	0.3	0.3
Renewable Sources ⁴	88.8	94.8	100.0	98.0	109.1	99.5	117.7
Distributed Generation ⁵	0.0	0.7	0.9	2.5	1.4	11.5	3.0
Total	743.4	820.4	836.6	907.8	915.4	1044.2	943.4
Cumulative Planned Additions⁶							
Coal Steam	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Fossil Steam ³	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Combined Cycle	0.0	12.7	12.7	12.7	12.7	12.7	12.7
Combustion Turbine/Diesel	0.0	14.0	14.0	14.0	14.0	14.0	14.0
Nuclear Power	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
Fuel Cells	0.0	0.0	0.0	0.1	0.1	0.3	0.3
Renewable Sources ⁴	0.0	5.1	5.1	6.7	6.7	8.1	8.1
Distributed Generation ⁵	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.0	32.0	32.0	33.7	33.7	35.3	35.3
Cumulative Unplanned Additions⁶							
Coal Steam	0.0	1.1	0.0	18.9	0.0	20.5	0.0
Other Fossil Steam ³	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Combined Cycle	0.0	19.4	44.6	74.2	162.7	168.6	234.7
Combustion Turbine/Diesel	0.0	38.9	35.4	64.7	40.8	117.2	53.5
Nuclear Power	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
Fuel Cells	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Renewable Sources ⁴	0.0	0.4	5.7	2.0	13.1	2.0	20.2
Distributed Generation ⁵	0.0	0.7	0.9	2.5	1.4	11.5	3.0
Total	0.0	60.6	86.7	162.2	218.0	319.8	311.5
Cumulative Total Additions	0.0	92.6	118.7	195.9	251.7	355.1	346.8
Cumulative Retirements⁷							
Coal Steam	0.0	2.3	2.3	5.4	37.9	7.2	86.7
Other Fossil Steam ³	0.0	9.9	18.3	18.4	34.9	20.7	45.4
Combined Cycle	0.0	0.0	0.0	0.2	0.2	0.2	0.5
Combustion Turbine/Diesel	0.0	4.4	5.7	6.0	7.7	6.3	7.8
Nuclear Power	0.0	0.0	0.0	2.6	0.0	21.2	7.4
Pumped Storage	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
Renewable Sources	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Total	0.0	16.7	26.5	32.8	80.9	55.6	148.0
Cogenerators⁸							
Capability							
Coal	8.4	8.9	8.9	8.6	7.4	8.6	6.7
Petroleum	2.7	2.9	2.9	2.9	2.9	2.9	3.0
Natural Gas	34.6	39.9	40.9	43.3	53.0	51.4	101.3
Other Gaseous Fuels	0.2	0.8	0.8	0.9	0.9	1.1	1.2
Renewable Sources ⁴	5.4	5.9	5.9	6.8	6.8	8.2	8.3
Other	1.1	0.9	0.9	0.9	0.9	0.9	0.9
Total	52.4	59.2	60.3	63.3	71.9	73.2	121.3
Cumulative Additions⁶	0.0	6.8	7.8	10.9	19.4	20.7	68.9

Table C5. Electricity Generating Capability (Continued)
(Gigawatts)

Net Summer Capability ¹	1999	Projections					
		2005		2010		2020	
		Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008
Other End-Use Generators⁹							
Renewable Sources	1.0	1.1	1.1	1.3	1.3	1.3	1.4
Cumulative Additions	0.0	0.1	0.1	0.3	0.3	0.3	0.4

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

²Includes grid-connected utilities and nonutilities except for cogenerators. Includes small power producers and exempt wholesale generators.

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

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

⁵Primarily peak-load capacity fueled by natural gas.

⁶Cumulative additions after December 31, 1999.

⁷Cumulative total retirements after December 31, 1999.

⁸Nameplate capacity is reported for nonutilities on Form EIA-860B, "Annual Electric Generator Report - Nonutility." Nameplate capacity is designated by the manufacturer. The nameplate capacity has been converted to the net summer capability based on historic relationships.

⁹Includes 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. Excludes off-grid photovoltaics and other generators not connected to the distribution or transmission systems.

CO₂ = Carbon dioxide.

Notes: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports. Net summer capability has been estimated for nonutility generators to be consistent with capability for electric utility generators.

Source: Energy Information Administration, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2C7B08.D060801A.

Table C6. Electricity Trade
(Billion Kilowatthours, Unless Otherwise Noted)

Electricity Trade	1999	Projections					
		2005		2010		2020	
		Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008
Interregional Electricity Trade							
Gross Domestic Firm Power Trade	182.2	125.3	125.3	102.9	102.9	0.0	0.0
Gross Domestic Economy Trade	152.0	202.3	162.5	155.5	58.3	147.9	73.8
Gross Domestic Trade	334.2	327.6	287.8	258.4	161.2	147.9	73.8
Gross Domestic Firm Power Sales							
(million 1999 dollars)	8588.1	5905.8	5905.8	4851.2	4851.2	0.0	0.0
Gross Domestic Economy Sales							
(million 1999 dollars)	4413.9	6468.6	5924.3	4510.4	3242.6	4605.1	4015.2
Gross Domestic Sales							
(million 1999 dollars)	13002.0	12374.4	11830.1	9361.6	8093.9	4605.1	4015.2
International Electricity Trade							
Firm Power Imports From Canada and	27.0	10.7	10.7	5.8	19.1	0.0	12.1
Economy Imports From Canada and Mexico ¹	21.9	63.5	63.5	45.9	45.9	30.6	30.6
Gross Imports From Canada and Mexico¹	48.9	74.1	74.1	51.7	65.0	30.6	42.7
Firm Power Exports To Canada and Mexico . .	9.2	9.7	9.7	8.7	8.7	0.0	0.0
Economy Exports To Canada and Mexico . . .	6.3	7.0	7.0	7.7	7.7	7.7	7.7
Gross Exports To Canada and Mexico	15.5	16.7	16.7	16.4	16.4	7.7	7.7

¹Historically electricity imports were primarily from renewable resources, principally hydroelectric.
CO₂ = Carbon dioxide.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 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, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2C7B08.D060801A.

Table C7. Natural Gas Supply and Disposition
(Trillion Cubic Feet per Year)

Supply, Disposition, and Prices	1999	Projections					
		2005		2010		2020	
		Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008
Production							
Dry Gas Production ¹	18.67	21.40	20.74	23.43	24.83	29.47	30.52
Supplemental Natural Gas ²	0.10	0.11	0.11	0.06	0.06	0.06	0.06
Net Imports	3.38	4.69	4.67	5.00	6.56	5.82	7.88
Canada	3.29	4.48	4.45	4.72	4.94	5.43	5.72
Mexico	-0.01	-0.18	-0.18	-0.25	0.32	-0.40	0.36
Liquefied Natural Gas	0.10	0.39	0.39	0.53	1.30	0.79	1.80
Total Supply	22.15	26.20	25.52	28.49	31.45	35.35	38.45
Consumption by Sector							
Residential	4.75	5.42	5.45	5.46	5.40	6.07	6.08
Commercial	3.06	3.88	3.91	4.06	4.05	4.32	4.96
Industrial ³	8.31	8.81	8.82	9.48	9.50	10.53	11.23
Electric Generators ⁴	3.64	5.43	4.74	6.81	9.71	11.19	12.84
Lease and Plant Fuel ⁵	1.23	1.38	1.34	1.50	1.57	1.87	1.91
Pipeline Fuel	0.64	0.81	0.79	0.88	0.93	1.07	1.11
Transportation ⁶	0.02	0.05	0.05	0.09	0.09	0.15	0.15
Total	21.65	25.79	25.11	28.29	31.25	35.20	38.28
Discrepancy⁷	0.50	0.42	0.41	0.20	0.20	0.14	0.17

¹Marketed production (wet) minus extraction losses.

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

³Includes consumption by cogenerators.

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

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

⁶Compressed natural gas used as vehicle fuel.

⁷Balancing item. Natural gas lost as a result of converting flow data measured at varying temperatures and pressures to a standard temperature and pressure and the merger of different data reporting systems which vary in scope, format, definition, and respondent type. In addition, 1999 values include net storage injections.

Btu = British thermal unit.

CO₂ = Carbon dioxide.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 supplemental natural gas: Energy Information Administration (EIA), *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). 1999 transportation sector consumption: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2C7B08.D060801A. Other 1999 consumption: EIA, *Short-Term Energy Outlook, September 2000*, <http://www.eia.doe.gov/pub/forecasting/steo/oldsteos/sep00.pdf> with adjustments to end-use sector consumption levels for consumption of natural gas by electric wholesale generators based on EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2C7B08.D060801A. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2C7B08.D060801A.

Table C8. Natural Gas Prices, Margins, and Revenue
(1999 Dollars per Thousand Cubic Feet, Unless Otherwise Noted)

Prices, Margins, and Revenue	1999	Projections					
		2005		2010		2020	
		Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008
Source Price							
Average Lower 48 Wellhead Price ¹	2.08	2.96	2.79	2.87	3.36	3.22	3.74
Average Import Price	2.29	2.95	2.92	2.64	2.95	2.72	3.05
Average²	2.11	2.96	2.81	2.82	3.27	3.13	3.59
Delivered Prices							
Residential	6.69	7.31	7.16	6.91	7.37	6.83	7.30
Commercial	5.49	5.70	5.56	5.82	6.27	5.93	6.38
Industrial ³	2.87	3.74	3.59	3.59	4.07	3.95	4.44
Electric Generators ⁴	2.63	3.50	3.43	3.32	4.13	3.78	4.53
Transportation ⁵	7.21	7.48	7.32	7.40	7.88	7.61	8.04
Average⁶	4.15	4.84	4.75	4.59	5.04	4.72	5.26
Transmission & Distribution Margins⁷							
Residential	4.58	4.35	4.34	4.08	4.10	3.70	3.71
Commercial	3.37	2.74	2.74	2.99	3.00	2.81	2.79
Industrial ³	0.76	0.78	0.77	0.77	0.80	0.82	0.85
Electric Generators ⁴	0.52	0.54	0.62	0.49	0.86	0.65	0.93
Transportation ⁵	5.10	4.51	4.51	4.58	4.61	4.48	4.45
Average⁶	2.04	1.88	1.94	1.76	1.77	1.59	1.67
Transmission & Distribution Revenue (billion 1999 dollars)							
Residential	21.77	23.57	23.68	22.30	22.13	22.48	22.56
Commercial	10.32	10.63	10.72	12.16	12.15	12.12	13.81
Industrial ³	6.28	6.86	6.83	7.26	7.64	8.65	9.56
Electric Generators ⁴	1.88	2.94	2.94	3.36	8.34	7.24	11.99
Transportation ⁵	0.08	0.24	0.24	0.41	0.40	0.68	0.66
Total	40.32	44.25	44.41	45.49	50.67	51.18	58.58

¹Represents lower 48 onshore and offshore supplies.

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

³Includes consumption by cogenerators.

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

CO₂ = Carbon dioxide.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 industrial delivered prices based on Energy Information Administration (EIA), *Manufacturing Energy Consumption Survey 1994*. 1999 residential and commercial delivered prices, average lower 48 wellhead price, and average import price: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). Other 1999 values, and projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2C7B08.D060801A.

Table C9. Oil and Gas Supply

Production and Supply	1999	Projections					
		2005		2010		2020	
		Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008
Crude Oil							
Lower 48 Average Wellhead Price¹ (1999 dollars per barrel)	16.49	21.43	20.57	20.73	20.82	21.47	21.38
Production (million barrels per day)²							
U.S. Total	5.88	5.66	5.68	5.32	5.28	5.25	5.34
Lower 48 Onshore	3.27	2.81	2.81	2.52	2.51	2.75	2.81
Conventional	2.59	2.18	2.18	1.81	1.82	1.98	2.05
Enhanced Oil Recovery	0.68	0.63	0.63	0.70	0.69	0.76	0.76
Lower 48 Offshore	1.56	2.06	2.08	2.16	2.13	1.87	1.89
Alaska	1.05	0.79	0.79	0.65	0.65	0.64	0.64
Lower 48 End of Year Reserves (billion barrels)² ...	18.33	15.75	15.75	14.55	14.50	14.11	14.31
Natural Gas							
Lower 48 Average Wellhead Price¹ (1999 dollars per thousand cubic feet)	2.08	2.96	2.79	2.87	3.36	3.22	3.74
Production (trillion cubic feet)³							
U.S. Total	18.67	21.40	20.74	23.43	24.83	29.47	30.52
Lower 48 Onshore	12.83	14.46	13.91	16.71	17.59	21.31	22.32
Associated-Dissolved ⁴	1.80	1.51	1.51	1.32	1.33	1.39	1.43
Non-Associated	11.03	12.95	12.39	15.39	16.26	19.91	20.89
Conventional	6.64	7.67	7.38	7.93	8.50	11.14	11.29
Unconventional	4.39	5.27	5.01	7.45	7.76	8.78	9.60
Lower 48 Offshore	5.43	6.47	6.37	6.22	6.75	7.59	7.64
Associated-Dissolved ⁴	0.93	1.06	1.06	1.09	1.09	1.04	1.04
Non-Associated	4.50	5.41	5.31	5.13	5.66	6.56	6.60
Alaska	0.42	0.47	0.46	0.50	0.50	0.57	0.56
Lower 48 End of Year Reserves³ (trillion cubic feet)	157.41	167.88	169.86	185.55	185.18	200.71	203.89
Supplemental Gas Supplies (trillion cubic feet)⁵ ...	0.10	0.11	0.11	0.06	0.06	0.06	0.06
Total Lower 48 Wells (thousands)	17.93	28.87	27.88	29.86	33.37	39.36	44.17

¹Represents lower 48 onshore and offshore supplies.

²Includes lease condensate.

³Market production (wet) minus extraction losses.

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

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

Btu = British thermal unit.

CO₂ = Carbon dioxide.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 lower 48 onshore, lower 48 offshore, and Alaska crude oil production: Energy Information Administration (EIA), *Petroleum Supply Annual 1999*, DOE/EIA-0340(99/1) (Washington, DC, June 2000). 1999 natural gas lower 48 average wellhead price, Alaska and total natural gas production, and supplemental gas supplies: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). Other 1999 values: EIA, Office of Integrated Analysis and Forecasting. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2C7B08.D060801A.

Table C10. Coal Supply, Disposition, and Prices
(Million Short Tons per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	1999	Projections					
		2005		2010		2020	
		Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008
Production¹							
Appalachia	433	426	412	421	285	396	238
Interior	185	182	169	180	125	161	109
West	486	624	591	694	305	783	294
East of the Mississippi	559	561	537	557	380	524	324
West of the Mississippi	544	672	636	738	335	817	317
Total	1103	1233	1173	1295	715	1340	641
Net Imports							
Imports	9	16	12	17	9	20	9
Exports	58	60	60	58	57	56	58
Total	-49	-44	-48	-40	-48	-36	-49
Total Supply²	1054	1189	1125	1254	667	1304	592
Consumption by Sector							
Residential and Commercial	5	5	5	5	5	5	5
Industrial ³	79	82	82	83	81	86	84
Coke Plants	28	25	25	23	23	19	19
Electric Generators ⁴	921	1077	1013	1145	559	1196	491
Total	1032	1189	1125	1256	668	1306	599
Discrepancy and Stock Change⁵	21	-1	-0	-2	-1	-2	-7
Average Minemouth Price							
(1999 dollars per short ton)	17.17	15.05	14.74	14.08	14.22	12.87	12.77
(1999 dollars per million Btu)	0.82	0.73	0.71	0.69	0.67	0.64	0.61
Delivered Prices (1999 dollars per short ton)⁶							
Industrial	31.39	29.67	29.49	28.61	26.50	26.50	23.68
Coke Plants	44.28	42.39	42.43	41.36	41.48	38.52	38.61
Electric Generators							
(1999 dollars per short ton)	24.73	22.90	21.67	21.28	18.98	19.41	16.92
(1999 dollars per million Btu)	1.21	1.14	1.07	1.06	0.93	0.98	0.84
Average	25.77	23.78	22.71	22.13	20.67	20.15	18.56
Exports ⁷	37.44	36.39	36.36	35.66	34.66	33.09	31.44

¹Includes anthracite, bituminous coal, lignite, and waste coal delivered to independent power producers. Waste coal deliveries totaled 8.5 million tons in 1995, 8.8 million tons in 1996, 8.1 million tons in 1997, 8.6 million tons in 1998, and are projected to reach 9.6 million tons in 1999, and 12.2 million tons in 2000..

²Production plus net imports and net storage withdrawals.

³Includes consumption by cogenerators.

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

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

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

⁷F.a.s. price at U.S. port of exit.

Btu = British thermal unit.

CO₂ = Carbon dioxide.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 data based on Energy Information Administration (EIA), *Quarterly Coal Report*, DOE/EIA-0121(2000/1Q) (Washington, DC, August 2000), and EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2C7B08.D060801A. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2C7B08.D060801A.

Table C11. Renewable Energy Generating Capability and Generation
(Gigawatts, Unless Otherwise Noted)

Capacity and Generation	1999	Projections					
		2005		2010		2020	
		Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008
Electric Generators¹							
(excluding cogenerators)							
Net Summer Capability							
Conventional Hydropower	78.77	79.26	80.43	79.38	80.90	79.38	80.90
Geothermal ²	2.87	3.43	7.05	4.93	10.66	4.95	11.11
Municipal Solid Waste ³	2.61	2.96	3.24	3.42	4.42	3.93	4.95
Wood and Other Biomass ⁴	1.57	1.75	1.75	2.12	2.87	2.45	3.98
Solar Thermal	0.33	0.35	0.35	0.40	0.40	0.48	0.48
Solar Photovoltaic	0.01	0.08	0.08	0.21	0.21	0.54	0.54
Wind	2.66	6.92	7.10	7.52	9.65	7.76	15.72
Total	88.83	94.75	100.01	97.98	109.10	99.49	117.68
Generation (billion kilowatthours)							
Conventional Hydropower	309.55	301.20	305.12	301.13	306.16	300.07	305.01
Geothermal ²	13.21	18.34	48.20	30.94	77.91	31.16	81.75
Municipal Solid Waste ³	18.12	20.68	22.93	23.88	31.66	27.76	35.68
Wood and Other Biomass ⁴	9.02	14.94	34.61	21.30	73.34	19.78	74.18
Dedicated Plants	7.73	9.16	9.18	11.36	16.44	13.82	24.09
Cofiring	1.29	5.78	25.43	9.94	56.89	5.95	50.09
Solar Thermal	0.89	0.96	0.96	1.11	1.11	1.37	1.37
Solar Photovoltaic	0.03	0.20	0.20	0.51	0.51	1.36	1.36
Wind	4.61	16.30	16.80	18.16	24.07	18.83	43.92
Total	355.43	372.61	428.82	397.03	514.77	400.32	543.28
Cogenerators⁵							
Net Summer Capability							
Municipal Solid Waste	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Biomass	4.65	5.17	5.19	6.06	6.06	7.54	7.55
Total	5.35	5.87	5.89	6.76	6.76	8.24	8.25
Generation (billion kilowatthours)							
Municipal Solid Waste	4.04	4.04	4.04	4.04	4.04	4.04	4.04
Biomass	27.08	29.92	30.02	35.01	34.94	43.52	43.48
Total	31.12	33.97	34.07	39.05	38.99	47.57	47.53
Other End-Use Generators⁶							
Net Summer Capability							
Conventional Hydropower ⁷	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solar Photovoltaic	0.01	0.10	0.10	0.35	0.35	0.35	0.36
Total	1.00	1.09	1.09	1.34	1.34	1.34	1.35
Generation (billion kilowatthours)							
Conventional Hydropower ⁷	4.57	4.44	4.44	4.43	4.43	4.41	4.41
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solar Photovoltaic	0.02	0.20	0.20	0.75	0.75	0.75	0.78
Total	4.59	4.64	4.64	5.18	5.18	5.17	5.19

¹Includes grid-connected utilities and nonutilities other than cogenerators. These nonutility facilities include small power producers and exempt wholesale generators.

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

³Includes landfill gas.

⁴Includes projections for energy crops after 2010.

⁵Cogenerators produce electricity and other useful thermal energy.

⁶Includes 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. Excludes off-grid photovoltaics and other generators not connected to the distribution or transmission systems.

⁷Represents own-use industrial hydroelectric power.

CO₂ = Carbon dioxide.

Notes: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports. Net summer capability has been estimated for nonutility generators for AEO2001. Net summer capability 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: 1999 electric utility capability: Energy Information Administration (EIA), Form EIA-860A: "Annual Electric Generator Report - Utility." 1999 nonutility and cogenerator capability: EIA, Form EIA-860B: "Annual Electric Generator Report - Nonutility." 1999 generation: EIA, *Annual Energy Review 1999*, DOE/EIA-0384(99) (Washington, DC, July 2000). Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2C7B08.D060801A.

Table C12. Renewable Energy Consumption by Sector and Source¹
(Quadrillion Btu per Year)

Sector and Source	1999	Projections					
		2005		2010		2020	
		Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008
Marketed Renewable Energy²							
Residential	0.41	0.42	0.42	0.42	0.42	0.44	0.43
Wood	0.41	0.42	0.42	0.42	0.42	0.44	0.43
Commercial	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Biomass	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Industrial³	2.15	2.42	2.41	2.64	2.63	3.08	3.08
Conventional Hydroelectric	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Municipal Solid Waste	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Biomass	1.97	2.23	2.22	2.46	2.44	2.90	2.89
Transportation	0.12	0.20	0.20	0.22	0.22	0.24	0.24
Ethanol used in E85 ⁴	0.00	0.02	0.02	0.03	0.03	0.03	0.03
Ethanol used in Gasoline Blending	0.12	0.18	0.18	0.19	0.20	0.21	0.21
Electric Generators⁵	3.88	4.19	5.36	4.73	6.92	4.78	7.32
Conventional Hydroelectric	3.19	3.10	3.14	3.10	3.15	3.08	3.14
Geothermal	0.28	0.44	1.34	0.85	2.31	0.85	2.44
Municipal Solid Waste ⁶	0.25	0.28	0.31	0.32	0.43	0.38	0.49
Biomass	0.12	0.18	0.38	0.26	0.76	0.25	0.78
Dedicated Plants	0.10	0.11	0.10	0.14	0.17	0.17	0.25
Cofiring	0.02	0.07	0.28	0.12	0.59	0.07	0.52
Solar Thermal	0.01	0.01	0.01	0.02	0.02	0.03	0.03
Solar Photovoltaic	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wind	0.05	0.17	0.17	0.19	0.25	0.19	0.45
Total Marketed Renewable Energy	6.64	7.31	8.47	8.10	10.28	8.62	11.15
Non-Marketed Renewable Energy⁷							
Selected Consumption							
Residential	0.02	0.03	0.03	0.03	0.03	0.04	0.03
Solar Hot Water Heating	0.01	0.01	0.01	0.00	0.00	0.00	0.00
Geothermal Heat Pumps	0.02	0.02	0.02	0.03	0.03	0.03	0.03
Solar Photovoltaic	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Commercial	0.02	0.02	0.02	0.03	0.03	0.03	0.03
Solar Thermal	0.02	0.02	0.02	0.02	0.02	0.03	0.03
Solar Photovoltaic	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ethanol							
From Corn	0.12	0.19	0.18	0.20	0.20	0.17	0.17
From Cellulose	0.00	0.01	0.01	0.02	0.02	0.07	0.07
Total	0.12	0.20	0.20	0.22	0.22	0.24	0.24

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.

³Includes all electricity production by industrial and other cogenerators for the grid and for own use.

⁴Excludes motor gasoline component of E85.

⁵Includes renewable energy delivered to the grid from electric utilities and nonutilities. Renewable energy used in generating electricity for own use is included in the individual sectoral electricity energy consumption values.

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.

CO₂ = Carbon dioxide.

Notes: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 ethanol: Energy Information Administration (EIA), *Annual Energy Review 1999*, DOE/EIA-0384(99) (Washington, DC, July 2000). 1999 electric generators: EIA, Form EIA-860A: "Annual Electric Generator Report - Utility," and EIA, Form EIA-860B: "Annual Electric Generator Report - Nonutility." Other 1999: EIA, Office of Integrated Analysis and Forecasting. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2C7B08.D060801A.

Table C13. Carbon Dioxide Emissions by Sector and Source
(Million Metric Tons Carbon Equivalent per Year)

Sector and Source	1999	Projections					
		2005		2010		2020	
		Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008
Residential							
Petroleum	26.0	26.5	26.5	24.5	24.6	23.2	23.6
Natural Gas	69.5	80.2	80.6	80.8	79.9	89.8	90.0
Coal	1.1	1.2	1.2	1.3	1.3	1.3	1.2
Electricity	193.4	227.1	210.5	242.6	151.6	275.6	163.2
Total	290.1	335.0	318.9	349.2	257.4	389.8	278.1
Commercial							
Petroleum	13.7	11.8	11.8	12.0	12.1	12.1	12.4
Natural Gas	45.4	57.4	57.8	60.1	59.8	63.9	73.3
Coal	1.7	1.7	1.7	1.8	1.8	1.9	1.9
Electricity	181.3	218.4	203.1	240.4	151.6	267.1	154.0
Total	242.1	289.4	274.5	314.3	225.4	345.0	241.6
Industrial¹							
Petroleum	104.2	99.2	98.5	105.3	106.2	113.6	115.1
Natural Gas ²	141.6	148.4	148.0	159.8	161.3	180.3	191.6
Coal	55.9	65.8	65.6	65.6	64.3	65.8	64.5
Electricity	178.8	193.6	179.5	204.1	128.9	226.4	122.6
Total	480.4	507.0	491.6	534.8	460.7	586.1	493.9
Transportation							
Petroleum ³	485.8	556.3	554.3	607.2	602.0	704.2	700.2
Natural Gas ⁴	9.5	12.8	12.4	14.4	15.0	18.1	18.7
Other ⁵	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Electricity	2.9	4.4	4.1	5.8	3.9	7.9	5.1
Total³	498.2	573.6	570.9	627.5	621.1	730.2	724.1
Total Carbon Dioxide Emissions by Delivered Fuel							
Petroleum ³	629.7	693.8	691.1	749.0	744.9	853.1	851.4
Natural Gas	266.0	298.8	298.9	315.1	316.0	352.0	373.6
Coal	58.8	68.8	68.5	68.8	67.4	69.0	67.7
Other ⁵	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Electricity	556.3	643.6	597.2	692.8	436.1	777.0	444.9
Total³	1510.8	1705.0	1655.8	1825.7	1564.5	2051.2	1737.7
Electric Generators⁶							
Petroleum	20.0	9.4	4.2	5.8	1.8	5.2	2.3
Natural Gas	45.8	79.6	69.6	100.0	142.5	164.1	188.4
Coal	490.5	554.6	523.4	587.0	291.7	607.7	254.2
Total	556.3	643.6	597.2	692.8	436.1	777.0	444.9
Total Carbon Dioxide Emissions by Primary Fuel⁷							
Petroleum ³	649.7	703.1	695.3	754.8	746.8	858.3	853.7
Natural Gas	311.8	378.4	368.5	415.0	458.5	516.2	561.9
Coal	549.3	623.3	592.0	655.8	359.2	676.7	321.9
Other ⁵	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Total³	1510.8	1705.0	1655.8	1825.7	1564.5	2051.2	1737.7
Carbon Dioxide Emissions (tons carbon equivalent per person)	5.5	5.9	5.7	6.1	5.2	6.3	5.3

¹Includes consumption by cogenerators.

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 1998, international bunker fuels accounted for 25 to 30 million metric tons carbon equivalent of carbon dioxide annually.

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

⁵Includes methanol and liquid hydrogen.

⁶Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy. Includes small power producers and exempt wholesale generators. 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.

CO₂ = Carbon dioxide.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 emissions and emission factors: Energy Information Administration (EIA), *Emissions of Greenhouse Gases in the United States 1999*, DOE/EIA-0573(99), (Washington, DC, October 2000). Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2C7B08.D060801A.

Table C14. Emissions, Allowance Costs, and Retrofits: Electric Generators, Excluding Cogenerators

Impacts	1999	Projections					
		2005		2010		2020	
		Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008	Reference	CO ₂ 1990-7% 2008
Emissions							
Nitrogen Oxide (million tons)	5.45	4.30	4.01	4.34	2.44	4.49	2.17
Sulfur Dioxide (million tons)	13.71	10.38	10.39	9.70	8.20	8.95	7.34
Mercury (tons)	43.60	45.24	42.45	45.60	24.16	45.07	21.09
Carbon Dioxide (million metric tons carbon equivalent)	556.31	643.58	597.24	692.78	436.08	776.99	444.95
Allowance Prices							
Nitrogen Oxide (1999 dollars per ton)	0	4352	455	4391	0	5037	0
Sulfur Dioxide (1999 dollars per ton)	0	190	150	187	0	241	0
Mercury (million 1999 dollars per ton)	0	0	0	0	0	0	0
Carbon Dioxide (1999 dollars per ton carbon equivalent)	0	0	38	0	157	0	151
Retrofits (gigawatts)							
Scrubber ¹	0.0	6.5	0.0	7.1	0.0	14.8	0.0
Combustion	0.0	39.9	38.8	42.1	42.8	46.1	44.6
SCR Post-combustion	0.0	92.8	77.4	92.9	77.4	93.0	77.4
SNCR Post-combustion	0.0	25.2	36.3	26.3	36.4	43.4	36.7
Coal Production by Sulfur Category (million tons)							
Low Sulfur (< .61 lbs. S/mmBtu)	472	594	586	642	297	721	286
Medium Sulfur (.61-1.67 lbs. S/mmBtu)	432	454	412	464	280	440	235
High Sulfur (> 1.67 lbs. S/mmBtu)	199	185	175	188	137	179	120

¹Represents scrubbers added by the model. Planned scrubbers added by electricity generators are not shown here.

CO₂ = Carbon dioxide.

lbs. S/mmBtu = Pounds sulfur per million British thermal units.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Source: Energy Information Administration, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2C7B08.D060801A.

Appendix D

Tables for Hg Cap Cases

Table D1. Total Energy Supply and Disposition Summary
(Quadrillion Btu per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton
Production										
Crude Oil and Lease Condensate . . .	12.45	11.98	12.01	12.01	11.27	11.25	11.21	11.12	11.19	11.14
Natural Gas Plant Liquids	2.62	3.12	3.11	3.12	3.37	3.46	3.42	4.16	4.25	4.17
Dry Natural Gas	19.16	21.95	21.93	21.93	24.04	24.71	24.38	30.24	30.90	30.35
Coal	23.08	25.45	25.42	25.43	26.55	25.01	26.05	27.16	25.77	26.81
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.74	7.74	6.54	6.54	6.59
Renewable Energy ¹	6.53	7.13	7.14	7.13	7.90	8.02	7.89	8.42	8.57	8.42
Other ²	1.65	0.35	0.35	0.35	0.31	0.30	0.54	0.33	0.32	0.33
Total	73.29	77.88	77.86	77.87	81.19	80.50	81.24	87.97	87.55	87.82
Imports										
Crude Oil ³	18.96	21.42	21.42	21.40	22.38	22.43	22.43	25.82	25.78	25.85
Petroleum Products ⁴	4.14	6.28	6.25	6.27	8.65	8.50	8.47	10.80	10.73	10.79
Natural Gas	3.63	5.13	5.13	5.13	5.55	5.67	5.60	6.59	6.70	6.63
Other Imports ⁵	0.64	1.11	1.11	1.11	0.96	0.96	0.96	0.96	0.96	0.96
Total	27.37	33.93	33.92	33.91	37.54	37.56	37.46	44.18	44.16	44.23
Exports										
Petroleum ⁶	1.98	1.73	1.74	1.74	1.69	1.69	1.71	1.85	1.88	1.86
Natural Gas	0.17	0.33	0.33	0.33	0.43	0.43	0.43	0.63	0.63	0.63
Coal	1.48	1.51	1.51	1.51	1.45	1.52	1.45	1.41	1.42	1.41
Total	3.62	3.57	3.57	3.57	3.58	3.65	3.59	3.89	3.93	3.90
Discrepancy⁷	0.69	0.43	0.41	0.42	0.04	-0.04	0.11	0.11	0.19	0.13
Consumption										
Petroleum Products ⁸	38.02	41.34	41.35	41.34	44.44	44.44	44.40	50.45	50.48	50.49
Natural Gas	22.21	26.44	26.41	26.42	29.00	29.77	29.38	36.06	36.80	36.18
Coal	21.42	24.39	24.38	24.38	25.64	24.10	25.19	26.42	24.95	26.07
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.74	7.74	6.54	6.54	6.59
Renewable Energy ¹	6.54	7.13	7.14	7.14	7.91	8.02	7.90	8.43	8.57	8.43
Other ⁹	0.35	0.61	0.61	0.61	0.38	0.38	0.38	0.25	0.25	0.25
Total	96.33	107.81	107.80	107.79	115.11	114.46	115.00	128.16	127.59	128.01
Net Imports - Petroleum	21.12	25.96	25.94	25.93	29.34	29.24	29.19	34.78	34.63	34.78
Prices (1999 dollars per unit)										
World Oil Price (dollars per barrel) ¹⁰ . .	17.22	20.83	20.83	20.83	21.37	21.37	21.37	22.41	22.41	22.41
Gas Wellhead Price (dollars per Mcf) ¹¹	2.08	2.96	2.96	2.96	2.87	3.06	2.90	3.22	3.41	3.33
Coal Minemouth Price (dollars per ton)	17.17	15.05	15.11	15.19	14.08	14.83	15.37	12.87	14.52	14.10
Average Electric Price (cents per Kwh)	6.6	6.4	6.4	6.4	6.1	6.4	6.2	6.2	6.4	6.3

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.

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, imports of 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, and net storage withdrawals.

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.

Mcf = Thousand cubic feet.

Kwh = Kilowatt-hour.

Hg = Mercury.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 natural gas values: Energy Information Administration (EIA), *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). 1999 petroleum values: EIA, *Petroleum Supply Annual 1999*, DOE/EIA-0340(99/1) (Washington, DC, June 2000). Other 1999 values: EIA, *Annual Energy Review 1999*, DOE/EIA-0384(99) (Washington, DC, July 2000) and EIA, *Quarterly Coal Report*, DOE/EIA-0121(2000/1Q) (Washington, DC, August 2000). Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008.D060801A, M2M6008.D060801A.

Table D2. Energy Consumption by Sector and Source
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton
Energy Consumption										
Residential										
Distillate Fuel	0.86	0.87	0.87	0.87	0.80	0.80	0.80	0.76	0.76	0.76
Kerosene	0.10	0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.07	0.07
Liquefied Petroleum Gas	0.46	0.45	0.45	0.45	0.42	0.42	0.42	0.40	0.41	0.41
Petroleum Subtotal	1.42	1.40	1.40	1.40	1.30	1.30	1.30	1.23	1.24	1.24
Natural Gas	4.88	5.57	5.57	5.57	5.61	5.57	5.60	6.23	6.19	6.21
Coal	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Renewable Energy ¹	0.41	0.42	0.42	0.42	0.42	0.42	0.42	0.44	0.43	0.43
Electricity	3.91	4.57	4.56	4.56	4.95	4.90	4.93	5.79	5.76	5.78
Delivered Energy	10.66	12.01	12.01	12.01	12.34	12.25	12.31	13.74	13.67	13.71
Electricity Related Losses	8.44	9.67	9.66	9.66	10.10	9.87	10.06	10.85	10.69	10.82
Total	19.10	21.68	21.67	21.67	22.44	22.13	22.37	24.59	24.36	24.52
Commercial										
Distillate Fuel	0.36	0.37	0.37	0.37	0.38	0.38	0.38	0.37	0.37	0.37
Residual Fuel	0.10	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Kerosene	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Liquefied Petroleum Gas	0.08	0.09	0.09	0.09	0.09	0.09	0.09	0.10	0.10	0.10
Motor Gasoline ²	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Petroleum Subtotal	0.60	0.60	0.61	0.61	0.62	0.62	0.62	0.62	0.62	0.62
Natural Gas	3.14	3.99	3.99	3.99	4.17	4.14	4.17	4.44	4.41	4.42
Coal	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Renewable Energy ³	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Electricity	3.66	4.39	4.39	4.39	4.91	4.88	4.89	5.62	5.59	5.60
Delivered Energy	7.55	9.13	9.13	9.13	9.85	9.78	9.83	10.83	10.78	10.80
Electricity Related Losses	7.91	9.30	9.30	9.30	10.01	9.82	9.98	10.51	10.37	10.49
Total	15.46	18.44	18.43	18.43	19.86	19.60	19.81	21.34	21.14	21.29
Industrial⁴										
Distillate Fuel	1.13	1.22	1.22	1.22	1.31	1.31	1.31	1.49	1.50	1.50
Liquefied Petroleum Gas	2.32	2.45	2.45	2.45	2.53	2.52	2.51	2.85	2.86	2.85
Petrochemical Feedstock	1.29	1.36	1.36	1.36	1.53	1.53	1.53	1.70	1.70	1.70
Residual Fuel	0.22	0.16	0.16	0.16	0.25	0.25	0.25	0.28	0.28	0.28
Motor Gasoline ²	0.21	0.23	0.23	0.23	0.25	0.25	0.25	0.28	0.28	0.28
Other Petroleum ⁵	4.29	4.44	4.45	4.44	4.71	4.72	4.71	5.02	5.03	5.03
Petroleum Subtotal	9.45	9.86	9.87	9.87	10.57	10.57	10.55	11.63	11.64	11.64
Natural Gas ⁶	9.80	10.46	10.45	10.45	11.27	11.31	11.34	12.73	12.77	12.74
Metallurgical Coal	0.75	0.67	0.67	0.67	0.61	0.61	0.61	0.50	0.50	0.50
Steam Coal	1.73	1.81	1.81	1.81	1.83	1.82	1.82	1.87	1.87	1.87
Net Coal Coke Imports	0.06	0.12	0.12	0.12	0.16	0.16	0.16	0.22	0.22	0.22
Coal Subtotal	2.54	2.59	2.59	2.59	2.59	2.58	2.58	2.60	2.60	2.59
Renewable Energy ⁷	2.15	2.42	2.42	2.42	2.64	2.64	2.64	3.08	3.08	3.08
Electricity	3.61	3.90	3.89	3.89	4.17	4.16	4.15	4.76	4.72	4.75
Delivered Energy	27.56	29.23	29.23	29.23	31.24	31.27	31.27	34.80	34.81	34.80
Electricity Related Losses	7.80	8.25	8.25	8.25	8.50	8.37	8.47	8.91	8.76	8.88
Total	35.36	37.48	37.48	37.47	39.74	39.64	39.74	43.71	43.57	43.68

Table D2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton
Transportation										
Distillate Fuel	5.13	6.28	6.28	6.28	7.00	6.99	6.99	8.22	8.21	8.22
Jet Fuel ⁸	3.46	3.90	3.90	3.90	4.51	4.51	4.51	5.97	5.97	5.97
Motor Gasoline ²	15.92	17.67	17.67	17.67	18.97	18.97	18.97	21.26	21.26	21.27
Residual Fuel	0.74	0.85	0.85	0.85	0.85	0.85	0.85	0.87	0.87	0.87
Liquefied Petroleum Gas	0.02	0.03	0.03	0.03	0.04	0.05	0.05	0.06	0.06	0.06
Other Petroleum ⁹	0.26	0.30	0.30	0.30	0.31	0.31	0.31	0.35	0.35	0.35
Petroleum Subtotal	25.54	29.03	29.03	29.03	31.68	31.67	31.67	36.73	36.72	36.73
Pipeline Fuel Natural Gas	0.66	0.83	0.83	0.83	0.91	0.93	0.92	1.10	1.12	1.10
Compressed Natural Gas	0.02	0.06	0.06	0.06	0.09	0.09	0.09	0.16	0.15	0.16
Renewable Energy (E85) ¹⁰	0.01	0.02	0.02	0.02	0.03	0.03	0.03	0.04	0.04	0.04
Methanol (M85) ¹¹	0.00	0.00	0.00	0.00	0.01	0.01	0.01	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	0.06	0.09	0.09	0.09	0.12	0.12	0.12	0.17	0.17	0.17
Delivered Energy	26.28	30.03	30.03	30.03	32.83	32.85	32.84	38.20	38.21	38.20
Electricity Related Losses	0.13	0.19	0.19	0.19	0.24	0.24	0.24	0.31	0.31	0.31
Total	26.41	30.22	30.22	30.22	33.07	33.09	33.08	38.51	38.51	38.51
Delivered Energy Consumption for All Sectors										
Distillate Fuel	7.48	8.74	8.74	8.74	9.49	9.48	9.48	10.85	10.84	10.85
Kerosene	0.15	0.13	0.13	0.13	0.12	0.12	0.12	0.12	0.12	0.12
Jet Fuel ⁸	3.46	3.90	3.90	3.90	4.51	4.51	4.51	5.97	5.97	5.97
Liquefied Petroleum Gas	2.88	3.02	3.03	3.03	3.08	3.08	3.07	3.41	3.42	3.41
Motor Gasoline ²	16.17	17.93	17.93	17.93	19.24	19.24	19.24	21.57	21.57	21.57
Petrochemical Feedstock	1.29	1.36	1.36	1.36	1.53	1.53	1.53	1.70	1.70	1.70
Residual Fuel	1.05	1.10	1.10	1.10	1.20	1.20	1.20	1.24	1.24	1.24
Other Petroleum ¹²	4.53	4.71	4.72	4.72	4.99	5.00	4.99	5.35	5.36	5.36
Petroleum Subtotal	37.01	40.90	40.91	40.90	44.16	44.16	44.14	50.21	50.22	50.22
Natural Gas ⁶	18.50	20.91	20.90	20.90	22.05	22.04	22.12	24.66	24.65	24.63
Metallurgical Coal	0.75	0.67	0.67	0.67	0.61	0.61	0.61	0.50	0.50	0.50
Steam Coal	1.84	1.92	1.92	1.92	1.95	1.95	1.94	2.00	2.00	1.99
Net Coal Coke Imports	0.06	0.12	0.12	0.12	0.16	0.16	0.16	0.22	0.22	0.22
Coal Subtotal	2.65	2.71	2.71	2.71	2.71	2.71	2.70	2.72	2.72	2.72
Renewable Energy ¹³	2.65	2.94	2.94	2.94	3.18	3.18	3.18	3.65	3.64	3.65
Methanol (M85) ¹¹	0.00	0.00	0.00	0.00	0.01	0.01	0.01	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	11.24	12.95	12.94	12.94	14.15	14.06	14.10	16.34	16.24	16.29
Delivered Energy	72.05	80.41	80.40	80.40	86.27	86.15	86.24	97.57	97.47	97.51
Electricity Related Losses	24.29	27.40	27.40	27.40	28.84	28.30	28.75	30.58	30.12	30.50
Total	96.33	107.81	107.80	107.79	115.11	114.46	115.00	128.16	127.59	128.01
Electric Generators¹⁴										
Distillate Fuel	0.06	0.06	0.06	0.06	0.06	0.05	0.04	0.06	0.05	0.05
Residual Fuel	0.96	0.38	0.38	0.38	0.22	0.22	0.22	0.19	0.21	0.22
Petroleum Subtotal	1.02	0.44	0.44	0.44	0.28	0.27	0.26	0.25	0.26	0.27
Natural Gas	3.71	5.53	5.52	5.52	6.94	7.73	7.26	11.40	12.15	11.55
Steam Coal	18.77	21.68	21.67	21.67	22.93	21.39	22.49	23.70	22.23	23.35
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.74	7.74	6.54	6.54	6.59
Renewable Energy ¹⁵	3.88	4.19	4.20	4.19	4.73	4.84	4.72	4.78	4.93	4.79
Electricity Imports ¹⁶	0.35	0.61	0.61	0.61	0.37	0.37	0.37	0.24	0.24	0.24
Total	35.52	40.35	40.33	40.33	42.99	42.36	42.85	46.92	46.36	46.79

Table D2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton
Total Energy Consumption										
Distillate Fuel	7.54	8.80	8.80	8.80	9.54	9.53	9.52	10.91	10.90	10.90
Kerosene	0.15	0.13	0.13	0.13	0.12	0.12	0.12	0.12	0.12	0.12
Jet Fuel ⁸	3.46	3.90	3.90	3.90	4.51	4.51	4.51	5.97	5.97	5.97
Liquefied Petroleum Gas	2.88	3.02	3.03	3.03	3.08	3.08	3.07	3.41	3.42	3.41
Motor Gasoline ²	16.17	17.93	17.93	17.93	19.24	19.24	19.24	21.57	21.57	21.57
Petrochemical Feedstock	1.29	1.36	1.36	1.36	1.53	1.53	1.53	1.70	1.70	1.70
Residual Fuel	2.01	1.48	1.48	1.48	1.42	1.42	1.42	1.42	1.45	1.46
Other Petroleum ¹²	4.53	4.71	4.72	4.72	4.99	5.00	4.99	5.35	5.36	5.36
Petroleum Subtotal	38.02	41.34	41.35	41.34	44.44	44.44	44.40	50.45	50.48	50.49
Natural Gas	22.21	26.44	26.41	26.42	29.00	29.77	29.38	36.06	36.80	36.18
Metallurgical Coal	0.75	0.67	0.67	0.67	0.61	0.61	0.61	0.50	0.50	0.50
Steam Coal	20.61	23.60	23.59	23.60	24.88	23.34	24.43	25.70	24.22	25.35
Net Coal Coke Imports	0.06	0.12	0.12	0.12	0.16	0.16	0.16	0.22	0.22	0.22
Coal Subtotal	21.42	24.39	24.38	24.38	25.64	24.10	25.19	26.42	24.95	26.07
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.74	7.74	6.54	6.54	6.59
Renewable Energy ¹⁷	6.54	7.13	7.14	7.14	7.91	8.03	7.90	8.43	8.57	8.43
Methanol (M85) ¹¹	0.00	0.00	0.00	0.00	0.01	0.01	0.01	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 Imports ¹⁶	0.35	0.61	0.61	0.61	0.37	0.37	0.37	0.24	0.24	0.24
Total	96.33	107.81	107.80	107.79	115.11	114.46	115.00	128.16	127.59	128.01
Energy Use and Related Statistics										
Delivered Energy Use	72.05	80.41	80.40	80.40	86.27	86.15	86.24	97.57	97.47	97.51
Total Energy Use	96.33	107.81	107.80	107.79	115.11	114.46	115.00	128.16	127.59	128.01
Population (millions)	273.13	288.02	288.02	288.02	300.17	300.17	300.17	325.24	325.24	325.24
Gross Domestic Product (billion 1996 dollars)	8876	10960	10960	10960	12667	12667	12667	16515	16515	16515
Total Carbon Dioxide Emissions (million metric tons carbon equivalent)	1510.8	1705.0	1704.4	1704.4	1825.7	1796.5	1817.6	2051.2	2022.7	2043.3

¹Includes wood used for residential heating.
²Includes ethanol (blends of 10 percent or less) and ethers blended into gasoline.
³Includes commercial sector electricity cogeneration by using wood and wood waste, landfill gas, municipal solid waste, and other biomass.
⁴Fuel consumption includes consumption for cogeneration, which produces electricity and other useful thermal energy.
⁵Includes petroleum coke, asphalt, road oil, lubricants, still gas, and miscellaneous petroleum products.
⁶Includes lease and plant fuel and consumption by cogenerators, excludes consumption by nonutility generators.
⁷Includes consumption of energy from hydroelectric, wood and wood waste, municipal solid waste, and other biomass; includes cogeneration, both for sale to the grid and for own use.
⁸Includes only kerosene type.
⁹Includes aviation gas and lubricants.
¹⁰E85 is 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable).
¹¹M85 is 85 percent methanol and 15 percent motor gasoline.
¹²Includes unfinished oils, natural gasoline, motor gasoline blending compounds, 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 all electric power generators for grid-connected power except cogenerators, which produce electricity and other useful thermal energy. 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 cogeneration. Excludes net electricity imports.
¹⁶In 1998 approximately 70 percent of the U.S. electricity imports were provided by renewable sources (hydroelectricity); EIA does not project future proportions for the fuel source of imported electricity.
¹⁷Includes 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.
Hg = Mercury.
Note: Totals may not equal sum of components due to independent rounding. Data for 1999 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: 1999 electric utility fuel consumption: Energy Information Administration, (EIA) *Electric Power Annual 1998, Volume 1*, DOE/EIA-0348(98)/1 (Washington, DC, April 1999). 1999 nonutility consumption estimates: EIA, Form EIA-860B: "Annual Electric Generator Report - Nonutility." Other 1999 values: EIA, *Short-Term Energy Outlook, September 2000*, <http://www.eia.doe.gov/pub/forecasting/steo/oldsteos/sep00.pdf>. **Projections:** EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008.D060801A, M2M6008.D060801A.

Table D3. Energy Prices by Sector and Source
(1999 Dollars per Million Btu, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton
Residential	13.10	13.27	13.29	13.29	13.46	13.84	13.58	13.77	14.04	13.90
Primary Energy ¹	6.71	7.49	7.49	7.49	7.18	7.32	7.20	7.08	7.21	7.16
Petroleum Products ²	7.55	9.20	9.17	9.19	9.37	9.35	9.35	9.47	9.39	9.45
Distillate Fuel	6.27	7.45	7.41	7.43	7.57	7.57	7.57	7.78	7.76	7.77
Liquefied Petroleum Gas	10.36	12.60	12.60	12.60	12.86	12.81	12.78	12.75	12.53	12.68
Natural Gas	6.52	7.11	7.11	7.11	6.72	6.91	6.76	6.65	6.82	6.75
Electricity	23.47	22.16	22.23	22.23	22.30	23.05	22.57	22.44	22.90	22.64
Commercial	13.18	12.70	12.72	12.72	12.25	12.72	12.41	12.69	13.03	12.86
Primary Energy ¹	5.22	5.57	5.56	5.56	5.68	5.83	5.71	5.79	5.93	5.87
Petroleum Products ²	4.99	6.13	6.10	6.12	6.29	6.28	6.28	6.40	6.35	6.38
Distillate Fuel	4.37	5.24	5.20	5.22	5.36	5.36	5.37	5.53	5.51	5.52
Residual Fuel	2.63	3.65	3.64	3.64	3.71	3.71	3.71	3.86	3.86	3.86
Natural Gas ³	5.34	5.55	5.55	5.55	5.66	5.84	5.70	5.78	5.94	5.88
Electricity	21.45	20.26	20.33	20.31	18.76	19.55	19.04	19.00	19.52	19.24
Industrial⁴	5.27	5.76	5.75	5.76	5.67	5.81	5.69	5.90	5.98	5.95
Primary Energy	3.91	4.47	4.46	4.47	4.49	4.55	4.48	4.68	4.70	4.71
Petroleum Products ²	5.54	6.00	5.98	6.00	6.13	6.09	6.08	6.16	6.03	6.13
Distillate Fuel	4.65	5.40	5.36	5.38	5.56	5.55	5.56	5.73	5.70	5.72
Liquefied Petroleum Gas	8.50	7.74	7.74	7.75	7.88	7.79	7.75	7.76	7.54	7.70
Residual Fuel	2.78	3.38	3.38	3.37	3.44	3.44	3.44	3.59	3.59	3.59
Natural Gas ⁵	2.79	3.64	3.64	3.64	3.50	3.67	3.53	3.85	4.03	3.95
Metallurgical Coal	1.65	1.58	1.58	1.59	1.54	1.55	1.55	1.44	1.44	1.44
Steam Coal	1.43	1.35	1.35	1.35	1.31	1.27	1.31	1.21	1.20	1.22
Electricity	13.00	12.80	12.82	12.82	12.08	12.72	12.31	12.22	12.71	12.44
Transportation	8.30	9.39	9.36	9.39	9.69	9.69	9.70	9.20	9.23	9.19
Primary Energy	8.29	9.38	9.35	9.37	9.68	9.67	9.68	9.18	9.21	9.17
Petroleum Products ²	8.28	9.37	9.34	9.37	9.67	9.67	9.68	9.18	9.21	9.17
Distillate Fuel ⁶	8.22	8.98	8.93	8.96	8.95	8.95	8.97	8.83	8.82	8.83
Jet Fuel ⁷	4.70	5.29	5.25	5.28	5.49	5.49	5.51	5.72	5.72	5.72
Motor Gasoline ⁸	9.45	10.81	10.78	10.81	11.31	11.30	11.31	10.60	10.66	10.58
Residual Fuel	2.46	3.11	3.11	3.11	3.18	3.18	3.18	3.33	3.33	3.33
Liquid Petroleum Gas ⁹	12.87	14.07	14.07	14.07	14.07	14.01	13.97	13.70	13.51	13.64
Natural Gas ¹⁰	7.02	7.28	7.28	7.28	7.21	7.39	7.24	7.41	7.57	7.50
Ethanol (E85) ¹¹	14.42	19.21	19.20	19.21	19.16	19.18	19.16	19.36	19.40	19.37
Methanol (M85) ¹²	10.38	13.13	13.12	13.13	13.83	13.83	13.83	14.35	14.37	14.35
Electricity	15.59	14.52	14.61	14.60	13.62	14.39	14.03	13.22	13.63	13.39
Average End-Use Energy	8.49	9.17	9.16	9.17	9.22	9.37	9.26	9.21	9.32	9.26
Primary Energy	6.31	7.19	7.17	7.19	7.35	7.39	7.35	7.23	7.28	7.25
Electricity	19.41	18.65	18.70	18.69	17.99	18.71	18.25	18.19	18.68	18.41
Electric Generators¹³										
Fossil Fuel Average	1.48	1.64	1.63	1.63	1.59	1.75	1.63	1.88	2.05	1.93
Petroleum Products	2.49	3.61	3.61	3.61	3.90	3.89	3.87	4.17	4.09	4.07
Distillate Fuel	4.04	4.72	4.68	4.70	4.87	4.87	4.88	5.06	5.05	5.06
Residual Fuel	2.40	3.42	3.43	3.43	3.65	3.66	3.66	3.89	3.86	3.83
Natural Gas	2.58	3.44	3.43	3.43	3.26	3.48	3.30	3.71	3.92	3.81
Steam Coal	1.21	1.14	1.14	1.14	1.06	1.09	1.06	0.98	1.01	0.98

Table D3. Energy Prices by Sector and Source (Continued)
(1999 Dollars per Million Btu, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton
Average Price to All Users¹⁴										
Petroleum Products ²	7.44	8.53	8.50	8.53	8.81	8.79	8.80	8.49	8.48	8.47
Distillate Fuel	7.25	8.14	8.09	8.12	8.20	8.20	8.22	8.20	8.19	8.19
Jet Fuel	4.70	5.29	5.25	5.28	5.49	5.49	5.51	5.72	5.72	5.72
Liquefied Petroleum Gas	8.84	8.63	8.63	8.64	8.74	8.66	8.63	8.54	8.33	8.48
Motor Gasoline ⁸	9.45	10.80	10.78	10.81	11.31	11.30	11.31	10.60	10.66	10.58
Residual Fuel	2.47	3.25	3.25	3.25	3.33	3.34	3.34	3.49	3.49	3.49
Natural Gas	4.05	4.72	4.72	4.71	4.47	4.62	4.49	4.60	4.77	4.70
Coal	1.23	1.16	1.15	1.15	1.08	1.11	1.08	1.00	1.02	1.00
Ethanol (E85) ¹¹	14.42	19.21	19.20	19.21	19.16	19.18	19.16	19.36	19.40	19.37
Methanol (M85) ¹²	10.38	13.13	13.12	13.13	13.83	13.83	13.83	14.35	14.37	14.35
Electricity	19.41	18.65	18.70	18.69	17.99	18.71	18.25	18.19	18.68	18.41
Non-Renewable Energy Expenditures by Sector (billion 1999 dollars)										
Residential	134.28	153.83	153.99	154.00	160.41	163.73	161.38	183.27	185.85	184.53
Commercial	98.42	114.97	115.15	115.12	119.69	123.45	120.92	136.41	139.29	137.81
Industrial	111.66	127.05	126.93	127.04	133.28	136.92	134.03	154.57	157.03	156.19
Transportation	212.64	273.84	272.95	273.72	308.81	308.68	308.96	340.45	341.59	340.19
Total Non-Renewable Expenditures	556.99	669.69	669.02	669.89	722.19	732.78	725.28	814.69	823.76	818.73
Transportation Renewable Expenditures	0.14	0.42	0.42	0.42	0.64	0.63	0.64	0.85	0.85	0.85
Total Expenditures	557.13	670.11	669.44	670.31	722.82	733.41	725.92	815.54	824.61	819.58

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.

³Excludes independent power producers.

⁴Includes cogenerators.

⁵Excludes uses for lease and plant fuel.

⁶Low sulfur diesel fuel. Price includes Federal and State taxes while excluding county and local taxes.

⁷Kerosene-type jet fuel. Price includes Federal and State taxes while excluding county and local taxes.

⁸Sales weighted-average price for all grades. Includes Federal and State taxes and excludes county and local taxes.

⁹Includes Federal and State taxes while excluding county and local taxes.

¹⁰Compressed natural gas used as a vehicle fuel. Price includes estimated motor vehicle fuel taxes.

¹¹E85 is 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable).

¹²M85 is 85 percent methanol and 15 percent motor gasoline.

¹³Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy. Includes small power producers and exempt wholesale generators.

¹⁴Weighted averages of end-use fuel prices are derived from the prices shown in each sector and the corresponding sectoral consumption.

Btu = British thermal unit.

Hg = Mercury.

Note: Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 prices for gasoline, distillate, and jet fuel are based on prices in various issues of Energy Information Administration (EIA), *Petroleum Marketing Monthly*, DOE/EIA-0380 (99/03-2000/04) (Washington, DC, 1999-2000). 1999 prices for all other petroleum products are derived from the EIA, *State Energy Price and Expenditure Report 1997*, DOE/EIA-0376(97) (Washington, DC, July 2000). 1999 industrial gas delivered prices are based on EIA, *Manufacturing Energy Consumption Survey 1994*. 1999 residential and commercial natural gas delivered prices: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). 1999 coal prices based on EIA, *Quarterly Coal Report*, DOE/EIA-0121(2000/1Q) (Washington, DC, August 2000), and EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008.D060801A, M2M6008.D060801A. 1999 electricity prices for commercial, industrial, and transportation: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008.D060801A, M2M6008.D060801A. **Projections:** EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008.D060801A, M2M6008.D060801A.

Table D4. Electricity Supply, Disposition, Prices, and Emissions
(Billion Kilowatthours, Unless Otherwise Noted)

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton
Generation by Fuel Type										
Electric Generators¹										
Coal	1831	2106	2105	2105	2245	2082	2185	2315	2149	2266
Petroleum	94	43	43	43	28	27	26	25	26	27
Natural Gas ²	359	583	580	581	825	955	871	1495	1618	1522
Nuclear Power	730	740	740	740	725	725	725	613	613	617
Pumped Storage	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Renewable Sources ³	355	373	374	373	397	400	396	400	407	401
Total	3369	3844	3841	3841	4219	4189	4203	4847	4812	4832
Non-Utility Generation for Own Use	16	17	17	17	17	17	17	17	16	16
Distributed Generation	0	0	0	0	1	1	1	5	5	5
Cogenerators⁴										
Coal	47	53	53	53	52	51	51	52	51	51
Petroleum	9	10	10	10	10	10	10	10	10	10
Natural Gas	207	237	237	237	261	263	262	318	333	325
Other Gaseous Fuels ⁵	4	6	6	6	7	7	7	8	9	8
Renewable Sources ³	31	34	34	34	39	39	39	48	48	48
Other ⁶	5	5	5	5	5	5	5	6	6	6
Total	303	345	345	345	373	375	375	441	456	448
Other End-Use Generators⁷										
Sales to Utilities	151	172	172	172	180	179	180	208	211	209
Generation for Own Use	156	178	178	178	198	201	200	238	251	243
Net Imports⁸	33	57	57	57	35	35	35	23	23	23
Electricity Sales by Sector										
Residential	1145	1339	1337	1337	1452	1437	1445	1698	1688	1694
Commercial	1073	1288	1287	1287	1439	1429	1435	1646	1637	1642
Industrial	1058	1142	1142	1141	1222	1219	1218	1395	1384	1391
Transportation	17	26	26	26	35	35	35	49	49	49
Total	3294	3794	3791	3791	4147	4119	4132	4788	4758	4776
End-Use Prices (1999 cents per kwh)⁹										
Residential	8.0	7.6	7.6	7.6	7.6	7.9	7.7	7.7	7.8	7.7
Commercial	7.3	6.9	6.9	6.9	6.4	6.7	6.5	6.5	6.7	6.6
Industrial	4.4	4.4	4.4	4.4	4.1	4.3	4.2	4.2	4.3	4.2
Transportation	5.3	5.0	5.0	5.0	4.6	4.9	4.8	4.5	4.7	4.6
All Sectors Average	6.6	6.4	6.4	6.4	6.1	6.4	6.2	6.2	6.4	6.3
Prices by Service Category⁹										
(1999 cents per kwh)										
Generation	4.1	3.8	3.8	3.8	3.5	3.7	3.5	3.6	3.8	3.7
Transmission	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7
Distribution	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Emissions (million short tons)										
Sulfur Dioxide	13.71	10.38	10.39	10.39	9.70	8.78	9.67	8.95	7.23	8.95
Nitrogen Oxide	5.45	4.30	3.44	3.44	4.34	3.30	3.42	4.49	3.45	3.54

¹Includes grid-connected generation at all utilities and nonutilities except for cogenerators. Includes small power producers and exempt wholesale generators.

²Includes electricity generation by fuel cells.

³Includes conventional hydroelectric, geothermal, wood, wood waste, municipal solid waste, landfill gas, other biomass, solar, and wind power.

⁴Cogenerators produce electricity and other useful thermal energy. Includes sales to utilities and generation for own use.

⁵Other gaseous fuels include refinery and still gas.

⁶Other includes hydrogen, sulfur, batteries, chemicals, fish oil, and spent sulfite liquor.

⁷Includes 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.

⁸In 1998 approximately 70 percent of the U.S. electricity imports were provided by renewable sources (hydroelectricity); EIA does not project future proportions for the fuel source of imported electricity.

⁹Prices represent average revenue per kilowatthour.

Kwh = Kilowatthour.

Hg = Mercury.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Source: Energy Information Administration, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008.D060801A, M2M6008.D060801A.

**Table D5. Electricity Generating Capability
(Gigawatts)**

Net Summer Capability ¹	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton
Electric Generators²										
Capability										
Coal Steam	305.1	303.9	303.9	303.9	318.6	305.8	314.6	318.5	304.3	314.3
Other Fossil Steam ³	137.4	127.8	127.8	127.5	119.2	116.3	118.7	116.9	114.0	116.1
Combined Cycle	21.0	53.2	52.5	52.4	107.8	124.1	109.5	202.2	214.3	204.4
Combustion Turbine/Diesel	74.3	123.1	122.6	124.3	147.2	146.3	149.6	199.5	200.2	199.7
Nuclear Power	97.4	97.5	97.5	97.5	94.8	94.8	94.8	76.3	76.3	76.9
Pumped Storage	19.3	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5
Fuel Cells	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.3	0.3
Renewable Sources ⁴	88.8	94.8	94.8	94.7	98.0	98.6	98.0	99.5	100.1	99.5
Distributed Generation ⁵	0.0	0.7	0.7	0.7	2.5	2.8	2.7	11.5	11.4	11.4
Total	743.4	820.4	819.2	820.6	907.8	908.3	907.6	1044.2	1040.4	1042.1
Cumulative Planned Additions⁶										
Coal Steam	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Fossil Steam ³	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Combined Cycle	0.0	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7
Combustion Turbine/Diesel	0.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
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	0.1	0.1	0.1	0.3	0.3	0.3
Renewable Sources ⁴	0.0	5.1	5.1	5.1	6.7	6.7	6.7	8.1	8.1	8.1
Distributed Generation ⁵	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.0	32.0	32.0	32.0	33.7	33.7	33.7	35.3	35.3	35.3
Cumulative Unplanned Additions⁶										
Coal Steam	0.0	1.1	1.1	1.1	18.9	6.3	14.9	20.5	6.7	16.4
Other Fossil Steam ³	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Combined Cycle	0.0	19.4	18.7	18.7	74.2	90.5	75.9	168.6	180.7	170.8
Combustion Turbine/Diesel	0.0	38.9	38.6	40.3	64.7	63.9	67.3	117.2	117.9	117.4
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 ⁴	0.0	0.4	0.4	0.4	2.0	2.6	2.0	2.0	2.6	2.1
Distributed Generation ⁵	0.0	0.7	0.7	0.7	2.5	2.8	2.7	11.5	11.4	11.4
Total	0.0	60.6	59.6	61.2	162.2	166.0	162.8	319.8	319.3	318.1
Cumulative Total Additions	0.0	92.6	91.6	93.2	195.9	199.7	196.5	355.1	354.6	353.4
Cumulative Retirements⁷										
Coal Steam	0.0	2.3	2.3	2.3	5.4	5.6	5.4	7.2	7.5	7.2
Other Fossil Steam ³	0.0	9.9	9.9	10.1	18.4	21.3	18.9	20.7	23.6	21.5
Combined Cycle	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2
Combustion Turbine/Diesel	0.0	4.4	4.5	4.5	6.0	6.2	6.2	6.3	6.3	6.3
Nuclear Power	0.0	0.0	0.0	0.0	2.6	2.6	2.6	21.2	21.2	20.6
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	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total	0.0	16.7	16.9	17.1	32.8	36.1	33.5	55.6	58.8	55.9
Cogenerators⁸										
Capability										
Coal	8.4	8.9	8.9	8.9	8.6	8.3	8.5	8.6	8.3	8.5
Petroleum	2.7	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
Natural Gas	34.6	39.9	39.9	39.9	43.3	43.7	43.5	51.4	53.6	52.3
Other Gaseous Fuels	0.2	0.8	0.8	0.8	0.9	0.9	0.9	1.1	1.1	1.1
Renewable Sources ⁴	5.4	5.9	5.9	5.9	6.8	6.8	6.8	8.2	8.2	8.2
Other	1.1	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Total	52.4	59.2	59.2	59.2	63.3	63.4	63.4	73.2	75.0	73.9
Cumulative Additions⁶	0.0	6.8	6.8	6.8	10.9	11.0	11.0	20.7	22.6	21.5

Table D5. Electricity Generating Capability (Continued)
(Gigawatts)

Net Summer Capability ¹	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton
Other End-Use Generators⁹										
Renewable Sources	1.0	1.1	1.1	1.1	1.3	1.3	1.3	1.3	1.3	1.3
Cumulative Additions	0.0	0.1	0.1	0.1	0.3	0.3	0.3	0.3	0.3	0.3

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

²Includes grid-connected utilities and nonutilities except for cogenerators. Includes small power producers and exempt wholesale generators.

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

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

⁵Primarily peak-load capacity fueled by natural gas.

⁶Cumulative additions after December 31, 1999.

⁷Cumulative total retirements after December 31, 1999.

⁸Nameplate capacity is reported for nonutilities on Form EIA-860B, "Annual Electric Generator Report - Nonutility." Nameplate capacity is designated by the manufacturer. The nameplate capacity has been converted to the net summer capability based on historic relationships.

⁹Includes 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. Excludes off-grid photovoltaics and other generators not connected to the distribution or transmission systems.

Hg = Mercury.

Notes: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports. Net summer capability has been estimated for nonutility generators to be consistent with capability for electric utility generators.

Source: Energy Information Administration, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008.D060801A, M2M6008.D060801A.

Table D6. Electricity Trade
(Billion Kilowatthours, Unless Otherwise Noted)

Electricity Trade	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton
Interregional Electricity Trade										
Gross Domestic Firm Power Trade	182.2	125.3	125.3	125.3	102.9	102.9	102.9	0.0	0.0	0.0
Gross Domestic Economy Trade	152.0	202.3	201.2	199.2	155.5	126.3	137.9	147.9	119.1	140.5
Gross Domestic Trade	334.2	327.6	326.4	324.5	258.4	229.3	240.9	147.9	119.1	140.5
Gross Domestic Firm Power Sales										
(million 1999 dollars)	8588.1	5905.8	5905.8	5905.8	4851.2	4851.2	4851.2	0.0	0.0	0.0
Gross Domestic Economy Sales										
(million 1999 dollars)	4413.9	6468.6	6424.1	6378.8	4510.4	3987.5	4157.7	4605.1	3990.0	4518.3
Gross Domestic Sales										
(million 1999 dollars)	13002.0	12374.4	12329.9	12284.6	9361.6	8838.8	9008.9	4605.1	3990.0	4518.3
International Electricity Trade										
Firm Power Imports From Canada and Mexico ¹	27.0	10.7	10.7	10.7	5.8	5.8	5.8	0.0	0.0	0.0
Economy Imports From Canada and Mexico ¹ ..	21.9	63.5	63.5	63.5	45.9	45.9	45.9	30.6	30.6	30.6
Gross Imports From Canada and Mexico¹ ..	48.9	74.1	74.1	74.1	51.7	51.7	51.7	30.6	30.6	30.6
Gross Exports To Canada and Mexico										
Firm Power Exports To Canada and Mexico ...	9.2	9.7	9.7	9.7	8.7	8.7	8.7	0.0	0.0	0.0
Economy Exports To Canada and Mexico	6.3	7.0	7.0	7.0	7.7	7.7	7.7	7.7	7.7	7.7
Gross Exports To Canada and Mexico	15.5	16.7	16.7	16.7	16.4	16.4	16.4	7.7	7.7	7.7

¹Historically electricity imports were primarily from renewable resources, principally hydroelectric.
Hg = Mercury.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 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, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008.D060801A, M2M6008.D060801A.

Table D7. Natural Gas Supply and Disposition
(Trillion Cubic Feet per Year)

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton
Production										
Dry Gas Production ¹	18.67	21.40	21.37	21.38	23.43	24.09	23.76	29.47	30.12	29.58
Supplemental Natural Gas ² . . .	0.10	0.11	0.11	0.11	0.06	0.06	0.06	0.06	0.06	0.06
Net Imports	3.38	4.69	4.69	4.69	5.00	5.12	5.05	5.82	5.92	5.85
Canada	3.29	4.48	4.48	4.48	4.72	4.83	4.77	5.43	5.53	5.45
Mexico	-0.01	-0.18	-0.18	-0.18	-0.25	-0.25	-0.25	-0.40	-0.40	-0.40
Liquefied Natural Gas	0.10	0.39	0.39	0.39	0.53	0.54	0.53	0.79	0.80	0.80
Total Supply	22.15	26.20	26.18	26.18	28.49	29.26	28.87	35.35	36.09	35.49
Consumption by Sector										
Residential	4.75	5.42	5.42	5.42	5.46	5.43	5.46	6.07	6.03	6.05
Commercial	3.06	3.88	3.88	3.88	4.06	4.03	4.06	4.32	4.29	4.31
Industrial ³	8.31	8.81	8.80	8.80	9.48	9.48	9.53	10.53	10.53	10.53
Electric Generators ⁴	3.64	5.43	5.41	5.42	6.81	7.59	7.13	11.19	11.92	11.33
Lease and Plant Fuel ⁵	1.23	1.38	1.38	1.38	1.50	1.53	1.52	1.87	1.90	1.88
Pipeline Fuel	0.64	0.81	0.81	0.81	0.88	0.90	0.89	1.07	1.09	1.08
Transportation ⁶	0.02	0.05	0.05	0.05	0.09	0.09	0.09	0.15	0.15	0.15
Total	21.65	25.79	25.76	25.77	28.29	29.05	28.66	35.20	35.93	35.32
Discrepancy ⁷	0.50	0.42	0.41	0.41	0.20	0.21	0.21	0.14	0.17	0.17

¹Marketed production (wet) minus extraction losses.

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

³Includes consumption by cogenerators.

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

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

⁶Compressed natural gas used as vehicle fuel.

⁷Balancing item. Natural gas lost as a result of converting flow data measured at varying temperatures and pressures to a standard temperature and pressure and the merger of different data reporting systems which vary in scope, format, definition, and respondent type. In addition, 1999 values include net storage injections.

Btu = British thermal unit.

Hg = Mercury.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 supplemental natural gas: Energy Information Administration (EIA), *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). 1999 transportation sector consumption: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008.D060801A, M2M6008.D060801A. Other 1999 consumption: EIA, *Short-Term Energy Outlook, September 2000*, <http://www.eia.doe.gov/pub/forecasting/steo/oldsteos/sep00.pdf> with adjustments to end-use sector consumption levels for consumption of natural gas by electric wholesale generators based on EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008.D060801A, M2M6008.D060801A. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008.D060801A, M2M6008.D060801A.

Table D8. Natural Gas Prices, Margins, and Revenue
(1999 Dollars per Thousand Cubic Feet, Unless Otherwise Noted)

Prices, Margins, and Revenue	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton
Source Price										
Average Lower 48 Wellhead Price ¹	2.08	2.96	2.96	2.96	2.87	3.06	2.90	3.22	3.41	3.33
Average Import Price	2.29	2.95	2.95	2.95	2.64	2.73	2.66	2.72	2.81	2.75
Average²	2.11	2.96	2.96	2.96	2.82	2.99	2.86	3.13	3.30	3.23
Delivered Prices										
Residential	6.69	7.31	7.30	7.30	6.91	7.09	6.94	6.83	7.01	6.93
Commercial	5.49	5.70	5.70	5.70	5.82	6.00	5.85	5.93	6.10	6.03
Industrial ³	2.87	3.74	3.74	3.74	3.59	3.77	3.63	3.95	4.13	4.06
Electric Generators ⁴	2.63	3.50	3.50	3.49	3.32	3.55	3.37	3.78	3.99	3.88
Transportation ⁵	7.21	7.48	7.47	7.47	7.40	7.59	7.44	7.61	7.78	7.70
Average⁶	4.15	4.84	4.84	4.84	4.59	4.74	4.61	4.72	4.89	4.82
Transmission & Distribution Margins⁷										
Residential	4.58	4.35	4.34	4.34	4.08	4.10	4.08	3.70	3.71	3.71
Commercial	3.37	2.74	2.74	2.74	2.99	3.00	2.99	2.81	2.81	2.81
Industrial ³	0.76	0.78	0.78	0.78	0.77	0.78	0.77	0.82	0.84	0.83
Electric Generators ⁴	0.52	0.54	0.54	0.53	0.49	0.55	0.51	0.65	0.69	0.66
Transportation ⁵	5.10	4.51	4.51	4.51	4.58	4.59	4.58	4.48	4.48	4.48
Average⁶	2.04	1.88	1.88	1.88	1.76	1.75	1.75	1.59	1.59	1.60
Transmission & Distribution Revenue (billion 1999 dollars)										
Residential	21.77	23.57	23.57	23.57	22.30	22.24	22.28	22.48	22.35	22.43
Commercial	10.32	10.63	10.63	10.63	12.16	12.10	12.14	12.12	12.05	12.09
Industrial ³	6.28	6.86	6.85	6.85	7.26	7.39	7.30	8.65	8.81	8.75
Electric Generators ⁴	1.88	2.94	2.91	2.90	3.36	4.21	3.62	7.24	8.28	7.45
Transportation ⁵	0.08	0.24	0.24	0.24	0.41	0.41	0.41	0.68	0.67	0.68
Total	40.32	44.25	44.21	44.19	45.49	46.34	45.75	51.18	52.16	51.40

¹Represents lower 48 onshore and offshore supplies.

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

³Includes consumption by cogenerators.

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

Hg = Mercury.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 industrial delivered prices based on Energy Information Administration (EIA), *Manufacturing Energy Consumption Survey 1994*. 1999 residential and commercial delivered prices, average lower 48 wellhead price, and average import price: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). Other 1999 values, and projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008.D060801A, M2M6008.D060801A.

Table D9. Oil and Gas Supply

Production and Supply	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton
Crude Oil										
Lower 48 Average Wellhead Price¹ (1999 dollars per barrel)	16.49	21.43	21.38	20.46	20.73	20.78	20.77	21.47	21.49	21.49
Production (million barrels per day)²										
U.S. Total	5.88	5.66	5.67	5.67	5.32	5.31	5.30	5.25	5.29	5.26
Lower 48 Onshore	3.27	2.81	2.81	2.81	2.52	2.52	2.51	2.75	2.77	2.76
Conventional	2.59	2.18	2.18	2.18	1.81	1.82	1.81	1.98	2.00	1.99
Enhanced Oil Recovery	0.68	0.63	0.63	0.63	0.70	0.70	0.70	0.76	0.77	0.77
Lower 48 Offshore	1.56	2.06	2.07	2.07	2.16	2.15	2.14	1.87	1.87	1.86
Alaska	1.05	0.79	0.79	0.79	0.65	0.65	0.65	0.64	0.64	0.64
Lower 48 End of Year Reserves (billion barrels)² ..	18.33	15.75	15.74	15.74	14.55	14.57	14.49	14.11	14.20	14.13
Natural Gas										
Lower 48 Average Wellhead Price³ (1999 dollars per thousand cubic feet)	2.08	2.96	2.96	2.96	2.87	3.06	2.90	3.22	3.41	3.33
Production (trillion cubic feet)³										
U.S. Total	18.67	21.40	21.37	21.38	23.43	24.09	23.76	29.47	30.12	29.58
Lower 48 Onshore	12.83	14.46	14.44	14.45	16.71	17.12	17.00	21.31	21.90	21.37
Associated-Dissolved ⁴	1.80	1.51	1.51	1.51	1.32	1.33	1.32	1.39	1.40	1.40
Non-Associated	11.03	12.95	12.93	12.93	15.39	15.79	15.68	19.91	20.50	19.97
Conventional	6.64	7.67	7.66	7.66	7.93	8.18	8.17	11.14	11.29	11.04
Unconventional	4.39	5.27	5.26	5.27	7.45	7.62	7.50	8.78	9.20	8.93
Lower 48 Offshore	5.43	6.47	6.47	6.46	6.22	6.46	6.26	7.59	7.65	7.64
Associated-Dissolved ⁴	0.93	1.06	1.06	1.06	1.09	1.09	1.09	1.04	1.04	1.04
Non-Associated	4.50	5.41	5.40	5.40	5.13	5.37	5.17	6.56	6.61	6.60
Alaska	0.42	0.47	0.47	0.47	0.50	0.50	0.50	0.57	0.57	0.57
Lower 48 End of Year Reserves (trillion cubic feet)	157.41	167.88	167.94	167.94	185.55	185.56	184.38	200.71	198.75	200.05
Supplemental Gas Supplies (trillion cubic feet)⁵ ..	0.10	0.11	0.11	0.11	0.06	0.06	0.06	0.06	0.06	0.06
Total Lower 48 Wells (thousands)	17.93	28.87	28.99	28.98	29.86	31.21	30.09	39.36	41.15	40.80

¹Represents lower 48 onshore and offshore supplies.

²Includes lease condensate.

³Market production (wet) minus extraction losses.

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

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

Btu = British thermal unit.

Hg = Mercury.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 lower 48 onshore, lower 48 offshore, and Alaska crude oil production: Energy Information Administration (EIA), *Petroleum Supply Annual 1999*, DOE/EIA-0340(99/1) (Washington, DC, June 2000). 1999 natural gas lower 48 average wellhead price, Alaska and total natural gas production, and supplemental gas supplies: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). Other 1999 values: EIA, Office of Integrated Analysis and Forecasting. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008.D060801A, M2M6008.D060801A.

Table D10. Coal Supply, Disposition, and Prices
(Million Short Tons per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton
Production¹										
Appalachia	433	426	431	431	421	356	422	396	368	395
Interior	185	182	184	184	180	180	196	161	174	189
West	486	624	615	614	694	665	621	783	687	705
East of the Mississippi	559	561	567	567	557	513	594	524	535	569
West of the Mississippi	544	672	662	661	738	687	644	817	694	720
Total	1103	1233	1229	1229	1295	1201	1238	1340	1229	1289
Net Imports										
Imports	9	16	16	16	17	17	17	20	20	20
Exports	58	60	60	60	58	60	57	56	57	56
Total	-49	-44	-44	-44	-40	-43	-40	-36	-37	-37
Total Supply²	1054	1189	1185	1185	1254	1158	1198	1304	1192	1252
Consumption by Sector										
Residential and Commercial	5	5	5	5	5	5	5	5	5	5
Industrial ³	79	82	82	82	83	83	83	86	86	86
Coke Plants	28	25	25	25	23	23	23	19	19	19
Electric Generators ⁴	921	1077	1074	1073	1145	1051	1091	1196	1080	1144
Total	1032	1189	1187	1186	1256	1163	1202	1306	1190	1254
Discrepancy and Stock Change⁵	21	-1	-1	-1	-2	-5	-4	-2	2	-2
Average Minemouth Price										
(1999 dollars per short ton)	17.17	15.05	15.11	15.19	14.08	14.83	15.37	12.87	14.52	14.10
(1999 dollars per million Btu)	0.82	0.73	0.73	0.73	0.69	0.71	0.73	0.64	0.69	0.68
Delivered Prices (1999 dollars per short ton)⁶										
Industrial	31.39	29.67	29.64	29.68	28.61	27.82	28.75	26.50	26.12	26.59
Coke Plants	44.28	42.39	42.39	42.53	41.36	41.56	41.51	38.52	38.57	38.70
Electric Generators										
(1999 dollars per short ton)	24.73	22.90	22.93	22.92	21.28	22.28	21.85	19.41	20.72	20.02
(1999 dollars per million Btu)	1.21	1.14	1.14	1.14	1.06	1.09	1.06	0.98	1.01	0.98
Average	25.77	23.78	23.81	23.81	22.13	23.06	22.70	20.15	21.39	20.75
Exports ⁷	37.44	36.39	36.36	36.48	35.66	34.95	35.63	33.09	32.96	33.10

¹Includes anthracite, bituminous coal, lignite, and waste coal delivered to independent power producers. Waste coal deliveries totaled 8.5 million tons in 1995, 8.8 million tons in 1996, 8.1 million tons in 1997, 8.6 million tons in 1998, and are projected to reach 9.6 million tons in 1999, and 12.2 million tons in 2000.

²Production plus net imports and net storage withdrawals.

³Includes consumption by cogenerators.

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

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

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

⁷F.a.s. price at U.S. port of exit.

Btu = British thermal unit.

Hg = Mercury.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 data based on Energy Information Administration (EIA), *Quarterly Coal Report*, DOE/EIA-0121(2000/1Q) (Washington, DC, August 2000), and EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008.D060801A, M2M6008.D060801A. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008.D060801A, M2M6008.D060801A.

Table D11. Renewable Energy Generating Capability and Generation
(Gigawatts, Unless Otherwise Noted)

Capacity and Generation	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton
Electric Generators¹										
(excluding cogenerators)										
Net Summer Capability										
Conventional Hydropower	78.77	79.26	79.26	79.26	79.38	79.38	79.38	79.38	79.38	79.38
Geothermal ²	2.87	3.43	3.43	3.43	4.93	5.38	4.95	4.95	5.40	4.97
Municipal Solid Waste ³	2.61	2.96	2.96	2.96	3.42	3.58	3.42	3.93	4.09	3.93
Wood and Other Biomass ⁴	1.57	1.75	1.75	1.75	2.12	2.12	2.12	2.45	2.45	2.45
Solar Thermal	0.33	0.35	0.35	0.35	0.40	0.40	0.40	0.48	0.48	0.48
Solar Photovoltaic	0.01	0.08	0.08	0.08	0.21	0.21	0.21	0.54	0.54	0.54
Wind	2.66	6.92	6.92	6.92	7.52	7.52	7.52	7.76	7.77	7.76
Total	88.83	94.75	94.76	94.75	97.98	98.58	97.99	99.49	100.10	99.52
Generation (billion kilowatthours)										
Conventional Hydropower	309.55	301.20	301.20	301.20	301.13	301.12	301.13	300.07	300.06	300.07
Geothermal ²	13.21	18.34	18.35	18.27	30.94	34.61	31.08	31.16	34.82	31.32
Municipal Solid Waste ³	18.12	20.68	20.68	20.68	23.88	25.14	23.88	27.76	29.02	27.76
Wood and Other Biomass ⁴	9.02	14.94	15.85	15.63	21.30	19.57	20.01	19.78	21.25	19.93
Dedicated Plants	7.73	9.16	9.16	9.16	11.36	11.38	11.37	13.82	13.84	13.83
Cofiring	1.29	5.78	6.69	6.47	9.94	8.19	8.64	5.95	7.41	6.10
Solar Thermal	0.89	0.96	0.96	0.96	1.11	1.11	1.11	1.37	1.37	1.37
Solar Photovoltaic	0.03	0.20	0.20	0.20	0.51	0.51	0.51	1.36	1.36	1.36
Wind	4.61	16.30	16.30	16.30	18.16	18.16	18.16	18.83	18.85	18.84
Total	355.43	372.61	373.53	373.24	397.03	400.22	395.88	400.32	406.73	400.64
Cogenerators⁵										
Net Summer Capability										
Municipal Solid Waste	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Biomass	4.65	5.17	5.17	5.17	6.06	6.06	6.06	7.54	7.54	7.54
Total	5.35	5.87	5.87	5.87	6.76	6.76	6.76	8.24	8.24	8.24
Generation (billion kilowatthours)										
Municipal Solid Waste	4.04	4.04	4.04	4.04	4.04	4.04	4.04	4.04	4.04	4.04
Biomass	27.08	29.92	29.92	29.92	35.01	35.01	35.01	43.52	43.52	43.52
Total	31.12	33.97	33.97	33.97	39.05	39.05	39.05	47.57	47.57	47.57
Other End-Use Generators⁶										
Net Summer Capability										
Conventional Hydropower ⁷	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solar Photovoltaic	0.01	0.10	0.10	0.10	0.35	0.35	0.35	0.35	0.35	0.35
Total	1.00	1.09	1.09	1.09	1.34	1.34	1.34	1.34	1.34	1.34
Generation (billion kilowatthours)										
Conventional Hydropower ⁷	4.57	4.44	4.44	4.44	4.43	4.43	4.43	4.41	4.41	4.41
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solar Photovoltaic	0.02	0.20	0.20	0.20	0.75	0.75	0.75	0.75	0.75	0.75
Total	4.59	4.64	4.64	4.64	5.18	5.18	5.18	5.17	5.17	5.17

¹Includes grid-connected utilities and nonutilities other than cogenerators. These nonutility facilities include small power producers and exempt wholesale generators.

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

³Includes landfill gas.

⁴Includes projections for energy crops after 2010.

⁵Cogenerators produce electricity and other useful thermal energy.

⁶Includes 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. Excludes off-grid photovoltaics and other generators not connected to the distribution or transmission systems.

⁷Represents own-use industrial hydroelectric power.

Hg = Mercury.

Notes: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports. Net summer capability has been estimated for nonutility generators for AEO2001. Net summer capability 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: 1999 electric utility capability: Energy Information Administration (EIA), Form EIA-860A: "Annual Electric Generator Report - Utility." 1999 nonutility and cogenerator capability: EIA, Form EIA-860B: "Annual Electric Generator Report - Nonutility." 1999 generation: EIA, *Annual Energy Review 1999*, DOE/EIA-0384(99) (Washington, DC, July 2000). Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008.D060801A, M2M6008.D060801A.

Table D12. Renewable Energy Consumption by Sector and Source¹
(Quadrillion Btu per Year)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton
Marketed Renewable Energy²										
Residential	0.41	0.42	0.42	0.42	0.42	0.42	0.42	0.44	0.43	0.43
Wood	0.41	0.42	0.42	0.42	0.42	0.42	0.42	0.44	0.43	0.43
Commercial	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Biomass	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Industrial³	2.15	2.42	2.42	2.42	2.64	2.64	2.64	3.08	3.08	3.08
Conventional Hydroelectric	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Municipal Solid Waste	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Biomass	1.97	2.23	2.23	2.23	2.46	2.46	2.46	2.90	2.90	2.90
Transportation	0.12	0.20	0.20	0.20	0.22	0.21	0.22	0.24	0.24	0.24
Ethanol used in E85 ⁴	0.00	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03
Ethanol used in Gasoline Blending	0.12	0.18	0.18	0.18	0.19	0.19	0.20	0.21	0.20	0.21
Electric Generators⁵	3.88	4.19	4.20	4.19	4.73	4.84	4.72	4.78	4.93	4.79
Conventional Hydroelectric	3.19	3.10	3.10	3.10	3.10	3.10	3.10	3.08	3.08	3.08
Geothermal	0.28	0.44	0.44	0.44	0.85	0.96	0.85	0.85	0.97	0.86
Municipal Solid Waste ⁶	0.25	0.28	0.28	0.28	0.32	0.34	0.32	0.38	0.39	0.38
Biomass	0.12	0.18	0.19	0.19	0.26	0.24	0.24	0.25	0.26	0.25
Dedicated Plants	0.10	0.11	0.11	0.11	0.14	0.14	0.14	0.17	0.17	0.17
Cofiring	0.02	0.07	0.08	0.08	0.12	0.10	0.10	0.07	0.09	0.08
Solar Thermal	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.03
Solar Photovoltaic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wind	0.05	0.17	0.17	0.17	0.19	0.19	0.19	0.19	0.19	0.19
Total Marketed Renewable Energy	6.64	7.31	7.32	7.31	8.10	8.21	8.09	8.62	8.77	8.63
Non-Marketed Renewable Energy⁷										
Selected Consumption										
Residential	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04
Solar Hot Water Heating	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Geothermal Heat Pumps	0.02	0.02	0.02	0.02	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	0.00	0.00	0.00
Commercial	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03
Solar Thermal	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03
Solar Photovoltaic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ethanol										
From Corn	0.12	0.19	0.19	0.19	0.20	0.19	0.20	0.17	0.17	0.17
From Cellulose	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.07	0.07	0.07
Total	0.12	0.20	0.20	0.20	0.22	0.21	0.22	0.24	0.24	0.24

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.

³Includes all electricity production by industrial and other cogenerators for the grid and for own use.

⁴Excludes motor gasoline component of E85.

⁵Includes renewable energy delivered to the grid from electric utilities and nonutilities. Renewable energy used in generating electricity for own use is included in the individual sectoral electricity energy consumption values.

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.

Hg = Mercury.

Notes: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 ethanol: Energy Information Administration (EIA), *Annual Energy Review 1999*, DOE/EIA-0384(99) (Washington, DC, July 2000). 1999 electric generators: EIA, Form EIA-860A: "Annual Electric Generator Report - Utility," and EIA, Form EIA-860B: "Annual Electric Generator Report - Nonutility." Other 1999: EIA, Office of Integrated Analysis and Forecasting. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008.D060801A, M2M6008.D060801A.

Table D13. Carbon Dioxide Emissions by Sector and Source
(Million Metric Tons Carbon Equivalent per Year)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton
Residential										
Petroleum	26.0	26.5	26.5	26.5	24.5	24.5	24.5	23.2	23.4	23.3
Natural Gas	69.5	80.2	80.2	80.2	80.8	80.3	80.7	89.8	89.2	89.4
Coal	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3
Electricity	193.4	227.1	226.8	226.8	242.6	231.6	239.4	275.6	265.5	272.8
Total	290.1	335.0	334.7	334.7	349.2	337.7	345.9	389.8	379.3	386.8
Commercial										
Petroleum	13.7	11.8	11.8	11.8	12.0	12.1	12.0	12.1	12.1	12.1
Natural Gas	45.4	57.4	57.4	57.4	60.1	59.6	60.0	63.9	63.5	63.7
Coal	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.9	1.9	1.9
Electricity	181.3	218.4	218.2	218.3	240.4	230.3	237.6	267.1	257.4	264.5
Total	242.1	289.4	289.2	289.2	314.3	303.7	311.5	345.0	335.0	342.2
Industrial¹										
Petroleum	104.2	99.2	99.4	99.3	105.3	105.3	104.9	113.6	113.8	113.7
Natural Gas ²	141.6	148.4	148.2	148.2	159.8	160.4	160.8	180.3	181.2	180.7
Coal	55.9	65.8	65.8	65.8	65.6	65.5	65.5	65.8	65.8	65.8
Electricity	178.8	193.6	193.6	193.6	204.1	196.3	201.7	226.4	217.6	224.0
Total	480.4	507.0	507.0	506.9	534.8	527.6	532.8	586.1	578.5	584.2
Transportation										
Petroleum ³	485.8	556.3	556.3	556.3	607.2	607.2	607.0	704.2	703.9	704.1
Natural Gas ⁴	9.5	12.8	12.8	12.8	14.4	14.7	14.5	18.1	18.4	18.1
Other ⁵	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Electricity	2.9	4.4	4.4	4.4	5.8	5.6	5.7	7.9	7.6	7.8
Total³	498.2	573.6	573.6	573.5	627.5	627.5	627.4	730.2	730.0	730.2
Total Carbon Dioxide Emissions by Delivered Fuel										
Petroleum ³	629.7	693.8	694.0	693.9	749.0	749.1	748.4	853.1	853.3	853.2
Natural Gas	266.0	298.8	298.7	298.7	315.1	314.9	316.0	352.0	352.2	352.0
Coal	58.8	68.8	68.7	68.7	68.8	68.7	68.6	69.0	69.0	69.0
Other ⁵	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Electricity	556.3	643.6	643.0	643.0	692.8	663.8	684.4	777.0	748.1	769.1
Total³	1510.8	1705.0	1704.4	1704.4	1825.7	1796.5	1817.6	2051.2	2022.7	2043.3
Electric Generators⁶										
Petroleum	20.0	9.4	9.3	9.3	5.8	5.8	5.6	5.2	5.5	5.7
Natural Gas	45.8	79.6	79.4	79.5	100.0	111.3	104.6	164.1	175.0	166.3
Coal	490.5	554.6	554.3	554.3	587.0	546.7	574.2	607.7	567.6	597.1
Total	556.3	643.6	643.0	643.0	692.8	663.8	684.4	777.0	748.1	769.1
Total Carbon Dioxide Emissions by Primary Fuel⁷										
Petroleum ³	649.7	703.1	703.3	703.1	754.8	754.8	754.0	858.3	858.8	858.9
Natural Gas	311.8	378.4	378.1	378.1	415.0	426.2	420.6	516.2	527.2	518.2
Coal	549.3	623.3	623.0	623.0	655.8	615.4	642.9	676.7	636.7	666.1
Other ⁵	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total³	1510.8	1705.0	1704.4	1704.4	1825.7	1796.5	1817.6	2051.2	2022.7	2043.3
Carbon Dioxide Emissions (tons carbon equivalent per person)										
	5.5	5.9	5.9	5.9	6.1	6.0	6.1	6.3	6.2	6.3

¹Includes consumption by cogenerators.

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 1998, international bunker fuels accounted for 25 to 30 million metric tons carbon equivalent of carbon dioxide annually.

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

⁵Includes methanol and liquid hydrogen.

⁶Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy. Includes small power producers and exempt wholesale generators. 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.

Hg = Mercury.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 emissions and emission factors: Energy Information Administration (EIA), *Emissions of Greenhouse Gases in the United States 1999*, DOE/EIA-0573(99), (Washington, DC, October 2000). Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008.D060801A, M2M6008.D060801A.

Table D14. Emissions, Allowance Costs, and Retrofits: Electric Generators, Excluding Cogenerators

Impacts	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton	Reference	Hg 5-Ton	Hg 20-Ton
Emissions										
Nitrogen Oxide (million tons)	5.45	4.30	3.44	3.44	4.34	3.30	3.42	4.49	3.45	3.54
Sulfur Dioxide (million tons)	13.71	10.38	10.39	10.39	9.70	8.78	9.67	8.95	7.23	8.95
Mercury (tons)	43.60	45.24	45.33	44.94	45.60	5.00	20.00	45.07	5.00	20.00
Carbon Dioxide (million metric tons carbon equivalent)	556.31	643.58	642.98	643.02	692.78	663.76	684.38	776.99	748.12	769.12
Allowance Prices										
Nitrogen Oxide (1999 dollars per ton) . . .	0	4352	4256	4277	4391	2651	3669	5037	4545	4645
Sulfur Dioxide (1999 dollars per ton) . . .	0	190	189	185	187	0	0	241	0	12
Mercury (million 1999 dollars per ton) . .	0	0	0	0	0	358	145	0	388	138
Carbon Dioxide (1999 dollars per ton carbon equivalent)	0	0	0	0	0	0	0	0	0	0
Retrofits (gigawatts)										
Scrubber ¹	0.0	6.5	7.6	9.8	7.1	17.6	42.7	14.8	51.7	42.7
Combustion	0.0	39.9	39.6	40.9	42.1	42.6	44.8	46.1	48.6	47.7
SCR Post-combustion	0.0	92.8	93.7	92.3	92.9	94.8	92.3	93.0	98.7	99.7
SNCR Post-combustion	0.0	25.2	22.4	25.3	26.3	22.7	25.6	43.4	24.5	29.7
Coal Production by Sulfur Category (million tons)										
Low Sulfur (< .61 lbs. S/mmBtu)	472	594	586	584	642	653	575	721	656	654
Medium Sulfur (.61-1.67 lbs. S/mmBtu) . .	432	454	456	455	464	383	455	440	390	432
High Sulfur (> 1.67 lbs. S/mmBtu)	199	185	187	190	188	164	209	179	183	203

¹Represents scrubbers added by the model. Planned scrubbers added by electricity generators are not shown here.

Hg = Mercury.

lbs. S/mmBtu = Pounds sulfur per million British thermal units.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Source: Energy Information Administration, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008.D060801A, M2M6008.D060801A.

Appendix E
Tables for RPS Cases

Table E1. Total Energy Supply and Disposition Summary
(Quadrillion Btu per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%
Production										
Crude Oil and Lease Condensate . . .	12.45	11.98	12.02	12.02	11.27	11.25	11.28	11.12	10.91	11.08
Natural Gas Plant Liquids	2.62	3.12	3.05	3.10	3.37	3.23	3.34	4.16	3.68	3.98
Dry Natural Gas	19.16	21.95	21.45	21.80	24.04	23.03	23.82	30.24	26.77	28.95
Coal	23.08	25.45	25.11	25.40	26.55	25.20	26.10	27.16	24.34	25.92
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.74	7.74	6.54	6.54	6.54
Renewable Energy ¹	6.53	7.13	8.89	7.41	7.90	12.46	9.37	8.42	18.11	12.72
Other ²	1.65	0.35	0.35	0.35	0.31	0.39	0.31	0.33	0.35	0.33
Total	73.29	77.88	78.76	77.97	81.19	83.29	81.96	87.97	90.70	89.53
Imports										
Crude Oil ³	18.96	21.42	21.39	21.41	22.38	22.39	22.40	25.82	26.06	25.89
Petroleum Products ⁴	4.14	6.28	6.24	6.21	8.65	8.64	8.61	10.80	10.98	10.80
Natural Gas	3.63	5.13	5.04	5.17	5.55	5.40	5.57	6.59	6.14	6.44
Other Imports ⁵	0.64	1.11	1.11	1.11	0.96	0.96	0.96	0.96	0.96	0.96
Total	27.37	33.93	33.79	33.90	37.54	37.39	37.53	44.18	44.14	44.09
Exports										
Petroleum ⁶	1.98	1.73	1.74	1.74	1.69	1.71	1.72	1.85	1.83	1.80
Natural Gas	0.17	0.33	0.33	0.33	0.43	0.43	0.43	0.63	0.63	0.63
Coal	1.48	1.51	1.51	1.51	1.45	1.45	1.45	1.41	1.41	1.41
Total	3.62	3.57	3.57	3.57	3.58	3.59	3.61	3.89	3.87	3.84
Discrepancy⁷	0.69	0.43	0.41	0.42	0.04	0.10	0.04	0.11	0.14	0.16
Consumption										
Petroleum Products ⁸	38.02	41.34	41.25	41.28	44.44	44.29	44.37	50.45	50.16	50.32
Natural Gas	22.21	26.44	25.85	26.33	29.00	27.84	28.80	36.06	32.17	34.61
Coal	21.42	24.39	24.06	24.35	25.64	24.27	25.18	26.42	23.59	25.18
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.74	7.74	6.54	6.54	6.54
Renewable Energy ¹	6.54	7.13	8.90	7.41	7.91	12.47	9.37	8.43	18.11	12.73
Other ⁹	0.35	0.61	0.61	0.61	0.38	0.38	0.38	0.25	0.25	0.25
Total	96.33	107.81	108.57	107.88	115.11	117.00	115.84	128.16	130.82	129.62
Net Imports - Petroleum	21.12	25.96	25.90	25.88	29.34	29.33	29.28	34.78	35.21	34.90
Prices (1999 dollars per unit)										
World Oil Price (dollars per barrel) ¹⁰ . .	17.22	20.83	20.83	20.83	21.37	21.37	21.37	22.41	22.41	22.41
Gas Wellhead Price (dollars per Mcf) ¹¹	2.08	2.96	2.91	2.95	2.87	2.65	2.81	3.22	2.66	2.95
Coal Minemouth Price (dollars per ton)	17.17	15.05	14.98	15.00	14.08	14.19	14.05	12.87	13.28	12.99
Average Electric Price (cents per Kwh)	6.6	6.4	6.4	6.3	6.1	6.3	6.2	6.2	6.5	6.2

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.

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, imports of 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, and net storage withdrawals.

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.

Mcf = Thousand cubic feet.

Kwh = Kilowatthour.

RPS = Renewable Portfolio Standards.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 natural gas values: Energy Information Administration (EIA), *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). 1999 petroleum values: EIA, *Petroleum Supply Annual 1999*, DOE/EIA-0340(99/1) (Washington, DC, June 2000). Other 1999 values: EIA, *Annual Energy Review 1999*, DOE/EIA-0384(99) (Washington, DC, July 2000) and EIA, *Quarterly Coal Report*, DOE/EIA-0121(2000/1Q) (Washington, DC, August 2000). Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2RPS20_X.D070601A, M2RPS20H_X.D070601A.

Table E2. Energy Consumption by Sector and Source
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%
Energy Consumption										
Residential										
Distillate Fuel	0.86	0.87	0.87	0.87	0.80	0.80	0.80	0.76	0.76	0.76
Kerosene	0.10	0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.07	0.07
Liquefied Petroleum Gas	0.46	0.45	0.45	0.45	0.42	0.42	0.42	0.40	0.39	0.40
Petroleum Subtotal	1.42	1.40	1.40	1.40	1.30	1.30	1.30	1.23	1.22	1.23
Natural Gas	4.88	5.57	5.58	5.57	5.61	5.66	5.62	6.23	6.41	6.31
Coal	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Renewable Energy ¹	0.41	0.42	0.42	0.42	0.42	0.43	0.42	0.44	0.44	0.44
Electricity	3.91	4.57	4.56	4.56	4.95	4.91	4.94	5.79	5.73	5.79
Delivered Energy	10.66	12.01	12.01	12.01	12.34	12.34	12.34	13.74	13.84	13.81
Electricity Related Losses	8.44	9.67	9.95	9.69	10.10	10.78	10.35	10.85	11.88	11.40
Total	19.10	21.68	21.96	21.70	22.44	23.12	22.69	24.59	25.73	25.20
Commercial										
Distillate Fuel	0.36	0.37	0.37	0.37	0.38	0.37	0.38	0.37	0.36	0.37
Residual Fuel	0.10	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Kerosene	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Liquefied Petroleum Gas	0.08	0.09	0.09	0.09	0.09	0.09	0.09	0.10	0.10	0.10
Motor Gasoline ²	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Petroleum Subtotal	0.60	0.60	0.61	0.60	0.62	0.61	0.62	0.62	0.61	0.61
Natural Gas	3.14	3.99	4.00	3.99	4.17	4.21	4.18	4.44	4.59	4.50
Coal	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Renewable Energy ³	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Electricity	3.66	4.39	4.39	4.40	4.91	4.89	4.91	5.62	5.57	5.61
Delivered Energy	7.55	9.13	9.14	9.14	9.85	9.86	9.86	10.83	10.93	10.88
Electricity Related Losses	7.91	9.30	9.58	9.33	10.01	10.72	10.27	10.51	11.57	11.05
Total	15.46	18.44	18.72	18.47	19.86	20.58	20.13	21.34	22.49	21.94
Industrial⁴										
Distillate Fuel	1.13	1.22	1.22	1.22	1.31	1.30	1.30	1.49	1.47	1.48
Liquefied Petroleum Gas	2.32	2.45	2.45	2.45	2.53	2.50	2.52	2.85	2.79	2.83
Petrochemical Feedstock	1.29	1.36	1.36	1.36	1.53	1.53	1.53	1.70	1.70	1.70
Residual Fuel	0.22	0.16	0.16	0.16	0.25	0.25	0.25	0.28	0.27	0.27
Motor Gasoline ²	0.21	0.23	0.23	0.23	0.25	0.25	0.25	0.28	0.28	0.28
Other Petroleum ⁵	4.29	4.44	4.44	4.45	4.71	4.70	4.70	5.02	5.01	5.02
Petroleum Subtotal	9.45	9.86	9.86	9.87	10.57	10.53	10.55	11.63	11.52	11.59
Natural Gas ⁶	9.80	10.46	10.43	10.44	11.27	11.30	11.29	12.73	12.89	12.75
Metallurgical Coal	0.75	0.67	0.67	0.67	0.61	0.61	0.61	0.50	0.50	0.50
Steam Coal	1.73	1.81	1.81	1.81	1.83	1.83	1.83	1.87	1.87	1.87
Net Coal Coke Imports	0.06	0.12	0.12	0.12	0.16	0.16	0.16	0.22	0.22	0.22
Coal Subtotal	2.54	2.59	2.59	2.59	2.59	2.59	2.59	2.60	2.60	2.59
Renewable Energy ⁷	2.15	2.42	2.42	2.42	2.64	2.64	2.64	3.08	3.08	3.08
Electricity	3.61	3.90	3.89	3.90	4.17	4.13	4.16	4.76	4.60	4.71
Delivered Energy	27.56	29.23	29.19	29.22	31.24	31.19	31.24	34.80	34.68	34.73
Electricity Related Losses	7.80	8.25	8.49	8.27	8.50	9.06	8.71	8.91	9.54	9.28
Total	35.36	37.48	37.69	37.49	39.74	40.25	39.95	43.71	44.22	44.01

Table E2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%
Transportation										
Distillate Fuel	5.13	6.28	6.27	6.28	7.00	6.98	7.00	8.22	8.18	8.21
Jet Fuel ⁸	3.46	3.90	3.90	3.90	4.51	4.51	4.51	5.97	5.97	5.97
Motor Gasoline ²	15.92	17.67	17.68	17.67	18.97	18.96	18.97	21.26	21.25	21.26
Residual Fuel	0.74	0.85	0.85	0.85	0.85	0.85	0.85	0.87	0.86	0.86
Liquefied Petroleum Gas	0.02	0.03	0.03	0.03	0.04	0.04	0.04	0.06	0.06	0.06
Other Petroleum ⁹	0.26	0.30	0.29	0.29	0.31	0.31	0.31	0.35	0.35	0.35
Petroleum Subtotal	25.54	29.03	29.03	29.03	31.68	31.66	31.67	36.73	36.67	36.71
Pipeline Fuel Natural Gas	0.66	0.83	0.82	0.83	0.91	0.88	0.90	1.10	0.99	1.06
Compressed Natural Gas	0.02	0.06	0.06	0.06	0.09	0.09	0.09	0.16	0.16	0.16
Renewable Energy (E85) ¹⁰	0.01	0.02	0.02	0.02	0.03	0.03	0.03	0.04	0.04	0.04
Methanol (M85) ¹¹	0.00	0.00	0.00	0.00	0.01	0.01	0.01	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	0.06	0.09	0.09	0.09	0.12	0.12	0.12	0.17	0.17	0.17
Delivered Energy	26.28	30.03	30.01	30.03	32.83	32.79	32.82	38.20	38.04	38.14
Electricity Related Losses	0.13	0.19	0.19	0.19	0.24	0.26	0.25	0.31	0.34	0.33
Total	26.41	30.22	30.21	30.21	33.07	33.04	33.07	38.51	38.38	38.47
Delivered Energy Consumption for All Sectors										
Distillate Fuel	7.48	8.74	8.73	8.73	9.49	9.46	9.48	10.85	10.77	10.82
Kerosene	0.15	0.13	0.13	0.13	0.12	0.12	0.12	0.12	0.12	0.12
Jet Fuel ⁸	3.46	3.90	3.90	3.90	4.51	4.51	4.51	5.97	5.97	5.97
Liquefied Petroleum Gas	2.88	3.02	3.02	3.03	3.08	3.06	3.07	3.41	3.33	3.38
Motor Gasoline ²	16.17	17.93	17.93	17.93	19.24	19.24	19.24	21.57	21.56	21.57
Petrochemical Feedstock	1.29	1.36	1.36	1.36	1.53	1.53	1.53	1.70	1.70	1.70
Residual Fuel	1.05	1.10	1.10	1.10	1.20	1.20	1.20	1.24	1.23	1.23
Other Petroleum ¹²	4.53	4.71	4.72	4.72	4.99	4.98	4.99	5.35	5.34	5.35
Petroleum Subtotal	37.01	40.90	40.90	40.90	44.16	44.10	44.14	50.21	50.02	50.14
Natural Gas ⁶	18.50	20.91	20.88	20.89	22.05	22.14	22.09	24.66	25.03	24.78
Metallurgical Coal	0.75	0.67	0.67	0.67	0.61	0.61	0.61	0.50	0.50	0.50
Steam Coal	1.84	1.92	1.92	1.92	1.95	1.95	1.95	2.00	2.00	1.99
Net Coal Coke Imports	0.06	0.12	0.12	0.12	0.16	0.16	0.16	0.22	0.22	0.22
Coal Subtotal	2.65	2.71	2.71	2.71	2.71	2.71	2.71	2.72	2.72	2.71
Renewable Energy ¹³	2.65	2.94	2.94	2.94	3.18	3.19	3.18	3.65	3.65	3.65
Methanol (M85) ¹¹	0.00	0.00	0.00	0.00	0.01	0.01	0.01	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	11.24	12.95	12.92	12.94	14.15	14.05	14.13	16.34	16.06	16.28
Delivered Energy	72.05	80.41	80.36	80.40	86.27	86.18	86.26	97.57	97.49	97.56
Electricity Related Losses	24.29	27.40	28.22	27.49	28.84	30.81	29.58	30.58	33.33	32.06
Total	96.33	107.81	108.57	107.88	115.11	117.00	115.84	128.16	130.82	129.62
Electric Generators¹⁴										
Distillate Fuel	0.06	0.06	0.05	0.06	0.06	0.04	0.04	0.06	0.03	0.04
Residual Fuel	0.96	0.38	0.30	0.31	0.22	0.15	0.19	0.19	0.11	0.14
Petroleum Subtotal	1.02	0.44	0.35	0.37	0.28	0.19	0.23	0.25	0.14	0.18
Natural Gas	3.71	5.53	4.97	5.44	6.94	5.70	6.71	11.40	7.14	9.83
Steam Coal	18.77	21.68	21.35	21.64	22.93	21.56	22.46	23.70	20.87	22.46
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.74	7.74	6.54	6.54	6.54
Renewable Energy ¹⁵	3.88	4.19	5.95	4.47	4.73	9.29	6.19	4.78	14.46	9.08
Electricity Imports ¹⁶	0.35	0.61	0.61	0.61	0.37	0.37	0.37	0.24	0.24	0.24
Total	35.52	40.35	41.14	40.43	42.99	44.86	43.71	46.92	49.39	48.34

Table E2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%
Total Energy Consumption										
Distillate Fuel	7.54	8.80	8.78	8.80	9.54	9.50	9.52	10.91	10.80	10.86
Kerosene	0.15	0.13	0.13	0.13	0.12	0.12	0.12	0.12	0.12	0.12
Jet Fuel ⁸	3.46	3.90	3.90	3.90	4.51	4.51	4.51	5.97	5.97	5.97
Liquefied Petroleum Gas	2.88	3.02	3.02	3.03	3.08	3.06	3.07	3.41	3.33	3.38
Motor Gasoline ⁹	16.17	17.93	17.93	17.93	19.24	19.24	19.24	21.57	21.56	21.57
Petrochemical Feedstock	1.29	1.36	1.36	1.36	1.53	1.53	1.53	1.70	1.70	1.70
Residual Fuel	2.01	1.48	1.40	1.41	1.42	1.35	1.38	1.42	1.33	1.38
Other Petroleum ¹²	4.53	4.71	4.72	4.72	4.99	4.98	4.99	5.35	5.34	5.35
Petroleum Subtotal	38.02	41.34	41.25	41.28	44.44	44.29	44.37	50.45	50.16	50.32
Natural Gas	22.21	26.44	25.85	26.33	29.00	27.84	28.80	36.06	32.17	34.61
Metallurgical Coal	0.75	0.67	0.67	0.67	0.61	0.61	0.61	0.50	0.50	0.50
Steam Coal	20.61	23.60	23.27	23.56	24.88	23.51	24.41	25.70	22.87	24.45
Net Coal Coke Imports	0.06	0.12	0.12	0.12	0.16	0.16	0.16	0.22	0.22	0.22
Coal Subtotal	21.42	24.39	24.06	24.35	25.64	24.27	25.18	26.42	23.59	25.18
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.74	7.74	6.54	6.54	6.54
Renewable Energy ¹⁷	6.54	7.13	8.90	7.41	7.91	12.47	9.37	8.43	18.12	12.73
Methanol (M85) ¹¹	0.00	0.00	0.00	0.00	0.01	0.01	0.01	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 Imports ¹⁶	0.35	0.61	0.61	0.61	0.37	0.37	0.37	0.24	0.24	0.24
Total	96.33	107.81	108.57	107.88	115.11	117.00	115.84	128.16	130.83	129.63
Energy Use and Related Statistics										
Delivered Energy Use	72.05	80.41	80.36	80.40	86.27	86.18	86.26	97.57	97.49	97.56
Total Energy Use	96.33	107.81	108.57	107.88	115.11	117.00	115.84	128.16	130.83	129.63
Population (millions)	273.13	288.02	288.02	288.02	300.17	300.17	300.17	325.24	325.24	325.24
Gross Domestic Product (billion 1996 dollars)	8876	10960	10960	10960	12667	12667	12667	16515	16515	16515
Total Carbon Dioxide Emissions (million metric tons carbon equivalent)	1510.8	1705.0	1686.2	1701.0	1825.7	1770.8	1809.5	2051.2	1916.1	1995.8

¹Includes wood used for residential heating.

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

³Includes commercial sector electricity cogenerated by using wood and wood waste, landfill gas, municipal solid waste, and other biomass.

⁴Fuel consumption includes consumption for cogeneration, which produces electricity and other useful thermal energy.

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

⁶Includes lease and plant fuel and consumption by cogenerators, excludes consumption by nonutility generators.

⁷Includes consumption of energy from hydroelectric, wood and wood waste, municipal solid waste, and other biomass; includes cogeneration, both for sale to the grid and for own use.

⁸Includes only kerosene type.

⁹Includes aviation gas and lubricants.

¹⁰E85 is 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable).

¹¹M85 is 85 percent methanol and 15 percent motor gasoline.

¹²Includes unfinished oils, natural gasoline, motor gasoline blending compounds, 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 all electric power generators for grid-connected power except cogenerators, which produce electricity and other useful thermal energy.

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 cogeneration. Excludes net electricity imports.

¹⁶In 1998 approximately 70 percent of the U.S. electricity imports were provided by renewable sources (hydroelectricity); EIA does not project future proportions for the fuel source of imported electricity.

¹⁷Includes 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.

RPS = Renewable Portfolio Standards.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 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: 1999 electric utility fuel consumption: Energy Information Administration, (EIA) *Electric Power Annual 1998, Volume 1*, DOE/EIA-0348(98)/1 (Washington, DC, April 1999). 1999 nonutility consumption estimates: EIA, Form EIA-860B: "Annual Electric Generator Report - Nonutility." Other 1999 values: EIA, *Short-Term Energy Outlook, September 2000*, <http://www.eia.doe.gov/pub/forecasting/steo/oldsteos/sep00.pdf>. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2RPS20_X.D070601A, M2RPS20H_X.D070601A.

Table E3. Energy Prices by Sector and Source
(1999 Dollars per Million Btu, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%
Residential	13.10	13.27	13.29	13.26	13.46	13.58	13.48	13.77	13.76	13.65
Primary Energy ¹	6.71	7.49	7.45	7.47	7.18	7.03	7.13	7.08	6.64	6.87
Petroleum Products ²	7.55	9.20	9.17	9.16	9.37	9.36	9.36	9.47	9.56	9.48
Distillate Fuel	6.27	7.45	7.40	7.38	7.57	7.58	7.57	7.78	7.76	7.76
Liquefied Petroleum Gas	10.36	12.60	12.59	12.60	12.86	12.83	12.83	12.75	13.14	12.85
Natural Gas	6.52	7.11	7.06	7.10	6.72	6.54	6.67	6.65	6.13	6.41
Electricity	23.47	22.16	22.30	22.17	22.30	22.92	22.42	22.44	23.31	22.54
Commercial	13.18	12.70	12.73	12.65	12.25	12.43	12.25	12.69	12.72	12.54
Primary Energy ¹	5.22	5.57	5.52	5.55	5.68	5.53	5.64	5.79	5.34	5.58
Petroleum Products ²	4.99	6.13	6.10	6.08	6.29	6.29	6.29	6.40	6.46	6.40
Distillate Fuel	4.37	5.24	5.19	5.17	5.36	5.37	5.36	5.53	5.52	5.51
Residual Fuel	2.63	3.65	3.63	3.63	3.71	3.70	3.70	3.86	3.84	3.85
Natural Gas ³	5.34	5.55	5.50	5.54	5.66	5.49	5.61	5.78	5.26	5.54
Electricity	21.45	20.26	20.40	20.17	18.76	19.34	18.82	19.00	19.69	18.96
Industrial⁴	5.27	5.76	5.74	5.73	5.67	5.64	5.64	5.90	5.76	5.79
Primary Energy	3.91	4.47	4.44	4.45	4.49	4.39	4.46	4.68	4.46	4.57
Petroleum Products ²	5.54	6.00	5.97	5.97	6.13	6.10	6.10	6.16	6.24	6.17
Distillate Fuel	4.65	5.40	5.35	5.34	5.56	5.56	5.55	5.73	5.71	5.70
Liquefied Petroleum Gas	8.50	7.74	7.73	7.74	7.88	7.80	7.82	7.76	8.08	7.84
Residual Fuel	2.78	3.38	3.37	3.37	3.44	3.42	3.43	3.59	3.58	3.58
Natural Gas ⁵	2.79	3.64	3.59	3.63	3.50	3.31	3.44	3.85	3.31	3.60
Metallurgical Coal	1.65	1.58	1.58	1.58	1.54	1.55	1.55	1.44	1.44	1.44
Steam Coal	1.43	1.35	1.35	1.35	1.31	1.30	1.30	1.21	1.20	1.21
Electricity	13.00	12.80	12.88	12.73	12.08	12.55	12.15	12.22	12.87	12.23
Transportation	8.30	9.39	9.36	9.33	9.69	9.71	9.71	9.20	9.21	9.19
Primary Energy	8.29	9.38	9.34	9.31	9.68	9.69	9.69	9.18	9.19	9.17
Petroleum Products ²	8.28	9.37	9.34	9.31	9.67	9.69	9.69	9.18	9.18	9.17
Distillate Fuel ⁶	8.22	8.98	8.92	8.90	8.95	8.95	8.95	8.83	8.83	8.82
Jet Fuel ⁷	4.70	5.29	5.25	5.23	5.49	5.49	5.49	5.72	5.72	5.72
Motor Gasoline ⁸	9.45	10.81	10.78	10.74	11.31	11.33	11.33	10.60	10.61	10.58
Residual Fuel	2.46	3.11	3.10	3.10	3.18	3.18	3.18	3.33	3.33	3.33
Liquid Petroleum Gas ⁹	12.87	14.07	14.04	14.05	14.07	14.02	14.03	13.70	14.02	13.80
Natural Gas ¹⁰	7.02	7.28	7.22	7.26	7.21	7.02	7.15	7.41	6.88	7.17
Ethanol (E85) ¹¹	14.42	19.21	19.19	19.19	19.16	19.20	19.21	19.36	19.30	19.33
Methanol (M85) ¹²	10.38	13.13	13.09	13.11	13.83	13.84	13.84	14.35	14.36	14.35
Electricity	15.59	14.52	14.67	14.49	13.62	14.20	13.80	13.22	14.05	13.33
Average End-Use Energy	8.49	9.17	9.15	9.12	9.22	9.25	9.22	9.21	9.18	9.14
Primary Energy	6.31	7.19	7.16	7.15	7.35	7.29	7.33	7.23	7.07	7.15
Electricity	19.41	18.65	18.77	18.60	17.99	18.55	18.07	18.19	18.97	18.23
Electric Generators¹³										
Fossil Fuel Average	1.48	1.64	1.58	1.62	1.59	1.49	1.57	1.88	1.52	1.74
Petroleum Products	2.49	3.61	3.63	3.64	3.90	4.01	3.91	4.17	4.42	4.24
Distillate Fuel	4.04	4.72	4.69	4.66	4.87	4.88	4.88	5.06	5.10	5.06
Residual Fuel	2.40	3.42	3.44	3.44	3.65	3.78	3.69	3.89	4.23	4.04
Natural Gas	2.58	3.44	3.34	3.41	3.26	3.02	3.20	3.71	3.06	3.43
Steam Coal	1.21	1.14	1.13	1.14	1.06	1.07	1.06	0.98	0.97	0.98

Table E3. Energy Prices by Sector and Source (Continued)
(1999 Dollars per Million Btu, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%
Average Price to All Users¹⁴										
Petroleum Products ²	7.44	8.53	8.51	8.48	8.81	8.82	8.82	8.49	8.53	8.49
Distillate Fuel	7.25	8.14	8.09	8.07	8.20	8.21	8.21	8.20	8.21	8.19
Jet Fuel	4.70	5.29	5.25	5.23	5.49	5.49	5.49	5.72	5.72	5.72
Liquefied Petroleum Gas	8.84	8.63	8.62	8.63	8.74	8.68	8.70	8.54	8.87	8.62
Motor Gasoline ⁸	9.45	10.80	10.78	10.74	11.31	11.33	11.33	10.60	10.61	10.58
Residual Fuel	2.47	3.25	3.24	3.24	3.33	3.33	3.33	3.49	3.49	3.49
Natural Gas	4.05	4.72	4.69	4.71	4.47	4.34	4.43	4.60	4.18	4.40
Coal	1.23	1.16	1.15	1.15	1.08	1.09	1.08	1.00	0.99	1.00
Ethanol (E85) ¹¹	14.42	19.21	19.19	19.19	19.16	19.20	19.21	19.36	19.30	19.33
Methanol (M85) ¹²	10.38	13.13	13.09	13.11	13.83	13.84	13.84	14.35	14.36	14.35
Electricity	19.41	18.65	18.77	18.60	17.99	18.55	18.07	18.19	18.97	18.23
Non-Renewable Energy Expenditures by Sector (billion 1999 dollars)										
Residential	134.28	153.83	154.00	153.69	160.41	161.84	160.56	183.27	184.47	182.54
Commercial	98.42	114.97	115.30	114.53	119.69	121.55	119.76	136.41	137.91	135.39
Industrial	111.66	127.05	126.58	126.37	133.28	132.80	132.78	154.57	151.28	151.74
Transportation	212.64	273.84	272.89	271.90	308.81	309.08	309.20	340.45	340.30	339.91
Total Non-Renewable Expenditures	556.99	669.69	668.77	666.50	722.19	725.27	722.30	814.69	813.96	809.58
Transportation Renewable Expenditures	0.14	0.42	0.42	0.42	0.64	0.64	0.64	0.85	0.85	0.85
Total Expenditures	557.13	670.11	669.19	666.92	722.82	725.91	722.93	815.54	814.81	810.43

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.

³Excludes independent power producers.

⁴Includes cogenerators.

⁵Excludes uses for lease and plant fuel.

⁶Low sulfur diesel fuel. Price includes Federal and State taxes while excluding county and local taxes.

⁷Kerosene-type jet fuel. Price includes Federal and State taxes while excluding county and local taxes.

⁸Sales weighted-average price for all grades. Includes Federal and State taxes and excludes county and local taxes.

⁹Includes Federal and State taxes while excluding county and local taxes.

¹⁰Compressed natural gas used as a vehicle fuel. Price includes estimated motor vehicle fuel taxes.

¹¹E85 is 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable).

¹²M85 is 85 percent methanol and 15 percent motor gasoline.

¹³Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy. Includes small power producers and exempt wholesale generators.

¹⁴Weighted averages of end-use fuel prices are derived from the prices shown in each sector and the corresponding sectoral consumption.

Btu = British thermal unit.

RPS = Renewable Portfolio Standards.

Note: Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 prices for gasoline, distillate, and jet fuel are based on prices in various issues of Energy Information Administration (EIA), *Petroleum Marketing Monthly*, DOE/EIA-0380 (99/03-2000/04) (Washington, DC, 1999-2000). 1999 prices for all other petroleum products are derived from the EIA, *State Energy Price and Expenditure Report 1997*, DOE/EIA-0376(97) (Washington, DC, July 2000). 1999 industrial gas delivered prices are based on EIA, *Manufacturing Energy Consumption Survey 1994*. 1999 residential and commercial natural gas delivered prices: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). 1999 coal prices based on EIA, *Quarterly Coal Report*, DOE/EIA-0121(2000/1Q) (Washington, DC, August 2000), and EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2RPS20_X.D070601A, M2RPS20H_X.D070601A. 1999 electricity prices for commercial, industrial, and transportation: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2RPS20_X.D070601A, M2RPS20H_X.D070601A. **Projections:** EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2RPS20_X.D070601A, M2RPS20H_X.D070601A.

Table E4. Electricity Supply, Disposition, Prices, and Emissions
(Billion Kilowatthours, Unless Otherwise Noted)

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%
Generation by Fuel Type										
Electric Generators¹										
Coal	1831	2106	2076	2104	2245	2105	2199	2315	2039	2195
Petroleum	94	43	35	37	28	20	23	25	14	19
Natural Gas ²	359	583	522	581	825	651	789	1495	888	1266
Nuclear Power	730	740	740	740	725	725	725	613	613	613
Pumped Storage	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Renewable Sources ³	355	373	466	383	397	687	476	400	1200	735
Total	3369	3844	3837	3843	4219	4188	4212	4847	4754	4827
Non-Utility Generation for Own Use	16	17	16	16	17	16	16	17	16	16
Distributed Generation	0	0	0	0	1	1	1	5	4	4
Cogenerators⁴										
Coal	47	53	53	53	52	52	52	52	51	51
Petroleum	9	10	10	10	10	10	10	10	10	10
Natural Gas	207	237	237	237	261	268	261	318	370	331
Other Gaseous Fuels ⁵	4	6	6	6	7	7	7	8	9	8
Renewable Sources ³	31	34	34	34	39	39	39	48	48	48
Other ⁶	5	5	5	5	5	5	5	6	6	6
Total	303	345	345	345	373	380	374	441	493	453
Other End-Use Generators⁷										
Sales to Utilities	151	172	171	171	180	180	180	208	218	210
Generation for Own Use	156	178	178	178	198	205	199	238	280	248
Net Imports⁸	33	57	57	57	35	35	35	23	23	23
Electricity Sales by Sector										
Residential	1145	1339	1335	1338	1452	1440	1449	1698	1678	1696
Commercial	1073	1288	1286	1288	1439	1432	1438	1646	1633	1645
Industrial	1058	1142	1140	1142	1222	1211	1220	1395	1347	1382
Transportation	17	26	26	26	35	35	35	49	49	49
Total	3294	3794	3787	3794	4147	4117	4141	4788	4707	4771
End-Use Prices (1999 cents per kwh)⁹										
Residential	8.0	7.6	7.6	7.6	7.6	7.8	7.7	7.7	8.0	7.7
Commercial	7.3	6.9	7.0	6.9	6.4	6.6	6.4	6.5	6.7	6.5
Industrial	4.4	4.4	4.4	4.3	4.1	4.3	4.1	4.2	4.4	4.2
Transportation	5.3	5.0	5.0	4.9	4.6	4.8	4.7	4.5	4.8	4.5
All Sectors Average	6.6	6.4	6.4	6.3	6.1	6.3	6.2	6.2	6.5	6.2
Prices by Service Category⁹										
(1999 cents per kwh)										
Generation	4.1	3.8	3.8	3.8	3.5	3.6	3.5	3.6	3.8	3.6
Transmission	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7
Distribution	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Emissions (million short tons)										
Sulfur Dioxide	13.71	10.38	10.39	10.39	9.70	9.70	9.70	8.95	8.95	8.95
Nitrogen Oxide	5.45	4.30	4.25	4.28	4.34	4.23	4.34	4.49	4.15	4.43

¹Includes grid-connected generation at all utilities and nonutilities except for cogenerators. Includes small power producers and exempt wholesale generators.

²Includes electricity generation by fuel cells.

³Includes conventional hydroelectric, geothermal, wood, wood waste, municipal solid waste, landfill gas, other biomass, solar, and wind power.

⁴Cogenerators produce electricity and other useful thermal energy. Includes sales to utilities and generation for own use.

⁵Other gaseous fuels include refinery and still gas.

⁶Other includes hydrogen, sulfur, batteries, chemicals, fish oil, and spent sulfite liquor.

⁷Includes 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.

⁸In 1998 approximately 70 percent of the U.S. electricity imports were provided by renewable sources (hydroelectricity); EIA does not project future proportions for the fuel source of imported electricity.

⁹Prices represent average revenue per kilowatthour.

Kwh = Kilowatthour.

RPS = Renewable Portfolio Standards.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Source: Energy Information Administration, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2RPS20_X.D070601A, M2RPS20H_X.D070601A.

**Table E5. Electricity Generating Capability
(Gigawatts)**

Net Summer Capability ¹	1999	Projections								
		2005			2010			2020		
		Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%
Electric Generators²										
Capability										
Coal Steam	305.1	303.9	303.6	304.2	318.6	307.9	317.2	318.5	304.8	315.4
Other Fossil Steam ³	137.4	127.8	125.5	125.3	119.2	115.1	116.4	116.9	108.9	114.0
Combined Cycle	21.0	53.2	50.6	57.8	107.8	84.5	103.5	202.2	126.8	176.6
Combustion Turbine/Diesel	74.3	123.1	127.2	125.6	147.2	150.4	152.0	199.5	191.4	197.5
Nuclear Power	97.4	97.5	97.5	97.5	94.8	94.8	94.8	76.3	76.3	76.3
Pumped Storage	19.3	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5
Fuel Cells	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.3	0.3
Renewable Sources ⁴	88.8	94.8	107.7	95.8	98.0	150.8	103.8	99.5	255.8	152.1
Distributed Generation ⁵	0.0	0.7	0.7	0.8	2.5	2.3	2.5	11.5	9.8	10.2
Total	743.4	820.4	832.2	826.6	907.8	925.3	909.8	1044.2	1093.7	1061.9
Cumulative Planned Additions⁶										
Coal Steam	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Fossil Steam ³	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Combined Cycle	0.0	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7
Combustion Turbine/Diesel	0.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
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	0.1	0.1	0.1	0.3	0.3	0.3
Renewable Sources ⁴	0.0	5.1	5.1	5.1	6.7	6.7	6.7	8.1	8.1	8.1
Distributed Generation ⁵	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.0	32.0	32.0	32.0	33.7	33.7	33.7	35.3	35.3	35.3
Cumulative Unplanned Additions⁶										
Coal Steam	0.0	1.1	0.8	1.4	18.9	8.6	17.6	20.5	8.6	17.6
Other Fossil Steam ³	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Combined Cycle	0.0	19.4	16.8	24.0	74.2	50.9	69.9	168.6	93.2	143.0
Combustion Turbine/Diesel	0.0	38.9	43.9	42.4	64.7	68.7	70.3	117.2	110.0	115.8
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 ⁴	0.0	0.4	13.4	1.5	2.0	54.8	7.8	2.0	158.4	54.6
Distributed Generation ⁵	0.0	0.7	0.7	0.8	2.5	2.3	2.5	11.5	9.8	10.2
Total	0.0	60.6	75.6	70.2	162.2	185.3	168.0	319.8	380.0	341.2
Cumulative Total Additions	0.0	92.6	107.6	102.2	195.9	218.9	201.7	355.1	415.3	376.5
Cumulative Retirements⁷										
Coal Steam	0.0	2.3	2.3	2.3	5.4	5.8	5.5	7.2	8.9	7.3
Other Fossil Steam ³	0.0	9.9	12.1	12.3	18.4	22.5	21.3	20.7	28.7	23.6
Combined Cycle	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2
Combustion Turbine/Diesel	0.0	4.4	5.3	5.3	6.0	6.9	6.7	6.3	7.1	6.8
Nuclear Power	0.0	0.0	0.0	0.0	2.6	2.6	2.6	21.2	21.2	21.2
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	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total	0.0	16.7	19.9	20.0	32.8	38.3	36.5	55.6	66.2	59.2
Cogenerators⁸										
Capability										
Coal	8.4	8.9	8.9	8.9	8.6	8.6	8.6	8.6	8.5	8.6
Petroleum	2.7	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
Natural Gas	34.6	39.9	39.9	39.9	43.3	44.4	43.4	51.4	58.6	53.1
Other Gaseous Fuels	0.2	0.8	0.8	0.8	0.9	0.9	0.9	1.1	1.1	1.1
Renewable Sources ⁴	5.4	5.9	5.9	5.9	6.8	6.8	6.8	8.2	8.2	8.2
Other	1.1	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Total	52.4	59.2	59.3	59.2	63.3	64.4	63.4	73.2	80.3	74.9
Cumulative Additions⁶	0.0	6.8	6.8	6.7	10.9	11.9	11.0	20.7	27.9	22.5

Table E5. Electricity Generating Capability (Continued)
(Gigawatts)

Net Summer Capability ¹	1999	Projections								
		2005			2010			2020		
		Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%
Other End-Use Generators⁹										
Renewable Sources	1.0	1.1	1.1	1.1	1.3	1.3	1.3	1.3	1.3	1.3
Cumulative Additions	0.0	0.1	0.1	0.1	0.3	0.3	0.3	0.3	0.3	0.3

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

²Includes grid-connected utilities and nonutilities except for cogenerators. Includes small power producers and exempt wholesale generators.

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

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

⁵Primarily peak-load capacity fueled by natural gas.

⁶Cumulative additions after December 31, 1999.

⁷Cumulative total retirements after December 31, 1999.

⁸Nameplate capacity is reported for nonutilities on Form EIA-860B: "Annual Electric Generator Report - Nonutility." Nameplate capacity is designated by the manufacturer. The nameplate capacity has been converted to the net summer capability based on historic relationships.

⁹Includes 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. Excludes off-grid photovoltaics and other generators not connected to the distribution or transmission systems.

RPS = Renewable Portfolio Standards.

Notes: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports. Net summer capability has been estimated for nonutility generators to be consistent with capability for electric utility generators.

Source: Energy Information Administration, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2RPS20_X.D070601A, M2RPS20H_X.D070601A.

Table E6. Electricity Trade
(Billion Kilowatthours, Unless Otherwise Noted)

Electricity Trade	1999	Projections								
		2005			2010			2020		
		Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%
Interregional Electricity Trade										
Gross Domestic Firm Power Trade	182.2	125.3	125.3	125.3	102.9	102.9	102.9	0.0	0.0	0.0
Gross Domestic Economy Trade	152.0	202.3	199.9	189.8	155.5	174.5	149.8	147.9	219.4	155.5
Gross Domestic Trade	334.2	327.6	325.1	315.0	258.4	277.4	252.7	147.9	219.4	155.5
Gross Domestic Firm Power Sales										
(million 1999 dollars)	8588.1	5905.8	5905.8	5905.8	4851.2	4851.2	4851.2	0.0	0.0	0.0
Gross Domestic Economy Sales										
(million 1999 dollars)	4413.9	6468.6	6549.9	5922.6	4510.4	5179.6	4335.7	4605.1	7165.9	4705.5
Gross Domestic Sales										
(million 1999 dollars)	13002.0	12374.4	12455.7	11828.4	9361.6	10030.8	9186.9	4605.1	7165.9	4705.5
International Electricity Trade										
Firm Power Imports From Canada and Mexico ¹	27.0	10.7	10.7	10.7	5.8	5.8	5.8	0.0	0.0	0.0
Economy Imports From Canada and Mexico ¹ ..	21.9	63.5	63.5	63.5	45.9	45.9	45.9	30.6	30.6	30.6
Gross Imports From Canada and Mexico¹ ..	48.9	74.1	74.1	74.1	51.7	51.7	51.7	30.6	30.6	30.6
Gross Exports To Canada and Mexico										
Firm Power Exports To Canada and Mexico ...	9.2	9.7	9.7	9.7	8.7	8.7	8.7	0.0	0.0	0.0
Economy Exports To Canada and Mexico	6.3	7.0	7.0	7.0	7.7	7.7	7.7	7.7	7.7	7.7
Gross Exports To Canada and Mexico	15.5	16.7	16.7	16.7	16.4	16.4	16.4	7.7	7.7	7.7

¹Historically electricity imports were primarily from renewable resources, principally hydroelectric.
RPS = Renewable Portfolio Standards.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 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, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2RPS20_X.D070601A, M2RPS20H_X.D070601A.

Table E7. Natural Gas Supply and Disposition
(Trillion Cubic Feet per Year)

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%
Production										
Dry Gas Production ¹	18.67	21.40	20.90	21.24	23.43	22.45	23.21	29.47	26.09	28.22
Supplemental Natural Gas ² . . .	0.10	0.11	0.11	0.11	0.06	0.06	0.06	0.06	0.06	0.06
Net Imports										
Canada	3.38	4.69	4.61	4.74	5.00	4.86	5.02	5.82	5.38	5.67
Mexico	3.29	4.48	4.40	4.52	4.72	4.58	4.74	5.43	5.03	5.29
Liquefied Natural Gas	-0.01	-0.18	-0.18	-0.18	-0.25	-0.25	-0.25	-0.40	-0.40	-0.40
Total Supply	0.10	0.39	0.39	0.39	0.53	0.52	0.53	0.79	0.75	0.78
Total Supply										
	22.15	26.20	25.63	26.09	28.49	27.36	28.29	35.35	31.52	33.94
Consumption by Sector										
Residential	4.75	5.42	5.43	5.43	5.46	5.51	5.48	6.07	6.24	6.14
Commercial	3.06	3.88	3.89	3.88	4.06	4.10	4.07	4.32	4.47	4.38
Industrial ³	8.31	8.81	8.80	8.80	9.48	9.55	9.51	10.53	10.85	10.61
Electric Generators ⁴	3.64	5.43	4.88	5.34	6.81	5.59	6.59	11.19	7.00	9.65
Lease and Plant Fuel ⁵	1.23	1.38	1.35	1.37	1.50	1.45	1.49	1.87	1.70	1.81
Pipeline Fuel	0.64	0.81	0.80	0.81	0.88	0.86	0.88	1.07	0.97	1.04
Transportation ⁶	0.02	0.05	0.05	0.05	0.09	0.09	0.09	0.15	0.15	0.15
Total	21.65	25.79	25.21	25.68	28.29	27.15	28.10	35.20	31.38	33.78
Discrepancy ⁷										
	0.50	0.42	0.42	0.41	0.20	0.20	0.19	0.14	0.14	0.17

¹Marketed production (wet) minus extraction losses.

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

³Includes consumption by cogenerators.

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

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

⁶Compressed natural gas used as vehicle fuel.

⁷Balancing item. Natural gas lost as a result of converting flow data measured at varying temperatures and pressures to a standard temperature and pressure and the merger of different data reporting systems which vary in scope, format, definition, and respondent type. In addition, 1999 values include net storage injections.

Btu = British thermal unit.

RPS = Renewable Portfolio Standards.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 supplemental natural gas: Energy Information Administration (EIA), *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). 1999 transportation sector consumption: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2RPS20_X.D070601A, M2RPS20H_X.D070601A. Other 1999 consumption: EIA, *Short-Term Energy Outlook, September 2000*, <http://www.eia.doe.gov/pub/forecasting/steo/oldsteos/sep00.pdf> with adjustments to end-use sector consumption levels for consumption of natural gas by electric wholesale generators based on EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2RPS20_X.D070601A, M2RPS20H_X.D070601A. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2RPS20_X.D070601A, M2RPS20H_X.D070601A.

Table E8. Natural Gas Prices, Margins, and Revenue
(1999 Dollars per Thousand Cubic Feet, Unless Otherwise Noted)

Prices, Margins, and Revenue	1999	Projections								
		2005			2010			2020		
		Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%
Source Price										
Average Lower 48 Wellhead Price ¹	2.08	2.96	2.91	2.95	2.87	2.65	2.81	3.22	2.66	2.95
Average Import Price	2.29	2.95	2.93	2.96	2.64	2.58	2.65	2.72	2.56	2.68
Average²	2.11	2.96	2.91	2.95	2.82	2.64	2.78	3.13	2.64	2.90
Delivered Prices										
Residential	6.69	7.31	7.25	7.29	6.91	6.72	6.85	6.83	6.29	6.58
Commercial	5.49	5.70	5.65	5.69	5.82	5.63	5.76	5.93	5.40	5.69
Industrial ³	2.87	3.74	3.69	3.73	3.59	3.40	3.54	3.95	3.39	3.69
Electric Generators ⁴	2.63	3.50	3.41	3.47	3.32	3.08	3.26	3.78	3.12	3.50
Transportation ⁵	7.21	7.48	7.41	7.45	7.40	7.21	7.35	7.61	7.06	7.36
Average⁶	4.15	4.84	4.81	4.83	4.59	4.45	4.54	4.72	4.29	4.51
Transmission & Distribution Margins⁷										
Residential	4.58	4.35	4.34	4.34	4.08	4.08	4.07	3.70	3.65	3.68
Commercial	3.37	2.74	2.74	2.74	2.99	2.99	2.99	2.81	2.76	2.79
Industrial ³	0.76	0.78	0.78	0.78	0.77	0.76	0.76	0.82	0.75	0.79
Electric Generators ⁴	0.52	0.54	0.50	0.52	0.49	0.44	0.48	0.65	0.48	0.59
Transportation ⁵	5.10	4.51	4.50	4.51	4.58	4.57	4.57	4.48	4.42	4.46
Average⁶	2.04	1.88	1.90	1.88	1.76	1.81	1.77	1.59	1.65	1.61
Transmission & Distribution Revenue (billion 1999 dollars)										
Residential	21.77	23.57	23.61	23.57	22.30	22.47	22.32	22.48	22.77	22.58
Commercial	10.32	10.63	10.66	10.64	12.16	12.27	12.17	12.12	12.34	12.20
Industrial ³	6.28	6.86	6.86	6.85	7.26	7.26	7.23	8.65	8.17	8.37
Electric Generators ⁴	1.88	2.94	2.42	2.79	3.36	2.47	3.18	7.24	3.35	5.72
Transportation ⁵	0.08	0.24	0.24	0.24	0.41	0.41	0.41	0.68	0.68	0.68
Total	40.32	44.25	43.79	44.10	45.49	44.88	45.30	51.18	47.31	49.56

¹Represents lower 48 onshore and offshore supplies.

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

³Includes consumption by cogenerators.

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

RPS = Renewable Portfolio Standards.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 industrial delivered prices based on Energy Information Administration (EIA), *Manufacturing Energy Consumption Survey 1994*. 1999 residential and commercial delivered prices, average lower 48 wellhead price, and average import price: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). Other 1999 values, and projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2RPS20_X.D070601A, M2RPS20H_X.D070601A.

Table E9. Oil and Gas Supply

Production and Supply	1999	Projections								
		2005			2010			2020		
		Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%
Crude Oil										
Lower 48 Average Wellhead Price¹ (1999 dollars per barrel)	16.49	21.43	20.56	22.29	20.73	20.76	20.77	21.47	21.51	21.52
Production (million barrels per day)²										
U.S. Total	5.88	5.66	5.68	5.68	5.32	5.31	5.33	5.25	5.15	5.23
Lower 48 Onshore	3.27	2.81	2.81	2.82	2.52	2.51	2.52	2.75	2.68	2.71
Conventional	2.59	2.18	2.18	2.18	1.81	1.80	1.81	1.98	1.93	1.97
Enhanced Oil Recovery	0.68	0.63	0.63	0.64	0.70	0.71	0.71	0.76	0.75	0.74
Lower 48 Offshore	1.56	2.06	2.07	2.07	2.16	2.15	2.16	1.87	1.84	1.88
Alaska	1.05	0.79	0.79	0.79	0.65	0.65	0.65	0.64	0.64	0.64
Lower 48 End of Year Reserves (billion barrels)² ..	18.33	15.75	15.74	15.77	14.55	14.47	14.55	14.11	13.88	14.04
Natural Gas										
Lower 48 Average Wellhead Price¹ (1999 dollars per thousand cubic feet)	2.08	2.96	2.91	2.95	2.87	2.65	2.81	3.22	2.66	2.95
Production (trillion cubic feet)³										
U.S. Total	18.67	21.40	20.90	21.24	23.43	22.45	23.21	29.47	26.09	28.22
Lower 48 Onshore	12.83	14.46	14.07	14.32	16.71	15.82	16.53	21.31	19.08	20.05
Associated-Dissolved ⁴	1.80	1.51	1.51	1.51	1.32	1.32	1.32	1.39	1.37	1.39
Non-Associated	11.03	12.95	12.55	12.80	15.39	14.50	15.21	19.91	17.71	18.66
Conventional	6.64	7.67	7.51	7.63	7.93	7.49	7.91	11.14	10.23	10.43
Unconventional	4.39	5.27	5.04	5.17	7.45	7.00	7.30	8.78	7.48	8.23
Lower 48 Offshore	5.43	6.47	6.37	6.46	6.22	6.12	6.17	7.59	6.44	7.60
Associated-Dissolved ⁴	0.93	1.06	1.06	1.06	1.09	1.09	1.09	1.04	1.03	1.04
Non-Associated	4.50	5.41	5.31	5.40	5.13	5.03	5.08	6.56	5.41	6.56
Alaska	0.42	0.47	0.47	0.47	0.50	0.50	0.50	0.57	0.57	0.57
Lower 48 End of Year Reserves³ (trillion cubic feet)	157.41	167.88	168.51	168.34	185.55	180.63	182.87	200.71	200.76	204.02
Supplemental Gas Supplies (trillion cubic feet)⁵ ..	0.10	0.11	0.11	0.11	0.06	0.06	0.06	0.06	0.06	0.06
Total Lower 48 Wells (thousands)	17.93	28.87	28.61	28.82	29.86	27.74	29.14	39.36	33.40	37.65

¹Represents lower 48 onshore and offshore supplies.

²Includes lease condensate.

³Market production (wet) minus extraction losses.

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

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

Btu = British thermal unit.

RPS = Renewable Portfolio Standards.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 lower 48 onshore, lower 48 offshore, and Alaska crude oil production: Energy Information Administration (EIA), *Petroleum Supply Annual 1999*, DOE/EIA-0340(99/1) (Washington, DC, June 2000). 1999 natural gas lower 48 average wellhead price, Alaska and total natural gas production, and supplemental gas supplies: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). Other 1999 values: EIA, Office of Integrated Analysis and Forecasting. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2RPS20_X.D070601A, M2RPS20H_X.D070601A.

Table E10. Coal Supply, Disposition, and Prices
(Million Short Tons per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%
Production¹										
Appalachia	433	426	420	425	421	404	412	396	379	383
Interior	185	182	180	181	180	177	180	161	159	163
West	486	624	616	625	694	644	680	783	650	729
East of the Mississippi	559	561	553	558	557	538	549	524	504	511
West of the Mississippi	544	672	664	673	738	687	724	817	685	764
Total	1103	1233	1217	1231	1295	1225	1273	1340	1188	1275
Net Imports										
Imports	9	16	16	16	17	17	17	20	20	20
Exports	58	60	60	60	58	58	58	56	56	56
Total	-49	-44	-44	-44	-40	-40	-40	-36	-36	-36
Total Supply²	1054	1189	1173	1187	1254	1185	1233	1304	1152	1239
Consumption by Sector										
Residential and Commercial	5	5	5	5	5	5	5	5	5	5
Industrial ³	79	82	82	82	83	83	83	86	86	85
Coke Plants	28	25	25	25	23	23	23	19	19	19
Electric Generators ⁴	921	1077	1061	1075	1145	1074	1122	1196	1043	1131
Total	1032	1189	1174	1188	1256	1186	1234	1306	1153	1241
Discrepancy and Stock Change⁵	21	-1	-1	-1	-2	-1	-1	-2	-1	-2
Average Minemouth Price										
(1999 dollars per short ton)	17.17	15.05	14.98	15.00	14.08	14.19	14.05	12.87	13.28	12.99
(1999 dollars per million Btu)	0.82	0.73	0.73	0.73	0.69	0.69	0.69	0.64	0.65	0.64
Delivered Prices (1999 dollars per short ton)⁶										
Industrial	31.39	29.67	29.55	29.64	28.61	28.54	28.56	26.50	26.33	26.45
Coke Plants	44.28	42.39	42.39	42.47	41.36	41.48	41.50	38.52	38.71	38.65
Electric Generators										
(1999 dollars per short ton)	24.73	22.90	22.81	22.86	21.28	21.38	21.24	19.41	19.39	19.38
(1999 dollars per million Btu)	1.21	1.14	1.13	1.14	1.06	1.07	1.06	0.98	0.97	0.98
Average	25.77	23.78	23.70	23.75	22.13	22.27	22.11	20.15	20.23	20.16
Exports ⁷	37.44	36.39	36.33	36.42	35.66	35.68	35.69	33.09	33.08	33.14

¹Includes anthracite, bituminous coal, lignite, and waste coal delivered to independent power producers. Waste coal deliveries totaled 8.5 million tons in 1995, 8.8 million tons in 1996, 8.1 million tons in 1997, 8.6 million tons in 1998, and are projected to reach 9.6 million tons in 1999, and 12.2 million tons in 2000.

²Production plus net imports and net storage withdrawals.

³Includes consumption by cogenerators.

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

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

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

⁷F.a.s. price at U.S. port of exit.

Btu = British thermal unit.

RPS = Renewable Portfolio Standards.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 data based on Energy Information Administration (EIA), *Quarterly Coal Report*, DOE/EIA-0121(2000/1Q) (Washington, DC, August 2000), and EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2RPS20_X.D070601A, M2RPS20H_X.D070601A. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2RPS20_X.D070601A, M2RPS20H_X.D070601A.

Table E11. Renewable Energy Generating Capability and Generation
(Gigawatts, Unless Otherwise Noted)

Capacity and Generation	1999	Projections								
		2005			2010			2020		
		Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%
Electric Generators¹										
(excluding cogenerators)										
Net Summer Capability										
Conventional Hydropower	78.77	79.26	79.26	79.26	79.38	79.38	79.38	79.38	79.38	79.38
Geothermal ²	2.87	3.43	8.36	4.39	4.93	13.97	8.78	4.95	15.29	10.41
Municipal Solid Waste ³	2.61	2.96	3.61	3.09	3.42	4.29	3.97	3.93	4.91	4.58
Wood and Other Biomass ⁴	1.57	1.75	5.15	1.75	2.12	17.52	2.17	2.45	60.95	17.77
Solar Thermal	0.33	0.35	0.35	0.35	0.40	0.40	0.40	0.48	0.48	0.48
Solar Photovoltaic	0.01	0.08	0.08	0.08	0.21	0.21	0.21	0.54	0.54	0.54
Wind	2.66	6.92	10.90	6.92	7.52	35.03	8.87	7.76	94.30	38.94
Total	88.83	94.75	107.71	95.85	97.98	150.79	103.78	99.49	255.84	152.10
Generation (billion kilowatthours)										
Conventional Hydropower	309.55	301.20	301.21	301.20	301.13	301.13	301.13	300.07	300.07	300.07
Geothermal ²	13.21	18.34	58.83	26.30	30.94	103.78	62.53	31.16	114.17	76.08
Municipal Solid Waste ³	18.12	20.68	25.82	21.76	23.88	30.67	28.16	27.76	35.48	32.83
Wood and Other Biomass ⁴	9.02	14.94	51.80	16.02	21.30	154.62	60.94	19.78	483.01	207.63
Dedicated Plants	7.73	9.16	31.64	9.16	11.36	114.19	11.78	13.82	403.94	116.13
Cofiring	1.29	5.78	20.16	6.86	9.94	40.42	49.16	5.95	79.08	91.50
Solar Thermal	0.89	0.96	0.96	0.96	1.11	1.11	1.11	1.37	1.37	1.37
Solar Photovoltaic	0.03	0.20	0.20	0.20	0.51	0.51	0.51	1.36	1.36	1.36
Wind	4.61	16.30	26.79	16.30	18.16	95.63	22.01	18.83	264.37	115.98
Total	355.43	372.61	465.60	382.74	397.03	687.45	476.39	400.32	1199.83	735.31
Cogenerators⁵										
Net Summer Capability										
Municipal Solid Waste	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Biomass	4.65	5.17	5.17	5.17	6.06	6.06	6.06	7.54	7.54	7.54
Total	5.35	5.87	5.87	5.87	6.76	6.76	6.76	8.24	8.24	8.24
Generation (billion kilowatthours)										
Municipal Solid Waste	4.04	4.04	4.04	4.04	4.04	4.04	4.04	4.04	4.04	4.04
Biomass	27.08	29.92	29.92	29.92	35.01	35.01	35.01	43.52	43.52	43.52
Total	31.12	33.97	33.97	33.97	39.05	39.05	39.05	47.57	47.57	47.57
Other End-Use Generators⁶										
Net Summer Capability										
Conventional Hydropower ⁷	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solar Photovoltaic	0.01	0.10	0.10	0.10	0.35	0.35	0.35	0.35	0.35	0.35
Total	1.00	1.09	1.09	1.09	1.34	1.34	1.34	1.34	1.34	1.34
Generation (billion kilowatthours)										
Conventional Hydropower ⁷	4.57	4.44	4.44	4.44	4.43	4.43	4.43	4.41	4.41	4.41
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solar Photovoltaic	0.02	0.20	0.20	0.20	0.75	0.75	0.75	0.75	0.75	0.75
Total	4.59	4.64	4.64	4.64	5.18	5.18	5.18	5.17	5.17	5.17

¹Includes grid-connected utilities and nonutilities other than cogenerators. These nonutility facilities include small power producers and exempt wholesale generators.

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

³Includes landfill gas.

⁴Includes projections for energy crops after 2010.

⁵Cogenerators produce electricity and other useful thermal energy.

⁶Includes 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. Excludes off-grid photovoltaics and other generators not connected to the distribution or transmission systems.

⁷Represents own-use industrial hydroelectric power.

RPS = Renewable Portfolio Standards.

Notes: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports. Net summer capability has been estimated for nonutility generators for AEO2001. Net summer capability 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: 1999 electric utility capability: Energy Information Administration (EIA), Form EIA-860A: "Annual Electric Generator Report - Utility." 1999 nonutility and cogenerator capability: EIA, Form EIA-860B: "Annual Electric Generator Report - Nonutility." 1999 generation: EIA, *Annual Energy Review 1999*, DOE/EIA-0384(99) (Washington, DC, July 2000). Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2RPS20_X.D070601A, M2RPS20H_X.D070601A.

Table E12. Renewable Energy Consumption by Sector and Source¹
(Quadrillion Btu per Year)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%
Marketed Renewable Energy²										
Residential	0.41	0.42	0.42	0.42	0.42	0.43	0.42	0.44	0.44	0.44
Wood	0.41	0.42	0.42	0.42	0.42	0.43	0.42	0.44	0.44	0.44
Commercial	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Biomass	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Industrial³	2.15	2.42	2.42	2.42	2.64	2.64	2.64	3.08	3.08	3.08
Conventional Hydroelectric	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Municipal Solid Waste	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Biomass	1.97	2.23	2.23	2.23	2.46	2.46	2.46	2.90	2.90	2.90
Transportation	0.12	0.20	0.20	0.20	0.22	0.23	0.22	0.24	0.24	0.24
Ethanol used in E85 ⁴	0.00	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03
Ethanol used in Gasoline Blending	0.12	0.18	0.18	0.18	0.19	0.20	0.20	0.21	0.20	0.21
Electric Generators⁵	3.88	4.19	5.95	4.47	4.73	9.29	6.19	4.78	14.46	9.08
Conventional Hydroelectric	3.19	3.10	3.10	3.10	3.10	3.10	3.10	3.08	3.08	3.08
Geothermal	0.28	0.44	1.69	0.70	0.85	3.29	1.80	0.85	3.68	2.29
Municipal Solid Waste ⁶	0.25	0.28	0.35	0.30	0.32	0.42	0.38	0.38	0.48	0.45
Biomass	0.12	0.18	0.53	0.19	0.26	1.48	0.66	0.25	4.47	2.04
Dedicated Plants	0.10	0.11	0.32	0.11	0.14	1.10	0.13	0.17	3.74	1.14
Cofiring	0.02	0.07	0.21	0.08	0.12	0.39	0.53	0.07	0.73	0.90
Solar Thermal	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.03
Solar Photovoltaic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wind	0.05	0.17	0.28	0.17	0.19	0.98	0.23	0.19	2.72	1.19
Total Marketed Renewable Energy	6.64	7.31	9.07	7.59	8.10	12.67	9.56	8.62	18.31	12.92
Non-Marketed Renewable Energy⁷										
Selected Consumption										
Residential	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04
Solar Hot Water Heating	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Geothermal Heat Pumps	0.02	0.02	0.02	0.02	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	0.00	0.00	0.00
Commercial	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03
Solar Thermal	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03
Solar Photovoltaic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ethanol										
From Corn	0.12	0.19	0.19	0.19	0.20	0.21	0.20	0.17	0.17	0.17
From Cellulose	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.07	0.07	0.07
Total	0.12	0.20	0.20	0.20	0.22	0.23	0.22	0.24	0.24	0.24

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.

³Includes all electricity production by industrial and other cogenerators for the grid and for own use.

⁴Excludes motor gasoline component of E85.

⁵Includes renewable energy delivered to the grid from electric utilities and nonutilities. Renewable energy used in generating electricity for own use is included in the individual sectoral electricity energy consumption values.

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.

RPS = Renewable Portfolio Standards.

Notes: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 ethanol: Energy Information Administration (EIA), *Annual Energy Review 1999*, DOE/EIA-0384(99) (Washington, DC, July 2000). 1999 electric generators: EIA, Form EIA-860A: "Annual Electric Generator Report - Utility," and EIA, Form EIA-860B: "Annual Electric Generator Report - Nonutility." Other 1999: EIA, Office of Integrated Analysis and Forecasting. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2RPS20_X.D070601A, M2RPS20H_X.D070601A.

Table E13. Carbon Dioxide Emissions by Sector and Source
(Million Metric Tons Carbon Equivalent per Year)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%
Residential										
Petroleum	26.0	26.5	26.5	26.5	24.5	24.5	24.5	23.2	23.1	23.2
Natural Gas	69.5	80.2	80.4	80.3	80.8	81.5	81.0	89.8	92.3	90.8
Coal	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3
Electricity	193.4	227.1	220.5	225.6	242.6	223.1	236.7	275.6	228.2	256.3
Total	290.1	335.0	328.6	333.6	349.2	330.4	343.5	389.8	344.7	371.5
Commercial										
Petroleum	13.7	11.8	11.8	11.8	12.0	12.0	12.0	12.1	11.8	12.0
Natural Gas	45.4	57.4	57.5	57.4	60.1	60.6	60.2	63.9	66.1	64.8
Coal	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.9	1.9	1.9
Electricity	181.3	218.4	212.3	217.3	240.4	221.9	234.9	267.1	222.1	248.6
Total	242.1	289.4	283.4	288.3	314.3	296.4	309.0	345.0	301.9	327.3
Industrial¹										
Petroleum	104.2	99.2	99.2	99.3	105.3	104.5	105.1	113.6	111.7	112.9
Natural Gas ²	141.6	148.4	147.9	148.1	159.8	160.2	159.9	180.3	182.4	180.9
Coal	55.9	65.8	65.8	65.8	65.6	65.6	65.7	65.8	65.9	65.7
Electricity	178.8	193.6	188.2	192.6	204.1	187.6	199.3	226.4	183.1	208.8
Total	480.4	507.0	501.1	505.8	534.8	518.0	530.0	586.1	543.1	568.2
Transportation										
Petroleum ³	485.8	556.3	556.2	556.3	607.2	606.6	607.0	704.2	703.0	703.7
Natural Gas ⁴	9.5	12.8	12.5	12.7	14.4	14.0	14.3	18.1	16.6	17.6
Other ⁵	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Electricity	2.9	4.4	4.3	4.4	5.8	5.4	5.7	7.9	6.6	7.3
Total³	498.2	573.6	573.1	573.4	627.5	626.1	627.1	730.2	726.3	728.7
Total Carbon Dioxide Emissions by Delivered Fuel										
Petroleum ³	629.7	693.8	693.8	693.9	749.0	747.6	748.6	853.1	849.6	851.8
Natural Gas	266.0	298.8	298.4	298.6	315.1	316.3	315.4	352.0	357.4	354.1
Coal	58.8	68.8	68.7	68.7	68.8	68.8	68.8	69.0	69.1	68.8
Other ⁵	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Electricity	556.3	643.6	625.2	639.8	692.8	637.9	676.6	777.0	640.0	721.0
Total³	1510.8	1705.0	1686.2	1701.0	1825.7	1770.8	1809.5	2051.2	1916.1	1995.8
Electric Generators⁶										
Petroleum	20.0	9.4	7.4	7.9	5.8	4.0	4.8	5.2	2.9	3.8
Natural Gas	45.8	79.6	71.6	78.3	100.0	82.1	96.6	164.1	102.7	141.6
Coal	490.5	554.6	546.2	553.6	587.0	551.8	575.1	607.7	534.3	575.7
Total	556.3	643.6	625.2	639.8	692.8	637.9	676.6	777.0	640.0	721.0
Total Carbon Dioxide Emissions by Primary Fuel⁷										
Petroleum ³	649.7	703.1	701.2	701.8	754.8	751.7	753.4	858.3	852.5	855.5
Natural Gas	311.8	378.4	370.0	376.9	415.0	398.4	412.0	516.2	460.1	495.6
Coal	549.3	623.3	615.0	622.3	655.8	620.6	644.0	676.7	603.4	644.5
Other ⁵	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total³	1510.8	1705.0	1686.2	1701.0	1825.7	1770.8	1809.5	2051.2	1916.1	1995.8
Carbon Dioxide Emissions (tons carbon equivalent per person)										
	5.5	5.9	5.9	5.9	6.1	5.9	6.0	6.3	5.9	6.1

¹Includes consumption by cogenerators.

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 1998, international bunker fuels accounted for 20 to 25 million metric tons carbon equivalent of carbon dioxide annually.

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

⁵Includes methanol and liquid hydrogen.

⁶Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy. Includes small power producers and exempt wholesale generators. 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.

RPS = Renewable Portfolio Standards.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 emissions and emission factors: Energy Information Administration (EIA), *Emissions of Greenhouse Gases in the United States 1999*, DOE/EIA-0573(99), (Washington, DC, October 2000). Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2RPS20_X.D070601A, M2RPS20H_X.D070601A.

Table E14. Emissions, Allowance Costs, and Retrofits: Electric Generators, Excluding Cogenerators

Impacts	1999	Projections								
		2005			2010			2020		
		Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%	Reference	RPS 20%	RPS 10%
Emissions										
Nitrogen Oxide (million tons)	5.45	4.30	4.25	4.28	4.34	4.23	4.34	4.49	4.15	4.43
Sulfur Dioxide (million tons)	13.71	10.38	10.39	10.39	9.70	9.70	9.70	8.95	8.95	8.95
Mercury (tons)	43.60	45.24	44.97	45.23	45.60	44.12	45.22	45.07	42.16	44.32
Carbon Dioxide (million metric tons carbon equivalent) . .	14.44	9.48	9.48	9.48	8.95	8.95	8.95	8.95	8.95	8.95
Allowance Prices										
Nitrogen Oxide (1999 dollars per ton)	0	4352	4351	4314	4391	4516	4451	5037	5625	5491
Sulfur Dioxide (1999 dollars per ton)	0	190	182	196	187	170	176	241	147	190
Mercury (million 1999 dollars per ton) . . .	0	0	0	0	0	0	0	0	0	0
Carbon Dioxide (1999 dollars per ton carbon equivalent)	12	3	3	3	0	0	0	0	0	0
Retrofits (gigawatts)										
Scrubber ¹	0.0	6.5	5.9	5.9	7.1	5.9	5.9	14.8	9.8	9.8
Combustion	0.0	39.9	40.6	42.0	42.1	43.7	43.7	46.1	46.6	46.2
SCR Post-combustion	0.0	92.8	96.6	93.3	92.9	96.7	93.6	93.0	99.9	93.9
SNCR Post-combustion	0.0	25.2	18.3	22.0	26.3	19.8	23.7	43.4	39.0	46.9
Coal Production by Sulfur Category (million tons)										
Low Sulfur (< .61 lbs. S/mmBtu)	472	594	585	595	642	596	627	721	592	663
Medium Sulfur (.61-1.67 lbs. S/mmBtu) . . .	432	454	448	452	464	443	459	440	426	440
High Sulfur (> 1.67 lbs. S/mmBtu)	199	185	185	184	188	186	187	179	170	172

¹Represents scrubbers added by the model. Planned scrubbers added by electricity generators are not shown here.

RPS = Renewable Portfolio Standards.

lbs. S/mmBtu = Pounds sulfur per million British thermal units.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Source: Energy Information Administration, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2RPS20_X.D070601A, M2RPS20H_X.D070601A.

Appendix F

Tables for Alternative Hg Cap Cases

Table F1. Total Energy Supply and Disposition Summary
(Quadrillion Btu per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%
Production										
Crude Oil and Lease Condensate . . .	12.45	11.98	12.01	12.04	11.27	11.21	11.22	11.12	11.13	11.11
Natural Gas Plant Liquids	2.62	3.12	3.11	3.12	3.37	3.44	3.39	4.16	4.22	4.17
Dry Natural Gas	19.16	21.95	21.92	21.96	24.04	24.56	24.19	30.24	30.66	30.31
Coal	23.08	25.45	25.44	25.43	26.55	25.57	26.37	27.16	26.14	26.96
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.74	7.74	6.54	6.54	6.59
Renewable Energy ¹	6.53	7.13	7.13	7.13	7.90	8.09	7.87	8.42	8.62	8.42
Other ²	1.65	0.35	0.35	0.35	0.31	0.38	0.30	0.33	0.32	0.32
Total	73.29	77.88	77.87	77.93	81.19	80.99	81.09	87.97	87.63	87.88
Imports										
Crude Oil ³	18.96	21.42	21.40	21.40	22.38	22.46	22.45	25.82	25.84	25.84
Petroleum Products ⁴	4.14	6.28	6.28	6.24	8.65	8.48	8.60	10.80	10.74	10.80
Natural Gas	3.63	5.13	5.13	5.13	5.55	5.61	5.57	6.59	6.66	6.62
Other Imports ⁵	0.64	1.11	1.11	1.11	0.96	0.96	0.96	0.96	0.96	0.96
Total	27.37	33.93	33.91	33.87	37.54	37.51	37.59	44.18	44.20	44.22
Exports										
Petroleum ⁶	1.98	1.73	1.74	1.74	1.69	1.71	1.70	1.85	1.86	1.83
Natural Gas	0.17	0.33	0.33	0.33	0.43	0.43	0.43	0.63	0.63	0.63
Coal	1.48	1.51	1.51	1.51	1.45	1.45	1.45	1.41	1.41	1.41
Total	3.62	3.57	3.57	3.57	3.58	3.59	3.58	3.89	3.90	3.87
Discrepancy⁷	0.69	0.43	0.42	0.43	0.04	0.05	0.04	0.11	0.12	0.15
Consumption										
Petroleum Products ⁸	38.02	41.34	41.35	41.35	44.44	44.40	44.42	50.45	50.46	50.47
Natural Gas	22.21	26.44	26.40	26.44	29.00	29.58	29.17	36.06	36.53	36.12
Coal	21.42	24.39	24.39	24.37	25.64	24.66	25.46	26.42	25.40	26.22
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.74	7.74	6.54	6.54	6.59
Renewable Energy ¹	6.54	7.13	7.14	7.14	7.91	8.10	7.88	8.43	8.63	8.43
Other ⁹	0.35	0.61	0.61	0.61	0.38	0.38	0.38	0.25	0.25	0.25
Total	96.33	107.81	107.79	107.81	115.11	114.86	115.05	128.16	127.81	128.07
Net Imports - Petroleum	21.12	25.96	25.94	25.90	29.34	29.24	29.35	34.78	34.71	34.81
Prices (1999 dollars per unit)										
World Oil Price (dollars per barrel) ¹⁰ . .	17.22	20.83	20.83	20.83	21.37	21.37	21.37	22.41	22.41	22.41
Gas Wellhead Price (dollars per Mcf) ¹¹	2.08	2.96	2.96	2.96	2.87	2.91	2.89	3.22	3.36	3.24
Coal Minemouth Price (dollars per ton)	17.17	15.05	15.21	14.94	14.08	14.50	14.25	12.87	13.71	13.32
Average Electric Price (cents per Kwh)	6.6	6.4	6.4	6.4	6.1	6.2	6.2	6.2	6.3	6.2

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.

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, imports of 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, and net storage withdrawals.

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.

Mcf = Thousand cubic feet.

Kwh = Kilowatthour.

Hg = Mercury.

MACT = Maximum available controlled technology.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 natural gas values: Energy Information Administration (EIA), *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). 1999 petroleum values: EIA, *Petroleum Supply Annual 1999*, DOE/EIA-0340(99/1) (Washington, DC, June 2000). Other 1999 values: EIA, *Annual Energy Review 1999*, DOE/EIA-0384(99) (Washington, DC, July 2000) and EIA, *Quarterly Coal Report*, DOE/EIA-0121(2000/1Q) (Washington, DC, August 2000). Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008A.D060801A, M2M9008M.D060801A.

Table F2. Energy Consumption by Sector and Source
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%
Energy Consumption										
Residential										
Distillate Fuel	0.86	0.87	0.87	0.87	0.80	0.80	0.80	0.76	0.76	0.76
Kerosene	0.10	0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.07	0.07
Liquefied Petroleum Gas	0.46	0.45	0.45	0.45	0.42	0.42	0.42	0.40	0.40	0.40
Petroleum Subtotal	1.42	1.40	1.40	1.40	1.30	1.30	1.30	1.23	1.23	1.23
Natural Gas	4.88	5.57	5.57	5.57	5.61	5.60	5.61	6.23	6.20	6.23
Coal	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Renewable Energy ¹	0.41	0.42	0.42	0.42	0.42	0.42	0.42	0.44	0.43	0.44
Electricity	3.91	4.57	4.56	4.57	4.95	4.93	4.94	5.79	5.77	5.79
Delivered Energy	10.66	12.01	12.01	12.01	12.34	12.31	12.32	13.74	13.69	13.74
Electricity Related Losses	8.44	9.67	9.66	9.67	10.10	10.00	10.08	10.85	10.75	10.83
Total	19.10	21.68	21.67	21.68	22.44	22.31	22.40	24.59	24.45	24.57
Commercial										
Distillate Fuel	0.36	0.37	0.37	0.37	0.38	0.38	0.38	0.37	0.37	0.37
Residual Fuel	0.10	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Kerosene	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Liquefied Petroleum Gas	0.08	0.09	0.09	0.09	0.09	0.09	0.09	0.10	0.10	0.10
Motor Gasoline ²	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Petroleum Subtotal	0.60	0.60	0.60	0.61	0.62	0.62	0.62	0.62	0.62	0.62
Natural Gas	3.14	3.99	3.99	3.99	4.17	4.16	4.17	4.44	4.42	4.43
Coal	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Renewable Energy ³	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Electricity	3.66	4.39	4.39	4.39	4.91	4.90	4.90	5.62	5.60	5.62
Delivered Energy	7.55	9.13	9.13	9.13	9.85	9.83	9.84	10.83	10.79	10.83
Electricity Related Losses	7.91	9.30	9.30	9.30	10.01	9.93	10.00	10.51	10.43	10.51
Total	15.46	18.44	18.43	18.43	19.86	19.76	19.84	21.34	21.22	21.34
Industrial⁴										
Distillate Fuel	1.13	1.22	1.22	1.22	1.31	1.31	1.31	1.49	1.50	1.49
Liquefied Petroleum Gas	2.32	2.45	2.45	2.45	2.53	2.51	2.53	2.85	2.86	2.87
Petrochemical Feedstock	1.29	1.36	1.36	1.36	1.53	1.53	1.53	1.70	1.70	1.70
Residual Fuel	0.22	0.16	0.16	0.16	0.25	0.25	0.25	0.28	0.28	0.28
Motor Gasoline ²	0.21	0.23	0.23	0.23	0.25	0.25	0.25	0.28	0.28	0.28
Other Petroleum ⁵	4.29	4.44	4.44	4.44	4.71	4.71	4.71	5.02	5.03	5.03
Petroleum Subtotal	9.45	9.86	9.87	9.87	10.57	10.56	10.57	11.63	11.64	11.65
Natural Gas ⁶	9.80	10.46	10.45	10.46	11.27	11.32	11.28	12.73	12.73	12.70
Metallurgical Coal	0.75	0.67	0.67	0.67	0.61	0.61	0.61	0.50	0.50	0.50
Steam Coal	1.73	1.81	1.81	1.81	1.83	1.82	1.82	1.87	1.87	1.86
Net Coal Coke Imports	0.06	0.12	0.12	0.12	0.16	0.16	0.16	0.22	0.22	0.22
Coal Subtotal	2.54	2.59	2.59	2.59	2.59	2.58	2.58	2.60	2.59	2.59
Renewable Energy ⁷	2.15	2.42	2.42	2.42	2.64	2.64	2.64	3.08	3.08	3.08
Electricity	3.61	3.90	3.89	3.90	4.17	4.16	4.16	4.76	4.75	4.75
Delivered Energy	27.56	29.23	29.23	29.23	31.24	31.26	31.24	34.80	34.79	34.77
Electricity Related Losses	7.80	8.25	8.25	8.24	8.50	8.44	8.49	8.91	8.84	8.88
Total	35.36	37.48	37.47	37.48	39.74	39.70	39.74	43.71	43.63	43.65

Table F2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%
Transportation										
Distillate Fuel	5.13	6.28	6.28	6.28	7.00	6.99	7.00	8.22	8.21	8.22
Jet Fuel ⁸	3.46	3.90	3.90	3.90	4.51	4.51	4.51	5.97	5.97	5.97
Motor Gasoline ²	15.92	17.67	17.67	17.67	18.97	18.97	18.97	21.26	21.27	21.26
Residual Fuel	0.74	0.85	0.85	0.85	0.85	0.85	0.85	0.87	0.87	0.87
Liquefied Petroleum Gas	0.02	0.03	0.03	0.03	0.04	0.05	0.04	0.06	0.06	0.06
Other Petroleum ⁹	0.26	0.30	0.30	0.30	0.31	0.31	0.31	0.35	0.35	0.35
Petroleum Subtotal	25.54	29.03	29.03	29.03	31.68	31.67	31.68	36.73	36.72	36.73
Pipeline Fuel Natural Gas	0.66	0.83	0.83	0.83	0.91	0.92	0.91	1.10	1.11	1.10
Compressed Natural Gas	0.02	0.06	0.06	0.06	0.09	0.09	0.09	0.16	0.15	0.16
Renewable Energy (E85) ¹⁰	0.01	0.02	0.02	0.02	0.03	0.03	0.03	0.04	0.04	0.04
Methanol (M85) ¹¹	0.00	0.00	0.00	0.00	0.01	0.01	0.01	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	0.06	0.09	0.09	0.09	0.12	0.12	0.12	0.17	0.17	0.17
Delivered Energy	26.28	30.03	30.03	30.04	32.83	32.84	32.84	38.20	38.20	38.20
Electricity Related Losses	0.13	0.19	0.19	0.19	0.24	0.24	0.24	0.31	0.31	0.31
Total	26.41	30.22	30.22	30.22	33.07	33.08	33.08	38.51	38.51	38.51
Delivered Energy Consumption for All Sectors										
Distillate Fuel	7.48	8.74	8.74	8.74	9.49	9.48	9.48	10.85	10.84	10.85
Kerosene	0.15	0.13	0.13	0.13	0.12	0.12	0.12	0.12	0.12	0.12
Jet Fuel ⁸	3.46	3.90	3.90	3.90	4.51	4.51	4.51	5.97	5.97	5.97
Liquefied Petroleum Gas	2.88	3.02	3.03	3.02	3.08	3.07	3.08	3.41	3.42	3.43
Motor Gasoline ²	16.17	17.93	17.93	17.93	19.24	19.24	19.24	21.57	21.58	21.57
Petrochemical Feedstock	1.29	1.36	1.36	1.36	1.53	1.53	1.53	1.70	1.70	1.70
Residual Fuel	1.05	1.10	1.10	1.10	1.20	1.20	1.20	1.24	1.24	1.24
Other Petroleum ¹²	4.53	4.71	4.72	4.72	4.99	4.99	4.99	5.35	5.36	5.36
Petroleum Subtotal	37.01	40.90	40.90	40.91	44.16	44.15	44.17	50.21	50.22	50.23
Natural Gas ⁶	18.50	20.91	20.90	20.90	22.05	22.10	22.06	24.66	24.61	24.62
Metallurgical Coal	0.75	0.67	0.67	0.67	0.61	0.61	0.61	0.50	0.50	0.50
Steam Coal	1.84	1.92	1.92	1.92	1.95	1.94	1.94	2.00	1.99	1.99
Net Coal Coke Imports	0.06	0.12	0.12	0.12	0.16	0.16	0.16	0.22	0.22	0.22
Coal Subtotal	2.65	2.71	2.71	2.71	2.71	2.70	2.71	2.72	2.71	2.71
Renewable Energy ¹³	2.65	2.94	2.94	2.94	3.18	3.18	3.18	3.65	3.64	3.65
Methanol (M85) ¹¹	0.00	0.00	0.00	0.00	0.01	0.01	0.01	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	11.24	12.95	12.94	12.95	14.15	14.11	14.12	16.34	16.29	16.33
Delivered Energy	72.05	80.41	80.40	80.41	86.27	86.24	86.24	97.57	97.48	97.54
Electricity Related Losses	24.29	27.40	27.40	27.39	28.84	28.62	28.81	30.58	30.33	30.53
Total	96.33	107.81	107.79	107.81	115.11	114.86	115.05	128.16	127.81	128.07
Electric Generators¹⁴										
Distillate Fuel	0.06	0.06	0.06	0.06	0.06	0.05	0.05	0.06	0.05	0.06
Residual Fuel	0.96	0.38	0.38	0.38	0.22	0.20	0.20	0.19	0.19	0.18
Petroleum Subtotal	1.02	0.44	0.45	0.44	0.28	0.25	0.26	0.25	0.24	0.24
Natural Gas	3.71	5.53	5.50	5.53	6.94	7.48	7.11	11.40	11.92	11.50
Steam Coal	18.77	21.68	21.68	21.66	22.93	21.96	22.75	23.70	22.69	23.51
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.74	7.74	6.54	6.54	6.59
Renewable Energy ¹⁵	3.88	4.19	4.19	4.19	4.73	4.91	4.70	4.78	4.98	4.78
Electricity Imports ¹⁶	0.35	0.61	0.61	0.61	0.37	0.37	0.37	0.24	0.24	0.24
Total	35.52	40.35	40.33	40.34	42.99	42.73	42.94	46.92	46.62	46.86

Table F2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%
Total Energy Consumption										
Distillate Fuel	7.54	8.80	8.80	8.80	9.54	9.53	9.54	10.91	10.89	10.91
Kerosene	0.15	0.13	0.13	0.13	0.12	0.12	0.12	0.12	0.12	0.12
Jet Fuel ⁸	3.46	3.90	3.90	3.90	4.51	4.51	4.51	5.97	5.97	5.97
Liquefied Petroleum Gas	2.88	3.02	3.03	3.02	3.08	3.07	3.08	3.41	3.42	3.43
Motor Gasoline ²	16.17	17.93	17.93	17.93	19.24	19.24	19.24	21.57	21.58	21.57
Petrochemical Feedstock	1.29	1.36	1.36	1.36	1.53	1.53	1.53	1.70	1.70	1.70
Residual Fuel	2.01	1.48	1.48	1.48	1.42	1.40	1.40	1.42	1.43	1.42
Other Petroleum ¹²	4.53	4.71	4.72	4.72	4.99	4.99	4.99	5.35	5.36	5.36
Petroleum Subtotal	38.02	41.34	41.35	41.35	44.44	44.40	44.42	50.45	50.46	50.47
Natural Gas	22.21	26.44	26.40	26.44	29.00	29.58	29.17	36.06	36.53	36.12
Metallurgical Coal	0.75	0.67	0.67	0.67	0.61	0.61	0.61	0.50	0.50	0.50
Steam Coal	20.61	23.60	23.60	23.58	24.88	23.90	24.70	25.70	24.68	25.49
Net Coal Coke Imports	0.06	0.12	0.12	0.12	0.16	0.16	0.16	0.22	0.22	0.22
Coal Subtotal	21.42	24.39	24.39	24.37	25.64	24.66	25.46	26.42	25.40	26.22
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.74	7.74	6.54	6.54	6.59
Renewable Energy ¹⁷	6.54	7.13	7.14	7.14	7.91	8.10	7.88	8.43	8.63	8.43
Methanol (M85) ¹¹	0.00	0.00	0.00	0.00	0.01	0.01	0.01	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 Imports ¹⁶	0.35	0.61	0.61	0.61	0.37	0.37	0.37	0.24	0.24	0.24
Total	96.33	107.81	107.79	107.81	115.11	114.86	115.05	128.16	127.81	128.07
Energy Use and Related Statistics										
Delivered Energy Use	72.05	80.41	80.40	80.41	86.27	86.24	86.24	97.57	97.48	97.54
Total Energy Use	96.33	107.81	107.79	107.81	115.11	114.86	115.05	128.16	127.81	128.07
Population (millions)	273.13	288.02	288.02	288.02	300.17	300.17	300.17	325.24	325.24	325.24
Gross Domestic Product (billion 1996 dollars)	8876	10960	10960	10960	12667	12667	12667	16515	16515	16515
Total Carbon Dioxide Emissions (million metric tons carbon equivalent)	1510.8	1705.0	1704.5	1704.7	1825.7	1807.8	1823.1	2051.2	2031.0	2046.9

¹Includes wood used for residential heating.

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

³Includes commercial sector electricity cogenerated by using wood and wood waste, landfill gas, municipal solid waste, and other biomass.

⁴Fuel consumption includes consumption for cogeneration, which produces electricity and other useful thermal energy.

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

⁶Includes lease and plant fuel and consumption by cogenerators, excludes consumption by nonutility generators.

⁷Includes consumption of energy from hydroelectric, wood and wood waste, municipal solid waste, and other biomass; includes cogeneration, both for sale to the grid and for own use.

⁸Includes only kerosene type.

⁹Includes aviation gas and lubricants.

¹⁰E85 is 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable).

¹¹M85 is 85 percent methanol and 15 percent motor gasoline.

¹²Includes unfinished oils, natural gasoline, motor gasoline blending compounds, 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 all electric power generators for grid-connected power except cogenerators, which produce electricity and other useful thermal energy. 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 cogeneration. Excludes net electricity imports.

¹⁶In 1998 approximately 70 percent of the U.S. electricity imports were provided by renewable sources (hydroelectricity); EIA does not project future proportions for the fuel source of imported electricity.

¹⁷Includes 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.

Hg = Mercury.

MACT = Maximum available controlled technology.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 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: 1999 electric utility fuel consumption: Energy Information Administration, (EIA) *Electric Power Annual 1998, Volume 1*, DOE/EIA-0348(98)/1 (Washington, DC, April 1999). 1999 nonutility consumption estimates: EIA, Form EIA-860B: "Annual Electric Generator Report - Nonutility." Other 1999 values: EIA, *Short-Term Energy Outlook, September 2000*, <http://www.eia.doe.gov/pub/forecasting/steo/oldsteos/sep00.pdf>. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008A.D060801A, M2M9008M.D060801A.

Table F3. Energy Prices by Sector and Source
(1999 Dollars per Million Btu, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%
Residential	13.10	13.27	13.29	13.27	13.46	13.60	13.55	13.77	13.95	13.81
Primary Energy ¹	6.71	7.49	7.49	7.49	7.18	7.21	7.19	7.08	7.18	7.10
Petroleum Products ²	7.55	9.20	9.19	9.17	9.37	9.35	9.37	9.47	9.46	9.47
Distillate Fuel	6.27	7.45	7.44	7.41	7.57	7.57	7.57	7.78	7.77	7.77
Liquefied Petroleum Gas	10.36	12.60	12.60	12.60	12.86	12.79	12.86	12.75	12.73	12.77
Natural Gas	6.52	7.11	7.11	7.11	6.72	6.77	6.74	6.65	6.77	6.67
Electricity	23.47	22.16	22.21	22.17	22.30	22.60	22.50	22.44	22.72	22.52
Commercial	13.18	12.70	12.71	12.70	12.25	12.40	12.32	12.69	12.89	12.68
Primary Energy ¹	5.22	5.57	5.56	5.56	5.68	5.72	5.70	5.79	5.89	5.80
Petroleum Products ²	4.99	6.13	6.12	6.10	6.29	6.28	6.29	6.40	6.39	6.39
Distillate Fuel	4.37	5.24	5.23	5.20	5.36	5.36	5.36	5.53	5.52	5.52
Residual Fuel	2.63	3.65	3.64	3.64	3.71	3.70	3.71	3.86	3.86	3.86
Natural Gas ³	5.34	5.55	5.55	5.55	5.66	5.71	5.68	5.78	5.89	5.80
Electricity	21.45	20.26	20.29	20.27	18.76	19.02	18.89	19.00	19.28	18.94
Industrial⁴	5.27	5.76	5.75	5.75	5.67	5.69	5.70	5.90	5.98	5.92
Primary Energy	3.91	4.47	4.47	4.46	4.49	4.49	4.50	4.68	4.74	4.70
Petroleum Products ²	5.54	6.00	6.00	5.98	6.13	6.08	6.13	6.16	6.15	6.18
Distillate Fuel	4.65	5.40	5.39	5.36	5.56	5.55	5.55	5.73	5.72	5.71
Liquefied Petroleum Gas	8.50	7.74	7.75	7.74	7.88	7.76	7.87	7.76	7.76	7.81
Residual Fuel	2.78	3.38	3.38	3.38	3.44	3.43	3.43	3.59	3.59	3.59
Natural Gas ⁵	2.79	3.64	3.64	3.64	3.50	3.54	3.51	3.85	3.97	3.87
Metallurgical Coal	1.65	1.58	1.59	1.58	1.54	1.54	1.54	1.44	1.44	1.44
Steam Coal	1.43	1.35	1.36	1.35	1.31	1.31	1.31	1.21	1.21	1.22
Electricity	13.00	12.80	12.80	12.81	12.08	12.29	12.23	12.22	12.50	12.25
Transportation	8.30	9.39	9.39	9.36	9.69	9.68	9.69	9.20	9.19	9.20
Primary Energy	8.29	9.38	9.37	9.35	9.68	9.67	9.67	9.18	9.18	9.18
Petroleum Products ²	8.28	9.37	9.37	9.34	9.67	9.66	9.67	9.18	9.17	9.18
Distillate Fuel ⁶	8.22	8.98	8.96	8.92	8.95	8.97	8.95	8.83	8.82	8.82
Jet Fuel ⁷	4.70	5.29	5.28	5.25	5.49	5.50	5.49	5.72	5.72	5.72
Motor Gasoline ⁸	9.45	10.81	10.81	10.78	11.31	11.29	11.31	10.60	10.59	10.60
Residual Fuel	2.46	3.11	3.11	3.11	3.18	3.18	3.18	3.33	3.33	3.33
Liquid Petroleum Gas ⁹	12.87	14.07	14.07	14.07	14.07	13.99	14.07	13.70	13.68	13.74
Natural Gas ¹⁰	7.02	7.28	7.28	7.28	7.21	7.26	7.23	7.41	7.52	7.42
Ethanol (E85) ¹¹	14.42	19.21	19.21	19.20	19.16	19.16	19.16	19.36	19.37	19.36
Methanol (M85) ¹²	10.38	13.13	13.13	13.13	13.83	13.83	13.83	14.35	14.35	14.35
Electricity	15.59	14.52	14.59	14.51	13.62	14.00	13.81	13.22	13.47	13.21
Average End-Use Energy	8.49	9.17	9.17	9.15	9.22	9.26	9.24	9.21	9.28	9.22
Primary Energy	6.31	7.19	7.19	7.17	7.35	7.35	7.35	7.23	7.27	7.25
Electricity	19.41	18.65	18.67	18.66	17.99	18.24	18.15	18.19	18.46	18.21
Electric Generators¹³										
Fossil Fuel Average	1.48	1.64	1.63	1.64	1.59	1.66	1.60	1.88	1.99	1.89
Petroleum Products	2.49	3.61	3.61	3.61	3.90	3.94	3.93	4.17	4.16	4.18
Distillate Fuel	4.04	4.72	4.71	4.68	4.87	4.87	4.87	5.06	5.06	5.05
Residual Fuel	2.40	3.42	3.42	3.43	3.65	3.70	3.68	3.89	3.90	3.90
Natural Gas	2.58	3.44	3.43	3.44	3.26	3.32	3.29	3.71	3.85	3.74
Steam Coal	1.21	1.14	1.14	1.14	1.06	1.06	1.04	0.98	0.99	0.97

Table F3. Energy Prices by Sector and Source (Continued)
(1999 Dollars per Million Btu, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%
Average Price to All Users¹⁴										
Petroleum Products ²	7.44	8.53	8.53	8.50	8.81	8.79	8.81	8.49	8.48	8.50
Distillate Fuel	7.25	8.14	8.12	8.09	8.20	8.22	8.20	8.20	8.19	8.19
Jet Fuel	4.70	5.29	5.28	5.25	5.49	5.50	5.49	5.72	5.72	5.72
Liquefied Petroleum Gas	8.84	8.63	8.64	8.63	8.74	8.64	8.74	8.54	8.54	8.58
Motor Gasoline ⁸	9.45	10.80	10.81	10.78	11.31	11.29	11.31	10.60	10.59	10.60
Residual Fuel	2.47	3.25	3.25	3.25	3.33	3.33	3.33	3.49	3.49	3.49
Natural Gas	4.05	4.72	4.72	4.72	4.47	4.49	4.48	4.60	4.72	4.62
Coal	1.23	1.16	1.16	1.16	1.08	1.09	1.07	1.00	1.01	0.99
Ethanol (E85) ¹¹	14.42	19.21	19.21	19.20	19.16	19.16	19.16	19.36	19.37	19.36
Methanol (M85) ¹²	10.38	13.13	13.13	13.13	13.83	13.83	13.83	14.35	14.35	14.35
Electricity	19.41	18.65	18.67	18.66	17.99	18.24	18.15	18.19	18.46	18.21
Non-Renewable Energy Expenditures by Sector (billion 1999 dollars)										
Residential	134.28	153.83	153.93	153.83	160.41	161.56	161.16	183.27	184.94	183.77
Commercial	98.42	114.97	115.01	114.98	119.69	120.84	120.27	136.41	138.04	136.22
Industrial	111.66	127.05	126.98	126.93	133.28	133.99	133.95	154.57	156.85	154.99
Transportation	212.64	273.84	273.76	273.00	308.81	308.49	308.71	340.45	340.22	340.50
Total Non-Renewable Expenditures	556.99	669.69	669.67	668.73	722.19	724.87	724.08	814.69	820.05	815.48
Transportation Renewable Expenditures	0.14	0.42	0.42	0.42	0.64	0.63	0.64	0.85	0.85	0.85
Total Expenditures	557.13	670.11	670.09	669.16	722.82	725.50	724.71	815.54	820.89	816.33

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.

³Excludes independent power producers.

⁴Includes cogenerators.

⁵Excludes uses for lease and plant fuel.

⁶Low sulfur diesel fuel. Price includes Federal and State taxes while excluding county and local taxes.

⁷Kerosene-type jet fuel. Price includes Federal and State taxes while excluding county and local taxes.

⁸Sales weighted-average price for all grades. Includes Federal and State taxes and excludes county and local taxes.

⁹Includes Federal and State taxes while excluding county and local taxes.

¹⁰Compressed natural gas used as a vehicle fuel. Price includes estimated motor vehicle fuel taxes.

¹¹E85 is 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable).

¹²M85 is 85 percent methanol and 15 percent motor gasoline.

¹³Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy. Includes small power producers and exempt wholesale generators.

¹⁴Weighted averages of end-use fuel prices are derived from the prices shown in each sector and the corresponding sectoral consumption.

Btu = British thermal unit.

Hg = Mercury.

MACT = Maximum available controlled technology.

Note: Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 prices for gasoline, distillate, and jet fuel are based on prices in various issues of Energy Information Administration (EIA), *Petroleum Marketing Monthly*, DOE/EIA-0380 (99/03-2000/04) (Washington, DC, 1999-2000). 1999 prices for all other petroleum products are derived from the EIA, *State Energy Price and Expenditure Report 1997*, DOE/EIA-0376(97) (Washington, DC, July 2000). 1999 industrial gas delivered prices are based on EIA, *Manufacturing Energy Consumption Survey 1994*. 1999 residential and commercial natural gas delivered prices: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). 1999 coal prices based on EIA, *Quarterly Coal Report*, DOE/EIA-0121(2000/1Q) (Washington, DC, August 2000), and EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008A.D060801A, M2M9008M.D060801A. 1999 electricity prices for commercial, industrial, and transportation: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008A.D060801A, M2M9008M.D060801A. **Projections:** EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008A.D060801A, M2M9008M.D060801A.

Table F4. Electricity Supply, Disposition, Prices, and Emissions
(Billion Kilowatthours, Unless Otherwise Noted)

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%
Generation by Fuel Type										
Electric Generators¹										
Coal	1831	2106	2106	2105	2245	2137	2214	2315	2198	2284
Petroleum	94	43	43	43	28	25	26	25	25	24
Natural Gas ²	359	583	580	583	825	913	854	1495	1584	1521
Nuclear Power	730	740	740	740	725	725	725	613	613	617
Pumped Storage	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Renewable Sources ³	355	373	373	373	397	407	393	400	412	399
Total	3369	3844	3841	3844	4219	4207	4211	4847	4830	4845
Non-Utility Generation for Own Use	16	17	17	17	17	17	17	17	16	16
Distributed Generation	0	0	0	0	1	1	1	5	5	5
Cogenerators⁴										
Coal	47	53	53	53	52	51	52	52	51	51
Petroleum	9	10	10	10	10	10	10	10	10	10
Natural Gas	207	237	237	237	261	260	261	318	323	321
Other Gaseous Fuels ⁵	4	6	6	6	7	7	7	8	9	8
Renewable Sources ³	31	34	34	34	39	39	39	48	48	48
Other ⁶	5	5	5	5	5	5	5	6	6	6
Total	303	345	345	345	373	373	374	441	446	443
Other End-Use Generators⁷	5	5	5	5	5	5	5	5	5	5
Sales to Utilities	151	172	172	172	180	179	180	208	208	208
Generation for Own Use	156	178	178	178	198	199	199	238	243	240
Net Imports⁸	33	57	57	57	35	35	35	23	23	23
Electricity Sales by Sector										
Residential	1145	1339	1337	1339	1452	1445	1448	1698	1692	1698
Commercial	1073	1288	1287	1288	1439	1435	1437	1646	1641	1647
Industrial	1058	1142	1142	1142	1222	1220	1221	1395	1391	1393
Transportation	17	26	26	26	35	35	35	49	49	49
Total	3294	3794	3792	3794	4147	4135	4140	4788	4773	4787
End-Use Prices (1999 cents per kwh)⁹										
Residential	8.0	7.6	7.6	7.6	7.6	7.7	7.7	7.7	7.8	7.7
Commercial	7.3	6.9	6.9	6.9	6.4	6.5	6.4	6.5	6.6	6.5
Industrial	4.4	4.4	4.4	4.4	4.1	4.2	4.2	4.2	4.3	4.2
Transportation	5.3	5.0	5.0	5.0	4.6	4.8	4.7	4.5	4.6	4.5
All Sectors Average	6.6	6.4	6.4	6.4	6.1	6.2	6.2	6.2	6.3	6.2
Prices by Service Category⁹ (1999 cents per kwh)										
Generation	4.1	3.8	3.8	3.8	3.5	3.5	3.5	3.6	3.7	3.6
Transmission	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7
Distribution	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Emissions (million short tons)										
Sulfur Dioxide	13.71	10.38	10.39	10.38	9.70	9.70	9.70	8.95	8.95	8.95
Nitrogen Oxide	5.45	4.30	3.41	3.42	4.34	3.38	3.44	4.49	3.52	3.56

¹Includes grid-connected generation at all utilities and nonutilities except for cogenerators. Includes small power producers and exempt wholesale generators.

²Includes electricity generation by fuel cells.

³Includes conventional hydroelectric, geothermal, wood, wood waste, municipal solid waste, landfill gas, other biomass, solar, and wind power.

⁴Cogenerators produce electricity and other useful thermal energy. Includes sales to utilities and generation for own use.

⁵Other gaseous fuels include refinery and still gas.

⁶Other includes hydrogen, sulfur, batteries, chemicals, fish oil, and spent sulfite liquor.

⁷Includes 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.

⁸In 1998 approximately 70 percent of the U.S. electricity imports were provided by renewable sources (hydroelectricity); EIA does not project future proportions for the fuel source of imported electricity.

⁹Prices represent average revenue per kilowatthour.

Kwh = Kilowatthour.

Hg = Mercury.

MACT = Maximum available controlled technology.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Source: Energy Information Administration, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008A.D060801A, M2M9008M.D060801A.

**Table F5. Electricity Generating Capability
(Gigawatts)**

Net Summer Capability ¹	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%
Electric Generators²										
Capability										
Coal Steam	305.1	303.9	303.9	303.8	318.6	305.7	315.9	318.5	303.9	315.2
Other Fossil Steam ³	137.4	127.8	127.6	127.5	119.2	116.0	119.1	116.9	113.4	116.9
Combined Cycle	21.0	53.2	52.8	52.9	107.8	122.3	111.7	202.2	216.4	209.0
Combustion Turbine/Diesel	74.3	123.1	122.7	123.9	147.2	147.7	150.8	199.5	200.3	200.0
Nuclear Power	97.4	97.5	97.5	97.5	94.8	94.8	94.8	76.3	76.3	76.9
Pumped Storage	19.3	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5
Fuel Cells	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.3	0.3
Renewable Sources ⁴	88.8	94.8	94.8	94.7	98.0	98.6	98.0	99.5	100.2	99.6
Distributed Generation ⁵	0.0	0.7	0.7	0.7	2.5	2.7	2.7	11.5	11.6	10.4
Total	743.4	820.4	819.4	820.6	907.8	907.6	912.7	1044.2	1041.8	1047.8
Cumulative Planned Additions⁶										
Coal Steam	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Fossil Steam ³	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Combined Cycle	0.0	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7
Combustion Turbine/Diesel	0.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
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	0.1	0.1	0.1	0.3	0.3	0.3
Renewable Sources ⁴	0.0	5.1	5.1	5.1	6.7	6.7	6.7	8.1	8.1	8.1
Distributed Generation ⁵	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.0	32.0	32.0	32.0	33.7	33.7	33.7	35.3	35.3	35.3
Cumulative Unplanned Additions⁶										
Coal Steam	0.0	1.1	1.1	1.0	18.9	6.2	16.3	20.5	6.2	17.5
Other Fossil Steam ³	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Combined Cycle	0.0	19.4	19.1	19.1	74.2	88.7	78.1	168.6	182.8	175.4
Combustion Turbine/Diesel	0.0	38.9	38.7	39.8	64.7	65.4	68.2	117.2	118.1	117.6
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 ⁴	0.0	0.4	0.4	0.4	2.0	2.7	2.1	2.0	2.7	2.1
Distributed Generation ⁵	0.0	0.7	0.7	0.7	2.5	2.7	2.7	11.5	11.6	10.4
Total	0.0	60.6	60.0	61.2	162.2	165.7	167.4	319.8	321.4	323.1
Cumulative Total Additions	0.0	92.6	92.0	93.2	195.9	199.3	201.1	355.1	356.7	358.4
Cumulative Retirements⁷										
Coal Steam	0.0	2.3	2.3	2.3	5.4	5.6	5.6	7.2	7.5	7.4
Other Fossil Steam ³	0.0	9.9	10.0	10.1	18.4	21.6	18.5	20.7	24.2	20.7
Combined Cycle	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2
Combustion Turbine/Diesel	0.0	4.4	4.5	4.5	6.0	6.2	5.9	6.3	6.3	6.1
Nuclear Power	0.0	0.0	0.0	0.0	2.6	2.6	2.6	21.2	21.2	20.6
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	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total	0.0	16.7	17.0	17.1	32.8	36.4	33.0	55.6	59.5	55.2
Cogenerators⁸										
Capability										
Coal	8.4	8.9	8.9	8.9	8.6	8.3	8.4	8.6	8.3	8.3
Petroleum	2.7	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
Natural Gas	34.6	39.9	39.9	39.9	43.3	43.4	43.4	51.4	52.2	51.7
Other Gaseous Fuels	0.2	0.8	0.8	0.8	0.9	0.9	0.9	1.1	1.1	1.1
Renewable Sources ⁴	5.4	5.9	5.9	5.9	6.8	6.8	6.8	8.2	8.2	8.2
Other	1.1	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Total	52.4	59.2	59.2	59.2	63.3	63.1	63.3	73.2	73.7	73.2
Cumulative Additions⁶	0.0	6.8	6.8	6.8	10.9	10.7	10.8	20.7	21.2	20.7

Table F5. Electricity Generating Capability (Continued)
(Gigawatts)

Net Summer Capability ¹	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%
Other End-Use Generators⁹										
Renewable Sources	1.0	1.1	1.1	1.1	1.3	1.3	1.3	1.3	1.3	1.3
Cumulative Additions	0.0	0.1	0.1	0.1	0.3	0.3	0.3	0.3	0.3	0.3

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

²Includes grid-connected utilities and nonutilities except for cogenerators. Includes small power producers and exempt wholesale generators.

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

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

⁵Primarily peak-load capacity fueled by natural gas.

⁶Cumulative additions after December 31, 1999.

⁷Cumulative total retirements after December 31, 1999.

⁸Nameplate capacity is reported for nonutilities on Form EIA-860B: "Annual Electric Generator Report - Nonutility." Nameplate capacity is designated by the manufacturer. The nameplate capacity has been converted to the net summer capability based on historic relationships.

⁹Includes 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. Excludes off-grid photovoltaics and other generators not connected to the distribution or transmission systems.

Hg = Mercury.

MACT = Maximum available controlled technology.

Notes: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports. Net summer capability has been estimated for nonutility generators to be consistent with capability for electric utility generators.

Source: Energy Information Administration, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008A.D060801A, M2M9008M.D060801A.

Table F6. Electricity Trade
(Billion Kilowatthours, Unless Otherwise Noted)

Electricity Trade	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%
Interregional Electricity Trade										
Gross Domestic Firm Power Trade	182.2	125.3	125.3	125.3	102.9	102.9	102.9	0.0	0.0	0.0
Gross Domestic Economy Trade	152.0	202.3	197.3	200.6	155.5	142.3	145.5	147.9	136.4	138.1
Gross Domestic Trade	334.2	327.6	322.5	325.9	258.4	245.2	248.4	147.9	136.4	138.1
Gross Domestic Firm Power Sales										
(million 1999 dollars)	8588.1	5905.8	5905.8	5905.8	4851.2	4851.2	4851.2	0.0	0.0	0.0
Gross Domestic Economy Sales										
(million 1999 dollars)	4413.9	6468.6	6293.8	6380.3	4510.4	4157.2	4275.3	4605.1	4326.9	4317.8
Gross Domestic Sales										
(million 1999 dollars)	13002.0	12374.4	12199.6	12286.1	9361.6	9008.4	9126.5	4605.1	4326.9	4317.8
International Electricity Trade										
Firm Power Imports From Canada and Mexico ¹	27.0	10.7	10.7	10.7	5.8	5.8	5.8	0.0	0.0	0.0
Economy Imports From Canada and Mexico ¹ . .	21.9	63.5	63.5	63.5	45.9	45.9	45.9	30.6	30.6	30.6
Gross Imports From Canada and Mexico¹ . .	48.9	74.1	74.1	74.1	51.7	51.7	51.7	30.6	30.6	30.6
Gross Exports To Canada and Mexico										
Firm Power Exports To Canada and Mexico . . .	9.2	9.7	9.7	9.7	8.7	8.7	8.7	0.0	0.0	0.0
Economy Exports To Canada and Mexico	6.3	7.0	7.0	7.0	7.7	7.7	7.7	7.7	7.7	7.7
Gross Exports To Canada and Mexico	15.5	16.7	16.7	16.7	16.4	16.4	16.4	7.7	7.7	7.7

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

Hg = Mercury.

MACT = Maximum available controlled technology.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 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, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008A.D060801A, M2M9008M.D060801A.

Table F7. Natural Gas Supply and Disposition
(Trillion Cubic Feet per Year)

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%
Production										
Dry Gas Production ¹	18.67	21.40	21.36	21.40	23.43	23.93	23.57	29.47	29.88	29.54
Supplemental Natural Gas ²	0.10	0.11	0.11	0.11	0.06	0.06	0.06	0.06	0.06	0.06
Net Imports	3.38	4.69	4.69	4.69	5.00	5.06	5.02	5.82	5.88	5.84
Canada	3.29	4.48	4.48	4.47	4.72	4.77	4.74	5.43	5.49	5.44
Mexico	-0.01	-0.18	-0.18	-0.18	-0.25	-0.25	-0.25	-0.40	-0.40	-0.40
Liquefied Natural Gas	0.10	0.39	0.39	0.39	0.53	0.53	0.53	0.79	0.80	0.80
Total Supply	22.15	26.20	26.17	26.20	28.49	29.05	28.65	35.35	35.83	35.43
Consumption by Sector										
Residential	4.75	5.42	5.42	5.42	5.46	5.46	5.46	6.07	6.04	6.07
Commercial	3.06	3.88	3.88	3.88	4.06	4.05	4.06	4.32	4.30	4.32
Industrial ³	8.31	8.81	8.80	8.81	9.48	9.50	9.48	10.53	10.50	10.49
Electric Generators ⁴	3.64	5.43	5.40	5.43	6.81	7.34	6.98	11.19	11.69	11.29
Lease and Plant Fuel ⁵	1.23	1.38	1.37	1.38	1.50	1.52	1.51	1.87	1.89	1.88
Pipeline Fuel	0.64	0.81	0.81	0.81	0.88	0.90	0.89	1.07	1.08	1.08
Transportation ⁶	0.02	0.05	0.05	0.05	0.09	0.09	0.09	0.15	0.15	0.15
Total	21.65	25.79	25.75	25.79	28.29	28.86	28.46	35.20	35.66	35.26
Discrepancy ⁷	0.50	0.42	0.41	0.42	0.20	0.19	0.20	0.14	0.16	0.17

¹Marketed production (wet) minus extraction losses.
²Synthetic natural gas, propane air, coke oven gas, refinery gas, biomass gas, air injected for Btu stabilization, and manufactured gas commingled and distributed with natural gas.
³Includes consumption by cogenerators.
⁴Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy. Includes small power producers and exempt wholesale generators.
⁵Represents natural gas used in the field gathering and processing plant machinery.
⁶Compressed natural gas used as vehicle fuel.
⁷Balancing item. Natural gas lost as a result of converting flow data measured at varying temperatures and pressures to a standard temperature and pressure and the merger of different data reporting systems which vary in scope, format, definition, and respondent type. In addition, 1999 values include net storage injections.
Btu = British thermal unit.
Hg = Mercury.
MACT = Maximum available controlled technology.
Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.
Sources: 1999 supplemental natural gas: Energy Information Administration (EIA), *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). 1999 transportation sector consumption: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008A.D060801A, M2M9008M.D060801A. Other 1999 consumption: EIA, *Short-Term Energy Outlook, September 2000*, <http://www.eia.doe.gov/pub/forecasting/steo/oldsteos/sep00.pdf> with adjustments to end-use sector consumption levels for consumption of natural gas by electric wholesale generators based on EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008A.D060801A, M2M9008M.D060801A. **Projections:** EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008A.D060801A, M2M9008M.D060801A.

Table F8. Natural Gas Prices, Margins, and Revenue
(1999 Dollars per Thousand Cubic Feet, Unless Otherwise Noted)

Prices, Margins, and Revenue	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%
Source Price										
Average Lower 48 Wellhead Price ¹	2.08	2.96	2.96	2.96	2.87	2.91	2.89	3.22	3.36	3.24
Average Import Price	2.29	2.95	2.95	2.95	2.64	2.66	2.65	2.72	2.75	2.73
Average²	2.11	2.96	2.96	2.96	2.82	2.86	2.84	3.13	3.25	3.15
Delivered Prices										
Residential	6.69	7.31	7.30	7.31	6.91	6.95	6.92	6.83	6.95	6.85
Commercial	5.49	5.70	5.70	5.70	5.82	5.86	5.83	5.93	6.05	5.95
Industrial ³	2.87	3.74	3.74	3.74	3.59	3.63	3.61	3.95	4.08	3.97
Electric Generators ⁴	2.63	3.50	3.50	3.50	3.32	3.38	3.35	3.78	3.92	3.81
Transportation ⁵	7.21	7.48	7.47	7.48	7.40	7.45	7.42	7.61	7.73	7.62
Average⁶	4.15	4.84	4.84	4.84	4.59	4.61	4.60	4.72	4.84	4.74
Transmission & Distribution Margins⁷										
Residential	4.58	4.35	4.34	4.35	4.08	4.09	4.08	3.70	3.71	3.71
Commercial	3.37	2.74	2.74	2.74	2.99	3.00	2.99	2.81	2.81	2.81
Industrial ³	0.76	0.78	0.78	0.78	0.77	0.77	0.77	0.82	0.83	0.82
Electric Generators ⁴	0.52	0.54	0.54	0.54	0.49	0.52	0.51	0.65	0.67	0.66
Transportation ⁵	5.10	4.51	4.51	4.51	4.58	4.59	4.58	4.48	4.48	4.48
Average⁶	2.04	1.88	1.88	1.88	1.76	1.75	1.76	1.59	1.59	1.60
Transmission & Distribution Revenue (billion 1999 dollars)										
Residential	21.77	23.57	23.57	23.57	22.30	22.31	22.29	22.48	22.39	22.48
Commercial	10.32	10.63	10.63	10.63	12.16	12.16	12.14	12.12	12.06	12.11
Industrial ³	6.28	6.86	6.85	6.86	7.26	7.31	7.26	8.65	8.72	8.64
Electric Generators ⁴	1.88	2.94	2.91	2.94	3.36	3.83	3.54	7.24	7.87	7.46
Transportation ⁵	0.08	0.24	0.24	0.24	0.41	0.41	0.41	0.68	0.67	0.68
Total	40.32	44.25	44.20	44.24	45.49	46.02	45.63	51.18	51.72	51.38

¹Represents lower 48 onshore and offshore supplies.

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

³Includes consumption by cogenerators.

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

Hg = Mercury.

MACT = Maximum available controlled technology.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 industrial delivered prices based on Energy Information Administration (EIA), *Manufacturing Energy Consumption Survey 1994*. 1999 residential and commercial delivered prices, average lower 48 wellhead price, and average import price: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). Other 1999 values, and projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008A.D060801A, M2M9008M.D060801A.

Table F9. Oil and Gas Supply

Production and Supply	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%
Crude Oil										
Lower 48 Average Wellhead Price¹ (1999 dollars per barrel)	16.49	21.43	20.45	20.51	20.73	20.78	20.75	21.47	21.49	21.49
Production (million barrels per day)²										
U.S. Total	5.88	5.66	5.67	5.69	5.32	5.30	5.30	5.25	5.26	5.25
Lower 48 Onshore	3.27	2.81	2.81	2.82	2.52	2.51	2.51	2.75	2.75	2.75
Conventional	2.59	2.18	2.18	2.19	1.81	1.81	1.81	1.98	1.99	1.98
Enhanced Oil Recovery	0.68	0.63	0.63	0.63	0.70	0.69	0.70	0.76	0.76	0.76
Lower 48 Offshore	1.56	2.06	2.07	2.08	2.16	2.14	2.14	1.87	1.87	1.86
Alaska	1.05	0.79	0.79	0.79	0.65	0.65	0.65	0.64	0.64	0.64
Lower 48 End of Year Reserves (billion barrels)² ..	18.33	15.75	15.73	15.73	14.55	14.48	14.50	14.11	14.10	14.08
Natural Gas										
Lower 48 Average Wellhead Price¹ (1999 dollars per thousand cubic feet)	2.08	2.96	2.96	2.96	2.87	2.91	2.89	3.22	3.36	3.24
Production (trillion cubic feet)³										
U.S. Total	18.67	21.40	21.36	21.40	23.43	23.93	23.57	29.47	29.88	29.54
Lower 48 Onshore	12.83	14.46	14.44	14.46	16.71	17.16	16.84	21.31	21.52	21.41
Associated-Dissolved ⁴	1.80	1.51	1.51	1.51	1.32	1.32	1.32	1.39	1.40	1.39
Non-Associated	11.03	12.95	12.92	12.95	15.39	15.83	15.51	19.91	20.12	20.02
Conventional	6.64	7.67	7.66	7.68	7.93	8.26	8.04	11.14	11.10	11.15
Unconventional	4.39	5.27	5.26	5.27	7.45	7.58	7.47	8.78	9.02	8.87
Lower 48 Offshore	5.43	6.47	6.46	6.47	6.22	6.27	6.23	7.59	7.79	7.56
Associated-Dissolved ⁴	0.93	1.06	1.06	1.06	1.09	1.09	1.09	1.04	1.04	1.04
Non-Associated	4.50	5.41	5.40	5.41	5.13	5.18	5.14	6.56	6.75	6.52
Alaska	0.42	0.47	0.47	0.47	0.50	0.50	0.50	0.57	0.57	0.57
Lower 48 End of Year Reserves³ (trillion cubic feet)	157.41	167.88	167.95	167.94	185.55	184.65	185.26	200.71	199.48	199.94
Supplemental Gas Supplies (trillion cubic feet)⁵ ..	0.10	0.11	0.11	0.11	0.06	0.06	0.06	0.06	0.06	0.06
Total Lower 48 Wells (thousands)	17.93	28.87	28.98	29.11	29.86	30.25	29.92	39.36	41.09	39.30

¹Represents lower 48 onshore and offshore supplies.

²Includes lease condensate.

³Market production (wet) minus extraction losses.

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

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

Btu = British thermal unit.

Hg = Mercury.

MACT = Maximum available controlled technology.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 lower 48 onshore, lower 48 offshore, and Alaska crude oil production: Energy Information Administration (EIA), *Petroleum Supply Annual 1999*, DOE/EIA-0340(99/1) (Washington, DC, June 2000). 1999 natural gas lower 48 average wellhead price, Alaska and total natural gas production, and supplemental gas supplies: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). Other 1999 values: EIA, Office of Integrated Analysis and Forecasting. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008A.D060801A, M2M9008M.D060801A.

Table F10. Coal Supply, Disposition, and Prices
(Million Short Tons per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%
Production¹										
Appalachia	433	426	429	424	421	403	417	396	383	396
Interior	185	182	185	179	180	174	195	161	173	184
West	486	624	616	630	694	653	669	783	705	740
East of the Mississippi	559	561	566	556	557	548	567	524	536	544
West of the Mississippi	544	672	664	677	738	681	715	817	725	776
Total	1103	1233	1230	1233	1295	1229	1282	1340	1261	1320
Net Imports										
Imports	9	16	16	16	17	17	17	20	20	20
Exports	58	60	60	60	58	57	57	56	56	56
Total	-49	-44	-44	-44	-40	-40	-40	-36	-36	-36
Total Supply²	1054	1189	1186	1189	1254	1189	1242	1304	1225	1283
Consumption by Sector										
Residential and Commercial	5	5	5	5	5	5	5	5	5	5
Industrial ³	79	82	82	82	83	83	83	86	85	85
Coke Plants	28	25	25	25	23	23	23	19	19	19
Electric Generators ⁴	921	1077	1074	1077	1145	1080	1132	1196	1118	1176
Total	1032	1189	1187	1190	1256	1191	1244	1306	1227	1285
Discrepancy and Stock Change⁵	21	-1	-1	-1	-2	-2	-2	-2	-2	-2
Average Minemouth Price										
(1999 dollars per short ton)	17.17	15.05	15.21	14.94	14.08	14.50	14.25	12.87	13.71	13.32
(1999 dollars per million Btu)	0.82	0.73	0.74	0.72	0.69	0.70	0.69	0.64	0.66	0.65
Delivered Prices (1999 dollars per short ton)⁶										
Industrial	31.39	29.67	29.75	29.62	28.61	28.62	28.70	26.50	26.53	26.68
Coke Plants	44.28	42.39	42.53	42.38	41.36	41.34	41.29	38.52	38.72	38.71
Electric Generators										
(1999 dollars per short ton)	24.73	22.90	22.96	22.87	21.28	21.65	20.99	19.41	20.06	19.38
(1999 dollars per million Btu)	1.21	1.14	1.14	1.14	1.06	1.06	1.04	0.98	0.99	0.97
Average	25.77	23.78	23.85	23.75	22.13	22.52	21.87	20.15	20.80	20.15
Exports ⁷	37.44	36.39	36.50	36.34	35.66	35.58	35.51	33.09	33.22	33.23

¹Includes anthracite, bituminous coal, lignite, and waste coal delivered to independent power producers. Waste coal deliveries totaled 8.5 million tons in 1995, 8.8 million tons in 1996, 8.1 million tons in 1997, 8.6 million tons in 1998, and are projected to reach 9.6 million tons in 1999, and 12.2 million tons in 2000.

²Production plus net imports and net storage withdrawals.

³Includes consumption by cogenerators.

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

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

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

⁷F.a.s. price at U.S. port of exit.

Btu = British thermal unit.

Hg = Mercury.

MACT = Maximum available controlled technology.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 data based on Energy Information Administration (EIA), *Quarterly Coal Report*, DOE/EIA-0121(2000/1Q) (Washington, DC, August 2000), and EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008A.D060801A, M2M9008M.D060801A. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008A.D060801A, M2M9008M.D060801A.

Table F11. Renewable Energy Generating Capability and Generation
(Gigawatts, Unless Otherwise Noted)

Capacity and Generation	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%
Electric Generators¹										
(excluding cogenerators)										
Net Summer Capability										
Conventional Hydropower	78.77	79.26	79.26	79.26	79.38	79.38	79.38	79.38	79.38	79.38
Geothermal ²	2.87	3.43	3.43	3.43	4.93	5.38	5.00	4.95	5.40	5.02
Municipal Solid Waste ³	2.61	2.96	2.96	2.96	3.42	3.63	3.43	3.93	4.14	3.94
Wood and Other Biomass ⁴	1.57	1.75	1.75	1.75	2.12	2.12	2.12	2.45	2.45	2.48
Solar Thermal	0.33	0.35	0.35	0.35	0.40	0.40	0.40	0.48	0.48	0.48
Solar Photovoltaic	0.01	0.08	0.08	0.08	0.21	0.21	0.21	0.54	0.54	0.54
Wind	2.66	6.92	6.92	6.92	7.52	7.52	7.52	7.76	7.76	7.76
Total	88.83	94.75	94.75	94.75	97.98	98.63	98.05	99.49	100.15	99.61
Generation (billion kilowatthours)										
Conventional Hydropower	309.55	301.20	301.20	301.20	301.13	301.13	301.13	300.07	300.06	300.07
Geothermal ²	13.21	18.34	18.34	18.28	30.94	34.66	31.51	31.16	34.87	31.74
Municipal Solid Waste ³	18.12	20.68	20.68	20.68	23.88	25.51	23.90	27.76	29.40	27.78
Wood and Other Biomass ⁴	9.02	14.94	15.66	15.81	21.30	26.27	16.60	19.78	25.85	17.94
Dedicated Plants	7.73	9.16	9.16	9.16	11.36	11.37	11.36	13.82	13.83	14.08
Cofiring	1.29	5.78	6.50	6.65	9.94	14.89	5.24	5.95	12.02	3.85
Solar Thermal	0.89	0.96	0.96	0.96	1.11	1.11	1.11	1.37	1.37	1.37
Solar Photovoltaic	0.03	0.20	0.20	0.20	0.51	0.51	0.51	1.36	1.36	1.36
Wind	4.61	16.30	16.30	16.30	18.16	18.16	18.16	18.83	18.84	18.83
Total	355.43	372.61	373.33	373.42	397.03	407.35	392.92	400.32	411.74	399.09
Cogenerators⁵										
Net Summer Capability										
Municipal Solid Waste	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Biomass	4.65	5.17	5.17	5.17	6.06	6.06	6.06	7.54	7.54	7.54
Total	5.35	5.87	5.87	5.87	6.76	6.76	6.76	8.24	8.24	8.24
Generation (billion kilowatthours)										
Municipal Solid Waste	4.04	4.04	4.04	4.04	4.04	4.04	4.04	4.04	4.04	4.04
Biomass	27.08	29.92	29.92	29.92	35.01	35.01	35.01	43.52	43.52	43.52
Total	31.12	33.97	33.97	33.97	39.05	39.05	39.05	47.57	47.57	47.57
Other End-Use Generators⁶										
Net Summer Capability										
Conventional Hydropower ⁷	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solar Photovoltaic	0.01	0.10	0.10	0.10	0.35	0.35	0.35	0.35	0.35	0.35
Total	1.00	1.09	1.09	1.09	1.34	1.34	1.34	1.34	1.34	1.34
Generation (billion kilowatthours)										
Conventional Hydropower ⁷	4.57	4.44	4.44	4.44	4.43	4.43	4.43	4.41	4.41	4.41
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solar Photovoltaic	0.02	0.20	0.20	0.20	0.75	0.75	0.75	0.75	0.75	0.75
Total	4.59	4.64	4.64	4.64	5.18	5.18	5.18	5.17	5.17	5.17

¹Includes grid-connected utilities and nonutilities other than cogenerators. These nonutility facilities include small power producers and exempt wholesale generators.

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

³Includes landfill gas.

⁴Includes projections for energy crops after 2010.

⁵Cogenerators produce electricity and other useful thermal energy.

⁶Includes 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. Excludes off-grid photovoltaics and other generators not connected to the distribution or transmission systems.

⁷Represents own-use industrial hydroelectric power.

Hg = Mercury.

MACT = Maximum available controlled technology.

Notes: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports. Net summer capability has been estimated for nonutility generators for AEO2001. Net summer capability 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: 1999 electric utility capability: Energy Information Administration (EIA), Form EIA-860A: "Annual Electric Generator Report - Utility." 1999 nonutility and cogenerator capability: EIA, Form EIA-860B: "Annual Electric Generator Report - Nonutility." 1999 generation: EIA, *Annual Energy Review 1999*, DOE/EIA-0384(99) (Washington, DC, July 2000). Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008A.D060801A, M2M9008M.D060801A.

Table F12. Renewable Energy Consumption by Sector and Source¹
(Quadrillion Btu per Year)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%
Marketed Renewable Energy²										
Residential	0.41	0.42	0.42	0.42	0.42	0.42	0.42	0.44	0.43	0.44
Wood	0.41	0.42	0.42	0.42	0.42	0.42	0.42	0.44	0.43	0.44
Commercial	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Biomass	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Industrial³	2.15	2.42	2.42	2.42	2.64	2.64	2.64	3.08	3.08	3.08
Conventional Hydroelectric	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Municipal Solid Waste	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Biomass	1.97	2.23	2.23	2.23	2.46	2.46	2.46	2.90	2.90	2.90
Transportation	0.12	0.20	0.20	0.20	0.22	0.21	0.22	0.24	0.24	0.24
Ethanol used in E85 ⁴	0.00	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03
Ethanol used in Gasoline Blending	0.12	0.18	0.18	0.18	0.19	0.19	0.19	0.21	0.20	0.20
Electric Generators⁵	3.88	4.19	4.19	4.19	4.73	4.91	4.70	4.78	4.98	4.78
Conventional Hydroelectric	3.19	3.10	3.10	3.10	3.10	3.10	3.10	3.08	3.08	3.08
Geothermal	0.28	0.44	0.44	0.44	0.85	0.96	0.87	0.85	0.97	0.87
Municipal Solid Waste ⁶	0.25	0.28	0.28	0.28	0.32	0.35	0.33	0.38	0.40	0.38
Biomass	0.12	0.18	0.19	0.19	0.26	0.30	0.21	0.25	0.31	0.23
Dedicated Plants	0.10	0.11	0.11	0.11	0.14	0.13	0.14	0.17	0.17	0.18
Cofiring	0.02	0.07	0.08	0.08	0.12	0.17	0.06	0.07	0.14	0.05
Solar Thermal	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.03
Solar Photovoltaic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wind	0.05	0.17	0.17	0.17	0.19	0.19	0.19	0.19	0.19	0.19
Total Marketed Renewable Energy	6.64	7.31	7.31	7.31	8.10	8.28	8.06	8.62	8.82	8.62
Non-Marketed Renewable Energy⁷										
Selected Consumption										
Residential	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04
Solar Hot Water Heating	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Geothermal Heat Pumps	0.02	0.02	0.02	0.02	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	0.00	0.00	0.00
Commercial	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03
Solar Thermal	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03
Solar Photovoltaic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ethanol										
From Corn	0.12	0.19	0.19	0.19	0.20	0.19	0.19	0.17	0.17	0.17
From Cellulose	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.07	0.07	0.07
Total	0.12	0.20	0.20	0.20	0.22	0.21	0.22	0.24	0.24	0.24

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.

³Includes all electricity production by industrial and other cogenerators for the grid and for own use.

⁴Excludes motor gasoline component of E85.

⁵Includes renewable energy delivered to the grid from electric utilities and nonutilities. Renewable energy used in generating electricity for own use is included in the individual sectoral electricity energy consumption values.

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.

Hg = Mercury.

MACT = Maximum available controlled technology.

Notes: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 ethanol: Energy Information Administration (EIA), *Annual Energy Review 1999*, DOE/EIA-0384(99) (Washington, DC, July 2000). 1999 electric generators: EIA, Form EIA-860A: "Annual Electric Generator Report - Utility," and EIA, Form EIA-860B: "Annual Electric Generator Report - Nonutility." Other 1999: EIA, Office of Integrated Analysis and Forecasting. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008A.D060801A, M2M9008M.D060801A.

Table F13. Carbon Dioxide Emissions by Sector and Source
(Million Metric Tons Carbon Equivalent per Year)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%
Residential										
Petroleum	26.0	26.5	26.5	26.5	24.5	24.5	24.5	23.2	23.3	23.3
Natural Gas	69.5	80.2	80.2	80.2	80.8	80.7	80.8	89.8	89.3	89.7
Coal	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3
Electricity	193.4	227.1	226.8	227.0	242.6	235.8	241.4	275.6	268.4	274.2
Total	290.1	335.0	334.7	334.9	349.2	342.3	347.9	389.8	382.3	388.4
Commercial										
Petroleum	13.7	11.8	11.8	11.8	12.0	12.0	12.1	12.1	12.1	12.1
Natural Gas	45.4	57.4	57.4	57.4	60.1	60.0	60.0	63.9	63.6	63.8
Coal	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.9	1.9	1.9
Electricity	181.3	218.4	218.3	218.3	240.4	234.2	239.5	267.1	260.4	266.0
Total	242.1	289.4	289.3	289.3	314.3	308.0	313.4	345.0	338.0	343.8
Industrial¹										
Petroleum	104.2	99.2	99.3	99.3	105.3	105.2	105.4	113.6	113.9	114.0
Natural Gas ²	141.6	148.4	148.2	148.4	159.8	160.3	159.8	180.3	180.5	180.1
Coal	55.9	65.8	65.8	65.8	65.6	65.4	65.5	65.8	65.7	65.6
Electricity	178.8	193.6	193.6	193.6	204.1	199.0	203.5	226.4	220.6	224.9
Total	480.4	507.0	506.9	507.0	534.8	529.9	534.2	586.1	580.7	584.6
Transportation										
Petroleum ³	485.8	556.3	556.3	556.3	607.2	607.2	607.3	704.2	704.1	704.1
Natural Gas ⁴	9.5	12.8	12.8	12.8	14.4	14.6	14.4	18.1	18.2	18.1
Other ⁵	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Electricity	2.9	4.4	4.4	4.4	5.8	5.6	5.8	7.9	7.7	7.8
Total³	498.2	573.6	573.5	573.6	627.5	627.5	627.6	730.2	730.1	730.2
Total Carbon Dioxide Emissions by Delivered Fuel										
Petroleum ³	629.7	693.8	693.9	694.0	749.0	748.9	749.2	853.1	853.4	853.5
Natural Gas	266.0	298.8	298.7	298.8	315.1	315.5	315.0	352.0	351.6	351.8
Coal	58.8	68.8	68.7	68.7	68.8	68.6	68.7	69.0	68.8	68.8
Other ⁵	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Electricity	556.3	643.6	643.1	643.2	692.8	674.7	690.1	777.0	757.1	772.8
Total³	1510.8	1705.0	1704.5	1704.7	1825.7	1807.8	1823.1	2051.2	2031.0	2046.9
Electric Generators⁶										
Petroleum	20.0	9.4	9.4	9.3	5.8	5.3	5.4	5.2	5.1	5.0
Natural Gas	45.8	79.6	79.2	79.7	100.0	107.7	102.4	164.1	171.6	165.6
Coal	490.5	554.6	554.5	554.2	587.0	561.7	582.3	607.7	580.4	602.2
Total	556.3	643.6	643.1	643.2	692.8	674.7	690.1	777.0	757.1	772.8
Total Carbon Dioxide Emissions by Primary Fuel⁷										
Petroleum ³	649.7	703.1	703.3	703.3	754.8	754.2	754.6	858.3	858.5	858.5
Natural Gas	311.8	378.4	377.9	378.4	415.0	423.2	417.4	516.2	523.2	517.4
Coal	549.3	623.3	623.2	622.9	655.8	630.3	651.0	676.7	649.3	670.9
Other ⁵	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total³	1510.8	1705.0	1704.5	1704.7	1825.7	1807.8	1823.1	2051.2	2031.0	2046.9
Carbon Dioxide Emissions (tons carbon equivalent per person)	5.5	5.9	5.9	5.9	6.1	6.0	6.1	6.3	6.2	6.3

¹Includes consumption by cogenerators.

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 1998, international bunker fuels accounted for 20 to 25 million metric tons carbon equivalent of carbon dioxide annually.

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

⁵Includes methanol and liquid hydrogen.

⁶Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy. Includes small power producers and exempt wholesale generators. 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.

Hg = Mercury.

MACT = Maximum available controlled technology.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 emissions and emission factors: Energy Information Administration (EIA), *Emissions of Greenhouse Gases in the United States 1999*, DOE/EIA-0573(99), (Washington, DC, October 2000). Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008A.D060801A, M2M9008M.D060801A.

Table F14. Emissions, Allowance Costs, and Retrofits: Electric Generators, Excluding Cogenerators

Impacts	1999	Projections								
		2005			2010			2020		
		Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%	Reference	Hg 5-Ton Recycle	Hg MACT 90%
Emissions										
Nitrogen Oxide (million tons)	5.45	4.30	3.41	3.42	4.34	3.38	3.44	4.49	3.52	3.56
Sulfur Dioxide (million tons)	13.71	10.38	10.39	10.38	9.70	9.70	9.70	8.95	8.95	8.95
Mercury (tons)	43.60	45.24	45.03	45.40	45.60	5.00	8.00	45.07	5.00	8.01
Carbon Dioxide (million metric tons carbon equivalent)	556.31	643.58	643.11	643.19	692.78	674.69	690.13	776.99	757.09	772.83
Allowance Prices										
Nitrogen Oxide (1999 dollars per ton) . . .	0	4352	3652	4159	4391	3140	4162	5037	4682	4798
Sulfur Dioxide (1999 dollars per ton)	0	190	185	204	187	118	114	241	109	145
Mercury (million 1999 dollars per ton) . . .	0	0	0	0	0	80	0	0	92	0
Carbon Dioxide (1999 dollars per ton carbon equivalent)	0	0	0	0	0	0	0	0	0	0
Retrofits (gigawatts)										
Scrubber ¹	0.0	6.5	9.6	4.4	7.1	12.3	27.2	14.8	25.2	27.2
Combustion	0.0	39.9	38.4	38.2	42.1	41.3	42.9	46.1	45.6	48.7
SCR Post-combustion	0.0	92.8	95.8	93.5	92.9	95.8	93.5	93.0	98.2	94.5
SNCR Post-combustion	0.0	25.2	21.4	24.4	26.3	21.7	25.4	43.4	26.5	36.3
Coal Production by Sulfur Category (million tons)										
Low Sulfur (< .61 lbs. S/mmBtu)	472	594	586	603	642	616	617	721	664	677
Medium Sulfur (.61-1.67 lbs. S/mmBtu) . .	432	454	455	451	464	441	459	440	428	452
High Sulfur (> 1.67 lbs. S/mmBtu)	199	185	188	179	188	173	206	179	170	190

¹Represents scrubbers added by the model. Planned scrubbers added by electricity generators are not shown here.

Hg = Mercury.

MACT = Maximum available controlled technology.

lbs. S/mmBtu = Pounds sulfur per million British thermal units.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Source: Energy Information Administration, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2M9008A.D060801A, M2M9008M.D060801A.

Appendix G

Tables for Integrated Cases With Three Emissions Caps

Table G1. Total Energy Supply and Disposition Summary
(Quadrillion Btu per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%
Production										
Crude Oil and Lease Condensate . . .	12.45	11.98	12.02	12.00	11.27	11.17	11.21	11.12	11.24	11.39
Natural Gas Plant Liquids	2.62	3.12	3.05	3.04	3.37	3.45	3.58	4.16	4.31	4.30
Dry Natural Gas	19.16	21.95	21.43	21.39	24.04	24.59	25.55	30.24	31.34	31.23
Coal	23.08	25.45	24.23	24.27	26.55	17.80	15.22	27.16	14.93	13.41
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.91	7.95	6.54	7.15	7.27
Renewable Energy ¹	6.53	7.13	8.14	8.23	7.90	9.97	10.02	8.42	10.65	11.08
Other ²	1.65	0.35	0.58	0.58	0.31	0.30	0.30	0.33	0.33	0.33
Total	73.29	77.88	77.35	77.41	81.19	75.18	73.84	87.97	79.94	79.00
Imports										
Crude Oil ³	18.96	21.42	21.39	21.41	22.38	22.51	22.49	25.82	25.82	25.68
Petroleum Products ⁴	4.14	6.28	5.84	5.84	8.65	8.22	8.03	10.80	10.31	10.31
Natural Gas	3.63	5.13	5.14	5.13	5.55	6.78	6.88	6.59	8.18	8.27
Other Imports ⁵	0.64	1.11	1.02	1.02	0.96	0.88	0.89	0.96	0.81	0.81
Total	27.37	33.93	33.38	33.39	37.54	38.39	38.29	44.18	45.11	45.07
Exports										
Petroleum ⁶	1.98	1.73	1.76	1.75	1.69	1.72	1.72	1.85	1.85	1.80
Natural Gas	0.17	0.33	0.33	0.33	0.43	0.12	0.12	0.63	0.12	0.12
Coal	1.48	1.51	1.51	1.51	1.45	1.52	1.50	1.41	1.56	1.48
Total	3.62	3.57	3.59	3.58	3.58	3.36	3.34	3.89	3.54	3.40
Discrepancy⁷	0.69	0.43	0.56	0.52	0.04	0.02	0.01	0.11	0.19	0.04
Consumption										
Petroleum Products ⁸	38.02	41.34	40.91	40.91	44.44	44.07	44.04	50.45	50.24	50.29
Natural Gas	22.21	26.44	25.93	25.87	29.00	31.07	32.11	36.06	39.23	39.22
Coal	21.42	24.39	23.08	23.16	25.64	16.65	14.13	26.42	13.68	12.38
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.91	7.95	6.54	7.15	7.27
Renewable Energy ¹	6.54	7.13	8.14	8.24	7.91	9.97	10.03	8.43	10.65	11.08
Other ⁹	0.35	0.61	0.61	0.61	0.38	0.51	0.52	0.25	0.38	0.38
Total	96.33	107.81	106.58	106.69	115.11	110.18	108.78	128.16	121.32	120.63
Net Imports - Petroleum	21.12	25.96	25.47	25.49	29.34	29.01	28.81	34.78	34.27	34.19
Prices (1999 dollars per unit)										
World Oil Price (dollars per barrel) ¹⁰ . .	17.22	20.83	20.83	20.83	21.37	21.37	21.37	22.41	22.41	22.41
Gas Wellhead Price (dollars per Mcf) ¹¹	2.08	2.96	2.80	2.79	2.87	3.24	3.50	3.22	3.69	3.80
Coal Minemouth Price (dollars per ton)	17.17	15.05	14.96	15.11	14.08	13.42	13.43	12.87	11.90	12.16
Average Electric Price (cents per Kwh)	6.6	6.4	6.7	6.7	6.1	8.1	8.6	6.2	8.4	8.6

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.

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, imports of 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, and net storage withdrawals.

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.

Mcf = Thousand cubic feet.

Kwh = Kilowatthour.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 natural gas values: Energy Information Administration (EIA), *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). 1999 petroleum values: EIA, *Petroleum Supply Annual 1999*, DOE/EIA-0340(99/1) (Washington, DC, June 2000). Other 1999 values: EIA, *Annual Energy Review 1999*, DOE/EIA-0384(99) (Washington, DC, July 2000) and EIA, *Quarterly Coal Report*, DOE/EIA-0121(2000/1Q) (Washington, DC, August 2000). Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NM9008.D060801A, M2NM7B08.D060901A.

Table G2. Energy Consumption by Sector and Source
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990- 7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990- 7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990- 7%
Energy Consumption										
Residential										
Distillate Fuel	0.86	0.87	0.87	0.87	0.80	0.81	0.81	0.76	0.77	0.77
Kerosene	0.10	0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.07	0.07
Liquefied Petroleum Gas	0.46	0.45	0.45	0.45	0.42	0.42	0.42	0.40	0.41	0.41
Petroleum Subtotal	1.42	1.40	1.40	1.40	1.30	1.30	1.30	1.23	1.25	1.25
Natural Gas	4.88	5.57	5.60	5.60	5.61	5.57	5.52	6.23	6.22	6.22
Coal	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Renewable Energy ¹	0.41	0.42	0.42	0.42	0.42	0.42	0.42	0.44	0.43	0.43
Electricity	3.91	4.57	4.50	4.50	4.95	4.61	4.54	5.79	5.33	5.26
Delivered Energy	10.66	12.01	11.97	11.97	12.34	11.95	11.83	13.74	13.28	13.21
Electricity Related Losses	8.44	9.67	9.35	9.39	10.10	8.74	8.31	10.85	8.91	8.74
Total	19.10	21.68	21.32	21.36	22.44	20.68	20.14	24.59	22.20	21.95
Commercial										
Distillate Fuel	0.36	0.37	0.37	0.37	0.38	0.38	0.38	0.37	0.38	0.40
Residual Fuel	0.10	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Kerosene	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Liquefied Petroleum Gas	0.08	0.09	0.09	0.09	0.09	0.09	0.09	0.10	0.10	0.10
Motor Gasoline ²	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Petroleum Subtotal	0.60	0.60	0.61	0.61	0.62	0.62	0.62	0.62	0.63	0.65
Natural Gas	3.14	3.99	4.01	4.01	4.17	4.15	4.11	4.44	4.83	4.95
Coal	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.08
Renewable Energy ³	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Electricity	3.66	4.39	4.34	4.34	4.91	4.61	4.55	5.62	5.09	4.99
Delivered Energy	7.55	9.13	9.11	9.11	9.85	9.53	9.44	10.83	10.70	10.74
Electricity Related Losses	7.91	9.30	9.03	9.06	10.01	8.74	8.33	10.51	8.51	8.29
Total	15.46	18.44	18.13	18.17	19.86	18.27	17.77	21.34	19.21	19.03
Industrial⁴										
Distillate Fuel	1.13	1.22	1.21	1.21	1.31	1.29	1.29	1.49	1.49	1.48
Liquefied Petroleum Gas	2.32	2.45	2.43	2.42	2.53	2.54	2.56	2.85	2.87	2.90
Petrochemical Feedstock	1.29	1.36	1.36	1.36	1.53	1.52	1.52	1.70	1.69	1.69
Residual Fuel	0.22	0.16	0.16	0.16	0.25	0.26	0.26	0.28	0.29	0.29
Motor Gasoline ²	0.21	0.23	0.23	0.23	0.25	0.24	0.24	0.28	0.28	0.28
Other Petroleum ⁵	4.29	4.44	4.42	4.42	4.71	4.72	4.73	5.02	5.09	5.09
Petroleum Subtotal	9.45	9.86	9.80	9.80	10.57	10.58	10.61	11.63	11.70	11.75
Natural Gas ⁶	9.80	10.46	10.44	10.44	11.27	11.35	11.32	12.73	13.38	13.38
Metallurgical Coal	0.75	0.67	0.67	0.67	0.61	0.61	0.61	0.50	0.50	0.50
Steam Coal	1.73	1.81	1.80	1.80	1.83	1.78	1.78	1.87	1.83	1.83
Net Coal Coke Imports	0.06	0.12	0.11	0.11	0.16	0.15	0.15	0.22	0.22	0.22
Coal Subtotal	2.54	2.59	2.59	2.59	2.59	2.54	2.53	2.60	2.55	2.54
Renewable Energy ⁷	2.15	2.42	2.41	2.41	2.64	2.63	2.63	3.08	3.08	3.08
Electricity	3.61	3.90	3.83	3.83	4.17	3.88	3.86	4.76	4.06	3.98
Delivered Energy	27.56	29.23	29.06	29.06	31.24	30.99	30.95	34.80	34.77	34.73
Electricity Related Losses	7.80	8.25	7.97	8.00	8.50	7.37	7.07	8.91	6.79	6.61
Total	35.36	37.48	37.03	37.06	39.74	38.36	38.02	43.71	41.57	41.34

Table G2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990- 7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990- 7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990- 7%
Transportation										
Distillate Fuel	5.13	6.28	6.23	6.23	7.00	6.89	6.86	8.22	8.11	8.10
Jet Fuel ⁸	3.46	3.90	3.88	3.88	4.51	4.49	4.48	5.97	5.96	5.96
Motor Gasoline ²	15.92	17.67	17.64	17.64	18.97	18.90	18.88	21.26	21.21	21.19
Residual Fuel	0.74	0.85	0.85	0.85	0.85	0.85	0.85	0.87	0.86	0.86
Liquefied Petroleum Gas	0.02	0.03	0.03	0.03	0.04	0.04	0.04	0.06	0.06	0.06
Other Petroleum ⁹	0.26	0.30	0.29	0.29	0.31	0.31	0.31	0.35	0.35	0.35
Petroleum Subtotal	25.54	29.03	28.92	28.92	31.68	31.48	31.42	36.73	36.56	36.53
Pipeline Fuel Natural Gas	0.66	0.83	0.82	0.82	0.91	0.93	0.96	1.10	1.15	1.15
Compressed Natural Gas	0.02	0.06	0.05	0.05	0.09	0.09	0.09	0.16	0.15	0.15
Renewable Energy (E85) ¹⁰	0.01	0.02	0.02	0.02	0.03	0.03	0.03	0.04	0.04	0.04
Methanol (M85) ¹¹	0.00	0.00	0.00	0.00	0.01	0.01	0.01	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	0.06	0.09	0.09	0.09	0.12	0.12	0.12	0.17	0.17	0.17
Delivered Energy	26.28	30.03	29.91	29.91	32.83	32.65	32.63	38.20	38.07	38.04
Electricity Related Losses	0.13	0.19	0.18	0.18	0.24	0.22	0.22	0.31	0.28	0.27
Total	26.41	30.22	30.09	30.09	33.07	32.87	32.85	38.51	38.35	38.31
Delivered Energy Consumption for All Sectors										
Distillate Fuel	7.48	8.74	8.68	8.68	9.49	9.36	9.35	10.85	10.75	10.76
Kerosene	0.15	0.13	0.13	0.13	0.12	0.13	0.13	0.12	0.12	0.12
Jet Fuel ⁸	3.46	3.90	3.88	3.88	4.51	4.49	4.48	5.97	5.96	5.96
Liquefied Petroleum Gas	2.88	3.02	3.00	3.00	3.08	3.09	3.12	3.41	3.43	3.47
Motor Gasoline ²	16.17	17.93	17.89	17.89	19.24	19.17	19.15	21.57	21.51	21.50
Petrochemical Feedstock	1.29	1.36	1.36	1.36	1.53	1.52	1.52	1.70	1.69	1.69
Residual Fuel	1.05	1.10	1.10	1.10	1.20	1.20	1.21	1.24	1.24	1.24
Other Petroleum ¹²	4.53	4.71	4.69	4.69	4.99	5.01	5.01	5.35	5.42	5.42
Petroleum Subtotal	37.01	40.90	40.73	40.73	44.16	43.97	43.96	50.21	50.14	50.18
Natural Gas ⁶	18.50	20.91	20.92	20.92	22.05	22.09	22.00	24.66	25.73	25.85
Metallurgical Coal	0.75	0.67	0.67	0.67	0.61	0.61	0.61	0.50	0.50	0.50
Steam Coal	1.84	1.92	1.92	1.92	1.95	1.91	1.90	2.00	1.96	1.95
Net Coal Coke Imports	0.06	0.12	0.11	0.11	0.16	0.15	0.15	0.22	0.22	0.22
Coal Subtotal	2.65	2.71	2.70	2.70	2.71	2.66	2.66	2.72	2.68	2.67
Renewable Energy ¹³	2.65	2.94	2.93	2.93	3.18	3.17	3.17	3.65	3.64	3.63
Methanol (M85) ¹¹	0.00	0.00	0.00	0.00	0.01	0.01	0.01	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	11.24	12.95	12.76	12.76	14.15	13.21	13.07	16.34	14.64	14.39
Delivered Energy	72.05	80.41	80.04	80.05	86.27	85.12	84.85	97.57	96.83	96.72
Electricity Related Losses	24.29	27.40	26.53	26.64	28.84	25.07	23.93	30.58	24.50	23.91
Total	96.33	107.81	106.58	106.69	115.11	110.18	108.78	128.16	121.32	120.63
Electric Generators¹⁴										
Distillate Fuel	0.06	0.06	0.03	0.03	0.06	0.02	0.01	0.06	0.02	0.03
Residual Fuel	0.96	0.38	0.15	0.14	0.22	0.08	0.07	0.19	0.08	0.08
Petroleum Subtotal	1.02	0.44	0.18	0.18	0.28	0.10	0.08	0.25	0.10	0.12
Natural Gas	3.71	5.53	5.01	4.95	6.94	8.98	10.12	11.40	13.50	13.37
Steam Coal	18.77	21.68	20.38	20.46	22.93	13.99	11.47	23.70	11.00	9.72
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.91	7.95	6.54	7.15	7.27
Renewable Energy ¹⁵	3.88	4.19	5.21	5.31	4.73	6.80	6.86	4.78	7.02	7.45
Electricity Imports ¹⁶	0.35	0.61	0.61	0.61	0.37	0.50	0.51	0.24	0.37	0.37
Total	35.52	40.35	39.29	39.40	42.99	38.28	36.99	46.92	39.14	38.31

Table G2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1998	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%
Total Energy Consumption										
Distillate Fuel	7.54	8.80	8.72	8.72	9.54	9.38	9.36	10.91	10.76	10.79
Kerosene	0.15	0.13	0.13	0.13	0.12	0.13	0.13	0.12	0.12	0.12
Jet Fuel ⁸	3.46	3.90	3.88	3.88	4.51	4.49	4.48	5.97	5.96	5.96
Liquefied Petroleum Gas	2.88	3.02	3.00	3.00	3.08	3.09	3.12	3.41	3.43	3.47
Motor Gasoline ²	16.17	17.93	17.89	17.89	19.24	19.17	19.15	21.57	21.51	21.50
Petrochemical Feedstock	1.29	1.36	1.36	1.36	1.53	1.52	1.52	1.70	1.69	1.69
Residual Fuel	2.01	1.48	1.25	1.25	1.42	1.29	1.28	1.42	1.33	1.33
Other Petroleum ¹²	4.53	4.71	4.69	4.69	4.99	5.01	5.01	5.35	5.42	5.42
Petroleum Subtotal	38.02	41.34	40.91	40.91	44.44	44.07	44.04	50.45	50.24	50.29
Natural Gas	22.21	26.44	25.93	25.87	29.00	31.07	32.11	36.06	39.23	39.22
Metallurgical Coal	0.75	0.67	0.67	0.67	0.61	0.61	0.61	0.50	0.50	0.50
Steam Coal	20.61	23.60	22.30	22.37	24.88	15.90	13.37	25.70	12.96	11.67
Net Coal Coke Imports	0.06	0.12	0.11	0.11	0.16	0.15	0.15	0.22	0.22	0.22
Coal Subtotal	21.42	24.39	23.08	23.16	25.64	16.65	14.13	26.42	13.68	12.38
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.91	7.95	6.54	7.15	7.27
Renewable Energy ¹⁷	6.54	7.13	8.14	8.24	7.91	9.97	10.03	8.43	10.66	11.09
Methanol (M85) ¹¹	0.00	0.00	0.00	0.00	0.01	0.01	0.01	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 Imports ¹⁶	0.35	0.61	0.61	0.61	0.37	0.50	0.51	0.24	0.37	0.37
Total	96.33	107.81	106.58	106.69	115.11	110.18	108.78	128.16	121.32	120.63
Energy Use and Related Statistics										
Delivered Energy Use	72.05	80.41	80.04	80.05	86.27	85.12	84.85	97.57	96.83	96.72
Total Energy Use	96.33	107.81	106.58	106.69	115.11	110.18	108.78	128.16	121.32	120.63
Population (millions)	273.13	288.02	288.02	288.02	300.17	300.17	300.17	325.24	325.24	325.24
Gross Domestic Product (billion 1996 dollars)	8876	10960	10904	10904	12667	12620	12610	16515	16523	16523
Total Carbon Dioxide Emissions (million metric tons carbon equivalent)	1510.8	1705.0	1655.9	1656.9	1825.7	1618.3	1568.0	2051.2	1765.6	1733.1

¹Includes wood used for residential heating.

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

³Includes commercial sector electricity cogenerated by using wood and wood waste, landfill gas, municipal solid waste, and other biomass.

⁴Fuel consumption includes consumption for cogeneration.

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

⁶Includes lease and plant fuel and consumption by cogenerators, excludes consumption by nonutility generators.

⁷Includes consumption of energy from hydroelectric, wood and wood waste, municipal solid waste, and other biomass; includes cogeneration, both for sale to the grid and for own use.

⁸Includes only kerosene type.

⁹Includes aviation gas and lubricants.

¹⁰E85 is 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable).

¹¹M85 is 85 percent methanol and 15 percent motor gasoline.

¹²Includes unfinished oils, natural gasoline, motor gasoline blending compounds, 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 all electric power generators for grid-connected power except cogenerators, which produce electricity and other useful thermal energy. 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 cogeneration. Excludes net electricity imports.

¹⁶In 1998 approximately 70 percent of the U.S. electricity imports were provided by renewable sources (hydroelectricity); EIA does not project future proportions for the fuel source of imported electricity.

¹⁷Includes 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.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 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: 1999 electric utility fuel consumption: Energy Information Administration, (EIA) *Electric Power Annual 1998, Volume 1*, DOE/EIA-0348(98)/1 (Washington, DC, April 1999). 1999 nonutility consumption estimates: EIA, Form EIA-860B: "Annual Electric Generator Report - Nonutility." Other 1999 values: EIA, *Short-Term Energy Outlook, September 2000*, <http://www.eia.doe.gov/pub/forecasting/steo/oldsteos/sep00.pdf>. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NM9008.D060801A, M2NM7B08.D060901A.

Table G3. Energy Prices by Sector and Source
(1999 Dollars per Million Btu, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990- 7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990- 7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990- 7%
Residential	13.10	13.27	13.56	13.55	13.46	15.71	16.39	13.77	16.19	16.42
Primary Energy ¹	6.71	7.49	7.38	7.37	7.18	7.47	7.65	7.08	7.42	7.51
Petroleum Products ²	7.55	9.20	9.14	9.14	9.37	9.43	9.40	9.47	9.43	9.45
Distillate Fuel	6.27	7.45	7.37	7.37	7.57	7.56	7.56	7.78	7.74	7.74
Liquefied Petroleum Gas	10.36	12.60	12.57	12.58	12.86	13.07	13.00	12.75	12.65	12.73
Natural Gas	6.52	7.11	6.98	6.98	6.72	7.07	7.29	6.65	7.07	7.17
Electricity	23.47	22.16	23.27	23.23	22.30	28.08	29.64	22.44	28.57	29.15
Commercial	13.18	12.70	13.20	13.17	12.25	15.42	16.27	12.69	15.69	15.88
Primary Energy ¹	5.22	5.57	5.45	5.45	5.68	5.97	6.16	5.79	6.13	6.21
Petroleum Products ²	4.99	6.13	6.07	6.07	6.29	6.30	6.27	6.40	6.34	6.31
Distillate Fuel	4.37	5.24	5.16	5.17	5.36	5.33	5.32	5.53	5.48	5.47
Residual Fuel	2.63	3.65	3.61	3.61	3.71	3.69	3.69	3.86	3.84	3.84
Natural Gas ³	5.34	5.55	5.42	5.42	5.66	6.00	6.23	5.78	6.18	6.28
Electricity	21.45	20.26	21.56	21.50	18.76	25.34	26.94	19.00	26.09	26.88
Industrial⁴	5.27	5.76	5.80	5.80	5.67	6.49	6.75	5.90	6.63	6.75
Primary Energy	3.91	4.47	4.38	4.38	4.49	4.65	4.76	4.68	4.82	4.90
Petroleum Products ²	5.54	6.00	5.94	5.94	6.13	6.15	6.14	6.16	6.08	6.14
Distillate Fuel	4.65	5.40	5.33	5.33	5.56	5.50	5.49	5.73	5.69	5.69
Liquefied Petroleum Gas	8.50	7.74	7.70	7.70	7.88	8.08	8.03	7.76	7.68	7.81
Residual Fuel	2.78	3.38	3.34	3.34	3.44	3.42	3.42	3.59	3.58	3.58
Natural Gas ⁵	2.79	3.64	3.51	3.50	3.50	3.85	4.10	3.85	4.29	4.39
Metallurgical Coal	1.65	1.58	1.58	1.59	1.54	1.55	1.55	1.44	1.44	1.44
Steam Coal	1.43	1.35	1.35	1.35	1.31	1.22	1.20	1.21	1.10	1.08
Electricity	13.00	12.80	13.72	13.67	12.08	17.22	18.43	12.22	17.97	18.59
Transportation	8.30	9.39	9.35	9.35	9.69	9.73	9.75	9.20	9.23	9.21
Primary Energy	8.29	9.38	9.33	9.33	9.68	9.71	9.72	9.18	9.20	9.18
Petroleum Products ²	8.28	9.37	9.33	9.33	9.67	9.70	9.72	9.18	9.19	9.17
Distillate Fuel ⁶	8.22	8.98	8.89	8.90	8.95	8.94	8.94	8.83	8.82	8.82
Jet Fuel ⁷	4.70	5.29	5.23	5.23	5.49	5.48	5.48	5.72	5.72	5.71
Motor Gasoline ⁸	9.45	10.81	10.77	10.77	11.31	11.36	11.39	10.60	10.62	10.59
Residual Fuel	2.46	3.11	3.10	3.09	3.18	3.17	3.17	3.33	3.32	3.32
Liquid Petroleum Gas ⁹	12.87	14.07	14.03	14.04	14.07	14.30	14.25	13.70	13.61	13.74
Natural Gas ¹⁰	7.02	7.28	7.14	7.14	7.21	7.56	7.78	7.41	7.80	7.89
Ethanol (E85) ¹¹	14.42	19.21	19.19	19.19	19.16	19.23	19.28	19.36	19.43	19.44
Methanol (M85) ¹²	10.38	13.13	12.99	12.99	13.83	13.84	13.83	14.35	14.36	14.35
Electricity	15.59	14.52	15.01	15.00	13.62	16.93	17.72	13.22	16.46	16.79
Average End-Use Energy	8.49	9.17	9.27	9.26	9.22	10.19	10.47	9.21	10.14	10.22
Primary Energy	6.31	7.19	7.12	7.11	7.35	7.46	7.54	7.23	7.31	7.34
Electricity	19.41	18.65	19.76	19.71	17.99	23.83	25.28	18.19	24.63	25.30
Electric Generators¹³										
Fossil Fuel Average	1.48	1.64	1.55	1.54	1.59	2.11	2.46	1.88	2.81	2.97
Petroleum Products	2.49	3.61	3.83	3.85	3.90	4.26	4.40	4.17	4.51	4.55
Distillate Fuel	4.04	4.72	4.72	4.73	4.87	4.92	4.92	5.06	5.13	5.01
Residual Fuel	2.40	3.42	3.64	3.65	3.65	4.13	4.29	3.89	4.39	4.36
Natural Gas	2.58	3.44	3.41	3.40	3.26	3.90	4.21	3.71	4.40	4.51
Steam Coal	1.21	1.14	1.07	1.07	1.06	0.95	0.91	0.98	0.85	0.82

Table G3. Energy Prices by Sector and Source (Continued)
(1999 Dollars per Million Btu, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%
Average Price to All Users¹⁴										
Petroleum Products ²	7.44	8.53	8.51	8.51	8.81	8.85	8.86	8.49	8.49	8.49
Distillate Fuel	7.25	8.14	8.07	8.08	8.20	8.20	8.19	8.20	8.19	8.18
Jet Fuel	4.70	5.29	5.23	5.23	5.49	5.48	5.48	5.72	5.72	5.71
Liquefied Petroleum Gas	8.84	8.63	8.60	8.60	8.74	8.94	8.89	8.54	8.47	8.59
Motor Gasoline ⁸	9.45	10.80	10.77	10.77	11.31	11.36	11.39	10.60	10.62	10.59
Residual Fuel	2.47	3.25	3.23	3.23	3.33	3.32	3.32	3.49	3.48	3.48
Natural Gas	4.05	4.72	4.64	4.63	4.47	4.82	5.04	4.60	5.08	5.19
Coal	1.23	1.16	1.10	1.10	1.08	0.99	0.95	1.00	0.89	0.87
Ethanol (E85) ¹¹	14.42	19.21	19.19	19.19	19.16	19.23	19.28	19.36	19.43	19.44
Methanol (M85) ¹²	10.38	13.13	12.99	12.99	13.83	13.84	13.83	14.35	14.36	14.35
Electricity	19.41	18.65	19.76	19.71	17.99	23.83	25.28	18.19	24.63	25.30
Non-Renewable Energy Expenditures by Sector (billion 1999 dollars)										
Residential	134.28	153.83	156.62	156.46	160.41	180.98	186.99	183.27	208.08	209.81
Commercial	98.42	114.97	119.11	118.83	119.69	145.65	152.18	136.41	166.62	169.30
Industrial	111.66	127.05	127.75	127.56	133.28	152.48	158.61	154.57	174.97	177.83
Transportation	212.64	273.84	271.57	271.56	308.81	308.13	308.22	340.45	339.89	338.97
Total Non-Renewable Expenditures	556.99	669.69	675.06	674.41	722.19	787.23	806.00	814.69	889.56	895.91
Transportation Renewable Expenditures	0.14	0.42	0.42	0.42	0.64	0.63	0.63	0.85	0.85	0.85
Total Expenditures	557.13	670.11	675.48	674.82	722.82	787.86	806.63	815.54	890.41	896.76

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.

³Excludes independent power producers.

⁴Includes cogenerators.

⁵Excludes uses for lease and plant fuel.

⁶Low sulfur diesel fuel. Price includes Federal and State taxes while excluding county and local taxes.

⁷Kerosene-type jet fuel. Price includes Federal and State taxes while excluding county and local taxes.

⁸Sales weighted-average price for all grades. Includes Federal and State taxes and excludes county and local taxes.

⁹Includes Federal and State taxes while excluding county and local taxes.

¹⁰Compressed natural gas used as a vehicle fuel. Price includes estimated motor vehicle fuel taxes.

¹¹E85 is 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable).

¹²M85 is 85 percent methanol and 15 percent motor gasoline.

¹³Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy. Includes small power producers and exempt wholesale generators.

¹⁴Weighted averages of end-use fuel prices are derived from the prices shown in each sector and the corresponding sectoral consumption.

Btu = British thermal unit.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Note: Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 prices for gasoline, distillate, and jet fuel are based on prices in various issues of Energy Information Administration (EIA), *Petroleum Marketing Monthly*, DOE/EIA-0380 (99/03-2000/04) (Washington, DC, 1999-2000). 1999 prices for all other petroleum products are derived from the EIA, *State Energy Price and Expenditure Report 1997*, DOE/EIA-0376(97) (Washington, DC, July 2000). 1999 industrial gas delivered prices are based on EIA, *Manufacturing Energy Consumption Survey 1994*. 1999 residential and commercial natural gas delivered prices: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). 1999 coal prices based on EIA, *Quarterly Coal Report*, DOE/EIA-0121(2000/1Q) (Washington, DC, August 2000), and EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NM9008.D060801A, M2NM7B08.D060901A. 1999 electricity prices for commercial, industrial, and transportation: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NM9008.D060801A, M2NM7B08.D060901A. **Projections:** EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NM9008.D060801A, M2NM7B08.D060901A.

Table G4. Electricity Supply, Disposition, Prices, and Emissions
(Billion Kilowatthours, Unless Otherwise Noted)

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%
Generation by Fuel Type										
Electric Generators¹										
Coal	1831	2106	1989	1995	2245	1387	1145	2315	1096	974
Petroleum	94	43	19	18	28	11	9	25	11	13
Natural Gas ²	359	583	625	618	825	1265	1458	1495	1977	1963
Nuclear Power	730	740	740	740	725	741	744	613	669	681
Pumped Storage	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Renewable Sources ³	355	373	418	420	397	511	512	400	525	564
Total	3369	3844	3790	3790	4219	3914	3868	4847	4277	4195
Non-Utility Generation for Own Use	16	17	21	21	17	20	20	17	19	18
Distributed Generation	0	0	0	0	1	1	1	5	2	1
Cogenerators⁴										
Coal	47	53	52	52	52	46	44	52	40	40
Petroleum	9	10	10	10	10	10	10	10	10	11
Natural Gas	207	237	242	242	261	320	321	318	595	641
Other Gaseous Fuels ⁵	4	6	6	6	7	7	7	8	9	9
Renewable Sources ³	31	34	34	34	39	39	39	48	48	48
Other ⁶	5	5	5	5	5	5	5	6	6	6
Total	303	345	350	350	373	427	427	441	707	753
Other End-Use Generators⁷										
Sales to Utilities	151	172	170	170	180	183	181	208	265	280
Generation for Own Use	156	178	184	184	198	249	250	238	447	478
Net Imports⁸	33	57	57	57	35	47	49	23	35	35
Electricity Sales by Sector										
Residential	1145	1339	1318	1318	1452	1350	1329	1698	1562	1542
Commercial	1073	1288	1272	1272	1439	1350	1334	1646	1491	1462
Industrial	1058	1142	1123	1123	1222	1138	1132	1395	1190	1167
Transportation	17	26	26	26	35	34	34	49	48	48
Total	3294	3794	3739	3740	4147	3873	3830	4788	4291	4218
End-Use Prices (1999 cents per kwh)⁹										
Residential	8.0	7.6	7.9	7.9	7.6	9.6	10.1	7.7	9.7	9.9
Commercial	7.3	6.9	7.4	7.3	6.4	8.6	9.2	6.5	8.9	9.2
Industrial	4.4	4.4	4.7	4.7	4.1	5.9	6.3	4.2	6.1	6.3
Transportation	5.3	5.0	5.1	5.1	4.6	5.8	6.0	4.5	5.6	5.7
All Sectors Average	6.6	6.4	6.7	6.7	6.1	8.1	8.6	6.2	8.4	8.6
Prices by Service Category⁹ (1999 cents per kwh)										
Generation	4.1	3.8	4.2	4.1	3.5	5.4	5.8	3.6	5.7	5.9
Transmission	0.6	0.6	0.6	0.6	0.7	0.7	0.8	0.7	0.7	0.7
Distribution	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.0
Emissions (million short tons)										
Sulfur Dioxide	13.71	10.38	8.55	8.55	9.70	4.52	4.02	8.95	3.27	3.27
Nitrogen Oxide	5.45	4.30	3.06	3.05	4.34	1.65	1.42	4.49	1.38	1.31

¹Includes grid-connected generation at all utilities and nonutilities except for cogenerators. Includes small power producers and exempt wholesale generators.

²Includes electricity generation by fuel cells.

³Includes conventional hydroelectric, geothermal, wood, wood waste, municipal solid waste, landfill gas, other biomass, solar, and wind power.

⁴Cogenerators produce electricity and other useful thermal energy. Includes sales to utilities and generation for own use.

⁵Other gaseous fuels include refinery and still gas.

⁶Other includes hydrogen, sulfur, batteries, chemicals, fish oil, and spent sulfite liquor.

⁷Includes 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.

⁸In 1998 approximately 70 percent of the U.S. electricity imports were provided by renewable sources (hydroelectricity); EIA does not project future proportions for the fuel source of imported electricity.

⁹Prices represent average revenue per kilowatthour.

Kwh = Kilowatthour.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Source: Energy Information Administration, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NM9008.D060801A, M2NM7B08.D060901A.

**Table G5. Electricity Generating Capability
(Gigawatts)**

Net Summer Capability ¹	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990- 7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990- 7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990- 7%
Electric Generators²										
Capability										
Coal Steam	305.1	303.9	302.8	302.8	318.6	269.2	266.0	318.5	240.0	221.2
Other Fossil Steam ³	137.4	127.8	119.9	119.9	119.2	103.6	104.6	116.9	94.3	91.1
Combined Cycle	21.0	53.2	84.4	84.5	107.8	174.5	205.3	202.2	269.0	273.8
Combustion Turbine/Diesel	74.3	123.1	114.8	116.3	147.2	119.0	119.9	199.5	135.7	128.8
Nuclear Power	97.4	97.5	97.5	97.5	94.8	96.9	97.5	76.3	85.7	87.6
Pumped Storage	19.3	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5
Fuel Cells	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.3	0.3
Renewable Sources ⁴	88.8	94.8	98.7	99.6	98.0	106.6	109.3	99.5	112.9	123.3
Distributed Generation ⁵	0.0	0.7	0.6	0.7	2.5	1.2	1.2	11.5	3.5	2.3
Total	743.4	820.4	838.2	840.7	907.8	890.7	923.5	1044.2	960.9	948.0
Cumulative Planned Additions⁶										
Coal Steam	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Fossil Steam ³	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Combined Cycle	0.0	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7
Combustion Turbine/Diesel	0.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
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	0.1	0.1	0.1	0.3	0.3	0.3
Renewable Sources ⁴	0.0	5.1	5.1	5.1	6.7	6.7	6.7	8.1	8.1	8.1
Distributed Generation ⁵	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.0	32.0	32.0	32.0	33.7	33.7	33.7	35.3	35.3	35.3
Cumulative Unplanned Additions⁶										
Coal Steam	0.0	1.1	0.0	0.0	18.9	0.0	0.0	20.5	0.0	0.0
Other Fossil Steam ³	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Combined Cycle	0.0	19.4	50.7	50.7	74.2	140.9	171.6	168.6	235.3	240.1
Combustion Turbine/Diesel	0.0	38.9	32.0	33.3	64.7	37.7	38.2	117.2	54.6	47.4
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 ⁴	0.0	0.4	4.4	5.2	2.0	10.7	13.3	2.0	15.5	25.8
Distributed Generation ⁵	0.0	0.7	0.6	0.7	2.5	1.2	1.2	11.5	3.5	2.3
Total	0.0	60.6	87.7	90.0	162.2	190.4	224.4	319.8	308.9	315.7
Cumulative Total Additions	0.0	92.6	119.7	122.0	195.9	224.1	258.1	355.1	344.2	351.0
Cumulative Retirements⁷										
Coal Steam	0.0	2.3	2.3	2.3	5.4	35.9	39.1	7.2	65.1	83.9
Other Fossil Steam ³	0.0	9.9	17.8	17.7	18.4	34.1	33.0	20.7	43.3	46.5
Combined Cycle	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.2	0.1	0.1
Combustion Turbine/Diesel	0.0	4.4	5.7	5.5	6.0	7.1	6.8	6.3	7.4	7.1
Nuclear Power	0.0	0.0	0.0	0.0	2.6	0.6	0.0	21.2	11.8	9.8
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 ⁴	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total	0.0	16.7	26.0	25.7	32.8	78.0	79.1	55.6	127.9	147.6
Cogenerators⁸										
Capability										
Coal	8.4	8.9	8.9	8.9	8.6	7.5	7.3	8.6	6.8	6.6
Petroleum	2.7	2.9	2.9	2.9	2.9	2.9	2.9	2.9	3.0	3.0
Natural Gas	34.6	39.9	40.8	40.8	43.3	51.6	51.8	51.4	89.7	97.1
Other Gaseous Fuels	0.2	0.8	0.8	0.8	0.9	0.9	0.9	1.1	1.2	1.1
Renewable Sources ⁴	5.4	5.9	5.9	5.9	6.8	6.8	6.8	8.2	8.3	8.2
Other	1.1	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Total	52.4	59.2	60.1	60.2	63.3	70.5	70.6	73.2	109.7	117.0
Cumulative Additions⁶	0.0	6.8	7.7	7.7	10.9	18.1	18.2	20.7	57.3	64.6

Table G5. Electricity Generating Capability (Continued)
(Gigawatts)

Net Summer Capability ¹	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990- 7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990- 7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990- 7%
Other End-Use Generators⁹										
Renewable Sources	1.0	1.1	1.1	1.1	1.3	1.3	1.3	1.3	1.3	1.4
Cumulative Additions	0.0	0.1	0.1	0.1	0.3	0.3	0.3	0.3	0.3	0.4

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

²Includes grid-connected utilities and nonutilities except for cogenerators. Includes small power producers and exempt wholesale generators.

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

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

⁵Primarily peak-load capacity fueled by natural gas.

⁶Cumulative additions after December 31, 1999.

⁷Cumulative total retirements after December 31, 1999.

⁸Nameplate capacity is reported for nonutilities on Form EIA-860B: "Annual Electric Generator Report - Nonutility." Nameplate capacity is designated by the manufacturer. The nameplate capacity has been converted to the net summer capability based on historic relationships.

⁹Includes 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. Excludes off-grid photovoltaics and other generators not connected to the distribution or transmission systems.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Notes: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports. Net summer capability has been estimated for nonutility generators to be consistent with capability for electric utility generators.

Source: Energy Information Administration, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NM9008.D060801A, M2NM7B08.D060901A.

Table G6. Electricity Trade
(Billion Kilowatthours, Unless Otherwise Noted)

Electricity Trade	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990- 7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990- 7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990- 7%
Interregional Electricity Trade										
Gross Domestic Firm Power Trade	182.2	125.3	125.3	125.3	102.9	102.9	102.9	0.0	0.0	0.0
Gross Domestic Economy Trade	152.0	202.3	154.1	152.9	155.5	65.7	57.4	147.9	73.9	81.1
Gross Domestic Trade	334.2	327.6	279.4	278.2	258.4	168.6	160.4	147.9	73.9	81.1
Gross Domestic Firm Power Sales										
(million 1999 dollars)	8588.1	5905.8	5905.8	5905.8	4851.2	4851.2	4851.2	0.0	0.0	0.0
Gross Domestic Economy Sales										
(million 1999 dollars)	4413.9	6468.6	5579.8	5474.0	4510.4	3283.6	3090.6	4605.1	4020.7	4444.8
Gross Domestic Sales	13002.0	12374.4	11485.6	11379.8	9361.6	8134.8	7941.9	4605.1	4020.7	4444.8
International Electricity Trade										
Firm Power Imports From Canada and Mexico ¹	27.0	10.7	10.7	10.7	5.8	17.9	19.1	0.0	12.1	12.1
Economy Imports From Canada and Mexico ¹ ..	21.9	63.5	63.5	63.5	45.9	45.9	45.9	30.6	30.6	30.6
Gross Imports From Canada and Mexico¹ ..	48.9	74.1	74.1	74.1	51.7	63.8	65.0	30.6	42.7	42.7
Firm Power Exports To Canada and Mexico . . .	9.2	9.7	9.7	9.7	8.7	8.7	8.7	0.0	0.0	0.0
Economy Exports To Canada and Mexico	6.3	7.0	7.0	7.0	7.7	7.7	7.7	7.7	7.7	7.7
Gross Exports To Canada and Mexico	15.5	16.7	16.7	16.7	16.4	16.4	16.4	7.7	7.7	7.7

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

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 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, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NM9008.D060801A, M2NM7B08.D060901A.

Table G7. Natural Gas Supply and Disposition
(Trillion Cubic Feet per Year)

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%
Production										
Dry Gas Production ¹	18.67	21.40	20.89	20.84	23.43	23.96	24.90	29.47	30.54	30.44
Supplemental Natural Gas ²	0.10	0.11	0.11	0.11	0.06	0.06	0.06	0.06	0.06	0.06
Net Imports	3.38	4.69	4.70	4.69	5.00	6.50	6.60	5.82	7.88	7.97
Canada	3.29	4.48	4.49	4.48	4.72	4.89	4.97	5.43	5.72	5.73
Mexico	-0.01	-0.18	-0.18	-0.18	-0.25	0.32	0.32	-0.40	0.36	0.36
Liquefied Natural Gas	0.10	0.39	0.39	0.39	0.53	1.30	1.31	0.79	1.80	1.88
Total Supply	22.15	26.20	25.70	25.65	28.49	30.52	31.56	35.35	38.48	38.46
Consumption by Sector										
Residential	4.75	5.42	5.45	5.45	5.46	5.42	5.37	6.07	6.06	6.05
Commercial	3.06	3.88	3.90	3.91	4.06	4.04	4.00	4.32	4.70	4.82
Industrial ³	8.31	8.81	8.82	8.82	9.48	9.53	9.45	10.53	11.11	11.12
Electric Generators ⁴	3.64	5.43	4.92	4.86	6.81	8.81	9.93	11.19	13.25	13.12
Lease and Plant Fuel ⁵	1.23	1.38	1.35	1.35	1.50	1.53	1.57	1.87	1.91	1.91
Pipeline Fuel	0.64	0.81	0.80	0.79	0.88	0.90	0.94	1.07	1.12	1.12
Transportation ⁶	0.02	0.05	0.05	0.05	0.09	0.09	0.09	0.15	0.15	0.15
Total	21.65	25.79	25.29	25.23	28.29	30.32	31.35	35.20	38.31	38.29
Discrepancy⁷	0.50	0.42	0.41	0.42	0.20	0.20	0.21	0.14	0.17	0.17

¹Marketed production (wet) minus extraction losses.

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

³Includes consumption by cogenerators.

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

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

⁶Compressed natural gas used as vehicle fuel.

⁷Balancing item. Natural gas lost as a result of converting flow data measured at varying temperatures and pressures to a standard temperature and pressure and the merger of different data reporting systems which vary in scope, format, definition, and respondent type. In addition, 1999 values include net storage injections.

Btu = British thermal unit.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 supplemental natural gas: Energy Information Administration (EIA), *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). 1999 transportation sector consumption: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NM9008.D060801A, M2NM7B08.D060901A. Other 1999 consumption: EIA, *Short-Term Energy Outlook, September 2000*, <http://www.eia.doe.gov/pub/forecasting/steo/oldsteos/sep00.pdf> with adjustments to end-use sector consumption levels for consumption of natural gas by electric wholesale generators based on EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NM9008.D060801A, M2NM7B08.D060901A. **Projections:** EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NM9008.D060801A, M2NM7B08.D060901A.

Table G8. Natural Gas Prices, Margins, and Revenue
(1999 Dollars per Thousand Cubic Feet, Unless Otherwise Noted)

Prices, Margins, and Revenue	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%
Source Price										
Average Lower 48 Wellhead Price ¹	2.08	2.96	2.80	2.79	2.87	3.24	3.50	3.22	3.69	3.80
Average Import Price	2.29	2.95	2.93	2.93	2.64	2.90	3.01	2.72	3.02	3.09
Average²	2.11	2.96	2.83	2.82	2.82	3.17	3.40	3.13	3.55	3.65
Delivered Prices										
Residential	6.69	7.31	7.17	7.16	6.91	7.26	7.49	6.83	7.26	7.36
Commercial	5.49	5.70	5.57	5.56	5.82	6.17	6.39	5.93	6.34	6.45
Industrial ³	2.87	3.74	3.60	3.59	3.59	3.96	4.21	3.95	4.40	4.51
Electric Generators ⁴	2.63	3.50	3.48	3.46	3.32	3.97	4.29	3.78	4.48	4.60
Transportation ⁵	7.21	7.48	7.34	7.33	7.40	7.77	7.99	7.61	8.01	8.11
Average⁶	4.15	4.84	4.76	4.75	4.59	4.94	5.17	4.72	5.21	5.32
Transmission & Distribution Margins⁷										
Residential	4.58	4.35	4.35	4.35	4.08	4.09	4.09	3.70	3.71	3.71
Commercial	3.37	2.74	2.75	2.74	2.99	3.00	3.00	2.81	2.80	2.80
Industrial ³	0.76	0.78	0.78	0.78	0.77	0.79	0.81	0.82	0.85	0.86
Electric Generators ⁴	0.52	0.54	0.65	0.65	0.49	0.80	0.89	0.65	0.93	0.95
Transportation ⁵	5.10	4.51	4.51	4.51	4.58	4.60	4.60	4.48	4.46	4.46
Average⁶	2.04	1.88	1.93	1.94	1.76	1.78	1.78	1.59	1.66	1.67
Transmission & Distribution Revenue (billion 1999 dollars)										
Residential	21.77	23.57	23.69	23.69	22.30	22.19	22.00	22.48	22.46	22.48
Commercial	10.32	10.63	10.72	10.72	12.16	12.12	11.99	12.12	13.15	13.49
Industrial ³	6.28	6.86	6.84	6.83	7.26	7.53	7.69	8.65	9.49	9.57
Electric Generators ⁴	1.88	2.94	3.20	3.14	3.36	7.08	8.86	7.24	12.39	12.49
Transportation ⁵	0.08	0.24	0.24	0.24	0.41	0.40	0.40	0.68	0.66	0.65
Total	40.32	44.25	44.69	44.62	45.49	49.32	50.95	51.18	58.15	58.67

¹Represents lower 48 onshore and offshore supplies.

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

³Includes consumption by cogenerators.

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

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 industrial delivered prices based on Energy Information Administration (EIA), *Manufacturing Energy Consumption Survey 1994*. 1999 residential and commercial delivered prices, average lower 48 wellhead price, and average import price: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). Other 1999 values, and projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NM9008.D060801A, M2NM7B08.D060901A.

Table G9. Oil and Gas Supply

Production and Supply	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%
Crude Oil										
Lower 48 Average Wellhead Price¹ (1999 dollars per barrel)	16.49	21.43	20.56	21.43	20.73	20.77	20.79	21.47	21.41	21.42
Production (million barrels per day)²										
U.S. Total	5.88	5.66	5.68	5.67	5.32	5.28	5.30	5.25	5.31	5.38
Lower 48 Onshore	3.27	2.81	2.81	2.81	2.52	2.51	2.52	2.75	2.80	2.83
Conventional	2.59	2.18	2.18	2.17	1.81	1.82	1.83	1.98	2.03	2.07
Enhanced Oil Recovery	0.68	0.63	0.63	0.63	0.70	0.70	0.69	0.76	0.76	0.76
Lower 48 Offshore	1.56	2.06	2.08	2.07	2.16	2.12	2.13	1.87	1.87	1.91
Alaska	1.05	0.79	0.79	0.79	0.65	0.65	0.65	0.64	0.64	0.64
Lower 48 End of Year Reserves (billion barrels)² ..	18.33	15.75	15.75	15.76	14.55	14.48	14.54	14.11	14.26	14.37
Natural Gas										
Lower 48 Average Wellhead Price¹ (1999 dollars per thousand cubic feet)	2.08	2.96	2.80	2.79	2.87	3.24	3.50	3.22	3.69	3.80
Production (trillion cubic feet)³										
U.S. Total	18.67	21.40	20.89	20.84	23.43	23.96	24.90	29.47	30.54	30.44
Lower 48 Onshore	12.83	14.46	14.00	13.96	16.71	16.84	17.66	21.31	22.42	22.37
Associated-Dissolved ⁴	1.80	1.51	1.51	1.51	1.32	1.33	1.33	1.39	1.42	1.44
Non-Associated	11.03	12.95	12.48	12.45	15.39	15.52	16.33	19.91	21.00	20.93
Conventional	6.64	7.67	7.43	7.42	7.93	8.01	8.53	11.14	11.41	11.27
Unconventional	4.39	5.27	5.05	5.02	7.45	7.51	7.80	8.78	9.60	9.67
Lower 48 Offshore	5.43	6.47	6.43	6.42	6.22	6.62	6.75	7.59	7.56	7.51
Associated-Dissolved ⁴	0.93	1.06	1.06	1.06	1.09	1.09	1.09	1.04	1.04	1.04
Non-Associated	4.50	5.41	5.37	5.35	5.13	5.53	5.66	6.56	6.52	6.47
Alaska	0.42	0.47	0.47	0.47	0.50	0.50	0.50	0.57	0.56	0.56
Lower 48 End of Year Reserves³ (trillion cubic feet)	157.41	167.88	169.73	170.08	185.55	184.66	185.37	200.71	200.26	208.77
Supplemental Gas Supplies (trillion cubic feet)⁵ ..	0.10	0.11	0.11	0.11	0.06	0.06	0.06	0.06	0.06	0.06
Total Lower 48 Wells (thousands)	17.93	28.87	27.94	27.85	29.86	31.86	33.93	39.36	44.00	46.75

¹Represents lower 48 onshore and offshore supplies.

²Includes lease condensate.

³Market production (wet) minus extraction losses.

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

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

Btu = British thermal unit.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 lower 48 onshore, lower 48 offshore, and Alaska crude oil production: Energy Information Administration (EIA), *Petroleum Supply Annual 1999*, DOE/EIA-0340(99/1) (Washington, DC, June 2000). 1999 natural gas lower 48 average wellhead price, Alaska and total natural gas production, and supplemental gas supplies: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). Other 1999 values: EIA, Office of Integrated Analysis and Forecasting. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NM9008.D060801A, M2NM7B08.D060901A.

Table G10. Coal Supply, Disposition, and Prices
(Million Short Tons per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%
Production¹										
Appalachia	433	426	418	419	421	306	275	396	240	234
Interior	185	182	175	179	180	113	108	161	94	87
West	486	624	572	568	694	435	341	783	387	320
East of the Mississippi	559	561	548	553	557	388	355	524	311	300
West of the Mississippi	544	672	617	613	738	464	369	817	410	341
Total	1103	1233	1165	1166	1295	853	724	1340	721	641
Net Imports										
Imports	9	16	12	12	17	9	9	20	9	9
Exports	58	60	60	60	58	60	59	56	62	59
Total	-49	-44	-48	-48	-40	-51	-50	-36	-54	-50
Total Supply²	1054	1189	1117	1118	1254	802	674	1304	667	590
Consumption by Sector										
Residential and Commercial	5	5	5	5	5	5	5	5	5	5
Industrial ³	79	82	82	82	83	82	81	86	84	84
Coke Plants	28	25	25	25	23	23	23	19	19	19
Electric Generators ⁴	921	1077	1005	1008	1145	694	567	1196	554	485
Total	1032	1189	1117	1120	1256	803	677	1306	663	593
Discrepancy and Stock Change⁵	21	-1	0	-2	-2	-2	-3	-2	5	-3
Average Minemouth Price										
(1999 dollars per short ton)	17.17	15.05	14.96	15.11	14.08	13.42	13.43	12.87	11.90	12.16
(1999 dollars per million Btu)	0.82	0.73	0.72	0.73	0.69	0.64	0.64	0.64	0.57	0.58
Delivered Prices (1999 dollars per short ton)⁶										
Industrial	31.39	29.67	29.49	29.64	28.61	26.68	26.12	26.50	23.80	23.54
Coke Plants	44.28	42.39	42.46	42.52	41.36	41.41	41.45	38.52	38.60	38.67
Electric Generators										
(1999 dollars per short ton)	24.73	22.90	21.77	21.80	21.28	19.22	18.35	19.41	16.81	16.47
(1999 dollars per million Btu)	1.21	1.14	1.07	1.07	1.06	0.95	0.91	0.98	0.85	0.82
Average	25.77	23.78	22.80	22.84	22.13	20.61	20.07	20.15	18.33	18.18
Exports ⁷	37.44	36.39	36.34	36.45	35.66	34.55	34.26	33.09	31.17	31.38

¹Includes anthracite, bituminous coal, lignite, and waste coal delivered to independent power producers. Waste coal deliveries totaled 8.5 million tons in 1995, 8.8 million tons in 1996, 8.1 million tons in 1997, 8.6 million tons in 1998, and are projected to reach 9.6 million tons in 1999, and 12.2 million tons in 2000.

²Production plus net imports and net storage withdrawals.

³Includes consumption by cogenerators.

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

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

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

⁷F.a.s. price at U.S. port of exit.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Btu = British thermal unit.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 data based on Energy Information Administration (EIA), *Quarterly Coal Report*, DOE/EIA-0121(2000/1Q) (Washington, DC, August 2000), and EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NM9008.D060801A, M2NM7B08.D060901A. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NM9008.D060801A, M2NM7B08.D060901A.

Table G11. Renewable Energy Generating Capability and Generation
(Gigawatts, Unless Otherwise Noted)

Capacity and Generation	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%
Electric Generators¹										
(excluding cogenerators)										
Net Summer Capability										
Conventional Hydropower	78.77	79.26	79.34	79.59	79.38	80.69	80.85	79.38	80.69	80.85
Geothermal ²	2.87	3.43	6.78	7.25	4.93	10.20	10.48	4.95	10.50	10.80
Municipal Solid Waste ³	2.61	2.96	3.24	3.24	3.42	4.24	4.42	3.93	4.82	4.94
Wood and Other Biomass ⁴	1.57	1.75	1.84	1.95	2.12	2.50	3.48	2.45	3.52	6.55
Solar Thermal	0.33	0.35	0.35	0.35	0.40	0.40	0.40	0.48	0.48	0.48
Solar Photovoltaic	0.01	0.08	0.08	0.08	0.21	0.21	0.21	0.54	0.54	0.54
Wind	2.66	6.92	7.04	7.10	7.52	8.42	9.50	7.76	12.40	19.13
Total	88.83	94.75	98.68	99.56	97.98	106.65	109.33	99.49	112.94	123.30
Generation (billion kilowatthours)										
Conventional Hydropower	309.55	301.20	301.47	302.22	301.13	305.52	306.02	300.07	304.39	304.87
Geothermal ²	13.21	18.34	46.00	49.92	30.94	74.42	76.62	31.16	76.96	79.35
Municipal Solid Waste ³	18.12	20.68	22.94	22.94	23.88	30.26	31.66	27.76	34.67	35.68
Wood and Other Biomass ⁴	9.02	14.94	30.01	26.92	21.30	79.00	72.81	19.78	72.50	86.31
Dedicated Plants	7.73	9.16	9.78	10.48	11.36	13.96	20.51	13.82	21.02	41.23
Cofiring	1.29	5.78	20.23	16.44	9.94	65.04	52.31	5.95	51.49	45.08
Solar Thermal	0.89	0.96	0.96	0.96	1.11	1.11	1.11	1.37	1.37	1.37
Solar Photovoltaic	0.03	0.20	0.20	0.20	0.51	0.51	0.51	1.36	1.36	1.36
Wind	4.61	16.30	16.64	16.79	18.16	20.66	23.66	18.83	33.63	54.99
Total	355.43	372.61	418.21	419.95	397.03	511.47	512.39	400.32	524.87	563.93
Cogenerators⁵										
Net Summer Capability										
Municipal Solid Waste	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Biomass	4.65	5.17	5.19	5.19	6.06	6.07	6.06	7.54	7.56	7.55
Total	5.35	5.87	5.89	5.89	6.76	6.77	6.76	8.24	8.26	8.25
Generation (billion kilowatthours)										
Municipal Solid Waste	4.04	4.04	4.04	4.04	4.04	4.04	4.04	4.04	4.04	4.04
Biomass	27.08	29.92	30.02	30.02	35.01	35.00	34.92	43.52	43.53	43.46
Total	31.12	33.97	34.06	34.06	39.05	39.04	38.97	47.57	47.57	47.51
Other End-Use Generators⁶										
Net Summer Capability										
Conventional Hydropower ⁷	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solar Photovoltaic	0.01	0.10	0.10	0.10	0.35	0.35	0.35	0.35	0.36	0.36
Total	1.00	1.09	1.09	1.09	1.34	1.34	1.34	1.34	1.35	1.35
Generation (billion kilowatthours)										
Conventional Hydropower ⁷	4.57	4.44	4.44	4.44	4.43	4.43	4.43	4.41	4.41	4.41
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solar Photovoltaic	0.02	0.20	0.20	0.20	0.75	0.75	0.75	0.75	0.77	0.78
Total	4.59	4.64	4.64	4.64	5.18	5.18	5.18	5.17	5.18	5.20

¹Includes grid-connected utilities and nonutilities other than cogenerators. These nonutility facilities include small power producers and exempt wholesale generators.

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

³Includes landfill gas.

⁴Includes projections for energy crops after 2010.

⁵Cogenerators produce electricity and other useful thermal energy.

⁶Includes 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. Excludes off-grid photovoltaics and other generators not connected to the distribution or transmission systems.

⁷Represents own-use industrial hydroelectric power.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Notes: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports. Net summer capability has been estimated for nonutility generators for AEO2001. Net summer capability 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: 1999 electric utility capability: Energy Information Administration (EIA), Form EIA-860A: "Annual Electric Generator Report - Utility." 1999 nonutility and cogenerator capability: EIA, Form EIA-860B: "Annual Electric Generator Report - Nonutility." 1999 generation: EIA, *Annual Energy Review 1999*, DOE/EIA-0384(99) (Washington, DC, July 2000). Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NM9008.D060801A, M2NM7B08.D060901A.

Table G12. Renewable Energy Consumption by Sector and Source¹
(Quadrillion Btu per Year)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%
Marketed Renewable Energy²										
Residential	0.41	0.42	0.42	0.42	0.42	0.42	0.42	0.44	0.43	0.43
Wood	0.41	0.42	0.42	0.42	0.42	0.42	0.42	0.44	0.43	0.43
Commercial	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Biomass	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Industrial³	2.15	2.42	2.41	2.41	2.64	2.63	2.63	3.08	3.08	3.08
Conventional Hydroelectric	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Municipal Solid Waste	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Biomass	1.97	2.23	2.22	2.22	2.46	2.44	2.44	2.90	2.89	2.89
Transportation	0.12	0.20	0.20	0.20	0.22	0.22	0.21	0.24	0.24	0.24
Ethanol used in E85 ⁴	0.00	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03
Ethanol used in Gasoline Blending	0.12	0.18	0.18	0.18	0.19	0.19	0.19	0.21	0.21	0.21
Electric Generators⁵	3.88	4.19	5.21	5.31	4.73	6.80	6.86	4.78	7.02	7.45
Conventional Hydroelectric	3.19	3.10	3.10	3.11	3.10	3.14	3.15	3.08	3.13	3.14
Geothermal	0.28	0.44	1.28	1.40	0.85	2.19	2.26	0.85	2.27	2.36
Municipal Solid Waste ⁶	0.25	0.28	0.31	0.31	0.32	0.41	0.43	0.38	0.47	0.49
Biomass	0.12	0.18	0.33	0.30	0.26	0.83	0.76	0.25	0.77	0.88
Dedicated Plants	0.10	0.11	0.11	0.12	0.14	0.15	0.21	0.17	0.22	0.42
Cofiring	0.02	0.07	0.22	0.18	0.12	0.68	0.54	0.07	0.54	0.46
Solar Thermal	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.03
Solar Photovoltaic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wind	0.05	0.17	0.17	0.17	0.19	0.21	0.24	0.19	0.35	0.57
Total Marketed Renewable Energy	6.64	7.31	8.31	8.41	8.10	10.16	10.21	8.62	10.85	11.28
Non-Marketed Renewable Energy⁷										
Selected Consumption										
Residential	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.03	0.03
Solar Hot Water Heating	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Geothermal Heat Pumps	0.02	0.02	0.02	0.02	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	0.00	0.00	0.00
Commercial	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03
Solar Thermal	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03
Solar Photovoltaic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ethanol										
From Corn	0.12	0.19	0.18	0.18	0.20	0.19	0.19	0.17	0.17	0.17
From Cellulose	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.07	0.07	0.07
Total	0.12	0.20	0.20	0.20	0.22	0.22	0.21	0.24	0.24	0.24

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

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

³Includes all electricity production by industrial and other cogenerators for the grid and for own use.

⁴Excludes motor gasoline component of E85.

⁵Includes renewable energy delivered to the grid from electric utilities and nonutilities. Renewable energy used in generating electricity for own use is included in the individual sectoral electricity energy consumption values.

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.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Notes: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 ethanol: Energy Information Administration (EIA), *Annual Energy Review 1999*, DOE/EIA-0384(99) (Washington, DC, July 2000). 1999 electric generators: EIA, Form EIA-860A: "Annual Electric Generator Report - Utility," and EIA, Form EIA-860B: "Annual Electric Generator Report - Nonutility." Other 1999: EIA, Office of Integrated Analysis and Forecasting. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NM9008.D060801A, M2NM7B08.D060901A.

Table G13. Carbon Dioxide Emissions by Sector and Source
(Million Metric Tons Carbon Equivalent per Year)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%
Residential										
Petroleum	26.0	26.5	26.5	26.5	24.5	24.5	24.6	23.2	23.6	23.7
Natural Gas	69.5	80.2	80.6	80.6	80.8	80.2	79.5	89.8	89.6	89.5
Coal	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.2	1.2
Electricity	193.4	227.1	210.5	210.9	242.6	170.5	153.0	275.6	174.1	162.2
Total	290.1	335.0	318.8	319.2	349.2	276.6	258.4	389.8	288.5	276.6
Commercial										
Petroleum	13.7	11.8	11.8	11.8	12.0	12.1	12.2	12.1	12.2	12.7
Natural Gas	45.4	57.4	57.7	57.8	60.1	59.8	59.1	63.9	69.6	71.3
Coal	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.9	1.9	1.9
Electricity	181.3	218.4	203.2	203.5	240.4	170.6	153.5	267.1	166.2	153.7
Total	242.1	289.4	274.5	274.8	314.3	244.3	226.7	345.0	249.9	239.6
Industrial¹										
Petroleum	104.2	99.2	98.5	98.6	105.3	105.7	106.3	113.6	114.9	115.7
Natural Gas ²	141.6	148.4	148.1	148.0	159.8	161.1	160.6	180.3	189.9	190.0
Coal	55.9	65.8	65.6	65.5	65.6	64.5	64.2	65.8	64.7	64.5
Electricity	178.8	193.6	179.4	179.7	204.1	143.8	130.3	226.4	132.7	122.7
Total	480.4	507.0	491.6	491.8	534.8	475.1	461.4	586.1	502.2	492.9
Transportation										
Petroleum ³	485.8	556.3	554.3	554.3	607.2	603.3	602.3	704.2	700.7	700.2
Natural Gas ⁴	9.5	12.8	12.5	12.5	14.4	14.6	15.1	18.1	18.8	18.7
Other ⁵	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Electricity	2.9	4.4	4.1	4.1	5.8	4.4	4.0	7.9	5.4	5.1
Total³	498.2	573.6	571.0	571.0	627.5	622.4	621.5	730.2	725.0	724.0
Total Carbon Dioxide Emissions by Delivered Fuel										
Petroleum ³	629.7	693.8	691.2	691.2	749.0	745.6	745.4	853.1	851.5	852.2
Natural Gas	266.0	298.8	299.0	299.0	315.1	315.6	314.4	352.0	367.8	369.5
Coal	58.8	68.8	68.5	68.5	68.8	67.6	67.4	69.0	67.9	67.6
Other ⁵	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Electricity	556.3	643.6	597.2	598.2	692.8	489.3	440.7	777.0	478.3	443.7
Total³	1510.8	1705.0	1655.9	1656.9	1825.7	1618.3	1568.0	2051.2	1765.6	1733.1
Electric Generators⁶										
Petroleum	20.0	9.4	3.8	3.7	5.8	2.1	1.7	5.2	2.1	2.4
Natural Gas	45.8	79.6	72.2	71.3	100.0	129.3	145.7	164.1	194.5	192.6
Coal	490.5	554.6	521.2	523.2	587.0	357.9	293.3	607.7	281.8	248.7
Total	556.3	643.6	597.2	598.2	692.8	489.3	440.7	777.0	478.3	443.7
Total Carbon Dioxide Emissions by Primary Fuel⁷										
Petroleum ³	649.7	703.1	695.0	694.9	754.8	747.7	747.1	858.3	853.6	854.6
Natural Gas	311.8	378.4	371.1	370.3	415.0	445.0	460.1	516.2	562.3	562.1
Coal	549.3	623.3	589.8	591.7	655.8	425.5	360.7	676.7	349.7	316.3
Other ⁵	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total³	1510.8	1705.0	1655.9	1656.9	1825.7	1618.3	1568.0	2051.2	1765.6	1733.1
Carbon Dioxide Emissions (tons carbon equivalent per person)										
	5.5	5.9	5.7	5.8	6.1	5.4	5.2	6.3	5.4	5.3

¹Includes consumption by cogenerators.

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 1998, international bunker fuels accounted for 20 to 25 million metric tons carbon equivalent of carbon dioxide annually.

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

⁵Includes methanol and liquid hydrogen.

⁶Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy. Includes small power producers and exempt wholesale generators. 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.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 emissions and emission factors: Energy Information Administration (EIA), *Emissions of Greenhouse Gases in the United States 1999*, DOE/EIA-0573(99), (Washington, DC, October 2000). Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NM9008.D060801A, M2NM7B08.D060901A.

Table G14. Emissions, Allowance Costs, and Retrofits: Electric Generators, Excluding Cogenerators

Impacts	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990	NO _x , SO ₂ , CO ₂ 1990-7%
Emissions										
Nitrogen Oxide (million tons)	5.45	4.30	3.06	3.05	4.34	1.65	1.42	4.49	1.38	1.31
Sulfur Dioxide (million tons)	13.71	10.38	8.55	8.55	9.70	4.52	4.02	8.95	3.27	3.27
Mercury (tons)	43.60	45.24	40.26	39.84	45.60	25.29	20.67	45.07	18.76	17.54
Carbon Dioxide (million metric tons carbon equivalent) . .	556.31	643.58	597.20	598.20	692.78	489.32	440.73	776.99	478.30	443.71
Allowance Prices										
Nitrogen Oxide (1999 dollars per ton)	0	4352	1565	1445	4391	0	0	5037	0	0
Sulfur Dioxide (1999 dollars per ton)	0	190	177	167	187	431	246	241	436	259
Mercury (million 1999 dollars per ton) . . .	0	0	0	0	0	0	0	0	0	0
Carbon Dioxide (1999 dollars per ton carbon equivalent)	0	0	27	27	0	112	142	0	143	154
Retrofits (gigawatts)										
Scrubber ¹	0.0	6.5	14.5	18.5	7.1	14.5	18.5	14.8	14.5	18.5
Combustion	0.0	39.9	51.7	54.9	42.1	57.6	60.5	46.1	59.2	60.5
SCR Post-combustion	0.0	92.8	61.3	59.8	92.9	100.8	87.0	93.0	100.8	87.0
SNCR Post-combustion	0.0	25.2	17.2	23.5	26.3	72.1	83.8	43.4	72.4	84.0
Coal Production by Sulfur Category (million tons)										
Low Sulfur (< .61 lbs. S/mmBtu)	472	594	578	569	642	454	346	721	391	320
Medium Sulfur (.61-1.67 lbs. S/mmBtu) . .	432	454	407	409	464	278	254	440	223	213
High Sulfur (> 1.67 lbs. S/mmBtu)	199	185	180	187	188	121	124	179	107	108

¹Represents scrubbers added by the model. Planned scrubbers added by electricity generators are not shown here.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

lbs. S/mmBtu = Pounds sulfur per million British thermal units.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Source: Energy Information Administration, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2NM9008.D060801A, M2NM7B08.D060901A.

Appendix H

Tables for Integrated Cases With Four Emissions Caps, Including CO₂ Emissions at the 1990 Level

Table H1. Total Energy Supply and Disposition Summary
(Quadrillion Btu per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990
Production										
Crude Oil and Lease Condensate . . .	12.45	11.98	12.01	12.02	11.27	11.19	11.23	11.12	11.34	11.08
Natural Gas Plant Liquids	2.62	3.12	3.04	3.00	3.37	3.56	3.46	4.16	4.30	3.95
Dry Natural Gas	19.16	21.95	21.40	21.11	24.04	25.43	24.69	30.24	31.28	28.72
Coal	23.08	25.45	24.25	24.50	26.55	17.02	18.35	27.16	14.79	17.58
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.91	7.91	6.54	7.27	6.95
Renewable Energy ¹	6.53	7.13	8.16	8.84	7.90	9.40	12.61	8.42	10.25	17.47
Other ²	1.65	0.35	0.58	0.58	0.31	0.30	0.55	0.33	0.33	0.33
Total	73.29	77.88	77.35	77.97	81.19	74.81	78.81	87.97	79.57	86.08
Imports										
Crude Oil ³	18.96	21.42	21.40	21.38	22.38	22.54	22.42	25.82	25.72	25.92
Petroleum Products ⁴	4.14	6.28	5.83	5.88	8.65	8.08	8.03	10.80	10.33	10.65
Natural Gas	3.63	5.13	5.13	5.00	5.55	6.85	5.75	6.59	8.18	6.53
Other Imports ⁵	0.64	1.11	1.02	1.02	0.96	0.88	0.88	0.96	0.81	0.81
Total	27.37	33.93	33.37	33.28	37.54	38.34	37.09	44.18	45.04	43.92
Exports										
Petroleum ⁶	1.98	1.73	1.75	1.75	1.69	1.72	1.71	1.85	1.81	1.86
Natural Gas	0.17	0.33	0.33	0.33	0.43	0.12	0.43	0.63	0.12	0.63
Coal	1.48	1.51	1.51	1.51	1.45	1.50	1.52	1.41	1.55	1.58
Total	3.62	3.57	3.58	3.58	3.58	3.34	3.65	3.89	3.47	4.08
Discrepancy⁷	0.69	0.43	0.52	0.56	0.04	0.10	0.15	0.11	0.08	0.12
Consumption										
Petroleum Products ⁸	38.02	41.34	40.91	40.92	44.44	44.10	44.03	50.45	50.27	50.10
Natural Gas	22.21	26.44	25.89	25.47	29.00	31.97	29.84	36.06	39.17	34.48
Coal	21.42	24.39	23.14	23.35	25.64	15.83	17.18	26.42	13.69	16.42
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.91	7.91	6.54	7.27	6.95
Renewable Energy ¹	6.54	7.13	8.16	8.85	7.91	9.40	12.62	8.43	10.25	17.48
Other ⁹	0.35	0.61	0.61	0.61	0.38	0.51	0.51	0.25	0.38	0.38
Total	96.33	107.81	106.62	107.10	115.11	109.72	112.10	128.16	121.05	125.80
Net Imports - Petroleum	21.12	25.96	25.48	25.51	29.34	28.90	28.75	34.78	34.24	34.71
Prices (1999 dollars per unit)										
World Oil Price (dollars per barrel) ¹⁰ . .	17.22	20.83	20.83	20.83	21.37	21.37	21.37	22.41	22.41	22.41
Gas Wellhead Price (dollars per Mcf) ¹¹	2.08	2.96	2.79	2.79	2.87	3.40	2.97	3.22	3.72	3.09
Coal Minemouth Price (dollars per ton)	17.17	15.05	15.33	15.09	14.08	15.09	15.57	12.87	13.66	14.22
Average Electric Price (cents per Kwh)	6.6	6.4	6.8	6.7	6.1	7.9	8.0	6.2	8.4	7.8

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.

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, imports of 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, and net storage withdrawals.

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.

Mcf = Thousand cubic feet.

Kwh = Kilowatt-hour.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Hg = Mercury.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 natural gas values: Energy Information Administration (EIA), *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). 1999 petroleum values: EIA, *Petroleum Supply Annual 1999*, DOE/EIA-0340(99/1) (Washington, DC, June 2000). Other 1999 values: EIA, *Annual Energy Review 1999*, DOE/EIA-0384(99) (Washington, DC, July 2000) and EIA, *Quarterly Coal Report*, DOE/EIA-0121(2000/1Q) (Washington, DC, August 2000). Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P9008.D060801A, M2P9008R_X.D070601A.

Table H2. Energy Consumption by Sector and Source
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990
Energy Consumption										
Residential										
Distillate Fuel	0.86	0.87	0.87	0.87	0.80	0.81	0.81	0.76	0.77	0.77
Kerosene	0.10	0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.07	0.07
Liquefied Petroleum Gas	0.46	0.45	0.45	0.45	0.42	0.42	0.42	0.40	0.41	0.41
Petroleum Subtotal	1.42	1.40	1.40	1.40	1.30	1.30	1.30	1.23	1.25	1.24
Natural Gas	4.88	5.57	5.60	5.60	5.61	5.54	5.62	6.23	6.20	6.36
Coal	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Renewable Energy ¹	0.41	0.42	0.42	0.42	0.42	0.42	0.42	0.44	0.43	0.44
Electricity	3.91	4.57	4.49	4.50	4.95	4.64	4.62	5.79	5.33	5.43
Delivered Energy	10.66	12.01	11.96	11.98	12.34	11.95	12.02	13.74	13.26	13.52
Electricity Related Losses	8.44	9.67	9.37	9.54	10.10	8.59	9.36	10.85	8.84	10.50
Total	19.10	21.68	21.34	21.51	22.44	20.54	21.38	24.59	22.10	24.02
Commercial										
Distillate Fuel	0.36	0.37	0.37	0.37	0.38	0.38	0.38	0.37	0.39	0.37
Residual Fuel	0.10	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Kerosene	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Liquefied Petroleum Gas	0.08	0.09	0.09	0.09	0.09	0.09	0.09	0.10	0.10	0.10
Motor Gasoline ²	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Petroleum Subtotal	0.60	0.60	0.61	0.61	0.62	0.62	0.62	0.62	0.63	0.62
Natural Gas	3.14	3.99	4.01	4.01	4.17	4.12	4.20	4.44	4.75	4.90
Coal	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.08
Renewable Energy ³	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Electricity	3.66	4.39	4.33	4.35	4.91	4.63	4.63	5.62	5.11	5.18
Delivered Energy	7.55	9.13	9.10	9.12	9.85	9.53	9.60	10.83	10.65	10.86
Electricity Related Losses	7.91	9.30	9.04	9.20	10.01	8.58	9.37	10.51	8.46	10.02
Total	15.46	18.44	18.14	18.32	19.86	18.11	18.96	21.34	19.11	20.89
Industrial⁴										
Distillate Fuel	1.13	1.22	1.21	1.21	1.31	1.29	1.29	1.49	1.48	1.47
Liquefied Petroleum Gas	2.32	2.45	2.42	2.42	2.53	2.55	2.50	2.85	2.90	2.80
Petrochemical Feedstock	1.29	1.36	1.36	1.36	1.53	1.52	1.52	1.70	1.69	1.69
Residual Fuel	0.22	0.16	0.16	0.16	0.25	0.26	0.26	0.28	0.29	0.28
Motor Gasoline ²	0.21	0.23	0.23	0.23	0.25	0.24	0.24	0.28	0.28	0.28
Other Petroleum ⁵	4.29	4.44	4.42	4.41	4.71	4.72	4.70	5.02	5.09	5.04
Petroleum Subtotal	9.45	9.86	9.80	9.79	10.57	10.60	10.51	11.63	11.74	11.56
Natural Gas ⁶	9.80	10.46	10.44	10.43	11.27	11.32	11.45	12.73	13.23	13.38
Metallurgical Coal	0.75	0.67	0.67	0.67	0.61	0.61	0.61	0.50	0.50	0.50
Steam Coal	1.73	1.81	1.80	1.81	1.83	1.74	1.77	1.87	1.85	1.88
Net Coal Coke Imports	0.06	0.12	0.11	0.11	0.16	0.15	0.15	0.22	0.22	0.22
Coal Subtotal	2.54	2.59	2.59	2.59	2.59	2.50	2.53	2.60	2.56	2.60
Renewable Energy ⁷	2.15	2.42	2.41	2.41	2.64	2.63	2.63	3.08	3.08	3.08
Electricity	3.61	3.90	3.83	3.84	4.17	3.90	3.88	4.76	4.10	4.08
Delivered Energy	27.56	29.23	29.06	29.05	31.24	30.95	30.99	34.80	34.71	34.69
Electricity Related Losses	7.80	8.25	7.99	8.13	8.50	7.23	7.85	8.91	6.79	7.89
Total	35.36	37.48	37.05	37.18	39.74	38.18	38.85	43.71	41.51	42.58

Table H2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990
Transportation										
Distillate Fuel	5.13	6.28	6.23	6.23	7.00	6.88	6.89	8.22	8.10	8.11
Jet Fuel ⁸	3.46	3.90	3.88	3.88	4.51	4.49	4.49	5.97	5.96	5.97
Motor Gasoline ²	15.92	17.67	17.64	17.64	18.97	18.90	18.90	21.26	21.20	21.22
Residual Fuel	0.74	0.85	0.85	0.85	0.85	0.85	0.85	0.87	0.86	0.86
Liquefied Petroleum Gas	0.02	0.03	0.03	0.03	0.04	0.04	0.04	0.06	0.06	0.06
Other Petroleum ⁹	0.26	0.30	0.29	0.29	0.31	0.31	0.31	0.35	0.35	0.35
Petroleum Subtotal	25.54	29.03	28.92	28.93	31.68	31.47	31.48	36.73	36.54	36.56
Pipeline Fuel Natural Gas	0.66	0.83	0.82	0.80	0.91	0.95	0.94	1.10	1.14	1.06
Compressed Natural Gas	0.02	0.06	0.05	0.05	0.09	0.09	0.09	0.16	0.15	0.15
Renewable Energy (E85) ¹⁰	0.01	0.02	0.02	0.02	0.03	0.03	0.03	0.04	0.04	0.04
Methanol (M85) ¹¹	0.00	0.00	0.00	0.00	0.01	0.01	0.01	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	0.06	0.09	0.09	0.09	0.12	0.12	0.12	0.17	0.17	0.17
Delivered Energy	26.28	30.03	29.91	29.90	32.83	32.67	32.67	38.20	38.05	37.99
Electricity Related Losses	0.13	0.19	0.18	0.19	0.24	0.22	0.24	0.31	0.27	0.32
Total	26.41	30.22	30.09	30.09	33.07	32.89	32.91	38.51	38.33	38.31
Delivered Energy Consumption for All Sectors										
Distillate Fuel	7.48	8.74	8.68	8.69	9.49	9.37	9.36	10.85	10.75	10.71
Kerosene	0.15	0.13	0.13	0.13	0.12	0.13	0.13	0.12	0.12	0.12
Jet Fuel ⁸	3.46	3.90	3.88	3.88	4.51	4.49	4.49	5.97	5.96	5.97
Liquefied Petroleum Gas	2.88	3.02	3.00	2.99	3.08	3.11	3.06	3.41	3.47	3.36
Motor Gasoline ²	16.17	17.93	17.89	17.89	19.24	19.17	19.17	21.57	21.51	21.53
Petrochemical Feedstock	1.29	1.36	1.36	1.36	1.53	1.52	1.52	1.70	1.69	1.69
Residual Fuel	1.05	1.10	1.10	1.10	1.20	1.21	1.20	1.24	1.24	1.23
Other Petroleum ¹²	4.53	4.71	4.69	4.68	4.99	5.01	4.98	5.35	5.42	5.37
Petroleum Subtotal	37.01	40.90	40.73	40.73	44.16	43.99	43.91	50.21	50.17	49.99
Natural Gas ⁶	18.50	20.91	20.92	20.90	22.05	22.01	22.30	24.66	25.47	25.85
Metallurgical Coal	0.75	0.67	0.67	0.67	0.61	0.61	0.61	0.50	0.50	0.50
Steam Coal	1.84	1.92	1.92	1.92	1.95	1.87	1.89	2.00	1.97	2.00
Net Coal Coke Imports	0.06	0.12	0.11	0.11	0.16	0.15	0.15	0.22	0.22	0.22
Coal Subtotal	2.65	2.71	2.70	2.70	2.71	2.62	2.65	2.72	2.69	2.72
Renewable Energy ¹³	2.65	2.94	2.93	2.93	3.18	3.17	3.17	3.65	3.64	3.64
Methanol (M85) ¹¹	0.00	0.00	0.00	0.00	0.01	0.01	0.01	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	11.24	12.95	12.74	12.78	14.15	13.29	13.25	16.34	14.70	14.85
Delivered Energy	72.05	80.41	80.03	80.05	86.27	85.10	85.28	97.57	96.68	97.06
Electricity Related Losses	24.29	27.40	26.59	27.05	28.84	24.62	26.82	30.58	24.37	28.74
Total	96.33	107.81	106.62	107.10	115.11	109.72	112.10	128.16	121.05	125.80
Electric Generators¹⁴										
Distillate Fuel	0.06	0.06	0.03	0.03	0.06	0.02	0.02	0.06	0.02	0.02
Residual Fuel	0.96	0.38	0.15	0.16	0.22	0.09	0.11	0.19	0.08	0.09
Petroleum Subtotal	1.02	0.44	0.19	0.19	0.28	0.10	0.13	0.25	0.10	0.11
Natural Gas	3.71	5.53	4.97	4.57	6.94	9.96	7.55	11.40	13.70	8.63
Steam Coal	18.77	21.68	20.44	20.65	22.93	13.21	14.53	23.70	11.01	13.70
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.91	7.91	6.54	7.27	6.95
Renewable Energy ¹⁵	3.88	4.19	5.23	5.92	4.73	6.23	9.45	4.78	6.62	13.84
Electricity Imports ¹⁶	0.35	0.61	0.61	0.61	0.37	0.50	0.50	0.24	0.37	0.37
Total	35.52	40.35	39.34	39.83	42.99	37.91	40.07	46.92	39.07	43.59

Table H2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990
Total Energy Consumption										
Distillate Fuel	7.54	8.80	8.71	8.72	9.54	9.38	9.38	10.91	10.76	10.73
Kerosene	0.15	0.13	0.13	0.13	0.12	0.13	0.13	0.12	0.12	0.12
Jet Fuel ⁸	3.46	3.90	3.88	3.88	4.51	4.49	4.49	5.97	5.96	5.97
Liquefied Petroleum Gas	2.88	3.02	3.00	2.99	3.08	3.11	3.06	3.41	3.47	3.36
Motor Gasoline ²	16.17	17.93	17.89	17.89	19.24	19.17	19.17	21.57	21.51	21.53
Petrochemical Feedstock	1.29	1.36	1.36	1.36	1.53	1.52	1.52	1.70	1.69	1.69
Residual Fuel	2.01	1.48	1.26	1.26	1.42	1.29	1.31	1.42	1.33	1.32
Other Petroleum ¹²	4.53	4.71	4.69	4.68	4.99	5.01	4.98	5.35	5.42	5.37
Petroleum Subtotal	38.02	41.34	40.91	40.92	44.44	44.10	44.03	50.45	50.27	50.10
Natural Gas	22.21	26.44	25.89	25.47	29.00	31.97	29.84	36.06	39.17	34.48
Metallurgical Coal	0.75	0.67	0.67	0.67	0.61	0.61	0.61	0.50	0.50	0.50
Steam Coal	20.61	23.60	22.36	22.57	24.88	15.07	16.43	25.70	12.98	15.70
Net Coal Coke Imports	0.06	0.12	0.11	0.11	0.16	0.15	0.15	0.22	0.22	0.22
Coal Subtotal	21.42	24.39	23.14	23.35	25.64	15.83	17.18	26.42	13.69	16.42
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.91	7.91	6.54	7.27	6.95
Renewable Energy ¹⁷	6.54	7.13	8.16	8.85	7.91	9.40	12.62	8.43	10.26	17.48
Methanol (M85) ¹¹	0.00	0.00	0.00	0.00	0.01	0.01	0.01	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 Imports ¹⁶	0.35	0.61	0.61	0.61	0.37	0.50	0.50	0.24	0.37	0.37
Total	96.33	107.81	106.62	107.10	115.11	109.72	112.10	128.16	121.05	125.80
Energy Use and Related Statistics										
Delivered Energy Use	72.05	80.41	80.03	80.05	86.27	85.10	85.28	97.57	96.68	97.06
Total Energy Use	96.33	107.81	106.62	107.10	115.11	109.72	112.10	128.16	121.05	125.80
Population (millions)	273.13	288.02	288.02	288.02	300.17	300.17	300.17	325.24	325.24	325.24
Gross Domestic Product (billion 1996 dollars)	8876	10960	10902	10906	12667	12620	12621	16515	16523	16518
Total Carbon Dioxide Emissions (million metric tons carbon equivalent)	1510.8	1705.0	1656.7	1656.2	1825.7	1609.4	1612.0	2051.2	1764.4	1763.2

¹Includes wood used for residential heating.

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

³Includes commercial sector electricity cogenerated by using wood and wood waste, landfill gas, municipal solid waste, and other biomass.

⁴Fuel consumption includes consumption for cogeneration, which provides electricity and other useful thermal energy.

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

⁶Includes lease and plant fuel and consumption by cogenerators, excludes consumption by nonutility generators.

⁷Includes consumption of energy from hydroelectric, wood and wood waste, municipal solid waste, and other biomass; includes cogeneration, both for sale to the grid and for own use.

⁸Includes only kerosene type.

⁹Includes aviation gas and lubricants.

¹⁰E85 is 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable).

¹¹M85 is 85 percent methanol and 15 percent motor gasoline.

¹²Includes unfinished oils, natural gasoline, motor gasoline blending compounds, 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 all electric power generators for grid-connected power except cogenerators, which produce electricity and other useful thermal energy. 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 cogeneration. Excludes net electricity imports.

¹⁶In 1998 approximately 70 percent of the U.S. electricity imports were provided by renewable sources (hydroelectricity); EIA does not project future proportions for the fuel source of imported electricity.

¹⁷Includes 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.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Hg = Mercury.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 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: 1999 electric utility fuel consumption: Energy Information Administration, (EIA) *Electric Power Annual 1998, Volume 1*, DOE/EIA-0348(98)/1 (Washington, DC, April 1999). 1999 nonutility consumption estimates: EIA, Form EIA-860B: "Annual Electric Generator Report - Nonutility." Other 1999 values: EIA, *Short-Term Energy Outlook, September 2000*, <http://www.eia.doe.gov/pub/forecasting/steo/oldsteos/sep00.pdf>. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P9008.D060801A, M2P9008R_X.D070601A.

Table H3. Energy Prices by Sector and Source
(1999 Dollars per Million Btu, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990
Residential	13.10	13.27	13.60	13.50	13.46	15.56	15.41	13.77	16.16	15.23
Primary Energy ¹	6.71	7.49	7.37	7.36	7.18	7.57	7.26	7.08	7.44	6.98
Petroleum Products ²	7.55	9.20	9.14	9.14	9.37	9.42	9.34	9.47	9.41	9.51
Distillate Fuel	6.27	7.45	7.37	7.37	7.57	7.56	7.57	7.78	7.74	7.76
Liquefied Petroleum Gas	10.36	12.60	12.58	12.59	12.86	13.08	12.79	12.75	12.62	12.89
Natural Gas	6.52	7.11	6.98	6.97	6.72	7.19	6.83	6.65	7.09	6.53
Electricity	23.47	22.16	23.37	23.12	22.30	27.44	27.70	22.44	28.42	26.85
Commercial	13.18	12.70	13.27	13.12	12.25	15.20	15.09	12.69	15.76	14.53
Primary Energy ¹	5.22	5.57	5.45	5.44	5.68	6.08	5.77	5.79	6.14	5.67
Petroleum Products ²	4.99	6.13	6.07	6.07	6.29	6.28	6.26	6.40	6.32	6.40
Distillate Fuel	4.37	5.24	5.16	5.16	5.36	5.32	5.34	5.53	5.48	5.51
Residual Fuel	2.63	3.65	3.61	3.61	3.71	3.69	3.69	3.86	3.84	3.84
Natural Gas ³	5.34	5.55	5.42	5.41	5.66	6.13	5.77	5.78	6.20	5.64
Electricity	21.45	20.26	21.72	21.39	18.76	24.68	24.92	19.00	26.04	24.10
Industrial⁴	5.27	5.76	5.82	5.78	5.67	6.48	6.29	5.90	6.66	6.21
Primary Energy	3.91	4.47	4.38	4.37	4.49	4.73	4.49	4.68	4.86	4.57
Petroleum Products ²	5.54	6.00	5.93	5.94	6.13	6.16	6.04	6.16	6.11	6.15
Distillate Fuel	4.65	5.40	5.33	5.32	5.56	5.50	5.52	5.73	5.69	5.71
Liquefied Petroleum Gas	8.50	7.74	7.70	7.71	7.88	8.11	7.74	7.76	7.70	7.83
Residual Fuel	2.78	3.38	3.35	3.35	3.44	3.42	3.42	3.59	3.58	3.58
Natural Gas ⁵	2.79	3.64	3.50	3.49	3.50	4.00	3.61	3.85	4.32	3.70
Metallurgical Coal	1.65	1.58	1.59	1.59	1.54	1.55	1.56	1.44	1.44	1.45
Steam Coal	1.43	1.35	1.35	1.35	1.31	1.20	1.22	1.21	1.10	1.13
Electricity	13.00	12.80	13.84	13.60	12.08	16.63	16.88	12.22	17.82	16.41
Transportation	8.30	9.39	9.34	9.34	9.69	9.72	9.72	9.20	9.23	9.19
Primary Energy	8.29	9.38	9.33	9.32	9.68	9.70	9.69	9.18	9.20	9.16
Petroleum Products ²	8.28	9.37	9.32	9.32	9.67	9.69	9.69	9.18	9.19	9.16
Distillate Fuel ⁶	8.22	8.98	8.90	8.89	8.95	8.95	8.95	8.83	8.81	8.83
Jet Fuel ⁷	4.70	5.29	5.23	5.23	5.49	5.48	5.49	5.72	5.72	5.72
Motor Gasoline ⁸	9.45	10.81	10.76	10.76	11.31	11.35	11.33	10.60	10.63	10.56
Residual Fuel	2.46	3.11	3.10	3.10	3.18	3.17	3.17	3.33	3.32	3.32
Liquid Petroleum Gas ⁹	12.87	14.07	14.03	14.04	14.07	14.32	13.97	13.70	13.63	13.81
Natural Gas ¹⁰	7.02	7.28	7.14	7.12	7.21	7.69	7.32	7.41	7.83	7.26
Ethanol (E85) ¹¹	14.42	19.21	19.18	19.18	19.16	19.23	19.19	19.36	19.42	19.31
Methanol (M85) ¹²	10.38	13.13	12.99	12.98	13.83	13.83	13.83	14.35	14.35	14.35
Electricity	15.59	14.52	15.06	15.06	13.62	16.32	16.99	13.22	16.28	15.98
Average End-Use Energy	8.49	9.17	9.29	9.24	9.22	10.14	10.04	9.21	10.15	9.73
Primary Energy	6.31	7.19	7.11	7.11	7.35	7.50	7.36	7.23	7.33	7.13
Electricity	19.41	18.65	19.89	19.62	17.99	23.20	23.46	18.19	24.50	22.90
Electric Generators¹³										
Fossil Fuel Average	1.48	1.64	1.54	1.51	1.59	2.33	1.91	1.88	2.86	2.01
Petroleum Products	2.49	3.61	3.82	3.80	3.90	4.24	4.09	4.17	4.49	4.47
Distillate Fuel	4.04	4.72	4.72	4.74	4.87	4.91	4.90	5.06	5.14	5.15
Residual Fuel	2.40	3.42	3.63	3.62	3.65	4.11	3.94	3.89	4.36	4.33
Natural Gas	2.58	3.44	3.40	3.36	3.26	4.11	3.60	3.71	4.45	3.69
Steam Coal	1.21	1.14	1.07	1.08	1.06	0.97	1.01	0.98	0.87	0.94

Table H3. Energy Prices by Sector and Source (Continued)
(1999 Dollars per Million Btu, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990
Average Price to All Users¹⁴										
Petroleum Products ²	7.44	8.53	8.51	8.51	8.81	8.85	8.81	8.49	8.50	8.49
Distillate Fuel	7.25	8.14	8.08	8.07	8.20	8.20	8.21	8.20	8.18	8.21
Jet Fuel	4.70	5.29	5.23	5.23	5.49	5.48	5.49	5.72	5.72	5.72
Liquefied Petroleum Gas	8.84	8.63	8.60	8.61	8.74	8.96	8.63	8.54	8.47	8.64
Motor Gasoline ⁹	9.45	10.80	10.76	10.76	11.31	11.35	11.33	10.60	10.63	10.56
Residual Fuel	2.47	3.25	3.23	3.23	3.33	3.32	3.32	3.49	3.48	3.48
Natural Gas	4.05	4.72	4.63	4.64	4.47	4.95	4.62	4.60	5.11	4.58
Coal	1.23	1.16	1.10	1.10	1.08	1.00	1.04	1.00	0.90	0.96
Ethanol (E85) ¹¹	14.42	19.21	19.18	19.18	19.16	19.23	19.19	19.36	19.42	19.31
Methanol (M85) ¹²	10.38	13.13	12.99	12.98	13.83	13.83	13.83	14.35	14.35	14.35
Electricity	19.41	18.65	19.89	19.62	17.99	23.20	23.46	18.19	24.50	22.90
Non-Renewable Energy Expenditures by Sector (billion 1999 dollars)										
Residential	134.28	153.83	156.93	156.07	160.41	179.31	178.65	183.27	207.36	199.21
Commercial	98.42	114.97	119.64	118.46	119.69	143.56	143.50	136.41	166.49	156.59
Industrial	111.66	127.05	128.08	127.21	133.28	151.77	148.13	154.57	175.38	163.45
Transportation	212.64	273.84	271.38	271.42	308.81	307.80	307.71	340.45	339.80	338.66
Total Non-Renewable Expenditures	556.99	669.69	676.04	673.16	722.19	782.44	777.98	814.69	889.03	857.91
Transportation Renewable Expenditures	0.14	0.42	0.42	0.42	0.64	0.63	0.63	0.85	0.85	0.84
Total Expenditures	557.13	670.11	676.45	673.58	722.82	783.08	778.61	815.54	889.88	858.75

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.

³Excludes independent power producers.

⁴Includes cogenerators.

⁵Excludes uses for lease and plant fuel.

⁶Low sulfur diesel fuel. Price includes Federal and State taxes while excluding county and local taxes.

⁷Kerosene-type jet fuel. Price includes Federal and State taxes while excluding county and local taxes.

⁸Sales weighted-average price for all grades. Includes Federal and State taxes and excludes county and local taxes.

⁹Includes Federal and State taxes while excluding county and local taxes.

¹⁰Compressed natural gas used as a vehicle fuel. Price includes estimated motor vehicle fuel taxes.

¹¹E85 is 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable).

¹²M85 is 85 percent methanol and 15 percent motor gasoline.

¹³Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy. Includes small power producers and exempt wholesale generators.

¹⁴Weighted averages of end-use fuel prices are derived from the prices shown in each sector and the corresponding sectoral consumption.

Btu = British thermal unit.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Hg = Mercury.

Note: Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 prices for gasoline, distillate, and jet fuel are based on prices in various issues of Energy Information Administration (EIA), *Petroleum Marketing Monthly*, DOE/EIA-0380 (99/03-2000/04) (Washington, DC, 1999-2000). 1999 prices for all other petroleum products are derived from the EIA, *State Energy Price and Expenditure Report 1997*, DOE/EIA-0376(97) (Washington, DC, July 2000). 1999 industrial gas delivered prices are based on EIA, *Manufacturing Energy Consumption Survey 1994*. 1999 residential and commercial natural gas delivered prices: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). 1999 coal prices based on EIA, *Quarterly Coal Report*, DOE/EIA-0121(2000/1Q) (Washington, DC, August 2000), and EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P9008.D060801A, M2P9008R_X.D070601A. 1999 electricity prices for commercial, industrial, and transportation: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P9008.D060801A, M2P9008R_X.D070601A. **Projections:** EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P9008.D060801A, M2P9008R_X.D070601A.

Table H4. Electricity Supply, Disposition, Prices, and Emissions
(Billion Kilowatthours, Unless Otherwise Noted)

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990
Generation by Fuel Type										
Electric Generators¹										
Coal	1831	2106	1992	2012	2245	1290	1425	2315	1082	1345
Petroleum	94	43	19	19	28	11	14	25	11	12
Natural Gas ²	359	583	618	561	825	1421	1026	1495	2014	1206
Nuclear Power	730	740	740	740	725	741	741	613	681	651
Pumped Storage	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Renewable Sources ³	355	373	417	465	397	484	723	400	513	1131
Total	3369	3844	3785	3796	4219	3946	3927	4847	4301	4344
Non-Utility Generation for Own Use	16	17	21	21	17	20	20	17	20	20
Distributed Generation	0	0	0	0	1	1	1	5	1	2
Cogenerators⁴										
Coal	47	53	52	53	52	42	45	52	41	45
Petroleum	9	10	10	10	10	10	10	10	10	10
Natural Gas	207	237	243	241	261	313	319	318	570	578
Other Gaseous Fuels ⁵	4	6	6	6	7	7	7	8	9	9
Renewable Sources ³	31	34	34	34	39	39	39	48	48	48
Other ⁶	5	5	5	5	5	5	5	6	6	6
Total	303	345	350	348	373	417	425	441	683	695
Other End-Use Generators⁷										
Sales to Utilities	151	172	170	171	180	177	182	208	258	264
Generation for Own Use	156	178	185	182	198	245	248	238	430	436
Net Imports⁸	33	57	57	57	35	47	47	23	35	35
Electricity Sales by Sector										
Residential	1145	1339	1316	1320	1452	1359	1355	1698	1563	1591
Commercial	1073	1288	1270	1274	1439	1358	1356	1646	1496	1519
Industrial	1058	1142	1122	1125	1222	1144	1137	1395	1201	1195
Transportation	17	26	26	26	35	34	34	49	48	48
Total	3294	3794	3735	3745	4147	3896	3882	4788	4309	4354
End-Use Prices (1999 cents per kwh)⁹										
Residential	8.0	7.6	8.0	7.9	7.6	9.4	9.5	7.7	9.7	9.2
Commercial	7.3	6.9	7.4	7.3	6.4	8.4	8.5	6.5	8.9	8.2
Industrial	4.4	4.4	4.7	4.6	4.1	5.7	5.8	4.2	6.1	5.6
Transportation	5.3	5.0	5.1	5.1	4.6	5.6	5.8	4.5	5.6	5.5
All Sectors Average	6.6	6.4	6.8	6.7	6.1	7.9	8.0	6.2	8.4	7.8
Prices by Service Category⁹ (1999 cents per kwh)										
Generation	4.1	3.8	4.2	4.1	3.5	5.1	5.2	3.6	5.7	5.1
Transmission	0.6	0.6	0.6	0.6	0.7	0.8	0.8	0.7	0.7	0.7
Distribution	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.0
Emissions (million short tons)										
Sulfur Dioxide	13.71	10.38	8.55	8.55	9.70	3.33	4.49	8.95	2.63	3.27
Nitrogen Oxide	5.45	4.30	3.08	3.02	4.34	1.51	1.66	4.49	1.34	1.53

¹Includes grid-connected generation at all utilities and nonutilities except for cogenerators. Includes small power producers and exempt wholesale generators.

²Includes electricity generation by fuel cells.

³Includes conventional hydroelectric, geothermal, wood, wood waste, municipal solid waste, landfill gas, other biomass, solar, and wind power.

⁴Cogenerators produce electricity and other useful thermal energy. Includes sales to utilities and generation for own use.

⁵Other gaseous fuels include refinery and still gas.

⁶Other includes hydrogen, sulfur, batteries, chemicals, fish oil, and spent sulfite liquor.

⁷Includes 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.

⁸In 1998 approximately 70 percent of the U.S. electricity imports were provided by renewable sources (hydroelectricity); EIA does not project future proportions for the fuel source of imported electricity.

⁹Prices represent average revenue per kilowatthour.

Kwh = Kilowatthour.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Hg = Mercury.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Source: Energy Information Administration, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P9008.D060801A, M2P9008R_X.D070601A.

**Table H5. Electricity Generating Capability
(Gigawatts)**

Net Summer Capability ¹	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990
Electric Generators²										
Capability										
Coal Steam	305.1	303.9	302.8	302.8	318.6	270.2	273.5	318.5	248.9	262.6
Other Fossil Steam ³	137.4	127.8	119.9	118.8	119.2	103.4	104.0	116.9	96.2	98.3
Combined Cycle	21.0	53.2	83.4	77.8	107.8	199.7	137.4	202.2	279.0	166.0
Combustion Turbine/Diesel	74.3	123.1	114.8	115.5	147.2	119.5	123.2	199.5	126.6	140.1
Nuclear Power	97.4	97.5	97.5	97.5	94.8	96.9	96.9	76.3	87.6	82.7
Pumped Storage	19.3	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5
Fuel Cells	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.3	0.3
Renewable Sources ⁴	88.8	94.8	98.8	107.8	98.0	104.5	150.5	99.5	113.2	246.7
Distributed Generation ⁵	0.0	0.7	0.6	0.5	2.5	1.2	1.3	11.5	3.3	4.7
Total	743.4	820.4	837.2	840.2	907.8	915.1	906.5	1044.2	974.7	1020.9
Cumulative Planned Additions⁶										
Coal Steam	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Fossil Steam ³	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Combined Cycle	0.0	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7
Combustion Turbine/Diesel	0.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
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	0.1	0.1	0.1	0.3	0.3	0.3
Renewable Sources ⁴	0.0	5.1	5.1	5.1	6.7	6.7	6.7	8.1	8.1	8.1
Distributed Generation ⁵	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.0	32.0	32.0	32.0	33.7	33.7	33.7	35.3	35.3	35.3
Cumulative Unplanned Additions⁶										
Coal Steam	0.0	1.1	0.0	0.0	18.9	0.0	0.0	20.5	0.0	0.0
Other Fossil Steam ³	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Combined Cycle	0.0	19.4	49.6	44.1	74.2	166.1	103.8	168.6	245.8	133.2
Combustion Turbine/Diesel	0.0	38.9	31.7	32.1	64.7	37.6	41.7	117.2	45.0	58.8
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 ⁴	0.0	0.4	4.4	13.5	2.0	8.5	54.6	2.0	15.8	149.3
Distributed Generation ⁵	0.0	0.7	0.6	0.5	2.5	1.2	1.3	11.5	3.3	4.7
Total	0.0	60.6	86.3	90.2	162.2	213.4	201.3	319.8	309.9	346.1
Cumulative Total Additions	0.0	92.6	118.3	122.2	195.9	247.1	235.0	355.1	345.2	381.4
Cumulative Retirements⁷										
Coal Steam	0.0	2.3	2.3	2.3	5.4	34.9	31.6	7.2	56.2	42.5
Other Fossil Steam ³	0.0	9.9	17.8	18.8	18.4	34.2	33.6	20.7	41.4	39.3
Combined Cycle	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.2	0.6	1.0
Combustion Turbine/Diesel	0.0	4.4	5.3	5.1	6.0	6.5	6.9	6.3	6.8	7.2
Nuclear Power	0.0	0.0	0.0	0.0	2.6	0.6	0.6	21.2	9.8	14.8
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	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total	0.0	16.7	25.5	26.5	32.8	76.5	73.1	55.6	115.1	105.0
Cogenerators⁸										
Capability										
Coal	8.4	8.9	8.9	8.9	8.6	7.1	7.5	8.6	6.8	7.5
Petroleum	2.7	2.9	2.9	2.9	2.9	2.9	2.9	2.9	3.0	3.0
Natural Gas	34.6	39.9	40.9	40.6	43.3	51.0	51.5	51.4	86.4	87.5
Other Gaseous Fuels	0.2	0.8	0.8	0.8	0.9	0.9	0.9	1.1	1.1	1.1
Renewable Sources ⁴	5.4	5.9	5.9	5.9	6.8	6.8	6.8	8.2	8.3	8.3
Other	1.1	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Total	52.4	59.2	60.2	59.9	63.3	69.5	70.4	73.2	106.5	108.2
Cumulative Additions⁶	0.0	6.8	7.8	7.5	10.9	17.1	18.0	20.7	54.1	55.7

Table H5. Electricity Generating Capability (Continued)
(Gigawatts)

Net Summer Capability ¹	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990
Other End-Use Generators⁹										
Renewable Sources	1.0	1.1	1.1	1.1	1.3	1.3	1.3	1.3	1.3	1.3
Cumulative Additions	0.0	0.1	0.1	0.1	0.3	0.3	0.3	0.3	0.3	0.3

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

²Includes grid-connected utilities and nonutilities except for cogenerators. Includes small power producers and exempt wholesale generators.

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

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

⁵Primarily peak-load capacity fueled by natural gas.

⁶Cumulative additions after December 31, 1999.

⁷Cumulative total retirements after December 31, 1999.

⁸Nameplate capacity is reported for nonutilities on Form EIA-860B, "Annual Electric Generator Report - Nonutility." Nameplate capacity is designated by the manufacturer. The nameplate capacity has been converted to the net summer capability based on historic relationships.

⁹Includes 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. Excludes off-grid photovoltaics and other generators not connected to the distribution or transmission systems.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Hg = Mercury.

Notes: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports. Net summer capability has been estimated for nonutility generators to be consistent with capability for electric utility generators.

Source: Energy Information Administration, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P9008.D060801A, M2P9008R_X.D070601A.

Table H6. Electricity Trade
(Billion Kilowatthours, Unless Otherwise Noted)

Electricity Trade	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990
Interregional Electricity Trade										
Gross Domestic Firm Power Trade	182.2	125.3	125.3	125.3	102.9	102.9	102.9	0.0	0.0	0.0
Gross Domestic Economy Trade	152.0	202.3	156.0	168.9	155.5	82.2	87.7	147.9	90.5	110.7
Gross Domestic Trade	334.2	327.6	281.3	294.2	258.4	185.2	190.6	147.9	90.5	110.7
Gross Domestic Firm Power Sales										
(million 1999 dollars)	8588.1	5905.8	5905.8	5905.8	4851.2	4851.2	4851.2	0.0	0.0	0.0
Gross Domestic Economy Sales										
(million 1999 dollars)	4413.9	6468.6	5674.5	6083.4	4510.4	3731.2	4136.7	4605.1	4777.4	5301.6
Gross Domestic Sales	13002.0	12374.4	11580.3	11989.2	9361.6	8582.4	8988.0	4605.1	4777.4	5301.6
International Electricity Trade										
Firm Power Imports From Canada and	27.0	10.7	10.7	10.7	5.8	17.9	17.9	0.0	12.1	12.1
Economy Imports From Canada and Mexico ¹	21.9	63.5	63.5	63.5	45.9	45.9	45.9	30.6	30.6	30.6
Gross Imports From Canada and Mexico¹	48.9	74.1	74.1	74.1	51.7	63.8	63.8	30.6	42.7	42.7
Firm Power Exports To Canada and Mexico . .	9.2	9.7	9.7	9.7	8.7	8.7	8.7	0.0	0.0	0.0
Economy Exports To Canada and Mexico . . .	6.3	7.0	7.0	7.0	7.7	7.7	7.7	7.7	7.7	7.7
Gross Exports To Canada and Mexico	15.5	16.7	16.7	16.7	16.4	16.4	16.4	7.7	7.7	7.7

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

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Hg = Mercury.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 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, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P9008.D060801A, M2P9008R_X.D070601A.

Table H7. Natural Gas Supply and Disposition
(Trillion Cubic Feet per Year)

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990
Production										
Dry Gas Production ¹	18.67	21.40	20.86	20.58	23.43	24.78	24.07	29.47	30.49	27.99
Supplemental Natural Gas ²	0.10	0.11	0.11	0.11	0.06	0.06	0.06	0.06	0.06	0.06
Net Imports	3.38	4.69	4.69	4.56	5.00	6.58	5.20	5.82	7.88	5.76
Canada	3.29	4.48	4.48	4.35	4.72	4.95	4.90	5.43	5.73	5.38
Mexico	-0.01	-0.18	-0.18	-0.18	-0.25	0.32	-0.25	-0.40	0.36	-0.40
Liquefied Natural Gas	0.10	0.39	0.39	0.39	0.53	1.30	0.54	0.79	1.80	0.78
Total Supply	22.15	26.20	25.66	25.25	28.49	31.42	29.32	35.35	38.42	33.80
Consumption by Sector										
Residential	4.75	5.42	5.45	5.45	5.46	5.39	5.47	6.07	6.04	6.19
Commercial	3.06	3.88	3.91	3.91	4.06	4.01	4.09	4.32	4.62	4.78
Industrial ³	8.31	8.81	8.82	8.82	9.48	9.46	9.62	10.53	10.97	11.23
Electric Generators ⁴	3.64	5.43	4.87	4.49	6.81	9.78	7.41	11.19	13.45	8.46
Lease and Plant Fuel ⁵	1.23	1.38	1.35	1.34	1.50	1.57	1.53	1.87	1.91	1.79
Pipeline Fuel	0.64	0.81	0.79	0.78	0.88	0.93	0.92	1.07	1.11	1.03
Transportation ⁶	0.02	0.05	0.05	0.05	0.09	0.09	0.09	0.15	0.15	0.15
Total	21.65	25.79	25.25	24.84	28.29	31.21	29.12	35.20	38.25	33.64
Discrepancy ⁷	0.50	0.42	0.42	0.41	0.20	0.20	0.20	0.14	0.17	0.16

¹Marketed production (wet) minus extraction losses.

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

³Includes consumption by cogenerators.

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

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

⁶Compressed natural gas used as vehicle fuel.

⁷Balancing item. Natural gas lost as a result of converting flow data measured at varying temperatures and pressures to a standard temperature and pressure and the merger of different data reporting systems which vary in scope, format, definition, and respondent type. In addition, 1999 values include net storage injections.

Btu = British thermal unit.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Hg = Mercury.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 supplemental natural gas: Energy Information Administration (EIA), *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). 1999 transportation sector consumption: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P9008.D060801A, M2P9008R_X.D070601A. Other 1999 consumption: EIA, *Short-Term Energy Outlook, September 2000*, <http://www.eia.doe.gov/pub/forecasting/steo/oldsteos/sep00.pdf> with adjustments to end-use sector consumption levels for consumption of natural gas by electric wholesale generators based on EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P9008.D060801A, M2P9008R_X.D070601A. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P9008.D060801A, M2P9008R_X.D070601A.

Table H8. Natural Gas Prices, Margins, and Revenue
(1999 Dollars per Thousand Cubic Feet, Unless Otherwise Noted)

Prices, Margins, and Revenue	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990
Source Price										
Average Lower 48 Wellhead Price ¹	2.08	2.96	2.79	2.79	2.87	3.40	2.97	3.22	3.72	3.09
Average Import Price	2.29	2.95	2.93	2.89	2.64	2.93	2.77	2.72	3.03	2.77
Average²	2.11	2.96	2.82	2.81	2.82	3.30	2.94	3.13	3.57	3.03
Delivered Prices										
Residential	6.69	7.31	7.16	7.15	6.91	7.38	7.02	6.83	7.28	6.71
Commercial	5.49	5.70	5.56	5.55	5.82	6.29	5.93	5.93	6.37	5.80
Industrial ³	2.87	3.74	3.60	3.58	3.59	4.11	3.71	3.95	4.43	3.80
Electric Generators ⁴	2.63	3.50	3.46	3.43	3.32	4.19	3.67	3.78	4.53	3.76
Transportation ⁵	7.21	7.48	7.33	7.32	7.40	7.90	7.52	7.61	8.04	7.46
Average⁶	4.15	4.84	4.75	4.76	4.59	5.08	4.74	4.72	5.24	4.70
Transmission & Distribution Margins⁷										
Residential	4.58	4.35	4.34	4.34	4.08	4.08	4.08	3.70	3.70	3.68
Commercial	3.37	2.74	2.74	2.74	2.99	2.99	2.99	2.81	2.79	2.77
Industrial ³	0.76	0.78	0.78	0.77	0.77	0.81	0.77	0.82	0.86	0.77
Electric Generators ⁴	0.52	0.54	0.64	0.62	0.49	0.88	0.74	0.65	0.96	0.73
Transportation ⁵	5.10	4.51	4.51	4.51	4.58	4.60	4.58	4.48	4.46	4.43
Average⁶	2.04	1.88	1.93	1.95	1.76	1.77	1.80	1.59	1.66	1.67
Transmission & Distribution Revenue (billion 1999 dollars)										
Residential	21.77	23.57	23.69	23.69	22.30	22.00	22.33	22.48	22.35	22.79
Commercial	10.32	10.63	10.72	10.72	12.16	11.98	12.24	12.12	12.90	13.22
Industrial ³	6.28	6.86	6.83	6.83	7.26	7.63	7.45	8.65	9.42	8.61
Electric Generators ⁴	1.88	2.94	3.14	2.78	3.36	8.65	5.47	7.24	12.91	6.16
Transportation ⁵	0.08	0.24	0.24	0.24	0.41	0.40	0.40	0.68	0.66	0.67
Total	40.32	44.25	44.61	44.26	45.49	50.66	47.89	51.18	58.23	51.43

¹Represents lower 48 onshore and offshore supplies.

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

³Includes consumption by cogenerators.

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

NO_x = Nitrogen oxide.
SO₂ = Sulfur dioxide.
CO₂ = Carbon dioxide.
Hg = Mercury.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 industrial delivered prices based on Energy Information Administration (EIA), *Manufacturing Energy Consumption Survey 1994*. 1999 residential and commercial delivered prices, average lower 48 wellhead price, and average import price: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). Other 1999 values, and projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P9008.D060801A, M2P9008R_X.D070601A.

Table H9. Oil and Gas Supply

Production and Supply	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990
Crude Oil										
Lower 48 Average Wellhead Price¹ (1999 dollars per barrel)	16.49	21.43	21.02	20.57	20.73	20.75	20.82	21.47	21.46	21.52
Production (million barrels per day)²										
U.S. Total	5.88	5.66	5.68	5.68	5.32	5.29	5.31	5.25	5.36	5.23
Lower 48 Onshore	3.27	2.81	2.81	2.81	2.52	2.51	2.51	2.75	2.82	2.73
Conventional	2.59	2.18	2.18	2.18	1.81	1.83	1.81	1.98	2.05	1.98
Enhanced Oil Recovery	0.68	0.63	0.63	0.63	0.70	0.69	0.70	0.76	0.76	0.75
Lower 48 Offshore	1.56	2.06	2.08	2.08	2.16	2.13	2.15	1.87	1.90	1.86
Alaska	1.05	0.79	0.79	0.79	0.65	0.65	0.65	0.64	0.64	0.64
Lower 48 End of Year Reserves (billion barrels) ²	18.33	15.75	15.76	15.75	14.55	14.51	14.47	14.11	14.33	14.07
Natural Gas										
Lower 48 Average Wellhead Price¹ (1999 dollars per thousand cubic feet)	2.08	2.96	2.79	2.79	2.87	3.40	2.97	3.22	3.72	3.09
Production (trillion cubic feet)³										
U.S. Total	18.67	21.40	20.86	20.58	23.43	24.78	24.07	29.47	30.49	27.99
Lower 48 Onshore	12.83	14.46	13.97	13.82	16.71	17.56	16.71	21.31	22.44	20.26
Associated-Dissolved ⁴	1.80	1.51	1.51	1.51	1.32	1.33	1.32	1.39	1.43	1.40
Non-Associated	11.03	12.95	12.46	12.30	15.39	16.23	15.39	19.91	21.01	18.87
Conventional	6.64	7.67	7.42	7.33	7.93	8.42	7.99	11.14	11.44	10.89
Unconventional	4.39	5.27	5.03	4.97	7.45	7.81	7.40	8.78	9.57	7.98
Lower 48 Offshore	5.43	6.47	6.42	6.29	6.22	6.72	6.86	7.59	7.49	7.16
Associated-Dissolved ⁴	0.93	1.06	1.06	1.06	1.09	1.09	1.09	1.04	1.04	1.03
Non-Associated	4.50	5.41	5.35	5.23	5.13	5.64	5.77	6.56	6.44	6.13
Alaska	0.42	0.47	0.46	0.47	0.50	0.50	0.50	0.57	0.56	0.56
Lower 48 End of Year Reserves³ (trillion cubic feet)	157.41	167.88	170.13	169.85	185.55	185.42	180.70	200.71	204.89	191.13
Supplemental Gas Supplies (trillion cubic feet) ⁵	0.10	0.11	0.11	0.11	0.06	0.06	0.06	0.06	0.06	0.06
Total Lower 48 Wells (thousands)	17.93	28.87	27.91	27.86	29.86	33.73	29.96	39.36	44.13	32.62

¹Represents lower 48 onshore and offshore supplies.

²Includes lease condensate.

³Market production (wet) minus extraction losses.

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

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

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Hg = Mercury.

Btu = British thermal unit.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 lower 48 onshore, lower 48 offshore, and Alaska crude oil production: Energy Information Administration (EIA), *Petroleum Supply Annual 1999*, DOE/EIA-0340(99/1) (Washington, DC, June 2000). 1999 natural gas lower 48 average wellhead price, Alaska and total natural gas production, and supplemental gas supplies: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). Other 1999 values: EIA, Office of Integrated Analysis and Forecasting. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P9008.D060801A, M2P9008R_X.D070601A.

Table H10. Coal Supply, Disposition, and Prices
(Million Short Tons per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990
Production¹										
Appalachia	433	426	424	423	421	267	293	396	236	275
Interior	185	182	185	180	180	130	135	161	123	126
West	486	624	552	573	694	392	422	783	328	418
East of the Mississippi	559	561	564	559	557	392	423	524	352	394
West of the Mississippi	544	672	597	618	738	398	428	817	335	425
Total	1103	1233	1161	1177	1295	790	850	1340	687	819
Net Imports										
Imports	9	16	12	12	17	9	9	20	9	9
Exports	58	60	60	60	58	59	60	56	62	63
Total	-49	-44	-48	-48	-40	-50	-51	-36	-53	-54
Total Supply²	1054	1189	1113	1129	1254	739	799	1304	635	765
Consumption by Sector										
Residential and Commercial	5	5	5	5	5	5	5	5	5	5
Industrial ³	79	82	82	82	83	80	81	86	85	86
Coke Plants	28	25	25	25	23	23	23	19	19	19
Electric Generators ⁴	921	1077	1003	1016	1145	629	690	1196	527	655
Total	1032	1189	1115	1128	1256	737	799	1306	636	765
Discrepancy and Stock Change⁵	21	-1	-2	0	-2	2	-0	-2	-2	-0
Average Minemouth Price										
(1999 dollars per short ton)	17.17	15.05	15.33	15.09	14.08	15.09	15.57	12.87	13.66	14.22
(1999 dollars per million Btu)	0.82	0.73	0.73	0.72	0.69	0.70	0.72	0.64	0.63	0.66
Delivered Prices (1999 dollars per short ton)⁶										
Industrial	31.39	29.67	29.65	29.59	28.61	26.25	26.77	26.50	23.84	24.54
Coke Plants	44.28	42.39	42.54	42.51	41.36	41.62	41.68	38.52	38.64	38.98
Electric Generators										
(1999 dollars per short ton)	24.73	22.90	21.83	21.91	21.28	20.45	21.26	19.41	18.14	19.62
(1999 dollars per million Btu)	1.21	1.14	1.07	1.08	1.06	0.97	1.01	0.98	0.87	0.94
Average	25.77	23.78	22.88	22.93	22.13	21.73	22.40	20.15	19.51	20.65
Exports ⁷	37.44	36.39	36.41	36.41	35.66	34.25	34.63	33.09	31.08	31.91

¹Includes anthracite, bituminous coal, lignite, and waste coal delivered to independent power producers. Waste coal deliveries totaled 8.5 million tons in 1995, 8.8 million tons in 1996, 8.1 million tons in 1997, 8.6 million tons in 1998, and are projected to reach 9.6 million tons in 1999, and 12.2 million tons in 2000..

²Production plus net imports and net storage withdrawals.

³Includes consumption by cogenerators.

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

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

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

⁷F.a.s. price at U.S. port of exit.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Hg = Mercury.

Btu = British thermal unit.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 data based on Energy Information Administration (EIA), *Quarterly Coal Report*, DOE/EIA-0121(2000/1Q) (Washington, DC, August 2000), and EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P9008.D060801A, M2P9008R_X.D070601A. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P9008.D060801A, M2P9008R_X.D070601A.

Table H11. Renewable Energy Generating Capability and Generation
(Gigawatts, Unless Otherwise Noted)

Capacity and Generation	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990
Electric Generators¹										
(excluding cogenerators)										
Net Summer Capability										
Conventional Hydropower	78.77	79.26	79.34	79.26	79.38	80.69	79.74	79.38	80.69	79.74
Geothermal ²	2.87	3.43	6.94	8.18	4.93	8.50	13.24	4.95	8.89	15.49
Municipal Solid Waste ³	2.61	2.96	3.24	3.72	3.42	4.30	4.30	3.93	4.83	4.93
Wood and Other Biomass ⁴	1.57	1.75	1.81	5.33	2.12	2.42	22.36	2.45	4.09	55.76
Solar Thermal	0.33	0.35	0.35	0.35	0.40	0.40	0.40	0.48	0.48	0.48
Solar Photovoltaic	0.01	0.08	0.08	0.08	0.21	0.21	0.21	0.54	0.54	0.54
Wind	2.66	6.92	7.00	10.90	7.52	7.98	30.30	7.76	13.71	89.79
Total	88.83	94.75	98.76	107.82	97.98	104.49	150.55	99.49	113.23	246.73
Generation (billion kilowatthours)										
Conventional Hydropower	309.55	301.20	301.47	301.20	301.13	305.54	302.28	300.07	304.39	301.19
Geothermal ²	13.21	18.34	47.37	57.39	30.94	60.34	98.37	31.16	63.66	116.13
Municipal Solid Waste ³	18.12	20.68	22.94	26.66	23.88	30.75	30.76	27.76	34.81	35.58
Wood and Other Biomass ⁴	9.02	14.94	27.64	51.78	21.30	66.36	207.22	19.78	69.61	423.00
Dedicated Plants	7.73	9.16	9.55	33.04	11.36	13.46	146.50	13.82	24.85	369.60
Cofiring	1.29	5.78	18.09	18.73	9.94	52.90	60.72	5.95	44.77	53.40
Solar Thermal	0.89	0.96	0.96	0.96	1.11	1.11	1.11	1.37	1.37	1.37
Solar Photovoltaic	0.03	0.20	0.20	0.20	0.51	0.51	0.51	1.36	1.36	1.36
Wind	4.61	16.30	16.53	26.92	18.16	19.46	82.38	18.83	38.05	252.17
Total	355.43	372.61	417.09	465.09	397.03	484.05	722.64	400.32	513.25	1130.79
Cogenerators⁵										
Net Summer Capability										
Municipal Solid Waste	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Biomass	4.65	5.17	5.19	5.19	6.06	6.07	6.07	7.54	7.56	7.56
Total	5.35	5.87	5.89	5.89	6.76	6.77	6.77	8.24	8.26	8.26
Generation (billion kilowatthours)										
Municipal Solid Waste	4.04	4.04	4.04	4.04	4.04	4.04	4.04	4.04	4.04	4.04
Biomass	27.08	29.92	30.01	30.03	35.01	35.00	35.00	43.52	43.54	43.55
Total	31.12	33.97	34.05	34.07	39.05	39.04	39.05	47.57	47.58	47.60
Other End-Use Generators⁶										
Net Summer Capability										
Conventional Hydropower ⁷	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solar Photovoltaic	0.01	0.10	0.10	0.10	0.35	0.35	0.35	0.35	0.35	0.35
Total	1.00	1.09	1.09	1.09	1.34	1.34	1.34	1.34	1.34	1.34
Generation (billion kilowatthours)										
Conventional Hydropower ⁷	4.57	4.44	4.44	4.44	4.43	4.43	4.43	4.41	4.41	4.41
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solar Photovoltaic	0.02	0.20	0.20	0.20	0.75	0.75	0.75	0.75	0.76	0.76
Total	4.59	4.64	4.64	4.64	5.18	5.18	5.18	5.17	5.18	5.17

¹Includes grid-connected utilities and nonutilities other than cogenerators. These nonutility facilities include small power producers and exempt wholesale generators.

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

³Includes landfill gas.

⁴Includes projections for energy crops after 2010.

⁵Cogenerators produce electricity and other useful thermal energy.

⁶Includes 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. Excludes off-grid photovoltaics and other generators not connected to the distribution or transmission systems.

⁷Represents own-use industrial hydroelectric power.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Hg = Mercury.

Notes: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports. Net summer capability has been estimated for nonutility generators for AEO2001. Net summer capability 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: 1999 electric utility capability: Energy Information Administration (EIA), Form EIA-860A: "Annual Electric Generator Report - Utility." 1999 nonutility and cogenerator capability: EIA, Form EIA-860B: "Annual Electric Generator Report - Nonutility." 1999 generation: EIA, *Annual Energy Review 1999*, DOE/EIA-0384(99) (Washington, DC, July 2000). Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P9008.D060801A, M2P9008R_X.D070601A.

Table H12. Renewable Energy Consumption by Sector and Source¹
(Quadrillion Btu per Year)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990
Marketed Renewable Energy²										
Residential	0.41	0.42	0.42	0.42	0.42	0.42	0.42	0.44	0.43	0.44
Wood	0.41	0.42	0.42	0.42	0.42	0.42	0.42	0.44	0.43	0.44
Commercial	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Biomass	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Industrial³	2.15	2.42	2.41	2.41	2.64	2.63	2.63	3.08	3.08	3.08
Conventional Hydroelectric	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Municipal Solid Waste	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Biomass	1.97	2.23	2.22	2.22	2.46	2.44	2.44	2.90	2.89	2.89
Transportation	0.12	0.20	0.20	0.20	0.22	0.21	0.22	0.24	0.24	0.24
Ethanol used in E85 ⁴	0.00	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03
Ethanol used in Gasoline Blending	0.12	0.18	0.18	0.18	0.19	0.19	0.20	0.21	0.21	0.20
Electric Generators⁵	3.88	4.19	5.23	5.92	4.73	6.23	9.45	4.78	6.62	13.84
Conventional Hydroelectric	3.19	3.10	3.10	3.10	3.10	3.14	3.11	3.08	3.13	3.10
Geothermal	0.28	0.44	1.33	1.64	0.85	1.74	3.08	0.85	1.86	3.74
Municipal Solid Waste ⁶	0.25	0.28	0.31	0.36	0.32	0.42	0.42	0.38	0.47	0.48
Biomass	0.12	0.18	0.31	0.52	0.26	0.71	1.98	0.25	0.74	3.90
Dedicated Plants	0.10	0.11	0.11	0.33	0.14	0.14	1.40	0.17	0.26	3.41
Cofiring	0.02	0.07	0.20	0.19	0.12	0.57	0.58	0.07	0.48	0.49
Solar Thermal	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.03
Solar Photovoltaic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wind	0.05	0.17	0.17	0.28	0.19	0.20	0.85	0.19	0.39	2.59
Total Marketed Renewable Energy	6.64	7.31	8.34	9.02	8.10	9.58	12.81	8.62	10.45	17.67
Non-Marketed Renewable Energy⁷										
Selected Consumption										
Residential	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.03	0.03
Solar Hot Water Heating	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Geothermal Heat Pumps	0.02	0.02	0.02	0.02	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	0.00	0.00	0.00
Commercial	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03
Solar Thermal	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03
Solar Photovoltaic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ethanol										
From Corn	0.12	0.19	0.18	0.18	0.20	0.19	0.20	0.17	0.17	0.17
From Cellulose	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.07	0.07	0.07
Total	0.12	0.20	0.20	0.20	0.22	0.21	0.22	0.24	0.24	0.24

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.

³Includes all electricity production by industrial and other cogenerators for the grid and for own use.

⁴Excludes motor gasoline component of E85.

⁵Includes renewable energy delivered to the grid from electric utilities and nonutilities. Renewable energy used in generating electricity for own use is included in the individual sectoral electricity energy consumption values.

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.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Hg = Mercury.

Notes: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 ethanol: Energy Information Administration (EIA), *Annual Energy Review 1999*, DOE/EIA-0384(99) (Washington, DC, July 2000). 1999 electric generators: EIA, Form EIA-860A: "Annual Electric Generator Report - Utility," and EIA, Form EIA-860B: "Annual Electric Generator Report - Nonutility." Other 1999: EIA, Office of Integrated Analysis and Forecasting. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P9008.D060801A, M2P9008R_X.D070601A.

Table H13. Carbon Dioxide Emissions by Sector and Source
(Million Metric Tons Carbon Equivalent per Year)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990
Residential										
Petroleum	26.0	26.5	26.5	26.5	24.5	24.5	24.6	23.2	23.6	23.4
Natural Gas	69.5	80.2	80.6	80.6	80.8	79.7	80.9	89.8	89.3	91.6
Coal	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.2	1.3
Electricity	193.4	227.1	210.7	210.7	242.6	168.1	168.1	275.6	174.1	173.9
Total	290.1	335.0	319.1	319.1	349.2	273.7	274.9	389.8	288.2	290.1
Commercial										
Petroleum	13.7	11.8	11.8	11.8	12.0	12.2	12.0	12.1	12.4	12.1
Natural Gas	45.4	57.4	57.8	57.8	60.1	59.3	60.5	63.9	68.4	70.6
Coal	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.9	1.9	1.9
Electricity	181.3	218.4	203.3	203.3	240.4	168.1	168.2	267.1	166.6	165.9
Total	242.1	289.4	274.7	274.7	314.3	241.3	242.6	345.0	249.3	250.6
Industrial¹										
Petroleum	104.2	99.2	98.6	98.4	105.3	106.1	104.5	113.6	115.6	112.5
Natural Gas ²	141.6	148.4	148.1	147.9	159.8	160.6	162.4	180.3	187.8	189.8
Coal	55.9	65.8	65.6	65.6	65.6	63.4	64.1	65.8	65.0	65.8
Electricity	178.8	193.6	179.7	179.6	204.1	141.6	141.0	226.4	133.8	130.6
Total	480.4	507.0	491.9	491.5	534.8	471.7	472.0	586.1	502.3	498.8
Transportation										
Petroleum ³	485.8	556.3	554.3	554.4	607.2	603.3	603.3	704.2	700.5	700.9
Natural Gas ⁴	9.5	12.8	12.5	12.4	14.4	15.0	14.9	18.1	18.7	17.4
Other ⁵	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Electricity	2.9	4.4	4.1	4.1	5.8	4.3	4.3	7.9	5.4	5.3
Total³	498.2	573.6	571.0	571.0	627.5	622.7	622.5	730.2	724.6	723.8
Total Carbon Dioxide Emissions by Delivered Fuel										
Petroleum ³	629.7	693.8	691.2	691.2	749.0	746.1	744.4	853.1	852.1	848.9
Natural Gas	266.0	298.8	299.0	298.7	315.1	314.6	318.7	352.0	364.1	369.5
Coal	58.8	68.8	68.5	68.6	68.8	66.6	67.2	69.0	68.2	69.0
Other ⁵	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Electricity	556.3	643.6	597.9	597.7	692.8	482.0	481.6	777.0	479.9	475.7
Total³	1510.8	1705.0	1656.7	1656.2	1825.7	1609.4	1612.0	2051.2	1764.4	1763.2
Electric Generators⁶										
Petroleum	20.0	9.4	3.9	3.9	5.8	2.1	2.7	5.2	2.1	2.3
Natural Gas	45.8	79.6	71.5	65.8	100.0	143.5	108.7	164.1	197.3	124.2
Coal	490.5	554.6	522.5	527.9	587.0	336.4	370.2	607.7	280.5	349.2
Total	556.3	643.6	597.9	597.7	692.8	482.0	481.6	777.0	479.9	475.7
Total Carbon Dioxide Emissions by Primary Fuel⁷										
Petroleum ³	649.7	703.1	695.1	695.1	754.8	748.3	747.0	858.3	854.2	851.2
Natural Gas	311.8	378.4	370.5	364.5	415.0	458.1	427.3	516.2	561.4	493.7
Coal	549.3	623.3	591.0	596.4	655.8	403.0	437.5	676.7	348.7	418.2
Other ⁵	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total³	1510.8	1705.0	1656.7	1656.2	1825.7	1609.4	1612.0	2051.2	1764.4	1763.2
Carbon Dioxide Emissions (tons carbon equivalent per person)	5.5	5.9	5.8	5.8	6.1	5.4	5.4	6.3	5.4	5.4

¹Includes consumption by cogenerators.

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 1998, international bunker fuels accounted for 25 to 30 million metric tons carbon equivalent of carbon dioxide annually.

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

⁵Includes methanol and liquid hydrogen.

⁶Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy. Includes small power producers and exempt wholesale generators. 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.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Hg = Mercury.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 emissions and emission factors: Energy Information Administration (EIA), *Emissions of Greenhouse Gases in the United States 1999*, DOE/EIA-0573(99), (Washington, DC, October 2000). Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P9008.D060801A, M2P9008R_X.D070601A.

Table H14. Emissions, Allowance Costs, and Retrofits: Electric Generators, Excluding Cogenerators

Impacts	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990	Reference	NO _x , SO ₂ , CO ₂ 1990, Hg	All CO ₂ 1990
Emissions										
Nitrogen Oxide (million tons)	5.45	4.30	3.08	3.02	4.34	1.51	1.66	4.49	1.34	1.53
Sulfur Dioxide (million tons)	13.71	10.38	8.55	8.55	9.70	3.33	4.49	8.95	2.63	3.27
Mercury (tons)	43.60	45.24	39.24	40.25	45.60	5.00	5.00	45.07	5.00	5.00
Carbon Dioxide (million metric tons carbon equivalent)	14.44	9.48	8.55	8.55	8.95	3.27	3.27	8.95	3.27	3.27
Allowance Prices										
Nitrogen Oxide (1999 dollars per ton) . . .	0	4352	1482	1640	4391	0	0	5037	0	1304
Sulfur Dioxide (1999 dollars per ton) . . .	0	190	142	177	187	1	3	241	2	150
Mercury (million 1999 dollars per ton) . . .	0	0	0	0	0	443	432	0	297	407
Carbon Dioxide (1999 dollars per ton carbon equivalent)	12	3	8	8	0	2	2	0	0	0
Retrofits (gigawatts)										
Scrubber ¹	0.0	6.5	26.4	17.5	7.1	31.2	28.1	14.8	31.2	32.2
Combustion	0.0	39.9	49.9	51.0	42.1	53.5	54.8	46.1	55.6	56.9
SCR Post-combustion	0.0	92.8	61.6	69.8	92.9	109.4	131.6	93.0	109.4	134.6
SNCR Post-combustion	0.0	25.2	15.4	14.9	26.3	65.3	34.3	43.4	65.4	34.6
Coal Production by Sulfur Category (million tons)										
Low Sulfur (< .61 lbs. S/mmBtu)	472	594	553	580	642	386	422	721	326	412
Medium Sulfur (.61-1.67 lbs. S/mmBtu) . .	432	454	409	412	464	267	286	440	232	274
High Sulfur (> 1.67 lbs. S/mmBtu)	199	185	199	185	188	136	143	179	129	133

¹Represents scrubbers added by the model. Planned scrubbers added by electricity generators are not shown here.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Hg = Mercury.

lbs. S/mmBtu = Pounds sulfur per million British thermal units.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Source: Energy Information Administration, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P9008.D060801A, M2P9008R_X.D070601A.

Appendix I

Tables for Integrated Cases With Four Emissions Caps, Including CO₂ Emissions at the 1990-7% Level

Table 11. Total Energy Supply and Disposition Summary
(Quadrillion Btu per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990-7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990-7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990-7%, Hg	All CO ₂ 1990-7%
Production										
Crude Oil and Lease Condensate . . .	12.45	11.98	12.02	12.00	11.27	11.19	11.22	11.12	11.46	11.14
Natural Gas Plant Liquids	2.62	3.12	3.04	3.00	3.37	3.64	3.57	4.16	4.27	4.01
Dry Natural Gas	19.16	21.95	21.39	21.10	24.04	25.97	25.49	30.24	31.07	29.14
Coal	23.08	25.45	24.27	24.45	26.55	14.56	16.25	27.16	13.81	15.80
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.91	7.91	6.54	7.27	7.10
Renewable Energy ¹	6.53	7.13	8.12	8.84	7.90	9.90	12.48	8.42	10.99	17.36
Other ²	1.65	0.35	0.58	0.58	0.31	0.30	0.31	0.33	0.33	0.32
Total	73.29	77.88	77.33	77.88	81.19	73.46	77.23	87.97	79.20	84.87
Imports										
Crude Oil ³	18.96	21.42	21.38	21.40	22.38	22.49	22.45	25.82	25.73	25.91
Petroleum Products ⁴	4.14	6.28	5.85	5.89	8.65	8.10	8.04	10.80	10.22	10.60
Natural Gas	3.63	5.13	5.13	5.00	5.55	6.97	5.88	6.59	8.47	6.63
Other Imports ⁵	0.64	1.11	1.02	1.02	0.96	0.89	0.88	0.96	0.81	0.81
Total	27.37	33.93	33.38	33.30	37.54	38.44	37.24	44.18	45.24	43.95
Exports										
Petroleum ⁶	1.98	1.73	1.76	1.75	1.69	1.70	1.72	1.85	1.81	1.87
Natural Gas	0.17	0.33	0.33	0.33	0.43	0.12	0.43	0.63	0.12	0.63
Coal	1.48	1.51	1.51	1.51	1.45	1.42	1.50	1.41	1.54	1.40
Total	3.62	3.57	3.59	3.58	3.58	3.24	3.64	3.89	3.47	3.90
Discrepancy⁷	0.69	0.43	0.54	0.50	0.04	0.05	0.07	0.11	0.08	0.16
Consumption										
Petroleum Products ⁸	38.02	41.34	40.92	40.92	44.44	44.16	44.04	50.45	50.29	50.12
Natural Gas	22.21	26.44	25.89	25.46	29.00	32.62	30.77	36.06	39.26	34.98
Coal	21.42	24.39	23.13	23.35	25.64	13.48	15.05	26.42	12.69	14.81
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.91	7.91	6.54	7.27	7.10
Renewable Energy ¹	6.54	7.13	8.12	8.84	7.91	9.91	12.49	8.43	11.00	17.37
Other ⁹	0.35	0.61	0.61	0.61	0.38	0.52	0.51	0.25	0.38	0.38
Total	96.33	107.81	106.57	107.10	115.11	108.60	110.77	128.16	120.89	124.76
Net Imports - Petroleum	21.12	25.96	25.48	25.54	29.34	28.89	28.77	34.78	34.15	34.64
Prices (1999 dollars per unit)										
World Oil Price (dollars per barrel) ¹⁰ . .	17.22	20.83	20.83	20.83	21.37	21.37	21.37	22.41	22.41	22.41
Gas Wellhead Price (dollars per Mcf) ¹¹	2.08	2.96	2.79	2.80	2.87	3.66	3.13	3.22	3.74	3.31
Coal Minemouth Price (dollars per ton)	17.17	15.05	14.79	14.93	14.08	14.38	15.43	12.87	13.41	14.08
Average Electric Price (cents per Kwh)	6.6	6.4	6.7	6.7	6.1	8.4	8.6	6.2	8.6	8.0

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.

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, imports of 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, and net storage withdrawals.

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.

Mcf = Thousand cubic feet.

Kwh = Kilowatthour.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Hg = Mercury.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 natural gas values: Energy Information Administration (EIA), *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). 1999 petroleum values: EIA, *Petroleum Supply Annual 1999*, DOE/EIA-0340(99/1) (Washington, DC, June 2000). Other 1999 values: EIA, *Annual Energy Review 1999*, DOE/EIA-0384(99) (Washington, DC, July 2000) and EIA, *Quarterly Coal Report*, DOE/EIA-0121(2000/1Q) (Washington, DC, August 2000). Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08.D060801A, M2P7B08R_X.D070601A.

Table 12. Energy Consumption by Sector and Source
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990- 7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990- 7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990- 7%, Hg	All CO ₂ 1990-7%
Energy Consumption										
Residential										
Distillate Fuel	0.86	0.87	0.87	0.87	0.80	0.81	0.81	0.76	0.77	0.77
Kerosene	0.10	0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.07	0.07
Liquefied Petroleum Gas	0.46	0.45	0.45	0.45	0.42	0.42	0.42	0.40	0.41	0.40
Petroleum Subtotal	1.42	1.40	1.40	1.40	1.30	1.30	1.30	1.23	1.25	1.24
Natural Gas	4.88	5.57	5.60	5.60	5.61	5.49	5.59	6.23	6.20	6.31
Coal	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Renewable Energy ¹	0.41	0.42	0.42	0.42	0.42	0.42	0.42	0.44	0.43	0.43
Electricity	3.91	4.57	4.50	4.51	4.95	4.56	4.54	5.79	5.29	5.39
Delivered Energy	10.66	12.01	11.97	11.98	12.34	11.83	11.91	13.74	13.21	13.42
Electricity Related Losses	8.44	9.67	9.35	9.53	10.10	8.26	8.92	10.85	8.82	10.18
Total	19.10	21.68	21.32	21.51	22.44	20.09	20.83	24.59	22.04	23.60
Commercial										
Distillate Fuel	0.36	0.37	0.37	0.37	0.38	0.39	0.38	0.37	0.41	0.38
Residual Fuel	0.10	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Kerosene	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Liquefied Petroleum Gas	0.08	0.09	0.09	0.09	0.09	0.09	0.09	0.10	0.10	0.10
Motor Gasoline ²	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Petroleum Subtotal	0.60	0.60	0.61	0.60	0.62	0.63	0.62	0.62	0.66	0.62
Natural Gas	3.14	3.99	4.01	4.01	4.17	4.07	4.19	4.44	4.81	4.96
Coal	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.08
Renewable Energy ³	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Electricity	3.66	4.39	4.34	4.35	4.91	4.58	4.55	5.62	5.04	5.12
Delivered Energy	7.55	9.13	9.11	9.12	9.85	9.43	9.51	10.83	10.67	10.87
Electricity Related Losses	7.91	9.30	9.02	9.20	10.01	8.28	8.94	10.51	8.41	9.68
Total	15.46	18.44	18.13	18.32	19.86	17.71	18.45	21.34	19.09	20.55
Industrial⁴										
Distillate Fuel	1.13	1.22	1.21	1.21	1.31	1.29	1.29	1.49	1.48	1.47
Liquefied Petroleum Gas	2.32	2.45	2.42	2.42	2.53	2.57	2.53	2.85	2.91	2.84
Petrochemical Feedstock	1.29	1.36	1.36	1.36	1.53	1.52	1.52	1.70	1.69	1.69
Residual Fuel	0.22	0.16	0.16	0.16	0.25	0.37	0.26	0.28	0.29	0.28
Motor Gasoline ²	0.21	0.23	0.23	0.23	0.25	0.24	0.24	0.28	0.28	0.28
Other Petroleum ⁵	4.29	4.44	4.42	4.42	4.71	4.73	4.71	5.02	5.10	5.05
Petroleum Subtotal	9.45	9.86	9.80	9.80	10.57	10.72	10.56	11.63	11.75	11.62
Natural Gas ⁶	9.80	10.46	10.44	10.42	11.27	11.17	11.42	12.73	13.28	13.35
Metallurgical Coal	0.75	0.67	0.67	0.67	0.61	0.61	0.61	0.50	0.50	0.50
Steam Coal	1.73	1.81	1.80	1.81	1.83	1.76	1.77	1.87	1.87	1.88
Net Coal Coke Imports	0.06	0.12	0.11	0.11	0.16	0.15	0.15	0.22	0.22	0.22
Coal Subtotal	2.54	2.59	2.59	2.59	2.59	2.52	2.53	2.60	2.59	2.60
Renewable Energy ⁷	2.15	2.42	2.41	2.41	2.64	2.63	2.63	3.08	3.08	3.08
Electricity	3.61	3.90	3.83	3.84	4.17	3.88	3.86	4.76	4.03	4.04
Delivered Energy	27.56	29.23	29.06	29.06	31.24	30.92	31.01	34.80	34.73	34.68
Electricity Related Losses	7.80	8.25	7.97	8.12	8.50	7.02	7.59	8.91	6.73	7.64
Total	35.36	37.48	37.03	37.18	39.74	37.95	38.59	43.71	41.46	42.32

Table I2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990- 7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990- 7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990- 7%, Hg	All CO ₂ 1990-7%
Transportation										
Distillate Fuel	5.13	6.28	6.23	6.24	7.00	6.86	6.87	8.22	8.10	8.11
Jet Fuel ⁸	3.46	3.90	3.88	3.88	4.51	4.48	4.49	5.97	5.96	5.97
Motor Gasoline ²	15.92	17.67	17.64	17.64	18.97	18.88	18.89	21.26	21.19	21.19
Residual Fuel	0.74	0.85	0.85	0.85	0.85	0.85	0.85	0.87	0.86	0.86
Liquefied Petroleum Gas	0.02	0.03	0.03	0.03	0.04	0.04	0.04	0.06	0.06	0.06
Other Petroleum ⁹	0.26	0.30	0.29	0.29	0.31	0.31	0.31	0.35	0.35	0.35
Petroleum Subtotal	25.54	29.03	28.93	28.93	31.68	31.42	31.45	36.73	36.52	36.53
Pipeline Fuel Natural Gas	0.66	0.83	0.81	0.80	0.91	0.98	0.97	1.10	1.14	1.07
Compressed Natural Gas	0.02	0.06	0.05	0.05	0.09	0.09	0.09	0.16	0.15	0.15
Renewable Energy (E85) ¹⁰	0.01	0.02	0.02	0.02	0.03	0.03	0.03	0.04	0.04	0.04
Methanol (M85) ¹¹	0.00	0.00	0.00	0.00	0.01	0.00	0.01	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	0.06	0.09	0.09	0.09	0.12	0.12	0.12	0.17	0.17	0.17
Delivered Energy	26.28	30.03	29.91	29.91	32.83	32.65	32.66	38.20	38.03	37.97
Electricity Related Losses	0.13	0.19	0.18	0.19	0.24	0.21	0.23	0.31	0.28	0.31
Total	26.41	30.22	30.09	30.09	33.07	32.86	32.89	38.51	38.30	38.29
Delivered Energy Consumption for All Sectors										
Distillate Fuel	7.48	8.74	8.69	8.69	9.49	9.35	9.34	10.85	10.76	10.72
Kerosene	0.15	0.13	0.13	0.13	0.12	0.13	0.13	0.12	0.12	0.12
Jet Fuel ⁸	3.46	3.90	3.88	3.88	4.51	4.48	4.49	5.97	5.96	5.97
Liquefied Petroleum Gas	2.88	3.02	3.00	3.00	3.08	3.13	3.09	3.41	3.48	3.40
Motor Gasoline ²	16.17	17.93	17.89	17.89	19.24	19.15	19.16	21.57	21.50	21.50
Petrochemical Feedstock	1.29	1.36	1.36	1.36	1.53	1.52	1.52	1.70	1.69	1.69
Residual Fuel	1.05	1.10	1.10	1.10	1.20	1.31	1.20	1.24	1.24	1.23
Other Petroleum ¹²	4.53	4.71	4.69	4.69	4.99	5.01	5.00	5.35	5.43	5.38
Petroleum Subtotal	37.01	40.90	40.73	40.74	44.16	44.08	43.93	50.21	50.19	50.02
Natural Gas ⁶	18.50	20.91	20.92	20.89	22.05	21.80	22.26	24.66	25.57	25.85
Metallurgical Coal	0.75	0.67	0.67	0.67	0.61	0.61	0.61	0.50	0.50	0.50
Steam Coal	1.84	1.92	1.92	1.92	1.95	1.89	1.90	2.00	2.00	2.01
Net Coal Coke Imports	0.06	0.12	0.11	0.11	0.16	0.15	0.15	0.22	0.22	0.22
Coal Subtotal	2.65	2.71	2.70	2.70	2.71	2.64	2.65	2.72	2.71	2.72
Renewable Energy ¹³	2.65	2.94	2.93	2.93	3.18	3.17	3.17	3.65	3.63	3.64
Methanol (M85) ¹¹	0.00	0.00	0.00	0.00	0.01	0.00	0.01	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	11.24	12.95	12.76	12.79	14.15	13.14	13.07	16.34	14.53	14.72
Delivered Energy	72.05	80.41	80.04	80.06	86.27	84.83	85.08	97.57	96.64	96.95
Electricity Related Losses	24.29	27.40	26.53	27.04	28.84	23.77	25.68	30.58	24.25	27.81
Total	96.33	107.81	106.57	107.10	115.11	108.60	110.77	128.16	120.89	124.76
Electric Generators¹⁴										
Distillate Fuel	0.06	0.06	0.03	0.03	0.06	0.01	0.02	0.06	0.02	0.02
Residual Fuel	0.96	0.38	0.15	0.15	0.22	0.07	0.09	0.19	0.08	0.09
Petroleum Subtotal	1.02	0.44	0.18	0.18	0.28	0.09	0.12	0.25	0.10	0.10
Natural Gas	3.71	5.53	4.97	4.57	6.94	10.83	8.51	11.40	13.69	9.14
Steam Coal	18.77	21.68	20.43	20.65	22.93	10.83	12.40	23.70	9.97	12.09
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.91	7.91	6.54	7.27	7.10
Renewable Energy ¹⁵	3.88	4.19	5.19	5.91	4.73	6.74	9.32	4.78	7.37	13.73
Electricity Imports ¹⁶	0.35	0.61	0.61	0.61	0.37	0.51	0.50	0.24	0.37	0.37
Total	35.52	40.35	39.29	39.82	42.99	36.91	38.75	46.92	38.77	42.53

Table 12. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990-7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990-7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990-7%, Hg	All CO ₂ 1990-7%
Total Energy Consumption										
Distillate Fuel	7.54	8.80	8.72	8.72	9.54	9.36	9.36	10.91	10.78	10.74
Kerosene	0.15	0.13	0.13	0.13	0.12	0.13	0.13	0.12	0.12	0.12
Jet Fuel ⁸	3.46	3.90	3.88	3.88	4.51	4.48	4.49	5.97	5.96	5.97
Liquefied Petroleum Gas	2.88	3.02	3.00	3.00	3.08	3.13	3.09	3.41	3.48	3.40
Motor Gasoline ²	16.17	17.93	17.89	17.89	19.24	19.15	19.16	21.57	21.50	21.50
Petrochemical Feedstock	1.29	1.36	1.36	1.36	1.53	1.52	1.52	1.70	1.69	1.69
Residual Fuel	2.01	1.48	1.26	1.26	1.42	1.38	1.30	1.42	1.33	1.32
Other Petroleum ¹²	4.53	4.71	4.69	4.69	4.99	5.01	5.00	5.35	5.43	5.38
Petroleum Subtotal	38.02	41.34	40.92	40.92	44.44	44.16	44.04	50.45	50.29	50.12
Natural Gas	22.21	26.44	25.89	25.46	29.00	32.62	30.77	36.06	39.26	34.98
Metallurgical Coal	0.75	0.67	0.67	0.67	0.61	0.61	0.61	0.50	0.50	0.50
Steam Coal	20.61	23.60	22.35	22.57	24.88	12.72	14.30	25.70	11.97	14.10
Net Coal Coke Imports	0.06	0.12	0.11	0.11	0.16	0.15	0.15	0.22	0.22	0.22
Coal Subtotal	21.42	24.39	23.13	23.35	25.64	13.48	15.05	26.42	12.69	14.81
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.91	7.91	6.54	7.27	7.10
Renewable Energy ¹⁷	6.54	7.13	8.12	8.84	7.91	9.91	12.49	8.43	11.00	17.37
Methanol (M85) ¹¹	0.00	0.00	0.00	0.00	0.01	0.00	0.01	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 Imports ¹⁶	0.35	0.61	0.61	0.61	0.37	0.51	0.50	0.24	0.37	0.37
Total	96.33	107.81	106.57	107.10	115.11	108.60	110.77	128.16	120.89	124.76
Energy Use and Related Statistics										
Delivered Energy Use	72.05	80.41	80.04	80.06	86.27	84.83	85.08	97.57	96.64	96.95
Total Energy Use	96.33	107.81	106.57	107.10	115.11	108.60	110.77	128.16	120.89	124.76
Population (millions)	273.13	288.02	288.02	288.02	300.17	300.17	300.17	325.24	325.24	325.24
Gross Domestic Product (billion 1996 dollars)	8876	10960	10904	10909	12667	12611	12617	16515	16523	16521
Total Carbon Dioxide Emissions (million metric tons carbon equivalent)	1510.8	1705.0	1657.0	1656.4	1825.7	1560.4	1570.8	2051.2	1740.4	1729.8

¹Includes wood used for residential heating.

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

³Includes commercial sector electricity cogenerated by using wood and wood waste, landfill gas, municipal solid waste, and other biomass.

⁴Fuel consumption includes consumption for cogeneration, which provides electricity and other useful thermal energy.

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

⁶Includes lease and plant fuel and consumption by cogenerators, excludes consumption by nonutility generators.

⁷Includes consumption of energy from hydroelectric, wood and wood waste, municipal solid waste, and other biomass; includes cogeneration, both for sale to the grid and for own use.

⁸Includes only kerosene type.

⁹Includes aviation gas and lubricants.

¹⁰E85 is 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable).

¹¹M85 is 85 percent methanol and 15 percent motor gasoline.

¹²Includes unfinished oils, natural gasoline, motor gasoline blending compounds, 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 all electric power generators for grid-connected power except cogenerators, which produce electricity and other useful thermal energy. 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 cogeneration. Excludes net electricity imports.

¹⁶In 1998 approximately 70 percent of the U.S. electricity imports were provided by renewable sources (hydroelectricity); EIA does not project future proportions for the fuel source of imported electricity.

¹⁷Includes 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.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Hg = Mercury.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 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: 1999 electric utility fuel consumption: Energy Information Administration, (EIA) *Electric Power Annual 1998, Volume 1*, DOE/EIA-0348(98)/1 (Washington, DC, April 1999). 1999 nonutility consumption estimates: EIA, Form EIA-860B: "Annual Electric Generator Report - Nonutility." Other 1999 values: EIA, *Short-Term Energy Outlook, September 2000*, <http://www.eia.doe.gov/pub/forecasting/steo/oldsteos/sep00.pdf>. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08.D060801A, M2P7B08R_X.D070601A.

Table I3. Energy Prices by Sector and Source
(1999 Dollars per Million Btu, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990- 7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990- 7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990- 7%, Hg	All CO ₂ 1990-7%
Residential	13.10	13.27	13.56	13.50	13.46	16.28	16.12	13.77	16.35	15.56
Primary Energy ¹	6.71	7.49	7.37	7.37	7.18	7.76	7.38	7.08	7.48	7.16
Petroleum Products ²	7.55	9.20	9.14	9.15	9.37	9.41	9.34	9.47	9.46	9.55
Distillate Fuel	6.27	7.45	7.37	7.37	7.57	7.56	7.56	7.78	7.74	7.74
Liquefied Petroleum Gas	10.36	12.60	12.57	12.59	12.86	13.02	12.80	12.75	12.74	13.08
Natural Gas	6.52	7.11	6.97	6.97	6.72	7.42	6.97	6.65	7.12	6.73
Electricity	23.47	22.16	23.27	23.09	22.30	29.07	29.48	22.44	28.93	27.42
Commercial	13.18	12.70	13.19	13.09	12.25	16.06	16.01	12.69	15.92	14.75
Primary Energy ¹	5.22	5.57	5.44	5.44	5.68	6.27	5.89	5.79	6.17	5.84
Petroleum Products ²	4.99	6.13	6.07	6.08	6.29	6.26	6.26	6.40	6.30	6.41
Distillate Fuel	4.37	5.24	5.16	5.17	5.36	5.32	5.33	5.53	5.47	5.49
Residual Fuel	2.63	3.65	3.61	3.61	3.71	3.69	3.69	3.86	3.84	3.84
Natural Gas ³	5.34	5.55	5.41	5.41	5.66	6.36	5.91	5.78	6.23	5.84
Electricity	21.45	20.26	21.56	21.32	18.76	26.27	26.84	19.00	26.64	24.59
Industrial⁴	5.27	5.76	5.80	5.78	5.67	6.74	6.57	5.90	6.72	6.36
Primary Energy	3.91	4.47	4.37	4.38	4.49	4.83	4.56	4.68	4.88	4.71
Petroleum Products ²	5.54	6.00	5.94	5.94	6.13	6.12	6.05	6.16	6.15	6.24
Distillate Fuel	4.65	5.40	5.33	5.33	5.56	5.49	5.50	5.73	5.69	5.69
Liquefied Petroleum Gas	8.50	7.74	7.70	7.71	7.88	8.07	7.81	7.76	7.84	8.11
Residual Fuel	2.78	3.38	3.35	3.35	3.44	3.33	3.42	3.59	3.58	3.58
Natural Gas ⁵	2.79	3.64	3.50	3.50	3.50	4.25	3.75	3.85	4.34	3.90
Metallurgical Coal	1.65	1.58	1.59	1.59	1.54	1.53	1.55	1.44	1.44	1.44
Steam Coal	1.43	1.35	1.34	1.35	1.31	1.18	1.21	1.21	1.08	1.11
Electricity	13.00	12.80	13.71	13.55	12.08	17.88	18.39	12.22	18.36	16.79
Transportation	8.30	9.39	9.35	9.35	9.69	9.74	9.75	9.20	9.21	9.24
Primary Energy	8.29	9.38	9.33	9.33	9.68	9.71	9.72	9.18	9.18	9.21
Petroleum Products ²	8.28	9.37	9.33	9.33	9.67	9.71	9.72	9.18	9.17	9.21
Distillate Fuel ⁶	8.22	8.98	8.89	8.90	8.95	8.93	8.94	8.83	8.81	8.83
Jet Fuel ⁷	4.70	5.29	5.23	5.23	5.49	5.48	5.48	5.72	5.71	5.72
Motor Gasoline ⁸	9.45	10.81	10.77	10.77	11.31	11.37	11.39	10.60	10.59	10.65
Residual Fuel	2.46	3.11	3.10	3.10	3.18	3.18	3.17	3.33	3.32	3.32
Liquid Petroleum Gas ⁹	12.87	14.07	14.02	14.04	14.07	14.27	14.00	13.70	13.76	13.96
Natural Gas ¹⁰	7.02	7.28	7.13	7.13	7.21	7.92	7.47	7.41	7.86	7.45
Ethanol (E85) ¹¹	14.42	19.21	19.19	19.18	19.16	19.28	19.28	19.36	19.43	19.39
Methanol (M85) ¹²	10.38	13.13	12.98	12.99	13.83	14.14	13.84	14.35	14.35	14.37
Electricity	15.59	14.52	15.01	15.02	13.62	17.06	17.92	13.22	16.67	16.11
Average End-Use Energy	8.49	9.17	9.27	9.24	9.22	10.42	10.35	9.21	10.20	9.87
Primary Energy	6.31	7.19	7.11	7.11	7.35	7.58	7.42	7.23	7.33	7.23
Electricity	19.41	18.65	19.76	19.57	17.99	24.68	25.18	18.19	25.06	23.39
Electric Generators¹³										
Fossil Fuel Average	1.48	1.64	1.55	1.51	1.59	2.68	2.14	1.88	2.96	2.21
Petroleum Products	2.49	3.61	3.82	3.81	3.90	4.35	4.15	4.17	4.48	4.49
Distillate Fuel	4.04	4.72	4.72	4.75	4.87	4.92	4.88	5.06	5.12	5.18
Residual Fuel	2.40	3.42	3.64	3.63	3.65	4.25	3.98	3.89	4.35	4.37
Natural Gas	2.58	3.44	3.40	3.37	3.26	4.41	3.79	3.71	4.49	3.93
Steam Coal	1.21	1.14	1.08	1.08	1.06	0.93	0.98	0.98	0.85	0.90

Table I3. Energy Prices by Sector and Source (Continued)
(1999 Dollars per Million Btu, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990-7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990-7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990-7%, Hg	All CO ₂ 1990-7%
Average Price to All Users¹⁴										
Petroleum Products ²	7.44	8.53	8.51	8.51	8.81	8.84	8.84	8.49	8.49	8.55
Distillate Fuel	7.25	8.14	8.07	8.08	8.20	8.18	8.20	8.20	8.17	8.20
Jet Fuel	4.70	5.29	5.23	5.23	5.49	5.48	5.48	5.72	5.71	5.72
Liquefied Petroleum Gas	8.84	8.63	8.60	8.62	8.74	8.92	8.68	8.54	8.60	8.89
Motor Gasoline ⁸	9.45	10.80	10.77	10.76	11.31	11.37	11.39	10.60	10.59	10.65
Residual Fuel	2.47	3.25	3.23	3.23	3.33	3.31	3.32	3.49	3.48	3.48
Natural Gas	4.05	4.72	4.63	4.65	4.47	5.19	4.74	4.60	5.14	4.78
Coal	1.23	1.16	1.10	1.10	1.08	0.97	1.02	1.00	0.89	0.93
Ethanol (E85) ¹¹	14.42	19.21	19.19	19.18	19.16	19.28	19.28	19.36	19.43	19.39
Methanol (M85) ¹²	10.38	13.13	12.98	12.99	13.83	14.14	13.84	14.35	14.35	14.37
Electricity	19.41	18.65	19.76	19.57	17.99	24.68	25.18	18.19	25.06	23.39
Non-Renewable Energy Expenditures by Sector (billion 1999 dollars)										
Residential	134.28	153.83	156.58	155.98	160.41	185.71	185.06	183.27	208.97	202.13
Commercial	98.42	114.97	119.06	118.24	119.69	150.12	150.84	136.41	168.56	159.06
Industrial	111.66	127.05	127.60	127.20	133.28	157.93	154.78	154.57	177.19	167.45
Transportation	212.64	273.84	271.54	271.60	308.81	307.79	308.43	340.45	338.89	340.30
Total Non-Renewable Expenditures	556.99	669.69	674.79	673.02	722.19	801.56	799.11	814.69	893.61	868.95
Transportation Renewable Expenditures	0.14	0.42	0.42	0.42	0.64	0.63	0.63	0.85	0.85	0.85
Total Expenditures	557.13	670.11	675.21	673.43	722.82	802.19	799.75	815.54	894.46	869.79

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.

³Excludes independent power producers.

⁴Includes cogenerators.

⁵Excludes uses for lease and plant fuel.

⁶Low sulfur diesel fuel. Price includes Federal and State taxes while excluding county and local taxes.

⁷Kerosene-type jet fuel. Price includes Federal and State taxes while excluding county and local taxes.

⁸Sales weighted-average price for all grades. Includes Federal and State taxes and excludes county and local taxes.

⁹Includes Federal and State taxes while excluding county and local taxes.

¹⁰Compressed natural gas used as a vehicle fuel. Price includes estimated motor vehicle fuel taxes.

¹¹E85 is 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable).

¹²M85 is 85 percent methanol and 15 percent motor gasoline.

¹³Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy. Includes small power producers and exempt wholesale generators.

¹⁴Weighted averages of end-use fuel prices are derived from the prices shown in each sector and the corresponding sectoral consumption.

Btu = British thermal unit.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Hg = Mercury.

Note: Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 prices for gasoline, distillate, and jet fuel are based on prices in various issues of Energy Information Administration (EIA), *Petroleum Marketing Monthly*, DOE/EIA-0380 (99/03-2000/04) (Washington, DC, 1999-2000). 1999 prices for all other petroleum products are derived from the EIA, *State Energy Price and Expenditure Report 1997*, DOE/EIA-0376(97) (Washington, DC, July 2000). 1999 industrial gas delivered prices are based on EIA, *Manufacturing Energy Consumption Survey 1994*. 1999 residential and commercial natural gas delivered prices: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). 1999 coal prices based on EIA, *Quarterly Coal Report*, DOE/EIA-0121(2000/1Q) (Washington, DC, August 2000), and EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08.D060801A, M2P7B08R_X.D070601A. 1999 electricity prices for commercial, industrial, and transportation: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08.D060801A, M2P7B08R_X.D070601A. **Projections:** EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08.D060801A, M2P7B08R_X.D070601A.

Table 14. Electricity Supply, Disposition, Prices, and Emissions
(Billion Kilowatthours, Unless Otherwise Noted)

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990- 7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990- 7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990- 7%, Hg	All CO ₂ 1990-7%
Generation by Fuel Type										
Electric Generators¹										
Coal	1831	2106	1995	2013	2245	1069	1223	2315	988	1190
Petroleum	94	43	19	19	28	9	13	25	11	11
Natural Gas ²	359	583	619	563	825	1575	1189	1495	2005	1304
Nuclear Power	730	740	740	740	725	741	741	613	681	665
Pumped Storage	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Renewable Sources ³	355	373	416	465	397	503	706	400	554	1128
Total	3369	3844	3789	3799	4219	3895	3871	4847	4238	4298
Non-Utility Generation for Own Use	16	17	21	21	17	20	20	17	20	19
Distributed Generation	0	0	0	0	1	1	0	5	1	1
Cogenerators⁴										
Coal	47	53	52	53	52	44	45	52	44	45
Petroleum	9	10	10	10	10	10	10	10	11	10
Natural Gas	207	237	243	240	261	314	323	318	602	605
Other Gaseous Fuels ⁵	4	6	6	6	7	7	7	8	9	9
Renewable Sources ³	31	34	34	34	39	39	39	48	48	48
Other ⁶	5	5	5	5	5	5	5	6	6	6
Total	303	345	350	348	373	419	429	441	718	722
Other End-Use Generators⁷										
Sales to Utilities	151	172	171	171	180	178	183	208	271	272
Generation for Own Use	156	178	184	182	198	246	251	238	452	455
Net Imports⁸	33	57	57	57	35	49	47	23	35	35
Electricity Sales by Sector										
Residential	1145	1339	1318	1321	1452	1338	1331	1698	1549	1579
Commercial	1073	1288	1272	1275	1439	1341	1334	1646	1477	1501
Industrial	1058	1142	1123	1126	1222	1138	1132	1395	1182	1184
Transportation	17	26	26	26	35	34	34	49	48	48
Total	3294	3794	3738	3747	4147	3851	3830	4788	4257	4313
End-Use Prices (1999 cents per kwh)⁹										
Residential	8.0	7.6	7.9	7.9	7.6	9.9	10.1	7.7	9.9	9.4
Commercial	7.3	6.9	7.4	7.3	6.4	9.0	9.2	6.5	9.1	8.4
Industrial	4.4	4.4	4.7	4.6	4.1	6.1	6.3	4.2	6.3	5.7
Transportation	5.3	5.0	5.1	5.1	4.6	5.8	6.1	4.5	5.7	5.5
All Sectors Average	6.6	6.4	6.7	6.7	6.1	8.4	8.6	6.2	8.6	8.0
Prices by Service Category⁹ (1999 cents per kwh)										
Generation	4.1	3.8	4.2	4.1	3.5	5.6	5.8	3.6	5.9	5.3
Transmission	0.6	0.6	0.6	0.6	0.7	0.8	0.8	0.7	0.7	0.7
Distribution	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.0
Emissions (million short tons)										
Sulfur Dioxide	13.71	10.38	8.55	8.55	9.70	3.19	3.60	8.95	2.92	3.17
Nitrogen Oxide	5.45	4.30	3.05	3.02	4.34	1.26	1.41	4.49	1.25	1.37

¹Includes grid-connected generation at all utilities and nonutilities except for cogenerators. Includes small power producers and exempt wholesale generators.

²Includes electricity generation by fuel cells.

³Includes conventional hydroelectric, geothermal, wood, wood waste, municipal solid waste, landfill gas, other biomass, solar, and wind power.

⁴Cogenerators produce electricity and other useful thermal energy. Includes sales to utilities and generation for own use.

⁵Other gaseous fuels include refinery and still gas.

⁶Other includes hydrogen, sulfur, batteries, chemicals, fish oil, and spent sulfite liquor.

⁷Includes 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.

⁸In 1998 approximately 70 percent of the U.S. electricity imports were provided by renewable sources (hydroelectricity); EIA does not project future proportions for the fuel source of imported electricity.

⁹Prices represent average revenue per kilowatthour.

Kwh = Kilowatthour.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Hg = Mercury.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Source: Energy Information Administration, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08.D060801A, M2P7B08R_X.D070601A.

**Table I5. Electricity Generating Capability
(Gigawatts)**

Net Summer Capability ¹	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990- 7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990- 7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990- 7%, Hg	All CO ₂ 1990-7%
Electric Generators²										
Capability										
Coal Steam	305.1	303.9	302.8	302.8	318.6	269.9	273.7	318.5	238.3	240.3
Other Fossil Steam ³	137.4	127.8	119.9	118.8	119.2	104.7	102.8	116.9	94.3	93.0
Combined Cycle	21.0	53.2	84.1	78.7	107.8	226.2	161.5	202.2	277.7	183.9
Combustion Turbine/Diesel	74.3	123.1	114.3	114.8	147.2	116.0	117.7	199.5	125.4	139.9
Nuclear Power	97.4	97.5	97.5	97.5	94.8	96.9	96.9	76.3	87.6	84.6
Pumped Storage	19.3	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5
Fuel Cells	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.3	0.3
Renewable Sources ⁴	88.8	94.8	98.7	107.8	98.0	109.0	151.9	99.5	121.5	247.5
Distributed Generation ⁵	0.0	0.7	0.6	0.5	2.5	1.2	0.9	11.5	3.2	3.4
Total	743.4	820.4	837.4	840.4	907.8	943.5	925.0	1044.2	967.8	1012.2
Cumulative Planned Additions⁶										
Coal Steam	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Fossil Steam ³	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Combined Cycle	0.0	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7
Combustion Turbine/Diesel	0.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
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	0.1	0.1	0.1	0.3	0.3	0.3
Renewable Sources ⁴	0.0	5.1	5.1	5.1	6.7	6.7	6.7	8.1	8.1	8.1
Distributed Generation ⁵	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.0	32.0	32.0	32.0	33.7	33.7	33.7	35.3	35.3	35.3
Cumulative Unplanned Additions⁶										
Coal Steam	0.0	1.1	0.0	0.0	18.9	0.0	0.0	20.5	0.0	0.0
Other Fossil Steam ³	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Combined Cycle	0.0	19.4	50.3	45.0	74.2	192.6	127.9	168.6	244.0	152.2
Combustion Turbine/Diesel	0.0	38.9	31.5	31.4	64.7	34.2	36.3	117.2	43.9	58.7
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 ⁴	0.0	0.4	4.4	13.5	2.0	13.0	55.9	2.0	24.0	150.1
Distributed Generation ⁵	0.0	0.7	0.6	0.5	2.5	1.2	0.9	11.5	3.2	3.4
Total	0.0	60.6	86.8	90.4	162.2	241.0	221.0	319.8	315.1	364.4
Cumulative Total Additions	0.0	92.6	118.8	122.4	195.9	274.6	254.7	355.1	350.4	399.7
Cumulative Retirements⁷										
Coal Steam	0.0	2.3	2.3	2.3	5.4	35.3	31.4	7.2	66.8	64.9
Other Fossil Steam ³	0.0	9.9	17.7	18.8	18.4	32.9	34.8	20.7	43.2	44.5
Combined Cycle	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.2	0.1	2.1
Combustion Turbine/Diesel	0.0	4.4	5.7	5.1	6.0	6.7	7.1	6.3	7.0	7.4
Nuclear Power	0.0	0.0	0.0	0.0	2.6	0.6	0.6	21.2	9.8	12.9
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	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total	0.0	16.7	25.9	26.5	32.8	75.7	74.3	55.6	127.1	131.9
Cogenerators⁸										
Capability										
Coal	8.4	8.9	8.9	8.9	8.6	7.3	7.5	8.6	7.3	7.5
Petroleum	2.7	2.9	2.9	2.9	2.9	2.9	2.9	2.9	3.0	3.0
Natural Gas	34.6	39.9	40.8	40.5	43.3	51.2	52.0	51.4	91.2	91.4
Other Gaseous Fuels	0.2	0.8	0.8	0.8	0.9	0.9	0.9	1.1	1.1	1.1
Renewable Sources ⁴	5.4	5.9	5.9	5.9	6.8	6.8	6.8	8.2	8.2	8.3
Other	1.1	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Total	52.4	59.2	60.2	59.9	63.3	69.9	70.9	73.2	111.7	112.1
Cumulative Additions⁶	0.0	6.8	7.8	7.5	10.9	17.5	18.4	20.7	59.3	59.7

Table 15. Electricity Generating Capability (Continued)
(Gigawatts)

Net Summer Capability ¹	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990- 7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990- 7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990- 7%, Hg	All CO ₂ 1990-7%
Other End-Use Generators⁹										
Renewable Sources	1.0	1.1	1.1	1.1	1.3	1.3	1.3	1.3	1.4	1.3
Cumulative Additions	0.0	0.1	0.1	0.1	0.3	0.3	0.3	0.3	0.4	0.3

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

²Includes grid-connected utilities and nonutilities except for cogenerators. Includes small power producers and exempt wholesale generators.

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

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

⁵Primarily peak-load capacity fueled by natural gas.

⁶Cumulative additions after December 31, 1999.

⁷Cumulative total retirements after December 31, 1999.

⁸Nameplate capacity is reported for nonutilities on Form EIA-860B, "Annual Electric Generator Report - Nonutility." Nameplate capacity is designated by the manufacturer. The nameplate capacity has been converted to the net summer capability based on historic relationships.

⁹Includes 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. Excludes off-grid photovoltaics and other generators not connected to the distribution or transmission systems.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Hg = Mercury.

Notes: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports. Net summer capability has been estimated for nonutility generators to be consistent with capability for electric utility generators.

Source: Energy Information Administration, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08.D060801A, M2P7B08R_X.D070601A.

Table 16. Electricity Trade
(Billion Kilowatthours, Unless Otherwise Noted)

Electricity Trade	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990- 7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990- 7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990- 7%, Hg	All CO ₂ 1990-7%
Interregional Electricity Trade										
Gross Domestic Firm Power Trade	182.2	125.3	125.3	125.3	102.9	102.9	102.9	0.0	0.0	0.0
Gross Domestic Economy Trade	152.0	202.3	157.8	169.2	155.5	83.4	82.9	147.9	101.2	102.9
Gross Domestic Trade	334.2	327.6	283.1	294.5	258.4	186.3	185.8	147.9	101.2	102.9
Gross Domestic Firm Power Sales										
(million 1999 dollars)	8588.1	5905.8	5905.8	5905.8	4851.2	4851.2	4851.2	0.0	0.0	0.0
Gross Domestic Economy Sales										
(million 1999 dollars)	4413.9	6468.6	5663.4	6025.7	4510.4	4106.8	4376.3	4605.1	5412.0	5158.1
Gross Domestic Sales	13002.0	12374.4	11569.2	11931.5	9361.6	8958.1	9227.6	4605.1	5412.0	5158.1
International Electricity Trade										
Firm Power Imports From Canada and	27.0	10.7	10.7	10.7	5.8	19.1	17.9	0.0	12.1	12.1
Economy Imports From Canada and Mexico ¹	21.9	63.5	63.5	63.5	45.9	45.9	45.9	30.6	30.6	30.6
Gross Imports From Canada and Mexico¹	48.9	74.1	74.1	74.1	51.7	65.0	63.8	30.6	42.7	42.7
Firm Power Exports To Canada and Mexico . .	9.2	9.7	9.7	9.7	8.7	8.7	8.7	0.0	0.0	0.0
Economy Exports To Canada and Mexico . . .	6.3	7.0	7.0	7.0	7.7	7.7	7.7	7.7	7.7	7.7
Gross Exports To Canada and Mexico	15.5	16.7	16.7	16.7	16.4	16.4	16.4	7.7	7.7	7.7

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

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Hg = Mercury.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 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, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08.D060801A, M2P7B08R_X.D070601A.

Table 17. Natural Gas Supply and Disposition
(Trillion Cubic Feet per Year)

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990- 7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990- 7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990- 7%, Hg	All CO ₂ 1990-7%
Production										
Dry Gas Production ¹	18.67	21.40	20.85	20.57	23.43	25.31	24.84	29.47	30.29	28.40
Supplemental Natural Gas ² . . .	0.10	0.11	0.11	0.11	0.06	0.06	0.06	0.06	0.06	0.06
Net Imports	3.38	4.69	4.69	4.57	5.00	6.69	5.33	5.82	8.16	5.85
Canada	3.29	4.48	4.48	4.36	4.72	5.06	5.03	5.43	5.74	5.46
Mexico	-0.01	-0.18	-0.18	-0.18	-0.25	0.32	-0.25	-0.40	0.36	-0.40
Liquefied Natural Gas	0.10	0.39	0.39	0.39	0.53	1.31	0.55	0.79	2.07	0.80
Total Supply	22.15	26.20	25.66	25.25	28.49	32.06	30.23	35.35	38.51	34.31
Consumption by Sector										
Residential	4.75	5.42	5.45	5.45	5.46	5.34	5.44	6.07	6.03	6.15
Commercial	3.06	3.88	3.91	3.91	4.06	3.96	4.08	4.32	4.69	4.83
Industrial ³	8.31	8.81	8.82	8.82	9.48	9.28	9.56	10.53	11.03	11.18
Electric Generators ⁴	3.64	5.43	4.87	4.49	6.81	10.63	8.35	11.19	13.43	8.97
Lease and Plant Fuel ⁵	1.23	1.38	1.35	1.34	1.50	1.59	1.57	1.87	1.90	1.81
Pipeline Fuel	0.64	0.81	0.79	0.78	0.88	0.95	0.94	1.07	1.11	1.05
Transportation ⁶	0.02	0.05	0.05	0.05	0.09	0.09	0.09	0.15	0.15	0.15
Total	21.65	25.79	25.25	24.83	28.29	31.85	30.03	35.20	38.33	34.14
Discrepancy ⁷	0.50	0.42	0.41	0.42	0.20	0.21	0.20	0.14	0.17	0.17

¹Marketed production (wet) minus extraction losses.
²Synthetic natural gas, propane air, coke oven gas, refinery gas, biomass gas, air injected for Btu stabilization, and manufactured gas commingled and distributed with natural gas.
³Includes consumption by cogenerators.
⁴Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy. Includes small power producers and exempt wholesale generators.
⁵Represents natural gas used in the field gathering and processing plant machinery.
⁶Compressed natural gas used as vehicle fuel.
⁷Balancing item. Natural gas lost as a result of converting flow data measured at varying temperatures and pressures to a standard temperature and pressure and the merger of different data reporting systems which vary in scope, format, definition, and respondent type. In addition, 1999 values include net storage injections.
 Btu = British thermal unit.
 NO_x = Nitrogen oxide.
 SO₂ = Sulfur dioxide.
 CO₂ = Carbon dioxide.
 Hg = Mercury.
 Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.
Sources: 1999 supplemental natural gas: Energy Information Administration (EIA), *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). 1999 transportation sector consumption: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08.D060801A, M2P7B08R_X.D070601A. Other 1999 consumption: EIA, *Short-Term Energy Outlook, September 2000*, <http://www.eia.doe.gov/pub/forecasting/steo/oldsteos/sep00.pdf> with adjustments to end-use sector consumption levels for consumption of natural gas by electric wholesale generators based on EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08.D060801A, M2P7B08R_X.D070601A. **Projections:** EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08.D060801A, M2P7B08R_X.D070601A.

Table 18. Natural Gas Prices, Margins, and Revenue
(1999 Dollars per Thousand Cubic Feet, Unless Otherwise Noted)

Prices, Margins, and Revenue	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990-7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990-7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990-7%, Hg	All CO ₂ 1990-7%
Source Price										
Average Lower 48 Wellhead Price ¹	2.08	2.96	2.79	2.80	2.87	3.66	3.13	3.22	3.74	3.31
Average Import Price	2.29	2.95	2.92	2.90	2.64	3.05	2.83	2.72	3.10	2.84
Average²	2.11	2.96	2.82	2.82	2.82	3.53	3.07	3.13	3.60	3.22
Delivered Prices										
Residential	6.69	7.31	7.16	7.16	6.91	7.62	7.16	6.83	7.32	6.92
Commercial	5.49	5.70	5.56	5.56	5.82	6.53	6.07	5.93	6.40	5.99
Industrial ³	2.87	3.74	3.59	3.59	3.59	4.36	3.86	3.95	4.46	4.01
Electric Generators ⁴	2.63	3.50	3.46	3.44	3.32	4.49	3.86	3.78	4.57	4.00
Transportation ⁵	7.21	7.48	7.33	7.32	7.40	8.13	7.67	7.61	8.07	7.65
Average⁶	4.15	4.84	4.75	4.77	4.59	5.32	4.86	4.72	5.27	4.91
Transmission & Distribution Margins⁷										
Residential	4.58	4.35	4.34	4.35	4.08	4.09	4.09	3.70	3.71	3.69
Commercial	3.37	2.74	2.74	2.74	2.99	3.00	3.00	2.81	2.80	2.77
Industrial ³	0.76	0.78	0.78	0.77	0.77	0.83	0.79	0.82	0.85	0.78
Electric Generators ⁴	0.52	0.54	0.65	0.62	0.49	0.96	0.79	0.65	0.97	0.78
Transportation ⁵	5.10	4.51	4.51	4.51	4.58	4.60	4.60	4.48	4.47	4.43
Average⁶	2.04	1.88	1.94	1.95	1.76	1.79	1.79	1.59	1.67	1.68
Transmission & Distribution Revenue (billion 1999 dollars)										
Residential	21.77	23.57	23.69	23.69	22.30	21.88	22.28	22.48	22.41	22.69
Commercial	10.32	10.63	10.72	10.72	12.16	11.89	12.24	12.12	13.12	13.39
Industrial ³	6.28	6.86	6.83	6.83	7.26	7.74	7.51	8.65	9.43	8.76
Electric Generators ⁴	1.88	2.94	3.16	2.79	3.36	10.23	6.63	7.24	13.08	6.96
Transportation ⁵	0.08	0.24	0.24	0.24	0.41	0.40	0.41	0.68	0.65	0.66
Total	40.32	44.25	44.64	44.26	45.49	52.13	49.07	51.18	58.69	52.46

¹Represents lower 48 onshore and offshore supplies.

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

³Includes consumption by cogenerators.

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

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Hg = Mercury.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 industrial delivered prices based on Energy Information Administration (EIA), *Manufacturing Energy Consumption Survey 1994*. 1999 residential and commercial delivered prices, average lower 48 wellhead price, and average import price: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). Other 1999 values, and projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08.D060801A, M2P7B08R_X.D070601A.

Table I9. Oil and Gas Supply

Production and Supply	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990-7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990-7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990-7%, Hg	All CO ₂ 1990-7%
Crude Oil										
Lower 48 Average Wellhead Price¹ (1999 dollars per barrel)	16.49	21.43	20.60	21.43	20.73	20.81	20.81	21.47	21.43	21.49
Production (million barrels per day)²										
U.S. Total	5.88	5.66	5.68	5.67	5.32	5.28	5.30	5.25	5.41	5.26
Lower 48 Onshore	3.27	2.81	2.81	2.81	2.52	2.51	2.52	2.75	2.85	2.76
Conventional	2.59	2.18	2.18	2.17	1.81	1.83	1.81	1.98	2.08	2.01
Enhanced Oil Recovery	0.68	0.63	0.63	0.63	0.70	0.68	0.70	0.76	0.76	0.74
Lower 48 Offshore	1.56	2.06	2.08	2.07	2.16	2.13	2.13	1.87	1.92	1.87
Alaska	1.05	0.79	0.79	0.79	0.65	0.65	0.65	0.64	0.64	0.64
Lower 48 End of Year Reserves (billion barrels) ²	18.33	15.75	15.75	15.77	14.55	14.51	14.49	14.11	14.44	14.09
Natural Gas										
Lower 48 Average Wellhead Price¹ (1999 dollars per thousand cubic feet)	2.08	2.96	2.79	2.80	2.87	3.66	3.13	3.22	3.74	3.31
Production (trillion cubic feet)³										
U.S. Total	18.67	21.40	20.85	20.57	23.43	25.31	24.84	29.47	30.29	28.40
Lower 48 Onshore	12.83	14.46	13.96	13.81	16.71	17.95	17.32	21.31	22.03	20.50
Associated-Dissolved ⁴	1.80	1.51	1.51	1.51	1.32	1.33	1.32	1.39	1.45	1.41
Non-Associated	11.03	12.95	12.44	12.30	15.39	16.62	16.00	19.91	20.57	19.09
Conventional	6.64	7.67	7.42	7.33	7.93	8.73	8.34	11.14	10.90	10.85
Unconventional	4.39	5.27	5.02	4.97	7.45	7.89	7.66	8.78	9.68	8.24
Lower 48 Offshore	5.43	6.47	6.43	6.29	6.22	6.86	7.02	7.59	7.70	7.34
Associated-Dissolved ⁴	0.93	1.06	1.06	1.06	1.09	1.09	1.09	1.04	1.05	1.04
Non-Associated	4.50	5.41	5.37	5.23	5.13	5.78	5.93	6.56	6.65	6.30
Alaska	0.42	0.47	0.47	0.47	0.50	0.50	0.50	0.57	0.56	0.56
Lower 48 End of Year Reserves³ (trillion cubic feet)	157.41	167.88	169.84	170.11	185.55	184.56	179.92	200.71	212.61	190.22
Supplemental Gas Supplies (trillion cubic feet) ⁵	0.10	0.11	0.11	0.11	0.06	0.06	0.06	0.06	0.06	0.06
Total Lower 48 Wells (thousands)	17.93	28.87	27.90	27.86	29.86	34.41	30.83	39.36	46.32	34.25

¹Represents lower 48 onshore and offshore supplies.

²Includes lease condensate.

³Market production (wet) minus extraction losses.

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

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

Btu = British thermal unit.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Hg = Mercury.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 lower 48 onshore, lower 48 offshore, and Alaska crude oil production: Energy Information Administration (EIA), *Petroleum Supply Annual 1999*, DOE/EIA-0340(99/1) (Washington, DC, June 2000). 1999 natural gas lower 48 average wellhead price, Alaska and total natural gas production, and supplemental gas supplies: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). Other 1999 values: EIA, Office of Integrated Analysis and Forecasting. **Projections:** EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08.D060801A, M2P7B08R_X.D070601A.

Table I10. Coal Supply, Disposition, and Prices
(Million Short Tons per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990-7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990-7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990-7%, Hg	All CO ₂ 1990-7%
Production¹										
Appalachia	433	426	412	420	421	245	276	396	233	263
Interior	185	182	173	176	180	112	124	161	103	124
West	486	624	586	579	694	317	348	783	305	344
East of the Mississippi	559	561	540	552	557	351	394	524	329	381
West of the Mississippi	544	672	630	624	738	323	354	817	312	350
Total	1103	1233	1170	1176	1295	674	749	1340	640	731
Net Imports										
Imports	9	16	12	12	17	9	9	20	9	9
Exports	58	60	60	60	58	57	59	56	62	56
Total	-49	-44	-48	-48	-40	-48	-50	-36	-53	-47
Total Supply²	1054	1189	1122	1128	1254	627	698	1304	587	684
Consumption by Sector										
Residential and Commercial	5	5	5	5	5	5	5	5	5	5
Industrial ³	79	82	82	82	83	81	81	86	86	86
Coke Plants	28	25	25	25	23	23	23	19	19	19
Electric Generators ⁴	921	1077	1011	1018	1145	518	587	1196	478	574
Total	1032	1189	1123	1130	1256	627	696	1306	588	684
Discrepancy and Stock Change⁵	21	-1	-1	-3	-2	-0	2	-2	-1	-0
Average Minemouth Price										
(1999 dollars per short ton)	17.17	15.05	14.79	14.93	14.08	14.38	15.43	12.87	13.41	14.08
(1999 dollars per million Btu)	0.82	0.73	0.71	0.72	0.69	0.67	0.71	0.64	0.62	0.65
Delivered Prices (1999 dollars per short ton)⁶										
Industrial	31.39	29.67	29.44	29.49	28.61	25.71	26.39	26.50	23.55	24.18
Coke Plants	44.28	42.39	42.55	42.56	41.36	41.04	41.66	38.52	38.48	38.69
Electric Generators										
(1999 dollars per short ton)	24.73	22.90	21.73	21.84	21.28	19.41	20.80	19.41	17.65	19.02
(1999 dollars per million Btu)	1.21	1.14	1.08	1.08	1.06	0.93	0.98	0.98	0.85	0.90
Average	25.77	23.78	22.77	22.86	22.13	21.02	22.14	20.15	19.19	20.22
Exports ⁷	37.44	36.39	36.40	36.39	35.66	33.25	34.32	33.09	30.92	32.01

¹Includes anthracite, bituminous coal, lignite, and waste coal delivered to independent power producers. Waste coal deliveries totaled 8.5 million tons in 1995, 8.8 million tons in 1996, 8.1 million tons in 1997, 8.6 million tons in 1998, and are projected to reach 9.6 million tons in 1999, and 12.2 million tons in 2000..

²Production plus net imports and net storage withdrawals.

³Includes consumption by cogenerators.

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

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

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

⁷F.a.s. price at U.S. port of exit.

Btu = British thermal unit.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Hg = Mercury.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 data based on Energy Information Administration (EIA), *Quarterly Coal Report*, DOE/EIA-0121(2000/1Q) (Washington, DC, August 2000), and EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08.D060801A, M2P7B08R_X.D070601A. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08.D060801A, M2P7B08R_X.D070601A.

Table I11. Renewable Energy Generating Capability and Generation
(Gigawatts, Unless Otherwise Noted)

Capacity and Generation	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990-7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990-7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990-7%, Hg	All CO ₂ 1990-7%
Electric Generators¹										
(excluding cogenerators)										
Net Summer Capability										
Conventional Hydropower	78.77	79.26	79.34	79.34	79.38	80.85	80.69	79.38	80.85	80.69
Geothermal ²	2.87	3.43	6.79	8.16	4.93	10.39	13.33	4.95	10.86	15.24
Municipal Solid Waste ³	2.61	2.96	3.24	3.69	3.42	4.42	4.41	3.93	4.94	4.95
Wood and Other Biomass ⁴	1.57	1.75	1.87	5.33	2.12	3.66	19.23	2.45	5.87	56.88
Solar Thermal	0.33	0.35	0.35	0.35	0.40	0.40	0.40	0.48	0.48	0.48
Solar Photovoltaic	0.01	0.08	0.08	0.08	0.21	0.21	0.21	0.54	0.54	0.54
Wind	2.66	6.92	7.05	10.90	7.52	9.04	33.66	7.76	17.92	88.76
Total	88.83	94.75	98.72	107.85	97.98	108.97	151.93	99.49	121.45	247.52
Generation (billion kilowatthours)										
Conventional Hydropower	309.55	301.20	301.47	301.47	301.13	306.09	305.53	300.07	304.94	304.42
Geothermal ²	13.21	18.34	46.08	57.18	30.94	76.02	98.78	31.16	79.93	113.80
Municipal Solid Waste ³	18.12	20.68	22.94	26.44	23.88	31.67	31.66	27.76	35.61	35.70
Wood and Other Biomass ⁴	9.02	14.94	28.15	51.80	21.30	65.04	175.74	19.78	79.41	423.19
Dedicated Plants	7.73	9.16	9.96	33.04	11.36	21.75	125.61	13.82	36.70	377.09
Cofiring	1.29	5.78	18.19	18.76	9.94	43.30	50.13	5.95	42.71	46.10
Solar Thermal	0.89	0.96	0.96	0.96	1.11	1.11	1.11	1.37	1.37	1.37
Solar Photovoltaic	0.03	0.20	0.20	0.20	0.51	0.51	0.51	1.36	1.36	1.36
Wind	4.61	16.30	16.66	26.95	18.16	22.40	92.59	18.83	51.37	248.42
Total	355.43	372.61	416.45	465.01	397.03	502.84	705.91	400.32	553.99	1128.26
Cogenerators⁵										
Net Summer Capability										
Municipal Solid Waste	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Biomass	4.65	5.17	5.19	5.19	6.06	6.06	6.07	7.54	7.55	7.56
Total	5.35	5.87	5.89	5.89	6.76	6.76	6.77	8.24	8.25	8.26
Generation (billion kilowatthours)										
Municipal Solid Waste	4.04	4.04	4.04	4.04	4.04	4.04	4.04	4.04	4.04	4.04
Biomass	27.08	29.92	30.02	30.04	35.01	34.93	34.97	43.52	43.48	43.52
Total	31.12	33.97	34.06	34.08	39.05	38.98	39.02	47.57	47.53	47.57
Other End-Use Generators⁶										
Net Summer Capability										
Conventional Hydropower ⁷	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solar Photovoltaic	0.01	0.10	0.10	0.10	0.35	0.35	0.35	0.35	0.36	0.35
Total	1.00	1.09	1.09	1.09	1.34	1.34	1.34	1.34	1.35	1.34
Generation (billion kilowatthours)										
Conventional Hydropower ⁷	4.57	4.44	4.44	4.44	4.43	4.43	4.43	4.41	4.41	4.41
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solar Photovoltaic	0.02	0.20	0.20	0.20	0.75	0.75	0.75	0.75	0.78	0.76
Total	4.59	4.64	4.64	4.64	5.18	5.18	5.18	5.17	5.19	5.17

¹Includes grid-connected utilities and nonutilities other than cogenerators. These nonutility facilities include small power producers and exempt wholesale generators.

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

³Includes landfill gas.

⁴Includes projections for energy crops after 2010.

⁵Cogenerators produce electricity and other useful thermal energy.

⁶Includes 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. Excludes off-grid photovoltaics and other generators not connected to the distribution or transmission systems.

⁷Represents own-use industrial hydroelectric power.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Hg = Mercury.

Notes: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports. Net summer capability has been estimated for nonutility generators for AEO2001. Net summer capability 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: 1999 electric utility capability: Energy Information Administration (EIA), Form EIA-860A: "Annual Electric Generator Report - Utility." 1999 nonutility and cogenerator capability: EIA, Form EIA-860B: "Annual Electric Generator Report - Nonutility." 1999 generation: EIA, *Annual Energy Review 1999*, DOE/EIA-0384(99) (Washington, DC, July 2000). Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08.D060801A, M2P7B08R_X.D070601A.

Table I12. Renewable Energy Consumption by Sector and Source¹
(Quadrillion Btu per Year)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990-7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990-7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990-7%, Hg	All CO ₂ 1990-7%
Marketed Renewable Energy²										
Residential	0.41	0.42	0.42	0.42	0.42	0.42	0.42	0.44	0.43	0.43
Wood	0.41	0.42	0.42	0.42	0.42	0.42	0.42	0.44	0.43	0.43
Commercial	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Biomass	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Industrial³	2.15	2.42	2.41	2.41	2.64	2.63	2.63	3.08	3.08	3.08
Conventional Hydroelectric	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Municipal Solid Waste	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Biomass	1.97	2.23	2.22	2.22	2.46	2.44	2.44	2.90	2.89	2.89
Transportation	0.12	0.20	0.20	0.20	0.22	0.21	0.22	0.24	0.24	0.24
Ethanol used in E85 ⁴	0.00	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03
Ethanol used in Gasoline Blending	0.12	0.18	0.18	0.18	0.19	0.19	0.20	0.21	0.21	0.20
Electric Generators⁵	3.88	4.19	5.19	5.91	4.73	6.74	9.32	4.78	7.37	13.73
Conventional Hydroelectric	3.19	3.10	3.10	3.10	3.10	3.15	3.14	3.08	3.14	3.13
Geothermal	0.28	0.44	1.28	1.63	0.85	2.23	3.10	0.85	2.37	3.65
Municipal Solid Waste ⁶	0.25	0.28	0.31	0.36	0.32	0.43	0.43	0.38	0.48	0.49
Biomass	0.12	0.18	0.31	0.52	0.26	0.68	1.68	0.25	0.82	3.89
Dedicated Plants	0.10	0.11	0.11	0.33	0.14	0.23	1.20	0.17	0.38	3.47
Cofiring	0.02	0.07	0.20	0.19	0.12	0.46	0.48	0.07	0.44	0.42
Solar Thermal	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.03
Solar Photovoltaic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wind	0.05	0.17	0.17	0.28	0.19	0.23	0.95	0.19	0.53	2.54
Total Marketed Renewable Energy	6.64	7.31	8.30	9.02	8.10	10.09	12.68	8.62	11.20	17.56
Non-Marketed Renewable Energy⁷										
Selected Consumption										
Residential	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.03	0.03
Solar Hot Water Heating	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Geothermal Heat Pumps	0.02	0.02	0.02	0.02	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	0.00	0.00	0.00
Commercial	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03
Solar Thermal	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03
Solar Photovoltaic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ethanol										
From Corn	0.12	0.19	0.18	0.18	0.20	0.19	0.20	0.17	0.17	0.17
From Cellulose	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.07	0.07	0.07
Total	0.12	0.20	0.20	0.20	0.22	0.21	0.22	0.24	0.24	0.24

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.

³Includes all electricity production by industrial and other cogenerators for the grid and for own use.

⁴Excludes motor gasoline component of E85.

⁵Includes renewable energy delivered to the grid from electric utilities and nonutilities. Renewable energy used in generating electricity for own use is included in the individual sectoral electricity energy consumption values.

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.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Hg = Mercury.

Notes: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 ethanol: Energy Information Administration (EIA), *Annual Energy Review 1999*, DOE/EIA-0384(99) (Washington, DC, July 2000). 1999 electric generators: EIA, Form EIA-860A: "Annual Electric Generator Report - Utility," and EIA, Form EIA-860B: "Annual Electric Generator Report - Nonutility." Other 1999: EIA, Office of Integrated Analysis and Forecasting. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08.D060801A, M2P7B08_X.D070601A.

Table I13. Carbon Dioxide Emissions by Sector and Source
(Million Metric Tons Carbon Equivalent per Year)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990-7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990-7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990-7%, Hg	All CO ₂ 1990-7%
Residential										
Petroleum	26.0	26.5	26.5	26.5	24.5	24.6	24.6	23.2	23.7	23.4
Natural Gas	69.5	80.2	80.6	80.6	80.8	79.0	80.5	89.8	89.2	90.9
Coal	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.2	1.3
Electricity	193.4	227.1	210.9	210.7	242.6	150.7	153.1	275.6	165.0	161.7
Total	290.1	335.0	319.3	319.0	349.2	255.6	259.5	389.8	279.1	277.3
Commercial										
Petroleum	13.7	11.8	11.8	11.8	12.0	12.3	12.1	12.1	12.9	12.2
Natural Gas	45.4	57.4	57.8	57.8	60.1	58.6	60.3	63.9	69.3	71.5
Coal	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.9	1.9	1.9
Electricity	181.3	218.4	203.5	203.4	240.4	151.1	153.4	267.1	157.4	153.8
Total	242.1	289.4	274.8	274.7	314.3	223.8	227.6	345.0	241.5	239.4
Industrial¹										
Petroleum	104.2	99.2	98.6	98.5	105.3	108.7	105.3	113.6	115.7	113.4
Natural Gas ²	141.6	148.4	148.0	147.8	159.8	158.4	162.1	180.3	188.5	189.5
Coal	55.9	65.8	65.6	65.7	65.6	63.9	64.2	65.8	65.7	65.9
Electricity	178.8	193.6	179.7	179.6	204.1	128.2	130.2	226.4	125.9	121.3
Total	480.4	507.0	491.8	491.6	534.8	459.3	461.9	586.1	495.8	490.1
Transportation										
Petroleum ³	485.8	556.3	554.3	554.5	607.2	602.3	602.6	704.2	700.1	700.4
Natural Gas ⁴	9.5	12.8	12.5	12.4	14.4	15.4	15.3	18.1	18.6	17.7
Other ⁵	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Electricity	2.9	4.4	4.1	4.1	5.8	3.9	4.0	7.9	5.2	5.0
Total³	498.2	573.6	571.0	571.1	627.5	621.7	621.9	730.2	723.9	723.1
Total Carbon Dioxide Emissions by Delivered Fuel										
Petroleum ³	629.7	693.8	691.2	691.4	749.0	747.9	744.6	853.1	852.4	849.4
Natural Gas	266.0	298.8	299.0	298.6	315.1	311.5	318.2	352.0	365.6	369.5
Coal	58.8	68.8	68.5	68.6	68.8	67.1	67.3	69.0	68.9	69.1
Other ⁵	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Electricity	556.3	643.6	598.1	597.8	692.8	433.9	440.6	777.0	453.5	441.7
Total³	1510.8	1705.0	1657.0	1656.4	1825.7	1560.4	1570.8	2051.2	1740.4	1729.8
Electric Generators⁶										
Petroleum	20.0	9.4	3.9	3.9	5.8	1.8	2.4	5.2	2.1	2.1
Natural Gas	45.8	79.6	71.5	65.8	100.0	155.9	122.5	164.1	197.1	131.6
Coal	490.5	554.6	522.7	528.1	587.0	276.1	315.7	607.7	254.3	308.0
Total	556.3	643.6	598.1	597.8	692.8	433.9	440.6	777.0	453.5	441.7
Total Carbon Dioxide Emissions by Primary Fuel⁷										
Petroleum ³	649.7	703.1	695.1	695.2	754.8	749.7	747.0	858.3	854.5	851.5
Natural Gas	311.8	378.4	370.5	364.4	415.0	467.4	440.7	516.2	562.7	501.1
Coal	549.3	623.3	591.3	596.7	655.8	343.2	383.0	676.7	323.2	377.1
Other ⁵	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total³	1510.8	1705.0	1657.0	1656.4	1825.7	1560.4	1570.8	2051.2	1740.4	1729.8
Carbon Dioxide Emissions (tons carbon equivalent per person)	5.5	5.9	5.8	5.8	6.1	5.2	5.2	6.3	5.4	5.3

¹Includes consumption by cogenerators.

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 1998, international bunker fuels accounted for 25 to 30 million metric tons carbon equivalent of carbon dioxide annually.

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

⁵Includes methanol and liquid hydrogen.

⁶Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy. Includes small power producers and exempt wholesale generators. 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.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Hg = Mercury.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 emissions and emission factors: Energy Information Administration (EIA), *Emissions of Greenhouse Gases in the United States 1999*, DOE/EIA-0573(99), (Washington, DC, October 2000). Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08.D060801A, M2P7B08R_X.D070601A.

Table I14. Emissions, Allowance Costs, and Retrofits: Electric Generators, Excluding Cogenerators

Impacts	1999	Projections								
		2005			2010			2020		
		Reference	NO _x , SO ₂ , CO ₂ 1990-7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990-7%, Hg	All CO ₂ 1990-7%	Reference	NO _x , SO ₂ , CO ₂ 1990-7%, Hg	All CO ₂ 1990-7%
Emissions										
Nitrogen Oxide (million tons)	5.45	4.30	3.05	3.02	4.34	1.26	1.41	4.49	1.25	1.37
Sulfur Dioxide (million tons)	13.71	10.38	8.55	8.55	9.70	3.19	3.60	8.95	2.92	3.17
Mercury (tons)	43.60	45.24	40.82	40.74	45.60	5.00	5.00	45.07	5.00	5.00
Carbon Dioxide (million metric tons carbon equivalent)	14.44	9.48	8.55	8.55	8.95	3.27	3.27	8.95	3.27	3.27
Allowance Prices										
Nitrogen Oxide (1999 dollars per ton)	0	4352	1423	1569	4391	0	0	5037	0	1118
Sulfur Dioxide (1999 dollars per ton)	0	190	192	218	187	0	2	241	1	0
Mercury (million 1999 dollars per ton) . . .	0	0	0	0	0	296	342	0	219	337
Carbon Dioxide (1999 dollars per ton carbon equivalent)	12	3	8	8	0	3	3	0	0	0
Retrofits (gigawatts)										
Scrubber ¹	0.0	6.5	9.7	13.3	7.1	21.2	27.5	14.8	21.2	32.5
Combustion	0.0	39.9	51.8	50.6	42.1	56.5	52.5	46.1	56.9	55.4
SCR Post-combustion	0.0	92.8	60.9	68.7	92.9	103.8	122.5	93.0	103.8	123.1
SNCR Post-combustion	0.0	25.2	21.9	15.6	26.3	72.8	53.3	43.4	72.8	53.3
Coal Production by Sulfur Category (million tons)										
Low Sulfur (< .61 lbs. S/mmBtu)	472	594	590	588	642	304	349	721	307	345
Medium Sulfur (.61-1.67 lbs. S/mmBtu) . .	432	454	402	406	464	243	261	440	216	248
High Sulfur (> 1.67 lbs. S/mmBtu)	199	185	178	181	188	128	139	179	117	138

¹Represents scrubbers added by the model. Planned scrubbers added by electricity generators are not shown here.

NO_x = Nitrogen oxide.

SO₂ = Sulfur dioxide.

CO₂ = Carbon dioxide.

Hg = Mercury.

lbs. S/mmBtu = Pounds sulfur per million British thermal units.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Source: Energy Information Administration, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08.D060801A, M2P7B08R_X.D070601A.

Appendix J

Tables for the Integrated Moderate Targets Case

Table J1. Total Energy Supply and Disposition Summary
(Quadrillion Btu per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	1999	Projections					
		2005		2010		2020	
		Reference	Integrated Moderate Target	Reference	Integrated Moderate Target	Reference	Integrated Moderate Target
Production							
Crude Oil and Lease Condensate	12.45	11.98	12.00	11.27	11.22	11.12	11.27
Natural Gas Plant Liquids	2.62	3.12	3.03	3.37	3.55	4.16	4.17
Dry Natural Gas	19.16	21.95	21.30	24.04	25.31	30.24	30.29
Coal	23.08	25.45	24.42	26.55	18.87	27.16	17.48
Nuclear Power	7.79	7.90	7.90	7.74	7.91	6.54	7.10
Renewable Energy ¹	6.53	7.13	7.78	7.90	9.97	8.42	12.32
Other ²	1.65	0.35	0.58	0.31	0.31	0.33	0.33
Total	73.29	77.88	77.02	81.19	77.14	87.97	82.95
Imports							
Crude Oil ³	18.96	21.42	21.39	22.38	22.45	25.82	25.82
Petroleum Products ⁴	4.14	6.28	5.87	8.65	8.10	10.80	10.46
Natural Gas	3.63	5.13	5.14	5.55	5.77	6.59	6.83
Other Imports ⁵	0.64	1.11	1.02	0.96	0.89	0.96	0.81
Total	27.37	33.93	33.42	37.54	37.21	44.18	43.92
Exports							
Petroleum ⁶	1.98	1.73	1.75	1.69	1.71	1.85	1.81
Natural Gas	0.17	0.33	0.33	0.43	0.43	0.63	0.63
Coal	1.48	1.51	1.51	1.45	1.52	1.41	1.42
Total	3.62	3.57	3.58	3.58	3.66	3.89	3.87
Discrepancy⁷	0.69	0.43	0.51	0.04	-0.02	0.11	0.13
Consumption							
Petroleum Products ⁸	38.02	41.34	40.92	44.44	44.09	50.45	50.25
Natural Gas	22.21	26.44	25.80	29.00	30.47	36.06	36.33
Coal	21.42	24.39	23.32	25.64	17.74	26.42	16.49
Nuclear Power	7.79	7.90	7.90	7.74	7.91	6.54	7.10
Renewable Energy ¹	6.54	7.13	7.78	7.91	9.97	8.43	12.33
Other ⁹	0.35	0.61	0.61	0.38	0.52	0.25	0.38
Total	96.33	107.81	106.35	115.11	110.70	128.16	122.88
Net Imports - Petroleum	21.12	25.96	25.52	29.34	28.84	34.78	34.47
Prices (1999 dollars per unit)							
World Oil Price (dollars per barrel) ¹⁰	17.22	20.83	20.83	21.37	21.37	22.41	22.41
Gas Wellhead Price (dollars per Mcf) ¹¹	2.08	2.96	2.79	2.87	3.09	3.22	3.74
Coal Minemouth Price (dollars per ton)	17.17	15.05	14.86	14.08	14.14	12.87	12.68
Average Electric Price (cents per Kwh)	6.6	6.4	6.9	6.1	8.2	6.2	8.2

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.

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, imports of 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, and net storage withdrawals.

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.

Mcf = Thousand cubic feet.

Kwh = Kilowatt-hour.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 natural gas values: Energy Information Administration (EIA), *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). 1999 petroleum values: EIA, *Petroleum Supply Annual 1999*, DOE/EIA-0340(99/1) (Washington, DC, June 2000). Other 1999 values: EIA, *Annual Energy Review 1999*, DOE/EIA-0384(99) (Washington, DC, July 2000) and EIA, *Quarterly Coal Report*, DOE/EIA-0121(2000/1Q) (Washington, DC, August 2000). Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2PHF08R_X.D070901A.

Table J2. Energy Consumption by Sector and Source
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1999	Projections					
		2005		2010		2020	
		Reference	Integrated Moderate Target	Reference	Integrated Moderate Target	Reference	Integrated Moderate Target
Energy Consumption							
Residential							
Distillate Fuel	0.86	0.87	0.87	0.80	0.81	0.76	0.77
Kerosene	0.10	0.08	0.08	0.07	0.07	0.07	0.07
Liquefied Petroleum Gas	0.46	0.45	0.45	0.42	0.42	0.40	0.41
Petroleum Subtotal	1.42	1.40	1.40	1.30	1.30	1.23	1.25
Natural Gas	4.88	5.57	5.60	5.61	5.60	6.23	6.21
Coal	0.04	0.05	0.05	0.05	0.05	0.05	0.05
Renewable Energy ¹	0.41	0.42	0.42	0.42	0.42	0.44	0.43
Electricity	3.91	4.57	4.47	4.95	4.61	5.79	5.37
Delivered Energy	10.66	12.01	11.95	12.34	11.98	13.74	13.30
Electricity Related Losses	8.44	9.67	9.29	10.10	8.89	10.85	9.51
Total	19.10	21.68	21.24	22.44	20.87	24.59	22.81
Commercial							
Distillate Fuel	0.36	0.37	0.37	0.38	0.38	0.37	0.38
Residual Fuel	0.10	0.09	0.09	0.09	0.09	0.09	0.09
Kerosene	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Liquefied Petroleum Gas	0.08	0.09	0.09	0.09	0.09	0.10	0.10
Motor Gasoline ²	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Petroleum Subtotal	0.60	0.60	0.60	0.62	0.62	0.62	0.63
Natural Gas	3.14	3.99	4.01	4.17	4.19	4.44	4.82
Coal	0.07	0.07	0.07	0.07	0.07	0.07	0.08
Renewable Energy ³	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Electricity	3.66	4.39	4.32	4.91	4.60	5.62	5.11
Delivered Energy	7.55	9.13	9.08	9.85	9.56	10.83	10.71
Electricity Related Losses	7.91	9.30	8.97	10.01	8.87	10.51	9.05
Total	15.46	18.44	18.05	19.86	18.43	21.34	19.77
Industrial⁴							
Distillate Fuel	1.13	1.22	1.21	1.31	1.30	1.49	1.49
Liquefied Petroleum Gas	2.32	2.45	2.42	2.53	2.52	2.85	2.88
Petrochemical Feedstock	1.29	1.36	1.36	1.53	1.52	1.70	1.69
Residual Fuel	0.22	0.16	0.16	0.25	0.26	0.28	0.29
Motor Gasoline ²	0.21	0.23	0.23	0.25	0.24	0.28	0.28
Other Petroleum ⁵	4.29	4.44	4.41	4.71	4.72	5.02	5.06
Petroleum Subtotal	9.45	9.86	9.79	10.57	10.56	11.63	11.69
Natural Gas ⁶	9.80	10.46	10.44	11.27	11.44	12.73	13.31
Metallurgical Coal	0.75	0.67	0.67	0.61	0.61	0.50	0.50
Steam Coal	1.73	1.81	1.80	1.83	1.75	1.87	1.85
Net Coal Coke Imports	0.06	0.12	0.11	0.16	0.15	0.22	0.22
Coal Subtotal	2.54	2.59	2.59	2.59	2.51	2.60	2.57
Renewable Energy ⁷	2.15	2.42	2.41	2.64	2.63	3.08	3.08
Electricity	3.61	3.90	3.82	4.17	3.88	4.76	4.08
Delivered Energy	27.56	29.23	29.04	31.24	31.03	34.80	34.73
Electricity Related Losses	7.80	8.25	7.94	8.50	7.47	8.91	7.23
Total	35.36	37.48	36.98	39.74	38.49	43.71	41.96

Table J2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1999	Projections					
		2005		2010		2020	
		Reference	Integrated Moderate Target	Reference	Integrated Moderate Target	Reference	Integrated Moderate Target
Transportation							
Distillate Fuel	5.13	6.28	6.23	7.00	6.90	8.22	8.13
Jet Fuel ⁸	3.46	3.90	3.88	4.51	4.49	5.97	5.96
Motor Gasoline ²	15.92	17.67	17.63	18.97	18.90	21.26	21.19
Residual Fuel	0.74	0.85	0.85	0.85	0.85	0.87	0.86
Liquefied Petroleum Gas	0.02	0.03	0.03	0.04	0.04	0.06	0.06
Other Petroleum ⁹	0.26	0.30	0.29	0.31	0.31	0.35	0.35
Petroleum Subtotal	25.54	29.03	28.91	31.68	31.49	36.73	36.56
Pipeline Fuel Natural Gas	0.66	0.83	0.81	0.91	0.95	1.10	1.11
Compressed Natural Gas	0.02	0.06	0.05	0.09	0.09	0.16	0.15
Renewable Energy (E85) ¹⁰	0.01	0.02	0.02	0.03	0.03	0.04	0.04
Methanol (M85) ¹¹	0.00	0.00	0.00	0.01	0.01	0.00	0.00
Liquid Hydrogen	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.06	0.09	0.09	0.12	0.12	0.17	0.17
Delivered Energy	26.28	30.03	29.89	32.83	32.69	38.20	38.04
Electricity Related Losses	0.13	0.19	0.18	0.24	0.23	0.31	0.29
Total	26.41	30.22	30.08	33.07	32.91	38.51	38.33
Delivered Energy Consumption for All Sectors							
Distillate Fuel	7.48	8.74	8.68	9.49	9.38	10.85	10.77
Kerosene	0.15	0.13	0.13	0.12	0.13	0.12	0.12
Jet Fuel ⁸	3.46	3.90	3.88	4.51	4.49	5.97	5.96
Liquefied Petroleum Gas	2.88	3.02	3.00	3.08	3.08	3.41	3.44
Motor Gasoline ²	16.17	17.93	17.88	19.24	19.17	21.57	21.50
Petrochemical Feedstock	1.29	1.36	1.36	1.53	1.52	1.70	1.69
Residual Fuel	1.05	1.10	1.10	1.20	1.20	1.24	1.24
Other Petroleum ¹²	4.53	4.71	4.68	4.99	5.00	5.35	5.39
Petroleum Subtotal	37.01	40.90	40.71	44.16	43.97	50.21	50.13
Natural Gas ⁵	18.50	20.91	20.92	22.05	22.27	24.66	25.59
Metallurgical Coal	0.75	0.67	0.67	0.61	0.61	0.50	0.50
Steam Coal	1.84	1.92	1.92	1.95	1.88	2.00	1.97
Net Coal Coke Imports	0.06	0.12	0.11	0.16	0.15	0.22	0.22
Coal Subtotal	2.65	2.71	2.70	2.71	2.63	2.72	2.69
Renewable Energy ¹³	2.65	2.94	2.93	3.18	3.17	3.65	3.64
Methanol (M85) ¹¹	0.00	0.00	0.00	0.01	0.01	0.00	0.00
Liquid Hydrogen	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	11.24	12.95	12.70	14.15	13.21	16.34	14.73
Delivered Energy	72.05	80.41	79.96	86.27	85.25	97.57	96.79
Electricity Related Losses	24.29	27.40	26.38	28.84	25.45	30.58	26.09
Total	96.33	107.81	106.35	115.11	110.70	128.16	122.88
Electric Generators¹⁴							
Distillate Fuel	0.06	0.06	0.03	0.06	0.02	0.06	0.02
Residual Fuel	0.96	0.38	0.18	0.22	0.10	0.19	0.11
Petroleum Subtotal	1.02	0.44	0.21	0.28	0.12	0.25	0.13
Natural Gas	3.71	5.53	4.88	6.94	8.20	11.40	10.73
Steam Coal	18.77	21.68	20.62	22.93	15.11	23.70	13.80
Nuclear Power	7.79	7.90	7.90	7.74	7.91	6.54	7.10
Renewable Energy ¹⁵	3.88	4.19	4.85	4.73	6.80	4.78	8.69
Electricity Imports ¹⁶	0.35	0.61	0.61	0.37	0.51	0.24	0.37
Total	35.52	40.35	39.08	42.99	38.66	46.92	40.82

Table J2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1999	Projections					
		2005		2010		2020	
		Reference	Integrated Moderate Target	Reference	Integrated Moderate Target	Reference	Integrated Moderate Target
Total Energy Consumption							
Distillate Fuel	7.54	8.80	8.71	9.54	9.40	10.91	10.79
Kerosene	0.15	0.13	0.13	0.12	0.13	0.12	0.12
Jet Fuel ⁸	3.46	3.90	3.88	4.51	4.49	5.97	5.96
Liquefied Petroleum Gas	2.88	3.02	3.00	3.08	3.08	3.41	3.44
Motor Gasoline ²	16.17	17.93	17.88	19.24	19.17	21.57	21.50
Petrochemical Feedstock	1.29	1.36	1.36	1.53	1.52	1.70	1.69
Residual Fuel	2.01	1.48	1.29	1.42	1.30	1.42	1.35
Other Petroleum ¹²	4.53	4.71	4.68	4.99	5.00	5.35	5.39
Petroleum Subtotal	38.02	41.34	40.92	44.44	44.09	50.45	50.25
Natural Gas	22.21	26.44	25.80	29.00	30.47	36.06	36.33
Metallurgical Coal	0.75	0.67	0.67	0.61	0.61	0.50	0.50
Steam Coal	20.61	23.60	22.54	24.88	16.99	25.70	15.77
Net Coal Coke Imports	0.06	0.12	0.11	0.16	0.15	0.22	0.22
Coal Subtotal	21.42	24.39	23.32	25.64	17.74	26.42	16.49
Nuclear Power	7.79	7.90	7.90	7.74	7.91	6.54	7.10
Renewable Energy ¹⁷	6.54	7.13	7.78	7.91	9.97	8.43	12.33
Methanol (M85) ¹¹	0.00	0.00	0.00	0.01	0.01	0.00	0.00
Liquid Hydrogen	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity Imports ¹⁶	0.35	0.61	0.61	0.37	0.51	0.24	0.37
Total	96.33	107.81	106.35	115.11	110.71	128.16	122.88
Energy Use and Related Statistics							
Delivered Energy Use	72.05	80.41	79.96	86.27	85.25	97.57	96.79
Total Energy Use	96.33	107.81	106.35	115.11	110.71	128.16	122.88
Population (millions)	273.13	288.02	288.02	300.17	300.17	325.24	325.24
Gross Domestic Product (billion 1996 dollars)	8876	10960	10899	12667	12621	16515	16523
Total Carbon Dioxide Emissions (million metric tons carbon equivalent)	1510.8	1705.0	1660.9	1825.7	1637.4	2051.2	1795.8

¹Includes wood used for residential heating.

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

³Includes commercial sector electricity cogeneration by using wood and wood waste, landfill gas, municipal solid waste, and other biomass.

⁴Fuel consumption includes consumption for cogeneration, which produces electricity and other useful thermal energy.

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

⁶Includes lease and plant fuel and consumption by cogenerators, excludes consumption by nonutility generators.

⁷Includes consumption of energy from hydroelectric, wood and wood waste, municipal solid waste, and other biomass; includes cogeneration, both for sale to the grid and for own use.

⁸Includes only kerosene type.

⁹Includes aviation gas and lubricants.

¹⁰E85 is 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable).

¹¹M85 is 85 percent methanol and 15 percent motor gasoline.

¹²Includes unfinished oils, natural gasoline, motor gasoline blending compounds, 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 all electric power generators for grid-connected power except cogenerators, which produce electricity and other useful thermal energy. 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 cogeneration. Excludes net electricity imports.

¹⁶In 1998 approximately 70 percent of the U.S. electricity imports were provided by renewable sources (hydroelectricity); EIA does not project future proportions for the fuel source of imported electricity.

¹⁷Includes 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 1999 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: 1999 electric utility fuel consumption: Energy Information Administration, (EIA) *Electric Power Annual 1998, Volume 1*, DOE/EIA-0348(98)/1 (Washington, DC, April 1999). 1999 nonutility consumption estimates: EIA, Form EIA-860B: "Annual Electric Generator Report - Nonutility." Other 1999 values: EIA, *Short-Term Energy Outlook, September 2000*, <http://www.eia.doe.gov/pub/forecasting/steo/oldsteos/sep00.pdf>. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2PHF08R_X.D070901A.

Table J3. Energy Prices by Sector and Source
(1999 Dollars per Million Btu, Unless Otherwise Noted)

Sector and Source	1999	Projections					
		2005		2010		2020	
		Reference	Integrated Moderate Target	Reference	Integrated Moderate Target	Reference	Integrated Moderate Target
Residential	13.10	13.27	13.73	13.46	15.62	13.77	15.99
Primary Energy ¹	6.71	7.49	7.37	7.18	7.35	7.08	7.47
Petroleum Products ²	7.55	9.20	9.15	9.37	9.35	9.47	9.50
Distillate Fuel	6.27	7.45	7.37	7.57	7.56	7.78	7.74
Liquefied Petroleum Gas	10.36	12.60	12.60	12.86	12.80	12.75	12.89
Natural Gas	6.52	7.11	6.97	6.72	6.94	6.65	7.11
Electricity	23.47	22.16	23.76	22.30	28.09	22.44	27.88
Commercial	13.18	12.70	13.52	12.25	15.42	12.69	15.45
Primary Energy ¹	5.22	5.57	5.44	5.68	5.86	5.79	6.16
Petroleum Products ²	4.99	6.13	6.08	6.29	6.26	6.40	6.37
Distillate Fuel	4.37	5.24	5.16	5.36	5.33	5.53	5.48
Residual Fuel	2.63	3.65	3.62	3.71	3.69	3.86	3.84
Natural Gas ³	5.34	5.55	5.41	5.66	5.87	5.78	6.21
Electricity	21.45	20.26	22.29	18.76	25.55	19.00	25.48
Industrial⁴	5.27	5.76	5.88	5.67	6.42	5.90	6.61
Primary Energy	3.91	4.47	4.38	4.49	4.55	4.68	4.87
Petroleum Products ²	5.54	6.00	5.95	6.13	6.05	6.16	6.17
Distillate Fuel	4.65	5.40	5.33	5.56	5.51	5.73	5.69
Liquefied Petroleum Gas	8.50	7.74	7.72	7.88	7.79	7.76	7.95
Residual Fuel	2.78	3.38	3.35	3.44	3.42	3.59	3.58
Natural Gas ⁵	2.79	3.64	3.49	3.50	3.71	3.85	4.29
Metallurgical Coal	1.65	1.58	1.59	1.54	1.55	1.44	1.44
Steam Coal	1.43	1.35	1.35	1.31	1.25	1.21	1.13
Electricity	13.00	12.80	14.24	12.08	17.39	12.22	17.42
Transportation	8.30	9.39	9.35	9.69	9.74	9.20	9.26
Primary Energy	8.29	9.38	9.34	9.68	9.71	9.18	9.23
Petroleum Products ²	8.28	9.37	9.33	9.67	9.71	9.18	9.22
Distillate Fuel ⁶	8.22	8.98	8.90	8.95	8.94	8.83	8.82
Jet Fuel ⁷	4.70	5.29	5.23	5.49	5.48	5.72	5.71
Motor Gasoline ⁸	9.45	10.81	10.78	11.31	11.37	10.60	10.68
Residual Fuel	2.46	3.11	3.10	3.18	3.17	3.33	3.33
Liquid Petroleum Gas ⁹	12.87	14.07	14.06	14.07	14.01	13.70	13.83
Natural Gas ¹⁰	7.02	7.28	7.14	7.21	7.43	7.41	7.82
Ethanol (E85) ¹¹	14.42	19.21	19.19	19.16	19.25	19.36	19.47
Methanol (M85) ¹²	10.38	13.13	12.98	13.83	13.84	14.35	14.38
Electricity	15.59	14.52	15.33	13.62	17.02	13.22	16.12
Average End-Use Energy	8.49	9.17	9.36	9.22	10.16	9.21	10.08
Primary Energy	6.31	7.19	7.11	7.35	7.41	7.23	7.36
Electricity	19.41	18.65	20.34	17.99	23.96	18.19	24.01
Electric Generators¹³							
Fossil Fuel Average	1.48	1.64	1.53	1.59	1.94	1.88	2.39
Petroleum Products	2.49	3.61	3.74	3.90	4.14	4.17	4.35
Distillate Fuel	4.04	4.72	4.74	4.87	4.89	5.06	5.10
Residual Fuel	2.40	3.42	3.57	3.65	3.98	3.89	4.20
Natural Gas	2.58	3.44	3.34	3.26	3.67	3.71	4.31
Steam Coal	1.21	1.14	1.08	1.06	0.98	0.98	0.88

Table J3. Energy Prices by Sector and Source (Continued)
(1999 Dollars per Million Btu, Unless Otherwise Noted)

Sector and Source	1999	Projections					
		2005		2010		2020	
		Reference	Integrated Moderate Target	Reference	Integrated Moderate Target	Reference	Integrated Moderate Target
Average Price to All Users¹⁴							
Petroleum Products ²	7.44	8.53	8.51	8.81	8.83	8.49	8.54
Distillate Fuel	7.25	8.14	8.08	8.20	8.20	8.20	8.19
Jet Fuel	4.70	5.29	5.23	5.49	5.48	5.72	5.71
Liquefied Petroleum Gas	8.84	8.63	8.62	8.74	8.67	8.54	8.72
Motor Gasoline ⁸	9.45	10.80	10.78	11.31	11.37	10.60	10.68
Residual Fuel	2.47	3.25	3.23	3.33	3.32	3.49	3.48
Natural Gas	4.05	4.72	4.62	4.47	4.68	4.60	5.12
Coal	1.23	1.16	1.10	1.08	1.01	1.00	0.91
Ethanol (E85) ¹¹	14.42	19.21	19.19	19.16	19.25	19.36	19.47
Methanol (M85) ¹²	10.38	13.13	12.98	13.83	13.84	14.35	14.38
Electricity	19.41	18.65	20.34	17.99	23.96	18.19	24.01
Non-Renewable Energy Expenditures by Sector (billion 1999 dollars)							
Residential	134.28	153.83	158.22	160.41	180.54	183.27	205.77
Commercial	98.42	114.97	121.71	119.69	146.13	136.41	164.24
Industrial	111.66	127.05	129.45	133.28	151.05	154.57	174.14
Transportation	212.64	273.84	271.64	308.81	308.51	340.45	341.18
Total Non-Renewable Expenditures	556.99	669.69	681.03	722.19	786.24	814.69	885.33
Transportation Renewable Expenditures	0.14	0.42	0.42	0.64	0.63	0.85	0.85
Total Expenditures	557.13	670.11	681.45	722.82	786.87	815.54	886.18

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.

³Excludes independent power producers.

⁴Includes cogenerators.

⁵Excludes uses for lease and plant fuel.

⁶Low sulfur diesel fuel. Price includes Federal and State taxes while excluding county and local taxes.

⁷Kerosene-type jet fuel. Price includes Federal and State taxes while excluding county and local taxes.

⁸Sales weighted-average price for all grades. Includes Federal and State taxes and excludes county and local taxes.

⁹Includes Federal and State taxes while excluding county and local taxes.

¹⁰Compressed natural gas used as a vehicle fuel. Price includes estimated motor vehicle fuel taxes.

¹¹E85 is 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable).

¹²M85 is 85 percent methanol and 15 percent motor gasoline.

¹³Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy. Includes small power producers and exempt wholesale generators.

¹⁴Weighted 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 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 prices for gasoline, distillate, and jet fuel are based on prices in various issues of Energy Information Administration (EIA), *Petroleum Marketing Monthly*, DOE/EIA-0380 (99/03-2000/04) (Washington, DC, 1999-2000). 1999 prices for all other petroleum products are derived from the EIA, *State Energy Price and Expenditure Report 1997*, DOE/EIA-0376(97) (Washington, DC, July 2000). 1999 industrial gas delivered prices are based on EIA, *Manufacturing Energy Consumption Survey 1994*. 1999 residential and commercial natural gas delivered prices: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). 1999 coal prices based on EIA, *Quarterly Coal Report*, DOE/EIA-0121(2000/1Q) (Washington, DC, August 2000), and EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2PHF08R_X.D070901A. 1999 electricity prices for commercial, industrial, and transportation: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2PHF08R_X.D070901A. **Projections:** EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2PHF08R_X.D070901A.

Table J4. Electricity Supply, Disposition, Prices, and Emissions
(Billion Kilowatthours, Unless Otherwise Noted)

Supply, Disposition, and Prices	1999	Projections					
		2005		2010		2020	
		Reference	Integrated Moderate Target	Reference	Integrated Moderate Target	Reference	Integrated Moderate Target
Generation by Fuel Type							
Electric Generators¹							
Coal	1831	2106	2015	2245	1495	2315	1371
Petroleum	94	43	22	28	13	25	14
Natural Gas ²	359	583	583	825	1130	1495	1550
Nuclear Power	730	740	740	725	741	613	665
Pumped Storage	-1	-1	-1	-1	-1	-1	-1
Renewable Sources ³	355	373	411	397	533	400	708
Total	3369	3844	3770	4219	3911	4847	4306
Non-Utility Generation for Own Use	16	17	22	17	20	17	20
Distributed Generation	0	0	0	1	1	5	2
Cogenerators⁴							
Coal	47	53	52	52	43	52	42
Petroleum	9	10	10	10	10	10	10
Natural Gas	207	237	244	261	326	318	589
Other Gaseous Fuels ⁵	4	6	6	7	7	8	9
Renewable Sources ³	31	34	34	39	39	48	48
Other ⁶	5	5	5	5	5	6	6
Total	303	345	351	373	431	441	703
Other End-Use Generators⁷							
.....	5	5	5	5	5	5	5
Sales to Utilities	151	172	171	180	182	208	264
Generation for Own Use	156	178	185	198	253	238	444
Net Imports⁸	33	57	57	35	49	23	35
Electricity Sales by Sector							
Residential	1145	1339	1311	1452	1351	1698	1574
Commercial	1073	1288	1265	1439	1349	1646	1498
Industrial	1058	1142	1119	1222	1136	1395	1197
Transportation	17	26	26	35	34	49	48
Total	3294	3794	3721	4147	3870	4788	4318
End-Use Prices (1999 cents per kwh)⁹							
Residential	8.0	7.6	8.1	7.6	9.6	7.7	9.5
Commercial	7.3	6.9	7.6	6.4	8.7	6.5	8.7
Industrial	4.4	4.4	4.9	4.1	5.9	4.2	5.9
Transportation	5.3	5.0	5.2	4.6	5.8	4.5	5.5
All Sectors Average	6.6	6.4	6.9	6.1	8.2	6.2	8.2
Prices by Service Category⁹							
(1999 cents per kwh)							
Generation	4.1	3.8	4.4	3.5	5.4	3.6	5.5
Transmission	0.6	0.6	0.6	0.7	0.7	0.7	0.7
Distribution	2.0	2.0	2.0	2.0	2.1	2.0	2.0
Emissions (million short tons)							
Sulfur Dioxide	13.71	10.38	9.95	9.70	7.30	8.95	6.55
Nitrogen Oxide	5.45	4.30	3.26	4.34	2.45	4.49	2.27

¹Includes grid-connected generation at all utilities and nonutilities except for cogenerators. Includes small power producers and exempt wholesale generators.

²Includes electricity generation by fuel cells.

³Includes conventional hydroelectric, geothermal, wood, wood waste, municipal solid waste, landfill gas, other biomass, solar, and wind power.

⁴Cogenerators produce electricity and other useful thermal energy. Includes sales to utilities and generation for own use.

⁵Other gaseous fuels include refinery and still gas.

⁶Other includes hydrogen, sulfur, batteries, chemicals, fish oil, and spent sulfite liquor.

⁷Includes 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.

⁸In 1998 approximately 70 percent of the U.S. electricity imports were provided by renewable sources (hydroelectricity); EIA does not project future proportions for the fuel source of imported electricity.

⁹Prices represent average revenue per kilowatthour.

Kwh = Kilowatthour.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Source: Energy Information Administration, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2PHF08R_X.D070901A.

**Table J5. Electricity Generating Capability
(Gigawatts)**

Net Summer Capability ¹	1999	Projections					
		2005		2010		2020	
		Reference	Integrated Moderate Target	Reference	Integrated Moderate Target	Reference	Integrated Moderate Target
Electric Generators²							
Capability							
Coal Steam	305.1	303.9	302.8	318.6	270.3	318.5	257.4
Other Fossil Steam ³	137.4	127.8	122.7	119.2	104.8	116.9	101.2
Combined Cycle	21.0	53.2	69.5	107.8	150.1	202.2	214.3
Combustion Turbine/Diesel	74.3	123.1	125.3	147.2	128.1	199.5	143.0
Nuclear Power	97.4	97.5	97.5	94.8	96.9	76.3	84.6
Pumped Storage	19.3	19.5	19.5	19.5	19.5	19.5	19.5
Fuel Cells	0.0	0.0	0.0	0.1	0.1	0.3	0.3
Renewable Sources ⁴	88.8	94.8	96.6	98.0	112.2	99.5	146.5
Distributed Generation ⁵	0.0	0.7	0.8	2.5	1.3	11.5	4.1
Total	743.4	820.4	834.6	907.8	883.3	1044.2	970.8
Cumulative Planned Additions⁶							
Coal Steam	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Fossil Steam ³	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Combined Cycle	0.0	12.7	12.7	12.7	12.7	12.7	12.7
Combustion Turbine/Diesel	0.0	14.0	14.0	14.0	14.0	14.0	14.0
Nuclear Power	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
Fuel Cells	0.0	0.0	0.0	0.1	0.1	0.3	0.3
Renewable Sources ⁴	0.0	5.1	5.1	6.7	6.7	8.1	8.1
Distributed Generation ⁵	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.0	32.0	32.0	33.7	33.7	35.3	35.3
Cumulative Unplanned Additions⁶							
Coal Steam	0.0	1.1	0.0	18.9	0.0	20.5	0.0
Other Fossil Steam ³	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Combined Cycle	0.0	19.4	35.7	74.2	116.4	168.6	180.9
Combustion Turbine/Diesel	0.0	38.9	41.9	64.7	46.7	117.2	61.9
Nuclear Power	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
Fuel Cells	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Renewable Sources ⁴	0.0	0.4	2.2	2.0	16.2	2.0	49.1
Distributed Generation ⁵	0.0	0.7	0.8	2.5	1.3	11.5	4.1
Total	0.0	60.6	80.7	162.2	180.6	319.8	295.9
Cumulative Total Additions	0.0	92.6	112.7	195.9	214.3	355.1	331.2
Cumulative Retirements⁷							
Coal Steam	0.0	2.3	2.3	5.4	34.8	7.2	47.7
Other Fossil Steam ³	0.0	9.9	14.9	18.4	32.8	20.7	36.5
Combined Cycle	0.0	0.0	0.0	0.2	0.1	0.2	0.5
Combustion Turbine/Diesel	0.0	4.4	5.1	6.0	7.1	6.3	7.4
Nuclear Power	0.0	0.0	0.0	2.6	0.6	21.2	12.9
Pumped Storage	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
Renewable Sources	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Total	0.0	16.7	22.5	32.8	75.6	55.6	105.1
Cogenerators⁸							
Capability							
Coal	8.4	8.9	8.9	8.6	7.2	8.6	6.8
Petroleum	2.7	2.9	2.9	2.9	2.9	2.9	3.0
Natural Gas	34.6	39.9	41.0	43.3	52.3	51.4	89.0
Other Gaseous Fuels	0.2	0.8	0.8	0.9	0.9	1.1	1.1
Renewable Sources ⁴	5.4	5.9	5.9	6.8	6.8	8.2	8.3
Other	1.1	0.9	0.9	0.9	0.9	0.9	0.9
Total	52.4	59.2	60.3	63.3	70.9	73.2	109.1
Cumulative Additions⁶	0.0	6.8	7.9	10.9	18.5	20.7	56.7

Table J5. Electricity Generating Capability (Continued)
(Gigawatts)

Net Summer Capability ¹	1999	Projections					
		2005		2010		2020	
		Reference	Integrated Moderate Target	Reference	Integrated Moderate Target	Reference	Integrated Moderate Target
Other End-Use Generators⁹							
Renewable Sources	1.0	1.1	1.1	1.3	1.3	1.3	1.3
Cumulative Additions	0.0	0.1	0.1	0.3	0.3	0.3	0.3

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

²Includes grid-connected utilities and nonutilities except for cogenerators. Includes small power producers and exempt wholesale generators.

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

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

⁵Primarily peak-load capacity fueled by natural gas.

⁶Cumulative additions after December 31, 1999.

⁷Cumulative total retirements after December 31, 1999.

⁸Nameplate capacity is reported for nonutilities on Form EIA-860B: "Annual Electric Generator Report - Nonutility." Nameplate capacity is designated by the manufacturer. The nameplate capacity has been converted to the net summer capability based on historic relationships.

⁹Includes 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. Excludes off-grid photovoltaics and other generators not connected to the distribution or transmission systems.

Notes: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports. Net summer capability has been estimated for nonutility generators to be consistent with capability for electric utility generators.

Source: Energy Information Administration, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2PHF08R_X.D070901A.

Table J6. Electricity Trade
(Billion Kilowatthours, Unless Otherwise Noted)

Electricity Trade	1999	Projections					
		2005		2010		2020	
		Reference	Integrated Moderate Target	Reference	Integrated Moderate Target	Reference	Integrated Moderate Target
Interregional Electricity Trade							
Gross Domestic Firm Power Trade	182.2	125.3	125.3	102.9	102.9	0.0	0.0
Gross Domestic Economy Trade	152.0	202.3	147.4	155.5	63.3	147.9	85.2
Gross Domestic Trade	334.2	327.6	272.7	258.4	166.2	147.9	85.2
Gross Domestic Firm Power Sales							
(million 1999 dollars)	8588.1	5905.8	5905.8	4851.2	4851.2	0.0	0.0
Gross Domestic Economy Sales							
(million 1999 dollars)	4413.9	6468.6	5612.2	4510.4	3164.4	4605.1	4493.0
Gross Domestic Sales							
(million 1999 dollars)	13002.0	12374.4	11518.0	9361.6	8015.7	4605.1	4493.0
International Electricity Trade							
Firm Power Imports From Canada and Mexico ¹	27.0	10.7	10.7	5.8	19.1	0.0	12.1
Economy Imports From Canada and Mexico ¹	21.9	63.5	63.5	45.9	45.9	30.6	30.6
Gross Imports From Canada and Mexico¹	48.9	74.1	74.1	51.7	65.0	30.6	42.7
Gross Exports To Canada and Mexico							
Firm Power Exports To Canada and Mexico	9.2	9.7	9.7	8.7	8.7	0.0	0.0
Economy Exports To Canada and Mexico	6.3	7.0	7.0	7.7	7.7	7.7	7.7
Gross Exports To Canada and Mexico	15.5	16.7	16.7	16.4	16.4	7.7	7.7

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

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 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, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2PHF08R_X.D070901A.

Table J7. Natural Gas Supply and Disposition
(Trillion Cubic Feet per Year)

Supply, Disposition, and Prices	1999	Projections					
		2005		2010		2020	
		Reference	Integrated Moderate Target	Reference	Integrated Moderate Target	Reference	Integrated Moderate Target
Production							
Dry Gas Production ¹	18.67	21.40	20.76	23.43	24.67	29.47	29.52
Supplemental Natural Gas ²	0.10	0.11	0.11	0.06	0.06	0.06	0.06
Net Imports	3.38	4.69	4.70	5.00	5.21	5.82	6.05
Canada	3.29	4.48	4.49	4.72	4.92	5.43	5.65
Mexico	-0.01	-0.18	-0.18	-0.25	-0.25	-0.40	-0.40
Liquefied Natural Gas	0.10	0.39	0.39	0.53	0.54	0.79	0.80
Total Supply	22.15	26.20	25.58	28.49	29.94	35.35	35.63
Consumption by Sector							
Residential	4.75	5.42	5.45	5.46	5.45	6.07	6.04
Commercial	3.06	3.88	3.91	4.06	4.08	4.32	4.69
Industrial ³	8.31	8.81	8.82	9.48	9.59	10.53	11.09
Electric Generators ⁴	3.64	5.43	4.79	6.81	8.05	11.19	10.53
Lease and Plant Fuel ⁵	1.23	1.38	1.34	1.50	1.56	1.87	1.87
Pipeline Fuel	0.64	0.81	0.79	0.88	0.92	1.07	1.08
Transportation ⁶	0.02	0.05	0.05	0.09	0.09	0.15	0.15
Total	21.65	25.79	25.16	28.29	29.73	35.20	35.46
Discrepancy ⁷	0.50	0.42	0.41	0.20	0.21	0.14	0.17

¹Marketed production (wet) minus extraction losses.

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

³Includes consumption by cogenerators.

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

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

⁶Compressed natural gas used as vehicle fuel.

⁷Balancing item. Natural gas lost as a result of converting flow data measured at varying temperatures and pressures to a standard temperature and pressure and the merger of different data reporting systems which vary in scope, format, definition, and respondent type. In addition, 1999 values include net storage injections.

Btu = British thermal unit.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 supplemental natural gas: Energy Information Administration (EIA), *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). 1999 transportation sector consumption: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2PHF08R_X.D070901A. Other 1999 consumption: EIA, *Short-Term Energy Outlook, September 2000*, <http://www.eia.doe.gov/pub/forecasting/steo/oldsteos/sep00.pdf> with adjustments to end-use sector consumption levels for consumption of natural gas by electric wholesale generators based on EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2PHF08R_X.D070901A.

Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2PHF08R_X.D070901A.

Table J8. Natural Gas Prices, Margins, and Revenue
(1999 Dollars per Thousand Cubic Feet, Unless Otherwise Noted)

Prices, Margins, and Revenue	1999	Projections					
		2005		2010		2020	
		Reference	Integrated Moderate Target	Reference	Integrated Moderate Target	Reference	Integrated Moderate Target
Source Price							
Average Lower 48 Wellhead Price ¹	2.08	2.96	2.79	2.87	3.09	3.22	3.74
Average Import Price	2.29	2.95	2.92	2.64	2.75	2.72	2.88
Average²	2.11	2.96	2.82	2.82	3.03	3.13	3.58
Delivered Prices							
Residential	6.69	7.31	7.16	6.91	7.12	6.83	7.31
Commercial	5.49	5.70	5.56	5.82	6.03	5.93	6.38
Industrial ³	2.87	3.74	3.59	3.59	3.81	3.95	4.41
Electric Generators ⁴	2.63	3.50	3.40	3.32	3.74	3.78	4.39
Transportation ⁵	7.21	7.48	7.33	7.40	7.63	7.61	8.03
Average⁶	4.15	4.84	4.74	4.59	4.80	4.72	5.25
Transmission & Distribution Margins⁷							
Residential	4.58	4.35	4.34	4.08	4.09	3.70	3.72
Commercial	3.37	2.74	2.74	2.99	3.00	2.81	2.80
Industrial ³	0.76	0.78	0.77	0.77	0.78	0.82	0.83
Electric Generators ⁴	0.52	0.54	0.59	0.49	0.71	0.65	0.81
Transportation ⁵	5.10	4.51	4.51	4.58	4.60	4.48	4.45
Average⁶	2.04	1.88	1.92	1.76	1.77	1.59	1.67
Transmission & Distribution Revenue (billion 1999 dollars)							
Residential	21.77	23.57	23.68	22.30	22.31	22.48	22.51
Commercial	10.32	10.63	10.71	12.16	12.24	12.12	13.11
Industrial ³	6.28	6.86	6.81	7.26	7.46	8.65	9.20
Electric Generators ⁴	1.88	2.94	2.81	3.36	5.72	7.24	8.50
Transportation ⁵	0.08	0.24	0.24	0.41	0.41	0.68	0.66
Total	40.32	44.25	44.24	45.49	48.14	51.18	53.97

¹Represents lower 48 onshore and offshore supplies.

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

³Includes consumption by cogenerators.

⁴Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy. 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 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 industrial delivered prices based on Energy Information Administration (EIA), *Manufacturing Energy Consumption Survey 1994*. 1999 residential and commercial delivered prices, average lower 48 wellhead price, and average import price: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). Other 1999 values, and projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2PHF08R_X.D070901A.

Table J9. Oil and Gas Supply

Production and Supply	1999	Projections					
		2005		2010		2020	
		Reference	Integrated Moderate Target	Reference	Integrated Moderate Target	Reference	Integrated Moderate Target
Crude Oil							
Lower 48 Average Wellhead Price¹ (1999 dollars per barrel)	16.49	21.43	21.43	20.73	20.83	21.47	21.46
Production (million barrels per day)²							
U.S. Total	5.88	5.66	5.67	5.32	5.30	5.25	5.32
Lower 48 Onshore	3.27	2.81	2.81	2.52	2.51	2.75	2.81
Conventional	2.59	2.18	2.17	1.81	1.81	1.98	2.04
Enhanced Oil Recovery	0.68	0.63	0.63	0.70	0.70	0.76	0.78
Lower 48 Offshore	1.56	2.06	2.07	2.16	2.15	1.87	1.87
Alaska	1.05	0.79	0.79	0.65	0.65	0.64	0.64
Lower 48 End of Year Reserves (billion barrels)²	18.33	15.75	15.76	14.55	14.46	14.11	14.28
Natural Gas							
Lower 48 Average Wellhead Price¹ (1999 dollars per thousand cubic feet)	2.08	2.96	2.79	2.87	3.09	3.22	3.74
Production (trillion cubic feet)³							
U.S. Total	18.67	21.40	20.76	23.43	24.67	29.47	29.52
Lower 48 Onshore	12.83	14.46	13.93	16.71	17.39	21.31	21.41
Associated-Dissolved ⁴	1.80	1.51	1.51	1.32	1.32	1.39	1.42
Non-Associated	11.03	12.95	12.42	15.39	16.07	19.91	19.99
Conventional	6.64	7.67	7.36	7.93	8.46	11.14	11.34
Unconventional	4.39	5.27	5.05	7.45	7.61	8.78	8.65
Lower 48 Offshore	5.43	6.47	6.37	6.22	6.78	7.59	7.55
Associated-Dissolved ⁴	0.93	1.06	1.06	1.09	1.09	1.04	1.03
Non-Associated	4.50	5.41	5.30	5.13	5.69	6.56	6.52
Alaska	0.42	0.47	0.46	0.50	0.50	0.57	0.56
Lower 48 End of Year Reserves³ (trillion cubic feet)	157.41	167.88	170.18	185.55	178.72	200.71	185.71
Supplemental Gas Supplies (trillion cubic feet)⁵	0.10	0.11	0.11	0.06	0.06	0.06	0.06
Total Lower 48 Wells (thousands)	17.93	28.87	27.85	29.86	30.52	39.36	36.17

¹Represents lower 48 onshore and offshore supplies.

²Includes lease condensate.

³Market production (wet) minus extraction losses.

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

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

Btu = British thermal unit.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 lower 48 onshore, lower 48 offshore, and Alaska crude oil production: Energy Information Administration (EIA), *Petroleum Supply Annual 1999*, DOE/EIA-0340(99/1) (Washington, DC, June 2000). 1999 natural gas lower 48 average wellhead price, Alaska and total natural gas production, and supplemental gas supplies: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). Other 1999 values: EIA, Office of Integrated Analysis and Forecasting. **Projections:** EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2PHF08R_X.D070901A.

Table J10. Coal Supply, Disposition, and Prices
(Million Short Tons per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	1999	Projections					
		2005		2010		2020	
		Reference	Integrated Moderate Target	Reference	Integrated Moderate Target	Reference	Integrated Moderate Target
Production¹							
Appalachia	433	426	415	421	314	396	272
Interior	185	182	174	180	139	161	123
West	486	624	588	694	441	783	441
East of the Mississippi	559	561	544	557	430	524	379
West of the Mississippi	544	672	633	738	465	817	457
Total	1103	1233	1177	1295	895	1340	836
Net Imports							
Imports	9	16	12	17	9	20	9
Exports	58	60	60	58	60	56	57
Total	-49	-44	-48	-40	-51	-36	-48
Total Supply²	1054	1189	1129	1254	844	1304	788
Consumption by Sector							
Residential and Commercial	5	5	5	5	5	5	5
Industrial ³	79	82	82	83	80	86	85
Coke Plants	28	25	25	23	23	19	19
Electric Generators ⁴	921	1077	1020	1145	738	1196	680
Total	1032	1189	1132	1256	846	1306	789
Discrepancy and Stock Change⁵	21	-1	-2	-2	-2	-2	-1
Average Minemouth Price							
(1999 dollars per short ton)	17.17	15.05	14.86	14.08	14.14	12.87	12.68
(1999 dollars per million Btu)	0.82	0.73	0.72	0.69	0.67	0.64	0.61
Delivered Prices (1999 dollars per short ton)⁶							
Industrial	31.39	29.67	29.53	28.61	27.20	26.50	24.56
Coke Plants	44.28	42.39	42.66	41.36	41.61	38.52	38.64
Electric Generators							
(1999 dollars per short ton)	24.73	22.90	21.79	21.28	19.98	19.41	17.87
(1999 dollars per million Btu)	1.21	1.14	1.08	1.06	0.98	0.98	0.88
Average	25.77	23.78	22.82	22.13	21.25	20.15	19.09
Exports ⁷	37.44	36.39	36.49	35.66	34.84	33.09	32.25

¹Includes anthracite, bituminous coal, lignite, and waste coal delivered to independent power producers. Waste coal deliveries totaled 8.5 million tons in 1995, 8.8 million tons in 1996, 8.1 million tons in 1997, 8.6 million tons in 1998, and are projected to reach 9.6 million tons in 1999, and 12.2 million tons in 2000.

²Production plus net imports and net storage withdrawals.

³Includes consumption by cogenerators.

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

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

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

⁷F.a.s. price at U.S. port of exit.

Btu = British thermal unit.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 data based on Energy Information Administration (EIA), *Quarterly Coal Report*, DOE/EIA-0121(2000/1Q) (Washington, DC, August 2000), and EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2PHF08R.D060801A. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2PHF08R_X.D070901A.

Table J11. Renewable Energy Generating Capability and Generation
(Gigawatts, Unless Otherwise Noted)

Capacity and Generation	1999	Projections					
		2005		2010		2020	
		Reference	Integrated Moderate Target	Reference	Integrated Moderate Target	Reference	Integrated Moderate Target
Electric Generators¹							
(excluding cogenerators)							
Net Summer Capability							
Conventional Hydropower	78.77	79.26	79.34	79.38	80.69	79.38	80.69
Geothermal ²	2.87	3.43	4.87	4.93	8.88	4.95	10.11
Municipal Solid Waste ³	2.61	2.96	3.24	3.42	4.40	3.93	4.94
Wood and Other Biomass ⁴	1.57	1.75	1.75	2.12	3.05	2.45	22.08
Solar Thermal	0.33	0.35	0.35	0.40	0.40	0.48	0.48
Solar Photovoltaic	0.01	0.08	0.08	0.21	0.21	0.54	0.54
Wind	2.66	6.92	6.92	7.52	14.59	7.76	27.69
Total	88.83	94.75	96.56	97.98	112.22	99.49	146.52
Generation (billion kilowatthours)							
Conventional Hydropower	309.55	301.20	301.46	301.13	305.53	300.07	304.40
Geothermal ²	13.21	18.34	30.27	30.94	63.30	31.16	73.40
Municipal Solid Waste ³	18.12	20.68	22.93	23.88	31.57	27.76	35.62
Wood and Other Biomass ⁴	9.02	14.94	39.23	21.30	91.79	19.78	213.35
Dedicated Plants	7.73	9.16	9.18	11.36	17.61	13.82	144.89
Cofiring	1.29	5.78	30.06	9.94	74.18	5.95	68.45
Solar Thermal	0.89	0.96	0.96	1.11	1.11	1.37	1.37
Solar Photovoltaic	0.03	0.20	0.20	0.51	0.51	1.36	1.36
Wind	4.61	16.30	16.30	18.16	39.00	18.83	78.32
Total	355.43	372.61	411.35	397.03	532.81	400.32	707.82
Cogenerators⁵							
Net Summer Capability							
Municipal Solid Waste	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Biomass	4.65	5.17	5.18	6.06	6.08	7.54	7.56
Total	5.35	5.87	5.88	6.76	6.78	8.24	8.26
Generation (billion kilowatthours)							
Municipal Solid Waste	4.04	4.04	4.04	4.04	4.04	4.04	4.04
Biomass	27.08	29.92	30.00	35.01	35.02	43.52	43.57
Total	31.12	33.97	34.05	39.05	39.06	47.57	47.61
Other End-Use Generators⁶							
Net Summer Capability							
Conventional Hydropower ⁷	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solar Photovoltaic	0.01	0.10	0.10	0.35	0.35	0.35	0.35
Total	1.00	1.09	1.09	1.34	1.34	1.34	1.34
Generation (billion kilowatthours)							
Conventional Hydropower ⁷	4.57	4.44	4.44	4.43	4.43	4.41	4.41
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solar Photovoltaic	0.02	0.20	0.20	0.75	0.75	0.75	0.76
Total	4.59	4.64	4.64	5.18	5.18	5.17	5.17

¹Includes grid-connected utilities and nonutilities other than cogenerators. These nonutility facilities include small power producers and exempt wholesale generators.

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

³Includes landfill gas.

⁴Includes projections for energy crops after 2010.

⁵Cogenerators produce electricity and other useful thermal energy.

⁶Includes 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. Excludes off-grid photovoltaics and other generators not connected to the distribution or transmission systems.

⁷Represents own-use industrial hydroelectric power.

Notes: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports. Net summer capability has been estimated for nonutility generators for AEO2001. Net summer capability 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: 1999 electric utility capability: Energy Information Administration (EIA), Form EIA-860A: "Annual Electric Generator Report - Utility." 1999 nonutility and cogenerator capability: EIA, Form EIA-860B: "Annual Electric Generator Report - Nonutility." 1999 generation: EIA, *Annual Energy Review 1999*, DOE/EIA-0384(99) (Washington, DC, July 2000). Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2PHF08R_X.D070901A.

Table J12. Renewable Energy Consumption by Sector and Source¹
(Quadrillion Btu per Year)

Sector and Source	1999	Projections					
		2005		2010		2020	
		Reference	Integrated Moderate Target	Reference	Integrated Moderate Target	Reference	Integrated Moderate Target
Marketed Renewable Energy²							
Residential	0.41	0.42	0.42	0.42	0.42	0.44	0.43
Wood	0.41	0.42	0.42	0.42	0.42	0.44	0.43
Commercial	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Biomass	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Industrial³	2.15	2.42	2.41	2.64	2.63	3.08	3.08
Conventional Hydroelectric	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Municipal Solid Waste	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Biomass	1.97	2.23	2.22	2.46	2.44	2.90	2.89
Transportation	0.12	0.20	0.20	0.22	0.22	0.24	0.24
Ethanol used in E85 ⁴	0.00	0.02	0.02	0.03	0.03	0.03	0.03
Ethanol used in Gasoline Blending	0.12	0.18	0.18	0.19	0.20	0.21	0.21
Electric Generators⁵	3.88	4.19	4.85	4.73	6.80	4.78	8.69
Conventional Hydroelectric	3.19	3.10	3.10	3.10	3.14	3.08	3.13
Geothermal	0.28	0.44	0.83	0.85	1.85	0.85	2.20
Municipal Solid Waste ⁶	0.25	0.28	0.31	0.32	0.43	0.38	0.48
Biomass	0.12	0.18	0.43	0.26	0.96	0.25	2.04
Dedicated Plants	0.10	0.11	0.10	0.14	0.18	0.17	1.39
Cofiring	0.02	0.07	0.33	0.12	0.77	0.07	0.66
Solar Thermal	0.01	0.01	0.01	0.02	0.02	0.03	0.03
Solar Photovoltaic	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wind	0.05	0.17	0.17	0.19	0.40	0.19	0.81
Total Marketed Renewable Energy	6.64	7.31	7.96	8.10	10.16	8.62	12.53
Non-Marketed Renewable Energy⁷							
Selected Consumption							
Residential	0.02	0.03	0.03	0.03	0.03	0.04	0.03
Solar Hot Water Heating	0.01	0.01	0.01	0.00	0.00	0.00	0.00
Geothermal Heat Pumps	0.02	0.02	0.02	0.03	0.03	0.03	0.03
Solar Photovoltaic	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Commercial	0.02	0.02	0.02	0.03	0.03	0.03	0.03
Solar Thermal	0.02	0.02	0.02	0.02	0.02	0.03	0.03
Solar Photovoltaic	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ethanol							
From Corn	0.12	0.19	0.18	0.20	0.20	0.17	0.17
From Cellulose	0.00	0.01	0.01	0.02	0.02	0.07	0.07
Total	0.12	0.20	0.20	0.22	0.22	0.24	0.24

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.

³Includes all electricity production by industrial and other cogenerators for the grid and for own use.

⁴Excludes motor gasoline component of E85.

⁵Includes renewable energy delivered to the grid from electric utilities and nonutilities. Renewable energy used in generating electricity for own use is included in the individual sectoral electricity energy consumption values.

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.

Notes: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 ethanol: Energy Information Administration (EIA), *Annual Energy Review 1999*, DOE/EIA-0384(99) (Washington, DC, July 2000). 1999 electric generators: EIA, Form EIA-860A: "Annual Electric Generator Report - Utility," and EIA, Form EIA-860B: "Annual Electric Generator Report - Nonutility." Other 1999: EIA, Office of Integrated Analysis and Forecasting. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2PHF08R_X.D070901A.

Table J13. Carbon Dioxide Emissions by Sector and Source
(Million Metric Tons Carbon Equivalent per Year)

Sector and Source	1999	Projections					
		2005		2010		2020	
		Reference	Integrated Moderate Target	Reference	Integrated Moderate Target	Reference	Integrated Moderate Target
Residential							
Petroleum	26.0	26.5	26.5	24.5	24.6	23.2	23.5
Natural Gas	69.5	80.2	80.6	80.8	80.6	89.8	89.4
Coal	1.1	1.2	1.2	1.3	1.3	1.3	1.2
Electricity	193.4	227.1	212.2	242.6	176.9	275.6	185.9
Total	290.1	335.0	320.6	349.2	283.4	389.8	300.1
Commercial							
Petroleum	13.7	11.8	11.8	12.0	12.0	12.1	12.3
Natural Gas	45.4	57.4	57.8	60.1	60.3	63.9	69.3
Coal	1.7	1.7	1.7	1.8	1.8	1.9	1.9
Electricity	181.3	218.4	204.8	240.4	176.6	267.1	177.0
Total	242.1	289.4	276.1	314.3	250.8	345.0	260.6
Industrial¹							
Petroleum	104.2	99.2	98.5	105.3	105.5	113.6	114.7
Natural Gas ²	141.6	148.4	148.1	159.8	162.4	180.3	189.0
Coal	55.9	65.8	65.6	65.6	63.7	65.8	65.1
Electricity	178.8	193.6	181.2	204.1	148.7	226.4	141.4
Total	480.4	507.0	493.3	534.8	480.3	586.1	510.2
Transportation							
Petroleum ³	485.8	556.3	554.1	607.2	603.5	704.2	700.9
Natural Gas ⁴	9.5	12.8	12.5	14.4	14.9	18.1	18.2
Other ⁵	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Electricity	2.9	4.4	4.2	5.8	4.5	7.9	5.7
Total³	498.2	573.6	570.8	627.5	623.0	730.2	724.9
Total Carbon Dioxide Emissions by Delivered Fuel							
Petroleum ³	629.7	693.8	690.9	749.0	745.6	853.1	851.4
Natural Gas	266.0	298.8	299.0	315.1	318.2	352.0	365.9
Coal	58.8	68.8	68.5	68.8	66.8	69.0	68.3
Other ⁵	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Electricity	556.3	643.6	602.4	692.8	506.7	777.0	510.1
Total³	1510.8	1705.0	1660.9	1825.7	1637.4	2051.2	1795.8
Electric Generators⁶							
Petroleum	20.0	9.4	4.5	5.8	2.6	5.2	2.6
Natural Gas	45.8	79.6	70.3	100.0	118.1	164.1	154.5
Coal	490.5	554.6	527.6	587.0	386.1	607.7	352.9
Total	556.3	643.6	602.4	692.8	506.7	777.0	510.1
Total Carbon Dioxide Emissions by Primary Fuel⁷							
Petroleum ³	649.7	703.1	695.4	754.8	748.1	858.3	854.1
Natural Gas	311.8	378.4	369.3	415.0	436.3	516.2	520.4
Coal	549.3	623.3	596.2	655.8	452.9	676.7	421.2
Other ⁵	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Total³	1510.8	1705.0	1660.9	1825.7	1637.4	2051.2	1795.8
Carbon Dioxide Emissions (tons carbon equivalent per person)	5.5	5.9	5.8	6.1	5.5	6.3	5.5

¹Includes consumption by cogenerators.

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 1998, international bunker fuels accounted for 25 to 30 million metric tons carbon equivalent of carbon dioxide annually.

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

⁵Includes methanol and liquid hydrogen.

⁶Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy. Includes small power producers and exempt wholesale generators. 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 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 emissions and emission factors: Energy Information Administration (EIA), *Emissions of Greenhouse Gases in the United States 1999*, DOE/EIA-0573(99), (Washington, DC, October 2000). Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2PHF08R_X.D070901A.

Table J14. Emissions, Allowance Costs, and Retrofits: Electric Generators, Excluding Cogenerators

Impacts	1999	Projections					
		2005		2010		2020	
		Reference	Integrated Moderate Target	Reference	Integrated Moderate Target	Reference	Integrated Moderate Target
Emissions							
Nitrogen Oxide (million tons)	5.45	4.30	3.26	4.34	2.45	4.49	2.27
Sulfur Dioxide (million tons)	13.71	10.38	9.95	9.70	7.30	8.95	6.55
Mercury (tons)	43.60	45.24	41.95	45.60	20.00	45.07	20.00
Carbon Dioxide (million metric tons carbon equivalent) . .	556.31	643.58	602.45	692.78	506.70	776.99	510.12
Allowance Prices							
Nitrogen Oxide (1999 dollars per ton) . . .	0	4352	139	4391	0	5037	0
Sulfur Dioxide (1999 dollars per ton) . . .	0	190	153	187	43	241	30
Mercury (million 1999 dollars per ton) . . .	0	0	0	0	111	0	90
Carbon Dioxide (1999 dollars per ton carbon equivalent)	0	0	44	0	111	0	119
Retrofits (gigawatts)							
Scrubber ¹	0.0	6.5	3.7	7.1	4.3	14.8	4.3
Combustion	0.0	39.9	38.6	42.1	41.6	46.1	44.4
SCR Post-combustion	0.0	92.8	86.1	92.9	86.1	93.0	86.4
SNCR Post-combustion	0.0	25.2	26.3	26.3	26.5	43.4	26.6
Coal Production by Sulfur Category (million tons)							
Low Sulfur (< .61 lbs. S/mmBtu)	472	594	586	642	448	721	432
Medium Sulfur (.61-1.67 lbs. S/mmBtu) . .	432	454	413	464	312	440	274
High Sulfur (> 1.67 lbs. S/mmBtu)	199	185	178	188	136	179	130

¹Represents scrubbers added by the model. Planned scrubbers added by electricity generators are not shown here.
lbs. S/mmBtu = Pounds sulfur per million British thermal units.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Source: Energy Information Administration, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2PHF08R_X.D070901A.

Appendix K

Tables for Integrated Cost of Service and Integrated High Gas Price Cases

Table K1. Total Energy Supply and Disposition Summary
(Quadrillion Btu per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price
Production										
Crude Oil and Lease Condensate . . .	12.45	11.98	12.00	11.81	11.27	11.23	10.77	11.12	11.57	10.70
Natural Gas Plant Liquids	2.62	3.12	3.07	3.03	3.37	3.73	3.72	4.16	4.30	3.81
Dry Natural Gas	19.16	21.95	21.61	21.36	24.04	26.63	26.56	30.24	31.24	27.63
Coal	23.08	25.45	24.09	24.29	26.55	13.89	14.75	27.16	12.41	14.30
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.95	7.95	6.54	7.41	7.51
Renewable Energy ¹	6.53	7.13	8.26	8.12	7.90	10.16	10.08	8.42	12.06	12.31
Other ²	1.65	0.35	0.54	0.58	0.31	0.30	0.30	0.33	0.33	0.33
Total	73.29	77.88	77.48	77.11	81.19	73.88	74.13	87.97	79.32	76.60
Imports										
Crude Oil ³	18.96	21.42	21.41	21.45	22.38	22.47	22.89	25.82	25.68	26.74
Petroleum Products ⁴	4.14	6.28	5.85	5.98	8.65	8.02	8.13	10.80	10.63	13.18
Natural Gas	3.63	5.13	5.17	5.13	5.55	7.11	6.14	6.59	8.61	7.19
Other Imports ⁵	0.64	1.11	1.02	1.02	0.96	0.89	0.89	0.96	0.81	0.81
Total	27.37	33.93	33.45	33.58	37.54	38.49	38.04	44.18	45.73	47.91
Exports										
Petroleum ⁶	1.98	1.73	1.75	1.75	1.69	1.67	1.64	1.85	1.86	2.10
Natural Gas	0.17	0.33	0.33	0.33	0.43	0.12	0.43	0.63	0.12	0.63
Coal	1.48	1.51	1.51	1.51	1.45	1.43	1.44	1.41	1.58	1.51
Total	3.62	3.57	3.58	3.59	3.58	3.21	3.51	3.89	3.56	4.25
Discrepancy⁷	0.69	0.43	0.53	0.56	0.04	0.11	0.14	0.11	0.21	0.36
Consumption										
Petroleum Products ⁸	38.02	41.34	40.94	40.90	44.44	44.20	44.27	50.45	50.63	52.46
Natural Gas	22.21	26.44	26.14	25.85	29.00	33.42	32.08	36.06	39.55	34.02
Coal	21.42	24.39	22.96	23.14	25.64	12.79	13.62	26.42	11.24	13.21
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.95	7.95	6.54	7.41	7.51
Renewable Energy ¹	6.54	7.13	8.26	8.13	7.91	10.17	10.09	8.43	12.07	12.32
Other ⁹	0.35	0.61	0.61	0.61	0.38	0.52	0.52	0.25	0.38	0.38
Total	96.33	107.81	106.82	106.54	115.11	109.05	108.52	128.16	121.27	119.90
Net Imports - Petroleum	21.12	25.96	25.51	25.68	29.34	28.83	29.38	34.78	34.45	37.82
Prices (1999 dollars per unit)										
World Oil Price (dollars per barrel) ¹⁰ . .	17.22	20.83	20.83	20.83	21.37	21.37	21.37	22.41	22.41	22.41
Gas Wellhead Price (dollars per Mcf) ¹¹	2.08	2.96	2.84	2.81	2.87	3.96	4.08	3.22	4.15	5.05
Coal Minemouth Price (dollars per ton)	17.17	15.05	14.77	14.97	14.08	14.39	14.67	12.87	13.37	13.95
Average Electric Price (cents per Kwh)	6.6	6.4	6.5	6.7	6.1	7.7	8.6	6.2	7.9	9.3

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.

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, imports of 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, and net storage withdrawals.

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.

Mcf = Thousand cubic feet.

Kwh = Kilowatthour.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 natural gas values: Energy Information Administration (EIA), *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). 1999 petroleum values: EIA, *Petroleum Supply Annual 1999*, DOE/EIA-0340(99/1) (Washington, DC, June 2000). Other 1999 values: EIA, *Annual Energy Review 1999*, DOE/EIA-0384(99) (Washington, DC, July 2000) and EIA, *Quarterly Coal Report*, DOE/EIA-0121(2000/1Q) (Washington, DC, August 2000). Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08C.D060901A, M2P7B08L.D060901A.

Table K2. Energy Consumption by Sector and Source
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price
Energy Consumption										
Residential										
Distillate Fuel	0.86	0.87	0.87	0.87	0.80	0.81	0.81	0.76	0.77	0.77
Kerosene	0.10	0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.07	0.07
Liquefied Petroleum Gas	0.46	0.45	0.45	0.45	0.42	0.42	0.42	0.40	0.41	0.40
Petroleum Subtotal	1.42	1.40	1.40	1.40	1.30	1.30	1.30	1.23	1.25	1.24
Natural Gas	4.88	5.57	5.59	5.60	5.61	5.42	5.42	6.23	6.02	5.90
Coal	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Renewable Energy ¹	0.41	0.42	0.42	0.42	0.42	0.42	0.42	0.44	0.42	0.42
Electricity	3.91	4.57	4.53	4.50	4.95	4.70	4.54	5.79	5.47	5.18
Delivered Energy	10.66	12.01	12.00	11.97	12.34	11.89	11.74	13.74	13.22	12.79
Electricity Related Losses	8.44	9.67	9.41	9.35	10.10	8.38	8.27	10.85	8.97	8.92
Total	19.10	21.68	21.41	21.32	22.44	20.27	20.01	24.59	22.19	21.71
Commercial										
Distillate Fuel	0.36	0.37	0.37	0.37	0.38	0.39	0.39	0.37	0.45	0.47
Residual Fuel	0.10	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Kerosene	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Liquefied Petroleum Gas	0.08	0.09	0.09	0.09	0.09	0.09	0.09	0.10	0.10	0.10
Motor Gasoline ²	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Petroleum Subtotal	0.60	0.60	0.61	0.60	0.62	0.64	0.63	0.62	0.70	0.72
Natural Gas	3.14	3.99	4.00	4.01	4.17	3.99	4.01	4.44	4.45	4.54
Coal	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.08
Renewable Energy ³	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Electricity	3.66	4.39	4.38	4.34	4.91	4.69	4.56	5.62	5.23	4.92
Delivered Energy	7.55	9.13	9.13	9.10	9.85	9.47	9.35	10.83	10.54	10.34
Electricity Related Losses	7.91	9.30	9.09	9.02	10.01	8.37	8.29	10.51	8.58	8.48
Total	15.46	18.44	18.22	18.13	19.86	17.85	17.64	21.34	19.12	18.81
Industrial⁴										
Distillate Fuel	1.13	1.22	1.21	1.21	1.31	1.30	1.30	1.49	1.49	1.51
Liquefied Petroleum Gas	2.32	2.45	2.43	2.43	2.53	2.58	2.59	2.85	3.01	3.21
Petrochemical Feedstock	1.29	1.36	1.36	1.36	1.53	1.52	1.52	1.70	1.69	1.69
Residual Fuel	0.22	0.16	0.16	0.16	0.25	0.37	0.37	0.28	0.39	0.42
Motor Gasoline ²	0.21	0.23	0.23	0.23	0.25	0.24	0.24	0.28	0.28	0.28
Other Petroleum ⁵	4.29	4.44	4.42	4.42	4.71	4.71	4.73	5.02	5.09	5.27
Petroleum Subtotal	9.45	9.86	9.81	9.79	10.57	10.73	10.76	11.63	11.95	12.39
Natural Gas ⁶	9.80	10.46	10.43	10.43	11.27	11.07	11.11	12.73	12.65	12.15
Metallurgical Coal	0.75	0.67	0.67	0.67	0.61	0.61	0.61	0.50	0.50	0.50
Steam Coal	1.73	1.81	1.80	1.80	1.83	1.74	1.79	1.87	1.83	1.90
Net Coal Coke Imports	0.06	0.12	0.11	0.11	0.16	0.15	0.15	0.22	0.22	0.21
Coal Subtotal	2.54	2.59	2.58	2.59	2.59	2.50	2.54	2.60	2.55	2.62
Renewable Energy ⁷	2.15	2.42	2.41	2.41	2.64	2.63	2.63	3.08	3.08	3.08
Electricity	3.61	3.90	3.85	3.83	4.17	3.99	3.88	4.76	4.32	4.02
Delivered Energy	27.56	29.23	29.08	29.05	31.24	30.92	30.93	34.80	34.55	34.25
Electricity Related Losses	7.80	8.25	8.00	7.96	8.50	7.12	7.07	8.91	7.08	6.93
Total	35.36	37.48	37.07	37.01	39.74	38.04	37.99	43.71	41.64	41.18

Table K2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price
Transportation										
Distillate Fuel	5.13	6.28	6.24	6.23	7.00	6.85	6.86	8.22	8.09	8.09
Jet Fuel ⁸	3.46	3.90	3.88	3.88	4.51	4.48	4.48	5.97	5.96	5.96
Motor Gasoline ²	15.92	17.67	17.64	17.64	18.97	18.90	18.89	21.26	21.21	21.19
Residual Fuel	0.74	0.85	0.85	0.85	0.85	0.85	0.85	0.87	0.86	0.86
Liquefied Petroleum Gas	0.02	0.03	0.03	0.03	0.04	0.04	0.04	0.06	0.06	0.05
Other Petroleum ⁹	0.26	0.30	0.29	0.29	0.31	0.31	0.30	0.35	0.35	0.35
Petroleum Subtotal	25.54	29.03	28.94	28.92	31.68	31.44	31.42	36.73	36.54	36.50
Pipeline Fuel Natural Gas	0.66	0.83	0.82	0.81	0.91	1.01	1.00	1.10	1.15	1.06
Compressed Natural Gas	0.02	0.06	0.05	0.05	0.09	0.09	0.09	0.16	0.15	0.14
Renewable Energy (E85) ¹⁰	0.01	0.02	0.02	0.02	0.03	0.03	0.03	0.04	0.04	0.04
Methanol (M85) ¹¹	0.00	0.00	0.00	0.00	0.01	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	0.06	0.09	0.09	0.09	0.12	0.12	0.12	0.17	0.17	0.17
Delivered Energy	26.28	30.03	29.93	29.90	32.83	32.69	32.66	38.20	38.05	37.92
Electricity Related Losses	0.13	0.19	0.18	0.18	0.24	0.21	0.21	0.31	0.27	0.28
Total	26.41	30.22	30.11	30.09	33.07	32.90	32.88	38.51	38.32	38.20
Delivered Energy Consumption for All Sectors										
Distillate Fuel	7.48	8.74	8.69	8.68	9.49	9.36	9.36	10.85	10.80	10.84
Kerosene	0.15	0.13	0.13	0.13	0.12	0.13	0.13	0.12	0.12	0.12
Jet Fuel ⁸	3.46	3.90	3.88	3.88	4.51	4.48	4.48	5.97	5.96	5.96
Liquefied Petroleum Gas	2.88	3.02	3.00	3.00	3.08	3.14	3.15	3.41	3.57	3.76
Motor Gasoline ²	16.17	17.93	17.90	17.89	19.24	19.17	19.16	21.57	21.52	21.50
Petrochemical Feedstock	1.29	1.36	1.36	1.36	1.53	1.52	1.52	1.70	1.69	1.69
Residual Fuel	1.05	1.10	1.10	1.10	1.20	1.31	1.32	1.24	1.35	1.37
Other Petroleum ¹²	4.53	4.71	4.69	4.69	4.99	4.99	5.01	5.35	5.42	5.60
Petroleum Subtotal	37.01	40.90	40.75	40.72	44.16	44.11	44.12	50.21	50.45	50.85
Natural Gas ⁶	18.50	20.91	20.90	20.91	22.05	21.57	21.63	24.66	24.42	23.79
Metallurgical Coal	0.75	0.67	0.67	0.67	0.61	0.61	0.61	0.50	0.50	0.50
Steam Coal	1.84	1.92	1.92	1.92	1.95	1.86	1.91	2.00	1.96	2.02
Net Coal Coke Imports	0.06	0.12	0.11	0.11	0.16	0.15	0.15	0.22	0.22	0.21
Coal Subtotal	2.65	2.71	2.70	2.70	2.71	2.62	2.67	2.72	2.67	2.74
Renewable Energy ¹³	2.65	2.94	2.93	2.93	3.18	3.17	3.17	3.65	3.63	3.62
Methanol (M85) ¹¹	0.00	0.00	0.00	0.00	0.01	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	11.24	12.95	12.85	12.75	14.15	13.50	13.10	16.34	15.19	14.29
Delivered Energy	72.05	80.41	80.14	80.02	86.27	84.97	84.68	97.57	96.37	95.29
Electricity Related Losses	24.29	27.40	26.68	26.52	28.84	24.08	23.84	30.58	24.90	24.61
Total	96.33	107.81	106.82	106.54	115.11	109.05	108.52	128.16	121.27	119.90
Electric Generators¹⁴										
Distillate Fuel	0.06	0.06	0.03	0.03	0.06	0.03	0.09	0.06	0.10	1.51
Residual Fuel	0.96	0.38	0.16	0.15	0.22	0.07	0.07	0.19	0.08	0.09
Petroleum Subtotal	1.02	0.44	0.19	0.18	0.28	0.10	0.15	0.25	0.18	1.61
Natural Gas	3.71	5.53	5.25	4.95	6.94	11.85	10.45	11.40	15.13	10.23
Steam Coal	18.77	21.68	20.26	20.44	22.93	10.17	10.95	23.70	8.56	10.47
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.95	7.95	6.54	7.41	7.51
Renewable Energy ¹⁵	3.88	4.19	5.33	5.19	4.73	7.00	6.93	4.78	8.44	8.70
Electricity Imports ¹⁶	0.35	0.61	0.61	0.61	0.37	0.51	0.51	0.24	0.37	0.37
Total	35.52	40.35	39.53	39.27	42.99	37.58	36.94	46.92	40.09	38.90

Table K2. Energy Consumption by Sector and Source (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price
Total Energy Consumption										
Distillate Fuel	7.54	8.80	8.72	8.71	9.54	9.39	9.44	10.91	10.90	12.36
Kerosene	0.15	0.13	0.13	0.13	0.12	0.13	0.13	0.12	0.12	0.12
Jet Fuel ⁸	3.46	3.90	3.88	3.88	4.51	4.48	4.48	5.97	5.96	5.96
Liquefied Petroleum Gas	2.88	3.02	3.00	3.00	3.08	3.14	3.15	3.41	3.57	3.76
Motor Gasoline ²	16.17	17.93	17.90	17.89	19.24	19.17	19.16	21.57	21.52	21.50
Petrochemical Feedstock	1.29	1.36	1.36	1.36	1.53	1.52	1.52	1.70	1.69	1.69
Residual Fuel	2.01	1.48	1.26	1.24	1.42	1.38	1.38	1.42	1.43	1.47
Other Petroleum ¹²	4.53	4.71	4.69	4.69	4.99	4.99	5.01	5.35	5.42	5.60
Petroleum Subtotal	38.02	41.34	40.94	40.90	44.44	44.20	44.27	50.45	50.63	52.46
Natural Gas	22.21	26.44	26.14	25.85	29.00	33.42	32.08	36.06	39.55	34.02
Metallurgical Coal	0.75	0.67	0.67	0.67	0.61	0.61	0.61	0.50	0.50	0.50
Steam Coal	20.61	23.60	22.17	22.36	24.88	12.04	12.86	25.70	10.52	12.50
Net Coal Coke Imports	0.06	0.12	0.11	0.11	0.16	0.15	0.15	0.22	0.22	0.21
Coal Subtotal	21.42	24.39	22.96	23.14	25.64	12.79	13.62	26.42	11.24	13.21
Nuclear Power	7.79	7.90	7.90	7.90	7.74	7.95	7.95	6.54	7.41	7.51
Renewable Energy ¹⁷	6.54	7.13	8.26	8.13	7.91	10.17	10.09	8.43	12.07	12.32
Methanol (M85) ¹¹	0.00	0.00	0.00	0.00	0.01	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 Imports ¹⁶	0.35	0.61	0.61	0.61	0.37	0.51	0.51	0.24	0.37	0.37
Total	96.33	107.81	106.82	106.54	115.11	109.05	108.52	128.16	121.27	119.90
Energy Use and Related Statistics										
Delivered Energy Use	72.05	80.41	80.14	80.02	86.27	84.97	84.68	97.57	96.37	95.29
Total Energy Use	96.33	107.81	106.82	106.54	115.11	109.05	108.52	128.16	121.27	119.90
Population (millions)	273.13	288.02	288.02	288.02	300.17	300.17	300.17	325.24	325.24	325.24
Gross Domestic Product (billion 1996 dollars)	8876	10960	10911	10904	12667	12614	12604	16515	16523	16523
Total Carbon Dioxide Emissions (million metric tons carbon equivalent)	1510.8	1705.0	1656.4	1656.1	1825.7	1555.1	1558.0	2051.2	1714.0	1720.0

¹Includes wood used for residential heating.

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

³Includes commercial sector electricity cogenerated by using wood and wood waste, landfill gas, municipal solid waste, and other biomass.

⁴Fuel consumption includes consumption for cogeneration, which produces electricity and other useful thermal energy.

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

⁶Includes lease and plant fuel and consumption by cogenerators, excludes consumption by nonutility generators.

⁷Includes consumption of energy from hydroelectric, wood and wood waste, municipal solid waste, and other biomass; includes cogeneration, both for sale to the grid and for own use.

⁸Includes only kerosene type.

⁹Includes aviation gas and lubricants.

¹⁰E85 is 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable).

¹¹M85 is 85 percent methanol and 15 percent motor gasoline.

¹²Includes unfinished oils, natural gasoline, motor gasoline blending compounds, 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 all electric power generators for grid-connected power except cogenerators, which produce electricity and other useful thermal energy. 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 cogeneration. Excludes net electricity imports.

¹⁶In 1998 approximately 70 percent of the U.S. electricity imports were provided by renewable sources (hydroelectricity); EIA does not project future proportions for the fuel source of imported electricity.

¹⁷Includes 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 1999 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: 1999 electric utility fuel consumption: Energy Information Administration, (EIA) *Electric Power Annual 1998, Volume 1*, DOE/EIA-0348(98)/1 (Washington, DC, April 1999). 1999 nonutility consumption estimates: EIA, Form EIA-860B: "Annual Electric Generator Report - Nonutility." Other 1999 values: EIA, *Short-Term Energy Outlook, September 2000*, <http://www.eia.doe.gov/pub/forecasting/steo/oldsteos/sep00.pdf>. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08C.D060901A, M2P7B08L.D060901A.

Table K3. Energy Prices by Sector and Source
(1999 Dollars per Million Btu, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price
Residential	13.10	13.27	13.33	13.57	13.46	15.58	16.69	13.77	15.84	17.86
Primary Energy ¹	6.71	7.49	7.41	7.39	7.18	7.96	8.03	7.08	7.80	8.46
Petroleum Products ²	7.55	9.20	9.14	9.15	9.37	9.34	9.36	9.47	9.54	9.79
Distillate Fuel	6.27	7.45	7.37	7.37	7.57	7.54	7.56	7.78	7.76	7.85
Liquefied Petroleum Gas	10.36	12.60	12.58	12.60	12.86	12.85	12.85	12.75	12.98	13.61
Natural Gas	6.52	7.11	7.02	7.00	6.72	7.69	7.77	6.65	7.49	8.24
Electricity	23.47	22.16	22.53	23.27	22.30	26.58	29.61	22.44	26.61	30.91
Commercial	13.18	12.70	12.81	13.21	12.25	15.20	16.55	12.69	15.51	17.71
Primary Energy ¹	5.22	5.57	5.48	5.46	5.68	6.48	6.55	5.79	6.48	7.11
Petroleum Products ²	4.99	6.13	6.07	6.08	6.29	6.21	6.23	6.40	6.30	6.46
Distillate Fuel	4.37	5.24	5.16	5.17	5.36	5.30	5.32	5.53	5.49	5.64
Residual Fuel	2.63	3.65	3.61	3.61	3.71	3.69	3.69	3.86	3.84	3.84
Natural Gas ³	5.34	5.55	5.46	5.44	5.66	6.61	6.70	5.78	6.60	7.31
Electricity	21.45	20.26	20.63	21.57	18.76	23.94	26.89	19.00	24.53	29.19
Industrial⁴	5.27	5.76	5.74	5.81	5.67	6.61	6.90	5.90	6.87	7.61
Primary Energy	3.91	4.47	4.40	4.39	4.49	4.91	4.94	4.68	5.13	5.59
Petroleum Products ²	5.54	6.00	5.95	5.95	6.13	6.04	6.04	6.16	6.25	6.53
Distillate Fuel	4.65	5.40	5.33	5.33	5.56	5.48	5.49	5.73	5.70	5.89
Liquefied Petroleum Gas	8.50	7.74	7.72	7.72	7.88	7.91	7.93	7.76	8.11	8.79
Residual Fuel	2.78	3.38	3.35	3.34	3.44	3.33	3.33	3.59	3.49	3.50
Natural Gas ⁵	2.79	3.64	3.55	3.52	3.50	4.53	4.61	3.85	4.73	5.49
Metallurgical Coal	1.65	1.58	1.59	1.58	1.54	1.52	1.54	1.44	1.44	1.45
Steam Coal	1.43	1.35	1.34	1.34	1.31	1.16	1.18	1.21	1.06	1.10
Electricity	13.00	12.80	13.12	13.72	12.08	16.20	18.32	12.22	16.92	20.24
Transportation	8.30	9.39	9.34	9.35	9.69	9.69	9.70	9.20	9.22	9.19
Primary Energy	8.29	9.38	9.32	9.33	9.68	9.66	9.67	9.18	9.18	9.15
Petroleum Products ²	8.28	9.37	9.32	9.33	9.67	9.65	9.67	9.18	9.18	9.14
Distillate Fuel ⁶	8.22	8.98	8.90	8.90	8.95	8.93	8.97	8.83	8.81	8.94
Jet Fuel ⁷	4.70	5.29	5.23	5.25	5.49	5.48	5.53	5.72	5.72	5.72
Motor Gasoline ⁸	9.45	10.81	10.75	10.76	11.31	11.28	11.28	10.60	10.60	10.49
Residual Fuel	2.46	3.11	3.10	3.09	3.18	3.18	3.18	3.33	3.33	3.33
Liquid Petroleum Gas ⁹	12.87	14.07	14.04	14.05	14.07	14.15	14.14	13.70	14.02	14.51
Natural Gas ¹⁰	7.02	7.28	7.19	7.16	7.21	8.19	8.27	7.41	8.18	8.75
Ethanol (E85) ¹¹	14.42	19.21	19.19	19.19	19.16	19.29	19.29	19.36	19.48	19.52
Methanol (M85) ¹²	10.38	13.13	13.03	13.00	13.83	14.37	14.36	14.35	14.35	14.32
Electricity	15.59	14.52	15.08	15.03	13.62	17.03	17.32	13.22	17.05	17.73
Average End-Use Energy	8.49	9.17	9.16	9.28	9.22	10.17	10.57	9.21	10.13	10.86
Primary Energy	6.31	7.19	7.13	7.12	7.35	7.63	7.65	7.23	7.49	7.73
Electricity	19.41	18.65	19.01	19.77	17.99	22.51	25.21	18.19	23.03	27.16
Electric Generators¹³										
Fossil Fuel Average	1.48	1.64	1.58	1.54	1.59	2.96	2.80	1.88	3.44	3.30
Petroleum Products	2.49	3.61	3.80	3.84	3.90	4.49	4.60	4.17	4.72	5.19
Distillate Fuel	4.04	4.72	4.74	4.75	4.87	4.78	4.81	5.06	4.97	5.24
Residual Fuel	2.40	3.42	3.63	3.65	3.65	4.34	4.32	3.89	4.41	4.27
Natural Gas	2.58	3.44	3.46	3.41	3.26	4.71	4.74	3.71	4.90	5.48
Steam Coal	1.21	1.14	1.07	1.07	1.06	0.92	0.94	0.98	0.84	0.89

Table K3. Energy Prices by Sector and Source (Continued)
(1999 Dollars per Million Btu, Unless Otherwise Noted)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price
Average Price to All Users¹⁴										
Petroleum Products ²	7.44	8.53	8.51	8.52	8.81	8.78	8.78	8.49	8.51	8.46
Distillate Fuel	7.25	8.14	8.08	8.08	8.20	8.17	8.18	8.20	8.14	7.92
Jet Fuel	4.70	5.29	5.23	5.25	5.49	5.48	5.53	5.72	5.72	5.72
Liquefied Petroleum Gas	8.84	8.63	8.61	8.62	8.74	8.76	8.77	8.54	8.85	9.46
Motor Gasoline ⁸	9.45	10.80	10.75	10.76	11.31	11.28	11.28	10.60	10.60	10.49
Residual Fuel	2.47	3.25	3.23	3.23	3.33	3.31	3.31	3.49	3.47	3.47
Natural Gas	4.05	4.72	4.67	4.65	4.47	5.44	5.53	4.60	5.50	6.29
Coal	1.23	1.16	1.09	1.10	1.08	0.96	0.97	1.00	0.88	0.92
Ethanol (E85) ¹¹	14.42	19.21	19.19	19.19	19.16	19.29	19.29	19.36	19.48	19.52
Methanol (M85) ¹²	10.38	13.13	13.03	13.00	13.83	14.37	14.36	14.35	14.35	14.32
Electricity	19.41	18.65	19.01	19.77	17.99	22.51	25.21	18.19	23.03	27.16
Non-Renewable Energy Expenditures by Sector (billion 1999 dollars)										
Residential	134.28	153.83	154.30	156.69	160.41	178.69	188.86	183.27	202.79	220.93
Commercial	98.42	114.97	115.95	119.15	119.69	142.78	153.36	136.41	162.17	181.61
Industrial	111.66	127.05	126.12	127.89	133.28	154.71	162.04	154.57	179.74	199.28
Transportation	212.64	273.84	271.38	271.53	308.81	306.29	306.53	340.45	339.36	337.85
Total Non-Renewable Expenditures	556.99	669.69	667.75	675.26	722.19	782.47	810.79	814.69	884.05	939.67
Transportation Renewable Expenditures	0.14	0.42	0.42	0.42	0.64	0.63	0.63	0.85	0.85	0.84
Total Expenditures	557.13	670.11	668.17	675.68	722.82	783.10	811.41	815.54	884.90	940.51

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.

³Excludes independent power producers.

⁴Includes cogenerators.

⁵Excludes uses for lease and plant fuel.

⁶Low sulfur diesel fuel. Price includes Federal and State taxes while excluding county and local taxes.

⁷Kerosene-type jet fuel. Price includes Federal and State taxes while excluding county and local taxes.

⁸Sales weighted-average price for all grades. Includes Federal and State taxes and excludes county and local taxes.

⁹Includes Federal and State taxes while excluding county and local taxes.

¹⁰Compressed natural gas used as a vehicle fuel. Price includes estimated motor vehicle fuel taxes.

¹¹E85 is 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable).

¹²M85 is 85 percent methanol and 15 percent motor gasoline.

¹³Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy. Includes small power producers and exempt wholesale generators.

¹⁴Weighted 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 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 prices for gasoline, distillate, and jet fuel are based on prices in various issues of Energy Information Administration (EIA), *Petroleum Marketing Monthly*, DOE/EIA-0380 (99/03-2000/04) (Washington, DC, 1999-2000). 1999 prices for all other petroleum products are derived from the EIA, *State Energy Price and Expenditure Report 1997*, DOE/EIA-0376(97) (Washington, DC, July 2000). 1999 industrial gas delivered prices are based on EIA, *Manufacturing Energy Consumption Survey 1994*. 1999 residential and commercial natural gas delivered prices: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). 1999 coal prices based on EIA, *Quarterly Coal Report*, DOE/EIA-0121(2000/1Q) (Washington, DC, August 2000), and EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08C.D060901A, M2P7B08L.D060901A. 1999 electricity prices for commercial, industrial, and transportation: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08C.D060901A, M2P7B08L.D060901A. **Projections:** EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08C.D060901A, M2P7B08L.D060901A.

Table K4. Electricity Supply, Disposition, Prices, and Emissions
(Billion Kilowatthours, Unless Otherwise Noted)

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price
Generation by Fuel Type										
Electric Generators¹										
Coal	1831	2106	1979	1995	2245	1003	1079	2315	852	1038
Petroleum	94	43	19	18	28	12	20	25	24	236
Natural Gas ²	359	583	656	616	825	1740	1525	1495	2243	1503
Nuclear Power	730	740	740	740	725	744	744	613	694	704
Pumped Storage	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Renewable Sources ³	355	373	425	419	397	515	514	400	657	687
Total	3369	3844	3819	3788	4219	4014	3882	4847	4468	4167
Non-Utility Generation for Own Use	16	17	21	21	17	20	20	17	19	19
Distributed Generation	0	0	0	0	1	1	1	5	1	1
Cogenerators⁴										
Coal	47	53	52	52	52	42	45	52	42	44
Petroleum	9	10	10	10	10	10	10	10	10	14
Natural Gas	207	237	238	242	261	285	313	318	477	594
Other Gaseous Fuels ⁵	4	6	6	6	7	7	7	8	9	9
Renewable Sources ³	31	34	34	34	39	39	39	48	48	47
Other ⁶	5	5	5	5	5	5	5	6	6	6
Total	303	345	346	350	373	389	419	441	591	714
Other End-Use Generators										
Sales to Utilities	151	172	170	170	180	171	178	208	238	270
Generation for Own Use	156	178	181	184	198	223	246	238	359	449
Net Imports⁸	33	57	57	57	35	49	49	23	35	35
Electricity Sales by Sector										
Residential	1145	1339	1329	1318	1452	1376	1331	1698	1604	1518
Commercial	1073	1288	1283	1272	1439	1375	1335	1646	1534	1443
Industrial	1058	1142	1129	1122	1222	1170	1138	1395	1267	1179
Transportation	17	26	26	26	35	34	34	49	48	48
Total	3294	3794	3767	3738	4147	3956	3838	4788	4453	4188
End-Use Prices (1999 cents per kwh)⁹										
Residential	8.0	7.6	7.7	7.9	7.6	9.1	10.1	7.7	9.1	10.5
Commercial	7.3	6.9	7.0	7.4	6.4	8.2	9.2	6.5	8.4	10.0
Industrial	4.4	4.4	4.5	4.7	4.1	5.5	6.3	4.2	5.8	6.9
Transportation	5.3	5.0	5.1	5.1	4.6	5.8	5.9	4.5	5.8	6.0
All Sectors Average	6.6	6.4	6.5	6.7	6.1	7.7	8.6	6.2	7.9	9.3
Prices by Service Category⁹										
(1999 cents/kwh)										
Generation	4.1	3.8	3.9	4.2	3.5	4.9	5.8	3.6	5.2	6.6
Transmission	0.6	0.6	0.6	0.6	0.7	0.8	0.8	0.7	0.7	0.7
Distribution	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	2.0	2.1
Emissions (million short tons)										
Sulfur Dioxide	13.71	10.38	8.55	8.55	9.70	2.75	3.06	8.95	2.38	2.64
Nitrogen Oxide	5.45	4.30	3.06	3.07	4.34	1.27	1.29	4.49	1.18	1.31

¹Includes grid-connected generation at all utilities and nonutilities except for cogenerators. Includes small power producers and exempt wholesale generators.

²Includes electricity generation by fuel cells.

³Includes conventional hydroelectric, geothermal, wood, wood waste, municipal solid waste, landfill gas, other biomass, solar, and wind power.

⁴Cogenerators produce electricity and other useful thermal energy. Includes sales to utilities and generation for own use.

⁵Other gaseous fuels include refinery and still gas.

⁶Other includes hydrogen, sulfur, batteries, chemicals, fish oil, and spent sulfite liquor.

⁷Includes 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.

⁸In 1998 approximately 70 percent of the U.S. electricity imports were provided by renewable sources (hydroelectricity); EIA does not project future proportions for the fuel source of imported electricity.

⁹Prices represent average revenue per kilowatthour.

Kwh = Kilowatthour.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Source: Energy Information Administration, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08C.D060901A, M2P7B08L.D060901A.

**Table K5. Electricity Generating Capability
(Gigawatts)**

Net Summer Capability ¹	1999	Projections								
		2005			2010			2020		
		Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price
Electric Generators²										
Capability										
Coal Steam	305.1	303.9	302.8	302.8	318.6	268.2	267.6	318.5	233.5	234.0
Other Fossil Steam ³	137.4	127.8	120.0	119.9	119.2	104.0	104.4	116.9	86.6	86.7
Combined Cycle	21.0	53.2	85.6	83.3	107.8	256.4	224.6	202.2	319.5	255.7
Combustion Turbine/Diesel	74.3	123.1	115.1	116.4	147.2	117.7	118.7	199.5	124.5	122.2
Nuclear Power	97.4	97.5	97.5	97.5	94.8	97.5	97.5	76.3	89.4	91.5
Pumped Storage	19.3	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5
Fuel Cells	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.3	0.3
Renewable Sources ⁴	88.8	94.8	99.5	100.0	98.0	111.8	111.5	99.5	142.2	149.2
Distributed Generation ⁵	0.0	0.7	0.5	0.7	2.5	1.3	1.4	11.5	2.9	2.1
Total	743.4	820.4	840.4	840.1	907.8	976.5	945.3	1044.2	1018.4	961.3
Cumulative Planned Additions⁶										
Coal Steam	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Fossil Steam ³	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Combined Cycle	0.0	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7
Combustion Turbine/Diesel	0.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
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	0.1	0.1	0.1	0.3	0.3	0.3
Renewable Sources ⁴	0.0	5.1	5.1	5.1	6.7	6.7	6.7	8.1	8.1	8.1
Distributed Generation ⁵	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.0	32.0	32.0	32.0	33.7	33.7	33.7	35.3	35.3	35.3
Cumulative Unplanned Additions⁶										
Coal Steam	0.0	1.1	0.0	0.0	18.9	0.0	0.0	20.5	0.0	0.0
Other Fossil Steam ³	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Combined Cycle	0.0	19.4	51.8	49.6	74.2	222.8	190.9	168.6	285.8	222.0
Combustion Turbine/Diesel	0.0	38.9	31.9	33.7	64.7	36.0	37.1	117.2	43.1	41.0
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 ⁴	0.0	0.4	5.2	5.7	2.0	15.8	15.5	2.0	44.8	51.7
Distributed Generation ⁵	0.0	0.7	0.5	0.7	2.5	1.3	1.4	11.5	2.9	2.1
Total	0.0	60.6	89.4	89.6	162.2	275.8	244.9	319.8	376.6	316.9
Cumulative Total Additions	0.0	92.6	121.4	121.6	195.9	309.5	278.6	355.1	411.9	352.2
Cumulative Retirements⁷										
Coal Steam	0.0	2.3	2.3	2.3	5.4	36.9	37.6	7.2	71.6	71.1
Other Fossil Steam ³	0.0	9.9	17.7	17.8	18.4	33.7	33.2	20.7	50.9	50.8
Combined Cycle	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.2	0.1	0.1
Combustion Turbine/Diesel	0.0	4.4	5.3	5.8	6.0	6.7	6.9	6.3	7.0	7.2
Nuclear Power	0.0	0.0	0.0	0.0	2.6	0.0	0.0	21.2	8.1	6.0
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 ⁴	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total	0.0	16.7	25.4	26.0	32.8	77.6	77.9	55.6	137.9	135.4
Cogenerators⁸										
Capability										
Coal	8.4	8.9	8.9	8.9	8.6	7.0	7.4	8.6	7.0	7.3
Petroleum	2.7	2.9	2.9	2.9	2.9	2.9	2.9	2.9	3.0	3.0
Natural Gas	34.6	39.9	40.3	40.9	43.3	47.4	51.1	51.4	73.6	90.8
Other Gaseous Fuels	0.2	0.8	0.8	0.8	0.9	0.9	0.9	1.1	1.2	1.2
Renewable Sources ⁴	5.4	5.9	5.9	5.9	6.8	6.8	6.8	8.2	8.3	8.2
Other	1.1	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Total	52.4	59.2	59.7	60.2	63.3	65.9	70.0	73.2	94.0	111.4
Cumulative Additions⁶	0.0	6.8	7.2	7.8	10.9	13.5	17.6	20.7	41.6	59.0

Table K5. Electricity Generating Capability (Continued)
(Gigawatts)

Net Summer Capability ¹	1999	Projections								
		2005			2010			2020		
		Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price
Other End-Use Generators⁹										
Renewable Sources	1.0	1.1	1.1	1.1	1.3	1.3	1.3	1.3	1.3	1.4
Cumulative Additions	0.0	0.1	0.1	0.1	0.3	0.3	0.3	0.3	0.3	0.4

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

²Includes grid-connected utilities and nonutilities except for cogenerators. Includes small power producers and exempt wholesale generators.

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

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

⁵Primarily peak-load capacity fueled by natural gas.

⁶Cumulative additions after December 31, 1999.

⁷Cumulative total retirements after December 31, 1999.

⁸Nameplate capacity is reported for nonutilities on EIA-860B: "Annual Electric Generator Report - Nonutility." Nameplate capacity is designated by the manufacturer. The nameplate capacity has been converted to the net summer capability based on historic relationships.

⁹Includes 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. Excludes off-grid photovoltaics and other generators not connected to the distribution or transmission systems.

Notes: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports. Net summer capability has been estimated for nonutility generators to be consistent with capability for electric utility generators.

Source: Energy Information Administration, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08C.D060901A, M2P7B08L.D060901A.

Table K6. Electricity Trade
(Billion Kilowatthours, Unless Otherwise Noted)

Electricity Trade	1999	Projections								
		2005			2010			2020		
		Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price
Interregional Electricity Trade										
Gross Domestic Firm Power Trade	182.2	125.3	125.3	125.3	102.9	102.9	102.9	0.0	0.0	0.0
Gross Domestic Economy Trade	152.0	202.3	149.8	151.2	155.5	98.1	89.9	147.9	110.3	113.1
Gross Domestic Trade	334.2	327.6	275.1	276.4	258.4	201.1	192.8	147.9	110.3	113.1
Gross Domestic Sales										
Gross Domestic Firm Power Sales (million 1999 dollars)	8588.1	5905.8	5905.8	5905.8	4851.2	4851.2	4851.2	0.0	0.0	0.0
Gross Domestic Economy Sales (million 1999 dollars)	4413.9	6468.6	5686.5	5458.3	4510.4	4761.0	4622.5	4605.1	6245.6	7140.3
Gross Domestic Sales (million 1999 dollars)	13002.0	12374.4	11592.3	11364.1	9361.6	9612.2	9473.7	4605.1	6245.6	7140.3
International Electricity Trade										
Firm Power Imports From Canada and Mexico ¹	27.0	10.7	10.7	10.7	5.8	19.1	19.1	0.0	12.1	12.1
Economy Imports From Canada and Mexico ¹ ..	21.9	63.5	63.5	63.5	45.9	45.9	45.9	30.6	30.6	30.6
Gross Imports From Canada and Mexico¹ ..	48.9	74.1	74.1	74.1	51.7	65.0	65.0	30.6	42.7	42.7
Gross Exports To Canada and Mexico										
Firm Power Exports To Canada and Mexico ...	9.2	9.7	9.7	9.7	8.7	8.7	8.7	0.0	0.0	0.0
Economy Exports To Canada and Mexico	6.3	7.0	7.0	7.0	7.7	7.7	7.7	7.7	7.7	7.7
Gross Exports To Canada and Mexico	15.5	16.7	16.7	16.7	16.4	16.4	16.4	7.7	7.7	7.7

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

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 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, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08C.D060901A, M2P7B08L.D060901A.

Table K7. Natural Gas Supply and Disposition
(Trillion Cubic Feet per Year)

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price
Production										
Dry Gas Production ¹	18.67	21.40	21.06	20.82	23.43	25.95	25.89	29.47	30.45	26.93
Supplemental Natural Gas ² . . .	0.10	0.11	0.11	0.11	0.06	0.06	0.06	0.06	0.06	0.06
Net Imports	3.38	4.69	4.73	4.69	5.00	6.83	5.57	5.82	8.30	6.40
Canada	3.29	4.48	4.52	4.48	4.72	5.19	5.24	5.43	5.88	5.73
Mexico	-0.01	-0.18	-0.18	-0.18	-0.25	0.32	-0.25	-0.40	0.36	-0.40
Liquefied Natural Gas	0.10	0.39	0.39	0.39	0.53	1.32	0.58	0.79	2.07	1.07
Total Supply	22.15	26.20	25.91	25.63	28.49	32.84	31.52	35.35	38.80	33.39
Consumption by Sector										
Residential	4.75	5.42	5.44	5.45	5.46	5.27	5.28	6.07	5.86	5.74
Commercial	3.06	3.88	3.90	3.90	4.06	3.89	3.90	4.32	4.34	4.42
Industrial ³	8.31	8.81	8.79	8.81	9.48	9.16	9.20	10.53	10.40	10.10
Electric Generators ⁴	3.64	5.43	5.15	4.86	6.81	11.63	10.25	11.19	14.84	10.04
Lease and Plant Fuel ⁵	1.23	1.38	1.36	1.35	1.50	1.62	1.62	1.87	1.91	1.74
Pipeline Fuel	0.64	0.81	0.80	0.79	0.88	0.98	0.97	1.07	1.12	1.03
Transportation ⁶	0.02	0.05	0.05	0.05	0.09	0.09	0.09	0.15	0.14	0.14
Total	21.65	25.79	25.50	25.21	28.29	32.64	31.32	35.20	38.63	33.21
Discrepancy⁷	0.50	0.42	0.41	0.41	0.20	0.21	0.20	0.14	0.18	0.18

¹Marketed production (wet) minus extraction losses.

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

³Includes consumption by cogenerators.

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

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

⁶Compressed natural gas used as vehicle fuel.

⁷Balancing item. Natural gas lost as a result of converting flow data measured at varying temperatures and pressures to a standard temperature and pressure and the merger of different data reporting systems which vary in scope, format, definition, and respondent type. In addition, 1999 values include net storage injections.

Btu = British thermal unit.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 supplemental natural gas: Energy Information Administration (EIA), *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). 1999 transportation sector consumption: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08C.D060901A, M2P7B08L.D060901A. Other 1999 consumption: EIA, *Short-Term Energy Outlook, September 2000*, <http://www.eia.doe.gov/pub/forecasting/steo/oldsteos/sep00.pdf> with adjustments to end-use sector consumption levels for consumption of natural gas by electric wholesale generators based on EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08C.D060901A, M2P7B08L.D060901A. **Projections:** EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08C.D060901A, M2P7B08L.D060901A.

Table K8. Natural Gas Prices, Margins, and Revenue
(1999 Dollars per Thousand Cubic Feet, Unless Otherwise Noted)

Prices, Margins, and Revenue	1999	Projections								
		2005			2010			2020		
		Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price
Source Price										
Average Lower 48 Wellhead Price ¹	2.08	2.96	2.84	2.81	2.87	3.96	4.08	3.22	4.15	5.05
Average Import Price	2.29	2.95	2.95	2.95	2.64	3.15	3.05	2.72	3.25	3.26
Average²	2.11	2.96	2.86	2.84	2.82	3.79	3.89	3.13	3.95	4.68
Delivered Prices										
Residential	6.69	7.31	7.21	7.18	6.91	7.89	7.98	6.83	7.69	8.46
Commercial	5.49	5.70	5.61	5.58	5.82	6.79	6.88	5.93	6.77	7.51
Industrial ³	2.87	3.74	3.64	3.61	3.59	4.66	4.74	3.95	4.86	5.64
Electric Generators ⁴	2.63	3.50	3.53	3.48	3.32	4.80	4.83	3.78	4.99	5.58
Transportation ⁵	7.21	7.48	7.38	7.35	7.40	8.41	8.50	7.61	8.40	8.99
Average⁶	4.15	4.84	4.79	4.77	4.59	5.58	5.68	4.72	5.64	6.45
Transmission & Distribution Margins⁷										
Residential	4.58	4.35	4.35	4.35	4.08	4.10	4.10	3.70	3.74	3.78
Commercial	3.37	2.74	2.75	2.74	2.99	3.00	2.99	2.81	2.82	2.83
Industrial ³	0.76	0.78	0.78	0.77	0.77	0.87	0.85	0.82	0.91	0.96
Electric Generators ⁴	0.52	0.54	0.66	0.64	0.49	1.01	0.94	0.65	1.04	0.90
Transportation ⁵	5.10	4.51	4.52	4.51	4.58	4.62	4.61	4.48	4.45	4.31
Average⁶	2.04	1.88	1.93	1.93	1.76	1.79	1.79	1.59	1.69	1.77
Transmission & Distribution Revenue (billion 1999 dollars)										
Residential	21.77	23.57	23.65	23.68	22.30	21.64	21.62	22.48	21.91	21.73
Commercial	10.32	10.63	10.70	10.71	12.16	11.67	11.68	12.12	12.22	12.52
Industrial ³	6.28	6.86	6.85	6.82	7.26	7.92	7.82	8.65	9.44	9.72
Electric Generators ⁴	1.88	2.94	3.42	3.10	3.36	11.72	9.61	7.24	15.38	9.06
Transportation ⁵	0.08	0.24	0.24	0.24	0.41	0.40	0.40	0.68	0.63	0.60
Total	40.32	44.25	44.86	44.55	45.49	53.36	51.13	51.18	59.58	53.64

¹Represents lower 48 onshore and offshore supplies.

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

³Includes consumption by cogenerators.

⁴Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy. 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 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 industrial delivered prices based on Energy Information Administration (EIA), *Manufacturing Energy Consumption Survey 1994*. 1999 residential and commercial delivered prices, average lower 48 wellhead price, and average import price: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). Other 1999 values, and projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08C.D060901A, M2P7B08L.D060901A.

Table K9. Oil and Gas Supply

Production and Supply	1999	Projections								
		2005			2010			2020		
		Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price
Crude Oil										
Lower 48 Average Wellhead Price¹ (1999 dollars per barrel)	16.49	21.43	21.44	21.85	20.73	20.91	20.98	21.47	21.41	21.39
Production (million barrels per day)²										
U.S. Total	5.88	5.66	5.67	5.58	5.32	5.30	5.09	5.25	5.47	5.05
Lower 48 Onshore	3.27	2.81	2.81	2.81	2.52	2.53	2.50	2.75	2.86	2.70
Conventional	2.59	2.18	2.17	2.17	1.81	1.85	1.80	1.98	2.13	2.00
Enhanced Oil Recovery	0.68	0.63	0.63	0.63	0.70	0.68	0.70	0.76	0.73	0.70
Lower 48 Offshore	1.56	2.06	2.07	2.00	2.16	2.13	1.98	1.87	1.97	1.76
Alaska	1.05	0.79	0.79	0.77	0.65	0.65	0.61	0.64	0.64	0.60
Lower 48 End of Year Reserves (billion barrels) ²	18.33	15.75	15.76	15.50	14.55	14.61	14.10	14.11	14.56	13.58
Natural Gas										
Lower 48 Average Wellhead Price¹ (1999 dollars per thousand cubic feet)	2.08	2.96	2.84	2.81	2.87	3.96	4.08	3.22	4.15	5.05
Production (trillion cubic feet)³										
U.S. Total	18.67	21.40	21.06	20.82	23.43	25.95	25.89	29.47	30.45	26.93
Lower 48 Onshore	12.83	14.46	14.10	14.09	16.71	18.40	18.05	21.31	22.21	18.94
Associated-Dissolved ⁴	1.80	1.51	1.51	1.52	1.32	1.34	1.32	1.39	1.48	1.43
Non-Associated	11.03	12.95	12.59	12.57	15.39	17.07	16.73	19.91	20.72	17.51
Conventional	6.64	7.67	7.51	7.41	7.93	8.92	9.00	11.14	10.79	9.22
Unconventional	4.39	5.27	5.08	5.16	7.45	8.15	7.72	8.78	9.93	8.29
Lower 48 Offshore	5.43	6.47	6.50	6.27	6.22	7.05	7.35	7.59	7.67	7.43
Associated-Dissolved ⁴	0.93	1.06	1.06	1.04	1.09	1.09	1.06	1.04	1.06	1.01
Non-Associated	4.50	5.41	5.43	5.22	5.13	5.96	6.29	6.56	6.62	6.42
Alaska	0.42	0.47	0.47	0.46	0.50	0.50	0.50	0.57	0.56	0.56
Lower 48 End of Year Reserves³ (trillion cubic feet)	157.41	167.88	169.46	168.59	185.55	184.15	167.64	200.71	217.28	184.23
Supplemental Gas Supplies (trillion cubic feet) ⁵	0.10	0.11	0.11	0.11	0.06	0.06	0.06	0.06	0.06	0.06
Total Lower 48 Wells (thousands)	17.93	28.87	28.13	27.80	29.86	35.72	34.43	39.36	50.58	42.16

¹Represents lower 48 onshore and offshore supplies.

²Includes lease condensate.

³Market production (wet) minus extraction losses.

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

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

Btu = British thermal unit.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 lower 48 onshore, lower 48 offshore, and Alaska crude oil production: Energy Information Administration (EIA), *Petroleum Supply Annual 1999*, DOE/EIA-0340(99/1) (Washington, DC, June 2000). 1999 natural gas lower 48 average wellhead price, Alaska and total natural gas production, and supplemental gas supplies: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2000/06) (Washington, DC, June 2000). Other 1999 values: EIA, Office of Integrated Analysis and Forecasting. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08C.D060901A, M2P7B08L.D060901A.

Table K10. Coal Supply, Disposition, and Prices
(Million Short Tons per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	1999	Projections								
		2005			2010			2020		
		Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price
Production¹										
Appalachia	433	426	409	420	421	232	250	396	218	239
Interior	185	182	174	177	180	112	117	161	96	113
West	486	624	578	571	694	297	314	783	257	309
East of the Mississippi	559	561	538	551	557	337	360	524	307	345
West of the Mississippi	544	672	623	616	738	304	321	817	264	316
Total	1103	1233	1161	1167	1295	641	681	1340	571	661
Net Imports										
Imports	9	16	12	12	17	9	9	20	9	9
Exports	58	60	60	60	58	57	57	56	63	60
Total	-49	-44	-48	-48	-40	-48	-48	-36	-54	-51
Total Supply²	1054	1189	1113	1119	1254	593	633	1304	517	609
Consumption by Sector										
Residential and Commercial	5	5	5	5	5	5	5	5	5	5
Industrial ³	79	82	82	82	83	80	82	86	84	87
Coke Plants	28	25	25	25	23	23	23	19	19	19
Electric Generators ⁴	921	1077	1002	1007	1145	485	521	1196	408	499
Total	1032	1189	1114	1119	1256	593	631	1306	517	610
Discrepancy and Stock Change⁵	21	-1	-1	-0	-2	1	2	-2	0	-1
Average Minemouth Price										
(1999 dollars per short ton)	17.17	15.05	14.77	14.97	14.08	14.39	14.67	12.87	13.37	13.95
(1999 dollars per million Btu)	0.82	0.73	0.71	0.72	0.69	0.66	0.68	0.64	0.62	0.64
Delivered Prices (1999 dollars per short ton)⁶										
Industrial	31.39	29.67	29.37	29.48	28.61	25.37	25.78	26.50	23.10	23.85
Coke Plants	44.28	42.39	42.51	42.42	41.36	40.85	41.17	38.52	38.47	38.90
Electric Generators										
(1999 dollars per short ton)	24.73	22.90	21.64	21.77	21.28	19.22	19.67	19.41	17.58	18.66
(1999 dollars per million Btu)	1.21	1.14	1.07	1.07	1.06	0.92	0.94	0.98	0.84	0.89
Average	25.77	23.78	22.68	22.80	22.13	20.89	21.25	20.15	19.25	20.04
Exports ⁷	37.44	36.39	36.36	36.32	35.66	32.99	33.43	33.09	30.55	31.58

¹Includes anthracite, bituminous coal, lignite, and waste coal delivered to independent power producers. Waste coal deliveries totaled 8.5 million tons in 1995, 8.8 million tons in 1996, 8.1 million tons in 1997, 8.6 million tons in 1998, and are projected to reach 9.6 million tons in 1999, and 12.2 million tons in 2000.

²Production plus net imports and net storage withdrawals.

³Includes consumption by cogenerators.

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

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

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

⁷F.a.s. price at U.S. port of exit.

Btu = British thermal unit.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 data based on Energy Information Administration (EIA), *Quarterly Coal Report*, DOE/EIA-0121(2000/1Q) (Washington, DC, August 2000), and EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08C.D060901A, M2P7B08L.D060901A. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08C.D060901A, M2P7B08L.D060901A.

Table K11. Renewable Energy Generating Capability and Generation
(Gigawatts, Unless Otherwise Noted)

Capacity and Generation	1999	Projections								
		2005			2010			2020		
		Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price
Electric Generators¹										
(excluding cogenerators)										
Net Summer Capability										
Conventional Hydropower	78.77	79.26	79.60	80.43	79.38	80.90	80.90	79.38	81.11	81.13
Geothermal ²	2.87	3.43	7.12	6.66	4.93	11.04	10.63	4.95	11.44	11.56
Municipal Solid Waste ³	2.61	2.96	3.24	3.24	3.42	4.42	4.42	3.93	4.95	4.94
Wood and Other Biomass ⁴	1.57	1.75	1.98	2.09	2.12	4.62	4.44	2.45	17.92	18.25
Solar Thermal	0.33	0.35	0.35	0.35	0.40	0.40	0.40	0.48	0.48	0.48
Solar Photovoltaic	0.01	0.08	0.08	0.08	0.21	0.21	0.21	0.54	0.54	0.54
Wind	2.66	6.92	7.10	7.14	7.52	10.19	10.47	7.76	25.78	32.30
Total	88.83	94.75	99.47	100.01	97.98	111.77	111.46	99.49	142.22	149.21
Generation (billion kilowatthours)										
Conventional Hydropower	309.55	301.20	302.25	305.12	301.13	306.22	306.18	300.07	305.63	305.65
Geothermal ²	13.21	18.34	48.83	44.99	30.94	81.21	77.85	31.16	84.63	85.58
Municipal Solid Waste ³	18.12	20.68	22.94	22.94	23.88	31.67	31.67	27.76	35.70	35.68
Wood and Other Biomass ⁴	9.02	14.94	32.83	28.22	21.30	68.63	70.13	19.78	154.00	163.41
Dedicated Plants	7.73	9.16	10.69	11.44	11.36	28.12	26.92	13.82	117.15	119.35
Cofiring	1.29	5.78	22.15	16.78	9.94	40.51	43.20	5.95	36.84	44.06
Solar Thermal	0.89	0.96	0.96	0.96	1.11	1.11	1.11	1.37	1.37	1.37
Solar Photovoltaic	0.03	0.20	0.20	0.20	0.51	0.51	0.51	1.36	1.36	1.36
Wind	4.61	16.30	16.80	16.93	18.16	25.66	26.36	18.83	74.22	94.21
Total	355.43	372.61	424.81	419.35	397.03	515.01	513.79	400.32	656.90	687.25
Cogenerators⁵										
Net Summer Capability										
Municipal Solid Waste	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Biomass	4.65	5.17	5.19	5.19	6.06	6.07	6.06	7.54	7.57	7.54
Total	5.35	5.87	5.89	5.89	6.76	6.77	6.76	8.24	8.27	8.24
Generation (billion kilowatthours)										
Municipal Solid Waste	4.04	4.04	4.04	4.04	4.04	4.04	4.04	4.04	4.04	4.05
Biomass	27.08	29.92	30.05	30.02	35.01	35.02	34.90	43.52	43.62	43.40
Total	31.12	33.97	34.09	34.06	39.05	39.06	38.94	47.57	47.66	47.44
Other End-Use Generators⁶										
Net Summer Capability										
Conventional Hydropower ⁷	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solar Photovoltaic	0.01	0.10	0.10	0.10	0.35	0.35	0.35	0.35	0.35	0.38
Total	1.00	1.09	1.09	1.09	1.34	1.34	1.34	1.34	1.34	1.37
Generation (billion kilowatthours)										
Conventional Hydropower ⁷	4.57	4.44	4.44	4.44	4.43	4.43	4.43	4.41	4.41	4.42
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solar Photovoltaic	0.02	0.20	0.20	0.20	0.75	0.75	0.75	0.75	0.75	0.82
Total	4.59	4.64	4.64	4.64	5.18	5.18	5.18	5.17	5.17	5.24

¹Includes grid-connected utilities and nonutilities other than cogenerators. These nonutility facilities include small power producers and exempt wholesale generators.

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

³Includes landfill gas.

⁴Includes projections for energy crops after 2010.

⁵Cogenerators produce electricity and other useful thermal energy.

⁶Includes 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. Excludes off-grid photovoltaics and other generators not connected to the distribution or transmission systems.

⁷Represents own-use industrial hydroelectric power.

Notes: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports. Net summer capability has been estimated for nonutility generators for AEO2001. Net summer capability 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: 1999 electric utility capability: Energy Information Administration (EIA), Form EIA-860A: "Annual Electric Generator Report - Utility." 1999 nonutility and cogenerator capability: EIA, Form EIA-860B: "Annual Electric Generator Report - Nonutility." 1999 generation: EIA, *Annual Energy Review 1999*, DOE/EIA-0384(99) (Washington, DC, July 2000). Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08C.D060901A, M2P7B08L.D060901A.

Table K12. Renewable Energy Consumption by Sector and Source¹
(Quadrillion Btu per Year)

Sector and Source	1999	Projections									
		2005			2010			2020			
		Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price	
Marketed Renewable Energy²											
Residential	0.41	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.44	0.42	0.42
Wood	0.41	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.44	0.42	0.42
Commercial	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Biomass	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Industrial³	2.15	2.42	2.41	2.41	2.64	2.63	2.63	3.08	3.08	3.08	3.08
Conventional Hydroelectric	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Municipal Solid Waste	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Biomass	1.97	2.23	2.22	2.22	2.46	2.44	2.44	2.90	2.89	2.89	2.89
Transportation	0.12	0.20	0.20	0.20	0.22	0.21	0.21	0.24	0.24	0.24	0.24
Ethanol used in E85 ⁴	0.00	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Ethanol used in Gasoline Blending	0.12	0.18	0.18	0.18	0.19	0.19	0.19	0.21	0.21	0.21	0.21
Electric Generators⁵	3.88	4.19	5.33	5.19	4.73	7.00	6.93	4.78	8.44	8.70	8.70
Conventional Hydroelectric	3.19	3.10	3.11	3.14	3.10	3.15	3.15	3.08	3.14	3.14	3.14
Geothermal	0.28	0.44	1.36	1.24	0.85	2.42	2.33	0.85	2.54	2.60	2.60
Municipal Solid Waste ⁶	0.25	0.28	0.31	0.31	0.32	0.43	0.43	0.38	0.49	0.49	0.49
Biomass	0.12	0.18	0.36	0.31	0.26	0.71	0.73	0.25	1.48	1.57	1.57
Dedicated Plants	0.10	0.11	0.12	0.13	0.14	0.29	0.28	0.17	1.12	1.15	1.15
Cofiring	0.02	0.07	0.24	0.19	0.12	0.42	0.45	0.07	0.35	0.42	0.42
Solar Thermal	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.03	0.03
Solar Photovoltaic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wind	0.05	0.17	0.17	0.17	0.19	0.26	0.27	0.19	0.76	0.86	0.86
Total Marketed Renewable Energy	6.64	7.31	8.44	8.30	8.10	10.34	10.27	8.62	12.27	12.51	12.51
Non-Marketed Renewable Energy⁷											
Selected Consumption											
Residential	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04
Solar Hot Water Heating	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Geothermal Heat Pumps	0.02	0.02	0.02	0.02	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	0.00	0.00	0.00	0.00
Commercial	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Solar Thermal	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03
Solar Photovoltaic	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ethanol											
From Corn	0.12	0.19	0.19	0.19	0.20	0.19	0.19	0.17	0.17	0.17	0.17
From Cellulose	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.07	0.07	0.07	0.07
Total	0.12	0.20	0.20	0.20	0.22	0.21	0.21	0.24	0.24	0.24	0.24

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.

³Includes all electricity production by industrial and other cogenerators for the grid and for own use.

⁴Excludes motor gasoline component of E85.

⁵Includes renewable energy delivered to the grid from electric utilities and nonutilities. Renewable energy used in generating electricity for own use is included in the individual sectoral electricity energy consumption values.

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.

Notes: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 ethanol: Energy Information Administration (EIA), *Annual Energy Review 1999*, DOE/EIA-0384(99) (Washington, DC, July 2000). 1999 electric generators: EIA, Form EIA-860A: "Annual Electric Generator Report - Utility," and EIA, Form EIA-860B: "Annual Electric Generator Report - Nonutility." Other 1999: EIA, Office of Integrated Analysis and Forecasting. Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08C.D060901A, M2P7B08L.D060901A.

Table K13. Carbon Dioxide Emissions by Sector and Source
(Million Metric Tons Carbon Equivalent per Year)

Sector and Source	1999	Projections								
		2005			2010			2020		
		Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price
Residential										
Petroleum	26.0	26.5	26.5	26.5	24.5	24.6	24.6	23.2	23.7	23.5
Natural Gas	69.5	80.2	80.5	80.6	80.8	78.0	78.1	89.8	86.7	84.9
Coal	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.2	1.2
Electricity	193.4	227.1	210.9	210.7	242.6	150.2	150.0	275.6	158.4	161.7
Total	290.1	335.0	319.1	319.0	349.2	254.2	254.0	389.8	270.0	271.3
Commercial										
Petroleum	13.7	11.8	11.8	11.8	12.0	12.4	12.3	12.1	13.6	14.0
Natural Gas	45.4	57.4	57.6	57.7	60.1	57.5	57.7	63.9	64.1	65.4
Coal	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.9	1.9	1.9
Electricity	181.3	218.4	203.5	203.4	240.4	150.1	150.4	267.1	151.4	153.7
Total	242.1	289.4	274.8	274.7	314.3	221.9	222.3	345.0	231.1	235.0
Industrial¹										
Petroleum	104.2	99.2	98.6	98.5	105.3	108.9	109.5	113.6	119.7	127.3
Natural Gas ²	141.6	148.4	147.9	148.0	159.8	156.9	157.6	180.3	179.4	172.3
Coal	55.9	65.8	65.5	65.6	65.6	63.3	64.5	65.8	64.6	66.3
Electricity	178.8	193.6	179.1	179.4	204.1	127.7	128.2	226.4	125.1	125.5
Total	480.4	507.0	491.2	491.5	534.8	456.8	459.8	586.1	488.8	491.5
Transportation										
Petroleum ³	485.8	556.3	554.6	554.2	607.2	602.6	602.3	704.2	700.4	699.7
Natural Gas ⁴	9.5	12.8	12.7	12.5	14.4	15.8	15.7	18.1	18.7	17.3
Other ⁵	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Electricity	2.9	4.4	4.1	4.1	5.8	3.8	3.9	7.9	4.8	5.2
Total³	498.2	573.6	571.4	570.9	627.5	622.2	621.9	730.2	724.0	722.3
Total Carbon Dioxide Emissions by Delivered Fuel										
Petroleum ³	629.7	693.8	691.5	691.0	749.0	748.5	748.8	853.1	857.4	864.6
Natural Gas	266.0	298.8	298.6	298.8	315.1	308.2	309.0	352.0	349.0	339.9
Coal	58.8	68.8	68.5	68.5	68.8	66.5	67.7	69.0	67.8	69.5
Other ⁵	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Electricity	556.3	643.6	597.7	597.7	692.8	431.8	432.5	777.0	439.7	446.0
Total³	1510.	1705.0	1656.4	1656.1	1825.7	1555.1	1558.0	2051.2	1714.0	1720.0
Electric Generators⁶										
Petroleum	20.0	9.4	3.9	3.7	5.8	2.0	3.1	5.2	3.7	31.9
Natural Gas	45.8	79.6	75.6	71.3	100.0	170.6	150.5	164.1	217.8	147.4
Coal	490.5	554.6	518.2	522.8	587.0	259.1	278.9	607.7	218.1	266.8
Total	556.3	643.6	597.7	597.7	692.8	431.8	432.5	777.0	439.7	446.0
Total Carbon Dioxide Emissions by Primary Fuel⁷										
Petroleum ³	649.7	703.1	695.5	694.7	754.8	750.5	751.9	858.3	861.1	896.5
Natural Gas	311.8	378.4	374.2	370.0	415.0	478.8	459.5	516.2	566.8	487.2
Coal	549.3	623.3	586.7	591.3	655.8	325.6	346.5	676.7	286.0	336.2
Other ⁵	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total³	1510.	1705.0	1656.4	1656.1	1825.7	1555.1	1558.0	2051.2	1714.0	1720.0
Carbon Dioxide Emissions (tons carbon equivalent per person)										
	5.5	5.9	5.8	5.7	6.1	5.2	5.2	6.3	5.3	5.3

¹Includes consumption by cogenerators.

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 1998, international bunker fuels accounted for 25 to 30 million metric tons carbon equivalent of carbon dioxide annually.

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

⁵Includes methanol and liquid hydrogen.

⁶Includes all electric power generators except cogenerators, which produce electricity and other useful thermal energy. Includes small power producers and exempt wholesale generators. 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 1999 are model results and may differ slightly from official EIA data reports.

Sources: 1999 emissions and emission factors: Energy Information Administration (EIA), *Emissions of Greenhouse Gases in the United States 1999*, DOE/EIA-0573(99), (Washington, DC, October 2000). Projections: EIA, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08C.D060901A, M2P7B08L.D060901A.

Table K14. Emissions, Allowance Costs, and Retrofits: Electric Generators, Excluding Cogenerators

Impacts	1999	Projections								
		2005			2010			2020		
		Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price	Reference	Integrated Cost of Service	Integrated High Gas Price
Emissions										
Nitrogen Oxide (million tons)	5.45	4.30	3.06	3.07	4.34	1.27	1.29	4.49	1.18	1.31
Sulfur Dioxide (million tons)	13.71	10.38	8.55	8.55	9.70	2.75	3.06	8.95	2.38	2.64
Mercury (tons)	43.60	45.24	40.67	40.00	45.60	5.00	5.00	45.07	5.00	5.00
Carbon Dioxide (million metric tons carbon equivalent)	556.31	643.58	597.68	597.69	692.78	431.81	432.45	776.99	439.68	446.03
Allowance Prices										
Nitrogen Oxide (1999 dollars per ton) . . .	0	4352	1346	1423	4391	0	0	5037	0	0
Sulfur Dioxide (1999 dollars per ton) . . .	0	190	178	177	187	0	0	241	0	2
Mercury (million 1999 dollars per ton) . .	0	0	0	0	0	308	305	0	244	344
Carbon Dioxide (1999 dollars per ton carbon equivalent)	0	0	36	27	0	117	125	0	162	169
Retrofits (gigawatts)										
Scrubber ¹	0.0	6.5	10.2	15.2	7.1	21.5	27.0	14.8	21.5	27.0
Combustion	0.0	39.9	50.3	52.1	42.1	54.0	56.9	46.1	55.9	58.2
SCR Post-combustion	0.0	92.8	53.4	61.5	92.9	83.2	94.8	93.0	83.2	94.8
SNCR Post-combustion	0.0	25.2	33.5	18.2	26.3	84.0	83.0	43.4	84.1	83.1
Coal Production by Sulfur Category (million tons)										
Low Sulfur (< .61 lbs. S/mmBtu)	472	594	581	577	642	284	308	721	257	303
Medium Sulfur (.61-1.67 lbs. S/mmBtu) . .	432	454	400	409	464	234	243	440	203	234
High Sulfur (> 1.67 lbs. S/mmBtu)	199	185	180	181	188	123	130	179	111	123

¹Represents scrubbers added by the model. Planned scrubbers added by electricity generators are not shown here.
lbs. S/mmBtu = Pounds sulfur per million British thermal units.

Note: Totals may not equal sum of components due to independent rounding. Data for 1999 are model results and may differ slightly from official EIA data reports.

Source: Energy Information Administration, AEO2001 National Energy Modeling System runs M2BASE.D060801A, M2P7B08C.D060901A, M2P7B08L.D060901A.

Appendix L

Pollution Control Costs

Appendix L

Pollution Control Costs

The costs for adding flue gas desulfurization equipment (scrubbers) are specific to each plant in the model. The costs generally vary with plant size (it is less expensive for larger plants) and an assessment of the difficulty of retrofitting the specific plant. On average, scrubber retrofits cost \$195 per kilowatt (in 1997 dollars).

The cost assumptions for NO_x controls are from the U.S. Environmental Protection Agency (EPA) report, *Analyzing Electric Power Generation Under the CAAA*.⁸³ Table K1, reproduced from the EPA report, provides the cost and performance parameters assumed for post-combustion NO_x controls for coal-fired power plants.

Table L1. Post-Combustion NO_x Controls for Coal-Fired Power Plants

Post-Combustion Control Technology	Capital (1997 Dollars per Kilowatt)	Fixed O&M (1997 Dollars per Kilowatt per Year)	Variable O&M (1997 Mills per Kilowatthour)	Percent Gas Use	Percent Removal
SCR (Low NO _x Rate)	69.70	6.12	0.24	—	70
SCR (High NO _x Rate)	71.80	6.38	0.40	—	80
SNCR (Low NO _x Rate)	16.60	0.24	0.82	—	40
SNCR (High NO _x Rate, Cyclone)	9.60	0.14	1.27	—	35
SNCR (High NO _x Rate, Other)	19.00	0.29	0.88	—	35

Assumptions: Low NO_x Rate <0.5 lb/MMBtu; High NO_x Rate ≥0.5 lb/MMBtu. Scaling factor for coal SCR = (200/MW)^{0.35}, economies of scale assumed up to 500 MW. Scaling factor for low-NO_x coal SNCR = (200/MW)^{0.577}, economies of scale assumed up to 500 MW. Scaling factor for High NO_x Coal SNCR, cyclone = (100/MW)^{0.577}; variable O&M costs = 1.27 for ≤300 MW, 1.27 - ((MW - 300)/100) x 0.015 for >300 MW. Scaling factor for high-NO_x coal SNCR, Other = (100/MW)^{0.681}; variable O&M costs = 0.88 for ≤480 MW, 0.89 for >480 MW. Gas Reburn includes \$5.2/kW charge for pipeline.

Sources: All estimates taken from the Bechtel report, except gas reburn, which is based on the Acurex Report.

⁸³U.S. Environmental Protection Agency, *Analyzing Electric Power Generation Under the CAAA* (Washington, DC, March 1998).