Appendix F

Results from Side Cases

Table F1. Key Results for Residential and Commercial Sector Technology Cases

Energy Consumption	2001	2010				2015			
		2003 Technology	Reference Case	High Technology	Best Available Technology	2003 Technology	Reference Case	High Technology	Best Available Technology
Residential									
Energy Consumption (quadrillion Btu)									
Distillate Fuel	0.91	0.92	0.91	0.90	0.87	0.88	0.87	0.85	0.80
Kerosene	0.10	0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.06
Liquefied Petroleum Gas	0.50	0.48	0.47	0.47	0.45	0.48	0.47	0.46	0.43
Petroleum Subtotal	1.50	1.47	1.46	1.45	1.39	1.43	1.41	1.39	1.29
Natural Gas	4.94	5.69	5.66	5.63	4.76	5.93	5.85	5.82	4.54
Coal	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Renewable Energy	0.39	0.41	0.41	0.40	0.40	0.41	0.41	0.40	0.40
Electricity	4.10	4.98	4.93	4.83	4.45	5.34	5.25	5.04	4.46
Delivered Energy	**10.94**	**12.57**	**12.47**	**12.32**	**11.00**	**13.14**	**12.93**	**12.67**	**10.70**
Electricity Related Losses	9.15	10.38	10.28	10.06	9.27	10.72	10.54	10.12	8.96
Total	**20.09**	**22.95**	**22.75**	**22.38**	**20.27**	**23.86**	**23.47**	**22.79**	**19.66**
Delivered Energy Consumption per Household (million Btu per household)	**102.9**	**107.2**	**106.4**	**105.1**	**93.8**	**106.4**	**104.7**	**102.6**	**86.7**
Non-Marketed Renewables Consumption (quadrillion Btu)	**0.03**	**0.04**	**0.04**	**0.04**	**0.04**	**0.05**	**0.05**	**0.05**	**0.04**
Commercial									
Energy Consumption (quadrillion Btu)									
Distillate Fuel	0.46	0.49	0.48	0.48	0.48	0.50	0.49	0.48	0.48
Residual Fuel	0.09	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05
Kerosene	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Liquefied Petroleum Gas	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Motor Gasoline	0.05	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Petroleum Subtotal	0.71	0.68	0.67	0.67	0.67	0.70	0.68	0.68	0.67
Natural Gas	3.33	3.81	3.80	3.78	3.66	4.02	4.00	3.98	3.81
Coal	0.09	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Renewable Energy	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
Electricity	4.09	5.07	5.02	4.93	4.46	5.71	5.59	5.44	4.79
Delivered Energy	**8.32**	**9.77**	**9.69**	**9.58**	**8.99**	**10.64**	**10.49**	**10.30**	**9.48**
Electricity Related Losses	9.12	10.57	10.46	10.28	9.29	11.47	11.23	10.92	9.62
Total	**17.44**	**20.34**	**20.15**	**19.87**	**18.28**	**22.11**	**21.72**	**21.23**	**19.10**
Delivered Energy Consumption per Square Foot (thousand Btu per square foot)	**118.4**	**119.4**	**118.5**	**117.2**	**109.9**	**120.7**	**118.9**	**116.8**	**107.5**
Net Summer Capacity (megawatts)									
Natural Gas	609	618	628	628	628	630	746	744	746
Solar Photovoltaic	16	252	252	268	278	278	305	443	513
Generation (billion kilowatthours)									
Natural Gas	4.26	4.33	4.40	4.40	4.40	4.41	5.25	5.24	5.25
Solar Photovoltaic	0.03	0.54	0.54	0.58	0.60	0.60	0.66	0.94	1.08
Non-Marketed Renewables (quadrillion Btu)	**0.02**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**

Btu = British thermal unit.

Note: Totals may not equal sum of components due to independent rounding. Data for 2001 are model results and may differ slightly from official EIA data reports. Side cases were run without the fully integrated modeling system, so not all feedbacks are captured. The reference case ratio of electricity losses to electricity use was used to compute electricity losses for the technology cases.

Source: Energy Information Administration, AEO2003 National Energy Modeling System, runs BLDFRZN.D110602A, AEO2003.D110502C, BLDHIGH.D110602A, and BLDBEST.D110602A

2020				2025				Annual Growth 2001-2025			
2003 Technology	Reference Case	High Technology	Best Available Technology	2003 Technology	Reference Case	High Technology	Best Available Technology	2003 Technology	Reference Case	High Technology	Best Available Technology
0.86	0.83	0.81	0.74	0.84	0.81	0.78	0.69	-0.3%	-0.5%	-0.6%	-1.1%
0.07	0.06	0.06	0.05	0.06	0.06	0.05	0.05	-2.0%	-2.2%	-2.3%	-3.0%
0.49	0.47	0.46	0.43	0.50	0.48	0.46	0.43	0.0%	-0.2%	-0.3%	-0.6%
1.41	1.37	1.34	1.22	1.39	1.34	1.30	1.17	-0.3%	-0.5%	-0.6%	-1.0%
6.25	6.12	6.03	4.56	6.57	6.40	6.24	4.68	1.2%	1.1%	1.0%	-0.2%
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.6%	0.4%	0.3%	0.1%
0.42	0.41	0.39	0.39	0.42	0.40	0.39	0.38	0.4%	0.2%	0.0%	-0.1%
5.72	5.59	5.27	4.57	6.09	5.94	5.55	4.80	1.7%	1.6%	1.3%	0.7%
13.81	**13.51**	**13.04**	**10.76**	**14.48**	**14.10**	**13.49**	**11.04**	**1.2%**	**1.1%**	**0.9%**	**0.0%**
11.20	10.96	10.32	8.96	11.60	11.33	10.58	9.16	1.0%	0.9%	0.6%	0.0%
25.01	**24.47**	**23.36**	**19.72**	**26.08**	**25.43**	**24.07**	**20.20**	**1.1%**	**1.0%**	**0.8%**	**0.0%**
107.2	**104.8**	**101.2**	**83.5**	**107.8**	**105.0**	**100.5**	**82.2**	**0.2%**	**0.1%**	**-0.1%**	**-0.9%**
0.05	**0.05**	**0.05**	**0.05**	**0.06**	**0.06**	**0.06**	**0.05**	**2.2%**	**2.3%**	**2.4%**	**2.0%**
0.51	0.49	0.48	0.48	0.51	0.49	0.48	0.48	0.5%	0.3%	0.2%	0.2%
0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	-2.5%	-2.5%	-2.5%	-2.5%
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	-0.7%	-0.7%	-0.7%	-0.7%
0.09	0.09	0.09	0.09	0.10	0.10	0.10	0.10	0.4%	0.4%	0.4%	0.4%
0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	-1.1%	-1.1%	-1.1%	-1.1%
0.71	0.69	0.68	0.68	0.72	0.70	0.68	0.68	0.1%	-0.1%	-0.1%	-0.1%
4.29	4.29	4.26	4.06	4.53	4.56	4.55	4.34	1.3%	1.3%	1.3%	1.1%
0.10	0.10	0.10	0.10	0.11	0.11	0.11	0.11	0.7%	0.7%	0.7%	0.7%
0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.0%	0.0%	0.0%	0.0%
6.41	6.20	5.96	5.19	7.16	6.83	6.48	5.61	2.4%	2.2%	1.9%	1.3%
11.63	**11.38**	**11.12**	**10.14**	**12.63**	**12.30**	**11.93**	**10.85**	**1.8%**	**1.6%**	**1.5%**	**1.1%**
12.57	12.14	11.68	10.16	13.66	13.03	12.36	10.70	1.7%	1.5%	1.3%	0.7%
24.19	**23.52**	**22.80**	**20.30**	**26.29**	**25.33**	**24.29**	**21.54**	**1.7%**	**1.6%**	**1.4%**	**0.9%**
122.8	**120.3**	**117.5**	**107.1**	**124.9**	**121.6**	**118.0**	**107.3**	**0.2%**	**0.1%**	**-0.0%**	**-0.4%**
663	1307	1429	1546	720	2238	2837	3323	0.7%	5.6%	6.6%	7.3%
307	471	751	846	337	773	1107	1236	13.5%	17.5%	19.3%	19.8%
4.64	9.29	10.17	11.02	5.05	16.00	20.33	23.84	0.7%	5.7%	6.7%	7.4%
0.66	1.01	1.57	1.76	0.73	1.63	2.30	2.56	13.6%	17.5%	19.2%	19.7%
0.03	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**1.1%**	**1.3%**	**1.5%**	**1.6%**

Table F2. Key Results for Industrial Sector Technology Cases

Consumption	2001	2010			2020			2025		
		2003 Technology	Reference Case	High Technology	2003 Technology	Reference Case	High Technology	2003 Technology	Reference Case	High Technology
Energy Consumption (quadrillion Btu)										
Distillate Fuel	1.13	1.25	1.21	1.20	1.42	1.36	1.31	1.52	1.45	1.39
Liquefied Petroleum Gas	2.10	2.60	2.55	2.52	3.19	3.10	3.03	3.43	3.33	3.25
Petrochemical Feedstocks	1.14	1.46	1.43	1.42	1.74	1.69	1.67	1.87	1.82	1.78
Residual Fuel	0.23	0.20	0.19	0.18	0.22	0.20	0.18	0.23	0.20	0.18
Motor Gasoline	0.15	0.17	0.17	0.16	0.19	0.18	0.18	0.20	0.19	0.19
Other Petroleum	4.03	4.39	4.31	4.27	4.64	4.49	4.37	4.78	4.60	4.46
Petroleum Subtotal	8.79	10.06	9.86	9.75	11.40	11.02	10.74	12.03	11.59	11.25
Natural Gas	7.74	9.59	9.13	8.96	11.23	10.38	9.75	12.16	11.22	10.35
Lease and Plant Fuel	1.20	1.39	1.39	1.39	1.59	1.59	1.59	1.74	1.74	1.74
Natural Gas Subtotal	8.94	10.98	10.52	10.35	12.82	11.97	11.33	13.90	12.96	12.09
Metallurgical Coal[1]	0.74	0.82	0.77	0.69	0.81	0.71	0.54	0.80	0.68	0.49
Steam Coal	1.42	1.47	1.44	1.42	1.56	1.50	1.44	1.61	1.53	1.45
Coal Subtotal	2.16	2.29	2.22	2.11	2.37	2.21	1.99	2.41	2.21	1.94
Renewable Energy	1.82	2.18	2.22	2.34	2.66	2.77	3.17	2.90	3.05	3.63
Electricity	3.39	4.08	3.95	3.81	4.99	4.63	4.32	5.49	5.00	4.61
Delivered Energy	**25.10**	**29.59**	**28.76**	**28.36**	**34.25**	**32.61**	**31.55**	**36.73**	**34.81**	**33.52**
Electricity Related Losses	7.57	8.50	8.23	7.93	9.77	9.08	8.47	10.47	9.54	8.78
Total	**32.67**	**38.09**	**36.99**	**36.29**	**44.02**	**41.69**	**40.02**	**47.20**	**44.35**	**42.31**
Delivered Energy Use per Dollar of Shipments (thousand Btu per 1996 dollar)	**4.63**	**4.25**	**4.13**	**4.08**	**3.82**	**3.64**	**3.52**	**3.63**	**3.44**	**3.31**
Onsite Industrial Combined Heat and Power										
Capacity (gigawatts)	22.02	27.25	27.45	30.07	32.39	33.44	38.44	35.43	37.66	43.40
Generation (billion kilowatthours)	125.40	162.20	163.34	181.16	197.58	204.42	236.60	218.77	233.76	269.15

[1]Includes net coal coke imports.

Btu = British thermal unit.

Note: Totals may not equal sum of components due to independent rounding. Data for 2001 are model results and may differ slightly from official EIA data reports. Side cases were run without the fully integrated modeling system, so not all potential feedbacks were captured. The reference case ratio of electricity losses to electricity use was used to compute electricity losses for the technology cases.

Source: Energy Information Administration, AEO2003 National Energy Modeling System runs INDFRZN.D110602A, AEO2003.D110502C, and INDHIGH.D110602A.

Table F3. Key Results for Transportation Sector Technology Cases

Consumption and Indicators	2001	2010			2020			2025		
		2003 Technology	Reference Case	High Technology	2003 Technology	Reference Case	High Technology	2003 Technology	Reference Case	High Technology
Energy Consumption (quadrillion Btu)										
Distillate Fuel	5.44	7.14	7.08	6.98	9.26	8.70	8.31	10.41	9.58	9.04
Jet Fuel	3.43	3.95	3.93	3.88	5.26	5.09	4.82	5.96	5.66	5.21
Motor Gasoline	16.26	20.18	20.09	19.64	25.07	24.04	22.58	27.60	25.90	24.04
Residual Fuel	0.84	0.83	0.83	0.83	0.86	0.85	0.84	0.88	0.87	0.86
Liquefied Petroleum Gas	0.02	0.05	0.05	0.05	0.08	0.08	0.07	0.10	0.09	0.08
Other Petroleum	0.24	0.26	0.26	0.26	0.30	0.30	0.30	0.32	0.32	0.32
Petroleum Subtotal	26.22	32.41	32.24	31.64	40.84	39.06	36.93	45.27	42.41	39.55
Pipeline Fuel Natural Gas	0.63	0.78	0.78	0.78	0.91	0.91	0.91	1.02	1.02	1.02
Compressed Natural Gas	0.01	0.06	0.06	0.06	0.10	0.10	0.10	0.12	0.11	0.11
Renewables (E85)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
Liquid Hydrogen	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.03
Electricity	0.07	0.09	0.09	0.09	0.11	0.12	0.12	0.12	0.14	0.13
Delivered Energy	**26.94**	**33.34**	**33.17**	**32.58**	**41.97**	**40.20**	**38.07**	**46.53**	**43.70**	**40.85**
Electricity Related Losses	0.17	0.18	0.19	0.20	0.21	0.24	0.24	0.23	0.27	0.26
Total	**27.10**	**33.52**	**33.36**	**32.77**	**42.18**	**40.44**	**38.31**	**46.76**	**43.97**	**41.10**
Energy Efficiency Indicators										
New Light-Duty Vehicle (miles per gallon)[1]	24.1	23.8	24.3	25.8	23.7	25.6	28.1	23.7	26.1	28.7
New Car (miles per gallon)[1]	28.1	27.6	28.5	30.7	27.6	29.8	32.6	27.5	30.1	32.9
New Light Truck (miles per gallon)[1]	20.7	20.8	21.0	22.2	20.7	22.5	24.8	20.8	23.0	25.3
Light-Duty Fleet (miles per gallon)[2]	19.8	19.2	19.3	19.8	19.0	19.8	21.2	18.9	20.2	21.9
New Commercial Light Truck (MPG)[3]	13.8	13.7	13.9	14.7	13.6	14.8	16.4	13.6	15.2	16.8
Stock Commercial Light Truck (MPG)[3]	13.7	13.8	13.8	14.2	13.6	14.4	15.5	13.6	14.8	16.2
Aircraft Efficiency (seat miles per gallon)	51.2	54.0	54.3	55.0	56.4	58.6	62.3	57.3	60.7	66.7
Freight Truck Efficiency (miles per gallon)	6.0	6.0	6.0	6.1	6.0	6.3	6.5	6.0	6.5	6.7
Rail Efficiency (ton miles per thousand Btu)	2.8	2.9	3.1	3.2	2.9	3.4	3.8	2.9	3.6	4.1
Domestic Shipping Efficiency (ton miles per thousand Btu)	2.3	2.3	2.3	2.4	2.3	2.4	2.5	2.3	2.4	2.6
Light-Duty Vehicles Less Than 8500 Pounds (vehicle miles traveled)	**2409**	**3004**	**3004**	**3007**	**3747**	**3753**	**3761**	**4124**	**4132**	**4143**

[1]Environmental Protection Agency rated miles per gallon.
[2]Combined car and light truck "on-the-road" estimate.
[3]Commercial trucks 8,500 to 10,000 pounds.
Btu = British thermal unit.
MPG = Miles per gallon.
Note: Totals may not equal sum of components due to independent rounding. Data for 2001 are model results and may differ slightly from official EIA data reports. Side cases were run without the fully integrated modeling system, so not all potential feedbacks were captured. The reference case ratio of electricity losses to electricity use was used to compute electricity losses for the technology cases.
Source: Energy Information Administration, AEO2003 National Energy Modeling System runs TRNFROZ.D110602A, AEO2003.D110502C, and TRNHIGH.D110602A.

Table F4. Key Results for Integrated Technology Cases

Consumption and Emissions	2001	2010			2020			2025		
		2003 Technology	Reference Case	High Technology	2003 Technology	Reference Case	High Technology	2003 Technology	Reference Case	High Technology
Consumption by Sector (quadrillion Btu)										
Residential	20.1	22.9	22.8	22.4	25.3	24.5	23.3	26.3	25.4	23.8
Commercial	17.4	20.3	20.2	19.9	24.5	23.5	22.7	26.6	25.3	23.9
Industrial	32.7	38.1	37.0	36.2	44.6	41.7	39.6	47.8	44.3	41.4
Transportation	27.1	33.5	33.4	32.8	42.3	40.4	38.3	46.6	44.0	41.0
Total	**97.3**	**114.9**	**113.3**	**111.3**	**136.7**	**130.1**	**123.8**	**147.3**	**139.1**	**130.1**
Consumption by Fuel (quadrillion Btu)										
Petroleum Products	38.5	45.1	44.6	43.8	54.9	52.6	50.0	59.9	56.6	53.2
Natural Gas	23.3	28.3	27.7	27.0	33.5	33.0	30.5	35.5	35.8	32.3
Coal	22.0	25.6	25.0	24.4	31.5	27.7	25.6	34.7	29.4	26.3
Nuclear Power	8.0	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4
Renewable Energy	5.3	7.2	7.2	7.5	8.2	8.3	9.1	8.6	8.8	9.8
Other	0.2	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1
Total	**97.3**	**114.9**	**113.3**	**111.3**	**136.7**	**130.1**	**123.8**	**147.3**	**139.1**	**130.1**
Energy Intensity (thousand Btu per 1996 dollar of GDP)	**10.6**	**9.4**	**9.2**	**9.1**	**8.3**	**7.9**	**7.5**	**7.8**	**7.4**	**6.9**
Carbon Dioxide Emissions by Sector (million metric tons carbon equivalent)										
Residential	313.8	356.2	352.1	345.1	408.1	383.7	357.8	432.9	402.8	366.8
Commercial	278.8	321.5	317.2	311.3	405.2	376.2	354.1	450.4	409.9	375.0
Industrial	451.5	517.3	498.1	481.4	611.1	555.2	509.0	660.3	589.9	525.9
Transportation	514.5	636.4	633.0	621.4	803.4	767.3	726.0	885.1	834.2	778.0
Total	**1558.6**	**1831.3**	**1800.5**	**1759.2**	**2227.8**	**2082.5**	**1946.8**	**2428.7**	**2236.9**	**2045.7**
Carbon Dioxide Emissions by End-Use Fuel (million metric tons carbon equivalent)										
Petroleum	640.5	761.9	755.7	741.9	933.4	892.6	847.5	1020.0	960.1	901.0
Natural Gas	251.7	303.7	297.2	294.1	355.3	333.8	322.8	374.5	357.5	335.9
Coal	54.7	61.0	59.0	56.2	63.0	59.2	53.4	64.3	59.3	52.3
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electricity	611.6	704.8	688.5	667.0	876.0	796.9	723.1	970.0	860.1	756.5
Total	**1558.6**	**1831.3**	**1800.5**	**1759.2**	**2227.8**	**2082.5**	**1946.8**	**2428.7**	**2236.9**	**2045.7**
Carbon Dioxide Emissions by Electric Generators (million metric tons carbon equivalent)										
Petroleum	27.5	10.7	8.8	7.6	9.4	9.7	7.2	12.2	10.9	8.0
Natural Gas	77.7	100.7	99.9	91.9	124.4	137.8	113.5	133.7	155.0	126.7
Coal	506.4	593.5	579.9	567.4	742.3	649.5	602.4	824.1	694.2	621.7
Total	**611.6**	**704.8**	**688.5**	**667.0**	**876.0**	**796.9**	**723.1**	**970.0**	**860.1**	**756.5**
Carbon Dioxide Emissions by Primary Fuel (million metric tons carbon equivalent)										
Petroleum	668.0	772.5	764.5	749.5	942.8	902.2	854.7	1032.2	971.0	909.0
Natural Gas	329.4	404.4	397.1	386.0	479.7	471.6	436.3	508.2	512.5	462.6
Coal	561.1	654.4	638.9	623.7	805.3	708.7	655.8	888.4	753.4	674.1
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**1558.6**	**1831.3**	**1800.5**	**1759.2**	**2227.8**	**2082.5**	**1946.8**	**2428.7**	**2236.9**	**2045.7**

Btu = British thermal unit.
GDP = Gross domestic product.
Note: Includes end-use, fossil electricity, and renewable technology assumptions. Totals may not equal sum of components due to independent rounding. Data for 2001 are model results and may differ slightly from official EIA data reports.
Source: Energy Information Administration, AEO2003 National Energy Modeling System runs LTRKITEN.D110702A, AEO2003.D110502C, and HTRKITEN.D110602A.

Table F5. Key Results for Advanced Nuclear Cost Case
(Gigawatts, Unless Otherwise Noted)

Net Summer Capacity, Generation, Emissions, and Fuel Prices	2001	Projections							
		2010		2015		2020		2025	
		Reference	Advanced Nuclear	Reference	Advanced Nuclear	Reference	Advanced Nuclear	Reference	Advanced Nuclear
Capacity									
Coal Steam	310.5	311.5	311.6	328.1	328.1	348.4	346.7	375.8	367.7
Other Fossil Steam	135.0	84.6	84.6	79.5	79.5	78.3	78.3	77.3	77.0
Combined Cycle	66.2	176.1	176.0	228.8	229.7	259.3	259.0	301.4	299.2
Combustion Turbine/Diesel	102.6	133.5	133.3	144.9	144.0	157.9	157.4	179.1	176.8
Nuclear Power	98.2	99.3	99.3	99.5	99.5	99.6	101.3	99.6	113.9
Pumped Storage	19.9	20.3	20.3	20.3	20.3	20.3	20.3	20.3	20.3
Fuel Cells	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
Renewable Sources	90.9	97.6	97.7	100.1	100.1	102.2	102.3	104.6	104.3
Distributed Generation (Natural Gas)	0.0	1.7	1.7	4.9	5.0	10.1	10.0	15.8	15.5
Combined Heat and Power[1]	28.8	34.6	34.6	37.6	37.6	41.7	41.7	47.4	47.6
Total	**851.9**	**959.3**	**959.1**	**1043.9**	**1044.0**	**1118.2**	**1117.2**	**1221.5**	**1222.5**
Cumulative Additions									
Coal Steam	0.0	6.8	6.9	23.9	23.9	45.5	43.8	74.0	65.9
Other Fossil Steam	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Combined Cycle	0.0	109.2	109.2	161.9	162.8	192.5	192.1	234.5	232.3
Combustion Turbine/Diesel	0.0	40.1	39.7	52.6	51.6	67.7	67.2	89.7	87.1
Nuclear Power	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	14.3
Pumped Storage	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Fuel Cells	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
Renewable Sources	0.0	6.3	6.4	8.8	8.9	11.0	11.0	13.3	13.1
Distributed Generation	0.0	1.7	1.7	4.9	5.0	10.1	10.0	15.8	15.5
Combined Heat and Power[1]	0.0	5.8	5.8	8.8	8.8	12.9	12.9	18.7	18.8
Total	**0.0**	**170.3**	**170.1**	**261.5**	**261.4**	**340.2**	**339.2**	**446.4**	**447.5**
Cumulative Retirements	**0.0**	**66.5**	**66.3**	**74.1**	**74.0**	**78.7**	**78.8**	**81.7**	**81.6**
Generation by Fuel (billion kilowatthours)									
Coal	1881	2222	2223	2368	2368	2530	2517	2736	2670
Petroleum	120	43	42	47	47	46	46	55	51
Natural Gas	535	875	874	1087	1086	1293	1292	1481	1445
Nuclear Power	769	800	800	805	805	807	818	807	920
Pumped Power	-9	-1	-1	-1	-1	-1	-1	-1	-1
Renewable Sources	263	396	397	409	409	420	421	432	432
Distributed Generation	0	1	1	3	3	5	5	7	7
Combined Heat and Power[1]	164	207	207	227	227	255	255	294	295
Total	**3723**	**4544**	**4544**	**4944**	**4944**	**5355**	**5354**	**5813**	**5819**
Carbon Dioxide Emissions by Electric Generators (million metric tons carbon equivalent)[2]									
Petroleum	27.5	8.8	8.7	9.8	9.9	9.7	9.8	10.9	10.3
Natural Gas	77.7	99.9	99.7	117.5	117.3	137.8	137.7	155.0	151.4
Coal	506.4	579.9	580.0	613.3	613.3	649.5	646.9	694.2	679.6
Total	**611.6**	**688.5**	**688.5**	**740.6**	**740.4**	**796.9**	**794.3**	**860.1**	**841.2**
Prices to Electric Generators (2001 dollars per million Btu)									
Petroleum	4.73	4.27	4.27	4.43	4.42	4.60	4.61	4.98	4.98
Natural Gas	4.78	3.79	3.79	4.14	4.14	4.30	4.30	4.60	4.43
Coal	1.25	1.17	1.17	1.15	1.15	1.12	1.12	1.10	1.10

[1] Includes combined heat and power plants and electricity-only plants in commercial and industrial sectors. Includes 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.

[2] Excludes combined heat and power and other generators

Note: Totals may not equal sum of components due to independent rounding. Data for 2001 are model results and may differ slightly from official EIA data reports. Net summer capacity has been estimated for nonutility generators to be consistent with electric utility capacity estimates.

Source: Energy Information Administration, AEO2003 National Energy Modeling System runs AEO2003.D110502C, and ADVNUC03.D110602A.

Table F6. Key Results for High Electricity Demand Case

Net Summer Capacity, Generation, Consumption, Emissions, and Prices	2001	2010		2020		2025		Annual Growth 2001-2025	
		Reference Case	High Demand	Reference Case	High Demand	Reference Case	High Demand	Reference Case	High Demand
Electricity Sales (billion kilowatthours)	**3414**	**4101**	**4353**	**4850**	**5503**	**5252**	**6163**	**1.8%**	**2.5%**
Electricity Prices (2001 cents per kilowatthour)	**7.3**	**6.4**	**6.6**	**6.6**	**6.8**	**6.7**	**7.0**	**-0.3%**	**-0.2%**
Capacity (gigawatts)									
Coal Steam	310.5	311.5	319.9	348.4	411.7	375.8	472.9	0.8%	1.8%
Other Fossil Steam	135.0	84.6	90.5	78.3	84.5	77.3	80.0	-2.3%	-2.2%
Combined Cycle	66.2	176.1	202.7	259.3	299.1	301.4	350.4	6.5%	7.2%
Combustion Turbine/Diesel	102.6	133.5	150.2	157.9	183.2	179.1	226.2	2.3%	3.3%
Nuclear Power	98.2	99.3	99.3	99.6	99.6	99.6	99.6	0.1%	0.1%
Fuel Cells	0.0	0.1	0.1	0.2	0.2	0.2	0.2	33.2%	33.2%
Renewable Sources/Pumped Storage	110.7	117.9	118.1	122.6	124.4	124.9	128.3	0.5%	0.6%
Distributed Generation	0.0	1.7	2.4	10.1	14.4	15.8	23.6	N/A	N/A
Combined Heat and Power[1]	28.8	34.6	34.6	41.7	41.7	47.4	47.4	2.1%	2.1%
Total	**851.9**	**959.3**	**1017.8**	**1118.2**	**1258.7**	**1221.5**	**1428.7**	**1.5%**	**2.2%**
Cumulative Additions (gigawatts)									
Coal Steam	0.0	6.8	15.2	45.5	108.8	74.0	171.1	N/A	N/A
Other Fossil Steam	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A
Combined Cycle	0.0	109.2	135.9	192.5	232.2	234.5	283.5	N/A	N/A
Combustion Turbine/Diesel	0.0	40.1	56.4	67.7	94.9	89.7	141.9	N/A	N/A
Nuclear Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A	N/A
Fuel Cells	0.0	0.1	0.1	0.2	0.2	0.2	0.2	N/A	N/A
Renewable Sources/Pumped Storage	0.0	6.6	6.8	11.3	13.1	13.6	17.0	N/A	N/A
Distributed Generation	0.0	1.7	2.4	10.1	14.4	15.8	23.6	N/A	N/A
Combined Heat and Power[1]	0.0	5.8	5.8	12.9	12.9	18.7	18.7	N/A	N/A
Total	**0.0**	**170.3**	**222.6**	**340.2**	**476.5**	**446.4**	**656.0**	**N/A**	**N/A**
Generation by Fuel (billion kilowatthours)									
Coal	1881	2222	2311	2530	2991	2736	3447	1.6%	2.6%
Petroleum	120	43	59	46	48	55	81	-3.2%	-1.6%
Natural Gas	535	875	1027	1293	1510	1481	1684	4.3%	4.9%
Nuclear Power	769	800	800	807	807	807	807	0.2%	0.2%
Renewable Sources/Pumped Storage	254	396	398	419	427	432	445	2.2%	2.4%
Distributed Generation	0	1	2	5	7	7	11	N/A	N/A
Combined Heat and Power[1]	164	207	207	255	255	294	294	2.5%	2.6%
Total	**3723**	**4544**	**4804**	**5355**	**6044**	**5813**	**6770**	**1.9%**	**2.5%**
Fossil Fuel Consumption by Electric Generators (quadrillion Btu)[2]									
Petroleum	1.25	0.42	0.58	0.46	0.47	0.52	0.75	-3.6%	-2.1%
Natural Gas	5.40	6.93	7.98	9.57	11.11	10.76	12.15	2.9%	3.4%
Coal	19.75	22.65	23.49	25.35	29.08	27.09	32.50	1.3%	2.1%
Carbon Dioxide Emissions by Electric Generators (million metric tons carbon equivalent)[2]									
Petroleum	27.5	8.8	12.1	9.7	9.9	10.9	15.5	-3.8%	-2.4%
Natural Gas	77.7	99.9	114.9	137.8	160.0	155.0	174.9	2.9%	3.4%
Coal	506.4	579.9	601.1	649.5	744.9	694.2	832.3	1.3%	2.1%
Total	**611.6**	**688.5**	**728.2**	**796.9**	**914.8**	**860.1**	**1022.7**	**1.4%**	**2.2%**
Prices to Electric Generators (2001 dollars per million Btu)									
Petroleum	4.73	4.27	4.23	4.60	4.66	4.98	5.05	0.2%	0.3%
Natural Gas	4.78	3.79	4.10	4.30	4.11	4.60	5.14	-0.2%	0.3%
Coal	1.25	1.17	1.18	1.12	1.16	1.10	1.17	-0.5%	-0.3%

[1]Includes combined heat and power plants and electricity-only plants in the commercial and industrial sectors. Includes 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.

[2] Excludes combined heat and power and other generators.

Btu = British thermal unit.

N/A = not applicable.

Note: Totals may not equal sum of components due to independent rounding. Data for 2001 are model results and may differ slightly from official EIA data reports. Other includes non-coal fossil steam, pumped storage, methane, propane and blast furnace gas. Side case was run without the fully integrated modeling system, so not all potential feedbacks were captured.

Source: Energy Information Administration, AEO2003 National Energy Modeling System runs AEO2003.D110502C, and HDEM03.D110602A.

Table F7. Key Results for Electric Power Sector Fossil Technology Cases

(Gigawatts, Unless Otherwise Noted)

Net Summer Capacity, Generation Consumption, and Emissions	2001	2010			2020			2025		
		Low Fossil	Reference Case	High Fossil	Low Fossil	Reference Case	High Fossil	Low Fossil	Reference Case	High Fossil
Capacity										
Pulverized Coal	310.0	314.6	310.8	305.5	382.2	344.2	303.6	424.0	368.6	302.5
Coal Gasification Combined-Cycle	0.5	0.7	0.8	8.7	1.3	4.1	58.1	1.3	7.1	94.3
Conventional Natural Gas Combined-Cycle	66.2	152.7	133.7	130.7	187.9	134.0	130.7	210.3	134.0	130.2
Advanced Natural Gas Combined-Cycle	0.0	17.3	42.4	47.5	21.1	125.3	159.6	22.1	167.4	204.7
Conventional Combustion Turbine	102.6	131.0	128.2	126.3	156.4	127.7	118.5	172.2	128.6	117.0
Advanced Combustion Turbine	0.0	2.5	5.3	3.3	5.6	30.2	13.8	7.3	50.5	22.7
Fuel Cells	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
Nuclear	98.2	99.3	99.3	99.3	99.6	99.6	99.6	99.6	99.6	99.6
Oil and Gas Steam	135.0	85.7	84.6	85.0	81.2	78.3	72.5	80.4	77.3	68.5
Renewable Sources/Pumped Storage	110.7	118.1	117.9	117.7	125.3	122.6	119.9	134.2	124.9	120.5
Distributed Generation	0.0	2.3	1.7	1.3	15.0	10.1	5.1	23.7	15.8	8.8
Combined Heat and Power[1]	28.8	34.6	34.6	34.6	41.7	41.7	41.7	47.4	47.4	47.4
Total	**851.9**	**958.9**	**959.3**	**960.0**	**1117.6**	**1118.2**	**1123.2**	**1222.7**	**1221.5**	**1216.5**
Cumulative Additions										
Pulverized Coal	0.0	10.4	6.6	1.6	79.8	41.9	1.6	122.7	67.4	1.6
Coal Gasification Combined-Cycle	0.0	0.2	0.3	8.2	0.8	3.6	57.6	0.8	6.6	93.8
Conventional Natural Gas Combined-Cycle	0.0	85.9	66.8	63.8	121.0	67.1	63.8	143.4	67.1	63.8
Advanced Natural Gas Combined-Cycle	0.0	17.3	42.4	47.5	21.1	125.3	159.6	22.1	167.4	204.7
Conventional Combustion Turbine	0.0	37.2	34.8	32.2	65.9	37.5	32.9	82.1	39.2	33.9
Advanced Combustion Turbine	0.0	2.5	5.3	3.3	5.6	30.2	13.8	7.3	50.5	22.7
Fuel Cells	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
Nuclear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oil and Gas Steam	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Renewable Sources	0.0	6.8	6.6	6.4	14.0	11.3	8.6	22.9	13.6	9.2
Distributed Generation	0.0	2.3	1.7	1.3	15.0	10.1	5.1	23.7	15.8	8.8
Combined Heat and Power[1]	0.0	5.8	5.8	5.8	12.9	12.9	12.9	18.7	18.7	18.7
Total	**0.0**	**168.5**	**170.3**	**170.3**	**336.4**	**340.2**	**356.1**	**443.8**	**446.4**	**457.5**
Cumulative Retirements	**0.0**	**65.0**	**66.5**	**65.7**	**75.5**	**78.7**	**89.6**	**77.8**	**81.7**	**97.7**
Generation by Fuel (billion kilowatthours)										
Coal	1881	2247	2222	2237	2757	2530	2600	3066	2736	2864
Petroleum	120	44	43	40	48	46	39	64	55	52
Natural Gas	535	848	875	866	1052	1293	1252	1093	1481	1386
Nuclear Power	769	800	800	800	807	807	807	807	807	807
Renewable Sources/Pumped Storage	254	397	396	395	428	419	406	474	432	411
Distributed Generation	0	2	1	1	7	5	2	11	7	4
Combined Heat and Power[1]	164	207	207	207	255	255	255	294	294	294
Total	**3723**	**4544**	**4544**	**4546**	**5354**	**5355**	**5361**	**5810**	**5813**	**5817**
Fuel Consumption by Electric Generators (quadrillion Btu)[2]										
Coal	19.75	22.87	22.65	22.67	27.26	25.35	24.96	29.92	27.09	26.45
Petroleum	1.25	0.43	0.42	0.40	0.48	0.46	0.39	0.64	0.52	0.48
Natural Gas	5.40	6.86	6.93	6.69	8.44	9.57	8.13	8.74	10.76	8.66
Nuclear Power	8.03	8.36	8.36	8.36	8.43	8.43	8.43	8.43	8.43	8.43
Renewable Sources	3.02	4.52	4.50	4.50	5.08	5.00	4.72	5.60	5.21	4.85
Total	**37.45**	**43.04**	**42.86**	**42.61**	**49.69**	**48.80**	**46.63**	**53.33**	**52.02**	**48.87**
Carbon Dioxide Emissions by Electric Generators (million metric tons carbon equivalent)[2]										
Petroleum	27.5	9.1	8.8	8.3	10.1	9.7	8.1	13.4	10.9	10.0
Natural Gas	77.7	98.8	99.9	96.4	121.6	137.8	117.1	125.8	155.0	124.7
Coal	506.4	585.4	579.9	580.2	698.4	649.5	639.4	766.3	694.2	677.7
Total	**611.6**	**693.2**	**688.5**	**684.8**	**830.0**	**796.9**	**764.6**	**905.5**	**860.1**	**812.3**

[1]Includes combined heat and power plants and electricity-only plants in the commercial and industrial sectors. Includes 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.

[2] Excludes combined heat and power and other generators.

Note: Totals may not equal sum of components due to independent rounding. Data for 2001 are model results and may differ slightly from official EIA data reports. Net summer capacity has been estimated for nonutility generators to be consistent with electric utility capacity estimates. Side cases were run without the fully integrated modeling system, so not all potential feedbacks were captured.

Source: Energy Information Administration, AEO2003 National Energy Modeling System runs LFOSS03.D110602A, AEO2003.D110502C, and HFOSS03.D110602A.

Table F8. Key Results for High Renewable Energy Case

Capacity, Generation, and Emissions	2001	2010		2020		2025	
		Reference	High Renewables	Reference	High Renewables	Reference	High Renewables
Renewable Capacity (gigawatts) Net Summer Capacity							
Electric Generators[1]							
Conventional Hydropower	78.36	78.92	78.92	78.92	78.92	78.92	78.92
Geothermal[2]	2.86	3.54	4.12	5.00	6.82	5.64	7.51
Municipal Solid Waste[3]	3.25	4.03	4.03	4.37	4.37	4.37	4.37
Wood and Other Biomass[4]	1.77	2.07	2.07	2.18	3.30	2.78	5.00
Solar Thermal	0.33	0.44	0.44	0.48	0.48	0.50	0.50
Solar Photovoltaic	0.02	0.10	0.10	0.27	0.27	0.36	0.36
Wind	4.29	8.47	11.68	11.05	36.91	12.00	39.12
Total	**90.88**	**97.57**	**101.36**	**102.25**	**131.05**	**104.56**	**135.77**
Combined Heat and Power[5]							
Municipal Solid Waste	0.28	0.28	0.28	0.28	0.28	0.28	0.28
Wood and Other Biomass	4.41	5.88	6.35	7.76	9.23	8.71	10.84
Total	**4.69**	**6.16**	**6.63**	**8.04**	**9.51**	**9.00**	**11.13**
Other End-Use Generators[6]							
Conventional Hydropower	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solar Photovoltaic	0.02	0.38	0.41	0.62	1.38	0.93	2.49
Total	**1.12**	**1.47**	**1.50**	**1.71**	**2.48**	**2.03**	**3.58**
Generation (billion kilowatthours)							
Electric Generators							
Coal	1881	2222	2208	2530	2440	2736	2616
Petroleum	120	43	42	46	47	55	53
Natural Gas	535	875	869	1293	1255	1481	1462
Total Fossil	**2536**	**3140**	**3119**	**3869**	**3742**	**4273**	**4131**
Conventional Hydropower	213.82	301.89	301.89	301.05	301.05	301.34	301.34
Geothermal	13.81	19.81	24.43	31.78	46.52	36.92	52.32
Municipal Solid Waste[3]	19.55	28.88	28.88	31.34	31.34	31.49	31.49
Wood and Other Biomass[4]	9.38	21.27	21.54	21.88	26.80	24.66	33.34
Dedicated Plants	7.67	12.41	12.42	13.12	20.16	16.47	30.38
Cofiring	1.71	8.85	9.12	8.76	6.64	8.19	2.96
Solar Thermal	0.49	0.77	0.86	0.90	1.08	0.97	1.21
Solar Photovoltaic	0.00	0.24	0.24	0.66	0.66	0.88	0.88
Wind	5.78	23.62	35.34	32.70	131.76	36.21	139.59
Total Renewable	**262.85**	**396.47**	**413.18**	**420.31**	**539.21**	**432.48**	**560.18**
Combined Heat and Power[5]							
Total Fossil	**111**	**144**	**144**	**180**	**181**	**212**	**213**
Municipal Solid Waste	2.46	2.15	2.15	2.15	2.15	2.15	2.15
Wood and Other Biomass	28.67	37.23	40.00	48.21	56.80	53.80	66.23
Total Renewables	**31.13**	**39.38**	**42.15**	**50.36**	**58.95**	**55.95**	**68.38**
Other End-Use Generators[6]							
Conventional Hydropower[7]	4.23	4.23	4.23	4.23	4.23	4.23	4.23
Geothermal	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solar Photovoltaic	0.02	0.82	0.87	1.33	2.90	1.98	5.17
Total	**4.25**	**5.05**	**5.11**	**5.57**	**7.14**	**6.22**	**9.41**
Sources of Ethanol							
From Corn	0.15	0.26	0.25	0.29	0.26	0.29	0.24
From Cellulose	0.00	0.00	0.01	0.02	0.05	0.05	0.10
Total	**0.15**	**0.26**	**0.26**	**0.31**	**0.31**	**0.34**	**0.34**
Carbon Dioxide Emissions by Electric Generators (million metric tons carbon equivalent)[8]							
Petroleum	27.5	8.8	8.7	9.7	9.8	10.9	10.5
Natural Gas	77.7	99.9	99.5	137.8	134.0	155.0	153.1
Coal	506.4	579.9	576.6	649.5	629.1	694.2	667.9
Total	**611.6**	**688.5**	**684.8**	**796.9**	**772.9**	**860.1**	**831.5**

[1]Includes grid-connected utilities and nonutilities other than cogenerators. These nonutility facilities include small power producers and exempt wholesale generators.
[2]Includes hydrothermal resources only (hot water and steam).
[3]Includes landfill gas.
[4]Includes projections for energy crops after 2010.
[5]Cogenerators produce electricity and other useful thermal energy.
[6]Includes 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.
[7]Represents own-use industrial hydroelectric power.
[8]Excludes combined heat and power and other generators.
Note: Totals may not equal sum of components due to independent rounding. Data for 2001 are model results and may differ slightly from official EIA data reports.
Source: Energy Information Administration, AEO2003 National Energy Modeling System runs AEO2003.D110502C, and HIRENEW03.D110602B.

Table F9. Total Energy Supply and Disposition Summary, Oil and Gas Technological Progress Cases

(Quadrillion Btu per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	2001	Projections								
		2010			2020			2025		
		Slow Technology Progress	Reference	Rapid Technology Progress	Slow Technology Progress	Reference	Rapid Technology Progress	Slow Technology Progress	Reference	Rapid Technology Progress
Production										
Crude Oil and Lease Condensate	12.29	11.81	11.91	11.98	11.26	11.56	11.83	10.71	11.29	11.75
Natural Gas Plant Liquids	2.65	3.12	3.16	3.19	3.46	3.59	3.75	3.54	3.76	3.98
Dry Natural Gas	19.97	22.17	22.47	22.67	25.28	25.75	26.89	25.80	27.47	29.07
Coal	23.97	25.50	25.30	25.17	28.14	27.69	27.02	29.69	29.29	28.79
Nuclear Power	8.03	8.36	8.36	8.36	8.43	8.43	8.43	8.43	8.43	8.43
Renewable Energy[1]	5.33	7.23	7.23	7.24	8.28	8.28	8.18	8.82	8.78	8.69
Other[2]	0.57	0.85	0.84	0.84	0.80	0.80	0.80	0.81	0.80	0.80
Total	**72.81**	**79.03**	**79.27**	**79.45**	**85.64**	**86.10**	**86.91**	**87.80**	**89.83**	**91.52**
Imports										
Crude Oil[3]	20.26	25.16	25.13	25.06	27.72	27.61	27.34	29.07	28.47	28.18
Petroleum Products[4]	5.04	6.61	6.41	6.32	12.30	11.97	11.84	15.54	15.17	14.60
Natural Gas	4.10	5.41	5.52	5.60	7.28	7.22	6.84	9.17	8.30	7.72
Other Imports[5]	0.73	0.90	0.90	0.89	0.95	0.96	0.97	0.94	0.94	0.94
Total	**30.13**	**38.08**	**37.96**	**37.87**	**48.26**	**47.76**	**46.98**	**54.71**	**52.88**	**51.44**
Exports										
Petroleum[6]	2.01	2.24	2.24	2.24	2.34	2.34	2.35	2.39	2.41	2.39
Natural Gas	0.37	0.60	0.62	0.64	0.37	0.41	0.50	0.36	0.37	0.36
Coal	1.27	0.91	0.91	0.89	0.74	0.74	0.74	0.67	0.67	0.67
Total	**3.64**	**3.75**	**3.76**	**3.77**	**3.45**	**3.49**	**3.59**	**3.43**	**3.45**	**3.43**
Consumption										
Petroleum Products[7]	38.46	44.74	44.65	44.59	52.65	52.60	52.61	56.73	56.56	56.40
Natural Gas	23.26	27.37	27.75	28.02	32.59	32.96	33.63	35.02	35.81	36.83
Coal	22.02	25.18	24.98	24.86	28.13	27.68	27.02	29.82	29.42	28.93
Nuclear Power	8.03	8.36	8.36	8.36	8.43	8.43	8.43	8.43	8.43	8.43
Renewable Energy[1]	5.33	7.23	7.23	7.24	8.28	8.28	8.18	8.82	8.78	8.69
Other[8]	0.21	0.29	0.29	0.28	0.17	0.17	0.18	0.07	0.07	0.06
Total	**97.30**	**113.15**	**113.26**	**113.34**	**130.25**	**130.12**	**130.05**	**138.89**	**139.07**	**139.34**
Net Imports - Petroleum	**23.29**	**29.53**	**29.31**	**29.15**	**37.69**	**37.24**	**36.82**	**42.21**	**41.23**	**40.39**
Prices (2001 dollars per unit)										
World Oil Price (dollars per barrel)[9]	22.01	23.99	23.99	23.99	25.48	25.48	25.48	26.57	26.57	26.57
Natural Gas Wellhead Price (dollars per thousand cubic feet)[10]	4.12	3.46	3.29	3.13	3.52	3.69	3.72	4.35	3.90	3.38
Coal Minemouth Price (dollars per ton)	17.59	15.05	14.99	15.03	14.42	14.38	14.31	14.42	14.36	14.20
Average Electricity Price (cents per kilowatthour)	7.3	6.4	6.4	6.3	6.6	6.6	6.7	6.8	6.7	6.6
Carbon Dioxide Emissions (million metric tons carbon equivalent)	**1558.6**	**1801.8**	**1800.5**	**1800.0**	**2089.6**	**2082.5**	**2075.6**	**2239.0**	**2236.9**	**2235.8**

[1]Includes 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.
[2]Includes liquid hydrogen, methanol, supplemental natural gas, and some domestic inputs to refineries.
[3]Includes imports of crude oil for the Strategic Petroleum Reserve.
[4]Includes imports of finished petroleum products, unfinished oils, alcohols, ethers, and blending components.
[5]Includes coal, coal coke (net), and electricity (net).
[6]Includes crude oil and petroleum products.
[7]Includes natural gas plant liquids, crude oil consumed as a fuel, and nonpetroleum-based liquids for blending, such as ethanol.
[8]Includes net electricity imports, methanol, and liquid hydrogen.
[9]Average refiner acquisition cost for imported crude oil.
[10]Represents lower 48 onshore and offshore supplies.
Btu = British thermal unit.
Note: Totals may not equal sum of components due to independent rounding. Data for 2001 are model results and may differ slightly from official EIA data reports.
Sources: 2001 natural gas supply values: Energy Information Administration (EIA), *Natural Gas Monthly*, DOE/EIA-0130(2002/08) (Washington, DC, August 2002). 2001 petroleum supply values: EIA, *Petroleum Supply Annual 2001,* DOE/EIA-0340(2001)/1 (Washington, DC, June 2002). Other 2001 values: EIA,*Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, November 2002) and EIA,*Quarterly Coal Report, October-December 2001, DOE/EIA-0121(2001/4Q) (Washington, DC, May 2002)*. **Projections:** EIA, AEO2003 National Energy Modeling System runs OGLTEC03.D110602C, AEO2003.D110502C, and OGHTEC03.D110602C.

Table F10. Natural Gas Supply and Disposition, Oil and Gas Technological Progress Cases
(Trillion Cubic Feet per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	2001	Projections								
		2010			2020			2025		
		Slow Technology Progress	Reference	Rapid Technology Progress	Slow Technology Progress	Reference	Rapid Technology Progress	Slow Technology Progress	Reference	Rapid Technology Progress
Lower 48 Average Wellhead Price (2001 dollars per thousand cubic feet)	**4.12**	**3.46**	**3.29**	**3.13**	**3.52**	**3.69**	**3.72**	**4.35**	**3.90**	**3.38**
Dry Gas Production[1]										
U.S. Total	**19.45**	**21.59**	**21.88**	**22.08**	**24.61**	**25.07**	**26.19**	**25.12**	**26.75**	**28.31**
Lower 48 Onshore	13.72	16.16	16.28	16.43	17.08	19.14	19.99	17.67	18.43	19.98
Associated-Dissolved	1.77	1.37	1.38	1.38	1.20	1.21	1.23	1.13	1.15	1.18
Non-Associated	11.94	14.79	14.91	15.05	15.89	17.92	18.76	16.54	17.27	18.80
Conventional	6.54	7.92	7.98	8.02	7.55	8.24	8.62	7.54	7.75	7.85
Unconventional	5.40	6.87	6.93	7.03	8.33	9.68	10.13	9.00	9.53	10.95
Lower 48 Offshore	5.30	4.95	5.12	5.17	5.14	5.39	5.66	5.03	5.69	5.91
Associated-Dissolved	1.08	0.78	0.79	0.80	0.75	0.77	0.80	0.82	0.91	0.90
Non-Associated	4.22	4.17	4.33	4.37	4.39	4.62	4.86	4.20	4.78	5.01
Alaska	0.43	0.48	0.48	0.48	2.39	0.55	0.55	2.42	2.64	2.42
Supplemental Natural Gas[2]	**0.08**	**0.10**	**0.10**	**0.10**	**0.10**	**0.10**	**0.10**	**0.10**	**0.10**	**0.10**
Net Imports	**3.65**	**4.70**	**4.78**	**4.85**	**6.76**	**6.66**	**6.20**	**8.61**	**7.76**	**7.19**
Canada	3.61	3.94	4.05	4.13	4.46	5.08	5.15	5.16	5.31	5.10
Mexico	-0.13	-0.24	-0.26	-0.28	0.34	0.07	-0.14	0.71	0.30	0.17
Liquefied Natural Gas	0.17	0.99	0.99	0.99	1.96	1.51	1.19	2.75	2.14	1.92
Total Supply	**23.17**	**26.38**	**26.76**	**27.02**	**31.47**	**31.82**	**32.48**	**33.83**	**34.60**	**35.60**
Consumption by Sector										
Residential	4.81	5.47	5.50	5.54	5.96	5.96	5.96	6.17	6.22	6.33
Commercial	3.24	3.66	3.69	3.72	4.16	4.17	4.17	4.38	4.43	4.52
Industrial[3]	7.53	8.83	8.88	8.92	10.08	10.10	10.17	10.76	10.91	11.08
Electric Generators[4]	5.30	6.57	6.80	6.95	9.02	9.39	9.89	10.19	10.56	11.10
Transportation[5]	0.01	0.06	0.06	0.06	0.10	0.10	0.10	0.11	0.11	0.11
Pipeline Fuel	0.61	0.75	0.76	0.76	0.90	0.88	0.91	0.94	1.00	1.03
Lease and Plant Fuel[6]	1.17	1.34	1.35	1.36	1.57	1.55	1.60	1.61	1.69	1.76
Total	**22.67**	**26.68**	**27.06**	**27.32**	**31.78**	**32.14**	**32.80**	**34.16**	**34.93**	**35.92**
Gas to Liquids	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discrepancy[7]	**0.50**	**-0.30**	**-0.30**	**-0.30**	**-0.32**	**-0.32**	**-0.32**	**-0.33**	**-0.32**	**-0.33**
Lower 48 End of Year Reserves	**174.04**	**173.61**	**178.39**	**183.38**	**183.92**	**193.42**	**202.36**	**174.83**	**189.88**	**212.43**

[1]Marketed production (wet) minus extraction losses.
[2]Synthetic 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.
[3]Includes consumption for combined heat and power, which produces electricity and other useful thermal energy.
[4]Includes consumption of energy by electricity-only and combined heat and power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public. Includes small power producers and exempt wholesale generators.
[5]Compressed natural gas used as vehicle fuel.
[6]Represents natural gas used in the field gathering and processing plant machinery.
[7]Balancing 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, 2001 values include net storage injections.
Btu = British thermal unit.
Note: Totals may not equal sum of components due to independent rounding. Data for 2001 are model results and may differ slightly from official EIA data reports.
Sources: 2001 supply values: Energy Information Administration (EIA), *Natural Gas Monthly*, DOE/EIA-0130(2002/08) (Washington, DC, August 2002). 2001 consumption based on: EIA, *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, November 2002). **Projections:** EIA, AEO2003 National Energy Modeling System runs OGLTEC03.D110602C, AEO2003.D110502C, and OGHTEC03.D110602C.

Table F11. Crude Oil Supply and Disposition, Oil and Gas Technological Progress Cases
(Million Barrels per Day, Unless Otherwise Noted)

Supply, Disposition, and Prices	2001	Projections								
		2010			2020			2025		
		Slow Technology Progress	Reference	Rapid Technology Progress	Slow Technology Progress	Reference	Rapid Technology Progress	Slow Technology Progress	Reference	Rapid Technology Progress
World Oil Price (2001 dollars per barrel)	**22.91**	**23.86**	**23.90**	**23.90**	**24.84**	**24.89**	**24.90**	**26.10**	**26.12**	**26.11**
Production[1]										
U.S. Total	**5.80**	**5.58**	**5.63**	**5.66**	**5.32**	**5.46**	**5.59**	**5.06**	**5.33**	**5.55**
Lower 48 Onshore	3.13	2.50	2.51	2.52	2.08	2.12	2.16	1.92	1.98	2.03
Lower 48 Offshore	1.71	2.46	2.47	2.48	2.04	2.11	2.17	1.99	2.18	2.32
Alaska	0.97	0.62	0.64	0.66	1.20	1.23	1.26	1.15	1.17	1.20
Net Crude Imports	**9.31**	**11.53**	**11.51**	**11.48**	**12.72**	**12.66**	**12.53**	**13.35**	**13.06**	**12.92**
Other Crude Supply	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Total Crude Supply	**15.13**	**17.11**	**17.14**	**17.14**	**18.04**	**18.12**	**18.12**	**18.41**	**18.39**	**18.47**
Natural Gas Plant Liquids	**1.87**	**2.20**	**2.23**	**2.25**	**2.42**	**2.53**	**2.64**	**2.48**	**2.63**	**2.79**
Other Inputs[2]	**0.30**	**0.44**	**0.44**	**0.44**	**0.44**	**0.44**	**0.44**	**0.45**	**0.45**	**0.45**
Refinery Processing Gain[3]	**0.90**	**0.91**	**0.91**	**0.91**	**0.97**	**0.96**	**0.95**	**0.96**	**0.96**	**0.95**
Net Product Imports[4]	**1.59**	**2.35**	**2.25**	**2.21**	**5.27**	**5.06**	**4.97**	**6.94**	**6.73**	**6.43**
Total Primary Supply[5]	**19.80**	**23.01**	**22.97**	**22.95**	**27.13**	**27.11**	**27.12**	**29.24**	**29.16**	**29.08**
Refined Petroleum Products Supplied										
Residential and Commercial	1.21	1.17	1.17	1.17	1.14	1.13	1.13	1.13	1.12	1.12
Industrial[6]	4.67	5.31	5.30	5.29	6.00	6.00	5.99	6.37	6.33	6.31
Transportation	13.27	16.33	16.33	16.33	19.80	19.79	19.79	21.49	21.48	21.49
Electric Generators[7]	0.55	0.22	0.19	0.17	0.21	0.20	0.22	0.27	0.23	0.17
Total	**19.69**	**23.03**	**22.99**	**22.96**	**27.15**	**27.13**	**27.13**	**29.26**	**29.17**	**29.10**
Discrepancy[8]	**0.10**	**-0.01**	**-0.01**	**-0.01**	**-0.01**	**-0.02**	**-0.02**	**-0.02**	**-0.02**	**-0.02**
Lower 48 End of Year Reserves (billion barrels)[1]	**19.48**	**17.76**	**17.79**	**17.77**	**15.68**	**15.64**	**15.78**	**14.89**	**15.31**	**15.44**

[1]Includes lease condensate.
[2]Includes alcohols, ethers, petroleum product stock withdrawals, domestic sources of blending components, other hydrocarbons, natural gas converted to liquid fuel, and coal converted to liquid fuel.
[3]Represents volumetric gain in refinery distillation and cracking processes.
[4]Includes net imports of finished petroleum products, unfinished oils, other hydrocarbons, alcohols, ethers, and blending components.
[5]Total crude supply plus natural gas plant liquids, other inputs, refinery processing gain, and net product imports.
[6]Includes consumption for combined heat and power, which produces electricity and other useful thermal energy.
[7]Includes consumption of energy by electricity-only and combined heat and power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public. Includes small power producers and exempt wholesale generators.
[8]Balancing item. Includes unaccounted for supply, losses and gains.
Note: Totals may not equal sum of components due to independent rounding. Data for 2001 are model results and may differ slightly from official EIA data reports.
Sources: 2001 product supplied data based on: Energy Information Administration (EIA), *Annual Energy Review 2001*, DOE/EIA-0384(2001) (Washington, DC, November 2002). Other 2001 data: EIA, *Petroleum Supply Annual 2001,* DOE/EIA-0340(2001)/1 (Washington, DC, June 2002). **Projections:** EIA, AEO2003 National Energy Modeling System runs OGLTEC03.D110602C, AEO2003.D110502C, and OGHTEC03.D110602C.

Results from Side Cases

Table F12. Key Results for Coal Mining Cost Cases

Prices, Productivity, Wages, and Emissions	2001	2010			2020			2025		
		Low Cost	Reference Case	High Cost	Low Cost	Reference Case	High Cost	Low Cost	Reference Case	High Cost
Minemouth Price (2001 dollars per short ton)	**17.59**	**13.86**	**14.99**	**16.25**	**12.56**	**14.38**	**16.61**	**11.96**	**14.36**	**17.24**
Delivered Price to Electric Generators (2001 dollars per million Btu)	**1.25**	**1.12**	**1.17**	**1.23**	**1.01**	**1.12**	**1.24**	**0.97**	**1.10**	**1.27**
Labor Productivity (short tons per miner per hour)	**6.85**	**9.79**	**8.47**	**7.33**	**12.62**	**9.60**	**7.31**	**14.28**	**9.97**	**7.08**
Labor Productivity (average annual growth from 2001)	**N/A**	**4.0**	**2.4**	**0.8**	**3.3**	**1.8**	**0.3**	**3.1**	**1.6**	**0.1**
Average Coal Miner Wage (2001 dollars per hour)	**18.94**	**18.11**	**18.94**	**19.81**	**17.22**	**18.94**	**20.82**	**16.80**	**18.94**	**21.35**
Average Coal Miner Wage (average annual growth from 2001)	**N/A**	**-0.50**	**0.00**	**0.50**	**-0.50**	**0.00**	**0.50**	**-0.50**	**0.00**	**0.50**
Carbon Dioxide Emissions by Electric Generators (million metric tons carbon equivalent)[1]										
Petroleum	27.5	8.6	8.8	9.1	9.8	9.7	9.7	11.4	10.9	11.9
Natural Gas	77.7	98.6	99.9	101.5	130.2	137.8	148.7	139.0	155.0	173.0
Coal	506.4	584.3	579.9	573.6	669.5	649.5	619.1	730.2	694.2	644.5
Total	**611.6**	**691.5**	**688.5**	**684.1**	**809.5**	**796.9**	**777.4**	**880.6**	**860.1**	**829.3**
Electric Generator Capability (gigawatts)	**789.4**	**919.4**	**922.5**	**924.3**	**1141.9**	**1148.8**	**1162.0**	**1267.2**	**1282.8**	**1316.7**

[1]Excludes combined heat and power and other generators.
Btu = British thermal unit.
N/A = Not applicable.
Note: Totals may not equal sum of components due to independent rounding. Data for 2001 are model results and may differ slightly from official EIA data reports.
Source: Energy Information Administration, AEO2003 National Energy Modeling System runs LMCST03.D110602A, AEO2003.D110502C, and HMCST03.D110602A.