Appendix F

Results from Side Cases

Table F1. Key Results for Residential Sector Technology Cases

Energy Consumption	1997	2005				2010			
		1999 Tech.	Reference Case	High Technology	Best Available Tech.	1999 Tech.	Reference Case	High Technology	Best Available Tech.
Energy Consumption (quadrillion Btu)									
Distillate Fuel	0.94	0.81	0.79	0.74	0.70	0.79	0.73	0.67	0.61
Kerosene	0.09	0.07	0.07	0.07	0.06	0.07	0.07	0.07	0.06
Liquefied Petroleum Gas	0.43	0.45	0.44	0.41	0.38	0.46	0.43	0.40	0.36
Petroleum Subtotal	1.47	1.33	1.29	1.23	1.14	1.32	1.23	1.14	1.03
Natural Gas	5.15	5.44	5.31	5.02	4.80	5.76	5.52	5.08	4.74
Coal	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Renewable Energy	0.60	0.62	0.61	0.60	0.59	0.64	0.62	0.60	0.60
Electricity	3.66	4.37	4.31	4.15	3.85	4.73	4.57	4.23	3.70
Delivered Energy	**10.92**	**11.82**	**11.57**	**11.05**	**10.44**	**12.50**	**12.00**	**11.11**	**10.13**
Electricity Related Losses	8.07	9.03	8.89	8.57	7.95	9.42	9.11	8.43	7.37
Total	**18.99**	**20.84**	**20.47**	**19.62**	**18.39**	**21.92**	**21.11**	**19.54**	**17.50**
Delivered Energy Consumption per Household (million Btu per Year)	**107.80**	**106.48**	**104.28**	**99.57**	**94.07**	**106.39**	**102.14**	**94.56**	**86.20**

Table F2. Key Results for Commercial Sector Technology Cases

Energy Consumption	1997	2005				2010			
		1999 Tech.	Reference Case	High Technology	Best Available Tech.	1999 Tech.	Reference Case	High Technology	Best Available Tech.
Energy Consumption (quadrillion Btu)									
Distillate Fuel	0.49	0.36	0.36	0.36	0.34	0.34	0.34	0.34	0.32
Residual Fuel	0.11	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Kerosene	0.03	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03
Liquid Petroleum Gas	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09
Motor Gasoline	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Petroleum Subtotal	0.73	0.58	0.58	0.58	0.56	0.57	0.57	0.57	0.55
Natural Gas	3.37	3.69	3.68	3.67	3.58	3.86	3.84	3.80	3.69
Coal	0.08	0.09	0.09	0.09	0.09	0.10	0.10	0.10	0.10
Renewable Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	3.44	4.00	3.97	3.92	3.69	4.32	4.26	4.17	3.82
Delivered Energy	**7.63**	**8.36**	**8.32**	**8.27**	**7.93**	**8.85**	**8.77**	**8.64**	**8.16**
Electricity Related Losses	7.59	8.26	8.19	8.10	7.62	8.60	8.48	8.31	7.61
Total	**15.22**	**16.62**	**16.51**	**16.37**	**15.55**	**17.45**	**17.24**	**16.95**	**15.77**
Delivered Energy Consumption per Square Foot (thousand Btu per year)	**126.49**	**126.18**	**125.55**	**124.70**	**119.63**	**127.39**	**126.18**	**124.40**	**117.47**

Table F1. Key Results for Residential Sector Technology Cases (Continued)

2015				2020				Annual Growth 1997-2020			
1999 Tech.	Reference Case	High Technology	Best Available Tech.	1999 Tech.	Reference Case	High Technology	Best Available Tech.	1999 Tech.	Reference Case	High Technology	Best Available Tech.
0.77	0.69	0.62	0.54	0.75	0.65	0.57	0.49	-1.0%	-1.6%	-2.1%	-2.8%
0.07	0.07	0.06	0.06	0.07	0.07	0.06	0.05	-1.1%	-1.4%	-1.6%	-2.3%
0.45	0.42	0.39	0.35	0.45	0.40	0.38	0.34	0.2%	-0.3%	-0.6%	-1.0%
1.29	1.18	1.07	0.95	1.27	1.12	1.01	0.88	-0.6%	-1.2%	-1.6%	-2.2%
6.16	5.77	5.20	4.68	6.52	5.94	5.28	4.45	1.0%	0.6%	0.1%	-0.6%
0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	-0.5%	-0.5%	-0.5%	-0.5%
0.66	0.64	0.61	0.61	0.68	0.65	0.62	0.62	0.6%	0.4%	0.2%	0.2%
5.18	4.93	4.47	3.78	5.64	5.31	4.73	3.89	1.9%	1.6%	1.1%	0.3%
13.34	**12.57**	**11.40**	**10.07**	**14.17**	**13.08**	**11.69**	**9.89**	**1.1%**	**0.8%**	**0.3%**	**-0.4%**
9.80	9.34	8.46	7.15	10.37	9.77	8.70	7.15	1.1%	0.8%	0.3%	-0.5%
23.14	**21.91**	**19.86**	**17.22**	**24.54**	**22.85**	**20.39**	**17.04**	**1.1%**	**0.8%**	**0.3%**	**-0.5%**
107.64	**101.38**	**91.99**	**81.20**	**108.96**	**100.58**	**89.94**	**76.09**	**0.0%**	**-0.3%**	**-0.8%**	**-1.5%**

Tech. = Technology.
Btu = British thermal units.
Note: 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, AEO99 National Energy Modeling System, runs RSFRZN.D100598A, AEO99B.D100198A, RSHTEK.D100598A, and RSBTEK.D100598A.

Table F2. Key Results for Commercial Sector Technology Cases (Continued)

2015				2020				Annual Growth 1997-2020			
1999 Tech.	Reference Case	High Technology	Best Available Tech.	1999 Tech.	Reference Case	High Technology	Best Available Tech.	1999 Tech.	Reference Case	High Technology	Best Available Tech.
0.33	0.33	0.33	0.31	0.32	0.32	0.31	0.30	-1.9%	-1.9%	-2.0%	-2.2%
0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	-0.8%	-0.8%	-0.8%	-0.8%
0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	-0.2%	-0.2%	-0.2%	-0.2%
0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.7%	0.7%	0.7%	0.7%
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	-0.3%	-0.3%	-0.3%	-0.3%
0.57	0.56	0.56	0.54	0.55	0.55	0.54	0.53	-1.2%	-1.3%	-1.3%	-1.4%
4.00	3.97	3.91	3.79	4.04	4.00	3.93	3.80	0.8%	0.7%	0.7%	0.5%
0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.9%	0.9%	0.9%	0.9%
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.0%	1.0%	1.0%	1.0%
4.64	4.54	4.41	3.99	4.85	4.72	4.55	4.10	1.5%	1.4%	1.2%	0.8%
9.31	**9.18**	**8.99**	**8.43**	**9.55**	**9.37**	**9.13**	**8.53**	**1.0%**	**0.9%**	**0.8%**	**0.5%**
8.78	8.60	8.36	7.55	8.92	8.68	8.38	7.54	0.7%	0.6%	0.4%	-0.0%
18.09	**17.78**	**17.35**	**15.98**	**18.47**	**18.05**	**17.51**	**16.06**	**0.8%**	**0.7%**	**0.6%**	**0.2%**
129.28	**127.49**	**124.89**	**117.03**	**130.94**	**128.47**	**125.30**	**116.95**	**0.2%**	**0.1%**	**-0.0%**	**-0.3%**

Tech. = Technology.
Btu = British thermal units.
Note: 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, AEO99 National Energy Modeling System, runs COMFZN.D100598A, AEO99B.D100198A, COMADV.D100598A, and COMBEST.D100598A.

Table F3. Key Results for Industrial Technology Cases

Consumption	1997	2010			2015			2020		
		1999 Technology	Reference Case	High Technology	1999 Technology	Reference Case	High Technology	1999 Technology	Reference Case	High Technology
Energy Consumption (quadrillion Btu)										
Distillate Fuel	1.13	1.35	1.35	1.29	1.43	1.42	1.31	1.49	1.48	1.32
Liquefied Petroleum Gas	2.14	2.46	2.45	2.33	2.59	2.58	2.41	2.70	2.69	2.48
Petrochemical Feedstocks	1.46	1.53	1.52	1.45	1.60	1.60	1.51	1.68	1.67	1.57
Residual Fuel	0.28	0.34	0.33	0.31	0.36	0.35	0.32	0.37	0.36	0.31
Motor Gasoline	0.21	0.26	0.26	0.25	0.28	0.28	0.26	0.30	0.29	0.27
Other Petroleum	4.11	4.98	4.89	4.71	5.05	4.95	4.64	5.10	4.99	4.56
Petroleum Subtotal	9.33	10.92	10.81	10.35	11.31	11.18	10.45	11.63	11.49	10.51
Natural Gas	9.93	11.75	11.43	11.17	12.38	12.02	11.58	12.88	12.52	11.97
Metallurgical Coal	0.79	0.67	0.63	0.64	0.62	0.58	0.58	0.58	0.53	0.52
Steam Coal	1.56	1.73	1.67	1.57	1.79	1.73	1.54	1.85	1.80	1.54
Net Coal Coke Imports	0.02	0.23	0.20	0.07	0.28	0.24	0.05	0.31	0.27	0.08
Coal Subtotal	2.36	2.63	2.51	2.29	2.69	2.55	2.17	2.73	2.60	2.14
Renewable Energy	1.88	2.29	2.31	2.35	2.42	2.45	2.52	2.52	2.56	2.66
Electricity	3.52	4.22	4.13	3.90	4.48	4.37	3.98	4.68	4.57	4.05
Delivered Energy	**27.01**	**31.81**	**31.18**	**30.05**	**33.27**	**32.57**	**30.70**	**34.44**	**33.73**	**31.32**
Electricity Related Losses	7.78	8.41	8.22	7.76	8.48	8.27	7.53	8.62	8.40	7.44
Total	**34.79**	**40.22**	**39.41**	**37.81**	**41.75**	**40.84**	**38.22**	**43.06**	**42.14**	**38.77**
Delivered Energy Use per Dollar of Output (thousand Btu per 1987 dollar)	**6.78**	**6.07**	**5.95**	**5.74**	**5.84**	**5.72**	**5.39**	**5.62**	**5.50**	**5.11**

Btu = British thermal units.

Note: 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, AEO99 Forecasting System runs INDLTECH.D100698A, AEO99B.D100198A, and INDHTECH.D100698A.

Table F4. Key Results for Transportation Technology Cases

Consumption and Indicators	1997	2010			2015			2020		
		1999 Technology	Reference Case	High Technology	1999 Technology	Reference Case	High Technology	1999 Technology	Reference Case	High Technology
Energy Consumption (quadrillion Btu)										
Distillate Fuel	4.64	6.27	6.00	5.63	6.74	6.31	5.65	7.15	6.58	5.60
Jet Fuel	3.31	5.18	5.10	5.10	5.87	5.69	5.56	6.60	6.27	5.90
Motor Gasoline	15.08	19.39	18.70	18.05	20.49	19.31	18.20	21.58	19.94	18.37
Residual Fuel	0.75	1.02	1.02	1.01	1.16	1.16	1.14	1.31	1.30	1.28
Liquid Petroleum Gas	0.04	0.18	0.18	0.20	0.22	0.20	0.23	0.24	0.22	0.25
Other Petroleum	0.29	0.34	0.34	0.34	0.35	0.35	0.35	0.36	0.36	0.36
Petroleum Subtotal	24.10	32.38	31.33	30.33	34.84	33.03	31.14	37.24	34.68	31.76
Pipeline Fuel Natural Gas	0.73	0.90	0.90	0.90	0.97	0.97	0.97	1.01	1.01	1.01
Compressed Natural Gas	0.01	0.25	0.26	0.29	0.30	0.31	0.34	0.33	0.34	0.37
Renewables (E85)	0.00	0.06	0.05	0.05	0.07	0.07	0.06	0.09	0.07	0.07
Methanol	0.00	0.08	0.08	0.07	0.11	0.10	0.09	0.13	0.11	0.10
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	0.18	0.15	0.15	0.24	0.19	0.20	0.29	0.22	0.22
Delivered Energy	**24.91**	**33.85**	**32.77**	**31.79**	**36.53**	**34.65**	**32.79**	**39.09**	**36.44**	**33.54**
Electricity Related Losses	0.13	0.36	0.30	0.30	0.46	0.36	0.37	0.53	0.41	0.41
Total	**25.04**	**34.21**	**33.07**	**32.09**	**36.98**	**35.00**	**33.16**	**39.62**	**36.85**	**33.95**
New Light-Duty Vehicle (miles per gallon)	24.0	23.2	25.4	27.5	23.3	26.1	29.0	23.3	26.5	30.2
Light-Duty Vehicles < 8500 pounds (VMT)	2301	2882	2887	2890	3089	3097	3104	3292	3303	3312

Tech = Technology.

Btu = British thermal units.

Vmt = Vehicle miles traveled.

Note: Side cases were run without the fully integrated modeling system, so not all potential feedbacks were captured.

Source: Energy Information Administration, AEO99 Forecasting System runs FZTECH.D100898A, AEO99B.D100198A, and HITECH.D100898A.

Table F5. Key Results for Integrated Technology Cases

Consumption and Emissions	1997	2010			2015			2020		
		1999 Tech.	Reference Case	High Tech.	1999 Tech.	Reference Case	High Tech.	1999 Tech.	Reference Case	High Tech.
Consumption by Sector (quadrillion Btu)										
Residential	18.99	22.18	21.11	19.61	23.64	21.91	20.03	25.14	22.85	20.53
Commercial	15.22	17.68	17.24	17.09	18.55	17.78	17.61	19.06	18.05	17.75
Industrial	34.79	40.54	39.41	38.25	42.21	40.84	38.90	43.71	42.14	39.43
Transportation	25.04	34.12	33.07	32.07	36.80	35.00	33.26	38.70	36.85	34.16
Total	**94.04**	**114.52**	**110.83**	**107.02**	**121.19**	**115.53**	**109.80**	**126.61**	**119.89**	**111.86**
Energy Intensity (thousand Btu per 1992 dollar of GDP)	**12.94**	**11.58**	**11.21**	**10.82**	**11.22**	**10.70**	**10.17**	**10.84**	**10.27**	**9.59**
Carbon Emissions by Sector (million metric tons)										
Residential	285.6	350.7	332.5	308.1	385.1	354.3	326.9	416.8	375.0	342.7
Commercial	236.6	289.9	281.7	278.6	314.4	299.0	299.3	329.4	308.1	309.2
Industrial	482.1	570.1	549.4	527.4	600.9	574.5	541.5	626.1	594.5	549.6
Transportation	475.3	646.0	626.3	607.1	696.2	662.3	628.5	732.8	697.3	646.4
Total	**1479.6**	**1856.7**	**1789.9**	**1721.1**	**1996.5**	**1890.1**	**1796.3**	**2105.2**	**1974.9**	**1848.0**
Carbon Emissions by End-Use Fuel (million metric tons)										
Petroleum	609.9	774.0	752.4	726.1	820.2	785.9	741.7	854.2	817.7	754.2
Natural Gas	275.4	321.7	313.4	305.5	340.7	328.9	317.7	355.5	340.0	326.4
Coal	62.0	70.6	67.4	62.6	72.1	68.4	60.6	73.0	69.8	58.7
Other	0.0	1.5	1.4	1.2	2.0	1.7	1.5	2.6	1.9	1.7
Electricity	532.4	688.8	655.4	625.6	761.4	705.1	674.9	820.0	745.5	707.1
Total	**1479.6**	**1856.7**	**1789.9**	**1721.1**	**1996.5**	**1890.1**	**1796.3**	**2105.2**	**1974.9**	**1848.0**
Carbon Emissions by Electric Generators (million metric tons)										
Petroleum	17.6	8.8	5.8	4.8	7.0	5.3	4.3	5.9	4.9	3.7
Natural Gas	43.8	95.5	98.5	81.6	109.0	124.0	99.6	117.8	134.8	106.7
Coal	471.0	584.5	551.1	539.3	645.5	575.9	571.0	696.3	605.8	596.6
Total	**532.4**	**688.8**	**655.4**	**625.6**	**761.4**	**705.1**	**674.9**	**820.0**	**745.5**	**707.1**
Carbon Emissions by Primary Fuel (million metric tons)										
Petroleum	627.5	782.7	758.1	730.9	827.3	791.1	746.0	860.1	822.6	757.9
Natural Gas	319.1	417.3	411.9	387.1	449.7	452.9	417.2	473.2	474.8	433.1
Coal	533.0	655.1	618.5	601.9	717.5	644.4	631.6	769.3	675.6	655.3
Other	0.0	1.5	1.4	1.2	2.0	1.7	1.5	2.6	1.9	1.7
Total	**1479.6**	**1856.7**	**1789.9**	**1721.1**	**1996.5**	**1890.1**	**1796.3**	**2105.2**	**1974.9**	**1848.0**

Btu = British thermal units.
GDP = Gross domestic product.
Tech. = Technology
Note: Totals may not equal sum of components due to independent rounding.
Source: Energy Information Administration, AEO99 National Energy Modeling System runs LDELTEK.D100898A, AEO99B.D100198A, and HDELTEK.D100898A.

Table F6. Key Results for Nuclear Retirement Cases
(Thousand Megawatts)

Net Summer Capability	1997	Projections								
		2010			2015			2020		
		Low Nuclear	Reference Case	High Nuclear	Low Nuclear	Reference Case	High Nuclear	Low Nuclear	Reference Case	High Nuclear
Electric Generators										
Capability (thousand megawatts)										
Coal Steam	304.7	308.6	308.9	308.2	317.2	316.2	314.2	338.8	333.0	326.1
Other Fossil Steam	138.7	79.7	80.2	82.2	75.6	79.5	80.2	74.2	75.7	78.7
Combined Cycle	16.4	130.3	126.0	122.0	181.3	175.9	162.4	217.0	211.5	196.5
Combustion Turbine/Diesel	78.2	151.9	151.0	145.6	182.7	174.9	167.4	193.3	186.7	179.6
Nuclear Power	99.0	72.1	74.2	85.5	45.0	56.4	79.4	31.8	48.9	78.2
Pumped Storage	19.6	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
Fuel Cells	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Renewable Sources	87.9	92.1	92.1	92.1	93.9	93.9	93.5	97.0	96.7	95.8
Total	**744.5**	**856.3**	**853.9**	**857.1**	**917.3**	**918.4**	**918.6**	**973.6**	**974.0**	**976.3**
Cumulative Planned Additions										
Total	**2.5**	**30.1**	**30.1**	**30.1**	**30.2**	**30.2**	**30.2**	**30.2**	**30.2**	**30.2**
Cumulative Unplanned Additions										
Coal Steam	0.0	5.4	5.6	5.0	14.6	13.5	11.7	36.8	31.0	24.1
Other Fossil Steam	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Combined Cycle	0.0	109.3	105.0	101.1	160.3	155.0	141.4	196.0	190.5	175.5
Combustion Turbine/Diesel	20.2	84.6	81.1	78.1	116.6	108.2	100.9	128.4	120.2	113.7
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	0.8	2.3	2.3	2.3	4.4	4.3	3.9	7.6	7.3	6.4
Total	**21.0**	**201.6**	**194.0**	**186.4**	**295.9**	**281.0**	**257.8**	**368.8**	**348.9**	**319.7**
Cumulative Total Additions	**23.5**	**231.7**	**224.2**	**216.6**	**326.0**	**311.1**	**288.0**	**399.0**	**379.0**	**349.8**
Cumulative Retirement	**14.8**	**110.9**	**105.7**	**95.5**	**144.3**	**128.3**	**104.9**	**160.9**	**140.6**	**109.0**
Generation by Fuel Type (billion kilowatthours)										
Coal	1796	2050	2046	2023	2168	2151	2109	2349	2298	2213
Petroleum	82	27	28	26	26	26	24	26	24	22
Natural Gas	299	925	919	879	1269	1213	1100	1415	1349	1237
Nuclear Power	629	544	554	619	343	419	578	239	359	564
Pumped Power	-3	-1	-1	-1	-1	-1	-1	-1	-1	-1
Renewable Sources	389	389	388	388	401	401	398	422	420	414
Total	**3192**	**3934**	**3934**	**3934**	**4207**	**4208**	**4208**	**4450**	**4450**	**4450**
Carbon Emissions by Electric Generators (million metric tons)										
Petroleum	17.6	5.7	5.8	5.5	5.3	5.3	4.9	5.3	4.9	4.5
Natural Gas	43.8	98.6	98.5	94.2	129.6	124.0	113.1	141.2	134.8	124.0
Coal	471.0	552.2	551.1	544.5	580.4	575.9	564.9	616.0	605.8	585.9
Total	**532.4**	**656.4**	**655.4**	**644.2**	**715.3**	**705.1**	**682.8**	**762.5**	**745.5**	**714.4**
Natural Gas Prices to Electric Generators (1997 dollars per tcf)	**2.76**	**3.16**	**3.15**	**3.13**	**3.31**	**3.24**	**3.13**	**3.39**	**3.31**	**3.16**
Coal Prices to Electric Generators (1997 dollars per short ton)	**26.05**	**21.67**	**21.66**	**21.62**	**20.04**	**20.03**	**19.93**	**18.75**	**18.77**	**18.72**

tcf = Thousand cubic feet.

Notes: Totals may not equal sum of components due to independent rounding. Net summer capability has been estimated for nonutility generators for AEO98. Net summer capacity is used to be consistent with electric utility capacity estimates. Electric utility capacity is the most recent data available as of July 1, 1998. Therefore, capacity estimates may differ from other Energy Information Administration sources. Side cases were run without the fully integrated modeling system, so not all potential feedbacks were captured.

Source: Energy Information Administration, AEO99 National Energy Modeling System runs LNUC99.D101698A, AEO99B.D100198A, and HNUC99.D101698A.

Table F7. Key Results for Electricity Demand Cases

Key Indicators	1997	2000		2010		2020		Annual Growth 1997-2020	
		Reference Case	High Demand	Reference Case	High Demand	Reference Case	High Demand	Reference Case	High Demand
Electricity Sales (billion kilowatthours)	3,130	3,333	3,355	3,843	4,116	4,345	4,935	1.4%	2.0%
Net Imports (billion kilowatthours)	32	43	43	30	32	27	27	-0.7%	-0.7%
Electricity Prices (1997 cents per kilowatthour)	6.9	6.6	6.6	6.1	6.5	5.6	6.2	-0.9%	-0.5%
Generation by Fuel (billion kilowatthours)									
Coal	1,855	1,989	1,999	2,101	2,160	2,353	2,716	1.0%	1.7%
Natural Gas	509	548	558	1,140	1,364	1,582	1,807	5.1%	5.7%
Renewables	430	423	423	445	448	483	505	0.5%	0.7%
Other	725	777	781	597	603	398	415	-2.6%	-2.4%
Total	**3,520**	**3,737**	**3,761**	**4,283**	**4,574**	**4,816**	**5,443**	**1.4%**	**1.9%**
Generating Capacity (gigawatts)									
Coal	304.7	305.4	305.4	308.9	310.6	333.0	378.7	0.4%	0.9%
Combined-Cycle/Combustion Turbine	94.6	126.0	126.0	277.0	317.6	398.2	462.7	6.4%	7.1%
Renewables	87.9	89.7	89.7	92.1	92.5	96.7	100.0	0.4%	0.6%
Nuclear Power	99.0	94.8	94.8	74.2	74.2	48.9	50.8	-3.0%	-2.9%
Cogenerators	51.8	54.6	54.7	56.8	56.8	59.1	59.1	0.6%	0.6%
Other	158.2	159.9	159.9	101.7	99.2	97.2	83.6	-2.1%	-2.7%
Total	**796.3**	**830.5**	**830.6**	**910.7**	**950.9**	**1,033.0**	**1,134.9**	**1.1%**	**1.6%**
Energy Production									
Coal (million short tons)	1,099	1,168	1,174	1,236	1,265	1,358	1,497	0.9%	1.3%
Natural Gas (trillion cubic feet)	22	22.69	22.80	28.18	29.93	32.44	34.17	1.7%	2.0%
Carbon Emissions (million metric tons)	1,480	1,585	1,590	1,790	1,833	1,975	2,073	1.3%	1.5%
Prices to Electric Generators (1997 dollars per million Btu)									
Coal	1.27	1.19	1.20	1.06	1.07	0.93	0.93	-1.3%	-1.3%
Natural Gas	2.70	2.62	2.63	3.08	3.29	3.24	3.55	0..8%	1.2%

Btu = British thermal units.

Notes: Other includes non-coal fossil steam, pumped storage, methane, propane and blast furnace gas. Coal Energy Production is production plus net imports. Side cases were run without the fully integrated modeling system, so not all potential feedbacks were captured.

Source: Energy Information Administration, AEO99 Forecasting System runs HDEMEL99.D100798A and AEO99B.D100198A.

Table F8. Key Results for Electricity Generation Sector Technology Cases
(Thousand Megawatts)

Net Summer Capability	1997	2000			2010			2020		
		Low Fossil	Reference Case	High Fossil	Low Fossil	Reference Case	High Fossil	Low Fossil	Reference Case	High Fossil
Electric Generators										
Capability										
Pulverized Coal	304.2	304.9	304.9	304.9	315.3	305.3	302.7	353.3	307.3	301.6
Coal Gasification Combined-Cycle	0.5	0.5	0.5	0.5	0.5	3.5	10.3	0.5	25.8	88.8
Conventional Natural Gas Combined-Cycle	16.4	22.7	22.0	18.8	82.5	27.0	22.4	154.9	27.0	22.4
Advanced Natural Gas Combined-Cycle	0.0	4.4	5.1	9.2	19.0	99.1	109.8	19.7	184.5	159.8
Conventional Combustion Turbine	78.2	97.6	96.8	96.8	136.7	116.9	103.1	176.6	123.4	103.2
Advanced Combustion Turbine	0.0	1.3	2.1	4.2	3.7	34.1	43.6	3.7	63.3	78.8
Fuel Cells	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nuclear	99.0	94.8	94.8	94.8	81.3	74.2	74.2	58.2	48.9	41.9
Oil and Gas Steam	138.7	138.4	138.4	138.4	100.0	80.2	74.8	80.6	75.7	68.2
Renewable Sources	107.5	111.3	111.3	111.3	114.9	113.7	113.6	124.2	118.2	114.9
Total	**744.5**	**775.9**	**775.9**	**779.0**	**854.0**	**853.9**	**854.5**	**971.6**	**974.0**	**979.6**
Cumulative Planned Additions										
Pulverized Coal	0.1	0.9	0.9	0.9	1.4	1.4	1.4	1.4	1.4	1.4
Coal Gasification Combined-Cycle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Conventional Natural Gas Combined-Cycle	0.7	2.0	2.0	2.0	5.3	5.3	5.3	5.3	5.3	5.3
Advanced Natural Gas Combined-Cycle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Conventional Cmbustion Turbine	1.5	6.7	6.7	6.7	18.6	18.6	18.6	18.6	18.6	18.6
Advanced Combustion Turbine	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
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	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Renewable Sources	0.1	3.6	3.6	3.6	4.7	4.7	4.7	4.7	4.7	4.7
Total	**2.5**	**13.3**	**13.3**	**13.3**	**30.1**	**30.1**	**30.1**	**30.2**	**30.2**	**30.2**
Cumulative Unplanned Additions										
Pulerized Coal	0.0	0.0	0.0	0.0	12.6	2.6	0.8	51.7	5.7	0.9
Coal Gasification Comined-Cycle	0.0	0.0	0.0	0.0	0.0	3.0	9.8	0.0	25.3	88.2
Conventional Natural Gas Combined-Cycle	0.0	5.0	4.3	1.2	61.5	6.0	1.4	133.9	6.0	1.4
Advanced Natural Gas Combined-Cycle	0.0	4.4	5.1	9.2	19.0	99.1	109.8	19.7	184.5	159.8
Conventional Combustion Turbine	20.2	34.4	33.6	33.6	64.9	47.0	36.0	110.7	56.8	37.3
Advanced Combustion Turbine	0.0	1.3	2.1	4.2	3.7	34.1	43.6	3.7	63.3	78.8
Fuel Cells	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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	0.8	0.9	0.9	0.9	3.5	2.3	2.2	13.3	7.3	4.0
Total	**21.0**	**46.0**	**46.0**	**49.1**	**165.1**	**194.0**	**203.6**	**332.9**	**348.9**	**370.4**
Cumulative Total Additions	**23.5**	**59.2**	**59.3**	**62.3**	**195.3**	**224.2**	**233.7**	**363.1**	**379.0**	**400.6**
Cumulative Retirements	**14.8**	**19.4**	**19.4**	**19.4**	**76.8**	**105.7**	**115.8**	**127.0**	**140.6**	**157.6**
Cogenerators										
Capability										
Coal	9.4	9.8	9.8	9.8	9.9	9.9	9.9	10.0	10.0	10.0
Petroleum	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5
Natural Gas	33.4	34.9	34.8	34.9	36.2	36.2	36.2	37.7	37.7	37.7
Other Gaseous Fuels	0.6	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Renewables	6.9	7.5	7.5	7.5	8.2	8.2	8.2	8.8	8.8	8.8
Other	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total	**51.8**	**54.7**	**54.6**	**54.7**	**56.7**	**56.8**	**56.7**	**59.1**	**59.1**	**59.0**
Cumulative Additions	**20.2**	**23.1**	**23.0**	**23.1**	**25.1**	**25.1**	**25.1**	**27.4**	**27.4**	**27.4**

Notes: Totals may not equal sum of components due to independent rounding. Net summer capability has been estimated for nonutility generators for AEO98. Net summer capacity is used to be consistent with electric utility capacity estimates. Electric utility capacity is the most recent data available as of August 31, 1997. Therefore, capacity estimates may differ from other Energy Information Administration sources.

Source: Energy Information Administration, AEO99 National Energy Modeling System runs LTECEL.D100398A, AEO99A.D100198A, and HTECEL.D100798A.

Table F9. Key Results for Competitive Pricing Case

Key Indicators and Consumption	Competitive Pricing						
	1996	1997	2000	2005	2010	2015	2020
Electricity Sales by Sector (billiion kilowatthours)							
Residential	1082	1072	1178	1279	1356	1448	1556
Commercial	981	1008	1083	1173	1261	1333	1379
Industrial	1030	1033	1059	1132	1215	1274	1329
Transportation	17	17	18	31	44	55	65
Total	**3111**	**3130**	**3338**	**3614**	**3876**	**4109**	**4329**
End-Use Prices (1997 cents per kwh)							
Residential	8.5	8.5	7.8	7.4	7.4	**7.4**	**7.2**
Commercial	7.7	7.6	7.1	6.6	6.3	6.2	6.1
Industrial	4.6	4.6	4.5	4.3	4.0	4.0	4.0
Transportation	5.5	5.6	5.3	5.0	4.9	4.8	4.7
All Sectors Average	**6.9**	**6.9**	**6.5**	**6.1**	**6.0**	**5.9**	**5.8**
Generation by Fuel Type (billion kilowathours)							
Coal	1745	1796	1931	1982	2063	2162	2319
Petroleum	72	82	101	35	25	27	22
Natural Gas	278	299	342	676	940	1197	1319
Nuclear Power	675	629	659	630	554	419	359
Pumped Storage	-2	-3	-1	-1	-1	-1	-1
Renewable Sources	379	389	375	381	389	401	416
Total	**3147**	**3192**	**3408**	**3703**	**3970**	**4204**	**4433**
Capability (Thousand Megawatts)							
Coal Steam	304.7	304.7	305.4	305.2	308.9	316.6	336.0
Other Fossil Steam	137.8	138.7	138.4	102.5	86.1	78.5	61.4
Combined Cycle	15.4	16.4	27.3	90.3	133.6	171.6	200.6
Combustion Turbine/Diesel	70.1	78.1	98.9	144.9	154.3	163.8	172.5
Nuclear Power	100.7	99.0	94.8	87.4	74.2	56.4	48.9
Pumped Storage	19.6	19.6	21.5	21.5	21.5	21.5	21.5
Fuel Cells	0	0.0	0.0	0.0	0.0	0.0	0.0
Renewable Sources	87.7	87.9	89.7	91.1	92.3	93.9	96.0
Total	**736**	**744.4**	**776.1**	**842.8**	**871.0**	**902.3**	**937.0**
Cumulative Planned Additions							
Total	**1.7**	**2.5**	**13.3**	**29.8**	**30.1**	**30.2**	**30.2**
Cumulative Unplanned Additions							
Coal Steam	0	0.0	0.0	1.5	5.8	14.1	34.0
Other Fossil Steam	0	0.0	0.0	0.0	0.0	0.0	0.0
Combied Cycle	0	0.0	9.6	69.3	112.6	150.6	179.7
Combustion Turbine/Diesel	13.3	20.1	35.7	72.2	81.8	91.8	100.5
Nuclear Power	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
Fuel Cells	0	0.0	0.0	0.0	0.0	0.0	0.0
Renewable Sources	0.8	0.8	0.9	1.4	2.4	4.3	6.7
Total	**14.1**	**21.0**	**46.2**	**144.3**	**202.7**	**260.8**	**320.8**
Cumulative Total Additions	15.8	23.4	59.4	174.2	232.8	290.9	351.0
Cumulative Retirements	12.7	14.8	19.4	68.3	98.4	124.2	149.5
Total Carbon Emissions by Electric Generators (million metric tons per year)	**513.2**	**532.4**	**589.5**	**616.9**	**661.0**	**708.3**	**747.6**
Natural Gas Prices to Electric Generators (1997 dollars per thousand cubic foot)	**2.76**	**2.76**	**2.68**	**3.03**	**3.17**	**3.22**	**3.27**
Coal Prices to Electric Generators (1997 dollars per short ton)	**26.96**	**26.16**	**24.48**	**23.24**	**21.70**	**20.19**	**19.00**

Note: Totals may not equal sum of components due to independent rounding.
Source: Energy Information Administration, AEO99 National Energy Modeling System run COMPETE.D100398A.

Table F10. Key Results for Renewable Portfolio Standard Cases

Key Indicators	1997	2000		2010		2020	
		Reference	5.5% RPS	Reference	5.5% RPS	Reference	5.5% RPS
Electricity Sales (billion kilowatthours)	**3,130**	**3,333**	**3,333**	**3,843**	**3,827**	**4,345**	**4,336**
Electricity Prices (1997 cents per kilowatthour)	**6.9**	**6.58**	**6.58**	**6.14**	**6.25**	**5.63**	**5.64**
Generation by Fuel (billion kilowatthours)							
Coal	1,855	1,989	1,990	2,101	2,069	2,353	2,258
Natural Gas	509	548	547	1,140	1,035	1,582	1,527
Oil	92	110	110	35	33	31	30
Conventional Hydropower	357	327	327	328	328	328	328
Geothermal	16	15	15	18	29	23	34
Municipal Solid Waste	16	26	26	29	29	31	31
Wood and Other Biomass	37	49	49	62	129	91	179
Solar Thermal	1	1	1	1	1	1	1
Solar Photovoltaic	0	0	0	1	1	2	2
Wind	3	6	6	8	51	8	52
Other	634	668	667	562	561	367	366
Total	**3,520**	**3,738**	**3,737**	**4,284**	**4,267**	**4,817**	**4,807**
Generating Capacity (gigawatts)							
Coal	314	315	315	319	317	343	332
Natural Gas and Oil	268	301	301	395	381	513	509
Conventional Hydropower	79	79	79	79	79	79	79
Geothermal	3	4	3	4	5	4	5
Municipal Solid Waste	4	4	4	4	4	5	5
Wood and Other Biomass	7	8	8	9	19	13	26
Solar Thermal	0	0	0	0	0	1	1
Solar Photovoltaic	0	0	0	0	0	1	1
Wind	2	3	3	3	19	4	19
Other	119	117	117	97	97	71	71
Total	796	831	831	911	921	1033	1,047
Energy Production							
Coal (million short tons)	1,099	1,168	1,168	1,236	1,224	1,358	1,322
Natural Gas (trillion cubic feet)	18.9	19.3	19.3	23.8	23.0	27.4	27.1
Carbon Emissions (million metric tons)	**532**	**589**	**589**	**655**	**635**	**745**	**720**
Prices to Generators (1997 dollars per million btu)							
Coal	1.27	1.19	1.19	1.06	1.07	0.93	0.94
Natural Gas	2.70	2.62	2.63	3.08	2.97	3.24	3.12

Source: Energy Information Administration, AEO99 National Energy Modeling System runs AEO99B.D100198A and RPS99.D100698B.

Table F11. Key Results for High Renewable Energy Case

Capacity and Generation	1997	2010		2020	
		Reference	High Renewables	Reference	High Renewables
Capacity (Gigawatts)					
Net Summer Capability					
Electric Generators					
Conventional Hydropower	77.60	78.51	78.51	78.51	78.51
Geothermal	3.00	3.16	3.77	3.52	4.93
Municipal Solid Waste	3.41	4.01	4.01	4.27	4.27
Wood and Other Biomass	1.66	2.33	5.14	5.61	14.51
Solar Thermal	0.35	0.44	0.45	0.52	0.53
Solar Photovoltaic	0.01	0.30	0.31	0.64	0.65
Wind	1.88	3.39	10.42	3.61	22.03
Total	**87.92**	**92.14**	**102.59**	**96.68**	**125.43**
Cogenerators					
Conventional Hydropower	0.93	0.93	0.93	0.93	0.93
Municipal Solid Waste	0.46	0.48	0.48	0.49	0.49
Wood and Other Biomass	5.45	6.77	6.78	7.39	7.39
Total	**6.85**	**8.19**	**8.19**	**8.81**	**8.81**
Generation					
(billion kilowatthours)					
Electric Generators					
Coal	1,796	2,046	2,001	2,298	2,089
Petroleum	82	28	31	24	25
Natural Gas	299	919	900	1,349	1,409
Total Fossil[1]	**2,177**	**2,992**	**2,932**	**3,672**	**3,523**
Conventional Hydropower	350.62	323.42	323.44	323.58	323.59
Geothermal	15.67	17.86	22.47	22.99	33.69
Municipal Solid Waste	14.30	26.49	26.50	28.34	28.35
Wood and Other Biomass	4.21	11.97	31.59	34.89	97.22
Solar Thermal	0.90	1.19	1.21	1.44	1.49
Solar Photovoltaic	0.00	0.71	0.72	1.56	1.59
Wind	3.41	7.69	34.16	8.44	78.74
Total Renewable	**389.11**	**389.33**	**440.09**	**421.24**	**564.68**
Cogenerators					
Coal	60	55	55	54	54
Petroleum	10	7	7	7	7
Natural Gas	210	221	221	233	232
Total Fossil[1]	**280**	**283**	**283**	**294**	**294**
Conventional Hydropower	6.16	4.90	4.90	4.90	4.90
Municipal Solid Waste	1.80	2.32	2.32	2.34	2.34
Wood and Other Biomass	32.69	49.59	49.59	55.82	55.78
Total Renewables	**40.65**	**56.82**	**56.82**	**63.06**	**63.02**

[1]Total of items presented.
Source: Energy Information Administration, AEO99 Forecasting System runs AEO99B.D100198A and HIRENEW.D100398B.

Table F12. Key Results for Oil and Gas Technological Progress Cases
(Quadrillion Btu per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	1997	Projections								
		2005			2010			2020		
		Slow Technology Progress	Reference	Rapid Technology Progress	Slow Technology Progress	Reference	Rapid Technology Progress	Slow Technology Progress	Reference	Rapid Technology Progress
Total Energy Supply and Disposition										
Production										
Crude Oil and Lease Condensate	13.65	11.99	12.31	12.60	11.24	11.83	12.40	9.65	10.51	11.09
Natural Gas Plant Liquids	2.57	2.75	2.80	2.83	2.97	3.06	3.12	3.24	3.47	3.69
Dry Natural Gas	19.46	21.75	22.17	22.38	23.69	24.44	24.93	26.11	28.12	29.96
Coal	23.29	25.31	25.20	25.14	26.30	25.91	25.75	29.38	28.12	27.14
Nuclear Power	6.71	6.73	6.73	6.73	5.91	5.91	5.91	3.98	3.83	3.75
Renewable Energy	6.82	7.11	7.11	7.11	7.45	7.44	7.44	8.25	8.15	8.09
Other	0.66	0.56	0.57	0.57	0.58	0.57	0.57	0.65	0.65	0.65
Total	**73.18**	**76.21**	**76.89**	**77.36**	**78.15**	**79.16**	**80.11**	**81.26**	**82.85**	**84.38**
Imports										
Crude Oil[1]	17.85	21.84	21.53	21.19	24.49	23.91	23.35	26.90	26.03	25.46
Petroleum Products	3.88	6.58	6.45	6.42	7.47	7.35	7.24	10.18	9.92	9.64
Natural Gas	3.05	4.04	3.97	3.96	4.76	4.69	4.71	5.67	5.46	5.19
Other Imports	0.52	0.70	0.70	0.70	0.71	0.71	0.71	0.75	0.75	0.75
Total	**25.32**	**33.16**	**32.65**	**32.28**	**37.43**	**36.66**	**36.01**	**43.50**	**42.15**	**41.03**
Exports										
Petroleum	2.09	2.03	2.05	2.06	2.09	2.11	2.14	1.95	2.00	2.02
Natural Gas	0.16	0.21	0.21	0.21	0.24	0.24	0.24	0.32	0.32	0.32
Coal	2.14	2.21	2.21	2.21	2.27	2.27	2.27	2.36	2.36	2.36
Total	**4.39**	**4.45**	**4.47**	**4.48**	**4.60**	**4.62**	**4.65**	**4.63**	**4.68**	**4.70**
Discrepancy	**-0.06**	**-0.36**	**-0.39**	**-0.35**	**-0.45**	**-0.37**	**-0.42**	**-0.50**	**-0.44**	**-0.47**
Consumption										
Petroleum Products	36.49	41.31	41.25	41.23	44.28	44.22	44.16	48.12	48.08	48.02
Natural Gas	22.59	25.54	25.89	26.07	28.11	28.79	29.30	31.38	33.17	34.73
Coal	21.09	23.46	23.31	23.27	24.38	24.06	23.84	27.50	26.26	25.23
Nuclear Power	6.71	6.73	6.73	6.73	5.91	5.91	5.91	3.98	3.83	3.75
Renewable Energy	6.82	7.12	7.12	7.11	7.46	7.45	7.45	8.26	8.17	8.11
Other	0.33	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39
Total	**94.04**	**104.55**	**104.68**	**104.81**	**110.53**	**110.83**	**111.05**	**119.63**	**119.89**	**120.23**
Net Imports - Petroleum	**19.65**	**26.38**	**25.93**	**25.56**	**29.87**	**29.16**	**28.45**	**35.12**	**33.95**	**33.08**
Prices (1997 dollars per unit)										
World Oil Price (dollars per barrel)	18.55	19.25	19.25	19.25	21.30	21.30	21.30	22.73	22.73	22.73
Gas Wellhead Price (dollars per Mcf)	2.23	2.53	2.35	2.25	2.85	2.52	2.29	2.99	2.68	2.23
Coal Minemouth Price (dollars per ton)	18.04	14.97	14.93	14.94	14.06	14.00	13.85	12.66	12.74	12.67
Avg. Electricity Price (cents per Kwh)	6.9	6.4	6.4	6.3	6.2	6.1	6.1	5.7	5.6	5.5
Natural Gas Supply and Disposition										
Production (trillion cubic feet)										
Dry Gas Production	18.93	21.16	21.57	21.77	23.05	23.77	24.25	25.40	27.35	29.15
Supplemental Natural Gas	0.11	0.11	0.11	0.11	0.06	0.06	0.06	0.06	0.06	0.06
Net Imports (trillion cubic feet)	**2.83**	**3.75**	**3.68**	**3.66**	**4.42**	**4.35**	**4.37**	**5.24**	**5.02**	**4.76**
Total Supply (trillion cubic feet)	**21.88**	**25.02**	**25.36**	**25.55**	**27.53**	**28.18**	**28.68**	**30.69**	**32.44**	**33.97**
Consumption by Sector (trillion cubic feet)										
Residential	5.00	5.12	5.16	5.19	5.28	5.36	5.43	5.66	5.77	5.92
Commercial	3.27	3.55	3.58	3.60	3.68	3.73	3.77	3.82	3.88	3.96
Industrial	8.40	8.96	9.04	9.09	9.32	9.46	9.59	10.09	10.24	10.45
Electric Generators	3.32	4.77	4.92	4.99	6.38	6.69	6.91	7.91	9.16	10.11
Lease and Plant Fuel	1.24	1.49	1.50	1.51	1.61	1.65	1.67	1.83	1.93	2.00
Pipeline Fuel	0.71	0.80	0.82	0.82	0.85	0.87	0.90	0.91	0.98	1.06
Transportation	0.01	0.18	0.18	0.18	0.25	0.25	0.25	0.33	0.33	0.34
Total	**21.98**	**24.86**	**25.19**	**25.37**	**27.36**	**28.02**	**28.52**	**30.55**	**32.30**	**33.83**
Discrepancy (trillion cubic feet)	**-0.09**	**0.16**	**0.17**	**0.18**	**0.17**	**0.16**	**0.16**	**0.14**	**0.14**	**0.14**

Table F12. Key Results for Oil and Gas Technological Progress Cases (Continued)
(Quadrillion Btu per Year, Unless Otherwise Noted)

Supply, Disposition, and Prices	1997	Projections								
		2005			2010			2020		
		Slow Tech. Progress	Reference	Rapid Tech. Progress	Slow Tech. Progress	Reference	Rapid Tech. Progress	Slow Tech. Progress	Reference	Rapid Tech. Progress
Crude Oil Supply										
Lower 48 Average Wellhead Price (1997 dollars per barrel)	**18.01**	**18.87**	**18.80**	**18.74**	**20.99**	**20.80**	**20.66**	**21.79**	**21.73**	**21.48**
Production (million barrels per day)										
U.S. Total	**6.45**	**5.66**	**5.82**	**5.95**	**5.31**	**5.59**	**5.86**	**4.56**	**4.96**	**5.24**
Lower 48 Onshore	3.75	3.07	3.11	3.13	3.00	3.07	3.13	3.08	3.28	3.40
Conventional	3.17	2.64	2.66	2.68	2.49	2.54	2.58	2.47	2.57	2.62
Enhanced Oil Recovery	0.58	0.43	0.45	0.45	0.50	0.53	0.55	0.62	0.71	0.78
Lower 48 Offshore	1.40	1.69	1.73	1.78	1.65	1.74	1.83	1.11	1.19	1.18
Alaska	1.29	0.91	0.97	1.04	0.67	0.78	0.90	0.37	0.49	0.66
Lower 48 End of Year Reserves (billion barrels)	**18.27**	**14.25**	**14.44**	**14.67**	**13.44**	**13.80**	**14.21**	**12.92**	**13.70**	**14.14**
Natural Gas Supply										
Lower 48 Average Wellhead Price (1997 dollars per Mcf)	**2.23**	**2.53**	**2.35**	**2.25**	**2.85**	**2.52**	**2.29**	**2.99**	**2.68**	**2.23**
Production (trillion cubic feet)										
U.S. Total	**18.93**	**21.16**	**21.57**	**21.77**	**23.05**	**23.77**	**24.25**	**25.40**	**27.35**	**29.15**
Lower 48 Onshore	12.88	14.06	14.31	14.24	15.89	16.36	16.78	18.05	20.24	22.57
Associated-Dissolved	1.77	1.32	1.32	1.33	1.18	1.19	1.20	1.17	1.21	1.24
Non-Associated	11.11	12.74	12.99	12.92	14.71	15.18	15.58	16.88	19.04	21.34
Conventional	7.42	9.17	9.01	8.76	10.29	10.27	9.87	12.12	12.32	11.81
Unconventional	3.68	3.57	3.97	4.16	4.42	4.90	5.71	4.76	6.72	9.52
Lower 48 Offshore	5.61	6.44	6.61	6.88	6.48	6.73	6.79	6.61	6.38	5.84
Associated-Dissolved	0.79	0.91	0.92	0.92	0.91	0.93	0.95	0.79	0.81	0.80
Non-Associated	4.81	5.53	5.69	5.96	5.57	5.80	5.84	5.82	5.57	5.03
Alaska	0.43	0.65	0.65	0.65	0.68	0.68	0.68	0.73	0.73	0.73
U.S. End of Year Reserves (trillion cubic feet)	**158.12**	**157.63**	**166.77**	**174.19**	**165.15**	**174.29**	**189.68**	**149.29**	**172.03**	**210.84**
Supplemental Gas Supplies (trillion cubic feet)	**0.12**	**0.11**	**0.11**	**0.11**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**
Total Lower 48 Wells Completed (thousands)	**27.02**	**26.00**	**27.00**	**26.86**	**32.02**	**31.54**	**31.25**	**31.11**	**35.62**	**38.21**

Tech = Technology.
Kwh = Kilowatthour.
Btu = British thermal unit.
Mcf = Thousand cubic feet.
N/A = Not applicable.
Note: Totals may not equal sum of components due to independent rounding. Figures for 1997 may differ from published data due to internal conversion factors.
Sources: Energy Information Administration, AEO99 National Energy Modeling System runs LTECOG.D100298A, AEO99B.D100198A, and HTECOG.D100298A.

Table F13. Key Results for Reduced Sulfur Gasoline Cases

Demand, Prices, and Imports	1997	2004			2010		
		Reference	API/NPRA Regional Reduced Sulfur	Automakers' National Low Sulfur	Reference	API/NPRA Regional Reduced Sulfur	Automakers' National Low Sulfur
Assumed Gasoline Content by Area (parts per million)							
California Reformulated Gasoline[1]	40	40	40	40	40	40	40
Federal Reformulated Gasoline Areas[2]	340	150	150	40	150	40	40
23 Eastern States and East Texas[3]	340	340	150	40	340	40	40
All Other Areas	340	340	300	40	340	300	40
Percentage of Total Gasoline Demand by Sulfur Content							
340 ppm average[4]	89%	66%			66%		
less than 300 ppm			24%			24%	
less than 150 ppm		23%	65%		23%		
less than 40 ppm	11%	11%	11%	100%	11%	76%	100%
National Average Gasoline Price (1997 dollars per gallon)	1.214	1.201	1.214	1.284	1.288	1.337	1.356
Consumer Expenditures for Gasoline (billions 1997 dollars)	148.7	169.8	171.6	181.5	197.6	205.2	208.1
Net Gasoline and Blending Components Imports (mbcd)	359	806	744	717	1193	1122	784
Net Crude Oil Imports (mbcd)	8,118	9,677	10,033	10,474	10,959	11,125	11,193
Import Share of Product Supplied (percentage)	0.49	0.57	0.57	0.58	0.60	0.61	0.61

[1]California requires a 40 parts per million (ppm) flat limit, or 30 ppm annual average with an 80 ppm cap.
[2]Required areas: Baltimore, Chicago, Houston, Los Angeles, Milwaukee, New York City, Philadelphia, San Diego, Sacramento, and Washington, DC, and the entire states of Connecticut, Delaware, New Jersey, Massachusetts, and Rhode Island. Plus opt-in areas in Arizona, Kentucky, Maine, Missouri, Maryland, New Hampshire, New York, Texas, and Virginia.
[3]Includes Alabama, Florida, Georgia, Illinois, Indiana, Kentucky, Louisiana, Maine, Maryland, Michigan, Mississippi, Missouri, New Hampshire, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, Vermont, Virginia, West Virginia, and Wisconsin.
[4]The current average sulfur content is 340 parts per million (ppm) though 1000 ppm is the maximum allowed.
mbcd = thousand barrels per day.
DC = District of Columbia.
API/NPRA = American Petroleum Institute and National Petrochemical and Refiners Association.
Note: Side cases were run without the fully integrated modeling system, so not all potential feedbacks were captured.
Source: Energy Information Administration, AEO99 National Energy Modeling System runs AEO99B.D100198A, TRLAPI.D101698A, and TRLAAMA.D101698A.

Table F14. Key Results for Coal Mining Cost Cases

Prices, Productivity, and Wages	1997	2000			2010			2020		
		Low Cost	Reference Case	High Cost	Low Cost	Reference Case	High Cost	Low Cost	Reference Case	High Cost
Minemouth Price (1997 dollars per short ton)	18.14	16.31	16.59	16.82	12.56	14.00	15.00	10.42	12.74	14.94
Delivered Price to Electric Generators (1997 dollars per million Btu)	1.27	1.18	1.19	1.21	0.99	1.06	1.14	0.82	0.93	1.07
Labor Productivity (short tons per miner per hour)	6.04	6.99	6.85	6.73	10.66	8.96	7.99	14.14	10.18	7.99
Labor Productivity (average annual growth from 1997)	N/A	5.0	4.3	3.7	4.5	3.1	2.2	3.8	2.3	1.2
Average Coal Miner Wage (1997 dollars per hour)	19.01	18.73	19.01	19.30	17.81	19.01	20.28	16.94	19.01	21.32
Average Coal Miner Wage (average annual growth from 1997)	N/A	-0.5	0.0	0.5	-0.5	0.0	0.5	-0.5	0.0	0.5

N/A = Not Applicable.

Note: Side cases were run without the fully integrated modeling system, so not all potential feedbacks are captured.

Source: Energy Information Administration, AEO99 National Energy Modeling System runs LLCST99.D100598B, AEO99.D100198A, and HLCST99.D100598B.