Appendix A

Reference Case Projections:

- World Energy Consumption
- Gross Domestic Product
- Carbon Dioxide Emissions
- World Population

Table A1. World Total Primary Energy Consumption by Region, Reference Case, 1990-2025
(Quadrillion Btu)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**100.6**	**118.7**	**115.6**	**134.5**	**144.6**	**155.0**	**166.6**	**1.5**
United States[a]	84.6	99.3	97.0	111.8	119.7	127.9	136.5	1.4
Canada	11.0	13.2	12.5	15.4	16.5	17.5	18.4	1.6
Mexico	5.0	6.2	6.0	7.3	8.3	9.6	11.6	2.8
Western Europe	**59.9**	**66.8**	**68.2**	**71.2**	**73.8**	**76.7**	**79.7**	**0.7**
United Kingdom	9.3	9.8	9.8	10.3	10.8	11.2	11.7	0.7
France	8.8	10.4	10.5	11.8	12.3	12.9	13.4	1.0
Germany	14.8	14.2	14.4	14.8	15.1	15.5	15.9	0.4
Italy	7.0	8.0	8.1	8.5	8.8	9.2	9.6	0.7
Netherlands	3.4	3.9	4.2	4.4	4.5	4.7	4.9	0.6
Other Western Europe	16.6	20.6	21.1	21.3	22.2	23.2	24.3	0.6
Industrialized Asia	**22.3**	**27.5**	**27.7**	**30.6**	**32.0**	**33.4**	**35.1**	**1.0**
Japan	17.9	21.8	21.9	23.9	24.7	25.4	26.3	0.8
Australia/New Zealand	4.4	5.7	5.8	6.7	7.3	7.9	8.8	1.8
Total Industrialized	**182.8**	**213.0**	**211.5**	**236.3**	**250.4**	**265.1**	**281.4**	**1.2**
EE/FSU								
Former Soviet Union	**60.7**	**40.8**	**41.9**	**46.2**	**50.6**	**55.1**	**59.8**	**1.5**
Russia	39.3	27.4	28.2	31.4	33.8	36.2	38.3	1.3
Other FSU	21.4	13.4	13.7	14.8	16.7	18.9	21.5	1.9
Eastern Europe	**15.6**	**11.3**	**11.4**	**12.8**	**13.8**	**15.2**	**15.8**	**1.4**
Total EE/FSU	**76.3**	**52.2**	**53.3**	**59.0**	**64.3**	**70.3**	**75.6**	**1.5**
Developing Countries								
Developing Asia	**52.5**	**80.5**	**85.0**	**110.6**	**129.7**	**150.5**	**173.4**	**3.0**
China	27.0	37.0	39.7	54.6	65.7	77.7	91.0	3.5
India	7.8	12.7	12.8	16.4	19.5	23.2	27.1	3.2
South Korea	3.8	7.9	8.1	10.1	11.3	12.3	13.3	2.1
Other Asia	13.9	23.0	24.5	29.4	33.3	37.3	42.0	2.3
Middle East	**13.1**	**20.3**	**20.8**	**25.0**	**27.7**	**30.7**	**34.1**	**2.1**
Turkey	2.0	3.0	2.9	3.7	4.2	4.6	5.0	2.3
Other Middle East	11.1	17.3	17.9	21.2	23.6	26.1	29.1	2.0
Africa	**9.3**	**11.9**	**12.4**	**14.6**	**16.7**	**19.0**	**21.5**	**2.3**
Central and South America	**14.4**	**21.0**	**20.9**	**25.4**	**28.4**	**32.2**	**36.9**	**2.4**
Brazil	6.0	9.0	8.8	10.5	12.1	13.8	15.7	2.5
Other Central/South America	8.5	12.0	12.2	14.9	16.3	18.5	21.1	2.3
Total Developing	**89.3**	**133.8**	**139.2**	**175.5**	**202.5**	**232.4**	**265.9**	**2.7**
Total World	**348.4**	**398.9**	**403.9**	**470.8**	**517.3**	**567.8**	**622.9**	**1.8**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union. Energy totals include net imports of coal coke and electricity generated from biomass in the United States. Totals may not equal sum of components due to independent rounding. The electricity portion of the national fuel consumption values consists of generation for domestic use plus an adjustment for electricity trade based on a fuel's share of total generation in the exporting country.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table A1; and System for the Analysis of Global Energy Markets (2004).

Table A2. World Total Energy Consumption by Region and Fuel, Reference Case, 1990-2025
(Quadrillion Btu)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America								
Oil	40.4	46.3	45.9	53.3	58.3	62.1	67.3	1.6
Natural Gas	23.1	28.8	27.6	32.6	35.3	38.7	40.9	1.6
Coal	20.7	24.5	23.9	27.4	28.6	30.7	34.2	1.5
Nuclear	6.9	8.7	8.9	9.6	9.8	10.0	9.7	0.4
Other	9.5	10.6	9.4	11.6	12.7	13.5	14.4	1.8
Total	**100.6**	**118.7**	**115.6**	**134.5**	**144.6**	**155.0**	**166.6**	**1.5**
Western Europe								
Oil	25.8	28.5	28.9	30.4	31.2	32.0	32.5	0.5
Natural Gas	9.7	14.9	15.1	16.8	18.6	21.0	24.3	2.0
Coal	12.4	8.4	8.6	7.7	7.4	7.1	7.0	-0.9
Nuclear	7.4	8.8	9.1	9.5	9.4	8.9	7.9	-0.6
Other	4.5	6.0	6.1	6.8	7.2	7.6	8.0	1.1
Total	**59.9**	**66.8**	**68.2**	**71.2**	**73.8**	**76.7**	**79.7**	**0.7**
Industrialized Asia								
Oil	12.1	13.2	13.0	14.0	14.3	14.5	15.1	0.6
Natural Gas	2.5	4.0	4.1	4.6	5.1	5.6	6.3	1.8
Coal	4.2	5.7	5.9	6.4	6.7	7.0	7.5	1.0
Nuclear	2.0	3.0	3.2	3.8	4.0	4.4	4.2	1.2
Other	1.6	1.6	1.6	1.8	1.9	1.9	2.0	0.9
Total	**22.3**	**27.5**	**27.7**	**30.6**	**32.0**	**33.4**	**35.1**	**1.0**
Total Industrialized								
Oil	78.2	88.1	87.8	97.8	103.8	108.6	114.9	1.1
Natural Gas	35.4	47.7	46.8	54.0	59.0	65.4	71.4	1.8
Coal	37.3	38.6	38.5	41.4	42.7	44.8	48.7	1.0
Nuclear	16.3	20.5	21.2	22.9	23.2	23.3	21.9	0.1
Other	15.6	18.2	17.1	20.2	21.7	23.0	24.4	1.5
Total	**182.8**	**213.0**	**211.5**	**236.3**	**250.4**	**265.1**	**281.4**	**1.2**
EE/FSU								
Oil	21.0	10.9	11.0	12.4	14.0	15.9	17.8	2.0
Natural Gas	28.8	23.3	23.8	27.7	31.3	35.8	39.5	2.1
Coal	20.8	12.2	12.4	11.9	11.6	11.3	11.1	-0.5
Nuclear	2.9	3.0	3.1	3.4	3.5	3.2	2.9	-0.3
Other	2.8	3.0	3.2	3.6	4.0	4.1	4.4	1.3
Total	**76.3**	**52.2**	**53.3**	**59.0**	**64.3**	**70.3**	**75.6**	**1.5**
Developing Countries								
Developing Asia								
Oil	16.1	30.2	30.7	42.0	49.2	57.4	65.7	3.2
Natural Gas	3.2	6.9	7.9	10.1	12.3	15.1	18.7	3.6
Coal	29.1	37.1	39.4	48.2	55.1	62.8	71.9	2.5
Nuclear	0.9	1.7	1.8	3.1	4.2	4.9	5.1	4.4
Other	3.2	4.5	5.1	7.2	8.9	10.3	11.9	3.6
Total	**52.5**	**80.5**	**85.0**	**110.6**	**129.7**	**150.5**	**173.4**	**3.0**

See notes at end of table.

Table A2. World Total Energy Consumption by Region and Fuel, Reference Case, 1990-2025 (Continued)
(Quadrillion Btu)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Developing Countries (Continued)								
Middle East								
Oil	8.0	11.0	11.1	14.1	15.5	17.2	18.7	2.2
Natural Gas	3.9	7.7	8.2	8.9	9.9	11.0	12.6	1.8
Coal	0.8	1.1	1.1	1.3	1.4	1.5	1.6	1.7
Nuclear	0.0	0.0	0.0	0.1	0.1	0.1	0.2	—
Other	0.4	0.5	0.4	0.6	0.7	0.8	1.0	3.7
Total	**13.1**	**20.3**	**20.8**	**25.0**	**27.7**	**30.7**	**34.1**	**2.1**
Africa								
Oil	4.2	5.2	5.3	6.4	7.3	8.5	9.6	2.5
Natural Gas	1.5	2.2	2.5	2.9	3.5	4.2	5.0	3.0
Coal	3.0	3.7	3.8	4.1	4.6	5.0	5.4	1.4
Nuclear	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.2
Other	0.6	0.7	0.8	1.0	1.1	1.2	1.5	2.7
Total	**9.3**	**11.9**	**12.4**	**14.6**	**16.7**	**19.0**	**21.5**	**2.3**
Central and South America								
Oil	7.7	10.6	10.5	12.7	14.2	16.3	18.7	2.4
Natural Gas	2.2	3.6	3.8	4.9	6.0	7.4	9.2	3.8
Coal	0.6	0.9	0.8	1.1	1.2	1.4	1.5	2.7
Nuclear	0.1	0.1	0.2	0.2	0.2	0.2	0.2	-0.7
Other	3.9	5.9	5.6	6.4	6.7	7.0	7.3	1.2
Total	**14.4**	**21.0**	**20.9**	**25.4**	**28.4**	**32.2**	**36.9**	**2.4**
Total Developing Countries								
Oil	35.9	56.9	57.6	75.2	86.3	99.3	112.6	2.8
Natural Gas	10.8	20.4	22.4	26.8	31.7	37.6	45.5	3.0
Coal	33.5	42.8	45.1	54.7	62.3	70.7	80.4	2.4
Nuclear	1.1	2.0	2.2	3.5	4.7	5.4	5.7	4.1
Other	8.0	11.6	11.8	15.2	17.5	19.5	21.7	2.5
Total	**89.3**	**133.8**	**139.2**	**175.5**	**202.5**	**232.4**	**265.9**	**2.7**
Total World								
Oil	135.1	155.9	156.5	185.4	204.0	223.8	245.3	1.9
Natural Gas	75.0	91.4	93.1	108.5	122.0	138.8	156.5	2.2
Coal	91.6	93.6	95.9	108.0	116.6	126.8	140.2	1.6
Nuclear	20.3	25.5	26.4	29.8	31.4	31.8	30.4	0.6
Other	26.4	32.8	32.2	39.0	43.2	46.6	50.4	1.9
Total	**348.4**	**398.9**	**403.9**	**470.8**	**517.3**	**567.8**	**622.9**	**1.8**

Notes: EE/FSU = Eastern Europe/Former Soviet Union. Energy totals include net imports of coal coke and electricity generated from biomass in the United States. Totals may not equal sum of components due to independent rounding. The electricity portion of the national fuel consumption values consists of generation for domestic use plus an adjustment for electricity trade based on a fuel's share of total generation in the exporting country.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table A1; and System for the Analysis of Global Energy Markets (2004).

Table A3. World Gross Domestic Product (GDP) by Region, Reference Case, 1990-2025
(Billion 1997 Dollars)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**7,723**	**10,573**	**10,609**	**14,014**	**16,228**	**18,675**	**21,461**	**3.0**
United States[a]	6,839	9,370	9,394	12,427	14,376	16,503	18,881	3.0
Canada	553	737	751	981	1,121	1,269	1,427	2.7
Mexico	331	465	464	606	731	903	1,153	3.9
Western Europe	**7,635**	**9,356**	**9,513**	**11,233**	**12,495**	**13,894**	**15,423**	**2.0**
United Kingdom	1,153	1,461	1,492	1,846	2,093	2,360	2,655	2.4
France	1,300	1,568	1,601	1,888	2,102	2,348	2,629	2.1
Germany	1,917	2,261	2,284	2,582	2,809	3,055	3,313	1.6
Italy	1,063	1,248	1,269	1,470	1,620	1,791	1,971	1.9
Netherlands	317	423	428	490	543	604	674	1.9
Other Western Europe	1,885	2,396	2,440	2,957	3,328	3,736	4,181	2.3
Industrialized Asia	**4,189**	**4,925**	**4,955**	**5,800**	**6,388**	**7,004**	**7,661**	**1.8**
Japan	3,808	4,395	4,411	5,085	5,557	6,046	6,563	1.7
Australia/New Zealand	381	530	543	715	831	958	1,098	3.0
Total Industrialized	**19,546**	**24,854**	**25,077**	**31,047**	**35,111**	**39,574**	**44,545**	**2.4**
EE/FSU								
Former Soviet Union	**929**	**597**	**632**	**970**	**1,196**	**1,443**	**1,710**	**4.2**
Russia	668	449	471	695	840	999	1,165	3.8
Other FSU	261	148	161	276	355	444	545	5.2
Eastern Europe	**353**	**379**	**389**	**550**	**667**	**810**	**971**	**3.9**
Total EE/FSU	**1,282**	**976**	**1,022**	**1,521**	**1,863**	**2,253**	**2,680**	**4.1**
Developing Countries								
Developing Asia	**1,766**	**3,403**	**3,536**	**5,854**	**7,540**	**9,464**	**11,714**	**5.1**
China	428	1,120	1,202	2,228	2,980	3,877	4,976	6.1
India	290	492	520	833	1,078	1,381	1,757	5.2
South Korea	299	544	562	908	1,117	1,310	1,510	4.2
Other Asia	749	1,246	1,253	1,885	2,366	2,896	3,471	4.3
Middle East	**409**	**594**	**584**	**821**	**987**	**1,176**	**1,389**	**3.7**
Turkey	139	198	183	278	340	412	492	4.2
Other Middle East	270	396	400	542	646	764	897	3.4
Africa	**488**	**606**	**626**	**903**	**1,101**	**1,332**	**1,596**	**4.0**
Central and South America	**1,105**	**1,503**	**1,510**	**1,968**	**2,419**	**2,967**	**3,650**	**3.7**
Brazil	655	851	863	1,132	1,390	1,697	2,076	3.7
Other Central/South America	450	652	647	836	1,029	1,269	1,574	3.8
Total Developing	**3,767**	**6,106**	**6,256**	**9,545**	**12,047**	**14,939**	**18,349**	**4.6**
Total World	**24,596**	**31,937**	**32,354**	**42,113**	**49,020**	**56,765**	**65,574**	**3.0**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union. Totals may not equal sum of components due to independent rounding.

Sources: Global Insight, Inc., *World Economic Outlook*, Vol. 1 (Lexington, MA, Third Quarter 2003), and Energy Information Administration, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table A20.

Table A4. World Oil Consumption by Region, Reference Case, 1990-2025
(Million Barrels per Day)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**20.4**	**23.8**	**23.5**	**27.4**	**29.9**	**31.9**	**34.6**	**1.6**
United States[a]	17.0	19.7	19.6	22.7	24.8	26.4	28.3	1.5
Canada	1.7	2.1	1.9	2.3	2.5	2.6	2.8	1.6
Mexico	1.7	2.0	1.9	2.4	2.6	2.9	3.5	2.5
Western Europe	**12.5**	**13.8**	**14.0**	**14.7**	**15.1**	**15.4**	**15.7**	**0.5**
United Kingdom	1.8	1.7	1.7	1.9	1.9	2.0	2.2	1.0
France	1.8	2.0	2.0	2.1	2.1	2.1	2.2	0.2
Germany	2.7	2.8	2.8	3.0	3.1	3.2	3.3	0.6
Italy	1.9	1.9	1.9	2.0	2.1	2.1	2.2	0.6
Netherlands	0.7	0.9	0.9	0.9	0.9	0.9	1.0	0.3
Other Western Europe	3.6	4.6	4.7	4.9	5.0	5.0	5.0	0.3
Industrialized Asia	**6.0**	**6.5**	**6.4**	**7.0**	**7.1**	**7.2**	**7.5**	**0.7**
Japan	5.1	5.5	5.4	5.7	5.7	5.7	5.8	0.3
Australia/New Zealand	0.8	1.0	1.0	1.3	1.4	1.5	1.7	2.2
Total Industrialized	**38.8**	**44.1**	**43.9**	**49.1**	**52.1**	**54.6**	**57.8**	**1.2**
EE/FSU								
Former Soviet Union	**8.4**	**3.8**	**3.9**	**4.4**	**5.0**	**5.7**	**6.4**	**2.1**
Russia	5.4	2.6	2.6	2.9	3.3	3.8	4.3	2.1
Other FSU	3.0	1.2	1.3	1.5	1.7	1.9	2.2	2.1
Eastern Europe	**1.6**	**1.4**	**1.4**	**1.6**	**1.7**	**1.9**	**2.1**	**1.7**
Total EE/FSU	**10.0**	**5.2**	**5.3**	**5.9**	**6.7**	**7.6**	**8.5**	**2.0**
Developing Countries								
Developing Asia	**7.6**	**14.5**	**14.8**	**20.2**	**23.7**	**27.6**	**31.6**	**3.2**
China	2.3	4.8	5.0	7.6	9.2	11.0	12.8	4.0
India	1.2	2.1	2.1	2.8	3.5	4.4	5.3	3.9
South Korea	1.0	2.1	2.1	2.5	2.6	2.7	2.9	1.3
Other Asia	3.1	5.5	5.5	7.3	8.4	9.5	10.7	2.8
Middle East	**3.8**	**5.3**	**5.4**	**6.8**	**7.5**	**8.3**	**9.1**	**2.2**
Turkey	0.5	0.7	0.6	0.8	0.9	1.0	1.1	2.4
Other Middle East	3.4	4.7	4.7	6.0	6.6	7.3	8.0	2.2
Africa	**2.1**	**2.5**	**2.6**	**3.1**	**3.6**	**4.1**	**4.7**	**2.5**
Central and South America	**3.7**	**5.2**	**5.2**	**6.3**	**7.0**	**8.0**	**9.2**	**2.4**
Brazil	1.5	2.2	2.2	2.6	2.9	3.3	3.8	2.3
Other Central/South America	2.3	3.0	3.0	3.7	4.1	4.7	5.4	2.5
Total Developing	**17.3**	**27.6**	**27.9**	**36.4**	**41.8**	**48.1**	**54.5**	**2.8**
Total World	**66.1**	**76.9**	**77.1**	**91.4**	**100.5**	**110.3**	**120.9**	**1.9**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union. Energy totals include net imports of coal coke and electricity generated from biomass in the United States. Totals may not equal sum of components due to independent rounding. The electricity portion of the national fuel consumption values consists of generation for domestic use plus an adjustment for electricity trade based on a fuel's share of total generation in the exporting country.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table A21; and System for the Analysis of Global Energy Markets (2004).

Table A5. World Natural Gas Consumption by Region, Reference Case, 1990-2025
(Trillion Cubic Feet)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**22.5**	**28.1**	**26.9**	**31.8**	**34.4**	**37.7**	**39.8**	**1.6**
United States[a]	19.2	23.5	22.6	26.2	28.0	30.4	31.4	1.4
Canada	2.4	3.3	2.9	3.9	4.3	4.6	4.9	2.2
Mexico	0.9	1.4	1.4	1.7	2.1	2.7	3.5	3.9
Western Europe	**10.1**	**14.6**	**14.8**	**16.4**	**18.2**	**20.6**	**23.7**	**2.0**
United Kingdom	2.1	3.4	3.3	3.8	4.3	4.8	5.2	2.0
France	1.0	1.4	1.5	1.5	1.6	1.7	1.8	0.8
Germany	2.7	3.2	3.3	3.6	4.1	5.2	5.6	2.2
Italy	1.7	2.5	2.5	2.8	3.1	3.4	3.5	1.4
Netherlands	1.5	1.7	1.8	1.8	2.0	2.1	2.2	1.0
Other Western Europe	1.2	2.3	2.4	2.9	3.1	3.4	5.3	3.3
Industrialized Asia	**2.6**	**3.8**	**3.9**	**4.4**	**4.9**	**5.3**	**6.0**	**1.8**
Japan	1.9	2.8	2.8	3.2	3.5	3.8	4.2	1.6
Australia/New Zealand	0.8	1.0	1.1	1.2	1.3	1.5	1.8	2.2
Total Industrialized	**35.2**	**46.4**	**45.6**	**52.6**	**57.4**	**63.6**	**69.5**	**1.8**
EE/FSU								
Former Soviet Union	**25.0**	**20.5**	**20.8**	**23.4**	**26.2**	**29.5**	**32.8**	**1.9**
Russia	17.3	14.1	14.4	15.8	17.5	19.5	21.2	1.6
Other FSU	7.7	6.4	6.4	7.6	8.6	10.0	11.6	2.5
Eastern Europe	**3.1**	**2.4**	**2.7**	**3.9**	**4.7**	**5.9**	**6.1**	**3.6**
Total EE/FSU	**28.1**	**23.0**	**23.5**	**27.3**	**30.9**	**35.3**	**39.0**	**2.1**
Developing Countries								
Developing Asia	**3.0**	**6.6**	**7.5**	**9.5**	**11.6**	**14.1**	**17.4**	**3.5**
China	0.5	1.0	1.0	1.9	2.6	3.6	5.0	6.9
India	0.4	0.8	0.8	1.2	1.6	2.0	2.5	4.8
South Korea	0.1	0.7	0.7	1.0	1.3	1.5	1.8	3.9
Other Asia	2.0	4.2	4.9	5.4	6.1	7.0	8.1	2.1
Middle East	**3.7**	**7.3**	**7.9**	**8.5**	**9.5**	**10.5**	**12.1**	**1.8**
Turkey	0.1	0.5	0.6	0.8	0.9	1.0	1.1	2.9
Other Middle East	3.6	6.8	7.3	7.7	8.6	9.5	10.9	1.7
Africa	**1.4**	**2.0**	**2.3**	**2.7**	**3.3**	**3.9**	**4.6**	**3.0**
Central and South America	**2.0**	**3.3**	**3.5**	**4.5**	**5.5**	**6.8**	**8.5**	**3.8**
Brazil	0.1	0.3	0.3	0.9	1.6	2.0	2.6	8.8
Other Central/South America	1.9	3.0	3.2	3.6	3.9	4.8	5.9	2.6
Total Developing	**10.1**	**19.3**	**21.2**	**25.2**	**29.8**	**35.3**	**42.6**	**2.9**
Total World	**73.4**	**88.7**	**90.3**	**105.1**	**118.1**	**134.2**	**151.1**	**2.2**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union. Energy totals include net imports of coal coke and electricity generated from biomass in the United States. Totals may not equal sum of components due to independent rounding. The electricity portion of the national fuel consumption values consists of generation for domestic use plus an adjustment for electricity trade based on a fuel's share of total generation in the exporting country.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table A13; and System for the Analysis of Global Energy Markets (2004).

Table A6. World Coal Consumption by Region, Reference Case, 1990-2025
(Million Short Tons)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**971**	**1,168**	**1,148**	**1,325**	**1,394**	**1,498**	**1,680**	**1.6**
United States[a]	903	1,084	1,060	1,229	1,291	1,391	1,567	1.6
Canada	59	69	73	77	81	83	87	0.8
Mexico	9	15	15	19	22	24	26	2.4
Western Europe	**894**	**559**	**574**	**513**	**493**	**474**	**463**	**-0.9**
United Kingdom	119	64	71	65	63	56	49	-1.5
France	35	25	21	13	12	12	11	-2.7
Germany	528	264	265	258	242	234	232	-0.5
Italy	25	20	22	21	21	20	20	-0.5
Netherlands	15	14	23	17	16	16	16	-1.7
Other Western Europe	172	172	172	140	140	136	135	-1.0
Industrialized Asia	**231**	**303**	**312**	**336**	**355**	**373**	**404**	**1.1**
Japan	125	160	166	178	186	195	202	0.8
Australia/New Zealand	106	143	147	158	169	179	201	1.3
Total Industrialized	**2,095**	**2,029**	**2,034**	**2,174**	**2,242**	**2,345**	**2,547**	**0.9**
EE/FSU								
Former Soviet Union	**848**	**421**	**446**	**441**	**442**	**441**	**436**	**-0.1**
Russia	497	267	284	298	304	302	297	0.2
Other FSU	352	154	162	143	138	138	138	-0.7
Eastern Europe	**528**	**390**	**382**	**348**	**321**	**297**	**289**	**-1.2**
Total EE/FSU	**1,376**	**811**	**828**	**788**	**763**	**738**	**724**	**-0.6**
Developing Countries								
Developing Asia	**1,590**	**1,959**	**2,084**	**2,553**	**2,928**	**3,343**	**3,834**	**2.6**
China	1,124	1,282	1,383	1,740	2,041	2,371	2,757	2.9
India	242	359	360	430	484	543	611	2.2
South Korea	49	72	76	104	115	119	127	2.2
Other Asia	175	246	265	280	288	310	339	1.0
Middle East	**66**	**94**	**95**	**116**	**125**	**134**	**142**	**1.7**
Turkey	60	80	81	96	107	114	122	1.7
Other Middle East	6	14	14	19	19	20	20	1.6
Africa	**152**	**187**	**191**	**206**	**228**	**249**	**268**	**1.4**
Central and South America	**27**	**34**	**32**	**43**	**48**	**54**	**59**	**2.7**
Brazil	17	21	21	30	32	36	39	2.7
Other Central/South America	10	13	11	14	16	18	20	2.6
Total Developing	**1,835**	**2,275**	**2,401**	**2,918**	**3,330**	**3,780**	**4,303**	**2.5**
Total World	**5,307**	**5,115**	**5,263**	**5,881**	**6,335**	**6,862**	**7,574**	**1.5**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union. Totals may not equal sum of components due to independent rounding. The electricity portion of the national fuel consumption values consists of generation for domestic use plus an adjustment for electricity trade based on a fuel's share of total generation in the exporting country. To convert short tons to metric tons, divide each number in the table by 1.102.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table A16; and System for the Analysis of Global Energy Markets (2004).

Table A7. World Nuclear Energy Consumption by Region, Reference Case, 1990-2025
(Billion Kilowatthours)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**649**	**830**	**850**	**912**	**932**	**945**	**925**	**0.4**
United States[a]	577	754	769	794	812	816	816	0.3
Canada	69	69	73	108	110	118	98	1.2
Mexico	3	8	8	10	10	11	11	1.1
Western Europe	**703**	**845**	**870**	**906**	**897**	**855**	**760**	**-0.6**
United Kingdom	59	82	86	69	52	47	28	-4.6
France	298	394	401	447	478	520	550	1.3
Germany	145	161	163	137	107	15	0	-100.0
Italy	0	0	0	0	0	0	0	—
Netherlands	3	4	4	4	4	0	0	-100.0
Other Western Europe	198	204	217	248	257	273	182	-0.7
Industrialized Asia	**192**	**294**	**309**	**369**	**394**	**426**	**411**	**1.2**
Japan	192	294	309	369	394	426	411	1.2
Australia/New Zealand	0	0	0	0	0	0	0	—
Total Industrialized	**1,544**	**1,969**	**2,029**	**2,187**	**2,223**	**2,226**	**2,095**	**0.1**
EE/FSU								
Former Soviet Union	**201**	**204**	**210**	**236**	**236**	**204**	**174**	**-0.8**
Russia	115	122	125	141	154	129	99	-1.0
Other FSU	86	81	85	95	82	76	75	-0.5
Eastern Europe	**54**	**67**	**72**	**76**	**80**	**84**	**88**	**0.8**
Total EE/FSU	**256**	**270**	**282**	**312**	**316**	**288**	**262**	**-0.3**
Developing Countries								
Developing Asia	**88**	**171**	**178**	**299**	**406**	**473**	**497**	**4.4**
China	0	16	17	66	129	142	154	9.7
India	6	14	18	46	55	66	66	5.5
South Korea	50	104	107	141	171	209	220	3.1
Other Asia	32	37	36	47	51	55	56	1.8
Middle East	**0**	**0**	**0**	**5**	**14**	**14**	**21**	**—**
Turkey	0	0	0	0	0	0	0	—
Other Middle East	0	0	0	5	14	14	21	—
Africa	**8**	**13**	**11**	**14**	**14**	**14**	**14**	**1.2**
Central and South America	**9**	**11**	**21**	**21**	**21**	**18**	**18**	**-0.7**
Brazil	2	5	14	14	14	14	14	0.0
Other Central/South America	7	6	7	6	6	3	3	-2.8
Total Developing	**105**	**195**	**209**	**339**	**455**	**518**	**549**	**4.1**
Total World	**1,905**	**2,434**	**2,521**	**2,838**	**2,994**	**3,032**	**2,906**	**0.6**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union. Totals may not equal sum of components due to independent rounding. The electricity portion of the national fuel consumption values consists of generation for domestic use plus an adjustment for electricity trade based on a fuel's share of total generation in the exporting country.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table A8; and System for the Analysis of Global Energy Markets (2004).

Table A8. World Consumption of Hydroelectricity and Other Renewable Energy by Region, Reference Case, 1990-2025
(Quadrillion Btu)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**9.5**	**10.6**	**9.4**	**11.6**	**12.7**	**13.5**	**14.4**	**1.8**
United States[a]	6.0	6.4	5.5	7.3	7.9	8.5	9.0	2.1
Canada	3.1	3.8	3.5	3.8	4.2	4.4	4.7	1.3
Mexico	0.3	0.5	0.4	0.5	0.5	0.6	0.6	1.7
Western Europe	**4.5**	**6.0**	**6.1**	**6.8**	**7.2**	**7.6**	**8.0**	**1.1**
United Kingdom	0.1	0.1	0.1	0.2	0.2	0.2	0.3	5.5
France	0.6	0.7	0.8	0.9	0.9	1.0	1.0	0.8
Germany	0.3	0.4	0.5	0.5	0.6	0.6	0.6	1.3
Italy	0.4	0.6	0.6	0.8	0.9	0.9	0.9	1.7
Netherlands	0.0	0.1	0.1	0.2	0.2	0.2	0.2	6.2
Other Western Europe	3.2	4.1	4.1	4.1	4.5	4.8	4.9	0.8
Industrialized Asia	**1.6**	**1.6**	**1.6**	**1.8**	**1.9**	**1.9**	**2.0**	**0.9**
Japan	1.1	1.1	1.1	1.3	1.3	1.3	1.4	0.9
Australia/New Zealand	0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.7
Total Industrialized	**15.6**	**18.2**	**17.1**	**20.2**	**21.7**	**23.0**	**24.4**	**1.5**
EE/FSU								
Former Soviet Union	**2.4**	**2.3**	**2.5**	**2.9**	**3.1**	**3.2**	**3.4**	**1.2**
Russia	1.8	1.7	1.8	2.0	2.1	2.2	2.3	1.0
Other FSU	0.6	0.7	0.7	0.9	1.0	1.0	1.0	1.7
Eastern Europe	**0.4**	**0.6**	**0.6**	**0.7**	**0.9**	**1.0**	**1.0**	**1.8**
Total EE/FSU	**2.8**	**3.0**	**3.2**	**3.6**	**4.0**	**4.1**	**4.4**	**1.3**
Developing Countries								
Developing Asia	**3.2**	**4.5**	**5.1**	**7.2**	**8.9**	**10.3**	**11.9**	**3.6**
China	1.3	2.3	2.8	4.2	5.0	5.9	6.8	3.8
India	0.7	0.8	0.8	1.1	1.3	1.5	1.8	3.2
South Korea	0.0	0.0	0.0	0.1	0.1	0.1	0.1	5.9
Other Asia	1.1	1.4	1.5	1.9	2.5	2.9	3.2	3.3
Middle East	**0.4**	**0.5**	**0.4**	**0.6**	**0.7**	**0.8**	**1.0**	**3.7**
Turkey	0.2	0.3	0.3	0.4	0.4	0.5	0.6	3.4
Other Middle East	0.1	0.1	0.1	0.2	0.3	0.3	0.4	4.1
Africa	**0.6**	**0.7**	**0.8**	**1.0**	**1.1**	**1.2**	**1.5**	**2.7**
Central and South America	**3.9**	**5.9**	**5.6**	**6.4**	**6.7**	**7.0**	**7.3**	**1.2**
Brazil	2.2	3.3	2.9	3.4	3.6	3.9	4.1	1.5
Other Central/South America	1.7	2.6	2.7	3.1	3.2	3.2	3.2	0.8
Total Developing	**8.0**	**11.6**	**11.8**	**15.2**	**17.5**	**19.5**	**21.7**	**2.5**
Total World	**26.4**	**32.8**	**32.2**	**39.0**	**43.2**	**46.6**	**50.4**	**1.9**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union. Totals may not equal sum of components due to independent rounding. The electricity portion of the national fuel consumption values consists of generation for domestic use plus an adjustment for electricity trade based on a fuel's share of total generation in the exporting country. U.S. totals include net electricity imports, methanol, and liquid hydrogen.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table A1; and System for the Analysis of Global Energy Markets (2004).

Table A9. World Carbon Dioxide Emissions by Region, Reference Case, 1990-2025
(Million Metric Tons Carbon Dioxide)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**5,769**	**6,731**	**6,613**	**7,677**	**8,255**	**8,876**	**9,659**	**1.6**
United States[a]	4,989	5,787	5,692	6,559	7,028	7,536	8,142	1.5
Canada	473	581	569	686	734	776	830	1.6
Mexico	308	364	352	433	492	565	687	2.8
Western Europe	**3,412**	**3,442**	**3,465**	**3,567**	**3,682**	**3,832**	**4,022**	**0.6**
United Kingdom	600	553	563	608	642	665	692	0.9
France	374	401	396	390	398	400	412	0.2
Germany	995	828	819	851	874	943	969	0.7
Italy	415	443	445	486	504	522	540	0.8
Netherlands	211	228	248	263	272	279	286	0.6
Other Western Europe	816	989	994	969	992	1,021	1,123	0.5
Industrialized Asia	**1,280**	**1,526**	**1,556**	**1,694**	**1,770**	**1,840**	**1,962**	**1.0**
Japan	987	1,138	1,158	1,239	1,274	1,300	1,356	0.7
Australia/New Zealand	294	387	398	455	497	541	605	1.8
Total Industrialized	**10,462**	**11,699**	**11,634**	**12,938**	**13,708**	**14,548**	**15,643**	**1.2**
EE/FSU								
Former Soviet Union	**3,798**	**2,338**	**2,399**	**2,600**	**2,840**	**3,118**	**3,393**	**1.5**
Russia	2,405	1,570	1,614	1,792	1,913	2,059	2,186	1.3
Other FSU	1,393	767	785	808	927	1,059	1,207	1.8
Eastern Europe	**1,104**	**756**	**748**	**797**	**827**	**888**	**920**	**0.9**
Total EE/FSU	**4,902**	**3,094**	**3,148**	**3,397**	**3,667**	**4,006**	**4,313**	**1.3**
Developing Countries								
Developing Asia	**3,994**	**5,709**	**6,012**	**7,647**	**8,863**	**10,240**	**11,801**	**2.9**
China	2,262	2,861	3,050	4,063	4,824	5,693	6,666	3.3
India	561	914	917	1,141	1,341	1,575	1,834	2.9
South Korea	234	425	443	563	620	662	720	2.0
Other Asia	937	1,509	1,602	1,881	2,078	2,310	2,581	2.0
Middle East	**846**	**1,262**	**1,299**	**1,566**	**1,729**	**1,910**	**2,110**	**2.0**
Turkey	129	184	184	249	280	309	340	2.6
Other Middle East	717	1,078	1,115	1,317	1,448	1,601	1,770	1.9
Africa	**656**	**811**	**843**	**971**	**1,110**	**1,259**	**1,413**	**2.2**
Central and South America	**703**	**961**	**964**	**1,194**	**1,358**	**1,578**	**1,845**	**2.7**
Brazil	250	343	347	451	531	617	720	3.1
Other Central/South America	453	618	617	744	827	961	1,125	2.5
Total Developing	**6,200**	**8,744**	**9,118**	**11,379**	**13,060**	**14,987**	**17,168**	**2.7**
Total World	**21,563**	**23,536**	**23,899**	**27,715**	**30,435**	**33,541**	**37,124**	**1.9**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union. The U.S. numbers include carbon dioxide emissions attributable to renewable energy sources.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table A19; and System for the Analysis of Global Energy Markets (2004).

Table A10. World Carbon Dioxide Emissions from Oil Use by Region, Reference Case, 1990-2025
(Million Metric Tons Carbon Dioxide)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**2,626**	**2,935**	**2,962**	**3,403**	**3,723**	**3,968**	**4,300**	**1.6**
United States[a]	2,165	2,416	2,458	2,786	3,051	3,241	3,473	1.5
Canada	222	258	258	311	332	354	378	1.6
Mexico	239	261	251	306	340	373	449	2.5
Western Europe	**1,739**	**1,853**	**1,845**	**1,943**	**1,990**	**2,038**	**2,073**	**0.5**
United Kingdom	242	231	231	251	259	272	293	1.0
France	245	267	267	275	278	279	284	0.2
Germany	376	357	348	366	379	399	404	0.6
Italy	270	261	261	284	289	293	302	0.6
Netherlands	99	98	98	99	102	103	106	0.3
Other Western Europe	507	639	639	667	683	691	684	0.3
Industrialized Asia	**768**	**802**	**802**	**870**	**889**	**905**	**942**	**0.7**
Japan	655	667	668	702	704	700	718	0.3
Australia/New Zealand	113	134	134	169	186	205	225	2.2
Total Industrialized	**5,133**	**5,589**	**5,613**	**6,215**	**6,602**	**6,910**	**7,315**	**1.1**
EE/FSU								
Former Soviet Union	**1,224**	**547**	**557**	**628**	**718**	**821**	**922**	**2.1**
Russia	783	366	369	416	435	480	523	1.5
Other FSU	441	181	189	211	283	341	399	3.2
Eastern Europe	**243**	**189**	**189**	**209**	**226**	**254**	**281**	**1.7**
Total EE/FSU	**1,468**	**736**	**746**	**837**	**944**	**1,074**	**1,203**	**2.0**
Developing Countries								
Developing Asia	**1,116**	**1,912**	**1,953**	**2,665**	**3,124**	**3,644**	**4,174**	**3.2**
China	345	619	642	985	1,187	1,427	1,650	4.0
India	165	279	279	365	456	572	693	3.9
South Korea	138	239	245	287	302	314	335	1.3
Other Asia	468	775	787	1,028	1,178	1,331	1,496	2.7
Middle East	**568**	**753**	**764**	**973**	**1,071**	**1,187**	**1,292**	**2.2**
Turkey	64	81	81	102	113	123	135	2.1
Other Middle East	504	672	682	871	959	1,065	1,158	2.2
Africa	**304**	**356**	**366**	**443**	**507**	**586**	**660**	**2.5**
Central and South America	**533**	**694**	**691**	**834**	**933**	**1,065**	**1,222**	**2.4**
Brazil	210	276	280	332	371	425	487	2.3
Other Central/South America	323	418	411	503	562	640	735	2.5
Total Developing	**2,521**	**3,716**	**3,774**	**4,916**	**5,635**	**6,482**	**7,349**	**2.8**
Total World	**9,121**	**10,041**	**10,134**	**11,969**	**13,181**	**14,466**	**15,867**	**1.9**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table A19; and System for the Analysis of Global Energy Markets (2004).

Table A11. World Carbon Dioxide Emissions from Natural Gas Use by Region, Reference Case, 1990-2025
(Million Metric Tons Carbon Dioxide)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**1,207**	**1,503**	**1,421**	**1,715**	**1,856**	**2,038**	**2,152**	**1.7**
United States[a]	1,025	1,249	1,189	1,409	1,510	1,640	1,692	1.5
Canada	127	177	156	211	230	245	266	2.2
Mexico	54	77	77	95	116	152	194	3.9
Western Europe	**514**	**786**	**799**	**885**	**981**	**1,111**	**1,281**	**2.0**
United Kingdom	110	188	183	204	236	261	284	1.8
France	57	81	85	93	99	100	108	1.0
Germany	116	165	173	194	222	280	303	2.4
Italy	91	135	136	152	166	182	192	1.4
Netherlands	72	81	83	85	94	102	107	1.1
Other Western Europe	67	134	139	156	165	185	287	3.1
Industrialized Asia	**133**	**209**	**216**	**244**	**270**	**295**	**331**	**1.8**
Japan	89	152	157	179	195	209	231	1.6
Australia/New Zealand	44	57	59	65	75	86	99	2.2
Total Industrialized	**1,853**	**2,497**	**2,436**	**2,844**	**3,107**	**3,443**	**3,763**	**1.8**
EE/FSU								
Former Soviet Union	**1,352**	**1,103**	**1,119**	**1,258**	**1,405**	**1,583**	**1,765**	**1.9**
Russia	928	753	768	842	934	1,037	1,131	1.6
Other FSU	424	351	351	416	471	545	634	2.5
Eastern Europe	**167**	**127**	**139**	**205**	**248**	**308**	**322**	**3.6**
Total EE/FSU	**1,519**	**1,231**	**1,258**	**1,463**	**1,653**	**1,890**	**2,087**	**2.1**
Developing Countries								
Developing Asia	**167**	**366**	**419**	**534**	**650**	**796**	**986**	**3.6**
China	31	59	66	131	181	251	346	7.2
India	24	43	44	67	86	107	134	4.8
South Korea	6	40	44	64	83	105	126	4.5
Other Asia	106	225	266	271	300	334	379	1.5
Middle East	**205**	**406**	**435**	**470**	**524**	**580**	**667**	**1.8**
Turkey	7	29	31	61	73	84	96	4.8
Other Middle East	199	377	404	409	452	496	570	1.5
Africa	**80**	**116**	**130**	**153**	**187**	**221**	**264**	**3.0**
Central and South America	**116**	**188**	**200**	**260**	**315**	**389**	**486**	**3.8**
Brazil	6	18	19	53	88	113	144	8.9
Other Central/South America	110	170	182	207	227	276	342	2.7
Total Developing	**569**	**1,077**	**1,184**	**1,416**	**1,676**	**1,986**	**2,402**	**3.0**
Total World	**3,941**	**4,805**	**4,878**	**5,724**	**6,436**	**7,320**	**8,253**	**2.2**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table A19; and System for the Analysis of Global Energy Markets (2004).

Table A12. World Carbon Dioxide Emissions from Coal Use by Region, Reference Case, 1990-2025
(Million Metric Tons Carbon Dioxide)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**1,933**	**2,293**	**2,222**	**2,560**	**2,676**	**2,871**	**3,207**	**1.5**
United States[a]	1,794	2,122	2,042	2,364	2,468	2,654	2,977	1.6
Canada	123	146	155	164	172	177	186	0.8
Mexico	15	25	25	32	36	40	44	2.4
Western Europe	**1,159**	**804**	**821**	**740**	**711**	**683**	**669**	**-0.9**
United Kingdom	248	134	149	153	148	132	115	-1.1
France	72	52	44	22	21	21	19	-3.4
Germany	503	306	298	291	273	264	262	-0.5
Italy	54	48	49	49	49	47	47	-0.2
Netherlands	40	49	67	80	76	74	73	0.4
Other Western Europe	242	216	215	145	144	145	152	-1.4
Industrialized Asia	**380**	**515**	**539**	**580**	**611**	**641**	**689**	**1.0**
Japan	243	319	334	359	375	392	407	0.8
Australia/New Zealand	137	196	205	221	236	250	282	1.3
Total Industrialized	**3,472**	**3,613**	**3,581**	**3,879**	**3,998**	**4,195**	**4,564**	**1.0**
EE/FSU								
Former Soviet Union	**1,222**	**687**	**723**	**714**	**717**	**715**	**706**	**-0.1**
Russia	694	452	478	534	544	542	533	0.5
Other FSU	528	236	245	181	173	173	174	-1.4
Eastern Europe	**694**	**440**	**420**	**382**	**353**	**326**	**317**	**-1.2**
Total EE/FSU	**1,915**	**1,127**	**1,143**	**1,097**	**1,070**	**1,041**	**1,024**	**-0.5**
Developing Countries								
Developing Asia	**2,710**	**3,431**	**3,639**	**4,448**	**5,089**	**5,799**	**6,641**	**2.5**
China	1,886	2,183	2,342	2,946	3,456	4,016	4,669	2.9
India	371	592	594	709	798	895	1,007	2.2
South Korea	90	146	155	212	234	243	259	2.2
Other Asia	363	509	549	581	600	645	706	1.1
Middle East	**73**	**103**	**100**	**123**	**133**	**142**	**150**	**1.7**
Turkey	59	74	71	86	95	102	109	1.8
Other Middle East	14	29	29	37	38	40	41	1.5
Africa	**272**	**339**	**347**	**375**	**416**	**453**	**489**	**1.4**
Central and South America	**54**	**78**	**73**	**100**	**110**	**124**	**137**	**2.7**
Brazil	34	49	48	66	72	79	88	2.6
Other Central/South America	20	30	25	34	38	45	49	2.8
Total Developing	**3,110**	**3,951**	**4,160**	**5,046**	**5,749**	**6,519**	**7,417**	**2.4**
Total World	**8,497**	**8,691**	**8,884**	**10,022**	**10,817**	**11,755**	**13,004**	**1.6**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table A19; and System for the Analysis of Global Energy Markets (2004).

Table A13. World Total Energy Consumption in Oil-Equivalent Units by Region, Reference Case, 1990-2025
(Million Tons Oil Equivalent)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**2,534**	**2,990**	**2,912**	**3,389**	**3,645**	**3,907**	**4,197**	**1.5**
United States[a]	2,131	2,503	2,446	2,817	3,018	3,224	3,439	1.4
Canada	278	331	315	388	417	441	465	1.6
Mexico	126	156	151	185	210	242	293	2.8
Western Europe	**1,509**	**1,685**	**1,718**	**1,794**	**1,859**	**1,932**	**2,008**	**0.7**
United Kingdom	234	246	247	261	271	283	295	0.7
France	222	261	265	298	310	324	337	1.0
Germany	373	357	362	373	381	391	401	0.4
Italy	177	201	204	214	223	232	241	0.7
Netherlands	85	99	107	110	114	118	122	0.6
Other Western Europe	418	520	533	537	560	584	613	0.6
Industrialized Asia	**563**	**692**	**699**	**771**	**807**	**841**	**885**	**1.0**
Japan	452	548	552	603	623	641	662	0.8
Australia/New Zealand	111	144	147	168	183	200	223	1.8
Total Industrialized	**4,606**	**5,366**	**5,329**	**5,954**	**6,311**	**6,680**	**7,091**	**1.2**
EE/FSU								
Former Soviet Union	**1,529**	**1,029**	**1,055**	**1,163**	**1,274**	**1,388**	**1,507**	**1.5**
Russia	991	690	711	791	852	911	965	1.3
Other FSU	538	339	345	373	422	477	542	1.9
Eastern Europe	**393**	**285**	**287**	**323**	**347**	**383**	**399**	**1.4**
Total EE/FSU	**1,923**	**1,314**	**1,342**	**1,487**	**1,621**	**1,771**	**1,906**	**1.5**
Developing Countries								
Developing Asia	**1,322**	**2,029**	**2,143**	**2,786**	**3,268**	**3,792**	**4,369**	**3.0**
China	681	931	1,000	1,376	1,654	1,958	2,294	3.5
India	196	319	322	413	492	584	682	3.2
South Korea	95	199	203	256	284	309	335	2.1
Other Asia	350	580	617	741	838	941	1,058	2.3
Middle East	**329**	**511**	**524**	**629**	**699**	**774**	**860**	**2.1**
Turkey	50	76	73	94	105	116	127	2.3
Other Middle East	280	435	451	535	594	657	733	2.0
Africa	**235**	**301**	**314**	**367**	**421**	**479**	**542**	**2.3**
Central and South America	**364**	**529**	**527**	**640**	**715**	**812**	**929**	**2.4**
Brazil	150	228	221	265	304	347	396	2.5
Other Central/South America	214	302	306	375	411	465	533	2.3
Total Developing	**2,250**	**3,371**	**3,508**	**4,422**	**5,103**	**5,856**	**6,700**	**2.7**
Total World	**8,779**	**10,052**	**10,179**	**11,863**	**13,036**	**14,308**	**15,697**	**1.8**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table A1; and System for the Analysis of Global Energy Markets (2004).

Table A14. World Population by Region, Reference Case, 1990-2025
(Millions)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**366**	**405**	**417**	**456**	**476**	**495**	**514**	**0.9**
United States[a]	255	276	286	309	322	335	348	0.8
Canada	28	31	31	33	34	35	36	0.6
Mexico	83	99	100	113	120	125	130	1.1
Western Europe	**376**	**390**	**391**	**396**	**397**	**397**	**397**	**0.1**
United Kingdom	57	59	59	60	61	62	63	0.3
France	57	59	60	62	63	64	64	0.3
Germany	79	82	82	83	82	82	82	0.0
Italy	57	58	57	57	56	54	53	-0.3
Netherlands	15	16	16	17	17	17	17	0.3
Other Western Europe	112	116	117	118	118	118	117	0.0
Industrialized Asia	**144**	**150**	**150**	**153**	**153**	**152**	**151**	**0.0**
Japan	124	127	127	128	127	126	123	-0.1
Australia/New Zealand	20	23	23	25	26	27	28	0.7
Total Industrialized	**886**	**946**	**959**	**1,005**	**1,026**	**1,045**	**1,061**	**0.4**
EE/FSU								
Former Soviet Union	**290**	**290**	**289**	**283**	**280**	**277**	**272**	**-0.2**
Russia	148	146	145	138	133	129	124	-0.6
Other FSU	141	144	144	145	147	148	148	0.1
Eastern Europe	**122**	**121**	**121**	**119**	**118**	**117**	**115**	**-0.2**
Total EE/FSU	**412**	**411**	**410**	**402**	**398**	**393**	**387**	**-0.2**
Developing Countries								
Developing Asia	**2,791**	**3,246**	**3,288**	**3,658**	**3,850**	**4,022**	**4,168**	**1.0**
China	1,155	1,275	1,285	1,365	1,402	1,429	1,445	0.5
India	846	1,017	1,033	1,174	1,246	1,312	1,369	1.2
South Korea	43	47	47	49	50	50	50	0.3
Other Asia	746	907	923	1,071	1,152	1,230	1,304	1.4
Middle East	**193**	**242**	**247**	**294**	**322**	**349**	**375**	**1.8**
Turkey	58	68	69	78	82	86	89	1.0
Other Middle East	136	174	178	216	240	263	286	2.0
Africa	**622**	**796**	**814**	**984**	**1,085**	**1,188**	**1,292**	**1.9**
Central and South America	**358**	**421**	**428**	**481**	**509**	**534**	**557**	**1.1**
Brazil	149	172	174	193	202	210	216	0.9
Other Central/South America	210	250	254	288	307	324	341	1.2
Total Developing	**3,965**	**4,705**	**4,777**	**5,418**	**5,765**	**6,092**	**6,392**	**1.2**
Total World	**5,263**	**6,061**	**6,145**	**6,825**	**7,190**	**7,531**	**7,841**	**1.0**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union. Totals may not equal sum of components due to independent rounding.

Sources: **United States:** Energy Information Administration, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table A20. **Other Countries:** United Nations, Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *The 2002 Revision and World Urbanization Prospects* (New York, NY, July 11, 2003).

Appendix B

High Economic Growth Case Projections:

- World Energy Consumption
- Gross Domestic Product
- Carbon Dioxide Emissions

Table B1. World Total Primary Energy Consumption by Region, High Economic Growth Case, 1990-2025
(Quadrillion Btu)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**100.6**	**118.7**	**115.6**	**138.2**	**150.4**	**163.5**	**177.9**	**1.8**
United States[a]	84.6	99.3	97.0	115.0	124.6	134.9	145.7	1.7
Canada	11.0	13.2	12.5	15.7	17.1	18.3	19.5	1.9
Mexico	5.0	6.2	6.0	7.5	8.7	10.3	12.7	3.2
Western Europe	**59.9**	**66.8**	**68.2**	**73.1**	**77.1**	**80.6**	**84.2**	**0.9**
United Kingdom	9.3	9.8	9.8	10.5	11.3	11.8	12.4	1.0
France	8.8	10.4	10.5	12.1	12.7	13.3	13.9	1.2
Germany	14.8	14.2	14.4	15.1	15.7	16.1	16.5	0.6
Italy	7.0	8.0	8.1	8.7	9.2	9.7	10.1	0.9
Netherlands	3.4	3.9	4.2	4.2	4.5	4.7	4.9	0.6
Other Western Europe	16.6	20.6	21.1	22.5	23.7	24.9	26.4	0.9
Industrialized Asia	**22.3**	**27.5**	**27.7**	**31.3**	**33.3**	**35.3**	**38.0**	**1.3**
Japan	17.9	21.8	21.9	24.4	25.7	26.8	28.3	1.1
Australia/New Zealand	4.4	5.7	5.8	6.9	7.7	8.5	9.7	2.1
Total Industrialized	**182.8**	**213.0**	**211.5**	**242.6**	**260.8**	**279.4**	**300.0**	**1.5**
EE/FSU								
Former Soviet Union	**60.7**	**40.8**	**41.9**	**50.0**	**56.9**	**64.9**	**73.7**	**2.4**
Russia	39.3	27.4	28.2	33.6	38.3	43.3	48.3	2.3
Other FSU	21.4	13.4	13.7	16.4	18.6	21.6	25.3	2.6
Eastern Europe	**15.6**	**11.3**	**11.4**	**13.5**	**15.0**	**17.1**	**18.6**	**2.1**
Total EE/FSU	**76.3**	**52.2**	**53.3**	**63.5**	**71.9**	**82.0**	**92.3**	**2.3**
Developing Countries								
Developing Asia	**52.5**	**80.5**	**85.0**	**116.8**	**143.1**	**173.1**	**204.8**	**3.7**
China	27.0	37.0	39.7	58.0	72.5	89.4	106.1	4.2
India	7.8	12.7	12.8	17.3	21.3	26.2	31.7	3.9
South Korea	3.8	7.9	8.1	10.7	12.3	13.9	15.7	2.8
Other Asia	13.9	23.0	24.5	30.8	37.0	43.5	51.3	3.1
Middle East	**13.1**	**20.3**	**20.8**	**26.1**	**30.5**	**35.5**	**41.6**	**2.9**
Turkey	2.0	3.0	2.9	3.9	4.6	5.3	6.2	3.2
Other Middle East	11.1	17.3	17.9	22.2	25.9	30.2	35.4	2.9
Africa	**9.3**	**11.9**	**12.4**	**15.7**	**19.2**	**23.9**	**28.4**	**3.5**
Central and South America	**14.4**	**21.0**	**20.9**	**26.5**	**30.6**	**35.8**	**42.8**	**3.0**
Brazil	6.0	9.0	8.8	10.9	12.9	15.1	18.0	3.0
Other Central/South America	8.5	12.0	12.2	15.6	17.7	20.7	24.8	3.0
Total Developing	**89.3**	**133.8**	**139.2**	**185.0**	**223.3**	**268.3**	**317.7**	**3.5**
Total World	**348.4**	**398.9**	**403.9**	**491.1**	**556.1**	**629.7**	**710.0**	**2.4**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union. Energy totals include net imports of coal coke and electricity generated from biomass in the United States. Totals may not equal sum of components due to independent rounding. The electricity portion of the national fuel consumption values consists of generation for domestic use plus an adjustment for electricity trade based on a fuel's share of total generation in the exporting country.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table B1; and System for the Analysis of Global Energy Markets (2004).

Table B2. World Total Energy Consumption by Region and Fuel, High Economic Growth Case, 1990-2025
(Quadrillion Btu)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America								
Oil	40.4	46.3	45.9	55.2	61.3	66.6	72.9	1.9
Natural Gas	23.1	28.8	27.6	33.8	37.3	41.3	44.0	2.0
Coal	20.7	24.5	23.9	27.7	28.8	31.2	35.7	1.7
Nuclear	6.9	8.7	8.9	9.6	9.8	10.0	9.7	0.4
Other	9.5	10.6	9.4	12.0	13.2	14.4	15.6	2.1
Total	**100.6**	**118.7**	**115.6**	**138.2**	**150.4**	**163.5**	**177.9**	**1.8**
Western Europe								
Oil	25.8	28.5	28.9	31.1	32.3	33.6	34.5	0.7
Natural Gas	9.7	14.9	15.1	17.4	20.2	22.9	25.9	2.3
Coal	12.4	8.4	8.6	8.1	7.8	7.1	7.0	-0.9
Nuclear	7.4	8.8	9.1	9.5	9.4	8.9	7.9	-0.6
Other	4.5	6.0	6.1	7.0	7.4	8.1	8.8	1.5
Total	**59.9**	**66.8**	**68.2**	**73.1**	**77.1**	**80.6**	**84.2**	**0.9**
Industrialized Asia								
Oil	12.1	13.2	13.0	14.4	14.9	15.5	16.4	1.0
Natural Gas	2.5	4.0	4.1	4.8	5.4	6.0	6.9	2.2
Coal	4.2	5.7	5.9	6.5	7.0	7.5	8.2	1.4
Nuclear	2.0	3.0	3.2	3.8	4.0	4.4	4.2	1.2
Other	1.6	1.6	1.6	1.9	2.0	2.0	2.3	1.5
Total	**22.3**	**27.5**	**27.7**	**31.3**	**33.3**	**35.3**	**38.0**	**1.3**
Total Industrialized								
Oil	78.2	88.1	87.8	100.6	108.5	115.7	123.8	1.4
Natural Gas	35.4	47.7	46.8	55.9	63.0	70.2	76.8	2.1
Coal	37.3	38.6	38.5	42.3	43.6	45.8	50.9	1.2
Nuclear	16.3	20.5	21.2	22.9	23.2	23.3	21.9	0.1
Other	15.6	18.2	17.1	20.9	22.5	24.5	26.7	1.9
Total	**182.8**	**213.0**	**211.5**	**242.6**	**260.8**	**279.4**	**300.0**	**1.5**
EE/FSU								
Oil	21.0	10.9	11.0	13.7	16.7	20.5	24.5	3.4
Natural Gas	28.8	23.3	23.8	30.3	35.4	41.4	47.5	2.9
Coal	20.8	12.2	12.4	12.2	12.1	12.2	12.2	-0.1
Nuclear	2.9	3.0	3.1	3.4	3.5	3.2	2.9	-0.3
Other	2.8	3.0	3.2	3.8	4.3	4.8	5.2	2.1
Total	**76.3**	**52.2**	**53.3**	**63.5**	**71.9**	**82.0**	**92.3**	**2.3**
Developing Countries								
Developing Asia								
Oil	16.1	30.2	30.7	44.4	54.5	66.6	79.6	4.0
Natural Gas	3.2	6.9	7.9	10.6	13.4	17.2	22.0	4.3
Coal	29.1	37.1	39.4	50.9	60.5	71.8	84.1	3.2
Nuclear	0.9	1.7	1.8	3.1	4.2	4.9	5.1	4.4
Other	3.2	4.5	5.1	7.7	10.4	12.5	14.0	4.3
Total	**52.5**	**80.5**	**85.0**	**116.8**	**143.1**	**173.1**	**204.8**	**3.7**

See notes at end of table.

Table B2. World Total Energy Consumption by Region and Fuel, High Economic Growth Case, 1990-2025 (Continued)
(Quadrillion Btu)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Developing Countries (Continued)								
Middle East								
Oil	8.0	11.0	11.1	14.8	17.2	20.2	23.5	3.2
Natural Gas	3.9	7.7	8.2	9.3	10.8	12.5	14.9	2.5
Coal	0.8	1.1	1.1	1.3	1.5	1.6	1.9	2.3
Nuclear	0.0	0.0	0.0	0.1	0.1	0.1	0.2	—
Other	0.4	0.5	0.4	0.6	0.8	1.0	1.2	4.7
Total	**13.1**	**20.3**	**20.8**	**26.1**	**30.5**	**35.5**	**41.6**	**2.9**
Africa								
Oil	4.2	5.2	5.3	7.1	9.0	12.0	14.3	4.2
Natural Gas	1.5	2.2	2.5	3.0	3.8	4.8	6.0	3.8
Coal	3.0	3.7	3.8	4.4	5.1	5.7	6.5	2.2
Nuclear	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.2
Other	0.6	0.7	0.8	1.1	1.2	1.3	1.5	2.8
Total	**9.3**	**11.9**	**12.4**	**15.7**	**19.2**	**23.9**	**28.4**	**3.5**
Central and South America								
Oil	7.7	10.6	10.5	13.0	15.2	18.2	22.3	3.2
Natural Gas	2.2	3.6	3.8	5.1	6.5	8.2	10.6	4.4
Coal	0.6	0.9	0.8	1.1	1.2	1.4	1.6	2.9
Nuclear	0.1	0.1	0.2	0.2	0.2	0.2	0.2	-0.7
Other	3.9	5.9	5.6	7.0	7.4	7.8	8.1	1.6
Total	**14.4**	**21.0**	**20.9**	**26.5**	**30.6**	**35.8**	**42.8**	**3.0**
Total Developing Countries								
Oil	35.9	56.9	57.6	79.3	96.0	117.1	139.7	3.8
Natural Gas	10.8	20.4	22.4	28.0	34.4	42.7	53.4	3.7
Coal	33.5	42.8	45.1	57.7	68.3	80.6	94.0	3.1
Nuclear	1.1	2.0	2.2	3.5	4.7	5.4	5.7	4.1
Other	8.0	11.6	11.8	16.4	19.8	22.5	24.9	3.1
Total	**89.3**	**133.8**	**139.2**	**185.0**	**223.3**	**268.3**	**317.7**	**3.5**
Total World								
Oil	135.1	155.9	156.5	193.6	221.3	253.2	287.9	2.6
Natural Gas	75.0	91.4	93.1	114.2	132.7	154.3	177.7	2.7
Coal	91.6	93.6	95.9	112.3	124.0	138.6	157.1	2.1
Nuclear	20.3	25.5	26.4	29.8	31.4	31.8	30.4	0.6
Other	26.4	32.8	32.2	41.1	46.6	51.8	56.7	2.4
Total	**348.4**	**398.9**	**403.9**	**491.1**	**556.1**	**629.7**	**710.0**	**2.4**

Notes: EE/FSU = Eastern Europe/Former Soviet Union. Energy totals include net imports of coal coke and electricity generated from biomass in the United States. Totals may not equal sum of components due to independent rounding. The electricity portion of the national fuel consumption values consists of generation for domestic use plus an adjustment for electricity trade based on a fuel's share of total generation in the exporting country.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table B1; and System for the Analysis of Global Energy Markets (2004).

Table B3. World Gross Domestic Product (GDP) by Region, High Economic Growth Case, 1990-2025
(Billion 1997 Dollars)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**7,723**	**10,573**	**10,609**	**14,744**	**17,333**	**20,295**	**23,946**	**3.5**
United States[a]	6,839	9,370	9,394	13,109	15,377	17,946	21,088	3.4
Canada	553	737	751	1,016	1,190	1,380	1,590	3.2
Mexico	331	465	464	620	766	969	1,267	4.3
Western Europe	**7,635**	**9,356**	**9,513**	**11,759**	**13,403**	**15,272**	**17,372**	**2.5**
United Kingdom	1,153	1,461	1,492	1,926	2,238	2,585	2,980	2.9
France	1,300	1,568	1,601	1,984	2,263	2,591	2,972	2.6
Germany	1,917	2,261	2,284	2,702	3,012	3,357	3,731	2.1
Italy	1,063	1,248	1,269	1,545	1,744	1,976	2,228	2.4
Netherlands	317	423	428	514	583	665	760	2.4
Other Western Europe	1,885	2,396	2,440	3,089	3,562	4,097	4,699	2.8
Industrialized Asia	**4,189**	**4,925**	**4,955**	**6,016**	**6,790**	**7,629**	**8,552**	**2.3**
Japan	3,808	4,395	4,411	5,273	5,906	6,584	7,325	2.1
Australia/New Zealand	381	530	543	742	884	1,045	1,227	3.5
Total Industrialized	**19,546**	**24,854**	**25,077**	**32,520**	**37,526**	**43,197**	**49,869**	**2.9**
EE/FSU								
Former Soviet Union	**929**	**597**	**632**	**1,108**	**1,466**	**1,901**	**2,420**	**5.8**
Russia	668	449	471	791	1,027	1,312	1,644	5.3
Other FSU	261	148	161	317	439	589	776	6.8
Eastern Europe	**353**	**379**	**389**	**595**	**757**	**963**	**1,212**	**4.8**
Total EE/FSU	**1,282**	**976**	**1,022**	**1,703**	**2,223**	**2,865**	**3,632**	**5.4**
Developing Countries								
Developing Asia	**1,766**	**3,403**	**3,536**	**6,296**	**8,505**	**11,199**	**14,543**	**6.1**
China	428	1,120	1,202	2,418	3,390	4,624	6,222	7.1
India	290	492	520	908	1,232	1,655	2,208	6.2
South Korea	299	544	562	973	1,255	1,545	1,869	5.1
Other Asia	749	1,246	1,253	1,997	2,628	3,375	4,244	5.2
Middle East	**409**	**594**	**584**	**857**	**1,081**	**1,352**	**1,675**	**4.5**
Turkey	139	198	183	273	350	445	558	4.8
Other Middle East	270	396	400	583	731	907	1,117	4.4
Africa	**488**	**606**	**626**	**979**	**1,253**	**1,590**	**1,999**	**5.0**
Central and South America	**1,105**	**1,503**	**1,510**	**2,127**	**2,743**	**3,528**	**4,553**	**4.7**
Brazil	655	851	863	1,230	1,584	2,028	2,603	4.7
Other Central/South America	450	652	647	898	1,159	1,500	1,951	4.7
Total Developing	**3,767**	**6,106**	**6,256**	**10,260**	**13,582**	**17,669**	**22,771**	**5.5**
Total World	**24,596**	**31,937**	**32,354**	**44,482**	**53,331**	**63,731**	**76,272**	**3.6**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union. Totals may not equal sum of components due to independent rounding.

Sources: Global Insight, Inc., *World Economic Outlook*, Vol. 1 (Lexington, MA, Third Quarter 2003), and Energy Information Administration, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table B20.

Table B4. World Oil Consumption by Region, High Economic Growth Case, 1990-2025
(Million Barrels per Day)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**20.4**	**23.8**	**23.5**	**28.3**	**31.5**	**34.2**	**37.5**	**2.0**
United States[a]	17.0	19.7	19.6	23.6	26.2	28.4	30.6	1.9
Canada	1.7	2.1	1.9	2.3	2.5	2.8	3.0	1.9
Mexico	1.7	2.0	1.9	2.4	2.8	3.1	3.9	2.9
Western Europe	**12.5**	**13.8**	**14.0**	**15.0**	**15.6**	**16.2**	**16.7**	**0.7**
United Kingdom	1.8	1.7	1.7	1.9	2.0	2.1	2.3	1.3
France	1.8	2.0	2.0	2.1	2.2	2.2	2.3	0.5
Germany	2.7	2.8	2.8	3.0	3.2	3.4	3.5	0.9
Italy	1.9	1.9	1.9	2.1	2.1	2.2	2.3	0.9
Netherlands	0.7	0.9	0.9	0.9	1.0	1.0	1.0	0.6
Other Western Europe	3.6	4.6	4.7	5.0	5.1	5.3	5.3	0.5
Industrialized Asia	**6.0**	**6.5**	**6.4**	**7.1**	**7.4**	**7.7**	**8.1**	**1.0**
Japan	5.1	5.5	5.4	5.8	5.9	6.0	6.3	0.6
Australia/New Zealand	0.8	1.0	1.0	1.3	1.5	1.7	1.9	2.6
Total Industrialized	**38.8**	**44.1**	**43.9**	**50.5**	**54.5**	**58.1**	**62.3**	**1.5**
EE/FSU								
Former Soviet Union	**8.4**	**3.8**	**3.9**	**4.9**	**6.1**	**7.7**	**9.3**	**3.7**
Russia	5.4	2.6	2.6	3.3	4.1	5.1	6.2	3.7
Other FSU	3.0	1.2	1.3	1.6	2.1	2.6	3.1	3.7
Eastern Europe	**1.6**	**1.4**	**1.4**	**1.7**	**1.9**	**2.2**	**2.5**	**2.4**
Total EE/FSU	**10.0**	**5.2**	**5.3**	**6.6**	**8.0**	**9.9**	**11.8**	**3.4**
Developing Countries								
Developing Asia	**7.6**	**14.5**	**14.8**	**21.4**	**26.3**	**32.1**	**38.3**	**4.0**
China	2.3	4.8	5.0	8.1	10.2	12.8	15.2	4.8
India	1.2	2.1	2.1	3.0	3.9	5.1	6.5	4.7
South Korea	1.0	2.1	2.1	2.7	2.9	3.2	3.5	2.1
Other Asia	3.1	5.5	5.5	7.6	9.2	11.0	13.1	3.7
Middle East	**3.8**	**5.3**	**5.4**	**7.2**	**8.4**	**9.8**	**11.4**	**3.2**
Turkey	0.5	0.7	0.6	0.9	1.0	1.2	1.4	3.4
Other Middle East	3.4	4.7	4.7	6.3	7.3	8.6	10.0	3.2
Africa	**2.1**	**2.5**	**2.6**	**3.5**	**4.4**	**5.8**	**7.0**	**4.2**
Central and South America	**3.7**	**5.2**	**5.2**	**6.4**	**7.5**	**9.0**	**10.9**	**3.2**
Brazil	1.5	2.2	2.2	2.6	3.1	3.7	4.5	3.0
Other Central/South America	2.3	3.0	3.0	3.8	4.4	5.3	6.4	3.3
Total Developing	**17.3**	**27.6**	**27.9**	**38.4**	**46.5**	**56.7**	**67.6**	**3.8**
Total World	**66.1**	**76.9**	**77.1**	**95.4**	**109.0**	**124.7**	**141.7**	**2.6**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union. Energy totals include net imports of coal coke and electricity generated from biomass in the United States. Totals may not equal sum of components due to independent rounding. The electricity portion of the national fuel consumption values consists of generation for domestic use plus an adjustment for electricity trade based on a fuel's share of total generation in the exporting country.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table B21; and System for the Analysis of Global Energy Markets (2004).

Table B5. World Natural Gas Consumption by Region, High Economic Growth Case, 1990-2025
(Trillion Cubic Feet)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**22.5**	**28.1**	**26.9**	**32.9**	**36.3**	**40.2**	**42.9**	**2.0**
United States[a]	19.2	23.5	22.6	27.2	29.8	32.5	33.8	1.7
Canada	2.4	3.3	2.9	4.0	4.4	4.8	5.3	2.5
Mexico	0.9	1.4	1.4	1.7	2.2	2.9	3.7	4.3
Western Europe	**10.1**	**14.6**	**14.8**	**17.0**	**19.8**	**22.4**	**25.3**	**2.3**
United Kingdom	2.1	3.4	3.3	3.9	4.7	5.2	5.6	2.2
France	1.0	1.4	1.5	1.6	1.8	1.8	1.9	1.1
Germany	2.7	3.2	3.3	3.7	4.5	5.6	6.0	2.5
Italy	1.7	2.5	2.5	2.9	3.3	3.6	3.8	1.7
Netherlands	1.5	1.7	1.8	1.8	2.1	2.3	2.4	1.3
Other Western Europe	1.2	2.3	2.4	3.0	3.3	3.7	5.7	3.6
Industrialized Asia	**2.6**	**3.8**	**3.9**	**4.5**	**5.2**	**5.7**	**6.6**	**2.2**
Japan	1.9	2.8	2.8	3.3	3.8	4.1	4.6	2.1
Australia/New Zealand	0.8	1.0	1.1	1.2	1.4	1.6	1.9	2.5
Total Industrialized	**35.2**	**46.4**	**45.6**	**54.4**	**61.3**	**68.3**	**74.7**	**2.1**
EE/FSU								
Former Soviet Union	**25.0**	**20.5**	**20.8**	**25.7**	**29.7**	**34.2**	**39.3**	**2.7**
Russia	17.3	14.1	14.4	17.4	19.9	22.6	25.4	2.4
Other FSU	7.7	6.4	6.4	8.3	9.8	11.6	13.9	3.3
Eastern Europe	**3.1**	**2.4**	**2.7**	**4.2**	**5.2**	**6.7**	**7.5**	**4.4**
Total EE/FSU	**28.1**	**23.0**	**23.5**	**29.9**	**34.9**	**40.8**	**46.8**	**2.9**
Developing Countries								
Developing Asia	**3.0**	**6.6**	**7.5**	**10.0**	**12.6**	**16.1**	**20.5**	**4.2**
China	0.5	1.0	1.0	2.0	2.9	4.2	5.8	7.6
India	0.4	0.8	0.8	1.3	1.7	2.2	2.9	5.5
South Korea	0.1	0.7	0.7	1.0	1.4	1.8	2.3	4.8
Other Asia	2.0	4.2	4.9	5.6	6.6	7.9	9.5	2.8
Middle East	**3.7**	**7.3**	**7.9**	**8.9**	**10.3**	**12.0**	**14.2**	**2.5**
Turkey	0.1	0.5	0.6	0.8	1.0	1.2	1.3	3.6
Other Middle East	3.6	6.8	7.3	8.1	9.3	10.8	12.9	2.4
Africa	**1.4**	**2.0**	**2.3**	**2.8**	**3.5**	**4.4**	**5.5**	**3.8**
Central and South America	**2.0**	**3.3**	**3.5**	**4.7**	**6.0**	**7.6**	**9.8**	**4.4**
Brazil	0.1	0.3	0.3	1.0	1.7	2.3	3.0	9.5
Other Central/South America	1.9	3.0	3.2	3.7	4.3	5.3	6.8	3.2
Total Developing	**10.1**	**19.3**	**21.2**	**26.3**	**32.3**	**40.0**	**50.0**	**3.6**
Total World	**73.4**	**88.7**	**90.3**	**110.7**	**128.5**	**149.1**	**171.5**	**2.7**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union. Energy totals include net imports of coal coke and electricity generated from biomass in the United States. Totals may not equal sum of components due to independent rounding. The electricity portion of the national fuel consumption values consists of generation for domestic use plus an adjustment for electricity trade based on a fuel's share of total generation in the exporting country.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table B13; and System for the Analysis of Global Energy Markets (2004).

Table B6. World Coal Consumption by Region, High Economic Growth Case, 1990-2025
(Million Short Tons)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**971**	**1,168**	**1,148**	**1,338**	**1,401**	**1,515**	**1,737**	**1.7**
United States[a]	903	1,084	1,060	1,240	1,295	1,399	1,612	1.8
Canada	59	69	73	79	85	93	99	1.3
Mexico	9	15	15	19	22	24	26	2.4
Western Europe	**894**	**559**	**574**	**541**	**518**	**475**	**467**	**-0.9**
United Kingdom	119	64	71	69	66	56	50	-1.5
France	35	25	21	13	12	12	11	-2.7
Germany	528	264	265	272	254	235	234	-0.5
Italy	25	20	22	22	22	20	20	-0.5
Netherlands	15	14	23	18	17	16	16	-1.6
Other Western Europe	172	172	172	155	152	144	149	-0.6
Industrialized Asia	**231**	**303**	**312**	**345**	**370**	**398**	**438**	**1.4**
Japan	125	160	166	182	192	205	218	1.1
Australia/New Zealand	106	143	147	163	178	192	221	1.7
Total Industrialized	**2,095**	**2,029**	**2,034**	**2,225**	**2,290**	**2,388**	**2,643**	**1.1**
EE/FSU								
Former Soviet Union	**848**	**421**	**446**	**458**	**457**	**471**	**481**	**0.3**
Russia	497	267	284	310	314	323	329	0.6
Other FSU	352	154	162	148	143	148	153	-0.2
Eastern Europe	**528**	**390**	**382**	**352**	**341**	**328**	**317**	**-0.8**
Total EE/FSU	**1,376**	**811**	**828**	**810**	**798**	**799**	**798**	**-0.2**
Developing Countries								
Developing Asia	**1,590**	**1,959**	**2,084**	**2,697**	**3,216**	**3,821**	**4,478**	**3.2**
China	1,124	1,282	1,383	1,844	2,249	2,714	3,221	3.6
India	242	359	360	450	522	604	694	2.8
South Korea	49	72	76	110	127	142	160	3.2
Other Asia	175	246	265	293	318	361	403	1.8
Middle East	**66**	**94**	**95**	**117**	**128**	**144**	**164**	**2.3**
Turkey	60	80	81	97	109	123	141	2.3
Other Middle East	6	14	14	20	19	21	23	2.2
Africa	**152**	**187**	**191**	**219**	**255**	**287**	**325**	**2.2**
Central and South America	**27**	**34**	**32**	**45**	**49**	**55**	**62**	**2.9**
Brazil	17	21	21	31	33	36	41	2.9
Other Central/South America	10	13	11	14	16	19	21	2.8
Total Developing	**1,835**	**2,275**	**2,401**	**3,078**	**3,647**	**4,306**	**5,029**	**3.1**
Total World	**5,307**	**5,115**	**5,263**	**6,113**	**6,735**	**7,493**	**8,470**	**2.0**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union. Totals may not equal sum of components due to independent rounding. The electricity portion of the national fuel consumption values consists of generation for domestic use plus an adjustment for electricity trade based on a fuel's share of total generation in the exporting country. To convert short tons to metric tons, divide each number in the table by 1.102.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table B16; and System for the Analysis of Global Energy Markets (2004).

Table B7. World Nuclear Energy Consumption by Region, High Economic Growth Case, 1990-2025
(Billion Kilowatthours)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**649**	**830**	**850**	**912**	**932**	**945**	**925**	**0.4**
United States[a]	577	754	769	794	812	816	816	0.3
Canada	69	69	73	108	110	118	98	1.2
Mexico	3	8	8	10	10	11	11	1.1
Western Europe	**703**	**845**	**870**	**906**	**897**	**855**	**760**	**-0.6**
United Kingdom	59	82	86	69	52	47	28	-4.6
France	298	394	401	447	478	520	550	1.3
Germany	145	161	163	137	107	15	0	-100.0
Italy	0	0	0	0	0	0	0	—
Netherlands	3	4	4	4	4	0	0	-100.0
Other Western Europe	198	204	217	248	257	273	182	-0.7
Industrialized Asia	**192**	**294**	**309**	**369**	**394**	**426**	**411**	**1.2**
Japan	192	294	309	369	394	426	411	1.2
Australia/New Zealand	0	0	0	0	0	0	0	—
Total Industrialized	**1,544**	**1,969**	**2,029**	**2,187**	**2,223**	**2,226**	**2,095**	**0.1**
EE/FSU								
Former Soviet Union	**201**	**204**	**210**	**236**	**236**	**204**	**174**	**-0.8**
Russia	115	122	125	141	154	129	100	-1.0
Other FSU	86	81	85	95	82	76	75	-0.5
Eastern Europe	**54**	**67**	**72**	**76**	**80**	**84**	**88**	**0.8**
Total EE/FSU	**256**	**270**	**282**	**312**	**316**	**288**	**262**	**-0.3**
Developing Countries								
Developing Asia	**88**	**171**	**178**	**299**	**406**	**473**	**497**	**4.4**
China	0	16	17	66	129	142	154	9.7
India	6	14	18	46	55	66	66	5.5
South Korea	50	104	107	141	171	209	220	3.1
Other Asia	32	37	36	47	51	55	56	1.8
Middle East	**0**	**0**	**0**	**5**	**14**	**14**	**21**	**—**
Turkey	0	0	0	0	0	0	0	—
Other Middle East	0	0	0	5	14	14	21	—
Africa	**8**	**13**	**11**	**14**	**14**	**14**	**14**	**1.2**
Central and South America	**9**	**11**	**21**	**21**	**21**	**18**	**18**	**-0.7**
Brazil	2	5	14	14	14	14	14	-0.1
Other Central/South America	7	6	7	7	7	4	4	-2.4
Total Developing	**105**	**195**	**209**	**339**	**455**	**518**	**549**	**4.1**
Total World	**1,905**	**2,434**	**2,521**	**2,838**	**2,994**	**3,032**	**2,906**	**0.6**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union. Totals may not equal sum of components due to independent rounding. The electricity portion of the national fuel consumption values consists of generation for domestic use plus an adjustment for electricity trade based on a fuel's share of total generation in the exporting country.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table B8; and System for the Analysis of Global Energy Markets (2004).

Table B8. World Consumption of Hydroelectricity and Other Renewable Energy by Region, High Economic Growth Case, 1990-2025
(Quadrillion Btu)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**9.5**	**10.6**	**9.4**	**12.0**	**13.2**	**14.4**	**15.6**	**2.1**
United States[a]	6.0	6.4	5.5	7.5	8.3	9.3	10.2	2.6
Canada	3.1	3.8	3.5	3.9	4.3	4.5	4.7	1.3
Mexico	0.3	0.5	0.4	0.5	0.6	0.6	0.7	2.2
Western Europe	**4.5**	**6.0**	**6.1**	**7.0**	**7.4**	**8.1**	**8.8**	**1.5**
United Kingdom	0.1	0.1	0.1	0.2	0.2	0.2	0.4	5.9
France	0.6	0.7	0.8	0.9	0.9	1.0	1.1	1.2
Germany	0.3	0.4	0.5	0.6	0.7	0.6	0.7	1.6
Italy	0.4	0.6	0.6	0.9	0.9	0.9	1.0	2.1
Netherlands	0.0	0.1	0.1	0.2	0.2	0.2	0.2	6.6
Other Western Europe	3.2	4.1	4.1	4.2	4.6	5.1	5.4	1.2
Industrialized Asia	**1.6**	**1.6**	**1.6**	**1.9**	**2.0**	**2.0**	**2.3**	**1.5**
Japan	1.1	1.1	1.1	1.3	1.4	1.4	1.7	1.7
Australia/New Zealand	0.4	0.5	0.5	0.5	0.6	0.6	0.6	1.1
Total Industrialized	**15.6**	**18.2**	**17.1**	**20.9**	**22.5**	**24.5**	**26.7**	**1.9**
EE/FSU								
Former Soviet Union	**2.4**	**2.3**	**2.5**	**3.0**	**3.3**	**3.6**	**3.9**	**1.8**
Russia	1.8	1.7	1.8	2.1	2.2	2.5	2.7	1.6
Other FSU	0.6	0.7	0.7	0.9	1.0	1.1	1.2	2.4
Eastern Europe	**0.4**	**0.6**	**0.6**	**0.8**	**1.0**	**1.2**	**1.3**	**2.8**
Total EE/FSU	**2.8**	**3.0**	**3.2**	**3.8**	**4.3**	**4.8**	**5.2**	**2.1**
Developing Countries								
Developing Asia	**3.2**	**4.5**	**5.1**	**7.7**	**10.4**	**12.5**	**14.0**	**4.3**
China	1.3	2.3	2.8	4.5	5.6	7.0	7.4	4.2
India	0.7	0.8	0.8	1.1	1.4	1.7	2.0	3.8
South Korea	0.0	0.0	0.0	0.1	0.1	0.1	0.1	6.0
Other Asia	1.1	1.4	1.5	2.0	3.4	3.7	4.5	4.7
Middle East	**0.4**	**0.5**	**0.4**	**0.6**	**0.8**	**1.0**	**1.2**	**4.7**
Turkey	0.2	0.3	0.3	0.4	0.5	0.6	0.7	4.5
Other Middle East	0.1	0.1	0.1	0.2	0.3	0.4	0.5	5.2
Africa	**0.6**	**0.7**	**0.8**	**1.1**	**1.2**	**1.3**	**1.5**	**2.8**
Central and South America	**3.9**	**5.9**	**5.6**	**7.0**	**7.4**	**7.8**	**8.1**	**1.6**
Brazil	2.2	3.3	2.9	3.7	3.9	4.2	4.6	1.9
Other Central/South America	1.7	2.6	2.7	3.3	3.5	3.5	3.5	1.2
Total Developing	**8.0**	**11.6**	**11.8**	**16.4**	**19.8**	**22.5**	**24.9**	**3.1**
Total World	**26.4**	**32.8**	**32.2**	**41.1**	**46.6**	**51.8**	**56.7**	**2.4**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union. Totals may not equal sum of components due to independent rounding. The electricity portion of the national fuel consumption values consists of generation for domestic use plus an adjustment for electricity trade based on a fuel's share of total generation in the exporting country. U.S. totals include net electricity imports, methanol, and liquid hydrogen.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table B1; and System for the Analysis of Global Energy Markets (2004).

Table B9. World Carbon Dioxide Emissions by Region, High Economic Growth Case, 1990-2025
(Million Metric Tons Carbon Dioxide)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**5,769**	**6,731**	**6,613**	**7,870**	**8,557**	**9,316**	**10,267**	**1.9**
United States[a]	4,989	5,787	5,692	6,730	7,281	7,886	8,615	1.7
Canada	473	581	569	699	761	826	900	1.9
Mexico	308	364	352	441	515	603	753	3.2
Western Europe	**3,412**	**3,442**	**3,465**	**3,671**	**3,864**	**4,028**	**4,237**	**0.8**
United Kingdom	600	553	563	619	671	697	728	1.1
France	374	401	396	401	417	423	435	0.4
Germany	995	828	819	872	909	976	1,003	0.8
Italy	415	443	445	495	527	549	568	1.0
Netherlands	211	228	248	238	255	263	270	0.4
Other Western Europe	816	989	994	1,046	1,086	1,121	1,234	0.9
Industrialized Asia	**1,280**	**1,526**	**1,556**	**1,737**	**1,850**	**1,961**	**2,129**	**1.3**
Japan	987	1,138	1,158	1,268	1,327	1,379	1,466	1.0
Australia/New Zealand	294	387	398	469	523	582	663	2.1
Total Industrialized	**10,462**	**11,699**	**11,634**	**13,278**	**14,271**	**15,305**	**16,633**	**1.5**
EE/FSU								
Former Soviet Union	**3,798**	**2,338**	**2,399**	**2,826**	**3,216**	**3,699**	**4,219**	**2.4**
Russia	2,405	1,570	1,614	1,911	2,171	2,474	2,784	2.3
Other FSU	1,393	767	785	915	1,045	1,225	1,435	2.5
Eastern Europe	**1,104**	**756**	**748**	**831**	**899**	**1,001**	**1,076**	**1.5**
Total EE/FSU	**4,902**	**3,094**	**3,148**	**3,658**	**4,115**	**4,699**	**5,295**	**2.2**
Developing Countries								
Developing Asia	**3,994**	**5,709**	**6,012**	**8,081**	**9,763**	**11,775**	**13,981**	**3.6**
China	2,262	2,861	3,050	4,309	5,328	6,542	7,821	4.0
India	561	914	917	1,205	1,465	1,785	2,152	3.6
South Korea	234	425	443	594	682	765	872	2.9
Other Asia	937	1,509	1,602	1,973	2,288	2,684	3,136	2.8
Middle East	**846**	**1,262**	**1,299**	**1,635**	**1,896**	**2,210**	**2,580**	**2.9**
Turkey	129	184	184	261	300	348	407	3.4
Other Middle East	717	1,078	1,115	1,373	1,597	1,862	2,173	2.8
Africa	**656**	**811**	**843**	**1,046**	**1,285**	**1,600**	**1,897**	**3.4**
Central and South America	**703**	**961**	**964**	**1,227**	**1,453**	**1,757**	**2,166**	**3.4**
Brazil	250	343	347	459	561	678	833	3.7
Other Central/South America	453	618	617	768	892	1,079	1,332	3.3
Total Developing	**6,200**	**8,744**	**9,118**	**11,989**	**14,398**	**17,341**	**20,623**	**3.5**
Total World	**21,563**	**23,536**	**23,899**	**28,925**	**32,784**	**37,345**	**42,551**	**2.4**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union. The U.S. numbers include carbon dioxide emissions attributable to renewable energy sources.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table B19; and System for the Analysis of Global Energy Markets (2004).

Table B10. World Carbon Dioxide Emissions from Oil Use by Region, High Economic Growth Case, 1990-2025
(Million Metric Tons Carbon Dioxide)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**2,626**	**2,935**	**2,967**	**3,506**	**3,898**	**4,224**	**4,613**	**1.9**
United States[a]	2,165	2,416	2,458	2,876	3,197	3,449	3,709	1.7
Canada	222	258	258	317	344	373	405	1.9
Mexico	239	261	251	313	357	403	499	2.9
Western Europe	**1,739**	**1,853**	**1,845**	**1,983**	**2,058**	**2,142**	**2,203**	**0.7**
United Kingdom	242	231	231	257	267	286	311	1.3
France	245	267	267	281	288	294	302	0.5
Germany	376	357	348	373	392	419	430	0.9
Italy	270	261	261	290	299	308	321	0.9
Netherlands	99	98	98	101	105	108	112	0.6
Other Western Europe	507	639	639	682	706	726	727	0.5
Industrialized Asia	**768**	**802**	**802**	**892**	**928**	**962**	**1,019**	**1.0**
Japan	655	667	668	717	732	741	772	0.6
Australia/New Zealand	113	134	134	174	196	221	247	2.6
Total Industrialized	**5,133**	**5,589**	**5,613**	**6,381**	**6,884**	**7,328**	**7,835**	**1.4**
EE/FSU								
Former Soviet Union	**1,224**	**547**	**557**	**703**	**880**	**1,099**	**1,325**	**3.7**
Russia	783	366	369	465	582	727	876	3.7
Other FSU	441	181	189	238	298	372	449	3.7
Eastern Europe	**243**	**189**	**189**	**223**	**253**	**292**	**335**	**2.4**
Total EE/FSU	**1,468**	**736**	**746**	**925**	**1,133**	**1,390**	**1,661**	**3.4**
Developing Countries								
Developing Asia	**1,116**	**1,912**	**1,953**	**2,823**	**3,465**	**4,233**	**5,056**	**4.0**
China	345	619	642	1,046	1,318	1,654	1,967	4.8
India	165	279	279	391	509	667	850	4.7
South Korea	138	239	245	304	336	361	399	2.1
Other Asia	468	775	787	1,082	1,302	1,550	1,840	3.6
Middle East	**568**	**753**	**764**	**1,020**	**1,191**	**1,397**	**1,620**	**3.2**
Turkey	64	81	81	115	134	155	181	3.4
Other Middle East	504	672	682	906	1,057	1,242	1,440	3.2
Africa	**304**	**356**	**366**	**490**	**623**	**827**	**990**	**4.2**
Central and South America	**533**	**694**	**691**	**853**	**999**	**1,196**	**1,462**	**3.2**
Brazil	210	276	280	334	391	470	574	3.0
Other Central/South America	323	418	411	519	608	726	887	3.3
Total Developing	**2,521**	**3,716**	**3,774**	**5,187**	**6,278**	**7,652**	**9,128**	**3.7**
Total World	**9,121**	**10,041**	**10,134**	**12,493**	**14,295**	**16,370**	**18,624**	**2.6**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table B19; and System for the Analysis of Global Energy Markets (2004).

Table B11. World Carbon Dioxide Emissions from Natural Gas Use by Region, High Economic Growth Case, 1990-2025
(Million Metric Tons Carbon Dioxide)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**1,207**	**1,503**	**1,421**	**1,776**	**1,961**	**2,170**	**2,315**	**2.1**
United States[a]	1,025	1,249	1,189	1,466	1,604	1,753	1,823	1.8
Canada	127	177	156	214	236	256	283	2.5
Mexico	54	77	77	96	121	161	209	4.3
Western Europe	**514**	**786**	**799**	**916**	**1,068**	**1,209**	**1,367**	**2.3**
United Kingdom	110	188	183	218	264	292	312	2.2
France	57	81	85	92	103	104	111	1.1
Germany	116	165	173	193	231	293	310	2.5
Italy	91	135	136	157	180	197	203	1.7
Netherlands	72	81	83	86	101	109	112	1.3
Other Western Europe	67	134	139	171	190	214	319	3.5
Industrialized Asia	**133**	**209**	**216**	**251**	**286**	**317**	**364**	**2.2**
Japan	89	152	157	185	208	225	256	2.1
Australia/New Zealand	44	57	59	66	78	92	108	2.5
Total Industrialized	**1,853**	**2,497**	**2,436**	**2,943**	**3,316**	**3,696**	**4,046**	**2.1**
EE/FSU								
Former Soviet Union	**1,352**	**1,103**	**1,119**	**1,381**	**1,595**	**1,836**	**2,113**	**2.7**
Russia	928	753	768	924	1,060	1,203	1,354	2.4
Other FSU	424	351	351	456	535	633	759	3.3
Eastern Europe	**167**	**127**	**139**	**222**	**271**	**349**	**393**	**4.4**
Total EE/FSU	**1,519**	**1,231**	**1,258**	**1,602**	**1,866**	**2,185**	**2,506**	**2.9**
Developing Countries								
Developing Asia	**167**	**366**	**419**	**560**	**707**	**909**	**1,160**	**4.3**
China	31	59	66	140	201	291	399	7.8
India	24	43	44	72	94	122	158	5.5
South Korea	6	40	44	65	87	114	146	5.2
Other Asia	106	225	266	282	325	382	458	2.3
Middle East	**205**	**406**	**435**	**490**	**570**	**661**	**785**	**2.5**
Turkey	7	29	31	61	70	85	102	5.1
Other Middle East	199	377	404	429	500	576	683	2.2
Africa	**80**	**116**	**130**	**157**	**198**	**251**	**315**	**3.8**
Central and South America	**116**	**188**	**200**	**271**	**342**	**434**	**561**	**4.4**
Brazil	6	18	19	54	94	124	164	9.5
Other Central/South America	110	170	182	216	248	310	397	3.3
Total Developing	**569**	**1,077**	**1,184**	**1,477**	**1,818**	**2,254**	**2,821**	**3.7**
Total World	**3,941**	**4,805**	**4,878**	**6,023**	**7,000**	**8,134**	**9,373**	**2.8**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table B19; and System for the Analysis of Global Energy Markets (2004).

Table B12. World Carbon Dioxide Emissions from Coal Use by Region, High Economic Growth Case, 1990-2025
(Million Metric Tons Carbon Dioxide)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**1,933**	**2,293**	**2,237**	**2,588**	**2,698**	**2,922**	**3,340**	**1.7**
United States[a]	1,794	2,122	2,057	2,388	2,480	2,684	3,084	1.7
Canada	123	146	155	168	181	198	212	1.3
Mexico	15	25	25	32	36	40	44	2.4
Western Europe	**1,159**	**804**	**821**	**771**	**739**	**677**	**666**	**-0.9**
United Kingdom	248	134	149	145	140	119	105	-1.5
France	72	52	44	28	26	25	23	-2.7
Germany	503	306	298	305	285	264	263	-0.5
Italy	54	48	49	48	48	44	43	-0.5
Netherlands	40	49	67	51	49	45	45	-1.6
Other Western Europe	242	216	215	194	191	180	187	-0.6
Industrialized Asia	**380**	**515**	**539**	**594**	**635**	**682**	**747**	**1.4**
Japan	243	319	334	366	387	413	438	1.1
Australia/New Zealand	137	196	205	228	249	269	309	1.7
Total Industrialized	**3,472**	**3,613**	**3,581**	**3,954**	**4,072**	**4,281**	**4,753**	**1.2**
EE/FSU								
Former Soviet Union	**1,222**	**687**	**723**	**743**	**742**	**764**	**780**	**0.3**
Russia	694	452	478	521	529	544	553	0.6
Other FSU	528	236	245	221	212	220	227	-0.3
Eastern Europe	**694**	**440**	**420**	**387**	**374**	**360**	**348**	**-0.8**
Total EE/FSU	**1,915**	**1,127**	**1,143**	**1,130**	**1,116**	**1,124**	**1,129**	**-0.1**
Developing Countries								
Developing Asia	**2,710**	**3,431**	**3,639**	**4,699**	**5,590**	**6,633**	**7,764**	**3.2**
China	1,886	2,183	2,342	3,123	3,809	4,597	5,455	3.6
India	371	592	594	743	862	996	1,145	2.8
South Korea	90	146	155	224	259	289	326	3.2
Other Asia	363	509	549	609	661	752	838	1.8
Middle East	**73**	**103**	**100**	**124**	**135**	**152**	**174**	**2.3**
Turkey	59	74	71	86	96	108	124	2.3
Other Middle East	14	29	29	38	40	45	50	2.3
Africa	**272**	**339**	**347**	**399**	**464**	**522**	**592**	**2.2**
Central and South America	**54**	**78**	**73**	**103**	**112**	**127**	**143**	**2.9**
Brazil	34	49	48	71	76	84	96	2.9
Other Central/South America	20	30	25	32	36	43	48	2.8
Total Developing	**3,110**	**3,951**	**4,160**	**5,325**	**6,302**	**7,435**	**8,674**	**3.1**
Total World	**8,497**	**8,691**	**8,884**	**10,409**	**11,490**	**12,841**	**14,555**	**2.1**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table B19; and System for the Analysis of Global Energy Markets (2004).

Table B13. World Total Energy Consumption in Oil-Equivalent Units by Region, High Economic Growth Case, 1990-2025
(Million Tons Oil Equivalent)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**2,534**	**2,990**	**2,912**	**3,483**	**3,791**	**4,120**	**4,483**	**1.8**
United States[a]	2,131	2,503	2,446	2,898	3,140	3,399	3,672	1.7
Canada	278	331	315	396	430	462	490	1.9
Mexico	126	156	151	189	220	259	321	3.2
Western Europe	**1,509**	**1,685**	**1,718**	**1,842**	**1,942**	**2,031**	**2,121**	**0.9**
United Kingdom	234	246	247	264	284	297	311	1.0
France	222	261	265	304	319	336	350	1.2
Germany	373	357	362	381	396	406	417	0.6
Italy	177	201	204	219	233	245	255	0.9
Netherlands	85	99	107	107	114	119	123	0.6
Other Western Europe	418	520	533	567	597	629	665	0.9
Industrialized Asia	**563**	**692**	**699**	**789**	**840**	**891**	**956**	**1.3**
Japan	452	548	552	616	647	675	712	1.1
Australia/New Zealand	111	144	147	173	193	215	244	2.1
Total Industrialized	**4,606**	**5,366**	**5,329**	**6,113**	**6,573**	**7,042**	**7,560**	**1.5**
EE/FSU								
Former Soviet Union	**1,529**	**1,029**	**1,055**	**1,260**	**1,434**	**1,636**	**1,856**	**2.4**
Russia	991	690	711	846	965	1,090	1,218	2.3
Other FSU	538	339	345	414	469	545	638	2.6
Eastern Europe	**393**	**285**	**287**	**340**	**378**	**431**	**469**	**2.1**
Total EE/FSU	**1,923**	**1,314**	**1,342**	**1,600**	**1,812**	**2,067**	**2,325**	**2.3**
Developing Countries								
Developing Asia	**1,322**	**2,029**	**2,143**	**2,942**	**3,607**	**4,361**	**5,162**	**3.7**
China	681	931	1,000	1,461	1,827	2,253	2,673	4.2
India	196	319	322	437	537	661	800	3.9
South Korea	95	199	203	268	310	350	396	2.8
Other Asia	350	580	617	776	934	1,097	1,293	3.1
Middle East	**329**	**511**	**524**	**657**	**768**	**895**	**1,049**	**2.9**
Turkey	50	76	73	99	115	134	156	3.2
Other Middle East	280	435	451	559	653	761	893	2.9
Africa	**235**	**301**	**314**	**395**	**484**	**602**	**717**	**3.5**
Central and South America	**364**	**529**	**527**	**668**	**770**	**902**	**1,079**	**3.0**
Brazil	150	228	221	275	325	381	454	3.0
Other Central/South America	214	302	306	393	446	521	625	3.0
Total Developing	**2,250**	**3,371**	**3,508**	**4,662**	**5,628**	**6,760**	**8,006**	**3.5**
Total World	**8,779**	**10,052**	**10,179**	**12,374**	**14,013**	**15,869**	**17,892**	**2.4**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table B1; and System for the Analysis of Global Energy Markets (2004).

Appendix C

Low Economic Growth Case Projections:

- World Energy Consumption
- Gross Domestic Product
- Carbon Dioxide Emissions

Table C1. World Total Primary Energy Consumption by Region, Low Economic Growth Case, 1990-2025
(Quadrillion Btu)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**100.6**	**118.7**	**115.6**	**130.1**	**137.7**	**145.5**	**153.6**	**1.2**
United States[a]	84.6	99.3	97.0	108.3	114.3	120.5	126.3	1.1
Canada	11.0	13.2	12.5	14.9	15.7	16.4	17.1	1.3
Mexico	5.0	6.2	6.0	6.9	7.7	8.6	10.2	2.2
Western Europe	**59.9**	**66.8**	**68.2**	**69.1**	**70.4**	**71.8**	**73.3**	**0.3**
United Kingdom	9.3	9.8	9.8	10.1	10.3	10.5	10.7	0.4
France	8.8	10.4	10.5	11.4	11.7	12.1	12.5	0.7
Germany	14.8	14.2	14.4	14.4	14.4	14.5	14.5	0.0
Italy	7.0	8.0	8.1	8.3	8.4	8.6	8.8	0.3
Netherlands	3.4	3.9	4.2	4.3	4.3	4.4	4.5	0.2
Other Western Europe	16.6	20.6	21.1	20.7	21.2	21.7	22.4	0.3
Industrialized Asia	**22.3**	**27.5**	**27.7**	**29.7**	**30.5**	**31.7**	**32.9**	**0.7**
Japan	17.9	21.8	21.9	23.2	23.6	24.4	24.9	0.5
Australia/New Zealand	4.4	5.7	5.8	6.5	6.9	7.3	8.0	1.3
Total Industrialized	**182.8**	**213.0**	**211.5**	**228.9**	**238.6**	**249.0**	**259.8**	**0.9**
EE/FSU								
Former Soviet Union	**60.7**	**40.8**	**41.9**	**43.1**	**45.2**	**47.4**	**49.5**	**0.7**
Russia	39.3	27.4	28.2	29.0	29.0	30.5	31.6	0.5
Other FSU	21.4	13.4	13.7	14.2	16.3	16.9	17.9	1.1
Eastern Europe	**15.6**	**11.3**	**11.4**	**12.1**	**12.7**	**13.4**	**13.4**	**0.7**
Total EE/FSU	**76.3**	**52.2**	**53.3**	**55.3**	**57.9**	**60.8**	**63.0**	**0.7**
Developing Countries								
Developing Asia	**52.5**	**80.5**	**85.0**	**103.3**	**116.3**	**129.7**	**143.3**	**2.2**
China	27.0	37.0	39.7	51.2	59.1	67.4	76.0	2.7
India	7.8	12.7	12.8	15.5	17.9	20.6	23.2	2.5
South Korea	3.8	7.9	8.1	9.5	10.1	10.7	11.2	1.4
Other Asia	13.9	23.0	24.5	27.0	29.2	31.0	32.9	1.2
Middle East	**13.1**	**20.3**	**20.8**	**23.0**	**24.2**	**25.9**	**27.8**	**1.2**
Turkey	2.0	3.0	2.9	3.5	3.7	3.9	4.2	1.5
Other Middle East	11.1	17.3	17.9	19.5	20.5	22.0	23.6	1.2
Africa	**9.3**	**11.9**	**12.4**	**13.3**	**14.3**	**15.4**	**16.6**	**1.2**
Central and South America	**14.4**	**21.0**	**20.9**	**24.1**	**26.2**	**28.6**	**31.5**	**1.7**
Brazil	6.0	9.0	8.8	9.9	11.1	12.2	13.5	1.8
Other Central/South America	8.5	12.0	12.2	14.1	15.1	16.3	18.0	1.6
Total Developing	**89.3**	**133.8**	**139.2**	**163.6**	**181.0**	**199.6**	**219.1**	**1.9**
Total World	**348.4**	**398.9**	**403.9**	**447.8**	**477.5**	**509.4**	**541.9**	**1.2**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union. Energy totals include net imports of coal coke and electricity generated from biomass in the United States. Totals may not equal sum of components due to independent rounding. The electricity portion of the national fuel consumption values consists of generation for domestic use plus an adjustment for electricity trade based on a fuel's share of total generation in the exporting country.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table B1; and System for the Analysis of Global Energy Markets (2004).

Table C2. World Total Energy Consumption by Region and Fuel, Low Economic Growth Case, 1990-2025
(Quadrillion Btu)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America								
Oil	40.4	46.3	45.9	51.2	54.7	57.6	61.3	1.2
Natural Gas	23.1	28.8	27.6	31.4	33.3	35.8	37.9	1.3
Coal	20.7	24.5	23.9	26.8	28.0	29.6	31.4	1.1
Nuclear	6.9	8.7	8.9	9.5	9.7	9.9	9.7	0.3
Other	9.5	10.6	9.4	11.2	11.9	12.5	13.2	1.4
Total	**100.6**	**118.7**	**115.6**	**130.1**	**137.7**	**145.5**	**153.6**	**1.2**
Western Europe								
Oil	25.8	28.5	28.9	29.6	29.9	29.9	30.1	0.2
Natural Gas	9.7	14.9	15.1	16.3	17.8	19.8	22.1	1.6
Coal	12.4	8.4	8.6	7.6	7.0	6.4	6.0	-1.5
Nuclear	7.4	8.8	9.1	8.9	8.8	8.4	7.5	-0.8
Other	4.5	6.0	6.1	6.6	6.9	7.3	7.6	0.9
Total	**59.9**	**66.8**	**68.2**	**69.1**	**70.4**	**71.8**	**73.3**	**0.3**
Industrialized Asia								
Oil	12.1	13.2	13.0	13.6	13.6	14.0	14.3	0.4
Natural Gas	2.5	4.0	4.1	4.5	4.9	5.2	5.8	1.5
Coal	4.2	5.7	5.9	6.3	6.4	6.6	7.0	0.7
Nuclear	2.0	3.0	3.2	3.6	3.9	4.2	4.0	1.0
Other	1.6	1.6	1.6	1.8	1.8	1.8	1.8	0.5
Total	**22.3**	**27.5**	**27.7**	**29.7**	**30.5**	**31.7**	**32.9**	**0.7**
Total Industrialized								
Oil	78.2	88.1	87.8	94.4	98.2	101.6	105.8	0.8
Natural Gas	35.4	47.7	46.8	52.3	56.0	60.8	65.8	1.4
Coal	37.3	38.6	38.5	40.7	41.3	42.6	44.4	0.6
Nuclear	16.3	20.5	21.2	22.0	22.4	22.5	21.2	0.0
Other	15.6	18.2	17.1	19.5	20.6	21.6	22.7	1.2
Total	**182.8**	**213.0**	**211.5**	**228.9**	**238.6**	**249.0**	**259.8**	**0.9**
EE/FSU								
Oil	21.0	10.9	11.0	11.3	12.1	13.0	13.9	1.0
Natural Gas	28.8	23.3	23.8	26.2	28.3	30.9	32.8	1.3
Coal	20.8	12.2	12.4	11.2	10.6	10.1	9.6	-1.1
Nuclear	2.9	3.0	3.1	3.2	3.3	3.0	2.7	-0.6
Other	2.8	3.0	3.2	3.4	3.6	3.8	4.0	0.9
Total	**76.3**	**52.2**	**53.3**	**55.3**	**57.9**	**60.8**	**63.0**	**0.7**
Developing Countries								
Developing Asia								
Oil	16.1	30.2	30.7	38.8	43.5	48.6	53.0	2.3
Natural Gas	3.2	6.9	7.9	9.5	11.0	12.9	15.3	2.8
Coal	29.1	37.1	39.4	45.5	50.2	55.0	60.6	1.8
Nuclear	0.9	1.7	1.8	2.9	3.9	4.6	4.9	4.2
Other	3.2	4.5	5.1	6.6	7.7	8.5	9.5	2.6
Total	**52.5**	**80.5**	**85.0**	**103.3**	**116.3**	**129.7**	**143.3**	**2.2**

See notes at end of table.

Table C2. World Total Energy Consumption by Region and Fuel, Low Economic Growth Case, 1990-2025 (Continued)
(Quadrillion Btu)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Developing Countries (Continued)								
Middle East								
Oil	8.0	11.0	11.1	12.6	13.3	14.1	14.6	1.2
Natural Gas	3.9	7.7	8.2	8.6	8.8	9.6	10.8	1.1
Coal	0.8	1.1	1.1	1.3	1.3	1.4	1.4	1.1
Nuclear	0.0	0.0	0.0	0.1	0.1	0.2	0.2	—
Other	0.4	0.5	0.4	0.5	0.6	0.7	0.8	2.8
Total	**13.1**	**20.3**	**20.8**	**23.0**	**24.2**	**25.9**	**27.8**	**1.2**
Africa								
Oil	4.2	5.2	5.3	5.7	6.1	6.7	7.0	1.2
Natural Gas	1.5	2.2	2.5	2.6	3.0	3.5	3.9	2.0
Coal	3.0	3.7	3.8	3.9	4.1	4.2	4.4	0.6
Nuclear	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.2
Other	0.6	0.7	0.8	0.9	0.9	0.9	1.1	1.4
Total	**9.3**	**11.9**	**12.4**	**13.3**	**14.3**	**15.4**	**16.6**	**1.2**
Central and South America								
Oil	7.7	10.6	10.5	11.7	12.7	13.8	15.1	1.5
Natural Gas	2.2	3.6	3.8	4.6	5.5	6.4	7.7	3.0
Coal	0.6	0.9	0.8	1.1	1.1	1.2	1.3	2.0
Nuclear	0.1	0.1	0.2	0.2	0.2	0.2	0.2	-1.0
Other	3.9	5.9	5.6	6.4	6.7	7.0	7.3	1.1
Total	**14.4**	**21.0**	**20.9**	**24.1**	**26.2**	**28.6**	**31.5**	**1.7**
Total Developing Countries								
Oil	35.9	56.9	57.6	68.8	75.6	83.1	89.7	1.9
Natural Gas	10.8	20.4	22.4	25.4	28.4	32.5	37.7	2.2
Coal	33.5	42.8	45.1	51.7	56.7	61.8	67.7	1.7
Nuclear	1.1	2.0	2.2	3.3	4.4	5.1	5.4	3.9
Other	8.0	11.6	11.8	14.4	15.9	17.2	18.6	1.9
Total	**89.3**	**133.8**	**139.2**	**163.6**	**181.0**	**199.6**	**219.1**	**1.9**
Total World								
Oil	135.1	155.9	156.5	174.5	185.9	197.7	209.3	1.2
Natural Gas	75.0	91.4	93.1	103.8	112.7	124.2	136.4	1.6
Coal	91.6	93.6	95.9	103.6	108.6	114.5	121.6	1.0
Nuclear	20.3	25.5	26.4	28.5	30.1	30.6	29.4	0.4
Other	26.4	32.8	32.2	37.4	40.2	42.5	45.2	1.4
Total	**348.4**	**398.9**	**403.9**	**447.8**	**477.5**	**509.4**	**541.9**	**1.2**

Notes: EE/FSU = Eastern Europe/Former Soviet Union. Energy totals include net imports of coal coke and electricity generated from biomass in the United States. Totals may not equal sum of components due to independent rounding. The electricity portion of the national fuel consumption values consists of generation for domestic use plus an adjustment for electricity trade based on a fuel's share of total generation in the exporting country.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table B1; and System for the Analysis of Global Energy Markets (2004).

Table C3. World Gross Domestic Product (GDP) by Region, Low Economic Growth Case, 1990-2025
(Billion 1997 Dollars)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**7,723**	**10,573**	**10,609**	**13,454**	**15,181**	**16,962**	**18,861**	**2.4**
United States[a]	6,839	9,370	9,394	11,955	13,474	15,008	16,597	2.4
Canada	553	737	751	931	1,038	1,147	1,259	2.2
Mexico	331	465	464	568	669	807	1,006	3.3
Western Europe	**7,635**	**9,356**	**9,513**	**10,765**	**11,684**	**12,677**	**13,731**	**1.5**
United Kingdom	1,153	1,461	1,492	1,764	1,952	2,148	2,358	1.9
France	1,300	1,568	1,601	1,816	1,973	2,151	2,350	1.6
Germany	1,917	2,261	2,284	2,472	2,624	2,784	2,946	1.1
Italy	1,063	1,248	1,269	1,414	1,520	1,640	1,761	1.4
Netherlands	317	423	428	470	508	552	601	1.4
Other Western Europe	1,885	2,396	2,440	2,828	3,106	3,402	3,716	1.8
Industrialized Asia	**4,189**	**4,925**	**4,955**	**5,506**	**5,917**	**6,331**	**6,756**	**1.3**
Japan	3,808	4,395	4,411	4,826	5,146	5,462	5,784	1.1
Australia/New Zealand	381	530	543	680	772	869	972	2.5
Total Industrialized	**19,546**	**24,854**	**25,077**	**29,725**	**32,782**	**35,970**	**39,348**	**1.9**
EE/FSU								
Former Soviet Union	**929**	**597**	**632**	**857**	**981**	**1,102**	**1,213**	**2.8**
Russia	668	449	471	610	686	759	822	2.3
Other FSU	261	148	161	246	295	343	391	3.8
Eastern Europe	**353**	**379**	**389**	**500**	**578**	**668**	**763**	**2.8**
Total EE/FSU	**1,282**	**976**	**1,022**	**1,357**	**1,560**	**1,770**	**1,976**	**2.8**
Developing Countries								
Developing Asia	**1,766**	**3,403**	**3,536**	**5,310**	**6,523**	**7,807**	**9,213**	**4.1**
China	428	1,120	1,202	2,044	2,608	3,235	3,958	5.1
India	290	492	520	766	944	1,154	1,399	4.2
South Korea	299	544	562	820	961	1,074	1,178	3.1
Other Asia	749	1,246	1,253	1,681	2,010	2,345	2,678	3.2
Middle East	**409**	**594**	**584**	**720**	**825**	**937**	**1,053**	**2.5**
Turkey	139	198	183	230	267	309	351	2.8
Other Middle East	270	396	400	490	557	628	702	2.4
Africa	**488**	**606**	**626**	**824**	**958**	**1,104**	**1,260**	**3.0**
Central and South America	**1,105**	**1,503**	**1,510**	**1,786**	**2,092**	**2,444**	**2,866**	**2.7**
Brazil	655	851	863	1,032	1,208	1,406	1,638	2.7
Other Central/South America	450	652	647	753	883	1,039	1,228	2.7
Total Developing	**3,767**	**6,106**	**6,256**	**8,640**	**10,397**	**12,292**	**14,392**	**3.5**
Total World	**24,596**	**31,937**	**32,354**	**39,722**	**44,739**	**50,031**	**55,717**	**2.3**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union. Totals may not equal sum of components due to independent rounding.

Sources: Global Insight, Inc., *World Economic Outlook*, Vol. 1 (Lexington, MA, Third Quarter 2003), and Energy Information Administration, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table B20.

Table C4. World Oil Consumption by Region, Low Economic Growth Case, 1990-2025
(Million Barrels per Day)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**20.4**	**23.8**	**23.5**	**26.3**	**28.1**	**29.5**	**31.4**	**1.2**
United States[a]	17.0	19.7	19.6	21.8	23.3	24.5	25.9	1.2
Canada	1.7	2.1	1.9	2.2	2.3	2.5	2.6	1.3
Mexico	1.7	2.0	1.9	2.2	2.4	2.5	3.0	1.8
Western Europe	**12.5**	**13.8**	**14.0**	**14.3**	**14.4**	**14.5**	**14.6**	**0.2**
United Kingdom	1.8	1.7	1.7	1.8	1.8	1.9	2.0	0.7
France	1.8	2.0	2.0	2.0	2.0	2.0	2.0	-0.1
Germany	2.7	2.8	2.8	2.9	2.9	3.0	3.0	0.3
Italy	1.9	1.9	1.9	2.0	2.0	2.0	2.0	0.3
Netherlands	0.7	0.9	0.9	0.9	0.9	0.9	0.9	0.0
Other Western Europe	3.6	4.6	4.7	4.7	4.8	4.7	4.6	0.0
Industrialized Asia	**6.0**	**6.5**	**6.4**	**6.7**	**6.8**	**6.9**	**7.1**	**0.4**
Japan	5.1	5.5	5.4	5.5	5.5	5.5	5.6	0.1
Australia/New Zealand	0.8	1.0	1.0	1.2	1.3	1.4	1.5	1.7
Total Industrialized	**38.8**	**44.1**	**43.9**	**47.3**	**49.3**	**50.9**	**53.1**	**0.8**
EE/FSU								
Former Soviet Union	**8.4**	**3.8**	**3.9**	**4.0**	**4.3**	**4.6**	**4.9**	**1.0**
Russia	5.4	2.6	2.6	2.7	2.9	3.1	3.3	1.0
Other FSU	3.0	1.2	1.3	1.3	1.4	1.6	1.6	1.0
Eastern Europe	**1.6**	**1.4**	**1.4**	**1.4**	**1.5**	**1.6**	**1.7**	**0.9**
Total EE/FSU	**10.0**	**5.2**	**5.3**	**5.4**	**5.8**	**6.3**	**6.7**	**1.0**
Developing Countries								
Developing Asia	**7.6**	**14.5**	**14.8**	**18.7**	**21.0**	**23.4**	**25.5**	**2.3**
China	2.3	4.8	5.0	7.2	8.3	9.5	10.6	3.2
India	1.2	2.1	2.1	2.6	3.1	3.8	4.4	3.0
South Korea	1.0	2.1	2.1	2.3	2.4	2.4	2.4	0.5
Other Asia	3.1	5.5	5.5	6.6	7.2	7.7	8.2	1.6
Middle East	**3.8**	**5.3**	**5.4**	**6.1**	**6.4**	**6.8**	**7.1**	**1.2**
Turkey	0.5	0.7	0.6	0.7	0.8	0.8	0.9	1.4
Other Middle East	3.4	4.7	4.7	5.4	5.7	6.0	6.2	1.1
Africa	**2.1**	**2.5**	**2.6**	**2.8**	**3.0**	**3.2**	**3.4**	**1.2**
Central and South America	**3.7**	**5.2**	**5.2**	**5.8**	**6.2**	**6.8**	**7.4**	**1.5**
Brazil	1.5	2.2	2.2	2.4	2.5	2.8	3.0	1.4
Other Central/South America	2.3	3.0	3.0	3.4	3.7	4.0	4.4	1.6
Total Developing	**17.3**	**27.6**	**27.9**	**33.3**	**36.6**	**40.2**	**43.4**	**1.9**
Total World	**66.1**	**76.9**	**77.1**	**86.1**	**91.7**	**97.4**	**103.2**	**1.2**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union. Energy totals include net imports of coal coke and electricity generated from biomass in the United States. Totals may not equal sum of components due to independent rounding. The electricity portion of the national fuel consumption values consists of generation for domestic use plus an adjustment for electricity trade based on a fuel's share of total generation in the exporting country.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table B21; and System for the Analysis of Global Energy Markets (2004).

Table C5. World Natural Gas Consumption by Region, Low Economic Growth Case, 1990-2025
(Trillion Cubic Feet)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**22.5**	**28.1**	**26.9**	**30.6**	**32.5**	**34.9**	**36.9**	**1.3**
United States[a]	19.2	23.5	22.6	25.1	26.4	28.0	29.1	1.1
Canada	2.4	3.3	2.9	3.9	4.2	4.4	4.7	2.0
Mexico	0.9	1.4	1.4	1.6	1.9	2.5	3.1	3.5
Western Europe	**10.1**	**14.6**	**14.8**	**16.0**	**17.4**	**19.3**	**21.6**	**1.6**
United Kingdom	2.1	3.4	3.3	3.7	4.2	4.5	4.8	1.6
France	1.0	1.4	1.5	1.5	1.6	1.6	1.6	0.4
Germany	2.7	3.2	3.3	3.5	3.9	4.9	5.1	1.8
Italy	1.7	2.5	2.5	2.7	2.9	3.1	3.2	1.0
Netherlands	1.5	1.7	1.8	1.7	1.9	2.0	2.0	0.6
Other Western Europe	1.2	2.3	2.4	2.8	2.9	3.2	4.9	2.9
Industrialized Asia	**2.6**	**3.8**	**3.9**	**4.3**	**4.6**	**5.0**	**5.5**	**1.5**
Japan	1.9	2.8	2.8	3.2	3.4	3.5	3.9	1.3
Australia/New Zealand	0.8	1.0	1.1	1.1	1.3	1.4	1.6	1.8
Total Industrialized	**35.2**	**46.4**	**45.6**	**50.9**	**54.5**	**59.2**	**64.1**	**1.4**
EE/FSU								
Former Soviet Union	**25.0**	**20.5**	**20.8**	**22.1**	**23.7**	**25.5**	**27.4**	**1.2**
Russia	17.3	14.1	14.4	14.9	15.9	16.8	17.7	0.9
Other FSU	7.7	6.4	6.4	7.2	7.8	8.6	9.7	1.7
Eastern Europe	**3.1**	**2.4**	**2.7**	**3.7**	**4.2**	**5.0**	**5.0**	**2.6**
Total EE/FSU	**28.1**	**23.0**	**23.5**	**25.8**	**27.9**	**30.5**	**32.4**	**1.3**
Developing Countries								
Developing Asia	**3.0**	**6.6**	**7.5**	**8.9**	**10.4**	**12.1**	**14.3**	**2.7**
China	0.5	1.0	1.0	1.8	2.3	3.1	4.1	6.1
India	0.4	0.8	0.8	1.2	1.4	1.7	2.0	3.9
South Korea	0.1	0.7	0.7	1.0	1.1	1.3	1.5	2.9
Other Asia	2.0	4.2	4.9	5.0	5.5	6.0	6.6	1.3
Middle East	**3.7**	**7.3**	**7.9**	**8.2**	**8.4**	**9.2**	**10.3**	**1.1**
Turkey	0.1	0.5	0.6	0.7	0.8	0.9	1.0	2.2
Other Middle East	3.6	6.8	7.3	7.5	7.6	8.3	9.3	1.0
Africa	**1.4**	**2.0**	**2.3**	**2.5**	**2.8**	**3.2**	**3.7**	**2.0**
Central and South America	**2.0**	**3.3**	**3.5**	**4.3**	**5.1**	**5.9**	**7.1**	**3.0**
Brazil	0.1	0.3	0.3	0.9	1.5	1.8	2.2	8.0
Other Central/South America	1.9	3.0	3.2	3.4	3.6	4.2	4.9	1.9
Total Developing	**10.1**	**19.3**	**21.2**	**23.9**	**26.7**	**30.4**	**35.3**	**2.1**
Total World	**73.4**	**88.7**	**90.3**	**100.6**	**109.1**	**120.1**	**131.7**	**1.6**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union. Energy totals include net imports of coal coke and electricity generated from biomass in the United States. Totals may not equal sum of components due to independent rounding. The electricity portion of the national fuel consumption values consists of generation for domestic use plus an adjustment for electricity trade based on a fuel's share of total generation in the exporting country.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table B13; and System for the Analysis of Global Energy Markets (2004).

Table C6. World Coal Consumption by Region, Low Economic Growth Case, 1990-2025
(Million Short Tons)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**971**	**1,168**	**1,148**	**1,299**	**1,366**	**1,449**	**1,545**	**1.2**
United States[a]	903	1,084	1,060	1,205	1,269	1,349	1,441	1.3
Canada	59	69	73	74	77	77	78	0.3
Mexico	9	15	15	19	21	23	25	2.3
Western Europe	**894**	**559**	**574**	**508**	**463**	**425**	**397**	**-1.5**
United Kingdom	119	64	71	65	59	51	42	-2.1
France	35	25	21	12	11	11	9	-3.3
Germany	528	264	265	255	227	210	199	-1.2
Italy	25	20	22	20	19	18	17	-1.2
Netherlands	15	14	23	17	15	14	13	-2.3
Other Western Europe	172	172	172	138	131	122	116	-1.6
Industrialized Asia	**231**	**303**	**312**	**331**	**337**	**348**	**371**	**0.7**
Japan	125	160	166	175	179	184	189	0.6
Australia/New Zealand	106	143	147	156	158	163	182	0.9
Total Industrialized	**2,095**	**2,029**	**2,034**	**2,138**	**2,167**	**2,222**	**2,313**	**0.5**
EE/FSU								
Former Soviet Union	**848**	**421**	**446**	**408**	**390**	**382**	**364**	**-0.8**
Russia	497	267	284	276	268	262	249	-0.5
Other FSU	352	154	162	132	122	120	116	-1.4
Eastern Europe	**528**	**390**	**382**	**341**	**314**	**288**	**268**	**-1.5**
Total EE/FSU	**1,376**	**811**	**828**	**748**	**705**	**670**	**632**	**-1.1**
Developing Countries								
Developing Asia	**1,590**	**1,959**	**2,084**	**2,411**	**2,664**	**2,930**	**3,232**	**1.8**
China	1,124	1,282	1,383	1,634	1,841	2,065	2,315	2.2
India	242	359	360	412	453	493	540	1.7
South Korea	49	72	76	99	101	102	104	1.3
Other Asia	175	246	265	266	268	270	273	0.1
Middle East	**66**	**94**	**95**	**110**	**118**	**120**	**123**	**1.1**
Turkey	60	80	81	92	101	102	106	1.1
Other Middle East	6	14	14	18	18	18	17	1.0
Africa	**152**	**187**	**191**	**196**	**204**	**211**	**220**	**0.6**
Central and South America	**27**	**34**	**32**	**42**	**43**	**47**	**51**	**2.0**
Brazil	17	21	21	29	29	31	34	2.1
Other Central/South America	10	13	11	13	14	16	17	1.9
Total Developing	**1,835**	**2,275**	**2,401**	**2,759**	**3,030**	**3,307**	**3,626**	**1.7**
Total World	**5,307**	**5,115**	**5,263**	**5,645**	**5,901**	**6,199**	**6,571**	**0.9**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union. Totals may not equal sum of components due to independent rounding. The electricity portion of the national fuel consumption values consists of generation for domestic use plus an adjustment for electricity trade based on a fuel's share of total generation in the exporting country. To convert short tons to metric tons, divide each number in the table by 1.102.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table B16; and System for the Analysis of Global Energy Markets (2004).

Table C7. World Nuclear Energy Consumption by Region, Low Economic Growth Case, 1990-2025
(Billion Kilowatthours)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**649**	**830**	**850**	**905**	**925**	**938**	**919**	**0.3**
United States[a]	577	754	769	794	812	816	816	0.3
Canada	69	69	73	102	104	111	92	1.0
Mexico	3	8	8	9	9	10	11	1.1
Western Europe	**703**	**845**	**870**	**850**	**844**	**806**	**718**	**-0.8**
United Kingdom	59	82	86	65	49	45	26	-4.8
France	298	394	401	420	450	490	520	1.1
Germany	145	161	163	129	100	14	0	-100.0
Italy	0	0	0	0	0	0	0	—
Netherlands	3	4	4	4	4	0	0	-100.0
Other Western Europe	198	204	217	233	242	257	172	-1.0
Industrialized Asia	**192**	**294**	**309**	**353**	**377**	**409**	**395**	**1.0**
Japan	192	294	309	353	377	409	395	1.0
Australia/New Zealand	0	0	0	0	0	0	0	—
Total Industrialized	**1,544**	**1,969**	**2,029**	**2,108**	**2,146**	**2,152**	**2,031**	**0.0**
EE/FSU								
Former Soviet Union	**201**	**204**	**210**	**220**	**221**	**192**	**164**	**-1.0**
Russia	115	122	125	131	145	121	94	-1.2
Other FSU	86	81	85	89	77	71	70	-0.8
Eastern Europe	**54**	**67**	**72**	**71**	**75**	**79**	**83**	**0.6**
Total EE/FSU	**256**	**270**	**282**	**291**	**296**	**271**	**247**	**-0.6**
Developing Countries								
Developing Asia	**88**	**171**	**178**	**278**	**381**	**447**	**473**	**4.2**
China	0	16	17	62	122	134	146	9.5
India	6	14	18	39	50	63	66	5.5
South Korea	50	104	107	133	161	198	208	2.8
Other Asia	32	37	36	44	48	52	53	1.6
Middle East	**0**	**0**	**0**	**5**	**13**	**14**	**21**	**—**
Turkey	0	0	0	0	0	0	0	—
Other Middle East	0	0	0	5	13	14	21	—
Africa	**8**	**13**	**11**	**13**	**14**	**14**	**14**	**1.2**
Central and South America	**9**	**11**	**21**	**19**	**19**	**16**	**16**	**-1.0**
Brazil	2	5	14	13	13	13	13	-0.4
Other Central/South America	7	6	7	6	6	3	3	-2.7
Total Developing	**105**	**195**	**209**	**316**	**427**	**492**	**524**	**3.9**
Total World	**1,905**	**2,434**	**2,521**	**2,715**	**2,869**	**2,914**	**2,803**	**0.4**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union. Totals may not equal sum of components due to independent rounding. The electricity portion of the national fuel consumption values consists of generation for domestic use plus an adjustment for electricity trade based on a fuel's share of total generation in the exporting country.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table B8; and System for the Analysis of Global Energy Markets (2004).

Table C8. World Consumption of Hydroelectricity and Other Renewable Energy by Region, Low Economic Growth Case, 1990-2025
(Quadrillion Btu)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**9.5**	**10.6**	**9.4**	**11.2**	**11.9**	**12.5**	**13.2**	**1.4**
United States[a]	6.0	6.4	5.5	7.1	7.6	8.0	8.4	1.8
Canada	3.1	3.8	3.5	3.7	3.8	4.0	4.3	0.8
Mexico	0.3	0.5	0.4	0.5	0.5	0.5	0.5	1.0
Western Europe	**4.5**	**6.0**	**6.1**	**6.6**	**6.9**	**7.3**	**7.6**	**0.9**
United Kingdom	0.1	0.1	0.1	0.2	0.2	0.2	0.3	5.3
France	0.6	0.7	0.8	0.9	0.8	0.9	0.9	0.6
Germany	0.3	0.4	0.5	0.5	0.6	0.6	0.6	1.0
Italy	0.4	0.6	0.6	0.8	0.8	0.8	0.9	1.5
Netherlands	0.0	0.1	0.1	0.2	0.2	0.2	0.2	6.0
Other Western Europe	3.2	4.1	4.1	4.0	4.3	4.6	4.7	0.6
Industrialized Asia	**1.6**	**1.6**	**1.6**	**1.8**	**1.8**	**1.8**	**1.8**	**0.5**
Japan	1.1	1.1	1.1	1.2	1.2	1.2	1.3	0.6
Australia/New Zealand	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Total Industrialized	**15.6**	**18.2**	**17.1**	**19.5**	**20.6**	**21.6**	**22.7**	**1.2**
EE/FSU								
Former Soviet Union	**2.4**	**2.3**	**2.5**	**2.7**	**2.9**	**3.0**	**3.1**	**0.9**
Russia	1.8	1.7	1.8	1.9	2.0	2.1	2.2	0.7
Other FSU	0.6	0.7	0.7	0.8	0.9	0.9	1.0	1.4
Eastern Europe	**0.4**	**0.6**	**0.6**	**0.7**	**0.8**	**0.8**	**0.8**	**0.9**
Total EE/FSU	**2.8**	**3.0**	**3.2**	**3.4**	**3.6**	**3.8**	**4.0**	**0.9**
Developing Countries								
Developing Asia	**3.2**	**4.5**	**5.1**	**6.6**	**7.7**	**8.5**	**9.5**	**2.6**
China	1.3	2.3	2.8	3.8	4.4	5.0	5.6	3.0
India	0.7	0.8	0.8	1.0	1.2	1.3	1.5	2.6
South Korea	0.0	0.0	0.0	0.1	0.1	0.1	0.1	5.5
Other Asia	1.1	1.4	1.5	1.7	2.0	2.1	2.3	1.9
Middle East	**0.4**	**0.5**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**2.8**
Turkey	0.2	0.3	0.3	0.3	0.3	0.4	0.5	2.5
Other Middle East	0.1	0.1	0.1	0.2	0.2	0.3	0.3	3.2
Africa	**0.6**	**0.7**	**0.8**	**0.9**	**0.9**	**0.9**	**1.1**	**1.4**
Central and South America	**3.9**	**5.9**	**5.6**	**6.4**	**6.7**	**7.0**	**7.3**	**1.1**
Brazil	2.2	3.3	2.9	3.4	3.5	3.8	4.1	1.4
Other Central/South America	1.7	2.6	2.7	3.1	3.2	3.2	3.2	0.7
Total Developing	**8.0**	**11.6**	**11.8**	**14.4**	**15.9**	**17.2**	**18.6**	**1.9**
Total World	**26.4**	**32.8**	**32.2**	**37.4**	**40.2**	**42.5**	**45.2**	**1.4**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union. Totals may not equal sum of components due to independent rounding. The electricity portion of the national fuel consumption values consists of generation for domestic use plus an adjustment for electricity trade based on a fuel's share of total generation in the exporting country. U.S. totals include net electricity imports, methanol, and liquid hydrogen.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table B1; and System for the Analysis of Global Energy Markets (2004).

Table C9. World Carbon Dioxide Emissions by Region, Low Economic Growth Case, 1990-2025
(Million Metric Tons Carbon Dioxide)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**5,769**	**6,731**	**6,613**	**7,444**	**7,897**	**8,374**	**8,908**	**1.2**
United States[a]	4,989	5,787	5,692	6,368	6,739	7,136	7,538	1.2
Canada	473	581	569	667	704	732	770	1.3
Mexico	308	364	352	409	453	505	600	2.2
Western Europe	**3,412**	**3,442**	**3,465**	**3,478**	**3,505**	**3,558**	**3,655**	**0.2**
United Kingdom	600	553	563	585	605	614	626	0.4
France	374	401	396	381	380	374	377	-0.2
Germany	995	828	819	824	822	862	863	0.2
Italy	415	443	445	470	478	484	491	0.4
Netherlands	211	228	248	225	229	231	232	-0.3
Other Western Europe	816	989	994	993	991	994	1,066	0.3
Industrialized Asia	**1,280**	**1,526**	**1,556**	**1,651**	**1,684**	**1,744**	**1,831**	**0.7**
Japan	987	1,138	1,158	1,208	1,219	1,248	1,285	0.4
Australia/New Zealand	294	387	398	443	465	496	547	1.3
Total Industrialized	**10,462**	**11,699**	**11,634**	**12,573**	**13,086**	**13,677**	**14,395**	**0.9**
EE/FSU								
Former Soviet Union	**3,798**	**2,338**	**2,399**	**2,419**	**2,521**	**2,653**	**2,769**	**0.6**
Russia	2,405	1,570	1,614	1,636	1,705	1,778	1,829	0.5
Other FSU	1,393	767	785	782	817	875	940	0.8
Eastern Europe	**1,104**	**756**	**748**	**760**	**770**	**796**	**788**	**0.2**
Total EE/FSU	**4,902**	**3,094**	**3,148**	**3,179**	**3,291**	**3,449**	**3,556**	**0.5**
Developing Countries								
Developing Asia	**3,994**	**5,709**	**6,012**	**7,166**	**7,980**	**8,849**	**9,768**	**2.0**
China	2,262	2,861	3,050	3,816	4,350	4,943	5,570	2.5
India	561	914	917	1,087	1,235	1,401	1,572	2.3
South Korea	234	425	443	526	555	574	596	1.2
Other Asia	937	1,509	1,602	1,737	1,839	1,931	2,031	1.0
Middle East	**846**	**1,262**	**1,299**	**1,438**	**1,509**	**1,608**	**1,707**	**1.1**
Turkey	129	184	184	239	257	267	284	1.8
Other Middle East	717	1,078	1,115	1,199	1,252	1,340	1,423	1.0
Africa	**656**	**811**	**843**	**893**	**956**	**1,028**	**1,094**	**1.1**
Central and South America	**703**	**961**	**964**	**1,111**	**1,219**	**1,350**	**1,512**	**1.9**
Brazil	250	343	347	417	471	523	585	2.2
Other Central/South America	453	618	617	694	747	827	926	1.7
Total Developing	**6,200**	**8,744**	**9,118**	**10,608**	**11,663**	**12,834**	**14,081**	**1.8**
Total World	**21,563**	**23,536**	**23,899**	**26,360**	**28,040**	**29,960**	**32,032**	**1.2**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union. The U.S. numbers include carbon dioxide emissions attributable to renewable energy sources.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table B19; and System for the Analysis of Global Energy Markets (2004).

Table C10. World Carbon Dioxide Emissions from Oil Use by Region, Low Economic Growth Case, 1990-2025
(Million Metric Tons Carbon Dioxide)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**2,626**	**2,935**	**2,967**	**3,285**	**3,525**	**3,716**	**3,967**	**1.2**
United States[a]	2,165	2,416	2,458	2,697	2,898	3,056	3,233	1.1
Canada	222	258	258	301	317	333	351	1.3
Mexico	239	261	251	286	310	328	384	1.8
Western Europe	**1,739**	**1,853**	**1,845**	**1,892**	**1,906**	**1,909**	**1,922**	**0.2**
United Kingdom	242	231	231	245	248	255	272	0.7
France	245	267	267	268	267	262	263	-0.1
Germany	376	357	348	356	363	374	375	0.3
Italy	270	261	261	277	277	275	280	0.3
Netherlands	99	98	98	96	97	97	98	0.0
Other Western Europe	507	639	639	650	654	647	635	0.0
Industrialized Asia	**768**	**802**	**802**	**842**	**846**	**870**	**889**	**0.4**
Japan	655	667	668	681	672	682	688	0.1
Australia/New Zealand	113	134	134	161	174	188	201	1.7
Total Industrialized	**5,133**	**5,589**	**5,613**	**6,019**	**6,277**	**6,495**	**6,779**	**0.8**
EE/FSU								
Former Soviet Union	**1,224**	**547**	**557**	**570**	**614**	**665**	**705**	**1.0**
Russia	783	366	369	377	406	440	466	1.0
Other FSU	441	181	189	193	208	225	239	1.0
Eastern Europe	**243**	**189**	**189**	**192**	**202**	**218**	**233**	**0.9**
Total EE/FSU	**1,468**	**736**	**746**	**762**	**816**	**883**	**938**	**1.0**
Developing Countries								
Developing Asia	**1,116**	**1,912**	**1,953**	**2,465**	**2,766**	**3,086**	**3,366**	**2.3**
China	345	619	642	926	1,069	1,231	1,364	3.2
India	165	279	279	343	412	495	571	3.0
South Korea	138	239	245	263	269	271	276	0.5
Other Asia	468	775	787	933	1,016	1,088	1,155	1.6
Middle East	**568**	**753**	**764**	**869**	**917**	**973**	**1,008**	**1.2**
Turkey	64	81	81	98	103	108	112	1.4
Other Middle East	504	672	682	771	814	866	896	1.1
Africa	**304**	**356**	**366**	**395**	**424**	**459**	**486**	**1.2**
Central and South America	**533**	**694**	**691**	**769**	**830**	**903**	**989**	**1.5**
Brazil	210	276	280	301	325	355	388	1.4
Other Central/South America	323	418	411	468	505	548	600	1.6
Total Developing	**2,521**	**3,716**	**3,774**	**4,498**	**4,937**	**5,421**	**5,849**	**1.8**
Total World	**9,121**	**10,041**	**10,134**	**11,278**	**12,030**	**12,798**	**13,566**	**1.2**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table B19; and System for the Analysis of Global Energy Markets (2004).

Table C11. World Carbon Dioxide Emissions from Natural Gas Use by Region, Low Economic Growth Case, 1990-2025
(Million Metric Tons Carbon Dioxide)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**1,207**	**1,503**	**1,421**	**1,653**	**1,753**	**1,885**	**1,996**	**1.4**
United States[a]	1,025	1,249	1,189	1,355	1,421	1,510	1,569	1.2
Canada	127	177	156	207	224	236	252	2.0
Mexico	54	77	77	91	108	139	174	3.5
Western Europe	**514**	**786**	**799**	**863**	**938**	**1,044**	**1,167**	**1.6**
United Kingdom	110	188	183	205	232	252	266	1.6
France	57	81	85	86	90	90	94	1.8
Germany	116	165	173	182	203	253	265	1.8
Italy	91	135	136	148	158	170	173	1.0
Netherlands	72	81	83	81	89	95	96	0.6
Other Western Europe	67	134	139	161	167	185	272	2.8
Industrialized Asia	**133**	**209**	**216**	**238**	**257**	**275**	**306**	**1.5**
Japan	89	152	157	175	186	195	216	1.3
Australia/New Zealand	44	57	59	63	71	80	91	1.8
Total Industrialized	**1,853**	**2,497**	**2,436**	**2,753**	**2,949**	**3,205**	**3,469**	**1.5**
EE/FSU								
Former Soviet Union	**1,352**	**1,103**	**1,119**	**1,188**	**1,274**	**1,369**	**1,473**	**1.2**
Russia	928	753	768	795	847	897	944	0.9
Other FSU	424	351	351	393	427	472	529	1.7
Eastern Europe	**167**	**127**	**139**	**194**	**222**	**262**	**260**	**2.6**
Total EE/FSU	**1,519**	**1,231**	**1,258**	**1,382**	**1,495**	**1,631**	**1,733**	**1.3**
Developing Countries								
Developing Asia	**167**	**366**	**419**	**501**	**583**	**682**	**809**	**2.8**
China	31	59	66	123	163	215	285	6.3
India	24	43	44	64	76	92	110	3.9
South Korea	6	40	44	63	79	95	107	3.8
Other Asia	106	225	266	252	265	281	307	0.6
Middle East	**205**	**406**	**435**	**453**	**466**	**507**	**568**	**1.1**
Turkey	7	29	31	61	65	70	78	3.9
Other Middle East	199	377	404	392	401	437	490	0.8
Africa	**80**	**116**	**130**	**140**	**160**	**184**	**209**	**2.0**
Central and South America	**116**	**188**	**200**	**245**	**291**	**340**	**405**	**3.0**
Brazil	6	18	19	49	80	97	118	8.0
Other Central/South America	110	170	182	196	211	243	287	1.9
Total Developing	**569**	**1,077**	**1,184**	**1,339**	**1,499**	**1,714**	**1,991**	**2.2**
Total World	**3,941**	**4,805**	**4,878**	**5,474**	**5,944**	**6,549**	**7,192**	**1.6**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table B19; and System for the Analysis of Global Energy Markets (2004).

Table C12. World Carbon Dioxide Emissions from Coal Use by Region, Low Economic Growth Case, 1990-2025
(Million Metric Tons Carbon Dioxide)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**1,933**	**2,293**	**2,222**	**2,506**	**2,619**	**2,772**	**2,945**	**1.2**
United States[a]	1,794	2,122	2,042	2,316	2,420	2,570	2,736	1.2
Canada	123	146	155	158	163	163	167	0.3
Mexico	15	25	25	32	35	39	43	2.3
Western Europe	**1,159**	**804**	**821**	**723**	**660**	**606**	**566**	**-1.5**
United Kingdom	248	134	149	136	125	106	89	-2.1
France	72	52	44	26	24	23	20	-3.3
Germany	503	306	298	287	255	236	224	-1.2
Italy	54	48	49	45	43	39	37	-1.2
Netherlands	40	49	67	48	43	40	38	-2.3
Other Western Europe	242	216	215	182	171	161	159	-1.3
Industrialized Asia	**380**	**515**	**539**	**571**	**581**	**599**	**636**	**0.7**
Japan	243	319	334	352	361	371	381	0.6
Australia/New Zealand	137	196	205	218	220	228	254	0.9
Total Industrialized	**3,472**	**3,613**	**3,581**	**3,800**	**3,860**	**3,977**	**4,147**	**0.6**
EE/FSU								
Former Soviet Union	**1,222**	**687**	**723**	**661**	**633**	**619**	**591**	**-0.8**
Russia	694	452	478	464	452	441	419	-0.5
Other FSU	528	236	245	197	181	178	172	-1.5
Eastern Europe	**694**	**440**	**420**	**374**	**346**	**317**	**295**	**-1.5**
Total EE/FSU	**1,915**	**1,127**	**1,143**	**1,036**	**979**	**936**	**885**	**-1.1**
Developing Countries								
Developing Asia	**2,710**	**3,431**	**3,639**	**4,201**	**4,631**	**5,081**	**5,593**	**1.8**
China	1,886	2,183	2,342	2,767	3,118	3,497	3,921	2.2
India	371	592	594	680	748	813	890	1.7
South Korea	90	146	155	201	207	208	213	1.3
Other Asia	363	509	549	553	558	562	569	0.2
Middle East	**73**	**103**	**100**	**117**	**125**	**127**	**130**	**1.1**
Turkey	59	74	71	81	88	90	93	1.1
Other Middle East	14	29	29	36	37	37	37	1.0
Africa	**272**	**339**	**347**	**358**	**372**	**385**	**400**	**0.6**
Central and South America	**54**	**78**	**73**	**96**	**99**	**107**	**118**	**2.0**
Brazil	34	49	48	66	67	71	79	2.1
Other Central/South America	20	30	25	30	32	36	39	1.9
Total Developing	**3,110**	**3,951**	**4,160**	**4,771**	**5,227**	**5,699**	**6,241**	**1.7**
Total World	**8,497**	**8,691**	**8,884**	**9,607**	**10,066**	**10,612**	**11,274**	**1.0**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table B19; and System for the Analysis of Global Energy Markets (2004).

Table C13. World Total Energy Consumption in Oil-Equivalent Units by Region, Low Economic Growth Case, 1990-2025
(Million Tons Oil Equivalent)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	1990	2000	2001	2010	2015	2020	2025	
Industrialized Countries								
North America	**2,534**	**2,990**	**2,912**	**3,279**	**3,470**	**3,667**	**3,870**	**1.2**
United States[a]	2,131	2,503	2,446	2,730	2,882	3,037	3,184	1.1
Canada	278	331	315	375	395	414	430	1.3
Mexico	126	156	151	175	193	216	256	2.2
Western Europe	**1,509**	**1,685**	**1,718**	**1,741**	**1,773**	**1,809**	**1,848**	**0.3**
United Kingdom	234	246	247	254	259	264	269	0.4
France	222	261	265	286	295	305	314	0.7
Germany	373	357	362	363	363	364	365	0.0
Italy	177	201	204	209	213	217	222	0.3
Netherlands	85	99	107	107	109	110	112	0.2
Other Western Europe	418	520	533	522	535	548	566	0.3
Industrialized Asia	**563**	**692**	**699**	**749**	**769**	**800**	**830**	**0.7**
Japan	452	548	552	585	596	615	628	0.5
Australia/New Zealand	111	144	147	164	173	185	202	1.3
Total Industrialized	**4,606**	**5,366**	**5,329**	**5,769**	**6,012**	**6,275**	**6,548**	**0.9**
EE/FSU								
Former Soviet Union	**1,529**	**1,029**	**1,055**	**1,087**	**1,140**	**1,195**	**1,248**	**0.7**
Russia	991	690	711	730	730	768	797	0.5
Other FSU	538	339	345	357	410	427	451	1.1
Eastern Europe	**393**	**285**	**287**	**306**	**319**	**339**	**339**	**0.7**
Total EE/FSU	**1,923**	**1,314**	**1,342**	**1,393**	**1,459**	**1,533**	**1,587**	**0.7**
Developing Countries								
Developing Asia	**1,322**	**2,029**	**2,143**	**2,603**	**2,932**	**3,268**	**3,611**	**2.2**
China	681	931	1,000	1,291	1,490	1,699	1,915	2.7
India	196	319	322	392	451	519	584	2.5
South Korea	95	199	203	238	256	270	282	1.4
Other Asia	350	580	617	682	735	781	830	1.2
Middle East	**329**	**511**	**524**	**579**	**609**	**652**	**699**	**1.2**
Turkey	50	76	73	87	93	99	105	1.5
Other Middle East	280	435	451	492	516	553	594	1.2
Africa	**235**	**301**	**314**	**335**	**361**	**389**	**418**	**1.2**
Central and South America	**364**	**529**	**527**	**607**	**659**	**720**	**794**	**1.7**
Brazil	150	228	221	251	279	308	341	1.8
Other Central/South America	214	302	306	356	380	412	453	1.6
Total Developing	**2,250**	**3,371**	**3,508**	**4,123**	**4,561**	**5,029**	**5,522**	**1.9**
Total World	**8,779**	**10,052**	**10,179**	**11,286**	**12,032**	**12,838**	**13,656**	**1.2**

[a]Includes the 50 States and the District of Columbia.

Notes: EE/FSU = Eastern Europe/Former Soviet Union.

Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/. **Projections:** EIA, *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table B1; and System for the Analysis of Global Energy Markets (2004).

Appendix D

Projections of Oil Production Capacity and Oil Production in Three Cases:

- Reference
- High World Oil Price
- Low World Oil Price

Table D1. World Oil Production Capacity by Region and Country, Reference Case, 1990-2025
(Million Barrels per Day)

Region/Country	History (Estimates)		Projections			
	1990	2001	2010	2015	2020	2025
OPEC						
Persian Gulf						
Iran	3.2	3.7	4.0	4.3	4.7	4.9
Iraq	2.2	2.8	3.7	4.4	5.3	6.6
Kuwait	1.7	2.4	3.1	3.7	4.4	5.0
Qatar	0.5	0.6	0.6	0.7	0.8	0.8
Saudi Arabia	8.6	10.2	13.2	14.4	18.2	22.5
United Arab Emitates	2.5	2.7	3.3	3.9	4.6	5.2
Total Persian Gulf	**18.7**	**22.4**	**27.9**	**31.4**	**38.0**	**45.0**
Other OPEC						
Algeria	1.3	1.6	2.0	2.1	2.4	2.7
Indonesia	1.5	1.5	1.5	1.5	1.5	1.5
Libya	1.5	1.7	2.0	2.2	2.6	2.9
Nigeria	1.8	2.2	2.6	3.0	3.4	3.8
Venezuela	2.4	3.2	3.7	4.3	4.9	5.6
Total Other OPEC	**8.5**	**10.2**	**11.8**	**13.1**	**14.8**	**16.5**
Total OPEC	**27.2**	**32.6**	**39.7**	**44.5**	**52.8**	**61.5**
Non-OPEC						
Industrialized						
United States	9.7	9.0	9.5	9.3	8.9	8.6
Canada	2.0	2.8	3.5	4.6	4.8	4.9
Mexico	3.0	3.6	4.2	4.5	4.6	4.8
Australia	0.6	0.7	0.9	0.8	0.8	0.8
North Sea	4.2	6.3	5.9	5.4	5.1	4.6
Other	0.6	0.7	0.8	0.6	0.6	0.6
Total Industrialized	**20.1**	**23.1**	**24.8**	**25.2**	**24.8**	**24.3**
Eurasia						
China	2.8	3.3	3.6	3.5	3.5	3.4
Former Soviet Union	11.4	8.8	13.2	15.1	16.1	17.3
Eastern Europe	0.3	0.2	0.3	0.4	0.4	0.5
Total Eurasia	**14.5**	**12.3**	**17.1**	**19.0**	**20.0**	**21.2**
Other Non-OPEC						
Central and South America	2.4	3.8	4.7	5.7	6.3	6.8
Middle East	1.4	2.0	2.2	2.5	2.6	2.8
Africa	2.1	3.0	4.0	5.0	5.7	6.9
Asia	1.7	2.5	2.6	2.8	2.7	2.6
Total Other Non-OPEC	**7.6**	**11.3**	**13.5**	**16.0**	**17.3**	**19.1**
Total Non-OPEC	**42.2**	**46.7**	**55.4**	**60.2**	**62.1**	**64.6**
Total World	**69.4**	**79.3**	**95.1**	**104.7**	**114.9**	**126.1**

Note: OPEC = Organization of Petroleum Exporting Countries.

Sources: **History:** Energy Information Administration (EIA), Energy Markets and Contingency Information Division. **Projections:** EIA, System for the Analysis of Global Energy Markets (2004); and U.S. Department of the Interior, U.S. Geological Survey, *World Petroleum Assessment 2000* (Reston, VA, July 2000).

Table D2. World Oil Production Capacity by Region and Country, High Oil Price Case, 1990-2025
(Million Barrels per Day)

Region/Country	History (Estimates)		Projections			
	1990	2001	2010	2015	2020	2025
OPEC						
Persian Gulf						
Iran	3.2	3.7	3.5	3.6	3.8	4.3
Iraq	2.2	2.8	2.9	3.2	3.7	4.6
Kuwait	1.7	2.4	2.3	2.5	2.9	3.4
Qatar	0.5	0.6	0.6	0.6	0.7	0.7
Saudi Arabia	8.6	10.2	9.4	9.8	12.9	16.0
United Arab Emitates	2.5	2.7	2.7	2.8	3.3	3.9
Total Persian Gulf	**18.7**	**22.4**	**21.4**	**22.5**	**27.3**	**32.9**
Other OPEC						
Algeria	1.3	1.6	1.6	1.7	2.0	2.2
Indonesia	1.5	1.5	1.5	1.5	1.5	1.5
Libya	1.5	1.7	1.7	1.8	2.1	2.4
Nigeria	1.8	2.2	2.2	2.4	2.8	3.3
Venezuela	2.4	3.2	3.2	3.4	3.9	4.5
Total Other OPEC	**8.5**	**10.2**	**10.2**	**10.8**	**12.3**	**13.9**
Total OPEC	**27.2**	**32.6**	**31.6**	**33.3**	**39.6**	**46.8**
Non-OPEC						
Industrialized						
United States	9.7	9.0	9.9	9.7	9.6	9.0
Canada	2.0	2.8	3.7	5.0	5.2	5.5
Mexico	3.0	3.6	4.4	4.8	5.0	5.2
Australia	0.6	0.7	0.9	0.8	0.8	0.8
North Sea	4.2	6.3	6.0	5.6	5.3	4.8
Other	0.6	0.7	0.7	0.7	0.7	0.6
Total Industrialized	**20.1**	**23.1**	**25.6**	**26.6**	**26.6**	**25.9**
Eurasia						
China	2.8	3.3	3.7	3.6	3.6	3.4
Former Soviet Union	11.4	8.8	13.9	16.2	17.4	19.0
Eastern Europe	0.3	0.2	0.3	0.4	0.4	0.4
Total Eurasia	**14.5**	**12.3**	**17.9**	**20.2**	**21.4**	**22.8**
Other Non-OPEC						
Central and South America	2.4	3.8	5.1	6.2	6.9	7.5
Middle East	1.4	2.0	2.4	2.7	2.9	3.1
Africa	2.1	3.0	4.6	5.5	6.8	8.2
Asia	1.7	2.5	2.8	2.9	3.0	3.0
Total Other Non-OPEC	**7.6**	**11.3**	**14.9**	**17.3**	**19.6**	**21.8**
Total Non-OPEC	**42.2**	**46.7**	**58.4**	**64.1**	**67.6**	**70.5**
Total World	**69.4**	**79.3**	**90.0**	**97.4**	**107.2**	**117.3**

Note: OPEC = Organization of Petroleum Exporting Countries.

Sources: **History:** Energy Information Administration (EIA), Energy Markets and Contingency Information Division. **Projections:** EIA, System for the Analysis of Global Energy Markets (2004); and U.S. Department of the Interior, U.S. Geological Survey, *World Petroleum Assessment 2000* (Reston, VA, July 2000).

Table D3. World Oil Production Capacity by Region and Country, Low Oil Price Case, 1990-2025
(Million Barrels per Day)

Region/Country	History (Estimates)		Projections			
	1990	2001	2010	2015	2020	2025
OPEC						
Persian Gulf						
Iran	3.2	3.7	4.5	4.9	5.4	5.7
Iraq	2.2	2.8	4.4	5.3	6.4	7.2
Kuwait	1.7	2.4	3.6	4.3	5.1	5.7
Qatar	0.5	0.6	0.6	0.8	0.8	0.8
Saudi Arabia	8.6	10.2	16.8	19.1	25.0	31.5
United Arab Emitates	2.5	2.7	3.7	4.5	5.3	5.9
Total Persian Gulf	**18.7**	**22.4**	**33.6**	**38.9**	**48.0**	**56.8**
Other OPEC						
Algeria	1.3	1.6	2.1	2.3	2.6	3.0
Indonesia	1.5	1.5	1.5	1.5	1.5	1.5
Libya	1.5	1.7	2.1	2.4	2.7	3.1
Nigeria	1.8	2.2	3.0	3.9	4.6	5.2
Venezuela	2.4	3.2	4.3	4.7	5.2	6.1
Total Other OPEC	**8.5**	**10.2**	**13.0**	**14.8**	**16.6**	**18.9**
Total OPEC	**27.2**	**32.6**	**46.6**	**53.7**	**64.6**	**75.7**
Non-OPEC						
Industrialized						
United States	9.7	9.0	9.2	8.8	8.3	7.9
Canada	2.0	2.8	3.4	4.4	4.5	4.3
Mexico	3.0	3.6	4.1	4.4	4.5	4.7
Australia	0.6	0.7	0.8	0.8	0.7	0.7
North Sea	4.2	6.3	5.8	5.3	5.1	4.5
Other	0.6	0.7	0.7	0.7	0.6	0.6
Total Industrialized	**20.1**	**23.1**	**24.0**	**24.4**	**23.7**	**22.7**
Eurasia						
China	2.8	3.3	3.5	3.3	3.3	3.2
Former Soviet Union	11.4	8.8	12.9	14.7	15.7	16.8
Eastern Europe	0.3	0.2	0.3	0.4	0.4	0.4
Total Eurasia	**14.5**	**12.3**	**16.7**	**18.4**	**19.4**	**20.4**
Other Non-OPEC						
Central and South America	2.4	3.8	4.6	5.5	5.9	6.5
Middle East	1.4	2.0	2.2	2.4	2.4	2.6
Africa	2.1	3.0	3.8	4.8	5.4	6.5
Asia	1.7	2.5	2.7	2.6	2.6	2.6
Total Other Non-OPEC	**7.6**	**11.3**	**13.3**	**15.3**	**16.3**	**18.2**
Total Non-OPEC	**42.2**	**46.7**	**54.0**	**58.1**	**59.4**	**61.3**
Total World	**69.4**	**79.3**	**100.6**	**111.8**	**124.0**	**137.0**

Note: OPEC = Organization of Petroleum Exporting Countries.

Sources: **History:** Energy Information Administration (EIA), Energy Markets and Contingency Information Division. **Projections:** EIA, System for the Analysis of Global Energy Markets (2004); and U.S. Department of the Interior, U.S. Geological Survey, *World Petroleum Assessment 2000* (Reston, VA, July 2000).

Table D4. World Oil Production by Region and Country, Reference Case, 1990-2025
(Million Barrels per Day)

Region/Country	History (Estimates)		Projections			
	1990	2001	2010	2015	2020	2025
Conventional Production	**66.7**	**75.7**	**88.1**	**95.7**	**104.9**	**115.5**
OPEC	**24.5**	**29.9**	**34.9**	**38.9**	**46.7**	**54.9**
Asia	1.5	1.4	1.3	1.3	1.3	1.4
Middle East	16.2	20.5	25.7	29.1	35.4	42.1
North Africa	2.7	3.0	3.0	3.1	3.6	4.0
West Africa	1.8	2.3	2.2	2.6	3.1	3.4
South America	2.3	2.7	2.7	2.8	3.3	4.0
Non-OPEC	**42.2**	**45.8**	**53.2**	**56.8**	**58.2**	**60.6**
Industrialized	**20.1**	**22.5**	**23.0**	**22.3**	**21.6**	**21.0**
United States	9.7	9.0	9.5	9.3	8.9	8.6
Canada	2.0	2.1	1.8	1.6	1.6	1.6
Mexico	3.0	3.6	4.2	4.5	4.6	4.8
Western Europe	4.6	6.9	6.4	5.9	5.5	5.0
Japan	0.1	0.1	0.1	0.1	0.1	0.1
Australia and New Zealand	0.7	0.8	1.0	0.9	0.9	0.9
Eurasia	**14.5**	**12.3**	**17.1**	**19.0**	**20.0**	**21.2**
China	**2.8**	**3.3**	**3.6**	**3.5**	**3.5**	**3.4**
Former Soviet Union	**11.4**	**8.8**	**13.2**	**15.1**	**16.1**	**17.3**
Russia	11.4	7.3	10.0	10.6	10.9	11.1
Caspian and Other FSU	0.0	1.5	3.2	4.5	5.2	6.2
Eastern Europe	**0.3**	**0.2**	**0.3**	**0.4**	**0.4**	**0.5**
Other Non-OPEC	**7.6**	**11.0**	**13.1**	**15.5**	**16.6**	**18.4**
Other Asia	1.7	2.5	2.6	2.8	2.7	2.6
Middle East	1.4	2.0	2.2	2.5	2.6	2.8
Africa	2.1	2.8	3.8	4.8	5.4	6.6
South and Central America	2.4	3.7	4.5	5.4	5.9	6.4
Nonconventional Production	**0.0**	**1.4**	**2.8**	**4.6**	**5.0**	**5.2**
United States	0.0	0.0	0.0	0.0	0.0	0.0
Other North America	0.0	0.7	1.7	3.0	3.2	3.3
Western Europe	0.0	0.0	0.0	0.0	0.0	0.0
Asia	0.0	0.0	0.0	0.0	0.0	0.0
Middle East	0.0	0.0	0.1	0.1	0.1	0.2
Africa	0.0	0.2	0.2	0.2	0.3	0.3
South and Central America	0.0	0.5	0.8	1.3	1.4	1.4
Liquids Production	**66.7**	**77.0**	**91.1**	**100.2**	**109.9**	**120.6**
OPEC	24.5	30.3	35.7	40.0	47.8	56.0
Non-OPEC	42.2	46.7	55.4	60.2	62.1	64.6
Persian Gulf Production as a Percentage of World Consumption	**24.3%**	**26.6%**	**28.1%**	**29.0%**	**32.1%**	**34.8%**

Notes: OPEC = Organization of Petroleum Exporting Countries. Conventional production includes crude oil (including lease condensates), natural gas liquids, other hydrogen hydrocarbons for refinery feedstocks, refinery gains, alcohol, and liquids produced from coal and other sources. Nonconventional liquids include production from oil sands, ultra-heavy oils, gas-to-liquids technologies, coal-to-liquids technologies, biofuel technologies, and shale oil. Totals may not equal sum of components due to independent rounding.

Sources: **History:** Energy Information Administration (EIA), Energy Markets and Contingency Information Division. **Projections:** EIA, System for the Analysis of Global Energy Markets (2004); and U.S. Department of the Interior, U.S. Geological Survey, *World Petroleum Assessment 2000* (Reston, VA, July 2000).

Table D5. World Oil Production by Region and Country, High Oil Price Case, 1990-2025
(Million Barrels per Day)

Region/Country	History (Estimates)		Projections			
	1990	2001	2010	2015	2020	2025
Conventional Production	**66.7**	**75.7**	**82.9**	**87.8**	**95.7**	**105.1**
OPEC	**24.5**	**29.9**	**27.2**	**27.9**	**33.5**	**40.1**
Asia	1.5	1.4	1.3	1.2	1.2	1.2
Middle East	16.2	20.5	18.8	19.7	24.4	29.9
North Africa	2.7	3.0	3.0	3.0	3.5	3.7
West Africa	1.8	2.3	2.0	2.1	2.4	2.9
South America	2.3	2.7	2.1	1.9	2.0	2.4
Non-OPEC	**42.2**	**45.8**	**55.7**	**59.9**	**62.2**	**65.0**
Industrialized	**20.1**	**22.5**	**23.6**	**23.0**	**22.6**	**21.7**
United States	9.7	9.0	9.8	9.5	9.4	8.8
Canada	2.0	2.1	1.8	1.7	1.6	1.6
Mexico	3.0	3.6	4.4	4.8	5.0	5.2
Western Europe	4.6	6.9	6.5	6.0	5.6	5.1
Japan	0.1	0.1	0.1	0.1	0.1	0.1
Australia and New Zealand	0.7	0.8	1.0	0.9	0.9	0.9
Eurasia	**14.5**	**12.3**	**17.9**	**20.2**	**21.4**	**22.9**
China	**2.8**	**3.3**	**3.7**	**3.6**	**3.6**	**3.5**
Former Soviet Union	**11.4**	**8.8**	**13.9**	**16.2**	**17.4**	**18.9**
Russia	11.4	7.3	10.5	11.3	11.6	11.9
Caspian and Other FSU	0.0	1.5	3.4	4.9	5.8	7.0
Eastern Europe	**0.3**	**0.2**	**0.3**	**0.4**	**0.4**	**0.5**
Other Non-OPEC	**7.6**	**11.0**	**14.2**	**16.7**	**18.2**	**20.4**
Other Asia	1.7	2.5	2.8	2.9	2.9	2.9
Middle East	1.4	2.0	2.4	2.7	2.8	3.1
Africa	2.1	2.8	4.2	5.4	6.2	7.5
South and Central America	2.4	3.7	4.8	5.7	6.3	6.9
Nonconventional Production	**0.0**	**1.4**	**3.7**	**5.7**	**7.0**	**8.0**
United States	0.0	0.0	0.1	0.2	0.2	0.2
Other North America	0.0	0.7	1.9	3.3	3.6	3.9
Western Europe	0.0	0.0	0.0	0.1	0.1	0.1
Asia	0.0	0.0	0.0	0.0	0.0	0.1
Middle East	0.0	0.0	0.1	0.1	0.2	0.3
Africa	0.0	0.2	0.4	0.1	0.6	0.8
South and Central America	0.0	0.5	1.2	1.9	2.3	2.6
Liquids Production	**66.7**	**77.0**	**86.6**	**93.6**	**103.0**	**112.7**
OPEC	24.5	30.3	28.2	29.5	35.4	42.2
Non-OPEC	42.2	46.7	58.4	64.1	67.6	70.5
Persian Gulf Production as a Percentage of World Consumption	**24.3%**	**26.6%**	**21.6%**	**21.0%**	**23.6%**	**26.5%**

Notes: OPEC = Organization of Petroleum Exporting Countries. Conventional production includes crude oil (including lease condensates), natural gas liquids, other hydrogen hydrocarbons for refinery feedstocks, refinery gains, alcohol, and liquids produced from coal and other sources. Nonconventional liquids include production from oil sands, ultra-heavy oils, gas-to-liquids technologies, coal-to-liquids technologies, biofuel technologies, and shale oil. Totals may not equal sum of components due to independent rounding.

Sources: **History:** Energy Information Administration (EIA), Energy Markets and Contingency Information Division. **Projections:** EIA, System for the Analysis of Global Energy Markets (2004); and U.S. Department of the Interior, U.S. Geological Survey, *World Petroleum Assessment 2000* (Reston, VA, July 2000).

Table D6. World Oil Production by Region and Country, Low Oil Price Case, 1990-2025
(Million Barrels per Day)

Region/Country	History (Estimates)		Projections			
	1990	2001	2010	2015	2020	2025
Conventional Production	**66.7**	**75.7**	**93.4**	**103.3**	**115.2**	**128.1**
OPEC	**24.5**	**29.9**	**41.5**	**48.4**	**59.2**	**70.3**
Asia	1.5	1.4	1.3	1.3	1.4	1.4
Middle East	16.2	20.5	30.7	36.7	45.5	54.0
North Africa	2.7	3.0	3.7	4.1	4.8	5.7
West Africa	1.8	2.3	2.6	3.0	3.7	4.3
South America	2.3	2.7	3.2	3.3	3.8	4.9
Non-OPEC	**42.2**	**45.8**	**51.9**	**54.9**	**56.0**	**57.8**
Industrialized	**20.1**	**22.5**	**22.4**	**21.7**	**20.8**	**19.8**
United States	9.7	9.0	9.2	8.8	8.3	7.9
Canada	2.0	2.1	1.8	1.7	1.6	1.5
Mexico	3.0	3.6	4.1	4.4	4.5	4.7
Western Europe	4.6	6.9	6.3	5.8	5.5	4.9
Japan	0.1	0.1	0.1	0.1	0.1	0.0
Australia and New Zealand	0.7	0.8	0.9	0.9	0.8	0.8
Eurasia	**14.5**	**12.3**	**16.7**	**18.4**	**19.4**	**20.4**
China	**2.8**	**3.3**	**3.5**	**3.3**	**3.3**	**3.2**
Former Soviet Union	**11.4**	**8.8**	**12.9**	**14.7**	**15.7**	**16.8**
Russia	11.4	7.3	9.8	10.4	10.7	10.9
Caspian and Other FSU	0.0	1.5	3.1	4.3	5.0	5.9
Eastern Europe	**0.3**	**0.2**	**0.3**	**0.4**	**0.4**	**0.4**
Other Non-OPEC	**7.6**	**11.0**	**12.8**	**14.8**	**15.8**	**17.6**
Other Asia	1.7	2.5	2.6	2.6	2.6	2.5
Middle East	1.4	2.0	2.2	2.4	2.4	2.6
Africa	2.1	2.8	3.6	4.6	5.2	6.3
South and Central America	2.4	3.7	4.4	5.2	5.6	6.2
Nonconventional Production	**0.0**	**1.4**	**2.6**	**4.0**	**4.3**	**4.1**
United States	0.0	0.0	0.0	0.0	0.0	0.0
Other North America	0.0	0.7	1.6	2.7	2.9	2.8
Western Europe	0.0	0.0	0.0	0.0	0.0	0.0
Asia	0.0	0.0	0.0	0.0	0.0	0.0
Middle East	0.0	0.0	0.0	0.0	0.0	0.0
Africa	0.0	0.2	0.2	0.2	0.2	0.2
South and Central America	0.0	0.5	0.8	1.1	1.2	1.1
Liquids Production	**66.7**	**77.0**	**96.1**	**107.4**	**119.5**	**132.5**
OPEC	24.5	30.3	42.1	49.3	60.1	71.2
Non-OPEC	42.2	46.7	54.0	58.1	59.4	61.3
Persian Gulf Production as a Percentage of World Consumption	**24.3%**	**26.6%**	**31.8%**	**34.1%**	**38.0%**	**40.7%**

Notes: OPEC = Organization of Petroleum Exporting Countries. Conventional production includes crude oil (including lease condensates), natural gas liquids, other hydrogen hydrocarbons for refinery feedstocks, refinery gains, alcohol, and liquids produced from coal and other sources. Nonconventional liquids include production from oil sands, ultra-heavy oils, gas-to-liquids technologies, coal-to-liquids technologies, biofuel technologies, and shale oil. Totals may not equal sum of components due to independent rounding.

Sources: **History:** Energy Information Administration (EIA), Energy Markets and Contingency Information Division. **Projections:** EIA, System for the Analysis of Global Energy Markets (2004); and U.S. Department of the Interior, U.S. Geological Survey, *World Petroleum Assessment 2000* (Reston, VA, July 2000).

Appendix E

Projections of Nuclear Generating Capacity

- Reference
- High Growth
- Low Growth

Table E1. World Nuclear Generating Capacity by Region and Country, Reference Case, 2000-2025
(Megawatts)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	2000	2001	2002	2010	2015	2020	2025	
Industrialized Countries								
North America	**109,238**	**109,537**	**110,035**	**116,489**	**118,042**	**119,252**	**116,395**	**0.3**
United States	97,860	98,159	98,657	100,570	102,123	102,603	102,603	0.2
Canada	10,018	10,018	10,018	14,477	14,477	15,207	12,351	0.9
Mexico	1,360	1,360	1,360	1,442	1,442	1,442	1,442	0.2
Western Europe	**125,926**	**125,926**	**125,530**	**125,002**	**119,541**	**103,856**	**92,737**	**-1.3**
United Kingdom	12,498	12,498	12,102	9,639	7,229	6,019	3,619	-5.0
France	63,073	63,073	63,073	66,610	68,210	69,810	69,810	0.4
Germany	21,283	21,283	21,283	17,320	12,669	1,345	0	-100.0
Netherlands	450	450	450	450	450	450	0	-100.0
Other	28,622	28,622	28,622	30,982	30,982	26,231	19,307	-1.6
Industrialized Asia	**43,245**	**43,245**	**43,602**	**50,308**	**53,148**	**56,882**	**54,281**	**1.0**
Japan	43,245	43,245	43,602	50,308	53,148	56,882	54,281	1.0
Total Industrialized	**278,409**	**278,708**	**279,167**	**291,798**	**290,730**	**279,989**	**263,413**	**-0.2**
EE/FSU								
Former Soviet Union	**33,796**	**34,746**	**34,746**	**41,226**	**42,750**	**39,280**	**35,615**	**0.1**
Russia	19,843	20,793	20,793	25,886	27,786	24,501	20,835	0.0
Other FSU	13,953	13,953	13,953	15,340	14,964	14,779	14,779	0.2
Eastern Europe	**10,676**	**11,588**	**11,684**	**12,175**	**13,830**	**12,965**	**12,965**	**0.5**
Total EE/FSU	**44,472**	**46,334**	**46,430**	**53,401**	**56,580**	**52,245**	**48,580**	**0.2**
Developing Countries								
Developing Asia	**22,814**	**23,016**	**27,987**	**40,939**	**52,844**	**61,772**	**66,712**	**4.5**
China	2,167	2,167	5,328	8,803	15,803	17,803	20,793	9.9
India	2,348	2,550	2,460	6,176	7,406	8,923	8,923	5.4
South Korea	12,990	12,990	14,890	17,646	21,446	26,257	27,607	3.2
Other	5,309	5,309	5,309	8,314	8,189	8,789	9,389	2.4
Middle East	**0**	**0**	**0**	**915**	**2,111**	**2,111**	**2,111**	**—**
Africa	**1,800**	**1,800**	**1,800**	**1,908**	**2,038**	**2,038**	**2,038**	**0.5**
Central/South America	**2,836**	**2,836**	**2,836**	**2,836**	**2,836**	**2,501**	**2,501**	**-0.5**
Brazil	1,901	1,901	1,901	1,901	1,901	1,901	1,901	0.0
Other	935	935	935	935	935	600	600	-1.8
Total Developing	**27,450**	**27,652**	**32,623**	**46,598**	**59,829**	**68,422**	**73,362**	**4.1**
Total World	**350,331**	**352,694**	**358,220**	**391,798**	**407,140**	**400,656**	**385,355**	**0.4**

Notes: EE/FSU = Eastern Europe/Former Soviet Union. Totals may not equal sum of components due to independent rounding.

Sources: **History:** International Atomic Energy Agency, *Nuclear Power Reactors in the World 2001* (Vienna, Austria, April 2003). **Projections:** Energy Information Administration (EIA), *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table A9; and EIA, Office of Coal, Nuclear, Electric and Alternate Fuels, based on detailed assessments of country-specific nuclear power plants.

Table E2. World Nuclear Generating Capacity by Region and Country, High Growth Case, 2000-2025
(Megawatts)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	2000	2001	2002	2010	2015	2020	2025	
Industrialized Countries								
North America	**109,238**	**109,537**	**110,035**	**116,489**	**119,502**	**121,712**	**122,712**	**0.5**
United States	97,860	98,159	98,657	100,570	102,123	102,603	102,603	0.2
Canada	10,018	10,018	10,018	14,477	15,937	16,667	16,667	2.1
Mexico	1,360	1,360	1,360	1,442	1,442	2,442	3,442	3.9
Western Europe	**125,926**	**125,926**	**125,530**	**130,819**	**134,039**	**141,639**	**148,037**	**0.7**
United Kingdom	12,498	12,498	12,102	10,619	10,639	12,639	11,674	-0.3
France	63,073	63,073	63,073	66,610	69,810	71,410	73,010	0.6
Germany	21,283	21,283	21,283	21,521	21,521	21,521	22,284	0.2
Italy	0	0	0	0	0	1,000	1,000	—
Netherlands	450	450	450	450	450	450	1,450	5.0
Other	28,622	28,622	28,622	31,618	31,618	34,618	38,618	1.3
Industrialized Asia	**43,245**	**43,245**	**43,602**	**52,555**	**59,671**	**65,371**	**72,771**	**2.2**
Japan	43,245	43,245	43,602	52,555	59,671	65,371	72,771	2.2
Total Industrialized	**278,409**	**278,708**	**279,167**	**299,862**	**313,211**	**328,721**	**343,519**	**0.9**
EE/FSU								
Former Soviet Union	**33,796**	**34,746**	**34,746**	**43,946**	**47,496**	**55,375**	**65,341**	**2.7**
Russia	19,843	20,793	20,793	28,606	31,156	37,686	43,742	3.1
Other FSU	13,953	13,953	13,953	15,340	16,340	17,689	21,599	1.8
Eastern Europe	**10,676**	**11,588**	**11,684**	**12,563**	**15,606**	**18,336**	**22,066**	**2.7**
Total EE/FSU	**44,472**	**46,334**	**46,430**	**56,509**	**63,102**	**73,711**	**87,407**	**2.7**
Developing Countries								
Developing Asia	**22,814**	**23,016**	**27,987**	**43,989**	**58,573**	**71,954**	**89,173**	**5.8**
China	2,167	2,167	5,328	10,903	17,903	20,903	24,903	10.7
India	2,348	2,550	2,460	6,176	8,960	11,860	12,123	6.7
South Korea	12,990	12,990	14,890	18,596	22,796	26,846	32,246	3.9
Other	5,309	5,309	5,309	8,314	8,914	12,345	19,901	5.7
Middle East	**0**	**0**	**0**	**915**	**2,111**	**3,111**	**7,111**	**—**
Turkey	0	0	0	0	0	0	2,000	—
Other	0	0	0	915	2,111	3,111	5,111	—
Africa	**1,800**	**1,800**	**1,800**	**2,038**	**2,298**	**2,558**	**4,818**	**4.2**
Central/South America	**2,836**	**2,836**	**2,836**	**2,836**	**4,757**	**4,757**	**5,757**	**3.0**
Brazil	1,901	1,901	1,901	1,901	3,130	3,130	4,130	3.3
Other	935	935	935	935	1,627	1,627	1,627	2.3
Total Developing	**27,450**	**27,652**	**32,623**	**49,778**	**67,739**	**82,380**	**106,859**	**5.8**
Total World	**350,331**	**352,694**	**358,220**	**406,149**	**444,053**	**484,813**	**537,786**	**1.8**

Notes: EE/FSU = Eastern Europe/Former Soviet Union. Totals may not equal sum of components due to independent rounding.

Sources: **History:** International Atomic Energy Agency, *Nuclear Power Reactors in the World 2001* (Vienna, Austria, April 2003). **Projections:** Energy Information Administration (EIA), *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table A9; and EIA, Office of Coal, Nuclear, Electric and Alternate Fuels, based on detailed assessments of country-specific nuclear power plants.

Table E3. World Nuclear Generating Capacity by Region and Country, Low Growth Case, 2000-2025
(Megawatts)

Region/Country	History			Projections				Average Annual Percent Change, 2001-2025
	2000	2001	2002	2010	2015	2020	2025	
Industrialized Countries								
North America	**109,238**	**109,537**	**110,035**	**116,489**	**115,185**	**113,990**	**110,731**	**0.0**
United States	97,860	98,159	98,657	100,570	102,123	102,603	102,603	0.2
Canada	10,018	10,018	10,018	14,477	11,621	9,946	6,687	-1.7
Mexico	1,360	1,360	1,360	1,442	1,442	1,442	1,442	0.2
Western Europe	**125,926**	**125,926**	**125,530**	**112,807**	**97,181**	**79,205**	**43,734**	**-4.3**
United Kingdom	12,498	12,498	12,102	6,019	2,994	1,814	1,259	-9.1
France	63,073	63,073	63,073	66,610	66,610	59,412	36,442	-2.3
Germany	21,283	21,283	21,283	12,669	1,345	0	0	-100.0
Netherlands	450	450	450	450	0	0	0	-100.0
Other	28,622	28,622	28,622	27,058	26,231	17,979	6,033	-6.3
Industrialized Asia	**43,245**	**43,245**	**43,602**	**49,396**	**49,470**	**42,492**	**38,074**	**-0.5**
Japan	43,245	43,245	43,602	49,396	49,470	42,492	38,074	-0.5
Total Industrialized	**278,409**	**278,708**	**279,167**	**278,692**	**261,836**	**235,687**	**192,539**	**-1.5**
EE/FSU								
Former Soviet Union	**33,796**	**34,746**	**34,746**	**35,954**	**32,365**	**27,457**	**16,638**	**-3.0**
Russia	19,843	20,793	20,793	22,174	18,585	13,678	7,689	-4.1
Other FSU	13,953	13,953	13,953	13,779	13,779	13,779	8,949	-1.8
Eastern Europe	**10,676**	**11,588**	**11,684**	**11,310**	**11,310**	**11,965**	**10,017**	**-0.6**
Total EE/FSU	**44,472**	**46,334**	**46,430**	**47,264**	**43,675**	**39,423**	**26,655**	**-2.3**
Developing Countries								
Developing Asia	**22,814**	**23,016**	**27,987**	**37,813**	**42,628**	**51,088**	**51,698**	**3.4**
China	2,167	2,167	5,328	8,603	9,793	14,793	16,514	8.8
India	2,348	2,550	2,460	3,964	5,689	7,821	7,572	4.6
South Korea	12,990	12,990	14,890	17,057	18,957	21,566	24,000	2.6
Other	5,309	5,309	5,309	8,189	8,189	6,909	3,612	-1.6
Middle East	**0**	**0**	**0**	**915**	**915**	**915**	**915**	**—**
Africa	**1,800**	**1,800**	**1,800**	**1,908**	**2,038**	**1,908**	**0**	**-100.0**
Central/South America	**2,836**	**2,836**	**2,836**	**2,501**	**2,501**	**1,275**	**1,275**	**-3.3**
Brazil	1,901	1,901	1,901	1,901	1,901	1,275	1,275	-1.7
Other	935	935	935	600	600	0	0	-100.0
Total Developing	**27,450**	**27,652**	**32,623**	**43,137**	**48,082**	**55,186**	**53,888**	**2.8**
Total World	**350,331**	**352,694**	**358,220**	**369,092**	**353,593**	**330,296**	**273,083**	**-1.1**

Notes: EE/FSU = Eastern Europe/Former Soviet Union. Totals may not equal sum of components due to independent rounding.

Sources: **History:** International Atomic Energy Agency, *Nuclear Power Reactors in the World 2001* (Vienna, Austria, April 2003). **Projections:** Energy Information Administration (EIA), *Annual Energy Outlook 2004*, DOE/EIA-0383(2004) (Washington, DC, January 2004), Table A9; and EIA, Office of Coal, Nuclear, Electric and Alternate Fuels, based on detailed assessments of country-specific nuclear power plants.

Appendix F

Comparisons With Other Forecasts, and Performance of Past *IEO* Forecasts for 1990, 1995, and 2000

Forecast Comparisons

Three organizations provide forecasts comparable with those in the *International Energy Outlook 2004* (*IEO2004*). The International Energy Agency (IEA) provides "business as usual" projections to the year 2030 in its *World Energy Outlook 2002*; Petroleum Economics, Ltd. (PEL) publishes world energy forecasts to 2020; and Petroleum Industry Research Associates (PIRA) provides projections to 2015. For this comparison, 2000 is used as the base year for all the forecasts (because IEA does not publish data for any other historical years), and the comparisons extend only to 2020. Although IEA's forecast extends to 2030, it does not publish a projection for 2025. In addition to forecasts from other organizations, the IEO2004 projections are also compared with those in last year's report (*IEO2003*).

Regional breakouts among the forecasting groups vary, complicating the comparisons. For example, *IEO2004* includes Mexico in North America and IEA includes Mexico in Organization for Economic Cooperation and Development (OECD) North America, but the two other forecasts include Mexico in Latin America. As a result, for purposes of this comparison, Mexico has been removed from North America in the *IEO2004* projections and added to Central and South America to form a "Latin America" country grouping that matches the other series. PIRA includes only Japan in industrialized Asia, whereas industrialized Asia in the *IEO2004* forecast comprises Japan, Australia, and New Zealand. *IEO2004* includes Turkey in the Middle East, but IEA includes Turkey, as well as the Czech Republic, Hungary, and Poland, in "OECD Europe" (which is designated as "Western Europe" for this comparison). PEL also places Turkey in Western Europe but includes the Czech Republic, Hungary, and Poland in Eastern Europe, as does *IEO2004*. Although most of the differences involve fairly small countries, they contribute to the variations among the forecasts.

All the forecasts provide projections out to the year 2010 (Table F1). The growth rates for energy consumption among the reference case forecasts for 2000-2010 range

Table F1. Comparison of Energy Consumption Growth Rates by Region, 2000-2010
(Average Annual Percent Growth)

Region	*IEO2004* Low Growth	*IEO2004* Reference	*IEO2004* High Growth	*IEO2003*	IEA	PIRA	PEL
Industrialized Countries	**0.7**	**1.0**	**1.3**	**1.1**	**1.1**	**0.8**	**1.1**
United States and Canada	0.9	1.2	1.5	1.3	1.1	0.7	1.3
Western Europe	0.3	0.6	0.9	0.8	1.1	0.9	0.9
Pacific	0.8	1.1	1.3	1.2	1.2	0.6[a]	0.6
EE/FSU	**0.6**	**1.2**	**2.0**	**2.4**	**1.8**	**2.5**	**1.4**
Developing Countries	**2.0**	**2.7**	**3.2**	**2.7**	**3.2**	**4.1**	**3.2**
Asia	2.5	3.2	3.8	3.2	3.4	4.1	3.6
China	3.3	4.0	4.6	3.9	3.2	4.7	4.1
Other Asia[b]	1.8	2.5	3.0	2.5	3.6	3.6	3.1
Middle East	1.2	2.1	2.5	2.1	2.8	3.0	3.2
Africa	1.1	2.0	2.7	1.9	3.3	2.4	2.6
Latin America	1.3	1.9	2.3	2.2	3.0	1.6	1.9
Total World	**1.2**	**1.7**	**2.1**	**1.9**	**1.9**	**2.0**	**1.9**

[a]Japan only.
[b]Other Asia includes India and South Korea.
Sources: ***IEO2004*:** Energy Information Administration (EIA), System for the Analysis of Global Energy Markets (2004). ***IEO2003*:** EIA, *International Energy Outlook 2002*, DOE/EIA-0484(2003) (Washington, DC, May 2003), Table A1, p. 181. **IEA:** International Energy Agency, *World Energy Outlook 2002* (Paris, France, September 2002), pp. 410-497. **PIRA:** PIRA Energy Group, *Retainer Client Seminar* (New York, NY, October 2003). **PEL:** Petroleum Economics, Ltd., *World Long Term Oil and Energy Outlook* (London, United Kingdom, April 2003).

from 1.7 percent per year (*IEO2004*) to 2.0 percent per year (PIRA). Among the forecasts, PIRA's regional expectations for energy demand growth vary the most from the *IEO2004* projections. The PIRA forecast, for the most part, projects higher growth rates for energy use in the developing world than does *IEO2004* (with the exception of Latin America) and in the EE/FSU region. PIRA's projected growth rates from 2000 to 2010 for China and other developing Asia, the Middle East, and the EE/FSU all fall above the projections in the *IEO2004* high economic growth case. On the other hand, PIRA is more pessimistic than *IEO2004* about the potential for energy demand growth in the industrialized regions. The PIRA growth rates for the United States and Canada and for industrialized Asia fall below those in the *IEO2004* low economic growth case.

The IEA projections for the developing world are also generally higher than the *IEO2004* projections. The IEA growth rates exceed the *IEO2004* growth rates projected for each developing region, except China. For China, IEA's projection of 3.2-percent annual growth in energy demand between 2000 and 2010 falls below the *IEO2004* low economic growth case; and its projected growth rates for other developing Asia, the Middle East, Africa, and Latin America all exceed the *IEO2004* high economic growth case. For the industrialized world, IEA largely agrees with *IEO2004*, except that the IEA growth rate for Western Europe (which in the IEA forecast includes Turkey, Hungary, Poland, and the Czech Republic) exceeds the rate in the *IEO2004* high economic growth case. In the PEL forecast, annual growth rates for energy demand fall within the range defined by the *IEO2004* low and high economic growth cases, except those for other developing Asia and the Middle East, both of which exceed those in the *IEO2004* high growth case.

The *IEO2004* reference case forecast is lower than in last year's outlook for the 2000 to 2010 time period, particularly for the EE/FSU and Latin American regions. For the EE/FSU, projected growth in energy use is substantially lower in *IEO2004* than in *IEO2003* (with demand growth averaging 1.2 percent and 2.4 percent per year, respectively, in the two forecasts). Expectations for efficiency gains in the coming decade have been raised in this year's report, accounting for the lower projected growth in energy demand over the 10-year period. In the case of Latin America, the lower forecast in *IEO2004* reflects a substantial lowering of expectations for economic growth in Mexico. From 2000 to 2010, Mexico's gross domestic product (GDP) was projected to expand at an average rate of 4.7 percent per year in *IEO2003*, compared with only 2.7 percent per year in *IEO2004*.

IEO2004, PIRA, and PEL provide forecasts for energy use in 2015 (Table F2), which is the end of the PIRA forecast horizon. Their projections for worldwide growth in

Table F2. Comparison of Energy Consumption Growth Rates by Region, 2000-2015
(Average Annual Percent Growth)

Region	*IEO2004*			*IEO2003*	PIRA	PEL
	Low Growth	Reference	High Growth			
Industrialized Countries	**0.7**	**1.1**	**1.3**	**1.1**	**0.8**	**1.0**
United States and Canada	1.0	1.3	1.6	1.4	0.8	1.2
Western Europe	0.3	0.7	1.0	0.7	0.9	0.9
Pacific	0.7	1.0	1.3	1.2	0.6	0.3
EE/FSU	**0.7**	**1.4**	**2.2**	**2.1**	**2.5**	**1.5**
Former Soviet Union	0.7	1.4	2.2	2.3	—	1.6
Eastern Europe	0.7	1.3	1.9	1.6	—	1.3
Developing Countries	**2.0**	**2.8**	**3.4**	**2.9**	**3.4**	**3.1**
Asia	2.5	3.2	3.9	3.3	4.0	3.4
China	3.2	3.9	4.6	3.9	4.4	3.8
Other Asia[a]	1.8	2.6	3.3	2.7	3.6	3.1
Middle East	1.2	2.1	2.7	2.3	3.3	3.0
Africa	1.2	2.3	3.2	2.0	2.4	2.5
Latin America	1.5	2.0	2.5	2.6	1.9	2.1
Total World	**1.2**	**1.7**	**2.2**	**1.9**	**2.1**	**1.9**

[a]Other Asia includes India and South Korea.

Sources: ***IEO2004*:** Energy Information Administration (EIA), System for the Analysis of Global Energy Markets (2004). ***IEO2003*:** EIA, *International Energy Outlook 2003*, DOE/EIA-0484(2003) (Washington, DC, May 2003), Table A1, p. 181. **PIRA:** PIRA Energy Group, *Retainer Client Seminar* (New York, NY, October 2003), Tables II-4, II-6, and II-7. **PEL:** Petroleum Economics, Ltd., *World Long Term Oil and Energy Outlook* (London, United Kingdom, April 2003), Table 2i.

energy consumption between 2000 and 2015 are similar, ranging from 1.7 percent per year (*IEO2004*) to 2.1 percent per year (PIRA), with PEL expecting average annual growth of 1.9 percent. As it does for 2000-2010, PIRA forecasts much faster growth in energy use for the EE/FSU and for the developing regions from 2000 to 2015 than does *IEO2004*. The PIRA growth rates are higher than those in the *IEO2004* high economic growth case for "other Asia" and the Middle East. In the PEL forecast, 2000-2015 growth rates for energy demand in the developing are generally higher than the *IEO2004* reference case projections (except for China), but only one (for the Middle East) exceeds the *IEO2004* high economic growth case. The *IEO2004* reference case projections for energy demand growth in the United States and Canada and in industrialized Asia are higher than PIRA's, which fall below those of the *IEO2004* low growth case, as does the PEL growth rate for industrialized Asia.

The *IEO2004* reference case projection of worldwide growth in energy use, at 1.7 percent per year for the 2000-2015 period, is slightly lower than was projected in *IEO2003*. By region, the largest differences between the two forecasts are for the EE/FSU and Latin America. *IEO2004* projects a higher growth rate than *IEO2003* for energy use in Africa. The differences for the EE/FSU are largely attributed to the FSU region, where growth in energy use has been revised downward to 1.4 percent per year for the 2000-2015 time period, compared with 2.3 percent per year in *IEO2003*. The difference represents a reevaluation of the potential for energy efficiency improvements in the FSU. In *IEO2004,* efficiency improvements have been strengthened substantially, reflecting the expectation of more rapid replacement of old, inefficient capital stock.

For Latin America, the revisions from *IEO2003* to *IEO2004* for the 2000-2015 period are explained in large part by a lower assumption in this year's forecast for Mexico's GDP growth. In *IEO2003*, robust economic growth of 5.2 percent per year was projected for Mexico. The *IEO2004* reference case projects GDP growth of only 3.1 percent per year for Mexico, reflecting a less optimistic view of Mexico's ability to attract the foreign investment needed to support rapid economic expansion in the mid-term. For Africa, on the other hand, *IEO2004* projects average annual GDP growth of 4.1 percent per year from 2000 to 2015, up from the *IEO2003* projection of 3.7 percent per year, reflecting a reevaluation of Africa's economic potential in the mid-term..

IEO2004, PEL, and IEA provide energy consumption projections for 2020 (Table F3). The three forecasts have similar projections for energy demand growth from 2000 to 2020, all projecting an average 1.8-percent annual increase in the world's total energy consumption. The highest growth rates are projected for the developing world and the slowest for the industrialized world. The largest variations among the regional forecasts are for

Table F3. Comparison of Energy Consumption Growth Rates by Region, 2000-2020
(Average Annual Percent Growth)

Region	*IEO2004* Low Growth	*IEO2004* Reference	*IEO2004* High Growth	*IEO2003*	IEA	PEL
Industrialized Countries	**0.8**	**1.1**	**1.3**	**1.1**	**1.0**	**1.0**
United States and Canada	1.0	1.3	1.6	1.3	1.1	1.2
Western Europe	0.4	0.7	0.9	0.7	0.9	0.8
Pacific	0.7	1.0	1.3	1.1	1.0	0.5
EE/FSU	**0.5**	**1.5**	**2.3**	**1.9**	**1.5**	**1.6**
Former Soviet Union	0.5	1.5	2.3	2.0	—	1.7
Eastern Europe	0.6	1.5	2.1	1.8	—	1.6
Developing Countries	**2.0**	**2.8**	**3.5**	**2.9**	**3.1**	**3.0**
Asia	2.4	3.2	3.9	3.2	3.1	3.3
China	3.1	3.8	4.5	3.8	3.0	3.6
Other Asia[a]	1.8	2.6	3.3	2.7	3.3	3.0
Middle East	1.2	2.1	2.8	2.3	2.5	2.9
Africa	1.3	2.3	3.5	2.1	3.4	2.5
Latin America	1.6	2.2	2.7	2.7	2.9	2.1
Total World	**1.2**	**1.8**	**2.3**	**1.9**	**1.8**	**1.8**

[a]Other Asia includes India and South Korea.

Sources: ***IEO2004*:** Energy Information Administration (EIA), System for the Analysis of Global Energy Markets (2004). ***IEO2003*:** EIA, *International Energy Outlook 2003*, DOE/EIA-0484(2003) (Washington, DC, May 2003), Table A1, p. 181. **IEA:** International Energy Agency, *World Energy Outlook 2002* (Paris, France, September 2002), pp. 410-497. **PEL:** Petroleum Economics, Ltd., *World Long Term Oil and Energy Outlook* (London, United Kingdom, April 2003), Table 2i.

Africa, where growth expectations for energy use range from 2.3 percent per year (*IEO2004)* to 3.4 percent per year (IEA). IEA also remains more optimistic than the other forecasts about energy demand growth in Latin America, where the 2.9-percent annual rate projected by IEA exceeds the rate in the *IEO2004* high economic growth case. Both IEA and PEL expect higher growth in the Middle East than is projected in the *IEO2004* reference case, and PEL's projection is higher than the *IEO2004* high economic growth case. On the other hand, IEA expects much slower growth in energy use in China than do the other forecasts, and its projection of a 3.0-percent average annual increase in China's energy consumption is lower than the *IEO2004* low economic growth case.

As was the case for the 2000-2010 and 2000-2015 comparison periods, the EE/FSU is the region with the largest differences between the *IEO2004* and *IEO2003* reference case forecasts for 2000-2020; however, the differences are somewhat smaller when the longer time horizon to 2020 is considered. The impact of efficiency gains projected for the region in the early years of the forecast lessens after 2015, and the difference between the economic growth rates projected for 2000-2020 in the *IEO2004* and *IEO2003* reference case forecasts is only 0.4 percentage points, as compared with the difference of 1.2 percentage points for the 2000-2010 period.

The forecasts vary not only with respect to levels of total energy demand but also with respect to the mix of primary energy inputs. All the forecasts provide energy consumption projections by fuel in 2010 (Table F4). In terms of oil consumption, all the forecasts expect similar growth worldwide between 2000 and 2010: 1.4 percent per year in the PEL forecast and 1.7 percent per year in the three others. The *IEO2004* projection for worldwide growth in natural gas use is substantially lower than the previous year's (*IEO2003*) projection, and its projection for nuclear power is higher. The three other forecasts show much higher growth in natural gas consumption than does the *IEO2004* reference case, and all are higher than the *IEO2004* high economic growth case. The IEA forecast has a much higher projection for growth in renewable energy use than any of the other forecasts—2.8 percent per year, compared with 1.8 percent (PIRA and *IEO2004*) and 2.0 percent per year (PEL).

PEL, PIRA, and *IEO2004* provide world energy consumption projections by fuel for 2015 (Table F5). In the

Table F4. Comparison of World Energy Consumption Growth Rates by Fuel, 2000-2010
(Average Annual Percent Growth)

Fuel	*IEO2004* Low Growth	*IEO2004* Reference	*IEO2004* High Growth	*IEO2003*	IEA	PIRA	PEL
Oil	1.1	1.7	2.2	1.5	1.7	1.7	1.4
Natural Gas	1.3	1.7	2.3	2.5	3.0	2.8	2.9
Coal	1.0	1.4	1.8	1.7	1.4	2.3	1.7
Nuclear	1.1	1.6	1.6	1.3	1.1	0.8	1.3
Renewable/Other	1.3	1.8	2.3	2.4	2.8	1.8	2.0
Total	**1.2**	**1.7**	**2.1**	**1.9**	**1.9**	**2.0**	**1.9**

Sources: ***IEO2004*:** Energy Information Administration (EIA), System for the Analysis of Global Energy Markets (2004). ***IEO2003*:** EIA, *International Energy Outlook 2002*, DOE/EIA-0484(2003) (Washington, DC, May 2003), Table A1, p. 181. **IEA:** International Energy Agency, *World Energy Outlook 2002* (Paris, France, September 2002), pp. 410-497. **PIRA:** PIRA Energy Group, *Retainer Client Seminar* (New York, NY, October 2003). **PEL:** Petroleum Economics, Ltd., *World Long Term Oil and Energy Outlook* (London, United Kingdom, April 2003).

Table F5. Comparison of World Energy Consumption Growth Rates by Fuel, 2000-2015
(Average Annual Percent Growth)

Fuel	*IEO2004* Low Growth	*IEO2004* Reference	*IEO2004* High Growth	*IEO2003*	PIRA	PEL
Oil	1.2	1.8	2.4	1.7	1.7	1.5
Natural Gas	1.4	1.9	2.5	2.8	3.0	3.0
Coal	1.0	1.5	1.9	1.6	2.2	1.5
Nuclear	1.1	1.4	1.4	1.1	0.6	0.7
Renewable/Other	1.4	1.9	2.4	2.1	2.0	2.1
Total	**1.2**	**1.7**	**2.2**	**1.9**	**2.1**	**1.9**

Sources: ***IEO2004*:** Energy Information Administration (EIA), System for the Analysis of Global Energy Markets (2004). ***IEO2003*:** EIA, *International Energy Outlook 2003*, DOE/EIA-0484(2003) (Washington, DC, May 2003). **PIRA:** PIRA Energy Group, *Retainer Client Seminar* (New York, NY, October 2003). **PEL:** Petroleum Economics, Ltd., *World Long Term Oil and Energy Outlook* (London, United Kingdom, April 2003).

IEO2004 reference case, worldwide growth in energy consumption is expected to be slower (1.7 percent per year between 2000 and 2015) than in the PEL (1.9 percent per year) and PIRA (2.1 percent per year) forecasts. PEL and PIRA remain much more bullish in their projections for natural gas demand over this time period, in both cases exceeding the *IEO2004* high economic growth case. *IEO2004* projects growth in nuclear power that is double that in the two other forecasts, both of which fall below the *IEO2004* low growth case.

IEO2004, PEL, and IEA provide energy consumption projections for 2020 (Table F6). Although total growth in energy use is projected at 1.8 percent per year between 2000 and 2020 in each of the forecasts, the projected fuel mixes differ. Whereas *IEO2004* expects nuclear power generation to grow by 1.1 percent per year from 2000 to 2020, both IEA and PEL project much slower growth (0.3 percent and 0.2 percent per year, respectively), and both fall below the *IEO2004* low economic growth case. *IEO2004* projects smaller increases in natural gas demand than the other two forecasts, and PEL's projection of 3.0-percent average annual growth in natural gas consumption is higher than the *IEO2004* high growth case. IEA is more optimistic about the growth potential of renewable energy sources, projecting 2.7-percent annual growth between 2000 and 2020, as compared with the *IEO2004* projection of 1.8 percent in the reference case and 2.3 percent in the high economic growth case.

There has been a fairly significant shift in the projected mix of energy fuel use between the *IEO2003* and *IEO2004* forecasts, with lower growth in natural gas and higher growth in nuclear power expected in the *IEO2004* forecast. The growth rates in demand for other fuels in *IEO2004* are, for the most part, similar to those in *IEO2003*. For natural gas, the lower forecast in *IEO2004* is the result of a slightly lower assumption for worldwide economic growth, a slower projected decline in nuclear power generation (which competes with natural gas in the electric power sector), and concerns about the long-term ability of natural gas producers to bring sufficient resources to market at prices competitive with those of other fuels. For nuclear power, the increased growth rate results from a reassessment of prospects for nuclear power in light of higher capacity utilization rates reported for many existing nuclear facilities and the expectation that fewer retirements of existing plants will occur than previously projected.

Performance of Past *IEO* Forecasts for 1990, 1995, and 2000

In an effort to measure how well the *IEO* projections have estimated future energy consumption trends over the 19-year history of the series, a comparison of *IEO* forecasts produced for the years 1990, 1995, and 2000 is presented here. The forecasts are compared with actual data published in EIA's *International Energy Annual 2001*, as part of EIA's commitment to provide users of the *IEO* with a set of performance measures to assess the forecasts produced by this agency.

The *IEO* has been published since 1985. In *IEO85*, midterm projections were derived only for the world's market economies. That is, no projections were prepared for the centrally planned economies (CPE) of the Soviet Union, Eastern Europe, Cambodia, China, Cuba, Laos, Mongolia, North Korea, and Vietnam. The *IEO85* projections extended to 1995 and included forecasts of energy consumption for 1990 and 1995 and primary consumption of oil, natural gas, coal, and "other fuels." *IEO85* projections were also presented for several individual countries and subregions: the United States, Canada, Japan, the United Kingdom, France, West Germany, Italy, the Netherlands, other OECD Europe, other OECD (Australia, New Zealand, and the U.S. Territories), OPEC, and other developing countries. Beginning with *IEO86*, nuclear power projections were published separately from the "other fuel" category.

Table F6. Comparison of World Energy Consumption Growth Rates by Fuel, 2000-2020
(Average Annual Percent Growth)

Fuel	*IEO2004* Low Growth	*IEO2004* Reference	*IEO2004* High Growth	*IEO2003*	IEA	PEL
Oil	1.2	1.8	2.5	1.7	1.7	1.5
Natural Gas	1.5	2.1	2.7	2.8	2.7	3.0
Coal	1.0	1.5	2.0	1.6	1.4	1.4
Nuclear	0.9	1.1	1.1	0.8	0.3	0.2
Renewable/Other	1.3	1.8	2.3	1.9	2.7	2.2
Total	**1.2**	**1.8**	**2.3**	**1.9**	**1.8**	**1.8**

Sources: ***IEO2004*:** Energy Information Administration (EIA), System for the Analysis of Global Energy Markets (2004). ***IEO2003*:** EIA, *International Energy Outlook 2003*, DOE/EIA-0484(2003) (Washington, DC, May 2003). **IEA:** International Energy Agency, *World Energy Outlook 2002* (Paris, France, September 2002). **PEL:** Petroleum Economics, Ltd., *World Long Term Oil and Energy Outlook* (London, United Kingdom, April 2003).

Regional aggregations have changed from report to report. In 1990, the report coverage was expanded for the first time from only the market economies to the entire world. Projections for China, the FSU, and other CPE countries were provided separately. Starting with *IEO94*, the regional presentation was changed from market economies and CPE countries to OECD, Eurasia (China, FSU, and Eastern Europe), and "Rest of World." Beginning in 1995 and essentially continuing until the current issue, the regional presentation changed to further group the world according to economic development: industrialized nations (essentially the OECD before the entry of South Korea and the Eastern European nations, the Czech Republic, Hungary, Poland, and Slovakia), the transitional economies of the EE/FSU, and the developing world (including China and India).

The forecast time horizon has also changed over the years (Table F7). In the first edition of the report, *IEO85*, projections were made for 1990 and 1995. *IEO86* saw the addition of projection year 2000. In *IEO91*, forecasts were no longer published for 1990, but forecasts for 2010 were added to the report. The projection horizon remained the same until *IEO96*, when projection year 2015 was added. In 1998, the forecast was extended again, out to 2020. The *IEO2003* and *IEO2004* forecasts extend to 2025.

Comparisons of Forecasts for Market Economies

Projections for market economies were made in the eight issues of the *IEO* that were published between 1985 and 1993 (no *IEO* was published in 1988). Historical data for total regional energy consumption in 1990 show that the *IEO* projections from those early years were consistently lower than the actual data for the market economies. For the four editions of the *IEO* printed between 1985 and 1989 in which 1990 projections were presented, total projected energy consumption in the market economies ran between 3 and 7 percent below the actual amounts published in the *International Energy Annual 2001* (Figure F1).

In addition, market economy projections for 1995 in the 1985 through 1993 *IEO* reports (EIA did not release forecasts for 1995 after the 1993 report) were consistently lower than the actual, historical 1995 data (Figure F2). Most of the difference is attributed to those market economy countries outside the OECD. Through the years, EIA's economic growth assumptions for OPEC and other market economy countries outside the OECD have been low. The 1993 forecast was, as one might expect, the most accurate of the forecasts for 1995, but its projection for OPEC and the other market economy countries was still more than 10 percent below the actual number.

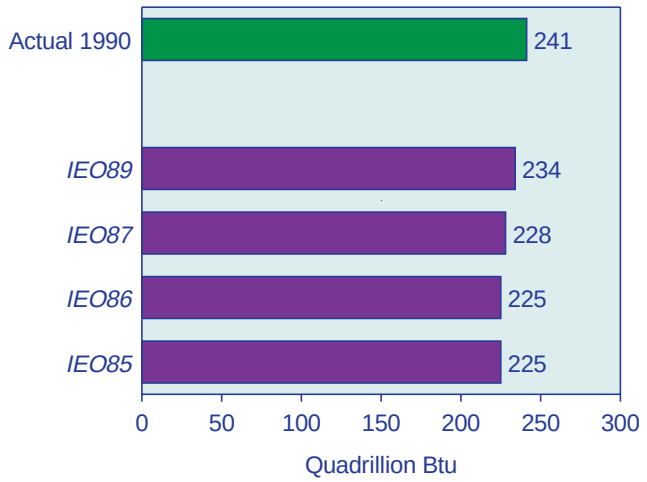
Similarly to the year 1995 projections, year 2000 projections were also consistently lower than actual 2000 data in each of the *IEOs* published between 1986 and 1993 (Figure F3). The consumption estimates for the market economies increased in each edition, from 265 quadrillion Btu in *IEO86* to 292 quadrillion Btu in *IEO93*. As late as 1993, the *IEO* forecasts were underestimating consumption of all energy sources in the market economies, by between 2 percent (oil) and 7 percent (natural gas and nuclear power).

Table F7. Years Included in *IEO* Projections by Edition, 1985-2004

Edition	1990	1995	2000	2005	2010	2015	2020	2025
IEO85	x	x						
IEO86	x	x	x					
IEO87	x	x	x					
IEO89	x	x	x					
IEO90		x	x		x			
IEO91		x	x		x			
IEO92		x	x		x			
IEO93		x	x		x			
IEO94			x	x	x			
IEO95			x	x	x			
IEO96		x	x	x	x	x		
IEO97			x	x	x	x		
IEO98			x	x	x	x	x	
IEO99			x	x	x	x	x	
IEO2000 . .				x	x	x	x	
IEO2001 . .				x	x	x	x	
IEO2002 . .				x	x	x	x	
IEO2003 . .				x	x	x	x	x
IEO2004 . .					x	x	x	x

Sources: Energy Information Administration, *International Energy Outlook*, DOE/EIA-0484 (Washington, DC, various years).

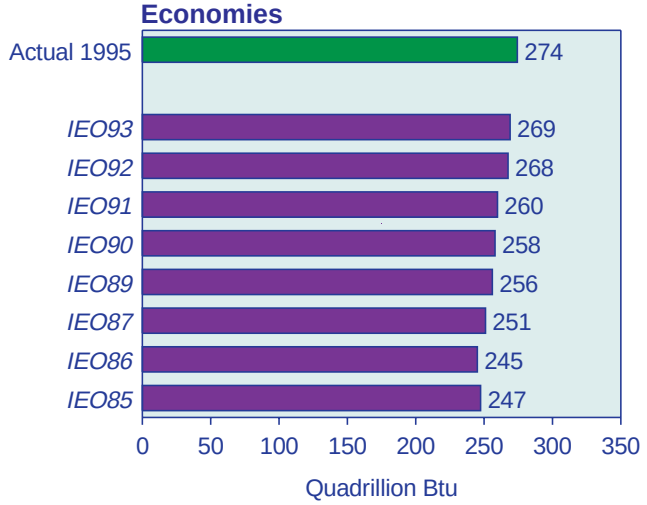
Figure F1. Comparison of *IEO* Forecasts with 1990 Energy Consumption in Market Economies



Sources: Energy Information Administration, *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/, and *International Energy Outlook*, DOE/EIA-0484 (Washington, DC, various years).

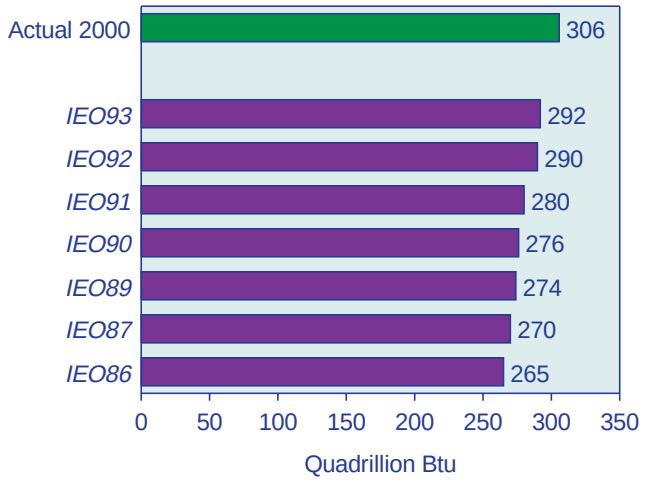
As noted above, in the 1994 edition of the *IEO*, the regional aggregation "market economies" was dropped altogether and replaced with delineation of member countries of the OECD, Eurasia, and Rest of World (ROW). As a result of that reorganization, it is not possible to recreate a forecast for the CPE countries: except for China, the FSU, and Eastern Europe, the remaining CPE countries—noted above—were included in "other ROW."

Figure F2. Comparison of *IEO* Forecasts with 1995 Energy Consumption in Market Economies



Sources: Energy Information Administration, *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/, and *International Energy Outlook*, DOE/EIA-0484 (Washington, DC, various years).

Figure F3. Comparison of *IEO* Forecasts with 2000 Energy Consumption in Market Economies



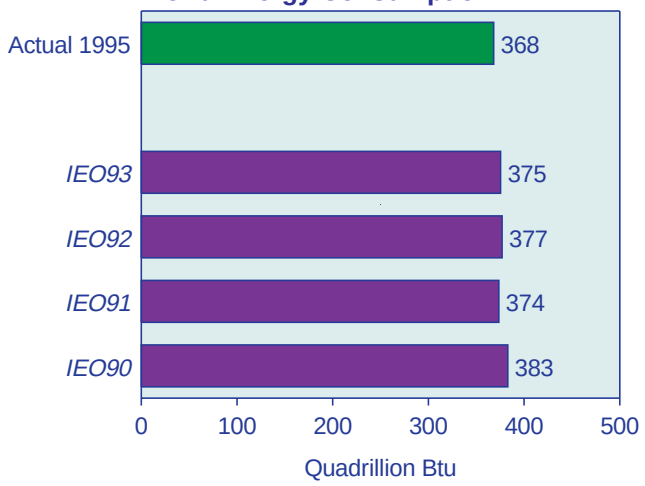
Sources: Energy Information Administration, *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/, and *International Energy Outlook*, DOE/EIA-0484 (Washington, DC, various years).

Comparisons of Forecasts for Year 1995

IEO90 marked the first release of a worldwide energy consumption forecast. In *IEO90* through *IEO93*, the forecasts for worldwide energy demand in 1995 were between 1 and 4 percent higher than the actual amounts consumed (Figure F4). Much of the difference can be explained by the unanticipated collapse of the Soviet Union economies in the early 1990s. The *IEO* forecasters could not foresee the extent to which energy consumption would fall in the FSU region. In *IEO90*, total energy consumption in the FSU was projected to reach 67 quadrillion Btu in 1995. The projection was reduced steadily in the next three *IEO* reports, but even in *IEO93* energy demand for 1995 in the FSU region was projected to be 53 quadrillion Btu, as compared with actual 1995 energy consumption of 43 quadrillion Btu—a difference equivalent to about 5 million barrels of oil per day.

Forecasts for 1995 can also be compared in terms of their depiction of the fuel mix. Every *IEO* after 1990 projected the share of each energy source relative to total energy consumption within 3.5 percentage points of the actual 1995 distribution. The earliest *IEOs* tended to be too optimistic about the growth of coal use in the market economies (Figure F5) and too pessimistic about the recovery of oil consumption after the declines in the early 1980s that followed the price shocks caused by oil embargoes in 1973 and 1974 and the 1979-1980 revolution in Iran (Figure F6). The *IEO85* and *IEO86* reports projected that oil would account for only about 40 percent of total energy consumption for the market economies in 1995, whereas oil actually accounted for 45 percent of the total in 1995.

Figure F4. Comparison of *IEO* Forecasts with 1995 World Energy Consumption

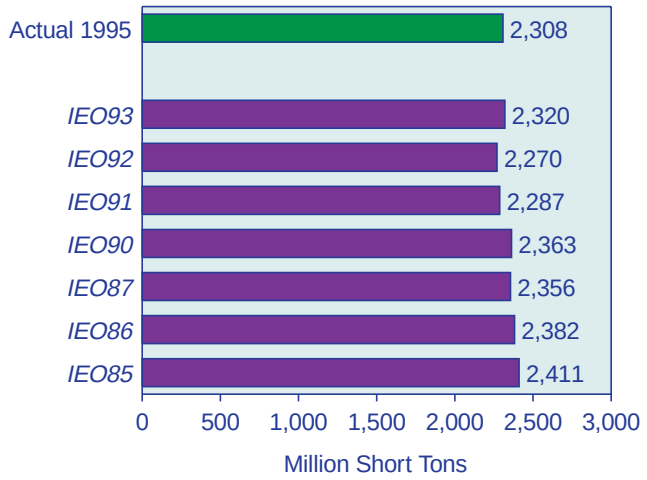


Sources: Energy Information Administration, *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/, and *International Energy Outlook*, DOE/EIA-0484 (Washington, DC, various years).

The 1995 forecasts for world coal consumption that appeared in the *IEOs* printed between 1990 and 1993 were consistently high, between 3 and 19 percent higher than actual coal use (Figure F7), largely because of overestimates for the FSU and Eastern Europe—regions that experienced substantial declines in coal consumption during the years following the collapse of the Soviet Union. Most of the projections for the FSU by fuel were greater than the actual consumption numbers, with the exception of hydroelectricity and other renewable resources (Figure F8). Natural gas use did not decline as much as oil and coal use, because gas is a plentiful resource in the region and was used extensively to fuel the domestic infrastructure; however, even the *IEO* estimates for 1995 natural gas use were 16 to 22 percent higher than the actual use.

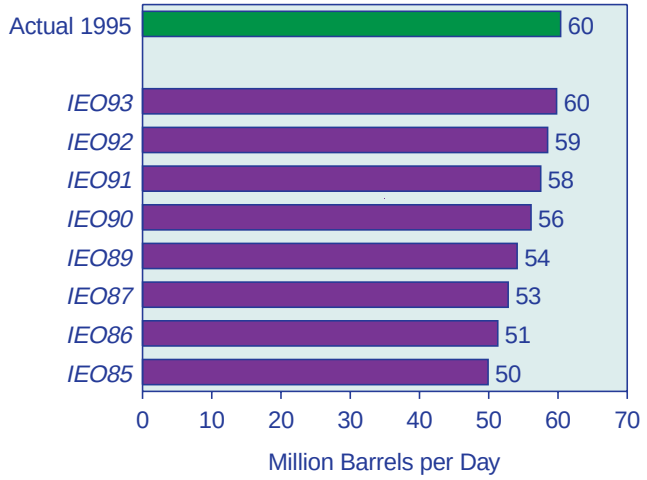
The *IEO* projections for total energy consumption in China were below the actual 1995 consumption level in *IEO90* (by 13 percent) and *IEO91* (by 8 percent) but higher in *IEO92* (by 6 percent) and about the same in *IEO93*. The underestimates in the earlier *IEOs* balanced, in part, the overestimates for the EE/FSU countries; however, even the 4- to 17-percent underestimate of projected 1995 coal use in China could not make up for the 31- to 55-percent overestimate of FSU coal use. In terms of other fuels, the *IEO* forecasts consistently overestimated China's gas consumption and underestimated its oil consumption. Nuclear power forecasts were fairly close for China, within 5 percent of the actual consumption (Figure F9). It is noteworthy, however, that consumption of natural gas and nuclear power was quite small in 1995, so that any variation between actual historical consumption and the projections results in a large percentage difference. EIA consistently underestimated economic growth in China. As late as 1993, EIA expected GDP in China to grow by about 7.3 percent per year during the decade of the 1990s, whereas it actually grew by 10.7 percent per year between 1990 and 1995.

Figure F5. Comparison of *IEO* Forecasts with 1995 Coal Consumption in Market Economies



Sources: Energy Information Administration, *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/, and *International Energy Outlook*, DOE/EIA-0484 (Washington, DC, various years).

Figure F6. Comparison of *IEO* Forecasts with 1995 Oil Consumption in Market Economies

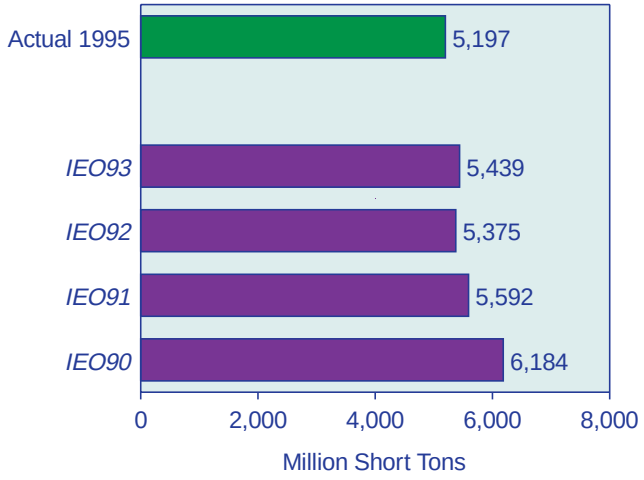


Sources: Energy Information Administration, *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/, and *International Energy Outlook*, DOE/EIA-0484 (Washington, DC, various years).

Comparisons of Forecasts for Year 2000

Ten editions of the *IEO* report contained worldwide forecasts for the year 2000 (*IEO90* through *IEO99*). The forecasts of total world energy consumption for 2000 were all above, but within 5 percent of, the actual total

Figure F7. Comparison of *IEO* Forecasts with 1995 World Coal Consumption

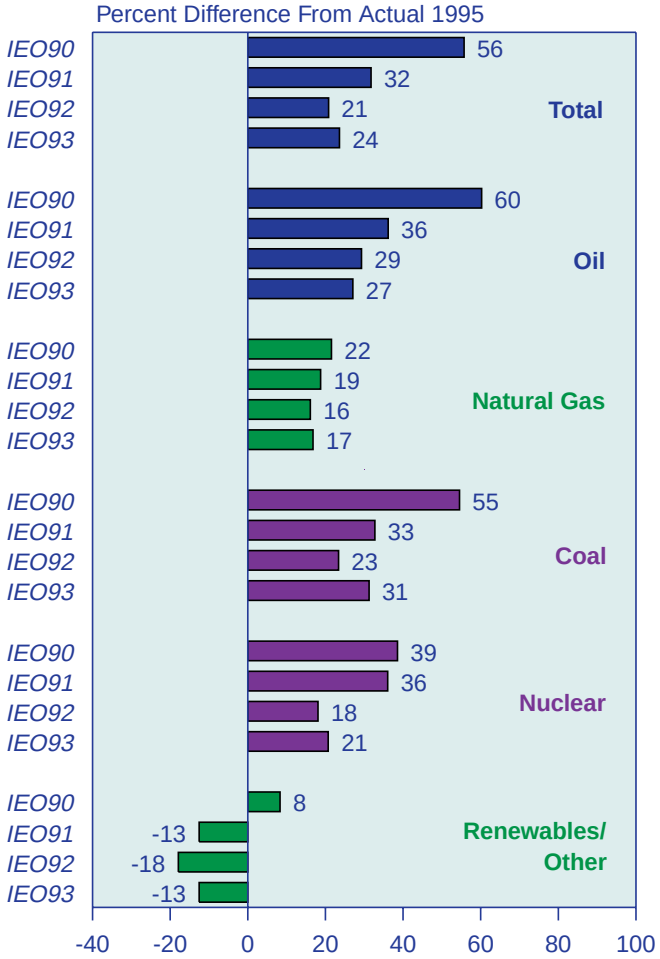


Sources: Energy Information Administration, *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/, and *International Energy Outlook*, DOE/EIA-0484 (Washington, DC, various years).

(Figure F10). *IEO97* provided the highest estimate of world energy use in 2000. This may seem surprising at first glance, but it is also true that the economic recession that would take hold in 1998 among the emerging economies of southeast Asia had not occurred and was not foreseen in the *IEO97* forecast. In fact, *IEO97* overestimated year 2000 energy use in developing Asia by 10 quadrillion Btu, or about 14 percent (Figure F11), and in industrialized Asia by 2 quadrillion Btu (8 percent). Projections for the EE/FSU in *IEO97* were also too optimistic, overestimating the rate of economic recovery in the region and as a result overestimating the growth in energy consumption by 7 quadrillion Btu (13 percent). *IEO97* did not anticipate the August 1998 devaluation of the Russian ruble and the economic recession that followed in the FSU region. By *IEO99*, total EE/FSU energy use had been adjusted downward to 52 quadrillion Btu—just slightly lower than the region's actual consumption in 2000.

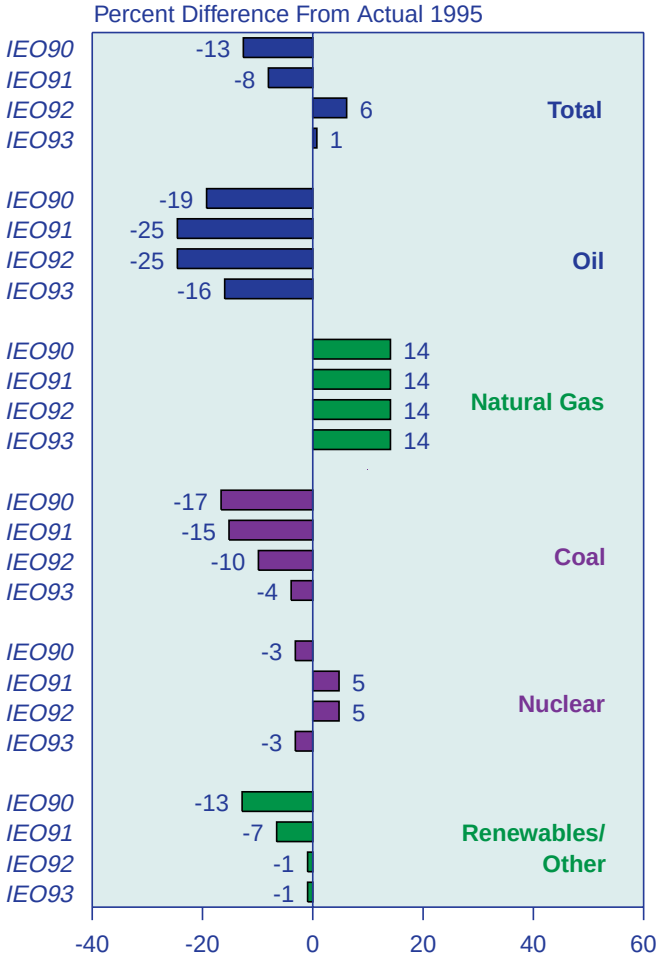
The projections for year 2000 by fuel were mixed in terms of accuracy. For all energy sources except coal, total world consumption forecasts fell within 12 percent of the actual levels. As was the case with forecasts for the years 1990 and 1995, world coal consumption projections were consistently high relative to actual consumption in 2000. The world coal forecast presented in *IEO90* was 30 percent higher than actual 2000 values. The forecasts for the CPE countries were responsible for the large discrepancy between projected *IEO90* and actual coal consumption in 2000. In fact, *IEO90* projected that the market economies would consume 2,801 million short tons of coal in 2000, and the actual estimate for coal use among the market economies was 2,904. However, in

Figure F8. Comparison of *IEO* Forecasts with 1995 Energy Consumption in the Former Soviet Union by Fuel Type



Sources: Energy Information Administration, *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/, and *International Energy Outlook*, DOE/EIA-0484 (Washington, DC, various years).

Figure F9. Comparison of *IEO* Forecasts with 1995 Energy Consumption in China by Fuel Type



Sources: Energy Information Administration, *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/, and *International Energy Outlook*, DOE/EIA-0484 (Washington, DC, various years).

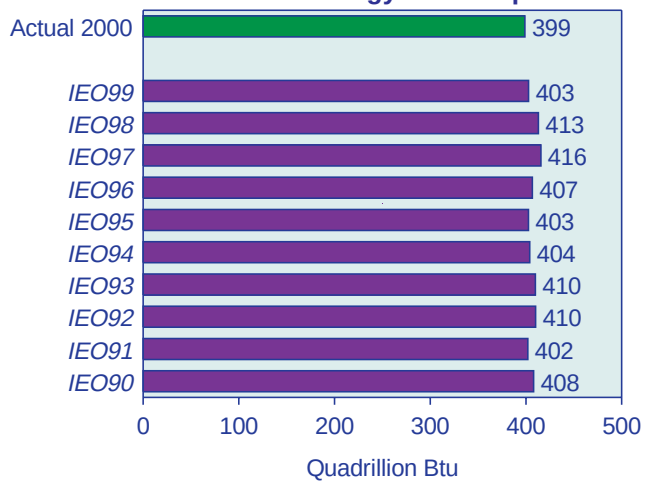
the CPE countries—including the EE/FSU—*IEO90* projected that coal use would climb to 3,841 million short tons in 2000, whereas actual coal consumption was only 2,211 million short tons.

Much of the discrepancy between the *IEO90* projection and actual 2000 coal consumption can be attributed to the FSU. As noted above, *IEO90* did not foresee the collapse of the Soviet regime in 1990 when the report projections were prepared. Indeed, coal use in the FSU in *IEO90* was expected to expand to 1,132 million short tons in 2000, whereas in reality coal use in the FSU began to decline precipitously after 1990, hitting a low of 391 million short tons in 1998 before edging up somewhat to 421 million short tons in 2000. The story was similar for Eastern Europe and the other CPE countries (excluding China), where coal use in 2000 was overestimated by 157 percent in *IEO90*.

The year 2000 forecasts for oil, natural gas, and hydroelectricity and other renewable energy sources were, for the most part, higher than actual levels. In contrast, projections for nuclear power were consistently lower than the actual 2000 values. Interestingly, the forecasts for the United States were largely responsible for the underestimation. Even in *IEO99*—the latest *IEO* that included projections for 2000—analysts were expecting nuclear power to begin to decline. In *IEO90* there was widespread pessimism about the future of nuclear power in the mid-term, given the aftermath of Chernobyl and the problems associated with nuclear waste disposal. In the political climate of the early 1990s, *IEO90* could not anticipate the life extensions and consistently improving efficiencies that have allowed nuclear power plants to generate more electricity and operate with shorter downtimes for maintenance, even without expanding their installed capacities.

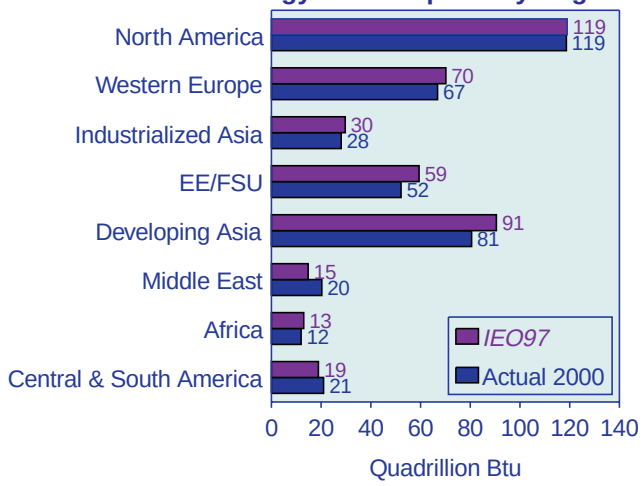
The comparison of *IEO* projections and historical data in the context of political and social events underscores the importance of those events in shaping the world's energy markets. Such comparisons also point out how important a model's assumptions are to the derivation of accurate forecasts. The political and social upheaval in the EE/FSU dramatically affected the accuracy of the projections for the region. If higher economic growth rates had been assumed for China, more accurate forecasts for that region might have been achieved. It is important for users of the *IEO* or any other projection series to realize the limitations of the forecasts. Failing an ability to predict future volatility in social, political, or economic events, the projections should be used as a plausible path or trend for the future and not as a precise prediction of future events.

Figure F10. Comparison of *IEO* Forecasts with 2000 World Energy Consumption



Sources: Energy Information Administration, *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/, and *International Energy Outlook*, DOE/EIA-0484 (Washington, DC, various years).

Figure F11. Comparison of *IEO97* Forecasts with 2000 Energy Consumption by Region



Sources: Energy Information Administration, *International Energy Annual 2001*, DOE/EIA-0219(2001) (Washington, DC, February 2003), web site www.eia.doe.gov/iea/, and *International Energy Outlook 1997*, DOE/EIA-0484(97) (Washington, DC, April 1997).

Appendix G

System for the Analysis of Global Energy Markets (SAGE)

The projections of world energy consumption appearing in this year's *International Energy Outlook* (*IEO*) are based on the Energy Information Administration's (EIA's) new international energy modeling tool, System for the Analysis of Global Energy markets (SAGE). SAGE is an integrated set of regional models that provide a technology-rich basis for estimating regional energy consumption. For each region, reference case estimates of 42 end-use energy service demands (e.g., car, commercial truck, and heavy truck road travel; residential lighting; steam heat requirements in the paper industry) are developed on the basis of economic and demographic projections. Projections of energy consumption to meet the energy demands are estimated on the basis of each region's existing energy use patterns, the existing stock of energy-using equipment, and the characteristics of available new technologies, as well as new sources of primary energy supply.

Period-by-period market simulations aim to provide each region's energy services at minimum cost by simultaneously making end-use equipment and primary energy supply decisions. For example, in SAGE, if there is an increase in residential lighting energy service, either existing generation equipment must be used more intensively or new equipment must be installed. The choice of generation equipment (type and fuel) incorporates analysis of both the characteristics of alternative generation technologies and the economics of primary energy supply.

Although the modeling system used to develop the projections has changed, this year's *IEO* maintains the same level of fuel detail and the same tabular format. As in the past, the *IEO* provides projections of total world primary energy consumption, as well as projections of energy consumption by primary energy type (oil, natural gas, coal, nuclear, and hydroelectric and other renewable resources) and projections of net electricity consumption. Projections of carbon dioxide emissions resulting from fossil fuel use are also provided. All projections are computed in 5-year intervals through the year 2025. Further, more detailed tables that emphasize the end-use demand-driven nature of SAGE will be considered for future reports.

SAGE provides projections for 15 regions or countries, including the North American countries of the United States, Canada, and Mexico; Western Europe; Japan; Australia/New Zealand; Eastern Europe; the former Soviet Union (FSU); China; India; South Korea; other developing Asia; the Middle East; Africa; and Central and South America. An offline procedure is used to develop projections for individual countries that fall into the SAGE regions, including the United Kingdom, France, Germany, Italy, and the Netherlands in Western Europe; Russia in the FSU; Turkey in the Middle East; and Brazil in Central and South America.

Projections of world oil prices over the forecast horizon are provided to SAGE from EIA's International Energy Module, which is a submodule of the National Energy Modeling System (NEMS). Projections of world nuclear energy consumption are derived from nuclear power electricity generation projections from EIA's International Nuclear Model (INM), PC Version (PC-INM). All U.S. projections are taken from EIA's *Annual Energy Outlook* (*AEO*).

A full description of the SAGE model is available in a two-volume set. The first volume provides a general understanding of the model's design, theoretical basis, necessary user-defined assumptions, and output. It also lists the software necessary to develop and analyze the results of SAGE-based policy and energy market scenarios. In addition, Volume I includes a Reference Guide, which explains each equation in detail. The second volume serves as a User's Guide for those actively developing SAGE-based scenario analyses. The documentation is available on EIA's web site in the model documentation section of "Current Publications" (http://www.eia.doe.gov/bookshelf/docs.html).