

Assumptions to the Annual Energy Outlook 2006

Table 67. Coal Mining Productivity by Region
(Short Tons per Miner Hour)

Supply Region	2004	2010	2015	2020	2025	2030	Average Annual Growth 04-30
Northern Appalachia	4.10	3.96	4.06	4.12	4.19	4.24	0.1%
Central Appalachia	3.41	2.92	2.82	2.72	2.63	2.55	-1.1%
Southern Appalachia	2.70	2.37	2.33	2.25	2.19	2.14	-0.9%
Eastern Interior	4.53	4.72	4.77	4.78	4.81	4.85	0.3%
Western Interior	3.91	3.93	3.93	3.93	3.93	3.93	0.0%
Gulf Lignite	9.30	8.88	8.66	8.45	8.24	8.04	-0.6%
Dakota Lignite	17.06	16.32	16.74	17.16	17.59	18.04	0.2%
Western Montana	25.86	25.43	24.01	23.82	22.22	21.58	-0.7%
Wyoming, Northern Power River Basin	43.00	40.44	41.50	42.38	43.19	43.84	0.1%
Wyoming, Southern Power River Basin	45.48	44.12	43.68	43.03	42.17	41.13	-0.4%
Western Wyoming	9.09	10.33	10.54	10.71	10.85	10.89	0.7%
Rocky Mountain	8.10	7.85	8.02	8.19	8.32	8.45	0.2%
Arizona/New Mexico	9.13	8.82	8.94	9.01	9.03	9.07	0.0%
Alaska/Washington	4.70	4.59	4.59	4.59	4.59	4.59	-0.1%
U.S. Average	6.80	6.56	6.90	7.14	7.49	7.56	0.4%

Source: Projections: Energy Information Administration, Office of Integrated and Forecasting

Table 68. Transportation Rate Multipliers
(Constant Dollar Index, 2004=1.000)

Scenario	Region:	2004	2010	2015	2020	2025	2030
Reference Case	East	1.000	1.0823	1.0498	1.0416	1.0370	1.0331
	West	1.000	1.0597	1.0354	1.0288	1.0249	1.0216
High Resource Price	East	1.000	1.0821	1.0498	1.0431	1.0408	1.0379
	West	1.000	1.0596	1.0354	1.0298	1.0277	1.0251
Low Resource Price	East	1.000	1.0823	1.0507	1.0415	1.0359	1.0312
	West	1.000	1.0597	1.0360	1.0287	1.0241	1.0202
High Economic Growth	East	1.000	1.0833	1.0550	1.0515	1.0521	1.0515
	West	1.000	1.0604	1.0392	1.0360	1.0359	1.0350
Low Economic Growth	East	1.000	1.0813	1.0449	1.0329	1.0242	1.0178
	West	1.000	1.0590	1.0318	1.0224	1.0155	1.0103
High Coal Cost	East	1.000	1.0911	1.0778	1.0892	1.1048	1.1212
	West	1.000	1.0668	1.0571	1.0655	1.0770	1.0890
Low Coal Cost	East	1.000	1.0728	1.0231	0.9963	0.9740	0.9519
	West	1.000	1.0521	1.0145	0.9936	0.9758	0.9583

Source: Projections: Energy Information Administration, Office of Integrated Analysis and Forecasting. Based on methodology described in *Coal Market Module of the National Energy Modeling System, Model Documentation 2006*, DOE/EIA-060(2006), (Washington, DC, 2006).

Table 69. World Steam Coal Import Demand by Import Region, 2004-2030
(Million metric tons of coal equivalent)

Import Regions ¹	2004 ²	2010	2015	2020	2025	2030
The Americas	44.0	35.2	45.0	69.0	94.5	110.7
United States	21.2	11.1	21.2	44.9	68.6	83.1
Canada	12.1	6.8	6.4	6.6	7.1	7.4
Mexico	3.0	7.5	7.7	8.2	9.1	10.0
South America	7.7	9.8	9.7	9.3	9.7	10.3
Europe	155.1	160.8	157.9	152.6	143.6	138.7
Scandinavia	13.8	10.3	7.6	6.5	5.8	4.9
U.K/Ireland	29.7	26.2	25.0	24.2	23.6	22.8
Germany/Austria	26.7	26.9	28.2	25.5	19.8	16.2
Other NW Europe	23.8	19.9	18.0	14.3	12.7	11.3
Iberia	19.8	22.9	21.6	20.4	19.1	17.5
Italy	14.6	23.4	25.2	27.0	27.0	27.0
Med/E Europe	26.7	31.2	32.3	34.7	35.6	39.0
Asia	241.7	285.3	309.2	332.7	357.7	384.5
Japan	91.7	92.8	84.1	83.3	86.5	89.2
East Asia	96.4	112.4	127.8	141.3	151.2	163.6
China/Hong Kong	19.2	29.0	36.1	40.2	44.3	48.4
ASEAN	18.3	29.8	37.7	42.2	46.7	51.6
Indian Sub	16.1	21.3	23.5	25.7	29.0	31.7
Total	440.8	481.3	512.1	554.3	595.8	633.9

¹Import Regions: **South America:** Argentina, Brazil, Chile; **Scandinavia:** Denmark, Finland, Norway, Sweden; **Other NW Europe:** Belgium, France, Luxembourg, Netherlands; **Iberia:** Portugal, Spain; **Med/E Europe:** Algeria, Bulgaria, Croatia, Egypt, Greece, Israel, Malta, Morocco, Romania, Tunisia, Turkey; **East Asia:** North Korea, South Korea, Taiwan; **ASEAN:** Malaysia, Philippines, Thailand; **Indian Sub:** Bangladesh, India, Iran, Pakistan, Sri Lanka.

²The base year of the world trade forecast for coal is 2004.

Notes: One "metric ton of coal equivalent" contains 27.78 million Btu. Totals may not equal sum of components due to independent rounding.

Source: Projections: Energy Information Administration, Office of Integrated Analysis and Forecasting.

Table 70. World Metallurgical Coal Import Demand by Import Region, 2004-2030

(Million metric tons of coal equivalent)

Import Regions ¹	2004 ²	2010	2015	2020	2025	2030
The Americas	20.2	25.7	28.5	30.5	30.8	31.5
United States	2.3	1.8	1.8	1.8	1.8	1.8
Canada	3.8	3.5	3.4	3.2	3.1	2.9
Mexico	1.0	1.7	1.8	1.9	2.0	2.1
South America	13.1	18.7	21.6	23.6	24.0	24.7
Europe	52.3	49.6	47.3	46.5	46.9	46.9
Scandinavia	3.1	2.5	2.1	1.9	1.6	1.3
U.K/Ireland	6.9	6.8	6.8	6.8	6.8	6.8
Germany/Austria	6.9	6.6	6.6	6.6	6.6	6.5
Other NW Europe	16.6	14.3	12.6	11.6	11.0	11.2
Iberia	4.2	3.9	3.8	3.8	3.8	3.8
Italy	6.2	6.2	5.7	5.7	5.7	5.6
Med/E Europe	8.4	9.3	9.7	10.1	11.4	11.7
Asia	118.7	133.3	147.2	156.2	167.1	178.3
Japan	69.0	68.1	66.4	64.7	63.7	62.8
East Asia	26.4	29.1	31.6	32.7	34.5	36.3
China/Hong Kong	6.2	13.3	19.1	23.9	29.2	34.6
ASEAN	0.0	0.0	0.0	0.0	0.0	0.0
Indian Sub	17.1	22.8	30.1	34.9	39.7	44.6
Total	191.2	208.6	223.0	233.2	244.8	256.7

¹Import Regions: **South America:** Argentina, Brazil, Chile; **Scandinavia:** Denmark, Finland, Norway, Sweden; **Other NW Europe:** Belgium, France, Luxembourg, Netherlands; **Iberia:** Portugal, Spain; **Med/E Europe:** Algeria, Bulgaria, Croatia, Egypt, Greece, Israel, Malta, Morocco, Romania, Tunisia, Turkey; **East Asia:** North Korea, South Korea, Taiwan; **ASEAN:** Malaysia, Philippines, Thailand; **Indian Sub:** Bangladesh, India, Iran, Pakistan, Sri Lanka.

² The base year of the world trade forecast for coal is 2004.

Notes: One "metric ton of coal equivalent" contains 27.78 million Btu. Totals may not equal sum of components due to independent rounding.

Source: Projections: Energy Information Administration, Office of Integrated Analysis and Forecasting.

Table 71. Production, Heat Content, and Sulfur, Mercury and Carbon Dioxide Emission Factors by Coal Type and Region

Coal Supply Region	States	Coal Rank and Sulfur Level	Mine Type	2004 Production (Million Short tons)	Heat Content (Million Btu per Short Ton)	Sulfur Content (Pounds Per Million Btu)	Mercury Content (Pounds Per Trillion Btu)	CO ₂ (Pounds Per Million Btu)
Northern Appalachia	PA, OH, MD, WV(North)	Metallurgical	Underground	3.5	27.43	0.70	N/A	205.4
		Mid-Sulfur Bituminous	All	73.6	25.04	1.26	11.17	205.4
		High-Sulfur Bituminous	All	58.0	24.73	2.47	11.67	203.6
		Waste Coal (Gob and Culm)	Surface	12.5	13.70	2.29	63.9	203.6
Central Appalachia	KY(East), WV(South), VA, TN (North)	Metallurgical	Underground	37.7	27.43	0.61	N/A	203.8
		Low-Sulfur Bituminous	All	50.0	25.13	0.54	5.61	203.8
		Mid-Sulfur Bituminous	All	145.5	24.66	0.89	7.58	203.8
Southern Appalachia	AL, TN (South)	Metallurgical	Underground	7.3	27.43	0.49	N/A	203.3
		Low-Sulfur Bituminous	All	1.5	24.36	0.56	3.87	203.3
		Mid-Sulfur Bituminous	All	13.6	24.36	1.10	10.15	203.3
East Interior	IL, IN, KY(West), MS	Mid-Sulfur Bituminous	All	31.7	22.44	1.07	5.6	202.9
		High-Sulfur Bituminous	All	58.9	22.65	2.72	6.35	202.5
		Mid-Sulfur Lignite	Surface	3.6	10.21	0.94	14.11	211.4
West Interior	IA, MO,KS, AR, OK, TX(Bit)	High-Sulfur Bituminous	Surface	2.5	23.28	2.39	21.55	202.4
Gulf Lignite	TX(Lig), LA	Mid-Sulfur Lignite	Surface	22.2	12.90	1.20	14.11	211.4
		High-Sulfur Lignite	Surface	27.5	13.13	2.53	15.28	211.4
Dakota Lignite	ND, MT(Lig)	Mid-Sulfur Lignite	Surface	30.3	13.27	1.06	8.38	216.6
Western Montana	MT (Bit and Sub)	Low-Sulfur Subbituminous	Underground	0.2	20.90	0.48	5.06	207.5
		Low-Sulfur Subbituminous	Surface	21.0	18.72	0.38	5.06	211.3
		Mid-Sulfur Subbituminous	Surface	18.5	17.31	0.76	5.47	211.3
Northern Wyoming	WY (Northern Powder River Basin)	Low-Sulfur Subbituminous	Surface	139.1	16.95	0.40	7.08	210.6
		Mid-Sulfur Subbituminous	Surface	4.3	16.56	0.80	7.55	210.6
Southern Wyoming	WY (Southern Powder River Basin)	Low-Sulfur Subbituminous	Surface	238.2	17.60	0.33	5.22	210.6
Western Wyoming	WY (Other basins, excluding Powder River Basin)	Low-Sulfur Subbituminous	Underground	*	18.50	0.60	2.19	204.4
		Low-Sulfur Subbituminous	Surface	9.9	18.89	0.53	4.06	210.6
		Mid-Sulfur Subbituminous	Surface	5.0	19.63	0.88	4.35	210.6
Rocky Mountain	CO, UT	Low-Sulfur Bituminous	Underground	51.4	23.02	0.49	3.82	203.0
		Low-Sulfur Subbituminous	Surface	10.3	20.56	0.41	2.04	210.6
Southwest	AZ, NM	Low-Sulfur Bituminous	Surface	18.6	21.19	0.47	4.66	205.4
		Mid-Sulfur Subbituminous	Surface	13.7	18.19	0.90	7.18	206.7
		Mid-Sulfur Bituminous	Underground	7.7	19.20	0.79	7.18	206.7
Northwest	WA, AK	Mid-Sulfur Subbituminous	Surface	7.2	15.90	1.10	6.99	207.9

N/A = not available.

*Indicates that the quantity is less than 50,000 short tons.

Source: Energy Information Administration, Form EIA-3, "Quarterly Coal Consumption Report—Manufacturing Plants"; Form EIA-5, "Quarterly Coal Consumption and Quality Report, Coke Plants"; Form EIA-6A, "Coal Distribution Report—Annual"; Form EIA-7A, "Coal Production Report", and Form EIA-423, "Monthly Cost and Quality of Fuels for Electric Plants Report." Federal Energy Regulatory Commission, Form 423, "Monthly Report of Cost and Quality of Fuels for Electric Plants." U.S. Department of Commerce, Bureau of the Census, "Monthly Report EM-545." U.S. Environmental Protection Agency, Emission Standards Division, *Information Collection Request for Electric Utility Steam Generating Unit, Mercury Emissions Information Collection Effort* (Research Triangle Park, NC, 1999). B.D. Hong and E.R. Slatick, "Carbon Dioxide Emission Factors for Coal," in Energy Information Administration, *Quarterly Coal Report*, January-March 1994, DOE/EIA-0121 (94/Q1) (Washington, DC, August 1995).