

UNITED STATES
ENERGY BALANCE TABLES

2002										Mtoe
	Coal	Oil	Gas	Hydro	Nuclear	NRE	Electricity	Heat	Total	
Production	551.3	359.9	460.1	22.7	203.2	79.8				1 677.1
Net Imports	- 11.5	655.6	86.9							731.0
TPED	541.2	1 012.1	534.9	22.7	203.2	79.8				2 394.0
Electricity and Heat Generation	- 511.5	- 24.2	- 143.4	- 22.7	- 203.2	- 30.7	310.1	5.4		- 620.3
Petroleum Refineries		- 230.5	- 20.5			- 1.2	- 4.3	- 0.9		- 257.4
Others			- 41.8			- 5.5	- 3.7			- 51.1
TFED	29.7	766.8	329.3			42.3	302.1	4.6		1 474.8
Industry	26.2	117.7	143.1			30.1	87.9	4.6		409.6
Transport		603.4	0.3			1.8	0.4			606.0
Residential	1.3	30.2	114.2			9.1	109.1			263.8
Commercial	2.2	15.4	71.7			1.2	104.8			195.5

2010										Mtoe
	Coal	Oil	Gas	Hydro	Nuclear	NRE	Electricity	Heat	Total	
Production	613.1	428.8	495.0	23.7	210.7	102.7				1 874.1
Net Imports	- 20.0	703.0	100.1				1.9			785.0
TPED	593.1	1 131.7	595.2	23.7	210.7	102.7	1.9			2 659.0
Electricity and Heat Generation	- 559.7	- 24.2	- 164.5	- 23.7	- 210.7	- 47.4	361.0	5.7		- 663.5
Petroleum Refineries		- 240.3	- 20.7			- 1.3	- 4.3	- 0.9		- 267.4
Others			- 46.0			- 7.9	- 4.1			- 58.0
TFED	33.4	867.2	364.0			46.2	354.4	4.8		1 670.1
Industry	30.1	128.2	151.5			32.8	97.1	4.8		444.5
Transport		693.4	0.5			2.6	0.4			697.0
Residential	1.2	30.0	124.0			9.6	121.9			286.5
Commercial	2.2	15.6	88.0			1.2	135.1			242.2

2020										Mtoe
	Coal	Oil	Gas	Hydro	Nuclear	NRE	Electricity	Heat	Total	
Production	629.2	450.6	559.0	24.4	233.9	134.2				2 031.3
Net Imports	27.7	810.4	114.5				1.2			953.8
TPED	656.9	1 261.0	673.5	24.4	233.9	134.2	1.2			2 985.1
Electricity and Heat Generation	- 620.6	- 24.5	- 201.0	- 24.4	- 233.9	- 68.9	431.4	5.7		- 736.2
Petroleum Refineries		- 245.2	- 20.3			- 1.2	- 4.2	- 0.9		- 271.9
Others			- 47.3			- 11.7	- 4.1			- 63.1
TFED	36.3	991.3	404.9			52.4	424.3	4.8		1 914.0
Industry	33.0	138.7	167.9			36.8	109.7	4.8		491.0
Transport		807.2	0.9			3.9	0.4			812.3
Residential	1.0	29.7	130.5			10.4	142.9			314.5
Commercial	2.2	15.7	105.5			1.2	171.4			296.1

2030										Mtoe
	Coal	Oil	Gas	Hydro	Nuclear	NRE	Electricity	Heat	Total	
Production	744.1	430.3	559.7	23.0	235.8	173.8				2 166.7
Net Imports	63.9	965.1	121.0				1.2			1 151.1
TPED	807.9	1 395.4	680.7	23.0	235.8	173.8	1.2			3 317.9
Electricity and Heat Generation	- 770.2	- 24.1	- 171.6	- 23.0	- 235.8	- 95.7	492.7	5.7		- 821.9
Petroleum Refineries		- 259.6	- 20.6			- 1.3	- 4.3	- 0.9		- 286.7
Others			- 43.9			- 16.5	- 4.0			- 64.3
TFED	37.7	1 111.7	444.7			60.4	485.7	4.8		2 144.9
Industry	34.6	148.1	185.3			42.0	121.2	4.8		536.1
Transport		918.3	1.5			5.5	0.4			925.6
Residential	0.9	29.4	133.4			11.7	163.9			339.3
Commercial	2.2	15.9	124.4			1.2	200.3			344.0

UNITED STATES
MACRO ASSUMPTIONS

	1980	2002	2010	2020	2030	Growth Rate (% per annum)				
						80-02	02-10	10-20	20-30	02-30
GDP (2000 PPP US\$ billion)	5 162	10 075	13 108	17 722	22 855	3.1	3.3	3.1	2.6	3.0
Population (million)	228	289	310	337	361	1.1	0.9	0.8	0.7	0.8
GDP per capita (2000 PPP US\$)	22 640	34 908	42 270	52 588	63 230	2.0	2.4	2.2	1.9	2.1
GDP in Services (2000 PPP US\$ billion)	4 040	7 942	10 550	14 475	18 793	3.1	3.6	3.2	2.6	3.1
GDP in Industry (2000 PPP US\$ billion)	1 151	2 249	2 791	3 566	4 376	3.1	2.7	2.5	2.1	2.4
Urbanisation level (%)	73	78	80	84	89	0.2	0.4	0.5	0.6	0.5

ENERGY PROJECTIONS

	Mtoe					Growth rate (% per annum)				
	1980	2002	2010	2020	2030	80-02	02-10	10-20	20-30	02-30
Production	1 553.3	1 677.1	1 874.1	2 031.3	2 166.7	0.3	1.4	0.8	0.6	0.9
Coal	447.9 (29%)	551.3 (33%)	613.1 (33%)	629.2 (31%)	744.1 (34%)	0.9	1.3	0.3	1.7	1.1
Oil	498.3 (32%)	359.9 (21%)	428.8 (23%)	450.6 (22%)	430.3 (20%)	-1.5	2.2	0.5	-0.5	0.6
Gas	454.6 (29%)	460.1 (27%)	495.0 (26%)	559.0 (28%)	559.7 (26%)	0.1	0.9	1.2		0.7
Hydro	24.0 (2%)	22.7 (1%)	23.7 (1%)	24.4 (1%)	23.0 (1%)	-0.2	0.5	0.3	-0.6	
NRE	59.1 (4%)	79.8 (5%)	102.7 (5%)	134.2 (7%)	173.8 (8%)	1.4	3.2	2.7	2.6	2.8
Nuclear	69.4 (4%)	203.2 (12%)	210.7 (11%)	233.9 (12%)	235.8 (11%)	5.0	0.5	1.0	0.1	0.5
Net Imports	307.3	731.0	785.0	953.8	1 151.1	4.0	0.9	2.0	1.9	1.6
Coal	-57.0	-11.5	-20.0	27.7	63.9	-7.0	7.2		8.7	
Oil	340.3	655.6	703.0	810.4	965.1	3.0	0.9	1.4	1.8	1.4
Gas	21.7	86.9	100.1	114.5	121.0	6.5	1.8	1.3	0.6	1.2
Electricity	2.3		1.9	1.2	1.2			-4.0	-0.3	
Total Primary Energy Demand	1 811.6	2 394.0	2 659.0	2 985.1	3 317.9	1.3	1.3	1.2	1.1	1.2
Coal	376.2 (21%)	541.2 (23%)	593.1 (22%)	656.9 (22%)	807.9 (24%)	1.7	1.2	1.0	2.1	1.4
Oil	803.9 (44%)	1 012.1 (42%)	1 131.7 (43%)	1 261.0 (42%)	1 395.4 (42%)	1.1	1.4	1.1	1.0	1.2
Gas	476.8 (26%)	534.9 (22%)	595.2 (22%)	673.5 (23%)	680.7 (21%)	0.5	1.3	1.2	0.1	0.9
Hydro	24.0 (1%)	22.7 (1%)	23.7 (1%)	24.4 (1%)	23.0 (1%)	-0.2	0.5	0.3	-0.6	0.04
NRE	59.1 (3%)	79.8 (3%)	102.7 (4%)	134.2 (4%)	173.8 (5%)	1.4	3.2	2.7	2.6	2.8
Nuclear	69.4 (4%)	203.2 (8%)	210.7 (8%)	233.9 (8%)	235.8 (7%)	5.0	0.5	1.0	0.1	0.5
Input for Electricity and Heat Generation	- 536.2	- 935.8	-1 030.1	-1 173.3	-1 320.4	2.6	1.2	1.3	1.2	1.2
Coal	-292.0 (54%)	-511.5 (55%)	-559.7 (54%)	-620.6 (53%)	-770.2 (58%)	2.6	1.1	1.0	2.2	1.5
Oil	-60.6 (11%)	-24.2 (3%)	-24.2 (2%)	-24.5 (2%)	-24.1 (2%)	-4.1		0.1	-0.2	
Gas	-85.6 (16%)	-143.4 (15%)	-164.5 (16%)	-201.0 (17%)	-171.6 (13%)	2.4	1.7	2.0	-1.6	0.6
Hydro	-24.0 (4%)	-22.7 (2%)	-23.7 (2%)	-24.4 (2%)	-23.0 (2%)	-0.2	0.5	0.3	-0.6	
NRE	-4.7 (1%)	-30.7 (3%)	-47.4 (5%)	-68.9 (6%)	-95.7 (7%)	8.9	5.6	3.8	3.3	4.1
Nuclear	-69.4 (13%)	-203.2 (22%)	-210.7 (20%)	-233.9 (20%)	-235.8 (18%)	5.0	0.5	1.0	0.1	0.5
Other Transformation	- 97.6	- 308.5	- 325.4	- 335.0	- 351.0	5.4	0.7	0.3	0.5	0.5
Coal	-2.5 (3%)									
Oil	-49.7 (51%)	-230.5 (75%)	-240.3 (74%)	-245.2 (73%)	-259.6 (74%)	7.2	0.5	0.2	0.6	0.4
Gas	-39.0 (40%)	-62.3 (20%)	-66.7 (20%)	-67.6 (20%)	-64.5 (18%)	2.2	0.8	0.1	-0.5	0.1
NRE		-6.8 (2%)	-9.1 (3%)	-12.9 (4%)	-17.7 (5%)		3.8	3.5	3.2	3.5
Electricity	-6.4 (7%)	-8.0 (3%)	-8.5 (3%)	-8.3 (2%)	-8.3 (2%)	1.0	0.7	-0.1	-0.1	0.1
Heat		-0.9 (0%)	-0.9 (0%)	-0.9 (0%)	-0.9 (0%)		0.1	-0.2	0.2	

UNITED STATES

	Mtoe					Growth rate (% per annum)				
	1980	2002	2010	2020	2030	80-02	02-10	10-20	20-30	02-30
Total Final Energy Demand	1 224.2	1 474.8	1 670.1	1 914.0	2 144.9	0.9	1.6	1.4	1.1	1.3
Coal	51.6 (4%)	29.7 (2%)	33.4 (2%)	36.3 (2%)	37.7 (2%)	-2.5	1.5	0.8	0.4	0.9
Oil	641.7 (52%)	766.8 (52%)	867.2 (52%)	991.3 (52%)	1 111.7 (52%)	0.8	1.6	1.3	1.2	1.3
Gas	322.7 (26%)	329.3 (22%)	364.0 (22%)	404.9 (21%)	444.7 (21%)	0.1	1.3	1.1	0.9	1.1
NRE	33.9 (3%)	42.3 (3%)	46.2 (3%)	52.4 (3%)	60.4 (3%)	1.0	1.1	1.3	1.4	1.3
Electricity	174.2 (14%)	302.1 (20%)	354.4 (21%)	424.3 (22%)	485.7 (23%)	2.5	2.0	1.8	1.4	1.7
Heat		4.6 (0%)	4.8 (0%)	4.8 (0%)	4.8 (0%)		0.7			0.2
Industry	447.0	409.6	444.5	491.0	536.1	-0.4	1.0	1.0	0.9	1.0
Coal	48.2 (11%)	26.2 (6%)	30.1 (7%)	33.0 (7%)	34.6 (6%)	-2.7	1.7	0.9	0.5	1.0
Oil	149.2 (33%)	117.7 (29%)	128.2 (29%)	138.7 (28%)	148.1 (28%)	-1.1	1.1	0.8	0.7	0.8
Gas	151.5 (34%)	143.1 (35%)	151.5 (34%)	167.9 (34%)	185.3 (35%)	-0.3	0.7	1.0	1.0	0.9
NRE	33.9 (8%)	30.1 (7%)	32.8 (7%)	36.8 (8%)	42.0 (8%)	-0.5	1.1	1.2	1.3	1.2
Electricity	64.2 (14%)	87.9 (21%)	97.1 (22%)	109.7 (22%)	121.2 (23%)	1.4	1.3	1.2	1.0	1.2
Heat		4.6 (1%)	4.8 (1%)	4.8 (1%)	4.8 (1%)		0.7			0.2
Transport	418.2	606.0	697.0	812.3	925.6	1.7	1.8	1.5	1.3	1.5
Coal										
Oil	418.0 (100%)	603.4 (100%)	693.4 (99%)	807.2 (99%)	918.3 (99%)	1.7	1.8	1.5	1.3	1.5
Gas		0.3 (0%)	0.5 (0%)	0.9 (0%)	1.5 (0%)		5.7	5.5	4.7	5.3
NRE		1.8 (0%)	2.6 (0%)	3.9 (0%)	5.5 (1%)		4.5	4.0	3.5	4.0
Electricity	0.3 (0%)	0.4 (0%)	0.4 (0%)	0.4 (0%)	0.4 (0%)	1.4	-0.5			-0.1
Residential	216.1	263.8	286.5	314.5	339.3	0.9	1.0	0.9	0.8	0.9
Coal	1.6 (1%)	1.3 (0%)	1.2 (0%)	1.0 (0%)	0.9 (0%)	-1.0	-1.0	-1.0	-1.0	-1.0
Oil	42.4 (20%)	30.2 (11%)	30.0 (10%)	29.7 (9%)	29.4 (9%)	-1.5	-0.1	-0.1	-0.1	-0.1
Gas	110.4 (51%)	114.2 (43%)	124.0 (43%)	130.5 (41%)	133.4 (39%)	0.2	1.0	0.5	0.2	0.6
NRE		9.1 (3%)	9.6 (3%)	10.4 (3%)	11.7 (3%)		0.6	0.9	1.2	0.9
Electricity	61.7 (29%)	109.1 (41%)	121.9 (43%)	142.9 (45%)	163.9 (48%)	2.6	1.4	1.6	1.4	1.5
Heat										
Commercial	142.8	195.5	242.2	296.1	344.0	1.4	2.7	2.0	1.5	2.0
Coal	1.8 (1%)	2.2 (1%)	2.2 (1%)	2.2 (1%)	2.2 (1%)	0.9	-0.1	-0.1	-0.1	-0.1
Oil	32.2 (23%)	15.4 (8%)	15.6 (6%)	15.7 (5%)	15.9 (5%)	-3.3	0.1	0.1	0.1	0.1
Gas	60.7 (43%)	71.7 (37%)	88.0 (36%)	105.5 (36%)	124.4 (36%)	0.8	2.6	1.8	1.7	2.0
NRE		1.2 (1%)	1.2 (1%)	1.2 (0%)	1.2 (0%)					
Electricity	48.1 (34%)	104.8 (54%)	135.1 (56%)	171.4 (58%)	200.3 (58%)	3.6	3.2	2.4	1.6	2.3
Heat										

ENERGY SECURITY

	1980	2002	2010	2020	2030
Diversity of Primary Energy Demand (Rated between 1 and 100)	80	84	84	84	84
Net Energy Import Ratio (%)	17	30	30	32	35
Net Oil Import Dependency (%)	42	65	62	64	69

UNITED STATES
ELECTRICITY GENERATION

	1980	2002	2010	2020	2030	Growth rate (% per annum)				
						80-02	02-10	10-20	20-30	02-30
Total Electricity Generation (TWh)	2 427	3 835	4 404	5 129	5 851	2.1	1.7	1.5	1.3	1.5
Coal	1 243 (51%)	1 928 (50%)	2 219 (50%)	2 590 (51%)	3 390 (58%)	2.0	1.8	1.6	2.7	2.0
Oil	263 (11%)	95 (2%)	97 (2%)	101 (2%)	101 (2%)	-4.5	0.3	0.3	0.1	0.2
Gas	370 (15%)	682 (18%)	791 (18%)	973 (19%)	829 (14%)	2.8	1.9	2.1	-1.6	0.7
Hydro	279 (11%)	264 (7%)	277 (6%)	284 (6%)	268 (5%)	-0.2	0.6	0.2	-0.6	0.04
NRE	6	86 (2%)	211 (5%)	284 (6%)	358 (6%)	13.1	11.8	3.0	2.3	5.2
Nuclear	266 (11%)	780 (20%)	809 (18%)	897 (18%)	905 (15%)	5.0	0.5	1.0	0.1	0.5
Total Installed Generation Capacity (GW)	579	880	1 034	1 074	1 248	1.9	2.0	0.4	1.5	1.3
Thermal	444 (77%)	686 (78%)	817 (79%)	839 (78%)	1 000 (80%)	2.0	2.2	0.3	1.8	1.4
Coal		315 (36%)	323 (31%)	355 (33%)	481 (39%)		0.3	1.0	3.1	1.5
Oil		257 (29%)	293 (28%)	261 (24%)	281 (22%)		1.6	-1.2	0.7	0.3
Gas		114 (13%)	201 (19%)	222 (21%)	238 (19%)		7.4	1.0	0.7	2.7
Hydro	82 (14%)	79 (9%)	79 (8%)	79 (7%)	79 (6%)	-0.2				
NRE	1	17 (2%)	36 (4%)	48 (4%)	61 (5%)	13.7	10.2	2.8	2.5	4.7
Nuclear	52 (9%)	99 (11%)	101 (10%)	109 (10%)	109 (9%)	3.0	0.3	0.7		0.4

ENERGY INTENSITY & CO₂ EMISSIONS

	1980	2002	2010	2020	2030	Growth Rates (% per annum)				
						80-02	02-10	10-20	20-30	02-30
Energy Intensity (toe per US\$ million GDP)	351	238	203	168	145	-1.8	-2.0	-1.8	-1.5	-1.7
Industry (toe per US\$ million GDP in Industry)	389	182	159	138	123	-3.4	-1.7	-1.4	-1.2	-1.4
Commercial (toe per US\$ million GDP in Services)	35	25	23	20	18	-1.6	-0.9	-1.1	-1.1	-1.1
Energy Intensity (kgoe per capita)	7 947	8 296	8 576	8 859	9 180	0.2	0.4	0.3	0.4	0.4
Industry	1 961	1 419	1 433	1 457	1 483	-1.5	0.1	0.2	0.2	0.2
Transport	1 835	2 100	2 247	2 411	2 561	0.6	0.9	0.7	0.6	0.7
Residential	948	914	924	933	939	-0.2	0.1	0.1	0.1	0.1
Commercial	626	677	781	879	952	0.4	1.8	1.2	0.8	1.2
CO₂ Emissions (million tonnes)	4 574	5 895	6 546	7 343	8 326	1.2	1.3	1.2	1.3	1.2
Electricity Generation	1 535	2 393	2 629	2 951	3 461	2.0	1.2	1.2	1.6	1.3
Transformation other than Electricity Generation	245	400	424	427	446	2.2	0.7	0.1	0.4	0.4
Industry	932	740	801	876	947	-1.0	1.0	0.9	0.8	0.9
Transport	1 223	1 777	2 046	2 387	2 721	1.7	1.8	1.6	1.3	1.5
Residential	390	363	385	399	405	-0.3	0.7	0.4	0.1	0.4
Commercial	248	223	261	303	347	-0.5	2.0	1.5	1.4	1.6
CO₂ Emissions Intensity										
CO ₂ emissions per GDP (tonnes per US\$ million)	886	585	499	414	364	-1.9	-2.0	-1.8	-1.3	-1.7
CO ₂ emissions per capita (tonnes per capita)	20.1	20.4	21.1	21.8	23.0	0.1	0.4	0.3	0.6	0.4

ENERGY INVESTMENT REQUIREMENTS

(Cumulative from 2003 -)	2010	2020	2030
Total (2000 US\$ billion)	431 - 565	868 - 1 150	1 354 - 1 751
Coal Production & Transportation	19 - 20	37 - 40	67 - 73
Oil & Gas Production & Processing	89 - 132	164 - 241	204 - 297
Oil & Gas International Trade	14 - 19	31 - 45	52 - 78
Oil & Gas Domestic Pipeline	81 - 115	178 - 254	224 - 320
Electricity Generation & Transmission	229 - 278	459 - 570	808 - 982