

CHAPTER - 3

ELECTRICITY GENERATION



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ELECTRICITY GENERATION

REVIEW

TOTAL GENERATION (UTILITIES + NON-UTILITIES)

Total electricity produced in the country including that from captive plants during the year 2004-05 was 665873 GWh as compared to 633275 GWh during the year 2003-04. The total generation has registered a growth of 5.15% over generation during previous year.

GENERATION (UTILITIES)

The All India gross electricity generation by the Public Utilities during the year 2004-05 was 594456 GWh as compared to 565102 GWh during 2003-04. The All India generation from utilities has shown a growth of 5.19%.

The generation from Hydro, Thermal, Nuclear and Non Conventional Energy Sources has been 84610 GWh, 488329 GWh, 17011 GWh and 4506 GWh respectively during the year 2004-05. The respective percentage of this generation with respect to gross generation from above sources has been 14.23%, 82.15%, 2.86% and 0.76%.

The Gross Generation during 2004-05 in Central, State and Private Sector was 220475, 315365 and 58616 GWh constituting 37.09%, 53.05% and 9.86% respectively.

GENERATION (NON-UTILITIES)

Besides electricity generation by the Public Utilities, during the year under review captive electricity generating plants of industries having captive generation of 1 MW & above has produced 71417 GWh comprising 44017GWh from Steam, 113 GWh from Hydro, 12040 GWh from diesel, 15052 GWh from Gas and 195 GWh from wind respectively. The captive generation has registered a growth of 4.76% over generation during previous year.

Various tables that appear in this Chapter give break-up details of electrical energy generation primemover-wise, State-wise, Region-wise and Sector-wise.



Table No. 3.1
GROSS ELECTRICAL ENERGY GENERATION IN THE COUNTRY (UTILITIES & NON-UTILITIES) PRIMEMOVERWISE DURING THE YEAR 2004-05

Gross Electrical Energy Generation (GWh)						
Year	Hydro	Steam	Diesel & RES (Including Wind)	Gas	Nuclear	Total
(I) Utilities Gross Electrical Energy Generation						
2004-05	84610.38	424244.06	7066.10	61524.66	17011.00	594456.20
2003-04	75242.48	407283.83	6866.95	57928.43	17780.00	565101.69
% increase	12.45	4.16	2.90	6.21	-4.33	5.19
(II) Non-Utilities Gross Electrical Energy Generation						
2004-05	112.77	44016.99	12234.81	15052.05	0.00	71416.62
2003-04	97.49	39610.29	13590.96	14874.38	0.00	68173.12
% increase	15.67	11.13	-9.98	1.19	0.00	4.76
(III) Total Gross Electrical Energy Generation						
2004-05	84723.15	468261.05	19300.91	76576.71	17011.00	665872.82
2003-04	75339.97	446894.12	20457.91	72802.81	17780.00	633274.81
% increase	12.45	4.78	-5.66	5.18	0.00	5.15



Gross Energy Generation (Utilities) during 2004-05 Total - 594456.20 GWh (MU)

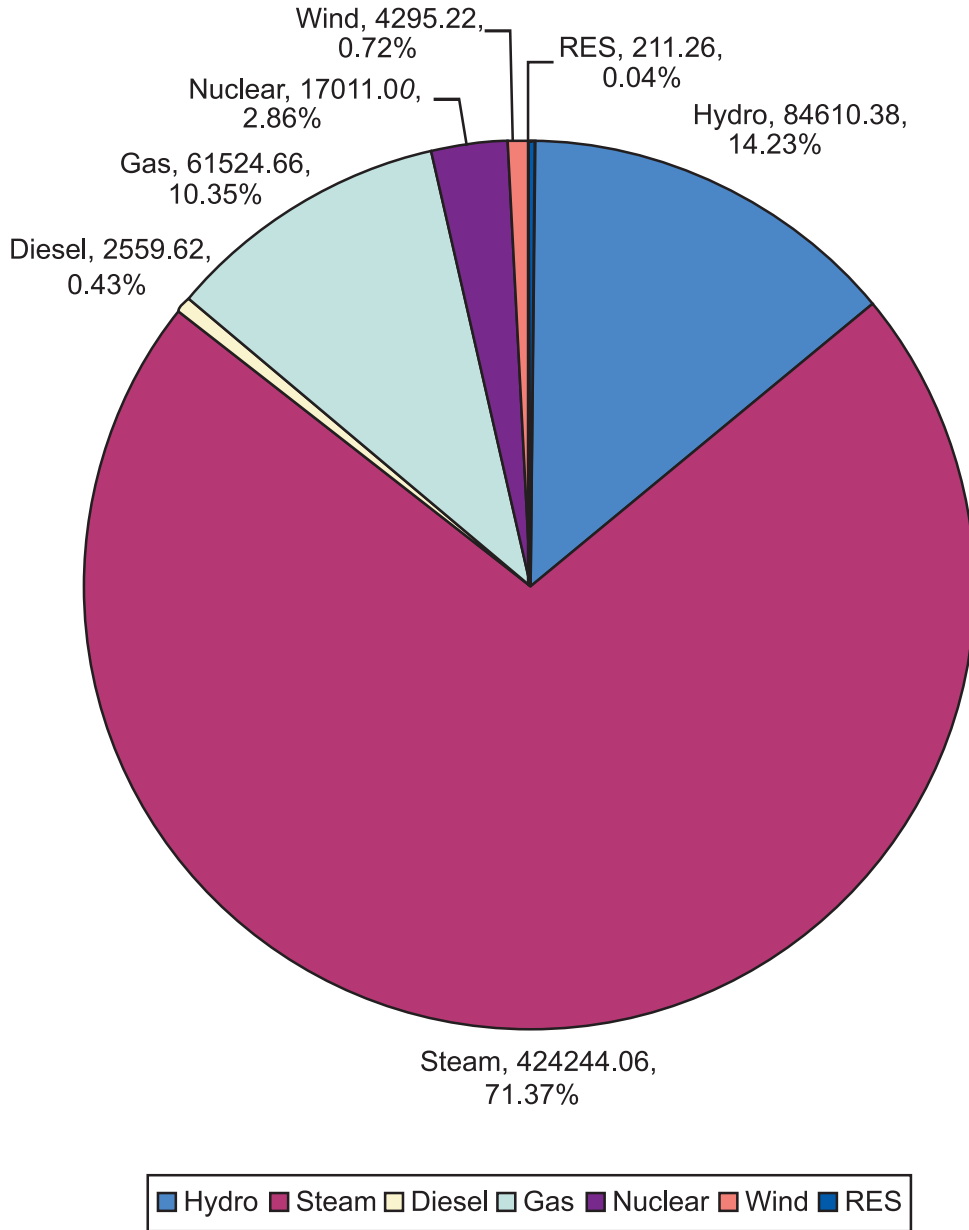




TABLE No. 3.2
ALL INDIA GROSS ELECTRICITY GENERATION (UTILITIES ONLY)
OWNERSHIPWISE AND PRIMEMOVER WISE DURING 2004-05

(IN GWh)

S. No.	State/U.Ts.	Hydro	Steam	Diesel	Gas	Nuclear	Renewable Energy Sources				Total
							Wind	Biomass Power	Biomass Gasifier	U & I	
1.1	State Electricity Board	28205.79	121705.05	296.95	8750.88	0.00	19.89	0.00	0.00	0.00	158978.56
1.2	Elect. Deptt./ Govt. Utg/ Corpns./Joint	32540.18	115052.21	329.28	8374.41	0.00	90.62	0.00	0.00	0.00	156386.70
1.3	Central Sector	20795.15	157481.48	0.00	25187.05	17011.00	0.00	0.00	0.00	0.00	220474.68
Sub-total Public Sector		81541.12	394238.74	626.23	42312.34	17011.00	110.51	0.00	0.00	0.00	535839.94
2 Private Sector											
2.1	Private Companies	3069.26	30005.32	1933.39	19212.32	0.00	4184.71	211.26	0.00	0.00	58616.26
Sub total Private Sector		3069.26	30005.32	1933.39	19212.32	0.00	4184.71	211.26	0.00	0.00	58616.26
Total All India		84610.38	424244.06	2559.62	61524.66	17011.00	4295.22	211.26	0.00	0.00	594456.20



TABLE No. 3.3
ALL INDIA GROSS ELECTRICAL ENERGY GENERATION
(UTILITIES ONLY) DURING 2004-05

State/U. Ts.	2003-04	2004-05	(GWh) % INCREASE
Haryana	10865.37	9847.31	-9.37
Himachal Pradesh	2810.95	2754.36	-2.01
Jammu & Kashmir	920.00	710.72	-22.75
Punjab	24047.89	21677.55	-9.86
Rajasthan	18614.08	20985.80	12.74
Uttar Pradesh	22835.51	20911.42	-8.43
Uttaranchal	4514.77	3113.13	-31.05
Chandigarh	0.00	0.00	0.00
Delhi	4906.69	5476.41	11.61
Central Sector NR	78147.73	84667.00	8.34
Sub-Total (N R)	167662.99	170143.70	1.48
Gujarat	38269.84	44230.80	15.58
Madhya Pradesh	15802.08	15975.24	1.10
Chhattisgarh	7916.43	8307.60	4.94
Maharashtra	66390.48	67078.27	1.04
Goa	202.27	336.16	66.19
D. & N. Haveli	0.00	0.00	0.00
Daman & Diu	0.00	0.00	0.00
Central Sector WR	45494.61	48156.34	5.85
Sub-Total (W R)	174075.71	184084.41	5.75
Andhra Pradesh	32913.93	37305.14	13.34
Karnataka	22996.43	23515.43	2.26
Kerala	5629.02	6514.95	15.74
Tamil Nadu	30353.93	32229.72	6.18
Lakshadweep	21.87	22.61	3.38
Pondicherry	275.42	275.41	0.00
Central Sector SR	47260.52	46623.64	-1.35
Sub-Total (S R)	139451.12	146486.90	5.05
Bihar	447.38	206.99	-53.73
Jharkhand	4438.83	4168.29	-6.09
Orissa	9119.33	10307.96	13.03
West Bengal	23508.42	24888.26	5.87
D.V.C.	10014.79	10845.28	8.29
A. & N. Islands	157.61	129.60	-17.77
Sikkim	36.00	58.83	63.42
Central Sector ER	29527.42	35203.03	19.22
Sub-Total (E R)	77249.78	85808.24	11.08
Assam	848.27	903.24	6.48
Manipur	0.00	1.32	0.00
Meghalaya	597.03	637.65	6.80
Nagaland	23.55	3.50	-85.14
Tripura	501.48	554.76	10.62
Arunachal Pradesh	29.00	2.00	-93.10
Mizoram	10.56	5.81	-44.98
Central Sector NER	4652.20	5824.67	25.20
Sub-Total (N E R)	6662.09	7932.95	19.08
Central Sector All India	220474.68	220474.68	0.00
Total All India	565101.69	594456.20	5.19



TABLE NO.3.4
GROSS ELECTRICAL ENERGY GENERATION (UTILITIES ONLY)
PRIMEMOVERWISE, REGIONWISE/STATEWISE DURING 2004-05

(GWh)

State/U.Ts.	Renewable Energy Sources									Total
	Hydro	Steam	Diesel	Gas	Nuclear	Wind	Biomass Power	Biomass Gasifier	U & I	
Haryana	2990.43	6856.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9847.31
Himachal Pradesh	2754.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2754.36
Jammu & Kashmir	686.98	0.00	0.00	23.74	0.00	0.00	0.00	0.00	0.00	710.72
Punjab	7293.15	14384.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21677.55
Rajasthan	2623.96	17641.59	0.00	353.85	0.00	331.53	34.87	0.00	0.00	20985.80
Uttar Pradesh	1207.62	19703.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20911.42
Uttaranchal	3113.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3113.13
Chandigarh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Delhi	0.00	1385.21	0.00	4091.20	0.00	0.00	0.00	0.00	0.00	5476.41
Central Sector NR	15457.90	46183.90	0.00	15522.20	7503.00	0.00	0.00	0.00	0.00	84667.00
Sub-Total (N R)	36127.53	106155.78	0.00	19990.99	7503.00	331.53	34.87	0.00	0.00	170143.70
Gujarat	872.75	30122.16	0.00	12885.89	0.00	350.00	0.00	0.00	0.00	44230.80
Madhya Pradesh	2433.88	13502.60	0.00	0.00	0.00	38.76	0.00	0.00	0.00	15975.24
Chhattisgarh	382.61	7924.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8307.60
Maharashtra	5588.48	55544.24	0.00	5450.19	0.00	495.36	0.00	0.00	0.00	67078.27
Goa	0.00	0.00	0.00	336.16	0.00	0.00	0.00	0.00	0.00	336.16
D. & N. Haveli	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daman & Diu	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Central Sector WR	1331.85	34870.38	0.00	6854.11	5100.00	0.00	0.00	0.00	0.00	48156.34
Sub-Total (W R)	10609.57	141964.37	0.00	25526.35	5100.00	884.12	0.00	0.00	0.00	184084.41
Andhra Pradesh	5514.76	23359.70	0.00	8269.89	0.00	160.79	0.00	0.00	0.00	37305.14
Karnataka	8935.47	12697.68	554.96	661.40	0.00	489.53	176.39	0.00	0.00	23515.43
Kerala	6081.50	0.00	312.06	118.89	0.00	2.50	0.00	0.00	0.00	6514.95
Tamil Nadu	4419.31	21358.71	1544.30	2481.10	0.00	2426.30	0.00	0.00	0.00	32229.72
Lakshadweep	0.00	0.00	22.61	0.00	0.00	0.00	0.00	0.00	0.00	22.61
Pondicherry	0.00	0.00	0.00	275.41	0.00	0.00	0.00	0.00	0.00	275.41
Central Sector SR	0.00	41593.90	0.00	621.74	4408.00	0.00	0.00	0.00	0.00	46623.64
Sub-Total (S R)	24951.04	99009.99	2433.93	12428.43	4408.00	3079.12	176.39	0.00	0.00	146486.90
Bihar	153.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	206.99	360.48
Jharkhand	148.74	4019.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4168.29
Orissa	7142.54	3165.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10307.96
West Bengal	530.39	24356.79	0.63	0.00	0.00	0.45	0.00	0.00	0.00	24888.26
D.V.C.	259.91	10585.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10845.28
A. & N. Islands	6.80	0.00	122.80	0.00	0.00	0.00	0.00	0.00	0.00	129.60
Sikkim	58.67	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	58.83
Central Sector ER	369.73	34833.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35203.03
Sub-Total (E R)	8570.28	77113.92	123.59	0.00	0.00	0.45	0.00	0.00	0.00	85808.24
Assam	0.00	0.00	0.00	903.24	0.00	0.00	0.00	0.00	0.00	903.24
Manipur	0.00	0.00	1.32	0.00	0.00	0.00	0.00	0.00	0.00	1.32
Meghalaya	637.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	637.65
Nagaland	3.40	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	3.50
Tripura	68.11	0.00	0.00	486.65	0.00	0.00	0.00	0.00	0.00	554.76
Arunachal Pradesh	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
Mizoram	5.13	0.00	0.68	0.00	0.00	0.00	0.00	0.00	0.00	5.81
Central Sector NER	3635.67	0.00	0.00	2189.00	0.00	0.00	0.00	0.00	0.00	5824.67
Sub-Total (N E R)	4351.96	0.00	2.10	3578.89	0.00	0.00	0.00	0.00	0.00	7932.95
Central Sector										
All India	20795.15	157481.48	0.00	25187.05	17011.00	0.00	0.00	0.00	0.00	220474.68
Total All India	84610.38	424244.06	2559.62	61524.66	17011.00	4295.22	211.26	0.00	0.00	594456.20

(^): Includes the generation of Small Hydro Projects.



TABLE No.3.5
GROSS ELECTRICAL ENERGY GENERATION BY STATE ELECTRICITY
BOARDS PRIME-MOVERWISE DURING 2004-2005.

State/U.Ts.										<i>(IN GWh)</i>
							Renewable Energy Sources			Total
	Hydro	Steam	Diesel	Gas	Nuclear	Wind	Biomass Power	Biomass Gasifier	U & I	
Himachal Pradesh	1287.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1287.26
Punjab	7289.51	14384.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21673.91
Sub Total NR	8576.77	14384.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22961.17
Gujarat	872.75	22062.63	0.00	1876.18	0.00	0.00	0.00	0.00	0.00	24811.56
Madhya Pradesh	2404.13	13502.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15906.73
Chhattisgarh	382.61	7924.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8307.60
Maharashtra	4149.94	42929.40	0.00	4115.17	0.00	0.00	0.00	0.00	0.00	51194.51
Sub Total WR	7809.43	86419.62	0.00	5991.35	0.00	0.00	0.00	0.00	0.00	100220.40
Kerala	6081.50	0.00	296.32	0.00	0.00	2.25	0.00	0.00	0.00	6380.07
Tamil Nadu	4419.31	20004.00	0.00	2003.10	0.00	17.64	0.00	0.00	0.00	26444.05
Sub Total SR	10500.81	20004.00	296.32	2003.10	0.00	19.89	0.00	0.00	0.00	32824.12
Bihar	2.00	153.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	155.49
Jharkhand	148.74	743.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	892.28
West Bengal	530.39	0.00	0.63	0.00	0.00	0.00	0.00	0.00	0.00	531.02
Sub Total ER	681.13	897.03	0.63	0.00	0.00	0.00	0.00	0.00	0.00	1578.79
Assam	0.00	0.00	0.00	756.43	0.00	0.00	0.00	0.00	0.00	756.43
Meghalaya	637.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	637.65
Sub Total NER	637.65	0.00	0.00	756.43	0.00	0.00	0.00	0.00	0.00	1394.08
Total (All Boards)	28205.79	121705.05	296.95	8750.88	0.00	19.89	0.00	0.00	0.00	158978.56



TABLE No.3.6
GROSS ELECTRICAL ENERGY GENERATION BY ELECTRICITY
DEPARTMENTS,GOVT. UNDERTAKINGS,CENTRAL SECTOR,MUNICIPALITIES AND
PRIVATE SECTOR-PRIME MOVER-WISE DURING 2004-05

State/U.Ts.	(IN GWh)									Total
	Hydro	Steam	Diesel	Gas	Nuclear	Renewable Energy Sources			U & I	
						Wind	Biomass Power	Biomass Gasifier		
Haryana	2990.43	6856.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9847.31
Rajasthan	2623.96	17641.59	0.00	353.85	0.00	48.76	0.00	0.00	0.00	20668.16
Jammu & Kashmir	686.98	0.00	0.00	23.74	0.00	0.00	0.00	0.00	0.00	710.72
Uttar Pradesh	1207.62	19703.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20911.42
Uttaranchal	3113.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3113.13
Delhi	0.00	1385.21	0.00	4091.20	0.00	0.00	0.00	0.00	0.00	5476.41
Chandigarh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Central Sector(NR)	15457.90	46183.90	0.00	15522.20	7503.00	0.00	0.00	0.00	0.00	84667.00
Sub Total (NR)	26080.02	91771.38	0.00	19990.99	7503.00	48.76	0.00	0.00	0.00	145394.15
Gujarat	0.00	3217.57	0.00	1151.19	0.00	25.00	0.00	0.00	0.00	4393.76
Madhya Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Goa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Central Sector (WR)	1331.85	34870.38	0.00	6854.11	5100.00	0.00	0.00	0.00	0.00	48156.34
Sub Total (WR)	1331.85	38087.95	0.00	8005.30	5100.00	25.00	0.00	0.00	0.00	52550.10
Andhra Pradesh	5514.76	23359.70	0.00	1992.37	0.00	1.36	0.00	0.00	0.00	30868.19
Karnataka	8805.24	10730.91	271.14	0.00	0.00	15.05	0.00	0.00	0.00	19822.34
Lakshadweep	0.00	0.00	22.61	0.00	0.00	0.00	0.00	0.00	0.00	22.61
Pondicherry	0.00	0.00	0.00	275.41	0.00	0.00	0.00	0.00	0.00	275.41
Central Sector (SR)	0.00	41593.90	0.00	621.74	4408.00	0.00	0.00	0.00	0.00	46623.64
Sub Total (SR)	14320.00	75684.51	293.75	2889.52	4408.00	16.41	0.00	0.00	0.00	97612.19
Bihar	51.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.50
Jharkhand	0.00	1326.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1326.20
Orissa	7142.54	3165.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10307.96
West Bengal	0.00	17079.56	0.00	0.00	0.00	0.45	0.00	0.00	0.00	17080.01
Sikkim	58.67	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	58.83
D.V.C.	259.91	10585.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10845.28
A. & N. Islands	6.80	0.00	33.27	0.00	0.00	0.00	0.00	0.00	0.00	40.07
Central Sector (ER)	369.73	34833.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35203.03
Sub Total (ER)	7889.15	66989.85	33.43	0.00	0.00	0.45	0.00	0.00	0.00	74912.88
Manipur	0.00	0.00	1.32	0.00	0.00	0.00	0.00	0.00	0.00	1.32
Nagaland	3.40	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	3.50
Tripura	68.11	0.00	0.00	486.65	0.00	0.00	0.00	0.00	0.00	554.76
Arunachal Pradesh	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
Mizoram	5.13	0.00	0.68	0.00	0.00	0.00	0.00	0.00	0.00	5.81
Central Sector (NER)	3635.67	0.00	0.00	2189.00	0.00	0.00	0.00	0.00	0.00	5824.67
Sub Total (NER)	3714.31	0.00	2.10	2675.65	0.00	0.00	0.00	0.00	0.00	6392.06
Total-I, (All India)	53335.33	272533.69	329.28	33561.46	17011.00	90.62	0.00	0.00	0.00	376861.38



TABLE No.3.6 (Contd.)
GROSS ELECTRICAL ENERGY GENERATION BY ELECTRICITY
DEPARTMENTS,GOVT. UNDERTAKINGS,CENTRAL SECTOR,MUNICIPALITIES AND
PRIVATE SECTOR-PRIME MOVER-WISE DURING 2004-05

State/U.Ts.										(IN GWh)
	Hydro	Steam	Diesel	Gas	Nuclear	Renewable Energy Sources			U & I	Total
						Wind	Biomass Power	Biomass Gasifier		
PRIVATE SECTOR										
Haryana	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Himachal Pradesh	1467.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1467.10
Jammu & Kashmir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Punjab	3.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.64
Rajasthan	0.00	0.00	0.00	0.00	0.00	282.77	34.87	0.00	0.00	317.64
Uttar Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Delhi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gujarat	0.00	4841.96	0.00	9858.52	0.00	325.00	0.00	0.00	0.00	15025.48
Madhya Pradesh	29.75	0.00	0.00	0.00	0.00	38.76	0.00	0.00	0.00	68.51
Chhattisgarh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maharashtra	1438.54	12614.84	0.00	1335.02	0.00	495.36	0.00	0.00	0.00	15883.76
Goa	0.00	0.00	0.00	336.16	0.00	0.00	0.00	0.00	0.00	336.16
Andhra Pradesh	0.00	0.00	0.00	6277.52	0.00	159.43	0.00	0.00	0.00	6436.95
Karnataka	130.23	1966.77	283.82	661.40	0.00	474.48	176.39	0.00	0.00	3693.09
Kerala	0.00	0.00	15.74	118.89	0.00	0.25	0.00	0.00	0.00	134.88
TamilNadu	0.00	1354.71	1544.30	478.00	0.00	2408.66	0.00	0.00	0.00	5785.67
Bihar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jharkhand	0.00	1949.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1949.81
Orissa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
West Bengal	0.00	7277.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7277.23
A&N Islands	0.00	0.00	89.53	0.00	0.00	0.00	0.00	0.00	0.00	89.53
Assam	0.00	0.00	0.00	146.81	0.00	0.00	0.00	0.00	0.00	146.81
Tripura	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arunachal Pradesh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total-II, (All India)	3069.26	30005.32	1933.39	19212.32	0.00	4184.71	211.26	0.00	0.00	58616.26
All India Total (I+II)	56404.59	302539.01	2262.67	52773.78	17011.00	4275.33	211.26	0.00	0.00	435477.64