PREFACE

The Electricity Act, 2003 was enacted by the Parliament to provide for the rationalization of the production and supply of electricity and generally for taking measures conducive to optional development of electrical power in India. The said Act has envisaged creation of Central Electricity Authority with certain specified statutory functions to be performed in co-ordination with various power sector organizations. Section 73(f) of the Electricity Act 2003 also specifically envisages promotion and assistance in the timely completion of the schemes for improving and augmenting the electricity system.

The Central Electricity Authority plays an important role in promoting and assisting the completion of schemes on schedule. The schemes pertaining to the transmission and transformation works are monitored by the Power System Project Monitoring (PSPM) Division in the Central Electricity Authority.

The present report is the outcome of the series of review meetings held with the States and the Central Power Utilities in the Power System Project Monitoring Division of the Central Electricity Authority. An ambitious programme of additional generation capacity of about 41,000 MW during 10^{th} plan period has been envisaged. Associated transmission system for evacuation of power from the above capacity has necessarily to be completed to match the commissioning of the generating projects. In addition, the transmission system augmentation is also required to facilitate delivery of power to the load center of the State utilities. To assist in and ensure completion of the transmission works, officers of PSPM Division visit the construction sites of transmission works on regular basis to review the progress of construction and to help the project authorities in resolution of the problems, if any. The present Report covers the details of transmission schemes at 220 kV and above for the period 2002-05. The progress of Transmission works of 132 kV and 66 kV are also monitored in certain vital cases as also for all the States of the North-Eastern Region has also been reported. The report also includes construction programme for the year 2005-06 on All India basis.

Acknowledgements are due to the State Electricity Boards, State Governments and State and Central Power Utilities who have attended various review meetings and furnished information as requested by the Central Electricity Authority.

New Delhi
March, 2005

(V.Ramakrishna)
Member (Power System)
Central Electricity Authority

TRANSMISSION CAPACITY ADDITION PROGRAMME DURING 2005-06

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INTRODUCTION

1.1 The role of electricity sector in an economy hardly needs to be emphasised. Not withstanding the substantial development made in the power sector in the country, most of the regions in the country are suffering from shortage of electricity. Adequate capacity addition and its utilization in the most optional manner remains the most important aspect of the power development.

Commensurate with the capacity addition, an extensive network of transmission and distribution has been developed over the years for evacuating power produced and utilizing the same by the ultimate consumers. The new capacity additions call for further expansion of the transmission system. The addition programme is being continuously monitored by the Power System Project Monitoring Division in the Central Electricity Authority.

1.2 MONITORING

The objective of Project Monitoring as enunciated under Section 73(f) of the Electricity Act, 2003 is to ensure timely completion of the schemes. The objective of monitoring is realised through the managerial techniques of "Planning & Control". The two deliberative elements of Planning & Control are essential to every phase of capacity additions in the transmission systems. They are inter-dependent functions, for the one loses its significance without the other.

The primary responsibility arising under the planning element is the determination of the Programme of Construction for the year and laying down the general principles on the basis of which it will operate. These general principles basically involves availability of the finances, land and various clearances to undertake construction works etc. The construction programme for the year is decided and distributed properly into the four quarters of the year.

The control function is generally exercised by comparing of actual results with pre-determined programme or targets and taking corrective measures where deviation occurs. There are several phases to the effective use of monitoring functions, the achievements of programme is certainly of first importance.

1.3 ROLE OF CEA

The Central Electricity Authority is a the key institution in promoting and assisting the timely completion of the schemes for improving and augmenting the electricity system. The Power System Project Monitoring Division which acts as a facilitator in expediting construction of the transmission schemes and renders valuable help to the Utilities in solving their problems like technical, financial and arranging various clearances like forest clearance from MOE&F etc.. The site visits by the officers of the Power System Project Monitoring Division and the "Review Meetings" held in the Central Electricity Authority with the Utility representatives provide an excellent ground for inter-action to identify bottlenecks and identify action required to ensure completion of schemes as per targets.

1.4 PROGRAMME FOR 2005-06

Review meetings were held with states Power utilities and PGCIL during December 2004 and January 2005 to identify the transmission programme to be completed in the coming year i.e. 2005-06. The representatives of various agencies also held detailed discussion with CEA officers regarding their performance during the year 2004-05. Based on the inputs given by power utilities, the programme of construction of Transmission lines and Sub-Stations (220 kV and above), for the year 2005-06 has been finalized.

CHAPTER – 1

TRANSMISSION CAPACITY ADDITIONS DURING 2004-05

The programme for construction of transmission works (220 kV and above) during 10th plan for evacuation of power from generating stations as well as for strengthening of power system network was developed on the basis of capacity addition programme. The net achievement of the transmission capacity additions during the last two years is given below.

A. TRANSMISSION LINES:- (All figures in ckm)

	TRANSMISSION CAPACITY ADDITIONS DURING 2004-05				
	Prog. 2004-05	Ach. (upto Mar-05) 2004-05	Ach as % of prog. 2004-05	Ach. 2003-04	Growth as % of 2003-04 2004-05
1	2	3	4	5	6
765 kV lines	71	45	63.4	78	57.7
± 500 kV HVDC	0	0	0.0	0	0.0
400 kV lines	4677	5366	114.7	3279	163.6
220 kV lines	2429	2808	115.6	3751	74.9

B. SUBSTATIONS:- (All figures in MVA/MW)

± 500 kV HVDC CONVERTER TER.	0	0	0.0	2000	-
HVDC B/B S/S	500	500	100.0	0	-
400 kV S/S	5225	2705	51.8	4465	60.6
220 kV S/S	6493	9162	141.1	8422	108.8

Details of year wise targets vs achievements of Transmission Lines and Sub-Stations for various voltage level is given in tables 1.1(a), 1.1(b).

CHAPTER – 2

CONSTRUCTION PROGRAMME OF TRANSMISSION SCHEMES FOR THE YEAR 2005-06

The construction programme of transmission schemes (220 kV and above) for the year 2005-06 was formulated in consultation with Central and State Power Utilities during the meeting with Central and State power utilities and are listed in the Annexure.

± 500 kV HVDC lines are not proposed during the current year. The programme of construction of 400 kV and 220 kV transmission lines for the year 2005-06 is 82.34 % and 112.72 % respectively of the last year programme. Similarly, the programme for transformation capacity additions at 400 kV and 220 kV levels which is 160.77 % and 118.9 % respectively of last year programme.

Table 2.1 depicts the achievements during 2003-04 and 2004-05 and the programme of construction of the transmission schemes (220 kV and above) for the year 2005-06 at various voltage levels. Table 2.2(a) depicts the utility wise details of construction programme of transmission lines and table 2.2(b) depicts same for the transformation works (220 kV and above) for the year 2005-06 quarterwise.

The list at Annexure given at the end indicates the transmission lines and the sub-stations scheduled for completion during the year 2005-06 and also the transmission lines under construction scheduled for commissioning during the subsequent years, mainly the power evacuation lines associated with generating stations.

TABLE - 2.2(b)

TRANSFORMATION CAPACITY (MVA) ADDITIONS OF 400 KV & 220 kV IN INDIA

	400 KV SUB-STATION (MVA)						220 KV SUB-STATION (MVA)					
	CENTRAL		STATE		TOTAL		CENTRAL		STATE		TOTAL	
	Programme	Achievement	Programme	Achievement	Programme	Achievement	Programme	Achievement	Programme	Achievement	Programme	Achievement
1. Sub-Station (MVA) existing at the end of 6th plan												
		715		8615	0	9330		500	0	36791	0	37291
2. Addition during 7th plan:												
85-86	1395	1395	1185	630	2580	2025	800	781	3265	2275	4065	3056
86-87	1065	1065	2195	2195	3260	3260	150	300	2485	2335	2635	2635
87-88	565	250	945	1750	1510	2000	300	150	2380	2770	2680	2920
88-89	1195	1575	1240	815	2435	2390	150	150	2686	3500	2836	3650
89-90	1575	1760	700	815	2275	2575	150	0	2956	4190	3106	4190
Total	5795	6045	6265	6205	12060	12250	1550	1381	13772	15070	15322	16451
3. Total at the end of 7th plan:												
		6760		14820		21580		1881		51861		53742
4. Addition during 1990-92:												
90-91	1890	1260	830	0	2720	1260	150	250	2898	4050	3048	4300
91-92	1825	1890	630	830	2455	2720	0	0	2571	2943	2571	2943
Total	3715	3150	1460	830	5175	3980	150	250	5469	6993	5619	7243
5. Total at the end of 1991-92:												
		9910		15650		25560		2131		58854		60985
6. Addition during 8th plan:												
92-93	2770	2455	1120	1710	3890	4165	300	150	2648	3992	2948	4142
93-94	1890	2140	1070	1070	2960	3210	185	150	3305	3903	3490	4053
94-95	315	315	2260	2075	2575	2390	35	35	3245	3495	3280	3530
95-96	1260	1260	1575	2075	2835	3335	0	0	2535	5790.5	2535	5790.5
96-97	1260	1260	3075	945	4335	2205	35	100	6800	5576.5	6835	5676.5
Total	7495	7430	9100	7875	16595	15305	555	435	18533	22757	19088	23192
7. Total at the end of 8th plan:												
		17340		23525		40865		2566		81611		84177
8. Addition during 9th plan:												
97-98	1260	945	1890	1260	3150	2205	50	0	5360	6016	5410	6016
98-99	0	630	2205	2205	2205	2835	150	50	4690	5435	4840	5485
99-2000	3085	2455	3905	3775	6990	6230	100	150	5335	8060	5435	8210
2000-01	1575	1575	4280	2520	5855	4095	150	0	6045	8155	6195	8155
2001-02	1575	1575	4780	3520	6355	5095	100	100	5310	4220	5410	4320
Total	7495	7180	17060	13280	24555	20460	550	300	26740	31886	27290	32186
9. Total at the end of 9th plan:												
		24520		**36805**		**61325**		**2866**		**113497**		**116363**
10. Addition during 10th plan:												
2002-03	3335	3650	1890	1345	5225	4995	150	150	5051.5	5315	5201.5	5465
2003-04	2205	1260	4150	3205	6355	4465	250	50	6283	8372	6533	8422
2004-05	2205	945	3020	1445	5225	2390	460	500	6033	7812	6493	8312
Total	7745	5855	9060	5995	16805	11850	860	700	17367.5	21499	18227.5	22199
11. Total at the end of 3rd year of 10th plan:												
		30375		**42800**		**73175**		**3566**		**134996**		**138562**

For 2004-05 Achievement is upto Feb-05

TABLE - 2.2(a)

TRANSFORMATION CAPACITY (MVA)/(MW) ADDITIONS OF +/- 500 KV HVDC TERMINALS & HVDC (BACK-TO-BACK) SUB-STATIONS (MW) IN INDIA

	+/- 500 KV HVDC CONVERTER TERMINALS (MW)						HVDC (BACK-TO-BACK) SUB-STATIONS (MW)					
	CENTRAL		STATE		TOTAL		CENTRAL		STATE		TOTAL	
	Programme	Achievement	Programme	Achievement	Programme	Achievement	Programme	Achievement	Programme	Achievement	Programme	Achievement
1. Sub-staton (MW) existing at the end of 8th plan												
		3000		0		3000		500		0	0	500
2. Addition during 9th plan:												
97-98	0	0		0	0	0		1000	0	0	0	1000
98-99	0	0	3000	3000	3000	3000		500	0	0	0	500
99-2000	0	0	0	0	0	0	0	0	0	0	0	0
2000-01	0	0	0	0	0	0	0	0	0	0	0	0
2001-02	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	3000	3000	3000	3000	0	1500	0	0	0	1500
3. Total at the end of 9th plan:												
		3000		**3000**		**6000**		**2000**		**0**		**2000**
4. Addition during 10th plan:												
2002-03	2000	2000	0	0	2000	2000	500	500	0	0	500	500
2003-04	2000	2000	0	0	2000	2000	0	0	0	0	0	0
2004-05	0	0	0	0	0	0	500	500	0	0	500	500
Total	4000	4000	0	0	4000	4000	1000	1000	0	0	1000	1000
5. Total at the end of 3rd year of 10th plan:												
		7000		**3000**		**10000**		**3000**		**0**		**3000**

For 2004-05 Achievement is upto Feb-05

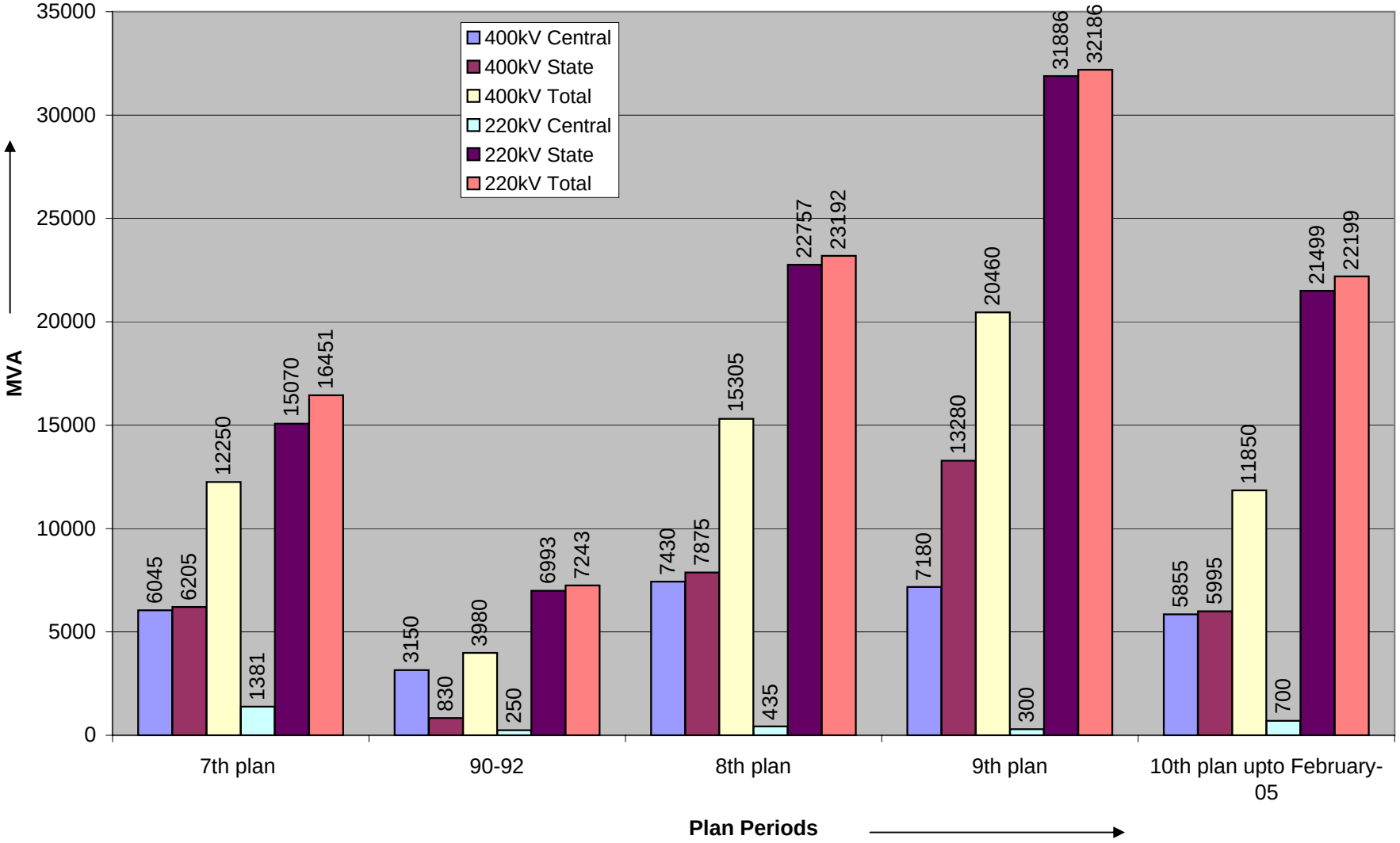
A. Growth in Transmission lines (ckm) during :

		7th plan	90-92	8th plan	9th plan	10th plan upto February-05
765 kV	Central	0	0	0	751	153
	State	0	0	0	409	0
	Total	**0**	**0**	**0**	**1160**	**153**
400 kV	Central	11237	3721	6212	6344	9389
	State	2558	2545	3840	6892	2172
	Total	**13795**	**6266**	**10052**	**13236**	**11561**
220 kV	Central	2919	532	1472	2123	518
	State	10707	4866	13099	15270	8884
	Total	**13626**	**5398**	**14571**	**17393**	**9402**

B. Growth in Sub-Station (MVA) during :

		7th plan	90-92	8th plan	9th plan	10th plan upto February-05
400kV	Central	6045	3150	7430	7180	5855
	State	6205	830	7875	13280	5995
	Total	**12250**	**3980**	**15305**	**20460**	**11850**
220kV	Central	1381	250	435	300	700
	State	15070	6993	22757	31886	21499
	Total	**16451**	**7243**	**23192**	**32186**	**22199**

Growth in Sub-Stations (MVA) During Various Plan Periods



Growth in Transmission Lines (CKm) During Various Plan Periods

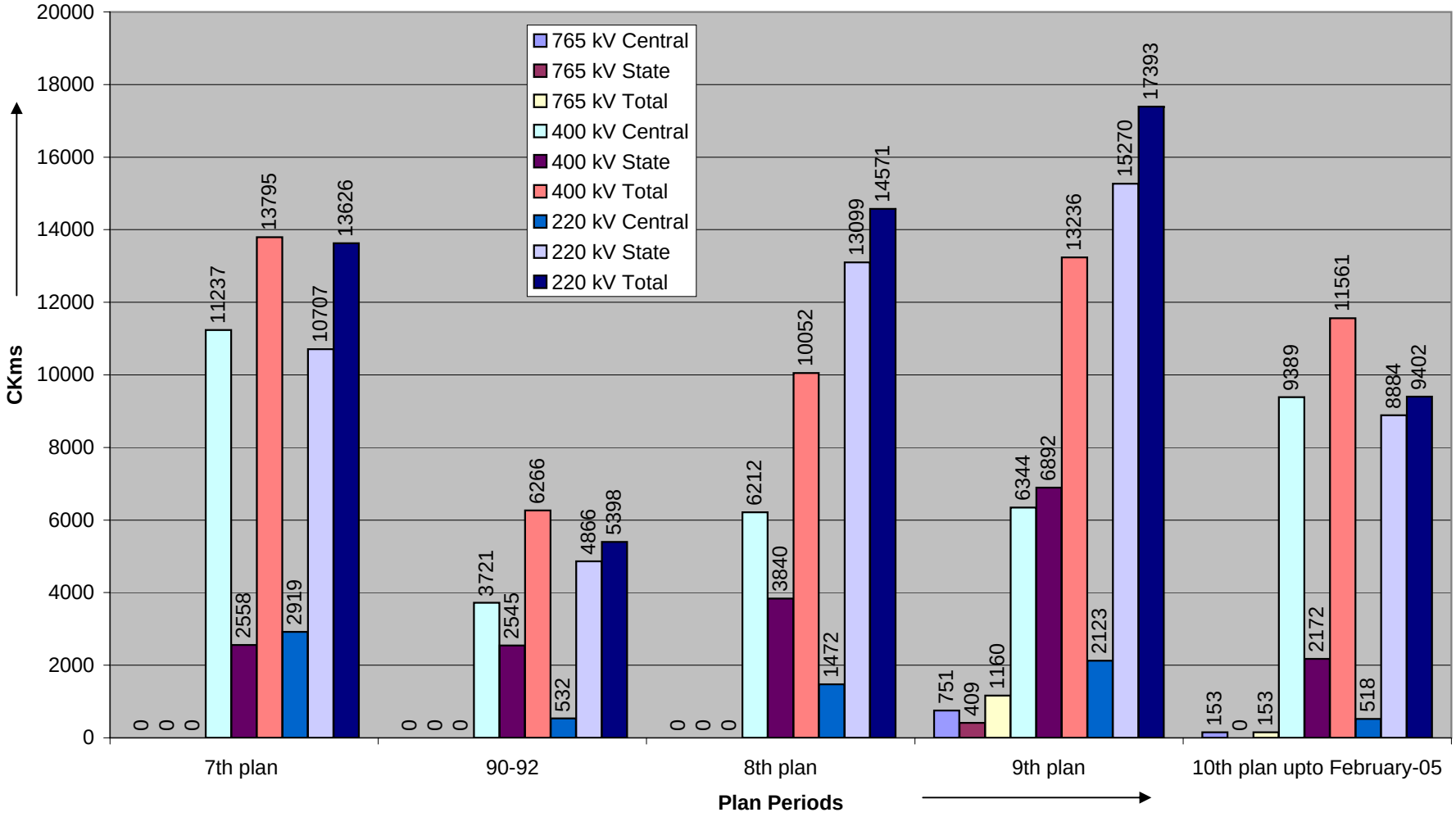


TABLE – 2.1

ABSTRACT OF THE CONSTRUCTION PROGRAMME OF THE TRANSMISSION SCHEMES (220 kV AND ABOVE) FOR THE YEAR 2005-06

ANNUAL ACTION PLAN

TRANSMISSION LINES (CKM) :

Voltage Level	Quarter (2005-06)				Total 2005-06
	1st	2nd	3rd	4th	
765 kV	0	0	30	75	105
+/- 500 kV HVDC	0	0	0	0	0
400 kV	750	885	1060	1155	3850
220 kV	434	569	790	945	2738

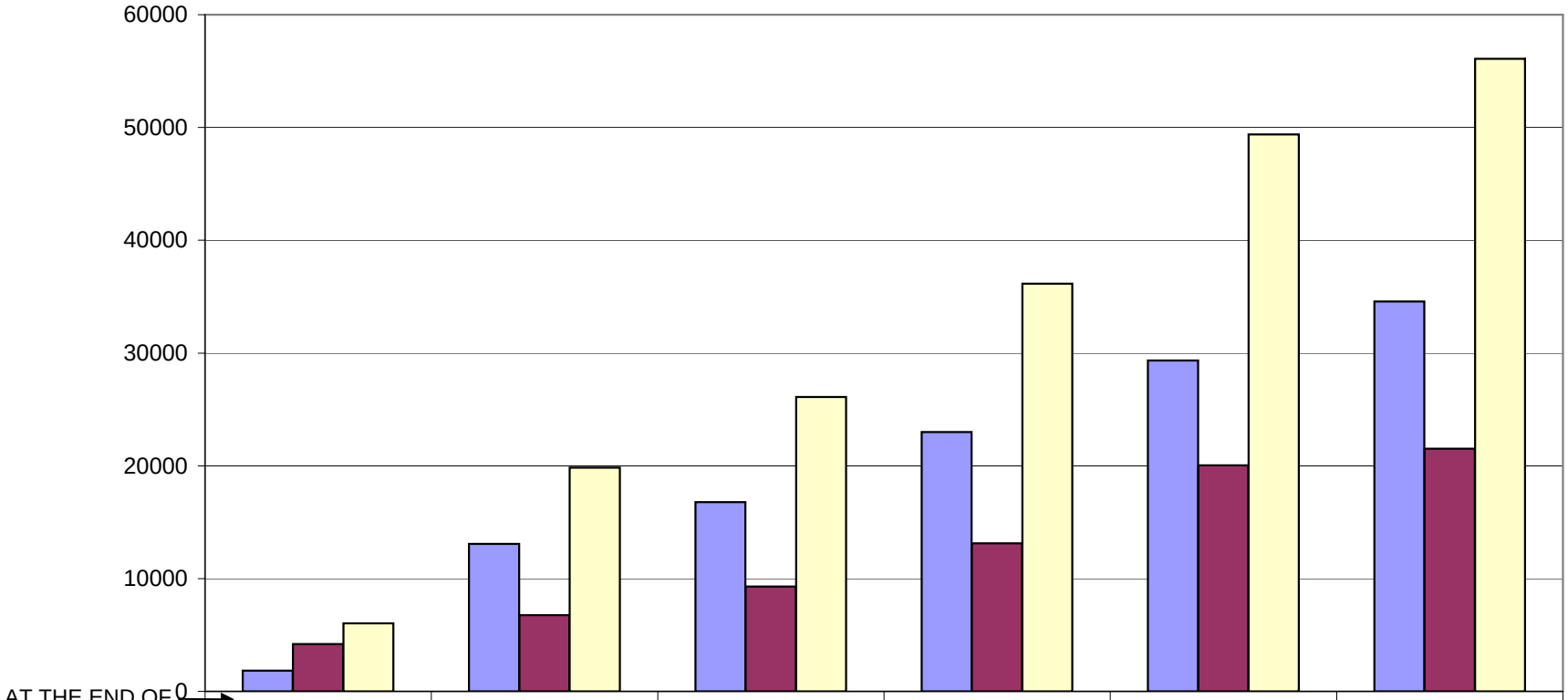
SUB-STATIONS (MVA/MW) :

Voltage Level	Quarter (2005-06)				Total 2005-06
	1st	2nd	3rd	4th	
HVDC TER.	0	0	0	0	0
HVDC B/B	0	0	0	0	0
400 kV	1575	1365	1890	2625	7455
220 kV	1170	1730	2135	2685	7720

NOTE :- The details of the construction programme of transmission lines and transformation works (220 kV and above) for the year 2005-06 utility wise are given in table – 2.2(a) and 2.2(b).

Chart-1/4

400 KV TRANSMISSION LINES (CKM) EXISTING AT THE END OF VARIOUS PLAN PERIODS IN THE COUNTRY

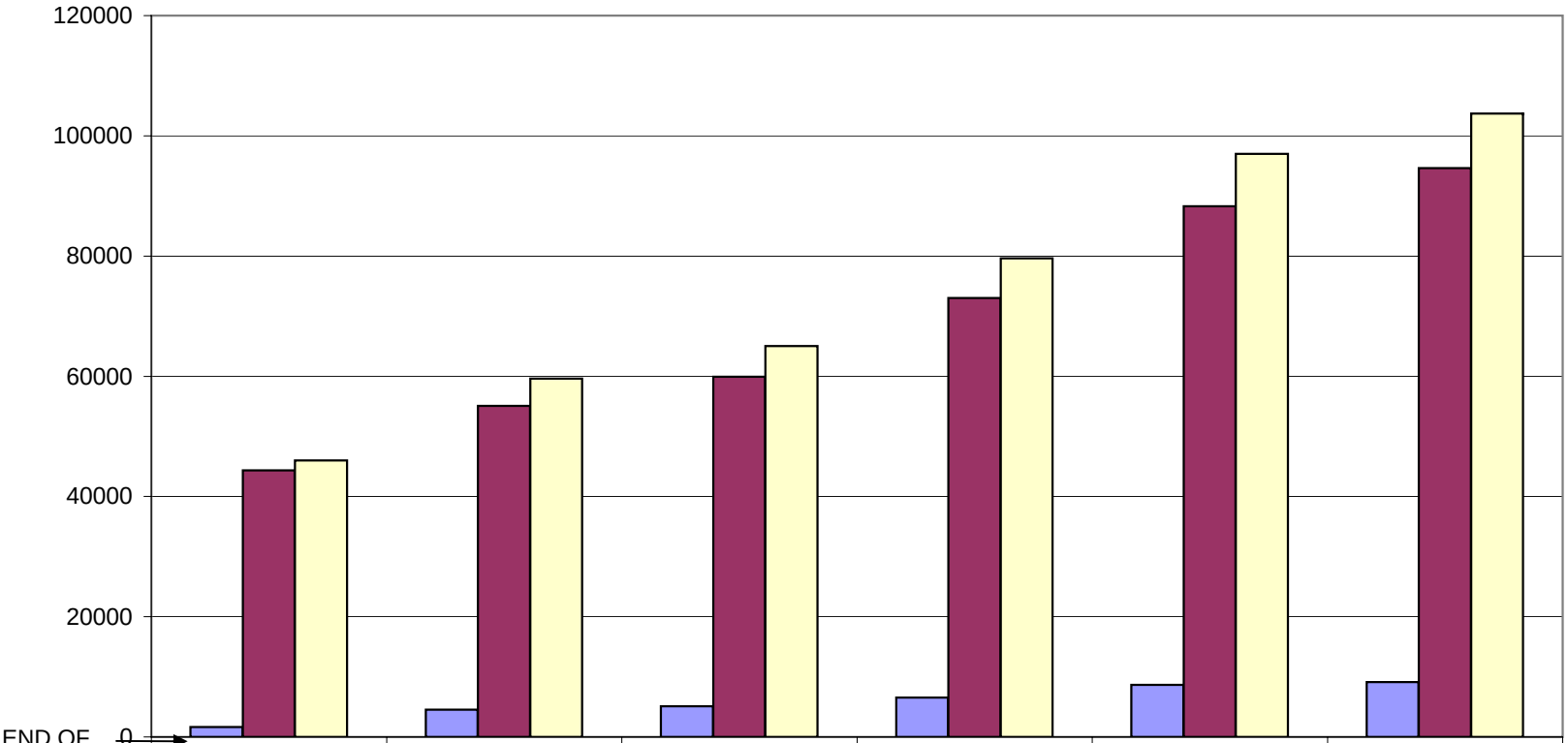


	VI PLAN (MAR'85)	VII PLAN (MAR'90)	ANNUAL PLANS (1990-92)	VIII PLAN (MAR'97)	IX PLAN (MAR'02)	2ND YEAR OF 10TH PLAN (MAR'04)
CENTRAL	1831	13068	16789	23001	29345	34562
STATE	4198	6756	9301	13141	20033	21528
TOTAL	6029	19824	26090	36142	49378	56090

(All figures in ckm)

Chart-2/4

220 KV TRANSMISSION LINES (CKM) EXISTING AT THE END OF VARIOUS PLAN PERIODS IN THE COUNTRY

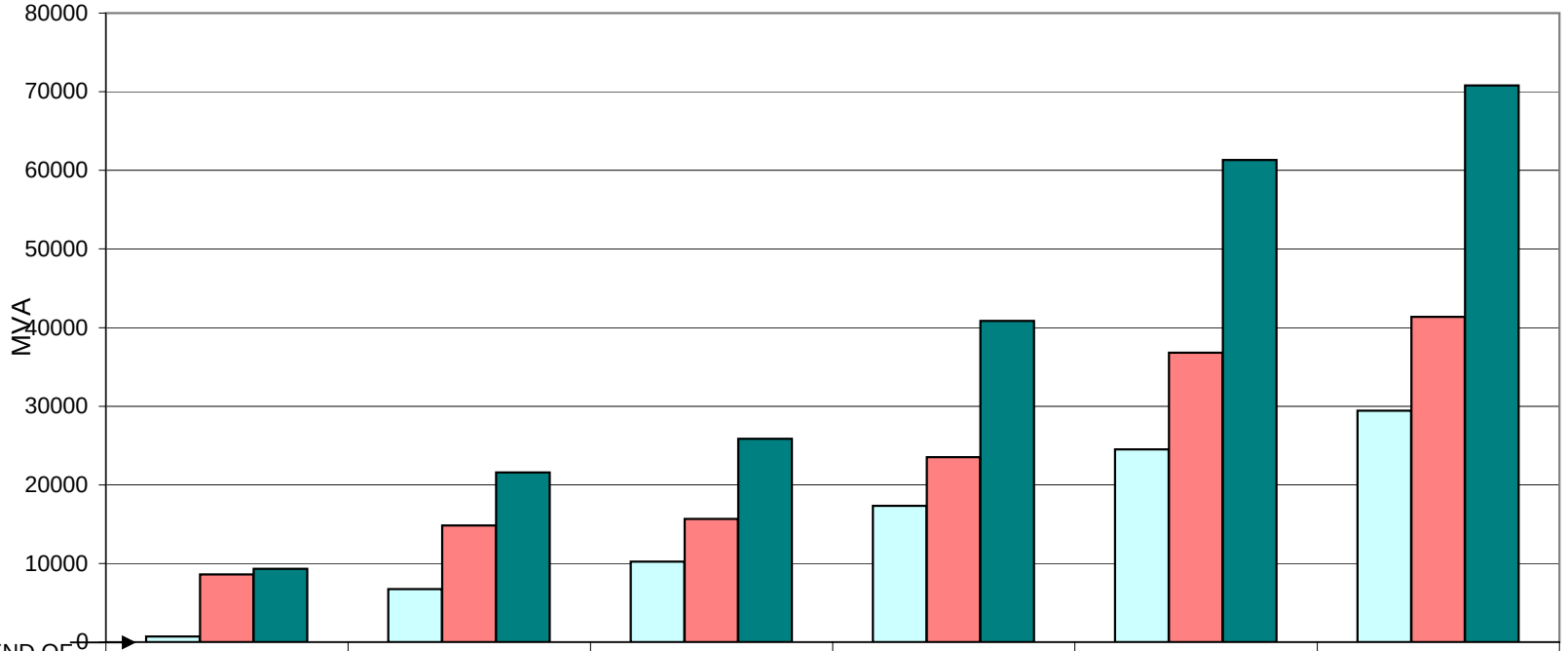


	VI PLAN (MAR'85)	VII PLAN (MAR'90)	ANNUAL PLANS (1990-92)	VIII PLAN (MAR'97)	IX PLAN (MAR'02)	2ND YEAR OF 10TH PLAN (MAR'04)
CENTRAL	1641	4560	5092	6564	8687	9117
STATE	44364	55071	59937	73037	88306	94607
TOTAL	46005	59631	65029	79601	96993	103724

(All figures in ckm)

Chart-3/4

400 KV TRANSFORMATION CAPACITY (MVA) EXISTING AT THE END OF VARIOUS PLAN PERIODS IN THE COUNTRY

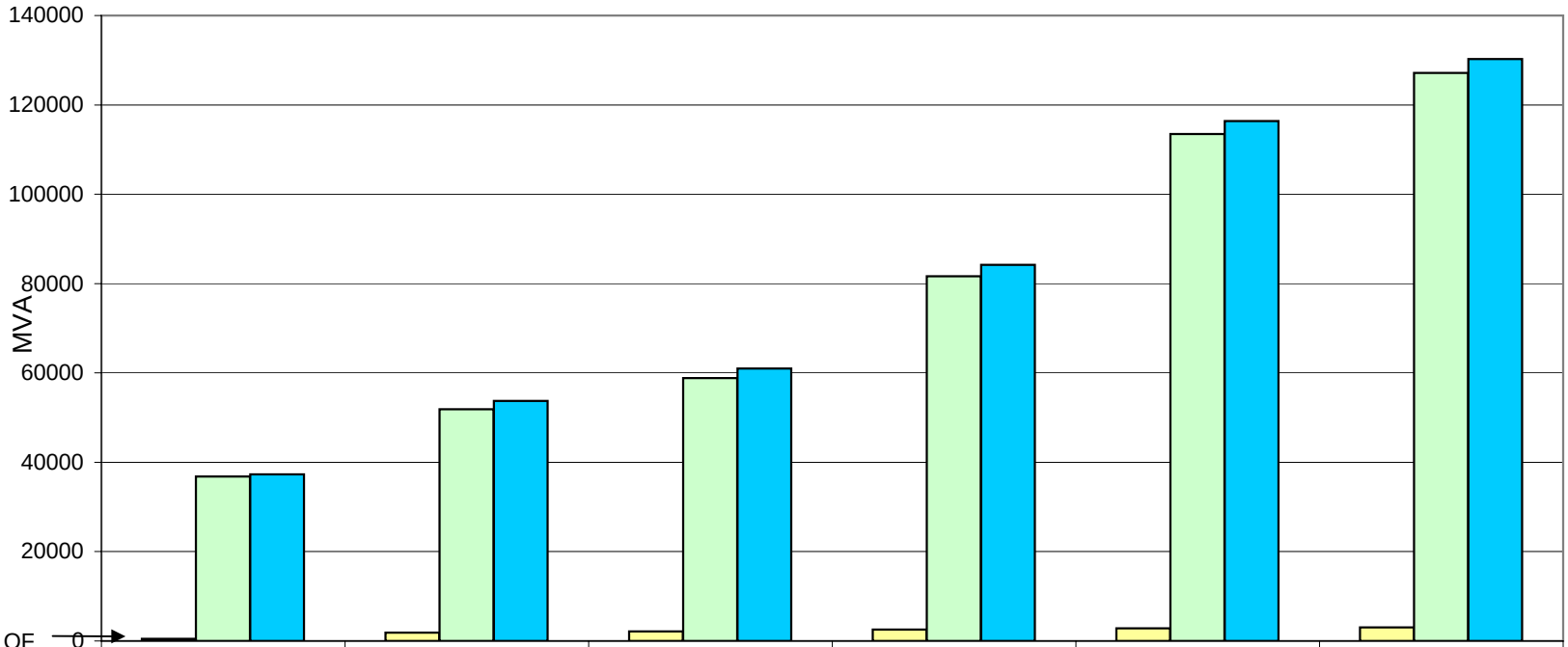


	VI PLAN (MAR'85)	VII PLAN (MAR'90)	ANNUAL PLANS (1990-92)	VIII PLAN (MAR'97)	IX PLAN (MAR'02)	2ND YEAR OF 10TH PLAN (MAR'04)
CENTRAL	715	6760	10225	17340	24520	29430
STATE	8615	14820	15650	23525	36805	41355
TOTAL	9330	21580	25875	40865	61325	70785

(All figures in MVA)

Chart-4/4

220 KV TRANSFORMATION CAPACITY (MVA) EXISTING AT THE END OF VARIOUS PLAN PERIODS IN THE COUNTRY



AT THE END OF	VI PLAN (MAR'85)	VII PLAN (MAR'90)	ANNUAL PLANS (1990-92)	VIII PLAN (MAR'97)	IX PLAN (MAR'02)	2ND YEAR OF 10TH PLAN (MAR'04)
CENTRAL	500	1881	2131	2566	2866	3066
STATE	36791	51861	58854	81611	113497	127184
TOTAL	37291	53742	60985	84177	116363	130250

(All figures in MVA)

CHAPTER – 3

FUND REQUIREMENTS FOR TRANSMISSION SCHEMES FOR 10TH PLAN PERIOD

The fund requirements for transmission schemes for the YEAR 2005-06 was worked out during the Review Meeting held in the Power System Project Monitoring in consultation with the utilities. The requirement of funds for transmission systems 220 kV and above, (66 kV and above in North-Eastern Region) on the basis of this review now works out to be ***Rs 45898.75 crores*** excluding the states of the States of J&K, Sikkim and Manipur who neither participated nor could furnish their proposals till date. Fund requirement of POWERGRID, DVC and Delhi (year 2006-07) and Andhra Pradesh, Bihar, Orissa and Arunachal Pradesh (tenth plan period) are assumed figures, as relevant data was not furnished.

The transmission function still remains with the public sector utilities who are heavily dependent on the plan outlays for undertaking construction programme. At times, the plan allocation, though meagre, is not made available to these utilities by some State Governments. In some cases, the plan allocation is made available after deducting the dues outstanding against these utilities from CPSUs and others. The other sources of financing transmission schemes like International and Domestic financial institutions etc are also drying up as the Utilities do not meet the norms set by such institutions. Utilities own contribution, however, is marginal. All these aspects are contributing towards slower growth of capacity addition in transmission network.

Table 3 depicts the Utilitywise fund requirements for transmission schemes for 10th Plan period (2002-07).

Table 5.1

As on june 2004

FUNDS REQUIREMENTS FOR TRANSMISSION SCHEMES FOR X TH PLAN PERIOD

All figures in Rs. Crores

Sl. No.	Name of the Utility	Transmission Works							Remarks
		Anticipated 2002-03	Proposed 2003-04	Proposed 2004-05	Proposed 2005-06	Proposed 2006-07	R & M	**Total 10th plan**	
I.	**State Sector**								
a.	**Northern Region**								
1	DTL	56.45	84.00	240.00	368.77	344.19	0.00	**1093.41**	
2	HPSEB	37.07	28.91	56.74	109.60	65.39	15.59	**313.30**	
3	HVPN	181.00	380.00	209.00	138.00	213.00	0.00	**1121.00**	
4	PDD,J&K (#)								NOT AVAILABLE
5	PSEB	94.35	154.60	241.57	306.86	354.95		**1152.33**	including R&M(20Cr)
6	RVPN	348.96	421.84	350.00	500.00	500.00		**2120.80**	including R&M
7	UPPCL (*)	168.32	200.00	545.00	525.00	355.00		**1793.32**	including R&M(32Cr)
8	Uttranchal (#)								NOT AVAILABLE
	Total N.R.	**886.15**	**1269.35**	**1642.31**	**1948.23**	**1832.53**	**15.59**	**7594.16**	
b.	**Western Region**								
1	CSEB	103.77	269.57	321.35	410.35	464.29		1569.33	including R&M
2	GEB	188.89	235.16	254.50	388.57	392.70		1459.82	including R&M
3	GOA	21.4	3.56	4.80	1.10	4.70		35.56	including R&M
4	MPSEB	138.71	513.30	505.53	405.51	270.86		1833.91	including R&M
5	MSEB	446.00	372.00	375.00	376.00	382.00		1951.00	including R&M
	Total W.R.	**898.77**	**1393.59**	**1461.18**	**1581.53**	**1514.55**	**0.00**	**6849.62**	
c.	**Southern Region**								
1	APTRANSCO	525.52	279.70	560.25	812.94	587.98		2766.39	
2	KPTCL	492.47	556.89	489.91	552.45	707.65		2799.37	including R&M
3	KSEB	276.29	277.78	232.76	216.92	171.71		1175.46	including R&M
4	TNEB	214.96	375.29	646.84	637.89	731.90		2606.88	including R&M
5	Pondicherry							128.60	
	Total S.R.	**1509.24**	**1489.66**	**1929.76**	**2220.20**	**2199.24**	**0.00**	**9476.70**	
d.	**Eastern Region**								
1	BSEB ($)	152.38	289.13	273.13	151.85	145.67		**1012.16**	As per MOM 16.10.01
2	GRIDCO	494.17	494.17	351.00	351.00	351.00		**2041.34**	
3	JSEB ($)	15.90	266.35	311.30	244.00	98.90	201.00	**1137.45**	
4	WBSEB	152.99	114.50	378.00	343.40	314.49	64.62	**1368.00**	
5	Sikkim (#)							**0.00**	NOT AVAILABLE
	Total E.R.	**815.44**	**1164.15**	**1313.43**	**1090.25**	**910.06**	**265.62**	**5558.95**	
e.	**N-E Region**								
1	Arunachal Pradesh	45.64	40.99	162.67	55.50	31.00		**335.80**	No R&M
2	ASEB	24.97	54.59	58.40	65.87	24.47	36.24	**264.54**	
3	Manipur	0.89	4.33	15.77	19.95	22.24	16.47	**79.65**	
4	MeSEB	2.09	22.15	61.06	58.24	59.38		202.92	R&M included
5	Mizoram	10.12	6.55	53.18	68.64	30.29	0.00	**168.78**	
6	Nagaland ($)			42.28	25.30	11.30		**78.88**	
7	Tripura	4.25	19.20	27.98	24.22	11.77	0.00	87.42	
	Total N-E Region	**87.96**	**147.81**	**421.34**	**317.72**	**190.45**	**52.71**	**1217.99**	
	TOTAL SS	**4197.56**	**5464.56**	**6768.02**	**7157.93**	**6646.83**	**333.92**	**30697.42**	
II.	**Central Sector**								
1	PGCIL	2759.00	2360.00	3840.00	Not finalised			**21370.00**	
2	JV with PGCIL							923.00	
3	DVC	37.78	49.88	167.80	251.27	290.00		796.73	including R&M
	Total C.S. & JV	**2796.78**	**2409.88**	**167.80**	**251.27**	**290.00**	**0.00**	**23089.73**	
	Total all India	**6994.34**	**7874.44**	**6935.82**	**7409.20**	**6936.83**	**333.92**	**53787.15**	

Did not participate in discussions in 2003 and before hence no figures is given.

***** Rs 14.30 crores included for capacitors (1090 MVAR).

$ Did not participate in discussions in 2003,but furnished annual plan document.

(As on January 2004)

FUNDS REQUIREMENTS FOR TRANSMISSION SCHEMES FOR X TH PLAN PERIOD

Table 3

All figures in Rs. Crores

Sl. No.	Name of the Utility	Transmission Works							Remarks
		Actual 2002-03	Actual 2003-04	Anticipated 2004-05	Proposed 2005-06	Proposed 2006-07	R & M	**Total 10th plan**	
I	**State Sector**								
a.	**Northern Region**								
1	DTL	56.65	67.06	121.00	231.50	230.00	0.00	***706.21***	
2	HPSEB	38.00	35.22	42.87	48.89	181.22	0.00	***346.20***	
3	HVPN	199.74	259.96	266.47	301.00	111.55	0.00	***1138.72***	
4	PDD,J&K								Not furnished
5	PSEB	132.54	87.12	160.00	300.00	300.00	0.00	***979.66***	including R&M
6	RVPN	276.23	337.64	328.93	410.00	435.00	0.00	***1787.80***	including R&M
7	UPPCL	168.32	217.40	297.00	625.00	596.76	0.00	***1904.48***	including R&M
8	Uttranchal	61.05	9.74	101.28	184.16	83.66	0.00	***439.89***	
	Total N.R.	**932.53**	**1014.14**	**1317.55**	**2100.55**	**1938.19**	**0.00**	**7302.96**	
b.	**Western Region**								
1	CSEB	73.64	224.66	324.45	410.35	464.29	18.40	***1515.79***	including R&M
2	GEB	180.46	145.69	102.04	99.40	317.00		***844.59***	including R&M
3	GOA	24	22.68	2.09	21.68	11.10		***81.55***	
4	MPPTCL	137.26	394.84	295.97	541.80	594.13		***1964.00***	including R&M
5	MSEB	374.00	372.00	380.00	476.00	482.00		***2084.00***	including R&M
	Total W.R.	**789.36**	**1159.87**	**1104.55**	**1549.23**	**1868.52**	**18.40**	**6489.93**	
c.	**Southern Region**								
1	APTRANSCO	178.00	172.00	348.00	290.00	696.00	0.00	***1684.00***	
2	KPTCL	308.33	515.24	341.77	592.66	833.69	13.52	***2605.21***	including R&M
3	KSEB	188.48	145.71	256.00	262.75	236.25		***1089.19***	
4	TNEB	186.52	274.38	436.62	451.82	480.22		***1829.56***	including R&M
5	Pondicherry	7.30	8.82	7.75	11.08	19.17		***54.12***	
	Total S.R.	**868.63**	**1116.15**	**1390.14**	**1608.31**	**2265.33**	**13.52**	**7262.08**	
d.	**Eastern Region**								
1	BSEB	0.00	3.12	35.51	35.00	35.00		***108.63***	including R&M
2	GRIDCO	480.00	480.00	480.00	253.60	253.60		***1947.20***	
3	JSEB	0.00	0.00	5.40	4.90	5.05		***15.35***	
4	WBSEB	152.99	93.34	324.28	375.93	357.90	64.62	***1369.06***	
5	Sikkim							***0.00***	Not furnished
	Total E.R.	**632.99**	**576.46**	**845.19**	**669.43**	**651.55**	**64.62**	**3440.24**	
e.	**N-E Region**								
1	Arunachal Pradesh	21.71	22.00	24.00	25.00	31.50		***124.21***	
2	ASEB	20.56	17.61	48.16	105.76	50.34	0.00	***242.43***	including R&M
3	Manipur	8.96	10.00	11.20	12.04	11.50		***53.70***	including R&M
4	MeSEB	6.39	3.77	29.06	196.48	136.22		***371.92***	
5	Mizoram	10.12	6.55	53.18	68.64	80.29	0.00	***218.78***	
6	Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	***0.00***	
7	Tripura	13.38	10.81	0.00	0.00	0.00		***24.19***	
	Total N-E Region	**81.12**	**70.74**	**165.60**	**407.92**	**309.85**	**0.00**	**1035.23**	
II	**Central Sector**								
1	PGCIL	2758.91	2421.19	3540.00	4901.00	5249.00	0.00	***18870.10***	Including J.V.
2	JV with PGCIL							***923.00***	Excl. eqity of PG
3	DVC	37.78	49.88	163.22	164.33	160.00		***575.21***	including R&M
	Total C.S. & JV	**2796.69**	**2471.07**	**3703.22**	**5065.33**	**5409.00**	**0.00**	***20368.31***	
	Total all India	**6101.32**	**6408.43**	**8526.25**	**11400.77**	**12442.44**	**96.54**	**45898.75**	

CHAPTER 4

TRANSMISSION LINES AND TRANSFORMATION CAPACITY EXISTING AT THE END OF VARIOUS PLAN PERIODS IN INDIA

The transmission line capacity additions (220 kV and above) during various plan periods till February 2005 of 10^{th} plan at various voltage levels viz 765 kV, ± 500 kV HVDC, 400 kV and 220 kV are indicated in table 4.1.(a)and 4.1(b). Similarly, the transformation capacity (220 kV and above) during various plan periods till 3^{rd} year of 10^{th} plan at various voltage levels viz ± 500 kV HVDC, HVDC (Back-to-Back) , 400 kV, and 220 kV terminals are indicated in table 4.2(a) and 4.2(b). These tables provide information regarding the construction of transmission works, the achievement vis-à-vis programme during various plan periods.

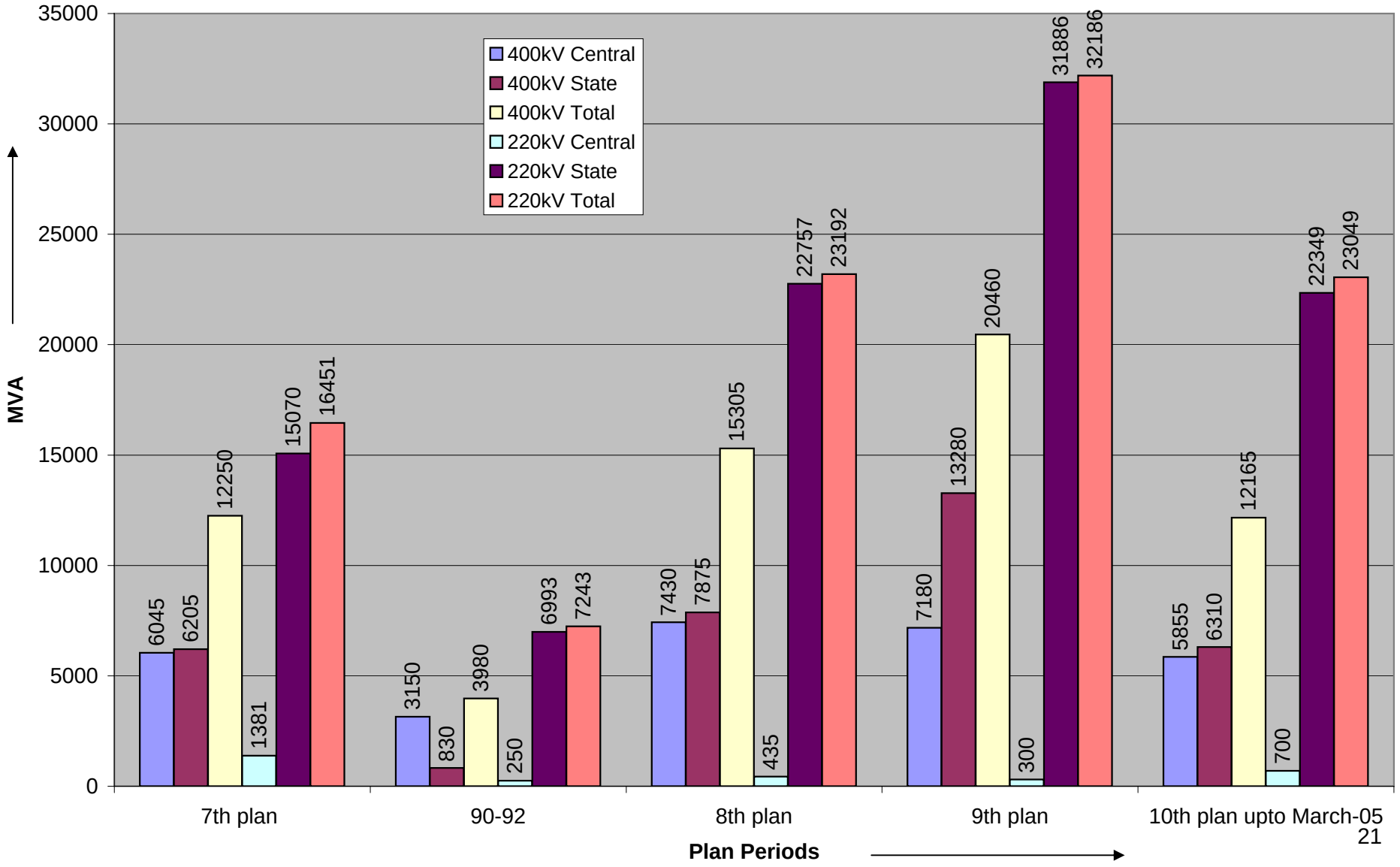
Growth in Transmission Lines (ckm) at the end of

	6th plan	7th plan	8th plan	9th plan	10th plan up to	
					2003-04	2004-05
765 kV						
Central	0	0	0	751	861	906
State				409	409	409
Total	**0**	**0**	**0**	**1160**	**1270**	**1315**
HVDC ± 500 kV						
Central		1634	1634	3234	4372	4372
State		0	0	1504	1504	1504
Total	**0**	**1634**	**1634**	**4738**	**5876**	**5876**

Growth in Sub-Stations (MVA) at the end of :

	6th plan	7th plan	8th plan	9th plan	10th plan up to	
					2003-04	2004-05
765 kV						
Central	0	0	0	0	0	0
State	0	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**	**0**
HVDC B/B						
Central	0	0	500	2000	2500	3000
State	0	0	0	0	0	0
Total	**0**	**0**	**500**	**2000**	**2500**	**3000**
± 500 kV HVDC TERMINAL						
Central			3000	3000	7000	7000
State			0	3000	3000	3000
Total	**0**	**0**	**3000**	**6000**	**10000**	**10000**

Growth in Sub-Stations (MVA) During Various Plan Periods



A. Growth in Transmission lines (ckm) during :

		7th plan	90-92	8th plan	9th plan	10th plan upto March-05
765 kV	Central	0	0	0	751	155
	State	0	0	0	409	0
	Total	**0**	**0**	**0**	**1160**	**155**
400 kV	Central	11237	3721	6212	6344	9882
	State	2558	2545	3840	6892	2196
	Total	**13795**	**6266**	**10052**	**13236**	**12078**
220 kV	Central	2919	532	1472	2123	522
	State	10707	4866	13099	15270	9020
	Total	**13626**	**5398**	**14571**	**17393**	**9542**

B. Growth in Sub-Station (MVA) during :

		7th plan	90-92	8th plan	9th plan	10th plan upto March-05
400kV	Central	6045	3150	7430	7180	5855
	State	6205	830	7875	13280	6310
	Total	**12250**	**3980**	**15305**	**20460**	**12165**
220kV	Central	1381	250	435	300	700
	State	15070	6993	22757	31886	22349
	Total	**16451**	**7243**	**23192**	**32186**	**23049**

TABLE 4.1(b)

TRANSMISSION LINES (CKM) ADDITIONS OF 400 KV & 220 kV IN INDIA

	400 KV TRANSMISSION LINES						220 KV TRANSMISSION LINES					
	CENTRAL		STATE		TOTAL		CENTRAL		STATE		TOTAL	
	Programme	Achievement	Programme	Achievement	Programme	Achievement	Programme	Achievement	Programme	Achievement	Programme	Achievement
1. Transmission lines existing at the end of 6th plan												
		1831		4198	0	6029		1641		44364	0	46005
2. Addition during 7th plan:												
85-86	1138	1181	1290	623	2428	1804	546	617	3052	1930	3598	2547
86-87	1577	2631	483	802	2060	3433	106	232	2601	1922	2707	2154
87-88	1790	1800	904	884	2694	2684	214	214	2516	2473	2730	2687
88-89	2474	2911	350	223	2824	3134	815	956	2380	2042	3195	2998
89-90	2547	2714	303	26	2850	2740	898	900	2322	2340	3220	3240
Total	9526	11237	3330	2558	12856	13795	2579	2919	12871	10707	15450	13626
3. Total at the end of 7th plan:												
		13068		6756		19824		4560		55071		59631
4. Addition during 1990-92:												
90-91	2207	2011	1033	1897	3240	3908	327	148	2703	2341	3030	2489
91-92	2137	1710	741	648	2878	2358	469	384	2556	2525	3025	2909
Total	4344	3721	1774	2545	6118	6266	796	532	5259	4866	6055	5398
5. Total at the end of 1991-92:												
		16789		9301		26090		5092		59937		65029
6. Addition during 8th plan:												
92-93	1283	870	1207	1087	2490	1957	512	501	2772	2536	3284	3037
93-94	637	581	786	796	1423	1377	491	526	2479	2734	2970	3260
94-95	855	1057	651	536	1506	1593	317	192	2783	2867	3100	3059
95-96	1479	1569	419	876	1898	2445	80	12	2035	2532	2115	2544
96-97	1872	2135	2096	545	3968	2680	496	241	2755	2430	3251	2671
Total	6126	6212	5159	3840	11285	10052	1896	1472	12824	13099	14720	14571
7. Total at the end of 8th plan:												
		23001		13141		36142		6564		73036		79600
8. Addition during 9th plan:												
97-98	2027	2061	963	706	2990	2767	418	345	2406	2569	2824	2914
98-99	2024	2378	980	884	3004	3262	696	629	2514	2701	3210	3330
99-2000	640	616	2488	2720	3128	3336	669	791	2884	3141	3553	3932
2000-01	478	672	1495	1419	1973	2091	389	310	4669	3364	5058	3674
2001-02	630	617	1150	1163	1780	1780	108	48	4132	3495	4240	3543
Total	5799	6344	7076	6892	12875	13236	2280	2123	16605	15270	18885	17393
9. Total at the end of 9th plan:												
		29345		**20033**		**49378**		**8687**		**88306**		**96993**
10. Addition during 10th plan:												
2002-03	2560	3053	638	380	3198	3433	68	94	2956	2886	3024	2980
2003-04	1877	2164	1508	1115	3385	3279	486	336	3080	3415	3566	3751
2004-05	3771	4665	905	701	4676	5366	72	92	2357	2719	2429	2811
Total	8208	9882	3051	2196	11259	12078	626	522	8393	9020	9019	9542
11. Total at the end of 3rd year of 10th plan:												
		39227		**22229**		**61456**		**9209**		**97326**		**106535**

TABLE 4.1(a)

TRANSMISSION LINES (CKM) ADDITIONS OF 765 KV & +/-500 kV HVDC IN INDIA

	765 KV TRANSMISSION LINES						+/-500 KV TRANSMISSION LINES					
	CENTRAL		STATE		TOTAL		CENTRAL		STATE		TOTAL	
	Programme	Achievement	Programme	Achievement	Programme	Achievement	Programme	Achievement	Programme	Achievement	Programme	Achievement
1. Transmission lines existing at the end of 7th plan												
	0	0	0	0	0	0	0	0	0	0	0	0
2. Addition during 1990-92:												
90-91	0	0	0	0	0	0	1634	1634	0	0	1634	1634
91-92	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1634	1634	0	0	1634	1634
3. Total at the end of 1991-92:												
		0		0		0		1634		0		1634
4. Addition during 8th plan:												
92-93	0	0	0	0	0	0	0	0	0	0	0	0
93-94	0	0	0	0	0	0	0	0	0	0	0	0
94-95	0	0	0	0	0	0	0	0	0	0	0	0
95-96	0	0	0	0	0	0	0	0	0	0	0	0
96-97	20	0	0	0	20	0	0	0	360	0	360	0
Total	20	0	0	0	20	0	0	0	360	0	360	0
5. Total at the end of 8th plan:												
		0		0		0		1634		0		1634
6. Addition during 9th plan:												
97-98	0	0	0	0	0	0	0	0	900	369	900	369
98-99	0	0	405	318	405	318	0	0	1135	1135	1135	1135
99-2000	325	325	91	91	416	416	0	0	0	0	0	0
2000-01	285	375	0	0	285	375	0	0	0	0	0	0
2001-02	224	51	0	0	224	51	1360	1600	0	0	1360	1600
Total	834	751	496	409	1330	1160	1360	1600	2035	1504	3395	3104
7. Total at the end of 9th plan:												
		751		**409**		**1160**		**3234**		**1504**		**4738**
8. Addition during 10th plan:												
2002-03	173	32	0	0	173	32	1272	1138	0	0	1272	1138
2003-04	149	78	0	0	149	78	0	0	0	0	0	0
2004-05	71	45	0	0	71	45	0	0	0	0	0	0
Total	393	155	0	0	393	155	1272	1138	0	0	1272	1138
9. Total at the end of 3rd year of 10th plan:												
		906		**409**		**1315**		**4372**		**1504**		**5876**

SUBSTATION PROGRAMME FOR 05-06

Sl. No.	Name of the Sub-Stations	Voltage Ratio	Capacity	MVA	Ant./Act
POWERGRID :					
765 kV Sub-station :					
1	Seoni (New)	765/400/220	7x333	2331	Feb-07
2	Seoni Extn.	765/400/220	3x333	999	Aug-07
	TOTAL			**3330**	
400 kV Sub-station :					
	INTER REGIONAL SYSTEMS				
1	Purnea Extn.	400/220	1x315	315	Jun-06
2	Muzaffarpur	400/220	2x315	630	Jun-06
3	Gorakhpur	400/220	1x315	315	Jun-06
4	Lucknow	400/220	1x315	315	Jun-06
5	Delhi	400/220	2x315	630	Jun-06
6	Seoni (New)	400/220	2x315	630	Feb-07
	TOTAL			**2835**	
	NORTHERN REGION				
1	Muzaffarnager (Extn.)	400/220	1x315	315	Mar-05
2	Kishenpur Extn.	400/220	7x105	735	Sep-05
3	Mainpuri (New)	400/220	2x315	630	Mar-05
4	Abdullapur	400/220	1x315	315	Dec-05
5	Kaithal (New)	400/220	2x315	630	Dec-05
6	Patiala(New)	400/220	2x315	630	Dec-05
7	Amritsar (New)	400/220	1 x 315	315	Jul-06
8	Bahadurgarh (New)	400/220	1 x 315	315	Jul-06
9	Gorakhpur (Extn.)	400/220	1 x 315	315	Jul-06
	TOTAL			**4200**	
	WESTERN REGION				
1	Khandwa	400/220	1 x 315	315	Apr-05
2	Vapi	400/220	2x315	630	Sep-05
3	Boisor	400/220	2x315	630	Jun-05
4	Rajgarh (New)	400/220	2x315	630	Feb-07
5	Raigarh (New)	400/220	2x315	630	Jul-07
6	Bina Switching Station (New)	400/220			Jul-07
7	Satna (Bay Extn.)	400/220	1x315	315	Jul-07

SUBSTATION PROGRAMME FOR 05-06

Sl. No.	Name of the Sub-Stations	Voltage Ratio	Capacity	MVA	Ant./Act
8	Gwalior (New)	400/220	2x315	630	Aug-07
9	Bhatapara(New)	400/220	2x315	630	Aug-07
	TOTAL			**4410**	

SOUTHERN REGION

1	Thiruvananthapuram (New)	400/220	2x315	630	Nov-04
2	Narendara	400/220	2x315	630	Aug-05
	TOTAL			**1260**	

EASTERN REGION

1	Baripada (New)	400/220/132	1x315	315	Mar-05
2	Subhasgram (New)	400/220	2 x 315	630	Apr-06
3	Siliguri (Extn.)	400/220	1 x 315	315	
4	Indravati (2nd Transformer, 1-Phase)	400/220	3 x 105	315	Apr-05
5	Baripada (Extn.)	400/220	1x315	315	Aug-07
6	Patna	400/220	2x315	630	Jul-07
7	Ranchi	400/220	2x315	630	Jul-07
8	Balia Switching Station	400/220			Jul-07
	TOTAL			**3150**	

220 kV Sub-station :

1	Baripada (New)	220/132	1x160	160	Mar-05
	TOTAL			**160**	

DVC :

220 kV Sub-station :

1	Borjora	220/33	2x50	100	Oct-05
2	Uluberia	220/132/33	2x150 + 2x50	400	Dec-05
3	Dhanbad (Amjore)	220/132/33	2x150	300	Jun-07
4	Giridih	220/132/33	2x150	300	Dec-07
	TOTAL			**1100**	

NORTHERN REGION :

DELHI

400 kV Sub-station :

1	Bawana (4th Transformer)	400/220	1x315	315	Oct-05
2	Bamnauli (4th Transformer)	400/220	1x315	315	Oct-05
	TOTAL			**630**	

SUBSTATION PROGRAMME FOR 05-06

Sl. No.	Name of the Sub-Stations	Voltage Ratio	Capacity	MVA	Ant./Act
220 kV Sub-station :					
1	Masjid-Moth (Sirifort)	220/33/11	1x100	100	Mar-06
2	Papankalan-I	220/33/11	1x100	100	Jun-05
3	Papankalan-II	220/66/11	1x100	100	Jun-05
4	Shalimar Bagh	220/33/11	1x100	100	Jun-05
5	Rohini (4th Transformer)	220/66/11	1x100	100	Sep-05
6	Naraina (3rd Transformer)	220/33/11	1x100	100	Oct-05
7	Bawana DSIDC	220/33/11	2x100	200	Dec-05
	TOTAL			**800**	

HIMACHAL PRADESH

400 kV Sub-station :

1	Kunihar	400/220	2x315	630	Mar-06
	TOTAL			**630**	

HARYANA

220 kV Sub-station :

1	Salimpur	220/66	2x100	200	Mar-06
2	Fatehabad (3rd Transformer)	220/132	1x100	100	Mar-06
3	Rania	220/132	1x100	100	Mar-06
4	IMT Manesar (2nd Transformer)	220/66	1x100	100	Mar-06
5	Palwal (Additional)	220/66	1x100	100	Mar-06
6	Rewari (Additional)	220/132	1x50	50	Mar-06
7	Daultabad	220/66	2x100	200	Mar-06
	TOTAL			**850**	

PUNJAB

220 kV Sub-station :

1	Tibber (Upgradation)	220/66	1x100	100	Jun-05
2	Mohali-II (Jhanjheri) (New)	220/66	1x100	100	Mar-06
3	Pakhowal (New)	220/66	1x100	100	Mar-06
4	Gobindgarh-II (Augmentation)	220/66	1x100	100	Mar-06
5	Mansa (Augmentation)	220/66	1x100	100	Mar-06
6	Dhuri (Augmentation) (2nd)	220/66	1x100	100	Mar-06
7	Kartarpur (Augmentation) (2nd)	220/66	1x100	100	Mar-06
8	Ghobaya (Augmentation) (1x100 MVA to replace 50 MVA transformer)	220/66	1x50	50	Mar-06
9	Nabha S/S (Upgradation)	220/66	1x100	100	Mar-06
10	Abohor S/S (Upgradation)	220/132	1x100	100	Mar-06
11	Laudhuwal / GT Road Ludhiana (New)	220/66	1x100	100	Mar-06
12	Lalton Kalan (Augmentation) (3rd)	220/66	1x100	100	Mar-06
	TOTAL			**1150**	

SUBSTATION PROGRAMME FOR 05-06

Sl. No.	Name of the Sub-Stations	Voltage Ratio	Capacity	MVA	Ant./Act
RAJASTHAN					
400 kV Sub-station :					
1	Kankroli	400/220	2x315	630	Mar-07
	TOTAL			**630**	
220 kV Sub-station :					
1	Makrana	220/132	1x100	100	Mar-06
2	Barmer	220/132	1x100	100	Mar-06
3	Dhanimanna	220/132	1x100	100	Mar-06
4	Amarsagar	220/132	1x100	100	Mar-05
	TOTAL			**400**	
UTTAR PRADESH					
800 kV Sub-station :					
1	Anpara (1st Transformer)	765/400	1x630	630	Mar-07
2	Anpara (2nd Transformer)	765/400	1x630	630	Mar-07
3	Unnao (1st Transformer)	765/400	1x630	630	Mar-07
4	Unnao (2nd Transformer)	765/400	1x630	630	Mar-07
	TOTAL			**2520**	
400 kV Sub-station :					
1	Gorakhpur	400/220	1x315	315	Jun-05
2	Grreater NOIDA	400/220/132	2x315+2x160	950	Dec-05
3	Kashipur (1st Transformer)	400/220	1x315	315	Dec-05
4	Kashipur (2nd Transformer)	400/220	1x315	315	Dec-06
	TOTAL			**1895**	
220 kV Sub-station :					
1	Sahupuri	220/132	160-100	60	Jun-05
2	Hardoi	220/132	1x100	100	Sep-05
3	Naubasta	220/132	160-100	60	Jun-05
4	Basti (2nd Transformer)	220/132	1x100	100	Sep-05
5	Orai (1st Transformer)	220/132	1x100	100	Mar-06
6	Orai (2nd Transformer)	220/132	1x100	100	Mar-07
	TOTAL			**520**	

SUBSTATION PROGRAMME FOR 05-06

Sl. No.	Name of the Sub-Stations	Voltage Ratio	Capacity	MVA	Ant./Act
UTTARANCHAL					
400 kV Sub-station :					
1	Kashipur (1st Transformer)	400/220	1x315	315	Dec-05
2	Kashipur (2nd Transformer)	400/220	1x315	315	Dec-05
	TOTAL			**630**	
220 kV Sub-station :					
1	Kashipur (1st Transformer)	220/132	1x160	160	Dec-05
2	Kashipur (2nd Transformer)	220/132	1x160	160	Dec-05
3	Haridwar (1st Transformer)	220/132	1x160	160	Dec-05
4	Haridwar (2nd Transformer)	220/132	1x160	160	Dec-05
5	Pantnagar (1st Transformer)	220/132	1x160	160	Dec-05
6	Pantnagar (2nd Transformer)	220/132	1x160	160	Dec-05
	TOTAL			**960**	
WESTERN REGION :					
CHATTISGARH					
220 kV Sub-station :					
1	Siltara	220/132	1x160	160	Jun-05
	TOTAL			**160**	
GUJARAT					
400 kV Sub-station :					
1	Zerda (Kansari) (Augmentation)	400/220	1x315	315	Mar-06
2	Ranchodpura (Vadavi)	400/220	1x315	315	Oct-05
	TOTAL			**630**	
220 kV Sub-station :					
1	Halvad	220/66	1x100	100	Oct-05
2	Mitha (Jotana)	220/66	1x100	100	Dec-05
3	Anjar	220/66	1x100	100	Jun-05
4	Mathasur	220/66	1x100	100	Dec-05
5	Dhanera	220/66	1x50	100	Dec-05
	TOTAL			**500**	
GOA					
220 kV Sub-station :					
1	Tivim (2nd Transformer)	220/110	1x100	100	Mar-06
2	Xeldem (Augmentation/Addl.)	220/33	1x50	50	Nov-05
	TOTAL			**150**	

SUBSTATION PROGRAMME FOR 05-06

Sl. No.	Name of the Sub-Stations	Voltage Ratio	Capacity	MVA	Ant./Act
MADHYA PRADESH					
220 kV Sub-station :					
1	Birsinghpur (New)	220/132	1x160	160	Jan-06
2	Rajgarh (New)	220/132	1x160	160	Dec-05
3	Tikkamgarh (New)	220/132	1x160	160	Mar-06
4	Shivpuri (New)	220/132	1x160	160	Mar-06
5	Mansa (Additional)	220/132	1x160	160	Jan-06
6	Dhuri (Additional)	220/132	1x160	160	Mar-06
	TOTAL			**960**	
MAHARASHTRA					
400 kV Sub-station :					
1	Akola	400/220	2x315	630	Mar-06
	TOTAL			**630**	
220 kV Sub-station :					
1	New Koyna	220/33	1x25	25	Dec-05
2	Nivalipatha	220/33	1x25	25	Mar-06
3	Urse	220/33	1x25	25	Mar-06
4	Savangi	220/132	1x100	100	Mar-06
5	Amalner	220/132	2x100	200	Mar-06
6	Bhenda	220/132	1x100	100	Mar-06
	TOTAL			**475**	
SOUTHERN REGION :					
ANDHRA PRADESH					
400 kV Sub-Stations :					
1	Vemagiri 2nd Transformer	400/220	1x315	315	May-05
2	Nellore	400/220	1x315	315	Jun-05
3	Chittor	400/220	1x315	315	Jun-05
4	Mehboobnagar	400/220	1x315	315	Sep-05
	TOTAL			**1260**	
220 kV Sub-Stations :					
1	Bhimavaram	220/132	1x100	100	Jun-05
2	Gudivada	220/132	1x100	100	Jun-05
	TOTAL			**200**	

SUBSTATION PROGRAMME FOR 05-06

Sl. No.	Name of the Sub-Stations	Voltage Ratio	Capacity	MVA	Ant./Act
KARNATAKA					
220 kV Sub-Stations :					
1	Madhuvanahalli (Kollegal)	220/66		100	Dec-05
2	Kudachi	220/110		100	Jun-05
3	Itagi (2nd Transformer)	220/110		100	Jun-05
4	Devanahalli International Airport	220/66		100	Mar-06
5	Shahapur	220/110		100	Sep-05
				500	
TAMILNADU					
400 kV Sub-Stations :					
1	Alamathy	400/230		315	Dec-05
	TOTAL			**315**	
230 kV Sub-Stations :					
1	Karimangalam	230/110	1x100	100	Jun-05
2	Malumichampatty	230/110	1x100	100	Jun-05
3	Kodikkurichi	230/110	1x100	100	Jun-05
4	Puddanchandai	230/110	1x100	100	Dec-05
5	Alamathy	230/110	2x100	200	Jun-05
	TOTAL			**600**	
KERALA					
220 kV Sub-Stations :					
1	Kundara	220/110	1x100	100	Sep-05
2	Edappon	220/110	1x100	100	Dec-05
3	Taliparamba	220/110	1x100	100	Jun-05
	TOTAL			**300**	
EASTERN REGION :					
BIHAR					
220 kV Sub-station :					
1	Khagaul (Patna)	220/132	2x100	200	Mar-05
2	Siwan (New)	220/132			

SUBSTATION PROGRAMME FOR 05-06

Sl. No.	Name of the Sub-Stations	Voltage Ratio	Capacity	MVA	Ant./Act
GRIDCO ORISSA					
220 kV Sub-station :					
1	Burla	220/132	2x100	200	Dec-05
2	Bolangir	220/132	2x100	200	Dec-05
3	Paradeep	220/132	2x100	200	Jun-05
	TOTAL			**400**	
JHARKHAND					
220 kV Sub-station :					
1	Hatia	220/132	3x100	300	Dec-06
	TOTAL			**300**	
WEST BENGAL					
400 kV Sub-station :					
1	Durgapur	400/220	7x105	735	Sep-05
2	Sagardighi	400/220	2x315	630	Mar-07
3	Arambagh	400/220	2x315	630	May-05
	TOTAL			**1365**	
220 kV Sub-station :					
1	Krishnanagar	220/132	2x160	320	Jun-05
2	Subhashgram	220/132	2x160	320	Jun-05
3	Asansol	220/132	1x160	160	Jun-05
	TOTAL			**800**	
NORTH EASTERN REGION :					
ARUNACHAL PRADESH					
132 kV Sub-Stations :					
1	Namsai	132/33	1x10	10	Dec-05
2	Itanagar	132/33	1x20	20	May-05
3	Bhalukong	132/33	1x10	10	May-05
4	Passi Ghat	132/33	1x10	10	May-05
5	Changlang	132/33	1x10	10	May-05
6	Khonsa	132/33	1x10	10	May-05
7	Tenga	132/33	1x10	10	May-05
	TOTAL			**80**	
ASSAM					
220 kV Sub-station :					
1	Agia	220/132	1x25	25	Oct-05
2	Balipara (Tezpur)	220/132	2x50	100	Dec-05
3	Tisukia	220/132	2x50	100	May-05
4	Mariani (2x100-2x50=100)	220/132	2x50	100	Oct-05
5	Sarusajai (1x100-1x50=50)	220/132	1x50	50	Oct-05
	TOTAL			**375**	

SUBSTATION PROGRAMME FOR 05-06

Sl. No.	Name of the Sub-Stations	Voltage Ratio	Capacity	MVA	Ant./Act
132 kV Sub-Stations :					
1	Sarusajai	132/33	2x31.5	63	Oct-05
2	Dhemaji	132/33	1x16	16	Oct-05
	TOTAL			**79**	

MEGHALAYA

132 kV Sub-Stations :

1	Lumshung 2x5	132/33	2x5	10	Jun-05
2	Nangalbibra (Aug.)	132/33	1x12.5	12.5	Mar-06
	TOTAL			**22.5**	

NAGALAND

NIL

MIZORAM

132 kV Sub-Stations :

1	Kolasib	132/66		12.5	Apr-05
2	Saitual	132/33		6.3	Mar-06
	TOTAL			**18.8**	

TRIPURA

132 kV Lines :

Seven nos. transmission schemes of Rs. 79.32 Crores proposed under NLCPR and NEC during 10th Plan. Yet to be sanctioned.

TABLE - 1.1(a)

YEARWISE TARGETS VS ACHIEVEMENTS-UPTO 2004-05 OF 10TH FIVE YEAR PLAN & PROGRAMME DURING 4th YEAR OF 10TH PLAN

TRANSMISSION LINES (CKM)

Voltage level	Name of the Utility	2002-03		2003-04		2004-05		2005-06	
		P	A	P	A	P	A	P	A
765 kV	POWERGRID (CS)	**173**	**32**	149	78	71	45	105	
	Total (All India)	**173**	**32**	**149**	**78**	**71**	**45**	**105**	
+/- 500 kV	POWERGRID (CS)	1272	1138	0	0	0	0	0	
	Total (All India)	**1272**	**1138**	**0**	**0**	**0**	**0**	**0**	
400 kV	POWERGRID	**2560**	**3053**	**1877**	**2164**	**3771**	4665	**3230**	
	DVC	0	0	0	0	0	0	0	
	TOTAL(CS)	**2560**	**3053**	**1877**	**2164**	**3771**	**4665**	**3230**	
	Delhi	0	0	0	106	0	0	0	
	Himachal Pradesh	0	0	114	114	0	0	0	
	Haryana	0	0	0	0	0	0	0	
	J&K	0	0	0	0	0	0	0	
	Punjab	0	0	0	0	0	0	0	
	Rajasthan	0	0	327	329	0	0	210	
	Uttranchal	0	0	0	0	0	0	60	
	Uttar Pradesh	0	0	0	0	0	0	140	
	TOTAL (NR)	**0**	**0**	**441**	**549**	**0**	**0**	**410**	
	Chattisgarh	0	0	0	0	0	0	0	
	Daman-UT	0	0	0	0	0	0	0	
	DNH-UT	0	0	0	0	0	0	0	
	Gujarat	64	49	16	13	0	0	150	
	Goa	0	0	0	0	0	0	0	
	Madhya Pradesh	150	21	338	245	254	241	0	
	Maharashtra	31	43	131	118	20	9	0	
	TOTAL (WR)	**245**	**113**	**485**	**376**	**274**	**250**	**150**	
	Andhra Pradesh	168	130	520	136	536	310	60	
	Karnataka	3	0	0	0	0	0	0	
	Kerala	0	0	0	0	0	0	0	
	Tamilnadu	0	0	0	0	0	0	0	
	TOTAL (SR)	**171**	**130**	**520**	**136**	**536**	**310**	**60**	
	Bihar	0	0	0	0	0	0	0	
	Orissa	200	137	40	32	95	141	0	
	West Bengal	22	0	22	22	0	0	0	
	TOTAL (ER)	**222**	**137**	**62**	**54**	**95**	**141**	**0**	
	Arunachal pradesh	0	0	0	0	0	0	0	
	TOTAL (NER)	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
	Total (SS)	**638**	**380**	**1508**	**1115**	**905**	**701**	**620**	
	Total (All India)	**3198**	**3433**	**3385**	**3279**	**4676**	**5366**	**3850**	

P : Programme
A : Achievement

TABLE - 1.2

TARGETS VS ACHIEVEMENTS - DURING 2nd and 3rd YEAR OF 10TH FIVE YEAR PLAN and PROGRAMME DURING 4th YEAR OF 10TH PLAN

TRANSMISSION LINES: (All figures in ckm)

Name of the Utility	2003-04				2004-05				2005-06	
	400 kV		220 kV		400 kV		220 kV		400 kV	220 kV
	P	A	P	A	P	A	P	A	P	P
Powergrid	1877	2164	486	336	3771	4172	72	88	3230	0
DVC	0	0	0	0	0	0	0	0	0	100
Total (CS)	**1877**	**2164**	**486**	**336**	**3771**	**4172**	**72**	**88**	**3230**	**100**
DTL	0	106	15	9	0	0	16	0	0	33
HPSEB	114	114	0	0	0	0	11	0	0	20
HVPN	0	0	278	282	0	0	129	320	0	300
J&K	0	0	0	0	0	0	0	0	0	0
PSEB	0	0	106	96	0	0	69	80	0	210
RVPN	327	329	226	208	0	0	394	554	210	390
UPCL	0	0	0	0	0	0	0	0	60	120
UPPCL	0	0	228	317	0	0	59	12	140	180
TOTAL (NR)	**441**	**549**	**853**	**912**	**0**	**0**	**678**	**966**	**410**	**1253**
CSEB	0	0	4	17	0	0	28	0	0	90
Daman-UT	0	0	0	0	0	0	0	0	0	0
DNH-UT	0	0	0	0	0	0	0	0	0	0
GEB	16	13	675	633	0	0	103	79	150	210
GOA	0	0	54	54	0	0	0	0	0	0
MPSEB	338	245	9	10	254	241	40	12	0	205
MSEB	131	118	445	442	20	9	343	169	0	175
TOTAL (WR)	**485**	**376**	**1187**	**1156**	**274**	**250**	**514**	**260**	**150**	**680**
APTRANSCO	520	136	310	177	536	286	163	123	60	180
KPTCL	0	0	265	369	0	0	336	261	0	130
KSEB	0	0	3	0	0	0	3	0	0	75
TNEB	0	0	205	206	0	0	303	203	0	120
TOTAL (SR)	**520**	**136**	**783**	**752**	**536**	**286**	**805**	**587**	**60**	**505**
BSEB	0	0	10	114	0	0	70	114	0	0
GRIDCO	40	32	75	211	95	141	260	276	0	105
WBPDCL	0	0	0	0	0	0	0	0	0	0
WBSEB	22	22	153	251	0	0	30	10	0	90
TOTAL (ER)	**62**	**54**	**238**	**576**	**95**	**141**	**360**	**400**	**0**	**195**
Arunacha pradesh	0	0	19	19	0	0	0	0	0	0
ASEB	0	0	0	0	0	0	0	0	0	5
TOTAL (NER)	**0**	**0**	**19**	**19**	**0**	**0**	**0**	**0**	**0**	**5**
Total (SS)	**1508**	**1115**	**3080**	**3415**	**905**	**677**	**2357**	**2583**	**620**	**2638**

P - Programme
A - Achievement

For 2004-05 Achievement is upto Feb-05

TABLE - 1.2

TARGETS VS ACHIEVEMENTS - DURING 2nd and 3rd YEAR OF 10TH FIVE YEAR PLAN and PROGRAMME DURING 4th YEAR OF 10TH PLAN

Total (All India)	**3385**	**3279**	**3566**	**3751**	**4676**	**4849**	**2429**	**2671**	**3850**	**2738**

SUB-STATIONS (MVA/MW): (All figures in MVA/MW)

Name of the Utility	2003-04				2004-05				2005-06	
	400 kV		220 kV		400 kV		220 kV		400 kV	220 kV
	P	A	P	A	P	A	P	A	P	P
Powergrid	2205	1260	250	50	2205	945	360	200	3885	0
DVC	0	0	0	0	0	0	100	300	0	500
Total (CS)	**2205**	**1260**	**250**	**50**	**2205**	**945**	**460**	**500**	**3885**	**500**
DTL	0	315	250	250	315	0	200	300	315	600
HPSEB	0		0		0	0	160	0	0	0
HVPN	0		800	955	0	0	600	810	0	600
J&K	0		0	0	0	0	0	0	0	0
PSEB	0		450	350	945	0	500	300	945	900
RVPN	945	315	490	550	0	315	300	100	0	300
UPCL	0		0		0	0	0	200	315	460
UPPCL	0		100	820	315	0	300	660	630	320
TOTAL (NR)	**945**	**630**	**2090**	**2925**	**1575**	**315**	**2060**	**2370**	**2205**	**3180**
CSEB	0		320	300		0	0	200	315	400
Daman-UT	0		0	150		0	0	0	0	0
DNH-UT	0		0			0	0	0	0	0
GEB	0		600	500		0	400	950	0	0
GOA	0		100			0	100	0	0	150
MPSEB	0		160	320		315	640	1120	0	640
MSEB	1945	1445	700	1425	500	500	675	1595	315	475
TOTAL (WR)	**1945**	**1445**	**1880**	**2695**	**500**	**815**	**1815**	**3865**	**630**	**1665**
APTRANSCO	0	0	600	732	315	0	300	100	630	200
KPTCL	630	1130	200	600		0	200	500	0	500
KSEB	0	0	100	100		0	100	0	0	200
TNEB	0	0	100	200		315	300	100	315	400
TOTAL (SR)	**630**	**1130**	**1000**	**1632**	**315**	**315**	**900**	**700**	**945**	**1300**
BSEB	0	0	0	0		0	0	0	0	0
GRIDCO	0	0	0	0	630	0	400	200	0	200
WBPDCL	0	0	0	0		0		0	0	0
WBSEB	630		1280	1120		0	800	640	735	600
TOTAL (ER)	**630**		**1280**	**1120**	**630**	**0**	**1200**	**840**	**735**	**800**
ASEB	0		0		0	0	25	**37**	0	275
Arunachal pradesh	0		33		0	0	33	0	0	0
TOTAL (NER)	**0**		**33**		**0**	**0**	**58**	**37**	**0**	**275**

P - Programme
A - Achievement

For 2004-05 Achievement is upto Feb-05

TABLE - 1.2

TARGETS VS ACHIEVEMENTS - DURING 2nd and 3rd YEAR OF 10TH FIVE YEAR PLAN and PROGRAMME DURING 4th YEAR OF 10TH PLAN

Total (SS)	4150	3205	6283	8372	3020	1445	6033	7812	4515	7220
Total (All India)	6355	4465	6533	8422	5225	2390	6493	8312	8400	7720

P - Programme
A - Achievement

For 2004-05 Achievement is upto Feb-05

TABLE - 1.1(b)

YEARWISE TARGETS VS ACHIEVEMENTS-UPTO 2004-05 OF 10TH FIVE YEAR PLAN & PROGRAMME DURING 4th YEAR OF 10TH PLAN

SUB-STATIONS (MVA/MW)

Voltage level	Name of the Utility	2002-03		2003-04		2004-05		2005-06	
		P	A	P	A	P	A	P	A
765 kV	POWERGRID (CS)	0	0	0	0	0		0	
	Total (All India)	**0**	**0**	**0**	**0**	**0**		**0**	
HVDC TERMINA	POWERGRID (CS)	2000	2000	2000	2000	0	0	0	
	Total (All India)	**2000**	**2000**	**2000**	**2000**	**0**	**0**	**0**	
HVDC B/B	POWERGRID (CS)	500	500	0	0	500	500	0	
	Total (All India)	**500**	**500**	**0**	**0**	**500**	**500**	**0**	
400 kV	POWERGRID	3335	3650	2205	1260	2205	945	3885	
	DVC	0	0	0	0	0	0	0	
	TOTAL(CS)	**3335**	**3650**	**2205**	**1260**	**2205**	**945**	**3885**	
	Delhi	315	0	0	315	315	0	315	
	Himachal Pradesh	0	0	0	0	0	0	0	
	Haryana	0	0	0	0	0	0	0	
	J&K	0	0	0	0	0	0	0	
	Punjab	0	0	0	0	0	0	945	
	Rajasthan	630	315	945	315	945	630	0	
	Uttranchal	0	0	0	0	0	0	315	
	Uttar Pradesh	0	0	0	0	315	0	630	
	TOTAL (NR)	**945**	**315**	**945**	**630**	**1575**	**630**	**2205**	
	Chattisgarh	0	0	0	0	0	0	315	
	Daman-UT	0	0	0	0	0	0	0	
	DNH-UT	0	0	0	0	0	0	0	
	Gujarat	0	0	0	0	0	0	0	
	Goa	0	0	0	0	0	0	0	
	Madhya Pradesh	0	0	0	0	0	315	0	
	Maharashtra	0	630	1945	1445	500	500	315	
	TOTAL (WR)	**0**	**630**	**1945**	**1445**	**500**	**815**	**630**	
	Andhra Pradesh	0	0	0	0	315	0	630	
	Karnataka	315	0	630	1130	0	0	0	
	Kerala	0	0	0	0	0	0	0	
	Tamilnadu	0	400	0	0	0	315	315	
	TOTAL (SR)	**315**	**400**	**630**	**1130**	**315**	**315**	**945**	
	Bihar	0	0	0	0	0	0	0	
	Orissa	630	0	0	0	630	0	0	
	West Bengal	0	0	630	0	0	0	735	
	TOTAL (ER)	**630**	**0**	**630**	**0**	**630**	**0**	**735**	
	Assam	0	0	0	0	0	0	0	
	Arunachal pradesh	0	0	0	0	0	0	0	
	Total (NER)	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
	Total (SS)	**1890**	**1345**	**4150**	**3205**	**3020**	**1760**	**4515**	
	Total (All India)	**5225**	**4995**	**6355**	**4465**	**5225**	**2705**	**8400**	

P : Programme
A : Achievement

TABLE - 1.1(b)

YEARWISE TARGETS VS ACHIEVEMENTS-UPTO 2004-05 OF 10TH FIVE YEAR PLAN & PROGRAMME DURING 4th YEAR OF 10TH PLAN

SUB-STATIONS (MVA/MW)

Voltage level	Name of the Utility	2002-03		2003-04		2004-05		2005-06	
		P	A	P	A	P	A	P	A
220 kV	POWERGRID	100	100	250	50	360	200	0	
	DVC	50	50	0	0	100	300	500	
	Total (CS)	**150**	**150**	**250**	**50**	**460**	**500**	**500**	
	Delhi	300	200	250	250	200	300	600	
	Himachal Pradesh	160	0	0	0	160	80	0	
	Haryana	400	400	800	955	600	810	600	
	J&K	0	0	0	0	0	0	0	
	Punjab	400	500	450	350	500	400	900	
	Rajasthan	0	250	490	550	300	420	300	
	Uttranchal	0	0	0	0	0	200	460	
	Uttar Pradesh	160	240	100	820	300	660	320	
	TOTAL (NR)	**1420**	**1590**	**2090**	**2925**	**2060**	**2870**	**3180**	
	Chattisgarh	480	160	320	300	0	200	400	
	Daman-UT	0	0	0	150	0	0	0	
	DNH-UT	0	350	0	0	0	0	0	
	Gujarat	350	250	600	500	400	1150	0	
	Goa	100	100	100	0	100	0	150	
	Madhya Pradesh	0	160	160	320	640	1120	640	
	Maharashtra	275	775	700	1425	675	1745	475	
	TOTAL (WR)	**1205**	**1795**	**1880**	**2695**	**1815**	**4215**	**1665**	
	Andhra Pradesh	632	1100	600	732	300	100	200	
	Karnataka	600	500	200	600	200	500	500	
	Kerala	0	0	100	100	100	0	200	
	Tamilnadu	150	50	100	200	300	100	400	
	TOTAL (SR)	**1382**	**1650**	**1000**	**1632**	**900**	**700**	**1300**	
	Bihar	100	0	0	0	0	0	0	
	Orissa	600	120	0	0	400	200	200	
	West Bengal	320	160	1280	1120	800	640	600	
	TOTAL (ER)	**1020**	**280**	**1280**	**1120**	**1200**	**840**	**800**	
	Assam	25	0	0	0	25	**37**	275	
	Arunachal pradesh	0	0	33	0	33	0	0	
	TOTAL (NER)	**25**	**0**	**33**	**0**	**58**	**37**	**275**	
	Total (SS)	**5052**	**5315**	**6283**	**8372**	**6033**	**8662**	**7220**	
	Total (All India)	**5202**	**5465**	**6533**	**8422**	**6493**	**9162**	**7720**	

P : Programme
A : Achievement

TABLE - 1.1(a)

YEARWISE TARGETS VS ACHIEVEMENTS-UPTO 2004-05 OF 10TH FIVE YEAR PLAN & PROGRAMME DURING 4th YEAR OF 10TH PLAN

TRANSMISSION LINES (CKM)

Voltage level	Name of the Utility	2002-03		2003-04		2004-05		2005-06	
		P	A	P	A	P	A	P	A
220 kV	POWERGRID	8	37	486	336	72	92	0	
	DVC	60	57	0	0	0	0	100	
	Total (CS)	**68**	**94**	**486**	**336**	**72**	**92**	**100**	
	Delhi	49	45	15	9	16	0	33	
	Himachal Pradesh	19	19	0	0	11	11	20	
	Haryana	75	72	278	282	129	320	300	
	J&K	0	0	0	0	0	0	0	
	Punjab	271	120	106	96	69	80	210	
	Rajasthan	55	181	226	208	394	606	390	
	Uttranchal	24	24	0	0	0	0	120	
	Uttar Pradesh	17	58	228	317	59	12	180	
	Total (NR)	**510**	**519**	**853**	**912**	**678**	**1029**	**1253**	
	Chattisgarh	15	8	4	17	28	0	90	
	Daman-UT	0	12	0	0	0	0	0	
	DNH-UT	0	40	0	0	0	0	0	
	Gujarat	234	198	675	633	103	79	210	
	Goa	88	38	54	54	0	0	0	
	Madhya Pradesh	100	88	9	10	40	18	205	
	Maharashtra	216	295	445	442	343	184	175	
	TOTAL (WR)	**653**	**679**	**1187**	**1156**	**514**	**281**	**680**	
	Andhra Pradesh	593	804	310	177	163	123	180	
	Karnataka	323	86	265	369	336	283	130	
	Kerala	3	5	3	0	3	0	75	
	Tamilnadu	266	375	205	206	303	203	120	
	TOTAL (SR)	**1185**	**1270**	**783**	**752**	**805**	**609**	**505**	
	Bihar	10	0	10	114	70	114	0	
	Orissa	466	340	75	211	260	289	105	
	West Bengal	132	78	153	251	30	10	90	
	TOTAL (ER)	**608**	**418**	**238**	**576**	**360**	**413**	**195**	
	Arunachal pradesh	0	0	19	19	0	0	0	
	ASEB	0	0	0	0	0	0	5	
	TOTAL (NER)	**0**	**0**	**19**	**19**	**0**	**0**	**5**	
	Total (SS)	**2956**	**2886**	**3080**	**3415**	**2357**	**2719**	**2638**	
	Total (All India)	**3024**	**2980**	**3566**	**3751**	**2429**	**2811**	**2738**	

P : Programme
A : Achievement