TRANSMISSION CAPACITY ADDITION PROGRAMME DURING 2006-07

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 2006-07

Review meetings were held with states Power utilities and PGCIL during December 2005 and February 2006 to identify the transmission programme to be completed in the coming year i.e. 2006-07. The representatives of various agencies also held detailed discussion with CEA officers regarding their performance during the year 2005-06. 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 2006-07 has been finalized.

1.5 NEW GENERATING STATIONS

It is learnt that the Santaldih TPP (1x250 MW) Unit-I and Durgapur TPS (Extn.) (1x300 MW) Unit-7 in West Bengal, O.P.Jindal TPP (P) (1x250 MW) Unit-I by Jindal Power Limited in Raigarh (Chhattisgarh) and Sugen CCPP Block-I (P) (1x365 MW) Unit-I by Torrent Power Generation Limited in Surat (Gujarat) are envisaged for commissioning in 2006-07, which were originally scheduled for commissioning during 11^{th} Plan. The transmission lines for evacuation of Power from these Generating Stations had not been discussed with the States / CPUs during the review meetings held from November 2005 to February 2006. The matter for construction of transmission lines for evacuation of Power from these Generating Stations are being taken-up with the concerned authorities for incorporating the same in the monthly report for monitoring purposes.

CHAPTER – 1

TRANSMISSION CAPACITY ADDITIONS DURING 2005-06

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 2005-06				
	Prog. 2005-06	Ach. (upto Mar-06) 2005-06	Ach as % of prog. 2005-06	Ach. 2004-05	Growth as % of 2004-05 2005-06
765 kV lines	105	287	273.3	45	637.8
± 500 kV HVDC	0	0	0.0	0	0.0
400 kV lines	3850	6260	162.6	5366	116.7
220 kV lines	2738	2871	104.9	2808	102.2

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

± 500 kV HVDC CONVERTER TER.	0	0	0.0	0	-
HVDC B/B S/S	0	0	0.0	500	-
400 kV S/S	7455	10265	137.7	2705	379.5
220 kV S/S	7760	7505	96.7	9162	81.9

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 2006-07

The construction programme of transmission schemes (220 kV and above) for the year 2006-07 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 765 kV, 400 kV and 220 kV transmission lines for the year 2006-07 is 628.57 %, 206.44 % and 155.88 % respectively of the last year programme. Similarly, the programme for transformation capacity additions at 400 kV and 220 kV levels is 149.30 % and 105.45 % respectively of last year programme.

Table 2.1 depicts the programme of construction of the transmission schemes (220 kV and above) for the year 2006-07 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 2006-07 quarterwise.

The list at Annexure given at the end indicates the transmission lines and the sub-stations scheduled for completion during the year 2006-07 and also the transmission lines under construction scheduled for commissioning during the subsequent years, mainly the power evacuation lines associated with generating stations.

TABLE – 2.1

ABSTRACT OF THE CONSTRUCTION PROGRAMME OF THE TRANSMISSION SCHEMES (220 kV AND ABOVE) FOR THE YEAR 2006-07

ANNUAL ACTION PLAN

TRANSMISSION LINES (CKM) :

Voltage Level	Quarter (2006-07)				Total 2006-07
	1st	2nd	3rd	4th	
765 kV	90	150	205	215	660
+/- 500 kV HVDC	0	0	0	0	0
400 kV	1395	1419	2151	2983	7948
220 kV	1000	677	1093	1498	4268

SUB-STATIONS (MVA/MW)) :

Voltage Level	Quarter (2006-07)				Total 2006-07
	1st	2nd	3rd	4th	
765 kV	0	0	0	2331	2331
HVDC TER.	0	0	0	0	0
HVDC B/B	0	0	0	0	0
400 kV	5355	2205	735	2835	11130
220 kV	1670	880	1093	4540	8183

NOTE :- The details of the construction programme of transmission lines and transformation works (220 kV and above) for the year 2006-07 utility wise are given in table – 2.2(a) and 2.2(b).

CHAPTER – 3

FUND REQUIREMENTS FOR TRANSMISSION SCHEMES FOR 10TH PLAN PERIOD

The fund requirements for transmission schemes for the year 2006-07 was worked out during the review meetings held in the Power System Project Monitoring Division 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 47342.60 crores*** excluding the states of the States of J&K, Uttar Pradesh and Sikkim who could not furnish their proposals till date. Fund requirement of Uttar Pradesh for the tenth plan period are assumed figures as the 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).

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 March 2006 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 4^{th} 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	2005-06
765 kV							
Central	0	0	0	751	886	908	1195
State	0	0	0	409	409	409	409
Total	**0**	**0**	**0**	**1160**	**1295**	**1317**	**1604**
HVDC ± 500 kV							
Central	0	1634	1634	3234	4368	4368	4368
State	0	0	0	1504	1504	1504	1504
Total	**0**	**1634**	**1634**	**4738**	**5872**	**5872**	**5872**

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	2005-06
765 kV							
Central	0	0	0	0	0	0	0
State	0	0	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**
HVDC B/B							
Central	0	0	500	2000	2500	3000	3000
State	0	0	0	0	0	0	0
Total	**0**	**0**	**500**	**2000**	**2500**	**3000**	**3000**
± 500 kV HVDC TERMINAL							
Central	0	0	3000	3000	7000	7000	7000
State	0	0	0	3000	3000	3000	3000
Total	**0**	**0**	**3000**	**6000**	**10000**	**10000**	**10000**

TABLE - 1.1(b)

YEARWISE TARGETS VS ACHIEVEMENTS-UPTO 2005-06 OF 10TH FIVE YEAR PLAN & PROGRAMME DURING 5th YEAR OF 10TH PLAN

SUB-STATIONS (MVA/MW)

Voltage level	Name of the Utility	2002-03		2003-04		2004-05		2005-06		2006-07	
		P	A	P	A	P	A	P	A	P	A
765 kV	POWERGRID (CS)	0	0	0	0	0		0	0	2331	
	Total (All India)	**0**	**0**	**0**	**0**	**0**		**0**	**0**	**2331**	
HVDC TERMINA	POWERGRID (CS)	2000	2000	2000	2000	0	0	0	0	0	
	Total (All India)	**2000**	**2000**	**2000**	**2000**	**0**	**0**	**0**	**0**	**0**	
HVDC B/B	POWERGRID (CS)	500	500	0	0	500	500	0	0	0	
	Total (All India)	**500**	**500**	**0**	**0**	**500**	**500**	**0**	**0**	**0**	
400 kV	POWERGRID	3335	3650	2205	1260	2205	945	3885	4725	6615	
	DVC	0	0	0	0	0	0	0	0	0	
	TOTAL(CS)	**3335**	**3650**	**2205**	**1260**	**2205**	**945**	**3885**	**4725**	**6615**	
	Delhi	315	0	0	315	315	0	315	630	0	
	Himachal Pradesh	0	0	0	0	0	0	0	0	0	
	Haryana	0	0	0	0	0	0	0	0	0	
	J&K	0	0	0	0	0	0	0	0	0	
	Punjab	0	0	0	0	0	0	0	0	0	
	Rajasthan	630	315	945	315	945	630	0	315	0	
	Uttar Pradesh	0	0	0	0	315	0	630	945	630	
	Uttranchal	0	0	0	0	0	0	315	0	630	
	TOTAL (NR)	**945**	**315**	**945**	**630**	**1575**	**630**	**1260**	**1890**	**1260**	
	Chattisgarh	0	0	0	0	0	0	315	0	0	
	Daman-UT	0	0	0	0	0	0	0	0	0	
	DNH-UT	0	0	0	0	0	0	0	0	0	
	Gujarat	0	0	0	0	0	0	0	315	630	
	Goa	0	0	0	0	0	0	0	0	0	
	Madhya Pradesh	0	0	0	0	0	315	0	630	0	
	Maharashtra	0	630	1945	1445	500	500	315	0	420	
	TOTAL (WR)	**0**	**630**	**1945**	**1445**	**500**	**815**	**630**	**945**	**1050**	
	Andhra Pradesh	0	0	0	0	315	0	630	1575	630	
	Karnataka	315	0	630	1130	0	0	0	500	630	
	Kerala	0	0	0	0	0	0	0	0	0	
	Tamilnadu	0	400	0	0	0	315	315	0	630	
	TOTAL (SR)	**315**	**400**	**630**	**1130**	**315**	**315**	**945**	**2075**	**1890**	
	Bihar	0	0	0	0	0	0	0	0	0	
	Orissa	630	0	0	0	630	0	0	630	0	
	West Bengal	0	0	630	0	0	0	735	0	315	
	Jharkhand								0	0	
	TOTAL (ER)	**630**	**0**	**630**	**0**	**630**	**0**	**735**	**630**	**315**	
	Assam	0	0	0	0	0	0	0	0	0	
	Arunachal pradesh	0	0	0	0	0	0	0	0	0	
	Total (NER)	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
	Total (SS)	**1890**	**1345**	**4150**	**3205**	**3020**	**1760**	**3570**	**5540**	**4515**	
	Total (All India)	**5225**	**4995**	**6355**	**4465**	**5225**	**2705**	**7455**	**10265**	**11130**	

P : Programme
A : Achievement

TABLE - 1.1(b)

YEARWISE TARGETS VS ACHIEVEMENTS-UPTO 2005-06 OF 10TH FIVE YEAR PLAN & PROGRAMME DURING 5th YEAR OF 10TH PLAN

SUB-STATIONS (MVA/MW)

Voltage level	Name of the Utility	2002-03		2003-04		2004-05		2005-06		2006-07	
		P	A	P	A	P	A	P	A	P	A

6

P : Programme
A : Achievement

TABLE - 1.1(b)

YEARWISE TARGETS VS ACHIEVEMENTS-UPTO 2005-06 OF 10TH FIVE YEAR PLAN & PROGRAMME DURING 5th YEAR OF 10TH PLAN

SUB-STATIONS (MVA/MW)

Voltage level	Name of the Utility	2002-03		2003-04		2004-05		2005-06		2006-07	
		P	A	P	A	P	A	P	A	P	A
220 kV	POWERGRID	100	100	250	50	360	200	0	160	800	
	DVC	50	50	0	0	100	300	500	350	100	
	Total (CS)	**150**	**150**	**250**	**50**	**460**	**500**	**500**	**510**	**900**	
	Chandigarh	-	-	-	-	-	-	0	0	0	
	Delhi	300	200	250	250	200	300	600	400	500	
	Himachal Pradesh	160	0	0	0	160	80	0	80	180	
	Haryana	400	400	800	955	600	810	600	450	850	
	J&K	0	0	0	0	0	0	0	0	0	
	Punjab	400	500	450	350	500	400	900	100	750	
	Rajasthan	0	250	490	550	300	420	300	900	100	
	Uttar Pradesh	160	240	100	820	300	660	320	460	460	
	Uttranchal	0	0	0	0	0	200	460	0	393	
	TOTAL (NR)	**1420**	**1590**	**2090**	**2925**	**2060**	**2870**	**3180**	**2390**	**3233**	
	Chattisgarh	480	160	320	300	0	200	400	320	0	
	Daman-UT	0	0	0	150	0	0	0	0	0	
	DNH-UT	0	350	0	0	0	0	0	0	0	
	Gujarat	350	250	600	500	400	1150	0	400	500	
	Goa	100	100	100	0	100	0	150	0	0	
	Madhya Pradesh	0	160	160	320	640	1120	640	680	480	
	Maharashtra	275	775	700	1425	675	1745	475	855	525	
	TOTAL (WR)	**1205**	**1795**	**1880**	**2695**	**1815**	**4215**	**1665**	**2255**	**1505**	
	Andhra Pradesh	632	1100	600	732	300	100	200	200	400	
	Karnataka	600	500	200	600	200	500	500	400	500	
	Kerala	0	0	100	100	100	0	200	300	200	
	Tamilnadu	150	50	100	200	300	100	400	700	300	
	TOTAL (SR)	**1382**	**1650**	**1000**	**1632**	**900**	**700**	**1300**	**1600**	**1400**	
	Bihar	100	0	0	0	0	0	0	200	200	
	Orissa	600	120	0	0	400	200	200	140	400	
	West Bengal	320	160	1280	1120	800	640	600	160	320	
	Jharkhand	-	-	-	-	-	-	0	0	0	
	TOTAL (ER)	**1020**	**280**	**1280**	**1120**	**1200**	**840**	**800**	**500**	**920**	
	Assam	25	0	0	0	25	**37**	275	250	225	
	Arunachal pradesh	0	0	33	0	33	0	0	0	0	
	TOTAL (NER)	**25**	**0**	**33**	**0**	**58**	**37**	**275**	**250**	**225**	
	Total (SS)	**5052**	**5315**	**6283**	**8372**	**6033**	**8662**	**7260**	**6995**	**7283**	
	Total (All India)	**5202**	**5465**	**6533**	**8422**	**6493**	**9162**	**7760**	**7505**	**8183**	

P : Programme
A : Achievement

TABLE - 1.1(b)

YEARWISE TARGETS VS ACHIEVEMENTS-UPTO 2005-06 OF 10TH FIVE YEAR PLAN & PROGRAMME DURING 5th YEAR OF 10TH PLAN

SUB-STATIONS (MVA/MW)

Voltage level	Name of the Utility	2002-03		2003-04		2004-05		2005-06		2006-07	
		P	A	P	A	P	A	P	A	P	A

P : Programme
A : Achievement