CHAPTER - 11
ENERGY

1. Energy is the prime mover of development. Globally, the per capita consumption of energy is used as a borometer to measure the level of economic development. The per capita consumption of eletricity in Delhi is around 1,000 knw, which is almost three times the national average. All the rural and urban villages in Delhi are electrified. According to the 1991 census, about 80% of the households in Delhi had electricity connections and the remaining 20% were in JJ clusters, unauthorised colonies and rural areas.

2. In Feb. 1997, the Delhi Vidyut Board (DVB) replaced the Delhi Electric Supply Undertaking (DECU) which was an MCD undertaking.

INVESTMENT IN THE ENERGY SECTOR

3. Given the importance of energy in development, the energy sector has been accorded high prioroty in Delhi's five- year and annual plans. The share of energy in total plan expenditure since 1980 the Sixth Five-Year Plan is given below:

Statement 11.1

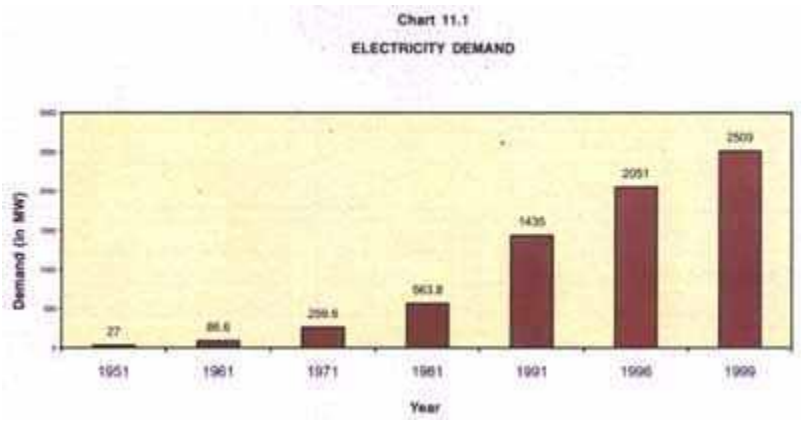
OUTLAY & EXPENDITURE UNDER ENERGY SECTOR

Five-Year Plan	Period	Total Plan expenditure	Expenditureon Energy Sector	% of Total Plan Expenditure
Sixth	1980-85	1,042.07	169.80	16.29
Seventh	1985-90	2,631.47	838.86	31.88
Eighth	1992-97	6,208.32	1,555.92	25.06
Ninth	1997-2002 (outlay)	15,541.28	3046.55	19.60
Annual Plan	1997-98	1,978.31	307.72	15.55
Annual Plan	1998-99	2,052.95	447.84	21.81

4. An outlay of Rs. 489 crore (16.3% of total outlay) has been allocated for the energy sector during 1999-2000.

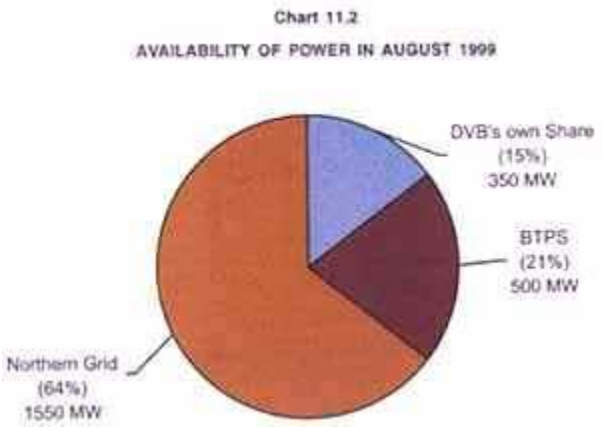
ENERGY DEMAND

5. Delhi's energy requirment is growing at about 10% per annum. From a peak demand of only 27 MW in 1951, Delhi's power demand crossed 2,509 MW during the summer of 1999 and is expected to touch 3,500 MW by the year 2002. Against the peak demand of 2,509 MW during 1999, the total availablity was only 2,400 MW, of which 350 MW came from DVB's own generation projects, 500 MW from BTPS and 1550 MW from the Northern Region Grid



POWER GENERATION

6. While demand has been growing rapidly, capacity addition has remained relative stagnant. The net cost of generating power from DVB's own plants is high due to low capacity utilisation and high fuel consumption by the plants. DVB's own generation installed capacity is 664 MW but availabilty is only around 300-350 MW. More than 80% of Delhi's power needs are met by purchases from NTPC and other sources (Table 11.1).



PLANT LOAD FACTORS

7. The PLF of the thermal plants of the national level in 1997-98 was 64.7%. In contrast , DVB's PLF for the last five years is indicated below :

Statement 11.2

PLANT LOAD FACTOR

YEAR	1995-96	1996-97	1997-98	1998-99	1999-2000(R.E)
PLF(%)	26.92	32.39	34.50	31.14	31.00

TRANSMISSION AND DISTRIBUTION (T&D) SYSTEM

8. The present overall transformation capacity and line length are inadequate for the peak load of 2,509 MW. System augmentation is a major priority at present. The targets and achievements in the 9th Plan are indicated below :

Statement 11.3

9TH PLAN TARGETS FOR TRANSMISSION AND DISTRIBUTION SYSTEM

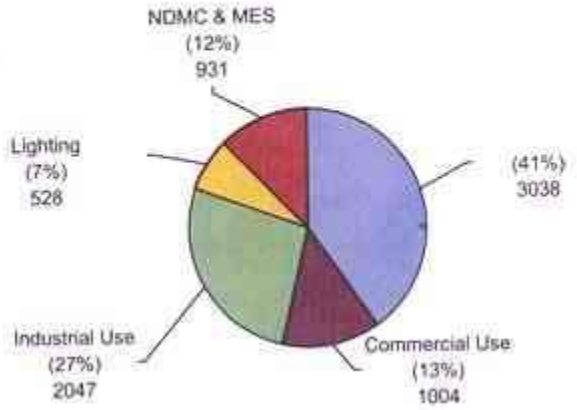
S.No.	Item	9th Plan Target	Annual Plan 1997-98 achievement	Annual Plan 1998-99 achievement	Achievement of first two years	Annual Plan 1999-2000 target
	Delhi Vidyut Board					
(1)	T & D Works					
(A)	Transformatrion Capacity (Unit - MVA)					
(i)	400 KV	1260	315	315	630	315
(ii)	220 KV	2350	100	300	400	600
(iii)	66 KV	700	60	270	330	300
(iv)	33 KV	450	90	234	324	266
(v)	11 KV	1260	222.415	264.6	487	400
(B)	T & D Capacity (Unit CKT Kms.)					
(i)	400 KV	226	48.00	-	48.00	74.00
(ii)	220 KV	320	-	14.6	14.60	62.80
(iii)	66 KV	110	5.24	14.62	19.86	28.80
(iv)	33 KV	130	11.863	45.57	57.43	57.05
(v)	11 KV	4200	474.774	556.67	1031.44	500.00
(2)	Shut Capacitor (Unit MVAR)	800	20	270	290	300
(3)	New Connections (Nos.)	280000	65314	84509	149823	60000
(4)	Tubewell Connections (Nos.)	2800	295	521	816	400

9. A 400-KV ring is being set up around Delhi to draw power from the Northern Regional Grid, the project is far behind its original target date of completion (June 1994). The Project consists of a 400-KV double circuit line from Mandaula to Ballabhgarh through Bawana and Bamnauli. The Mandaula- Bawana Section of 23.801 kms was commissioned in January 1998. Work on the Bawana-Bamnauli section is expected to be completed by June 2000. Work on the Bamnauli-Ballabhgarh section is awaiting clearance from the Haryana Forest Department. The 400-KV sub-stations at Ballabhgarh, Mandaula and Bawana have been completed and the sub-station at Bamnauli is targeted for completion in 1999-2000.
10. To strengthen the T&D system, against an investment of Rs. 1,378.39 crore in the Eighth Plan, a provision of Rs 1,800 crore has been made in the Ninth Plan. Rs. 681.46 crore were spent during 1997-99. A provision of Rs. 417 crore has been made to strengthen the T&D system during 1999-2000.
11. Average T&D losses in the country are 21%; in Mumbai they are 11% and in Calcutta they are around 19%. In Delhi, T&D losses increased from 22.6% in 1991-92 to 42.55% in 1995-96 and were around 49% in 1998-99. Given the type of utility and distribution pattern DVB uses, technical loses should not exceed 11-12% but present technical losses are around 18-19%. The bulk of T&D losses in Delhi are due to electricity theft.

12. Details regarding number of consumers and pattern of consumption are at Table 11.2 and 11.3. The number of electricity consumers has increased from 10.11 lakh in 1980-81 to 20.64 lakh in 1996-97. The share of domestic consumption has increased from about 29% 1n 1980-81 to 40% in 1996-97.

Chart 11.3

PATTERN OF ELECTRICITY CONSUMPTION IN DELHI IN 1996-97 (MILLION UNITS)



STRATEGY PAPER

13. A strategy paper for the power sector was prepared by the Government of N.C.T. of Delhi in 1999. The important suggestions regarding structural reforms are L :

(i) A Delhi Power Generation and Transmission Company should be registered under the companies Act to manage the existing and planned generating stations as well the EHV transmission network upto 220 kv including sub-station. This company should follow the rules, regulations and the work culture of the NTPC and PGCIL.

(ii) New generation should be encouraged to come up both in the private sector, as also through joint ventures. The BOT/BOOT route could also be followed.

(iii) New Power distribution companies should be set up to look after the transmission and distribution network from upto 66 KV to 400 volts, consumer power supply, metering and revenue collection in the six existing circles of the DVB. These companies should have the flexibility to be organized as joint venture

(iv) An independent, statutory Delhi Electricity Regulatory Commission should be established. This Commission should undertake licensing of new capacity, prescribe performance standards and fix tariffs after appropriate consultations.

(v) All legitimate interests of the employees of the DVB must be protected as part of restructuring.

REGULATORY COMMISSION

14. The Government of NCT of Delhi has constituted a State Electricity Regulatory Commission. The main functions of the Commission are :

a) To determine the tariff for electricity, wholesale, bulk, grid or retail, as the case may be.

b) To determine the tariff payable for the use of transmission facilities.

c) To regulate power purchase and procurement process of the transmission utilities and distribution utilities including the price at which power shall be procured from the generating companies, generating stations or from other sources for transmission, sale, distribution and supply in the National Capital Territory of Delhi.

d) To promote competition, efficiency and economy in the power sector.

Table 11.1

AVAILABILITY OF ELECTRICITY

Year	Locally Generated @	Purchased from NTPC & other sources	Total
1	2	3	4
1976-77	1569	446	2015
1977-78	1593	548	2141
1978-79	1413	971	2384
1979-80 1	467	1120	2587
1980-81	1313	1613	2926
1981-82	1113	2153	3266
1982-83	1077	2520	3597
1983-84	1037	2993	4030
1984-85	1255	3283	4538
1985-86	1158	3759	4917
1986-87	1402	4157	5559
1987-88	1359	4832	6191
1988-89	1088	5732	6820
1989-90	1662	5962	7624
1990-91	2351	6378	8729
1991-92	2415	6973	9288
1992-93	2433	8115	10548
1993-94	2281	8645	10926
1994-95	2280	9905	12185
1995-96	2212	10789	13007
1996-97	2026	11656	13682

@ Means DVB Share only.
Source: Delhi Vidyut Board.

Table 11.2

NUMBER OF CONSUMERS OF ELECTRICITY

(Number of Consumers)					
Year	Domestic (Fan,	Commercial (Fan, Light	Industrial	Water works and	Total no. of consumers*

	Light,Heat, Power)	Heat, Power)		Street Lighting	
1980-81	806812	162241	41370	1075	1011498
1990-91	1420214	201725	79385	1900	1703224
1992-93	1533935	210483	85915	2029	1832362
1993-94	1579020	213522	87555	2055	1882152
1994-95	1617944	216717	90541	2155	1977357
1995-96	1666581	230730	94475	2215	1994002
1996-97	1713474	251501	96923	2219	2064117

*Includes N.D.M.C. and M.E.S.
Source: Delhi Vidyut Board.

Table 11.3

PATTERN OF ELECTRICITY CONSUMPTION

Year	Domestic	Commercial	Industrial *	Water works & street lights	Licensees (NDMC & MES)	Total
1976-77	441	247	444	111	363	1606
1977-78	454	243	483	121	376	1677
1978-79	530	243	567	131	424	1895
1979-80	576	242	639	127	433	2017
1980-81	701	453	590	175	453	2372
1981-82	746	499	753	61	485	2544
1982-83	850	598	821	42	530	2841
1983-84	945	632	858	38	579	3052
1984-85	1162	709	950	48	597	3466
1985-86	1286	779	1095	193	598	3951
1986-87	1385	827	1200	73	599	4084
1987-88	1483	881	1085	280	639	4368
1988-89	1687	918	1420	297	641	4963
1989-90	2108	1046	1751	299	649	5853
1990-91	2316	1093	1952	347	707	6415
1991-92	3110	1002	1843	363	781	7099
1992-93	3741	1024	2067	378	786	7996
1993-94	3348	1172	1764	363	846	7493
1994-95	2961	1278	1368	350	883	6840
1995-96	2835	1501	1537	390	1037	7300
1996-97	3038	1004	2047	528	931	7548

Source: Delhi Vidyut Board.