CHAPTER 11

ENERGY

1. Efficient and reliable energy supply is of critical importance to the country's economic development. Power is a subject in the concurrent list and it is the responsibility of both the Union and State Govt. to make the power sector efficient, robust and financially viable. Historic Power Sector Reform took place in Delhi in the beginning of Xth Five Year Plan i.e. on 01.07.02 with corporatisation of Transmission and generation and privatization of distribution of power.

2. Delhi has the highest per capita power consumption of electricity among the States and Union Territories of India. The per capita consumption of electricity in Delhi has increased from 1259 units per annum in 2000-01 to 1615 units in 2007-08.

3. From 1st July, 2002 under the Delhi Electricity Reforms Act, DVB was unbundled into Six companies comprising of a Generation Company, a Transmission Company, three distribution companies and one holding company. The Generation and Transmission functions are performed by the two companies i.e. Genco and Transco as wholly State Government owned companies, the distribution functions have been entrusted to two private companies viz BSES and TATA Power Ltd. BSES has taken up two distribution companies namely; BSES Rajdhani Power Ltd and BSES Yamuna Power Ltd., while the third company is with TATA Power which has been named as New Delhi Power Ltd. Transco company also makes available bulk supply of power to NDMC and MES for distribution in their respective areas.

4. GOVT. INVESTMENT IN THE ENERGY SECTOR

The share of energy sector in the total plan expenditure of Govt. of Delhi since last five years is given below:

Statement 11.1

Outlay & Expenditure under Energy Sector

(Rupees in crore)

Annual Plan	Total Plan Expenditure	Expenditure on Energy Sector	% of Total Plan Expenditure
2004 -05	4260.53	625.74	14.69
2005-06	4280.87	271.47	6.34
2006-07	5083.70	257.24	5.06
2007-08	8747.55	1256.75	12.89
2008-09	10000.00	585.75	5.86

5. Energy Demand and Power Transmission

5.1. Delhi Transco Ltd., a company notified as the State Transmission Utility, engaged in the business of transmission of Power in Delhi, has successfully met the power transmission requirements with proper operation, maintenance and augmentation of its transmission network consisting of 2 No. of 400 KV and 22 No. of 220 KV substations with associated transmission lines. Maintenance of 400/220 KV System is the core business of State Transmission Utility. Existing network of DTL consists of a 400 KV ring around the periphery of Delhi interlinked with the 220 KV network spread all over the city. The constituents of the network in detail are as given below:-

Statement 11.2

Parameters	400 KV Level	220 KV Level
No. of Sub Stations	2	22
Transformation Capacity (in MVA)	2520	6400
Transmission lines (length in Ckt.Km.)	227	575

Source : DTL

5.2 The performance of the transmission business has improved considerably over the past five years. Delhi Transco Ltd. has significantly improved its operations i.e. in the system availability, reduction of transmission losses, drastical reduction of load shedding etc. as depicted in the table below:-

Statement 11.3

Year	2004 - 05	2005 - 06	2006 - 07	2007 - 08	2008 - 09
Peak Demand met in MW	3490	3626	3736	4030	4034
Energy Consumption in Mus	20810	21184	21977	22372	21768
Shedding in MU	176	322	411	136	128
Shedding as % of energy consumption	0.84	1.5	1.87	0.61	0.61
Transmission Losses(%)	1.30	0.72	0.83	0.95	
System availability (in %)		97.71	98.87	98.50	

Source : DTL

5.3. The improvements may be discerned from the graphs below:

Chart 11.1

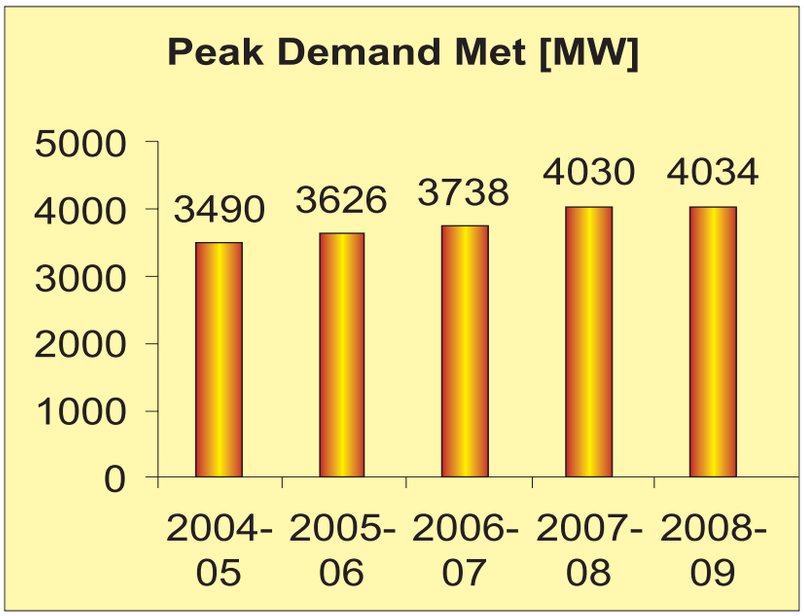


Chart 11.2

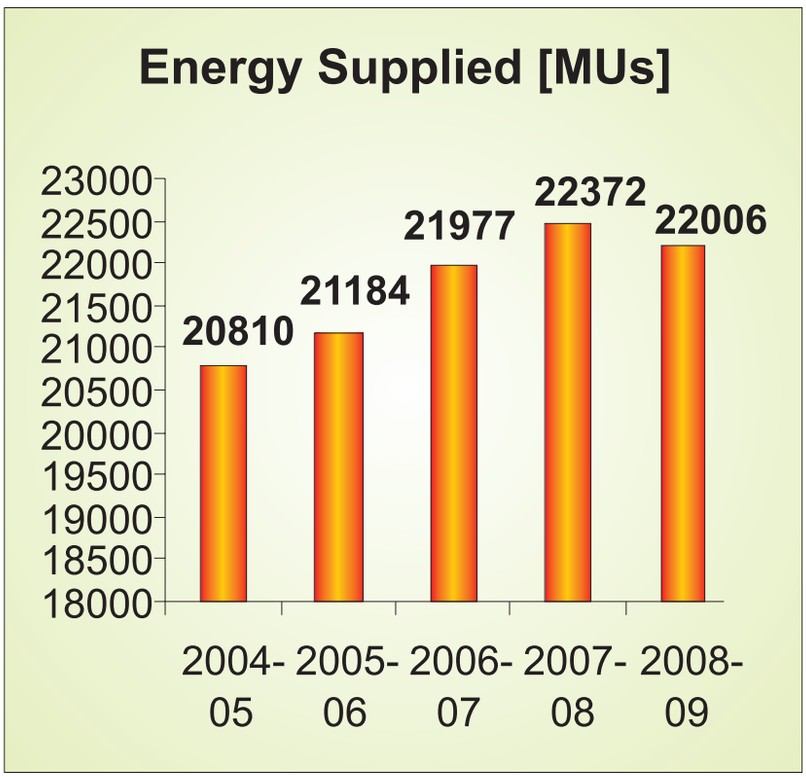
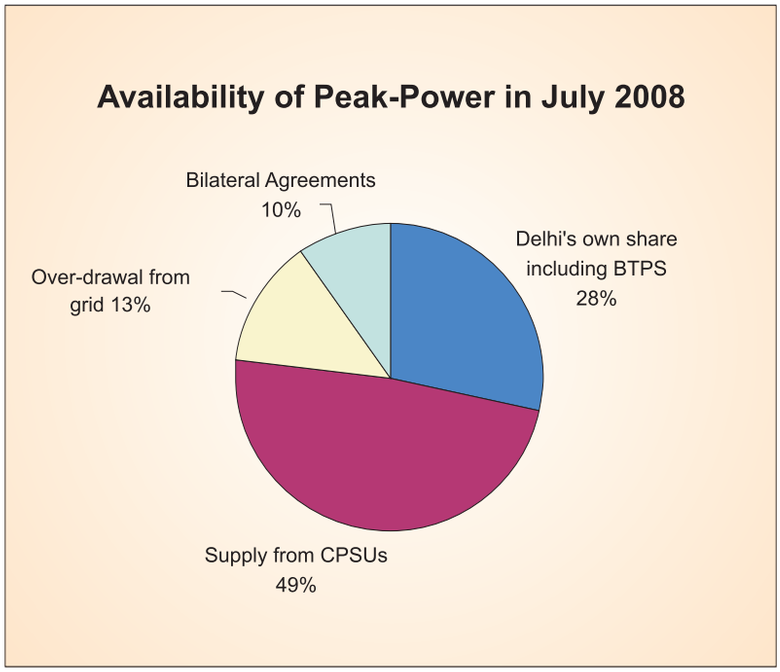


Chart 11.3



5.4. As per the projections made by the Seventeenth Power Survey Committee of Central Electricity Authority (CEA), Ministry of Energy, Govt of India, the maximum demand of Delhi will grow to 6961 MW by the end of 11th Five Year Plan.

5.5. Status of Major Power Transmission Projects.

- **Establishment of 400/220 KV substation at Mundka** - In order to inject power from Aravali Generating Station at Jhajjar, Haryana, 400/220KV substation of 2X315 MVA capacity has been planned, Preliminary work for processing of Tender was carried out during the year and LOA has been issued.

- **Establishment of 220 KV GIS substation at Ridge Valley** - In order to augment additional power supply to BSES Rajdhani Power Limited, NDMC, MES & Railways, a Turn Key order for establishment of 220 KV 2X160 MVA GIS substation has been placed.

- **Establishment of 220 KV GIS substation at IGI Airport** - For meeting the projected load of 145 MW of IGI Airport and load of DMRC for its fast track line to the airport and for the area between Vasant Kunj - National Highway-8, a preliminary work for award of contract for 2x160 MVA capacity substation was carried out.

- **Augmentation of Transformation Capacity at Gas Turbine substation** - For the purpose of carrying out the plan work of replacing the existing 100 MVA power transformers with 160 MVA power transformers, an order was placed on Crompton and Greaves Ltd. One transformer was received at site.

- **Establishment of 220 KV substation at Harish Chandra Mathur Lane** - To augment, strengthen and increase reliability of power supply to the NDMC area, which consists of VIP establishments, a 220 KV GIS substation was envisaged to be established at Harish Chandra Mathur Lane. The establishment of this substation shall provide another avenue for evacuation of power from 400/220 KV substation at Maharani Bagh.

6. Power Generation

6.1. While demand has been growing rapidly, capacity addition has remained relatively stagnant. Delhi's own generation installed capacity is 994.5 MW . Nearly 28% of Delhi's power needs are met by its own plants and BTPS and remaining 72% by import from NTPC and other sources .

6.2. The power generation in Delhi is undertaken by two Govt. owned companies i.e. Inder Prasth Power Generation Co. Ltd. (IPPGCL) and Pragati Power Corporation Ltd. (PPCL) with the following installed capacity. IPPGCL owned three plants i.e. Rajghat Power House, I.P. Power Station and GTPS:

Statement 11.4

INSTALLED CAPACITY

Rajghat Power House	Coal based	67.5x 2= 135.00 MW
I.P. Power Station	Coal based	62.5x3+60x1= 247.50 MW
GTPS	Gas based	30x6+34x3= 282.00 MW
Pragati Power Station	Gas based	104x2+122x1= 330 MW
	Total	**=994.50 MW**

6.3. Plant Load Factor

Plant load factor for the last five years is indicated below:

Statement 11.5

Plant Load Factor

(In percetage)

Year	2004-05	2005-06	2006-07	2007-08	2008-09
Overall PLF IP GCL	65.53	64.35	60.31	67.31	64.06
I.P. Station	42.45	45.42	43.92	47.26	44.05
R.P.H.	58.96	48.57	53.69	76.04	74.16
Gas Turbine Plant	62.32	70.76	57.17	60.38	53.05 (70.18)
Pragati Power Plant	88.27	79.53	77.99	84.72	83.07 (85.32)

Source : DTL

Note: Figures in the bracket are Plant Availability Factor which means had the gas been made available to the Plant, the Plant Load Factor would have been higher as indicated in the bracket.

6.4. The comparative picture of Plant Load Factor in Delhi vis-à-vis national average is indicated below:

Statement 11.6

COMPARATIVE PLANT LOAD FACTOR

(In percentage)

YEAR	DELHI	ALL INDIA
2003-04	59.1	72.7
2004-05	65.5	74.8
2005-06	56.8	75.1
2006-07	67.8	76.8
2007-08	54.92	N.A.

Source : Planning Commission, GOI & Delhi Transco Ltd.

6.5. Capacity Addition Programme

IPPGCL & PPCL are setting up new power plants for augmentation of Delhi's core generation and to meet the demand of power during the Commonwealth Games, 2010 and beyond. Two Gas Based Combined Cycle Power Projects of 1500 MW capacity at Bawana & 750 MW capacity at Bamnauli respectively are set up in Delhi by Pragati Power Corporation Ltd. A 1500 MW coal based Power Project is being set up by Aravali Co. Pvt. Ltd. (a JVC of NTPC, IPGCL & HPGCL) in Distt. Jhajjar, Haryana. Present status and commissioning schedule of these projects are as under:-

Project	Status	Commissioning Schedule (Best Effort)
1500 MW (N) Combined Cycle Gas Turbine Power Project at Bawana (Pragati-III)	Turn-key order placed on 30.4.08 on BHEL Civil works commenced	First Unit - March,2010 Last Unit- Oct., 2010
1500 MW Indira Gandhi Super Thermal Power Project (Coal based) in Distt. Jhajjar, Haryana	All inputs tied up. Work in Progress.	First Unit - April,2010 Last Unit- Oct., 2010
750 MW (N) Combined Cycle Gas Turbine Power Project at Bamnauli (Pragati-II)	Land acquired Preliminary studies are being conducted.	2011-12

7. POWER DISTRIBUTION

7.1. Delhi has a total consumer base of 33.30 lakh, electricity to whom is being supplied by 5 Licensees, 3 private distribution Companies (BRPL, BYPL, NDPL), NDMC and MES. Total consumers under 5 distribution Licensees and the area of supply is as under:

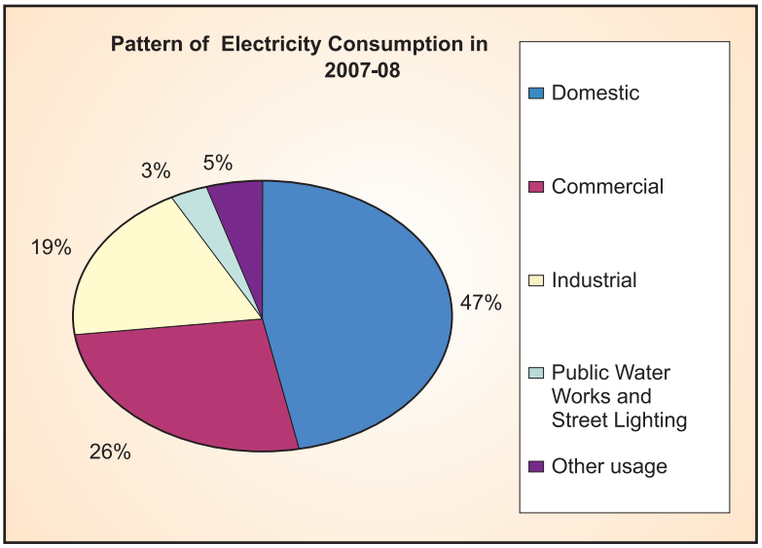
Statement 11.7

Licensees	Area of Supply	No. of Consumers (In lakh)	Share of Load (in percentage)
BSES Rajdhani Power Ltd. (BRPL)	South and West Delhi	13.25	42.00
BSES Yamuna Power Ltd.(BYPL)	Central and East Delhi	9.75	24.00
North Delhi Power Ltd. (NDPL)	North and North-West Delhi	9.50	28.00
New Delhi Municipal Committee (NDMC)	New Delhi area	0.70	5.20
Military Engineering Services (MES)	Delhi Cantt.	0.10	0.80

Source : DTL

7.2. Pattern of Electricity Consumption by various category of consumers in Delhi in 2008 is depicted below :

Chart 11.4



7.3. Aggregate Technical & Commercial (AT & C) Losses:

After the Power sector Reform, the position of Aggregate Technical and Commercial Losses (AT & C losses) was reduced drastically from 52% in pre-reform period to around 25% in 2007-2008.Yearwise position in respect of each private distribution Company is given below:

Statement 11.8

(In percentage)

Distribution Company	Opening levels of AT & C loss		2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
BYPL	57.2	Target	56.45	54.7	50.7	44.65	39.95	34.77
		Achievement	61.89	54.29	50.12	43.88	39.03	29.8 2
BRPL	48.1	Target	47.55	46	42.7	36.70	39.10	26.69
		Achievement	47.4	45.06	40.64	35.53	29.92	27.17
NDPL	48.01	Target	47.6	45.35	40.85	35.35	31.10	22.03
		Achievement	47.79	44.86	33.79	26.52	23.54	18.31

Source: Annual Report of DERC 2007-08 and Public notice of ARR Petitions of Discoms

7.4. The loss level reduction of AT & C losses targeted by DERC in the Multi Year Tariff (MYT) regulations for the three distribution Companies by the end of control period (2007-08 to 2010-11) and the annual loss reduction target during the control period as stipulated by DERC for the Discoms is as under:-

Target of AT & C Losses

(In percentage)

by 2010-11		Annual Target	
BRPL	-	17%	3.23
NDPL	-	17%	1.65
BYPL	-	22 %	4.26

7.5. Improved Distribution Infrastructue:

There has been significant addition to the infrastructure such as power transformers, EHV cables, installation of distribution transformers, installation of 11 KV feeders, shunt capacitors etc. by the three private distribution companies and corresponding augmentation of grid and Grid Stations by Delhi Transco Ltd. Capital investments made by three DISCOMs are as under:

(Rs In Crore)

Discoms	FY 2002 - 03	FY 2003 - 04	FY 2004 -05	FY 2005 -06	FY 2006 - 07	FY 2007 - 08 (Prov.)	G.Total
BRPL	76.38	114.56	538.75	618.54	306.21	128.24	1782.68
BYPL	56.36	87.69	414.42	298.92	209.08	117.53	1184 .00
NDPL	48.51	299.40	338.20	431.00	270.00	325.00	1712.11
Total	181.25	501.65	1291.37	1348.46	785.29	570.77	4678.79

8. Benefit to Citizens as Consumers after Reform

Though there has been increase in the cost of living and cost of production in the Electricity but Tariff for consumers (Poor Citizens) have been reduced to Rs. 1.20 from 01st March, 2008 as compared to Rs. 1.75 even existing in 2002.

- No Tariff increase has taken place in the Domestic Category since 2004.
- Load shedding is much less as compared to 2002 and is only 0.6% of the Energy supplied against 2.3% in 2002.
- Voltage is within permissible limit and Voltage Stablizer and Inverter sales have gone down, a saving to Citizens/Consumers.
- Meter replacement and new connection procedure have been simplified.
- Tariff in Delhi is the lowest in Delhi as compared to all Metros in Delhi Current. Tariff is Rs. 1.20 against Tariff upto 200 Units - as companed to Rs. 2.18 in Mumbai (BEST), Rs. 4.32 in Kolkata and Rs. 3.50 in Chennai.
- Multiple Forums exist to ensure redressal of public grievances :

  (a) Citizen's Grievance Redressal Forun\m uder Electricity Act, 2003.

  (b) Public Grievance Cell of Power Department of GNCTD.

  (c) Aap ki Sunwai' of Delhi Govt.
- Any consumer can get the Meter Testing carried out on demand at a nominal cost by independent Third Party i.e. Central Power Research Institute of Govt. of India.
- New Complaint Redressal System is much faster.
- Transformer failure rate was 15% in 2002 and now it is less than 2%.
- All single delivery contractors have been removed and all consumers are being provided with metered connection and shall be the consumers of Distribution Licensees.
- High Voltage Distribution System provided to reduce losses and to curtail theft of Electricity.
- Arial Bunch Conductors provided for LT and HT lines for safety.

9. The Power Sector Reform in Delhi w.e.f 01-07-02 with corporatisation of both transmission and generation business and with privatization of power distribution is a great success and showcased the reform model in the country with a number of improvements in the power sector. The positive aspects of the reform process in Delhi Power Sector are elaborated as under:-

- Loss making Delhi Vidyut Board was converted into profit making self-sustainable power utility by adopting pro-active reform strategy.
- Aggregate technical and commercial losses have been brought down to around 25% in 2008-09 from 52%.
- The power purchase cost in past seven years has increased by 25%, cost of consumable goods has increased by 55% whereas actual tariff being paid by middle class consumers consuming up to 200 units per month has been brought down by 15%.
- Increasing load growth was successfully met by arranging adequate power supply. The average peak demand met has increased to 4030 MW in 2007 from 2670 MW of 2001-02.
- Load shedding has been brought down to 0.6% (2007-08) from abnormally high 4.9% in year 2000-01.
- Peak demand deficit of Delhi is very low of around -1.5% against the national average of 12.3%
- Plan support to power utilities has decreased from $37.54 Million(2002-03) to $6.11 Million (2006-07), that to only Government power utilities as Loan.
- No support in terms of govt. funding of distribution sector. However capital expenditure on power infrastructure on distribution has been increased to around Rs. 4678 crore during 2002-03 to 2007-08.
- Power Utilities like NDPL, DTL and PPCL are paying Dividend.
- Structured reform of Distribution Sector in Delhi has graduated Delhi Power Sector from the stage of Single buyer to the stage of wholesale competition.
- Distribution Companies are buying power directly from Generator, Traders, other Discoms etc.
- Current Open Access Policy allows Domestic consumers having load of 1 MW of Power to approach any generator/trader/distribution companies etc as per his choice without any extra cross subsidy surcharge and additional surcharge.