

CHAPTER 11

ENERGY

1. Energy is a critical input for economic development and one of the vital needs of every citizen. Globally, the per capita consumption of energy is often used as a barometer to measure the level of economic development. All forms of economic activity, be it agriculture, industry or services, is reliant on the uninterrupted supply of power. Delhi has the highest per capita power consumption among the States and Union Territories of India, with a consumption of 1265 KWH per capita per annum in 2004-05 as compared to the national average of 606 KWH.
2. In February 1997, the Delhi Vidyut Board (DVB) replaced the Delhi Electric Supply Undertaking (DESU) which was an MCD undertaking. In Delhi, till 30th June, 2002, DVB was responsible to provide electricity to areas falling within the jurisdiction of municipal limits and supplying electricity in bulk to New Delhi Municipal Council (NDMC) and the Delhi Cantonment Board (DCB) which in turn distributed it within their own areas. Later, w.e.f. 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.

INVESTMENT IN THE ENERGY SECTOR

3. 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

(Rupees crore)

Five-Year Plan	Period	Total Plan Expenditure	Expenditure on 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	1990-95	6,208.32	1,555.92	25.06
Ninth	1997-2002	13465.09	3589.69	26.66
Tenth	2002-2007	23000.00 [Outlay]	3457.50 [Outlay]	15.03
Annual Plan	2002-2003	4404.84	1576.80	35.80
Annual Plan	2003 – 2004	4609.22	1706.29	37.02
Annual Plan	2004 –2005	4260.53	625.74	14.69
Annual Plan	2005-2006	4280.87	271.47	6.34

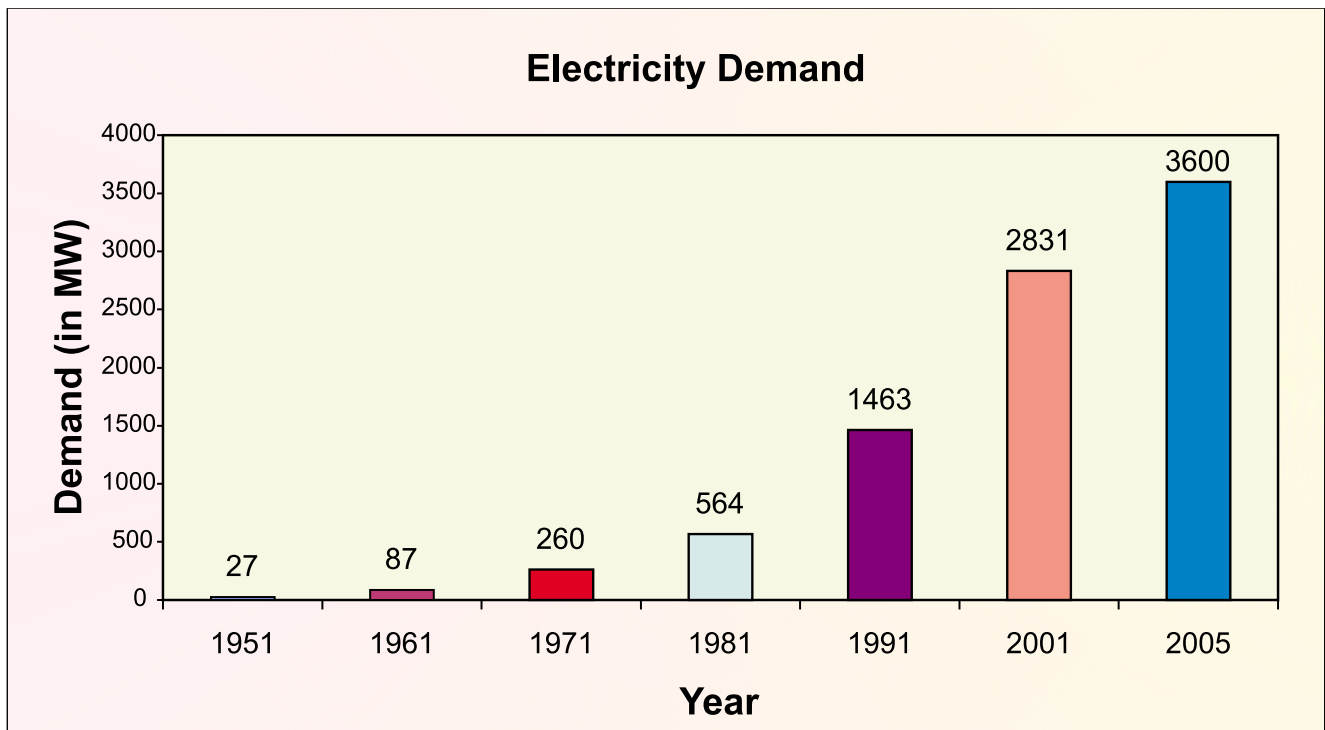
ENERGY DEMAND

4. The power demand in Delhi is growing at the rate of 5-6% per annum. From a peak demand of only 27 MW in 1951, Delhi's power demand crossed 3600 MW on 23rd June, 2005. Delhi Transco Ltd. (DTL) has met this demand from various sources as detailed below:-

Availability from Delhi's own plants	1116 MW
Availability from Central Sector Stations	2115 MW
Availability from other states through bilateral arrangements.	369 MW
Total demand met	3600 MW

5. 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.

Chart 11.1



6. The overall supply of power in Delhi has improved significantly as the load shedding decreases year after year as shown hereunder:-

Statement 11.2

ENERGY DEMAND AND LOAD SHEDDING

Year	Peak Demand Met (MW)	Energy consumed in Million Units	Load shedding in Million consumption	Load shedding in % with Units
2001-02	2879	18448	558	3.02
2002-03	3097	19667	452	2.30
2003-04	3289	20385	229	1.12
2004-05	3490	20810	177	0.85

Source: Delhi Transco Ltd.

Power Generation

7. While demand has been growing rapidly, capacity addition has remained relatively stagnant. The net cost of generating power from Delhi's own plants is high due to low capacity utilisation and high fuel consumption by the plants. Delhi's own generation installed capacity is 994.5 MW but availability is only around 750 MW. Nearly 38% of Delhi's power needs are met by its own plants and BTPS and remaining 62% by import from NTPC and other sources (Chart 11.2).

Statement 11.3

INSTALLED CAPACITY

Rajghat Power House	Coal based	67.5×2	= 135.00 MW
I.P. Power Station	Coal based	$62.5 \times 3 + 60 \times 1$	= 247.50 MW
GTPS	Gas based	$30 \times 6 + 34 \times 3$	= 282.00 MW
Pragati Power Station	Gas based	$104 \times 2 + 122 \times 1$	= 330 MW
		Total	= 994.50 MW

CAPACITY ADDITION PROGRAMME:

8. No addition in generation capacity since financial year 2002-03 when Combined Cycle Pragati Power Project was commissioned. To meet the power demand of Delhi, the following projects are under consideration of Govt of Delhi.
- (i) Conversion of coal based Indraprastha Power Station to a 1000 MW gas based station, in phased manner:-

The proposal is to firstly carry out limited repair and maintenance works on Units No. 2,3,4

& 5 to have reliable generation around 170 MW for a period of about five years and simultaneously initiate action for installation of one module of 350 MW (nominal capacity) CCGT in the south side at I.P.Station. Subsequently to replace Units No. 2,3,4 & 5 with gas based units in phased manner so that ultimately I.P. Station becomes gas based station of 1000 MW capacity. The first CCGT module is expected to be commissioned during 2009-10.

(ii) **Pragati Phase-II Project:**

Installation of a 350 MW capacity (nominal) gas based power project on the east side of Ring Road over the ash pond area of I.P.Station, between Bhairon Marg crossing and Nizamuddin Bridge. NTPC has prepared feasibility report. NTPC is also carrying out EIA study and preparing specifications for tendering. The best effort zero date for the project is June, 2006 and commissioning of Units from 18 months to 27 months thereafter.

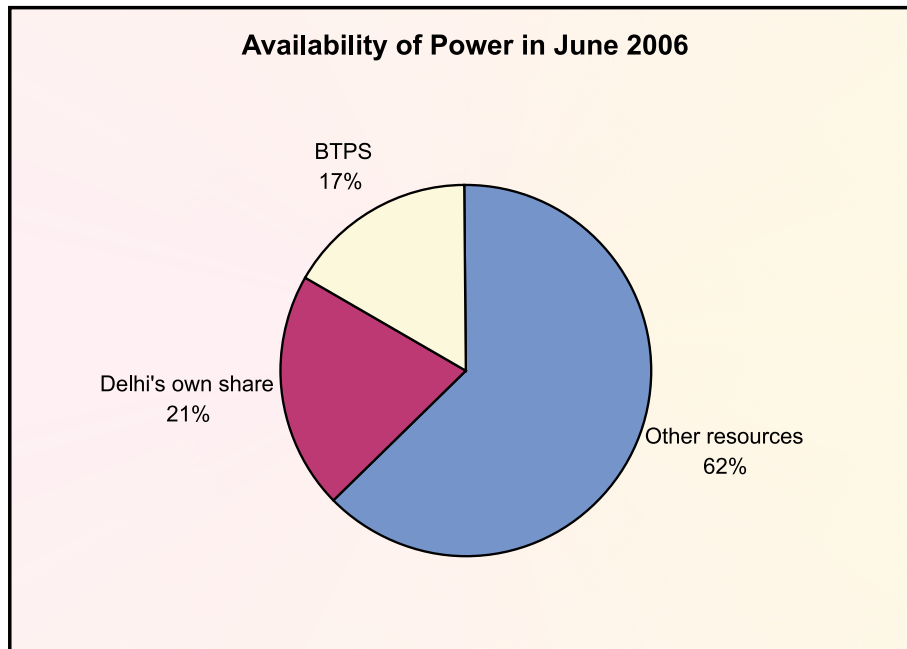
(iii) Agreement with NTPC for 480 MW Power Plant at Dadari.

(iv) 600 MW power has also been tied up with Tehri Project.

(v) Installation of a 1000 MW coal based thermal power plant at Chhattisgarh.

(vi) Setting up of 1000 MW Gas based power plant at Bawana.

Chart 11.2



Source : Power Department

Plant Load Factor

9. Plant load factor for the last four years is indicated below:

Statement 11.4

Plant Load Factor

(In %age)

Year	2002-03	2003-04	2004-05	2005-06
Overall PLF	51.29	59.11	65.53	56.81
I.P. Station	28.65	35.38	42.45	45.42
R.P.H.	71.68	65.25	58.96	48.57
Gas Turbine Plant	49.14	49.03	62.32	70.46
P.P.S.	65.37	83.01	88.27	88.14

Source : Delhi Transco Ltd.

10. The comparative picture of Plant Load Factor is indicated below:

Statement 11.5

COMPARATIVE PLANT LOAD FACTOR

(In % Age)

YEAR	DELHI	ALL INDIA
End of 8 th plan (1996 – 97)	41.70	64.40
End of 9 th plan (2001- 02)	43.60	72.10
End of 2002- 03	51.29	72.20
End of 2003-04	59.11	72.70
End of 2004-05	65.53	74.8
End of 2005-06	56.81	NA

Source : Planning Commission, GOI & Delhi Transco Ltd.

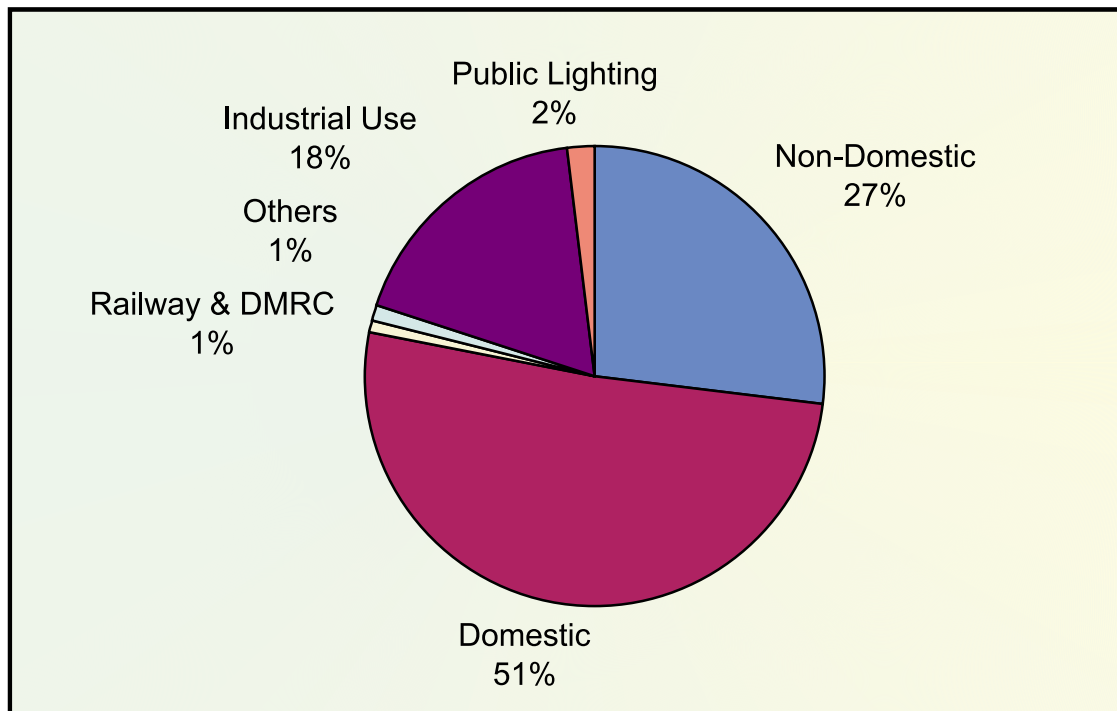
Transmission and Distribution (T&D) System

11. Delhi Transco Limited is responsible for transmission of power at 220 KV and above voltage levels

besides establishment, upgradation, operation and maintenance of EHV (extra high voltage) network and arranging bulk power supply to Distribution Licensees. The network of Delhi Transco Ltd comprises of sub-stations and transmission lines of 220 KV and 400 KV. At present DTL has 2 sub-stations of 400 KV and 21 sub-stations of 220 KV. In order to draw power from Northern Regional Grid, a 400 KV Double Circuit ring having capacity of 2000 MW per circuit has been established around Delhi which connects Dadri, Thermal Power Station of NTPC, Ballabhgarh, Bamnauli, Bawana and Mandola. DTL has transformation capacity of 5600 MVA at 220 KV level.

12. The Transmission losses of Delhi Transco Ltd have been reduced from 3.84% during 2002-03 to 1.69% in 2003-04 and further to 1.30% during 2004-05.
13. Details regarding number of consumers and pattern of consumption are at Table 11.3 and 11.4. The number of electricity consumers has increased from 10.11 lakh in 1980-81 to 27.87 lakh in 2004-05.

Pattern of Electricity Consumption in Delhi in 2005-06



14. POWER SECTOR REFORMS

The first major step taken by the Government of NCT of Delhi was to bring out a strategy paper on power sector reforms in February, 1999. The important suggestions outlined for structural reforms were:

- (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 66 KV to 400 volts, consumer power supply, metering and revenue collection in the existing six circles of the DVB. These companies should have the flexibility to be organized as joint ventures.
 - (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.
15. Based on strategy paper the Government took the following steps towards power sector reforms:-
- (a) Delhi Electricity Regulatory Commission (DERC) was set up and made functional from 1999.
 - (b) Delhi Electricity Reforms Act, 2000 was notified in March 2001. It provides for the constitution of an Electricity Regulatory Commission, unbundling of DVB into separate Generation, Transmission and Distribution Companies and increasing avenues for participation of Private Sector.
 - (c) Request for Qualification documents issued by Government and 32 companies including all the major Indian players in the Power Sector participated. Six companies short listed/pre-qualified for RPF stage.
 - (d) Six companies were registered in July 2001 splitting DVB into one generation, one transmission, three distribution and one holding company.
 - (e) Bids invited from private investors to buy equity of the distribution companies to turn them around.
 - (f) The Cabinet considered the bids unacceptable and a Core Committee was authorized to explore alternatives including negotiations.
 - (g) The Cabinet approved the report of Core Committee which had obtained acceptable bids after protected negotiations.

- (h) The Share Holding Agreement was signed with successful bidders.
- (i) Transfer Scheme was operationalized and management of Discoms was handed over to private distribution companies on 30th June, 2002.
- (j) The Power Sector of Delhi ushered in a new era on 1.7.2002 when DVB was unbundled into Six Companies viz Holding Co., Generation Co., Transmission Co. and three Distribution Cos. The management of three Distribution Companies had been given to private investors while stipulating targets for efficiency improvement and reduction in AT & C losses. Two Distribution Companies had been given to M/s BSES and one Distribution Company to M/s TATA Power.
- (k) As per Cabinet Decision, Govt of Delhi made available to Transmission Company an amount of Rs.3452 crore during the period 2002-06 as loan. Transmission Company used this loan to bridge the gap between its revenue requirement and its bulk supply price which it received from the distribution licenses.

Accelerated Power Development & Reforms Programme [A.P.D.R.P]

- 16. Govt of India had released an additional central assistance of Rs.105.51 crore to Delhi Govt under APDRP scheme on 28.3.2003. However, due to shortage of time and procedural requirement, these funds were released to BSES Yamuna Power Ltd.(Rs.32.43), BSES Rajdhani Power Ltd. (Rs. 37.26 crore) and NDPL (Rs.35.82 crore) in August, 2003.

PERFORMANCE RATING

- 17. At the instance of the Ministry of Power GOI, ICRA/CRISL has carried out a performance rating of the State Power Sector across all states based on August, 2003 data and its major findings and suggestions in respect of Delhi are as under:-
 - 1. A highest score of 57 has been assigned to the Delhi Power Sector amongst all states. At the time of last rating exercise (August 2002) Delhi was assigned 6th rank and 52.50 crore.
 - 2. There is a need to reduce revenue gap by increasing tariffs and cost rationalization. The tariff should uniform for all consumer categories.
 - 3. Currently the State has high dependence on CPSUs and other sources of power with limited generation capacity.
 - 4. The utilities have achieved 100% interface metering. However, the same is yet to be used for billing by the TRANSCO. Energy accounting has also been conducted by the DISCOMS, however the results from the same are still awaited.

5. The generation plants are aged and have low PLF (48.5%) and low availability factor (62.2%). The same need to be improved alongwith reduction of high levels of man power (4.27 Per MW).
6. The commercial viability of DISCOMs is contingent upon improvement in the low level of metered billing, reduction in the high level of AT & C losses and improvement in distribution infrastructure.
7. The DISCOM are making cash profits, as the cost of power is adjusted/subsidized by the Transco to cover their cost and present return rate.

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

Delhi's Power Sector Reforms have been highlighted in Economic Survey 2005-06 of Govt of India, as "encouraging" due to the following factors:

- i The actual Aggregate Technical and Commercial Loss levels for each distribution company has been better than respective target.
- ii There has been considerable improvement in the quality of power given the fact that load shedding has come down from 2.32 per cent of the energy input in 2002-03 to only 0.85 per cent in 2004-05.
- iii 100 per cent payment is being made to central power sector utilities for power purchased.
- iv About Rs.1250 crores invested by the distribution companies for capital schemes during the period 2002-03 to 2004-05.
- v The average response time for attending to break downs has improved considerably.
- vi The options available to consumers for payment of bills have increased.

For all the three companies a target of 17% AT & C loss reduction in first five years was fixed. The position of AT & C losses is indicated in statement 11.6.

Statement 11.6

In percentage (%)

Distribution losses in	Opening levels of AT & C loss	AT & C Company	
		2004-05	2005-06 [Provisional]
BYPL	57.2	50.12	43.41
BRPL	48.1	40.64	35.14
NDPL	48.01	39.79	28.00

Overall AT & C losses reduced from 52% in financial year 2000 to 39.7% in financial year 2005.

19. DISCOMs have reduced AT & C losses in the last 4 years in line with commitments made:-

NDPL

	FY2002-03	FY 2003-04	FY 2004-05	FY2005-06
Bid Level	47.60	45.35	40.85	35.35
Minimum Level	46.60	41.60	37.10	32.85
Actual	47.78	44.86	33.79	28.00
Over/(under) achievement Bid level	0.18	0.49	7.06	7.35

BRPL

	FY 2002-03	FY 2003-04	FY 2004-05	FY2005-06
Bid Level	47.55	46.00	42.70	36.70
Minimum Level	46.85	41.85	37.35	32.85
Actual	47.40	45.06	40.64	35.14
Over (under) achievement Bid level	0.15	0.94	2.06	1.56

BYPL

	FY 2002-03	FY 2003-04	FY 2004-05	FY2005-06
Bid Level	56.45	54.70	50.70	45.05
Minimum level	55.70	50.700	45.70	40.70
Actual	61.89	54.29	50.12	43.41
Over/(under)achievement- Bid level	5.44	0.14	0.58	1.64

20. Salient Features of Tariff Orders issued by DERC**FY 2002-03 & FY 2003-04**

- Increase in average retail tariffs by around 5% to bridge revenue gap consolidated sector revenue gap of Rs.92 Crore.
- Rationalisation of tariff structure by abolishing meter rent, minimum charges, misuse charges etc.

FY 2004-05

- Increase in tariff limited to 10% (average) to avoid a tariff shock
- Creation of Regulatory Asset of Rs.696 crore to be given on deferred basis.

FY 2005-06

- Quantum of regulatory asset revised from Rs.696 Crore to Rs.548 Crore on the basis of actual revenue gap of Rs.548 Crore for FY 2004-05.
- Regulatory Asset amortised to the extent of Rs.205 Crore.
- Average tariff hike of 6.6%.

21. Tariff increase

[In Percentage]

	FY 2002-03	FY 2003-04	FY 2004-05	FY 2005-06	FY 2006-07
Projected Tariff increase	10.00	10.00	10.00	5.00	3.00
Actual Tariff increase	5.00		10.00	6.60	

- Tariff increase in FY 2002-03 & FY 2003-04 has not happened as per projections.
- Cumulative tariff increase upto FY 2004-05 is of the order of 23% as against 40% as projected at the time of privatization.

22. Investments made by DISCOMs (Rs Crore)

Discoms	FY 2002-03	FY 2003-04	FY 2004-05	FY 2005-06 Projected
BRPL	31	88	923	477
BYPL	36	71	418	426
NDPL	49	226	328	361

❖ Improvements made by DISCOMs in respect of quality of supply

BSES DISCOMs

- Aggregate load shedding has decreased by 90% with load shedding of 4.4 MU during July 2004 as compared to load shedding 45.8 MU in July 2002.
- Distribution transformer failure rate has reduced by 98% with 2 DT failures in July 2004 as compared to 108 DT failures during July 2002.

NDPL

- Distribution transformer failure rate has reduced from 11.48% in 2002-03 to 1.7% in FY 2004-05 (upto Sept 04)
- Frequency of tripping has reduced from 35 in 2002-03 to 17.50 in FY 2004-05 (upto Sept 04)

23. Consumer grievances

Till July 31, 2005

Name of the CGRF	No. of complaints received	No. of complaints disposed off	No. of complaints pending
CGRF-BYPL	554	493	61
CGRF-BRPL	596	474	122
CGRF-NDPL	408	352	56

Name of CGRF	No. of cases decided in favour of complainants	No. of cases decided in favour of utility	No of cases recommended to DERC for imposition of fine
CGRF-BYPL	409	20	1
CGRF-BRPL	348	126	5
CGRF-NDPL	280	68	Nil

Majority of cases have been decided in favour of consumers.

24. Concerns of consumers

- Committees set up by DERC – random study found only 0.5% meters defective
- Special meter testing drive organized by DISCOMs – 0.72% of meters found fast
- BSES DISCOMs initiated independent third party review of meters by CPRI- meters found to be correct.
- NDPL consumers given choice to buy meters from the approved ISI vendors
- DISCOMs have put in place grievance redressal mechanisms
- DISCOMs taking several steps to provide better consumer services
- Advance information on planned shutdowns, Advance Payment Schemes, setting up of call centers, load upgradation camps.