CHAPTER - 5

ENERGY

Delhi's electricity consumption has increased from 19666 million units in 2002-03 to 29035 million units in 2014-15. Power sector reforms and unbundling of Delhi Vidyut Board in 2002 has reduced the aggregate transmission and distribution losses from 52% to about 13%. Prior to 2002, Delhi saw extensive power cuts and generation, transmission and distribution sector of Delhi was not in a healthy state.

However, the situation has changed dramatically and the system could deliver a peak load of 5925 MW last summer without any power cut. The per capita consumption of electricity of Delhi is much higher than the national average. Government prepared a proposal for islanding of Delhi, which was approved by Government of India. The project is under implementation.

On the generation side, Pragati Power Station of 330MW was commissioned in a record period of 2 years in 2003. The performance of this plant is among the best power plants of the country. The first phase of Bawana Pragati-III Power Plant with a capacity of 750 MW was commissioned in 2010-11. The second phase of this 1500 MW plant is also commissioned in 2013-14. Pragati-III Power Station at Bawana is now available fully for commercial operation. However, there are issues with the supply of requisite quantum of gas for this power plant, which has been taken up with Ministry of Petroleum & Natural Gas.

The year wise position of Approved Plan Outlay, Revised Plan Outlay and Expenditure under this sector is as under:

[₹ in crore]

S. No.	Year	Plan Outlay	Revised Plan Outlay	Exp.
1.	2007-08	1250.00	1263.13	1256.75
2.	2008-09	1015.65	585.75	567.08
3.	2009-10	461.00	10.00	3.39
4.	2010-11	110.80	256.00	250.84
5.	2011-12	1576.00	1842.36	1833.26
6.	2012-13	859.61	1275.00	1271.61
7.	2013-14	513.00	326.00	325.99
8.	2014-15	675.00	634.00	581.26
9.	2015-16	645.00	--	--

A. GENCO (₹ 14000.00 Lakh – Total)

1. 1500 MW Gas Based Combined Cycle Pragati-III Power Plant at Bawana:

Annual Plan Outlay 2015-16 : ₹13000 Lakh (Loan)

There are two modules of 750MW each. Each module comprises of 2 Gas Turbines (GTs) of about 250MW each and 1 Steam Turbine Generator (STG). The power plant needs 2.8 mmscmd of gas to generate 750 MW of electricity.

Pragati-III Power Station of 1371.20 MW (nominal capacity) is fully commissioned for commercial operation and availability of 95.69% achieved. Delhi will be getting 70% of power generation from this project (10% each to Haryana & Punjab and 10% Merchant Power).

Cost of the Project:

The Cabinet vide decision No.1412 dated 02.06.2008 accorded approval for the total approved project cost of the plant of ₹5195.81 crore and funding of 30% of the project cost as equity amounting to ₹1558.74 crore (100% equity share of Delhi Government released).

₹130 crore is allocated as loan for Pragati- III Plant at Bawana for project cost which includes release of Retention Liabilities on completion and performance to BHEL.

Present status of the project:

- Zero Date – 30.04.2008
- Original Schedule – 2010
- GT-1 - synchronized on 11th October 2010
- GT-2 - synchronized on 09th February 2011
- GT-1 declared for Commercial Operation on 27.12.2011
- GT-2 achieve full load on 17.02.2011
- GT-2 declared COD on 16.07.2012
- STG-1 Synchronized on 03.10.2011
- STG-1 declared COD on 14.12.2012
- GT-3 achieved full load on 27.06.2012
- GT-3 declared COD on 28.10.2013
- GT-4 achieved full load on 07.05.2013
- GT-4 declared COD on 27.02.2014
- STG-2 declared COD on 27.03.2014
- 1371.2 MW Pragati-III Power Station is now available fully for commercial operation

2. 1500 MW coal based Indira Gandhi Super Thermal Power Plant at Jhajjar

Annual Plan Outlay 2015-16 : ₹999 lakh (Equity)

Aims and Objectives of the Scheme:

Govt. of NCT of Delhi has signed a MOU with Haryana Govt. and NTPC Limited for setting up of a 1500 MW coal based power project in District Jhajjhar of Haryana by Aravali Power Co. Pvt. Ltd. (APCPL), a JV Co. of IPGCL, HPGCL & NTPC. This project is being executed by M/s NTPC Limited and the power generated will be shared equally by Delhi and Haryana states. There are 3 units of 500MW each. The Power Station is fully commissioned for commercial operation.

Present status of the project:-

- Date of EFC / Cabinet Approval: 31-05-2007 & GNCTD Cabinet approval on 16-10-2006
- Year of Commencement: 2007-08
- First unit has been synchronized with the system on 10th October 2010 and commercial operation started on 5th March 2011
- Second unit commissioned on 20 Oct 2011 and achieved a full load on 05.11.11. Its commercial operation started on 21st April 2012
- Third unit declared for commercial operation on 26th April 2013

Cost of the Project:-

i. The Project Cost is to be shared between NTPC, Haryana Govt. and Delhi Govt. in the ratio of 50:25:25

ii. Project Cost: ₹8587.97 crore, approved by cabinet vide decision no. 1986 dated 11.2.2013

iii. Equity already infused by GNCTD: ₹645 crore

iv. Provision of ₹9.99 crore has been made in Annual Plan 2015-16 for part funding of balance equity due to revised project cost

3. Development of Coal Block

Annual Plan Outlay 2015-16 : ₹1 Lakh (Capital)

Aims and Objectives of the Scheme:

To develop coal mine for fuel security and set up Coal Based Power Plant at Pit-head or elsewhere to meet the demand of power in Delhi.

Present status of the project:

- The earlier allocated coal block at Mara – II Mahan in District Singraulli to the 4 Govt. of Delhi and HPGCL has been cancelled after Hon'ble Supreme Court Order / Decision.
- Token budget provision has been made in anticipation of fresh allocation of a new coal block.

B. TRANSCO (400/220 KV Works) (₹45000.00 lakh – Total)

1. Augmentation of 400/220 KV Transmission & Transformation Works

Annual Plan Outlay 2015-16 : ₹ 20000 Lakh (Loan)

Delhi Transco Limited is the State Transmission Utility of the National Capital Territory of Delhi. It is responsible for transmission of power at 220KV and 400KV level, besides up gradation operation and maintenance of EHV Network as per system requirements. After the enactment of Electricity Act 2003, a new department: State Load Despatch Centre (SLDC) under Delhi Transco Limited was created, as an Apex body to ensure integrated operation of the power system in Delhi. SLDC is responsible for the real time Load Despatch function, O&M of SCADA System and Energy Accounting. Its mission is to facilitate intra and interstate transfer of power with Reliability, Security and Economy on sound commercial principles.

At present Delhi Transco Limited has power transmission network consisting of four number of 400 KV and thirty four number of 220 KV sub-stations and associated with transmission lines. In order to meet the load requirement of power in Delhi, following Transmission Network Projects (400/220 KV) are being proposed for the Year 2015-16 for increasing and strengthening the reliability of power supply:-

Details of Proposed Transmission Network Projects (400/220 KV) for the Year 2015-16

SN	Name of the Substations / Projects	Capacity in MVA / Ckt. Kms.	(₹ in crore)		Executing Agency
			Project Cost	Fund requirement in 2015-16	
400 kV Transmission Works					
1	S/C LILO of Mandaula – Bawana at Rajghat	2 x 34	140	60	ISTS
220 kV Sub-station Works					
1	Establishment of 220/33kV GIS at Rajghat	3 x 100	80	56.0	PGCIL
2	220/66KV S/Stn at Papankalan-III	2 x 160	55	40	PGCIL
3	220/66KV GIS at	2 x 160	100	60	PGCIL

SN	Name of the Substations / Projects	Capacity in MVA / Ckt. Kms.	(₹ in crore)		Executing Agency
			Project Cost	Fund requirement in 2015-16	
	Tughlakabad				
4	220/66KV GIS at (SGTN)	2 x 160	85	59.5	TBCB
5	220/33KV GIS at Preet Vihar	3 x 100	65	45.5	PGCIL
6	220/33KV GIS at Karmapura	3 x 100	85	59.5	PGCIL
7	220/66kV 1x160 MVA Trf at Gopalpur	1 x 160	11	11	DTL
8	220/33KV GIS at Maharani Bagh	3 x 100	100	70.0	DTL
9	220/66KV GIS at Budella	2 X 160	80	56.0	TBCB
10	220/66KV GIS at Hamidpur	2 X 160	80	56.0	DTL
11	220/33KV GIS at Jasola	2 x 300	70	49.0	TBCB
12	220/66KV and 220/33KV GIS at R K Puram	520	120	84.0	TBCB
13	220/33KV GIS at Chandrawal	3 x 100	70	49.0	TBCB
220 kV Transmission Works					
1	S/C Park St–Electric Ln- Rajghat-Park St U/G line	1 x 16	80	60	PGCIL
2	220/kV D/C Lodhi Road – Rajghat U/G line	1 x 6	80	60	PGCIL
3	LILO of D/C bamnauli –Naraina line at PPK-III	2 x 6	2	2	PGCIL
4	LILO of D/C BTPS- Mahrauli line at Tuglakabad	2 x 0.5	2	2	PGCIL
5	220kV D/C Tuglakabad – Okhla O/H line	2 x 1.5	5	5	PGCIL
6	220kV D/C Kashmiri Gate – Raj Ghat O/H line	2 x 4	10	10	PGCIL
7	LILO of Geeta Clny – Patparganj O/H line at Rajghat	2 x 4	7	7	PGCIL
8	LILO 220kV D/C Narela – Rohtak Road at SGTN	2 x 3	10	10	TBCB
9	220kV D/C Masjid Moth – Okhla U/G line	1 x 8	80	50	PGCIL
10	HTLS conductoring D/C Bamnauli-Mehrauli-BTPS	2 x 30	50	30	DTL
11	LILO of D/C U/G Ridge Valley-AIIMS at RKPuram	2 x 4	50	40	DTL
12	LILO of Najafgarh-Bamnauli D/C O/H at Budella	2 x 6	20	15	TBCB
13	D/C LILO Maharani Bagh – Sarita Vihar at Jasola	2 x 2	10	10	TBCB

SN	Name of the Substations / Projects	Capacity in MVA / Ckt. Kms.	(₹ in crore)		Executing Agency
			Project Cost	Fund requirement in 2015-16	
14	LILO of 220kV D/C Narela–Mandola at Hamidpur	2 x 0.5	2	2	DTL
15	2nd ckt LILO of Pragati –Sarita at Maharanibagh	2 x 1	10	10	DTL
16	220kV D/C Vasant Kunj – R K Puram U/G line	2 x 5	75	55	DTL
17	LILO of D/C Gopalpur–SabjiMandi at Chandrawal	2 x 2	2		TBCB
Additional Works required by summer 2015 for N-1 of Delhi system Not covered in 12th Plan					
1	IP Power to Rajghat Tower route modification		20		DTL
2	3 nos 220KV GIS bay addition at Kashmiri gate		20		DTL
TOTAL COST for 2015-16 (in Rs Crore)			**1676**	**1124**	
ISTS 2015-16 (Rs Crore)			**140**	**60**	**ISTS**
DTL 2015-16 (Rs Crore)			**418**	**274**	**DTL**
PGCIL 2015-16 (Rs Crore)			**651**	**457**	**PGCIL**
TBCB 2015-16 (Rs Crore)			**467**	**332.5**	**TBCB**

2. Integrated Power Development Scheme (IPDS)

Annual Plan Outlay 2015-16 : ₹ 20000 Lakh
(GOI Share as GIA - Capital) + ₹ 5000 lakh (State Share as Equity)

A new scheme namely "Integrated Power Development Scheme (IPDS)" has been launched (earlier known as Restructured Accelerated Power Development and Reforms Programme (R-APDRP)) by Ministry of Power, Government of India with an objective to reduce Aggregate Technical and Commercial (AT & C) losses, to establish IT-enabled energy accounting/auditing, to improve collective efficiency and improvement in billed energy based on metered consumption so as to facilitate 24x7 reliable and adequate power. Its prime objective is for strengthening of the sub-transmission and distribution network and to meet the critical gap in urban areas, metering of distribution / feeders/ transformers / consumers in urban areas and provisioning of roof top solar panels.

In terms of the guidelines of IPDS and OM dated 03rd December 2014 of Ministry of Power, Govt. of India, the funding pattern is: (i) 60% grant from GOI, (ii) 30% as loan by DISCOMS & (iii) 10% as equity by DISCOMs, where DISCOM is State owned. The loan and equity component is to be funded by the State where the DISCOMs are private companies. The grant component from GOI can be further increased by 15% of the loan component of 30% subject to achievement of prescribed milestone. As per the funding mechanism mentioned in Chapter-IV of IPDS guidelines and Para 12 of the OM of M/o Power, GOI dated 03rd December

2014, the loan component of 30% for IPDS is to be provided by PFC or by other Financial Institutions / Banks.

Delhi Transco Ltd. (DTL), being the Implementing Agency, has to arrange the loan component. The assets to be created under the scheme will be owned by State Govt. / State owned Company. These assets will be handed over to the concerned DISCOMs for their use during the license period on mutually agreed terms and conditions. The responsibility of operation and maintenance of these assets would be of the DISCOMs concerned.

Power Department has proposed projects worth ₹1425 crore to be covered under IPDS Scheme mainly for augmentation of transformation capacity, system improvement etc. of 66 KV, 33 kV, 11 kV works. Govt. of India has agreed for funding under IPDS to extend the financial assistance as "grant' to the tune of ₹850 crore (60% of the total cost) for addressing the gap in sub-transmission and distribution.

The balance 40% (10% as equity and 30% as loan) amount of ₹570 crore is to be arranged by Delhi Govt. and DTL respectively. The grant likely to be received from GOI and is to be routed through Annual Plan Budget of Govt. of NCT of Delhi.

Power Department has also proposed to appoint DTL as the Nodal agency through which the IPDS project have to be implemented. DTL is to enter into an agreement with PFC and three Private DISCOMs for implementation of the scheme. DTL is to execute a MoU with DISCOMs to recover the part of the project cost funded from the state budget.

Three more committees are proposed to be constituted by Power Department, i.e. Distribution Reforms Committee, Oversight Committee and Project Management Agency to oversee smooth implementation of the scheme.

The project proposal under IPDS is under submission to Govt. of India for financing of distribution related works during 2015-16.

The IPDS is to be implement by DTL in Delhi. Progress made so far:-

- Order regarding Implementation Agency issued.
- Order regarding Distribution Reforms Committee issued.
- Technical Committee for examination of DISCOMs proposal constituted.
- Need Assessment Document submitted to the Nodal Agency of Central Government.
- Appointment of Project Management Agency under progress.
- Detailed Project Report for planned scheme have been prepared and under evaluation by Technical Committee and Technical Expert.
- Action initiated for constitution of District Electricity Committee.

A budget provision of ₹ 250 crore (including ₹ 50 as GNCTD share + ₹200 crore as GOI Grant to be released from GOI) has been kept for the aforesaid scheme in Regular Budget 2015-16.

C. POWER DEPARTMENT

1. Shifting of HT / LT Transmission Lines

Annual Plan Outlay 2015-16 : ₹ 4300 Lakh

This scheme was initiated for shifting of HT (11000V) and LT (400V) Electricity Lines posing Threat to human lives. A decision was taken by the Council of Ministers vide cabinet decision no. 1310 dated 20.11.2007 to shift such lines where it poses danger to human life and property.

A provision of ₹ 43 crore is approved for 2015-16 for this scheme.

2. Renewable Energy

Annual Plan Outlay 2015-16 : ₹1000 Lakh (Capital)

The Energy Efficiency and Renewal Energy Management Centre (EE&REMC), which got transferred from Environment Department to Power Department from 2015-16 onwards, is the State Nodal Agency which has proposed for perspective plan for Renewable Energy Generation of 43 MW capacity from Solar and Non-Solar sources during 2015-16.

As per Delhi Electricity Regulatory Commission (DERC) orders in line with the amended National Tariff Policy issued by the Govt. of India on 22.01.2011, all Distribution Companies have to purchase power from renewable sources upto 0.6% of their total consumptions in 2015-16 and upto 9% in the year 2016-17. At present the total 5.6 MW power is being procured from solar sources which is about 0.05% and 16 MW power from municipal waste which is about 0.27% of the total allocation of all sources.

SOLAR

EE&REMC has prepared comprehensive Rooftop Solar Policy for Delhi and intends to encourage institutions and individuals to harness solar energy and make best use of it. As per the study conducted by Power Grid Corporation of India (PGCIL) the potential of rooftop solar PV Plants in Delhi is around 2200 MWp. At present Delhi has only 7 MW grid connected projects for Solar Power which have contributed nearly 2.34 MUs in 2014-15. It is proposed to augment the capacity of Solar Power to 14 MWp in the current financial year by EE&REMC, NDMC and Delhi Metro Rail Corporation.

NON-SOLAR

Delhi has also made good progress in other feasible modes of Renewable Energy. Disposal of Municipal Solid Waste is very challenging issue. In order to overcome this problem Waste to Energy Plants are being set-up at various locations in Delhi to generate electricity.

Renewable Energy Generation Capacity Perspective Plan Estimates				
SN	Year	Source and Capacity in MW		Total Capacity Targeted in MW (Cumulative)
		Solar	Non Solar	
1	2014-15	7	16	23
2	2015-16	15 (7+8)	28 (16+12)	43
3	2016-17	35 (15+20)	52 (28+24)	87
4	2017-18	55 (35+20)	52	107
5	2018-19	75 (55+20)	52	127
6	2019-20	95 (75+20)	52	147
7	2020-21	115 (95+20)	52	167
8	2021-22	135 (115+20)	52	187
	Total	**135**	**52**	**187**

PROGRESS

- Net Metering Regulations and Guidelines are in place.
- A comprehensive draft Rooftop Solar Policy has been prepared by EE&REMC which is under approval.
- Govt. of India approved for installation of Grid Connected Rooftop Projects in NCT of Delhi.
- DERC in order to facilitate installation of Grid Connected SPV Power Plants has issued the Net Metering Regulations and Guidelines in 2014.
- All the grid connected projects have contributed to nearly 7 MW of power in Delhi till November 2014 generating around 2.34 MUs in 2014-15.
- It is proposed to develop New Delhi Municipal Council (NDMC) area as Solar City by installing SPV panels on rooftop of Govt. buildings, Metro Stations, Bus Stops, etc.
- Ministry of New & Renewable Energy, GOI has approved central financial assistance of ₹21.60 crore (@ ₹2.7 crore per MWp) for aggregate capacity of 8 MWp grid connected Rooftop Projects in NCT of Delhi.
- Solar Photo Voltaic (SPV) Power Plant of 2.14 MWp at Indira Gandhi International Airport has been successfully installed and commissioned.
- Solar Photo Voltaic (SPV) Power Plant of 1.5 MWp at Yamuna Bank Depot has been installed and commissioned by Delhi Metro Rail Corporation.

- A 500 Kg and 50 Kg per day capacity of Biogas plant utilizing kitchen waste are operational at Delhi Secretariat and Delhi Technical University respectively.
- A 16MW Waste-to-Energy Plant, largest integrated waste management project with a capacity to dispose and process 2000 tons garbage per day, is operation since 2012 at Okhla.
- A 12MW Waste-to-Energy Plant for utilizing municipal solid waste to generate electricity is under progress at East Delhi.
- A 24MW Waste-to-Energy Plant for utilizing municipal solid waste to generate electricity is under progress at Bawana.

3. State Energy Conservation Fund (SECF)

Annual Plan Outlay 2015-16 : ₹200 Lakh (Capital)

Clause 16 (1) of the Energy Conservation Act 2001 requires State Govt. / UTs to constitute a fund called SECF for the purpose of promotion of efficient use of energy and its conservation within the State. A scheme titled Contribution to SECF was approved by the Govt. of India. As per the scheme, the contribution under SECF is made to those State Govt. / UT who have notified their SECF and finalized the rules and regulations to operationalize the same. The scheme is for contribution to all the States / UTs with a maximum ceiling of ₹4 crore for any State / UT to be provided in two installments of ₹2 crore each. The second installment towards SECF is released only after the State have provided a matching contribution to the first installment of ₹2 crore.

In order to avail the full benefit of this central scheme to the tune of ₹4 crore, an Energy Conservation Fund is created in the current financial year amounting to ₹2 crore to finance the Energy Efficient Projects and Street Lighting etc.

This fund can be utilized for implementation of energy efficiency projects in public building including central govt., state govt. and central or state govt. undertakings/agencies' buildings, energy efficiency street lighting or common area lighting projects, energy efficiency projects in public drinking water pumping stations, etc. This will not only reduce the recurring expenditure of Govt. but will also help in conservation of electricity thereby reducing the load on the system and consumption during peaks.