CHAPTER-5

ENERGY

Power sector reforms and unbundling of Delhi Vidyut Board in 2002 has reduced the aggregate transmission and distribution losses from 52% to about 11%. Prior to 2002, Delhi saw extensive power cuts and generation, transmission and distribution sector of Delhi was not in a healthy state. Load Shedding successfully retained to only 0.10% of the total consumption providing relief to the people of Delhi.

Delhi's highest ever peak power demand of 6,526 MW was recorded in 2017-18 and may breach the 7,000 MW mark this year. 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 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.

Revised outlay & expenditure of 2016-17, Approved outlay & Revised Outlay 2017-18 and Annual Outlay 2018-19 for Energy Sector are as under:

[₹ in Crore]

Sector	2016-17		2017-18			2018-19 BE
	RE	Exp	BE	RE	Exp	
Energy	225	187.77	295	247	221.85	138

Major Project / Program/Scheme details and their Budget Provision for financial year 2018-19 is as under:

A. GENCO (₹ 2598.00 lakh – Total) :-

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

Annual Outlay : ₹ 2500 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 already released).

₹ 25 crore is allocated as loan for Pragati- III Plant at Bawana towards 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 Outlay : ₹ 98 lakh (Equity)

Aims and Objectives of the Scheme:-

Govt. of NCT of Delhi 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 executed by M/s NTPC Limited and the power generated is 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 20th 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 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. GNCTD has already infused its 100% equity contribution of ₹ 645 crore.

iv. IPGCL / PPCL informed that the project cost now proposed to be revised to ₹ 10131.82 crore including additional capitalization in line with CERC regulations upto cutoff date, i.e. 31.3.2016. However, the proposed revised project cost of ₹ 10131.82 crore is yet to be approved by the Competent Authority / Cabinet.

B. TRANSCO (₹ 5002.00 lakh – Total) :-

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

Annual Outlay : ₹ 5000 lakh (Loan)

Delhi Transco Limited (DTL) 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. It's 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 six number of 220 KV sub-stations and associated with transmission lines. DTL is having 400 kV transmission lines of 249 ckt. KM and 220 kV lines of 824 ckt. KM, transformation capacity of 5410 MVA at 400kV level and 12440 MVA at 220 kV level as on 31.03.2018. In order to meet the

load requirement of power in Delhi, following Transmission Network Projects (400/220 KV) are being proposed for the Year 2018-19 for increasing and strengthening the reliability of power supply:-

Details of Proposed Major Transmission Network Projects for the Year 2018-19

SN	Name of the Substations / Transmission Line Projects	Capacity in MVA / Ckt. Kms.	Project Cost (₹ in crore)	Fund requirement in 2018-19 (₹ in crore)	Executing Agency
1	220/66 kV GIS at Tughlakabad (MOU-II)	2 x 160	157.00	25.00	DTL
2	220 kV S/C Park Street-Electric Lane – IP Power Park Street (MOU-II)	2 x 18	116.00	82.00	DTL
3	220/66 kV GIS S/Stn. at R.K. Puram	2x100 + 2x160	109.83	48.97	DTL
4	Isolation, CT, PT/CVT & CB Replacement under PSDF Scheme	--	89.00	89.00	GOI share – 90%
5	220 kV GIS at Dwarka	220	60.00	13.00	DTL
6	HTLS Conductoring at Bamnauli – Mehrauli – BTPS	--	53.77	53.77	DTL
7	33 kV GIS Conversion at Okhla	33	28.97	28.97	DTL
8	100 MVA ICT to 160 MVA ICT capacity augmentation at Najafgarh	160	21.16	21.16	DTL
9	220 kV GIS Bay new additions at Kashmiri Gate	220	16.81	16.81	DTL
10	Double Circuit Over Head from Shalimar Bagh to SGTN	--	13.45	13.45	DTL
11	Installation of 220/66 kV, 160 MVA ICT at Kanjhawla	160	10.19	10.19	DTL
12	Multi Circuit from Kashmiri Gate to Rajghat	--	10.00	1.00	DTL

2. Integrated Power Development Scheme (IPDS):-

Annual Outlay : ₹ 1 lakh (GOI Share as GIA - Capital) +
₹ 1 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. It’s 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 initially 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 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.

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

- Order regarding appointing DTL as Implementing 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 (DPR) for planned scheme have been prepared and evaluated by Technical Committee and Technical Expert.
- Final DPR uploaded on IPDS website for onward submission to Monitoring Committee (MoP, GoI) after scrutiny by PFC on 27.8.2015.
- Action initiated for constitution of District Electricity Committee.
- Approval of DPRs by PFC/Ministry of Power awaited.

C. POWER DEPARTMENT:-

1. Payment towards land premium / land acquisition for subsequent leasing to DISCOMS:-

Annual Outlay : ₹ 2000 lakh (Capital)

The Ministry of Urban Development, Government of India has decided followings:-

a. DDA will allot land to Government of NCT of Delhi (GNCTD) at Zonal Variant Rates for setting up of electric sub-stations, etc. by Power Distribution Companies.

b. GNCTD may in turn allow the Power Distribution Companies to set up electric sub-stations etc. on "right to use" basis and on such terms and conditions as GNCTD may enter into with Power Distribution Companies.

c. The land should be put to use only for the specific purpose of setting up of electric sub-stations etc. and in no way put up to any other use or commercially exploited. This should be specified in the allotment letter by DDA.

d. DDA will allot only the minimum required land as per norms.

Subsequently, it has been decided by the Government of Delhi that GNCTD would make payment to DDA at Zonal Variant Rate along with ground rent, as applicable. Thereafter, GNCTD would sign a license / lease agreement with the Distribution companies and would charge appropriate annual rent/ license fees from the Distribution companies. The license deed would, inter alia, involve allowing the Distribution companies to use the land on "right to use" basis and on the basis condition that the land would be used only for the purpose of expansion of the distribution network, construction of electric sub-station and erection of related infrastructure and not for any other work by the power utility companies.

As the land would be initially obtained from DDA by GNCTD, initial payment has to be made by Government of Delhi.

2. Shifting of HT (11KV & 33KV) / LT (400V) Transmission Lines:-

Annual Outlay : ₹ 3000 lakh (Capital)

This scheme was initiated for shifting of HT (11000V & 33000V) and LT (400V) Electricity Transmission 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. Financing of the shifting cost in case of various categories of affected persons / institutions / colonies / farmhouses etc. was issued by Power Department vide its letter dated 27.11.2009 after Cabinet Decision No. 1588 dated 9.11.2009.

3. Renewable Energy:-

Annual Outlay : ₹ 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 from Solar and Non-Solar sources.

EE&REMC is to work as ‘State Designated Agency (SDA)’ to coordinate, regulate and enforce Energy Conservation Act, 2001 in Delhi in association with Bureau of Energy Efficiency (BEE). The Centre, as a ‘State Nodal Agency (SNA)’, has to implement new and renewable energy projects in the city of Delhi in association with Ministry of New & Renewable Energy (MNRE), Govt. of India. The Centre is responsible for implementation of Energy Conservation Building Code, creating awareness and disseminating information for efficient use of energy and its conservation, development of solar power and other renewable energy projects, monitoring the achievements of Renewable Purchase Obligations (RPO), creating awareness about the benefits of solar power through electronic media, print media, conducting workshops and training programmes, exhibitions, seminars and conferences.

As per Delhi Electricity Regulatory Commission (DERC), the target of Renewable Purchase Obligation (RPO) has been increased from 14.25% in 2017-18 to 17% in the year 2018-19. Total **Renewable Energy** (Solar + Waste-to-Energy) Installed Capacity in the State of Delhi as on April'2018 = 140.86 MW (88.86 MW from Solar + 52 MW from WTE plants).

During FY 2018-19, following is proposed under **Green Budget**:-

- Addition of 74 MW of solar power.
- Purchase of 1000 MW of Green Power i.e. from solar and wind-based generation in the coming year.
- Limited-time Generation Based Incentive (GBI) for existing and future net metered connections in the domestic/residential segment. A GBI of ₹ 2 per unit (kWh) of gross solar energy generated is being offered for 3 years on first come first serve basis under "Delhi Solar Policy-2016".
- To bring out a Group Net Metering policy to enable utilisation of huge solar potentials in Govt Schools, Mandis and other Government buildings which can also turn into surplus generators.
- Pilot scheme named Agriculture-cum-Solar Farm scheme. The scheme will incentivise the installation of solar panels on raised structure on agricultural farms without affecting the normal farming activities that will continue below the solar panels.
- Implementation of Building Energy Efficiency Programme (BEEP) wherein power consumption audit in various office/government buildings will be carried out beginning with buildings under Power Department.
- Enforcement of Energy Conservation Building Code (ECBC).

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. For mass scale adoption of solar energy as green power in Delhi, a Policy named as "Delhi Solar Policy-2016" has been notified on 27.09.2016 with an objective to achieve roof top solar growth in Delhi : 1000 MW by 2020 and 2000 MW by 2025.

Present Status:-

- Total **Solar** Energy Installed Capacity in the State of Delhi as on April'2018 - 88.86 MW

Target of Delhi Govt. 2018-19 :-

- Installed capacity of 150 MW of **Solar** Power by the end of FY 2018-19 in Delhi from present capacity of 88.86 MW.

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.

Three municipal corporations, New Delhi Municipal Council and Delhi Cantonment Board send around 8,370 tons of garbage to the three landfills at Bhalswa, Okhla and Ghazipur. With two Waste-to-Energy plants at Timarpur - Okhla & Ghazipur already functioning and a third at Narela-Bawana, inaugurated in March 2017, Delhi will have the capacity to use up almost half of the garbage that is generated daily.

Present Status:-

Total **Waste-to-Energy** Installed Capacity in the State of Delhi as on April'2018 = 52 MW from following three WTE Plants:-

i. A 16 MW Waste-to-Energy Plant, with a capacity to dispose and process 2000 tons garbage per day, is in operation since 2012 at Timarpur - Okhla.

ii. A 12 MW Waste-to-Energy Plant for utilizing 1300 tons of municipal solid waste to generate electricity is under operation at Ghazipur (East Delhi).

iii. A 24 MW Waste-to-Energy Plant for utilizing municipal solid waste to generate electricity inaugurated in March'2017 at Narela - Bawana, the biggest such plant in Delhi using 1300 tons of waste per day to produce power.

Status on ongoing installation work of new Non-Solar Plants/Proposals:-

- Two newly proposed Waste-to-Energy Plants in Delhi- (i) Bhalaswa (Capacity 20 MW), (ii) Tehkhand (Capacity 25 MW)

4. State Energy Conservation Fund (SECF):-

Annual Outlay : ₹ 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, a state budget provision amounting to ₹ 2 crore has been made in CFY 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.