

Business Plan for MYT
for the control period of FY 2019-20 to FY 2021-22
of Electricity Wing of Engineering Department, Chandigarh

Submitted to:

Joint Electricity Regulatory Commission
for the State of Goa & Union Territories,
Gurgaon, Haryana

Submitted by:

Electricity Wing of Engineering Department, Chandigarh

August, 2018

Prayers to the Commission

Electricity Wing of Engineering Department, Chandigarh respectfully prays that the Hon'ble Commission may: -

- a. Examine the proposal submitted by the Petitioner for a favorable dispensation as detailed in the enclosed proposal;
- b. Consider the submissions and allow the Business Plan for the period of FY 2019-20 to FY 2021-22 of Electricity Wing of Engineering Department, Chandigarh;
- c. Approve the Projections for No. of Consumers, Connected Load and Energy Sales for the control period of FY 2019-20 to FY 2021-22;
- d. Approve the Power Procurement Plan for the control period of FY 2019-20 to FY 2021-22;
- e. Approve the Capital Investment Plan for the control period of FY 2019-20 to FY 2021-22;
- f. Approve the Financing of Capital Schemes for the control period of FY 2019-20 to FY 2021-22;
- g. Condone any inadvertent omissions/errors/shortcomings and permit to add/change/modify/alter this filing and make further submissions as may be required at a future date;
- h. Pass such orders as the Hon'ble Commission may deem fit and proper, keeping in view the facts and circumstances of the case;

Electricity Wing of Engineering Department
Chandigarh, UT
(Petitioner)

Place: Chandigarh.

Date: August, 2018.

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List of abbreviations

Abbreviation	Full Form
A&G	Administrative and General
ACoS	Average Cost of Supply
Act	The Electricity Act, 2003
APR	Annual Performance Review
ARR	Aggregate Revenue Requirement
ATE	Appellate Tribunal of Electricity
BPL	Below Poverty Line
CAGR	Compound Annualized Growth rate
Capex	Capital Expenditure
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission
CGRF	Consumer Grievance Redressal Forum
CGS	Central Generating Stations
COD	Commercial Operation Date
Cr	Crores
Discom	Distribution Company
EWEDC	Electricity Wing of Engineering Department, Chandigarh
DSM	Deviation Settlement Mechanism
EHT	Extra High Tension
ERP	Enterprise Resource Planning
FPPCA	Fuel and Power Purchase Cost Adjustment
FY	Financial Year
GFA	Gross Fixed Assets
HT	High Tension
IEX	Indian Energy Exchange Limited
IPP	Independent Power Producer
ISTS	Inter State Transmission System
JERC	Joint Electricity Regulatory Commission for the state of Goa and Union Territories
LT	Low Tension
MU	Million Units
MYT	Multi Year Tariff
NFA	Net Fixed Assets
NTPC	National Thermal Power Corporation
O&M	Operation and Maintenance
PGCIL	Power Grid Corporation of India Limited

Abbreviation	Full Form
PLF	Plant Load Factor
PLR	Prime Lending Rate
POSOCO	Power System Operation Corporation Limited
PPA	Power Purchase Agreement
R&M	Repair and Maintenance
REC	Renewable Energy Certificate
RLDC	Regional Load Despatch Centre
RoE	Return on Equity
RPO	Renewable Purchase Obligation
SBI PLR	SBI Prime Lending Rate
SERC	State Electricity Regulatory Commission
SLDC	State Load Despatch Center
SOP	Standard of Performance
T&D Loss	Transmission & Distribution Loss
UI	Unscheduled Interchange
UT	Union Territory

CHAPTER 1: INTRODUCTION

BACKGROUND

- 1.1 Union Territory of Chandigarh came into existence with effect from 1st November, 1966 after re-organization of erstwhile state of Punjab. An early entrant to the planning process, Chandigarh has emerged as one of the most developed Union Territories in India and even achieved the ranking of one of the best UTs in India with regards to investment environment, infrastructure and tourism. The total population of the Union Territory is around 10.55 Lakhs as per 2011 census.

The Local Distribution of electricity in Chandigarh was taken over by the Chandigarh Administration from the PSEB on 2nd May, 1967. The Electricity Wing of Engineering Department, Chandigarh is part of Chandigarh Administration, UT of Chandigarh and is responsible for Transmission and Distribution of power supply up to consumers' door-step. The Electricity Department of Chandigarh is responsible for ensuing quality and continuous power supply to each and every resident of Chandigarh at the most economical rates. All the sectors and villages of Chandigarh are electrified and any desiring consumer can avail power supply by submitting requisition in the prescribed form to the appropriate office of the Department subject to fulfilment of the requisite conditions and payment of charges. The Electricity Operation Circle is headed by Superintending Engineer along with five Executive Engineers.

The Electricity Department of UT Administration of Chandigarh, hereinafter called "EWEDC", a deemed licensee under section 14 of the Electricity Act 2003, is carrying out the business of transmission, distribution and retail supply of electricity in Chandigarh (UT). The Electricity Wing of Engineering Department, Chandigarh (EWEDC) has been allowed to function as an integrated distribution licensee of Union Territory of Chandigarh. The Chandigarh Electricity Department doesn't have its own generation and procures power from its allocation from central generating stations i.e. NTPC, NHPC, NPCIL, BBMB, SJVNL and THDC. The remaining is met through short term purchase under bilateral transactions and power exchange etc.

- 1.2 The table below gives an overview of present transmission and distribution infrastructure of Electricity Wing of Engineering Department, Chandigarh as of 31.03.2018.

Table 1: Present Infrastructure

Particulars	Quantity (Unit)
220 KV Feeders (Kms.)	108
66 KV Feeders (Kms.)	128
33 KV Feeders (Kms.)	22
11 KV Feeders (Kms.)	873
LT Lines (Kms.)	1621
Distribution Transformers (Nos.)	2130
Street Points (Nos.)	19627
220 KV S/S (Nos.)	1
66 KV S/S (Nos.)	13
33 KV S/S (Nos.)	5

1.3 The key duties being discharged by Electricity Wing of Engineering Department, Chandigarh are:

- Laying and operating of such electric line, sub-station and electrical plant that is primarily maintained for the purpose of distributing electricity in the area of supply of Electricity Wing of Engineering Department, Chandigarh, notwithstanding that such line, sub-station or electrical plant are high pressure cables or overhead lines or associated with such high-pressure cables or overhead lines; or used incidentally for the purpose of transmitting electricity for others, in accordance with Electricity Act, 2003 or the Rules framed there under.
- Operating and maintaining sub-stations and dedicated transmission lines connected there with as per the provisions of the Act and the Rules framed there under.
- Arranging, in-coordination with the Generating Companies, for the supply of electricity required within the boundary of the UT and for the distribution of the same in the most economical and efficient manner;
- Supplying electricity, as soon as practicable to any person requiring such supply, within its competency to do so under the said Act;
- Preparing and carrying out schemes for distribution and generally for promoting the use of electricity within the State.

1.4 The present power allocation of Chandigarh is approximately 277 MW from various generating stations including 94.89 MW from BBMB. The current demand is primarily dependent on the domestic and commercial which contributed approx. 77% to the total sales of EWEDC in the FY 2017-18.

OBJECTIVE OF BUSINESS PLAN

- 1.5 The Joint Electricity Regulatory Commission (JERC) for the State of Goa and Union Territories, in exercise of powers conferred by sub section (1) of section 181 and clauses (zd), (ze) and (zf) of sub section (2) of section 181, read with sections 61, 62, 83 and 86, of the Electricity Act 2003 (36 of 2003) and all other powers enabling it in this behalf, has issued the Joint Electricity Regulatory Commission for the State of Goa and Union Territories (Generation, Transmission and Distribution Multi Year Tariff) Regulations, 2018, hereinafter referred to as "MYT Regulations, 2018".
- 1.6 As per the Regulations, the Distribution Licensee are required to file a Business Plan for the control period of three financial years from April 1, 2019 to March 31, 2022, which shall comprise but not be limited to detailed category-wise sales and demand projections, power procurement plan, capital investment plan, financing plan and physical targets before the Hon'ble Commission as part of the Tariff filing before the beginning of the Control Period.
- 1.7 Accordingly, the Electricity Wing of Engineering Department, Chandigarh is hereby filing the Business Plan for the control period of the FY 2019-20 to FY 2021-22 based on the available data for the FY 2017-18 and previous financial years.
- 1.8 The Electricity Wing of Engineering Department, Chandigarh has prepared the Business Plan taking into the consideration the various existing internal factors and external business environment affecting the business.
- 1.9 The key objectives of this business plan are:
 - Providing a tool for strategic planning and management - The primary objective of the Business Plan is to analyze and anticipate the future requirements and strategically plan for the requisite capital investments, means of financing the schemes and various associated costs and document them which would serve as an effective tool for monitoring and execution of future works. It is important to project the growth in transmission and distribution network infrastructure commensurate with the energy demand required for fueling the economic growth targets of the state.
 - Meeting the regulatory compliance of submission of a business plan as mandated by the Joint Electricity Regulatory Commission, MYT Regulations, 2018.
 - Support in decision making leading to better Operational Efficiency: The Business Plan is prepared so as to be useful for the Management, associated stakeholders, the Hon'ble Commission and various government bodies. The future projections in the plan would help the department in decision making and taking proactive actions, and thus improving the overall operational efficiency of the transmission and distribution network infrastructure.

- 1.10 The Electricity Wing of Engineering Department, Chandigarh submits that the Business Plan being a dynamic document may need to be updated at periodic intervals considering the changes in the internal and external environment and these changes would be intimated to the Hon'ble Commission from time to time.

Review of Previous Control Period

- 1.11 The Electricity Wing of Engineering Department, Chandigarh submitted the petition for approval of Business Plan for the MYT control period FY 2016-17 to FY 2018-19 vide memo no. SEE/OP/C1-2015/210/2423 dated 17th August, 2015. The Hon'ble Commission after considering the petition and views of all the stake holders issued the Business Plan Order on 28th December, 2015. The Hon'ble Commission in its order had approved various parameters as required by the MYT Regulations, 2014. The Electricity Wing of Engineering Department, Chandigarh has made efforts to achieve the targets/trajectories as set out by the Hon'ble Commission. The yearly performances have been submitted for approval of the Commission vide APRs for the FY 2016-17 & FY 2017-18. Further, on completion of the audited accounts, EWEDC has also submitted the True-up petition for the FY 2016-17. The Hon'ble Commission has already passed order in respect of the above petitions. EWEDC shall be submitting the APR for the FY 2018-19 & True-up petition for the FY 2017-18 along with the MYT petition for the next control period FY 2019-20 to FY 2021-22.
- 1.12 The subsequent sections provide the highlights of the targets & achievements on various parameters as approved in the Business Plan & MYT petition for the control period FY 2016-17 to FY 2018-19.
- 1.13 **Capital Investment Plan** - The Hon'ble Commission in the Business Plan for the MYT control period of the FY 2016-17 to FY 2018-19 had approved the Capital Investment Plan for each of the years of the control period. The year wise capital expenditure approved and actual expenditure is provided in the table below:

Table 2: Comparison of Capital Investment Plan for Previous Business Plan

Particulars	2016-17		2017-18		2018-19	
	Approved in Business Plan Order	Actual	Approved in Business Plan Order	Actual (Unaudited)	Approved in Business Plan Order	Estimated
Capital Expenditure (Rs. in Crores)	25.82	12.65	21.69	13.15	12.64	13.00

- 1.14 **Capitalisation** - The year wise capitalization for the FY 2016-17 & 2017-18 & estimated capitalization for the FY 2018-19 vis-à-vis capitalization schedule approved is provided in the table below:

Table 3: Comparison of Capitalization for Previous Business Plan

Particulars	2016-17		2017-18		2018-19	
	Approved in Business Plan Order	Actual	Approved in Business Plan Order	Actual (Unaudited)	Approved in Business Plan Order	Estimated
Capitalisation (Rs. in Crores)	48.13	5.61	38.52	8.07	19.49	15.95

- 1.15 **T&D Loss Trajectory** - The year wise distribution loss for the FY 2016-17 & 2017-18 & estimated distribution loss for the FY 2018-19 vis-à-vis approved distribution loss trajectory is provided in the table below:

Table 4: Comparison of T&D Loss for Previous Business Plan

Particulars	2016-17		2017-18		2018-19	
	Approved in Business Plan Order	Actual	Approved in Business Plan Order	Actual (Unaudited)	Approved in Business Plan Order	Estimated
T& D Loss	13.25%	13.65%	12.75%	9.51%	12.25%	13.25%

- 1.16 **Sales Forecast** - The year wise sales for various categories of consumers for the FY 2016-17 & 2017-18 & estimated sales for the FY 2018-19 vis-à-vis approved sales is provided in the table below:

Table 5: Comparison of Energy Sales for Previous Business Plan

Category	2016-17		2017-18		2018-19	
	Approved in Business Plan Order	Actual	Approved in Business Plan Order	Actual (Unaudited)	Approved in Business Plan Order	Estimated
Domestic	760.27	721.70	818.46	731.94	881.11	779.80
Commercial	490.82	498.68	507.00	494.02	523.71	512.69
Large Supply	117.00	126.74	117.00	119.85	117.00	120.75
Medium Supply	104.72	116.08	104.82	119.33	104.92	123.57
Small Power	21.00	19.53	21.00	19.50	21.00	20.04
Agriculture	1.87	1.30	2.02	1.43	2.18	1.44
Public Lighting	25.67	21.83	27.74	17.73	29.96	18.54
Bulk Supply	89.06	80.60	92.26	80.60	95.57	81.85
Others Temporary Supply	7.00	4.98	7.00	4.40	7.00	4.40
Total	1,617.42	1,591.43	1,697.30	1,588.80	1,782.45	1,663.06

(In MUs)

- 1.17 **No. of Consumers** - The year wise no. of consumers for various categories of consumers for the FY 2016-17 & 2017-18 & estimated no. of consumers for the FY 2018-19 vis-à-vis approved no. of consumers is provided in the table below:

Table 6: Comparison of No. of Consumer for Previous Business Plan

(In No.)

Category	2016-17		2017-18		2018-19	
	Approved in Business Plan Order	Actual	Approved in Business Plan Order	Actual (Unaudited)	Approved in Business Plan Order	Estimated
Domestic	194,369	191,436	200,200	212,499	206,206	217,513
Commercial	23,038	23,493	23,498	25,942	23,968	26,742
Large Supply	108	99	108	97	108	97
Medium Supply	1,295	1,288	1,346	1,305	1,400	1,353
Small Power	1,275	1,275	1,275	1,281	1,275	1,287
Agriculture	121	119	121	124	121	124
Public Lighting	977	1,082	1,026	1,168	1,077	1,249
Bulk Supply	592	732	592	637	592	699
Others Temporary Supply	620	437	620	386	620	386
Total	222,395	219,961	228,786	243,439	235,367	249,450

- 1.18 **Connected Load** - The year wise connected load for various categories of consumers for the FY 2016-17 & 2017-18 & estimated connected load for the FY 2018-19 vis-à-vis approved connected is provided in the table below:

Table 7: Comparison of Connected Load for Previous Business Plan

(In KW)

Category	2016-17		2017-18		2018-19	
	Approved in Business Plan Order	Actual	Approved in Business Plan Order	Actual (Unaudited)	Approved in Business Plan Order	Estimated
Domestic	876,406	850,347	920,226	909,069	966,238	944,819
Commercial	430,983	424,746	456,842	446,005	484,253	471,132
Large Supply	74,661	70,044	76,155	69,431	77,678	70,312
Medium Supply	71,285	71,457	74,136	72,362	77,102	75,550
Small Power	19,655	19,565	19,852	19,717	20,050	19,906
Agriculture	737	748	744	843	751	861
Public Lighting	6,197	6,660	6,321	6,756	6,447	7,079
Bulk Supply	41,464	42,454	41,464	42,253	41,464	42,795
Others Temporary Supply	4,187	2,480	4,187	2,191	4,187	2,191
Total	1,525,574	1,488,501	1,599,926	1,568,627	1,678,169	1,634,643

- 1.19 **Power procurement Plan** - The Hon'ble Commission in the Business plan order approved the power purchase sources for the MYT control period FY 2016-17 to FY 2018-19. The approved power purchase sources are provided below:

Table 8: Power Purchase Sources approved in the Previous Business Plan

Sl. No.	Organization	Name of Project	Installed Capacity (In MW)
1	NTPC	Anta	419.33
2		Auraiya	663.00
3		Dadri GPP	829.78
4		Dadri II TPP	980.00
5		Kahalgaon II	1,500.00
6		Rihand I	1,000.00
7		Rihand II	1,000.00
8		Rihand III	1,000.00
9		Singrauli	2,000.00
10		Unchahar I	420.00
11		Unchahar II	420.00
12		Unchahar III	210.00
13		Jhajjar (APCPL)	1,500.00
14		Koldam	800.00
15	NHPC	Chamera I	540.00
16		Chamera II	300.00
17		Chamera III	120.00
18		Dhauliganga	290.00
19		Dulhasti	390.00
20		Parbathi III	520.00
21		Salal	690.00
22		Sewa II	120.00
23		Tanakpur	94.00
24		Uri-I	480.00
25	Uri II	240.00	
26	NPCIL	NAPP	440.00
27		RAPP (#3 and #4)	440.00
28		RAPP(#5 and #6)	440.00
29	SJVNL	NATHPA JHAKRI	1,500.00
30		RAMPUR	412.00
31	BBMB	BBMB 3.5%	2,711.00
32		BBMB 1 LU	-
33		BBMB 10 LU	-
34		PONG	396.00
35		DEHAR	990.00
36	THDC	Koteshwar	400.00
37		Tehri	1,000.00

1.20 The actual power procured from various sources for the FY 2016-17 & FY 2017-18 & estimated for the FY 2018-19 is provided below:

Table 9: Power Purchase Quantum for the 1st control period of Business Plan

(In MUs)

Sl. No.	Name of Project	FY 2016-17 Actual	FY 2017-18 Actual Unaudited	FY 2018-19 Estimated
	NTPC Stations			
1	Anta	16.32	4.75	4.75
2	Auraiya	7.05	2.51	2.51
3	Dadri GPP	31.67	24.49	24.49
4	Dadri II TPP	17.97	12.30	12.30
5	Kahalgaon II	23.52	23.30	23.30
6	Rihand I	67.36	79.32	79.32
7	Rihand II	75.83	66.37	66.37
8	Rihand III	59.88	52.37	52.37
9	Singrauli	37.71	22.71	22.71
10	Unchahar I	19.05	15.06	15.06
11	Unchahar II	29.53	22.84	22.84
12	Unchahar III	14.17	11.24	11.24
13	Unchahar IV	-	2.79	2.79
14	Jhajjar (Aravali)	24.49	54.77	54.77
15	Koldam	34.99	41.64	41.64
	NHPC Stations			
16	Chamera I	83.55	88.45	88.45
17	Chamera II	20.81	29.70	29.70
18	Chamera III	11.44	18.13	18.13
19	Dhauliganga	13.03	21.45	21.45
20	Dulhasti	25.75	37.14	37.14
21	Parbathi III	8.69	12.55	12.55
22	Salal	8.72	8.31	8.31
23	Sewa II	7.07	9.66	9.66
24	Tanakpur	3.55	3.94	3.94
25	Uri-I	16.92	14.01	14.01
26	Uri II	15.57	17.14	17.14
	NPCIL Stations			
27	NAPP	55.24	76.12	76.12

28	RAPP (#3 and #4)	19.89	20.48	20.48
29	RAPP (#5 and #6)	41.07	71.87	71.87
	SJVNL Stations			
30	NATHPA JHAKRI	69.17	91.90	91.90
31	RAMPUR (U Q)	8.12	13.85	13.85
	BBMB			
32	BBMB 3.5 %	518.48	560.38	560.38
33	BBMB 1 LU	126.23	83.57	83.57
34	BBMB 10 LU	5.05	23.18	23.18
	THDC Stations			
35	Koteshwar	10.18	13.97	13.97
36	Tehri	157.85	164.62	164.62
	Others			
37	CREST	2.04	3.78	3.78
38	Pvt. Solar	0.14	0.86	0.86
39	Bilateral/Exchange/UI	263.08	131.58	246.65
	Annual Total	1,951.17	1,953.07	2,068.13

1.21 **Operation & Maintenance Expenses** - The details O&M Expenses parameters approved in the business plan & actually achieved are provided in the table below:

Table 10: Comparison of Employee Expenses Norms for Previous Business Plan

Particulars	Approved for 1st Control Period	FY 2016-17 Actual	FY 2017-18 Actual Unaudited	FY 2018-19 Estimated
No. of Personnel		1,127	1,106	1,309
No. of Transformer		2,084	2,188	2,293
No. of Consumer		219,961	243,439	249,450
Employee Cost (Rs. in Crores)		64.65	68.82	81.45
No. of Personnel per 1000 Consumer (In No.)	5.19	5.12	4.54	5.25
No. of Personnel per Trnsformer (In No.)	0.58	0.54	0.51	0.57
Annual Employee Expenses per personnel (In Rs.)	497,998	573,647	622,242	622,242

Table 11: Comparison of A&G Expenses Norms for Previous Business Plan

Particulars	Approved for 1st Control Period	FY 2016-17 Actual	FY 2017-18 Actual Unaudited	FY 2018-19 Estimated
No. of Personnel		1,127	1,106	1,309
No. of Consumer		219,961	243,439	249,450
A&G Expenses (Rs. in Crores)		3.58	4.81	5.69
A&G Expense per Employee (In Rs.)	46,024	31,766	43,490	43,490
A&G Expense per 1000 Consumers (In Rs.)	242,883	162,756	197,585	228,216

Table 12: Comparison of R&M Expenses Norms for Previous Business Plan

Particulars	Approved for 1st Control Period	FY 2016-17 Actual	FY 2017-18 Actual Unaudited	FY 2018-19 Estimated
GFA (Rs. in Crores)		409.47	437.38	453.33
R&M Expenses (Rs. in Crores)		9.45	8.50	10.51
R&M Expenses (In %)	2.60%	2.31%	1.94%	2.32%

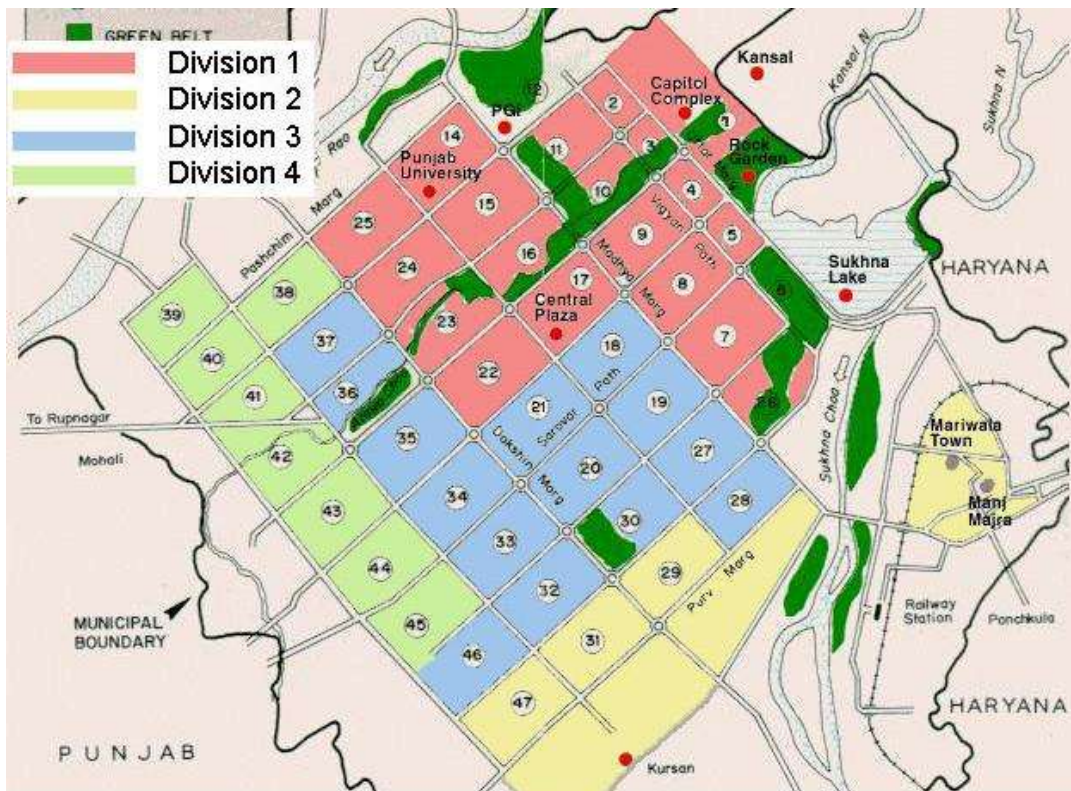
CHAPTER 2: ABOUT Electricity Wing of Engineering Department, Chandigarh

2.1 Union Territory of Chandigarh came into existence with effect from 1st November, 1966 after re-organization of erstwhile state of Punjab. The Local Distribution of electricity in Chandigarh was taken over by the Chandigarh Administration from the PSEB on 2nd May, 1967 and is responsible for Transmission and Distribution of power supply up to consumer's door-step for making quality and continuous power supply available to each and every resident.

AREA SERVED

2.2 Chandigarh comprises of an area of 114 sq. km. For operational purpose the area has been divided into 4 divisions.

Figure 1: Map of Area Served



ORGANIZATIONAL STRUCTURE

2.3 The Electricity Operation Circle is headed by Superintending Engineer along with five Executive Engineers with the employee strength of 1106 nos. (as on 31.03.2018).

POWER DEMAND AND SUPPLY

- 2.4 Electricity Wing of Engineering Department, Chandigarh is responsible for arranging power from various sources (as Chandigarh does not have its own source) and distribution and transmission thereof to all type of consumers. Power is being purchased from various central generating stations i.e. NTPC, NHPC, NPCIL, BBMB, SJVNL and THDC. The remaining is met through short term purchase under bilateral transactions and power exchange etc.
- 2.5 The present power entitlement to Electricity Wing of Engineering Department, Chandigarh is 277 MW. The peak demand for last year touched 399 MW (FY 2017-18) and it is anticipated to reach 404 MW in FY 2018-19. For the FY 2019-20, FY 2020-21 and FY 2021-22, the peak demand is projected to be 421 MW, 435 MW and 448 MW.

GRID DETAILS

- 2.6 Power supply to the Chandigarh is received mainly through the following three lines:
- 220 KV Sub Station at Kishangarh Manimajra through 220 KV double circuit Chandigarh - Nalagarh line from 400 KV grid substation Nalagarh (PGCIL),
 - 66 KV Chandigarh line from 220 KV Mohali (PSPCL) Grid substation to 66 KV Grid Substation Sector - 52 and Sector – 39,
 - 66KV Chandigarh line from 220 KV Dhulkot (Ambala) Grid substation to 66 KV Grid Substation at Sector - 28.
- 2.7 Further there are 13 nos. 66KV Sub-station in Chandigarh and 5 nos. 33KV substations details of which are provided in the table below:

Table 13: Sub-station Details

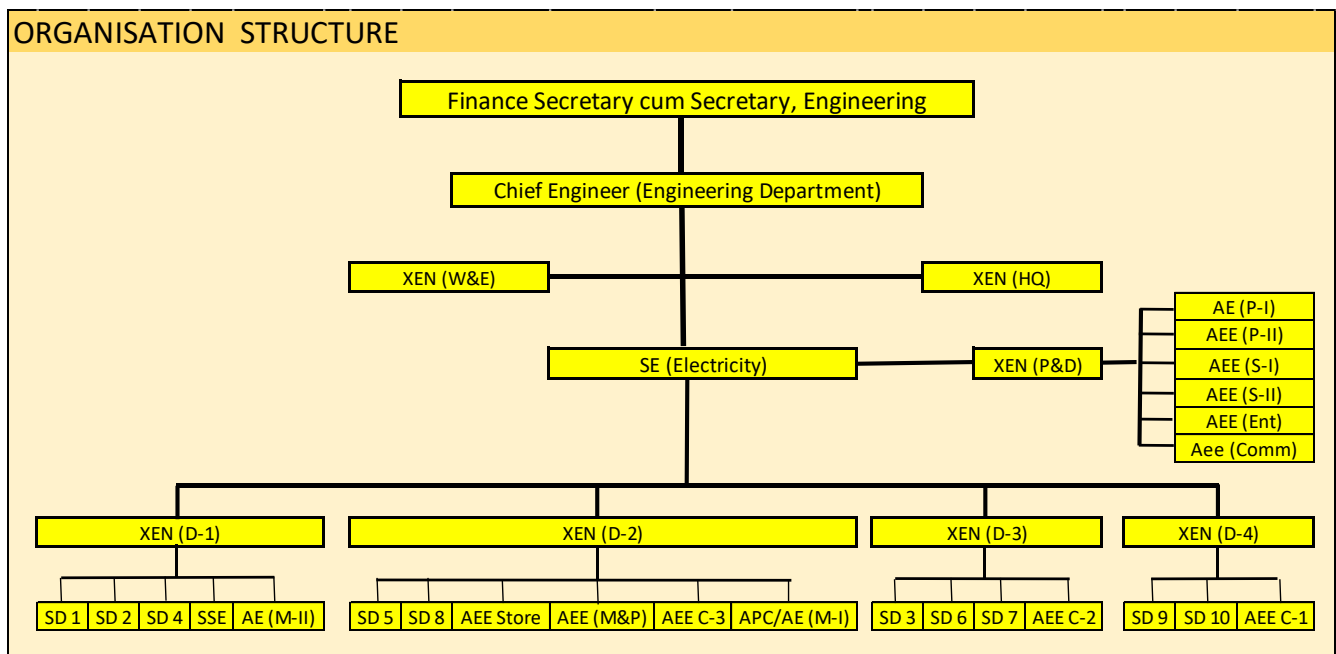
Sl. No.	Sub-station	Voltage Level (KV)	Installed Capacity (MVA)
220 KV Sub-station			
1	Kishangarh	220/66 KV	300 MVA
66 KV Sub-station			
2	B.B.M.B. Sector - 28	66/33/11 KV	101 MVA
3	Sector - 52	66/33/11 KV	107.5 MVA
4	Sector - 56	66/11 KV	40 MVA
5	Sector - 39	66/11 KV	52.5 MVA
6	Sector - 12	66/11 KV	50 MVA
7	Sector - 1	66/11 KV	32.5 MVA
8	Ind. Area Ph. 1	66/11 KV	57.5 MVA
9	Ind. Area Ph. 2	66/11 KV	45 MVA

10	Sector - 32	66/11 KV	45 MVA
11	I.T. Park M/Majra	66/11 KV	60 MVA
12	Sector - 47	66/11 KV	40 MVA
13	Mani Majra	66/11 KV	40 MVA
14	Sector - 18	66/11 KV	45 MVA
33 KV Sub-station			
15	Sector - 17	33/11 KV	43.5 MVA
16	Sector - 18	33/11 KV	24.5 MVA
17	Sector - 34	33/11 KV	25 MVA
18	Sector - 37	33/11 KV	10 MVA
19	Ind. Area Ph. 1	33/11 KV	12 MVA

ORGANIZATION STRUCTURE: ROLES AND RESPONSIBILITIES

2.8 Electricity Department is part of the Administration of Union Territory of Chandigarh & headed by the Superintending Engineer. Day to day work related to functioning of the Department is looked by the Executive Engineer (Elect.) at Division level. Under Division there are 10 Sub-Division headed by the Assistant Executive Engineer/Assistant Engineer. Executive Engineer at Division Office is also helped by Technical Section, Establishment Section and Account Section headed by the Accountant. At lower level there are Junior Engineers who look after the Operation & Maintenance work of their respective assigned areas and report to their respective Assistant Executive Engineer.

Figure 2: Organization Structure



CHAPTER 3: MANPOWER PLANNING

- 3.1 Currently there are 1780 sanctioned posts of different categories in the Electricity Wing of Engineering Department, Chandigarh. In 1997, a case for additional 287 posts was sent to Govt. of India which sanctioned 1855 posts for EWEDC. However, being a financial matter, MOP advised to seek the approval of Joint Electricity Regulatory Commission for Goa & UTs (JERC). In-turn JERC issued directive to EWEDC to carry out detailed manpower study according to future load growth in Chandigarh. Accordingly, M/s Deloitte Touche Tohmatsu Pvt. Ltd. was appointed as Consultant to conduct the Manpower Study and delegation of power. The Commission in its Order dated 24.06.2014 has approved the manpower requirement for Electricity Wing of Engineering Department, Chandigarh and necessary action is being taken to fill up these posts.

Table 14: Phase-I manpower (Till retirement of existing employees)

Manpower Requirement for CED	Sanctioned	As-Is Manpower at CED as on 31.03.2018	Total Manpower Approved by JERC	Proposed In-house Manpower	Proposed Outsourced Manpower Approved by JERC
Executives (AEE/AE & above)	30	24	59	59	-
Non-Executives (JE & below)	1,584	805 (R) 194 (O/S)	1,317	991	326
Non-Executives - Group D	166	83	114	114	-
Total	1,780	1,106	1,490	1,164	326

Table 15: Phase-II manpower (Final approval)

Manpower Requirement for CED	Sanctioned	As-Is Manpower at CED as on 31.03.2018	Total Manpower Approved by JERC	Proposed In-house Manpower	Proposed Outsourced Manpower Approved by JERC
Executives (AEE/AE & above)	30	24	60	60	-
Non-Executives (JE & below)	1,584	805 (R) 194 (O/S)	1,323	756	567
Non-Executives - Group D	166	83	108	4	104
Total	1,780	1,106	1,491	820	671

- 3.2 Existing post under Phase-I Manpower will continue till the retirement of existing employees and ultimately the future posts should be filled as per Phase-II manpower. The organizational structure is to be divided into three verticals i.e. Commercial, Distribution (operation & maintenance), Power System (33KV & above) headed by SE. Finance & Administration along with the three verticals is to be put under one Chief Engineer. Further, another post of Chief Engineer was also approved by JERC for Solar. Number of posts of Executives (Assistant Engineer & above) is to be increased from 30 to 60 on

regular basis and number of posts of Non-executive (JE & below) including Group-D is to be reduced from 1750 to 1431. With further direction that 760 posts should be filled up on regular basis and 671 on outsource basis.

- 3.3 Further the Commission has approved one additional post of Chief Engineer to implement the National Policy on Renewable energy as generation from solar system is getting nation-wide thrust. Moreover, in view of the implement of SCADA system required to be undertaken by EWEDC the requirement for an additional Chief Engineer was justified. EWEDC has been moving towards the process of hiring the staff as approved by the Hon'ble Commission and desires to add the required employees as also approved by the Hon'ble Commission above.
- 3.4 While there were a few clarifications with respect to the Hon'ble Commission's Order dated 24.06.2014 which were clarified by the EWEDC through its various correspondence with the Hon'ble Commission. This had led to some delay in the recruitment process. However, post all clarifications from the Hon'ble Commission, EWEDC proposes to add all the employees as approved by the Hon'ble Commission by the first year of the Control Period. In this respect, EWEDC has already sought approval for addition of employees with the Ministry of Power, Government of India vide its letter dated 14.07.15. However, Manpower proposal has been deferred due to administrative reasons, as conveyed to the Ministry of Power.
- 3.5 The EWEDC has planned to carry out recruitment for 243 posts in the ensuing year and intends to carry out recruitment for vacant positions vis-à-vis JERC approved posts during the first year of the Control Period. The table below presents the current status of the employee strength (01.04.2018) and future manpower planning for the Control Period:

Table 16: Present Employee Strength

Sl. No.	Particulars	Actuals FY 2017-18	Ensuing Projections FY 2018-19	Ensuing Year Projection FY 2019-20	Ensuing Year Projection FY 2020-21	Ensuing Year Projection 2021-22
1	No. of employees as on 1st April	918 (*R) 209 (**O/S)	1,106	1,309	1,308	1,301
2	No. of employees added during the year	32 (R)	111 (R) 132 (O/S)	40 (R) ***	41 (R) ***	48 (R) ***
3	Total number of employees (1+2)	1,159	1,349	1,349	1,349	1,349
4	Number of employees retired/retiring during the year	38 (R) 15 (O/S)	40 (R)	41 (R)	48 (R)	35 (R)
5	Number of employees at the end of the year (3-4)	1,106	1,309	1,308	1,301	1,314

* R – Regular

** O/S – Outsourced

*** Recruitment planned by EWEDC in subsequent year of the control period to fill the gap between actual and approved strength.

3.6 The details of the 243 posts to be filled in the ensuing year is as follows:

Table 17: Recruitment Planned for the control period

Sl. No.	Category	No. of Posts					
		2017-18	2018-19		2019-20	2020-21	2021-22
			Regular	O/S			
1	AE	-	5	-	-	-	-
2	LDC	27	-	3	12	10	15
3	Steno-Typist	-	5	-	-	-	-
4	JE	1	30	-	5	8	12
5	Peon	3	-	-	-	-	-
6	Lineman	1	-	-	10	5	6
7	Asstt. Lineman	-	65	129	13	18	15
8	Foreman	-	3	-	-	-	-
9	UDC	-	2	-	-	-	-
10	IA	-	1	-	-	-	-
Total		32	111	132	40	41	48

MANPOWER TRAINING AND RE-SKILLING

3.7 With the rapidly expanding system and advent of new technology, it becomes all the important to develop the skill set of the employees of the transmission and distribution utility. The EWEDC acknowledges the fact that improving knowledge base is an ever-evolving process and thus has initiated the process to impart refresher training to its employees. As per the proposal, a training of 49 ALM's is conducted at HVBNL, Panchkula in the initial phase. The table below presents the estimated cost of the training program:

Table 18: Manpower Training Cost

Sl. No.	Program	Cost (Rs. in Crores)				
		2017-18	2018-19	2019-20	2020-21	2021-22
1	Residential	0.00	-	-	-	-
2	Non-residential	0.12	0.26 *	0.26	0.28	0.30
Total		0.12	0.26	0.26	0.28	0.30

* Rs. 0.11 Crores already incurred upto July, 2018. Further, Rs. 0.15 Crores has been estimated for training of the JEs for the period of August, 2018 to March, 2019.

3.8 In view of the additional cost involved in providing the trainings to the employees, EWEDC requests the Hon'ble Commission to approve the associated cost and allow recovered of the same in the tariff.

SAFETY MEASURES

- 3.9 In order to ensure safety of its manpower, the safety measures prescribed under Central electricity Authority (measures related to safety and electric supply) Regulations, 2010 and Joint Electricity Regulatory Commission (Distribution Code Regulation 2010) needs to be adhered to by the utility. Accordingly, to comply with the safety measures directed by the commission the EWEDC intends to engage consultants to examine all the Rules and Regulations in the force and suggest way forward. The consultant shall require to analyze existing safety standards, tool kits and practices being followed by the department. In coherence with its study and various safety regulation in place the consultant shall come out with suitable safety tool kits/equipment required to carry out operation and maintenance of distribution network. In this regard the EWEDC has already issued Expression of Interest and intends to complete the process soon. Tender for regular sensitization for safety measures and disaster management are being called.
- 3.10 The proposed expenditure to be incurred on safety measures and procurement of safety materials such as personal protective gear and other equipment for its manpower is as below:

Table 19: Proposed Expenditure on Safety Measures

Particulars	FY 2019-20	FY 2020-21	FY 2021-22
Proposed Expenditure (Rs. in Crores)	0.10	0.12	0.10

CHAPTER 4: IT INITIATIVES AND TECHNOLOGICAL INITIATIVES

- 4.1 EWEDC has taken various IT & Technological initiatives for improvement of system working & efficiency. The brief of the measures taken in this regard and status of the same is provided below.
- 4.2 DPR for smart grid amounting to Rs. 256 Crores for whole of Chandigarh excluding the scope covered in the pilot project for the area under electricity operation sub division - 5 has already been submitted to MOP for consideration & approval.
- 4.3 A pilot project for smart grid project is planned with an estimated cost of Rs. 36 Crores of which 70% i.e. 25.20 Crores shall be funded by EWEDC and balance by GOI. EWEDC plans a capital expenditure of Rs. 4.50 Crores in the FY 2018-19, Rs. 12 Crores in the FY 2019-20 & balance in the FY 2020-21 towards this scheme.
- 4.4 **Outage Management System** - EWEDC is implementing outage management system wide scheme of Urja Mitra wherein there shall be online monitoring & information for schedule/unscheduled outages.

CHAPTER 5: CUSTOMER SERVICE RELATED ACTIVITIES

- 5.1 EWEDC has taken several initiatives for improvement of customer service. The steps already taken and those proposed to be taken are provided below.
- 5.2 **Centralized Complaint Centre:** EWEDC has started 24X7 centralized complaint centre where consumers can lodge complaints and remedial action can be taken accordingly.
- 5.3 EWEDC has introduced the facility whereby consumers can check their electricity bills online at www.chdengineering.gov.in.
- 5.4 EWEDC has introduced the facility of online payment whereby consumers can pay by using debit cards, credit cards & internet banking system.
- 5.5 EWEDC has implemented the system of payment of electricity bills through RTGS/NEFT in 1st phase for government consumers who pay through PFMS.
- 5.6 EWEDC has introduced the system of payment of electricity bills through BBPS.
- 5.7 EWEDC is taking initiative to implement the facility of payment of electricity bills through QR code scanning mechanism.

CHAPTER 6: SALES AND LOAD GROWTH PROJECTIONS**CONSUMER GROWTH**

6.1 The No. of Consumer for the control period of FY 2019-20 to FY 2021-22 has been projected based on CAGR of actual figures approved by the Hon'ble Commission for the FY 2011-12 to FY 2016-17. The CAGR for past five/three/one-year growth have been applied year over year appropriately on the actual figures for the FY 2017-18 to arrive at the projected No. of Consumer for the control period of FY 2019-20 to FY 2021-22. The calculation of CAGR of No. of Consumer is provided in the table below.

Table 20: Past Consumer Growth

Category	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	CAGR for 5 Years	CAGR for 3	CAGR for 1 Year
	Actual	Actual	Actual	Actual	Actual	Actual			
Domestic	1,70,364	1,72,549	1,74,407	1,83,211	1,88,375	1,91,436	2.36%	3.15%	1.62%
Commercial	25,359	20,309	21,447	22,143	22,661	23,493	-1.52%	3.08%	3.67%
Large Supply	104	101	105	108	103	99	-0.98%	-1.94%	-3.88%
Medium Supply	1,076	1,116	1,154	1,197	1,255	1,288	3.66%	3.73%	2.63%
Small Power	1,291	1,285	1,285	1,275	1,269	1,275	-0.25%	-0.26%	0.47%
Agriculture	122	123	122	121	120	119	-0.50%	-0.83%	-0.83%
Public Lighting	775	807	846	886	978	1,082	6.90%	8.55%	10.63%
Bulk Supply	348	503	529	592	667	732	16.03%	11.43%	9.75%
Others Temporary Supply	903	922	737	620	573	437	-13.51%	-15.99%	-23.73%
Total	2,00,342	1,97,715	2,00,632	2,10,153	2,16,001	2,19,961			

6.2 The forecast of No. of Consumer is based on the trends observed in the connection pattern of various categories over the past years, new developments on accounts of Government policies, socio economic changes etc. that would affect consumption across various categories of consumers. The CAGR along with the projected consumer growth for the control period has been given in the table below.

Table 21: Projected No. of Consumer

Category	2017-18	CAGR Used	2018-19	2019-20	2020-21	2021-22
	Actual (UnAudited)		Projected	Projected	Projected	Projected
Domestic	2,12,499	2.36%	2,17,513	2,22,646	2,27,900	2,33,278
Commercial	25,942	3.08%	26,742	27,567	28,417	29,293
Large Supply	97	0.00%	97	97	97	97
Medium Supply	1,305	3.66%	1,353	1,402	1,454	1,507
Small Power	1,281	0.47%	1,287	1,293	1,299	1,305
Agriculture	124	0.00%	124	124	124	124
Public Lighting	1,168	6.90%	1,249	1,335	1,427	1,525
Bulk Supply	637	9.75%	699	767	842	924
Others Temporary Supply	386	0.00%	386	386	386	386
Total	2,43,439		2,49,450	2,55,617	2,61,946	2,68,440

LOAD GROWTH

6.3 The connected load for the control period of FY 2019-20 to FY 2021-22 has been projected based on CAGR of actual figures approved by the Hon'ble Commission for the FY 2011-12 to FY 2016-17. The CAGR for past five/three/one-year growth have been applied year over year appropriately on the actual figures for the FY 2017-18 to arrive at the projected connected load for the control period of FY 2019-20 to FY 2021-22. The calculation of CAGR of connected load is provided in the table below.

Table 22: Past Load Growth

(All Figures are in KW)

Category	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	CAGR for	CAGR for	CAGR for
	Actual	Actual	Actual	Actual	Actual	Actual	5 Years	3 Years	1 Year
Domestic	6,58,690	7,31,236	7,73,459	7,94,926	8,18,172	8,50,347	5.24%	3.21%	3.93%
Commercial	3,18,272	3,26,156	3,60,348	3,83,574	4,00,437	4,24,746	5.94%	5.63%	6.07%
Large Supply	65,763	64,023	69,671	71,762	71,904	70,044	1.27%	0.18%	-2.59%
Medium Supply	57,603	59,811	62,011	65,907	70,162	71,457	4.40%	4.84%	1.85%
Small Power	18,652	18,754	19,015	19,268	19,364	19,565	0.96%	0.96%	1.04%
Agriculture	675	707	715	722	737	748	2.08%	1.52%	1.49%
Public Lighting	5,455	5,583	5,791	5,956	6,243	6,660	4.07%	4.77%	6.68%
Bulk Supply	30,378	41,303	41,299	41,464	41,916	42,454	6.92%	0.92%	1.28%
Others Temporary Supply	27,840	5,672	4,229	3,510	3,250	2,480	-38.35%	-16.30%	-23.69%
Total	11,83,328	12,53,245	13,36,538	13,87,089	14,32,185	14,88,501			

6.4 The forecast of connected load is based on the trends observed in the connection pattern of various categories over the past years, new developments on accounts of Government policies, socio economic changes etc. that would affect consumption across various categories of consumers. The CAGR along with the projected consumer growth for the control period has been given in the table below.

Table 23: Projected Connected Load

(All Figures are in KW)

Category	2017-18	CAGR Used	2018-19	2019-20	2020-21	2021-22
	Actual (UnAudited)		Projected	Projected	Projected	Projected
Domestic	9,09,069	3.93%	9,44,819	9,81,974	10,20,591	10,60,726
Commercial	4,46,005	5.63%	4,71,132	4,97,674	5,25,711	5,55,328
Large Supply	69,431	1.27%	70,312	71,204	72,108	73,023
Medium Supply	72,362	4.40%	75,550	78,877	82,352	85,979
Small Power	19,717	0.96%	19,906	20,098	20,291	20,485
Agriculture	843	2.08%	861	879	897	915
Public Lighting	6,756	4.77%	7,079	7,416	7,770	8,141
Bulk Supply	42,253	1.28%	42,795	43,344	43,901	44,464
Others Temporary Supply	2,191	0.00%	2,191	2,191	2,191	2,191
Total	15,68,627		16,34,643	17,03,657	17,75,811	18,51,253

ENERGY SALES GROWTH

6.5 The energy sales for the control period of FY 2019-20 to FY 2021-22 has been projected based on CAGR of actual figures approved by the Hon'ble Commission for the FY 2011-12 to FY 2016-17. The CAGR for past five/three/one-year growth have been applied year over year appropriately on the actual figures for the FY 2017-18 to arrive at the projected energy sales for the control period of FY 2019-20 to FY 2021-22. The calculation of CAGR of energy sales is provided in the table below.

Table 24: Past Sales Growth

(All Figures are in MU)

Category	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	CAGR for 5 Years	CAGR for 3 Years	CAGR for 1 Year
	Actual	Actual	Actual	Actual	Actual	Actual			
Domestic	525.79	586.54	608.24	655.38	658.50	721.70	6.54%	5.87%	9.60%
Commercial	417.36	397.54	446.18	460.21	463.34	498.68	3.62%	3.78%	7.63%
Large Supply	128.72	137.50	123.94	117.20	131.84	126.74	-0.31%	0.75%	-3.87%
Medium Supply	103.71	103.84	104.53	103.58	110.94	116.08	2.28%	3.56%	4.63%
Small Power	22.02	20.11	20.36	20.50	19.01	19.53	-2.38%	-1.38%	2.73%
Agriculture	1.27	1.40	1.46	1.67	1.49	1.30	0.54%	-3.68%	-12.38%
Public Lighting	17.45	21.98	21.20	21.67	22.50	21.83	4.59%	0.99%	-2.96%
Bulk Supply	74.67	87.34	86.56	83.49	77.19	80.60	1.54%	-2.35%	4.42%
Others Temporary Supply	10.50	8.79	7.68	7.97	6.52	4.98	-13.87%	-13.46%	-23.68%
Total	1,301.49	1,365.04	1,420.15	1,471.67	1,491.32	1,591.43			

6.6 The table given below summarizes the projections of category wise energy sales for the Control Period of the FY 2019-20 to FY 2021-22 along with the CAGR used for projections.

Domestic Category Consumers: As can be witnessed from the data presented in the table above, the 5 year, 3 year and 1 year CAGR for the domestic category sales has been in the range of 5% to 10%. Considering the increased average consumption and the increase in number of domestic consumers, sales in the domestic category has been projected at growth rate of 6.54% (same as 5 year CAGR) year over year on the actual figures for the FY 2017-18.

Commercial Category Consumers: As can be witnessed that from the data presented in the table above, the 5 year, 3 year and 1 year CAGR for the commercial category sales has been in the range of 3% to 8%. However, sales in commercial category is to be considered on the basis of consistent growth over a period of time. Accordingly, for projection of sales in the commercial category has been done considering an increase of 3.78% (same as 3 year CAGR) year over year on the actual figures for the FY 2017-18.

Large Supply Category Consumers: As can be witnessed that from the data presented in the table above, the 5 year, 3 year and 1 year CAGR has been in the range of -4% to 1% for this category, The data of the past five years is not reflecting any specific trend in this category sales. In view of the above, for projection of sales in the large supply category has been done considering an increase of 0.75% (same as 3 year CAGR) year over year on the actual figures for the FY 2017-18.

Medium Supply Category Consumers: As can be witnessed that from the data presented in the table above, the 5 year, 3 year and 1 year CAGR for the Medium supply category sales has been in the range of 2% to 5%. There is an increasing trend in the sales of this category. However, EWEDC feels it prudent to estimate the growth in this category as per the 3 year CAGR. Accordingly, the sales for the category has been projected at growth rate of 3.56% (same as 3 year CAGR) year over year on the actual figures for the FY 2017-18 to arrive at the projected energy sales.

Small Power Category Consumers: As can be witnessed that from the data presented in the table above, the 5 year, 3 year and 1 year CAGR has been in the range of -3% to 3% for this category. The past data is not reflecting any specific trend in this category sales. Accordingly, for projection of sales in the small power category has been done considering an increase of 2.73% (same as 1 year CAGR) year over year on the actual figures for the FY 2017-18.

Agriculture Category Consumers: As can be witnessed that from the data presented in the table above, the 5 year, 3 year and 1 year CAGR has been in the range of -13% to 1% for this category, The category is not reflecting any specific trend in the sales growth. Projection of sales in the agriculture category has been done considering an increase of 0.54% (same as 5 year CAGR) year over year on the actual figures for the FY 2017-18.

Public Lighting Category Consumers: As can be witnessed that from the data presented in the table above, the 5 year, 3 year and 1 year CAGR has been in the range of -3% to 5% for this category, The trend of consumption in this category is reflective of the factor that over the last few years while there has been increase in energy requirement due increased electrification, there has been corresponding decrease due to various DSM measures. Hence, no specific trend is reflected for the category. Accordingly, for projection of sales in the public lighting category an increase of 4.59% (same as 5 year CAGR) year over year on the actual figures for the FY 2017-18 has been considered.

Bulk Supply Category Consumers: As can be witnessed that from the data presented in the table above, the 5 year, 3 year and 1 year CAGR has been in the range of -3% to 5% for this category. This category also is not providing any specific growth trend in sales. Accordingly, for projection of sales in the bulk supply category growth rate over a period of 5 years has been considered i.e 1.54% (same as 5 year CAGR) year over year on the actual figures for the FY 2017-18 to arrive at the projected energy sales.

Others Temporary Supply Category Consumers: As can be witnessed that from the data presented in the table above, the 5 year, 3 year and 1 year CAGR has been observed a negative growth for this category, Accordingly, sales in the others temporary supply category has been considering as same as the actual figures for the FY 2017-18 and projected accordingly.

Based on the assumptions and methodology detailed above, the projected sales for FY 2018-19 and for the control period of FY 2019-20 to FY 2021-22 is summarized in table below:

Table 25: Projected Energy Sales

(All Figures are in MU)

Category	2017-18	CAGR Used	2018-19	2019-20	2020-21	2021-22
	Actual (UnAudited)		Projected	Projected	Projected	Projected
Domestic	731.94	6.54%	779.80	830.79	885.11	942.99
Commercial	494.02	3.78%	512.69	532.05	552.15	573.01
Large Supply	119.85	0.75%	120.75	121.65	122.56	123.48
Medium Supply	119.33	3.56%	123.57	127.96	132.51	137.22
Small Power	19.50	2.73%	20.04	20.58	21.15	21.72
Agriculture	1.43	0.54%	1.44	1.45	1.45	1.46
Public Lighting	17.73	4.59%	18.54	19.39	20.28	21.21
Bulk Supply	80.60	1.54%	81.85	83.11	84.39	85.68
Others Temporary Supply	4.40	0.00%	4.40	4.40	4.40	4.40
Total	1,588.80		1,663.06	1,741.38	1,824.00	1,911.17

6.7 The table given below summarizes the projections of sub-category/category wise no. of consumers. Connected load & energy sales for the control period of the FY 2019-20 to FY 2021-22.

Table 26: Projected No. of Consumers, Connected Load and Energy Sales

CategoryAA3:M16	2017-18 - Actual (UnAudited)			2019-20 - Projected			2020-21 - Projected			2021-22 - Projected		
	No. of Consumer	Connected Load	Energy Sales	No. of Consumer	Connected Load	Energy Sales	No. of Consumer	Connected Load	Energy Sales	No. of Consumer	Connected Load	Energy Sales
	(In No.)	(In Kw)	(In MUs)	(In No.)	(In Kw)	(In MUs)	(In No.)	(In Kw)	(In MUs)	(In No.)	(In Kw)	(In MUs)
0 - 150 units	1,17,190	2,89,397	63.90	1,22,786	3,12,605	72.53	1,25,683	3,24,899	77.27	1,28,650	3,37,676	82.33
151 - 400 units	70,588	3,25,614	225.05	73,959	3,51,728	255.44	75,704	3,65,560	272.15	77,490	3,79,935	289.94
401 and above units	24,721	2,94,058	442.99	25,901	3,17,641	502.82	26,513	3,30,132	535.69	27,138	3,43,115	570.72
Domestic	2,12,499	9,09,069	731.94	2,22,646	9,81,974	830.79	2,27,900	10,20,591	885.11	2,33,278	10,60,726	942.99
0 - 150 units (Single Phase)	10,798	44,883	3.60	11,474	50,083	3.87	11,829	52,904	4.02	12,193	55,885	4.17
0 - 150 units (Three Phase)	2,919	21,428	1.64	3,102	23,911	1.77	3,197	25,258	1.83	3,296	26,681	1.90
151 - 400 units (Single Phase)	4,065	26,943	11.13	4,320	30,064	11.99	4,453	31,758	12.44	4,590	33,547	12.91
151 - 400 units (Three Phase)	1,289	6,963	4.50	1,370	7,770	4.85	1,412	8,208	5.03	1,456	8,670	5.22
401 and above units (Single Phase)	1,869	37,676	209.06	1,986	42,041	225.15	2,047	44,409	233.66	2,110	46,911	242.49
401 and above units (Three Phase)	5,002	3,08,111	264.09	5,315	3,43,805	284.42	5,479	3,63,174	295.17	5,648	3,83,634	306.32
Commercial	25,942	4,46,005	494.02	27,567	4,97,674	532.05	28,417	5,25,711	552.15	29,293	5,55,328	573.01
Large Supply	97	69,431	119.85	97	71,204	121.65	97	72,108	122.56	97	73,023	123.48
Medium Supply	1,305	72,362	119.33	1,402	78,877	127.96	1,454	82,352	132.51	1,507	85,979	137.22
Small Power	1,281	19,717	19.50	1,293	20,098	20.58	1,299	20,291	21.15	1,305	20,485	21.72
Agriculture	124	843	1.43	124	879	1.45	124	897	1.45	124	915	1.46
Public Lighting	1,168	6,756	17.73	1,335	7,416	19.39	1,427	7,770	20.28	1,525	8,141	21.21
Bulk Supply	637	42,253	80.60	767	43,344	83.11	842	43,901	84.39	924	44,464	85.68
Others Temporary Supply	386	2,191	4.40	386	2,191	4.40	386	2,191	4.40	386	2,191	4.40
Total	2,43,439	15,68,627	1,588.80	2,55,617	17,03,657	1,741.38	2,61,946	17,75,811	1,824.00	2,68,440	18,51,253	1,911.17

6.8 It is submitted that the Hon'ble Commission may kindly consider and approve the number of consumers, connected load and energy sales as projected above.

CHAPTER 7: POWER AVAILABILITY

POWER ALLOCATION

- 7.1 Since Electricity Wing of Engineering Department, Chandigarh does not have any generation capacity of its own, it relies entirely on the allocation of power from the Central Generating Stations including NTPC, NHPC, NPCIL, BBMB, SJVNL and THDC. The remaining is met through short term purchase under bilateral transactions and power exchange etc. The current firm and unallocated power allocation from the various Central Generating Stations have been considered as per the recent revised allocation statement issued by Northern Regional Power Committee against the Ministry of Power letter No. NRPC/OPR/103/02/2018/7358-7383 dated 22.06.2018.
- 7.2 For the Control Period, it is expected that the allocations from various central generating stations shall remain the same for Electricity Wing of Engineering Department, Chandigarh. The details of the plants and the capacity allocated to Chandigarh are as given below:

Table 27: Existing Power Allocation to Electricity Wing of Engineering Department, Chandigarh

Sl. No.	Organization	Name of Project	Type	Capacity (In MW)	Total Avg. Entitlement (In %)	Entitlement (In MW)
1	NTPC	Anta	Gas	419	1.19	4.99
2		Auraiya	Gas	663	0.75	4.97
3		Dadri GPP	Gas	830	0.61	5.06
4		Dadri II TPP	Coal	980	0.22	2.11
5		Kahalgaon II	Coal	1,500	0.20	3.00
6		Rihand I	Coal	1,000	1.00	10.00
7		Rihand II	Coal	1,000	0.80	8.00
8		Rihand III	Coal	1,000	0.55	5.45
9		Singrauli	Coal	2,000	0.20	4.00
10		Unchahar I	Coal	420	0.48	2.02
11		Unchahar II	Coal	420	0.71	2.98
12		Unchahar III	Coal	210	0.48	1.01
13		Jhajjar (APCPL)	Coal	1,500	0.43	6.45
14		Koldam	Hydel	800	0.79	6.32
15	NHPC	Chamera I	Hydel	540	3.90	21.06
16		Chamera II	Hydel	300	0.67	2.01
17		Chamera III	Hydel	231	0.60	1.39
18		Dhauliganga	Hydel	280	0.72	2.02

19		Dulhasti	Hydel	390	0.47	1.83
20		Parbathi III	Hydel	520	0.60	3.12
21		Salal	Hydel	690	0.27	1.86
22		Sewa II	Hydel	120	0.83	1.00
23		Tanakpur	Hydel	94	1.28	1.20
24		Uri-I	Hydel	480	0.62	2.98
25		Uri II	Hydel	240	0.63	1.52
26	NPCIL	NAPP	Nuclear	440	1.14	5.02
27		RAPP (#3 and #4)	Nuclear	66	3.18	2.10
28		RAPP(#5 and #6)	Nuclear	440	0.68	2.99
29	SVNVL	NATHPA JHAKRI	Hydel	1,500	0.53	7.95
30		RAMPUR	Hydel	137	0.79	1.08
31	BBMB	BBMB 3.5%	Hydel	1,325	3.50	46.38
32		BBMB 1 LU	Hydel	1 LU per day		
33		BBMB 10 LU	Hydel	10 LU per day		
34		PONG	Hydel	396	3.50	13.86
35		DEHAR	Hydel	990	3.50	34.65
36	THDC	Koteshwar	Hydel	400	0.36	1.44
37		Tehri	Hydel	1,000	0.60	6.00
	TOTAL					227.80

7.3 Based on the above entitlement and reasonable assumptions as detailed below from the various generators, the expected availability of energy for the control period has been projected.

PROJECTIONS FOR POWER PROCUREMENT FROM CENTRAL GENERATING STATIONS AND SHARED STATION

7.4 NTPC: The net energy available from the generating stations of NTPC has been estimated by considering average availability for past three years. Further, actual draws for the FY 2017-18 and 1st quarter of the FY 2018-19 has been taken as base for projecting the availability during the control period.

7.5 NHPC: The net energy available from the generating stations of NHPC has been estimated by considering average availability for past three years. Further, actual draws for the FY 2017-18 and 1st quarter of the FY 2018-19 has been taken as base for projecting the availability during the control period.

- 7.6 **NPCIL**: The net energy available from the generating stations of NPCIL has been estimated by considering average availability for past three years. Further, actual draws for the FY 2017-18 and 1st quarter of the FY 2018-19 has been taken as base for projecting the availability during the control period.
- 7.7 **SJVNL**: The net energy available from the generating stations of SJVNL has been estimated by considering average availability for past three years. Further, actual draws for the FY 2017-18 and 1st quarter of the FY 2018-19 has been taken as base for projecting the availability during the control period.
- 7.8 **BBMB**: The UT of Chandigarh has been allocated fix quota of 1 LU and 10 LU per day from the BBMB plant. In addition to that 3.5% of the plant capacity has been allocated to the UT of Chandigarh. The net energy available from the generating stations of BBMB has been estimated by considering actual draws for the FY 2017-18 and 1st quarter of the FY 2018-19 as base and projection has been done accordingly for the control period.
- 7.9 **THDC**: The net energy available from the generating stations of THDC has been estimated by considering average availability for past three years. Further, actual draws for the FY 2017-18 and 1st quarter of the FY 2018-19 has been taken as base for projecting the availability during the control period.
- 7.10 Based on the above assumptions and methodology, the power availability to EWEDC from various generating stations during the control period is as summarized below:

Table 28: Power Available from CGS & Other Source during the Control Period
(In MUs)

Sl. No.	Name of Project	FY 2019-20	FY 2020-21	FY 2021-22
	NTPC Stations			
1	Anta	4.75	4.75	4.75
2	Auraiya	2.51	2.51	2.51
3	Dadri GPP	24.49	24.49	24.49
4	Dadri II TPP	12.30	12.30	12.30
5	Kahalgaon II	23.30	23.30	23.30
6	Rihand I	79.32	79.32	79.32
7	Rihand II	66.37	66.37	66.37
8	Rihand III	52.37	52.37	52.37
9	Singrauli	22.71	22.71	22.71

10	Unchahar I	15.06	15.06	15.06
11	Unchahar II	22.84	22.84	22.84
12	Unchahar III	11.24	11.24	11.24
13	Unchahar IV	2.79	2.79	2.79
14	Jhajjar (Aravali)	54.77	54.77	54.77
15	Koldam	41.64	41.64	41.64
	NHPC Stations			
16	Chamera I	88.45	88.45	88.45
17	Chamera II	29.70	29.70	29.70
18	Chamera III	18.13	18.13	18.13
19	Dhauliganga	21.45	21.45	21.45
20	Dulhasti	37.14	37.14	37.14
21	Parbathi III	12.55	12.55	12.55
22	Salal	8.31	8.31	8.31
23	Sewa II	9.66	9.66	9.66
24	Tanakpur	3.94	3.94	3.94
25	Uri-I	14.01	14.01	14.01
26	Uri II	17.14	17.14	17.14
	NPCIL Stations			
27	NAPP	76.12	76.12	76.12
28	RAPP (#3 and #4)	20.48	20.48	20.48
29	RAPP(#5 and #6)	71.87	71.87	71.87
	SJVNL Stations			
30	NATHPA JHAKRI	91.90	91.90	91.90
31	RAMPUR (U Q)	13.85	13.85	13.85
	BBMB			
32	BBMB 3.5 %	560.38	560.38	560.38
33	BBMB 1 LU	83.57	83.57	83.57
34	BBMB 10 LU	23.18	23.18	23.18
	THDC Stations			
35	Koteshwar	13.97	13.97	13.97
36	Tehri	164.62	164.62	164.62
	Others			
37	CREST	3.78	3.78	3.78
38	Pvt. Solar	0.86	0.86	0.86
39	Bilateral/Exchange/UI	246.65	336.86	431.87
	Annual Total	2,068.13	2,158.34	2,253.35

RENEWABLE PURCHASE OBLIGATION

7.11 Apart from the above allocations from central generating stations, EWEDC shall also procure power from roof-top solar power plants as covered under the power procurement from renewable energy segment and balance power shall be required to be procured from bilateral agreements. Renewable power obligation for the utilities has been prescribed by the Hon'ble Commission vide JERC for State of Goa and UTs (Procurement of Renewable Energy) Regulations, 2010, First Amendment Regulations, 2014, Second Amendment Regulations, 2015 and Third Amendment Regulations, 2016. The Hon'ble Commission has revised/specified Renewable Purchase Obligation (RPOs) targets for all Distribution Licensees/obligated entities for FY 2010-11 to FY 2021-22.

7.12 The RPO targets for the control period to be achieved by the EWEDC during the control period as specified in the Regulations is as follows:

Table 29: RPO Obligation for the Control Period

FY	Solar RPO (%)	Non-Solar RPO (%)
2019-20	4.70	6.80
2020-21	6.10	8.00
2021-22	8.00	9.00

7.13 The Electricity Wing of Engineering Department, Chandigarh submits that it intends to meet the RPO as per the directions of the Hon'ble Commission in the MYT control period. EWEDC has planned to meet the Solar RPO partially from the purchase of solar power from rooftop projects within the UT of Chandigarh (both Net metering mode and Gross metering mode) while the balance solar obligation is proposed to be met through purchase of Renewable Energy Certificates (REC).

7.14 Further, EWEDC submits that in absence of any non-solar power plants within the UT of Chandigarh, the Non-Solar RPO compliance shall be completely met by purchase of non-solar REC.

7.15 The summary of projected Solar and Non-Solar compliance by EWEDC during the control period is summarized in the table below:

7.16 The effective energy used for calculation of the RPO has been arrived as follows:

Table 30: Effective energy sales (excluding Hydro) for the Control Period

Sl. No.	Particular	Formula	FY 2019-20	FY 2020-21	FY 2021-22
1	Energy Sales within UT (In MUs)	a	1,741.38	1,824.00	1,911.17
2	Hydro Power Purchase (In MUs)	b	1,253.57	1,253.57	1,253.57
3	Inter-State Loss	c	3.60%	3.60%	3.60%
4	Inter-State Loss (In MUs)	$d=b*c$	45.13	45.13	45.13
5	Intra-State Loss	e	13.05%	12.85%	12.65%
6	Intra-State Loss (In MUs)	$f=e*(b-d)$	157.70	155.28	152.87
7	Hydro Power Consumed (In MUs)	$g=b-d-f$	1,050.74	1,053.16	1,055.57
8	Conventional Power Consumed (In MUs)	$h=a-g$	690.63	770.84	855.60

Table 31: Units to be Procured under RPO for the Control Period

Solar Obligation	FY 2019-20	FY 2020-21	FY 2021-22
Solar RPO (In %)	4.70%	6.10%	8.00%
Projected Sales (In MUs)	690.63	770.84	855.60
Total Power to be Procured to meet Solar Obligation (In MUs)	32.46	47.02	68.45
Power planned to procure from Gross & Net Metering Mode (In MUs)	29.23	34.23	39.23
RPO to be met with REC (In MUs)	3.23	12.79	29.22
Non Solar Obligation	FY 2019-20	FY 2020-21	FY 2021-22
Non Solar RPO (In %)	6.80%	8.00%	9.00%
Projected Sales (In MUs)	690.63	770.84	855.60
Total Power to be Procured to meet Non Solar Obligation (In MUs)	46.96	61.67	77.00

7.17 It is submitted that the Hon'ble Commission may kindly consider the above submission regarding power procurement & renewable power obligation for the control period.

CHAPTER 8: T&D LOSS TRAJECTORY AND ENERGY BALANCE

T&D LOSS TRAJECTORY FOR THE CONTROL PERIOD

8.1 It is submitted that EWEDC has been constantly endeavoring to reduce its T&D losses. The EWEDC has been able to reduce its losses from 24.22% in FY 2003-04 to 9.51% (unaudited) in the FY 2017-18. In this regard EWEDC submits that the system improvement and augmentation work executed each year under the planned schemes have resulted in the reduction of T&D losses in its distribution area.

8.2 EWEDC over the years has consistently been able to reduce the T & D losses barring FY 2011-12.

Figure 3: T&D Loss Target Achieved vis-a-vis Targets



* T&D loss of 9.51% for the FY 2017-18 is unaudited figure.

8.3 As can be observed from the above graph, EWEDC has been successful in maintaining the T&D losses within 20% in spite of having a consumer profile where majority of the consumers are LT category consumers. EWEDC has achieved T&D loss level of 9.51% (unaudited) for the FY 2017-18. The sharp fall in T&D losses in the FY 2017-18 is on account of the following factors:

- i. There has been increase in energy sale through UI/exchange from 36.76 MUs in FY 2016-17 to 131.74 MUs in FY 2017-18.

- ii. The excess energy sale was due to return of 48 MUs towards banked units to J&K during the FY 2017-18 against energy received in the FY 2015-16 & FY 2016-17 and sale of excess power through UI/exchange during different intervals of time.
- iii. The figures of T&D loss are provisional & unaudited. Final audited figure shall be submitted after completion of audit.

- 8.4 One of the primary reasons of stagnation in losses is the dominance of domestic category in the sales mix. In spite of an increase in overall sale, maximum increase in sales have happened in the domestic category resulting in a higher proportion of the overall sales as compared to industrial consumers where the sales have remained stagnant leading to a reduction in overall share.
- 8.5 It is submitted to the Hon'ble Commission that while the distribution area of EWEDC is small, the scope for addition of HT consumers is limited or negligible. As a result, the sales to such categories is generally restricted leading to stagnation of T&D losses. With over 80% of the sales to LT consumers, EWEDC feels that further reduction in the T&D loss in the UT of Chandigarh shall be possible after implementation of its various IT/strengthening schemes under IPDS and Smart Grid project which are under approval with Government of India.
- 8.6 In addition to the issue of higher LT sales, another important factor is the absence of interconnection point within the UT boundary which has been also submitted to the Hon'ble Commission in its past submissions.
- 8.7 The energy input in EWEDC is currently being metered at 400kV Nalagarh, 220kV Mohali and 220kV Dhoolkot (BBMB) which has resulted in higher T&D losses for EWEDC. The EWEDC has to bear around 3% additional losses of interstate circuit due to not having any interstate point in its boundary. In this regard it is submitted that construction of a 220/66 kV substation at Hallo Majra is under progress by M/s PGCIL. This substation shall cater to the future load growth of Chandigarh resulting in lower losses due to commissioning of an interconnection point within the UT periphery.
- 8.8 In view of the above submission, EWEDC proposes to maintain T&D loss at 13.25% in FY 2018-19, 13.05% in FY 2019-20, 12.85% in FY 2020-21 & 12.65% in FY 2021-22. EWEDC requests the Hon'ble Commission to consider & set the T&D loss target as proposed so that the same is realistic & achievable in light of the fact that the current loss levels of EWEDC are very low and reduction of losses below the current levels shall be difficult without implementation of IT & infrastructure schemes.

ENERGY BALANCE & ADDITIONAL POWER PURCHASE

8.9 Based on the projected Energy Requirement and availability within the UT of Chandigarh and proposed T&D loss levels, the table below presents the Energy Balance for the control period:

Table 32: Projected Energy Balance for the Control Period

Particulars	FY 2019-20	FY 2020-21	FY 2021-22
Energy Requirement			
Energy Sales (MUs)	1,741.38	1,824.00	1,911.17
T&D Loss	13.05%	12.85%	12.65%
T&D Loss (MUs)	261.36	268.94	276.78
Total Energy Required at UT Periphery (MUs)	2,002.73	2,092.94	2,187.95
Energy Available			
Units Procured	1,816.85	1,816.85	1,816.85
Inter-State Transmission Loss	3.60%	3.60%	3.60%
Transmission Loss (MUs)	65.41	65.41	65.41
Net Energy Available at UT Periphery	1,751.44	1,751.44	1,751.44
Power Available within UT			
Power procured from Gross/NET Metering Mode (In MUs)	4.64	4.64	4.64
Total Energy Available	1,756.08	1,756.08	1,756.08
Demand Supply (Gap)/ Surplus	(246.65)	(336.86)	(431.87)

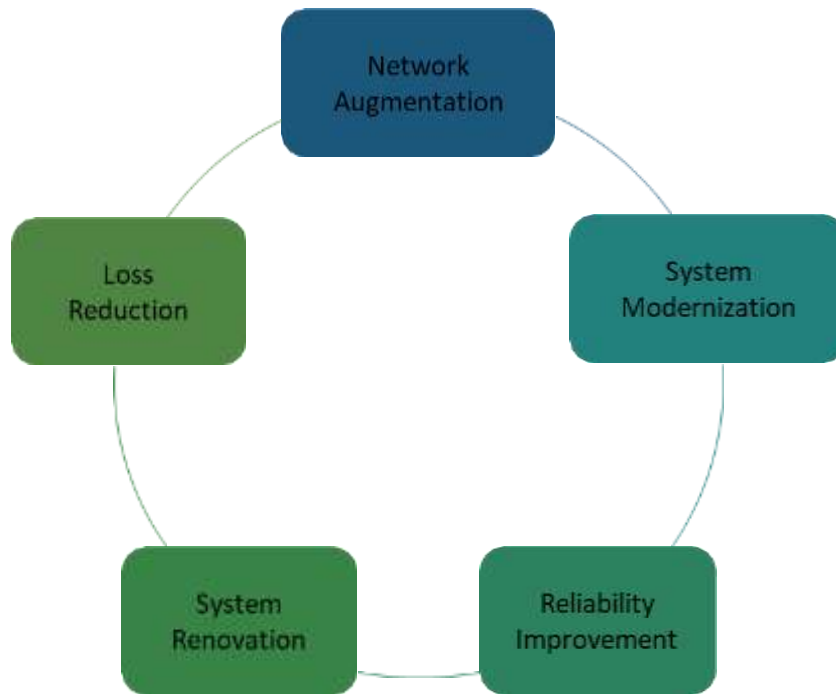
8.10 As per the above projection for energy balance, it is observed that EWEDC shall face energy deficit of 246.65 MUs, 336.86 MUs and 431.87 MUs for the FY 2019-20, FY 2020-21 & FY 2021-22 respectively.

8.11 EWEDC proposes to meet the balance deficit during the control period through power purchase through bilateral agreement/exchange. The Hon'ble Commission is requested to approve the above energy balance for EWEDC.

CHAPTER 9: CAPITAL INVESTMENT PLAN

- 9.1 As per the MYT Regulations, 2018, the Distribution Licensee is required to file the Business Plan for the control period of three financial years from April 1, 2019 to March 31, 2022, which shall comprise but not be limited to detailed category-wise sales and demand projections, power procurement plan, capital investment plan, financing plan and physical targets before the Hon'ble Commission as part of the Tariff Filing before the beginning of the control period.
- 9.2 Based upon the above mandate the CAPEX Plan proposals (scheme wise) for the FY 2019-20 to FY 2021-22 under the MYT control period of the FY 2019-20 to FY 2021-22 have been formulated by Electricity Wing of Engineering Department, Chandigarh in order to enable better planning, budgeting and monitoring at macro & micro levels. The capital expenditure plan has been separately prepared into two categories:
- Capital Investment Plan for 66 KV and above works
 - Capital Investment Plan for 11 KV and below works
- 9.3 Electricity Wing of Engineering Department, Chandigarh has prepared the capex plan taking into consideration all the factors which would affect the operations of the company. The capex plan includes the details of various capital expenditure schemes in the identified areas and their respective estimates for each year of the MYT control period of the FY 2019-20 to FY 2021-22.
- 9.4 The capital investments of Electricity Wing of Engineering Department, Chandigarh can largely be categorized in following areas:
- Investments in New Transmission Infrastructure to support the demand requirements or power evacuation from generation projects.
 - System augmentation and strengthening including renovation and modernization to maintain the performance of the existing system and to deter investments.

The figure below provides a wider overview of the capital investment avenues planned by the Electricity Wing of Engineering Department, Chandigarh.



9.5 Since capital investment is an ongoing activity for any transmission and distribution licensee, EWEDC has categorized the schemes under the followings two categories i.e. On-going schemes and new schemes. The year wise details of proposed capital expenditure under the two categories has been furnished a below.

NEW SCHEMES:

9.6 EWEDC has planned for 10 new 66kV schemes in view of the system upgradation requirement and improvement of reliability. The details of the new 66kV capital schemes along with the investment rationale is provided in table below:

Table 33: Capital Expenditure for 66 KV New Schemes for the Control Period

Sl. No.	66KV New Scheme	Total Exp. (Rs. in Crores)
1	Replace the existing battery bank and battery charger	0.09
Scheme Details	Revised Rough Cost Estimate for Supply, Delivery, Testing & Commissioning of 220V Volts 50 Amp full wave FCBC to replace the existing battery bank and battery charger at 66KV Grid Sub Station, Sector 39, Chandigarh. Rationale: The scheme is aimed at improving system reliability and system up-gradation.	

2	Providing 66kV outgoing feeders from upcoming 220kV	76.00
Scheme Details	<p>Providing 06 Nos., 66kV outgoing feeders from upcoming 220kV GIS Hallomajra, UT Chandigarh.</p> <p>a) 66kV Double Circuit (underground) to existing 66kV GSS Sector 52, UT Chandigarh each consisting of single core 4x630mm² Aluminium conductor XLPE insulated cable (11.5x2 = 23KM Approx. for each circuit) with further extended link of one 66kV circuit to 33kV GSS Sector 34, UT Chandigarh (4x4 = 16KM Approx.) i.e. going to be upgraded to 66KV GSS.</p> <p>b) 66kV Double Circuit (underground) to existing 66kV GSS Sector 47, UT Chandigarh each consisting of single core 4x630mm² Aluminium conductor XLPE insulated cable (6.5x2 = 13KM Approx. for each circuit)</p> <p>c) 66kV Single Circuit (underground) for 66kV GSS I/A Phase-I, UT Chandigarh consisting of single core 4x630mm² Aluminium conductor XLPE insulated cable (1KM Approx.) terminated at poultry farm chowk Chandigarh on existing 66KV overhead tower line circuit in between 66KV GSS I/A Ph-I & II, UT Chandigarh.</p> <p>d) 66kV Single Circuit (underground) for 66kV GSS I/A Phase-II, UT Chandigarh consisting of single core 4x630mm² Aluminium conductor XLPE insulated cable (1KM Approx.) terminated at poultry farm chowk Chandigarh on existing 66KV overhead tower line circuit in between 66KV GSS I/A Ph-I & II, UT Chandigarh.</p> <p>Rationale: The scheme will help in improving service reliability to the consumers of the area and to meet Standards of Performance of JERC.</p>	
3	Replacement/ augmentation of damaged 66/11KV, 10/12.5MVA Power Transformers with 20MVA Power Transformers	4.36
Scheme Details	<p>Replacement/ augmentation of 3 Nos. damaged 66/11KV, 10/12.5MVA Power Transformers with 20MVA Power Transformers at 66KV Grid Sub Station, Sector 1, BBMB and Industrial area Phase II, Chandigarh.</p> <p>Rationale: The scheme will help in improving service reliability to the consumers of the area and to meet Standards of Performance of JERC.</p>	
4	Replacement/ augmentation of damaged 66/11KV, 10/12.5MVA Power Transformers with 20MVA Power Transformers	1.38
Scheme Details	<p>Replacement/augmentation of 01 No. damaged 66/11kV, 10/12.5MVA Power Transformers with 20 MVA Power Transformers at 66KV Grid Sub Station, Industrial Area, Phase-I, UT Chandigarh.</p> <p>Rationale: The scheme will help in improving service reliability to the consumers of the area and to meet Standards of Performance of JERC.</p>	
5	Providing 1x30MVA 66/11KV additional Power TF & Replacement of 14 Nos. MOCB	10.37
Scheme Details	<p>a) Providing 1x30MVA 66/11KV additional Power TF at 66kv Grid Sub Station Sec-39 UT Chd.</p> <p>b) Replacement of 14 Nos. MOCB with SF₆, Breakers at 66KV Grid Substation Sector-52 and Sector -12 UT Chandigarh.</p> <p>Rationale: The scheme will help in improving service reliability to the consumers of the area and to meet Standards of Performance of JERC.</p>	

6	Replacement of obsolete and old 66 kV isolator, 66 kV SF-6 breaker, 11 kV VCB and allied items	4.99
Scheme Details	RCE for the replacement of obsolete and old 66 kV isolator, 66 kV SF-6 breaker, 11 kV VCB and allied items at 66 kV Grid Sub Station I/A Phase-I & Phase-II and 33 kV Grid Sub Station I/A Phase-I, UT Chandigarh. Rationale: The scheme is aimed at improving system reliability and system up-gradation.	
7	Providing 2x20MVA, 66 / 11KV Gas Insulated Sub Station	27.29
Scheme Details	Providing 2x20MVA, 66 / 11KV Gas Insulated Sub Station at Sector-26 UT Chandigarh along with 66 KV D/C line from I.T Grid Sub Station Kishangarh to 66KV Grid Sub Station Sector-26 UT Chd. Rationale: The scheme will help in improving service reliability to the consumers of the area and to meet Standards of Performance of JERC.	
8	Providing GIS 2x20MVA, 66/11KV Power Transformer along with 66 kV associated 66 kV T/L	36.98
Scheme Details	Conversion of existing 33KV Sub Station Sector-18 to 66KV Sub Station Sector-18 by Providing GIS 2x20MVA, 66/11KV Power Transformer along with 66 kV associated 66 kV T/L with underground cable from 66 kV Sector-26 to 66 kV Sector 18. Rationale: The scheme intends to upgrade transmission network of EWEDC. It also helps to meet peak demand. The upgradation of Sub-station will be provided better service to the consumers.	
9	Providing Hot Spare	2.50
Scheme Details	Providing Hot Spare 16/20MVA, 66/11KV Power Transformer. Rationale: The scheme is aimed at improving system reliability and system up-gradation.	
10	Conversion of 66 kV Single Circuit to Double Circuit T/L and U/G cable	7.37
Scheme Details	Conversion of 66 kV Single Circuit to Double Circuit T/L and U/G cable from 220 kV GSS Kishangarh to 66 kV Sub Station Sector-12 UT Chandigarh to double circuit T/L. Rationale: The scheme will help in improving service reliability to the consumers of the area and to meet Standards of Performance of JERC.	

66KV ONGOING SCHEMES

9.7 The table below provides the information about 66 KV ongoing works. Further, the table provides details about each individual scheme as well as original cost of the project.

Table 34: Capital Expenditure for 66 KV Ongoing Schemes for the Control Period

Sl. No.	66KV Ongoing Scheme	Total Exp. (Rs. in Crores)
1	Providing 66KV Transmission Line	11.03
Scheme Details	Prov. 66KV Transmission Line to upcoming 66KV G/S/Stn. alongwith associate 66KV Line Bays at Raipure Kalan, CHD. Rationale: The scheme will help in improving service reliability to the consumers of the area and to meet Standards of Performance of JERC.	
2	Providing 2x20MVA, 66/11KV Grid Sub-Station	9.74
Scheme Details	Providing 2x20MVA, 66/11KV Grid Sub-Station at Raipur Kalan. Rationale: The scheme will help in improving service reliability to the consumers of the area and to meet Standards of Performance of JERC.	
3	Providing double circuit 66 KV overhead TL tussled monopoles	3.12
Scheme Details	Providing double circuit 66 KV overhead TL tussled monopoles from T off point 60 proposed 66/11 KV Grid substation village Sarangpur ,UT Chandigarh. Rationale: The scheme is aimed at improving system reliability and system up-gradation.	
4	Construction of Double Circuit 66KV overhead Transmission line & Construction of 2 Nos. Line Bays	1.18
Scheme Details	A) Prov. Construction of Double Circuit 66KV overhead Transmission line on tubular monopoles from T-OFF Point to proposed 66KV G/S/Stn at Institutional Area in Village - Sarangpure, CHD B) Prov. Construction of 2 Nos. Line Bays at 66/11KV G/S/Stn, Village - Sarangpure, CHD. Rationale: The scheme is aimed at improving system reliability and system up-gradation.	
5	Turnkey execution of new 66KV 2x20 MVA Grid S/Stn.	9.89
Scheme Details	Turnkey execution of new 66KV 2x20 MVA Grid S/Stn. at institutional Area, Village- Sarangpur, UT, Chandigarh. Rationale: The scheme will help in improving service reliability to the consumers of the area and to meet Standards of Performance of JERC.	
6	Up gradation of T/F capacity	7.12
Scheme Details	Up gradation of T/F capacity 66/11KV Grid S/Stn. IT Park by replacing 2x12.5 MVA with 2x20MVA T/F and shifting & reinstallation 2x12.5 MVA at Civil Sectt. Sector-1 & Sector-12, Chd. Rationale: The scheme will help in improving service reliability to the consumers of the area and to meet Standards of Performance of JERC.	

7	Up gradation of existing 33KV S/Stn. To 66KV	7.22
Scheme Details	Up gradation of existing 33KV S/Stn. To 66KV by providing 1x30MVA, 66/11KV power T/F at Sector-34, chd. Rationale: The scheme will help in improving service reliability to the consumers of the area and to meet Standards of Performance of JERC.	
8	Providing 66 kV Transmission line with underground cable	7.90
Scheme Details	Providing 66 kV Transmission line with underground cable from Sector-32 Grid Sub Station to Sector 34 Grid Sub Station. Rationale: The scheme will help in improving service reliability to the consumers of the area and to meet Standards of Performance of JERC.	

CAPITAL EXPENDITURE SCHEMES FOR 11 KV

9.8 The details of Capital Investment Plan for 11 KV and below works is as below:

9.9 The Capex Plan proposal (Scheme wise) for FY 2019-20 to 2021-22 under the MYT control period of the FY 2019-20 to 2021-22 have been formulated by Electricity Wing of Engineering Department, Chandigarh keeping in view various parameters that come into play to ensure better supply of power to end consumers.

9.10 The table below provides the information about 11 KV ongoing & proposed works as well as estimated cost on such works to be incurred during the control period.

Table 35: Capital Expenditure for 11 KV & below Schemes for the Control Period

Sl. No.	Particulars	Total Exp. (Rs. in Crores)
1	General Service Connection (GSC) and Industrial Service Connection (ISC) including replacement of Electromechanical meters to Static meters	11.26
Scheme Details	Provide additional distribution network with transformer centers & HT/LT services lines for arranging power supply to various categories of HT & Lt consumers. Rationale: Network and system expansion to help/serve new consumers.	

2	Strengthening of Distribution Network by providing 11KV underground power distribution system	8.91
Scheme Details	<p>Various U/G system shall be laid in different parts of UT Chandigarh during the control period. This will provide relief to the existing system. The scheme will provide alternate 11 KV feeders from other nearby 66/11 KV Sub Stations.</p> <p>Rationale: The scheme intends to provide U/G cable power distribution system and removing O/H lines to render uninterrupted and stable power supply to urban, rural and industrial areas of UT Chandigarh, the scheme is part of planned system augmentation.</p>	
3	Providing and Augmentation of the LT O/H ACSR conductors	0.55
Scheme Details	<p>Provide/augment the LT overhead conductor in the area of the Chandigarh. Further, the old LT O/H ACSR conductors shall be replaced with the new one of suitable capacity in phased manner.</p> <p>Rationale: The augmentation of LT O/H ACSR conductor shall reduce the technical losses. The proposed replacement of old LT O/H conductor aims to improve the reliability of power supply.</p>	
4	Strengthening of Distribution Network by providing/augmentation of 11/0.400KV, 1000/315/200/100 KVA Distribution Transformers along with ACB.	8.82
Scheme Details	<p>Installation of the 315 KVA/100 KVA distribution transformers in the vicinity of the UT Chandigarh. The distribution transformers shall be installed at different locations specifically at load centers.</p> <p>Rationale: To provide reliable power, proper voltage to the prospective consumers. The LT line shall automatically be reduced.</p>	
5	Providing 11KV/LT Aerial Bunched Cable	2.92
Scheme Details	<p>Provide the HT/LT Aerial Bunched cable in UT Chandigarh in the phased manner. This cable shall be provided in thickly plantation/forest area.</p> <p>Rationale: To reduce the breakdowns/faults thereby improving reliability of power in the respective area.</p>	
6	Providing improved metering system, special tools, testing equipments, vehicle, skylift, safety devices, office equipment etc.	2.00
Scheme Details	<p>Provide the metering system, special tools, testing equipments, vehicles, skylift, safety devices & office equipments etc. to the various offices of the EWEDC.</p> <p>Rationale: The EWEDC intends to improve its functionality thus its services to the consumers. The new equipment will help in plugging gaps in services.</p>	

7	Improvement and augmentation of 66/11 KV existing sub-station and 11KV Indoor sub-stations including HT/LT Panels, ACB/OCB, Battery bank, CT/PT, HT/ LT Shunt Capacitors etc. on the existing distribution transformers	21.24
Scheme Details	The scheme will provide the replacement of old MOCB with SF. Breakers, replacement of old and obsolete panels and other allied equipment etc. The battery charger alongwith battery bank and DCDB at 66 KV Grid Substations has also been proposed to replaced. Rationale: The scheme is provided system augmentation & upgradation.	
8	Miscellaneous such as Renovation of houses in Electricity Colony, Unforeseen Works etc.	6.07
Scheme Details	Renovate the old buildings/offices of EWEDC & misc. works. Rationale: The EWEDC intends to improve its functionality thus its services to the consumers.	
9	Smart Grid Project Under Sub-Division No. 5	25.20
Scheme Details	A pilot project has taken by EWEDC for Smart Grid Project. Rationale: The scheme will help in improving service reliability to the consumers, System Up-gradation and to meet Standards of Performance of JERC.	
10	Conversion of Existing Overhead HT/ LT Lines into underground Equipments of 11 kV I/D S/Stn. Including Street Light System in Sector 8, UT, Chandigarh on Turnkey Basis	18.14
Scheme Details	Conversion of Overhead HT/LT lines into underground will help to reduce the losses & faults thereby improving the reliability of power supply. Rationale: The scheme will help in improving service reliability to the consumers, System Up-gradation and to meet Standards of Performance of JERC.	
11	Smart Grid Project of whole Chandigarh	256.00
Scheme Details	The Smart Grid Project of whole Chandigarh is under approval by NSGM/MoP. Rationale: The scheme will help in improving service reliability to the consumers, System Up-gradation and to meet Standards of Performance of JERC.	
12	Installation of AMR & DLMS compliant energy meters at EHV sub-stations for Energy Audit	0.82
Scheme Details	Installation of AMR & DLMS compliant energy meters at EHV sub-stations for Energy Audit. The estimate is approved and DNIT is under process. Rationale: The scheme will make the energy audit as per direction of the Hon'ble Commission in various Tariff Orders.	

SCHEME WISE PROPOSED CAPITAL EXPENDITURE FOR THE CONTROL PERIOD

9.11 Since the above 66 KV schemes shall be implemented during the control period, the year wise break-up of the various 66 KV schemes during the control period is provided in the table below:

Table 36: Proposed Capital Expenditure for 66 KV Schemes for the Control Period

Sl. No.	66 kV Schemes	Original Project Cost (Rs. in Crores)	Proposed Expenditure (Rs. in Crores)		
			FY 2019-20	FY 2020-21	FY 2021-22
1	Prov. 66KV Transmission Line to upcoming 66KV G/S/Stn alongwith associate 66KV Line Bays at Raipure Kalan, CHD.	11.03	4.26	-	-
2	Providing 2x20MVA, 66/11KV Grid Sub-Station at Raipur Kalan.	9.74	3.90	-	-
3	Providing double circuit 66 KV overhead TL tussled monopoles from T off point 60 proposed 66/11 KV Grid substation village Sarangpur, UT Chandigarh.	3.12	1.10	-	-
4	A) Prov. Construction of Double Circuit 66KV overhead Transmission line on tubular monopoles from T-OFF Point to proposed 66KV G/S/Stn at Institutional Area in Village - Sarangpure, CHD B) Prov. Construction of 2 Nos. Line Bays at 66/11KV G/S/Stn, Village - Sarangpure, CHD	1.18	0.32	-	-
5	Turnkey execution of new 66KV 2x20 MVA Grid S/Stn. at institutional Area, Village- Sarangpur, UT, Chandigarh	9.89	3.96	-	-
6	Up gradation of T/F capacity 66/11KV Grid S/Stn. IT Park by replacing 2x12.5 MVA with 2x20MVA T/F and shifting & reinstallation 2x12.5 MVA at Civil Sectt. Sector-1 & Sector-12, Chd.	7.12	2.85	-	-
7	Up gradation of existing 33KV S/Stn. To 66KV by providing 1x30MVA, 66/11KV power T/F at Sector-34, Chd.	7.22	2.89	-	-
8	Providing 66 kV Transmission line with underground cable from Sector-32 Grid Sub Station to Sector 34 Grid Sub Station	7.90	3.16	-	-
9	Revised Rough Cost Estimate for Supply, Delivery, Testing & Commissioning of 220V Volts 50 Amp full wave FCBC to replace the existing battery bank and battery charger at 66KV Grid Sub Station, Sector 39, Chd.	0.09	0.09	-	-

10	<p>Providing 06 Nos., 66kV outgoing feeders from upcoming 220kV GIS Hallomajra, UT Chandigarh.</p> <p>a) 66kV Double Circuit (underground) to existing 66kV GSS Sector 52, UT Chandigarh each consisting of single core 4x630mm² Aluminium conductor XLPE insulated cable (11.5x2 = 23KM Approx. for each circuit) with further extended link of one 66kV circuit to 33kV GSS Sector 34, UT Chandigarh (4x4 = 16KM Approx.) i.e. going to be upgraded to 66KV GSS.</p> <p>b) 66kV Double Circuit (underground) to existing 66kV GSS Sector 47, UT Chandigarh each consisting of single core 4x630mm² Aluminium conductor XLPE insulated cable (6.5x2 = 13KM Approx. for each circuit)</p> <p>c) 66kV Single Circuit (underground) for 66kV GSS I/A Phase-I, UT Chandigarh consisting of single core 4x630mm² Aluminium conductor XLPE insulated cable (1KM Approx.) terminated at poultry farm chowk Chandigarh on existing 66KV overhead tower line circuit in between 66KV GSS I/A Ph-I & II, UT Chandigarh.</p> <p>d) 66kV Single Circuit (underground) for 66kV GSS I/A Phase-II, UT Chandigarh consisting of single core 4x630mm² Aluminium conductor XLPE insulated cable (1KM Approx.) terminated at poultry farm chowk Chandigarh on existing 66KV overhead tower line circuit in between 66KV GSS I/A Ph-I & II, UT Chandigarh.</p>	76.00	19.00	34.00	23.00
11	Replacement/ augmentation of 3 Nos. damaged 66/11KV, 10/12.5MVA Power Transformers with 20MVA Power Transformers at 66KV Grid Sub Station, Sector 1, BBMB and Industrial area Phase II, Chandigarh.	4.36	2.20	1.36	-

12	Replacement/augmentation of 01 No. damaged 66/11kV, 10/12.5MVA Power Transformers with 20 MVA Power Transformers at 66KV Grid Sub Station, Industrial Area, Phase-I, UT Chandigarh	1.38	1.00	0.38	-
13	a) Providing 1x30MVA 66/11KV additional Power TF at 66kv Grid Sub Station Sec-39 UT Chd. b) Replacement of 14 Nos. MOCB with SF6, Breakers at 66KV Grid Substation Sector-52 and Sector -12 UT Chandigarh	10.37	2.10	5.20	3.07
14	RCE for the replacement of obsolete and old 66 kV isolator, 66 kV SF-6 breaker, 11 kV VCB and allied items at 66 kV Grid Sub Station I/A Phase-I & Phase-II and 33 kV Grid Sub Station I/A Phase-I, UT Chandigarh.	4.99	-	3.20	1.79
15	Providing 2x20MVA, 66 / 11KV Gas Insulated Sub Station at Sector-26 UT Chandigarh along with 66 KV D/C line from I.T Grid Sub Station Kishangarh to 66KV Grid Sub Station Sector-26 UT Chd.	27.29	-	16.37	10.92
16	Conversion of existing 33KV Sub Station Sector-18 to 66KV Sub Station Sector-18 by Providing GIS 2x20MVA, 66/11KV Power Transformer along with 66 kV associated 66 kV T/L with underground cable from 66 kV Sector-26 to 66 kV Sector 18.	36.98	-	22.00	14.98
17	Providing Hot Spare 16/20MVA, 66/11KV Power Transformer	2.50	-	1.50	1.00
18	Conversion of 66 kV Single Circuit to Double Circuit T/L and U/G cable from 220 kV GSS Kishangarh to 66 kV Sub Station Sector-12 UT Chandigarh to double circuit T/L.	7.37	-	4.42	2.95
	Total	228.53	46.81	88.43	57.70

9.12 In addition to the 66kV schemes, EWEDC is also undertaking 11kV works which are primarily intended for strengthening of the distribution network and shall be useful in improving the reliability and voltage profile of the distribution network for the end consumers. The proposed schemes (details of which are provided above) and capital expenditure to be undertaken over the control period is as below.

Table 37: Proposed Capital Expenditure for 11 KV & below Schemes for the Control Period

Sl. No.	11 KV Schemes	Original Project Cost (Rs. in Crores)	Proposed Expenditure (Rs. in Crores)		
			FY 2019-20	FY 2020-21	FY 2021-22
1	General Service Connection (GSC) and Industrial Service Connection (ISC) including replacement of Electromechanical meters to Static meters.	11.26	3.14	3.28	3.42
2	Strengthening of Distribution Network by providing 11KV underground power distribution system.	8.91	2.82	3.34	1.63
3	Providing and Augmentation of the LT O/H ACSR conductors	0.55	0.34	0.15	-
4	Strengthening of Distribution Network by providing/augmentation of 11/0.400KV, 1000/315/200/100 KVA Distribution Transformers along with ACB.	8.82	4.95	1.62	1.14
5	Providing 11KV/LT Aerial Bunched Conductor	2.92	0.76	-	1.79
6	Providing improved metering system, special tools, testing equipments, vehicle, skylift, safety devices, office equipment etc.	2.00	1.28	0.47	-
7	Improvement and augmentation of 66/11 KV existing sub-station and 11KV Indoor sub-stations including HT/LT Panels, ACB/OCB, Battery bank, CT/PT, HT/ LT Shunt Capacitors etc. on the existing distribution transformers.	21.24	2.98	9.47	6.11
8	Miscellaneous such as Renovation of houses in Electricity Colony, Unforeseen Works etc.	6.07	2.00	1.80	1.50
9	Smart Grid Project Under Sub-Division No. 5.	25.20	12.00	8.36	-
10	Conversion of Existing Overhead HT/ LT Lines into underground Equipments of 11 kV I/D S/Stn. Including Street Light System in Sector 8, UT, Chandigarh on Turnkey Basis.	18.14	9.00	4.14	-

11	The Smart Grid Project of whole Chandigarh is under approval by NSGM/MoP.	256.00	-	10.00	20.00
12	Installation of AMR & DLMS compliant energy meters at EHV sub-stations for Energy Audit. The estimate is approved and DNIT is under process.	0.82	-	0.82	-
	Total	361.93	39.26	43.46	35.60

CAPITALIZATION SCHEDULE

9.13 For 66kV new and ongoing schemes, EWEDC has proposed the capitalization considering the estimated date of commissioning of these schemes.

9.14 With respect to the 11kV schemes, 100% capitalization of the amount proposed in the concerned year for schemes such as General Service connections and industrial service connections, augmentation distribution transformers and LT OH conductors, installation of shunt capacitors and replacement of electro-mechanical meters has been considered.

9.15 Scheme-wise and year-wise proposed capitalization for the control period is summarized in the table below:

Table 38: Capitalization Schedule for the Control Period

Sl. No.	Particulars	Proposed Capitalization (Rs. in Crores)		
		FY 2019-20	FY 2020-21	FY 2021-22
66 KV Ongoing Scheme				
1	Prov. 66KV Transmission Line to upcoming 66KV G/S/Stn. alongwith associate 66KV Line Bays at Raipure Kalan, CHD.	11.03	-	-
2	Providing 2x20MVA, 66/11KV Grid Sub-Station at Raipur Kalan.	9.74	-	-
3	Providing double circuit 66 KV overhead TL tussled monopoles from T off point 60 proposed 66/11 KV Grid substation village Sarangpur ,UT Chandigarh.	3.12	-	-
4	A) Prov. Construction of Double Circuit 66KV overhead Transmission line on tubular monopoles from T-OFF Point to proposed 66KV G/S/Stn at Institutional Area in Village - Sarangpure, CHD B) Prov. Construction of 2 Nos. Line Bays at 66/11KV G/S/Stn., Village - Sarangpure, CHD	1.18	-	-

5	Turnkey execution of new 66KV 2x20 MVA Grid S/Stn. at institutional Area, Village- Sarangpur, UT, Chandigarh	9.89	-	-
6	Up gradation of T/F capacity 66/11KV Grid S/Stn. IT Park by replacing 2x12.5 MVA with 2x20MVA T/F and shifting & reinstallation 2x12.5 MVA at Civil Sectt. Sector-1 & Sector-12, Chd.	7.12	-	-
7	Up gradation of existing 33KV S/Stn. To 66KV by providing 1x30MVA, 66/11KV power T/F at Sector-34, chd.	7.22	-	-
8	Providing 66 kV Transmission line with underground cable from Sector-32 Grid Sub Station to Sector 34 Grid Sub Station	7.90	-	-
66 KV New Scheme				
9	Revised Rough Cost Estimate for Supply, Delivery, Testing & Commissioning of 220V Volts 50 Amp full wave FCBC to replace the existing battery bank and battery charger at 66KV Grid Sub Station, Sector 39, Chandigarh	0.09	-	-
10	Replacement/ augmentation of 3 Nos. damaged 66/11KV, 10/12.5MVA Power Transformers with 20MVA Power Transformers at 66KV Grid Sub Station, Sector 1, BBMB and Industrial area Phase II, Chandigarh.	-	4.36	-
11	Replacement/augmentation of 01 No. damaged 66/11kV, 10/12.5MVA Power Transformers with 20 MVA Power Transformers at 66KV Grid Sub Station, Industrial Area, Phase-I, UT Chandigarh	-	1.38	-
12	a) Providing 1x30MVA 66/11KV additional Power TF At 66kv Grid Sub Station Sec-39 UT Chd. b) Replacement of 14 Nos. MOCB with SF6, Breakers at 66KV Grid Substation Sector-52 and Sector -12 UT Chandigarh	-	-	10.37
13	RCE for the replacement of obsolete and old 66 kV isolator, 66 kV SF-6 breaker, 11 kV VCB and allied items at 66 kV Grid Sub Station I/A Phase-I & Phase-II and 33 kV Grid Sub Station I/A Phase-I, UT Chandigarh.	-	-	4.99
14	Providing Hot Spare 16/20MVA, 66/11KV Power Transformer	-	-	2.50
15	Conversion of 66 kV Single Circuit to Double Circuit T/L and U/G cable from 220 kV GSS Kishangarh to 66 kV Sub Station Sector-12 UT Chandigarh to double circuit T/L	-	-	7.37

11 KV Ongoing & New Scheme				
16	General Service Connection (GSC) and Industrial Service Connection (ISC) including replacement of Electromechanical meters to Static meters	2.09	2.81	7.05
17	Strengthening of Distribution Network by providing 11KV underground power distribution system.	1.88	2.86	3.35
18	Providing and Augmentation of the LT O/H ACSR conductors	0.22	0.13	-
19	Strengthening of Distribution Network by providing/augmentation of 11/0.400KV, 1000/315/200/100 KVA Distribution Transformers along with ACB.	3.30	1.39	2.36
20	Providing 11KV/LT Aerial Bunched Conductor	0.51	-	3.69
21	Providing improved metering system, special tools, testing equipments, vehicle, skylift, safety devices, office equipment etc.	0.85	0.40	-
22	Improvement and augmentation of 66/11 KV existing sub-station and 11KV Indoor sub-stations including HT/LT Panels, ACB/OCB, Battery bank, CT/PT, HT/LT Shunt Capacitors etc. on the existing distribution transformers.	1.98	8.11	12.61
23	Miscellaneous such as Renovation of houses in Electricity Colony, Unforeseen Works etc.	1.33	1.54	3.09
24	Smart Grid Project Under Sub-Division No.5	-	25.20	-
25	Conversion of Existing Overhead HT/ LT Lines into underground Equipments of 11 kV I/D S/Stn. Including Street Light System in Sector 8, UT, Chandigarh on Turnkey Basis.	-	18.14	-
26	Installation of AMR & DLMS compliant energy meters at EHV sub-stations for Energy Audit. The estimate is approved and DNIT is under process	-	0.82	-
	Total	69.45	67.14	57.38

9.16 The table below presents overview of the planned capital expenditure and capitalization schedule over the control period.

Table 39: Year Wise Overall Capital Expenditure and Capitalization

Particulars	FY 2019-20	FY 2020-21	FY 2021-22
Capital Expenditure (Rs. in Crores)	86.07	131.89	93.30
Capitalization (Rs. in Crores)	69.45	67.14	57.38

PHYSICAL TARGET ACHIEVEMENT FOR THE CONTROL PERIOD

9.17 In accordance with the proposed capitalization schedule, EWEDC expects to roll out infrastructure as presented in the table below:

Table 40: Expected Physical Target Achievement for the Control Period

FY	Distribution Transformer		New Sub-Stations (66/11KV)		Lines (In KMs)		
	Nos.	KVA	Nos.	MVA	LT	11KV	66KV
2019-20	112	33,600	-	-	7	16	-
2020-21	106	31,800	-	-	7	16	-
2021-22	110	33,000	-	-	7	16	-

STATUS OF TENDER PROCESSING FOR SUPPLY/SERVICES

9.18 All activities to prepare DNIT, Tender & their execution is done by PSU at their own level as per GFR - 133 (2). The normal lead time to complete the work is 18 to 24 Months after award of work.

STATUS OF ROW OR LAND ACQUISITION

9.19 The ROW is provided by Chief Architect, Department of Urban Planning when it is required to execute the work. The ROW of following works is under approval:

- (i) Turnkey execution of 66 KV Transmission Line from T-off point to the proposed 66 KV Grid Substation in Institutional Area, Village Sarangpur, Chandigarh.
- (ii) Conversion of existing 66 KV S/C Transmission Line and Underground Cable from 220 KV Substation, Kishangarh to Sector - 12, Chandigarh to D/C Transmission Line.

CHAPTER 10: FINANCING OF THE CAPITAL SCHEMES

- 10.1 The entire capital expenditure incurred by EWEDC had been funded through equity infusion by GOI through budgetary support without any external borrowings. There are no loan borrowings by the Electricity Wing of Engineering Department, Chandigarh for the capital expenditure.
- 10.2 As per the Regulation 26 of MYT Regulations, 2018 any equity deployed in excess of 30% of the capital cost of the project is required to be treated a normative loan. Since the entire capital expenditure in the various schemes shall be infused by the Government of India, EWEDC requests the Hon'ble Commission to consider the funding of the various schemes in line with the Regulation 24 and provide approval for the same.
- 10.3 The breakup of the financing of the capital expenditure undertaken during the control period is provided in table below:

Table 41: Proposed Funding Details for the Control Period

Particulars	FY 2019-20 (Rs. in Crores)	FY 2020-21 (Rs. in Crores)	FY 2021-22 (Rs. in Crores)
Proposed Capital Expenditure	86.07	131.89	93.30
Actual Funding			
100% Equity from GoI	86.07	131.89	93.30
Proposed Funding in line with Regulation 26 (b) of JERC MYT Regulations			
Equity (30%)	25.82	39.57	27.99
Debt (Normative Debt in excess of 30% equity)	60.25	92.32	65.31
Total Funding	86.07	131.89	93.30

TIE-UP OF FUNDS FOR THE APPROVED PROJECT COST

- 10.4 The 66 kV & above work are executed by the PSU as "Deposit Work" on cost plus basis and funds with respect to these projects are deposited by the Chandigarh Administration. The competent authority allocates the funds under 4801 Plan Head to EWEDC.

CHAPTER 11: OTHER INITIATIVES

ENERGY EFFICIENCY AND DEMAND SIDE MANAGEMENT

11.1 DSM measures:

11.1.1 Regulation 5 of the JERC for the state of Goa and Union Territories (Multi Year Distribution Tariff) Regulations, 2014 states that

“The Distribution Licensees shall project the power purchase requirement after considering effect of target set for the Energy Efficiency (EE) and Demand Side Management (DSM) schemes.”

11.1.2 In view of the above & DSM activities as approved in the Business Plan order of the previous control period, EWEDC has implemented the Efficient Lighting Program by distribution of LED bulbs in the UT of Chandigarh as a part of Demand Side Management Activity, through an Energy Service Company (ESCO), M/s. Energy Efficiency Services Limited, New Delhi.

11.1.3 EWEDC plans 100% replacement of incandescent bulbs. The number of LED's planned to be replaced along with estimated capital expenditure & savings to EWEDC is provided in the table below. The status of implementation is provided in the table below:

Table 42: Estimated Savings and Expenditure for Energy Efficiency Program

No. of LED's to be replaced (No.)	513,978
Expected annual energy savings (Mwh/year)	66,749
Expected reduction of installed load (MW)	13
Estimated Capital Expenditure (Rs. in Crores)	-
Estimated cost savings to CED per year (Rs. in Crores)	27.00

11.1.4 Special drive was conducted under Gram Swaraj Abhiyan. In this initiative ESL arranged special campaign through 2 nos. mobile vans for sale of LED bulbs to the villages & slum colonies as well as nook & corner of urban area.

PROMOTION OF RENEWABLE POWER

11.2 To promote the use of renewable power in Chandigarh, EWEDC plans to increase the purchase of solar power from the various solar PV projects envisaged to be setup under various Government/ private/ NGO sectors. EWEDC has also initiated a study to make a road map for sourcing 100%

energy requirement of EWEDC through Renewable Energy sources. The tendering for identification of consultants is under consideration.

ENERGY AUDIT

11.3 EWEDC plans to conduct energy audit of its Transmission & Distribution system to identify energy losses and implement steps to reduce the same. Further, EWEDC shall also take up with the Chandigarh Administration to get all the government buildings/schools/colleges audited so that energy conservation steps may be taken.

SYSTEM STRENGTHENING & IMPROVEMENT

11.4 EWEDC plans to implement system strengthening & improvement measures through IPDS. This is part of the 5-year plan of the department in which total investment would be Rs. 27.73 crores.

SMART GRID

11.5 DPR for smart grid amounting to Rs. 256 Crores for whole of Chandigarh excluding the scope covered in the pilot project for the area under electricity operation sub division - 5 has already been submitted to MOP for consideration & approval.

11.6 A pilot project for smart grid is planned with an estimated cost of Rs. 36 Crores of which 70% i.e. 25.20 Crores shall be funded by EWEDC and balance by GOI. EWEDC plans a capital expenditure of Rs. 4.50 Crores in the FY 2018-19, Rs. 12 Crores in the FY 2019-20 & the rest amount in the FY 2020-21 towards for this scheme.

OUTAGE MANAGEMENT SYSTEM

11.7 EWEDC is implementing outage management system vide scheme of Urja Mitra wherein there shall be online monitoring & information for schedule/unscheduled outages.

CENTRALIZED COMPLAINT CENTER

11.8 EWEDC has started 24X7 centralized complaint centre where consumers can lodge complaints and remedial action can be taken accordingly.

AVAILABILITY OF WHEELING BUSINESS AND SUPPLY BUSINESS

11.9 Regulation 7 of the Joint Electricity Regulatory Commission for the state of Goa and Union Territories (Multi Year Distribution Tariff) Regulations, 2014 states

“The commission shall approve a trajectory while approving the business plan for certain variables having regard to the reorganization, restructuring and development of the electricity industry in the State, provided that the variable for which a trajectory may be indicated by the licensee include, but are not limited to, Operation & Maintenance expense norms, supply availability and wire availability and distribution losses.”

11.10 In this regard, it is submitted that the Electricity Wing of Engineering Department, Chandigarh is currently operating as an integrated department within the Administration of UT of Chandigarh. Therefore, the Transmission and Distribution business is being carried out by EWEDC as an integrated business and also the accounts were not being prepared as per the commercial principles.

11.11 Post the issuance of directives of the Hon'ble Commission in its various Orders, EWEDC has initiated preparation of audited accounts as per commercial principles. A chartered accountant firm has been appointed to prepare and audit the accounts of EWEDC as per standard accounting practices. Currently, audit of FY 2016-17 accounts has been completed while the audit of FY 2017-18 accounts is under process.

11.12 In view of the fact that the EWEDC is still to segregate its transmission and distribution functions, it is submitted that segregation and monitoring the parameters of the distribution business under wires and retail supply functions is very difficult at the moment. Therefore, it is requested that the Hon'ble Commission should provide separate targets/ trajectories for wheeling and retail supply business only once EWEDC has separated its transmission and distribution functions.

11.13 Further, with respect to setting of O&M targets for transmission and distribution functions as well, it is submitted that pending the availability of audited accounts as well as separation of transmission and distribution functions, it is difficult to provide O&M targets for the transmission and distribution business. EWEDC requests the Hon'ble Commission to allow the O&M expenses for EWEDC based on the actual O&M expenses incurred in the past years until the segregation of transmission and distribution functions and completion of audit of EWEDC accounts for past years.

11.14 As per the directions of Hon'ble High Court (Punjab & Haryana) and Hon'ble commission in the relevant Tariff Order, the regular connections will be given to the residents of JJ Clusters/Unauthorized colonies.

Sd/-
Superintending Engineer
Electricity Operation Circle
U.T. Chandigarh