

CHAPTER – 4

LOAD FORECAST & SALES FORECAST

Introduction:

Bangalore Electricity Supply Company Limited (BESCOM) has completed its 18years of experience in the area of Distribution Business in the State of Karnataka. Presently, BESCOM area of operation includes 8 districts of Karnataka. Viz., Bangalore Urban, Bangalore Rural, Ramanagara, Chikkaballapur, Kolar, Tumkuru, Davanagere and Chitradurga.

The Commission has issued guidelines for preparation of Load Forecast, Power Procurement Plan & Power Procurement procedure through regulations:

- KERC (Conditions of License for ESCOMs) Regulations, 2004 dated 28.04.2004
- KERC (Load Forecast) Regulations, 2009 dated 02.04.2009

The Commission vide the above Load Forecast regulations has directed the Distribution Licensees to follow the Forecast methodology adopted by CEA from time to time, so as to have a consistent methodology. Further, it is also stated that the forecast as per the latest available EPS (Electric Power Survey of India), under fulfillment of CEA's obligation under Section 73(a) of Electricity Act, 2003 would be the reference point.

The latest available CEA forecast is 19th EPS.

Energy /Demand requirement of BESCOM constitutes approximately 50% of the Karnataka State Energy/Demand requirement. Bangalore urban alone constitutes 50% of Energy/Demand requirement of BESCOM. Hence, Bangalore Urban alone constitutes 25% of the total State Energy /Demand requirement.

BESCOM in its Tariff filing for the 5th control period i.e., FY-20 to FY-22, had projected the energy forecast up to 2022 under different scenarios.

The Karnataka Electricity Regulatory Commission in its letter no. KERC/DD(Tariff)B/02/21/806, dated 24.09.2021 has stated that the 6th Control period is for a span of 3 years from FY-23 to FY-25.

Demand forecasting of electricity is an important activity for distribution companies to know the description of electricity demand in future.

To make more accurate forecasts, we need to combine historical review with statistical/probability based modeling for categories such as irrigation pump sets and Bhagya Jyothi installations. Though BESCOM has historical details from FY-03 onwards, it is felt that the past years growth scenarios will be more accurate to project for future years. The thought of considering limited historical data is due to the fact that the power sector has evolved over the recent years, initiating new regulations for increasing competitiveness in the market and also increasing the energy generation through renewable source of energy. Hence, actuals of FY-12 to FY-22 (up to Sept-22) figures are considered. Actuals with respect to Projection under different scenarios are verified and necessary corrections are proposed for the next control period i.e., FY-23 to FY-25.

The actuals are compared to the following projection scenarios and necessary corrections are proposed.

1. Per capita consumption
2. 19th EPS
3. Circle wise energy sales
4. Area Load Dispatch Centre based projections
5. Compounded Annual Growth Rate (CAGR)

Sales Projection for 6th Control Period:

Actual sales recorded for the financial year 2021 is 25262.93 MU. Compared to previous years there is drastic fall down of sales during FY-21 due to COVID -19 pandemic and lock down situations. Hence, in order to compute full year sales figures for FY-22, FY-20 sales figures are considered as base and previous half yearly data (excluding covid period) are considered.

The category wise half yearly sales ratios for each of the financial year from FY-16 to FY-21 are depicted in the table:

Table 4.1

Tariff	Apr-15 to Sept-15	Oct-15 to Mar-16	Apr-16 to Sept-16	Oct-16 to Mar-17	Apr-17 to Sept-17	Oct-17 to Mar-18	Apr-18 to Sept-18	Oct-18 to Mar-19	Apr-19 to Sept-19	Oct-19 to Mar-20	Apr-20 to Sept-20	Oct-20 to Mar-21
HT-1	0.5	0.5	0.51	0.49	0.49	0.51	0.49	0.51	0.49	0.51	0.5	0.5
HT-2A	0.51	0.49	0.53	0.47	0.5	0.5	0.54	0.46	0.52	0.48	0.43	0.57
HT-2B	0.53	0.47	0.54	0.46	0.53	0.47	0.56	0.44	0.52	0.48	0.51	0.49
HT-2C	0.51	0.49	0.51	0.49	0.52	0.48	0.53	0.47	0.52	0.48	0.5	0.5
HT-3	0.47	0.53	0.3	0.7	0.13	0.87	0.3	0.7	0.27	0.73	0.39	0.61
HT-4	0.53	0.47	0.59	0.41	0.52	0.48	0.5	0.5	0.5	0.5	0.52	0.48
HT-5	0.49	0.51	0.45	0.55	0.5	0.5	0.5	0.5	0.51	0.49	0.43	0.57
HT total	0.51	0.49	0.53	0.47	0.51	0.49	0.54	0.46	0.51	0.49	0.46	0.54
LT-1	0.51	0.49	0.51	0.49	0.46	0.54	0.51	0.49	0.51	0.49	0.55	0.45
LT-2	0.51	0.49	0.52	0.48	0.52	0.48	0.51	0.49	0.52	0.48	0.53	0.47
LT-3	0.52	0.48	0.52	0.48	0.53	0.47	0.51	0.49	0.53	0.47	0.48	0.52
LT-4	0.52	0.48	0.44	0.56	0.48	0.52	0.48	0.52	0.54	0.46	0.48	0.52
LT-5	0.51	0.49	0.51	0.49	0.5	0.5	0.5	0.5	0.51	0.49	0.42	0.58
LT-6A [WS]	0.51	0.49	0.41	0.59	0.44	0.56	0.47	0.53	0.52	0.48	0.5	0.5
LT-6B [SL]	0.5	0.5	0.47	0.53	0.47	0.53	0.49	0.51	0.5	0.5	0.49	0.51
LT-7	0.51	0.49	0.49	0.51	0.51	0.49	0.51	0.49	0.47	0.53	0.46	0.54
LT total	0.51	0.49	0.48	0.52	0.5	0.5	0.5	0.5	0.53	0.47	0.46	0.5
Total	0.51	0.49	0.5	0.5	0.5	0.5	0.51	0.49	0.52	0.48	0.5	0.51

First half year category wise sales ratio for Apr-21 to Sept-21 are computed by considering the average of the first half years sales ratio of the financial year from FY-16 to FY-20. Similarly, second half year category wise sales ratio is computed as depicted in the table below:

Table 4.2

Tariff	Apr-21 to Sept-21	Oct-21 to Mar-22
HT-1	0.50	0.50
HT-2A	0.52	0.48
HT-2B	0.54	0.46
HT-2C	0.52	0.48
HT-3	0.30	0.70
HT-4	0.53	0.47
HT-5	0.49	0.51
HT total	0.52	0.48
LT-1	0.50	0.50
LT-2	0.52	0.48
LT-3	0.52	0.48
LT-4	0.49	0.51
LT-5	0.51	0.49
LT-6A WS]	0.47	0.53
LT-6B [SL]	0.48	0.52
LT-6C	0.04	0.96
LT-7	0.50	0.50
LT total	0.50	0.50
Total	0.51	0.49

Sales projection of HT-2A, HT-2B, HT-2C, LT-3 and LT-5 installations are slightly modified keeping in view the post lockdown/COVID-19 pandemic. For LT-4a Commission an approved sale i.e. 7004MU in the Tariff Order-2021 is considered for projection. Total sales projected for the FY-22 is 28118.60 MU.

Sales Projection for FY-23, FY-24 and FY-25:

CAGR up to 10 years are calculated and growth rates are arrived as shown in the table below:

Table 4.3

Tariff category	CAGR 10yrs	CAGR 9yrs	CAGR 8yrs	CAGR 7yrs	CAGR 6yrs	CAGR 5yrs	CAGR 4yrs	CAGR 3yrs	CAGR 2yrs	CAGR 1yr
LT-1 < 40HP							6%	0%	-1%	-5%
LT-1 > 40HP							10%	14%	21%	-5%
LT-1	16%	16%	21%	24%	27%	35%	7%	4%	4%	-5%
LT-2(a)	5%	4%	4%	4%	3%	3%	3%	2%	1%	3%
LT-2(b)	-2%	0%	-1%	-3%	-4%	-6%	-9%	-13%	-22%	6%
LT-3	5%	4%	4%	4%	3%	3%	1%	1%	-3%	27%
LT-4(a)	3%	2%	4%	3%	2%	-1%	3%	-1%	1%	1%
LT-4(b)	-12%	-12%	-11%	0%	-10%	-2%	19%	7%	18%	9%
LT-4(c)	4%	3%	7%	-1%	5%	4%	8%	6%	3%	11%
LT-5	2%	1%	2%	2%	2%	2%	2%	1%	3%	23%
LT-6a(i) WR	13%	14%	16%	19%	24%	21%	16%	8%	7%	21%
LT-6a(ii) SL	3%	4%	4%	5%	7%	7%	5%	4%	3%	13%
LT-6© EV										
LT-7	5%	4%	4%	0%	3%	4%	6%	14%	-2%	6%
LT Total	4%	4%	5%	4%	4%	2%	3%	1%	1%	7%
HT-1	5%	5%	3%	3%	3%	3%	4%	3%	3%	1%
HT-2(a)	0%	-1%	-2%	-1%	-1%	0%	0%	-1%	3%	26%
HT-2(b)	-3%	-4%	-4%	-5%	-4%	-5%	-6%	-7%	-8%	36%
HT-2©			18%	8%	6%	4%	2%	1%	0%	37%
HT-3(a)	32%	26%	34%	27%	9%	45%	38%	28%	28%	0%
HT3 (b)	14%	23%	35%	22%	37%	13%	15%	4%	-4%	-10%
HT-4	-4%	-5%	-4%	-7%	-4%	-6%	3%	3%	-1%	-2%
HT-5		20%	10%	-14%	5%	4%	5%	6%	7%	16%
HT TOTAL	0%	-1%	-1%	-2%	-1%	-1%	-1%	-2%	0%	24%
TOTAL	3%	2%	3%	2%	2%	1%	2%	0%	1%	11%

The sales for 6th Control period has been finalized with certain correction factors as detailed below:

1. An estimated Category wise sale of FY-22 is considered for arriving at the CAGR.
2. Half yearly sales i.e. cumulative DCB of Sept -19 is considered.
3. In respect of BJ/KJ, no new schemes are announced by GoK. Hence the estimated consumption for FY-22 based on half yearly sales is retained for the future years.
4. IP sales: For FY-22, Commission approved sales i.e. 7004 MU in the Tariff Order-2021 dtd: 09.06.2021, same is considered for FY-22 projection. For FY-23 to FY-25 projections are computed by multiplying Commission approved Specific Consumption for FY-22 with projected installations.
5. Considering FY-22 as the base year, CAGR for 10 years, 9 years, 8 years, 7 years, 6 years, 5 years, 4 years, 3 years , 2 years are computed . Out of which 3 year CAGR is considered appropriate for projections.
6. 3 year CAGR considering FY-22 as base year is negative and miniscule for few categories such as LT-2(b), LT-3 and LT-5 due to COVID-19 pandemic lockdown. Hence, 3 year CAGR is computed by considering FY-20 as the base year i.e. 7%, 6% and 2% for LT-2(b), LT-3 and LT-5 respectively. Based on these growth rates, projections are made.
7. Due to Covid-19 pandemic and lock down restrictions HT-2(a) and HT-2(b) consumption had declined. As the growth rates are negative, FY-23 to FY-25 consumptions are projected based on 10 year CAGR growth rate by considering FY-20 as the base year.
8. 3 year growth rate of HT-2c category is low, 5 year CAGR is considered for the projections.
9. For HT-3(a), 3 year CAGR is on higher side 6 year CAGR is considered for the projections.

The sales calculations for FY-23, FY-24 and FY-25 are shown in the table below:

Table 4.4
Sales in MU

Tariff category	FY-21	FY-22 (Apr-21 to Sep-21) (Actuals)	FY-22 Estimations	FY-23 Estimations	FY-24 Estimations	FY-25 Estimations
LT-1 < 40HP	181.77	90.74	172.77	172.77	172.77	172.77
LT-1> 40HP	71.28	35.72	68.02	68.02	68.02	68.02
LT-2(a)	7160.88	3793.85	7360.79	7514.12	7670.63	7830.40
LT-2(b)	32.16	17.60	34.15	60.48	64.66	69.13
LT-3	1669.66	870.43	2128.60	2376.17	2519.69	2671.89
LT-4(a)	6910.20	3500.95	7004.55	7309.99	7455.78	7601.56
LT-4(b)	1.73	0.75	1.88	2.01	2.16	2.32
LT-4(c)	5.46	3.03	6.06	6.42	6.81	7.22
LT-5	1038.44	578.85	1282.29	1236.39	1255.39	1274.69
LT-6a(i)WR	1238.30	722.46	1497.59	1615.23	1742.10	1878.94
LT-6a(ii)SL	491.96	274.74	554.30	573.71	593.81	614.60
LT-6© EV	0.03	0.1076	0.24	0.30	0.40	0.50
LT-7	187.06	100.56	197.61	224.35	254.71	289.18
LT Total	18988.92	9989.78	20308.85	21159.96	21806.93	22481.22
HT-1	796.61	422.20	800.87	827.45	854.91	883.28
HT-2(a)	3505.08	2066.76	4408.82	4487.69	4567.97	4649.68
HT-2(b)	1466.98	790.62	1991.92	2006.34	2020.87	2035.50
HT-2©	243.04	147.70	333.80	348.25	363.32	379.05
HT-3(a)	94.01	56.16	93.94	102.12	111.01	120.68
HT3 (b)	1.37	0.73	1.23	1.28	1.34	1.40
HT-4	79.15	42.64	77.43	80.07	82.79	85.60
HT-5	87.75	54.14	101.75	107.67	113.93	120.57
HT TOTAL	6274.01	3580.95	7809.75	7960.86	8116.14	8275.76
TOTAL	25262.93	13570.73	28118.60	29120.82	29923.07	30756.98

Consumer Projection:

Estimation of number of consumers for FY-22 is computed by adding the half yearly growth of consumers to the first half of FY-22. For FY-23 to FY-25, 3 year CAGR is considered by taking FY-20 as the base year more appropriate.

Estimation of installations is prepared with a few modifications such as,

- **BJ/KJ:** The number of installations based on DCB figures for Sept-21(First half year figures of FY-22) is 843367. Same numbers of consumers are retained for FY-22 to FY-25.
- **LT-4(b):** CAGR values are negative; FY-22 numbers of consumers are retained.

The CAGR for 5 years, 4 years, 3 years, 2 years and 1 year is computed as shown in the table below.

Table 4.5

Consumer Category	CAGR 5 years	CAGR 4 years	CAGR 3 years	CAGR 2 years	CAGR 1 year
LT-1(a)	1.9%	2.2%	2%	0%	0%
LT-2(a)	5.3%	5.0%	5%	5%	5%
LT-2(b)	4.2%	2.4%	3%	3%	3%
LT-3	5.8%	4.9%	5%	5%	4%
LT-4(a)	4.0%	3.6%	4%	3%	3%
LT-4(b)	-16.8%	-23.4%	-11%	-25%	-17%
LT-4(c)	6.0%	5.4%	7%	6%	6%
LT-5	4.5%	3.7%	4%	4%	4%
LT-6WS	7.7%	8.1%	8%	6%	6%
LT-6SL	3.5%	3.3%	4%	4%	4%
LT-7	17.0%	12.1%	11%	11%	11%
LT TOTAL	5.5%	5.1%	5%	5%	5%
HT-1	7.6%	8.0%	10%	7%	8%
HT-2(a)	6.5%	4.2%	6%	6%	5%

HT-2(b)	9.0%	6.6%	10%	11%	11%
HT-2(c)	17.0%	11.8%	11%	11%	10%
HT-3(a)	9.8%	16.9%	17%	18%	13%
HT-3(b)	51.6%	9.8%	13%	11%	14%
HT-4	13.7%	10.9%	23%	37%	63%
HT-5	36.6%	31.3%	23%	22%	20%
HT TOTAL	9.4%	7.1%	9%	10%	10%
TOTAL	5.5%	5.1%	5%	5%	5%

Consumers Projections for 6th Control period i.e. FY-23 to FY-25 are depicted in the table below.

Table 4.6

Sl. No.	Consumer Category	As on 31/03/23	As on 31/03/24	As on 31/03/25
	LT1(a)<40HP	770651	770651	770651
	LT1(a)>40HP	72716	72716	72716
1	LT-1(a) Total	843367	843367	843367
2	LT-2(a)	9324451	9788025	10274646
3	LT-2(b)	13065	13502	13953
4	LT-3	1276127	1337660	1402161
5	LT-4(a)	1002844	1022844	1042844
6	LT-4(b)	240	240	240
7	LT-4(c)	2037	2170	2312
8	LT-5	242066	251727	261773
9	LT-6WS	97245	104711	112750
10	LT-6SL	78319	81224	84237
11	LT-6EV	125	150	175
12	LT-7	999092	1112441	1238650
	LT TOTAL	13878979	14558061	15277107
13	HT-1	314	344	378
14	HT-2(a)	8447	8918	9416
16	HT-2(b)	8843	9694	10627

17	HT-2(c)	1099	1221	1358
18	HT-3(a)	62	72	84
19	HT-3(b)	18	21	23
20	HT-4	600	736	903
21	HT-5	2343	2883	3546
	HT TOTAL	21726	23890	26337
	TOTAL	13900705	14581952	15303444

The tariff category wise details are stated below:

1. LT-1 Installations:

Growth of consumers and consumption:

Table 4.7

Particulars	Sub Category	FY-23	FY-24	FY-25
Consumers	LT1(a)<40HP	770651	770651	770651
	LT1(a)>40HP	72716	72716	72716
	Total	843367	843367	843367
Consumption in MU	LT1(a)<40HP	172.77	172.77	172.77
	LT1(a)>40HP	68.02	68.02	68.02
	Total	240.78	240.78	240.78

The number of installations based on DCB figures for Sept-21 (First Half year figures of FY-22) is 843367. Same numbers of consumers are retained for FY-22, FY- 23, FY-24 and FY-25.

The energy sales for Sept-21(first half year figure of FY-22) are 126.46 MU based on actual. For the FY-22 energy consumption 240.78 MU is calculated based on the half yearly figures. Since, BESCOM has not proposed any increase in consumers under this tariff, the sales under this tariff is also retained as 240.78 for each year of the 6th control period as shown in the table.

However, if the Government introduces any new schemes during the Control Period, the same will be brought to the kind notice of the Hon'ble Commission during Annual Performance Review.

2. LT-2a Installations:

Growth of consumers and consumption:

Table 4.8

Particulars	FY-23	FY-24	FY-25
Consumers	9324451	9788025	10274646
Consumption in MU	7514.12	7670.63	7830.40

The number of installations based on DCB figures for Sept-21 is 87,39,355. For FY-22, consumers are calculated based on difference of Sept-21(First Half year figure FY-22) and FY-21 figures added to Sept-21 (First Half year figure of FY-22) totalling to 88,82,832 consumers. The year-end figure for FY-23, FY-24 and FY-25 are based on 3 year CAGR growth rate of 5%.

The energy sales for Sept -21 under this category is 3793.85 MU based on actual. Considering FY-20 as base year figure and previous half yearly data consumption for FY-22 is computed as 7360.79 MU. For FY-23, FY-24 and FY- 25, consumption is projected using 3 year CAGR growth rate at 2% is reckoned to arrive at the consumption.

3. LT-2b Installations:

Growth of consumers and consumption:

Table 4.9

Particulars	FY-23	FY-24	FY-25
Consumers	13065	13502	13953
Consumption in MU	60.48	64.66	69.13

The number of installations based on DCB figures for Sept-21 is 12592. For FY- 22, consumers are calculated based on difference of Sept-21 (First Half year figure of FY-22) and FY-21 figures added to Sept-21 (First Half year figure of FY-22) totalling to 12643 consumers. The year-end figure for FY-23, FY-24 and FY-25 are based on 3 year CAGR growth rate of 3%.

The energy sales for Sept-21 (First Half year figure of FY-22) under this category is 17.60 MU based on actual. Considering FY-20 as base year figure and previous half yearly data consumption for FY-22 is computed as 34.15MU. 3 year CAGR considering FY-22 as base year is negative. Therefore, for FY-23, FY-24 and FY-25, 3 year CAGR is computed by considering FY-20 as the base year i.e., at 7% growth rate projections are made.

4. LT-3 Installations:

Growth of consumers and consumption:

Table 4.10

Particulars	FY-23	FY-24	FY-25
Consumers	1276127	1337660	1402161
Consumption in MU	2376.17	2519.69	2671.89

The number of installations based on DCB figures for Sept-21 is 11,99,375. For FY-22, consumers are computed based on difference of Sept-21(First Half year figure of FY-22) and FY-21 figures added to Sept-21(First Half year figure of FY-22) totalling to 12,17,425 consumers. The year-end figure for FY-23, FY-24 and FY-25 are based on 3 year CAGR growth rate of 5%.

The energy sales for Sept -21 (First Half year figure of FY-22) under this category is 870.43 MU based on actual. Considering FY-20 as base year figure and previous half yearly data consumption for FY-22 and keeping in view as almost normalcy are restored after the outbreak of Covid -19 pandemic, sales projection of LT-3 installations are slightly modified is computed as 2128.60 MU. For FY-23, FY-24 and

FY-25, 3 year CAGR is computed by considering FY-20 as the base year i.e. at 6% growth rate projections are made.

5. LT-4b Installations:

Growth of consumers and consumption:

Table 4.11

Particulars	FY-23	FY-24	FY-25
Consumers	240	240	240
Consumption in MU	2.01	2.16	2.32

The number of installations based on DCB figures for Sept-21 is 231.

For FY-22, consumers are computed based on difference of Sept-21(First Half year figure of FY-22) and FY-21 figures added to Sept-21(First Half year figure of FY-22) totalling to 240 consumers. CAGR values are negative; FY-22 numbers of consumers are retained for the FY-23, FY-24 and FY-25.

The energy sale for Sept-21(First Half Year figure of FY-22) under this category is 0.75 MU based on actual. Considering FY-20 as base year figure and previous half yearly data consumption for FY-22 is computed as 1.88 MU. For FY-23, FY-24 and FY- 25, consumption is projected using 3 year CAGR growth rate at 7% is reckoned to arrive at the consumption.

6. LT-4c Installations:

Growth of consumers and consumption:

Table 4.12

Particulars	FY-23	FY-24	FY-25
Consumers	2037	2170	2312
Consumption in MU	6.42	6.81	7.22

The number of installations based on DCB figures for Sept-21 is 1863. For FY-22, consumers are calculated based on difference of Sept-21(First Half year figure of FY-22) and FY-21 figures added to Sept-21(First Half year figure of FY-22) totalling to 1912 consumers. The year-end figure for FY-22, FY-23 and FY-25 are based on 3 year CAGR growth rate of 7%.

The energy sales for Sept -21 (First Half year figure of FY-22) under this category 3.03 based on actual. Considering FY-20 as base year figure and previous half yearly data consumption for FY-22 is computed as 6.06 MU. For FY-23, FY-24 and FY-25, consumption is projected using 3 year CAGR growth rate at 6% is reckoned to arrive at the consumption.

7. LT-5 Installations:

Growth of consumers and consumption:

Table 4.13

Particulars	FY-23	FY-24	FY-25
Consumers	242066	251727	261773
Consumption in MU	1236.39	1255.39	1274.69

The number of installations based on DCB figures for Sept-21 is 229333. For FY- 22, consumers are calculated based on difference of Sept-21(First Half year figure of FY-22) and FY-21 figures added to Sept-21(First Half year figure of FY-22) totalling to 232776 consumers. The year-end figure for FY-23, FY-24 and FY-25 are based on 3 year CAGR growth rate of 4%.

The energy sales for Sept -21 (First Half year figure of FY-22) under this category is 578.85 MU based on actual. Considering FY-20 as base year figure and previous half yearly data consumption for FY-22 and keeping in view as almost normalcy are restored after the outbreak of Covid -19 pandemic, sales projection of LT-5 installations are slightly modified is computed as 1282.29 MU. For FY-23, FY-24 and FY-25, 3 year CAGR is computed by considering FY-20 as the base year i.e., at 2% growth rate projections are made.

8. LT-6 Water supply Installations:

Growth of consumers and consumption:

Table 4.14

Particulars	FY-23	FY-24	FY-25
Consumers	97245	104711	112750
Consumption in MU	1615.23	1742.1	1878.94

The number of installations based on DCB figures for Sept-21 is 88986. For FY- 22, consumers are calculated based on difference of Sept-21(First Half year figure of FY-22) and FY-21 figures added to Sept-21(First Half year figure of FY-22) totalling to 90312 consumers. The year-end figure for FY-23, FY-24 and FY-25 are based on 3 year CAGR growth rate of 8%.

The energy sales for Sept -21 (First Half year figure of FY-22) under this category is 722.46 based on actual. Considering FY-20 as base year figure and previous half yearly data consumption for FY-22 is computed as 1497.59 MU. For FY-23, FY-24 and FY- 25, consumption is projected using 3 year CAGR growth rate at 8% is reckoned to arrive at the consumption.

9. LT-6 Street Light Installations

Growth of consumers and consumption:

Table 4.15

Particulars	FY-23	FY-24	FY-25
Consumers	78319	81224	84237
Consumption in MU	573.71	593.81	614.6

The number of installations based on DCB figures for Sept-21 is 72971. For FY- 22, consumers are calculated based on difference of Sept-21(First Half year figure of FY-22) and FY-21 figures added to Sept-21(First Half year figure of FY-22) totalling to

75518 consumers. The year-end figure for FY-23, FY-24 and FY-25 are based on 3 year CAGR growth rate of 4%.

The energy sales for Sept -21 (First Half year figure of FY-22) under this category is 274.74 MU based on actual. Considering FY-20 as base year figure and previous half yearly data consumption for FY-22 is computed as 554.30 MU. For FY-23, FY-24 and FY- 25, consumption is projected using 3 year CAGR growth rate at 4% is reckoned to arrive at the consumption.

10. LT-6c Installations:

Growth of consumers and consumption:

Table 4.16

Particulars	FY-23	FY-24	FY-25
Consumers	125	150	175
Consumption in MU	0.3	0.4	0.5

The number of installations based on DCB figures for Sept-21 is 44. For FY-22, projected consumers are 50. The energy sales for Sept -21 (First Half year figure of FY-22) under this category is 0.1076 MU based on actual. Anticipating more e-mobility in coming years, projections made for the future years are depicted in the above table.

11. LT-7 Temporary Installations:

Growth of consumers and consumption:

Table 4.17

Particulars	FY-23	FY-24	FY-25
Consumers	999092	1112441	1238650
Consumption in MU	224.35	254.71	289.18

The number of installations based on DCB figures for Sept-21 is 864709 (First Half Year Figure of FY-22). For FY-22, consumers are calculated based on difference of Sept-21(Half year figure) and FY-21 figures added to Sept-21 (First Half year figure of

FY-22) totalling to 897292 consumers. The year-end figure for FY-23, FY-24 and FY-25 are based on 3 year CAGR growth rate of 11%.

The energy sales for Sept -21 (First Half year figure of FY-22) under this category is 100.56 MU based on actual. Considering FY-20 as base year figure and previous half yearly data consumption for FY-22 is computed as 197.61 MU. For FY-23, FY-24 and FY-25, using 3 year CAGR growth rate at 14% is reckoned to arrive at the consumption.

12. HT-1 Installations:

Growth of consumers and consumption:

Table 4.18

Particulars	FY-23	FY-24	FY-25
Consumers	314	344	378
Consumption in MU	827.45	854.91	883.28

The number of installations based on DCB figures for Sept-21(First Half Year Figure of FY-22) is 282. For FY-22, consumers are calculated based on difference of Sept-21(First Half year figure of FY-22) and FY-21 figures added to Sept-21(First Half year figure of FY-22) totalling to 286 consumers. The year-end figure for FY-23, FY-24 and FY-25 are based on 3 year CAGR growth rate of 10%.

The energy sales for Sept -21 (First Half year figure of FY-22) under this category is 422.20 MU based on actual. Considering FY-20 as base year figure and previous half yearly data consumption for FY-22 is computed as 800.87 MU. For FY-23, FY-24 and FY-25, using 3 year CAGR growth rate at 3% is reckoned to arrive at the consumption.

13. HT-2a Installations:

Growth of consumers and consumption:

Table 4.19

Particulars	FY-23	FY-24	FY-25
Consumers	8447	8918	9416
Consumption in MU	4487.69	4567.97	4649.68

The number of installations based on DCB figures for Sept-21(First Half Year Figure of FY-22) is 7851. For FY-22, consumers are calculated based on difference of Sept-21(First Half year figure of FY-22) and FY-21 figures added to Sept-21(First Half year figure of FY-22) totalling to 8000 consumers. The year-end figure for FY-23, FY-24 and FY-25 are based on 3 year CAGR growth rate of 6%.

The energy sales for Sept -21 (First Half year figure of FY-22) under this category is 2066.76MU based on actual. Considering FY-20 as base year figure and previous half yearly data consumption for FY-22 and keeping in view as almost normalcy are restored after the outbreak of Covid -19 pandemic, sales projection of HT-2a installations are slightly modified is computed as 4408.82 MU

For FY-23, FY-24 and FY-25, as the growth rates are negative, consumptions are projected based on 10 year CAGR growth rate by considering FY-20 as the base year.

14. HT-2b Installations:

Growth of consumers and consumption:

Table 4.20

Particulars	FY-23	FY-24	FY-25
Consumers	8843	9694	10627
Consumption in MU	2006.34	2020.87	2035.5

The number of installations based on DCB figures for Sept-21(First Half Year Figure of FY-22) is 7955. For FY-22, consumers are calculated based on difference of Sept-21(First Half year figure of FY-22) and FY-21 figures added to Sept-21(First Half year

figure of FY-22) totalling to 8067 consumers. The year-end figure for FY-23, FY-24 and FY-25 are based on 3 year CAGR growth rate of 10%.

The energy sales for Sept -21 (First Half year figure of FY-22) under this category is 790.62 MU based on actual. Considering FY-20 as base year figure and previous half yearly data consumption for FY-22 and keeping in view as almost normalcy are restored after the outbreak of Covid -19 pandemic, sales projection of HT-2b installations are slightly modified is computed as 1991.92 MU

For FY-23, FY-24 and FY-25, as the growth rates are negative, consumptions are projected based on 10 year CAGR growth rate by considering FY-20 as the base year.

15. HT-2c Installations:

Growth of consumers and consumption:

Table 4.21

Particulars	FY-23	FY-24	FY-25
Consumers	1099	1221	1358
Consumption in MU	348.25	363.32	379.05

The number of installations based on DCB figures for Sept-21(First Half Year Figure of FY-22) is 946. For FY-22, consumers are calculated based on difference of Sept-21(First Half year figure of FY-22) and FY-21 figures added to Sept-21(First Half year figure of FY-22) totalling to 988 consumers. The year-end figure for FY-23, FY-24 and FY-25 are based on 3 year CAGR growth rate of 11%.

The energy sales for Sept -21 (First Half year figure of FY-22) under this category is 147.70 MU based on actual. Considering FY-20 as base year figure and previous half yearly data consumption for FY-22 and keeping in view as almost normalcy are restored after the outbreak of Covid -19 pandemic, sales projection of HT-2c installations are slightly modified is computed as 333.80 MU.

For FY-23, FY-24 and FY-25, as 3 year CAGR is minimal, consumptions are projected at 5 year CAGR growth rate at 4%.

16. HT-3a Installations:

Growth of consumers and consumption:

Table 4.22

Particulars	FY-23	FY-24	FY-25
Consumers	62	72	84
Consumption in MU	102.12	111.01	120.68

The number of installations based on DCB figures for Sept-21(First Half Year Figure of FY-22) is 51. For FY-22, consumers are calculated based on difference of Sept-21(First Half year figure of FY-22) and FY-21 figures added to Sept-21(First Half year figure of FY-22) totalling to 53 consumers. The year-end figure for FY-23, FY-24 and FY-25 are based on 3 year CAGR growth rate of 17%.

The energy sales for Sept -21 (First Half year figure of FY-22) under this category is 56.16 MU based on actual. Considering FY-20 as base year figure and previous half yearly data consumption for FY-22 is computed as 93.94 MU. For FY-23, FY-24 and FY-25, using 3 year CAGR growth rate on higher side 6 year CAGR is considered for the projections.

17. HT 3b Installations:

Growth of consumers and consumption:

Table 4.23

Particulars	FY-23	FY-24	FY-25
Consumers	18	21	23
Consumption	1.28	1.34	1.40

The number of installations based on DCB figures for Sept-21(First Half Year Figure of FY-22) is 16. For FY-22, retained consumers for the projection are totalling to 16.

The year-end figure for FY-23, FY-24 and FY-25 are based on 3 year CAGR growth rate of 13%.

The energy sales for Sept -21 (First Half year figure of FY-22) under this category is 0.73 MU based on actual. Considering FY-20 as base year figure and previous half yearly data consumption for FY-22 is computed as 1.23 MU. For FY-23, FY-24 and FY-25, using 3 year CAGR growth rate 4% is reckoned to arrive at the consumption.

18. HT-4 Installations:

Growth of consumers and consumption:

Table 4.24

Particulars	FY-23	FY-24	FY-25
Consumers	600	736	903
Consumption in MU	80.07	82.79	85.60

The number of installations based on DCB figures for Sept-21(First Half Year Figure of FY-22) is 477. For FY-22, consumers are calculated based on difference of Sept-21(First Half year figure of FY-22) and FY-21 figures added to Sept-21(First Half year figure of FY-22) totalling to 489 consumers. The year-end figure for FY-23, FY-24 and FY-25 are computed based on 3 year CAGR growth rate 23%.

The energy sales for Sept -21 (First Half year figure of FY-22) under this category is 42.64 based on actual. Considering FY-20 as base year figure and previous half yearly data consumption for FY-22 is computed as 77.63 MU. For FY-23, FY-24 and FY-25, using 3 year CAGR growth rate 3% is reckoned to arrive at the consumption.

19. HT-5 Installations

Growth of consumers and consumption:

Table 4.25

Particulars	FY-23	FY-24	FY-25
Consumers	2343	2883	3546
Consumption in MU	107.67	113.93	120.57

The number of installations based on DCB figures for Sept-21(First Half Year Figure of FY-22) is 1788. For FY-22, consumers are calculated based on difference of Sept-21(First Half year figure of FY-22) and FY-21 figures added to Sept-21(First Half year figure of FY-22) totalling to 1905 consumers. The year-end figure for FY-23, FY-24 and FY-25 are based on 3 year CAGR growth rate of 23%.

The energy sales for Sept -21 (First Half year figure of FY-22) under this category is 54.14MU based on actual. Considering FY-20 as base year figure and previous half yearly data consumption for FY-22 is computed as 101.75 MU. For FY-23, FY-24 and FY-25, using 3 year CAGR growth rate 6% is reckoned to arrive at the consumption.

20. LT-4 Agriculture Installations:

The agricultural consumers for FY-21 are 951183 and Sept-21 DCB figures are 967844. This shows that 16661 installations are added for a period of six months. For FY-22, Consumers are calculated based on previous years consumers data totalling to 982844 (15,000 installations are added) consumers.

For FY-23, FY-24 and FY-25, installations per annum reckoned is 20,000. The details are shown in the table below.

Table 4.26

Details	FY-22	FY-23	FY-24	FY-25
No of Consumers	982844	1002844	1022844	1042844

Consumption:

The energy sales for Sept -21 (First Half year figure of FY-22) under this category is 3500.95 MU based on actual. For FY-22, Commission approved sales i.e., 7004 MU in the Tariff Order-2021 dtd: 09.06.2021, same is considered for FY-22 projection. For FY-23 to FY-25 projections are computed by multiplying Commission approved Specific Consumption for FY-22 with projected installations.

Table 4.27

Details	FY-22	FY-23	FY-24	FY-25
Consumption (in MU)	7004.55	7309.99	7455.78	7601.56

The total sales, energy requirement at IF point and energy requirement at generation point for FY-22 and for the 6th control period is shown in the table below:

The average and peak load requirement is computed with actual data. The actual peak of BESCOM during FY-22 (up to October-21) is 6336 MW which was on 07.04.2021. An average of 58.5% is reckoned to arrive at the peak load requirement.

Table 4.28

PARTICULARS	FY-22	FY-23	FY-24	FY-25
Total energy sales projected MU	28118.60	29120.82	29923.07	30756.98
Sales growth rate projected in MU		4%	3%	3%
Distribution loss (%)	11.00	10.95	10.90	10.85
Energy available at interface points (MU)	31593.93	32701.65	33583.69	34500.25
Transmission loss (%)	2.978	2.928	2.878	2.828
Energy available at generation points (MU)	32563.68	33688.03	34578.87	35504.31
Energy Input growth rate in percentage		3%	3%	3%
Average MW Requirement	3717	3846	3937	4053
Peak MW requirement at LF of 58.5%	6354	6574	6729	6928