

ལྷོ། །འབྲུག་གྲོག་མེ་ལས་འཛིན།།

**Bhutan Power Corporation  
Limited**



**POWER DATA BOOK**

**2023**





འབྲུག་སྤྱི་ལམ་འཛིན།  
**Bhutan Power Corporation Limited**  
(An ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018 Certified Company)  
Registered Office, Thimphu  
Office of the Chief Executive Officer  
Thimphu : Bhutan



## EXECUTIVE SUMMARY

Bhutan Power Corporation (BPC) is pleased to publish the 'Power Data Book (PDB) 2023', which presents yearly statistics on BPC's system performances, details of the transmission and distribution network, overall achievements, and assets scenario. This information is valuable for scholars, businesses, and decision-makers alike in their studies or decision-making processes. With the increasing demand for electricity due to economic growth activities and to align to BPC's core mandate of 24/7 sustainable, reliable and quality electricity supply, BPC continues to upgrade and extend electricity coverage in the country and also invest in the automation and smart grid technology.

As on December 31, 2023, BPC has 243,285 customers which is 4.65 % increase from last year and sold 5,689.74 Million Units (MU) of electricity, which is an increase by 64.20% from the last year. BPC's energy purchase has also increased by 61.67% to 5,922.04 MU in 2023 indicating huge upsurge in the domestic energy demand. BPC wheeled 5,135.06 MU of electricity for export to India. BPC has executed 100% connection of off-grid supplies to our main grid and about 99.97% rural electrification achieved as on December 2023 as part of our aim to deliver affordable, adequate, reliable, and quality electricity services to all of our valued customers. The reliability indices data are being recorded and is being published for 2023.

The contributions of focal official from respective Departments and Divisions made it possible to compile this PDB 2023.

As an environmentally conscious organization, and to support efforts in reducing carbon footprint, BPC has switched to digital copies for this issue, which can be downloaded at [www.bpc.bt](http://www.bpc.bt).

## TABLE OF CONTENTS

EXECUTIVE SUMMARY	i
TABLE OF CONTENTS	ii
LIST OF ABBREVIATIONS	iii
CHAPTER 1: OVERVIEW OF BPC SYSTEM PERFORMANCE AND BPC INFRASTRUCTURE DETAILS	1
CHAPTER 2: POWER GENERATION AND SUPPLY	22
CHAPTER 3: ENERGY PURCHASE, IMPORT AND WHEELED	24
CHAPTER 4: PEAK DEMAND	26
CHAPTER 5: DZONGKHAG WISE SYSTEM PERFORMANCE	27
CHAPTER 6: ELECTRICITY TARIFF	51
CHAPTER 7: FIBER NETWORK	52
CHAPTER 8: FINANCIAL	61
CHAPTER 9: EMPLOYEE DETAILS	63
CHAPTER 10: COMPANY ASSET	65
CHAPTER 11: RURAL ELECTRIFICATION	66
CHAPTER 12: PERFORMANCE INDICATOR	67

## LIST OF ABBREVIATIONS

ADSS	-	All Dielectric Self-Supporting Optical Fiber
ASEB	-	Assam State Electricity Board
BHP	-	Basochhu Hydropower Plant
BPC	-	Bhutan Power Corporation Limited
BPSO	-	Bhutan Power System Operator
CHP	-	Chukha Hydropower Plant
D/C	-	Double Circuit
DG	-	Diesel Generator
DGPC	-	Druk Green Power Corporation Limited
ESD	-	Electricity Services Division
GENCOs	-	Generating Companies
GWh	-	Gigawatt Hour
HV	-	High Voltages
KHP	-	Kurichhu Hydropower Plant
KM	-	Kilometer
kV	-	Kilovolt
kW	-	Kilowatt
kWh	-	Kilowatt Hour
LV	-	Low Voltage
MU	-	Million Unit
MV	-	Medium Voltage
OPGW	-	Optical Ground Wire
PDB	-	Power Data Book
S/C	-	Single Circuit
THP	-	Tala Hydropower Plant
TOMS	-	Transmission Operation and Maintenance Section
WBSEB	-	West Bengal State Electricity Board

## **CHAPTER 1**

### **OVERVIEW OF BPC SYSTEM PERFORMANCE AND BPC INFRASTRUCTURE DETAILS**

This chapter provides yearly performance over a five-year period as presented in Table 1.0. Energy Sale, Purchase and System Losses is presented in plot. Statistics on transmission and distribution infrastructures of BPC showing the complete technical data of transmission are presented in table from 1.1 to 1.4 and distribution network in table 1.5 to 1.7. Primary transmission voltages in Bhutan are 66kV, 132kV, 220kV and 400kV. Transmission voltages are stepped down or stepped up to suitable secondary voltages which are distributed or transmitted to the load centres. The distribution MV network comprises 33kV and 11kV lines. Some isolated segments of the network continue to use 6.6 kV circuits in a few places. The Low voltage (LV) system are at 415 volts (three phase) and 230 volts (single phase).

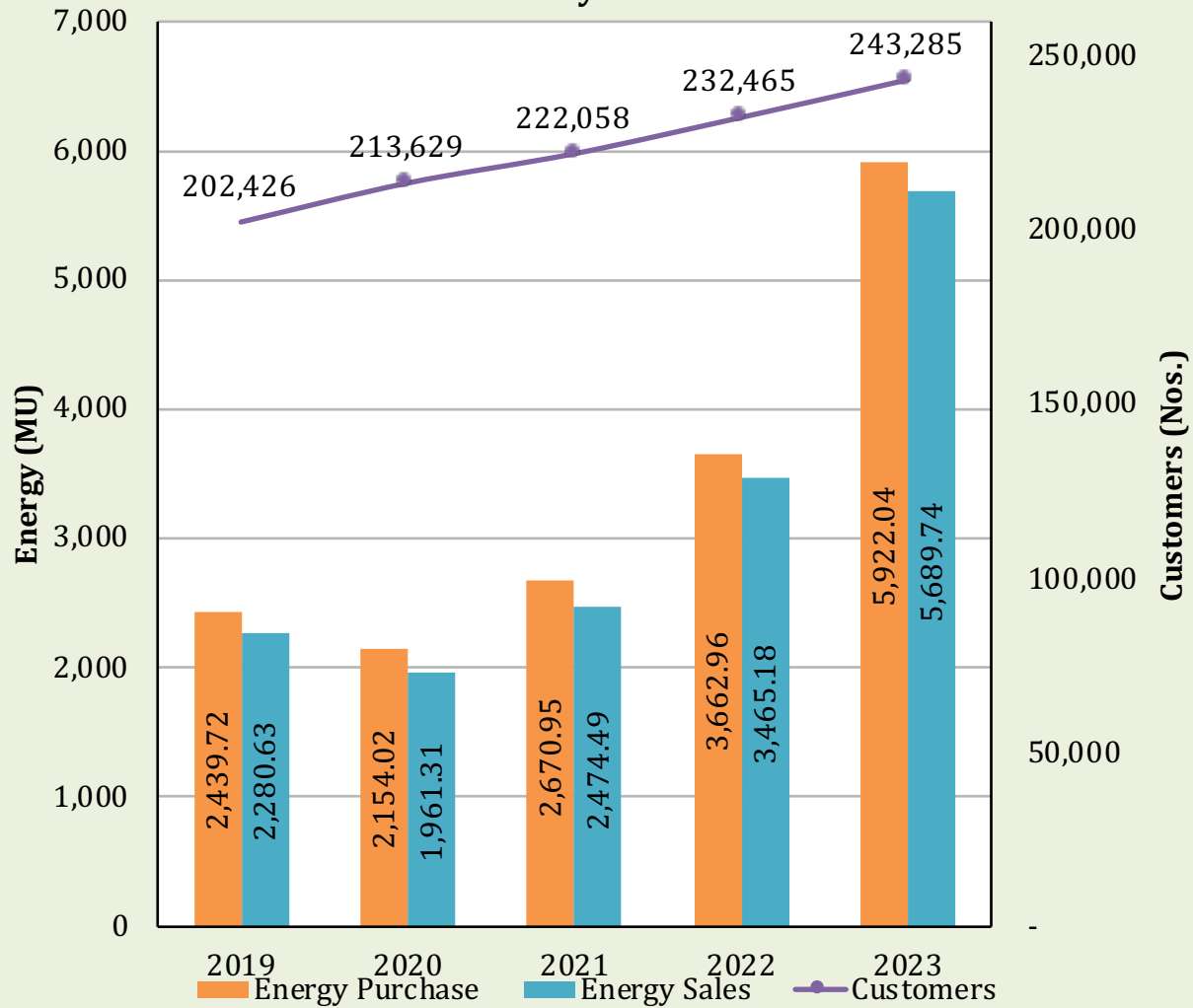
## 1.0 OVERVIEW OF BPC SYSTEM PERFORMANCE

**Table 1.0 : OVERVIEW OF BPC SYSTEM PERFORMANCE**

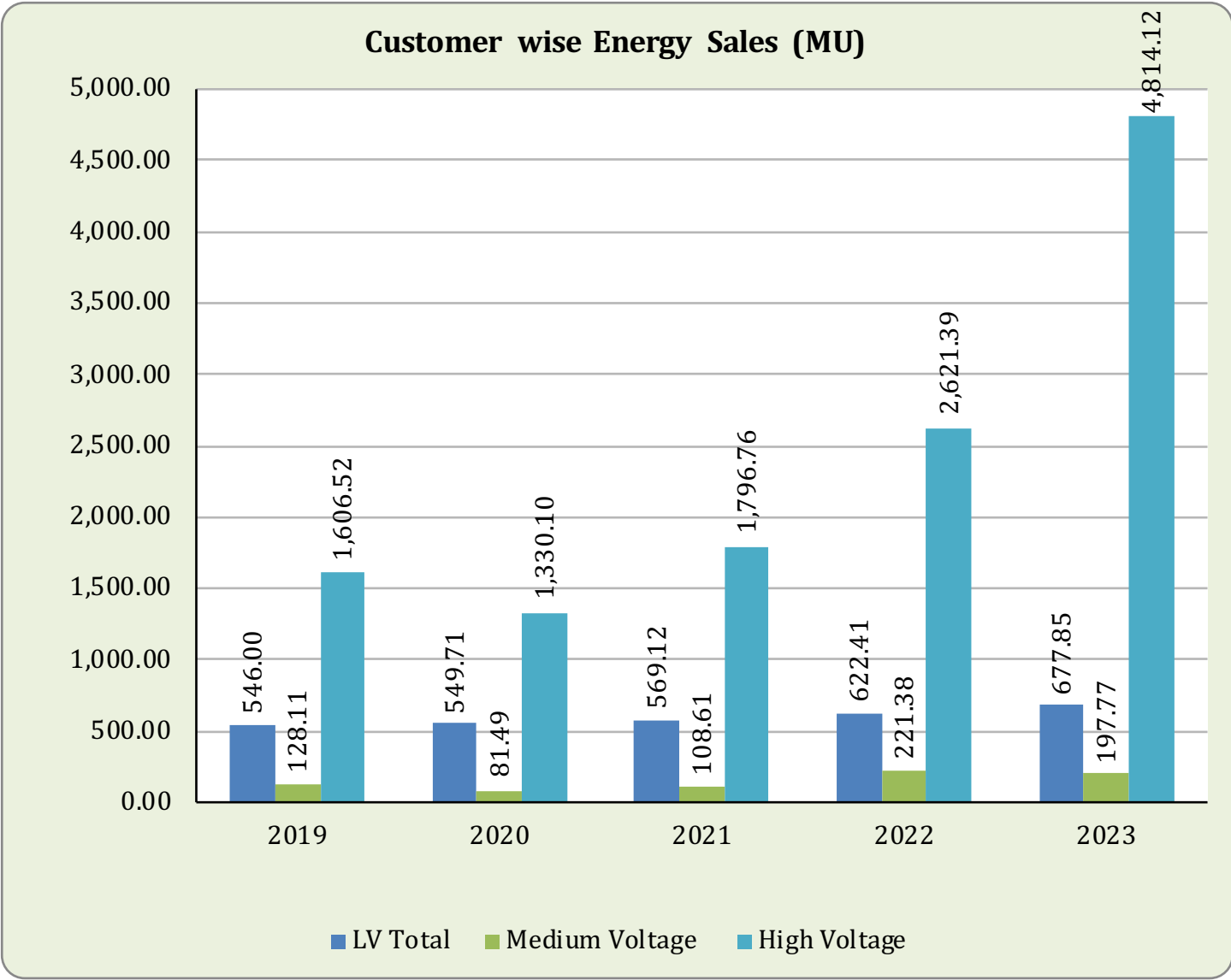
Sl#	Particulars	2019	2020	2021	2022	2023
<b>1</b>	<b>Energy Requirement (MU)</b>					
	Purchase from Generating Companies by BPC	2,419.42	2,128.58	2,649.54	3,439.59	5,304.09
	Import of power				203.92	597.68
	Purchase from Solar					0.62
	Mini/Micro Hydel Generation	20.24	25.44	21.41	19.45	19.64
	Diesel Generation	0.01	0.00	0.00	0.00	0.008
	Import (From ASEB &WBESB) through DCSD	0.05	0.00	0.00	0.00	0.00
	<b>Total</b>	<b>2,439.72</b>	<b>2,154.02</b>	<b>2,670.95</b>	<b>3,662.96</b>	<b>5,922.04</b>
	% growth over previous year	-1.67%	-11.71%	24.00%	37.14%	61.67%
<b>2</b>	Purchase from TD by DCSD	2,326.48	2,002.91	2,518.12	3,535.59	5,744.01
<b>3</b>	<b>Energy Wheeled</b>	<b>6,172.44</b>	<b>9,156.71</b>	<b>8,074.27</b>	<b>7,240.21</b>	<b>5,135.06</b>
<b>4</b>	<b>Energy Sales in MU (Category Wise)</b>					
	Rural Residential	124.54	140.45	146.15	161.29	170.23
	Rural Cooperatives	0.34	0.38	0.43	0.50	0.54
	Rural Micro Trade	2.49	2.54	2.62	2.84	2.89
	Rural Community Lhakhangs	2.16	2.44	2.54	2.71	2.94
	Highlanders	0.26	1.23	1.56	1.62	1.76
	Urban	140.08	155.93	168.22	182.13	189.28
	Religious Institutions	4.59	5.02	5.40	5.12	5.29
	Cottage and Small Scale Industries	0.42	6.57	7.15	8.03	9.28
	Commercial	73.18	58.95	59.02	67.25	77.54
	Industrial	10.09	8.09	8.07	8.71	10.10
	Agriculture	2.36	2.26	2.35	2.39	2.32
	Institutions	67.40	66.27	74.92	78.77	88.41
	Street lighting	4.60	5.01	5.15	5.49	6.01
	Power house auxiliaries	1.27	1.37	1.22	1.16	1.02
	Temporary connections	31.23	21.88	18.54	24.06	24.75
	Bulk	81.00	71.32	65.77	70.34	84.14
	EVCS					1.37
	<b>LV Total</b>	<b>546.00</b>	<b>549.71</b>	<b>569.12</b>	<b>622.41</b>	<b>677.85</b>
	Medium Voltage	128.11	81.49	108.61	221.38	197.77
	High Voltage	1,606.52	1,330.10	1,796.76	2,621.39	4,814.12
	<b>Total Energy Sales</b>	<b>2,280.63</b>	<b>1,961.31</b>	<b>2,474.49</b>	<b>3,465.18</b>	<b>5,689.74</b>
	% Growth over previous year	-2.05%	-14.00%	26.17%	40.04%	64.20%
<b>4</b>	<b>Number of Customers (Categorywise)</b>					
	Rural Residential	112,547	117,633	122,574	128,111	133,481
	Rural Cooperatives	454	533	454	489	554
	Rural Micro Trade	1,395	1,443	1,463	1,484	1,508
	Rural Community Lhakhangs	1,414	1,506	1,586	1,632	1,695
	Highlanders	1,311	1,344	1,385	1,478	1,631
	Urban	52,488	57,135	59,101	62,145	65,160

Sl#	Particulars	2019	2020	2021	2022	2023
	Religious Institutions	709	703	719	707	754
	Cottage and Small Scale Industries	615	1,658	1,731	1,783	1,835
	Commercial	14,603	14,724	15,246	16,065	17,602
	Industrial	247	289	274	462	284
	Agriculture	2,768	2,453	2,906	3,190	3,174
	Institutions	7,942	8,546	9,042	9,283	10,242
	Street lighting	620	696	732	716	823
	Power house auxiliaries	44	48	47	81	48
	Temporary connections	4,378	4,026	3,953	4,067	3,636
	Bulk	801	812	751	683	721
	<b>EVCS</b>					40
	<b>LV Total</b>	<b>202,336</b>	<b>213,549</b>	<b>221,964</b>	<b>232,376</b>	<b>243,188</b>
	Medium Voltage	73	65	75	70	75
	High Voltage	17	15	19	19	22
	<b>Total Customers</b>	<b>202,426</b>	<b>213,629</b>	<b>222,058</b>	<b>232,465</b>	<b>243,285</b>
	% growth over previous year	4.96%	5.53%	3.95%	4.69%	4.65%
<b>5</b>	<b>Loss (%)</b>					
	Global System losses (including Wheeling) (%)	1.85%	1.70%	1.83%	1.81%	2.14%
	Transmission Loss including wheeling (%)	1.08%	1.11%	1.23%	1.21%	1.49%
	Distribution Losses including HV Industries (%)	2.82%	3.34%	2.30%	1.98%	1.35%
	Distribution Losses Excluding HV Industries (%)	9.42%	9.37%	7.51%	7.30%	7.86%

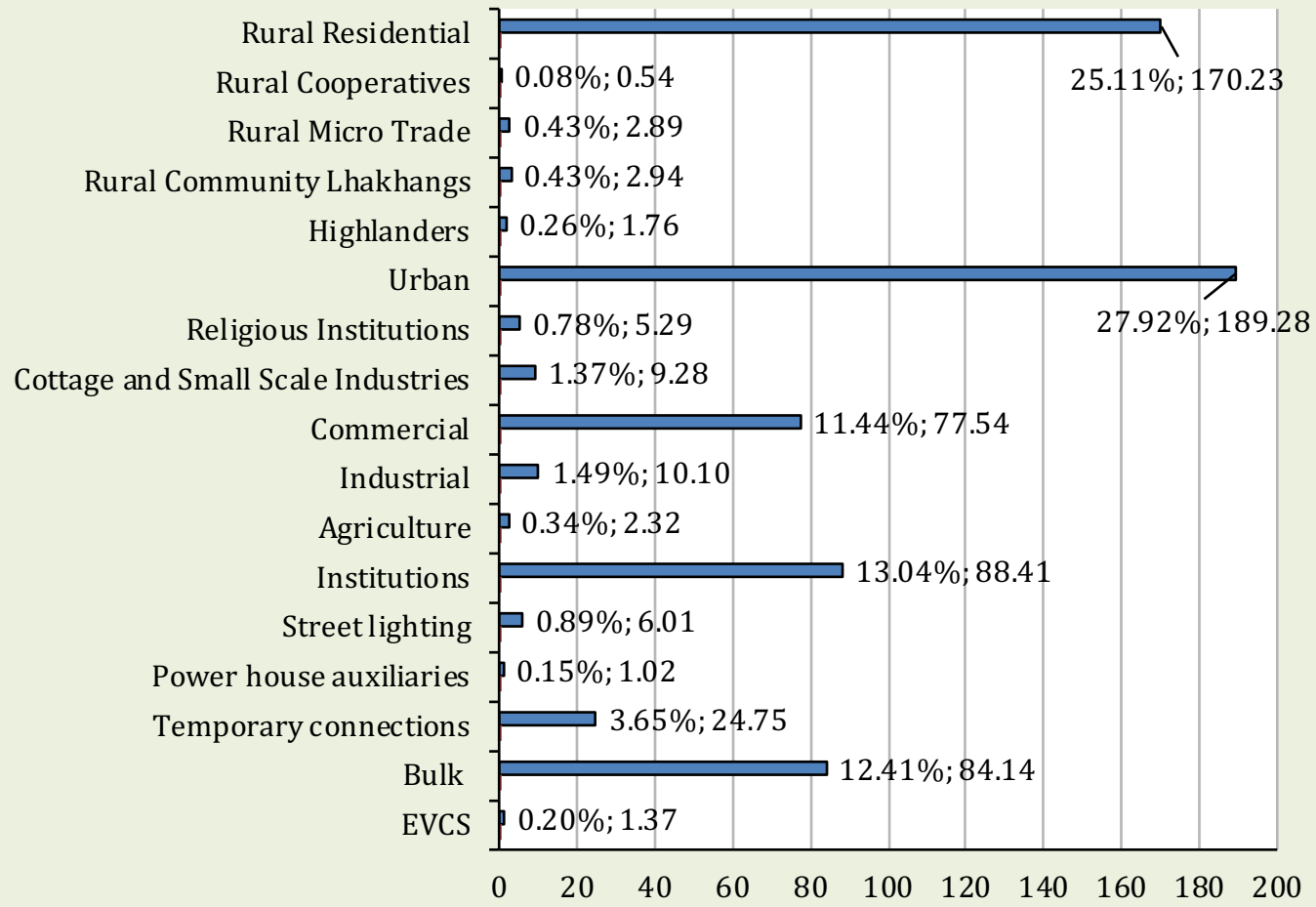
**Energy Purchase Vs Sales (MU) with Customer over past 5 years**



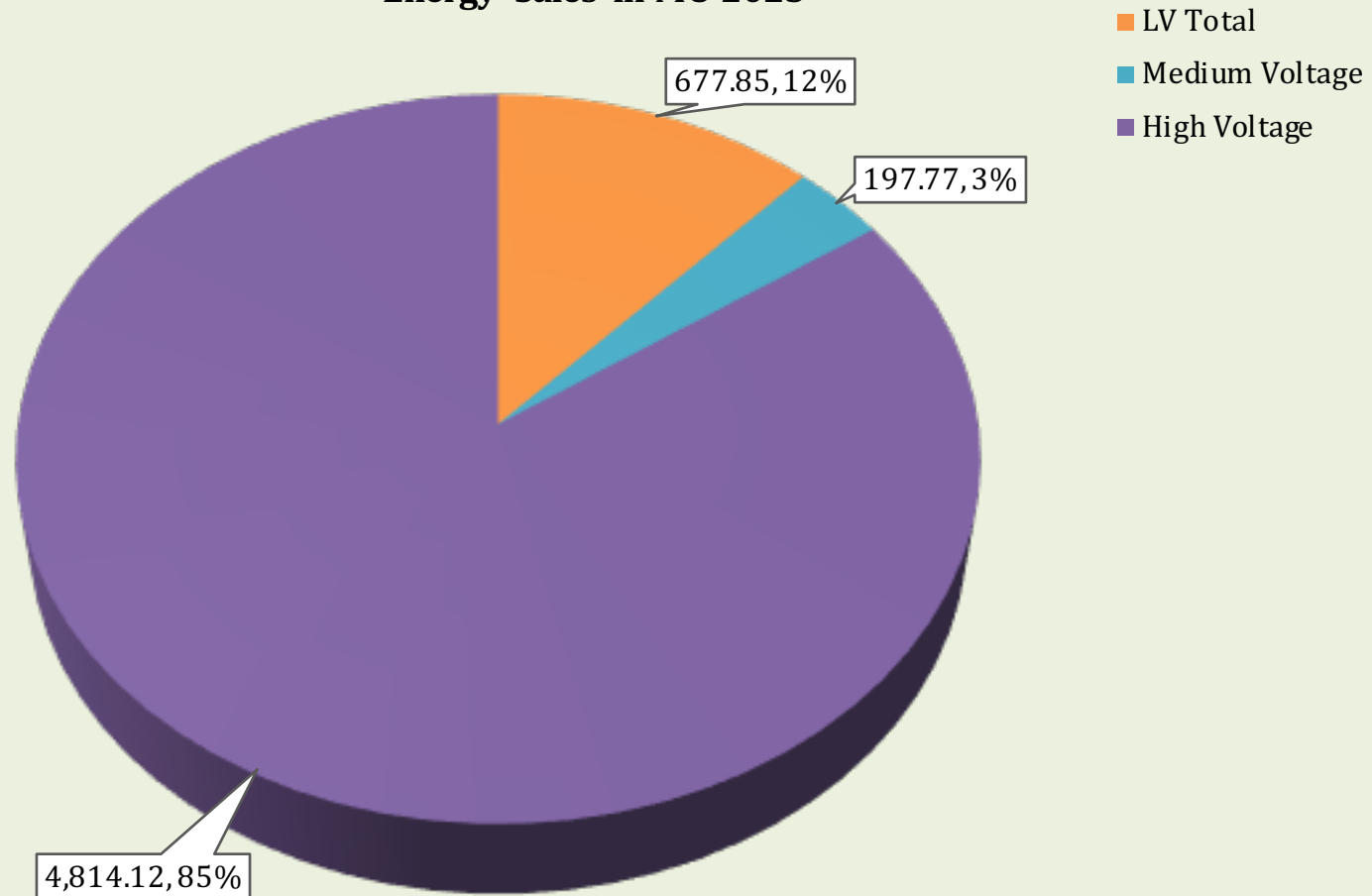




### Energy Sales to LV Customers 2023 (MU)

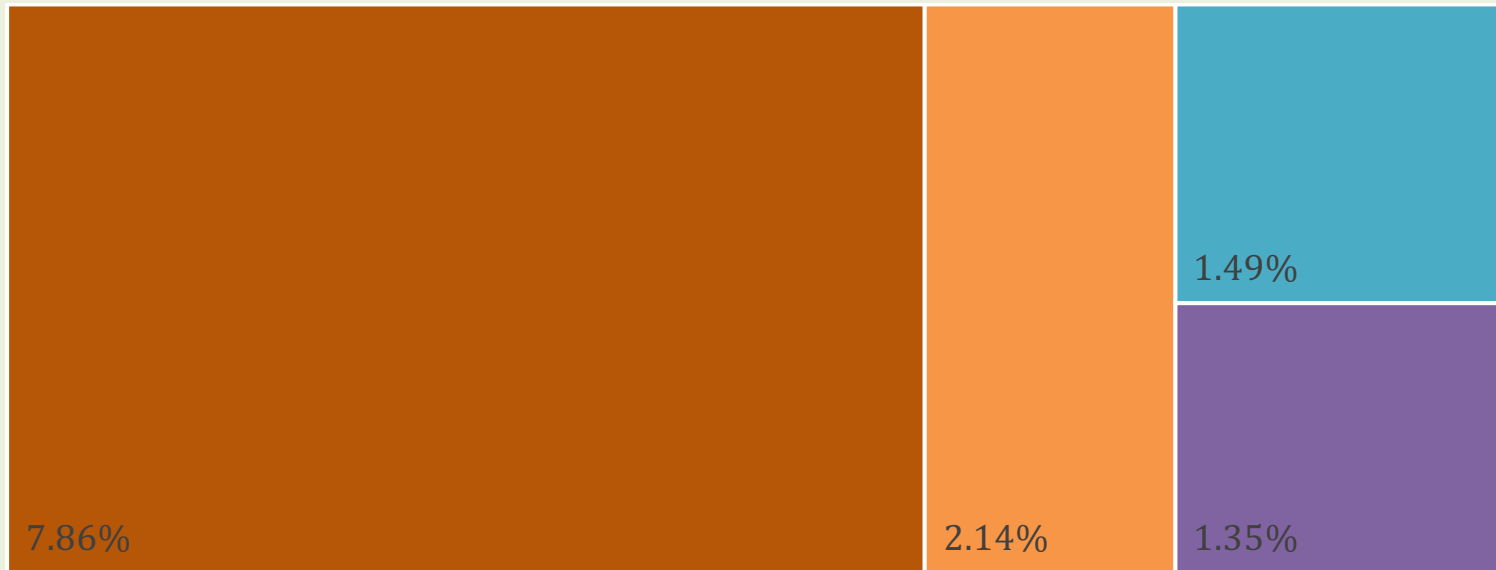


### Energy Sales in MU 2023



### System Losses (%)

- Global System losses (including Wheeling) (%)
- Transmission Loss including wheeling (%)
- Distribution Losses including HV Industries (%)
- Distribution Losses Excluding HV Industries (%)



**1.1 MAJOR TRANSMISSION LINES (ROUTE LENGTH IN KM), SUBSTATION CAPACITY (MVA) AND TOWERS NUMBERS**

**Table 1.1 : MAJOR TRANSMISSION LINES (ROUTE LENGTH IN KM), SUBSTATION CAPACITY (MVA) AND TOWERS NUMBERS**

Sl#	Description	2019	2020	2021	2022	2023
<b>A</b>	<b>Transmission Lines</b>					
1	400 kV (D/C) - Twin Moose	496.11	496.11	496.11	496.11	496.11
2	400kV Quad Moose ACSR	4.75	4.75	4.75	4.75	4.75
3	220 kV (S/C)	182.03	182.03	182.03	181.72	181.74
4	220 kV (D/C)	143.51	143.51	143.51	137.48	136.98
5	132 kV (S/C)	343.44	343.44	343.44	344.65	344.65
6	132 kV (D/C)	128.53	128.53	128.53	156.89	156.89
7	66 kV (S/C)	345.25	345.25	345.25	349.80	345.70
8	66 kV (D/C)	59.92	59.92	59.92	59.92	59.92
9	66 kV (Q/C)	3.41	3.41	3.41	3.41	3.41
10	UG	6.72	6.72	6.72	6.72	6.72
	<b>Total</b>	<b>1,713.64</b>	<b>1,713.64</b>	<b>1,713.64</b>	<b>1,741.44</b>	<b>1,736.86</b>
<b>B</b>	<b>Transformation Capacity of Transmission Substation (MVA)</b>	1,675.50	1,675.50	1,900.50	1,910.50	2,735.50
<b>C</b>	<b>Transmission Towers (Nos)</b>	4,869	4,869	4,869	4,925	4,946



## 1.2 MAJOR TRANSMISSION LINES (ROUTE LENGTH IN KM) AS OF DECEMBER 2023

**Table 1.2: TRANSMISSION LINES AS ON DECEMBER 2023**

Sl#	Transmission Line	Length as per tower schedule(km) 2023
<b>I</b>	<b>400 kV</b>	
<b>A</b>	<b>D/C Twin</b>	
1	400kV Tala-Siliguri line- 1 & 2	24.62
2	400kV Tala-Malbase-Siliguri line 4	49.53
3	400kV Puna-1-Alipurduar line-1 & 2	93.38
4	400kV Puna-1-Puna-2 line-1 & 2	13.03
5	400kV Puna-2-Alipurduar line-1 & 2	80.85
6	400kV Puna-2-Jigmeling line-1 & 2	64.98
7	400kV Mangdechhu-Jigmeling line-1 & 2	85.07
8	400kV Mangdechhu-Jigmeling line-3 & 4	84.65
	<b>Sub- total A</b>	<b>496.11</b>
<b>B</b>	<b>D/C Quad</b>	
1	400kV Jigmeling-Alipurduar line-1 & 2	4.75
	<b>Sub - total I</b>	<b>500.86</b>
<b>II</b>	<b>220 kV</b>	
<b>A</b>	<b>S/C</b>	
1	220kV Chukha-Malbase line	29.87
2	220kV Chhukha-Semtokha line	54.01
3	220kV Rurichhu-Semtokha line	44.90
4	220kV Rurichhu-Tsirang line	48.03
5	220kV Singyegoan - Samtse line (till MS-1)	1.46
6	220kV SBL 9 to Singhigaon line	0.83
7	220kV SBL 9 to Birpara (till Border) line	2.64
	<b>Sub- total A</b>	<b>181.74</b>
<b>B</b>	<b>D/C</b>	
1	220kV Chukha-Birpara line-1 & 2 (upto Bhutan border)	35.46
2	220kV Malbase- till SBL 9 of Singhigaon / Birpara line	1.78
4	220kV Malbase-Samtse line 1&2	41.64
5	220kV Tsirang-Jigmeling line	30.57
6	220kV Dagachhu-Tsirang line	23.14
7	220kV Tshendagang-Dagapela LILO	4.40
	<b>Sub- total B</b>	<b>136.98</b>
	<b>Sub-total II</b>	<b>318.72</b>
<b>III</b>	<b>132 kV</b>	
<b>A</b>	<b>S/C</b>	
1	132kV Kurichhu-Kilikhar line	10.06
2	132kV Kilikhar-Kanglung line	29.71
3	132kV Kilikhar-Tangmachhu line	42.80
4	132kV Kurichhu-Nangkhoh line	31.08
5	132kV Nangkhoh-Deothang line	23.67
6	132kV Nangkhoh-Nganglam line	33.69
7	132kV Nganglam-Tintibi line	83.30
8	132kV Gelephu-Pelrithang (Lodrai)	5.49
9	132kV Pelrithang- Tintibi	40.47
10	132kV Gelephu-Salakati line	0.10
11	132kV Deothang-Motanga line	10.45
12	132kV Motanga-Rangia line	1.77
13	132kV Tintibi-Yurmoo line	31.55
14	132kV Motanga-DML line	0.53
	<b>Sub- total A</b>	<b>344.65</b>

Sl#	Transmission Line	Length as per tower schedule(km) 2023
<b>B</b>	<b>D/C</b>	
1	132kV Jigmeling-Pelrithang (Lodrai)	10.42
2	132kV Motanga-Phuntshothang	21.63
3	132kV Merung-Corlung LILO	18.68
4	132kV Kanglung-Phuntshothang line (Single strung)	51.43
5	132kV Nganglam-Motanga line (Single strung)	34.92
6	132kV Mangdechhu-Yurmoo line	1.86
7	132kV Nikachhu-Mangdechhu line	17.96
	<b>Sub- total B</b>	<b>156.89</b>
	<b>Sub-total III</b>	<b>501.54</b>
<b>IV</b>	<b>66 kV</b>	
<b>A</b>	<b>S/C</b>	
1	66kV Chhukha-Chumdo line	36.98
2	66kV Chumdo-Khasadrapphu	4.78
3	66kV Khasadrapphu-Olakha	11.74
4	66kV Chumdo-Paro line	24.01
5	66kV Chumdo-Haa line	33.40
6	66kV Watsa tie line	0.50
7	66kV Olakha-Semtokha line	1.65
8	66kV Semtokha-Lobeysa line	24.46
9	66kV Rurichhu-Lobeysa line	20.30
10	66kV Hebesa-Rurichhu line	3.08
11	66kV Semtokha-Dechenchholing line	11.88
12	66kV Chukha-Gedu line	20.40
13	66kV Gedu-Phuentsholing line	16.70
14	66kV Phuentsholing-Gomtu line	27.35
15	66kV Malbase-Phuentsholing line	8.69
16	66kV Yurmoo-Kewathang line (charged at 33 kV)	20.94
17	66kV Yurmoo-Bumthang line (charged at 33 kV)	34.86
18	66kV Dechenchholing-Damji line	43.98
	<b>Sub- total A</b>	<b>345.70</b>
<b>B</b>	<b>D/C</b>	
1	66kV Khasadrapphu-Jemina	5.96
2	66kV Samtse-Sibsoo line	26.96
3	66kV Samtse-Gomtu line	14.85
4	66kV Jizikha-Pangbesa LILO	1.95
5	66kV Jemina-Changedapphu LILO	10.20
	<b>Sub- total B</b>	<b>59.92</b>
<b>C</b>	<b>Quad/C</b>	
1	66kV Malbase-Pasakha multicircuit line	3.41
	<b>Sub-total IV</b>	<b>409.02</b>
<b>IV</b>	<b>Total Transmission Line length</b>	<b>1730.14</b>
<b>V</b>	<b>HV Cable</b>	
<b>A</b>	<b>66 kV</b>	
1	66kV Khasadrapphu - Olakha	1.00
2	66kV Pasakha Industrial Area	5.02
3	66kV UG cable from SW31 to Dochula Substation	0.70
	<b>Sub- total V</b>	<b>6.72</b>
	<b>GRAND TOTAL</b>	<b>1736.86</b>

**Table 1.3 TRANSFORMATION CAPACITY OF HV SUBSTATIONS AS ON DECEMBER 2023**

Sl. No.	Substation	Substation Type	Voltage Ratio (kV)	No. of trf	Transformer No. & Capacity (No. x MVA)	Maximum Capacity (MVA)	Section
1	Semtokha	AIS	220/66	2	2 x 50/63	176	<b>TOMS Semtokha</b>
			220/66	1	1 x 40/50		
			66/11	2	2 x 20		
2	Olakha	AIS	66/33	2	2 x 20	40	
3	Dechencholing	AIS	66/33	2	2 x 30	60	
			33/11	2	2 x 5		
4	Changedaphu	AIS	66/33	2	2 x 20	40	
5	Jemina	AIS	66/33	1	1 x 10	10	
			33/11	1	1 x 5		
6	Dochula	GIS	66/11	3	3 x 25	100	
			66/11	1	1x25		
7	Jamjee	GIS	220/33	3	3x80	300	
			220/66	2	2x30		
			66/33	2	2x5		
8	Olathang	GIS	66/33	2	2 x 20	40	
9	Pangbesa	AIS	66/33	2	2 x 10	20	
			33/11	2	2 x 5		
10	Haa	AIS	66/11	2	2 x 5	10	
11	Lobeysa	AIS	66/33	2	2 x 5	20	
			66/11	2	2 x 5		
12	Damji (GIS)	GIS	66/33	3	3 x 10	30	
13	Gedu	AIS	66/33	2	2 x 6.3/8	26	
			66/11	2	2 x 4/5		
14	Gedu (220kV)	GIS	220/66	2	2x80	160	
15	Malbase	AIS	400/220/33	1	1 x 120/160/200	500	
			400/220	3	3x100		
			220/66	3	3 x 50/63		
			66/11	2	2 x 10		
16	Singhigaon	GIS	220/66	3	3 x 50/63	189	
			66/11	2	2 x 10		
17	Phuentsholing	AIS	66/33	2	2 x 10	37.5	
			66/11	1	1 x 5		
			66/11	1	1 x 10/ 12.5		

Sl. No.	Substation	Substation Type	Voltage Ratio (kV)	No. of trf	Transformer No. & Capacity (No. x MVA)	Maximum Capacity (MVA)	Section
18	Gomtu	AIS	66/33	1	1 x 5	20	TOMS Pling
			66/11	1	1 x 5		
			66/11	1	1 x 10		
19	Dhamdum	AIS	220/66	2	2 x 50/63	126	
			66/33	2	2x5		
20	Jamtsholing	GIS	66/33	2	2x15	30	
21	Darjey	AIS	220/33	2	2x10	20	TOMS Tisrang
22	Dagapela	AIS	220/33	2	2 x 40	80	
23	Gelephu	AIS	132/33	2	2 x 25	50	TOMS Jigmeling
			33/11	2	2 x 10		
24	Jigmeling	GIS	400/220	3	3 x 166.66	500	
		AIS	220/132	2	2x 63/80		
25	Tintibi	AIS	132/33	2	2 x 3	6	
			33/11	2	2 x 1.5		
26	Yurmoo	GIS	132/33	2	2x40	30	TOMS Tingtibi
27	Kilikhar	AIS	132/33	1	1 x 10	20	
			33/11	2	2 x 2.5		
			132/33	1	1 x 10		
28	Kanglung	AIS	132/33	2	2 x 5	10	
			33/11	2	2 x 2.5		
29	Corlung	AIS	132/33	2	2 x 10	20	
30	Dewathang	AIS	132/33	2	2 x 5	10	
			33/11	2	2 x 2.5		
31	Nangkor	AIS	132/33	2	2 x 5	10	
			33/11	2	2 x 2.5		
32	Nganglam	AIS	132/33	1	1 x 5	10	
			132/33	1	1 x 3		
			33/11	2	2 x 1.5		
33	Motanga	AIS	132/33	1	1 x 15	15	
34	Phuntshothang	AIS	132/33	2	2 x 10	20	
<b>Total Capacity(MVA)</b>				<b>119</b>		<b>2,735.50</b>	

**Table 1.4 TRANSMISSION TOWERS AS OF DECEMBER 2023**

Sl#	Line Section		Tower Type							Voltage (kV)	Conductor	Ckt
	From	To	A	B	C	D	SPL	Q	Total			
1	Tala	Pugli	-	32	25	32	15	-	104	400	Twin Moose ACSR	D/C
2	Tala	Khogla	-	9	12	14	13	-	48	400	Twin Moose ACSR	D/C
3	Puna I	Alipurduar 1 & 2	-	71	59	84	15	-	229	400	Twin Moose ACSR	D/C
4	Puna I	Puna II	-	17	11	8	1	-	37	400	Twin Moose ACSR	D/C
5	Puna II	Alipurduar 1 & 2	-	53	59	82	15	-	209	400	Twin Moose ACSR	D/C
6	Puna II	Jigmeling 1 & 2	-	39	41	67	-	-	147	400	Twin Moose ACSR	D/C
7	Mangdechhu (Line-A)	Jigmeling (Line-A)		27	42	81	35		185	400	Twin Moose ACSR	D/C
8	Mangdechhu (Line-B)	Jigmeling (Line-B)		36	37	75	37		185	400	Twin Moose ACSR	D/C
9	Jigmeling	India Border (Alipurduar)					12		12	400	Quad Moose ACSR	D/C
	<b>Total 400 kV</b>		-	<b>284</b>	<b>286</b>	<b>443</b>	<b>143</b>	-	<b>1,156</b>			
10	Chukha	India Border	-	52	27	12	6	-	97	220	Zebra ACSR	D/C
11	Chukha	Malbase	-	51	24	15	2	-	92	220	Zebra ACSR	S/C
12	Chukha	Semtokha	-	83	40	18	3	-	144	220	Zebra ACSR	S/C
13	Semtokha	Rurichhu	-	52	26	26	6	-	110	220	Zebra ACSR	S/C
14	Rurichhu	Tsirang	-	87	17	5	8	-	117	220	Zebra ACSR	S/C
15	Malbase	India Border (Birpara)	-	2	3	2	-	1	8	220	Zebra ACSR	S/C
16	Samtse	Singhigaon	-	-	5	1	-	-	6	220	Zebra ACSR	D/C
17	Malbase	Singhigaon	-	1	9	7	1	-	16	220	Zebra ACSR	S/C
18	Malbase	Samtse	-	40	29	35	2	-	106	220	Zebra ACSR	D/C
19	Tsirang	Jigmeling	-	36	19	10	4	-	69	220	Zebra ACSR	D/C
20	Tsirang	Dagachu Porthead yard	-	25	21	6	4	-	56	220	Zebra ACSR	D/C
21	Jigmeling	Pelrithang (Lodrai)	-	11	7	6	4	-	28	220	Zebra ACSR	D/C
22	Tshendengang	Dagapela (LILO)	-	8	7	5	-	-	20	220	Zebra ACSR	D/C
23	220kV Rurichhu-PHPA-1 LILO	PHPA (LILO)							7	220	Zebra ACSR	S/C
	<b>Total 220 kV</b>		-	<b>448</b>	<b>234</b>	<b>148</b>	<b>40</b>	<b>1</b>	<b>876</b>			
24	Kurichhu	Kilikhar	-	6	9	10	3	-	28	132	Panther ACSR	S/C
25	Kilikhar	Kanglung	-	27	26	15	13	-	81	132	Panther ACSR	S/C



Sl#	Line Section		Tower Type							Voltage (kV)	Conductor	Ckt
	From	To	A	B	C	D	SPL	Q	Total			
26	Kilikhar	Tangmachhu(Lhue ntshe)	-	63	40	9	2	-	114	132	Panther ACSR	S/C
27	Merung	Corlung (LILLO)	-	19	17	14	-	-	50	132	Panther ACSR	D/C
28	Kurichhu	Nangkhor	-	52	14	25	7	-	98	132	Panther ACSR	S/C
29	Nangkhor	Deothang	-	17	16	12	15	-	60	132	Panther ACSR	S/C
30	Nangkhor	Nganglam	-	62	23	10	7	-	102	132	Panther ACSR	S/C
31	Deothang	Montanga	-	9	2	10	16	-	37	132	Panther ACSR	S/C
32	Motanga	India Border								132	Panther ACSR	S/C
33	Motanga	Phuntshothang		16	21	24			61	132	Panther ACSR	D/C
34	Motanga	Nganglam		27	42	23	2		94	132	Panther ACSR	D/C
35	Kanglung	Phuntshothang		33	26	33	21		113	132	Panther ACSR	D/C
36	Nganglam	Tingtibi	-	95	34	57	60	-	246	132	Panther ACSR	S/C
37	Tintibi	Pelrithang(Lodrai)	-	51	24	19	28	-	122	132	Panther ACSR	S/C
38	Pelrithang(Lodrai)	Gelephu		13	2	5	-	-	20	132	Panther ACSR	S/C
39	Gelephu	India Border	-	-	1	-	-	-	1	132	Panther ACSR	S/C
40	Tingtibi	Yurmoo	-	31	12	6	32	2	83	132	Panther ACSR	S/C
41	Mangdechhu	Yurmoo		2	4	1			7	132	Panther ACSR	D/C
42	Motanga	DML							4	132	Panther ACSR	S/C
43	Nikkachhu	Mangdechhu		18	14	23			55	132	Panther ACSR	D/C
	<b>Total 132 kV</b>		-	<b>541</b>	<b>327</b>	<b>296</b>	<b>206</b>	<b>2</b>	<b>1,376</b>			
44	Chukha	Chumdo	-	79	30	13	9	-	131	66	Dog ACSR	S/C
45	Chumdo	Khasadrapchu	-	28	5	-	-	-	33			
46	Khasadrapchu	Olakha	2	25	6	3	-	-	36			
47	Khasadrapchu	Jemina	-	11	2	4	6	-	23	66	Dog ACSR	D/C
48	Chumdo	Paro	-	45	21	18	-	-	84	66	Dog ACSR	S/C
49	Chumdo	Haa	2	36	17	18	25	25	123	66	Dog ACSR	S/C
50	Watsa	Watsa (Tie line)	-	2	-	2	-	-	4	66	Dog ACSR	S/C
51	Semtokha	Olakha	-	2	1	4	-	-	7	66	HTLS	S/C
52	Semtokha	Lobeysa	-	42	15	22	2	-	81	66	Dog ACSR + HTLS	S/C
53	Lobeysa	Rurichhu	1	44	13	9	9	-	76	66	Dog ACSR	S/C
54	Rurichhu	Hebisa	-	7	1	6	-	-	14	66	Dog ACSR	S/C
55	Semtokha	Dechencholing	-	29	1	3	11	-	44	66	HTLS	S/C
56	Chukha	Gedu	6	44	23	-	1	-	74	66	Dog ACSR	S/C
57	Jizhikha	Pangbesa		5	1	3			9	66	Wolf ACSR	D/C

Sl#	Line Section		Tower Type							Voltage (kV)	Conductor	Ckt
	From	To	A	B	C	D	SPL	Q	Total			
58	Jemina	Changedaphu		20	7	8			35	66	Wolf ACSR	D/C
59	Dechenchholing	Gasa (Damji)	-	66	74	61			201		Wolf ACSR	S/C
60	Gedu	Phuentsholing	2	50	15	-	-	-	67	66	Dog ACSR	S/C
61	Phuentsholing	Gomtu	-	39	30	23	3	-	95	66	Dog ACSR	S/C
62	Malbase	Phuentsholing	-	9	4	10	-	-	23	66	Dog ACSR	S/C
63	Malbase	Pasakha	-	-	6	4	7	-	17	66	Dog ACSR	Q/C
64	Samtse	Sibso	-	40	39	17	-	-	96	66	Wolf ACSR	D/C
65	Samtse	Gomtu	-	19	22	12	-	-	53	66	Wolf ACSR	D/C
66	Yurmoo	Trongsa	-	20	17	13	28		78	66	Wolf ACSR	S/C
67	Yurmoo	Bumthang	-	93	14	13	6	8	134	66	Wolf ACSR	S/C
	<b>Total 66 kV</b>		<b>13</b>	<b>755</b>	<b>364</b>	<b>266</b>	<b>107</b>	<b>33</b>	<b>1,538</b>			
	<b>Total</b>		<b>13</b>	<b>2,028</b>	<b>1,211</b>	<b>1,153</b>	<b>496</b>	<b>36</b>	<b>4,946</b>			

**1.5 DISTRIBUTION LINES (ROUTE LENGTH IN KM) AND SUBSTATION CAPACITY (kVA)**

**TABLE 1.5 DISTRIBUTION LINES (ROUTE LENGTH IN KM) AND SUBSTATION CAPACITY (kVA)**

<b>Sl#</b>	<b>Description</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>
A	Distribution Lines					
	33 kV	3,859.76	4,050.57	4,149.48	4185.73	4,412.40
	11 kV	2,745.62	2,636.80	2,686.44	2696.46	2,786.77
	6.6 kV	88.43	83.86	85.02	80.14	86.79
	LV line	8,930.74	9,944.96	10,036.20	10426.12	9,966.43
	<b>Total Line length</b>	<b>15,624.55</b>	<b>16,716.19</b>	<b>16,957.14</b>	<b>17,388.44</b>	<b>17,252.39</b>
B	Transformer capacity (kVA)	878,945	908,036	959,187	1,046,742	1,157,581

**Table 1.6 DISTRIBUTION NETWORK (LINE LENGTH IN KM) AS OF DECEMBER 2023**

<b>Sl#</b>	<b>Dzongkhag</b>	<b>33 kV</b>	<b>11 kV</b>	<b>6.6 kV</b>	<b>Total MV line</b>	<b>Total LV line</b>	<b>Total Line length</b>
1	Bumthang	95.82	110.86	10.03	216.71	202.78	<b>419.49</b>
2	Chhukha	331.01	271.78	-	602.79	1,019.02	<b>1,621.81</b>
3	Dagana	264.87	-	45.29	310.16	440.97	<b>751.13</b>
4	Haa	122.45	61.13	-	183.58	246.80	<b>430.38</b>
5	Lhuntse	100.59	188.25	-	288.84	513.00	<b>801.84</b>
6	Mongar	388.76	158.25	-	547.01	710.73	<b>1,257.74</b>
7	Paro	215.87	149.61	-	365.48	276.10	<b>641.58</b>
8	Pemagatsel	264.94	51.50	-	316.44	419.55	<b>735.99</b>
9	Punakha	233.26	60.01	-	293.27	411.77	<b>705.04</b>
10	Samtse	168.03	425.79	-	593.82	1,046.68	<b>1,640.50</b>
11	S/ Jongkhar	399.99	104.46	-	504.45	516.85	<b>1,021.30</b>
12	Sarpang	77.12	317.74	-	394.86	604.69	<b>999.55</b>
13	Thimphu	129.21	278.13	2.87	410.21	465.69	<b>875.90</b>
14	Trongsa	213.23	20.88	1.40	235.51	239.86	<b>475.37</b>
15	Trashigang	150.04	309.12	-	459.16	747.68	<b>1,206.84</b>
16	Trashiyangtse	238.60	7.23	-	245.83	491.23	<b>737.06</b>
17	Tsirang	207.18	9.18	3.72	220.08	542.91	<b>762.99</b>
18	Wangdue	272.64	246.72	1.48	520.84	702.49	<b>1,223.33</b>
19	Zhemgang	538.79	16.13	22.00	576.92	367.63	<b>944.55</b>
	<b>Total</b>	<b>4,412.40</b>	<b>2,786.77</b>	<b>86.79</b>	<b>7,285.96</b>	<b>9,966.43</b>	<b>17,252.39</b>

**Table 1.7 DISTRIBUTION SUBSTATION (kVA) AS OF DECEMBER 2023**

Sl#	Dzongkhag	Voltage Ratio (kV)	Number of Transformers under BPC	Total Installed Capacity(kVA) under BPC	Transformer classification	Total No of Transformers Installed in the system (Pvt. Transformer included)	Total Capacity (kVA) incl Pvt
1	Bumthang	33/11	4	10000	Power Transformer	166	30,059
		33/6.6	1	125	Distribution Transformers		
		33/0.240	2	20			
		33/0.415	35	2204			
		11/0.240	5	95			
		11/0.415	89	11623			
		6.6/0.415	10	433			
		<b>TOTAL</b>	<b>146</b>	<b>24500</b>			
2	Chhukha	33/11	4	20000	Power Transformer	545	168,619
		33/0.240	30	447	Distribution Transformers		
		33/0.415	161	6445			
		11/0.415	172	44256			
		11/0.240	44	21109			
		<b>TOTAL</b>	<b>411</b>	<b>92257</b>			
3	Dagana	33/0.240	26	587	Distribution Transformers	241	17,297
		33/0.415	197	15304			
		33/6.6	1	750			
		6.6/0.415	17	656			
		<b>TOTAL</b>	<b>241</b>	<b>17297</b>			
4	Sarpang	33/11	3	8000	Power Transformer	359	48,994
		33/0.240	27	459	Distribution Transformer		
		33/0.415	15	1206			
		11/0.240	36	555			
		11/0.415	241	25944			
		<b>TOTAL</b>	<b>322</b>	<b>36164</b>			
5	Haa	33/11	1	2500	Power Transformer	166	20,604
		33/0.240	34	541	Distribution Transformer		
		33/0.415	51	2582			
		11/0.415	70	11106			
		<b>TOTAL</b>	<b>156</b>	<b>16729</b>			
6	Lhuntse	33/11	2	3000	Power Transformers	226	14,495
		33/0.240	74	1577	Distribution Transformers		
		33/0.415	22	1620			
		11/0.415	105	4772			
		11/0.240	6	84			
		<b>TOTAL</b>	<b>209</b>	<b>11053</b>			
7	Mongar	33/11	1	2500	Power Transformer	432	34,784
		33/0.240	69	1540	Distribution Transformers		
		33/0.415	74	8330			
		11/0.240	31	84			
		11/0.415	241	19574			
		<b>TOTAL</b>	<b>416</b>	<b>32028</b>			
8	Paro	33/11	7	30000	Power Transformer	337	109,734
		33/0.240	31	421	Distribution Transformers		
		33/0.400	3	626			
		33/0.420	1	250			
		33/0.415	73	8058			
		33/0.433	1	160			
		11/0.240	9	129			
		11/0.400	13	3291			
		11/0.415	106	37399			
		11/0.420	10	665			
		11/0.433	29	5505			
		<b>TOTAL</b>	<b>283</b>	<b>86504</b>			



Sl#	Dzongkhag	Voltage Ratio (kV)	Number of Transformers under BPC	Total Installed Capacity(kVA) under BPC	Transformer classification	Total No of Tranformers Installed in the system (Pvt. Transformer included)	Total Capacity (kVA) incl Pvt	
9	Pemagatsel	33/11	2	5000	Distribution Transformer	273	23,661	
		33/0.240	108	2497				
		33/0.415	110	6456				
		11/0.415	35	4825				
		11/0.240	1	16				
		<i>SUB-TOTAL</i>	256	18794				
		0.415/11	1	400	Generating Transformer			
<b>TOTAL</b>	<b>257</b>	<b>19194</b>						
10	Punakha	33/11	1	2500	Power Transformer	267	32,016	
		33/0.240	34	1027	Distribution Transformer			
		33/0.415	147	8928				
		11/0.240	1	10				
		11/0.415	59	11223				
		<b>TOTAL</b>	<b>242</b>	<b>23688</b>				
11	Samtse	33/11	5	18500	Power Transformer	692	94,707	
		33/0.240	36	621	Distribution Transformer			
		33/0.415	115	3251				
		11/0.240	91	1393				
		11/0.415	381	25027				
		<b>TOTAL</b>	<b>628</b>	<b>48792</b>				
12	S/Jongkhar	33/11	5	18500	Power Transformer	395	56,690	
		33/0.240	137	2892	Distribution Transformers			
		33/0.415	134	12001				
		11/0.415	73	15270				
		<b>TOTAL</b>	<b>349</b>	<b>48663</b>				
13	Thimphu	33/11	18	79800	Power Transformer	574	345,817	
		33/0.415	45	10373	Distribution Transformer			
		33/0.400	10	464				
		11/0.433	50	15789				
		11/0.420	16	1292				
		11/0.415	230	134185				
		11/0.400	72	28832				
		6.35/0.220	2	41				
		6.35/0.233	1	63				
		6.35/0.240	6	188				
		<i>SUB-TOTAL</i>	450	271027				
		0.415/11	2	4015				Generating Transformer
		<b>TOTAL</b>	<b>452</b>	<b>275042</b>				
14	Trongsa	33/11	2	5000	Power Transformer	179	26,019	
		33/0.415	91	6259	Distribution Transformers			
		33/0.240	31	418				
		11/0.240	1	10				
		11/0.415	21	3043				
		6.6/0.415	1	50				
		0.415/11	1	400				
		<i>SUB-TOTAL</i>	148	15180				
		0.415/6.6	1	50				Generating Transformer (Tangsibji & Sherubling)
<b>TOTAL</b>	<b>149</b>	<b>15230</b>						
15	Trashigang	33/11	4	10000	Power Transformer	319	37,524	
		33/0.240	26	898	Distribution Transformers			
		33/0.415	52	2659				
		11/0.240	2	26				
		11/0.415	219	19625				
		<b>TOTAL</b>	<b>303</b>	<b>33208</b>				

Sl#	Dzongkhag	Voltage Ratio (kV)	Number of Transformers under BPC	Total Installed Capacity(kVA) under BPC	Transformer classification	Total No of Tranfomers Installed in the system (Pvt. Transformer included)	Total Capacity (kVA) incl Pvt
16	Trashi yangtse	33/0.415	135	8562	Distribution Transformer	189	12,189
		33/0.240	36	498			
		11/0.415	7	528			
		<i>SUB-TOTAL</i>	<i>178</i>	<i>9588</i>			
		0.415/33	1	400	Generating Transformer		
	<b>TOTAL</b>	<b>179</b>	<b>9988</b>				
17	Tsirang	33/0.415	197	14849	Distribution Transformer	262	18,343
		33/0.240	53	815			
		11/0.415	3	113			
		11/0.240	1	16			
		6.6/0.415	3	550			
		<i>SUB-TOTAL</i>	<i>257</i>	<i>16343</i>			
		0.415/6.6	1	250	Generating Transformer		
		6.6/33	1	250	Power Transformer		
	<b>TOTAL</b>	<b>259</b>	<b>16843</b>				
18	Wangdue	33/11	2	5000	Power Transformer	366	51,893
		33/0.240	36	903	Distribution Transformers		
		33/0.415	124	10709			
		11/0.240	7	118			
		11/0.415	166	23485			
		<i>SUB-TOTAL</i>	<i>335</i>	<i>40215</i>			
			<b>TOTAL</b>	<b>335</b>	<b>40215</b>		
19	Zhemgang	33/6.6	1	1500	Power Transformer	254	14,136
		11/6.6	1	500	Distribution Transformer		
		33/0.240	109	1972			
		33/0.415	98	6521			
		11/0.415	7	250			
		6.6/0.415	29	2220			
		<i>SUB-TOTAL</i>	<i>245</i>	<i>12963</i>			
		0.415/6.6	1	250	Generating Transformer		
	<b>TOTAL</b>	<b>246</b>	<b>13213</b>				
	<b>Total</b>	<b>5,583</b>	<b>860,608</b>		<b>6,242</b>	<b>1,157,581</b>	

**Note: Total No. of Transformers connected in the System also includes Private owned Transformers**

## CHAPTER 2

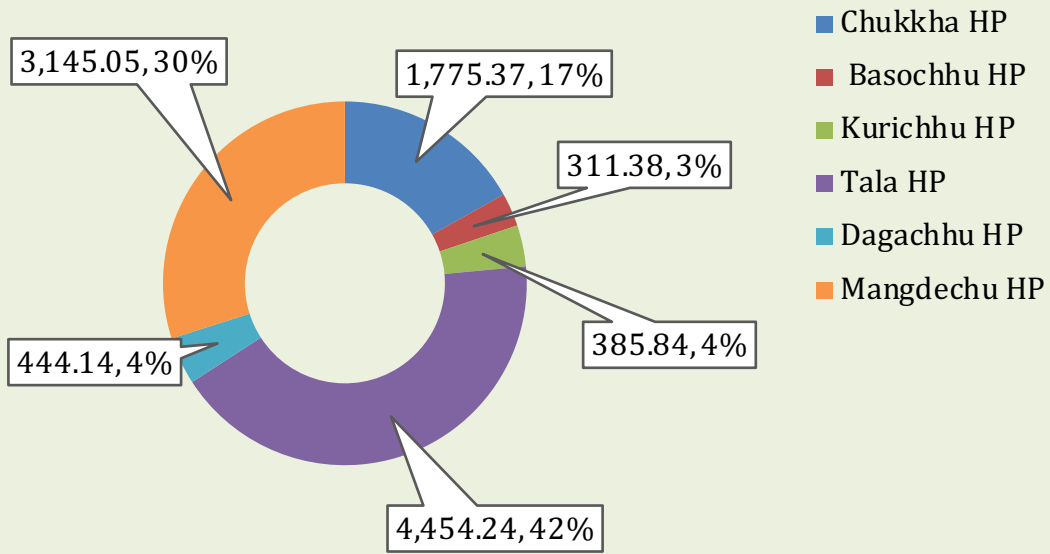
### POWER GENERATION AND SUPPLY

This chapter provides information on power generation by GENCOS of DGPC (Druk Green Power Corporation Limited) and energy export from Bhutan as presented in table 2.1.

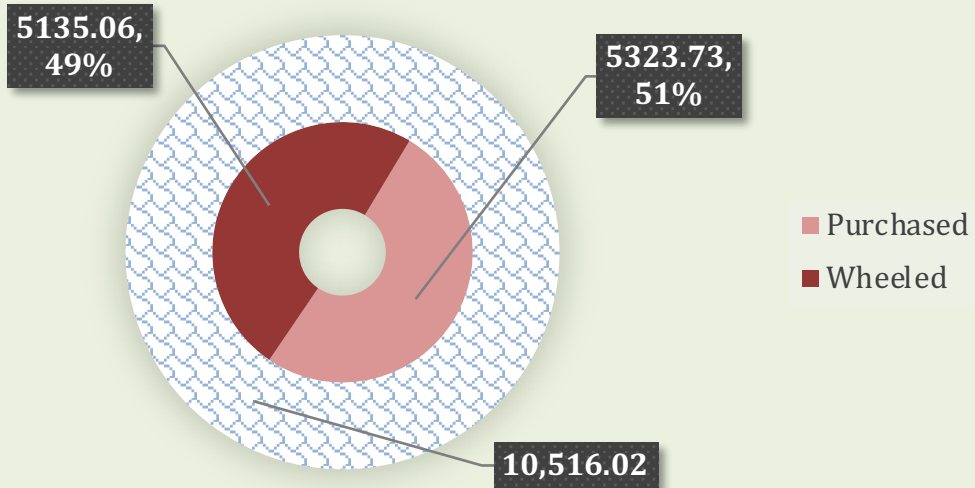
**Table 2.1 MAJOR HYDROPOWER PLANT GENERATION (MU)**

Plant	Particulars	2019	2020	2021	2022	2023
4 x 15 MW Kurichhu HP	Generation	395.46	391.59	386.29	407.92	385.84
	Export to India	78.99	93.39	46.93	19.7	26.10
6 x 170 MW Tala HP	Generation	4,536.58	5,031.82	4,619.77	4,539.01	4,454.24
	Export to India	2,718.14	3,387.53	2,761.82	2,384.83	1,235.42
4 x 84 MW Chukkha HP	Generation	1,687.71	1,858.07	1,966.308	1,915.92	1,775.37
	Export to India	1,689.64	2,030.55	1,835.82	1,624.87	967.14
2 x 12 MW/ 2 x 20 MW Basochhu HP	Generation	306.47	348.56	339.17	354.59	311.38
	Export to India					40.92
4 x 180 MW Mangdechu HP	Generation**	1,320.32	3,218.39	2,988.89	3,084.96	3,145.05
	Export to India	2,019.00	2,020.00	2,944.29	2,772.89	2,435.53
2 x 126 MW Dagachhu HP	Generation*	399.72	518.27	499.87	451.65	444.14
	Export to India	2,419.42	2,128.58	485.41	437.49	429.95
<b>TOTAL</b>	<b>Actual Generation by DGPC</b>	<b>8,646.26</b>	<b>11,366.71</b>	<b>10,800.30</b>	<b>10,754.05</b>	<b>10,516.02</b>
	<b>Energy Purchase by BPC from DGPC</b>	<b>2,419.42</b>	<b>2,128.58</b>	<b>2,649.54</b>	<b>3,654.00</b>	<b>5,323.73</b>
	<b>Import from India (ASEB</b>	<b>12.55</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
	<b>Total energy purchased including Import</b>	<b>2,439.72</b>	<b>2,154.02</b>	<b>2,670.95</b>	<b>3,662.96</b>	<b>5,922.04</b>
	<b>Energy Wheeled by BPC</b>	<b>6,172.44</b>	<b>9,156.71</b>	<b>8,074.27</b>	<b>7,240.21</b>	<b>5,135.06</b>

### Energy Generation 2023 (MU)



### Energy Distributions (MU) 2023



## CHAPTER 3

### ENERGY PURCHASE, IMPORT AND WHEELED

BPC purchases energy from DGPC. In Samtse and Samdrup Jongkhar, BPC, sometimes, imports power from West Bengal State Electricity Board (WBSEB) and Assam State Electricity Board (ASEB) respectively at distribution level. After meeting Bhutan's internal demand, all surplus power generated by the DGPC and MHPA are exported to India. The data on energy wheeled for the export of excess power is also included.

**Table 3.1 ENERGY PURCHASED FROM GENCOS BY BPC (MU)**

SLNO	Generation Plant	2019	2020	2021	2022	2023
1	KHP	2,419.42	2,128.58	2,649.54	3450.08	5323.72
2	THP					
3	CHP					
4	BHP					
5	MHPA					
6	DHPC					
7	Embeded Generation					
8	PTC				203.92	597.68
	<b>Total</b>	<b>2,419.42</b>	<b>2,128.58</b>	<b>2,649.54</b>	<b>3654.00</b>	<b>5921.40</b>

**Table 3.2 ENERGY TRANSFERRED BY TD TO DCSD (MU)**

SLNo	DZONGKHAG	2019	2020	2021	2022	2023
1	Chhukha	1,423.82	1,152.99	1,230.07	1,297.04	1,853.70
2	Haa	14.06	15.10	16.04	17.23	16.65
3	Paro	68.80	58.75	59.04	98.31	128.97
4	Punakha	23.70	22.19	25.66	53.59	159.62
5	Samtse	99.01	68.78	80.49	67.74	94.69
6	Thimphu	241.14	240.84	585.37	944.53	1,924.23
7	Wangdue	62.90	51.42	48.79	46.41	49.63
8	Tsirang	8.24	9.00	9.68	10.39	10.65
9	Dagana	8.70	9.65	27.68	296.53	500.43
10	Sarpang	35.95	34.64	35.30	38.34	48.13
11	Mongar	14.57	14.90	16.14	17.69	17.74
12	Pemagatsel	110.90	92.17	91.68	93.68	90.02
13	Samdrupjongkhar	142.68	161.22	221.21	235.83	240.20
14	Trashigang	19.88	14.73	16.16	17.75	14.68
15	Zhemgang	4.72	4.88	5.16	5.95	6.60
16	Lhuntse	5.46	5.45	5.65	6.41	7.47
17	Trongsa	41.96	41.21	37.05	254.89	559.70
18	Bumthang					12.49
19	Trashiyangtse	0.00	4.99	6.95	9.22	8.40
	<b>Total</b>	<b>2,326.48</b>	<b>2,002.91</b>	<b>2,518.12</b>	<b>3,511.52</b>	<b>5,743.97</b>

**Table 3.3 ENERGY IMPORTED (MU)**

DZONGKHAG	2019	2020	2021	2022	2023
Samtse (From West Bengal SEB)	0.00	0.00	0.00	0.00	0.00
Samdrupjongkhar (Assam SEB)	0.05	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.05</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

*Note: Energy is imported from WBSEB in Samtse and from ASEB in Samdrup Jongkhar at distribution level.*

**3.4 ENERGY WHEELED (MU)**

Plant	2019	2020	2021	2022	2023
Chukkha HP	1,689.64	2,030.55	1,835.82	1,624.87	967.13
Kurichhu HP	78.99	93.39	46.93	19.70	26.10
Tala HP	2,718.14	3,387.53	2,761.82	2,384.83	1,235.42
Dagachhu HP	387.65	502.34	485.41	437.91	429.95
Mangdechhu HP	1,298.02	3,142.90	2,944.29	2,772.89	2,435.53
Basochhu HP					40.92
<b>Total</b>	<b>6,172.44</b>	<b>9,156.71</b>	<b>8,074.27</b>	<b>7,240.21</b>	<b>5,135.06</b>

## CHAPTER 4

### PEAK DEMAND

This chapter shows the national coincidental peak load and the transmission substation wise peak load from 2019 to 2023. The Coincident peak load during 2023 has increased by more than 326.28 MW as shown in table 4.1. Jamee and 220kV Gedu S/s are leading with highest peak of 177.75 MW and 153.66 MW respectively as shown in table 4.2.

**Table 4.1 NATIONAL COINCIDENTAL LOAD (MW)**

Sl#	Particulars	2019	2020	2021	2022	2023
1	Coincidental Peak Load	387.66	374.53	435.35	629.23	955.51
2	Date and Month	01-Jan	24-Dec	27-Dec	28-Dec	30-Dec
3	Time	19:02	15:00	18:02	18:00	18:00

**Table 4.2 SUBSTATION WISE PEAKLOAD (MW)**

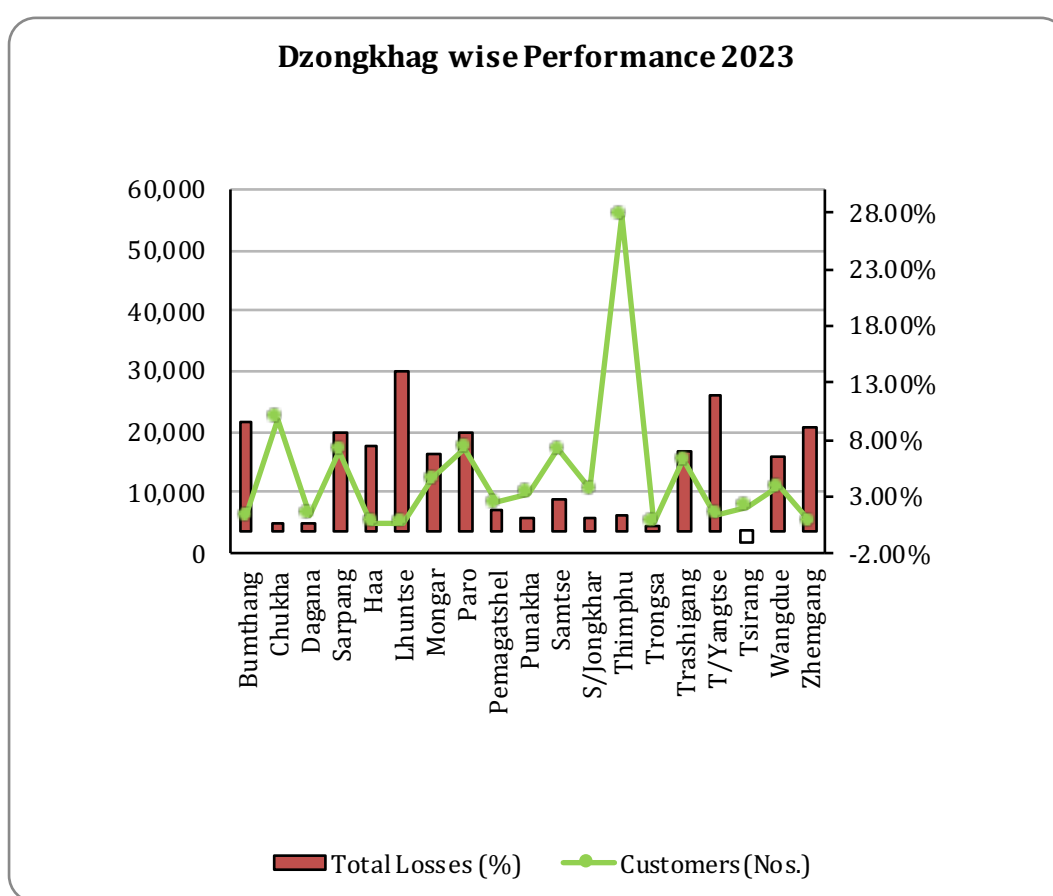
Sl.N o.	Substation	2019	2020	2021	2022	2023
1	Semtokha	18.88	25.59	19.16	19.28	17.25
2	Olakha	34.60	34.90	38.14	38.61	36.18
3	Dechencholing	16.69	18.50	38.06	39	28.65
4	Jemina	5.97	7.82	5.45	9.9	7.36
5	Jamjee					177.75
6	Lobeysa	13.98	13.83	12.33	12.31	14.03
7	Haa	2.90	12.36	3.49	3.53	9.6
8	Paro	17.41	17.09	16.41	17.74	19.27
9	Gedu	4.92	3.96	4.34	17.39	17.59
10	220kV Gedu (DHI)					153.66
11	Gomtu	14.78	14.51	14.13	13.49	16.92
12	Singhigoan	111.00	99.00	117	100.2	111.3
13	Phuentsholing	9.21	8.21	7.39	7.38	9.37
14	Watsa	1.97	1.09	0.92	6.11	0
15	Darjay	3.71	5.93	4.7	9.66	6.5
16	Kilikhar	8.45	5.97	6.31	7.43	7.05
17	Kanglung	7.48	6.62	7.71	7.26	5.62
18	Nangkhoh	2.90	2.88	2.87	3.21	2.91
19	Nganglam	24.15	23.03	18.81	20.73	6.66
20	Tingtibi	3.66	3.30	1.66	3.48	1.98
21	Gelephu	9.40	13.20	10.2	12.6	16
22	Deothang	4.40	4.16	2.8	3.3	2.61
23	Motanga	17.30	36.80	31.38	30.92	30.93
24	Malbase	109.00	100.60	94.82	137.17	115
25	Yurmoo	13.50	11.10	10.5	73.9	79.6
26	Jigmeling	1.10	0.86	0	0.6	4.1
27	Pangbesa		1.41	2.78	12.59	14.26
28	Dagapela		3.04	16.73	54.35	67.1
29	Corlung		2.20	2.89	2.75	2.63
30	Damdum		6.26	6.61	14.6	6.99
31	Damji			2.13	5.44	22.11
32	Dochula			66.69	66.18	84.33
33	Phuntshothang			1.7	2.25	14.26
34	Changidaphu			3.05	11.28	13.07

## CHAPTER 5

### DZONGKHAG WISE SYSTEM PERFORMANCE

This chapter provides data on the dzongkhag-wise system performance. The energy requirement of the Dzongkhags along with energy purchased from DGPC, DG generation and import of power from India are also included. Energy sales are segmented into client categories. In this chapter, the numbers of customers in each category have been mentioned. The losses in each district are determined using the energy demand and energy sales. Data on all Dzongkhag are as shown in Table 5.1 to table 5.19.

The pattern of daily power use during a typical summer and winter were also described in this chapter to comprehend the load curve.





**Table 5.1. BUMTHANG**

Sl. No.	Particulars	2019	2020	2021	2022	2023
<b>1</b>	<b>Energy Requirement in kWh</b>					
i)	Purchase from TD				15,377,176.87	12,486,224.80
ii)	Mini/Micro Hydel Generation	5,150,212.86	5,160,978.53	5,179,655.38		5,242,559.45
iii)	Diesel Generation	0.00	0.00	0.00		0.00
iv)	Net Import from Trongsa	8,336,536.00	7,857,479.00	8,916,137.79		787,150
v)	Net Export to Trongsa	-434,032.00	-112,563.00	-515,394.05		-318,650.00
	<b>Total</b>	<b>13,052,716.86</b>	<b>12,905,894.53</b>	<b>13,580,399.12</b>	<b>15,058,526.87</b>	<b>16,766,484.25</b>
	% growth over previous year	4.88%	-1.12%	5.23%	10.88%	11.34%
<b>2</b>	<b>Energy Sales in kWh (Category Wise)</b>					
i)	Rural Residential	2,568,958.00	2,966,120.81	3,088,286.00	3,553,559.37	3,750,519.80
ii)	Rural Cooperatives	23,299.00	17,602.00	17,403.00	21,964.00	20,114.00
iii)	Rural Micro Trade	45,779.00	47,104.50	40,851.00	44,587.00	42,450.00
iv)	Rural Community Lhakhangs	112,828.00	126,497.00	156,327.00	195,558.00	198,383.00
v)	Highlanders	0.00	0.00	0.00	0.00	0.00
vi)	Urban	2,079,643.00	2,354,439.97	2,579,952.00	2,744,902.98	2,831,084.02
vii)	Religious Institutions	674,377.00	763,326.00	848,270.00	795,423.00	871,166.00
viii)	Cottage and Small Scale Industries	47,255.00	625,513.16	686,143.00	713,128.00	736,610.00
ix)	Commercial	1,097,573.00	607,077.00	639,314.00	714,545.41	798,629.59
x)	Industrial	68,298.00	27,810.00	29,904.00	24,575.00	20,686.00
xi)	Agriculture	51,647.00	52,207.00	64,609.00	59,006.00	21,926.00
xii)	Institutions	1,123,683.00	1,433,725.00	1,663,551.00	1,642,777.87	1,881,378.13
xiii)	Street lighting	55,035.00	43,152.00	36,421.00	100,388.00	111,045.00
xiv)	Power house auxiliaries	24,906.00	21,192.00	20,019.00	22,503.00	19,021.00
xv)	Temporary connections	352,909.00	257,276.24	322,733.00	355,686.00	472,587.00
xvi)	Bulk	3,151,355.00	2,242,264.00	1,956,100.00	2,243,294.00	3,212,665.00
xvii)	EVCS (Electric Vehicle charging station)					10,998.00
	<b>LV Total</b>	<b>11,477,545.00</b>	<b>11,585,306.68</b>	<b>12,149,883.00</b>	<b>13,231,897.63</b>	<b>14,999,262.54</b>
xviii)	Medium Voltage					
ix)	High Voltage					
	<b>Total Energy Sales</b>	<b>11,477,545.00</b>	<b>11,585,306.68</b>	<b>12,149,883.00</b>	<b>13,231,897.63</b>	<b>14,999,262.54</b>
	% growth over previous year	4.13%	0.94%	4.87%	<b>0.00</b>	
<b>3</b>	<b>Number of Customers (Categorywise)</b>					
i)	Rural Residential	2,508	2,632.00	2,778.00	2,956	3,184.00
ii)	Rural Cooperatives	42	45	51.00	55	58
iii)	Rural Micro Trade	31	31	31.00	31	33
iv)	Rural Community Lhakhangs	88	89	93.00	94	96
v)	Highlanders	0	0	0.00	-	-
vi)	Urban	1,271	1,345	1,419.00	1,478	1,616.00
vii)	Religious Institutions	48	45	45.00	46	49
viii)	Cottage and Small Scale Industries	89	174	177.00	189	189
ix)	Commercial	316	245	251.00	257	264
x)	Industrial	16	14	13.00	14	14
xi)	Agriculture	29	30	32.00	35	34
xii)	Institutions	214	213	210.00	219	228
xiii)	Street lighting	12	12	12.00	15	15
xiv)	Power house auxiliaries	4	4	4.00	4	4
xv)	Temporary connections	121	134	147.00	197	231
xvi)	Bulk	104	101	105.00	105	110
xvii)	EVCS (Electric Vehicle charging station)					2
	<b>LV Total</b>	<b>4,893</b>	<b>5,114</b>	<b>5,368.00</b>	<b>5,695.00</b>	<b>6,127.00</b>
ix)	Medium Voltage					
x)	High Voltage					
	<b>Total Customers</b>	<b>4,893</b>	<b>5,114</b>	<b>5,368.00</b>	<b>5,695.00</b>	<b>6,127.00</b>
	% growth over previous year	4.44%	4.52%	4.97%	6.09%	7.59%
<b>4</b>	<b>Total Loss (%)</b>	<b>11.68%</b>	<b>10.23%</b>	<b>10.53%</b>	<b>11.88%</b>	<b>9.51%</b>

Table 5.2: CHHUKHA

Sl. No.	Particulars	2019	2020	2021	2022	2023
<b>1</b>	<b>Energy Requirement in kWh</b>					
i)	Purchase from TD	1,423,824,789.27	1,152,997,204.32	1,230,069,319.00	1,300,027,355.92	1,853,698,840.49
ii)	Mini/Micro Hydel Generation					
iii)	Diesel Generation	2,115.00	0.00	-		
iv)	Import	1,542,910.16	1,964,174.77	1,798,603.48		3,602,578.00
v)	Export	0.00	-450789.07	-450790.38	(262,963.75)	
vi)	HV Purchase	1,304,528,863.00	1,058,153,637.00	1,139,872,100.00	1,183,048,227.00	1,671,545,581.00
	<b>Total</b>	<b>1,425,369,814.43</b>	<b>1,154,510,590.02</b>	<b>1,231,417,132.10</b>	<b>1,299,764,392.17</b>	<b>1,857,301,418.49</b>
	% growth over previous year	-5.32%	-19.00%	6.74%	5.55%	42.90%
<b>2</b>	<b>Energy Sales in kWh (Category Wise)</b>					
i)	Rural Residential	7,116,459.00	7,622,107.95	7,786,876.00	8,363,657.18	8,660,637.80
ii)	Rural Cooperatives	19,438.00	37,397.00	88,781.00	92,113.00	117,842.00
iii)	Rural Micro Trade	71,695.00	98,198.40	102,849.00	107,341.00	98,400.00
iv)	Rural Community Lhakhangs	85,903.00	98,807.00	86,777.00	88,246.00	99,386.00
v)	Highlanders	0.00	-	-	-	-
vi)	Urban	16,486,273.00	17,111,667.07	17,199,976.00	17,438,342.30	18,416,678.43
vii)	Religious Institutions	300,449.00	272,462.00	255,870.00	259,993.00	277,561.00
viii)	Cottage and Small Scale Industries	0.00	253,565.00	283,641.00	307,755.00	352,966.00
ix)	Commercial	10,925,038.18	8,272,239.15	7,642,497.00	9,363,802.23	11,494,611.65
x)	Industrial	5,091,984.00	3,911,984.27	3,767,440.00	4,049,684.00	3,940,244.50
xi)	Agriculture	38,790.00	30,535.00	44,681.00	48,417.00	54,577.00
xii)	Institutions	9,601,882.98	9,830,376.43	10,514,997.00	11,288,933.00	12,832,709.00
xiii)	Street lighting	982,981.49	1,123,861.77	1,158,862.00	1,229,552.00	1,224,221.00
xiv)	Power house auxiliaries	85,963.00	99,101.00	111,407.00	100,289.00	107,452.00
xv)	Temporary connections	2,642,117.65	2,400,458.20	2,795,031.00	3,264,953.19	3,620,741.81
xvi)	Bulk Consumption	5,524,874.00	5,346,320.00	5,329,134.00	4,763,946.00	4,965,120.00
xvii)	EVCS (Electric Vehicle charging station)					316,356.00
	<b>LV Total</b>	<b>58,973,848.30</b>	<b>56,509,080.24</b>	<b>57,168,819.00</b>	<b>60,767,023.90</b>	<b>66,579,504.19</b>
xviii)	Medium Voltage	54,750,207.00	32,757,061.00	28,225,191.00	48,877,479.00	108,985,495.75
ix)	High Voltage	1,304,501,397.00	1,059,256,500.00	1,139,872,100.00	1,184,350,100.00	1,671,359,752.74
	<b>Total Energy Sales</b>	<b>1,418,225,452.30</b>	<b>1,148,522,641.24</b>	<b>1,225,266,110.00</b>	<b>1,293,994,602.90</b>	<b>1,846,924,752.68</b>
	% growth over previous year	-5.47%	-19.02%	6.68%	5.61%	42.73%
<b>3</b>	<b>Number of Customers (Categorywise)</b>					
i)	Rural Residential	7,914	8,283.00	8,514	8,485	8,746
ii)	Rural Cooperatives	41	51.00	63	60	74
iii)	Rural Micro Trade	53	73.00	71	63	66
iv)	Rural Community Lhakhangs	51	53.00	54	54	47
v)	Highlanders	0	0	-	-	-
vi)	Urban	7,798	9,072.00	9,141	9,400	9,547
vii)	Religious Institutions	21	22.00	24	23	38
viii)	Cottage and Small Scale Industries	0	107.00	75	70	110
ix)	Commercial	1,539	1,519.00	1,510	1,660	1,784
x)	Industrial	13	70.00	69	73	72
xi)	Agriculture	506	30.00	38	42	51
xii)	Institutions	412	845.00	869	882	952
xiii)	Street lighting	78	81.00	86	94	97
xiv)	Power house auxiliaries	4	4.00	4	4	4
xv)	Temporary connections	349	426.00	466	441	441
xvi)	Bulk	98	101.00	102	75	75
xvii)	EVCS (Electric Vehicle charging station)					7
	<b>LV Total</b>	<b>18,877</b>	<b>20,737</b>	<b>21,086</b>	<b>21,426</b>	<b>22,111</b>
ix)	Medium Voltage	30	32	30	29	30
x)	High Voltage	11	11	11	11	12
	<b>Total Customers</b>	<b>18,918</b>	<b>20,780</b>	<b>21,127</b>	<b>21,466</b>	<b>22,153</b>
	% growth over previous year	4.90%	9.84%	1.67%	1.60%	3.20%
<b>4</b>	<b>Total Loss (%)</b>	<b>0.50%</b>	<b>0.52%</b>	<b>0.50%</b>	<b>0.52%</b>	<b>0.56%</b>

**Table 5.3: DAGANA**

Sl. No.	Particulars	2019	2020	2021	2022	2023
<b>1</b>	<b>Energy Requirement in kWh</b>					
i)	Purchase from TD	8,700,519.00	9,654,279.00	27,678,172.50	297,478,668.90	500,427,147.70
ii)	Mini/Micro Hydel Generation	323,016.00	364,462.00	297,717.00		152,350.00
iii)	Diesel Generation	0.00	0.00	0.00		
iv)	Import	0.00	0.00	0.00		
v)	Export	-1,542,910.16	-1,955,719.76	-1,798,603.48	(1,313,237.36)	(2,412,250.00)
vi)	HV Purchase	830.00	0.00	0.00		488,927,100.00
	<b>Total</b>	<b>7,480,624.84</b>	<b>8,063,021.24</b>	<b>26,177,286.02</b>	<b>296,165,431.54</b>	<b>498,167,247.70</b>
	% growth over previous year	0.44%	7.79%	224.66%	1031.38%	68.21%
<b>2</b>	<b>Energy Sales in kWh (Category Wise)</b>					
i)	Rural Residential	4,350,029.00	4,983,234.90	5,186,101.00	5,583,925.00	5,434,165.00
ii)	Rural Cooperatives	5,775.00	7,405.00	10,300.00	12,819.00	16,915.00
iii)	Rural Micro Trade	117,523.00	132,884.00	129,781.00	157,244.00	133,844.00
iv)	Rural Community Lhakhangs	53,731.00	51,752.00	48,377.00	46,369.00	48,695.00
v)	Highlanders	0.00	0.00	0.00	-	-
vi)	Urban	258,168.00	275,183.05	295,348.00	313,502.00	317,099.00
vii)	Religious Institutions	30,723.00	41,520.00	41,270.00	39,149.00	36,993.00
viii)	Cottage and Small Scale Industries	11,038.00	146,143.00	172,161.00	151,041.00	155,184.00
ix)	Commercial	253,730.00	124,599.00	118,155.00	126,776.00	200,990.00
x)	Industrial	0.00	667.00	0.00	-	-
xi)	Agriculture	19,927.00	18,915.00	73,783.00	49,178.00	36,742.00
xii)	Institutions	782,791.00	754,432.25	885,868.00	987,608.54	1,031,822.00
xiii)	Street lighting	26,498.00	30,563.00	35,473.00	37,669.00	41,948.00
xiv)	Power house auxiliaries	5,700.00	8,849.00	8,943.00	12,283.00	13,392.00
xv)	Temporary connections	59,557.00	55,148.00	123,595.00	131,940.00	74,622.00
xvi)	Bulk	478,450.28	418,729.01	464,490.00	470,832.94	393,296.13
xvii)	EVCS (Electric Vehicle charging station)					900.00
	<b>LV Total</b>	<b>6,453,640.28</b>	<b>7,050,024.21</b>	<b>7,593,645.00</b>	<b>8,120,336.48</b>	<b>7,936,607.13</b>
xviii)	Medium Voltage	0.00	0.00	18,276,734.00	38,926,508.40	
ix)	High Voltage	830.00	38.00	0.00	246,126,834.20	490,655,139.80
	<b>Total Energy Sales</b>	<b>6,454,470.28</b>	<b>7,050,062.21</b>	<b>25,870,379.00</b>	<b>293,173,679.08</b>	<b>498,591,746.93</b>
	% growth over previous year	2.54%	9.23%	266.95%	1033.24%	70.07%
<b>3</b>	<b>Number of Customers (Categorywise)</b>					
i)	Rural Residential	4,768	4,909	5,016	5,161	5,238.00
ii)	Rural Cooperatives	20	22	22	22	22.00
iii)	Rural Micro Trade	84	87	89	92	92.00
iv)	Rural Community Lhakhangs	43	44	46	49	50.00
v)	Highlanders	0	-	-	-	
vi)	Urban	185	191	194	198	208.00
vii)	Religious Institutions	9	10	8	8	8.00
viii)	Cottage and Small Scale Industries	71	71	73	70	73.00
ix)	Commercial	100	100	101	116	176.00
x)	Industrial	0	-	-	-	
xi)	Agriculture	28	39	47	49	54.00
xii)	Institutions	228	243	251	278	309.00
xiii)	Street lighting	6	9	9	10	12.00
xiv)	Power house auxiliaries	3	4	4	4	4.00
xv)	Temporary connections	8	26	34	45	48.00
xvi)	Bulk	9	9	9	9	9.00
xvii)	EVCS (Electric Vehicle charging station)					1
	<b>LV Total</b>	<b>5,562</b>	<b>5,764</b>	<b>5,903</b>	<b>6,111</b>	<b>6,304</b>
ix)	Medium Voltage	0	0	1		
x)	High Voltage	1	0	0	1	1.00
	<b>Total Customers</b>	<b>5,563</b>	<b>5,764</b>	<b>5,904</b>	<b>6,112</b>	<b>6,305</b>
	% growth over previous year	3.79%	3.61%	2.43%	3.52%	3.16%
<b>4</b>	<b>Total Loss (%)</b>	<b>13.72%</b>	<b>12.56%</b>	<b>1.17%</b>	<b>1.01%</b>	<b>0.54%</b>

**Table 5.4: SARPANG**

Sl. No.	Particulars	2019	2020	2021	2022	2023
<b>1</b>	<b>Energy Requirement in kWh</b>					
i)	Purchase from TD	35,948,591.00	34,640,834.00	35,296,604.00	38,389,458.00	48,126,469.90
ii)	Mini/Micro Hydel Generation					
iii)	Diesel Generation	0.00	0.00	0.00	0.00	0.00
iv)	Import					
	<b>Total</b>	<b>35,948,591.00</b>	<b>34,640,834.00</b>	<b>35,296,604.00</b>	<b>38,389,458.00</b>	<b>48,126,469.90</b>
	% growth over previous year	11.51%	-3.64%	1.89%	8.76%	25.36%
<b>2</b>	<b>Energy Sales in kWh (Category Wise)</b>					
i)	Rural Residential	9,499,477.00	10,319,528.96	10,492,554.00	11,153,368.76	12,103,650.15
ii)	Rural Cooperatives	75,717.00	85,669.20	85,266.00	85,824.00	88,074.00
iii)	Rural Micro Trade	463,872.00	430,064.57	444,242.00	467,835.00	458,687.00
iv)	Rural Community Lhakhangs	57,854.00	52,771.53	58,055.00	74,887.00	105,800.00
v)	Highlanders	0.00	0.00	0.00	-	-
vi)	Urban	5,275,867.00	5,777,534.23	6,184,119.00	6,797,465.55	7,683,322.28
vii)	Religious Institutions	137,415.00	147,965.16	152,328.00	146,019.00	172,321.00
viii)	Cottage and Small Scale Industries	68.00	318,142.00	648,407.00	572,863.00	668,505.00
ix)	Commercial	3,012,749.00	2,348,143.68	2,256,006.00	2,351,978.86	2,705,256.14
x)	Industrial	18,828.00	60,919.65	59,503.00	91,249.00	799,067.42
xi)	Agriculture	721,086.00	743,452.32	671,232.00	593,098.00	545,722.00
xii)	Institutions	3,010,929.54	2,916,549.58	3,413,961.00	3,894,171.32	4,034,034.12
xiii)	Street lighting	179,855.00	298,644.10	586,119.00	698,875.00	797,563.00
xiv)	Power house auxiliaries	338,040.00	380,840.00	305,040.00	297,395.00	230,684.00
xv)	Temporary connections	1,334,754.00	1,106,045.32	958,360.00	1,136,249.00	1,362,711.00
xvi)	Bulk	3,819,592.00	3,839,988.68	4,286,449.00	4,222,815.00	5,268,859.00
xvii)	EVCS (Electric Vehicle charging station)					16,020.00
	<b>LV Total</b>	<b>27,946,103.54</b>	<b>28,826,258.97</b>	<b>30,601,641.00</b>	<b>32,584,093.49</b>	<b>37,040,276.11</b>
xviii)	Medium Voltage	4,188,516.00	2,749,964.00	4,493,222.00	3,393,209.00	6,923,667.00
ix)	High Voltage	0.00	0.00	0.00	0.00	0.00
	<b>Total Energy Sales</b>	<b>32,134,619.54</b>	<b>31,576,222.97</b>	<b>35,094,863.00</b>	<b>35,977,302.49</b>	<b>43,963,943.11</b>
	% growth over previous year	9.39%	-1.74%	11.14%	2.51%	22.20%
<b>3</b>	<b>Number of Customers (Categorywise)</b>					
i)	Rural Residential	7,991	8,365.00	8,746	9,145	9,553.00
ii)	Rural Cooperatives	41	42.00	44	32	50
iii)	Rural Micro Trade	253	254.00	256	255	256
iv)	Rural Community Lhakhangs	26	28.00	34	23	36
v)	Highlanders	0	0	-	-	-
vi)	Urban	3,049	3,524.00	3,738	4,110	4,461.00
vii)	Religious Institutions	43	43.00	43	35	48
viii)	Cottage and Small Scale Industries	1	142.00	152	155	156
ix)	Commercial	829	754.00	752	769	815
x)	Industrial	10	14.00	14	16	19
xi)	Agriculture	281	302.00	309	313	329
xii)	Institutions	545	559.00	589	623	649
xiii)	Street lighting	50	91.00	105	90	135
xiv)	Power house auxiliaries	3	3.00	3	2	3
xv)	Temporary connections	543	435.00	403	390	372
xvi)	Bulk	34	40.00	42	37	51
xvii)	EVCS (Electric Vehicle charging station)					1
	<b>LV Total</b>	<b>13,699</b>	<b>14,596</b>	<b>15,230</b>	<b>15,995</b>	<b>16,934</b>
ix)	Medium Voltage	2	2	2	2	4
x)	High Voltage	0	0	0	0	0
	<b>Total Customers</b>	<b>13,701</b>	<b>14,598</b>	<b>15,232</b>	<b>15,997</b>	<b>16,938</b>
	% growth over previous year	7.62%	6.55%	4.34%	5.02%	5.88%
<b>4</b>	<b>Total Loss (%)</b>	<b>10.61%</b>	<b>8.85%</b>	<b>0.57%</b>	<b>6.28%</b>	<b>8.65%</b>

Table 5.5 : HAA

Sl. No.	Particulars	2019	2020	2021	2022	2023
<b>1</b>	<b>Energy Requirement in kWh</b>					
i)	Purchase from TD	14,056,749.00	15,097,022.00	16,036,865.00	17,131,027.9	16,647,897.00
ii)	Mini/Micro Hydel Generation					
iii)	Diesel Generation					
iv)	Import	285,542.00	86,833.00	358,933.00		1356020
v)	Export					-1,229,132.00
	<b>Total</b>	<b>14,342,291.00</b>	<b>15,183,855.00</b>	<b>16,395,798.00</b>	<b>17,131,027.90</b>	<b>16,774,785.00</b>
	% growth over previous year	5.78%	5.87%	7.98%	4.48%	-2.08%
<b>2</b>	<b>Energy Sales in kWh (Category Wise)</b>					
i)	Rural Residential	3,386,279.00	3,844,219.87	4,119,953.00	4,521,871.00	4,528,243.00
ii)	Rural Cooperatives	33,752.00	52,488.00	54,832.00	54,966.00	43,224.00
iii)	Rural Micro Trade	105,033.00	103,904.00	125,933.00	131,652.00	113,382.00
iv)	Rural Community Lhakhangs	27,132.00	32,311.00	38,202.00	36,106.00	35,981.00
v)	Highlanders	0.00	0.00	0.00	0.00	0.00
vi)	Urban	729,860.00	786,971.10	908,854.00	1,018,059.00	1,033,730.00
vii)	Religious Institutions	179,412.00	151,449.14	136,172.00	164,300.00	179,479.00
viii)	Cottage and Small Scale Industries	0.00	289.00	2,164.00	10,412.00	9,854.00
ix)	Commercial	1,030,376.00	818,011.00	945,287.00	1,102,818.00	1,162,905.00
x)	Industrial	0.00	0.00	0.00	0.00	0.00
xi)	Agriculture	42,205.00	31,089.00	59,023.00	77,601.00	76,775.00
xii)	Institutions	2,067,987.00	2,177,829.00	2,713,647.00	2,660,209.00	2,495,692.00
xiii)	Street lighting	57,829.00	52,074.00	39,197.00	43,106.00	47,570.00
xiv)	Power house auxiliaries	48,173.00	49,142.00	57,090.00	39,128.00	32,330.00
xv)	Temporary connections	769,125.00	681,477.55	478,499.00	642,349.00	985,645.60
xvi)	Bulk	4,429,096.00	5,015,815.00	4,765,923.00	5,036,610.00	4,834,180.00
xvii)	EVCS (Electric Vehicle charging station)					5,180.00
	<b>LV Total</b>	<b>12,906,259.00</b>	<b>13,797,069.66</b>	<b>14,444,776.00</b>	<b>15,539,187.00</b>	<b>15,584,170.60</b>
xviii)	Medium Voltage					
ix	High Voltage					
	<b>Total Energy Sales</b>	<b>12,906,259.00</b>	<b>13,797,069.66</b>	<b>14,444,776.00</b>	<b>15,539,187.00</b>	<b>15,584,170.60</b>
	% growth over previous year	4.82%	6.90%	4.69%	7.58%	0.29%
<b>3</b>	<b>Number of Customers (Categorywise)</b>					
i)	Rural Residential	2,953	3,091	3,252	3,364	3,715
ii)	Rural Cooperatives	8	8	10	11	10
iii)	Rural Micro Trade	49	49	50	51	51
iv)	Rural Community Lhakhangs	25	27	28	29	33
v)	Highlanders	0	0	0	-	
vi)	Urban	453	452	484	485	517
vii)	Religious Institutions	23	23	25	29	29
viii)	Cottage and Small Scale Industries	0	1	3	6	6
ix)	Commercial	212	208	237	245	280
x)	Industrial				-	
xi)	Agriculture	54	58	66	77	84
xii)	Institutions	144	151	168	189	223
xiii)	Street lighting	11	11	10	11	12
xiv)	Power house auxiliaries	1	1	1	1	1
xv)	Temporary connections	113	108	44	54	58
xvi)	Bulk	9	9	10	10	10
xvii)	EVCS (Electric Vehicle charging station)					1
	<b>LV Total</b>	<b>4,055</b>	<b>4,197</b>	<b>4,388</b>	<b>4,562</b>	<b>5,030</b>
ix)	Medium Voltage					
x)	High Voltage					
	<b>Total Customers</b>	<b>4,055</b>	<b>4,197</b>	<b>4,388</b>	<b>4,562</b>	<b>5,030</b>
	% growth over previous year	13.08%	3.50%	4.55%	3.97%	10.26%
<b>4</b>	<b>Total Loss (%)</b>	<b>10.01%</b>	<b>9.13%</b>	<b>11.90%</b>	<b>9.29%</b>	<b>7.54%</b>

**Table 5.6: LHUNTSE**

Sl. No.	Particulars	2019	2020	2021	2022	2023
<b>1</b>	<b>Energy Requirement in kWh</b>					
i)	Purchase from TD	5,463,787.00	5,452,674.00	5,650,758.00	6,562,305.27	7,470,842.00
ii)	Mini/Micro Hydel Generation	297,954.75	833,574.00	815,818.00	343,845.00	511,055.75
iii)	Diesel Generation					
iv)	Import					
	<b>Total</b>	<b>5,761,741.75</b>	<b>6,286,248.00</b>	<b>6,466,576.00</b>	<b>6,906,150.27</b>	<b>7,981,897.75</b>
	% growth over previous year	1.74%	9.10%	2.87%	6.80%	15.58%
<b>2</b>	<b>Energy Sales in kWh (Category Wise)</b>					
i)	Rural Residential	2,944,578.00	3,311,933.80	3,277,267.00	3,451,982.43	3,506,741.57
ii)	Rural Cooperatives	0.00	0.00	0.00	654	1188
iii)	Rural Micro Trade	43,284.00	40,288.00	35,377.00	36,989.00	35,156.00
iv)	Rural Community Lhakhangs	50,448.00	61,597.00	67,644.00	75,007.86	74,707.14
v)	Highlanders	0.00	0.00	0.00	-	0
vi)	Urban	652,164.00	672,334.00	681,599.00	717,615.91	706,206.09
vii)	Religious Institutions	149,542.00	161,387.00	181,957.00	165,057.00	195,252.00
viii)	Cottage and Small Scale Industries	0.00	0.00	0.00	-	0
ix)	Commercial	199,108.00	213,175.00	227,815.00	285,561.00	333,541.00
x)	Industrial	30,404.00	15,365.00	10,914.00	15,449.00	12,247.00
xi)	Agriculture	15,832.00	22,791.00	14,575.00	12,557.00	6,610.00
xii)	Institutions	753,994.00	704,571.40	858,396.00	890,900.54	958,800.96
xiii)	Street lighting	56,143.00	57,278.00	47,846.00	44,500.00	72,049.00
xiv)	Power house auxiliaries	0.00	0.00	0.00	702	384
xv)	Temporary connections	28,710.00	80,505.00	72,336.00	196,386.00	164,257.00
xvi)	Bulk	66,605.00	88,901.00	129,359.00	181,923.00	791,937.00
xvii)	EVCS (Electric Vehicle charging station)					80.00
	<b>LV Total</b>	<b>4,990,812.00</b>	<b>5,430,126.20</b>	<b>5,605,085.00</b>	<b>6,075,284.74</b>	<b>6,859,156.76</b>
xviii)	Medium Voltage					
ix)	High Voltage					
	<b>Total Energy Sales</b>	<b>4,990,812.00</b>	<b>5,430,126.20</b>	<b>5,605,085.00</b>	<b>6,075,284.74</b>	<b>6,859,156.76</b>
	% growth over previous year	3.44%	8.80%	3.22%	8.39%	12.90%
<b>3</b>	<b>Number of Customers (Categorywise)</b>					
i)	Rural Residential	3,462	3,551	3,622	3,706	3864
ii)	Rural Cooperatives	0	0	0	1	1
iii)	Rural Micro Trade	28	28	28	28	28
iv)	Rural Community Lhakhangs	98	99	98	98	98
v)	Highlanders	0	0	0	-	
vi)	Urban	406	395	399	399	414
vii)	Religious Institutions	38	38	38	39	39
viii)	Cottage and Small Scale Industries	0	0	0	-	
ix)	Commercial	50	60	60	74	79
x)	Industrial	10	9	7	8	8
xi)	Agriculture	123	122	124	123	123
xii)	Institutions	254	250	254	260	282
xiii)	Street lighting	20	20	19	20	25
xiv)	Power house auxiliaries	0	0	0	2	2
xv)	Temporary connections	24	34	43	42	49
xvi)	Bulk	5	5	5	7	17
	EVCS (Electric Vehicle charging Station)					1
	<b>LV Total</b>	<b>4,518</b>	<b>4,611</b>	<b>4,697</b>	<b>4,807</b>	<b>5,030</b>
xvii)	Medium Voltage					
xviii)	High Voltage					
	<b>Total Customers</b>	<b>4,518</b>	<b>4,611</b>	<b>4,697</b>	<b>4,807</b>	<b>5,030</b>
	% growth over previous year	2.19%	2.06%	1.87%	2.34%	4.64%
<b>4</b>	<b>Total Loss (%)</b>	<b>13.38%</b>	<b>13.62%</b>	<b>13.32%</b>	<b>12.03%</b>	<b>14.09%</b>

**Table 5.7: MONGAR**

Sl. No.	Particulars	2019	2020	2021	2022	2023
<b>1</b>	<b>Energy Requirement in kWh</b>					
i)	Purchase from TD	14,574,076.00	14,895,205.00	16,139,270.00	20,973,699.07	17,735,777.40
ii)	Mini/Micro Hydel Generation	1,187,487.00	1,519,117.00	1,561,311.00	701,376.00	871,712.35
iii)	Diesel Generation	0.00	0.00	0.00	0.00	
iv)	Import from Trashigang	1,878,132.00	2,035,835.00	1,563,592.00	0.00	2,586,488.00
v)	Export	-245,711.00	-7242.00	0	-135,058.00	
	<b>Total</b>	<b>17,393,984.00</b>	<b>18,442,915.00</b>	<b>19,264,173.00</b>	<b>21,540,017.07</b>	<b>21,193,977.75</b>
	% growth over previous year	7.77%	6.03%	4.45%	11.81%	-1.61%
<b>2</b>	<b>Energy Sales in kWh (Category Wise)</b>					
i)	Rural Residential	5,806,018.00	6,421,477.15	6,470,210.00	7,343,997.00	7,662,841.00
ii)	Rural Cooperatives	210.00	2,045.00	2,380.00	6,997.00	8,487.00
iii)	Rural Micro Trade	74,123.00	71,647.34	70,661.00	76,014.00	76,521.00
iv)	Rural Community Lhakhangs	177,366.00	218,691.35	227,082.00	235,590.00	233,087.00
v)	Highlanders	0.00	0.00	0.00	-	-
vi)	Urban	3,128,985.00	3,745,213.21	3,677,674.00	3,836,936.00	3,547,747.00
vii)	Religious Institutions	139,384.00	138,188.00	167,593.00	210,594.00	227,178.00
viii)	Cottage and Small Scale Industries	0.00	243,914.30	450,470.00	531,760.69	552,628.05
ix)	Commercial	1,482,347.96	1,231,235.91	1,091,220.00	1,243,581.62	1,361,403.12
x)	Industrial	0.00	0.00	0.00	12,360.00	20,504.00
xi)	Agriculture	209,254.22	233,977.11	221,910.00	190,633.80	127,472.09
xii)	Institutions	1,598,386.00	1,526,741.68	1,662,424.00	1,931,718.00	2,299,960.00
xiii)	Street lighting	22,786.00	26,486.00	52,376.00	50,380.00	68,824.00
xiv)	Power house auxiliaries	29,024.00	17,580.00	16,045.00	17,201.00	16,228.00
xv)	Temporary connections	311,317.00	297,101.73	415,222.00	621,220.00	757,132.11
xvi)	Bulk	1,802,069.26	1,629,989.92	2,106,151.00	2,210,801.28	2,300,700.69
xvii)	EVCS (Electric Vehicle charging station)					1,940.00
	<b>LV Total</b>	<b>14,781,270.44</b>	<b>15,804,288.70</b>	<b>16,631,418.00</b>	<b>18,519,784.39</b>	<b>19,262,653.06</b>
xviii)	Medium Voltage		167,811.00	556,400.00	710,666.00	508,986.00
ix	High Voltage					
	<b>Total Energy Sales</b>	<b>14,781,270.44</b>	<b>15,972,099.70</b>	<b>17,187,818.00</b>	<b>19,230,450.39</b>	<b>19,771,639.06</b>
	% growth over previous year	7.65%	8.06%	7.61%	11.88%	2.81%
<b>3</b>	<b>Number of Customers (Categorywise)</b>					
i)	Rural Residential	7,020	7,201	7,650	7,900	8,474
ii)	Rural Cooperatives	5	12	21	27	27
iii)	Rural Micro Trade	49	47	48	49	50
iv)	Rural Community Lhakhangs	165	175	180	184	187
v)	Highlanders	0	0	-	-	-
vi)	Urban	1,885	1,926	1,868	1,895	1,938
vii)	Religious Institutions	50	47	60	62	62
viii)	Cottage and Small Scale Industries	0	123	123	121	119
ix)	Commercial	417	313	342	348	412
x)	Industrial	0	1	-	3	4
xi)	Agriculture	108	110	112	115	122
xii)	Institutions	476	490	517	572	652
xiii)	Street lighting	18	17	23	23	27
xiv)	Power house auxiliaries	4	4	3	3	3
xv)	Temporary connections	72	84	94	112	130
xvi)	Bulk	27	26	28	28	27
xvii)	EVCS (Electric Vehicle charging station)					2
	<b>LV Total</b>	<b>10,296</b>	<b>10,576</b>	<b>11,069</b>	<b>11,442</b>	<b>12,236</b>
ix)	Medium Voltage		1	1	1	1
x)	High Voltage					
	<b>Total Customers</b>	<b>10,296</b>	<b>10,577</b>	<b>11,070</b>	<b>11,443</b>	<b>12,237</b>
	% growth over previous year	5.80%	2.73%	4.66%	3.37%	6.94%
<b>4</b>	<b>Total Loss (%)</b>	<b>15.02%</b>	<b>13.40%</b>	<b>10.78%</b>	<b>10.66%</b>	<b>6.71%</b>



Table 5.8: PARO

Sl. No.	Particulars	2019	2020	2021	2022	2023
<b>1</b>	<b>Energy Requirement in kWh</b>					
i)	Purchase from TD	68,797,490.69	58,747,304.50	59,041,640.00	98,661,640.73	128,967,185.60
ii)	Mini/Micro Hydel Generation					
iii)	Diesel Generation					
iv)	Import		240,724.00	0		724630
v)	Export					-30,196,163.00
	<b>Total</b>	<b>68,797,490.69</b>	<b>58,988,028.50</b>	<b>59,041,640.00</b>	<b>98,661,640.73</b>	<b>99,495,652.60</b>
	% growth over previous year	14.30%	-14.26%	0.09%	67.11%	0.85%
<b>2</b>	<b>Energy Sales in kWh (Category Wise)</b>					
i)	Rural Residential	19,726,659.00	21,963,902.35	23,392,312.00	26,812,426.91	29,928,531.75
ii)	Rural Cooperatives	29,668.00	28,777.00	36,122.00	65,561.00	85,971.00
iii)	Rural Micro Trade	85,790.00	73,798.00	77,054.00	146,871.00	162,967.00
iv)	Rural Community Lhakhangs	461,134.00	492,857.36	488,117.00	471,828.00	455,269.00
v)	Highlanders	90,412.00	473,254.00	632,249.00	630,572.00	577,863.00
vi)	Urban	1,284,723.00	1,232,310.35	1,481,865.00	1,733,752.00	1,743,799.00
vii)	Religious Institutions	631,492.00	672,282.00	901,353.00	776,921.00	769,327.00
viii)	Cottage and Small Scale Industries	22,746.00	400,304.00	517,058.00	724,713.60	945,793.00
ix)	Commercial	8,477,044.64	6,750,295.12	6,142,323.00	6,665,930.07	7,944,347.18
x)	Industrial	581,836.00	456,005.00	380,784.00	503,711.81	649,114.88
xi)	Agriculture	128,206.00	120,527.91	143,701.00	148,907.67	163,526.33
xii)	Institutions	6,223,341.28	6,727,110.34	8,394,282.00	8,765,419.46	10,598,193.74
xiii)	Street lighting	70,362.00	80,979.14	62,644.00	87,861.49	193,171.48
xiv)	Power house auxiliaries				12,732.00	0.00
xv)	Temporary connections	3,851,137.00	3,556,829.77	2,689,141.00	3,538,423.95	1,559,664.00
xvi)	Bulk	15,634,716.00	9,350,840.00	5,530,735.00	7,169,061.88	11,745,210.36
xvii)	EVCS (Electric Vehicle charging station)					136,266.00
	<b>LV Total</b>	<b>57,299,266.92</b>	<b>52,380,072.33</b>	<b>50,869,740.00</b>	<b>58,254,693.84</b>	<b>67,659,014.72</b>
xviii)	Medium Voltage	4,627,229.20	1,036,369.60	918,035.00	32,599,580.00	20,692,729.00
ix	High Voltage					
	<b>Total Energy Sales</b>	<b>61,926,496.12</b>	<b>53,416,441.93</b>	<b>51,787,775.00</b>	<b>90,854,273.84</b>	<b>88,351,743.72</b>
	% growth over previous year	18.34%	-13.74%	-3.05%	75.44%	-2.75%
<b>3</b>	<b>Number of Customers (Categorywise)</b>					
i)	Rural Residential	9,919	10,530	11,288	12,316	13,465
ii)	Rural Cooperatives	27	25	51	85	103
iii)	Rural Micro Trade	20	20	39	48	54
iv)	Rural Community Lhakhangs	117	115	118	117	123
v)	Highlanders	235	239	255	259	280
vi)	Urban	347	399	507	535	564
vii)	Religious Institutions	61	61	60	46	39
viii)	Cottage and Small Scale Industries	34	53	92	106	112
ix)	Commercial	1,544	1,519	1,452	1,554	1,630
x)	Industrial	56	54	54	52	47
xi)	Agriculture	126	144	167	167	157
xii)	Institutions	367	352	377	419	504
xiii)	Street lighting	11	11	12	13	18
xiv)	Power house auxiliaries				2	0
xv)	Temporary connections	488	468	518	547	103
xvi)	Bulk	40	43	47	54	57
xvii)	EVCS (Electric Vehicle charging station)					2
	<b>LV Total</b>	<b>13,392</b>	<b>14,033</b>	<b>15,037</b>	<b>16,320</b>	<b>17,258</b>
ix)	Medium Voltage	3	2	2	3	2
x)	High Voltage					
	<b>Total Customers</b>	<b>13,395</b>	<b>14,035</b>	<b>15,039</b>	<b>16,323</b>	<b>17,260</b>
	% growth over previous year	6.84%	4.78%	7.15%	8.54%	5.74%
<b>4</b>	<b>Total Loss (%)</b>	<b>9.99%</b>	<b>9.45%</b>	<b>12.29%</b>	<b>7.92%</b>	<b>8.67%</b>



Table 5.9: PEMAGATSHEL

Sl.No.	Particulars	2019	2020	2021	2022	2023
<b>1</b>	<b>Energy Requirement in kWh</b>					
i)	Purchase from TD	110,896,694.00	92,168,469.50	91,679,930.00	93,825,695.00	90,016,019.00
ii)	Mini/Micro Hydel Generation					
iii)	Diesel Generation	0.00	0.00	0.00		
iv)	Export to Trashigang and Zhemgang	-2,816,862.50	-3,056,328.50	-2,982,774.00	-3,455,966.00	-4,020,723.00
v)	HV Purchase	95,171,198.00	78,412,320.00	77,861,707.00	79,018,540.00	73,967,455.00
	<b>Total</b>	<b>108,079,831.50</b>	<b>89,112,141.00</b>	<b>88,697,156.00</b>	<b>90,369,729.00</b>	<b>85,995,296.00</b>
	% growth over previous year	0.29%	-17.55%	-0.47%	1.89%	-4.84%
<b>2</b>	<b>Energy Sales in kWh (Category Wise)</b>					
i)	Rural Residential	4,089,663.00	4,442,338.03	4,366,806.00	4,753,737.06	4,541,393.94
ii)	Rural Cooperatives	33,103.00	31,563.00	31,281.00	33,926.00	22,557.00
iii)	Rural Micro Trade	100,040.00	106,344.53	105,138.00	100,119.00	99,556.00
iv)	Rural Community Lhakhangs	77,810.00	88,951.64	102,868.00	125,145.00	131,308.00
v)	Highlanders	0.00	0.00	0.00	-	0
vi)	Urban	1,283,704.00	1,178,454.17	1,230,706.00	1,238,039.00	1,314,262.00
vii)	Religious Institutions	121,745.00	128,937.05	136,155.00	151,603.00	118,773.00
viii)	Cottage and Small Scale Industries	1,394.00	25,512.00	23,071.00	27,165.00	21,637.00
ix)	Commercial	704,989.00	695,961.76	689,854.00	738,279.20	735,409.79
x)	Industrial	51,613.00	43,626.00	51,435.00	46,291.00	40,654.00
xi)	Agriculture	27,460.00	15,305.00	14,607.00	11,043.00	3,938.00
xii)	Institutions	922,174.00	833,122.24	1,035,072.00	1,135,592.18	1,081,236.82
xiii)	Street lighting	19,466.00	30,418.00	30,230.00	37,234.00	52,259.00
xiv)	Power house auxiliaries		0.00	8,800.00	3,550.00	3,350.00
xv)	Temporary connections	184,049.00	280,500.91	363,223.00	416,144.00	558,190.00
xvi)	Bulk	837,494.00	797,437.00	807,815.00	860,307.00	923,034.00
xvii)	EVCS (Electric Vehicle charging station)					80.00
	<b>LV Total</b>	<b>8,454,704.00</b>	<b>8,698,471.33</b>	<b>8,997,061.00</b>	<b>9,678,174.44</b>	<b>9,647,638.55</b>
xviii)	Medium Voltage	2,865,648.00	517,497.00	530,604.00	452,765.00	1,314,436.30
ix)	High Voltage	95,171,198.00	78,412,320.00	77,861,707.00	79,018,540.00	73,470,042.10
	<b>Total Energy Sales</b>	<b>106,491,550.00</b>	<b>87,628,288.33</b>	<b>87,389,372.00</b>	<b>89,149,479.44</b>	<b>84,432,116.95</b>
	% growth over previous year	1.17%	-17.71%	-0.27%	2.01%	-5.29%
<b>3</b>	<b>Number of Customers (Categorywise)</b>					
i)	Rural Residential	5,901	6,065	6,227	6,352	6,182
ii)	Rural Cooperatives	40	46	50	53	60
iii)	Rural Micro Trade	78	78	78	78	80
iv)	Rural Community Lhakhangs	107	118	121	134	140
v)	Highlanders	0	0	-	-	0
vi)	Urban	737	705	710	766	879
vii)	Religious Institutions	44	41	42	53	49
viii)	Cottage and Small Scale Industries	5	6	6	7	8
ix)	Commercial	234	231	231	229	249
x)	Industrial	8	8	7	7	7
xi)	Agriculture	30	28	28	27	27
xii)	Institutions	397	398	439	448	451
xiii)	Street lighting	3	4	7	7	10
xiv)	Power house auxiliaries		1	1	1	1
xv)	Temporary connections	132	157	155	199	228
xvi)	Bulk	36	36	37	32	30
	EVCS (Electric Vehicle charging station)					1
	<b>LV Total</b>	<b>7,752</b>	<b>7,922</b>	<b>8,139</b>	<b>8,393</b>	<b>8,402</b>
xvii)	Medium Voltage	4	4	3	2	3
xviii)	High Voltage	1	1	1	1	1
	<b>Total Customers</b>	<b>7,757</b>	<b>7,927</b>	<b>8,143</b>	<b>8,396</b>	<b>8,406</b>
	% growth over previous year	2.21%	2.19%	2.72%	3.11%	0.12%
<b>4</b>	<b>Total Loss (%)</b>	<b>1.47%</b>	<b>1.67%</b>	<b>1.47%</b>	<b>1.27%</b>	<b>1.74%</b>

Table 5.10: PUNAKHA

Sl. No.	Particulars	2019	2020	2021	2022	2023
<b>1</b>	<b>Energy Requirement in kWh</b>					
i)	Purchase from TD	23,702,108.80	22,188,748.86	25,664,234.10	53,676,782.20	159,623,057.58
ii)	Mini/Micro Hydel Generation					
iii)	Diesel Generation					
iv)	Import					
	<b>Total</b>	<b>23,702,108.80</b>	<b>22,188,748.86</b>	<b>25,664,234.10</b>	<b>53,676,782.20</b>	<b>159,623,057.58</b>
	% growth over previous year	11.11%	-6.38%	15.66%	109.15%	197.38%
<b>2</b>	<b>Energy Sales in kWh (Category Wise)</b>					
i)	Rural Residential	7,995,450.46	8,827,284.16	8,988,238.00	9,798,888.00	10,268,601.97
ii)	Rural Cooperatives	3,358.00	2,920.00	3,639.00	22,180.00	18,908.00
iii)	Rural Micro Trade	117,978.00	133,745.13	149,969.00	152,430.00	160,544.00
iv)	Rural Community Lhakhangs	40,848.00	36,909.00	49,883.00	40,798.00	41,374.00
v)	Highlanders	53,867.00	291,539.00	326,341.00	338,729.00	439,936.00
vi)	Urban	1,852,821.00	1,843,751.75	1,837,876.00	1,928,880.00	1,831,887.00
vii)	Religious Institutions	733,282.00	813,597.31	851,185.00	731,983.40	749,844.00
viii)	Cottage and Small Scale Industries	78,307.00	684,533.00	583,454.00	653,937.20	648,113.80
ix)	Commercial	2,318,158.50	1,461,314.64	1,568,306.00	1,847,213.00	2,287,745.60
x)	Industrial				-	
xi)	Agriculture	262,942.00	265,394.00	302,502.00	368,251.00	419,360.00
xii)	Institutions	2,834,908.32	2,887,058.64	3,484,578.00	3,454,799.80	3,606,488.00
xiii)	Street lighting	133,570.00	105,547.00	60,315.00	91,816.00	116,427.00
xiv)	Power house auxiliaries	3,390.00	4,760.00	6,070.00	5,110.00	6,960.00
xv)	Temporary connections	814,537.83	419,863.05	279,824.00	363,812.00	514,326.00
xvi)	Bulk	3,763,394.00	3,064,826.69	2,323,082.00	2,833,515.60	4,922,090.80
xvii)	EVCS (Electric Vehicle charging station)					72948.8
	<b>LV Total</b>	<b>21,006,812.11</b>	<b>20,843,043.37</b>	<b>20,815,262.00</b>	<b>22,632,343.00</b>	<b>26,105,554.97</b>
xviii)	Medium Voltage			3,426,450.00	29,283,180.00	7,755,975.00
ix)	High Voltage					124054290.00
	<b>Total Energy Sales</b>	<b>21,006,812.11</b>	<b>20,843,043.37</b>	<b>24,241,712.00</b>	<b>51,915,523.00</b>	<b>157,915,819.97</b>
	% growth over previous year	12.49%	-0.78%	16.31%	114.16%	204.18%
<b>3</b>	<b>Number of Customers (Categorywise)</b>					
i)	Rural Residential	5,572	5,846	6,008	6,347	6,732
ii)	Rural Cooperatives	3	11	10	9	9
iii)	Rural Micro Trade	59	65	65	67	73
iv)	Rural Community Lhakhangs	31	34	36	38	38
v)	Highlanders	310	326	337	347	371
vi)	Urban	892	894	879	867	873
vii)	Religious Institutions	74	75	77	70	78
viii)	Cottage and Small Scale Industries	102	106	103	102	102
ix)	Commercial	416	431	466	519	597
x)	Industrial	0	0	-	-	
xi)	Agriculture	292	341	382	402	421
xii)	Institutions	375	369	380	375	387
xiii)	Street lighting	6	6	7	7	7
xiv)	Power house auxiliaries	1	1	1	1	1
xv)	Temporary connections	110	107	107	119	131
xvi)	Bulk	19	21	27	25	24
	EVCS (Electric Vehicle charging station)					2
	<b>LV Total</b>	<b>8,262</b>	<b>8,633</b>	<b>8,885</b>	<b>9,295</b>	<b>9,846</b>
xvii)	Medium Voltage			1	1	
xviii)	High Voltage					1
	<b>Total Customers</b>	<b>8,262</b>	<b>8,633</b>	<b>8,886</b>	<b>9,296</b>	<b>9,847</b>
	% growth over previous year	2.94%	4.49%	2.93%	4.61%	5.93%
<b>4</b>	<b>Total Loss (%)</b>	<b>11.37%</b>	<b>6.06%</b>	<b>5.54%</b>	<b>3.28%</b>	<b>1.07%</b>

Table 5.11: SAMTSE

Sl.No.	Particulars	2019	2020	2021	2022	2023
<b>1</b>	<b>Energy Requirement in kWh</b>					
i)	Purchase from TD	99,005,939.00	68,784,715.00	80,493,957.00	67,860,994.25	94,692,098.00
ii)	Mini/Micro Hydel Generation					
iii)	Diesel Generation					
iv)	Import from WBSEB	2,693.55	0.00	0.00	0.00	
v)	Import from Chukhha	0.00	857,622.20	450790.38		
vi)	Export to Haa	-285,542.00	-406833.00	-358,933.00	-415,894.00	-750,196.00
vii)	HV Purchase	39,449,683.00	21,033,000.00	28,540,400	16,481,500.00	39,108,000.00
	<b>Total</b>	<b>98,723,090.55</b>	<b>69,235,504.20</b>	<b>80,585,814.38</b>	<b>67,445,100.25</b>	<b>93,941,902.00</b>
	% growth over previous year	-0.98%	-29.87%	16.39%	-16.31%	39.29%
<b>2</b>	<b>Energy Sales in kWh (Category Wise)</b>					
i)	Rural Residential	10,604,219.00	11,440,458.61	11,685,976.00	12,224,138.00	12,742,525.00
ii)	Rural Cooperatives	10,888.00	22,080.00	13,256.00	12,267.00	11,248.00
iii)	Rural Micro Trade	47,185.00	47,011.67	53,881.00	61,900.00	75,084.00
iv)	Rural Community Lhakhangs	8,302.00	12,754.86	13,286.00	18,732.00	18,170.00
v)	Highlanders	0.00	0.00	0.00	-	-
vi)	Urban	1,957,271.00	2,112,028.05	2,126,286.00	2,198,945.25	2,213,616.48
vii)	Religious Institutions	22,631.00	28,971.00	32,573.00	40,208.00	56,821.00
viii)	Cottage and Small Scale Industries	6,142.00	159,597.76	167,914.00	184,222.00	214,367.00
ix)	Commercial	1,335,921.00	1,208,103.82	1,307,724.00	1,593,759.77	1,895,416.44
x)	Industrial	487,000.00	335,191.00	387,765.00	399,684.00	553,176.00
xi)	Agriculture	85,229.91	81,333.09	101,633.00	115,371.64	148,887.47
xii)	Institutions	2,173,970.83	2,146,175.65	2,577,091.00	2,882,195.08	3,362,175.81
xiii)	Street lighting	178,463.00	186,996.00	152,268.00	175,211.00	205,512.00
xiv)	Power house auxiliaries				-	-
xv)	Temporary connections	475,406.09	412,609.47	427,690.00	643,863.00	1,009,315.00
xvi)	Bulk	5,638,462.21	4,815,981.00	5,268,752.00	5,625,682.50	5,557,729.50
	EVCS (Electric Vehicle charging station)					1,560.00
	<b>LV Total</b>	<b>23,031,091.04</b>	<b>23,009,291.97</b>	<b>24,316,095.00</b>	<b>26,176,179.24</b>	<b>28,064,043.70</b>
xvii)	Medium Voltage	33,357,972.00	22,122,302.00	23,660,685.00	20,885,329.00	24,059,023.00
xviii)	High Voltage	39,483,283.00	21,054,700.00	28,540,400.00	16,294,500.00	39,123,470.00
	<b>Total Energy Sales</b>	<b>95,872,346.04</b>	<b>66,186,293.97</b>	<b>76,517,180.00</b>	<b>63,356,008.24</b>	<b>91,246,536.70</b>
	% growth over previous year	-0.21%	-30.96%	15.61%	-17.20%	44.02%
<b>3</b>	<b>Number of Customers (Categorywise)</b>					
i)	Rural Residential	11,815	12,273	12,684	13,424	13,525
ii)	Rural Cooperatives	21	25	24	26	25
iii)	Rural Micro Trade	37	42	46	53	58
iv)	Rural Community Lhakhangs	14	18	20	19	19
v)	Highlanders	0	0	-	-	0
vi)	Urban	1,075	1,143	1,150	1,217	1,278
vii)	Religious Institutions	17	19	19	20	24
viii)	Cottage and Small Scale Industries	0	82	88	94	95
ix)	Commercial	609	590	620	755	833
x)	Industrial	20	15	15	16	17
xi)	Agriculture	201	205	212	220	225
xii)	Institutions	507	552	594	637	657
xiii)	Street lighting	28	31	33	34	44
xiv)	Power house auxiliaries				-	0
xv)	Temporary connections	185	163	173	211	242
xvi)	Bulk	58	61	68	70	64
	EVCS (Electric Vehicle charging station)					1
	<b>LV Total</b>	<b>14,587</b>	<b>15,219</b>	<b>15,746</b>	<b>16,796</b>	<b>17,107</b>
xvii)	Medium Voltage	13	12	11	14	14
xviii)	High Voltage	1	1	1	1	1
	<b>Total Customers</b>	<b>14,601</b>	<b>15,232</b>	<b>15,758</b>	<b>16,811</b>	<b>17,122</b>
	% growth over previous year	3.03%	4.32%	3.45%	6.68%	1.85%
<b>4</b>	<b>Total Loss (%)</b>	<b>2.89%</b>	<b>4.40%</b>	<b>5.05%</b>	<b>5.60%</b>	<b>2.84%</b>

Table 5.12: SAMDRUP JONGKHAR

Sl. No.	Particulars	2019	2020	2021	2022	2023
<b>1</b>	<b>Energy Requirement in kWh</b>					
i)	Purchase from TD	142,677,268.00	161,218,731	221,210,919.00	236,156,435.00	240,197,512.00
ii)	Mini/Micro Hydel Generation					
iii)	Diesel Generation					
iv)	Export to Zhemgang	0.00	0.00	0.00	0.00	
v)	Import from ASEB	49,537.60	0.00	0.00	0.00	
vi)	HV Purchase	124,037,661.00	142,259,677.00	199,947,486	210,716,819	209,888,154.00
	<b>Total</b>	<b>142,726,805.60</b>	<b>161,218,731.00</b>	<b>221,210,919.00</b>	<b>236,156,435.00</b>	<b>240,197,512.00</b>
	% growth over previous year	-1.61%	12.96%	37.21%	6.76%	1.71%
<b>2</b>	<b>Energy Sales in kWh (Category Wise)</b>					
i)	Rural Residential	4,772,529.00	5,250,114.49	5,169,714.00	5,580,823.16	6,072,972.84
ii)	Rural Cooperatives	17,092.00	14,189.00	18,299.00	17,532.00	23,312.00
iii)	Rural Micro Trade	92,268.00	91,177.00	85,847.00	92,035.00	111,903.00
iv)	Rural Community Lhakhangs	108,136.00	130,530.00	128,843.00	137,093.04	159,670.96
v)	Highlanders	772.00	7,032.00	6,431.00	5,481.00	7,312.00
vi)	Urban	3,520,823.90	3,540,565.26	3,541,692.00	3,647,530.39	3,854,993.61
vii)	Religious Institutions	165,700.00	209,924.00	202,345.00	180,308.00	173,503.00
viii)	Cottage and Small Scale Industries	0.00	148,753.00	202,614.00	206,855.00	239,151.00
ix)	Commercial	1,444,951.00	1,187,923.68	1,421,867.00	1,748,473.11	2,074,709.00
x)	Industrial	117,421.00	64,109.00	52,993.00	56,312.00	61,200.00
xi)	Agriculture	12,138.00	14,339.00	14,046.00	16,249.00	12,131.00
xii)	Institutions	1,898,263.00	1,722,028.56	2,153,469.00	2,658,117.00	2,833,190.00
xiii)	Street lighting	347,403.00	306,652.00	250,359.00	271,075.00	301,188.00
xiv)	Power house auxiliaries					-
xv)	Temporary connections	720,848.00	591,716.93	654,123.00	584,847.00	636,620.00
xvi)	Bulk	3,276,317.63	3,413,380.30	3,458,292.00	3,581,242.00	4,655,721.00
	EVCS (Electric Vehicle charging station)					
	<b>LV Total</b>	<b>16,494,662.53</b>	<b>16,692,434.22</b>	<b>17,360,934.00</b>	<b>18,783,972.70</b>	<b>21,217,577.41</b>
xvii)	Medium Voltage	353,567.00	485,681.00	1,614,397.00	4,426,150.00	6,675,321.00
xviii)	High Voltage	128,311,075.00	141,035,473.00	199,947,486.00	210,716,819.00	209,907,556.00
	<b>Total Energy Sales</b>	<b>145,159,304.53</b>	<b>158,213,588.22</b>	<b>218,922,817.00</b>	<b>233,926,941.70</b>	<b>237,800,454.41</b>
	% growth over previous year	1.33%	8.99%	38.37%	6.85%	1.66%
<b>3</b>	<b>Number of Customers (Categorywise)</b>					
i)	Rural Residential	5,587	5,988	6,189	6,436	6,720
ii)	Rural Cooperatives	29	32	33	33	34
iii)	Rural Micro Trade	66	67	68	68	68
iv)	Rural Community Lhakhangs	118	119	120	122	123
v)	Highlanders	12	12	12	12	31
vi)	Urban	2,054	2,060	2,137	2,205	2,187
vii)	Religious Institutions	18	18	17	18	18
viii)	Cottage and Small Scale Industries	0	29	32	38	38
ix)	Commercial	389	381	400	405	448
x)	Industrial	20	20	17	17	18
xi)	Agriculture	10	10	11	9	9
xii)	Institutions	420	423	458	482	524
xiii)	Street lighting	70	72	72	76	78
xiv)	Power house auxiliaries					-
xv)	Temporary connections	145	127	138	133	158
xvi)	Bulk	116	120	77	40	42
	EVCS (Electric Vehicle charging station)					
	<b>LV Total</b>	<b>9,054.00</b>	<b>9,478.00</b>	<b>9,781.00</b>	<b>10,094.00</b>	<b>10,496.00</b>
xvii)	Medium Voltage	4.00	3.00	4.00	4.00	2.00
xviii)	High Voltage	2.00	2.00	1.00	1.00	1.00
	<b>Total Customers</b>	<b>9,060.00</b>	<b>9,483.00</b>	<b>9,786.00</b>	<b>10,099.00</b>	<b>10,499.00</b>
	% growth over previous year	4.02%	4.67%	3.20%	3.20%	3.96%
<b>4</b>	<b>Loss (%)</b>	<b>-1.70%</b>	<b>1.86%</b>	<b>1.03%</b>	<b>0.94%</b>	<b>0.99%</b>

Table 5.13: THIMPHU

Sl. No.	Particulars	2019	2020	2021	2022	2023
<b>1</b>	<b>Energy Requirement in kWh</b>					
i)	Purchase from TD	241,144,016.33	240,844,201.46	585,367,333.06	950,317,415.31	1,924,226,446.32
ii)	Mini/Micro Hydel Generation	3,478,375.00	5,491,949.00	3,624,580.00		1,970,636.10
iii)	Diesel Generation	3,490.00	4,240.00	950.00		8027.2
iv)	Import					29651873
v)	HV Purchase			324,877,912.00	664,606,231.00	1,647,912,900.00
vi)	Export					-445,533.00
	<b>Total</b>	<b>244,625,881.33</b>	<b>246,340,390.46</b>	<b>588,992,863.06</b>	<b>950,317,415.31</b>	<b>1,955,411,449.62</b>
	% growth over previous year	7.93%	0.70%	139.10%	61.35%	105.76%
<b>2</b>	<b>Energy Sales in kWh (Category Wise)</b>					
i)	Rural Residential	12,292,299.39	15,458,211.36	17,674,913.00	20,787,373.55	22,369,325.94
ii)	Rural Cooperatives	16,419.00	10,996.31	10,732.00	21,773.00	24,097.00
iii)	Rural Micro Trade	476,288.31	440,550.62	474,128.00	481,783.78	505,185.69
iv)	Rural Community Lhakhangs	378,904.00	439,425.46	458,944.00	494,257.00	581,382.00
v)	Highlanders	0.00	0.00	0.00	43,368.00	19,073.00
vi)	Urban	91,492,965.64	105,837,744.85	117,150,182.00	128,610,974.56	134,186,190.57
vii)	Religious Institutions	107,499.00	109,311.05	97,799.00	82,644.00	71,421.00
viii)	Cottage and Small Scale Industries	121,716.00	1,742,509.25	1,748,952.00	2,082,502.00	2,441,854.00
ix)	Commercial	34,771,084.48	29,478,072.09	30,217,296.00	34,137,017.73	38,502,895.96
x)	Industrial	3,382,538.00	3,029,643.35	3,173,297.00	3,320,756.00	3,823,001.00
xi)	Agriculture	163,403.00	127,886.60	104,559.00	118,963.00	81,428.00
xii)	Institutions	26,802,775.60	25,615,612.74	26,694,129.00	27,381,002.65	31,666,165.71
xiii)	Street lighting	1,738,992.00	1,912,287.50	1,859,100.00	1,840,125.00	1,850,738.00
xiv)	Power house auxiliaries	511,302.00	532,138.42	440,483.00	421,985.00	364,532.82
xv)	Temporary connections	16,410,641.00	8,752,790.22	5,523,304.00	7,621,473.00	7,787,966.00
xvi)	Bulk	24,039,941.00	24,111,693.48	22,347,520.00	23,651,131.60	25,613,683.60
xvii)	EVCS (Electric Vehicle charging station)					726,038.20
	<b>LV Total</b>	<b>212,706,768.42</b>	<b>217,598,873.29</b>	<b>227,975,338.00</b>	<b>251,097,129.87</b>	<b>270,614,978.49</b>
xvii)	Medium Voltage	6,452,240.00	3,492,564.00	12,681,764.00	8,861,300.00	9,965,536.00
xviii)	High Voltage			324,877,912.00	664,605,465.00	1,648,489,223.00
	<b>Total Energy Sales</b>	<b>219,159,008.42</b>	<b>221,091,437.29</b>	<b>565,535,014.00</b>	<b>924,563,894.87</b>	<b>1,929,069,737.49</b>
	% growth over previous year	8.53%	0.88%	155.79%	63.48%	108.65%
<b>3</b>	<b>Number of Customers (Categorywise)</b>					
i)	Rural Residential	5,562	6,227	6,851	7,627	8,352.00
ii)	Rural Cooperatives	14	16	18	18	20
iii)	Rural Micro Trade	145	144	145	145	143
iv)	Rural Community Lhakhangs	78	80	84	88	96
v)	Highlanders	0	0	-	62	64
vi)	Urban	27,161	29,842	31,314	33,342	35,303.00
vii)	Religious Institutions	8	8	9	9	9
viii)	Cottage and Small Scale Industries	0	316	336	346	346
ix)	Commercial	6,517	6,965	7,383	7,766	8,378.00
x)	Industrial	27	28	28	28	27
xi)	Agriculture	45	46	42	43	44
xii)	Institutions	1,448	1,494	1,572	1,680	1,866.00
xiii)	Street lighting	139	141	141	143	141
xiv)	Power house auxiliaries	12	13	13	12	12
xv)	Temporary connections	1,537	1,166	1,016	945	848
xvi)	Bulk	62	67	67	62	63
xvii)	EVCS (Electric Vehicle charging station)					14
	<b>LV Total</b>	<b>42,755</b>	<b>46,553</b>	<b>49,019</b>	<b>52,316</b>	<b>55,726</b>
xvii)	Medium Voltage	4	4	6	5	5
xviii)	High Voltage			4	2	3
	<b>Total Customers</b>	<b>42,759</b>	<b>46,557</b>	<b>49,029</b>	<b>52,323</b>	<b>55,734</b>
	% growth over previous year	7.58%	8.88%	5.31%	6.72%	6.52%
<b>4</b>	<b>Total Loss (%)</b>	<b>10.41%</b>	<b>10.25%</b>	<b>3.98%</b>	<b>2.70%</b>	<b>1.39%</b>

Table 5.14: TRONGSA

Sl.No.	Particulars	2019	2020	2021	2022	2023
<b>1</b>	<b>Energy Requirement in kWh</b>					
i)	Purchase from TD	41,957,414.00	41,209,055.00	37,045,447.00	251,182,850.78	559,702,255.77
ii)	Mini/Micro Hydel Generation	126,571.80	169,132.67	21,476.78	0.00	
iii)	Diesel Generation					
iv)	Net Import Bumthang	434,032.00	347,009.00	518,135.05	318,650.00	2,072,000.00
v)	Net Import Zhemgang	182,839.00		223,233.00	548,795.00	72,325.00
vi)	Net Import Zhemgang					260,980.00
vii)	Net Export to Bumthang	-11,398,105.60	-13,265,798.19	-13,382,514.69	-10,234,968.25	
viii)	Net Export to Wangdue					-3,127,283.00
	<b>Total</b>	<b>31,302,751.20</b>	<b>28,459,398.48</b>	<b>24,425,777.14</b>	<b>240,947,882.53</b>	<b>558,980,277.77</b>
	% growth over previous year	-9.85%	-9.08%	-14.17%	886.45%	131.99%
<b>2</b>	<b>Energy Sales in kWh (Category Wise)</b>					
i)	Rural Residential	3,447,527.00	3,759,136.59	3,879,657.00	3,996,107.00	3,910,560.00
ii)	Rural Cooperatives	10,696.00	16,294.00	12,674.00	3.00	170
iii)	Rural Micro Trade	83,809.00	125,848.00	106,406.00	107,258.00	112,400.00
iv)	Rural Community Lhakhangs	5,995.00	11,502.00	15,187.00	21,827.00	31,300.00
v)	Highlanders				-	-
vi)	Urban	1,262,308.00	1,331,078.00	1,307,907.00	1,314,850.00	1,335,072.00
vii)	Religious Institutions	130,893.00	138,809.00	126,507.00	101,771.00	99,402.00
viii)	Cottage and Small Scale Industries	128.00	73,640.00	89,425.00	84,778.00	68,121.00
ix)	Commercial	327,879.00	303,137.00	409,227.00	444,100.00	531,661.00
x)	Industrial	88,376.00	51,721.00	47,285.00	41,195.00	31,296.00
xi)	Agriculture	65.00	144.00	7,985.00	21,937.00	56,108.00
xii)	Institutions	524,889.90	567,890.00	837,172.00	1,050,665.00	1,113,847.00
xiii)	Street lighting	86,127.00	106,642.00	98,462.00	107,664.00	115,123.00
xiv)	Power house auxiliaries	52,125.00	54,585.00	48,378.00	30,084.00	28,313.00
xv)	Temporary connections	248,086.00	169,785.00	173,649.00	292,692.00	263,064.00
xvi)	Bulk	1,130,760.00	972,562.20	876,863.00	748,305.00	959,857.00
xvi)	EVCS (Electric Vehicle charging station)					2,400.00
	<b>LV Total</b>	<b>7,399,663.90</b>	<b>7,682,773.79</b>	<b>8,036,784.00</b>	<b>8,363,236.00</b>	<b>8,658,694.00</b>
xviii)	Medium Voltage	21,392,552.60	17,605,586.15	13,685,976.00	32,587,478.71	10,747,021.66
ix)	High Voltage				198,311,834.50	537,544,146.80
	<b>Total Energy Sales</b>	<b>28,792,216.50</b>	<b>25,288,359.94</b>	<b>21,722,760.00</b>	<b>239,262,549.21</b>	<b>556,949,862.46</b>
	% growth over previous year	-11.45%	-12.17%	-14.10%	1001.44%	132.78%
<b>3</b>	<b>Number of Customers (Categorywise)</b>					
i)	Rural Residential	2,907	3,027	3,047	3,191	3,235.00
ii)	Rural Cooperatives	106	139	5	4	7
iii)	Rural Micro Trade	68	69	56	54	54
iv)	Rural Community Lhakhangs	6	12	14	19	20
v)	Highlanders				-	-
vi)	Urban	667	672	683	684	690
vii)	Religious Institutions	51	49	47	40	37
viii)	Cottage and Small Scale Industries	0	30	29	30	29
ix)	Commercial	102	102	106	121	129
x)	Industrial	17	10	10	10	9
xi)	Agriculture	10	9	236	258	272
xii)	Institutions	177	186	281	301	312
xiii)	Street lighting	14	20	21	22	22
xiv)	Power house auxiliaries	3	3	3	3	3
xv)	Temporary connections	43	50	54	75	77
xvi)	Bulk	108	99	53	57	56
xvii)	EVCS (Electric Vehicle charging station)					1
	<b>LV Total</b>	<b>4,279</b>	<b>4,477</b>	<b>4,645</b>	<b>4,869</b>	<b>4,953</b>
xvii)	Medium Voltage	11	4	12	6	13
xviii)	High Voltage				1	1
	<b>Total Customers</b>	<b>4,290</b>	<b>4,481</b>	<b>4,657</b>	<b>4,876</b>	<b>4,967</b>
	% growth over previous year	3.22%	4.45%	3.93%	4.70%	1.87%
<b>4</b>	<b>Total Loss (%)</b>	<b>8.02%</b>	<b>11.14%</b>	<b>11.07%</b>	<b>0.67%</b>	<b>0.30%</b>

Table 5.15: TRASHIGANG

Sl.No.	Particulars	2019	2020	2021	2022	2023
<b>1</b>	<b>Energy Requirement in kWh</b>					
i)	Purchase from TD	19,877,934.00	14,733,085.00	16,161,991.00	25,692,873.00	14,679,817.00
ii)	Mini/Micro Hydel Generation	7,237,226.00	9,410,780.00	7,861,759.00		9,115,225.00
iii)	Diesel Generation					
iv)	Import from Pemagatshel & Trashi Yangtse	2,304,878.00	1,716,481.00	910,250.00		2,457,344.00
v)	Export to Trashi Yangtse & Mongar	-9,198,332.00	-4,793,865.00	-3,549,170.00	-3,138,579.00	-2,869,524.00
	<b>Total</b>	<b>20,221,706.00</b>	<b>21,066,481.00</b>	<b>21,384,830.0</b>	<b>22,554,294.0</b>	<b>23,382,862.00</b>
	% growth over previous year	1.10%	4.18%	1.51%	5.47%	3.67%
<b>2</b>	<b>Energy Sales in kWh (Category Wise)</b>					
i)	Rural Residential	7,898,696.00	9,416,571.03	9,397,583.00	10,122,611	10,947,162.00
ii)	Rural Cooperatives	25,972.00	15,528.00	17,241.00	18,341	24,638.00
iii)	Rural Micro Trade	208,775.00	215,778.00	216,707.00	249,438	244,554.00
iv)	Rural Community Lhakhangs	316,405.00	286,109.75	293,079.00	320,248	361,570.00
v)	Highlanders	111,839.00	460,732.00	597,554.00	599,618	713,740.00
vi)	Urban	2,167,815.00	1,458,988.19	1,446,032.00	1,621,280	1,543,196.95
vii)	Religious Institutions	298,386.00	314,648.78	338,575.00	350,752	346,096.00
viii)	Cottage and Small Scale Industries	17,428.00	267,477.00	296,299.00	303,864	301,293.00
ix)	Commercial	961,719.00	800,930.22	894,565.00	996,992	1,027,194.20
x)	Industrial	66,232.00	24,611.00	8,764.00	7,097	6,985.00
xi)	Agriculture	62,224.00	59,985.00	68,027.00	41,969	44,218.00
xii)	Institutions	2,452,384.00	2,001,972.99	2,799,688.00	2,677,403	2,855,917.58
xiii)	Street lighting	149,634.00	123,148.00	127,579.00	127,498	131,211.00
xiv)	Power house auxiliaries	36,303.00	37,862.00	32,345.00	34,957	33,323.00
xv)	Temporary connections	144,735.00	122,374.98	113,463.00	193,531	262,389.00
xvi)	Bulk	2,605,301.00	2,211,167.63	2,246,426.00	2,333,637.00	2,502,071.00
xvi)	EVCS (Electric Vehicle charging station)					-
	<b>LV Total</b>	<b>17,523,848.00</b>	<b>17,817,884.57</b>	<b>18,893,927.00</b>	<b>19,999,235.28</b>	<b>21,345,558.73</b>
xvii)	Medium Voltage					
xviii)	High Voltage					
	<b>Total Energy Sales</b>	<b>17,523,848.00</b>	<b>17,817,884.57</b>	<b>18,893,927.00</b>	<b>19,999,235.28</b>	<b>21,345,558.73</b>
	% growth over previous year	0.84%	1.68%	6.04%	5.85%	6.73%
<b>3</b>	<b>Number of Customers (Categorywise)</b>					
i)	Rural Residential	10,186	10,408	10,635	10,838	11,086.00
ii)	Rural Cooperatives	18	19	21	23	23
iii)	Rural Micro Trade	136	139	140	142	143
iv)	Rural Community Lhakhangs	205	219	238	244	251
v)	Highlanders	754	767	781	798	885
vi)	Urban	894	919	916	927	967
vii)	Religious Institutions	57	55	55	56	67
viii)	Cottage and Small Scale Industries	76	106	112	111	118
ix)	Commercial	360	360	369	398	390
x)	Industrial	14	12	12	14	14
xi)	Agriculture	386	392	394	397	425
xii)	Institutions	665	669	657	691	735
xiii)	Street lighting	51	56	54	54	56
xiv)	Power house auxiliaries	2	3	3	3	3
xv)	Temporary connections	39	58	57	74	89
xvi)	Bulk	29	27	31	33	35
xvii)	EVCS (Electric Vehicle charging station)					-
	<b>LV Total</b>	<b>13,872</b>	<b>14,209</b>	<b>14,475</b>	<b>14,803</b>	<b>15,287</b>
xvii)	Medium Voltage					
xviii)	High Voltage					
	<b>Total Customers</b>	<b>13,872</b>	<b>14,209</b>	<b>14,475</b>	<b>14,803</b>	<b>15,287</b>
	% growth over previous year	1.79%	2.43%	1.87%	2.27%	3.27%
<b>4</b>	<b>Total Loss (%)</b>	<b>13.34%</b>	<b>15.42%</b>	<b>11.65%</b>	<b>9.94%</b>	<b>7.01%</b>



**Table 5.16: TRASHI YANGTSE**

Sl. No.	Particulars	2019	2020	2021	2022	2023
<b>1</b>	<b>Energy Requirement in kWh</b>					
i)	Purchase from TD		4,985,531.00	6,953,369.50	9,392,575.50	8,398,487.50
ii)	Mini/Micro Hydel Generation					
iii)	Diesel Generation					
iv)	Import from Trashigang (Chenary & Jamkhar)	7,320,200.00	2,899,905.00	802,709.00		488797.00
v)	Export to Trashigang (Chenary & Jamkhar)	-134,408.00	-204,506.00	-285,924.00	-205,022.00	-188,487.00
	<b>Total</b>	<b>7,185,792.00</b>	<b>7,680,930.00</b>	<b>7,470,154.50</b>	<b>9,187,553.50</b>	<b>8,698,797.50</b>
	% growth over previous year	2.13%	6.89%	-2.74%	22.99%	-5.32%
<b>2</b>	<b>Energy Sales in kWh (Category Wise)</b>					
i)	Rural Residential	3,028,309.50	3,374,835.52	3,324,117.00	3,786,031.00	3,584,135.00
ii)	Rural Cooperatives	3,216.00	2,131.00	1,878.00	1,915.00	2,049.00
iii)	Rural Micro Trade	65,911.00	63,144.00	65,097.00	72,127.00	69,637.00
iv)	Rural Community Lhakhangs	42,793.00	55,287.00	59,852.00	65,212.00	59,576.00
v)	Highlanders	0.00	0.00	0.00	-	-
vi)	Urban	1,303,306.00	1,204,125.82	1,266,322.00	1,411,675.00	1,329,087.00
vii)	Religious Institutions	116,069.00	148,568.00	122,956.00	128,406.00	114,340.00
viii)	Cottage and Small Scale Industries	8,195.00	107,544.00	111,856.00	108,917.00	113,780.00
ix)	Commercial	503,099.00	465,259.00	491,130.00	573,464.00	615,061.00
x)	Industrial	66,233.00	44,236.00	40,526.00	51,826.00	52,436.00
xi)	Agriculture	58,681.00	38,071.00	32,609.00	34,844.00	34,703.00
xii)	Institutions	641,361.00	736,032.00	934,729.00	1,033,964.00	1,101,056.00
xiii)	Street lighting	73,957.00	77,310.00	91,081.00	102,045.00	101,734.00
xiv)	Power house auxiliaries	30,560.00	74,560.00	73,280.00	73,240.00	72,640.00
xv)	Temporary connections	226,786.00	212,788.67	207,661.00	342,508.00	216,224.00
xvi)	Bulk	101,760.00	90,520.00	115,360.00	120,320.00	126,700.00
xvii)	EVCS (Electric Vehicle charging station)					4,387.00
	<b>LV Total</b>	<b>6,270,236.50</b>	<b>6,694,412.01</b>	<b>6,938,454.00</b>	<b>7,906,494.00</b>	<b>7,597,545.00</b>
xvii)	Medium Voltage	52,704.00	36,320.00	97,604.00	145,023.00	49,113.00
xviii)	High Voltage					
	<b>Total Energy Sales</b>	<b>6,322,940.50</b>	<b>6,730,732.01</b>	<b>7,036,058.00</b>	<b>8,051,517.00</b>	<b>7,646,658.00</b>
	% growth over previous year	2.34%	6.45%	4.54%	14.43%	-5.03%
<b>3</b>	<b>Number of Customers (Categorywise)</b>					
i)	Rural Residential	3,925	4,064	4,210	4,382	4,448.00
ii)	Rural Cooperatives	5	5	5	4	5
iii)	Rural Micro Trade	54	56	58	59	56
iv)	Rural Community Lhakhangs	65	67	70	72	74
v)	Highlanders	0	0	-	-	-
vi)	Urban	713	732	772	794	832
vii)	Religious Institutions	25	27	27	30	30
viii)	Cottage and Small Scale Industries	51	58	60	62	62
ix)	Commercial	129	135	143	169	165
x)	Industrial	21	21	22	24	21
xi)	Agriculture	121	129	133	135	141
xii)	Institutions	324	334	356	365	354
xiii)	Street lighting	15	15	17	17	16
xiv)	Power house auxiliaries	2	2	2	2	2
xv)	Temporary connections	73	77	105	114	105
xvi)	Bulk	5	5	5	5	4
xvii)	EVCS (Electric Vehicle charging station)					1
	<b>LV Total</b>	<b>5,528</b>	<b>5,727</b>	<b>5,985</b>	<b>6,234</b>	<b>6,316</b>
xvii)	Medium Voltage	1	1	1	2	1
xviii)	High Voltage					
	<b>Total Customers</b>	<b>5,529</b>	<b>5,728</b>	<b>5,986</b>	<b>6,236</b>	<b>6,317</b>
	% growth over previous year	2.41%	3.60%	4.50%	4.18%	1.30%
<b>4</b>	<b>Total Loss (%)</b>	<b>12.01%</b>	<b>12.37%</b>	<b>5.81%</b>	<b>11.97%</b>	<b>11.84%</b>



Table 5.17: TSIRANG

SI#	Particulars	2019	2020	2021	2022	2023
<b>1</b>	<b>Energy Requirement in kWh</b>					
i)	Purchase from TD	8,235,078.00	8,999,033.00	9,680,711.00	11,129,939.59	10,651,328.00
ii)	Mini/Micro Hydel Generation	420,633.00	425,952.00	523,695.00		538,695.24
iii)	Diesel Generation				0	
iv)	Import from Wangdue	497,455.00	124,272.00	139,518.00	187,840.00	177,328.30
v)	Export					
	<b>Total</b>	<b>9,153,166.00</b>	<b>9,549,257.00</b>	<b>10,343,924.00</b>	<b>11,129,939.59</b>	<b>11,367,351.54</b>
	% growth over previous year	9.11%	4.33%	8.32%	7.60%	2.13%
<b>2</b>	<b>Energy Sales in kWh (Category Wise)</b>					
i)	Rural Residential	5,011,866.00	5,618,204.97	5,924,219.00	6,700,690.45	6,826,306.55
ii)	Rural Cooperatives	14,024.00	12,220.00	10,563.00	14,269.00	13,942.00
iii)	Rural Micro Trade	146,342.00	154,096.00	157,110.00	161,299.00	168,635.00
iv)	Rural Community Lhakhangs	12,769.00	21,722.00	26,259.00	30,185.00	38,099.00
v)	Highlanders				-	-
vi)	Urban	1,153,906.00	1,230,413.44	1,246,470.00	1,371,448.00	1,476,337.00
vii)	Religious Institutions	62,432.00	75,283.00	85,765.00	83,605.00	68,432.00
viii)	Cottage and Small Scale Industries	31,753.00	427,886.74	407,198.00	409,806.00	422,521.00
ix)	Commercial	659,518.00	375,532.00	407,093.00	467,775.00	585,974.00
x)	Industrial	23,698.00	19,587.00	57,827.00	87,975.00	91,872.00
xi)	Agriculture	74,745.00	90,047.12	122,255.00	206,540.00	142,453.00
xii)	Institutions	644,918.00	616,590.93	715,479.00	790,535.00	802,044.00
xiii)	Street lighting	58,346.00	86,214.04	108,128.00	98,925.00	100,914.00
xiv)	Power house auxiliaries	92,963.00	80,872.00	79,193.00	83,333.00	81,782.00
xv)	Temporary connections	110,220.00	106,537.74	135,873.00	103,664.00	57,646.00
xvi)	Bulk	505,187.00	433,498.00	601,516.00	598,042.00	526,087.00
xvii)	EVCS (Electric Vehicle charging station)					47,220.00
	<b>LV Total</b>	<b>8,602,687.00</b>	<b>9,348,704.98</b>	<b>10,084,948.00</b>	<b>11,208,091.45</b>	<b>11,450,264.55</b>
xviii)	Medium Voltage					
	<b>Total Energy Sales</b>	<b>8,602,687.00</b>	<b>9,348,704.98</b>	<b>10,084,948.00</b>	<b>11,208,091.45</b>	<b>11,450,264.55</b>
	% growth over previous year	6.15%	8.67%	7.88%	11.14%	2.16%
<b>3</b>	<b>Number of Customers (Categorywise)</b>					
i)	Rural Residential	5,316	5,484	5,721	5,865	6,045.00
ii)	Rural Cooperatives	9	9	9	9	9
iii)	Rural Micro Trade	103	103	103	104	103
iv)	Rural Community Lhakhangs	17	19	19	20	26
v)	Highlanders	0	0	-	-	-
vi)	Urban	618	614	623	679	721
vii)	Religious Institutions	16	17	20	20	20
viii)	Cottage and Small Scale Industries	97	109	109	107	104
ix)	Commercial	151	156	174	4	230
x)	Industrial	3	3	4	180	7
xi)	Agriculture	99	111	119	280	134
xii)	Institutions	224	242	269	29	285
xiii)	Street lighting	22	26	29	3	29
xiv)	Power house auxiliaries	3	3	3	35	3
xv)	Temporary connections	16	34	32	6	18
xvi)	Bulk	5	6	6	6	6
xvii)	EVCS (Electric Vehicle charging station)					1
	<b>LV Total</b>	<b>6,699</b>	<b>6,936</b>	<b>7,240</b>	<b>7,347</b>	<b>7,741</b>
xviii)	Medium Voltage					
	<b>Total Customers</b>	<b>6,699</b>	<b>6,936</b>	<b>7,240</b>	<b>7,347</b>	<b>7,741</b>
	% growth over previous year	3.40%	3.54%			5.36%
<b>4</b>	<b>Total Loss (%)</b>	<b>6.01%</b>	<b>2.10%</b>	<b>2.50%</b>	<b>-0.70%</b>	<b>-1.07%</b>

**Table 5.18: WANGDUE PHODRANG**

SI#	Particulars	2019	2020	2021	2022	2023
<b>1</b>	<b>Energy Requirement in kWh</b>					
i)	Purchase from TD	62,896,108.60	51,421,402.59	48,788,021.20	52,215,417.41	49,629,176.00
ii)	Mini/Micro Hydel Generation	1,550,569.29	1,499,442.00	911,639.00		789,175.06
iii)	Diesel Generation					
iv)	Import from Trongsa	3,061,569.60	5,325,633.19	4,466,372.90		2338700.00
v)	Export to Tsirang	-497,455.00	-123337.00	-139,518.00	-177,415.00	-177328.34
vi)	HV Purchase	39,337,373.00	30,362,402.00	25,659,641.00	22,032,200.00	19,766,711.00
	<b>Total</b>	<b>67,010,792.49</b>	<b>58,123,140.78</b>	<b>54,026,515.10</b>	<b>52,038,002.41</b>	<b>52,579,722.72</b>
	% growth over previous year	0.12%	-13.26%	-7.05%	-3.68%	1.04%
<b>2</b>	<b>Energy Sales in kWh (Category Wise)</b>					
i)	Rural Residential	7,691,882.00	8,845,923.11	9,165,760.00	9,728,683.00	9,943,884.00
ii)	Rural Cooperatives	10,040.00	13,766.00	15,687.00	19,001.00	12,751.00
iii)	Rural Micro Trade	95,852.00	113,012.00	125,898.00	141,751.00	167,870.00
iv)	Rural Community Lhakhangs	85,567.00	157,000.00	167,127.00	171,261.00	194,298.00
v)	Highlanders	0.00	0.00	0.00	-	-
vi)	Urban	3,068,017.00	3,125,259.00	3,035,904.00	3,140,522.00	2,898,928.00
vii)	Religious Institutions	509,470.00	615,243.00	628,940.00	614,112.00	663,495.00
viii)	Cottage and Small Scale Industries	71,857.00	871,450.00	652,255.00	838,230.00	1,238,575.00
ix)	Commercial	3,291,002.80	2,290,307.00	2,171,208.00	2,390,366.60	2,813,593.00
x)	Industrial				-	-
xi)	Agriculture	352,744.00	262,299.88	270,531.00	260,916.00	331,356.00
xii)	Institutions	2,267,611.00	2,049,900.00	2,355,951.00	2,349,861.00	2,474,930.89
xiii)	Street lighting	268,508.00	267,091.00	255,602.00	238,852.00	339,697.00
xiv)	Power house auxiliaries	11,862.00	11,042.00	8,068.00	8,270.00	6,707.00
xv)	Temporary connections	2,500,476.85	2,292,189.00	2,710,068.00	3,496,917.00	4,347,652.00
xvi)	Bulk	4,032,182.00	3,334,896.50	2,868,208.00	3,455,937.70	4,085,149.00
xvii)	EVCS (Electric Vehicle charging station)					29,540.00
	<b>LV Total</b>	<b>24,257,071.65</b>	<b>24,249,378.49</b>	<b>24,431,207.00</b>	<b>26,854,680.30</b>	<b>29,548,425.89</b>
xvii)	Medium Voltage	72,887.00	522,121.00	444,581.00	234,556.00	91,737.00
xviii)	High Voltage	39,052,494.00	30,343,138.00	25,659,641.00	21,969,000.00	19,516,695.00
	<b>Total Energy Sales</b>	<b>63,382,452.65</b>	<b>55,114,637.49</b>	<b>50,535,429.00</b>	<b>49,058,236.30</b>	<b>49,156,857.89</b>
	% growth over previous year	-0.27%	-13.04%	-8.31%	-2.92%	0.20%
<b>3</b>	<b>Number of Customers (Categorywise)</b>					
i)	Rural Residential	6,342	6,674	6,829	6,991	7,153.00
ii)	Rural Cooperatives	6	6	6	6	6
iii)	Rural Micro Trade	44	50	53	56	59
iv)	Rural Community Lhakhangs	90	111	134	136	143
v)	Highlanders	0	0	-	-	-
vi)	Urban	1,515	1,486	1,480	1,487	1,489.00
vii)	Religious Institutions	68	69	67	66	74
viii)	Cottage and Small Scale Industries	89	121	130	137	137
ix)	Commercial	554	538	528	537	592
x)	Industrial			1	-	-
xi)	Agriculture	295	319	419	463	485
xii)	Institutions	455	469	476	493	512
xiii)	Street lighting	31	37	37	37	37
xiv)	Power house auxiliaries	2	2	2	2	2
xv)	Temporary connections	334	327	339	340	272
xvi)	Bulk	30	26	24	24	29
xvii)	EVCS (Electric Vehicle charging station)					2
	<b>LV Total</b>	<b>9,855</b>	<b>10,235</b>	<b>10,525</b>	<b>10,775</b>	<b>10,992</b>
xvii)	Medium Voltage	1	1	1	1	-
ix)	High Voltage	1	1	1	1	1
	<b>Total Customers</b>	<b>9,857</b>	<b>10,237</b>	<b>10,527</b>	<b>10,777</b>	<b>10,993</b>
	% growth over previous year	2.71%	3.86%	2.83%	2.37%	2.00%
<b>4</b>	<b>Total Loss (%)</b>	<b>5.41%</b>	<b>5.18%</b>	<b>6.46%</b>	<b>5.81%</b>	<b>6.49%</b>

**Table 5.19: ZHEMGANG**

Sl#	Particulars	2019	2020	2021	2022	2023
<b>1</b>	<b>Energy Requirement in kWh</b>					
i)	Purchase from TD	4,719,569.50	4,878,435.00	5,159,205.00	7,942,376.53	6,595,189.50
ii)	Mini/Micro Hydel Generation	469,054.37	561,474.34	707,814.04		449,472.36
iii)	Diesel Generation					
iv)	Import from Pema Gatsel/Trongsa	892,103.50	1,368,114.50	1606470.00		1473428.00
v)	Export to Trongsa	-182,839.00	-234,430.00	-223,053.00	-233,351.00	-72,325.00
	<b>Total</b>	<b>5,897,888.37</b>	<b>6,573,593.84</b>	<b>7,250,436.04</b>	<b>7,709,025.53</b>	<b>8,445,764.86</b>
	% growth over previous year	1.1%	11.5%	10.3%	6.3%	9.6%
<b>2</b>	<b>Energy Sales in kWh (Category Wise)</b>					
i)	Rural Residential	2,306,331.00	2,583,908.00	2756224.00	3,021,357.28	3,446,570.24
ii)	Rural Cooperatives	3,596.00	5,437.00	2380.00	2,648.00	3,016.00
iii)	Rural Micro Trade	50,709.00	54,638.00	55403.00	56,163.00	57,577.00
iv)	Rural Community Lhakhangs	56,380.00	66,634.00	57559.00	63,173.00	73,641.00
v)	Highlanders				-	-
vi)	Urban	1,121,323.00	1,113,782.00	1025081.00	1,041,098.99	1,013,909.67
vii)	Religious Institutions	82,570.00	87,183.00	88872.00	101,097.00	100,756.00
viii)	Cottage and Small Scale Industries		76,477.00	105228.00	117,018.00	146,768.00
ix)	Commercial	385,081.00	322,639.00	381501.00	455,015.25	466,723.99
x)	Industrial	11,809.00	4,982.37	2533.00	42	-
xi)	Agriculture	38,125.00	47,514.63	19271.00	10,672.00	7,772.00
xii)	Institutions	1,072,115.00	1,024,696.48	1223588.00	1,291,001.69	1,375,623.00
xiii)	Street lighting	92,277.00	92,620.00	102244.00	104,156.00	134,071.00
xiv)	Power house auxiliaries				-	-
xv)	Temporary connections	41,859.00	79,790.00	96474.00	114,667.00	97,606.00
xvi)	Bulk	161,425.00	142,398.00	287,871.00	229,842.00	754,777.00
						-
	<b>LV Total</b>	<b>5,423,600.00</b>	<b>5,702,699.48</b>	<b>6,204,229.00</b>	<b>6,607,951.21</b>	<b>7,678,810.90</b>
xvii)	Medium Voltage					
xviii)	High Voltage					
	<b>Total Energy Sales</b>	<b>5,423,600.00</b>	<b>5,702,699.48</b>	<b>6,204,229.00</b>	<b>6,607,951.21</b>	<b>7,678,810.90</b>
	% growth over previous year	1.0%	5.1%	8.8%	6.5%	16.2%
<b>3</b>	<b>Number of Customers (Categorywise)</b>					
i)	Rural Residential	2,899	3,015	3,307	3,625	3,764.00
ii)	Rural Cooperatives	19	20	11	11	11
iii)	Rural Micro Trade	38	41	39	41	41
iv)	Rural Community Lhakhangs	70	79	79	92	95
v)	Highlanders	0	0	-	-	-
vi)	Urban	768	764	687	677	676
vii)	Religious Institutions	38	36	36	37	36
viii)	Cottage and Small Scale Industries	0	24	31	32	31
ix)	Commercial	135	117	121	139	151
x)	Industrial	12	10	1	-	-
xi)	Agriculture	24	28	35	35	37
xii)	Institutions	310	307	325	340	360
xiii)	Street lighting	35	36	38	40	42
xiv)	Power house auxiliaries				-	-
xv)	Temporary connections	46	45	28	23	36
xvi)	Bulk	7	10	8	4	12
xvii)	EVCS (Electric Vehicle charging station)					-
	<b>LV Total</b>	<b>4,401</b>	<b>4,532</b>	<b>4,746</b>	<b>5,096</b>	<b>5,292</b>
xvii)	Medium Voltage					
xviii)	High Voltage					
	<b>Total Customers</b>	<b>4,401</b>	<b>4,532</b>	<b>4,746</b>	<b>5,096</b>	<b>5,292</b>
	% growth over previous year	2.92%	2.98%	4.72%	7.37%	3.85%
<b>4</b>	<b>Total Loss (%)</b>	<b>8.04%</b>	<b>13.25%</b>	<b>14.43%</b>	<b>12.77%</b>	<b>9.00%</b>

## 5.20. PATTERN OF DAILY ELECTRICITY USE

Comparison of domestic load consumption pattern of Thimphu and Phuentsholing during summer and winter for year 2023 shown in Table 5.20. Thimphu has huge energy demand variances during winter and summer while Phuentsholing has very negligible variances.

**TABLE 5.20 : COMPARISON OF DAILY ELECTRICITY USE IN THIMPHU AND PHUENTSHOLING**

Time	Thimphu Load		Phuentsholing Load*	
	Jun-23	Dec-23	Jun-23	Dec-23
	Summer Load (MW)	Winter Load (MW)	Summer Load (MW)	Winter Load (MW)
0:00	21.80	45.11	4.24	3.16
1:00	20.39	40.01	3.95	3.05
2:00	19.87	37.78	3.77	2.90
3:00	19.54	34.20	3.79	2.84
4:00	19.62	32.86	3.88	2.95
5:00	20.40	34.48	4.00	3.12
6:00	27.32	38.97	4.49	3.54
7:00	33.36	51.89	4.90	4.81
8:00	31.39	67.74	5.28	5.72
9:00	30.97	70.07	5.65	5.04
10:00	31.97	71.03	6.47	5.42
11:00	30.32	69.24	6.64	5.02
12:00	31.92	67.58	6.72	4.95
13:00	30.60	64.29	5.74	5.24
14:00	27.02	61.03	5.51	3.83
15:00	27.52	60.50	6.24	4.35
16:00	28.33	61.96	6.22	4.03
17:00	29.00	69.28	6.09	4.37
18:00	32.01	81.19	5.90	6.43
19:00	35.45	88.12	6.53	6.17
20:00	39.99	87.00	6.82	5.92
21:00	35.89	81.66	6.00	5.23
22:00	29.46	70.9	5.57	4.47
23:00	24.78	55.94	4.7	3.7

 - Minimum load  - Maximum load

### 5.3 Dzongkhagwise Reliability Indices in 2023 (all outages accounted)

Sl.No.	Division	January			February			March			April			May		
		SAIFI	SAIDI	MAIFI	SAIFI	SAIDI	MAIFI	SAIFI	SAIDI	MAIFI	SAIFI	SAIDI	MAIFI	SAIFI	SAIDI	MAIFI
1	Bumthang	0.21	0.03	0	0.76	0.63	0.12	1.2	0.862	0.001	0	0	0.001	0.479	0.254	0
2	Chhukha	0.52	2.1	0	0.09	0.09	0	4.549	0.543	0.001	4.162	0.574	0.001	6.105	0.632	0.922
3	Dagana	2.2	0.92	0.08	1.81	0.47	0.98	6.297	0.991	0.002	4.084	0.991	0.001	6.742	1.017	3.037
4	Haa	2.37	1.42	0.32	2.38	1.74	0.37	5.565	0.714	0	7.214	0.734	0.001	6.266	0.787	1.887
5	Lhuentse	0	0	0	0	0	0	0.274	0.171	0	0.334	0.33	0	0.067	0.067	0.133
6	Mongar	0.85	0.56	0	1.22	1.8	0	5.147	0.563	0.001	3.72	0.658	0	2.146	0.552	0.34
7	Paro	4.51	10.96	1.82	7.84	10.91	1.61	7.039	1.643	0.002	4.624	1.697	0.002	3.229	1.83	1.168
8	Pema Gatshel	2.05	1.36	0.4	4	5.85	0.65	16.448	0.979	0.007	6.765	0.979	0.006	6.445	0.857	1.525
9	Punakha	0.91	0.38	1.92	0.71	0.71	4.04	2.633	0.924	0.001	3.762	1.326	0.001	5.007	0.999	10.059
10	Samdrup Jongkhar	4.74	3.47	1.27	4.17	5.63	2.93	9.514	0.083	0.001	13.804	0.461	0	8.713	0.992	5.767
11	Samtse	0.45	0.58	0.48	1.35	1	0.42	2.014	1.358	0.001	6.028	1.379	0.001	6.832	1.413	0.934
12	Sarpang	0.11	0.09	0.05	0.04	0.02	0	0.245	0.082	0	0.076	0.037	0	2.099	1.104	0.066
13	Thimphu	0.14	0.07	0.09	0.16	0.09	0.06	0.279	0.119	0	1.964	0.153	0	0.137	0.124	0.203
14	Trashigang	1.58	1.52	4.54	1.31	0.54	0.91	0.984	0.994	0	1.419	1.728	0	5.943	1.278	4.032
15	Trashigang	1.51	0.44	0	0.97	0.46	0	1.033	0.631	0.001	0.826	0.305	0.001	0.429	0.636	0
16	Trongsa	3.19	7.09	0.54	1.48	0.35	0.14	2.836	1.353	0	2.663	0.784	0	3.147	1.394	2.43
17	Tsirang	2.22	1.45	0.55	1.17	0.57	0.68	0	0	0	0	0	0	2.016	1.089	1.321
18	Wangdue Phodrang	1.62	1.17	0.18	2.34	0.69	1.03	0.806	0.324	0	1.202	0.744	0	2.581	0.723	0.831
19	Zhemgang	1.18	0.91	2.36	6.68	7.61	5.27	8.271	0.687	0	7.305	0.687	0	6.656	0.7	4.025
	<b>BPC Overall</b>	<b>1.09</b>	<b>1.33</b>	<b>0.47</b>	<b>1.36</b>	<b>1.42</b>	<b>0.62</b>	<b>2.76</b>	<b>0.539</b>	<b>0.001</b>	<b>2.963</b>	<b>0.54</b>	<b>0.001</b>	<b>3.254</b>	<b>0.771</b>	<b>1.452</b>

Sl.No.	Division	June			July			August			September			October		
		SAIFI	SAIDI	MAIFI	SAIFI	SAIDI	MAIFI	SAIFI	SAIDI	MAIFI	SAIFI	SAIDI	MAIFI	SAIFI	SAIDI	MAIFI
1	Bumthang	1.228	0.891	0.393	1.668	0.91	0.085	1.234	0.604	0.135	2.302	8.070	0.172	0.840	0.300	0.000
2	Chhukha	3.907	0.526	0.837	4.638	0.528	0.639	4.742	0.941	1.032	5.051	8.200	0.434	2.340	4.380	0.879
3	Dagana	8.176	1.01	3.322	5.841	1.024	5.46	11.55	0.959	3.832	7.333	7.700	3.452	5.380	2.800	3.696
4	Haa	5.497	0.748	2.183	9.959	0.748	1.266	5.713	0.992	2.047	2.945	4.920	0.000	3.290	2.450	0.840
5	Lhuentse	0.862	0.482	6.2	0.536	0.499	7.462	2.79	0.881	4.386	0.792	3.620	1.116	2.030	1.450	0.000
6	Mongar	4.631	0.762	0.17	7.523	0.889	2.207	7.972	0.894	3.184	5.626	9.010	4.431	2.910	4.350	0.343
7	Paro	1.825	0.891	1.92	1.519	1.146	3.35	1.985	0.946	0.988	0.365	0.900	2.338	0.470	1.260	2.815
8	Pema Gatshel	10.185	0.942	2.568	7.851	0.94	3.541	4.795	0.926	1.854	6.328	8.190	2.137	4.040	8.730	1.836
9	Punakha	5.626	0.725	9.043	6.615	0.984	3.774	3.345	0.979	1.536	4.273	3.120	0.785	6.540	5.170	0.967
10	Samdrup Jongkhar	6.695	0.998	4.401	6.114	0.992	7.218	6.721	0.99	6.801	10.507	9.020	10.925	5.530	3.690	6.547
11	Samtse	2.534	1.238	0.915	2.657	0.974	0.197	3.841	1.35	0.494	1.832	1.840	1.113	1.420	1.990	0.236
12	Sarpang	5.885	1.106	0.685	4.597	1.004	0.594	2.473	1.113	0.374	5.131	5.270	0.353	4.410	4.600	0.000
13	Thimphu	0.45	0.114	0.083	0.593	0.261	0.65	0.328	0.221	0.058	0.207	0.150	0.060	0.210	0.310	0.036
14	Trashigang	1.069	0.599	12.092	2.508	1.175	26.538	2.881	1.407	16.199	7.071	4.730	9.864	2.440	0.720	10.461
15	Trashigang	0.846	0.426	0.467	2.187	0.628	0.843	3.114	0.94	0.7	1.395	1.820	0.581	2.420	1.880	1.010
16	Trongsa	3.851	0.707	7.288	5.196	1.636	18.156	6.101	1.581	7.482	5.378	7.100	6.986	4.670	4.330	7.140
17	Tsirang	2.007	0.603	1.819	2.807	0.948	2.734	3.755	1.405	3.789	2.299	3.910	3.310	2.470	2.620	2.875
18	Wangdue Phodrang	0.726	0.589	1.433	3.172	0.846	2.025	1.698	0.804	1.041	3.554	6.030	1.077	1.550	0.950	1.921
19	Zhemgang	4.453	0.726	10.239	16.068	0.877	8.727	15.808	0.847	6.603	6.710	6.540	4.358	5.080	1.780	1.634
	<b>BPC Overall</b>	<b>3.002</b>	<b>0.638</b>	<b>2.11</b>	<b>3.659</b>	<b>0.755</b>	<b>3.019</b>	<b>3.534</b>	<b>0.843</b>	<b>1.989</b>	<b>3.225</b>	<b>4.081</b>	<b>1.922</b>	<b>2.331</b>	<b>2.461</b>	<b>1.528</b>

Sl.No.	Division	November			December			Total (Jan - Dec)			Avg (Jan - Dec)		
		SAIFI	SAIDI	MAIFI	SAIFI	SAIDI	MAIFI	SAIFI	SAIDI	MAIFI	SAIFI	SAIDI	MAIFI
1	Bumthang	2.231	13.130	0.000	0.487	1.520	0.000	12.639	27.201	0.907	1.053	2.267	0.076
2	Chhukha	1.699	1.890	0.752	2.475	8.890	0.084	40.278	29.294	5.581	3.357	2.441	0.465
3	Dagana	3.037	2.620	2.966	4.728	2.250	1.641	67.178	22.752	28.469	5.598	1.896	2.372
4	Haa	1.282	2.410	0.865	3.581	2.070	1.605	56.062	19.733	11.384	4.672	1.644	0.949
5	Lhuentse	1.379	0.820	0.406	0.052	0.130	0.234	9.116	8.450	19.937	0.760	0.704	1.661
6	Mongar	4.155	2.680	0.157	1.800	0.670	0.168	47.700	23.388	11.001	3.975	1.949	0.917
7	Paro	1.126	0.930	0.235	2.410	1.340	1.145	36.942	34.453	17.393	3.079	2.871	1.449
8	Pema Gatshel	7.568	20.540	0.484	2.983	2.790	0.396	79.458	53.083	15.404	6.622	4.424	1.284
9	Punakha	4.630	7.290	2.114	2.917	1.890	0.375	46.968	24.497	34.615	3.914	2.041	2.885
10	Samdrup Jongkhar	4.458	8.960	1.823	3.143	3.180	1.034	84.109	38.466	48.717	7.009	3.206	4.060
11	Samtse	0.494	1.400	0.257	1.562	1.440	0.208	31.014	15.962	5.256	2.585	1.330	0.438
12	Sarpang	0.666	0.730	0.000	1.035	2.280	0.000	26.767	17.436	2.122	2.231	1.453	0.177
13	Thimphu	0.069	0.050	0.047	0.080	0.310	0.017	4.617	1.972	1.304	0.385	0.164	0.109
14	Trashi Yangtse	1.251	0.340	4.885	2.458	1.090	3.438	30.914	16.121	92.959	2.576	1.343	7.747
15	Trashigang	2.560	1.020	0.102	0.864	0.630	0.289	18.154	9.816	3.994	1.513	0.818	0.333
16	Trongsa	2.489	1.850	1.644	1.008	5.030	4.601	42.009	33.205	56.407	3.501	2.767	4.701
17	Tsirang	2.478	2.470	1.088	1.033	3.510	0.980	22.255	18.575	19.146	1.855	1.548	1.596
18	Wangdue Phodrang	0.315	0.470	0.007	3.011	1.650	0.182	22.575	14.990	9.727	1.881	1.249	0.811
19	Zhemgang	9.742	29.980	2.723	7.532	20.830	2.149	95.485	72.174	48.088	7.957	6.015	4.007
	<b>BPC Overall</b>	<b>1.924</b>	<b>3.247</b>	<b>0.669</b>	<b>1.730</b>	<b>2.534</b>	<b>0.560</b>	<b>30.832</b>	<b>19.159</b>	<b>14.341</b>	<b>2.569</b>	<b>1.597</b>	<b>1.195</b>

**CHAPTER 6**  
**ELECTRICITY TARIFF**

The information on various electricity tariff is given in this chapter. The electricity tariff levied by BPC to

**Table 6.1: DOMESTIC ELECTRICITY TARIFFS LEVIED BY BPC**

Tariff Structure	Unit	1 <sup>st</sup> July 2017 to 30 <sup>th</sup> Jun 2018	1st July 2021 to 31st August 2022	1st September 2022 - 30th JUNE 2025
<b>Low Voltage (LV)</b>				
LV Block I (Rural) 0-100 kWh	Nu./kWh	0	0	0
LV Block I (Highlanders) 0-200 kWh	Nu./kWh		0	0
LV Block I (Others) 0-100 kWh	Nu./kWh	1.28	1.28	1.28
LV Block II (All) 101-500 kWh	Nu./kWh	2.6	2.68	2.66
LV Block III (All) >500 kWh	Nu./kWh	3.43	3.64	
LV Bulk	Nu./kWh	3.9	4.14	
<b>Medium Voltage (MV)</b>				
Energy Charge	Nu./kWh	2.07	2.65	1.6
Demand Charge	Nu./kVA/Month	275	325	170
<b>High Voltage (HV)</b>				
Energy Charge	Nu./kWh	1.59	1.5	1.6
Demand Charge	Nu./kVA/Month	262	292	496

**Table 6.2: AVERAGE TARIFF**

Customer	From Jan 2016	From Jan 2018	1st July 2021 to 31st August 2022	1st SEPTEMBER 2022 - 30th JUNE 2025
HV	2.23	2.25	2.26	2.66
MV	5.25	5.68	5.15	2.66
LV	5.74	5.88	5.06	2.66

**Table 6.3: WHEELING CHARGES**

	Oct 2013 - June 2014	July 2015 - Dec 2016	1st July 2021 to 31st August 2022	1st SEPTEMBER 2022 - 30th JUNE 2025
<b>Charges (Nu/kWh)</b>	0.114	0.114	0.270	0.230

**Table 6.4: ELECTRICITY TARIFF LEVIED BY GENERATING COMPANIES**

Name of Plant	Export Tariff (Nu/kWh)	Domestic Tariff		
		From Oct 2013- Dec 2016	1st July 2021 - 31st August 2022	1st July 2024 - 30th June 2025
Chukha	3.00	0 Nu/kWh for 15% of energy generated and the remaining at 1.39 Nu/kWh	1.42	1.34
Basochhu				
Kurichhu	2.23	0 Nu/kWh for 15% of energy generated and the remaining at 1.39 Nu/kWh	1.42	1.34
Tala	2.23	0 Nu/kWh for 15% of energy generated and the remaining at 1.39 Nu/kWh	1.42	1.34
Dagachhu	3.399	-	1.42	1.34
Mangdechhu	4.12	-	3.77	3.64

**6.5 IMPORT TARIFF**

Particulars	Tariff (Nu/kWh)
ASEB	2.12 + Wheeling Charge (0.2) + 12% loss
WBSEB	2.25 + Wheeling Charge (0.2) + 12% loss



## CHAPTER 7

### FIBER NETWORK

This chapter provides information on the ground wire with Optical Ground Wire (OPGW) on transmission lines and All Dielectric Self Supporting (ADSS) Optical Fibers on BPC distribution Poles. The National Broadband Master Plan of Bhutan envisages optical fiber connectivity to all the twenty (20) District Headquarters and Gewogs. As part of the first phase of the National ICT Broadband Master Plan, BPC has carried out live line replacement of the existing Ground Wire with OPGW on existing 220kV, 132kV and 66kV transmission lines and live line installation of All Dielectric Self Supporting (ADSS) Optical Fibers on existing BPC distribution Poles. The OPGW has terminated at the high voltage substations of BPC, which are generally located near the Dzongkhag Headquarters.

All Dielectric Self Supporting (ADSS) Optical Fiber cable connectivity is taken up from the high voltage substations to the Districts Headquarters, BPC Offices, Gewog Centers and further extended to the government offices. The total OPGW line length coverage around the country is 1543.23 KM (table 7.1) and total ADSS line length coverage around the country is 5,334.86 KM (table 7.2) as of December 2023.

**Table 7.1: OPTICAL GROUND WIRE (OPGW) IN TRANSMISSION LINES**

Sl #	Terminal Points	Line Length (KM)	Voltage level (kV)	Total No. of fibres
1	Malbase - Siliguri	27.08	400	24
2	MHEP - Jigmeling	169.73	400	24
<b>Sub -Total</b>		<b>196.81</b>		
3	Semtokha - Rurichu (BHPC)	37.24	220	24
4	Semtokha - Chhukha	57.20	220	24
5	Chhukha - Malbase	33.30	220	24
6	Darjey - Dagapela	25.23	220	16
7	Darjey - Dagachhu	22.44	220	8
8	Darjey - Jigmeling	33.95	220	24
9	Jigmeling - Gelephu	16.93	220	24
10	Malbase-Damdum	42.82	220	24
<b>Sub -Total</b>		<b>269.11</b>		
11	Gelephu-Tintibi	49.06	132	24
12	Tintibi-Nganglam	82.93	132	24
13	Nangkhor-Deothang	25.60	132	24
14	Nangkhor-Nganglam	36.80	132	24
15	Kurichhu-Nangkhor	33.74	132	24
16	Kurichhu-Kilikhar	11.39	132	24
17	Kilikhar-Kanglung	32.19	132	12
18	Kilikhar-Corlung	47.92	132	12
19	Kanglung - Corlung	24.45	132	12
20	Kilikhar-Tangmachu	45.93	132	24
21	Deothang - Motanga	12.33	132	24
22	Motang - Phuntshothang	23.03	132	24
23	Phuntshothang - Kanglung	55.56	132	24
24	Motanga-Nganglam	34.92	132	24
25	MHEP- Yurmoo	1.84	132	24
<b>Sub - Total</b>		<b>517.69</b>		
26	Olakha -Gigakom Hydel	13.33	66	24
27	Gigakom Hydel - Chumdo	8.33	66	24
28	Chumdo - Paro	25.08	66	24
29	Chumdo - Haa	35.64	66	24
30	Chumdo - Watsa	16.24	66	12
31	Watsa - Chhukha	22.96	66	12
32	Chumdo - Chukha	38.00	66	12
33	Chukha - Gedu	21.70	66	24
34	Gedu -Phuentsholing	18.01	66	24
35	Rurichu -Tsirang	50.55	66	24
36	Lobesa-Rurichhu	21.90	66	24
37	Tintibi - Yurmoo	32.29	66	24
38	Yurmoo - Garpang	39.36	66	24
39	Yurmoo - Kewathang	18.90	66	24
40	Olakha - Simtokha	1.90	66	24
41	Malbase - Singegaon	2.50	66	24
42	Singegaon - Phuentsholling	9.10	66	24
43	Tala Power House - Malbase	27.80	66	24
44	Phuntsholing - Gomtu	28.29	66	24
45	Gomtu - Damdum	15.84	66	24
46	Damdum - Sipsoo	28.30	66	24
47	Dechencholing - Damji	47.98	66	24
48	Jemina-Changedaphu	11.10	66	24
49	Simtokha-Lobesa	24.55	66	24
<b>Sub - Total</b>		<b>559.62</b>		
<b>Grand Total</b>		<b>1,543.23</b>		

**Table 7.2: ALL DIELECTRIC SELF SUPPORTING (ADSS) OPTICAL FIBER CABLE**

Sl#	Dzongkhag	Terminal point (A)	Terminal point (B)	Line Length (KM)	Total No of fibers
1	Bumthang	Garpang S/S	Chumey gewog	12.16	12
			Tang	14.76	12
			Chhoekhor	11.83	12
			Ura	25.97	12
2	Chhukha	Gedu S/S	Getena	28.11	4
			Darla	10.30	4
			ESSD Gedu	1.13	2
			Bongo	8.38	48
		Watsa S/S	Chapcha	3.39	12
			Tsimasham ESSD	6.41	8
		Chukha S/yard	Bjachho	2.05	8
			Geling	18.78	8
			Malabase S/S	Sampheling	5.41
		Phuntsholing S/S	Metekha	31.60	6
			Dungna	27.33	6
			Logchina	12.51	6
			Phuntsholing	4.80	6
		Gedu S/S	Deorali/ Karmaling	73.27	4
			Lhamoizingkha	62.77	6
			Ninchula	73.81	4
		Darla	Sinchula BHU	0.94	24
		Darla	Rinchentse BHU	0.28	24
		Darla	Arikha BHU	0.14	24
		Dungna	BHU	0.26	24
Logchina	Khatokha BHU	0.45	24		
3	Dagana	Dagapela S/S	Goshi	4.51	24
			Tsendagang	3.29	24
			Kana	17.24	12
			Tseza	31.68	12
			Tashiding	8.33	24
			Dorona	15.07	12
			Geserling	6.98	12
			Khibisa	12.57	24
			PL2 tower	5.00	24
		Darjei S/S (Tsirang)	Drujegang	16.44	8
			Lajab	25.42	8
			Tshangkha	16.89	8
		Lhamoizingkha BTL	PL2-31 tower	3.13	24
4	Gasa	Goenkhatoe T-point	Laya	28.80	24
		Lobesa S/S	Goenkhatoe	59.93	4
			Goenkhamae	50.59	2
5	Haa	Phuntsholing S/S	Gakiling	59.36	4
			Sombaykha	73.45	4
		Haa S/S	Bji	7.08	8
			ESD office	1.65	8
			Samar	12.82	12
			Eusu	5.71	12
			Katsho	1.88	8

Sl#	Dzongkhag	Terminal point (A)	Terminal point (B)	Line Length (KM)	Total No of fibers
6	Lhuntse	Tangmachu S/S	ESD office	11.56	6
			Dungkhar	39.85	6
			Khoma	13.61	6
			Gangzur	17.44	6
			Metsho	28.85	12
			Tshenkhar	21.38	8
			Jarey	33.40	8
			Menbi	2.96	24
			Menjey	4.22	24
			Ura, Bumthang	58.32	24
		Gangzur	Thimyul BHU	1.33	24
		Khoma	BHU	1.81	24
		Tsenkhar	Autsho BHU	0.98	24
		Menbi	Tangmachu BHU	0.28	24
		Medtsho	Gortsum BHU	0.76	24
Minjey	BHU	1.07	24		
7	Mongar	kilikhar S/S	Drepung	5.71	6
			Kengkhar	30.64	6
			Silambi	55.07	6
			Jurmey	32.02	6
			Ngatsang	17.60	12
			Chaskhar	24.45	6
			Thangrong	35.82	6
			Sermung	27.99	12
			Balam	24.47	12
			ESD Mongar	5.15	12
			Mongar	5.32	12
			Saling	15.84	6
			Tsamang	36.52	6
			Chali	12.51	6
			Tsakaling	17.02	6
			Bondeyma Gyalsung	17.73	24
		Kanglung S/S	Dramitse	13.54	6
			Narang	21.50	6
		T-off Kurizampa	Gelposhing TMD	0.66	2
		Nganglam S/S	Gongdue	28.42	8
		Mongar	Dzongdag Residence	0.30	24
Weringla	Dzongkhag	0.70	24		
8	Paro	Olathang S/S	Hungrel	2.18	6
			Dopshari	5.07	6
			Doteng	8.37	6
			Shaba	9.86	6
			Paro ESD	2.30	6
			Wangchang	2.45	24
			Royal Academy	19.02	6
			Lyuni	5.57	12
			Tsento	13.77	24
			Lango	7.56	24
		Chumdo S/S	Doga	5.23	24
		Watsa S/S	Naja	16.88	24
		Dogar	Chuzom RBP Check Point	0.29	24

Sl#	Dzongkhag	Terminal point (A)	Terminal point (B)	Line Length (KM)	Total No of fibers
9	Pemagatsel	Nangkhor S/S	Khar	7.01	6
			TMD Nangkhor	0.07	2
			Dungmin	16.40	6
			Chongshing	5.95	12
			Zobel	8.71	12
			Nanong	29.83	12
			Yurung	8.32	12
			Chimung	17.15	12
			ESD office	4.48	12
			Shumar	1.65	12
		Nanglam S/S	Chokhorling	28.98	12
			Decheling	8.54	28
			Gongdue	28.42	8
			Nganglam ESSD	3.50	2
			Norbugang	14.94	12
		Nanong	RNR	0.30	24
		Chimung	RNR	0.30	24
		Dungmin	RNR	0.34	24
		Nganglam	Dungkhag	1.50	24
10	Punakha	Lobesa S/S	Baap	1.81	6
			Talo	9.11	4
			Kabjisa	22.39	4
			Goenshari	32.34	4
			Shengana	16.86	6
			Guma	8.69	6
			Dzome	12.51	6
			Toewang	19.74	6
			Chhubu	18.22	6
			Khuruthang ESD office	6.36	10
			ESD, Wangdue	4.06	24
			Lingmukha	8.99	6
			Toepisa	10.83	24
			Barp	Lobesa sub post	0.33
		Barp	RNR	1.19	24
		Toepisa	BHU	0.19	24
		Toepisa	Thinleygang Pry School	0.20	24
		Toepisa	RNR	0.17	24
		Talo	Norbugang BHU	1.49	24
		Talo	Norbugang Pry School	0.17	24
		Talo	Lapsakha Pry School	0.52	24
		Kabisa	BHU	0.10	24
		Goenshari	BHU	0.30	24
		Goenshari	Goenshari Pry School	0.10	24
		Chubu	Nawakha CPS	0.62	24
		Toewang	Samdingkha BHU	0.20	24
		Toewang	RNR	0.08	24
		Dzomi	Mendrelgang Pry School	0.25	24
		Shengana	RNR	0.42	24
		Lingmukha	Tshochasa BHU	0.30	24
		Lingmukha	Tshochasa Pry School	0.40	24
		Lingmukha	RNR	0.26	24

Sl#	Dzongkhag	Terminal point (A)	Terminal point (B)	Line Length (KM)	Total No of fibers
11	S/ Jongkhar	Deothang S/S	Langchenphug	84.00	2
			Serthi	95.00	0
			Lauri	126.00	0
			Samrang	46.00	4
			ESD S/Jongkhar	14.17	12
			Deothang	4.60	12
			Orong	7.51	24
			Pemathang	37.30	4
			Gomdar	26.12	12
			Wangphu	31.20	12
			Martshala	37.33	4
			Phuntshothang	31.98	8
			Tapping from Dewathang	Dewathang ESSD	0.18
		Tapping from Dewathang	Bangtar ESSD	0.09	2
		Phuntshothang Gewog	132kV Phuntshothang	0.37	2
		S/Jongkhar ESD	RCO S/Jongkhar	0.03	2
			RSD S/Jongkhar	0.35	2
		Pemathang	BHU	0.60	24
		Phuntshothang	BHU	0.50	24
		Martshalla	BHU	0.90	24
		Samrang	BHU	0.84	24
		Langchenphu	Jomotshangkha BHUI	0.44	24
		Serthi	Minjiwoong BHU I	0.90	24
		Wangphu	BHU	0.21	24
		Gomdar	BHU I	0.90	24
		Phuntshothang	Samdrupcholing	0.70	24
		Jomotshangkha	Dungkhag	0.30	24
S/J Thromde	Thromde	3.00	24		
Phuntshothang S/S	Pemathang Gyalsung	23.35	24		
12	Samtse	Samtse ESD	Samtse	3.89	6
			Nainital/Ugyentse	14.99	6
			Chargarey/sangacholing	26.17	8
			Lehereni/Namgaychhoelin	31.05	8
			Biru /Pemaling	39.83	6
			Sipsu ESSD	38.54	6
			Chengmari/Norbugang	10.61	6
			Ghounney/yoeseitse	19.67	6
			Sipsu/Tashicholing	37.44	6
			Tendu	50.57	6
			Bara/Norgaygang	52.70	6
			Gomtu S/S	16.95	24
			Damdum S/S	4.50	24
			Dzong	1.16	24
		Gomtu S/S	Pagli/Phuentshogpelri	1.09	24
		Phuntsholing S/S	Dorokha/Dophoogchen	38.06	4
			Dorokha ESSD	37.00	2
			Tading	11.47	10
			Dungtoe	48.59	4
			Denchukha	38.43	6
Sipsoo S/S	Jamtsholing Gyalsung	4.01	24		

Sl#	Dzongkhag	Terminal point (A)	Terminal point (B)	Line Length (KM)	Total No of fibers
13	Sarpang	Gelephu S/S	Bhur/Samtenling	10.55	8
			Gelephu	5.19	6
			Shershong	17.25	6
			Jigmecholing	23.92	8
			Umling	23.82	6
			Dekiling	23.69	8
			Shomphangkha	27.50	6
			Churzagang	19.31	6
			Hilley/Gakiling	35.58	6
			ESD office Gelephu	1.92	6
			ESSD office Sarpang	32.12	6
			Singye	43.40	8
			Dovan/ Chuzom	26.90	6
			Takai/Tareythang	27.54	6
Tareythang Gyalsung	21.17	24			
14	Thimphu	Semotkha S/S	Chang	1.33	24
			Dagala	5.06	24
			IT park	4.30	24
			DPH	6.09	
			Olakha S/S	2.97	48
		Chumdo	Gyenekha	5.54	24
		Gidagom	Jemina	5.93	24
			Mewang	0.67	24
		Dechencholing S/S	Kawang	2.64	24
			Begana	6.78	24
		Head Office	Simtokha	8.35	24
		Head Office	Chubachu S/S	0.79	24
			ESD office	0.50	24
		T-point ( IT park)	Babesa ESSD	1.30	2
		Motithang S/S	Thimphu Hydel	3.91	2
		Chubachu S/S	Dechencholing	7.70	24
			Motithang	2.07	24
			Olakha S/S	7.87	24
		Mewang	RNR	1.23	24
		Mewang	Geology Mine &	0.68	24
Geneykha	RNR	0.35	24		
CMTD Begana	Naro	25.59	24		
15	Trashiyangtse	Kanglung	Duksum	25.66	24
			Jamkhar	21.13	6
		Duksum	ESD	26.11	6
			Ramjar	4.31	24
			Yalang	8.65	24
			Khamdang	3.88	12
			Toethso	10.02	12
			Yangtse	25.50	6
			Dzong	26.99	6
			Bumdeling	34.35	6
		Tomzhang	5.28	24	
		Tongmijangsa	BHU	1.76	24
		Khamdang	BHU	0.23	24
Khamdang	RNR	0.22	24		

Sl#	Dzongkhag	Terminal point (A)	Terminal point (B)	Line Length (KM)	Total No of fibers
15	Trashiyangtse	Toedtsho	BHU	0.28	24
		Yangtse	RNR	0.26	24
		Yallang	RNR	0.49	24
		Ramjar	BHU	0.67	24
		Ramjar	RNR	0.31	24
		Bomdeling	BHU	0.15	24
16	Trashigang	Kanglung s/s	Rangjung ESSD	26.95	6
			Udzorong	8.05	12
			Khaling ESSD	19.93	6
			Lumang	31.94	6
			Khaling	19.40	6
			Thrimshing	34.60	6
			Kangpara	45.72	24
			Bidung	31.25	6
			Radi	29.68	6
			Phongmey	38.72	6
			Merak	52.35	4
			Sakteng	59.73	4
			Samkhar	19.04	6
		Kanglung s/s	Shongphu	26.41	6
			Bartsham	35.56	6
			Kanglung	0.86	6
			Yangneer	15.92	6
			ESD Trashigang	11.67	6
		T-point ( Duksum)	Chenary Project Office	0.09	2
		T-point(Thrimzhing	Wamrong ESSD	1.45	2
17	Trongsa	Kewathang S/S	Chumey	24.7	24
			Tangsibji	15.59	12
			Drangten	19.43	12
			ESD office	4.11	12
			Nubi	10.39	12
		Tingtibi S/S	Khorphu	30.31	6
		BT BTS	Langthel	7.88	24
Yurmoo S/S	T-point	0.41	24		
18	Tsirang	Darjey S/S	Rangthangling	0.7	6
			Beteni	8.1	6
			Mendrelgang	7.2	6
			Barshong	13.07	6
			ESD office	4.18	24
			Kikhorthang	4.55	8
			Dunglegang	10.01	8
			Semjong	10.54	8
			Goseling	8.54	6
			Tsirang Toe	11.76	6
			Phuntenchu	16.98	6
			Pataley	20.31	6
			RECD(400 Kv PO)	3.49	6
Tsholingkhar	5.2	24			



Sl#	Dzongkhag	Terminal point (A)	Terminal point (B)	Line Length (KM)	Total No of fibers
19	Wangdue	Lobesa	Nyisho	20.35	6
			Theedtsho	7.88	12
			ESD office	4.06	12
			Nahi	12.23	6
			Gatseshogom	15.41	6
			Gatseshowom	19.18	6
			Ruepisa	7.59	6
			Phangyul	16.17	6
			Kazhi	23.44	6
			Bjena	22.15	6
			Gangtey	58.98	6
			Dangchhu	58.84	6
			Wind Power House	12.82	2
			Sephu	62.98	6
		Phobjikha	26.39	6	
		Sephu T-point	Tangsibji T-point	24.09	24
		Gatey T-point	Dungdunesa T-point	10.11	24
		BHPC	Daga	16.71	12
		BHPC	Athang	18.92	12
		Kazhi	School	0.3	24
Kazhi	BHU	0.26	24		
Phangyul	School	0.25	24		
BHPC	Khotokha Gyalsung	18.61	24		
20	Zhemgang	Tingtibi	ESD office	15.9	8
			Trong	1.7	8
			Shingkar	64.89	8
			Bardo	79.69	8
			Nangkhor	24.79	8
			Phangkhar	40.11	8
			Bjoka	58.79	8
			Goshing	47.92	8
			T-point ( Nangla gewog)	Panbang ESSD	1.16
		Trong CC T-point	400KV MTPO	0.16	2
		Nanglam	Nangla	20.37	12
<b>Total (KM)</b>				<b>5,334.86</b>	

## CHAPTER 8

### FINANCIAL

This chapter provides Energy and financial statistics on total energy purchase GENCOS (table 8.1), Revenue earned through sale of electricity to our domestic customers (table 8.2), wheeling charges (table 8.3) and the revenue earned through other projects (table 8.4) for 5 years from 2019 to 2023.

**Table 8.1 PURCHASE OF POWER FROM GENERATING COMPANY (Million Nu.)**

Sl#	Description	2019	2020	2021	2022	2023
1	CHP	3,749.82	3,169.73	3,842.86	6,305.08	8,730.82
2	BHP					
3	KHP					
4	THP					
5	DHP*					
6	MHPA					
<b>Total</b>		<b>3,749.82</b>	<b>3,169.73</b>	<b>3,842.86</b>	<b>6,305.08</b>	<b>8,730.82</b>

Source: TD, BPC

**Table 8.2. REVENUE FROM SALE OF ELECTRICITY (Million Nu.)**

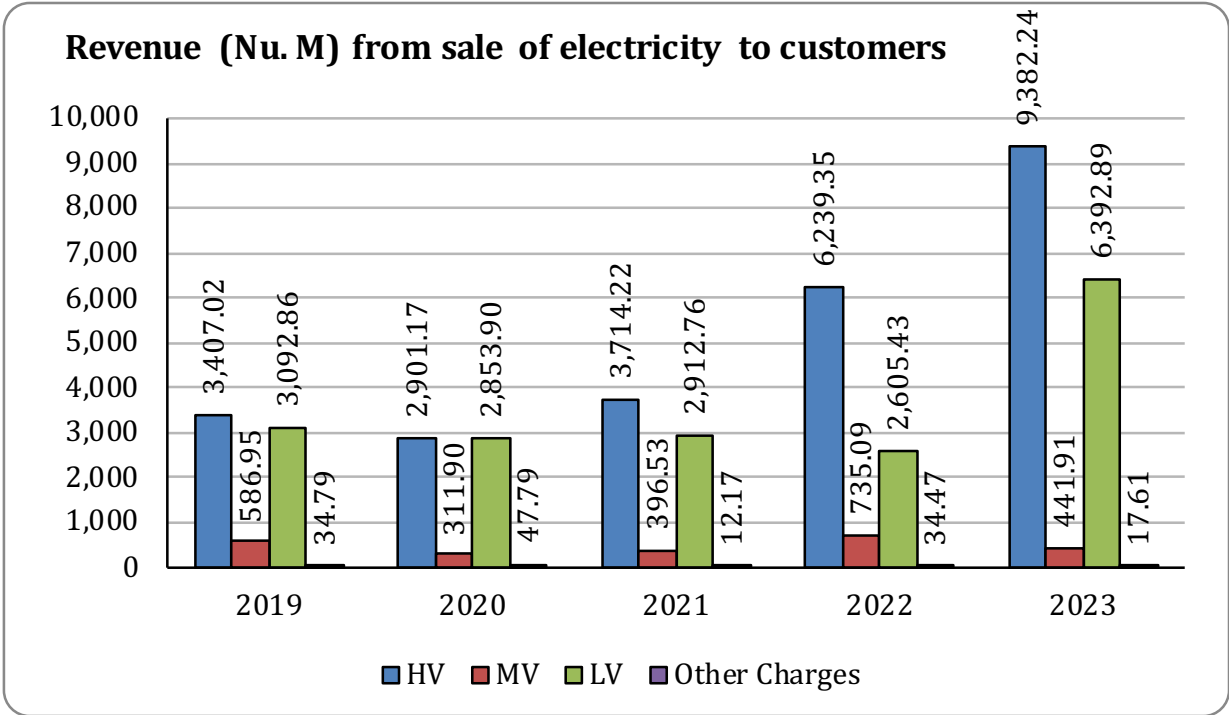
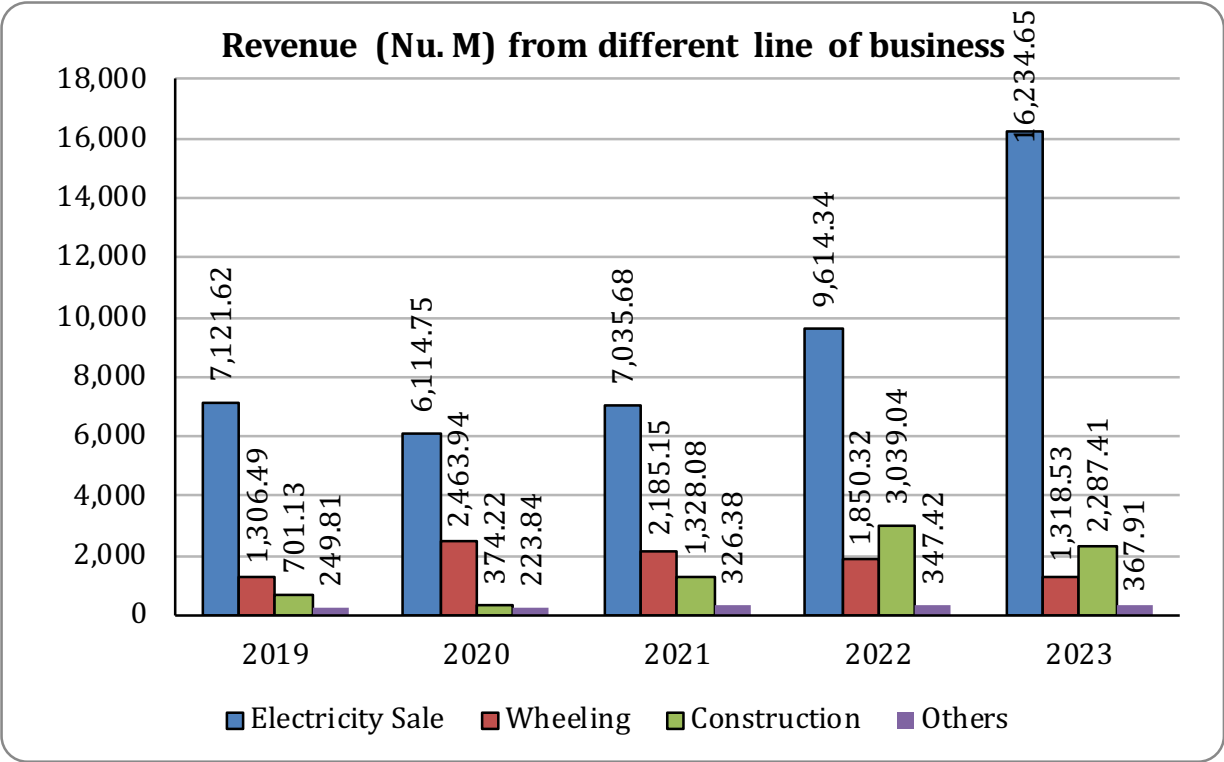
Sl#	Particulars	2019	2020	2021	2022	2023
1	HV Energy Charge	2,544.55	2,040.02	2,725.09	3,635.85	6,751.34
2	HV Demand Charge	862.47	861.15	989.13	1,805.28	2,630.90
	HV Charge (Import)				798.23	4,545.11
	<b>HV (total)</b>	<b>3,407.02</b>	<b>2,901.17</b>	<b>3,714.22</b>	<b>6,239.35</b>	<b>9,382.24</b>
3	MV Energy Charge	439.87	195.83	287.68	566.32	310.10
4	MV Demand Charge	147.09	116.07	108.85	168.78	131.81
	<b>MV (Total)</b>	<b>586.95</b>	<b>311.90</b>	<b>396.53</b>	<b>735.09</b>	<b>441.91</b>
5	LV Energy Charge	<b>3,092.86</b>	<b>2,853.90</b>	<b>2,912.76</b>	<b>2,605.43</b>	<b>6,392.89</b>
6	Other Charges	34.79	47.79	12.17	34.47	17.61
<b>Total</b>		<b>7,121.62</b>	<b>6,114.75</b>	<b>7,035.68</b>	<b>9,614.34</b>	<b>16,234.65</b>

**Table 8.3: REVENUE FROM WHEELING CHARGE (Million Nu.)**

Sl#	Particulars	2019	2020	2021	2022	2023
1	Wheeling Charge	1,306.49	2,463.94	2,185.15	1,850.32	1,318.53

**Table 8.4: REVENUE FROM CONSTRUCTION CONTRACTS & OTHERS (Million Nu.)**

Sl#	Particulars	2019	2020	2021	2022	2023
1	Revenue from Construction Contracts	701.13	374.22	1,328.08	3,039.04	2,287.41
2	Revenue from others	249.81	223.84	326.38	347.42	367.91
<b>Total</b>		<b>950.94</b>	<b>598.07</b>	<b>1,654.45</b>	<b>3,386.46</b>	<b>2,655.32</b>



## CHAPTER 9

### EMPLOYEE DETAILS

This chapter covers employee statistics of BPC during 2023 as shown in table 9.1 . In five years, 2021 had the highest employee count with 2415 numbers while during 2023 the employee reduced to 2219 numbers . Under the age category, age between 30 years to 39 years is the highest with 37% while age between 18 years to 29 years and 50plus years are the lowest with 15% each.

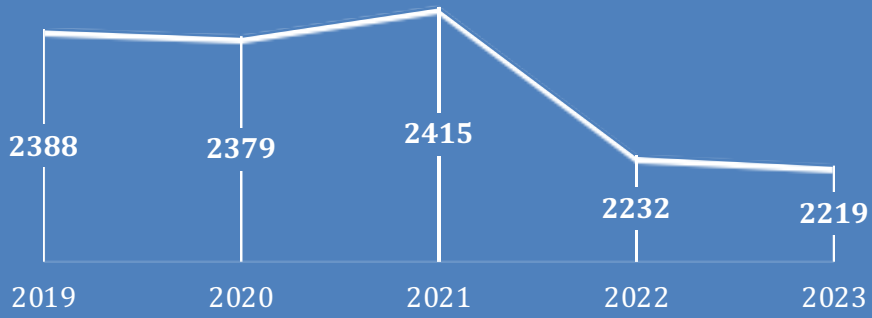
**TABLE 9.1: DZONGKHAG WISE EMPLOYEE -2023**

Sl#	Description	Count	%
<b>A</b>	<b>Employment Type</b>		
1	Regular	2203.00	99.28%
2	Contract	16.00	0.72%
3	<b>Total</b>	<b>2219.00</b>	
<b>C</b>	<b>Grade</b>		
1	A	181.00	8.16%
2	B	555.00	25.01%
3	C	859.00	38.71%
4	D & GC	624.00	28.12%
	<b>Total</b>	<b>2219.00</b>	
<b>E</b>	<b>Dzongkhag</b>		
1	Bumthang	31.00	1.40%
2	Chukha	263.00	11.85%
3	Dagana	71.00	3.20%
4	Gasa	19.00	0.86%
5	Haa	41.00	1.85%
6	Lhuentse	44.00	1.98%
7	Mongar	98.00	4.42%
8	Paro	74.00	3.33%
9	Pema Gatshel	80.00	3.61%
10	Punakha	74.00	3.33%
11	Samdrup Jongkhar	140.00	6.31%
12	Samtse	135.00	6.08%
13	Sarpang	191.00	8.61%
14	Thimphu	539.00	24.29%
15	Trashhi Yangtse	43.00	1.94%
16	Trashigang	93.00	4.19%
17	Trongsa	50.00	2.25%
18	Tsirang	81.00	3.65%
19	Wangdue phodrang	77.00	3.47%
20	Zhemgang	75.00	3.38%
	<b>Total</b>	<b>2219.00</b>	

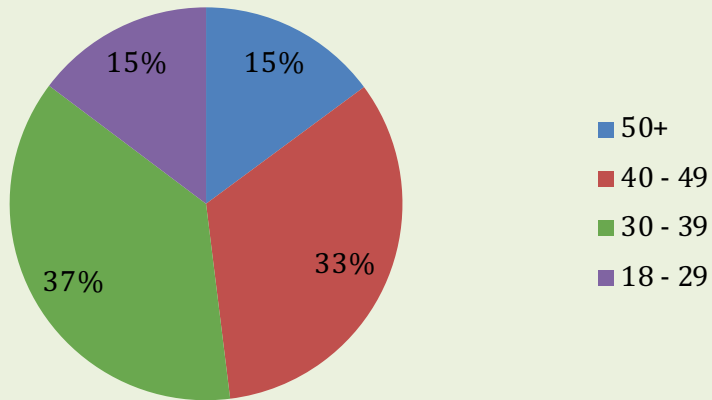
Sl#	Description	Count	%
<b>B</b>	<b>Gender</b>		
1	Male	1806.00	81.39%
2	Female	413.00	18.61%
	<b>Total</b>	<b>2219.00</b>	
<b>D</b>	<b>Qualification</b>		
1	Masters	53.00	2.39%
2	Bachelors	190.00	8.56%
3	Diploma	250.00	11.27%
4	Certificate/Others	1726.00	77.78%
	<b>Total</b>	<b>2219.00</b>	
<b>F</b>	<b>Office</b>		
1	CEO	7.00	0.32%
2	DD	42.00	1.89%
3	TD	39.00	1.76%
4	C&PD	16.00	0.72%
5	CSD	9.00	0.41%
6	CD	119.00	5.36%
7	CSDiv	12.00	0.54%
8	D& CSD	1098.00	49.48%
9	TO& MD	709.00	31.95%
10	E&RD	52.00	2.34%
11	PD	38.00	1.71%
12	SSD	52.00	2.34%
13	F&AD	20.00	0.90%
14	IAU	6.00	0.27%
	<b>Total</b>	<b>2219.00</b>	

Sl. No.	Age	Count	%
1	50+	330.00	14.87%
2	40 - 49	736.00	33.17%
3	30 - 39	826.00	37.22%
4	18 - 29	327.00	14.74%
	<b>Total</b>	<b>2219.00</b>	

### EMPLOYEE COUNT FOR 5 YEARS (2019 - 2023)



### % Age group of Employees



## CHAPTER 10

### COMPANY ASSET

This chapter presents the financial aspects of fixed asset of BPC for the last five years (2019-2032) as presented in Table 10.1. The company's net asset, capital work in progress and total fixed asset is demonstrated in figure.

**TABLE 10.1 : ASSET**

<b>Financial year</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>
Total Asset (Million Nu) - TA	35,248.82	35,035.10	35,798.86	42,117.67	43,549.80
Gross fixed asset (Million Nu) - GFA	40,774.14	41,643.10	42,934.71	46,706.06	49,933.63
Accumulated Depreciation (Million Nu)	9,616.72	10,984.57	11,717.60	12,790.27	14,307.02
Net fixed assets (Million Nu)	27,676.29	27,939.46	28,428.76	33,915.79	35,626.62
Capital Work in Progress (Million Nu)	3,481.13	2,719.07	2,788.35	4,464.16	3,204.88
<b>Total fixed Asset (Million Nu.) - TFA</b>	<b>31,157.42</b>	<b>30,658.53</b>	<b>31,217.11</b>	<b>38,379.95</b>	<b>38,831.50</b>
<b>Growth Rate</b>	<b>35.24%</b>	<b>-1.60%</b>	<b>1.82%</b>	<b>22.95%</b>	<b>1.18%</b>

## CHAPTER 11 RURAL ELECTRIFICATION

This chapter provides the number of households electrified under the rural electrification projects as on 31st December 2023.

**Table 11.1 YEARLY TOTAL RE COVERAGE**

Sl#	RE Coverage	Till 2019	Till 2020	Till 2021	Till 2022	Till 2023
1	Household(s)	90,129	90,483	91,195	91,195	92,476
2	% RE without off grid works	100.00%	100.00%	100.00%	100.00%	100.00%
99	% RE with off grid works	98.71%	99.09%	99.87%	99.87%	99.97%

## CHAPTER 12

### PERFORMANCE INDICATORS

This chapter displays indicators which are used in appraising the performance of BPC and provides information on yearly achievement of Five years from 2019 to 2023 as presented in table 12.1.

**TABLE 12.1: PERFORMANCE INDICATORS, ACHIEVEMENT AND STATUS FROM 2019 TO 2023**

Sl#	Indicators	2019	2020	2021	2022	2023
1	Number of Customers / Employee	84.95	89.80	99.58	104.76	109.64
2	Energy Sale (MU) / Employee	0.96	0.82	1.11	1.55	2.56
3	Revenue Earned (Million Nu.) /Employee	3.97	3.80	4.88	6.65	9.11
4	Revenue Earned (Million Nu.) /Total Customer	0.05	0.04	0.05	0.06	0.08
5	LV line length / MV line length	1.33	1.47	1.45	1.50	1.37
6	Global System losses (including Wheeling) (%)	1.85%	1.70%	1.83%	1.81%	2.14%
7	Global System losses (Excluding Wheeling) (%)	6.52%	8.95%	7.36%	5.40%	4.12%
7	Transmission Loss including wheeling (%)	1.08%	1.11%	1.23%	1.21%	1.49%
8	Distribution Losses including HV Industries (%)	2.82%	3.34%	2.30%	1.98%	1.35%
9	Fixed Assets Turnover Ratio (Sales / Average Net Block)	0.40	0.33	0.39	0.48	0.58
10	Current Ratio (Current Assets/Current Liabilities)	1.10	1.24	1.16	0.83	0.98
11	Quick Ratio (Current Asset-Inventory / Current Liabilities)	0.99	1.11	1.01	0.68	0.79
12	Interest Coverage Ratio (Pro t before interest & tax/Interest)	5.29	2.15	2.79	2.45	2.79
13	Debt Service Coverage Ratio (PAT+Depreciation+Interest / (Interest +Principal Repayment)	1.61	1.56	2.36	2.54	2.83
14	Gearing Ratio (Debt/Net Fixed Asset)	37.47%	34.89%	32.63%	32.63%	37.37
15	Debt Equity Ratio (Debt /average Equity)	102.23%	93.80%	88.88%	112.45%	116.64%
16	Return on Asset (Profit after tax/average net total assets)	4.95%	1.99%	3.92%	2.66%	3.29%
17	Return on Equity (return available/ Average Equity)	8.60%	3.80%	7.46%	5.27%	7.11%