ANNUAL ENERGY AUDIT REPORT

Designated Consumer

JAIPUR VIDYUT VITRAN NIGAM LTD
(JVVNL)

Vidyut Bhawan, Jyoti Nagar,
Jaipur- 302005
(Rajasthan)

FY 2022 -23

Conducted by

A-Z Energy Engineers Private Limited

PLOT NO. 12, 4860-62, HARBANS SINGH STREET, KOTHI NO.-24, WARD NO.-II,
DARYA GANJ, NEW DELHI-110002, Tel: 0129-4046120, Mob. 9811402040,
Email:pp_mittal@yahoo.com

Table of Contents

List of Tables

List of Figures

List of Abbreviations

AMI	Advanced Metering Infrastructure
AMR	Automated Meter Reading
AMRUT	Atal Mission for Rejuvenation and Urban Transformation
AT&C	Aggregate Technical and Commercial
BEE	Bureau of Energy Efficiency
ckt	Circuit
CT	Current Transformer
DC	Designated Consumer
DEEP	Discovery of Efficient Electricity Price
DISCOM	Electricity Distribution Company
DT	Distribution Transformer
EA	Energy Auditor
EHT	Extra High Tension
EHV	Extra High Voltage
EM	Energy Manager
FY	Financial Year
HT	High Tension
HVDS	High Voltage Distribution System
KVA	Kilo Volt Ampere
LT	Low Tension
MoP	Ministry of Power
MU	Million Units
MW	Mega Watt
NO	Nodal Officer
OA	Open Access
PoC	Point of Connection
PT	Potential Transformer
PX	Power Exchange
RE	Renewable Energy
RLDC	Regional Load Dispatch Centre
SDA	State Designated Agency
SLD	Single Line Diagram
SLDC	State Load Dispatch Centre
T&D	Transmission and Distribution

Acknowledgement

We would like to express our heartfelt gratitude to the Jaipur Vidyut Vitran Nigam Limited (JVVNL), Jaipur for providing us with the opportunity to conduct the Energy Audit of their DISCOM for FY 2022-23, in accordance with the Bureau of Energy Efficiency (Manner and Intervals for Conduct of Energy Audit in electricity distribution companies) Regulations, 2021 and its Amendments.

We are immensely grateful to the management of Jaipur Vidyut Vitran Nigam Limited (JVVNL), Jaipur, for their invaluable cooperation and providing us with all the relevant information necessary for the successful completion of the Annual Energy Audit.

We also extend our sincere thanks to the entire working group, especially to Sh. R. N. Kumawat– MD, Sh. Umesh Gupta– Chief Engineer (M&P-IT), JVVNL, Jaipur and Sh. Y.K.Aren for their immense support and assistance throughout the audit process.

We look forward to a continued partnership with Jaipur Vidyut Vitran Nigam Limited (JVVNL), Jaipur, and we express our gratitude for their continued support in all our future endeavours.

M/s A-Z Energy Engineers Pvt. Ltd. Dr. P. P. MITTAL Accredited Energy Auditor AEA-011 Faridabad

Signature
Name: Dr. P.P Mittal
Designation: Director
Registered No: AEA-011
Firm: A-Z Energy Engineers Pvt. Ltd.

1. Executive Summary

At present, the JVVNL is divided into thirteen (13) power distribution circles, namely 12 district (13 circles) of Rajasthan, namely Jaipur (JPDC/JCC), Dausa, Alwar, Bharatpur, Dholpur, Kota, Bundi, Baran, Jhalawar, Sawai madhopur, Tonk and Karauli. These distribution circles have been strategically divided to cover districts present within the state. After preliminary stakeholder interaction with utility officials of the respective circles, data collection was carried out to collect the data required for further study. Using the data collected, AT&C loss level computation was carried out. It was observed from our field survey that lack of metering; longer line lengths, malfeasance practices, and lack of database management were the key and preliminary factors behind the high losses.

While the Input Energy purchase, Net Input energy at DISCOM Periphery and Energy billed for the customer is 38764 MU, 35144 MU and 30016 MU, the monthly consumption per customer stands at 507.8 KWH/Month. JVVNL caters to area spread in 13 circles, 58 Division.

1.1. Goals and Objectives

JVVNL is a designated consumer in Discom sector. Being a designated Consumer JVVNL need to have Annual energy audit (Accounting) of their facilities as per BEE notification No 18/1/BEE/Discom/2021 dated 6th October 2021.

The Annual Energy Audit (Accounting) at JVVNL is conducted with the following Objectives:

- Verification of existing pattern of energy distribution across periphery of electricity Distribution Company.
- Verification of accounted energy flow submitted by electricity Distribution Company at all applicable voltage levels of the distribution network.
- Verification of the accuracy of the data collected, analyses, and processes the data with respect to consistency, improvement in accounting and reducing loss of DISCOM.
- Verification of the information submitted by DC to the SDA/BEE about status of energy input, Output and loss for the previous two year.
- Access the past performance of the establishment.
- Quantification of Energy Losses, and Energy Saving Potential.

1.2. About Energy Audit firm

A-Z Energy Engineers Pvt. Ltd. is an Accredited Energy Auditor from BEE and an ISO 9001:2015 certified company that aims to assist all stakeholders in implementing energy efficiency and creating awareness about the merits of energy efficiency and safety practices. A-Z Energy is empanelled by BEE for PAT M & V Audits and Mandatory Energy

Audit Projects and have completed more than 1500 projects, including 52 PAT projects. The founder Director-Dr PP Mittal, has received several awards and recognitions for his services in the field of energy. We have a pool of experienced BEE Accredited & Certified Energy Auditors, Electrical Engineers, Mechanical Engineers and Technicians having experience of more than 30 years. The Energy Audits is being carried out with sophisticated instruments namely Power-Analyzer, Flue Gas Analyzer, Ultra-sonic flow meter, Techo-meter, Anemometer, Hego-Meter, Digital Thermometer, Thermographic Camera's, Lux Meter, Leak detectors. Laser gun etc.

1.3. AT&C losses for FY 2022-23

The AT&C loss including DF Consumers for FY2022-2023 are 15.95% & the Distribution loss of the sector is 14.59%. The AT&C loss for the FY 2022-23 is shown in the table below:

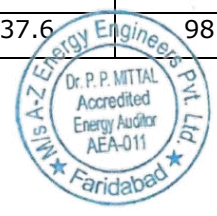
Table 1: Energy Balance& Losses for FY 2022-23

Energy Input Details	Formula	UoM	Value
Input Energy Purchase (From Generation Source)	A	MU	38764
Net input energy (at DISCOM Periphery after adjusting the transmission losses and energy traded)	B	MU	35144
Total Energy billed (is the Net energy billed, adjusted for energy traded))	C	MU	30016
Transmission and Distribution (T&D) loss Details	D	MU	5129
	E = D/B x 100	%	14.59%
Collection Efficiency	F	%	98.41%
Aggregate Technical & Commercial Loss	G = 1-{(1-E) x Min (F,100%)	%	15.95%

The technical losses and aggregate technical & commercial (AT&C) losses without DF and Including DF consumers presented below:

Particulars	Input Energy (MU)	Billed Energy (MU)	Losses (MU)	Losses (%)
Without DF Consumers	33141.97	28013.23	5128.73	15.48%
Including DF Consumer	35144.49	30015.76	5128.73	14.59%

Particulars	Collection Amount Rs Crore	Billed Amount Rs Crore	Collection Efficiency (%)	AT&C (%)
AT&C Loss Without DF	21270.4	21624.7	98.36%	16.86%
AT&C Losses including DF	22473.6	22837.6	98.41%	15.95%



2. Background

2.1. Extant Regulations and role of BEE

2.1.1. The Objectives of BEE

- To develop policies and programmes on efficient use of energy and its conservation with the involvement of stakeholders.
- To plan, manage and implement energy conservation programmes as envisaged in the EC Act.
- To assume leadership and provide policy framework and direction to national energy efficiency and conservation efforts and programmes.
- To demonstrate energy efficiency delivery mechanisms, as envisaged in the EC Act, through Public-Private Partnership (PPP).
- To establish systems and procedures to measure, monitor and verify energy efficiency results in individual sectors as well as at the national level.
- To leverage multi-lateral, bi-lateral and private sector support in implementation of programmes and projects on efficient use of energy and its conservation.
- To promote awareness of energy savings and energy conservation.

2.1.2. Role of BEE

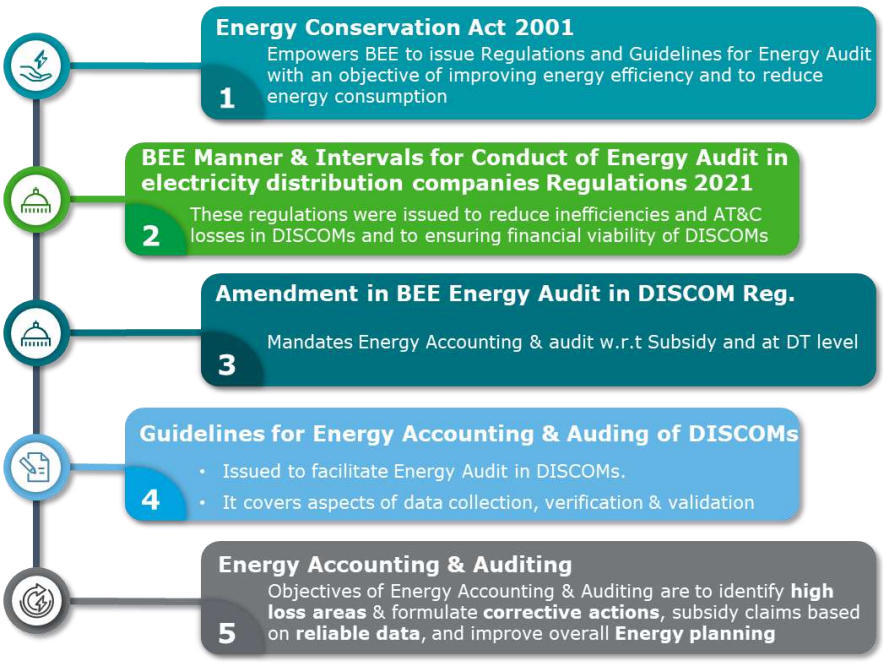
- BEE coordinates with designated agencies, designated consumers and other organization working in the field of energy conservation/efficiency to recognize and utilize the existing resources and infrastructure in performing the functions assigned to the Bureau under the Energy Conservation Act.
- The Act provides regulatory mandate for: standards &labeling of equipment and appliances; energy conservation building code for commercial buildings; and energy consumption norms for energy intensive industries.
- The EC Act was amended in 2010 to incorporate few additional provisions required to better equip BEE to manage ever-evolving sphere of energy efficiency in the country.
- Create awareness and disseminate information on energy efficiency and conservation.
- Arrange and organize training of personnel and specialists in the techniques for efficient use of energy and its conservation.
- Strengthen consultancy services in the field of Energy Efficiency.
- Promote research and development.
- Develop testing and certification procedures and promote testing facilities.
- Formulate and facilitate implementation of pilot projects and demonstration projects.
- Promote use of energy efficient processes, equipment, devices and systems.

- Take steps to encourage preferential treatment for use of energy efficient equipment or appliances.
- Promote innovative financing of energy efficiency projects.
- Give financial assistance to institutions for promoting efficient use of energy and its conservation.
- Prepare educational curriculum on efficient use of energy and its conservation.
- Implement international co-operation programmes relating to efficient use of energy and its conservation.

2.1.3. Regulatory framework for Energy Accounting & Audit

The Energy Conservation Act 2001 (hereafter referred to as EC Act 2001) was enacted on 29thSeptember 2001. The EC Act 2001 empowers BEE to notify regulations regarding energy conservation and efficiency improvement. In accordance with the EC Act 2001, BEE notified the Bureau of Energy Efficiency (Manner and Intervals for Conduct of Energy Audit) Regulations, 2021, on 6thOctober 2021. BEE subsequently amended these regulations with the Bureau of Energy Efficiency (Manner and Intervals for Conduct of Energy Audit) (Amendment) Regulations, 2022. The Ministry of Power (MoP) issued guidelines on 17thJanuary 2023, for energy accounting and auditing of distribution companies, in line with the BEE regulations. Distribution companies and energy audit firms must comply with this regulatory framework when preparing energy accounts and audit reports. The regulatory framework for Energy accounting and Energy Auditing is shown in the below figure:

Figure 1: Regulatory framework for Energy Accounting & Audit



Key highlights of the Regulatory framework are listed below:

- Bureau of Energy Efficiency (BEE) through Ministry of Power, Government of India issued regulations for Conduct of Mandatory Annual Energy Audit and Periodic Energy Accounting in DISCOMs. As per the regulation, all Electricity Distribution Companies are mandated to conduct annual energy audit and periodic energy accounting on quarterly basis.
- Owing to the impact of energy auditing on the entire distribution and retail supply business and absence of an existing framework with dedicated focus on the same, it was imperative to develop a set of comprehensive guidelines that all Distribution utilities across India can follow and adhere to.
- Accordingly, Regulations on Manner and Intervals for Conduct of Energy Audit and Accounting in Electricity Distribution Companies has been framed. Energy Accounting means accounting of all energy inflows at various voltage levels in the distribution periphery of the network, including renewable energy generation and open access consumers, and energy consumption by the end consumers. Energy accounting and a consequent annual energy audit would help to identify areas of high loss and pilferage, and thereafter focus efforts to take corrective action.
- These Regulations for Energy audit in Electricity Distribution Companies provides broad framework for conduct of Annual Energy Audit though and Quarterly Periodic Energy Accounting with necessary Pre-requisites and reporting requirements to be met.
- The Central Government may issue the energy savings certificate to the designated consumer whose energy consumption is less than the prescribed norms and standards in accordance with the procedure as may be prescribed.
- The designated consumer whose energy consumption is more than the prescribed norms and standards shall be entitled to purchase the energy savings certificate to comply with the prescribed norms and standards
- The Central Government may, in consultation with the Bureau, prescribe the value of per metric ton of oil equivalent of energy consumed

2.2. Purpose of audit and accounting Report

JVVNL is a designated consumer in Discom sector. Being a designated Consumer JVVNL need to have Annual energy audit (Accounting) of their facilities as per BEE notification No 18/1/BEE/Discom/2021 dated 6thOctober 2021.

The energy intensity of India is higher with respect to GDP growth and there is an urgent need to address these issues on priority through integrated and comprehensive approach and by adopting latest techniques and technologies with active participation of all stakeholders.

Sensing the need of our Government of India initiated a mechanism for all energy intensive large industries and facilities (designated consumer) known as PAT Scheme

which is "A market-based mechanism to enhance cost effectiveness of improvements in energy efficiency in designated consumers, through certification of energy savings that could be traded."

Annual Energy audit (Accounting) will not only help in reducing losses in system, but it also helps DISCOM in sustainable growth. The objective of this energy audit is to reduce T&D loss and AT&C loss of the DISCOM through identification of commercially viable and implementable scheme for reduction of technical and commercial loss in the DISCOM thus leading to sustainable energy cost reductions.

The Annual Energy Audit (Accounting) at JVVNL is conducted with the following Objectives:

- Verification of existing pattern of energy distribution across periphery of electricity Distribution Company.
- Verification of accounted energy flow submitted by electricity Distribution Company at all applicable voltage levels of the distribution network.
- Verification of the accuracy of the data collected, analyses, and processes the data with respect to consistency, improvement in accounting and reducing loss of DISCOM.
- Verification of the information submitted by DC to the SDA/BEE about status of energy input, Output and loss for the previous two year.
- Access the past performance of the establishment.
- Quantification of Energy Losses, and Energy Saving Potential.

2.3. Period of Energy Auditing and accounting

Energy audit activity was started with a meeting at Head Office of JVVNL in the month of Aug. 2023. Based on the requirement visit was made to Division, Subdivision, Grid& Substation etc. for data collection and technical discussion. The period of study was from April 2022 to March 2023

Table 2: Period of Energy Auditing and accounting

Particulars	Energy Accounting				Energy Audit
	Q1	Q2	Q3	Q4	FY 2022-23
Applicable period	1-Apr-22 to 30-Jun-22	1-Jul-22 to 30-Sep-22	1-Oct-22 to 31-Dec-22	1-Jan-23 to 31-Mar-23	1-Apr-22 to 31-Mar-23
Date of Commencement	29.08.2022	28.11.2022	27.02.2023	29.05.23	
Date of Publishing	-	-	-	-	
Officer In charge	Shri Umesh Gupta				Dr. P P Mittal [AEA 0011] Registration No: EmAEA-0024

M/s A-Z Energy Engineers Pvt. Ltd. Dr. P. P. MITTAL Accredited Energy Auditor AEA-011 Faridabad

3. DISCOM Introduction and Overview

3.1. Name and address of DISCOM

JVVNL (Jaipur Vidyut Vitran Nigam Limited) is having its Regd. Office at Vidyut Bhawan, Jyoti Nagar, Jaipur 302005 (Rajasthan)

Table 3: Name and Address of DISCOM

Particulars	Details
Name of DC	Jaipur Vidyut Vitran Nigam Limited
Address	Regd. Office: Vidyut Bhawan, Jyoti Nagar, Jaipur 302005

3.2. Name and contact details of energy manager (BEE Certified, if any) and Authorized signatory of DISCOM (Nodal Officer)

The Energy Accounting/Audit wing is headed by Sh. R. N. Kumawat– MD, Sh. Umesh Gupta– Chief Engineer (M&P-IT), JVVNL, Jaipur and Sh. Y.K.Aren is leading the energy accounting activities in JVVNL. The details of DISCOM's energy manager and authorized signatory for this report are shown below:

Table 4: Details of energy manager and Authorized signatory of DISCOM

Particulars	Details
Energy Manager	Shri. Y. K Aren SE(M&P), JVVNL, Jaipur Mobile: 9413390872 Email: sempjpr@jvvnl.org
Authorized Signatory	Shri. Umesh Gupta Chief Engineer (M&P-IT),JVVNL, Jaipur Telephone: 0141-2205874

3.3. Summary profile of DISCOM

3.3.1. Jurisdiction of DISCOM

At present, the JVVNL is divided into thirteen (13) power distribution circles, namely 12 district (13 circles) of Rajasthan, namely Jaipur (JPDC/JCC), Dausa, Alwar, Bharatpur, Dholpur, Kota, Bundi, Baran, Jhalawar, Sawaimadhopur, Tonk and Karauli. These distribution circles have been strategically divided to cover districts present within the state. After preliminary stakeholder interaction with utility officials of the respective circles, data collection was carried out to collect the data required for further study. Using the data collected, AT&C loss level computation was carried out. It was observed from our field survey that lack of metering; longer line lengths, malfeasance practices, and lack of database management were the key and preliminary factors behind the high losses.

While the Input Energy purchase, Net Input energy at DISCOM Periphery and Energy billed for the customer is 38764 MU, 35144 MU and 30016 MU, the monthly consumption per customer stands at 507.8 KWH/Month. JVVNL caters to area spread in 13 circles, 58 Division.

3.3.2. Energy Accounting/Audit wing in the DISCOM:

The Energy Accounting/Audit cell in the DISCOM has been established on 24-12-21. The Organogram of the DISCOM is as shown below:

Figure 2: Organogram of Energy accounting cell in the DISCOM

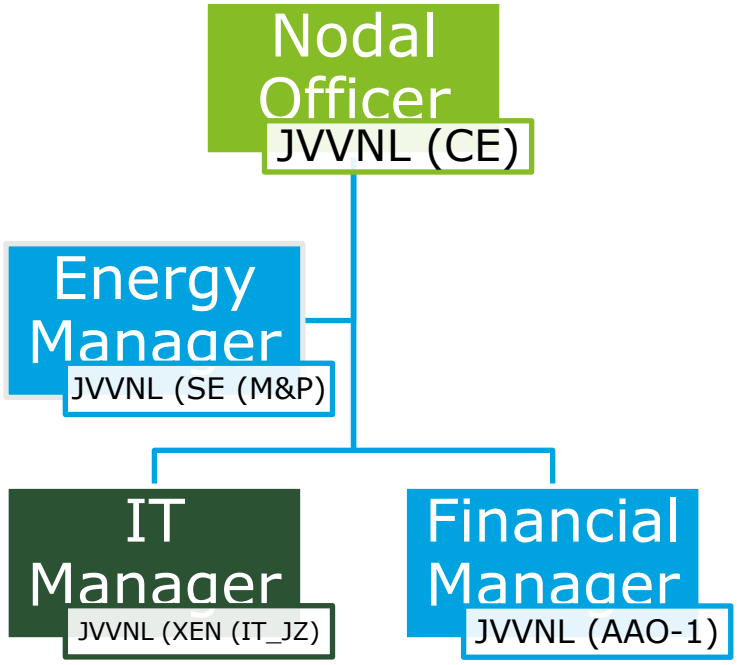


Table 5: Details of energy manager and Authorized signatory of DISCOM

Designation	Name of Officers
Managing Director	Sh. R.N Kumawat
CE (M&P-IT)-Nodal Officer	Sh. Umesh Gupta
SE (M&P)-Energy Manager	Sh. Y. K Airen
XEN (IT_JZ)-IT Manager	Sh. Pushpendra Kumar Sharma
AAO-1-Financial Manager	Sh. Rajesh Arora

3.3.3. Administrative hierarchy

JVVNL is having its corporate office at Vidyut Bhawan, Jyoti Nagar, Jaipur 302005 (Rajasthan) and has 13 Circles. These Circles are further divided into Divisions, Sub-Divisions and Sections as shown in the below tables.

Table 6: Administrative hierarchy structure in JVVNL

Parameters	Total
Number of circles	13
Number of divisions	58
Number of sub-divisions	222

The Circles are further divided into Divisions, Sub-Divisions and Sections the name of circle and division are given below Subdivision is not provided as shown in the table below:

Table 7: Administrative hierarchy in JVVNL upto Division level

Zone	Circle	Division
Jaipur	ALWAR	XEN_CD_ALWAR
		XEN_DD_ALWAR
		XEN_OM_ALWAR-RURAL
		XEN_OM_BANSUR
		XEN_OM_BEHROR
		XEN_OM_BHIWADI
		XEN_OM_K.G.BASS
		XEN_OM_LAXMMANGARH
		XEN_OM_RAJGARH
Kota	BARAN	XEN_CD_BARAN
		XEN_DD_BARAN
		XEN_OM_ATRU
Bharatpur	BHARATPUR	XEN_OM_BAYANA
		XEN_OM_BAYANA
		XEN_OM_DEEG
		XEN_OM_KAMAN
		XEN_OM_WEIR
Kota	BUNDI	XEN_OM_BUNDI
		XEN_OM-II_BUNDI
Jaipur	DAUSA	XEN_OM_MAHUWA
		XEN_OM_SIKRAI
		XEN_OM_BANDIKUI
		XEN_OM_DAUSA
		XEN_OM_LALSOT
Bharatpur	DHOLPUR	XEN_DD_DHOLPUR
		XEN_OM_DHOLPUR
Jaipur	JCC	XEN_CD-1_JCC
		XEN_CD-2_JCC
		XEN_CD-3_JCC
		XEN_CD-4_JCC
		XEN_CD-5_JCC
		XEN_CD-6_JCC
		XEN_CD-7_JCC
Kota	JHALAWAR	XEN_JHALAWAR-I
		XEN_OM_BHAWANIMANDI
		XEN_OM_JHALAWAR
Jaipur	JPDC	XEN_DD-1_BANIPARK
		XEN_DD-2_BANIPARK
		XEN_OM_BASSI
		XEN_OM_CHOMU
		XEN_OM_DUDU
		XEN_OM_JAMWARAMGARH
		XEN_OM_KOTPUTALI
		XEN_OM_SAMBHAR
		XEN_OM_SANGANER
		XEN_OM_SHAHPURA
Bharatpur	KARAULI	XEN_OM_HINDAUN
		XEN_OM_KARAULI
Kota	KOTA	XEN_DD_KOTA
		XEN_OM_R_MANDI

Zone	Circle	Division
		XEN_OM_SANGOD
Bharatpur	SWM	XEN_OM_BONLIBAMANWAS
		XEN_OM_GANGAPURCITY
		XEN_OM_SWM
		XEN_OM_SWM-RURAL
Jaipur	TONK	XEN_OM_DEOLI
		XEN_OM_NEWAI
		XEN_OM_TONK

3.3.4. Consumer Details

Energy consumption with type of customer is given in the table:

Table 8: Customer Profile for FY 2022-23

Category	No. of Connections		Connected Load		Energy		Billed Amount Rs. Crore	Collected Amount Rs.Crore
	Nos	%	MW	%	MU	%		
Residential	3797082	77.1%	6046	32.5%	6021	21.5%	4894	4956
Agricultural	597208	12.1%	4834	26.0%	9742	34.8%	6094	5921
Commercial/ Industrial-LT	500007	10.2%	2880	15.5%	3274	11.7%	3268	3225
Commercial/ Industrial-HT	20296	0.4%	4658	25.0%	8642	30.8%	6992	6865
Others	11187	0.2%	184	1.0%	334	1.2%	375	303
Jaipur Discom	4925780	100%	18602	100%	28013	100%	21624.7	21270.4
DF	2		1068.18		2003		1212.85	1203.29
At Company	4925782		19670		30016		22837.58	22473.64

3.4. Electrical infrastructure and assets voltage wise

The following table provides the details of network infrastructure owned by JVVNL:

Table 9: Network Infrastructure details

Asset	Particulars	Unit	FY20-21	FY21-22	FY22-23
66 kV and above	66/ 11 kV Sub station	Nos			
	66 kV Feeders	Nos			
	66 kV Line	Ckt. km			
33 kV	33/ 11 kV Sub station	Nos			
	33 kV Feeders	Nos	1136	1180	1223
	33 kV Line	Ckt. km	16529	16578.83	16735
11 kV	11 kV Feeders	Nos	9219	9519	9732
	11 kV Overhead Line	Ckt. km	160476	161581.01	164322
	11 kV Underground Line	Ckt. km	185106	187769.2	195182
LT	LT Line	Ckt. km	11542	11772.84	12376
PTR	Power Transformer	Nos			
	Power Transformer Capacity	MVA			
DTR	Distribution Transformer	Nos	790551	829639	873368
	Distribution Transformer Capacity	MVA			

The Input energy, consumption, transmission losses and key infrastructure details of the JVVNL are summarized in table below:

Table 10: Input Energy & Infrastructure details

Parameters	FY 2022-23
Input Energy purchased (MU)	38763.99
Transmission loss (%)	8.03
Transmission loss (MU)	3066.48
Energy sold outside the periphery (MU)	552.81
Open access sale (MU)	114.9
EHT sale	-
Net input energy (received at DISCOM periphery or at distribution point)-(MU)	35144.49
Is 100% metering available at 66/33 kV (Select yes or no from list)	Yes
Is 100% metering available at 11 kV (Select yes or no from list)	Yes
% of metering available at DT	1.97%
% of metering available at consumer end	99.94%
No of feeders at 66kV voltage level	NA
No of feeders at 33kV voltage level	1223
No of feeders at 11kV voltage level	9732
No of LT feeders level	NA
Line length (ckt. km) at 66kV voltage level	NA
Line length (ckt. km) at 33kV voltage level	16735
Line length (ckt. km) at 11kV voltage level	195182
Line length (km) at LT level	164322
Length of Aerial Bunched Cables	87717
Length of Underground Cables	12376
HT/LT ratio	0.80

3.4.1. Metering details

The status of meters installed in JVVNL as on 31-03-2023 are given in the below tables:

Table 11: Voltage wise Meter Consumers

Parameters	>66kV	33kV	11/22kV	LT
Number of conventional metered consumers	0	0	1626	4488861
Number of consumers with 'smart' meters	0	0	0	407126
Number of consumers with 'smart prepaid' meters	0	0	0	285
Number of consumers with 'AMR' meters	66	632	14302	9982
Number of consumers with 'non-smart prepaid' meters	0	0	0	0
Number of unmetered consumers	0	0	0	2902
Number of total consumers	66	632	15928	4909156

3.4.2. Distribution Transformer (DT) details

The details of distribution transformers in JVVNL as on 31-03-2023 are given in the below tables:

Table 12: Numbers of Distribution Transformers

Parameters	>66kV	33kV	11/22kV	LT
Number of conventionally metered Distribution Transformers	0	0	0	
Number of DTs with communicable meters	0	0	0	17247
Number of unmetered DTs	0	0	0	856121
Number of total Transformers	0	0	0	873368

3.4.3. Feeder details

The details of feeders in JVVNL as on 31-03-2023 are given in the below tables:

Table 13: Voltage wise numbers of Feeders

Parameters	>66kV	33kV	11/22Kv	LT
Number of metered feeders		1223	9732	
Number of feeders with communicable meters		1223	9732	
Number of unmetered feeders		0	0	
Number of total feeders		1223	9732	

3.4.4. Distribution Line details

The details of distribution lines in JVVNL as on 31-03-2023 are given in the below tables:

Table 14: Length of Distribution Lines

Parameters	>66kV	33kV	11/22Kv	LT
Line length(ctkm)		16735	195182	164322
Length of Aerial Bunched Cables		0	0	87717
Length of Underground Cables		1617	8592	2167

3.4.5. Energy Flow details

Energy flow details for FY 2022-23 are given in the below table:

Table 15: Energy Flow details

EnergyInput Details	Formula	UoM	Value
Input Energy Purchase (From Generation Source)	A	MU	38764
Net input energy (at DISCOM Periphery after adjusting the transmission losses and energy traded)	B	MU	35144
Total Energy billed (is the Net energy billed, adjusted for energy traded)	C	MU	30016
Transmission and Distribution (T&D) loss Details	D	MU	5129
	E = D/B x 100	%	14.59%

3.4.6. Pattern of energy distribution

Purchase Energy:

During the analyzed period, JVVNL purchased a maximum energy of 3694.22 million units (MUs) in May 2022, while the least energy of 2684.58 MUs purchased in Oct 2022. This shows that the company's energy purchase varies considerably from month to month irrespective of the seasonal impact.

Input Energy:

During the analyzed period, JVVNL at discom periphery a maximum energy input of 3376.75 million units (MUs) in May 2022, while the least input energy of 2462.91 MUs was purchased in Oct 2022. This shows that the company's energy purchase varies considerably from month to month irrespective of the seasonal impact.

Energy Billed:

The energy billed by JVVNL showed a minor increasing trend from April 2022 to March 2023, with a slight bump in January 2023. This indicates that the company's energy consumption has increased gradually over the analyzed period.

The chart below shows JVVNL energy purchase pattern from April 2022 to March 2023:

Figure 3: Monthly Energy Input and Energy billed pattern

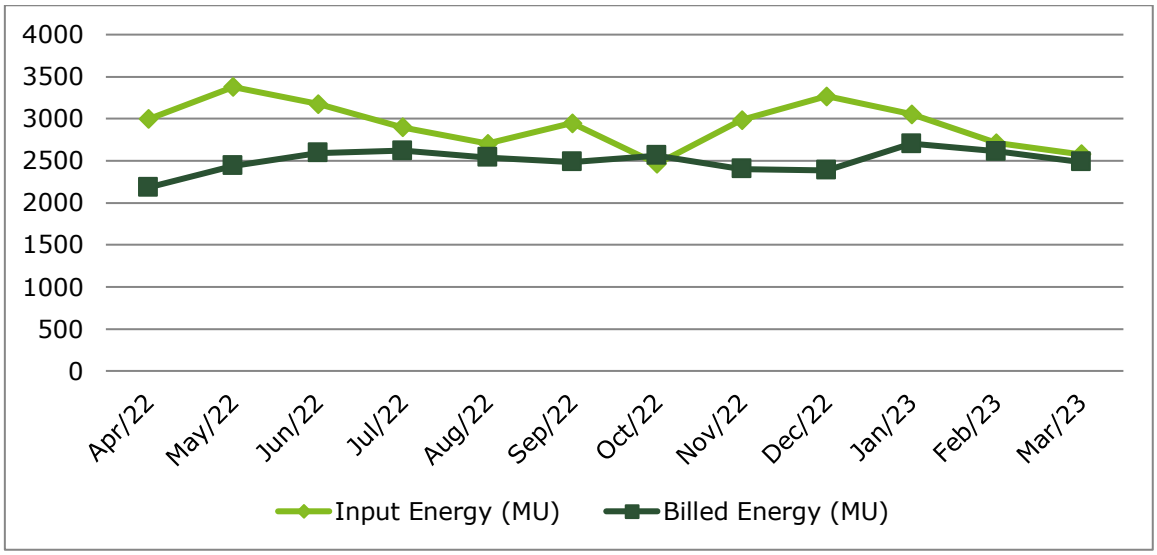
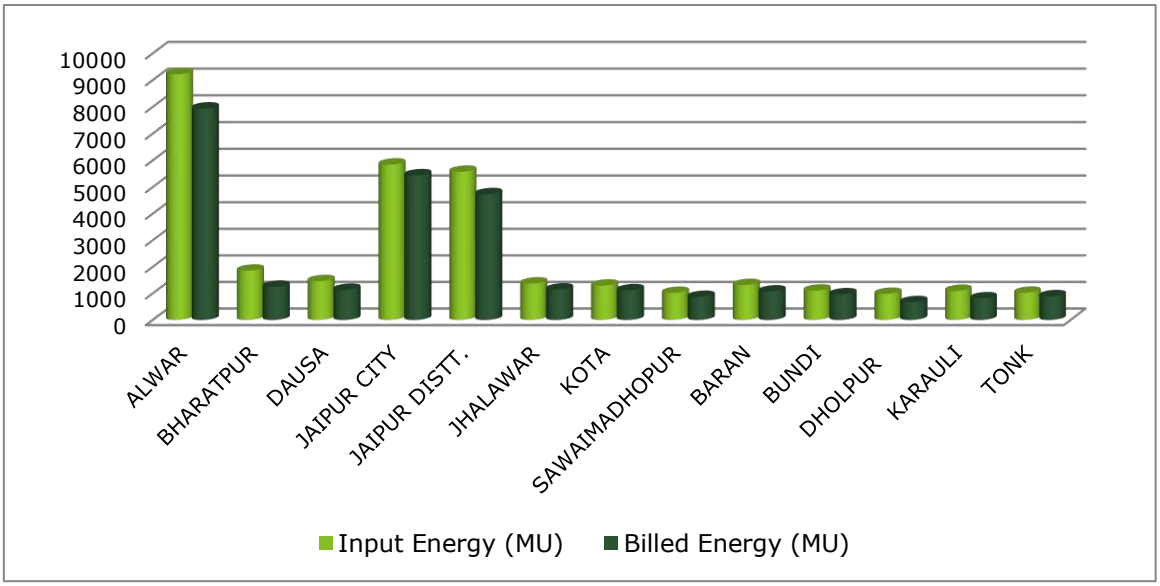


Figure 4: Circle wise Energy Input (MU) and Energy billed (MU) pattern



In conclusion, JVVNL energy input at discom periphery pattern shows considerable variation from month to month. While the maximum energy input in month of May 2022, the least energy input in Oct 2022. The energy billed shows a minor increasing trend from April 2022 to March 2023, indicating a gradual increase in energy consumption. The chart shows that the energy purchase pattern fluctuates considerably, which may pose challenges for the company in managing its energy supply and demand.

The Month wise break up of input energy (MU) parameter for all the circle is given below:

Table 16: Month wise Input Energy for FY 2022-23

	Circle	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	TOTAL
1	ALWAR	759.00	834.70	782.82	712.95	715.50	760.64	646.92	783.91	897.92	845.79	757.86	719.88	9217.89
2	BHARATPUR	147.03	163.73	151.69	146.84	141.52	139.47	113.89	167.46	215.29	176.12	157.57	134.86	1855.47
3	DAUSA	121.42	142.15	127.02	98.34	89.60	95.62	88.72	152.92	172.27	147.35	127.62	98.60	1461.65
4	JAIPUR CITY	557.20	671.34	647.50	599.50	510.85	555.15	438.10	362.91	372.39	397.33	343.04	386.47	5841.79
5	JAIPUR DISTT.	497.44	524.24	499.93	406.76	377.02	446.06	392.49	466.23	540.88	515.74	453.41	451.39	5571.58
6	JHALAWAR	112.21	117.28	103.94	94.09	93.60	102.33	96.17	150.15	146.94	136.39	122.56	96.01	1371.66
7	KOTA	95.69	109.40	104.41	107.42	104.28	125.38	95.41	123.93	119.95	110.21	103.88	93.42	1293.40
8	SAWAIMADHOPUR	86.86	95.64	89.05	83.96	74.11	80.85	66.83	99.82	108.37	88.32	75.72	68.22	1017.74
9	BARAN	88.70	103.82	92.99	93.54	92.74	100.39	82.80	158.10	159.27	133.20	123.51	84.64	1313.70
10	BUNDI	85.78	102.29	92.44	102.69	93.00	112.56	73.03	98.43	100.81	88.42	81.95	70.87	1102.27
11	DHOLPUR	86.32	94.64	89.83	83.70	79.60	78.34	69.90	77.81	85.95	86.76	72.68	74.99	980.51
12	KARAULI	87.07	98.47	86.80	78.18	71.25	72.47	68.60	120.18	126.84	107.64	98.06	76.77	1092.32
13	TONK	94.94	107.67	94.63	84.89	79.35	84.55	72.50	86.35	90.66	81.23	67.98	77.25	1021.99
	TOTAL DISCOM	2819.66	3165.35	2963.05	2692.86	2522.42	2753.79	2305.37	2848.22	3137.56	2914.49	2585.84	2433.35	33141.97
14	KEDL	141.58	174.54	177.90	171.43	150.81	164.26	135.09	116.32	109.43	115.79	103.97	119.97	1681.11
15	BEDL	33.05	36.85	34.99	34.34	30.53	28.42	22.44	19.27	18.04	22.05	18.87	22.56	321.42
	Total	2994.29	3376.75	3175.94	2898.63	2703.76	2946.48	2462.91	2983.81	3265.03	3052.32	2708.68	2575.89	35144.49

The Month wise break up of billed energy (MUs) parameter for all the circle is given below:

Table 17: Month wise Billed Energy for FY 2022-23

	Circle	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	TOTAL
1	ALWAR	612.54	632.07	642.90	654.51	646.49	642.23	673.53	631.58	631.63	720.15	731.23	718.02	7936.87
2	BHARATPUR	80.43	85.28	93.29	88.55	96.57	92.47	105.96	98.49	118.52	136.04	129.65	121.73	1246.97
3	DAUSA	77.09	89.50	81.17	90.70	79.38	87.69	83.11	97.97	102.40	122.25	109.07	110.70	1131.04
4	JAIPUR CITY	397.59	515.40	604.85	581.56	545.96	489.26	508.12	410.77	343.44	354.48	362.15	325.39	5438.99
5	JAIPUR DISTT.	368.83	368.48	391.36	393.66	375.52	362.83	403.25	390.97	380.50	451.60	444.08	400.09	4731.16
6	JHALAWAR	78.89	79.56	82.62	82.09	76.53	81.91	85.91	93.23	106.43	121.90	127.24	124.70	1141.03
7	KOTA	78.47	76.62	87.13	84.41	92.10	84.27	106.60	95.77	106.70	107.99	105.65	88.76	1114.47
8	SAWAIMADHOPUR	44.98	58.80	64.75	70.97	88.84	81.97	72.00	65.74	74.76	98.75	70.64	74.42	866.62
9	BARAN	52.14	78.04	71.70	86.76	71.90	94.02	77.51	99.23	107.86	132.37	98.77	98.54	1068.85
10	BUNDI	61.50	65.70	74.34	78.77	96.23	83.59	95.51	79.36	80.79	91.19	85.59	71.92	964.49
11	DHOLPUR	40.36	53.87	46.64	60.58	47.61	57.61	51.23	60.05	53.04	68.62	60.73	67.88	668.23
12	KARAULI	50.00	50.28	59.14	60.28	63.61	60.58	63.50	69.81	82.68	86.04	91.71	75.18	812.82
13	TONK	64.17	76.83	80.76	79.80	77.69	76.05	76.19	75.14	70.76	74.44	72.39	67.47	891.70
	TOTAL DISCOM	2007.01	2230.44	2380.65	2412.64	2358.43	2294.48	2402.42	2268.11	2259.51	2565.82	2488.90	2344.81	28013.23
14	KEDL	141.58	174.54	177.90	171.43	150.81	164.26	135.09	116.32	109.43	115.79	103.97	119.97	1681.11
15	BEDL	33.05	36.85	34.99	34.34	30.53	28.42	22.44	19.27	18.04	22.05	18.87	22.56	321.42
	Total	2181.65	2441.83	2593.55	2618.41	2539.77	2487.17	2559.96	2403.70	2386.98	2703.66	2611.74	2487.34	30015.76

The voltage wise consumption pattern is given below:

Table 18: Voltage wise consumption pattern

Voltage Level	Consumers		Energy Consumption	
	No.	%Share	MUs	%Share
LT	4909149	99.66%	18727.53	62.39%
HT	16633	0.34%	11288.23	37.61%
Total	4925782	100%	30016	100%

3.4.7. Salient features

JVVNL main objectives are to achieve efficiency gains and make necessary changes to make the company commercially viable, progressively self-sustainable, and less dependent on the government while balancing the interests of consumers about quality of service and economical tariffs.

- To undertake the activities of distribution to all consumers irrespective of the voltage, provision, supply, wheeling, purchase, sale, import, export and trading of electricity, introduce open access in distribution as per the Electricity Act2003 and/or the directions of the regulator.
- To plan, develop, acquire, establish, construct, erect, lay, hire, lease, buy, sell, operate, run, manage, maintain, enlarge, alter, renovate, modernize, work and use power distribution system network in all its aspects including amongst others various voltage lines and associated sub -stations, including distribution centers, cables, wires, accumulators, plants, motors, meters, apparatus, computers and materials connected with sub -transmission, distribution, supply of electrical energy, ancillary services, telecommunication and telemetering equipments.
- To tender, finalise and execute Power Purchase Agreements and other agreements for sale or purchase of electricity with generating companies, trading companies, other distribution companies, Central and State generating authorities, departments or companies, societies, other States, utilities, Independent Power Producers and other Persons.
- To undertake Rural Electrification schemes in the licensed area.
- Any other work incidental to the objectives & functions of the company.

3.5. Energy Conservation measures

Energy conservation is a critical issue in today's world, as the demand for energy continues to increase while the resources available to produce it are finite. The energy conservation measures that have been already taken and some propose for the futures are explained below.

Energy Conservation Measures taken by the DISCOM:

Several energy conservation measures have already been implemented to reduce energy consumption and promote sustainable energy use. Some of these measures are:

Revamped distribution Sector Scheme (RDSS)

The MoP, GoI has launched a Revamped Distribution Sector Scheme- a Reforms-based and Results-linked Scheme on 20.7.21 with an outlay of Rs.3,03,758 crore over a period of five years from FY 2021-22 to FY 2025-26 with the objective to improve the quality, reliability and affordability of power supply to consumers through a financially sustainable and operationally efficient distribution sector. The Scheme aims to reduce the AT& C losses to pan-India levels of 12-15% and ACS-ARR gap to zero by FY 2024-25 by improving the operational efficiencies and financial sustainability of all DISCOMs/ Power Departments, excluding Private Sector DISCOMs.

DISCOMs/ Power Departments would be able to access funds under the Scheme for Pre-paid Smart Metering for all consumers (excluding Ag. consumers),System (DT and Feeder) Metering and Distribution infrastructure works for loss reduction and modernization. The financial assistance for Distribution infrastructure works under the Scheme would be subject to meeting pre-qualifying criteria as well as upon achievement of basic minimum benchmarks by the DISCOM and evaluated on the basis of Action plans.

The Scheme provides for annual appraisal of the DISCOM performance against predefined and agreed upon performance trajectories including AT&C losses, ACS-ARR gaps, infrastructure upgrade performance, consumer services, hours of supply, corporate governance, etc. DISCOMs have to score a minimum of 60% of marks and clear a minimum bar in respect to certain parameters to be able to be eligible for funding against the Scheme in that year.

Implementation of the Scheme would lead to consumer empowerment by way of prepaid Smart metering to be implemented in Public-Private-Partnership (PPP) mode and leveraging Artificial Intelligence to analyze data generated through IT/OT devices including System Meters, prepaid Smart meters to prepare system generated energy accounting reports every month to enable DISCOMs to take informed decisions on loss reduction, demand forecasting, Time of Day (ToD) tariff, Renewable Energy (RE) Integration and for other predictive analysis.

The Scheme has a major focus on improving electricity supply for the farmers through separation of agriculture feeders and for providing daytime electricity to them by convergence with 0(PM-KUSUM) Scheme for solarisation of agriculture feeders.

1. JVVNL has reduced their AT & C losses quite appreciably from the FY 2011-12 to FY 2021-22 by the adoption of Technical Loss Management by network up-gradation, installation of power factor controller, network management, regular health monitoring of the assets at all voltage levels, High Voltage Distribution System (HVDS) installation, LED bulb distribution, Commercial Loss Management and Theft Control, conducting in house Energy audit, replacement of old meters

with high quality electronic meters, adoption of Automatic Meter Reading System, Smart Street Lighting Management System, LT Aerial Bunched Conductor (ABC) installation, use different types of seals to prevent unauthorized access to service parts etc.

2. Energy-Efficient Lighting: The Company has initiated Ujala scheme for replacement of traditional incandescent bulbs with energy-efficient LED bulbs, which has significantly reduced energy consumption and saved power purchase costs.
3. Energy Management Systems: The Company has implemented energy management systems to monitor and control energy consumption, identify areas of energy waste, and optimize energy usage.
4. Renewable Energy: The Company has increased the use of renewable energy sources, such as solar and wind power, to reduce reliance on fossil fuels and reduce carbon emissions.
5. Energy Audits: Regular energy audits are conducted to identify energy waste and implement measures to reduce it.

Proposed Energy Conservation Measures for the Future:

A. Installation of 100% metering at distribution transformers, replacement of old electro-mechanical meters with high quality electronic meters, meter Board Renovation, 100% metered supply, automatic Meter Reading System for high value consumers, In house meter testing facility (NABL accredited) to identify defective and faulty meters, starting of Pre-paid metering, implementation of Smart Street Lighting Management System (SSLMS), installation of LT Aerial Bunched Conductor (ABC), installation of special tamper-evident paper seals in Service cut-out.
B. 11 kV incomers shall be provided with capacitor bank with suitable capacity.
C. Irrigation power consumers shall be provided with adequate capacity individual capacitors with their motors to manage the reactive load.
D. Normal conventional meter should be replaced with communicable meters.
E. Augmentation of existing transformers at overloaded segments.
F. Replacement or strengthening of conductor at overloaded segments is recommended.
G. Recommended to provide AMR meters in DT.
H. Recommended to provide AMR meters for all HT installations.

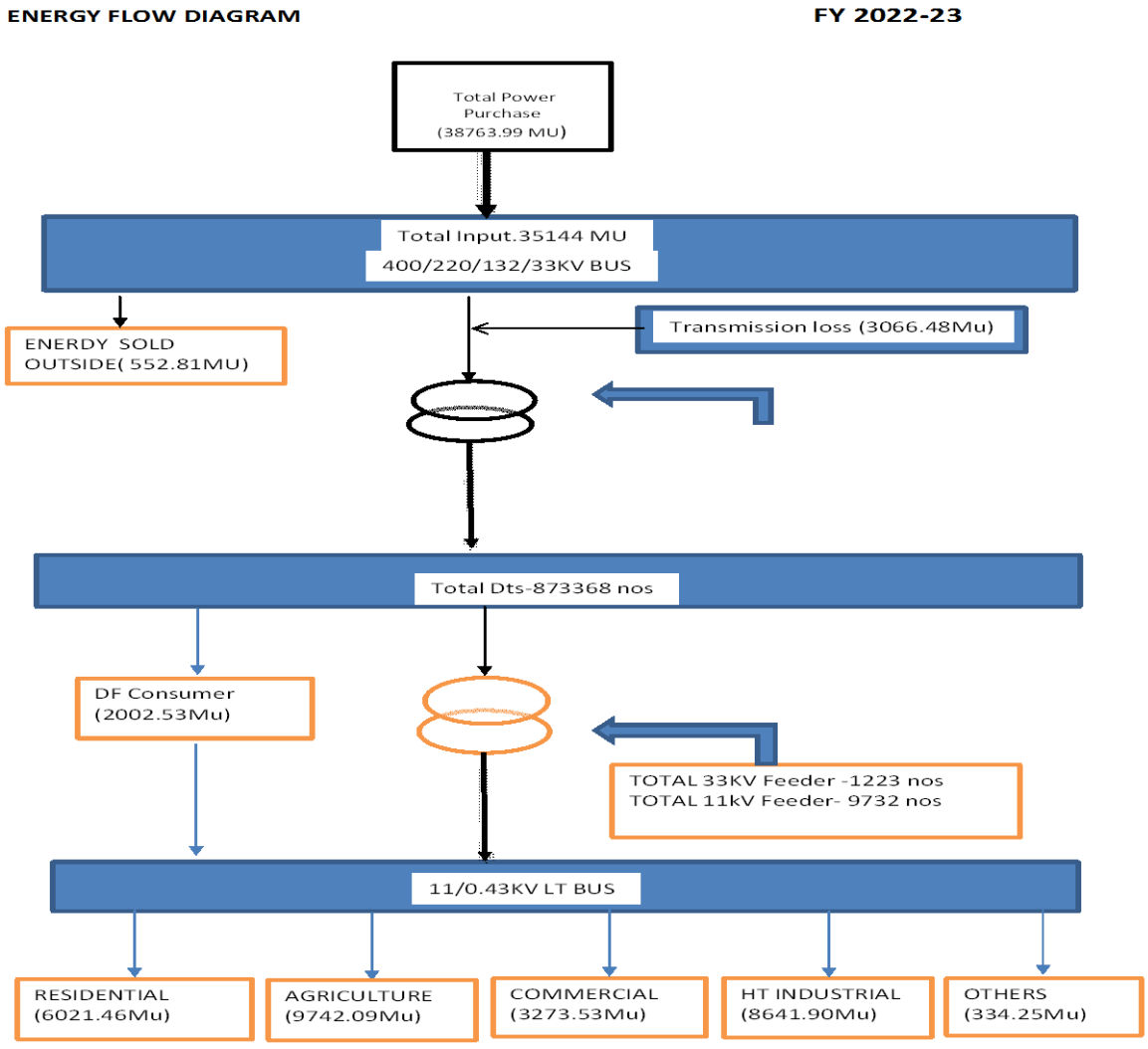
4. Energy flow analysis

4.1. Energy flow across 5 Service Levels

The Energy at different voltage levels and the losses at different levels are shown in below table long term energy, short term energy and renewable energy wise details are given below:

Table 19: Energy Flow at different Voltage level Losses for FY 2022-23

DISCOM	Input (in MU)	Sale (in MU)	Loss (in MU)	Loss %
LT	33310.28	18722	4676	14.04
11kV		4296		
33kV		5616		
>33kV	1834.21	1382	452	24.66



4.2. Validation of metered data

- Sample Checks to ascertain input energy of the feeders to ensure division input energy reported is correct.
- Check and ensure that transmission loss is within the limits.
- Verify the tariff rate for each subsidy and ensure the assessment bill given to the Government for subsidy categories is correct.
- Division wise Metering, billing and consumption analysis is to be made and should include Quarter to quarter comparison of current year and previous year (s).
- Identify departmental metering gaps and billing gaps areas such as Local bodies-municipalities, police lines, Govt offices.

The Category wise metered consumers and unmetered consumers for all the circle wise consumers are shown in below table, As per the consumers details most of the consumers are residential which is 77% and the energy share is 21% of total consumers and energy, commercial/industrial LT is 10% of total consumers and energy share is 12% of total billed energy, commercial/industrial HT is 0.41% of total consumers and energy share is 30.85% of total billed energy.

Consumer category	Metered	Un-metered	Total Consumer	% share of Consumer	Metered Energy (MU)	Unmetered Energy	Billed Energy (MU)	% Share energy
Residential	3797082	0	3797082	77%	6021.46	0.00	6021.46	21%
Agricultural	594306	2902	597208	12%	9656.31	85.78	9742.09	35%
Commercial/Industrial-LT	500007	0	500007	10%	3273.53	0.00	3273.53	12%
Commercial/Industrial-HT	20296	0	20296	0%	8641.90	0.00	8641.90	31%
Others	11187	0	11187	0%	334.25	0.00	334.25	1%
Total	4922878	2902	4925780	100%	27927.45	85.78	28013.23	100%

Field visit of Substations, DTs and commercial building was done during the audit time.

It was also observed that most of the consumers are metered.

It was also observed that some of the meter and CT & PT is not in working condition.

At the time of field visit it was observed that capacitor banks are installed.

It was also observed that average power factor was found in the range of .90 to 0.95.

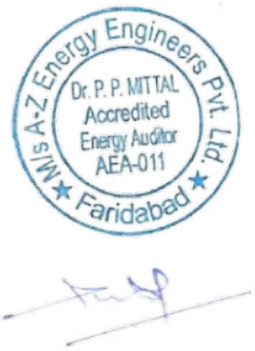
It was also observed that hourly load parameters are monitored in the logbook and energy consumption is monitored at every 24hr.

4.3. Validation of energy flow data and losses

Voltage wise power purchase details are not available, as the invoice of power purchase contains only units purchased and details of power plant voltage not available. Voltage wise energy flow data are not available, Input at different voltage level are not available. Majority of feeders are common to LT & HT. So input energy supplied is inseparable.

3	Voltage level	Particulars	MU
I	66kV and above	Long-Term Conventional	1,834
		Medium Conventional	
		Short Term Conventional	
		Banking	
		Long-Term Renewable energy	
		Medium and Short-Term RE	
		Captive, open access input	
		Sale of surplus power	
		Quantum of inter-state transmission loss	
		Power procured from inter-state sources	1,834
		Power at state transmission boundary	1,834
Ii	33kV	Long-Term Conventional	33,310
		Medium Conventional	
		Short Term Conventional	
		Banking	
		Long-Term Renewable energy	
		Medium and Short-Term RE	
		Captive, open access input	
		Sale of surplus power	
		Quantum of intra-state transmission loss	0
		Power procured from intra-state sources	33,310
Iii		**Input in DISCOM wires network**	35,144
Iv	33 kV	Renewable Energy Procurement	
		Small capacity conventional/ biomass/ hydro plants Procurement	
		Captive, open access input	
V	11 kV	Renewable Energy Procurement	
		Small capacity conventional/ biomass/ hydro plants Procurement	
		Sales Migration Input	
Vi	LT	Renewable Energy Procurement	
		Sales Migration Input	
Vii		**Energy Embedded within DISCOM wires network**	0
Viii		**Total Energy Available/ Input**	35,144
4	**Voltage level**	**Energy Sales Particulars**	
I	LT Level	DISCOM' consumers	18,722
		Demand from open access, captive	
		Embedded generation used at LT level	
		Sale at LT level	
		Quantum of LT level losses	
		Energy Input at LT level	
Ii	11 kV Level	DISCOM' consumers	4,296
		Demand from open access, captive	
		Embedded generation at 11 kV level used	
		Sales at 11 kV level	
		Quantum of Losses at 11 kV	
		Energy input at 11 kV level	

Iii	33 kV Level	DISCOM' consumers	5,616
		Demand from open access, captive	
		Embedded generation at 33 kV or below level	
		Sales at 33 kV level	
		Quantum of Losses at 33 kV	
		Energy input at 33kV Level	
Iv	> 33 kV	DISCOM' consumers	1,382
		Demand from open access, captive	
		Cross border sale of energy	
		Sale to other DISCOMs	
		Banking	
		Sales at 66kV and above (EHV)	
Total Energy Requirement			
Total Energy Sales			**30,016**



5. Loss and subsidy computation

5.1. Energy accounts analysis for previous year

Previous cycle of audit is energy accounting base on the notification No. 18/1/BEE/DISCOM/2021 from Bureau of Energy Efficiency dated 6thOctober 2021.

a) Summary of AT&C losses for previous years

The AT&C losses for the FY 2020-21 & 2021-22 are as shown below:

Table 20: AT&C losses of previous year

Technical Details	UoM	FY 2020-21	FY 2021-22
Input Energy Purchase(From Generation Source)*	Million kWh	33630.11	35698.25
Net input energy (at DISCOM Periphery after adjusting the transmission losses and energy traded)	Million kWh	31176.07	31896.48
Total Energy billed (is the Net energy billed, adjusted for energy traded))	Million kWh	25115.88	26534.11
Transmission and Distribution (T&D) loss Details	Million kWh	7958.54	5362.37
	%	24.06%	16.81%
Collection Efficiency	%	92.83%	100%
Aggregate Technical & Commercial Loss	%	25.22%	16.81%

b) Circle wise Consumer, Load & Energy consumptions for FY 2021-22

The circle wise input energy & Billed energy in different circle is given below the "Alwar" circle having maximum energy billed and "Dholpur" circle having minimum energy billed. "Alwar" have maximum input energy and "Dholpur" have minimum input energy as shown in table:

Table 21: Circle wise AT&C Losses in FY 2021-22

S. No	Name of circle	Total Number of connections (Nos)	Total Connected Load(MW)	Input energy (MU)	Billed Energy (MU)
1	Alwar	758706	4704.23	8398.13	7110.74
2	BARAN	175746	474.20	1219.09	950.76
3	BHARATPUR	313790	812.44	1695.43	1059.99
4	BUNDI	214455	509.06	1033.47	873.22
5	DAUSA	284492	707.15	1392.67	1045.41
6	DHOLPUR	132426	342.78	913.68	594.87
7	JCC	944516	4429.60	5151.41	4740.29
8	JHALAWAR	210636	544.99	1345.40	1079.10
9	JPDC	811869	2782.63	5128.72	4208.61
10	KARAULI	211262	597.96	1023.11	751.61
11	KOTA	181099	612.09	1201.14	1008.32
12	SWM	232763	505.51	980.73	826.73
13	TONK	261177	462.46	933.08	804.06
	DF	2	1017.55	1480.42	1480.42
	Total	**4732939**	**18502.65**	**31896.48**	**26534.11**

c) Circle wise Energy & Losses consumptions for FY 2021-22

The circle wise Input energy, Billed energy and losses are given below as shown in table:

Table 22: Circle wise AT&C Losses in FY 2021-22

S. No	Name of circle	Input energy (MU)	Total energy (MU)	Distribution loss (MU)	Distribution loss (%)	Collection Efficiency (%)	AT & C loss (%)
1	Alwar	8398.13	7110.74	1287.40	15.33%	105.63%	10.57%
2	Baran	1219.09	950.76	268.33	22.01%	115.37%	10.02%
3	Bharatpur	1695.43	1059.99	635.45	37.48%	110.61%	30.85%
4	Bundi	1033.47	873.22	160.25	15.51%	115.26%	2.62%
5	Dausa	1392.67	1045.41	347.26	24.93%	110.59%	16.99%
6	Dholpur	913.68	594.87	318.82	34.89%	93.94%	38.84%
7	JCC	5151.41	4740.29	411.11	7.98%	92.96%	14.46%
8	Jhalawar	1345.40	1079.10	266.29	19.79%	103.65%	16.86%
9	JPDC	5128.72	4208.61	920.11	17.94%	104.01%	14.65%
10	Karauli	1023.11	751.61	271.51	26.54%	117.39%	13.76%
11	Kota	1201.14	1008.32	192.82	16.05%	123.27%	-3.48%
12	SWM	980.73	826.73	154.00	15.70%	113.83%	4.04%
13	Tonk	933.08	804.06	129.02	13.83%	102.94%	11.30%
	DF	1480.42	1480.42	0.00	0.00%	84.14%	15.86%
	Total	**31896.48**	**26534.11**	**5362.37**	**16.81%**	**100.00%**	**16.81%**

5.2. Energy accounts analysis and performance in current year (based on quarterly data)

5.2.1. Month wise Input energy and billed energy details

The Month wise input energy & billed energy for FY 2022-23 of the Discom periphery is shown in below table.

Table 23: Month wise input energy & billed energy for FY 2022-23

Months	Purchase Units (MU)	Net Input Energy (MU)	Billed Energy (MU)
Apr-22	3325.33	2994.29	2181.65
May-22	**3694.22**	3376.75	2441.83
Jun-22	3498.74	3175.94	2593.55
Jul-22	3341.03	2898.63	2618.41
Aug-22	3049.07	2703.76	2539.77
Sep-22	3209.49	2946.48	2487.17
Oct-22	**2684.58**	2462.91	2559.96
Nov-22	3247.60	2983.81	2403.70
Dec-22	3557.76	3265.03	2386.98
Jan-23	3345.56	3052.32	2703.66
Feb-23	2960.15	2708.68	2611.74
Mar-23	2850.46	2575.89	2487.34
Total	38763.99	35144.5	30015.8

Note: Details Sheet Attached in Annexure

5.2.2. Quarterly and annual AT&C losses

The Quarter wise and annual AT&C losses for FY 2022-23 are shown in below table.

Table 24: Energy Input and AT&C Losses for FY 2022-23

Energy Input Details	Formula	UoM	Quarterly				Annual
			Q1	Q2	Q3	Q4	FY 22-23
Input Energy Purchase (From Generation Source)	A	MU	10408	9508	9384	9449	38764
Net input energy (at DISCOM Periphery after adjusting the transmission losses and energy traded)	B	MU	9547	8549	9365	8336	35144
Total Energy billed (is the Net energy billed, adjusted for energy traded)	C	MU	7217	7645	7351	7803	30016
Transmission and Distribution (T&D) loss Details	D	MU	2330	904	2014	534	5129
	E = D/B x 100	%	24.41%	10.57%	21.51%	6.40%	14.59%
Collection Efficiency	F	%	106.77%	92.11%	94.67%	98.48%	98.41%
Aggregate Technical & Commercial Loss	G = 1-{(1-E) x Min (F,100%)	%	19.29%	17.62%	20.11%	7.83%	15.95%

5.2.3. Voltage wise AT&C losses

Voltage wise power purchase details are available, as the invoice of power purchase contains only units purchased and details of power plant voltage not available.

Majority of feeders are common to LT & HT. So input energy supplied is inseparable.

Cumulated EHT sales MUs for 33kV and above are maintained and therefore bifurcations of same are not available.

The voltage wise AT&C losses of JVVNL for FY 2022-23 are as shown in the below table:

Table 25: Voltage-wise AT&C Losses for FY 2022-23

S. No.	Particulars	Units	Values
1	**Losses in >33 KV System and Connected Equipment**		
1.a.	Total Energy delivered into 132 KV Distribution System from EHT SSs	MUs	
1.b.	Energy consumed by HT consumers at 132KV (Sales + Third Party)	MUs	1382
1.c.	Energy Delivered to lower voltage	MUs	
1.d.	**Losses (>33 kV System)**	MUs	
1.e.	**% Losses (>33 kV System)**	%	
2	**Losses in 33 KV System and Connected Equipment**		
2.a.	Total Energy delivered into 33 KV Distribution System from EHT SSs	MUs	
2.b.	Energy consumed by HT consumers at 33KV (Sales + Third Party)	MUs	5616
2.c.	Energy Delivered into 11 KV and LT System from 33/11 KV SSs	MUs	
2.d.	**Losses (33 kV System)**	MUs	
2.e.	**% Losses (33 kV System)**	%	
3	**Losses in 11 KV System and Connected Equipment**		
3.a.	Total Energy delivered into 11 KV and LT Distribution System	MUs	
3.b.	Energy consumed by HT consumers at 11KV (Sales + Third Party)	MUs	4296
3.c.	Total Output from 11kV to LT	MUs	
3.d.	**Losses (11kV System)**	MUs	

S. No.	Particulars	Units	Values
3.e.	**% Losses (11kV System)**	%	
4	**Losses in LT system and connected equipment**		
4.a.	Energy delivered to LT system from 11/400 V DTRs	MUs	
4.b.	Energy sold at LT level	MUs	18722
4.c.	**Losses (LT System)**	MUs	
4.d.	**% Losses (LT System)**	%	
5	**Total losses in the Distribution System**		
5.a.	Total Input to the distribution system	MUs	35144
5.b.	Total Output from the Distribution System	MUs	30016
5.c.	**Distribution System Losses**	MUs	5129
5.d.	**% Distribution System Losses**	%	14.59%

5.2.4. Circle wise AT&C losses analysis

1. Circle wise connections & energy consumptions for FY 2022-23

The circle wise connections, load, input energy & Billed energy with percentage share in different circle is given below the "JCC" circle having maximum numbers of consumers and "Dholpur" circle having minimum numbers of consumers. "Alwar" have maximum input energy as well as billed units and "Dholpur" have minimum input energy as well as billed units as shown in table:

Table 26: Circle wise No. of consumers, Input energy and Sales in FY 2022-23

Circle	Total Number of connections		Total Connected Load		Input energy		Billed energy	
	Nos.	% Share	MW	% Share	MU	% Share	MU	% Share
ALWAR	791340	16.1%	4988.19	26.8%	9217.8863	27.8%	7936.86918	28.3%
BARAN	182784	3.7%	493.959	2.7%	1313.7024	4.0%	1068.85385	3.8%
BHARATPUR	325606	6.6%	865.873	4.7%	1855.4699	5.6%	1246.96987	4.5%
BUNDI	222476	4.5%	551.206	3.0%	1102.2683	3.3%	964.486126	3.4%
DAUSA	294372	6.0%	744.203	4.0%	1461.6505	4.4%	1131.03846	4.0%
DHOLPUR	138000	2.8%	361.497	1.9%	980.51345	3.0%	668.228909	2.4%
JCC	983120	20.0%	4718.9	25.4%	5841.7855	17.6%	5438.98759	19.4%
JHALAWAR	216448	4.4%	563.304	3.0%	1371.6647	4.1%	1141.02544	4.1%
JPDC	853992	17.3%	3007.57	16.2%	5571.5756	16.8%	4731.16213	16.9%
KARAULI	217180	4.4%	621.739	3.3%	1092.3178	3.3%	812.819953	2.9%
KOTA	188917	3.8%	652.305	3.5%	1293.4	3.9%	1114.47199	4.0%
SWM	238914	4.9%	527.691	2.8%	1017.7434	3.1%	866.622223	3.1%
TONK	272631	5.5%	505.378	2.7%	1021.9883	3.1%	891.697351	3.2%
Jaipur Discom	4925780	100.0%	18601.8	100.0%	33141.966	100.0%	28013.2331	100.0%
DF	2		1068.18		2002.53		2002.53	
Total	4925782		19670		35144.494		30015.761	

2. Circle-wise AT&C losses

The circle wise AT&C losses are shown in the table below:

Table 27: Circle wise T&D losses, Collection Efficiency and AT&C losses for FY 2022-23

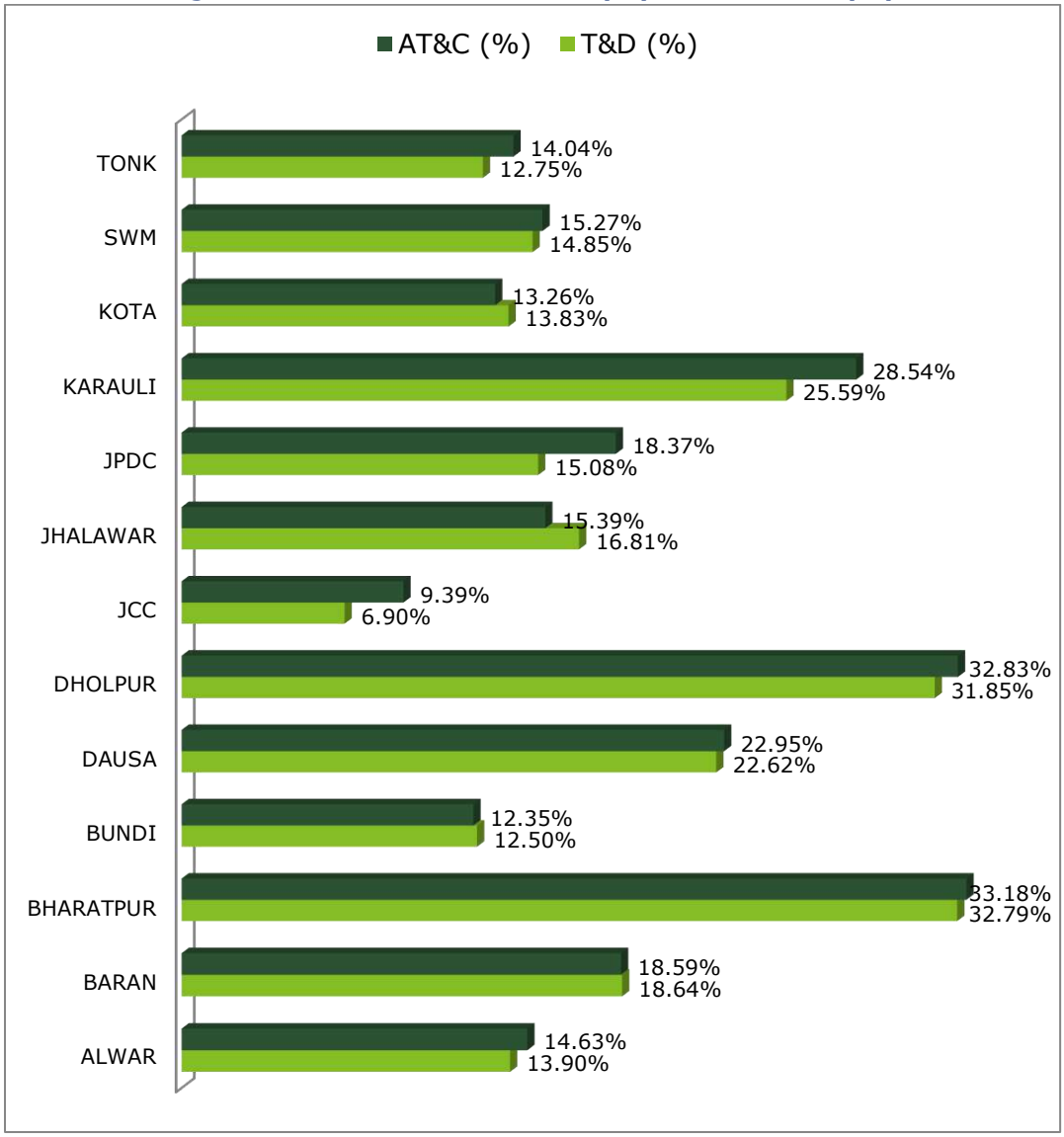
Name of Circle	Input energy (MU)	Billed energy (MU)	T&D loss		Collection Efficiency (%)	AT& Closs (%)
			(MU)	(%)		
ALWAR	9217.89	7936.87	1281.02	13.90%	99.15%	14.63%
BARAN	1313.70	1068.85	244.85	18.64%	100.06%	18.59%
BHARATPUR	1855.47	1246.97	608.50	32.79%	99.42%	33.18%
BUNDI	1102.27	964.49	137.78	12.50%	100.17%	12.35%
DAUSA	1461.65	1131.04	330.61	22.62%	99.57%	22.95%
DHOLPUR	980.51	668.23	312.28	31.85%	98.57%	32.83%
JCC	5841.79	5438.99	402.80	6.90%	97.32%	9.39%
JHALAWAR	1371.66	1141.03	230.64	16.81%	101.72%	15.39%
JPDC	5571.58	4731.16	840.41	15.08%	96.13%	18.37%
KARAULI	1092.32	812.82	279.50	25.59%	96.04%	28.54%
KOTA	1293.40	1114.47	178.93	13.83%	100.66%	13.26%
SWM	1017.74	866.62	151.12	14.85%	99.51%	15.27%
TONK	1021.99	891.70	130.29	12.75%	98.52%	14.04%
Jaipur Discom	33141.97	28013.23	5128.73	15.48%	98.36%	16.86%
DF	2002.53	2002.53	0.00	0.00%	99.21%	0.79%
Total	35144.49	30015.76	5128.73	14.59%	98.41%	15.95%

Note: *AT&C Losses calculation as per BEE proforma the calculation is as per actual Collection efficiency. JVVNLAT&C calculation is based on more than 100% collection efficiency.*

3. High loss Circles

"Alwar" Circle had the highest T&D loss both in quantum 1281.02 MUs and highest T&D loss in Bharatpur percentage of 32.79%. Therefore, "Dholpur" Circle must be prioritizedto reduce the T&D loss in order to have overall reduction in AT&C losses of the DISCOM. Further, the circles with high loss that needs to be prioritized can be identified from the below chart:

Figure 5: Circle wise AT&C Losses (%) Vs T&D losses (%)



Division wise AT&C losses analysis

4. Division-wise AT&C losses

The Division wise AT&C losses are shown in the table below:

Table 28: Division wise T&D losses, Collection Efficiency and AT&C losses for FY 2022-23

S. No	Name of circle	Circle code	Name of Division	Consumer category	Total Number of connection (Nos)	Total Connected Load (MW)	Input energy (MU)	Total Billed energy (MU)	% of energy consumption	D loss (MU)	D loss (%)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency (%)	AT & C loss (%)
1	ALWAR		XEN_CD_ ALWAR	Residential	99519	254	1241.73	241.87	20.5%	60.35	4.86%	192.04	197.11	103%	
				Agricultural	2907	30		51.02	4.3%			34.88	34.15	98%	
				Commercial/Industrial-LT	21861	106		115.02	9.7%			111.70	116.89	105%	
				Commercial/Industrial-HT	937	274		745.74	63.1%			545.08	557.41	102%	
				Others	331	20		27.74	2.3%			26.62	23.31	88%	
Sub-total					**125555**	**683**	**1241.73**	**1181.38**	**100%**	**60.35**	**4.86%**	**910.32**	**928.86**	102%	**2.92**
2	ALWAR		XEN_DD_ ALWAR	Residential	47902	38	480.34	43.67	12.2%	121.98	25.40%	35.05	38.04	109%	
				Agricultural	13059	162		254.49	71.0%			153.42	150.26	98%	
				Commercial/Industrial-LT	5055	23		29.60	8.3%			26.52	28.90	109%	
				Commercial/Industrial-HT	54	14		29.65	8.3%			22.32	23.05	103%	
				Others	69	1		0.95	0.3%			0.97	0.38	40%	
Sub-total					**66139**	**238**	**480.34**	**358.36**	**100%**	**121.98**	**25.40%**	**238.28**	**240.64**	101%	**24.66**
3	ALWAR		XEN_OM_ ALWAR-RURAL	Residential	42444	76	512.32	45	12.2%	139.48	27.23%	38.25	41.53	109%	
				Agricultural	13957	171		292	78.2%			184.77	181.50	98%	
				Commercial/Industrial-LT	4844	16		25	6.7%			19.83	21.02	106%	
				Commercial/Industrial-HT	76	14		10	2.6%			10.14	10.09	100%	
				Others	46	1		1	0.3%			1.00	1.12	112%	
Sub-total					**61367**	**279**	**512.32**	**373**	**100%**	**139.48**	**27.23%**	**253.99**	**255.25**	100%	**26.86**
4	ALWAR		XEN_OM_ BANSUR	Residential	77660	366	855.94	75.07	12%	214.83	25.10%	61.02	65.31	107%	
				Agricultural	30809	285		527.38	82%			331.81	324.55	98%	
				Commercial/Industrial-LT	6041	21		30.64	5%			26.18	30.49	116%	
				Commercial/Industrial-HT	62	6		7.11	1%			6.58	6.63	101%	
				Others	98	0		0.91	0%			0.85	0.35	41%	
Sub-total					**114670**	**679**	**855.94**	**641.12**	**100%**	**214.83**	**25.10%**	**426.45**	**427.32**	100%	**24.94**

S. No	Name of circle	Circle code	Name of Division	Consumer category	Total Number of connection (Nos)	Total Connected Load (MW)	Input energy (MU)	Total Billed energy (MU)	% of energy consumption	D loss (MU)	D loss (%)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency (%)	AT & C loss (%)
5	ALWAR		XEN_OM_BEHROR	Residential	70860	101	1316.85	84	7.9%	252.03	19.14%	64.02	68.61	107%	
				Agricultural	12925	152		254	23.9%			150.09	148.90	99%	
				Commercial/Industrial-LT	6684	57		73	6.8%			65.73	68.64	104%	
				Commercial/Industrial-HT	652	301		650	61.0%			505.68	514.74	102%	
				Others	260	2		4	0.4%			4.17	3.11	74%	
Sub-total					**91381**	**613**	**1316.85**	**1065**	**100%**	**252.03**	**19.14%**	**789.68**	**804.00**	102%	**17.67**
6	ALWAR		XEN_OM_BHIWADI	Residential	58588	214	3217.21	132	4.3%	113.34	3.52%	107.16	110.41	103%	
				Agricultural	4276	36		71	2.3%			44.07	43.28	98%	
				Commercial/Industrial-LT	7011	80		76	2.4%			70.08	72.77	104%	
				Commercial/Industrial-HT	2620	1321		2808	90.5%			2141.71	2047.80	96%	
				Others	355	7		17	0.5%			13.79	11.81	86%	
Sub-total					**72850**	**1659**	**3217.21**	**3104**	**100%**	**113.34**	**3.52%**	**2376.83**	**2286.08**	96%	**7.21**
7	ALWAR		XEN_OM_K.G.BASS	Residential	85251	109	843.37	110	16.8%	187.43	22.22%	86.69	91.68	106%	
				Agricultural	28449	258		462	70.5%			294.79	287.05	97%	
				Commercial/Industrial-LT	9957	34		47	7.2%			41.47	44.80	108%	
				Commercial/Industrial-HT	172	26		33	5.0%			30.10	30.71	102%	
				Others	124	4		3	0.5%			3.85	2.63	68%	
Sub-total					**123953**	**432**	**843.37**	**656**	**100%**	**187.43**	**22.22%**	**456.91**	**456.88**	100%	**22.23**
8	ALWAR		XEN_OM_LAXMMANGARH	Residential	51169	38	426.72	49	15.9%	116.20	27.23%	40.08	44.30	111%	
				Agricultural	14856	169		242	78.0%			159.32	155.13	97%	
				Commercial/Industrial-LT	4077	14		15	4.9%			14.97	16.85	113%	
				Commercial/Industrial-HT	25	2		3	1.1%			2.71	2.74	101%	
				Others	60	1		0	0.1%			0.56	0.48	84%	
Sub-total					**70187**	**224**	**426.72**	**311**	**100%**	**116.20**	**27.23%**	**217.64**	**219.49**	101%	**26.61**
9	ALWAR		XEN_OM_RAJGARH	Residential	50169	36	323.40	45	18.0%	75.38	23.31%	35.24	37.57	107%	
				Agricultural	9998	111		155	62.5%			99.57	98.05	98%	
				Commercial/Industrial-LT	4805	17		18	7.2%			17.18	18.52	108%	
				Commercial/Industrial-HT	119	16		29	11.8%			25.72	26.56	103%	
				Others	147	3		1	0.5%			1.80	0.87	48%	

S. No	Name of circle	Circle code	Name of Division	Consumer category	Total Number of connection (Nos)	Total Connected Load (MW)	Input energy (MU)	Total Billed energy (MU)	% of energy consumption	D loss (MU)	D loss (%)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency (%)	AT & C loss (%)
Sub-total					**65238**	**182**	**323.40**	**248**	**100%**	**75.38**	**23.31%**	**179.52**	**181.57**	101%	**22.43**
	ALWAR			Residential	583562	1233	9217.89	826	10.4%	1281.02	13.90%	659.55	694.57	105%	
				Agricultural	131236	1376		2309	29.1%			1452.72	1422.87	98%	
				Commercial/Industrial-LT	70335	368		429	5.4%			393.67	418.87	106%	
				Commercial/Industrial-HT	4717	1974		4316	54.4%			3290.04	3219.73	98%	
				Others	1490	38		56	0.7%			53.62	44.06	82%	
Sub-total					**791340**	**4988**	**9217.89**	**7937**	**100%**	**1281.02**	**13.90%**	**5849.61**	**5800.10**	99%	**14.63**
10	BARAN		XEN_CD_BARAN	Residential	38955	47	366.67	51	18.2%	88.19	24.05%	41.25	42.67	103%	
				Agricultural	8762	57		174	62.5%			106.71	108.25	101%	
				Commercial/Industrial-LT	5712	22		24	8.4%			24.48	25.82	105%	
				Commercial/Industrial-HT	100	16		29	10.3%			24.50	20.42	83%	
				Others	191	3		2	0.6%			2.97	1.29	43%	
Sub-total					**53720**	**145**	**366.67**	**278**	**100%**	**88.19**	**24.05%**	**199.9**	**198.5**	99%	**24.61**
11	BARAN		XEN_DD_BARAN	Residential	46742	37	452.25	38	9.8%	68.25	15.09%	34.35	34.42	100%	
				Agricultural	16578	126		327	85.3%			207.13	209.50	101%	
				Commercial/Industrial-LT	2979	10		14	3.6%			13.29	13.26	100%	
				Commercial/Industrial-HT	32	3		4	1.2%			4.48	4.40	98%	
				Others	106	1		1	0.2%			0.76	1.19	156%	
Sub-total					**66437**	**178**	**452.25**	**384**	**100%**	**68.25**	**15.09%**	**260.0**	**262.8**	101%	**14.19**
12	BARAN		XEN_OM_ATRU	Residential	40869	39	494.78	36	8.9%	88.41	17.87%	33.24	34.84	105%	
				Agricultural	18090	107		342	84.2%			207.23	204.80	99%	
				Commercial/Industrial-LT	3522	12		16	4.0%			16.00	15.43	96%	
				Commercial/Industrial-HT	60	12		10	2.5%			11.55	11.26	97%	
				Others	86	1		2	0.5%			1.77	2.58	146%	
Sub-total					**62627**	**171**	**494.78**	**406.37**	**100%**	**88.41**	**17.87%**	**269.8**	**268.9**	100%	**18.14**
	BARAN			Residential	126566	123	1313.70	124	11.6%	244.85	18.64%	108.84	111.92	103%	
				Agricultural	43430	291		844	78.9%			521.07	522.55	100%	
				Commercial/Industrial-LT	12213	44		54	5.0%			53.77	54.51	101%	
				Commercial/Industrial-HT	192	31		43	4.0%			40.54	36.08	89%	

S. No	Name of circle	Circle code	Name of Division	Consumer category	Total Number of connection (Nos)	Total Connected Load (MW)	Input energy (MU)	Total Billed energy (MU)	% of energy consumption	D loss (MU)	D loss (%)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency (%)	AT & C loss (%)
				Others	383	5		4	0.4%			5.50	5.06	92%	
Sub-total					**182784**	**494**	**1313.70**	**1068.85**	**100%**	**244.85**	**18.64%**	**729.7**	**730.1**	100%	**18.59**
13	BHARATPUR		XEN_OM_BAYANA	Residential	49360	53	392.24	63	21.2%	95.77	24.42%	51.86	57.21	110%	
				Agricultural	8776	78		166	56.0%			111.22	94.30	85%	
				Commercial/Industrial-LT	4178	16		22	7.3%			20.72	19.74	95%	
				Commercial/Industrial-HT	408	37		41	13.7%			39.91	41.38	104%	
				Others	147	1		5	1.8%			5.72	2.34	41%	
Sub-total					**62869**	**184**	**392.24**	**296.47**	**100%**	**95.77**	**24.42%**	**229.4**	**215.0**	94%	**29.18**
14	BHARATPUR		XEN_OM_BHARATPUR	Residential	62060	52	463.65	57	16.2%	110.53	23.84%	49.01	54.14	110%	
				Agricultural	12810	137		246	69.7%			148.72	146.36	98%	
				Commercial/Industrial-LT	3952	18		20	5.7%			18.66	18.57	99%	
				Commercial/Industrial-HT	79	20		27	7.8%			23.33	23.87	102%	
				Others	127	1		2	0.6%			2.23	0.79	36%	
Sub-total					**79028**	**228**	**463.65**	**353.12**	**100%**	**110.53**	**23.84%**	**241.9**	**243.7**	101%	**23.28**
15	BHARATPUR		XEN_OM_DEEG	Residential	72717	71	457.19	79	30.9%	200.06	43.76%	63.61	69.59	109%	
				Agricultural	6914	62		130	50.7%			79.00	78.13	99%	
				Commercial/Industrial-LT	7024	24		32	12.4%			25.20	25.98	103%	
				Commercial/Industrial-HT	73	18		14	5.3%			13.61	13.45	99%	
				Others	131	1		2	0.7%			2.61	0.01	0%	
Sub-total					**86859**	**176**	**457.19**	**257.13**	**100%**	**200.06**	**43.76%**	**184.0**	**187.2**	102%	**42.80**
16	BHARATPUR		XEN_OM_KAMAN	Residential	41437	40	332.62	46	22.5%	129.73	39.00%	40.86	43.00	105%	
				Agricultural	3279	27		101	49.6%			55.36	55.60	100%	
				Commercial/Industrial-LT	3966	15		18	8.9%			15.41	14.66	95%	
				Commercial/Industrial-HT	134	38		38	18.7%			38.34	39.23	102%	
				Others	49	1		1	0.3%			0.66	0.65	98%	
Sub-total					**48865**	**121**	**332.62**	**202.88**	**100%**	**129.73**	**39.00%**	**150.6**	**153.1**	102%	**37.99**
17	BHARATPUR		XEN_OM_WEIR	Residential	36395	35	209.76	16.09	12%	72.40	34.51%	13.41	15.53	116%	
				Agricultural	8381	95		95.47	70%			60.34	57.49	95%	
				Commercial/Industrial-LT	3055	12		8.67	6%			7.99	10.70	134%	

S. No	Name of circle	Circle code	Name of Division	Consumer category	Total Number of connection (Nos)	Total Connected Load (MW)	Input energy (MU)	Total Billed energy (MU)	% of energy consumption	D loss (MU)	D loss (%)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency (%)	AT & C loss (%)
				Commercial/Industrial-HT	51	15		15.61	11%			13.81	14.24	103%	
				Others	103	0		1.52	1%			1.71	1.10	64%	
Sub-total					**47985**	**157**	**209.76**	**137.37**	**100%**	**72.40**	**34.51%**	**97.3**	**99.1**	102%	**33.31**
	BHARATPUR			Residential	261969	250		261	20.9%			219	239	109%	
				Agricultural	40160	399		739	59.3%			455	432	95%	
				Commercial/Industrial-LT	22175	84	1855.47	100	8.1%	608.50	32.79%	88	90	102%	
				Commercial/Industrial-HT	745	129		135	10.8%			129	132	102%	
				Others	557	4		11	0.9%			13	5	38%	
Sub-total					**325606**	**866**	**1855.47**	**1247**	**100%**	**608.50**	**32.79%**	**903.3**	**898.0**	99%	**33.18**
18	BUNDI		XEN_OM_BUNDI	Residential	95249	95		117	18.5%			97.18	103.38	106%	
				Agricultural	22228	151		354	56.0%			219.74	213.17	97%	
				Commercial/Industrial-LT	9766	36	733.94	46	7.2%	102.53	13.97%	44.60	47.75	107%	
				Commercial/Industrial-HT	297	59		105	16.6%			94.74	97.58	103%	
				Others	271	3		11	1.7%			10.74	4.38	41%	
Sub-total					**127811**	**345**	**733.94**	**631**	**100%**	**102.53**	**13.97%**	**467.0**	**466.3**	100%	**14.10**
19	BUNDI		XEN_OM-II_BUNDI	Residential	71452	61		72	21.5%			58.95	65.88	112%	
				Agricultural	16537	95		179	53.8%			113.76	110.78	97%	
				Commercial/Industrial-LT	6394	20	368.33	31	9.3%	35.25	9.57%	28.55	29.49	103%	
				Commercial/Industrial-HT	79	28		47	14.2%			35.93	36.14	101%	
				Others	203	2		4	1.3%			4.90	1.77	36%	
Sub-total					**94665**	**206**	**368.33**	**333**	**100%**	**35.25**	**9.57%**	**242.1**	**244.1**	101%	**8.84**
	BUNDI			Residential	166701	156		188	19.5%			156	169	108%	
				Agricultural	38765	246		533	55.3%			333	324	97%	
				Commercial/Industrial-LT	16160	56	1102.27	76	7.9%	137.78	12.50%	73	77	106%	
				Commercial/Industrial-HT	376	88		152	15.7%			131	134	102%	
				Others	474	5		15	1.6%			16	6	39%	
Sub-total					**222476**	**551**	**1102.27**	**964**	**100%**	**137.78**	**12.50%**	**709.1**	**710.3**	100%	**12.35**
20	DAUSA		XEN_OM_MAHUWA	Residential	29319	20	261.81	27	17.0%	102.94	39.32%	22.86	24.36	107%	
				Agricultural	6378	65		106	66.8%			69.31	66.08	95%	

S. No	Name of circle	Circle code	Name of Division	Consumer category	Total Number of connection (Nos)	Total Connected Load (MW)	Input energy (MU)	Total Billed energy (MU)	% of energy consumption	D loss (MU)	D loss (%)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency (%)	AT & C loss (%)
				Commercial/Industrial-LT	3718	14		20	12.7%			17.34	19.87	115%	
				Commercial/Industrial-HT	23	3		5	3.2%			4.21	4.67	111%	
				Others	50	0		1	0.3%			0.54	0.48	88%	
Sub-total					**39488**	**102**	**261.81**	**159**	**100%**	**102.94**	**39.32%**	**114.3**	**115.5**	101%	**38.68**
21	DAUSA		XEN_OM_SIKRAI	Residential	34404	22	157.30	15	11.6%	25.19	16.01%	12.42	13.55	109%	
				Agricultural	9503	82		104	78.4%			66.66	61.89	93%	
				Commercial/Industrial-LT	3830	18		10	7.2%			9.34	11.16	119%	
				Commercial/Industrial-HT	118	7		4	2.7%			3.80	3.82	101%	
				Others	60	0		0	0.1%			0.11	0.15	130%	
Sub-total					**47915**	**129**	**157.30**	**132**	**100%**	**25.19**	**16.01%**	**92.3**	**90.6**	98%	**17.62**
22	DAUSA		XEN_OM_BANDIKUI	Residential	48388	40	353.18	64	25.5%	102.54	29.03%	50.04	50.80	102%	
				Agricultural	7940	63		155	61.9%			95.93	96.04	100%	
				Commercial/Industrial-LT	4848	17		24	9.7%			22.58	23.13	102%	
				Commercial/Industrial-HT	44	3		5	2.1%			5.31	5.28	99%	
				Others	82	1		2	0.8%			1.82	0.75	41%	
Sub-total					**61302**	**125**	**353.18**	**251**	**100%**	**102.54**	**29.03%**	**175.7**	**176.0**	100%	**28.90**
23	DAUSA		XEN_OM_DAUSA	Residential	66584	65	355.14	78	27.6%	73.11	20.59%	60.64	62.46	103%	
				Agricultural	9251	63		125	44.3%			73.82	71.24	97%	
				Commercial/Industrial-LT	7375	31		33	11.7%			31.03	31.72	102%	
				Commercial/Industrial-HT	227	30		43	15.2%			38.38	38.76	101%	
				Others	246	3		4	1.3%			2.83	2.36	83%	
Sub-total					**83683**	**192**	**355.14**	**282**	**100%**	**73.11**	**20.59%**	**206.7**	**206.5**	100%	**20.65**
24	DAUSA		XEN_OM_LALSOT	Residential	41230	38	334.22	35	11.3%	26.84	8.03%	26.71	28.81	108%	
				Agricultural	16194	130		235	76.3%			147.05	143.18	97%	
				Commercial/Industrial-LT	4369	19		24	7.8%			19.45	17.88	92%	
				Commercial/Industrial-HT	91	9		13	4.1%			11.97	12.33	103%	
				Others	100	1		1	0.5%			1.06	1.06	100%	
Sub-total					**61984**	**196**	**334.22**	**307**	**100%**	**26.84**	**8.03%**	**206.2**	**203.3**	99%	**9.36**
	DAUSA			Residential	219925	184	1461.65	219	19.4%	330.61	22.62%	173	180	104%	

S. No	Name of circle	Circle code	Name of Division	Consumer category	Total Number of connection (Nos)	Total Connected Load (MW)	Input energy (MU)	Total Billed energy (MU)	% of energy consumption	D loss (MU)	D loss (%)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency (%)	AT & C loss (%)
				Agricultural	49266	403		724	64.0%			453	438	97%	
				Commercial/Industrial-LT	24140	99		111	9.8%			100	104	104%	
				Commercial/Industrial-HT	503	53		69	6.1%			64	65	102%	
				Others	538	5		8	0.7%			6	5	75%	
Sub-total					**294372**	**744**	**1461.65**	**1131**	**100%**	**330.61**	**22.62%**	**795.2**	**791.8**	100%	**22.95**
				Residential	59297	61		55	18.6%			52.15	47.96	92%	
				Agricultural	5013	53		189	63.5%			113.34	109.03	96%	
25	DHOLPUR		XEN_DD_DHOLPUR	Commercial/Industrial-LT	4048	19	454.02	18	6.1%	157.17	34.62%	17.41	18.42	106%	
				Commercial/Industrial-HT	220	20		33	11.0%			30.16	29.12	97%	
				Others	102	1		2	0.7%			0.39	1.53	394%	
Sub-total					**68680**	**153**	**454.02**	**297**	**100%**	**157.17**	**34.62%**	**213.5**	**206.1**	97%	**36.88**
				Residential	57809	75		80	21.5%			64.77	66.84	103%	
				Agricultural	5297	60		171	46.1%			90.25	90.86	101%	
26	DHOLPUR		XEN_OM_DHOLPUR	Commercial/Industrial-LT	5882	29	526.49	31	8.3%	155.11	29.46%	27.08	28.69	106%	
				Commercial/Industrial-HT	225	42		81	21.7%			67.59	64.84	96%	
				Others	107	2		9	2.3%			2.54	1.72	68%	
Sub-total					**69320**	**208**	**526.49**	**371**	**100%**	**155.11**	**29.46%**	**252.2**	**253.0**	100%	**29.26**
				Residential	117106	136		135	20.2%			117	115	98%	
				Agricultural	10310	113		360	53.9%			204	200	98%	
	DHOLPUR			Commercial/Industrial-LT	9930	47	980.51	49	7.3%	312.28	31.85%	44	47	106%	
				Commercial/Industrial-HT	445	62		113	17.0%			98	94	96%	
				Others	209	3		11	1.6%			3	3	111%	
Sub-total					**138000**	**361**	**980.51**	**668**	**100%**	**312.28**	**31.85%**	**465.7**	**459.0**	99%	**32.83**
				Residential	135816	457		429	44.7%			350.48	340.12	97%	
				Agricultural	873	5		7	0.8%			6.57	6.01	91%	
27	JCC		XEN_CD-1_JCC	Commercial/Industrial-LT	23187	192	1045.44	203	21.2%	85.42	8.17%	218.00	208.79	96%	
				Commercial/Industrial-HT	625	142		277	28.9%			224.82	211.06	94%	
				Others	500	16		43	4.5%			41.10	38.41	93%	
Sub-total					**161001**	**813**	**1045.44**	**960**	**100%**	**85.42**	**8.17%**	**841.0**	**804.4**	96%	**12.17**

S. No	Name of circle	Circle code	Name of Division	Consumer category	Total Number of connection (Nos)	Total Connected Load (MW)	Input energy (MU)	Total Billed energy (MU)	% of energy consumption	D loss (MU)	D loss (%)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency (%)	AT & C loss (%)
28	JCC		XEN_CD-2_JCC	Residential	96438	425	955.18	443	47.9%	30.35	3.18%	358.01	348.16	97%	
				Agricultural	12	0		0	0.0%			0.10	0.09	90%	
				Commercial/Industrial-LT	21214	297		332	35.9%			355.76	344.65	97%	
				Commercial/Industrial-HT	406	60		99	10.7%			83.18	75.35	91%	
				Others	484	17		51	5.5%			87.43	93.55	107%	
Sub-total					**118554**	**799**	**955.18**	**925**	**100%**	**30.35**	**3.18%**	**884.5**	**861.8**	97%	**5.66**
29	JCC		XEN_CD-3_JCC	Residential	43455	94	377.73	135	39.5%	35.37	9.36%	107.29	103.99	97%	
				Agricultural	0	0		0	0.0%			0.00	0.00	#DIV/0!	
				Commercial/Industrial-LT	36291	181		187	54.7%			187.19	182.28	97%	
				Commercial/Industrial-HT	106	23		15	4.5%			15.34	13.74	90%	
				Others	203	3		5	1.3%			4.51	4.14	92%	
Sub-total					**80055**	**300**	**377.73**	**342**	**100%**	**35.37**	**9.36%**	**314.3**	**304.1**	97%	**12.30**
30	JCC		XEN_CD-4_JCC	Residential	88827	229	552.26	274	53.8%	42.51	7.70%	220.21	214.04	97%	
				Agricultural	126	0		1	0.1%			0.47	0.44	95%	
				Commercial/Industrial-LT	16801	161		172	33.7%			178.08	171.24	96%	
				Commercial/Industrial-HT	170	30		44	8.5%			75.03	122.71	164%	
				Others	509	19		20	3.9%			19.91	17.30	87%	
Sub-total					**106433**	**439**	**552.26**	**510**	**100%**	**42.51**	**7.70%**	**493.7**	**525.7**	106%	**1.71**
31	JCC		XEN_CD-5_JCC	Residential	110522	143	503.14	325	72.6%	55.17	10.97%	224.51	218.13	97%	
				Agricultural	265	1		2	0.4%			1.64	1.53	93%	
				Commercial/Industrial-LT	21508	85		101	22.5%			96.36	90.91	94%	
				Commercial/Industrial-HT	82	12		12	2.6%			11.21	31.24	279%	
				Others	353	5		8	1.7%			8.27	6.74	82%	
Sub-total					**132730**	**246**	**503.14**	**448**	**100%**	**55.17**	**10.97%**	**342.0**	**348.5**	102%	**9.26**
32	JCC		XEN_CD-6_JCC	Residential	188752	695	1349.23	554	43.9%	89.44	6.63%	448.18	434.63	97%	
				Agricultural	832	4		6	0.5%			5.12	4.87	95%	
				Commercial/Industrial-LT	36253	332		340	27.0%			364.05	347.75	96%	
				Commercial/Industrial-HT	2451	287		350	27.8%			319.19	299.74	94%	
				Others	993	15		10	0.8%			15.35	11.50	75%	

S. No	Name of circle	Circle code	Name of Division	Consumer category	Total Number of connection (Nos)	Total Connected Load (MW)	Input energy (MU)	Total Billed energy (MU)	% of energy consumption	D loss (MU)	D loss (%)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency (%)	AT & C loss (%)
Sub-total					**229281**	**1332**	**1349.23**	**1260**	**100%**	**89.44**	**6.63%**	**1151.9**	**1098.5**	95%	**10.96**
33	JCC		XEN_CD-7_JCC	Residential	125138	314	1058.81	347	34.9%	64.53	6.09%	277.26	267.26	96%	
				Agricultural	471	3		6	0.6%			4.63	4.32	93%	
				Commercial/Industrial-LT	27368	174		192	19.3%			188.36	178.57	95%	
				Commercial/Industrial-HT	1754	296		446	44.9%			397.27	372.58	94%	
				Others	335	2		4	0.4%			4.72	2.66	56%	
Sub-total					**155066**	**790**	**1058.81**	**994**	**100%**	**64.53**	**6.09%**	**872.2**	**825.4**	95%	**11.14**
	JCC			Residential	788948	2357	5841.79	2506	46.1%	402.80	6.90%	1986	1926	97%	
				Agricultural	2579	14		22	0.4%			19	17	93%	
				Commercial/Industrial-LT	182622	1421		1528	28.1%			1588	1524	96%	
				Commercial/Industrial-HT	5594	849		1243	22.8%			1126	1126	100%	
				Others	3377	77		140	2.6%			181	174	96%	
Sub-total					**983120**	**4719**	**5841.79**	**5439**	**100%**	**402.80**	**6.90%**	**4899.6**	**4768.5**	97%	**9.39**
34	JHALAWAR		XEN_JHALAWAR-I	Residential	43854	58	338.95	56	21.4%	76.35	22.53%	45.89	49.97	109%	
				Agricultural	7397	33		108	41.0%			72.30	83.01	115%	
				Commercial/Industrial-LT	5123	24		24	9.3%			23.64	25.02	106%	
				Commercial/Industrial-HT	485	60		65	24.7%			64.51	64.02	99%	
				Others	205	4		9	3.6%			9.20	7.23	79%	
Sub-total					**57064**	**179**	**338.95**	**263**	**100%**	**76.35**	**22.53%**	**215.5**	**229.2**	106%	**17.60**
35	JHALAWAR		XEN_OM_BHAWANI MANDI	Residential	53667	64	596.44	52	10.1%	79.95	13.40%	45.05	49.66	110%	
				Agricultural	20378	91		318	61.5%			193.96	189.50	98%	
				Commercial/Industrial-LT	4508	16		17	3.3%			17.26	18.16	105%	
				Commercial/Industrial-HT	100	30		127	24.6%			83.80	83.36	99%	
				Others	172	1		3	0.5%			2.99	-0.12	-4%	
Sub-total					**78825**	**203**	**596.44**	**516**	**100%**	**79.95**	**13.40%**	**343.1**	**340.6**	99%	**14.04**
36	JHALAWAR		XEN_OM_JHALAWAR	Residential	59755	60	436.28	60	16.6%	74.34	17.04%	52.38	61.25	117%	
				Agricultural	16334	99		268	73.9%			161.69	156.69	97%	
				Commercial/Industrial-LT	4309	16		19	5.3%			19.09	19.93	104%	
				Commercial/Industrial-HT	38	6		13	3.6%			12.30	11.26	92%	

S. No	Name of circle	Circle code	Name of Division	Consumer category	Total Number of connection (Nos)	Total Connected Load (MW)	Input energy (MU)	Total Billed energy (MU)	% of energy consumption	D loss (MU)	D loss (%)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency (%)	AT & C loss (%)
				Others	123	1		2	0.5%			2.15	1.11	52%	
Sub-total					**80559**	**181**	**436.28**	**362**	**100%**	**74.34**	**17.04%**	**247.6**	**250.2**	101%	**16.15**
	JHALAWAR			Residential	157276	182	1371.66	169	14.8%	230.64	16.81%	143	161	112%	
				Agricultural	44109	223		693	60.7%			428	429	100%	
				Commercial/Industrial-LT	13940	56		60	5.3%			60	63	105%	
				Commercial/Industrial-HT	623	96		205	18.0%			161	159	99%	
				Others	500	6		14	1.2%			14	8	57%	
Sub-total					**216448**	**563**	**1371.66**	**1141**	**100%**	**230.64**	**16.81%**	**806.2**	**820.1**	102%	**15.39**
37	JPDC		XEN_DD-1_BANIPARK	Residential	90293	115	787.69	137	19.8%	99.44	12.62%	113.18	111.36	98%	
				Agricultural	13270	125		262	38.0%			166.08	161.62	97%	
				Commercial/Industrial-LT	11864	56		88	12.8%			85.66	84.28	98%	
				Commercial/Industrial-HT	1306	140		196	28.5%			185.08	176.50	95%	
				Others	91	5		6	0.8%			5.64	5.33	95%	
Sub-total					**116824**	**441**	**787.69**	**688**	**100%**	**99.44**	**12.62%**	**555.7**	**539.1**	97%	**15.23**
38	JPDC		XEN_DD-2_BANIPARK	Residential	67093	84	752.38	80	11.2%	35.92	4.77%	57.93	67.67	117%	
				Agricultural	7080	44		96	13.4%			55.03	54.85	100%	
				Commercial/Industrial-LT	9715	80		81	11.4%			96.03	86.26	90%	
				Commercial/Industrial-HT	781	301		457	63.8%			373.31	358.92	96%	
				Others	178	2		2	0.2%			2.12	2.42	114%	
Sub-total					**84847**	**511**	**752.38**	**716**	**100%**	**35.92**	**4.77%**	**584.4**	**570.1**	98%	**7.11**
39	JPDC		XEN_OM_BASSI	Residential	59242	51	481.41	75	20.4%	114.45	23.77%	60.40	61.71	102%	
				Agricultural	9297	73		185	50.4%			109.74	105.58	96%	
				Commercial/Industrial-LT	6948	31		42	11.3%			42.03	39.65	94%	
				Commercial/Industrial-HT	457	51		64	17.4%			61.22	58.42	95%	
				Others	107	1		2	0.4%			1.61	1.37	85%	
Sub-total					**76051**	**206**	**481.41**	**367**	**100%**	**114.45**	**23.77%**	**275.0**	**266.7**	97%	**26.07**
40	JPDC		XEN_OM_CHOMU	Residential	71846	55	822.46	85	11.2%	68.23	8.30%	70.31	69.49	99%	
				Agricultural	19063	195		348	46.2%			225.33	211.40	94%	
				Commercial/Industrial-LT	11580	49		53	7.0%			52.13	51.32	98%	

S. No	Name of circle	Circle code	Name of Division	Consumer category	Total Number of connection (Nos)	Total Connected Load (MW)	Input energy (MU)	Total Billed energy (MU)	% of energy consumption	D loss (MU)	D loss (%)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency (%)	AT & C loss (%)
				Commercial/Industrial-HT	706	155		262	34.7%			219.93	212.48	97%	
				Others	253	2		6	0.8%			4.71	5.30	113%	
Sub-total					**103448**	**456**	**822.46**	**754**	**100%**	**68.23**	**8.30%**	**572.4**	**550.0**	96%	**11.89**
41	JPDC		XEN_OM_DUDU	Residential	42764	24	195.10	42	23.9%	20.97	10.75%	33.44	33.94	101%	
				Agricultural	5693	35		67	38.6%			41.53	38.50	93%	
				Commercial/Industrial-LT	4214	20		18	10.2%			19.11	18.44	96%	
				Commercial/Industrial-HT	123	45		47	27.0%			42.48	40.93	96%	
				Others	81	1		1	0.3%			0.61	0.60	98%	
Sub-total					**52875**	**124**	**195.10**	**174**	**100%**	**20.97**	**10.75%**	**137.2**	**132.4**	97%	**13.85**
42	JPDC		XEN_OM_JAMWARAMGARH	Residential	45391	33	276.87	24	12.3%	84.45	30.50%	18.78	20.67	110%	
				Agricultural	10607	76		116	60.4%			59.23	54.03	91%	
				Commercial/Industrial-LT	5091	49		31	16.2%			38.46	33.50	87%	
				Commercial/Industrial-HT	76	21		20	10.6%			18.17	15.30	84%	
				Others	94	1		1	0.5%			1.17	1.10	94%	
Sub-total					**61259**	**180**	**276.87**	**192**	**100%**	**84.45**	**30.50%**	**135.8**	**124.6**	92%	**36.24**
43	JPDC		XEN_OM_KOTPUTALI	Residential	53483	40	914.18	60	8.5%	213.21	23.32%	46.33	51.64	111%	
				Agricultural	12937	131		259	37.0%			180.33	164.06	91%	
				Commercial/Industrial-LT	7020	32		37	5.3%			39.83	37.08	93%	
				Commercial/Industrial-HT	196	160		341	48.6%			254.46	245.14	96%	
				Others	128	3		4	0.5%			3.66	2.61	71%	
Sub-total					**73764**	**366**	**914.18**	**701**	**100%**	**213.21**	**23.32%**	**524.6**	**500.5**	95%	**26.84**
44	JPDC		XEN_OM_SAMBHAR	Residential	66664	51	315.72	73	24.1%	13.79	4.37%	60.78	59.60	98%	
				Agricultural	11719	87		137	45.4%			89.03	82.80	93%	
				Commercial/Industrial-LT	8352	26		24	8.1%			26.55	25.28	95%	
				Commercial/Industrial-HT	158	26		64	21.1%			49.62	47.24	95%	
				Others	130	3		4	1.4%			4.83	3.56	74%	
Sub-total					**87023**	**193**	**315.72**	**302**	**100%**	**13.79**	**4.37%**	**230.8**	**218.5**	95%	**9.47**
45	JPDC		XEN_OM_SANGANER	Residential	88327	129	392.12	116	32.1%	30.01	7.65%	96.15	95.05	99%	
				Agricultural	8133	46		101	28.0%			56.66	52.05	92%	

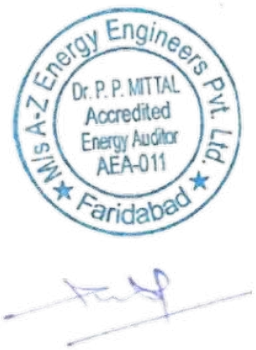
S. No	Name of circle	Circle code	Name of Division	Consumer category	Total Number of connection (Nos)	Total Connected Load (MW)	Input energy (MU)	Total Billed energy (MU)	% of energy consumption	D loss (MU)	D loss (%)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency (%)	AT & C loss (%)
				Commercial/Industrial-LT	10153	48		51	14.1%			55.63	55.13	99%	
				Commercial/Industrial-HT	349	48		90	24.8%			73.52	70.56	96%	
				Others	210	2		4	1.0%			2.90	3.30	114%	
Sub-total					**107172**	**272**	**392.12**	**362**	**100%**	**30.01**	**7.65%**	**284.9**	**276.1**	97%	**10.50**
46	JPDC		XEN_OM_SHAHPURA	Residential	67186	42		65	13.7%			53.90	53.00	98%	
				Agricultural	15312	148		290	61.3%			184.76	171.30	93%	
				Commercial/Industrial-LT	7812	31	633.64	58	12.2%	159.94	25.24%	50.42	48.06	95%	
				Commercial/Industrial-HT	221	35		57	12.1%			50.96	49.07	96%	
				Others	198	1		3	0.7%			2.39	2.78	117%	
Sub-total					**90729**	**258**	**633.64**	**474**	**100%**	**159.94**	**25.24%**	**342.4**	**324.2**	95%	**29.22**
	JPDC			Residential	652289	624		755	16.0%			611	624	102%	
				Agricultural	113111	960		1862	39.4%			1168	1096	94%	
				Commercial/Industrial-LT	82749	421	5571.58	484	10.2%	840.41	15.08%	506	479	95%	
				Commercial/Industrial-HT	4373	982		1598	33.8%			1329	1275	96%	
				Others	1470	20		32	0.7%			30	28	96%	
Sub-total					**853992**	**3008**	**5571.58**	**4731**	**100%**	**840.41**	**15.08%**	**3643.2**	**3502.2**	96%	**18.37**
47	KARAULI		XEN_OM_HINDAUN	Residential	89860	84		110	26.3%			99.45	99.73	100%	
				Agricultural	14808	137		232	55.2%			150.07	146.74	98%	
				Commercial/Industrial-LT	8895	40	555.70	56	13.4%	135.40	24.37%	51.86	52.06	100%	
				Commercial/Industrial-HT	170	12		15	3.6%			14.68	14.76	101%	
				Others	228	2		7	1.5%			8.65	2.09	24%	
Sub-total					**113961**	**275**	**555.70**	**420**	**100%**	**135.40**	**24.37%**	**324.7**	**315.4**	97%	**26.54**
48	KARAULI		XEN_OM_KARAULI	Residential	80371	166		82	21.0%			82.12	74.86	91%	
				Agricultural	16066	131		235	60.0%			151.68	144.38	95%	
				Commercial/Industrial-LT	6464	29	536.62	51	12.9%	144.09	26.85%	45.68	49.34	108%	
				Commercial/Industrial-HT	109	19		18	4.5%			18.34	19.56	107%	
				Others	209	2		6	1.6%			8.01	2.04	26%	
Sub-total					**103219**	**346**	**536.62**	**393**	**100%**	**144.09**	**26.85%**	**305.8**	**290.2**	95%	**30.60**
	KARAULI			Residential	170231	250	1092.32	193	23.7%	279.50	25.59%	182	175	96%	

S. No	Name of circle	Circle code	Name of Division	Consumer category	Total Number of connection (Nos)	Total Connected Load (MW)	Input energy (MU)	Total Billed energy (MU)	% of energy consumption	D loss (MU)	D loss (%)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency (%)	AT & C loss (%)
				Agricultural	30874	268		468	57.5%			302	291	96%	
				Commercial/Industrial-LT	15359	68		107	13.1%			98	101	104%	
				Commercial/Industrial-HT	279	31		33	4.0%			33	34	104%	
				Others	437	5		13	1.6%			17	4	25%	
Sub-total					**217180**	**622**	**1092.32**	**813**	**100%**	**279.50**	**25.59%**	**630.5**	**605.5**	96%	**28.54**
49	KOTA		XEN_DD_KOTA	Residential	79246	112		92	17.1%			79.27	87.41	110%	
				Agricultural	14303	84		202	37.5%			124.06	123.87	100%	
				Commercial/Industrial-LT	6781	40	663.06	57	10.5%	124.90	18.84%	50.40	49.80	99%	
				Commercial/Industrial-HT	295	100		182	33.8%			141.66	141.40	100%	
				Others	222	2		6	1.1%			4.59	3.33	72%	
Sub-total					**100847**	**338**	**663.06**	**538**	**100%**	**124.90**	**18.84%**	**400.0**	**405.8**	101%	**17.65**
50	KOTA		XEN_OM_R_MANDI	Residential	39302	40		50	13.3%			41.14	43.12	105%	
				Agricultural	7437	31		74	19.9%			46.86	43.07	92%	
				Commercial/Industrial-LT	4095	19	407.86	20	5.3%	34.77	8.53%	20.10	20.23	101%	
				Commercial/Industrial-HT	1450	125		228	61.0%			191.78	193.11	101%	
				Others	131	1		2	0.5%			2.26	1.02	45%	
Sub-total					**52415**	**216**	**407.86**	**373**	**100%**	**34.77**	**8.53%**	**302.1**	**300.6**	99%	**9.01**
51	KOTA		XEN_OM_SANGOD	Residential	21969	21		21	10.5%			19.32	21.40	111%	
				Agricultural	11376	69		169	83.0%			104.79	104.37	100%	
				Commercial/Industrial-LT	2207	7	222.47	11	5.4%	19.26	8.65%	10.17	10.02	99%	
				Commercial/Industrial-HT	18	1		2	1.0%			1.79	1.65	92%	
				Others	85	0		1	0.3%			0.76	0.70	93%	
Sub-total					**35655**	**99**	**222.47**	**203**	**100%**	**19.26**	**8.65%**	**136.8**	**138.1**	101%	**7.78**
	KOTA			Residential	140517	173		163	14.6%			140	152	109%	
				Agricultural	33116	184		445	39.9%			276	271	98%	
				Commercial/Industrial-LT	13083	66	1293.40	87	7.8%	178.93	13.83%	81	80	99%	
				Commercial/Industrial-HT	1763	227		411	36.9%			335	336	100%	
				Others	438	4		8	0.7%			8	5	66%	
Sub-total					**188917**	**652**	**1293.40**	**1114**	**100%**	**178.93**	**13.83%**	**838.9**	**844.5**	101%	**13.26**

S. No	Name of circle	Circle code	Name of Division	Consumer category	Total Number of connection (Nos)	Total Connected Load (MW)	Input energy (MU)	Total Billed energy (MU)	% of energy consumption	D loss (MU)	D loss (%)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency (%)	AT & C loss (%)
52	SWM		XEN_OM_BONLIBAMANWAS	Residential	38326	24	122.63	19	19.9%	26.10	21.28%	17.65	18.01	102%	
				Agricultural	6457	38		68	70.1%			44.02	41.26	94%	
				Commercial/Industrial-LT	1809	7		7	7.7%			6.76	8.31	123%	
				Commercial/Industrial-HT	22	5		2	2.1%			2.42	2.47	102%	
				Others	71	0		0	0.2%			0.21	0.87	408%	
Sub-total					**46685**	**74**	**122.63**	**97**	**100%**	**26.10**	**21.28%**	**71.1**	**70.9**	100%	**21.43**
53	SWM		XEN_OM_GANGAPURCITY	Residential	52570	69	281.31	86	36.4%	45.35	16.12%	70.50	72.18	102%	
				Agricultural	5523	45		106	45.1%			68.30	69.89	102%	
				Commercial/Industrial-LT	6509	25		28	12.1%			27.49	25.27	92%	
				Commercial/Industrial-HT	77	9		12	5.2%			11.92	11.11	93%	
				Others	224	2		3	1.2%			4.69	2.01	43%	
Sub-total					**64903**	**150**	**281.31**	**236**	**100%**	**45.35**	**16.12%**	**182.9**	**180.5**	99%	**17.24**
54	SWM		XEN_OM_SWM	Residential	56136	56	357.00	87	28.5%	50.72	14.21%	71.34	72.86	102%	
				Agricultural	10392	61		146	47.8%			92.31	92.75	100%	
				Commercial/Industrial-LT	6903	37		50	16.2%			48.29	50.20	104%	
				Commercial/Industrial-HT	50	9		18	5.7%			15.76	14.44	92%	
				Others	191	2		5	1.8%			6.34	1.99	31%	
Sub-total					**73672**	**165**	**357.00**	**306**	**100%**	**50.72**	**14.21%**	**234.0**	**232.2**	99%	**14.86**
55	SWM		XEN_OM_SWM-RURAL	Residential	37719	32	256.81	34	14.9%	28.96	11.28%	32.11	32.75	102%	
				Agricultural	13254	94		173	75.8%			118.08	118.14	100%	
				Commercial/Industrial-LT	2556	10		19	8.2%			16.15	16.30	101%	
				Commercial/Industrial-HT	17	2		2	1.0%			2.24	2.38	106%	
				Others	108	0		0	0.2%			0.55	0.70	126%	
Sub-total					**53654**	**139**	**256.81**	**228**	**100%**	**28.96**	**11.28%**	**169.1**	**170.3**	101%	**10.68**
	SWM			Residential	184751	182	1017.74	226	26.1%	151.12	14.85%	192	196	102%	
				Agricultural	35626	237		493	56.9%			323	322	100%	
				Commercial/Industrial-LT	17777	79		104	12.0%			99	100	101%	
				Commercial/Industrial-HT	166	24		34	3.9%			32	30	94%	
				Others	594	5		9	1.0%			12	6	47%	

S. No	Name of circle	Circle code	Name of Division	Consumer category	Total Number of connection (Nos)	Total Connected Load (MW)	Input energy (MU)	Total Billed energy (MU)	% of energy consumption	D loss (MU)	D loss (%)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency (%)	AT & C loss (%)
Sub-total					**238914**	**528**	**1017.74**	**867**	**100%**	**151.12**	**14.85%**	**657.1**	**653.9**	100%	**15.27**
56	TONK		XEN_OM_DEOLI	Residential	60052	52	310.42	63	22.0%	24.00	7.73%	51.83	52.84	102%	
				Agricultural	5153	23		51	17.8%			32.56	31.41	96%	
				Commercial/Industrial-LT	4163	14		16	5.5%			16.35	16.51	101%	
				Commercial/Industrial-HT	149	37		154	53.9%			109.13	108.65	100%	
				Others	145	4		2	0.8%			2.66	2.53	95%	
Sub-total					**69662**	**130**	**310.42**	**286**	**100%**	**24.00**	**7.73%**	**212.5**	**211.9**	100%	**7.99**
57	TONK		XEN_OM_NEWAI	Residential	77317	72	327.91	87	28.6%	23.60	7.20%	71.44	71.61	100%	
				Agricultural	9065	39		94	30.9%			60.18	57.16	95%	
				Commercial/Industrial-LT	6869	26		30	10.0%			30.85	31.14	101%	
				Commercial/Industrial-HT	259	55		90	29.5%			77.62	77.16	99%	
				Others	258	2		3	1.1%			4.31	3.60	84%	
Sub-total					**93768**	**194**	**327.91**	**304**	**100%**	**23.60**	**7.20%**	**244.4**	**240.7**	98%	**8.61**
58	TONK		XEN_OM_TONK	Residential	89872	72	383.66	105	34.9%	82.69	21.55%	84.97	87.65	103%	
				Agricultural	10408	58		106	35.1%			69.03	65.40	95%	
				Commercial/Industrial-LT	8492	30		38	12.5%			37.58	38.82	103%	
				Commercial/Industrial-HT	112	20		45	14.9%			38.00	38.31	101%	
				Others	317	2		8	2.5%			10.01	3.42	34%	
Sub-total					**109201**	**182**	**383.66**	**301**	**100%**	**82.69**	**21.55%**	**239.6**	**233.6**	98%	**23.51**
	TONK			Residential	227241	196	1021.99	255	28.6%	130.29	12.75%	208	212	102%	
				Agricultural	24626	120		251	28.1%			162	154	95%	
				Commercial/Industrial-LT	19524	70		84	9.4%			85	86	102%	
				Commercial/Industrial-HT	520	112		289	32.4%			225	224	100%	
				Others	720	8		13	1.5%			17	10	56%	
Sub-total					**272631**	**505**	**1021.99**	**892**	**100%**	**130.29**	**12.75%**	**696.5**	**686.2**	99%	**14.04**
	JAIPUR DISCOM			Residential	3797082	6046	33141.97	6021	21.5%	5128.73	15.48%	4894	4956	101%	
				Agricultural	597208	4834		9742	34.8%			6094	5921	97%	
				Commercial/Industrial-LT	500007	2880		3274	11.7%			3268	3225	99%	
				Commercial/Industrial-HT	20296	4658		8642	30.8%			6992	6865	98%	

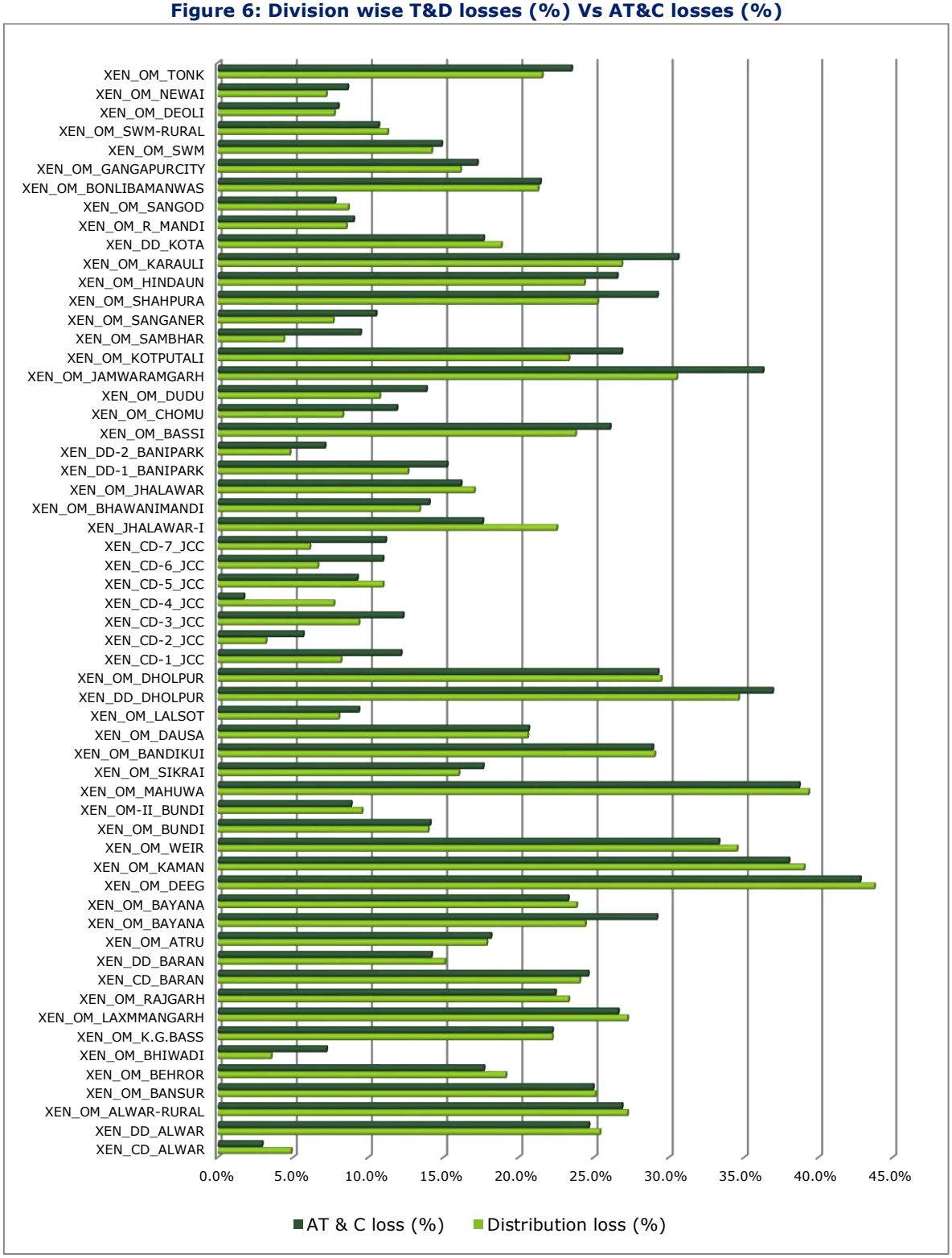
S. No	Name of circle	Circle code	Name of Division	Consumer category	Total Number of connection (Nos)	Total Connected Load (MW)	Input energy (MU)	Total Billed energy (MU)	% of energy consumption	D loss (MU)	D loss (%)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency (%)	AT & C loss (%)
				Others	11187	184		334	1.2%			375	303	81%	
Total					**4925780**	**18602**	**33141.**	**28013**	**100%**	**5128.7**	**15.48%**	**21624.7**	**21270.4**	98%	**16.86**
DF					**2**	**1068**	**2002.53**	**2003**	**100%**	**0.00**	**0.0%**	**1212.85**	**1203.29**	99%	**0.79**
At company level					**4925782**	**19670**	**35144.**	**30016**	**100%**	**5128.7**	**14.6%**	**22837.58**	**22473.64**	98%	**15.95**



5. High loss divisions

"XEN_OM_BEHROR" Division had the highest T&D loss quantum of 252.03 MU andXEN_OM_DEEG Division had the highest AT&C loss percentage of 42.80%. Further, the divisions with high loss that needs to be prioritized can be identified from the below chart:

Figure 6: Division wise T&D losses (%) Vs AT&C losses (%)



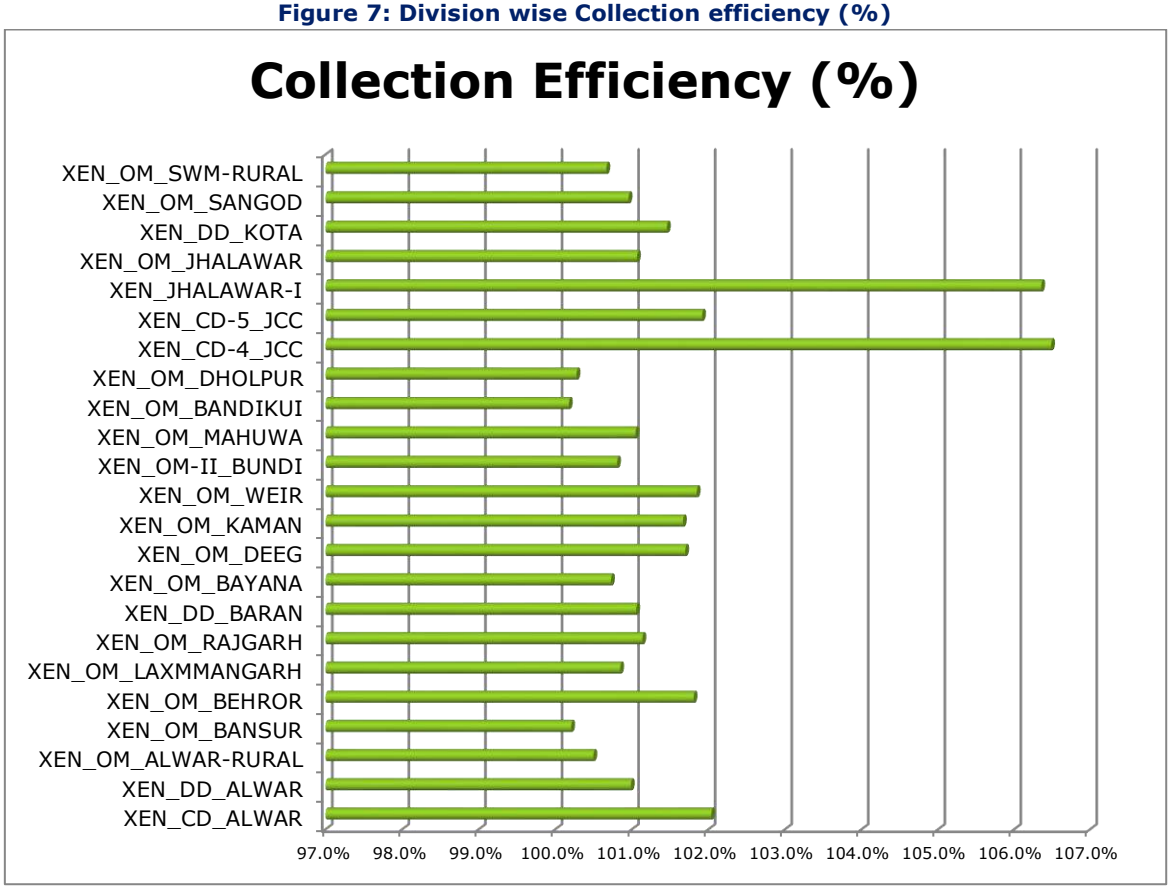
The list of top Divisions with higher AT&C losses (%) & T&D losses (MU) identified from the above chart are tabulated below:

Table 29: Top Divisions with higher AT&C losses (%) & T&D losses (MU)

S.No	Name of Division	D loss (MU)	D loss (%)	AT & C loss (%)
1	XEN_OM_ALWAR-RURAL	139.48	27.2%	26.86%
2	XEN_OM_LAXMMANGARH	116.20	27.2%	26.61%
3	XEN_OM_BAYANA	95.77	24.4%	29.18%
4	XEN_OM_DEEG	200.06	43.8%	42.80%
5	XEN_OM_KAMAN	129.73	39.0%	37.99%
6	XEN_OM_WEIR	72.40	34.5%	33.31%
7	XEN_OM_MAHUWA	102.94	39.3%	38.68%
8	XEN_OM_BANDIKUI	102.54	29.0%	28.90%
9	XEN_DD_DHOLPUR	157.17	34.6%	36.88%
10	XEN_OM_DHOLPUR	155.11	29.5%	29.26%
11	XEN_OM_JAMWARAMGARH	84.45	30.5%	36.24%
12	XEN_OM_KOTPUTALI	213.21	23.3%	26.84%
13	XEN_OM_SHAHPURA	159.94	25.2%	29.22%
14	XEN_OM_HINDAUN	135.40	24.4%	26.54%
15	XEN_OM_KARAULI	144.09	26.9%	30.60%

Further, it was observed that the collection efficiency is more than 100% across all the Divisions as shown below:

Figure 7: Division wise Collection efficiency (%)



5.2.5. Feeder wise AT&C losses analysis

1. Feeder wise ATC losses

The entire EHT/HT/LT system is in Ring Main. For ring-main connectivity, the electrical connection keeps changing in fault conditions, maintenance purpose and optimization of asset. Thus, feeder-wise energy accounting will not be correct; it is calculated as a whole.

100% consumer indexing is not in place; thus, feeder wise /DTR wise energy accounting or loss calculation is not possible.

AT&C Loss of Sample Feeders given below in the table:

Table 30: Feeder wise AT&C Loss FY 2022-23

Name of the Station	Feeder Code/ID	Feeder Name	Type of Feeder	Type of feeder meter	Received at Feeder (Final MU)	Feeder Consumption (In MU)	T&D losses (%)	AT&C losses (%)
220 kV GSS NPH	1028860	Hasanpura	URBAN	AMR	5.25	4.29	18.35	20.34
220 kV GSS NPH	1028863	Loco	URBAN	AMR	10.70	8.77	17.98	17.93
220 kV GSS NPH	1028869	Janta Nagar	URBAN	AMR	7.40	6.09	17.71	16.84
ESI	1028848	Jacob Road	URBAN	AMR	4.55	3.73	17.99	17.76
ESI	1028854	Janta Nagar	URBAN	AMR	5.62	4.58	18.61	19.55
ESI	2265816	GANPATI ENCLAVE	URBAN	AMR	6.65	5.49	17.36	17.27
Shanti Nagar	1028872	Hasanpura	URBAN	AMR	7.76	6.36	18.03	16.90
Shanti Nagar	1028875	Pratap Line	URBAN	AMR	5.45	4.47	17.97	18.82
Shanti Nagar	1028881	Panchvati	URBAN	AMR	8.69	7.09	18.40	19.39
SHANTI NAGAR	2264741	SHARM KALYAN	URBAN	AMR	6.43	5.27	18.12	18.46
Bhankrota	1028941	Maharjpura	URBAN	AMR	3.77	3.07	18.44	17.47
Heerapura	1028926	Vardman Nagar	URBAN	AMR	15.49	12.22	21.06	20.77
Ambabari	1028884	Jhotwara Station	URBAN	AMR	9.23	7.71	16.42	15.39
Ambabari	1029034	Ambabari	URBAN	AMR	2.65	2.24	15.65	15.08
Ambabari	1029040	Nehru Nagar	URBAN	AMR	5.77	4.78	17.02	16.39
Ambabari	1029043	RPA	URBAN	AMR	0.65	0.54	17.46	17.07
Ambabari	1029046	Ambabari W/w	URBAN	AMR	7.20	6.01	16.55	16.04
Ambabari	1029049	Jaipuria Compound	URBAN	AMR	8.58	7.17	16.42	15.71
RPA	1029010	RPA Colony	URBAN	AMR	2.40	1.92	19.76	19.20
RPA	1029013	Imperial Hospital	URBAN	AMR	4.08	3.36	17.47	17.81
RPA	1029022	Sanjay Colony	URBAN	AMR	7.58	6.26	17.42	16.87
RPA	1029028	RashtrapatiMaidan	URBAN	AMR	2.42	2.02	16.75	16.39
Subhash Nagar	1028956	Pital Factory	URBAN	AMR	3.94	3.30	16.22	16.57
Subhash Nagar	1028959	Water Works	URBAN	AMR	1.84	1.52	17.42	17.78
Subhash Nagar	1028965	Subhash Nagar	URBAN	AMR	10.07	8.44	16.19	15.66
Bindayaka	1029163	Siwar	URBAN	AMR	2.86	2.29	19.79	18.58
Bindayaka	2264221	Mundiya	URBAN	OTHER	0.09	0.08	10.06	70.31
MPN	1110787	MaharanaPratap Marg	URBAN	AMR	16.02	13.59	15.20	15.10
SMS Hospital	1029613	Raiser Plaza / RamniwasBagh	URBAN	AMR	7.43	3.94	47.05	47.13
132 kV Chambal	1028893	Jamuna Nagar	URBAN	AMR	4.50	3.76	16.59	18.16
132 kV Chambal	1028896	NBC	URBAN	AMR	6.34	5.29	16.58	18.02

Name of the Station	Feeder Code/ID	Feeder Name	Type of Feeder	Type of feeder meter	Received at Feeder (Final MU)	Feeder Consumption (In MU)	T&D losses (%)	AT&C losses (%)
132 kV Chambal	2265079	Pratap Lines	URBAN	AMR	0.22	0.23	-3.13	23.17
132 kV Chambal	2265522	Queens Road	URBAN	AMR	10.22	8.53	16.52	16.54
Agra Road	1029586	11 KV NAG TALAI-II	URBAN	AMR	5.68	4.33	23.79	24.20
Agra Road	1029589	11KV RAMGANJ (33KV AGRA ROAD)	URBAN	AMR	6.84	5.27	22.89	24.55
Agra Road	1029592	Golcha	URBAN	AMR	7.67	5.96	22.21	20.92
Agra Road	1029595	11KV NAG TALAI -I	URBAN	AMR	5.37	4.18	22.16	22.56
Ram ganj S/S.	1029568	BabuKaTeeba	URBAN	AMR	6.66	5.41	18.76	18.52
Ramganj	1029571	11KV AGRA ROAD	URBAN	AMR	4.82	3.90	19.08	18.82
Ramganj	2263981	11 kvNaharwada	URBAN	AMR	2.77	2.24	19.28	18.16
Sanjay Bazar	1029556	11KV REGRO KI KOTHI	URBAN	AMR	8.54	6.78	20.54	20.29
33/11 KV Chandpole	1030582	Birahmpuri Via Nirman Marg	URBAN	AMR	7.22	6.11	15.33	16.53
33/11 KV Sec-03, Jawahar Nagar S/S	1029851	11 KV O/G Azad Nagar	URBAN	AMR	5.67	4.53	20.10	19.64
33/11 KV Siddarth Nagar S/S	2262692	Shankar Vihar 6	URBAN	OTHER	7.79	3.30	57.57	57.63
University	1030399	11 KV O/G University	URBAN	AMR	5.50	5.02	8.82	16.22
Jamdoli	1030444	11KV O/G LMNIIT	URBAN	AMR	3.79	3.09	18.36	18.81
Jamdoli	1030447	11KV O/G KESHAV VIDYAPEETH	URBAN	AMR	5.35	4.45	16.70	16.44
Jamdoli	1030450	11KV O/G MURGI FARM	URBAN	AMR	5.30	4.47	15.71	15.51
Jamdoli	2262476	Bharat Vihar	URBAN	AMR	2.73	2.23	18.41	18.65
Jamdoli	2265530	Manu Vihar	URBAN	AMR	0.74	0.62	15.64	16.06
Luniyawas(JCC)	1030456	11KV O/G Bhawgarh Bandha	URBAN	AMR	1.99	1.72	13.54	15.44
Luniyawas(JCC)	1114884	11KV O/G Sonia Wali Dhani	URBAN	AMR	0.58	0.51	11.36	17.01
Puranaghat	1116748	GhatKeBalaji	URBAN	AMR	5.34	4.60	13.76	20.65
Puranaghat	1116751	RADHAKRISHNA MANIR	URBAN	AMR	6.68	5.51	17.56	16.90
Puranaghat	1116754	Apollo College	URBAN	AMR	1.85	1.55	16.13	17.41
Puranaghat	1116763	SarasParlour	URBAN	AMR	4.20	3.38	19.40	15.82
Puranaghat	1116766	Agra Road	URBAN	AMR	2.43	2.07	14.72	15.43
33/11 KV Old Vidhan Sabha	1030555	Dhawai Ji Kakhurra	URBAN	AMR	9.41	7.93	15.74	15.04
33/11 KV chardarwaja	1030510	Gangapole	URBAN	AMR	4.39	3.52	19.80	18.89
33/11 KV chardarwaja	2262592	Bas Ki Puliya	URBAN	AMR	4.03	3.32	17.62	17.56
33/11 KV chardarwaja	2264008	PannigaranKa Rasta	URBAN	AMR	2.25	1.81	19.56	18.66
33/11 KV ID-GAH	1030522	Galta Gate	URBAN	AMR	6.08	4.94	18.67	17.89
33/11 KV ID-GAH	1030525	Hidaki Mori	URBAN	AMR	7.70	6.18	19.76	19.15
33/11 KV ID-GAH	1030528	Edgah	URBAN	AMR	6.36	4.87	23.37	23.23
33/11 KV ID-GAH	1030534	Substation	URBAN	AMR	0.01	0.01	13.60	19.94
33/11 KV LakshmanDungri	1030549	Gangapole	URBAN	AMR	11.53	9.63	16.50	16.00
33/11 KV LakshmanDungri	2263529	kholekehanumanji	URBAN	AMR	0.62	0.52	16.43	23.78
33/11 KV LakshmanDungri	2263996	Hidaki Mori	URBAN	AMR	1.40	1.13	18.87	18.98
33/11 KV LakshmanDungri	2265889	Govindwatika	URBAN	AMR	0.42	0.26	37.38	32.51
Galta Gate	2263527	Laxmi N Puri	URBAN	AMR	3.33	2.74	17.73	17.25
33/11 KV NahriKa Naka	1030567	Nirman marg-1	URBAN	AMR	6.81	5.63	17.30	17.09
33/11 KV Sadwa	1030612	Pili Ki Talai	URBAN	AMR	4.94	4.46	9.70	15.82

Name of the Station	Feeder Code/ID	Feeder Name	Type of Feeder	Type of feeder meter	Received at Feeder (Final MU)	Feeder Consumption (In MU)	T&D losses (%)	AT&C losses (%)
Jai SinghpuraKhor (JDA)	2263997	Kund road	URBAN	AMR	29.07	5.76	80.19	80.22
KKD	1030627	Kunda w/w	URBAN	AMR	9.16	4.93	46.18	46.29
Jalmahal	2264465	substation 250 KVA	URBAN	AMR	0.01	0.01	7.12	23.01
Arawali Marg	1096565	MARUTI	URBAN	AMR	1.93	0.90	53.50	50.07
Meera Marg	1030849	VIJAY PATH	URBAN	AMR	4.41	3.64	17.53	15.63
MEERA MARG	2262493	INDRA PATH	URBAN	AMR	9.49	5.14	45.84	46.03
Patrkar Colony	1083361	Mohanpura - II	URBAN	AMR	2.40	1.72	28.18	27.39
SFS	1030840	THADI MARKET	URBAN	AMR	7.22	6.02	16.69	17.99
VardhmanSarovar C	2262471	GANPATI ENCLAVE	URBAN	OTHER	20.99	5.86	72.06	71.91
VardhmanSarovar C	2262472	KHATIYON KI DHANI	URBAN	AMR	1.76	1.06	39.72	40.45
VardhmanSarovar C	2262473	KHUSI VIHAR	URBAN	AMR	2.16	1.46	32.38	31.55
Dadudayal Nagar	2262468	RAMPURA ROAD	URBAN	AMR	16.47	13.55	17.72	17.97
Dadudayal Nagar	2262469	B Block	URBAN	AMR	10.15	6.97	31.31	31.07
Dadudayal Nagar	2262470	ECD BLOCK	URBAN	AMR	13.50	2.72	79.87	79.81
Malpura Gate	1030942	Saipura	URBAN	AMR	13.26	11.22	15.40	15.21
MUHANA MANDI	2263310	NARAYAN CITY	URBAN	AMR	40.74	0.40	99.03	99.05
MuhanaMandi	1114741	PREM NAGAR INDOOR	URBAN	AMR	5.89	4.17	29.19	30.83
Sanganer-II	1030885	THANA CIRCLE	URBAN	AMR	4.92	4.02	18.34	20.77
Sanganer-II	2262465	PANCHWATI	URBAN	AMR	100.89	11.64	88.46	88.40
Sanganer-II	2265249	KhatikokiDhaal	URBAN	AMR	2.83	0.00	99.90	99.90
Shikarpura	2264074	SHIKSHA SAGAR	URBAN	AMR	4.60	2.54	44.75	44.40
Kumbha Marg	1114729	SATLAZ APPARTMENT	URBAN	AMR	0.57	0.48	15.23	16.16
MewadAptt.	2265252	GovindPuri/Shivpuri	URBAN	OTHER	1.63	1.36	16.59	16.67
MEWAR APP.	1031044	MEWAR-I	URBAN	AMR	1.50	1.11	26.14	24.77
NRI	1116626	SECTOR 17	URBAN	AMR	6.56	4.43	32.41	32.66
PratapAppartment	1114717	RAVI APPARTMENT	URBAN	AMR	1.19	0.82	30.77	29.64
Pratap Nagar Sec 5	2265544	Dravawati	URBAN	AMR	0.72	0.22	69.60	75.63
I G Nagar Sector 1	1031098	Feeder - 3	URBAN	AMR	1.94	1.66	14.45	15.01
Ramnagriya	2262605	MAHADEV NAGAR	URBAN	AMR	2.82	2.36	16.11	15.33
Road No 5 VKIA	2266128	LEHAR	URBAN	OTHER	7.71	4.96	35.64	35.77
Road No-1D(JCC)	1031167	O/G Narayan Vihar	URBAN	AMR	9.55	8.12	14.93	15.11
Kardhani	1031362	Kardhani	URBAN	AMR	6.14	5.51	10.27	23.34
KhirniPhatak	1028905	Satyanagar	URBAN	AMR	7.96	6.66	16.33	15.09
Lohamandi	1082636	Benad rural	URBAN	AMR	8.25	3.93	52.41	51.21
TKC	1031368	Kardani / Shopping Center	URBAN	AMR	2.30	1.93	15.99	16.00
Champapura	1083022	Subrampura	Rural	AMR	5.85	4.33	26.01	25.35
Champapura	1083028	AnandLok 24 Hrs	Rural	AMR	1.28	0.77	39.84	40.49
Hathoj	2265989	BalajiSagar	Rural	AMR	2.82	1.60	43.36	43.26
Lalpura	1083064	IadanKa Was	Rural	AMR	4.75	3.63	23.59	23.04
Lalpura	1083067	Lalpura	Rural	AMR	1.77	1.41	20.23	20.84
Lalpura	1083073	Pachar - I / Purana	Rural	AMR	3.92	3.26	16.88	16.03
Machwa	1083103	Fatehpuriya	Rural	AMR	6.80	4.94	27.33	26.68
Machwa	1117400	Ok Plus	Rural	AMR	1.04	0.56	45.78	45.64

Name of the Station	Feeder Code/ID	Feeder Name	Type of Feeder	Type of feeder meter	Received at Feeder (Final MU)	Feeder Consumption (In MU)	T&D losses (%)	AT&C losses (%)
Ramkui	1083082	Ramkui	Rural	AMR	1.76	1.44	18.03	18.07
Ramkui	1083085	Mahlaki Dhani	Rural	AMR	2.74	2.07	24.57	24.13
Ramkui	1083088	Bhomyagi	Rural	AMR	2.39	1.81	24.36	24.36
Ramkui	1083091	24 Hour Pachar / W/W	Rural	AMR	1.38	1.08	21.66	22.33
Sundariyawas	1083061	Gudliya	Rural	AMR	4.43	2.65	40.31	40.08
Sundariyawas	1085353	Bassa - II	Rural	AMR	2.58	1.70	34.42	34.05
Sundariyawas	2266308	SARANG KA BAS	rural	OTHER	1.66	0.38	76.82	76.75
Sundariyawas	2262498	24 HrsDurjanyawas City	Rural	AMR	0.63	0.41	35.53	37.39
Khatwada	1117002	Pump House	Rural	AMR	0.32	0.14	57.92	45.33
Khatwada	2264978	Step by step	Rural	AMR	0.10	0.07	31.00	30.94
RIICO-II (BAGRU-IA)	1084855	Satya	Ind-R	AMR	1.10	0.95	13.29	18.32
132 kV Bagru	1084627	Rampura	Urban	AMR	2.29	1.28	43.92	42.43
Ajayrajpura	1084768	Ajayrajpura	Rural	AMR	2.84	1.00	64.91	65.65
Ajayrajpura	1084774	BhakrotaKhurd	Rural	AMR	0.27	0.09	67.57	68.79
Ajayrajpura	1084777	Hasampura	Rural	AMR	1.35	0.56	58.56	52.08
Ajayrajpura	2264910	Jaijaspura 24Hrs	Rural	AMR	0.61	0.15	74.95	73.67
AnandVihar	2263150	AnandVihar-I	Rural	AMR	0.08	0.03	64.04	65.00
ARG IND PARK	2262771	Feeder no 2	Ind-R	AMR	1.49	0.00	99.75	99.73
ARG IND PARK	2265457	Feeder no 3	Ind-R	AMR	0.30	0.09	68.35	64.95
Bad Awaniya	1084666	Gosala (R)	Rural	AMR	1.61	1.01	37.63	38.64
Bad Awaniya	1084675	Naiwala (R)	Rural	AMR	2.00	0.78	61.18	59.52
Bad Awaniya	2266016	Awaniya City	Rural	AMR	0.24	0.01	94.44	94.44
Bad KeBalaji	1084735	Naiwala	Rural	AMR	2.27	1.67	26.35	26.42
Bad KeBalaji	1084741	Parasrampuria	Rural	AMR	0.93	0.64	30.85	31.31
Bad KeBalaji	1084744	Factory	Rural	AMR	3.74	3.02	19.16	19.70
Bad KeBalaji	2265826	Bhambhoriya	Rural	AMR	3.18	1.20	62.31	62.08
Bagru City	2262765	GHODA CHOUK	Urban	AMR	6.68	2.48	62.92	62.59
Bagru City	2266169	Petrol Pump	Urban	OTHER	4.63	1.62	64.94	64.98
Begus	1084684	Boraj	Rural	AMR	2.87	2.45	14.65	15.55
Begus	1084687	Kanadpura	Rural	AMR	3.42	2.82	17.50	17.94
Begus	1084690	Bassedi	Rural	AMR	1.91	1.63	14.96	20.68
Begus	2265380	Bassedi-2	Rural	AMR	2.02	1.69	16.58	20.07
Dhankya	1084723	Sivar	Rural	AMR	3.04	2.11	30.72	30.63
Dhankya	1085350	Bassa I	Rural	AMR	3.18	1.35	57.67	58.19
Dhankya	2264388	Dhankiya City	Rural	AMR	0.79	0.52	33.69	35.55
Dahmi Kala	2265942	Dahmi City	Rural	AMR	2.34	0.29	87.56	88.13
Dahmi Kala	2266014	DabarDera	Rural	OTHER	1.23	0.01	99.44	99.44
Hardhyanpura	1084633	Devliya(R)	Rural	AMR	3.44	2.06	39.98	50.56
Hardhyanpura	2264909	Sanjhariya	Rural	AMR	3.63	2.29	36.97	35.72
Hardhyanpura	2266017	CDIT	Rural	AMR	0.78	0.25	67.93	67.85
Jaisinghpura	1084783	Mahimadezire	Rural	AMR	0.29	0.22	24.03	20.15
Jaisinghpura	1084792	PiplaBaratsingh	Rural	AMR	3.16	2.45	22.71	22.00
Jaisinghpura	1084795	Jaisinghpura	Rural	AMR	3.73	2.99	19.74	18.89
Jaisinghpura	2263157	JDA	Rural	OTHER	2.35	0.36	84.65	83.96

Name of the Station	Feeder Code/ID	Feeder Name	Type of Feeder	Type of feeder meter	Received at Feeder (Final MU)	Feeder Consumption (In MU)	T&D losses (%)	AT&C losses (%)
Kalwara	1084750	SiraniGhanthapura	Rural	AMR	1.89	0.81	57.01	49.78
Kalwara	1084753	Dadiya	Rural	AMR	0.73	0.46	36.35	34.30
Kalwara	1084756	DRIT	Rural	AMR	0.78	0.62	21.06	16.89
Kalwara	1084765	SngJit	Rural	AMR	0.33	0.28	16.15	32.66
Kalwara	1085410	Kalwada	Rural	AMR	1.93	1.20	37.78	32.07
Mahapura	1084813	Mahapura City / No 8A	Rural	AMR	4.30	2.92	31.97	30.22
Mahapura	1085416	Mahapura (R)	Ind-R	AMR	4.58	3.44	24.97	24.75
Mahla Housing Board	2265354	Housing City 01	Ind-R	AMR	2.31	0.09	96.17	94.51
Mahla Housing Board	2265653	Girdharipura	Rural	AMR	0.80	0.54	32.70	32.18
Mundiyaramsar	2262819	Nimbera	Ind-R	AMR	4.50	2.67	40.60	39.50
Mundiyaramsar	2262821	Mundiaramsar	Ind-R	AMR	3.64	2.80	23.19	30.72
Mundiyaramsar	2262822	Chakmoriya	Ind-R	AMR	2.42	1.65	32.09	32.06
Mundiyaramsar	2264914	Himmatpura	Ind-R	AMR	1.63	1.17	28.48	29.70
RampuraUnti	1084645	RampuraUnti	Rural	AMR	1.98	1.38	30.37	27.77
RampuraUnti	1084651	Syosingpura / Narwariya	Rural	AMR	1.03	0.55	46.29	46.05
RampuraUnti	1084654	Laxminarayanpura	Rural	AMR	1.00	0.42	57.60	57.33
RampuraUnti	2264840	Sherpura-Nandlalpura	Rural	AMR	0.93	0.66	28.89	28.95
RawanBagru	1084657	Mahala (R)	Rural	AMR	1.06	0.56	47.12	41.90
RawanBagru	1084663	Rajpura (R)	Rural	AMR	2.33	1.56	33.07	34.19
RawanBagru	1085365	KeriyaKa Bas	Rural	AMR	1.28	0.87	32.23	28.65
SOLITAIR-I	2262751	NAKSHTRA	Rural	AMR	1.54	1.12	27.28	26.92
SOLITAIR-II	2264231	RR IND	Rural	AMR	3.56	2.59	27.22	28.04
Syo Singh Pura	1084702	Sheosinghpura	Ind-R	AMR	0.72	0.44	38.65	40.27
Syo Singh Pura	1084708	Tiwardiwala	Rural	AMR	1.96	1.22	37.86	38.88
Syo Singh Pura	2265723	Shyosinghpura City	Rural	AMR	0.06	0.04	29.37	29.14
Choru(JPDC)	1106627	Choru	Rural	AMR	2.17	1.27	41.63	40.43
Dosara	1083172	Dosra	Rural	AMR	3.46	2.90	16.11	15.57
Dosara	1083175	Gopalpura	Rural	AMR	3.93	1.91	51.29	50.54
Madhorajpura	2264232	Madhorajpura	Rural	AMR	1.62	1.34	17.15	15.83
Madhorajpura	2264561	Dantuli	Rural	AMR	0.47	0.21	54.96	52.99
Phagi	1083109	Bhojpura	Rural	AMR	1.08	0.74	31.58	29.34
Phagi	1083112	Chakwada	Rural	AMR	1.96	1.44	26.53	25.82
Phagi	1083115	Madhorajpura	Rural	AMR	0.24	0.03	88.25	87.70

2. Identify high loss feeders

These are some Identified high loss feeders:

Table 31: High Losses Feeders FY 2022-23

Name of the Station	Feeder Code/ID	Feeder Name	Type of Feeder	Type of feeder meter	Received at Feeder (Final in MU)	Feeder Consumption (In MU)	T&D losses (%)	AT&C losses (%)
Bindayaka	2264221	Mundiya	URBAN	OTHER	0.09	0.08	10.06	70.31
SMS Hospital	1029613	Raiser Plaza / RamniwasBagh	URBAN	AMR	7.43	3.94	47.05	47.13

Name of the Station	Feeder Code/ID	Feeder Name	Type of Feeder	Type of feeder meter	Received at Feeder (Final in MU)	Feeder Consumption (In MU)	T&D losses (%)	AT&C losses (%)
33/11 KV Siddarth Nagar S/S	2262692	Shankar Vihar 6	URBAN	OTHER	7.79	3.30	57.57	57.63
33/11 KV LakshmanDungri	2265889	Govindwatika	URBAN	AMR	0.42	0.26	37.38	32.51
Jai SinghpuraKhor (JDA)	2263997	Kund road	URBAN	AMR	29.07	5.76	80.19	80.22
KKD	1030627	Kunda w/w	URBAN	AMR	9.16	4.93	46.18	46.29
Arawali Marg	1096565	MARUTI	URBAN	AMR	1.93	0.90	53.50	50.07
MEERA MARG	2262493	INDRA PATH	URBAN	AMR	9.49	5.14	45.84	46.03
Patrkar Colony	1083361	Mohanpura - II	URBAN	AMR	2.40	1.72	28.18	27.39
VardhmanSarovar C	2262471	GANPATI ENCLAVE	URBAN	OTHER	20.99	5.86	72.06	71.91
VardhmanSarovar C	2262472	KHATIYON KI DHANI	URBAN	AMR	1.76	1.06	39.72	40.45
VardhmanSarovar C	2262473	KHUSI VIHAR	URBAN	AMR	2.16	1.46	32.38	31.55
Dadudayal Nagar	2262469	B Block	URBAN	AMR	10.15	6.97	31.31	31.07
Dadudayal Nagar	2262470	ECD BLOCK	URBAN	AMR	13.50	2.72	79.87	79.81
MUHANA MANDI	2263310	NARAYAN CITY	URBAN	AMR	40.74	0.40	99.03	99.05
MuhanaMandi	1114741	PREM NAGAR INDOOR	URBAN	AMR	5.89	4.17	29.19	30.83
Sanganer-II	2262465	PANCHWATI	URBAN	AMR	100.89	11.64	88.46	88.40
Sanganer-II	2265249	KhatikokiDhaal	URBAN	AMR	2.83	0.00	99.90	99.90
Shikarpura	2264074	SHIKSHA SAGAR	URBAN	AMR	4.60	2.54	44.75	44.40
NRI	1116626	SECTOR 17	URBAN	AMR	6.56	4.43	32.41	32.66
PratapAppartment	1114717	RAVI APPARTMENT	URBAN	AMR	1.19	0.82	30.77	29.64
Pratap Nagar Sec 5	2265544	Dravawati	URBAN	AMR	0.72	0.22	69.60	75.63
Road No 5 VKIA	2266128	LEHAR	URBAN	OTHER	7.71	4.96	35.64	35.77
Lohamandi	1082636	Benad rural	URBAN	AMR	8.25	3.93	52.41	51.21
Champapura	1083022	Subrampura	Rural	AMR	5.85	4.33	26.01	25.35
Champapura	1083028	AnandLok 24 Hrs	Rural	AMR	1.28	0.77	39.84	40.49
Hathoj	2265989	BalajiSagar	Rural	AMR	2.82	1.60	43.36	43.26
Machwa	1083103	Fatehpuriya	Rural	AMR	6.80	4.94	27.33	26.68
Machwa	1117400	Ok Plus	Rural	AMR	1.04	0.56	45.78	45.64
Sundariyawas	1083061	Gudliya	Rural	AMR	4.43	2.65	40.31	40.08
Sundariyawas	1085353	Bassa - II	Rural	AMR	2.58	1.70	34.42	34.05
Sundariyawas	2266308	SARANG KA BAS	rural	OTHER	1.66	0.38	76.82	76.75
Sundariyawas	2262498	24 HrsDurjanyawas City	Rural	AMR	0.63	0.41	35.53	37.39
Khatwada	1117002	Pump House	Rural	AMR	0.32	0.14	57.92	45.33
Khatwada	2264978	Step by step	Rural	AMR	0.10	0.07	31.00	30.94
132 kV Bagru	1084627	Rampura	Urban	AMR	2.29	1.28	43.92	42.43
Ajayrajpura	1084768	Ajayrajpura	Rural	AMR	2.84	1.00	64.91	65.65
Ajayrajpura	1084774	BhakrotaKhurd	Rural	AMR	0.27	0.09	67.57	68.79
Ajayrajpura	1084777	Hasampura	Rural	AMR	1.35	0.56	58.56	52.08
Ajayrajpura	2264910	Jaijaspura 24Hrs	Rural	AMR	0.61	0.15	74.95	73.67
AnandVihar	2263150	AnandVihar-I	Rural	AMR	0.08	0.03	64.04	65.00
ARG IND PARK	2262771	Feeder no 2	Ind-R	AMR	1.49	0.00	99.75	99.73
ARG IND PARK	2265457	Feeder no 3	Ind-R	AMR	0.30	0.09	68.35	64.95
Bad Awaniya	1084666	Gosala (R)	Rural	AMR	1.61	1.01	37.63	38.64
Bad Awaniya	1084675	Naiwala (R)	Rural	AMR	2.00	0.78	61.18	59.52

Name of the Station	Feeder Code/ID	Feeder Name	Type of Feeder	Type of feeder meter	Received at Feeder (Final in MU)	Feeder Consumption (In MU)	T&D losses (%)	AT&C losses (%)
Bad Awaniya	2266016	Awaniya City	Rural	AMR	0.24	0.01	94.44	94.44
Bad KeBalaji	1084735	Naiwala	Rural	AMR	2.27	1.67	26.35	26.42
Bad KeBalaji	1084741	Parasrampuria	Rural	AMR	0.93	0.64	30.85	31.31
Bad KeBalaji	2265826	Bhambhoriya	Rural	AMR	3.18	1.20	62.31	62.08
Bagru City	2262765	GHODA CHOUK	Urban	AMR	6.68	2.48	62.92	62.59
Bagru City	2266169	Petrol Pump	Urban	OTHER	4.63	1.62	64.94	64.98
Dhankya	1084723	Sivar	Rural	AMR	3.04	2.11	30.72	30.63
Dhankya	1085350	Bassa I	Rural	AMR	3.18	1.35	57.67	58.19
Dhankya	2264388	Dhankiya City	Rural	AMR	0.79	0.52	33.69	35.55
Dahmi Kala	2265942	Dahmi City	Rural	AMR	2.34	0.29	87.56	88.13
Dahmi Kala	2266014	DabarDera	Rural	OTHER	1.23	0.01	99.44	99.44
Hardhyanpura	1084633	Devliya(R)	Rural	AMR	3.44	2.06	39.98	50.56
Hardhyanpura	2264909	Sanjhariya	Rural	AMR	3.63	2.29	36.97	35.72
Hardhyanpura	2266017	CDIT	Rural	AMR	0.78	0.25	67.93	67.85
Jaisinghpura	2263157	JDA	Rural	OTHER	2.35	0.36	84.65	83.96
Kalwara	1084750	SiraniGhanthapura	Rural	AMR	1.89	0.81	57.01	49.78
Kalwara	1084753	Dadiya	Rural	AMR	0.73	0.46	36.35	34.30
Kalwara	1084765	SngJit	Rural	AMR	0.33	0.28	16.15	32.66
Kalwara	1085410	Kalwada	Rural	AMR	1.93	1.20	37.78	32.07
Mahapura	1084813	Mahapura City / No 8A	Rural	AMR	4.30	2.92	31.97	30.22
Mahla Housing Board	2265354	Housing City 01	Ind-R	AMR	2.31	0.09	96.17	94.51
Mahla Housing Board	2265653	Girdharipura	Rural	AMR	0.80	0.54	32.70	32.18
Mundiyaramsar	2262819	Nimbera	Ind-R	AMR	4.50	2.67	40.60	39.50
Mundiyaramsar	2262821	Mundiaramsar	Ind-R	AMR	3.64	2.80	23.19	30.72
Mundiyaramsar	2262822	Chakmoriya	Ind-R	AMR	2.42	1.65	32.09	32.06
Mundiyaramsar	2264914	Himmatpura	Ind-R	AMR	1.63	1.17	28.48	29.70
RampuraUnti	1084645	RampuraUnti	Rural	AMR	1.98	1.38	30.37	27.77
RampuraUnti	1084651	Syosingpura / Narwariya	Rural	AMR	1.03	0.55	46.29	46.05
RampuraUnti	1084654	Laxminarayanpura	Rural	AMR	1.00	0.42	57.60	57.33
RampuraUnti	2264840	Sherpura-Nandlalpura	Rural	AMR	0.93	0.66	28.89	28.95
RawanBagru	1084657	Mahala (R)	Rural	AMR	1.06	0.56	47.12	41.90
RawanBagru	1084663	Rajpura (R)	Rural	AMR	2.33	1.56	33.07	34.19
RawanBagru	1085365	KeriyaKa Bas	Rural	AMR	1.28	0.87	32.23	28.65
SOLITAIR-I	2262751	NAKSHTRA	Rural	AMR	1.54	1.12	27.28	26.92
SOLITAIR-II	2264231	RR IND	Rural	AMR	3.56	2.59	27.22	28.04
Syo Singh Pura	1084702	Sheosinghpura	Ind-R	AMR	0.72	0.44	38.65	40.27
Syo Singh Pura	1084708	Tiwardiwala	Rural	AMR	1.96	1.22	37.86	38.88
Syo Singh Pura	2265723	Shyosinghpura City	Rural	AMR	0.06	0.04	29.37	29.14
Choru(JPDC)	1106627	Choru	Rural	AMR	2.17	1.27	41.63	40.43
Dosara	1083175	Gopalpura	Rural	AMR	3.93	1.91	51.29	50.54
Madhorajpura	2264561	Dantuli	Rural	AMR	0.47	0.21	54.96	52.99
Phagi	1083109	Bhojpura	Rural	AMR	1.08	0.74	31.58	29.34
Phagi	1083112	Chakwada	Rural	AMR	1.96	1.44	26.53	25.82

Name of the Station	Feeder Code/ID	Feeder Name	Type of Feeder	Type of feeder meter	Received at Feeder (Final in MU)	Feeder Consumption (In MU)	T&D losses (%)	AT&C losses (%)
Phagi	1083115	Madhorajpura	Rural	AMR	0.24	0.03	88.25	87.70
RatanIndusrial Area	1087684	IND - I / Deasha Green	Rural	AMR	3.01	2.14	28.86	28.19
RatanIndusrial Area	1087687	Ind - II / W/W	Rural	AMR	2.64	1.75	33.58	33.27
Rotwara	1083181	Mandoor	Rural	AMR	1.24	0.71	42.65	40.68
Rotwara	1083184	Amarpura	Rural	AMR	1.68	1.18	30.03	28.45
220 kV Chomu	1013653	Morija - II	Rural	AMR	3.54	2.45	30.84	31.00
220 kV Chomu	1013659	Hadota / Anjani Mata	Rural	AMR	10.33	7.60	26.46	31.40
Biharipura(JPDC,Jaipur)	1013713	Jahota (B)	Rural	AMR	2.76	1.76	36.21	36.21
Biharipura(JPDC,Jaipur)	1013719	Biharipura	Urban	AMR	2.47	1.74	29.52	29.18
Chomu	1013677	Hadota Back	Urban	AMR	3.23	2.39	25.88	25.80
Chomu	1117110	Teja Ji City	Rural	AMR	3.56	2.16	39.33	46.24
Khadibagh	2262671	Ahiro Ki Dhani	Rural	AMR	3.13	2.37	24.17	38.40
Khadibagh	2262673	Santoshi Mata	Rural	AMR	5.71	2.50	56.27	61.34
Samod	1013752	SamodGramin	Rural	AMR	1.48	1.05	28.99	29.62

5.2.6. Identify overloaded segments/ infrastructure

Overloaded segments are covered under RDSS Schemes.

UL (Under loaded): 20% of kVA rating for more than 90% of time where peak kVA < 40% of kVA rating

OL (Overloaded): 95% of kVA rating for at least half an hour

UB (Unbalanced): Relative phase wise unbalance is > 150% or < 50% and peak kVA of the transformer is at least 50% of kVA rating.

Energy meters are installed at each voltage level for energy consumption. The readings are taken manually.

The energy reading of commercial and Industrial consumers, Distribution transformer readings are downloaded by the appropriate software for billing and analysis.

There is 99.94% metering available at consumers. Also JVVNL has claimed that there is approx 1.97% metering at DTs transformers.

The energy consumed by JVVNL offices, receiving stations is also metered and accounted.

5.3. Subsidy computation and analysis (based on quarterly data)

Quarter wise subsidy details attached in annexure Separately, Annual Subsidy details are given below:

Consumer Category (Separate for each subsidized consumer category)	Billed Energy			Subsidized Billed Energy			Applicable rate of Subsidy as notified by		Subsidy Due from State Govt.			Subsidy Actually Billed / claimed from State Govt	Subsidy Received from State Govt. (As against	Balance Subsidy yet to be Received from State
	Metered	Un-metered*	Total	Metered (out of col.2)	Un-metered* (out of col.3)	Total	Metered Energy**	Un-metered Energy**	Metered Energy	Un-metered Energy	Total			
	(in kWh)			(in kWh)			(in Rs/kWh)		(in Rs. Cr.)			(in Rs. Cr.)	(in Rs. Cr.)	(in Rs. Cr.)
1	2	3	4=2+3	5	6	7=5+6	8	9	10	11	12=10+11	13	14	15=13-14
Residential	6021463547	0	6021463547	6021463547		6021463547	Order enclosed		1738	0	1738.46		1738.46	
Agriculture	9656311506	85782736	9742094241	9656311506	85782736	9742094241			5491	50	5541.85		5156.34	
Commercial/Industrial - LT	3273530040	0	3273530040			0			0	0	0.00		0.00	
Commercial/Industrial - HT	8641898515	0	8641898515			0			0	0	0.00		0.00	
Other (Distribution Fracnchisee, PSL, MIX LOAD, EV)	2336774699	0	2336774699	757566615		757566615			153	0	152.77		152.77	
Total	**29929978306**	**85782736**	**30015761042**	**16435341668**	**85782736**	**16521124403**			**7382.60**	**50.48**	**7433.09**	**7433.09**	**7047.57**	**385.52**

5.4. Trend analysis and identification of key exceptions

Details maybe specified such as performance of DISCOM in FY2021-22 Vs FY 2022-23 annually comparison, circle wise analysis, where the DISCOM has improved and where needs improvement, etc.

a) Summary of AT&C losses comparison for previous years

Table 32: AT&C loss Comparison for last two Years

Technical Details	UoM	FY 2021-22	FY 2022-23
Input Energy Purchase (From Generation Source)*	Million kWh	35698.25	38764
Net input energy (at DISCOM Periphery after adjusting the transmission losses and energy traded)	Million kWh	31896.48	35144
Total Energy billed (is the Net energy billed, adjusted for energy traded))	Million kWh	26534.11	30016
Transmission and Distribution (T&D) loss Details	Million kWh	5362.37	5129
	%	16.81%	14.59%
Collection Efficiency	%	100%	98.41%
Aggregate Technical & Commercial Loss	%	16.81%	15.95%

The trend of reduction in distribution loss has reached a trough during the past few years. Marginal rate of reduction of distribution loss becomes extremely low. Further reduction

will involve significant capital and operational expenditure and may prove to be counter-productive for the consumers

As we compare the losses for last three years it was found that T&D losses is decreasing trend as compare to first two years and collection efficiency is also decreasing trends, hence AT&C losses is increasing.

b) Circle wise Energy& Losses Comparison

The circle wise input energy, Billed energy & losses comparison is shown in below table:

Table 33: Circle wise Energy & Losses Comparison

Particulars	Input Energy (MU)		Billed Energy (MU)		Loss (MU)		Loss (%)	
	2021-22	2022-23	2021-22	2022-23	2021-22	2022-23	2021-22	2022-23
ALWAR	8398.13	9217.89	7110.74	7936.87	1287.39	1281.0	15.33%	13.9%
BARAN	1219.09	1313.70	950.76	1068.85	268.33	244.8	22.01%	18.6%
BHARATPUR	1695.43	1855.47	1059.99	1246.97	635.44	608.5	37.48%	32.8%
BUNDI	1033.47	1102.27	873.22	964.49	160.25	137.8	15.51%	12.5%
DAUSA	1392.67	1461.65	1045.41	1131.04	347.26	330.6	24.93%	22.6%
DHOLPUR	913.68	980.51	594.87	668.23	318.81	312.3	34.89%	31.8%
JCC	5151.41	5841.79	4740.29	5438.99	411.12	402.8	7.98%	6.9%
JHALAWAR	1345.40	1371.66	1079.10	1141.03	266.30	230.6	19.79%	16.8%
JPDC	5128.72	5571.58	4208.61	4731.16	920.11	840.4	17.94%	15.1%
KARAULI	1023.11	1092.32	751.61	812.82	271.50	279.5	26.54%	25.6%
KOTA	1201.14	1293.40	1008.32	1114.47	192.82	178.9	16.05%	13.8%
SWM	980.73	1017.74	826.73	866.62	154.00	151.1	15.70%	14.8%
TONK	933.08	1021.99	804.06	891.70	129.02	130.3	13.83%	12.7%
Jaipur Discom	**30416.06**	**33141.97**	**25053.71**	**28013.23**	**5362.35**	**5128.73**	**17.63%**	**15.48%**

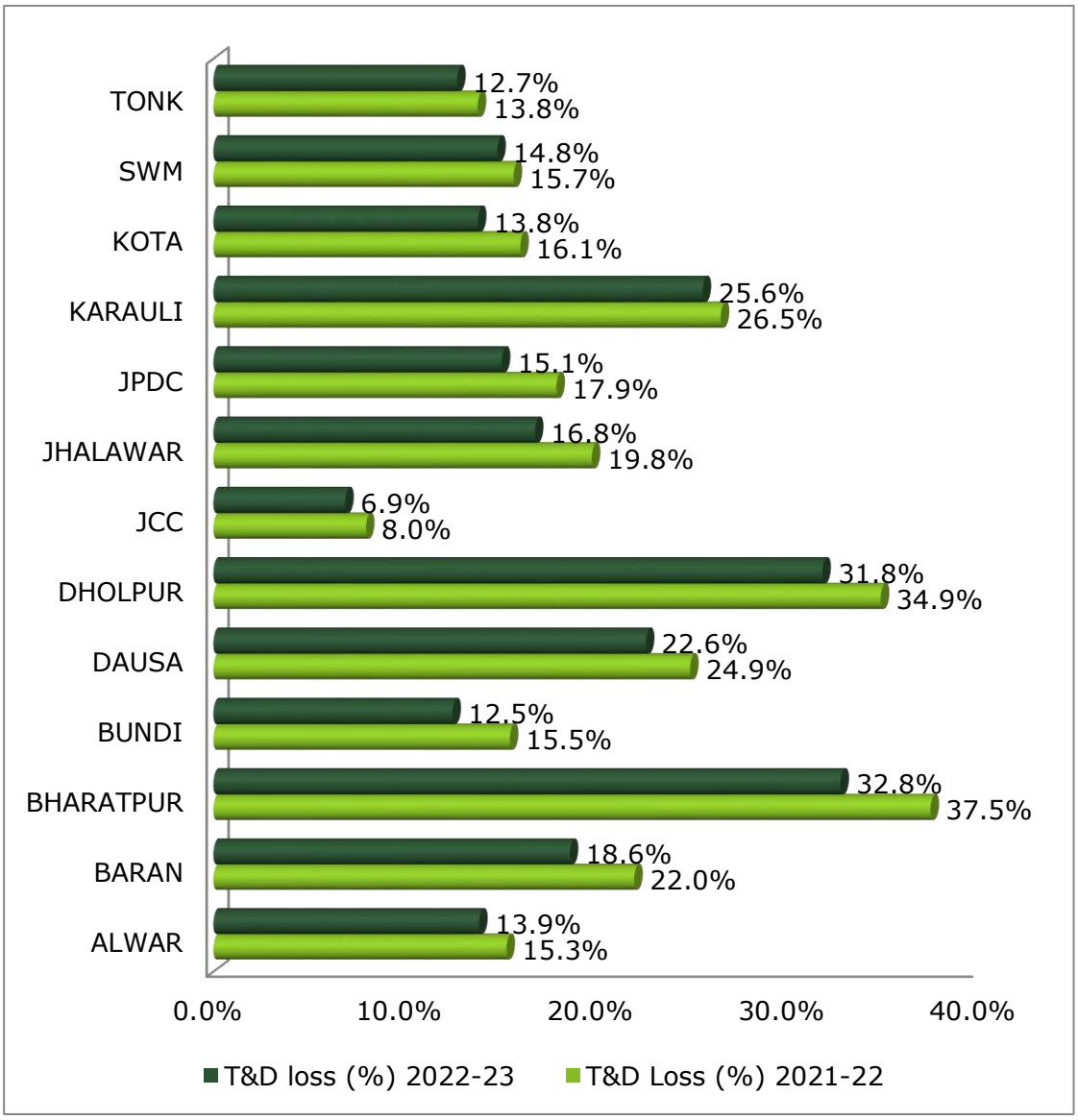
c) Circle wise Collection & AT&C Losses comparison

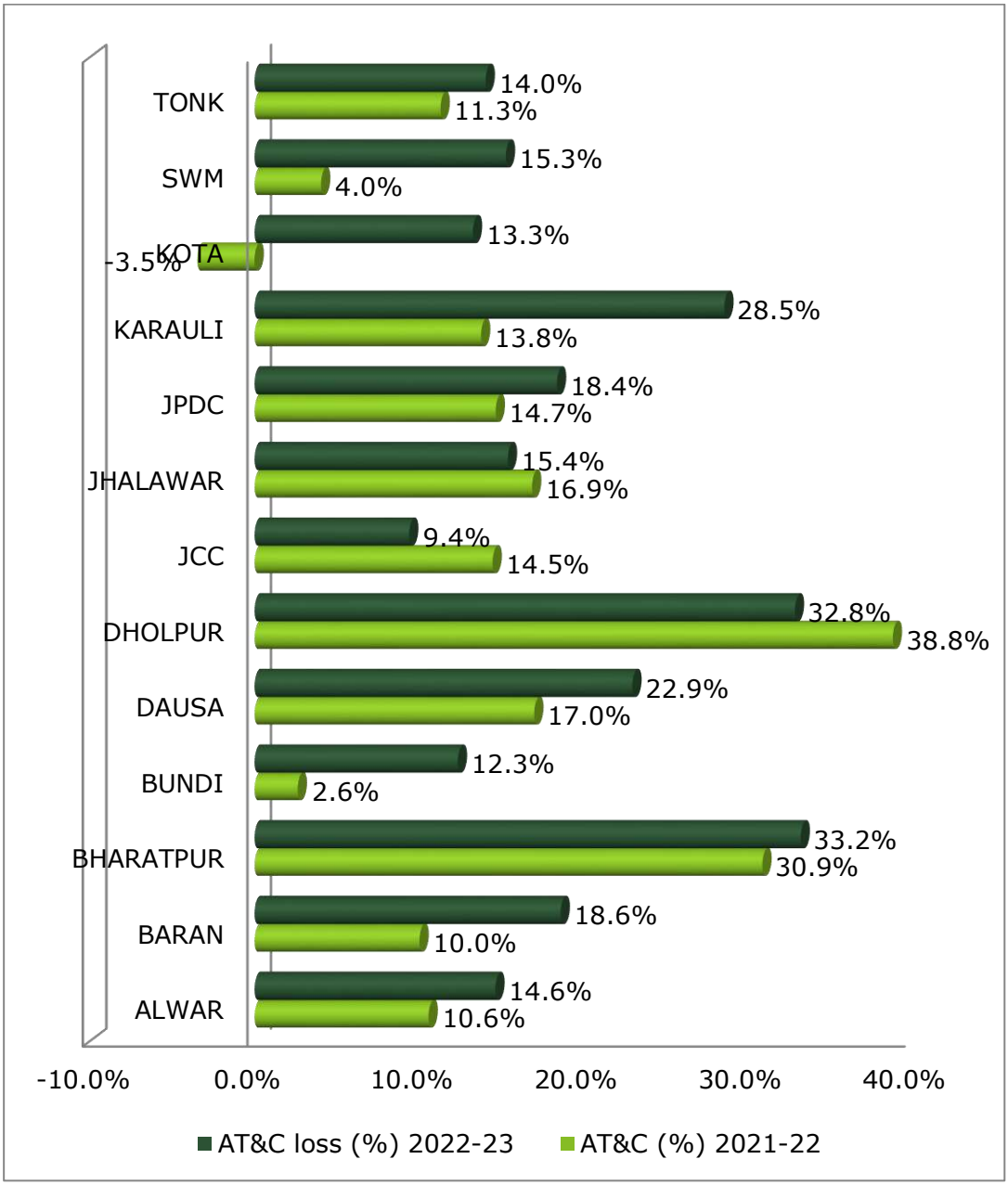
The circle wise Billed, Collection Amount & AT&C losses comparison is shown in below table:

Table 34: Circle wise Collection Efficiency & AT&C Losses Comparison

Particulars	Billed Amount (Cr)		Collected Amount (Cr)		Collection Efficiency		AT&C (%)	
	2021-22	2022-23	2021-22	2022-23	2021-22	2022-23	2021-22	2022-23
ALWAR	5170.78	5849.61	5461.69	5800.10	106%	99.2%	10.6%	14.6%
BARAN	644.78	729.72	743.89	730.12	115%	100.1%	10.0%	18.6%
BHARATPUR	748.98	903.28	828.43	898.04	111%	99.4%	30.9%	33.2%
BUNDI	624.3	709.09	719.54	710.32	115%	100.2%	2.6%	12.3%
DAUSA	741.8	795.22	820.33	791.83	111%	99.6%	17.0%	22.9%
DHOLPUR	420.96	465.69	395.46	459.01	94%	98.6%	38.8%	32.8%
JCC	4080.42	4899.62	3793.29	4768.50	93%	97.3%	14.5%	9.4%
JHALAWAR	753.72	806.21	781.24	820.06	104%	101.7%	16.9%	15.4%
JPDC	3104.89	3643.18	3229.42	3502.23	104%	96.1%	14.7%	18.4%

Particulars	Billed Amount (Cr)		Collected Amount (Cr)		Collection Efficiency		AT&C (%)	
	2021-22	2022-23	2021-22	2022-23	2021-22	2022-23	2021-22	2022-23
KARAULI	556.39	630.54	653.13	605.55	117%	96.0%	13.8%	28.5%
KOTA	751.48	838.94	926.33	844.50	123%	100.7%	-3.5%	13.3%
SWM	605.35	657.12	689.07	653.89	114%	99.5%	4.0%	15.3%
TONK	610.34	696.51	628.26	686.21	103%	98.5%	11.3%	14.0%




TONK
14.0%
11.3%
SWM
15.3%
4.0%
KOTA
13.3%
-3.5%
KARAULI
28.5%
13.8%
JPDC
18.4%
14.7%
JHALAWAR
15.4%
16.9%
JCC
9.4%
14.5%
DHOLPUR
32.8%
38.8%
DAUSA
22.9%
17.0%
BUNDI
12.3%
2.6%
BHARATPUR
33.2%
30.9%
BARAN
18.6%
10.0%
ALWAR
14.6%
10.6%
-10.0%
0.0%
10.0%
20.0%
30.0%
40.0%
AT&C loss (%) 2022-23
AT&C (%) 2021-22

6. Energy Audit findings

6.1. Critical Analysis

- Verified transmission losses, distribution (T&D) losses, collection efficiency & aggregate technical & commercial losses of JVVNL for FY22-23, i.e., 1st April 2022 to 31st March 2023 is 8.03%, 14.59%, 98.41% & 15.95% respectively.
- JVVNL calculation methodology of AT&C Losses calculated on more than 100% collection efficiency.
- The electrical energy which is supplied by various interstate Purchase power agreement at 220 KV, 132KV, 33 KV and same is supplied to customers at 132 KV, 33 KV, 11 KV, 400V and 230 V single phase.
- JVVNL has 100 % metering available at 11/33/66 KV system. However, there is 99.94% metering at consumer end and 1.97% metering available at DT.
- JVVNL is a very vast distribution network having 13 numbers of circles, 58 numbers of divisions, 222 numbers of sub-division, 10955 numbers of feeders, 873368 number of DTs and 4925782 numbers of consumers.
- JVVNL will be able to provide the Feeder Wise Input Energy, Feeder wise billed energy after completion of installation of feeder meters and DT meters and mapping in each feeder.
- At the time of field visit it was found that at maximum substation the average power factor is above 0.95, which is satisfactory.
- Majority of feeders are common to LT & HT. So input energy supplied is inseparable.
- Cumulated EHT sales MUs for 33kV and above are maintained and therefore bifurcations of same are not available.
- Capacitor bank is already installed at some of the substation.
- At present HT/LT ratio of DISCOM is 0.80.
- Need to improve HT/LT ratio by providing (High Voltage Distribution System) HVDS system.

6.1.1. Status and progress in compliance to pre-requisites to energy accounting

This Energy Audit report is being issued within the timeline stipulated in Regulations and hence no further comments from Energy Auditor with regards to this aspect.

It was observed that there has been significant delay in submission of Quarterly Accounts during three Quarters (i.e., Q1, Q2, and Q3 FY 2022-23), quarterly report Q4 is also

submitted to BEE. The Quarterly accounts within the timeframe stipulated in the Regulations. Further, the compliance with regards to Regulations and Pre-requisites are tabulated in the table below:

Table 35: Compliance status w.r.t Timelines and Pre-requisites

Clause	Details	Sub-Clause	Criteria	Compliance Status
3	Intervals of time for conduct of annual energy audit	A	Conducted an annual energy audit for every financial year and submitted the annual energy audit report to the Bureau and respective State. Designated Agency and also made available on the website of the electricity distribution company within a period of four months from the expiry of the relevant financial year	Conducted an annual energy audit for every financial year and submitted the annual energy audit report to the Bureau and respective State. Designated Agency
4	Intervals of time for conduct of periodic energy accounting.	A	All feeder wise, circle wise and division wise periodic energy accounting is conducted by the energy manager of the electricity distribution company for each quarter of the financial year.	All feeder wise, circle wise and division wise periodic energy accounting is conducted by the energy manager of the electricity distribution company for each quarter of the financial year.
		B	All feeder wise, circle wise and division wise periodic energy accounting is conducted by the energy manager of the electricity distribution company for each quarter of the financial year.	All feeder wise, circle wise and division wise periodic energy accounting is conducted by the energy manager of the electricity distribution company for each quarter of the financial year.
		C	Electricity distribution company conducted its first periodic energy accounting, for the last quarter of the financial year immediately preceding the date of such commencement (i.e., 6thOctober 2021)	Electricity distribution company conducted its first periodic energy accounting, for the last quarter of the financial year immediately preceding the date of such commencement (i.e., 6thOctober 2021)
		D	Electricity distribution company conducted its subsequent periodic energy accounting for each quarter of the financial year for a period of two financial years from the date of such commencement and submits the periodic energy	Yes

Clause	Details	Sub-Clause	Criteria	Compliance Status
			accounting report within sixty days from the date of periodic energy accounting.	
5	Pre-requisites for annual energy audit and periodic energy accounting	A	Pre-requisites for annual energy audit and periodic energy accounting	Yes
		B	Identification and mapping of high tension and low-tension consumers	Yes
		C	Development and implementation of information technology enabled energy accounting and audit system, including associated software	Under Progress
		d	Electricity distribution company ensures the installation of functional meters for all consumers, transformers and feeders. Meter installation is done in a phased manner within a period of three financial years from the date of the commencement of these regulations in accordance with the trajectory set out in the First Schedule	Under Progress
			d.1. 100% Communicable Feeder Metering integrated with AMI, by 31st December 2022 along with replacement of existing non-communicable feeder meters.	
			d.2. All Distribution Transformers (other than HVDS DT up to 25kVA and other DTs below 25 kVA) shall be metered with communicable meters. Communicable DT Metering for the following areas/ consumers to be completed by December 2023 and in balance areas by December 2025:	Under Progress
			d.2.1. All Electricity Divisions of 500 AMRUT cities, with AT&C Losses > 15%	
			d.2.2. All Union Territories (for areas with technical difficulty, non-communicable meters may be installed)	
			d.2.3. All Industrial and Commercial consumers	

Clause	Details	Sub-Clause	Criteria	Compliance Status
			d.2.4. All Government offices at Block level and above	
			d.2.5. Other high loss areas i.e., rural areas with losses more than 25% and urban areas with losses more than 15%	
			d.3. Prepaid Smart Consumer Metering to be completed for all directly connected meters and AMR in case of other meters, by December 2023 in the following areas: d.3.1. All Electricity Divisions of 500 AMRUT cities, with AT&C Losses > 15%;	
			d.3.2. All Union Territories (for areas with technical difficulty, prepaid meters to be installed);	
			d.3.3. All Industrial and Commercial consumers;	
			d.3.4. All Government offices at Block level and above;	
			d.3.5. Other high loss areas i.e., rural areas with losses more than 25% and urban areas with losses more than 15%.	
			d.4. Consumer Metering: 98% by FY 2022-23 99% by FY 2023-24	
			d.5. Targets for functional meters - Meter FY 22-23 FY 23-24 FY24-25 Feeder metering 98.5% 99.5% 99.5% DT metering 90% 95% 98% Consumer metering 93% 96% 98	
		e	e.1. All distribution transformers (other than high voltage distribution system up to 25kVA and other distribution system below 25 kVA) is metered with communicable meters.	
			e.2. And existing non communicable distribution transformer meters is replaced with communicable meters and integrated with advanced metering infrastructure.	
		f	Electricity distribution	

Clause	Details	Sub-Clause	Criteria	Compliance Status
			company has established an information technology enabled system to create energy accounting reports without any manual interference and such systems may be within a period of three years from the date of the commencement of these regulations in case of urban and priority area consumers; and within five years from the date of the commencement of these regulations in case of rural consumers	
		g	Electricity distribution company has a centralized energy accounting and audit cell comprising of (i) a nodal officer, an energy manager and an information technology manager, having professional experience of not less than five years; and (ii) a financial manager having professional experience of not less than five years	
6	Reporting requirements for annual energy audit and periodic energy accounting	a	Electricity distribution company has a nodal officer, who is a full time employee of the electricity distribution company in the rank of the Chief Engineer or above, for the purpose of reporting of the annual energy audit and periodic energy accounting and communicate the same to the Bureau	Yes
		b	Electricity distribution company ensures that the energy accounting data is generated from a metering system or till such time the metering system is not in place, by an agreed method of assumption as may be prescribed by the State Commission.	Yes, Under Process
		c	Metering of distribution transformers at High Voltage Distribution System up to 25KVA is done on cluster meter installed by the electricity distribution	Under Process

Clause	Details	Sub-Clause	Criteria	Compliance Status
			company	
		d	The energy accounting and audit system and software is developed to create monthly, quarterly and yearly energy accounting reports.	
		c	Electricity distribution company has provided the details of the information technology system in place as specified in clause (f) of regulation 5 that ensures minimal manual intervention in creating the energy accounting reports and any manual intervention of any nature, in respect of the period specified therein, shall be clearly indicated in the periodic energy accounting report	Under Process

6.1.2. Data gaps

The Audit firm has raised the data gaps to the DISCOM. The summary of data gaps raised and response from DISCOM is summarized in the table below:

Table 36: Summary of Data gaps

S. No.	Data gaps raised by Energy Auditor	Response shared by DISCOM	Status of data submission by DISCOM
1	DT Wise losses are not in account.	DT wise mapping is under process.	
2	Voltage wise consumer & Sold unit is not available	Voltage wise bifurcation is not available	
3	Voltage wise Input energy and losses are not available	Voltage wise energy bifurcation is not available	

6.1.3. Summary of key responses of DISCOM management on Comments by Energy Auditor

The Auditor has identified the key issued with regards to Energy Accounting/Audit and DISCOM's management has responded to the same as summarized in the table below:

Table 37: Comments by Energy Auditor and responses of DISCOM management

S. No.	Comments by Energy Auditor	Response of DISCOM's management
1	Kindly provide the identification and mapping of all of the electrical	Division Wise schematic were shown

S. No.	Comments by Energy Auditor	Response of DISCOM's management
	network assets.	
2	Kindly provide the identification and mappingof high tension and low-tension consumers	Schematic maps for 11kV feeder were Shown.
3	DT wise losses is not is account	DT wise metering is under process.
4	Energy (Electrical) Purchase report for the year 2022-23	Provided by JVVNL
5	Energy sold outside the discom	Energy sold outside Provided
6	Energy Conservational Schemes implemented	Provided
7	Energy conservational Schemes to be implemented	Provided
8	Quarter wise report	Provided
9	Voltage wise losses are not available	Under process

6.2. Revised findings based on data validation and field verification

JVVNL officials responded to the data gaps and the plan for the site visit with Accredited Energy Auditor was prepared. The field visit conducted in the month of August 2023. The schedule of the visits is as follows. Details along with Photos is enclosed in annexure

1. During field interaction & on-site visit auditor wanted to know the status of identification and mapping status of all of the electrical network assets, status of identification and mapping of high tension and low-tension consumers, status of the development and implementation of information technology status enabled energy accounting and audit system, including associated software, installation status of functional meters for consumers, transformers and feeders, status of adoption of an information technology enabled system to create energy accounting report reports without any manual interference and status of formation of cell for centralized energy accounting etc.
2. During field, interaction & on-site visit auditor observed that JVVNL possessed communicable meters connected with feeders of JVVNL for capturing loss data, having system for identification and mapping of all high-tension as well as low tension consumers, the DT metering is under progress.
3. Management response for action plan of JVVNL found to be very positive and JVVNL agreed upon to implement it with top priority within the target stipulated in pre-requisites of BEE's regulation.
4. Network diagram of the few feeders with high loss checked.
5. The condition of the conductor and the reason for loss were discussed.
6. The input point meter serial number validation carried out.

7. The energy accounting process validated for each circle.
8. Input energy data cross verification.
9. Metering points and their energy break up.
10. Checklist submitted to the JVVNL and data gaps of the submitted data explained.
11. At the time of field visit it was found that at maximum substation the average power factor is above 0.95, which is satisfactory.
12. Need to survey and replace conductor of proper capacity.
13. Need to cut tree branches touching to conductors.
14. Need to tighten the jumpers.

6.3. Inclusions and Exclusions

NA

7. Conclusion and Action Plan

7.1. Summary of critical analysis and way forward proposed by Energy Auditor

The primary energy-consuming areas are the distribution network, the office buildings, and the fleet of vehicles used for maintenance and repairs. The distribution network accounts for the majority of energy consumption, followed by office buildings and vehicles.

7.1.1. Areas of Inefficiencies:

- **Distribution Network:** The energy consumption of the distribution network is higher than industry standards. The primary reasons for this are the aging infrastructure and lack of modern technology.
- **AT&C Loss:** it is slightly high (15.95%) as compared to national average of 15.5%. The main reason of high AT&C losses is billing efficiency, which is around 85%.
- **LT/HT Ratio:** Increasing HT lines can help in reducing both line losses and voltage drops. Efforts should be made to achieve a low LT/HT ratio, which would be very beneficial for improving efficiency of power distribution in the JVVNL.

7.1.2. Recommendations:

- The division wise excel sheet shall be automated via some software and the respective changes in the field in order to maintain the supply and meter faults, etc. shall be updated in the software on timely basis.
- Normal conventional meter should be replaced with communicable meters.
- Consumer indexing on de-novo basis.
- Generation of automated energy audit reports (DT level/ Feeder level/ Sub-division·level/ Division level/ Circle) ·
- Development of a comprehensive consumer engagement plan.
- Operation, maintenance, and support services after the successful completion of the Operational Go-Live of the system.
- Augmentation of existing transformers at overloaded segments.
- Replacement or strengthening of conductor at overloaded segments is recommended.
- Recommended to provide AMR meters for all HT installations.
- The DTR meter reading shall be AMR based and shall be increased. Proper Monitoring of the DTR meters shall be done.

7.1.3. Cost-Benefit Analysis:

To determine the cost-effectiveness of the recommended measures, a cost-benefit analysis should be conducted. The cost of implementing the measures should be compared to the potential energy savings to determine the return on investment. This analysis will help the company prioritize the implementation of the recommended measures.

In conclusion, the energy audit of the electricity distribution company revealed several areas of inefficiencies in energy consumption. The recommended measures, including upgrading the infrastructure, modernizing the HVAC systems, promoting employee awareness, and improving the fleet of vehicles, will help to improve energy efficiency and reduce energy consumption. Conducting a cost-benefit analysis will help the company to prioritize the implementation of these measures. Overall, the implementation of these measures will improve the company's energy efficiency, reduce energy consumption, and lower energy costs.

7.2. Summary of key findings – energy balance and losses

The Energy balance and losses of JVVNL for FY 2022-23 are as shown in the table below:

Table 38: Energy balance and losses

Energy Input Details	Formula	UoM	Value
Input Energy Purchase (From Generation Source)	A	MU	38764
Net input energy (at DISCOM Periphery after adjusting the transmission losses and energy traded)	B	MU	35144
Total Energy billed (is the Net energy billed, adjusted for energy traded))	C	MU	30016
Transmission and Distribution (T&D) loss Details	D	MU	5129
	E = D/B x 100	%	14.59%
Collection Efficiency	F	%	98.41%
Aggregate Technical & Commercial Loss	G = 1-{(1-E) x Min(F,100%)	%	15.95%

7.3. Recommendations and best practices

a) Energy accounting

Bureau of Energy Efficiency (BEE) through Ministry of Power, Government of India issued regulations for Conduct of Mandatory Annual Energy Audit and Periodic Energy Accounting in DISCOMs namely Bureau of Energy Efficiency (Manner and Intervals for Conduct of Energy Audit in electricity distribution companies) Regulations, 2021. As per the regulation, all Electricity Distribution Companies are mandated to conduct annual energy audit and periodic energy accounting on quarterly basis.

These Regulations for Energy audit in Electricity Distribution Companies provides broad framework for conduct of Annual Energy Audit and Quarterly Periodic Energy Accounting with necessary Pre-requisites and reporting requirements to be met.

As per clause of BEE regulations, 2021, Intervals of time for conduct of annual energy audit.-

Every electricity distribution company shall conduct an annual energy audit for every financial year and submit the annual energy audit report to the Bureau and respective State Designated Agency and made available on the website of the electricity distribution company within a period of four months from the expiry of the relevant financial year:

Provided that on the commencement of these regulations, the first annual energy audit of every electricity distribution company shall be conducted within six months from the date of such commencement, by taking into account the energy accounting of electricity distribution company for the financial year immediately preceding the date of the commencement of these regulations.

b) Loss reduction

- Replacement of Electronic Meter to Smart Meters in Urban areas having loss more than 40%. In RDSS scheme.
- DT metering of Urban areas having loss more than 40%.
- Augmentation of DTR and PTRs
- Augmentation of Conductor of 33 & 11 KV lines.
- Construction of New Substations.
- Installation of New Capacitor Bank on 11 KV feeders.
- LT underground cabling etc.
- Replacement of Bare LT Conductor with AB cable.
- Improving HT: LT ratio.

c) Energy conservation

i. Awareness camps organised at Sub-Divisional level to advice consumers to use 5-star rated energy efficient appliances.

ii. Encouraging Consumers to opt roof top solar energy panels.

7.4. Action plan for line loss reduction

Following energy conservation Measures (ECMs) is adopted for line loss reduction

1. Installation of Smart Meters.
2. Installation of Automatic Power factor controller (Capacitor Bank).
3. System improvement & automation.
4. Improvement in metering system.
5. Replacing of conventional/ non star rated transformer into energy efficient transformers.
6. Replacement of all conventional mechanical energy meters with static digital energy meters having less power consumption and more accuracy.
7. Laying of AB cable in theft prone area where loss is in higher side.
8. HVD system to reduce low tension line losses.
9. Replacing worm out /Under sized conductors.
10. Increase in HT/LT Ratio.
11. Preventive & Periodic maintenance of line & transformer.
12. Load balancing of distribution transformers.
13. MIS Based periodic reporting of unit wise business parameters.
14. Installation of solar generation plant & solar pumps.
15. Strengthening of energy accounting infrastructure- 100% consumer metering.
16. GIS based asset mapping of all 33/11KV Substations, 11KV Lines and distribution transformers has been completed.
17. 11KV Feeder wise base line technical data i.e., length, Peak load, VR and technical loss calculated by algorithm & published in power BI.
18. Feeder wise baseline commercial loss is being collected by subtracting technical loss for total T&D loss.
19. Selection/priority of area must be made under:
    I. Feeder having VR more than 15%.
    II. Feeder having VR more than 9 to 15%.
    III. Feeder having peak load more than 100 Amp. & length more than 30KM.
    IV. High T&D loss feeder.
    V. High commercial loss feeder.

7.5. Action plan for monitoring and reporting

1. Advanced Metering Infrastructure (AMI) smart metering system in JVVNL
2. Erection of requisite structure for installation of boundary meters and corresponding ringfencing of Project Area

3. Approve all documents required for completion of Pre-Operational Go-Live Phase.
4. Provide existing database of consumer indexing and physical & IT infrastructure as available with the Utility.
5. Provide necessary inputs for developing a comprehensive consumer engagement Plan.
6. The division wise excel sheet shall be automated via some software and the respective changes in the field in order to maintain the supply and meter faults, etc. shall be updated in the software on timely basis.
7. Most of the Feeder Meters are having communication facility through AMR and MRI Data (generally, more than feeder meter data is received through AMR or MRI.). The DTR meter reading shall be AMR based and shall be increased. Proper Monitoring of the DTR meters shall be done.
8. During off-peak periods, JVVNL is expected to minimize the no load losses by maintaining optimal loading of transformers by configuring its network in such a manner that reliability of supply is also not compromised.

7.6. Action plan for automated energy accounting

Automated energy accounting is a critical component of modern electricity distribution systems. It allows for accurate and efficient tracking of energy usage, which helps identify energy waste, reduce energy consumption, and improve billing accuracy. In this report, we will outline an action plan for implementing automated energy accounting in an electricity distribution company.

Step 1: Evaluate Current Energy Accounting System

The first step is to evaluate the current energy accounting system to identify areas that need improvement. This will involve reviewing the current processes, systems, and data management practices. The evaluation should consider the following factors:

- Accuracy of billing and metering
- Timeliness of bill generation
- Data management practices
- Energy usage tracking capabilities
- Customer feedback and complaints

Step 2: Identify Automated Energy Accounting System Requirements

After evaluating the current energy accounting system, the next step is to identify the requirements for an automated energy accounting system. This will involve considering the following factors:

- Energy usage tracking capabilities
- Billing accuracy and timeliness
- Integration with existing systems
- Data management capabilities
- Scalability and flexibility

Step 3: Research and Select an Automated Energy Accounting System

Once the requirements are identified, the next step is to research and select an automated energy accounting system. This will involve reviewing available options and selecting a system that meets the identified requirements. The selected system should have the following features:

- Real-time energy usage tracking
- Automated billing and metering
- Data management and analysis capabilities
- Integration with existing systems
- User-friendly interface

Step 4: Develop Implementation Plan

After selecting an automated energy accounting system, the next step is to develop an implementation plan. This will involve determining the following:

- Timeline for implementation
- Resource requirements
- Roles and responsibilities
- Training requirements
- Data migration plan

Step 5: Implementation and Testing

Once the implementation plan is developed, the next step is to implement and test the automated energy accounting system. This will involve the following:

- Installation and configuration of the system
- Data migration from the old system to the new system
- User training
- System testing

Step 6: Rollout and Monitoring

After successful testing, the next step is to rollout the automated energy accounting system to all customers. This will involve communicating the changes to customers and ensuring a smooth transition. Once rolled out, the system should be continuously monitored to identify any issues and improve the system's performance.

In conclusion, implementing an automated energy accounting system can help an JVVNL improve billing accuracy, reduce energy waste, and enhance data management capabilities. The action plan outlined above provides a framework for implementing an automated energy accounting system in an electricity distribution company. By following this plan, the company can successfully implement the system and achieve its energy accounting goals.

Annexures

Annexure I - Introduction of Verification Firm

We A-Z Energy Engineers Pvt. Ltd. provides consultancy services in the areas of energy management while conducting Energy Audits in all segments of energy input. For conducting Detailed Energy Audits, Energy Audits under PAT (Mandatory and M&V), we have a pool of experienced BEE Accredited & Certified Energy Auditors, Electrical Engineers, Mechanical Engineers and Technicians having experience of more than 30 years. The Energy Audits is being carried out with sophisticated instruments namely Power-Analyzer, Flue Gas Analyzer, Ultra-sonic flow meter, Techo-meter, Anemometer, Hego-Meter, Digital Thermometer, Thermographic Camera's, Lux Meter, Leak detectors. Laser gun etc.

Objective

- To carry out and take ahead the business of Energy Efficiency and climate change including promotion and dissemination of energy efficient product and services.
- To disseminate the culture of safe manufacturing and Services through safety audits and trainings.
- To facilitate implementation of energy efficiency projects for Demand Side Measures including optimization of energy mix for industries, railways, building sector, lighting, HVAC etc.
- To facilitate implementation of schemes, programs and policies of central and state governments or its agencies applicable for enhancing energy efficiency.
- To provide consultancy services in the field of Clean Development Mechanism and Renewable Energy Certificate projects, Carbon Markets, Demand Side Management, Energy Efficiency, Climate change and other related areas.
- To identify and impart training to build the capacity of stakeholders in the field of Energy Efficiency and safe practices in Industry.
- To act as a resource center in the field of Energy Efficiency and take up the activities of Capacity Building Training and other related activities.

Vision

- To make use of energy sustainable.
- To create and sustain markets for energy efficiency in India
- To facilitate energy efficiency improvement through private sector investments in energy efficiency.

Mission

- To assist all stakeholders in implementing energy efficiency and realizing savings.
- To create awareness regarding merits of improvement of energy efficiency and safety practices in private and public sector.

We are Accredited Energy Auditor from BEE, also empanelled by BEE for PAT M & V Audits and Mandatory Energy Audit Projects. A-Z Energy Engineers Pvt. Ltd. has been short listed by Bureau of Energy Efficiency as an Energy Service Company (ESCO), it is an ISO 9001:2015 certified company. We have completed more than 1260 nos. projects, including 52 PAT projects

Dr. P.P. Mittal the Founder Director of A-Z Energy Engineers Pvt. Ltd. was awarded by Govt. of India in National Energy Conservation Award 2013, 2015 & 2016. MSME Ministry Govt. of India awarded "Best Services Providing Company" it was awarded by Hon'ble Prime Minister of India.

a) Name of the Firm

Nameof AccreditedFirm	AccreditedEnergyAuditor
A-Z energy Engineers Private Limited	Dr P.P Mittal (AEA 011)

b) Composition of Team

Sr.No.	Name	Qualification	Registration No	Experience (InYears)/Sector
1	Dr. P.P Mittal	Ph.D, MBA		+45 Years
2	Mr. Vipon Chanda	DISCOM Sector		30
3	Mr. V.P Sharma	B. Tech		32 Years
4	Mr. Alok Kumar Tiwari	B. Tech		7 Years
5	Mr. Pankaj Chauhan	Team Member		8 Years

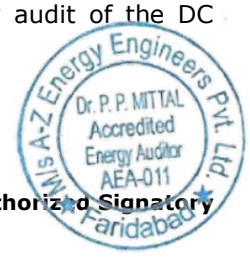
c) Registration No.

EmAEA0024

d) Undertaking

We A-Z Energy Engineers Pvt. Ltd. hereby confirm that our AEA and any of the audit team member mentioned in this report has conduct mandatory annual energy audit (Accounting) for JVVNL, Jaipur (hereafter called as DC).

We also confirm that none of our team member was in the employment of the DC within the previous four years, and was not involved in undertaking energy audit of the DC within the previous four years.



Authorized Signatory

Dr P.P Mittal

Annexure II - Minutes of Meeting with the DISCOM team

Minutes of Meeting with Jaipur Vidyut Vitran Nigam Limited (JVVNL), Jaipur along & A-Z Energy Engineers Pvt. Ltd., New Delhi

Jaipur Vidyut Vitran Nigam Limited **AZ Energy Engineers Pvt. Ltd.**

AZ Energy Engineers audit team visited the site in month of Sep' 23 and conduct the energy audit accounting with reference to the BEE and notification from the Bureau of Energy Efficiency dated 28th October 2022 for Conduct of Energy Audit (Accounting) in Electricity Distribution Companies).

Following are the key observations during audit.

- Filled in Proforma for FY 2022-23 was filled with Jaipur Vidyut Vitran Nigam Limited, & Audit team.
- JVVNL has provided the following documents for Purchase Energy, input/Billed energy from various wings of Jaipur Discom .
- JVVNL has provided details for action plan to reduce losses
- Verified T&D losses, AT&C losses & Collection Efficiency is 14.59%, 15.95% & 98.41% respectively based on the filled in proforma and verified source documents.
- During the audit field visit of substation was done and data attached in report. During the visit it was found that most of meters with modem were installed also daily basis logbook.

S. No	Data Required for Annual Energy Audit	Status
1	Complete filled in Proforma for the year 2022-2023 (Annually)	Provided
2	Supporting Data with Month wise breakup	
A	Purchase Energy	Provided Month wise breakup

S. No	Data Required for Annual Energy Audit	Status
B	Net Input in Discom	(Consumer, Units)
C	Billed Energy	
D	Revenue Demand	
E	Revenue Collected	
F	Energy Export to other	
G	Transmission loss calculation Methodology	Provided
H	Quarter report	Provided
3	Feeder wise input ,Billed Energy, T&D & AT&C losses	Provided
4	Action plan to reduce the T&D and AT&C losses	RDSS Plan Provided
5	Assets details matched with the proforma infrastructure sheets	Provided
6	Subsidy category Wise (BEE Guideline proforma)	Provided
7	High Loss area T&D & AT&C action plan to reduce losses	Provided
8	DT Wise Losses	Under Progress
9	Feeder wise Losses	Provided

M/s A-Z Energy Engineers Pvt. Ltd. Dr. P. P. MITTAL Accredited Energy Auditor AEA-011 Faridabad

Jaipur Vidyut Vitran Nigam Limited

Superintending Engineer (M&P)
JVVNL, JAIPUR

AZ Energy Engineers Pvt. Ltd.

Annexure III - Check List prepared by auditing Firm

An annual energy audit checklist used to assess the energy efficiency of JVVNL based on equipment, appliances, design, and usage. Accredited Energy Audi tor develops this checklist to identify opportunities for energy cost reduction and recommend solutions.

Documentary evidence for T & D system related data voltage-wise energy input data, sale data, feeder-wise loss data, collection efficiency etc.

► List of Measures adopted for energy conservation and quantity of energy saved with proper document support.

► Checking & verification of over loading of feeders at Substation level either by the study of SCADA system or by the log book

- Month wise input and billed energy.
- T&D losses computation approach.
- Un-metered energy consumption approach.
- Internal field audit report of input and billed energy.
- Performance of discom on distribution losses.
- Outcome of internal filed audit.
- Measures taken to reduce losses and improve losses.
- Zone/circle/Division/Sub-division wise loss computation.
- Reduction achieved, measures adopted for energy conservation and quantity of energy saved.
- Report on distribution losses.
- Write up on energy scenario.
- Net Input Energy Computation Details.
- Category wise consumer's details.
- Category wise consumers connected load and % load
- Bifurcation of Billed Energy (metered billed energy and unmetered billed energy).

Write up on procedure followed Technical loss analysis.

Annexure IV - Brief Approach, Scope & Methodology for audit

Scope of annual energy accounting is as per guidelines and notification from Bureau of Energy Efficiency, New Delhi dated 6th October, 2021

Annexure V - Infrastructure Details

The infrastructure details of the DISCOM are as shown in the table below:

Table 39: Infrastructure details

Parameters	Total	Covered during in audit	Verified by Auditor in Sample Check	Remarks (Source of data)
Number of circles	13	13	Sample Checked	
Number of divisions	58	58	Sample Checked	
Number of sub-divisions	222	222	Sample Checked	
Number of feeders	10955	10955	Sample Checked	
Number of DTs	873368	873368	Sample Checked	
Number of consumers	4925782	4925782	Sample Checked	

Table 40: Metering details

Parameters	66kV and above	33kV	11/22kV	LT
Number of conventional metered consumers	0	0	1626	4488861
Number of consumers with 'smart' meters	0	0	0	407126
Number of consumers with 'smart prepaid' meters	0	0	0	285
Number of consumers with 'AMR' meters	66	632	14302	9982
Number of consumers with 'non-smart prepaid Meters	0	0	0	0
Number of unmetered consumers	0	0	0	2902
Number of total consumers	66	632	15928	4909156
Number of conventionally metered Distribution Transformers	0	0	0	
Number of DTs with communicable meters	0	0	0	17247
Number of unmetered DTs	0	0	0	856121
Number of total Transformers	0	0	0	873368
Number of metered feeders		1223	9732	
Number of feeders with communicable meters		1223	9732	
Number of unmetered feeders		0	0	
Number of total feeders		1223	9732	
Line length (ct km)		16735	195182	164322
Length of Aerial Bunched Cables		0	0	87717
Length of Underground Cables		1617	8592	2167

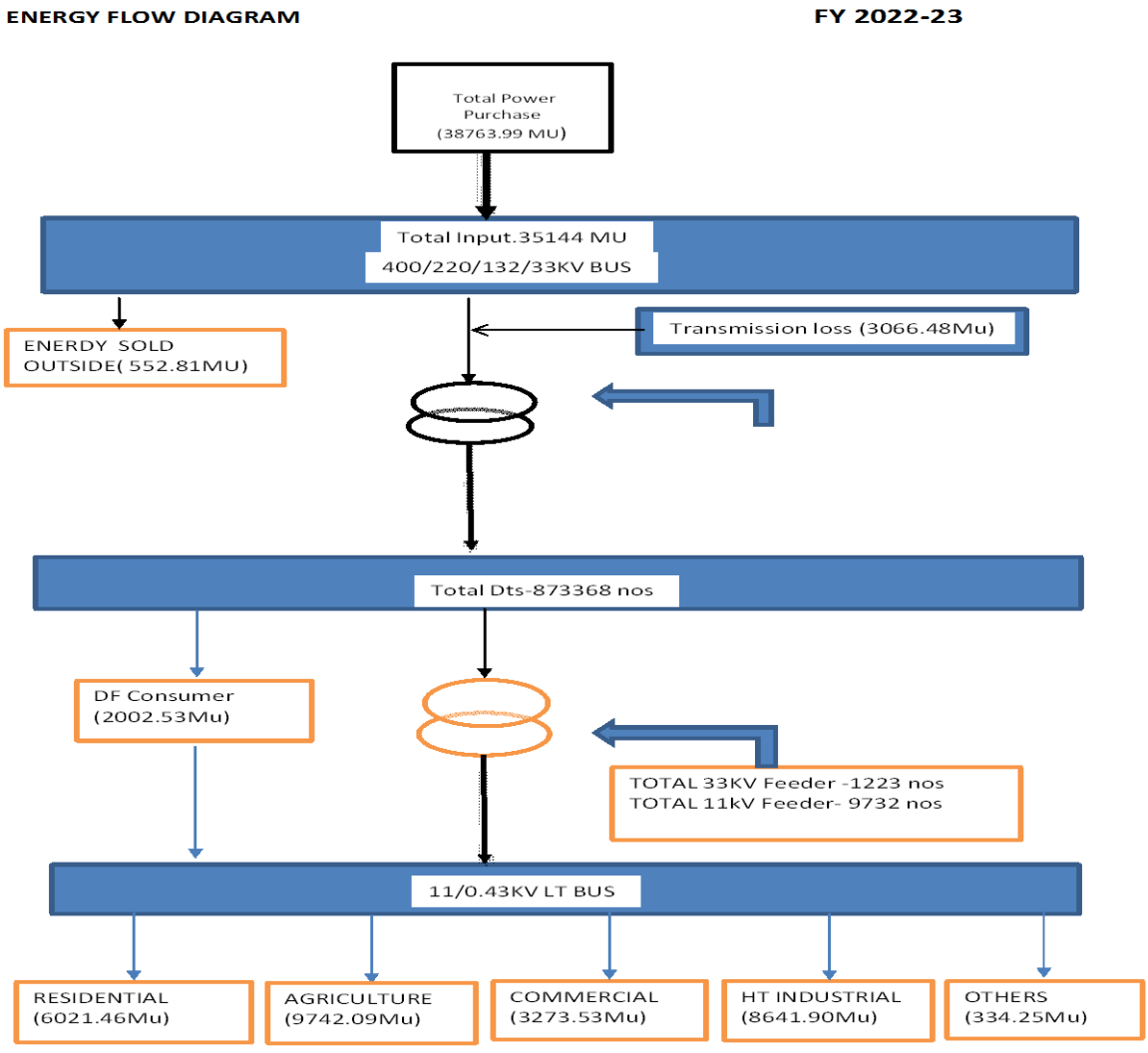
Annexure VI - Electrical Distribution System

► Energy flow between transmission and 220kV/132kV/33kV/20 kV/11kV/6.0 kV/3.3 kV incoming distribution feeders

► Energy flow between 132kV/33kV outgoing and 20 kV/11kV/6.6 kV/6.0 kV incoming feeders

► Energy flow between 11kV/6.0 kV/3.3 kV feeders and distribution transformers, or high voltage distribution system

Energy flow between distribution transformer, or high voltage distribution system to end-consumer, including ring main system. Energy flow between Feeder to end-consumer & Energy flow between 132kV/33kV/20 kV/11kV/6.0 kV/3.3 kV directly to consumer



Annexure VII - Power Purchase Details

a) Input Purchase Power for FY 2022-23

JVVNL, Jaipur purchase the power and the month wise purchase units are shown in below table:

Table 41: Month wise power purchase

Sr. No.	Months	Energy (in Mus)
1	Apr-22	3325.33
2	**May-22**	**3694.22**
3	Jun-22	3498.74
4	Jul-22	3341.03
5	Aug-22	3049.07
6	Sep-22	3209.49
7	**Oct-22**	**2684.58**
8	Nov-22	3247.60
9	Dec-22	3557.76
10	Jan-23	3345.56
11	Feb-23	2960.15
12	Mar-23	2850.46
	Total	**38763.99**

b) Circle wise monthly Input Energy for FY 2022-23

The Month wise break up of input energy (MUs) parameter for all the circle is given below:

Table 42: Circle wise monthly input energy (MU)

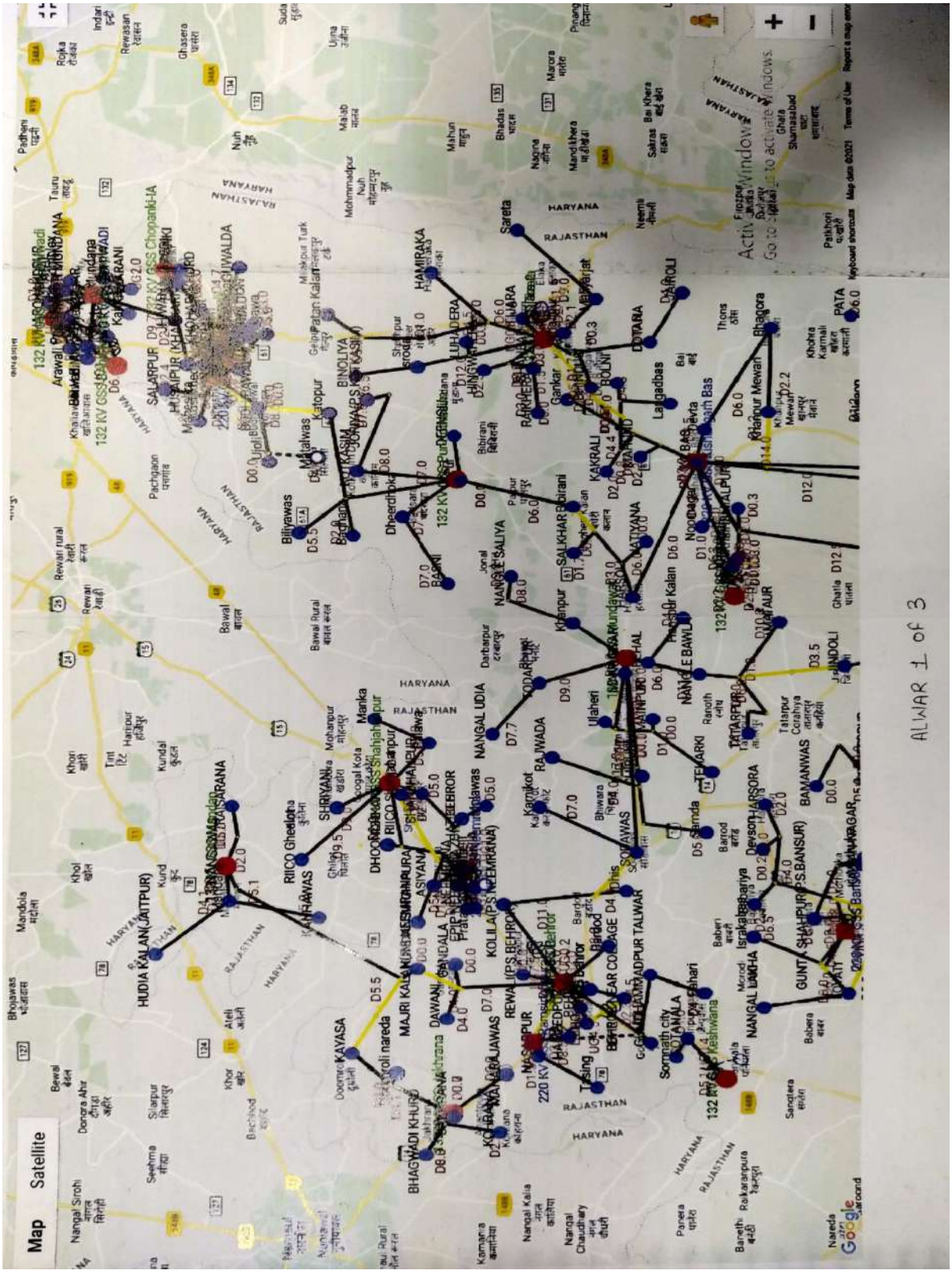
	Circle	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23
1	ALWAR	759.00	834.70	782.82	712.95	715.50	760.64	646.92	783.91	897.92	845.79	757.86	719.88
2	BHARATPUR	147.03	163.73	151.69	146.84	141.52	139.47	113.89	167.46	215.29	176.12	157.57	134.86
3	DAUSA	121.42	142.15	127.02	98.34	89.60	95.62	88.72	152.92	172.27	147.35	127.62	98.60
4	JAIPUR CITY	557.20	671.34	647.50	599.50	510.85	555.15	438.10	362.91	372.39	397.33	343.04	386.47
5	JAIPUR DISTT.	497.44	524.24	499.93	406.76	377.02	446.06	392.49	466.23	540.88	515.74	453.41	451.39
6	JHALAWAR	112.21	117.28	103.94	94.09	93.60	102.33	96.17	150.15	146.94	136.39	122.56	96.01
7	KOTA	95.69	109.40	104.41	107.42	104.28	125.38	95.41	123.93	119.95	110.21	103.88	93.42
8	SMW	86.86	95.64	89.05	83.96	74.11	80.85	66.83	99.82	108.37	88.32	75.72	68.22
9	BARAN	88.70	103.82	92.99	93.54	92.74	100.39	82.80	158.10	159.27	133.20	123.51	84.64
10	BUNDI	85.78	102.29	92.44	102.69	93.00	112.56	73.03	98.43	100.81	88.42	81.95	70.87
11	DHOLPUR	86.32	94.64	89.83	83.70	79.60	78.34	69.90	77.81	85.95	86.76	72.68	74.99
12	KARAULI	87.07	98.47	86.80	78.18	71.25	72.47	68.60	120.18	126.84	107.64	98.06	76.77
13	TONK	94.94	107.67	94.63	84.89	79.35	84.55	72.50	86.35	90.66	81.23	67.98	77.25
TOTAL DISCOM		**2819.6**	**3165.3**	**2963.0**	**2692.8**	**2522.4**	**2753.7**	**2305.3**	**2848.2**	**3137.5**	**2914.4**	**2585.8**	**2433.3**
14	KEDL	141.58	174.54	177.90	171.43	150.81	164.26	135.09	116.32	109.43	115.79	103.97	119.97
15	BEDL	33.05	36.85	34.99	34.34	30.53	28.42	22.44	19.27	18.04	22.05	18.87	22.56
Total		**2994.2**	**3376.7**	**3175.9**	**2898.6**	**2703.7**	**2946.4**	**2462.9**	**2983.8**	**3265.0**	**3052.3**	**2708.6**	**2575.8**

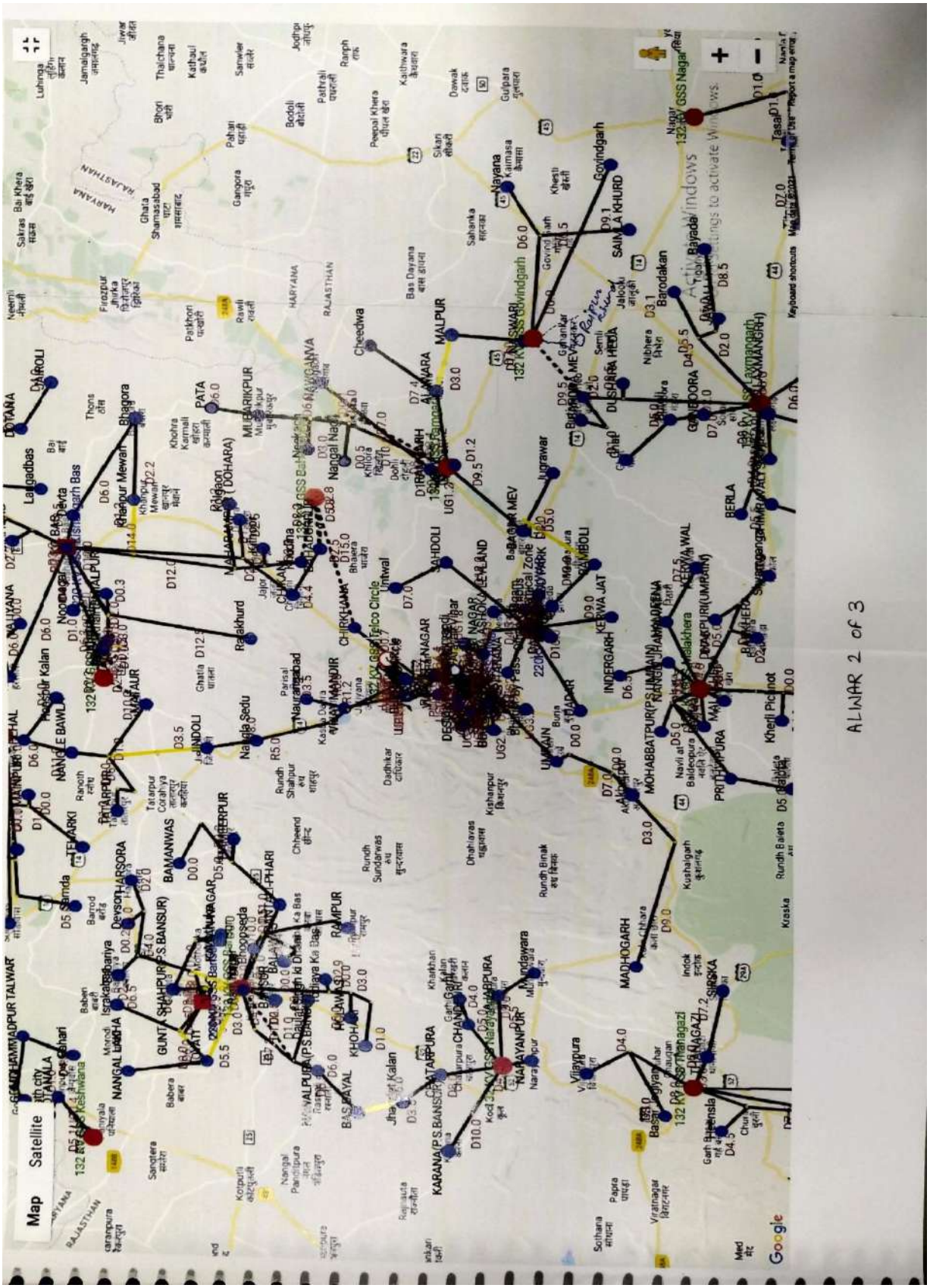
Circle		Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23
1	ALWAR	612.54	632.07	642.90	654.51	646.49	642.23	673.53	631.58	631.63	720.15	731.23	718.02
2	BHARATPUR	80.43	85.28	93.29	88.55	96.57	92.47	105.96	98.49	118.52	136.04	129.65	121.73
3	DAUSA	77.09	89.50	81.17	90.70	79.38	87.69	83.11	97.97	102.40	122.25	109.07	110.70
4	JAIPUR CITY	397.59	515.40	604.85	581.56	545.96	489.26	508.12	410.77	343.44	354.48	362.15	325.39
5	JAIPUR DISTT.	368.83	368.48	391.36	393.66	375.52	362.83	403.25	390.97	380.50	451.60	444.08	400.09
6	JHALAWAR	78.89	79.56	82.62	82.09	76.53	81.91	85.91	93.23	106.43	121.90	127.24	124.70
7	KOTA	78.47	76.62	87.13	84.41	92.10	84.27	106.60	95.77	106.70	107.99	105.65	88.76
8	SMW	44.98	58.80	64.75	70.97	88.84	81.97	72.00	65.74	74.76	98.75	70.64	74.42
9	BARAN	52.14	78.04	71.70	86.76	71.90	94.02	77.51	99.23	107.86	132.37	98.77	98.54
10	BUNDI	61.50	65.70	74.34	78.77	96.23	83.59	95.51	79.36	80.79	91.19	85.59	71.92
11	DHOLPUR	40.36	53.87	46.64	60.58	47.61	57.61	51.23	60.05	53.04	68.62	60.73	67.88
12	KARAULI	50.00	50.28	59.14	60.28	63.61	60.58	63.50	69.81	82.68	86.04	91.71	75.18
13	TONK	64.17	76.83	80.76	79.80	77.69	76.05	76.19	75.14	70.76	74.44	72.39	67.47
TOTAL DISCOM		**2007.01**	**2230.44**	**2380.65**	**2412.64**	**2358.43**	**2294.48**	**2402.42**	**2268.11**	**2259.51**	**2565.82**	**2488.90**	**2344.81**
14	KEDL	141.58	174.54	177.90	171.43	150.81	164.26	135.09	116.32	109.43	115.79	103.97	119.97
15	BEDL	33.05	36.85	34.99	34.34	30.53	28.42	22.44	19.27	18.04	22.05	18.87	22.56
Total		**2181.65**	**2441.83**	**2593.55**	**2618.41**	**2539.77**	**2487.17**	**2559.96**	**2403.70**	**2386.98**	**2703.66**	**2611.74**	**2487.34**

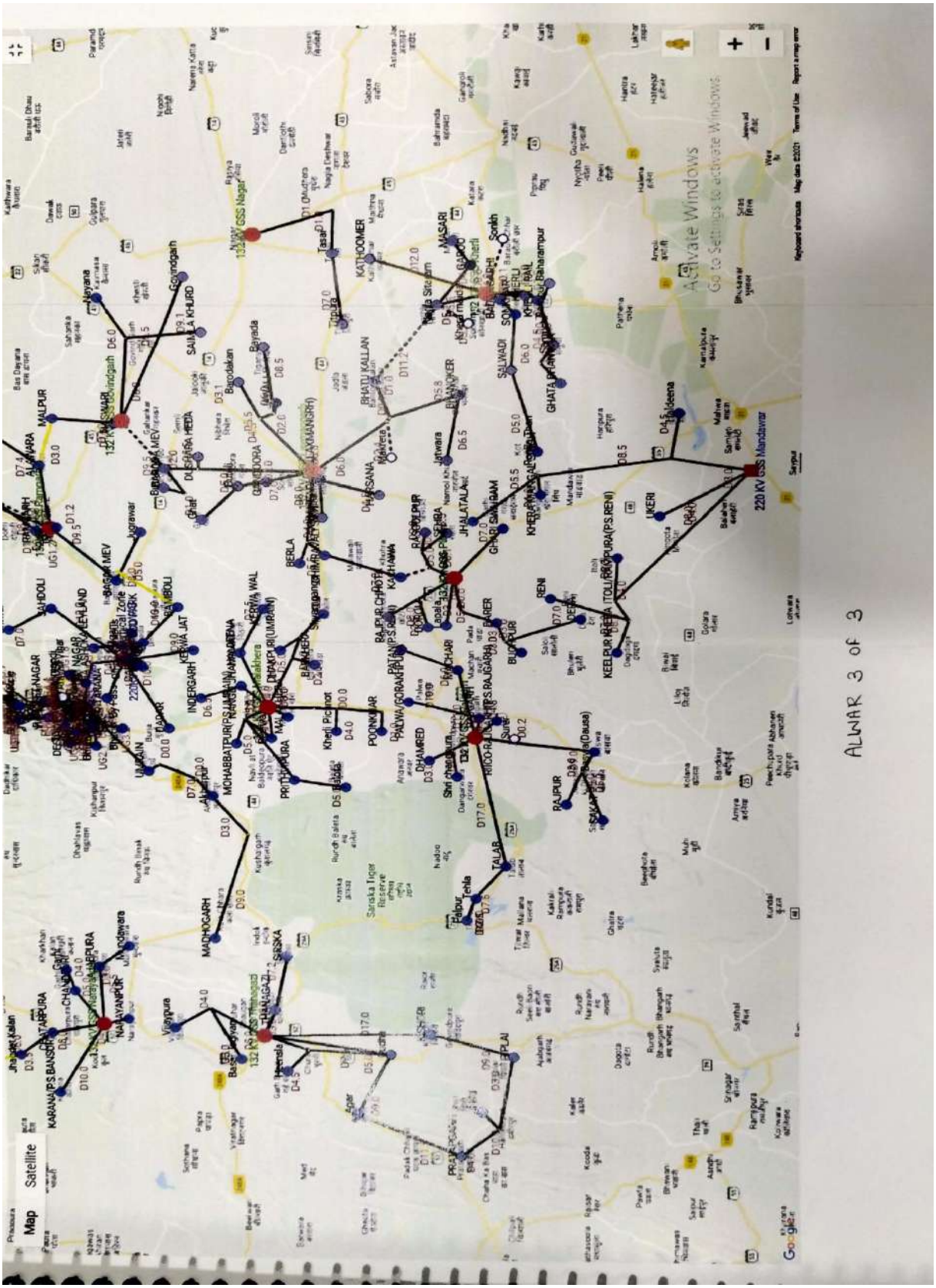
Annexure VIII - Single Line Diagram (SLD)

The SLD of the DISCOM is as shown below:

Figure 8: Single Line Diagram (SLD) of JVVNL




ALWAR 2 of 3
Map
Satellite
Google


ALWAR 3 of 3
Map
Satellite
Activate Windows
Go to Settings to activate Windows

Annexure IX - Category of service details (With Consumer and voltage-wise)

Type of consumers with different type of voltage & number of consumers are shown in below table:

Table 43: Category of service details

S. No	Type of Consumers	Category of Consumers	Voltage Level	No of Consumers	Consumption (In MU)
1	Domestic (LT)	LT		3796248	5909.57
2	Domestic (HT)	HT		834	111.90
3	Commercial (LT)	LT		424353	1599.03
4	Commercial (HT)	HT		4636	872.91
5	Public Lighting	LT		6780	159.81
6	Agriculture (Metered)	LT		594306	9656.31
7	Agriculture (Flat)	LT		2902	85.78
8	Industrial (Small) LT	LT		50655	379.02
9	Industrial (Small) HT	HT		1040	5.49
10	Industrial (Medium) LT	LT		10126	476.38
11	Industrial (Medium) HT	HT		3997	373.52
12	HT Industrial	HT		5539	7394.96
13	Water Supply (Small) LT	LT		19323	417.07
14	Water Supply (Small) HT	HT		0	0.00
15	Water Supply (Medium) LT	LT		267	21.53
16	Water Supply (Medium) HT	HT		163	25.77
17	HT Water Supply	HT		204	349.73
18	Mixed Load – LT	LT		4068	21.00
19	Mixed Load – HT	HT		213	2153.76
20	EV - LT	LT		121	2.02
21	EV - HT	HT		7	0.19
	Total			4925782	30015.76

Annexure X - Field Verification data and reports

The field inspection details are shown in the below table:

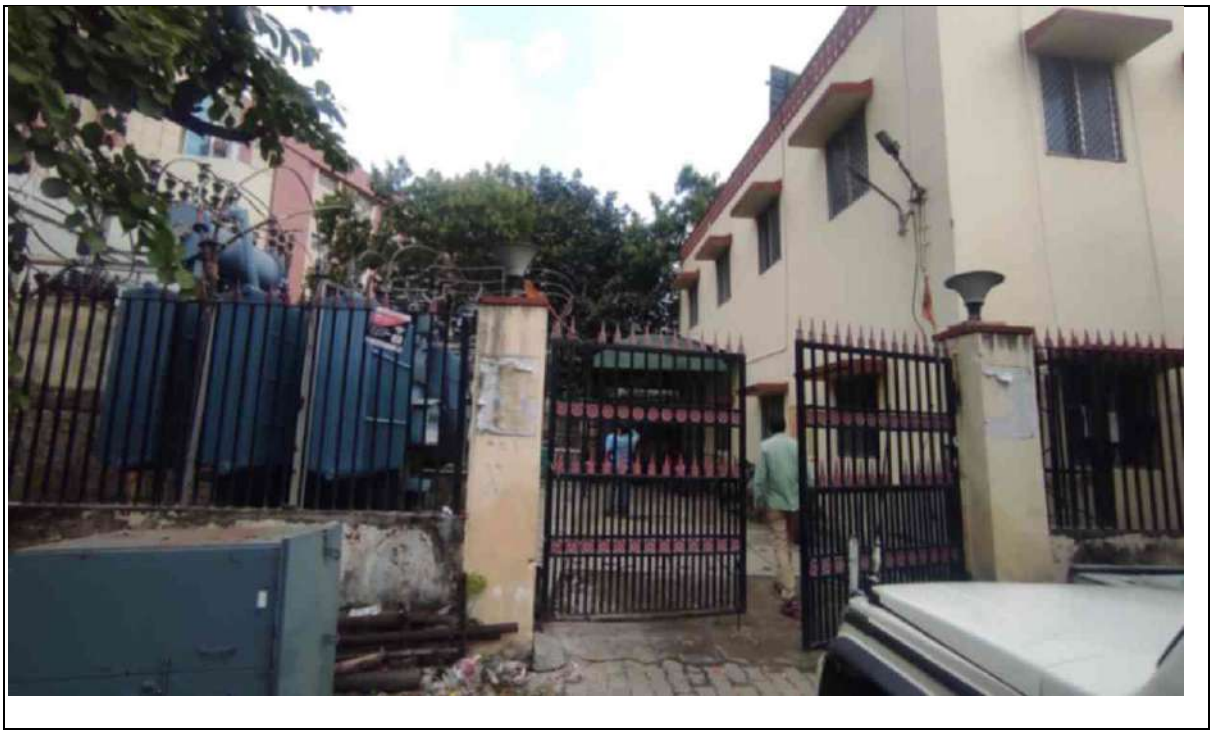
Table 44: Field inspection details

Photographs taken during field verification are shown below:

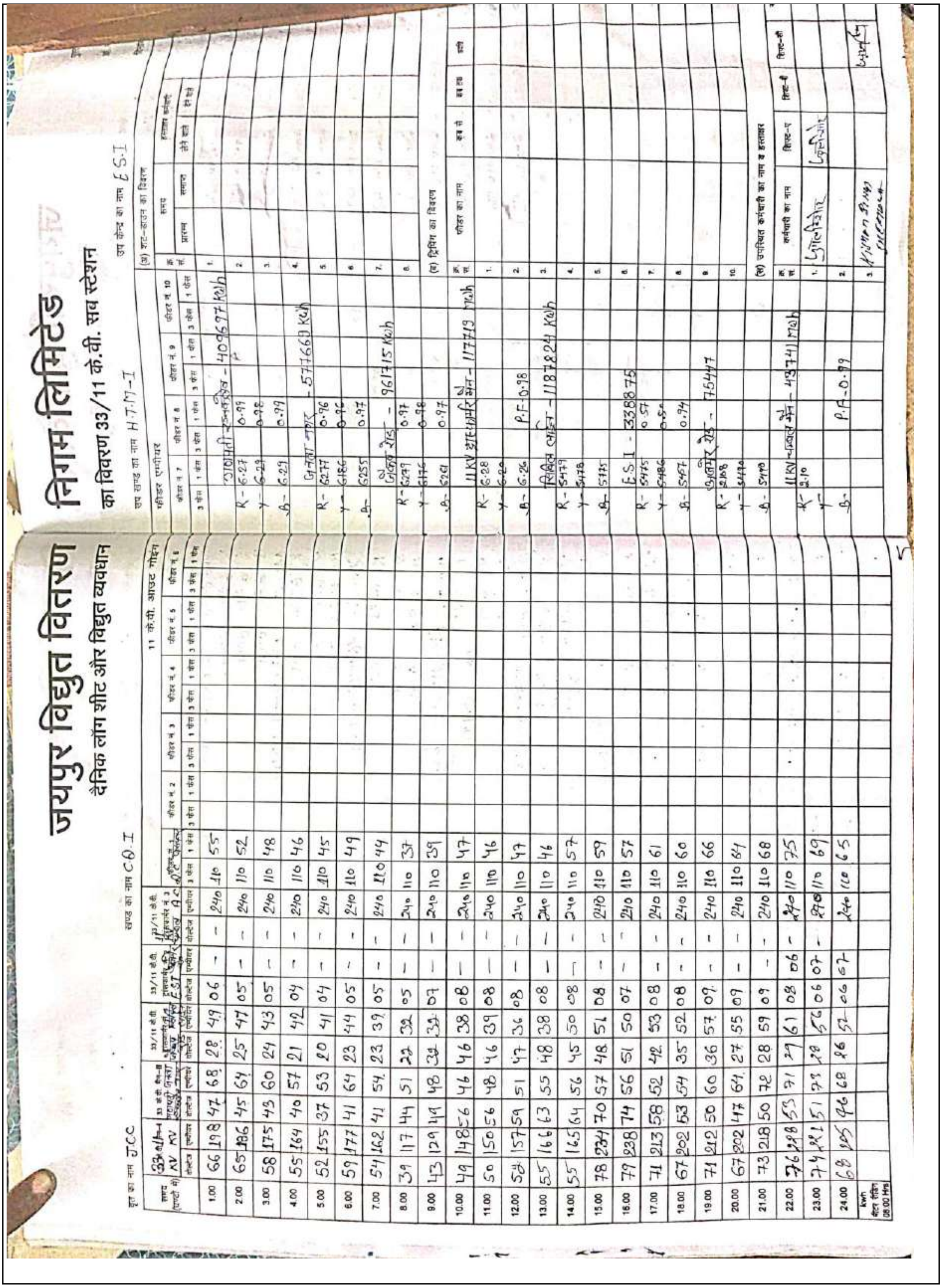
PARTICULARS		DETAILS
Name of Substation		ESI Substation
Voltage Ratio		33/11KV
Capacity of Substation		8MVA
Feeders	No.	6
	Name	Ganpati, Janta nagar, Jaco road, Civil line, ESI, Ajmer road
Remark		➢ Meters of all the feeders are working properly. ➢ Metering data is being posed through AMR. ➢ All feeders are under load. ➢ Transformer oil level ok, silica gel ok, temperature ok, Tap Position-3

Feeder wise load during field verification are shown below

PARTICULARS	GANPATI	JANTA NAGAR	JACO ROAD	CIVIL LINE	ESI	AJMER ROAD
Voltage (KV)	10.84	10.77	10.60	10.88	10.89	10.95
Amp.	65.2	49.2	53.2	39.2	8.4	54.8
P.F	0.99	0.96	0.99	0.972	0.91	0.988
MW	1.21	0.88	0.97	0.72	0.14	1.03




11 K.V. जैकब रोड
11 K.V. ट्रॉन्सफार्मर मेन
Feeder Meter Test
by CMRI Meter

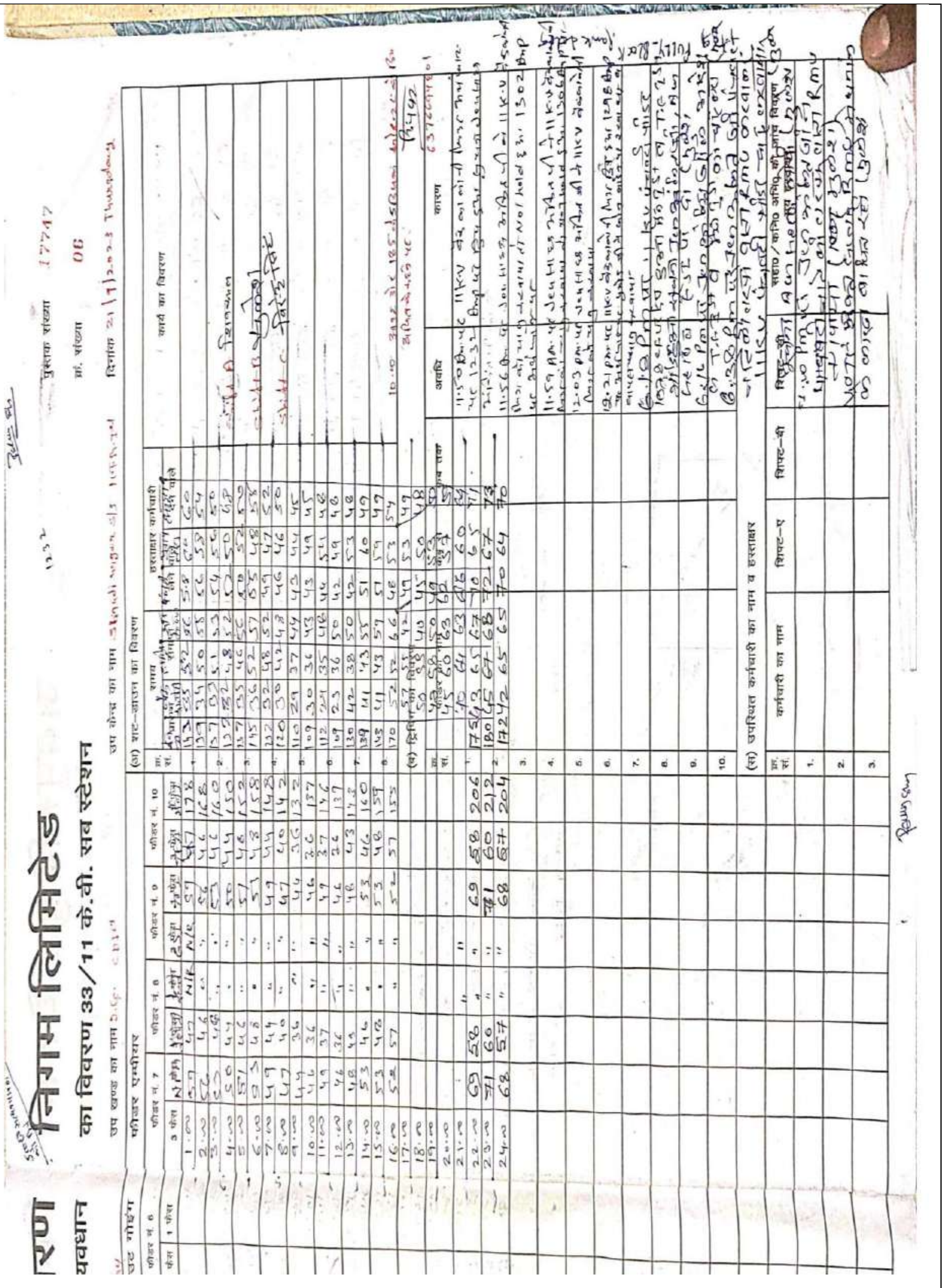

जयपुर विद्युत वितरण निगम लिमिटेड
दैनिक लॉग शीट और विद्युत व्यवधान का विवरण 33/11 के.वी. सब स्टेशन
वृत का नाम J.C.C
खण्ड का नाम C.Q.-I
उप खण्ड का नाम H.T.M-I
उप केन्द्र का नाम E.S.I
11 के.वी. आउट गोइंग
1.00 66 198 47 68 28 49 06 – – 240 110 55
2.00 65 186 45 64 25 47 05 – – 240 110 52
3.00 58 175 43 60 24 43 05 – – 240 110 48
4.00 55 164 40 57 21 42 04 – – 240 110 46
5.00 52 155 37 53 20 41 04 – – 240 110 45
6.00 59 177 41 64 23 44 05 – – 240 110 49
7.00 54 162 41 54 23 39 05 – – 240 110 44
8.00 39 117 44 51 22 32 05 – – 240 110 37
9.00 43 129 44 48 32 32 07 – – 240 110 39
10.00 49 148 56 46 46 38 08 – – 240 110 47
11.00 50 150 56 48 46 39 08 – – 240 110 46
12.00 52 157 59 51 47 36 08 – – 240 110 47
13.00 55 166 63 55 48 38 08 – – 240 110 46
14.00 55 165 64 56 45 50 08 – – 240 110 57
15.00 78 234 70 57 48 51 08 – – 240 110 59
16.00 79 238 74 56 51 50 07 – – 240 110 57
17.00 71 213 58 52 42 53 08 – – 240 110 61
18.00 67 202 53 54 35 52 08 – – 240 110 60
19.00 71 212 50 60 36 57 09 – – 240 110 66
20.00 67 202 47 64 27 55 09 – – 240 110 64
21.00 73 218 50 72 28 59 09 – – 240 110 68
22.00 76 228 53 71 29 61 08 06 – 240 110 75
23.00 74 221 51 73 28 56 06 07 – 240 110 69
24.00 68 205 46 68 26 52 06 67 – 240 110 65
kwh मीटर रीडिंग 08.00 Hrs
फीडर एम्पीयर
उमापती ट्रांसफार्मर - 409697 KWh
R - 6.27 0.99
Y - 6.29 0.98
B - 6.29 0.99
जनता नगर - 577660 KWh
R - 6277 0.96
Y - 6186 0.96
B - 6255 0.97
जेकब रोड - 961715 KWh
R - 6299 0.97
Y - 6176 0.98
B - 6261 0.97
11 KV ट्रांसफार्मर मेन - 117719 MWh
R - 6.28
Y - 6.28
B - 6.26 P.F - 0.98
सिविल लाइन - 1187824 KWh
R - 5479
Y - 5478
B - 5775
E.S.I - 338875
R - 5475 0.57
Y - 5486 0.58
B - 5457 0.94
अजमेर रोड - 75447
R - 2108
Y - 5490
B - 5490
11 KV पावर मैन - 43741 MWh
R - 2.10
Y -
B - P.F - 0.99
(अ) शट-डाउन का विवरण
(ब) ट्रिपिंग का विवरण
फीडर का नाम
(स) उपस्थित कर्मचारी का नाम व हस्ताक्षर
कर्मचारी का नाम
शिफ्ट-ए
शिफ्ट-बी
शिफ्ट-सी
1. युगलकिशोर
3. Kishan Singh

PARTICULARS		DETAILS
Name of Substation		Shanti Nagar Substation
Voltage Ratio		33/11KV
Capacity of Substation		8MVAX2Nos.
Feeders	No.	6
	Name	Hasanpura, Pratap Line, Panchwati Colony, Shram Kalyan Kendra, khatipura Water Works, Bank Colony
Remark		➢ Meters of all the feeders are working properly. ➢ Metering data is being posed through AMR. ➢ All feeders are under load. ➢ Transformer oil level ok, silica gel ok, temperature ok, Tap Position-2

Feeder wise load during field verification are shown below

PARTICULARS	HASANPURA	PRATAP LINE	PANCHWATI COLONY	SHRAM KALYAN KENDRA	KHATIPURA WATER WORKS	BANK COLONY
Voltage (KV)	10.33	10.41	10.33	10.67	10.25	10.70
Amp.	50.4	61.6	48.72	52.4	47.6	43.6
P.F	0.979	0.98	0.975	0.98	0.98	0.965
MW	0.88	1.09	0.85	0.95	0.83	0.78


मेन I
KV मेन – I


रण निगम लिमिटेड
यवधान का विवरण 33/11 के.वी. सब स्टेशन
पुस्तक संख्या 17747
प्र. संख्या 06
दिनांक 21/7/2023 Thursday
उप खण्ड का नाम
उप केन्द्र का नाम
फीडर एम्पीयर
(अ) शट–डाउन का विवरण
कार्य का विवरण
(ब) ट्रिपिंग का विवरण
अवधि
कारण
(स) उपस्थित कर्मचारी का नाम व हस्ताक्षर
कर्मचारी का नाम
शिफ्ट–ए
शिफ्ट–बी
शिफ्ट–सी

PARTICULARS		DETAILS
Name of Substation		Khasha kothi Substation
Voltage Ratio		33/11KV
Capacity of Substation		8MVAX2Nos.
Feeders	No.	Atal va ,Old power house,
	Name	
Remark		➢ Meters of all the feeders are working properly. ➢ Metering data is being posed through AMR. ➢ All feeders are under load. ➢ Transformer oil level ok, silica gel ok, temperature ok, Tap Position-2

Feeder wise load during field verification are shown below

PARTICULARS	INDIRA BAZAR	AKASHVAI	DADU MARG	CHANDPOL	VIDHAYAK PURI	RAILWAY STATION	ATAL VAN	OLD POWER HOUSE
Voltage (KV)	10.72	10.74	10.74	10.83	10.78	10.83	10.78	10.78
Amp.	66.00	67.44	41.60	76.00	52.00	44.80	57.20	34.00
P.F	0.983	0.911	0.99	0.972	0.98	0.99	0.98	0.44
MW	1.20	1.14	0.77	1.39	0.95	0.83	1.05	0.28