Annual Energy Audit Accounting 2020-21

Designated Consumer

TATA POWER DELHI DISTRIBUTION LIMITED

NDPL House, Hudson Lines, Kingsway Camp, Delhi-110009 (India)

APRIL-2022

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

ACKNOWLEDGEMENT

A-Z Energy Engineers Pvt. Ltd. is grateful to the Tata Power Delhi Distribution Limited, for giving us an opportunity to conduct ~~of~~ Energy Audit Accounting of their DISCOM, under the Bureau of Energy efficiency 2021 Scheme.

We also express sincere thanks to the management of Tata Power DDL, Delhi, which is a Designated Consumers in the DISCOM sector for extending necessary co-operation and providing relevant information to us for the successful completion of the audit. Our sincere thanks to the entire working group comprising of:

- Mr. Ganesh Srinivasan – CEO
- Mr. HC Sharma – General Manager, Nodal Officer
- Md. Shadab Ahmad – Sr. Manager, Energy Manager
- Ms. Sameeksha Raina – Head of Group, Energy Audit
- Mr. Krishna M Chaitanya – Senior Manager, Energy Audit
- Mr. Akshay Kumar Gera – Assistant Manager, Energy Audit

A-Z Energy Engineers Pvt. Ltd. looks forward to their continued support in all future endeavours as well.

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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 Kilometer
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

Executive Summary

Tata Power-DDL is a joint venture between Tata Power Company and the Government of NCT of Delhi with the majority stake being held by Tata Power. It distributes electricity in North & North West parts of Delhi. The company started operations on July 1, 2002 post the unbundling of erstwhile Delhi Vidyut Board initially with a registered consumer base of around 12 lakh and a peak load of around 1350 MW, the company's operations span across an area of 510 sq kms.

Key information as per current scenario:

- Distributes electricity in: North & North-West Delhi
- Serving a populace of 7 million
- A customer base of 1.88 million
- Peak load of 2106 MW (as of Mar 2022)
- Distribution area of 510 sq. km.

Tata Power–DDL has implemented several world-class technologies such as Advance Distribution Management system or ADMS which is designed to replace the conventional SCADA-DMS-OMS system with features like real-time integration of Smart Meter Data / Distributed Generation integration and single data model from GIS , Integrated Geographical Information System (GIS) for instant services, Advanced Metering Infrastructure (AMI), Automated Demand Response (ADR), Smart Street Light Management system, Field Force Automation, Upgraded Network, Integrated Toll Free Helpline No. 19124, etc.

Tata Power-DDL is the first Indian utility to be a member of Global Intelligent Utility Network Coalition (GIUNC) which is a coalition of 14 power utilities worldwide and is working towards accelerating the development of common standards, technology solutions and processes for intelligent networks.

Tata Power-DDL provides various facilities and services to its consumers for their ease and convenience such as 24X7 Integrated Helpline, Mobile Application for both iOS and Android users, bilingual website, Multiple Payment Avenue, End to End online services for New Connection, etc.

Some key details regarding company’s distribution for FY 20-21 are mentioned below:

1. Source of Input Energy
2. Consumer wise connections & energy consumptions for FY 2020-21
3. Technical Parameters For FY 2020-21

1. Source of Input Energy

The source of input energy with generation station and generation capacity & contract period is given the table:

Table 1: Generation station, generation capacity & contract period

Name of Generation station	Generation Capacity (MW)	Type of station based on fuel	Type of contract in Year	Type of Grid
NTPC Dadri GPS	28.0	Gas	25 Years	Inter State
NTPC Auriya GPS	22.0	Gas	35 Years	Inter State
NTPC ANTA GPS	14.0	Gas	30 Years	Inter State
Pragati- I	63.6	Gas	25 Years	Intra State
Pragati III	298.0	Gas	25 Years	Intra State
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NHPC Dulhasti	15.0	Hydro	35 Years	Inter State
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NHPC Dhauliganga	11.0	Hydro	35 Years	Inter State
NHPC Sewa II	5.0	Hydro	35 Years	Inter State
Tala HEP	9.0	Hydro	35 Years	Inter State
Nathpa Jhakri HPS	44.0	Hydro	35 Years	Inter State
Tehri HPP	19.0	Hydro	35 Years	Inter State
Koteshwar HEP	12.0	Hydro	35 Years	Inter State
Narora APS	14.0	Nuclear	43 Years	Inter State
RAPP 5&6	17.0	Nuclear	43 Years	Inter State
NTPC Singrauli Small Hydro	2.0	RE	35 Years	Inter State
SECI Solar (Renewable)	20.0	RE	35 Years	Inter State
Delhi Municipal Solid Waste Solutions Ltd. (Bawana) (Renewable)	7.0	RE	20 Years	Intra State
Nanti Hydro Power Pvt. Ltd. (Renewable)	13.5	RE	20 Years	Inter State
Suryakanta Hydro energies Pvt. Ltd. (Renewable)	14.0	RE	20 Years	Inter State
Timarpur Okhla Waste management co. Ltd. (Renewable)	6.0	RE	20 Years	Intra State
Sun Edison	180.0	RE	20 Years	Inter State
Taranda	12.7	RE	20 Years	Inter State
SECI WIND	50.0	RE	25 Years	Inter State
NTPC Aravali Jhajjar	613.8	Coal	25 Years	Inter State

Name of Generation station	Generation Capacity (MW)	Type of station based on fuel	Type of contract in Year	Type of Grid
NTPC Dadri NCTPS(Th.) Stage II	10.0	Coal	25 Years	Inter State
NTPC Dadri NCTPS(Th) Stage I	10.0	Coal	25 Years	Inter State
NTPC Kahalgaon II	48.3	Coal	25 Years	Inter State
NTPC Singrauli STPS	46.0	Coal	30 Years	Inter State
NTPC Rihand STPS-II	39.0	Coal	25 Years	Inter State
NTPC Rihand STPS-I	31.0	Coal	28 Years	Inter State
NTPC Kahalgaon I	15.6	Coal	25 Years	Inter State
NTPC Unchahaar-II TPS	14.0	Coal	25 Years	Inter State
NTPC Unchahaar-III TPS	9.0	Coal	25 Years	Inter State
NTPC Unchahaar-I TPS	7.0	Coal	27 Years	Inter State
NTPC Farakka	7.0	Coal	25 Years	Inter State
CLP Jhajjar	132.0	Coal	25 Years	Inter State
Maithon Power Limited	300.0	Coal	30 Years	Inter State
CTPS 7 & CTPS 8	92.0	Coal	25 Years	Inter State
MTPS 6	31.0	Coal	25 Years	Inter State
Sasan	27 MW to 136 MW	Coal	25 Years	Inter State

Type of Fuel	Generation Capacity (MW)
Gas	507.6
Renewable Energy	305.2
Hydro	204.2
Nuclear	31.0
Coal	1541.7

2. Consumer wise connections & energy consumptions for FY 2020-21

Table 2: Energy consumption with type of consumers

Type of Consumers	Category of Consumers (EHT/HT/LT/Others)	Voltage Level (V)	No of Consumers	Total Consumption (In MU)
Domestic	HT/LT	11/.22/.4	1540657	4534.71
Commercial	LT		236046	942.86
Water Supply			1311	257.98
Public Lighting			4907	118.48
HT Industrial			384	239.84
HT Commercial			471	276.37
Others-1 (if any , specify in remarks)			40255	1939.91
Total			1824031	8310.16

3. Technical Parameters For FY 2020-21

Tata Power DDL supplies power to north & north-west part of Delhi. Distribution area of Tata Power DDL is divided into five circles, twelve divisions & the overall purchased Energy, consumptions & AT &C losses for the FY-2020-2021 is shown in table below the AT&C losses for FY2020-2021 is 6.48% & the T&D losses of the sector is 7.15%.

Table 3: Technical Details (FY2020-21)

Technical Details (FY2020-21)		
Energy Input Details	**UoM**	**Value**
Input Energy Purchase (From Generation Source)	Million kwh	10085.62
Net input energy (at DISCOM Periphery after adjusting the transmission losses and energy traded)	Million kwh	8950.12
Total Energy billed (is the Net energy billed, adjusted for energy traded))	Million kwh	8310.43
Transmission and Distribution (T&D) loss Details	Million kwh	639.68
	%	7.15%
Collection Efficiency	%	101%
Aggregate Technical & Commercial Loss	%	6%

The total purchased power by Tata Power-DDL is 10085.62 million kWh and the net energy after adjusting the transmission losses and energy sales is 8950.12 million kWh, The total energy billed or net energy billed after all the adjustment is 8310.43 million kWh. The total T&D losses for FY 2020-21 was 639.68 million kWh, the overall collection efficiency of the Tata Power-DDL was 101% & AT&C losses was 6.48% .

4. Details of Input Energy & Infrastructure

The Input energy, consumption & transmission losses of the Tata Power-DDL are shown in table below:

Table 4: The Input energy, consumption & transmission losses of the Tata Power DDL

Parameters	FY 2020-21
Input Energy purchased (MU)	10085.6
Transmission loss (%)	3.22%
Transmission loss (MU)	324.35
Energy sold outside the periphery (MU)	811.16
Open access sale (MU)	68.64
EHT sale	90

Parameters	FY 2020-21
Net input energy (received at DISCOM periphery or at distribution point)-(MU)	9012.06
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	90%
% of metering available at consumer end	100%
No of feeders at 66kV voltage level	134
No of feeders at 33kV voltage level	108
No of feeders at 11kV voltage level	1280
No of LT feeders' level	15539
Line length (ckt. km) at 66kV voltage level	536.92
Line length (ckt. km) at 33kV voltage level	477.11
Line length (ckt. km) at 11kV voltage level	4999.2
Line length (km) at LT level	7354.1
Length of Aerial Bunched Cables	5556.2
Length of Underground Cables	5832
HT/LT ratio	0.8177

5. Energy Conservation measures already taken

Tata Power DDL has done various energy conservation measures to reduce the energy consumptions in FY-2020-21. Some of them are mentioned below:

- Replacement of the old inefficient ACs with energy efficient AC's
- Replacement of inefficient old fan with energy efficient BLDC Fans
- Replacement of non-conventional light with energy efficient light (LED's)

Table 5: AC Replacement Program, BLDC Fan's & (LED's) Energy saving

DSM Program	FY	Quantity (Nos)	Load reduction (MW)	Energy Saving (MU)	CO2 reduction (mTon)
AC Replacement Program	FY-20-21	1350	0.63	1.36	1.1
BLDC Ceiling Fan	FY-20-21	30	0	0	0
LED Lighting Scheme	FY-20-21	58242	1	2	2

Apart from the above-mentioned Demand Side Management related measures, some critical initiatives adopted for technical loss reduction are mentioned below:

- Thermo-scanning of assets for hotspot detection to perform conditional-based monitoring for sustainable energy conservation to ensure efficiency and effectiveness of equipment and systems.
- Using Wedge connectors for Jumpers to prevent degradation and achieves significantly lower resistance values to reduce heating losses.
- Implementation of HVDS (High Voltage Distribution System) for distribution of electricity.
- Replacement of 1.1 kV 4 core X 70 sq. mm LT Cable with 1.1 kV 4 core X 150 sq. mm cable and introduction of 11 kV 3 core x 400 sq. mm cable in place of 3 core X 300 sq. mm cable to reduce resistance and increase capacity.
- Replacement of 2 core X 10 sq. mm service cable with 2 core X 16 / 25 sq.mm cable
- Usage of Low Tension pole capacitors for lengthy LT Feeders to better manage voltage regulation and power factor.
- Planning of new LT feeders up to 400 meters to limit technical losses at low voltage level.
- Replacement of static electronic meters with digital smart meters at the consumers as well as DT ends so that identification of high loss feeders can be made.

6. Energy Conservation measures Proposed for Future

DSM Program	FY	Quantity (Nos)	Load reduction (MW)	Energy Saving (MU)	CO2 reduction (mTon)
AC Replacement Scheme	FY-21-22	2148	1	1.64	1.3
BLDC Ceiling Fan	FY-21-22	620	0.03	0.12	0.1
LED Lighting Scheme	FY-21-22	99006	1	2	2
Behavioural Demand Response (BDR)	FY-21-22	2044	7.69	-	-

Critical Analysis

- Tata Power Delhi Distribution Limited is an electricity distribution company which is spread over 510 sq. KM and providing power supply to North & North-West Delhi which is serving a populace of 7 million. Tata Power DDL is having a peak load of 2106 MW and customer base of 1.88 million.
- Verified transmission losses, distribution (T&D) losses, collection efficiency & aggregate technical & commercial losses of Tata Power Delhi Distribution Limited for FY20-21, i.e., 1st April'2020 to 31st March'2021 was 3.22%, 7.15 %, 101 % & 6.48 % respectively.
- The electrical energy is supplied by various interstate and intrastate generating stations at 400 KV, 220 KV, 66 KV, 33 KV and same is supplied to customers at 66 KV, 33 KV, 11 KV, 6.6KV, 400V and 230 V single phase.
- Tata Power–DDL has implemented several world-class technologies such as Advance Distribution Management system or ADMS which is designed to replace the conventional SCADA-DMS-OMS system with features like real-time integration of Smart Meter Data / Distributed Generation integration and single data model from GIS , Integrated Geographical Information System (GIS) for instant services, Advanced Metering Infrastructure (AMI), Automated Demand Response (ADR), Smart Street Light Management system, Field Force Automation, Upgraded Network etc.
- All the feeders (66/33/11 kV) & consumers of Tata Power DDL are metered. However, for DTs, metering is generally done at DT above 250 kVA capacity. The Discom has a very huge population of DTs of capacity 250 kVA & below. Besides, the installation capacity of DTs rated 250 kVA & below is insignificant as compared to total installation capacity of all DTs (~10%). Expanding metering infrastructure for all DTs would require intensive capital expenditure, therefore, the Discom has requested for exemption for metering at DTs rated 250 kVA & below
- Tata Power DDL has implemented various energy conservation measures under DSM programme i.e., AC Replacement Scheme, BLDC Ceiling Fan, LED Lighting Scheme, Behavioural Demand Response (BDR) etc.
- Tata Power Delhi a very vast distribution network having 5 numbers of circles, 12 numbers of divisions, 37 numbers of sub-division, 1280 number of feeders, 7248 number of DTs and 1824031 numbers of consumers.
- 12 % of its total generation requirement has been met via renewable energy towards compliance of renewable purchase obligation (RPO) for the Discom.

I. Background

1.1 Extant Regulation & Role of BEE

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.

Role of BEE

- BEE coordinates with designated agencies, designated consumers and other organizations 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 & labelling 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.

The main amendments made to the original Act are given below:

- 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
- Commercial buildings which are having a connected load of 100 kW or contract demand of 120 kVA and above brought under the purview under the EC Act.

Promotional Role

The major Promotional Role of BEE includes:

- 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 programmers relating to efficient use of energy and its conservation.

1.2 Purpose of Audit & Accounting Report

The annual energy audit accounting has been conducted for FY 2020-21 based on the notification no. 18/1/BEE/Discom/2021 from BUREAU OF ENERGY EFFICIENCY, New Delhi dated 6th October, 2021 which says:

(1) 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 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:
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.

(2) Where a new electricity distribution company is established after the commencement of these regulations, such electricity distribution company shall conduct its first annual energy audit on completion of the first financial year from the date of being notified as designated consumer.

The Annual Energy Audit (Accounting) 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 and analyse and process 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

1.3 Period of Energy Audit & Accounting

Period of energy audit and accounting for TATA POWER DELHI DISTRIBUTION LIMITED, New Delhi is from April'2021 to May 2022. The period of information has been gathered from FY20-21, 1st April, 2020- 31st March, 2021.

II. Introduction of Designated Consumer

2.1 Sector

Tata Power Delhi Distribution Limited belongs to the Electricity Distribution Sector.

2.2 Name and Address of Designated Consumer

Table 6: General Information

General Information					
1	**Name of the DISCOM**	TATA POWER DELHI DISTRIBUTION LIMITED			
2	**i) Year of Establishment**	2002-03			
	ii) Government/Public/Private	Joint venture			
3	**DISCOM's Contact details & Address**				
i	City/Town/Village	New Delhi			
ii	District	Delhi			
iii	State	Delhi	Pin	110009	
iv	Telephone	011-66112202	Fax	011-27468042	
4	**Registered Office**				
i	Company's Chief Executive Name	Ganesh Srinivasan			
ii	Designation	CEO			
iii	Address	NDPL House, Hudson Lines, Kingsway Camp, Delhi-09			
iv	City/Town/Village	Delhi	P.O.	GTB Nagar	
v	District				
vi	State	Delhi	Pin	110009	
vii	Telephone	011-66112202	Fax	011-27468042	
5	**Nodal Officer Details***				
i	Nodal Officer Name (Designated at DISCOM's)	Mr. HC Sharma			
ii	Designation	General Manager			
iii	Address	NDPL House, Hudson Lines, Kingsway Camp, Delhi-09			
iv	City/Town/Village	Delhi	P.O.	GTB Nagar	
v	District				
vi	State	Delhi	Pin	110009	
vii	Telephone	91-1166050595	Fax		
6	**Energy Manager Details***				
i	Name	Md. Shadab Ahmad			
ii	Designation	Sr. Manager	Whether EA or EM	EM	
iii	EA/EM Registration No.	EM-5062			
iv	Telephone	91-1166050613	Fax		
v	Mobile	9717991957	E-mail ID	mdshadab.ahmad@tatapower-ddl.com	

2.3 Name and details of energy manager and Authorised signatory of DC

Table 7: Name and details of energy manager and Authorised signatory of DC

PARTICULARS	DETAILS
Energy Manager	Md. Shadab Ahmad (Sr. Manager) EM - 5062 Ph: 91-1166050613 Mobile: 9717991957 Email: mdshadab.ahmad@tatapower-ddl.com
Authorized Signatory	Mr. HC Sharma (General Manager) Ph: 91-1166050595

2.4 Summary profile of DC's

Tata Power Delhi Distribution Limited [Tata Power-DDL] is a joint venture between Tata Power and the Government of NCT of Delhi with the majority stake being held by Tata Power Company (51%).

Tata Power-DDL is acknowledged for its consumer-friendly practices. Since privatization, the Aggregate Technical & Commercial (AT&C) losses in Tata Power-DDL areas have shown a record decline.

Table 8: Customer Database

Distribute Electricity	Service a Populace	Customer Base	Peak Load (MW)	Distribution Area
North & North West Delhi	7 million	1.88 million	2106	510 Sq. M

To ensure reliable power supply and to provide best in class service to its consumers, Tata Power–DDL has implemented several world-class technologies such as Advance Distribution Management system or ADMS which is designed to replace the conventional SCADA-DMS-OMS system with features like real-time integration of Smart Meter Data / Distributed Generation integration and single data model from GIS , Integrated Geographical Information System (GIS) for instant services, Advanced Metering Infrastructure (AMI), Automated Demand Response (ADR), Smart Street Light Management system, Field Force Automation, Upgraded Network, Integrated Toll Free Helpline No. 19124, etc.

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Tata Power-DDL provides various facilities and services to its consumers for their ease and convenience such as 24X7 Integrated Helpline, Mobile Application for both iOS and Android users, bilingual website, Multiple Payment Avenue, End to End online services for New Connection, etc.

Tata Power-DDL's contribution towards improving the ease of getting electricity connection through process simplification improving India's ranking twice, from 138 in 2015 to 22 in 2019.

TATA Power-DDL has also added solar generation as a part of its sustainable initiatives since 2008, and has installed fifteen (15) Solar Plants in its Licensed Area with a total generation capacity is 1.8 MW. It has a total of 1420 Rooftop solar plants under net metering with a cumulative capacity of 43MWp. The company is now working on setting up a Smart Grid with the integration of Roof Top Solar, Energy Storage, E-charging of Electric Vehicles, Home Automation etc. in its network.

Tata Power-DDL's change management experience, distributed leadership system, adoption of latest technology; robust competence development process and innovative & open work culture are the key strategic boosters which helped in building and sustaining competitive advantage in the changing business scenario. A journey which began a decade ago for empowering the consumers in Delhi now holds the potential to transform the distribution sector in India and similarly help utilities across the globe. Tata Power-DDL has a presence in India in nearly 20+ States and working with 30+ Discoms including Goa, Haryana, Uttar Pradesh, Chhattisgarh etc. as well as in international cities such as Benin, Eko, Kaduna, Kano etc.

Tata Power-DDL is focused and committed to the road ahead and is exploring new opportunities to replicate its experience of distribution reforms both in India and abroad. It is leveraging its unique learning and skillsets solely and in collaboration with leading utilities and technology providers like GE, IBM, Enel, Omron, 3M, Panasonic, AES, Mitsubishi etc. in the areas of communications & smart grid technology, change management, consumer service delivery and business process re-engineering. Tata Power-DDL has also collaborated with leading international and national Institutions like Harvard, MIT, Ryerson University, IIT Delhi, Punjab Engineering College, Delhi University, Netaji Subhas Institute of Technology etc. to carry out research activities in energy space.

Key parameters regarding Tata Power DDL are mentioned below:-

Source of Input Energy

The source of input energy with generation station and generation capacity & contract period is given the table:

Table 9: Generation station and generation capacity

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SECI Solar (Renewable)	20.0	RE	35 Years	Inter State
Delhi Municipal Solid Waste Solutions Ltd. (Bawana) (Renewable)	7.0	RE	20 Years	Intra State
Nanti Hydro Power Pvt. Ltd. (Renewable)	13.5	RE	20 Years	Inter State
Suryakanta Hydro energies Pvt. Ltd. (Renewable)	14.0	RE	20 Years	Inter State
Timarpur Okhla Waste management co. Ltd. (Renewable)	6.0	RE	20 Years	Intra State
Sun Edison	180.0	RE	20 Years	Inter State
Taranda	12.7	RE	20 Years	Inter State
SECI WIND	50.0	RE	25 Years	Inter State
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NTPC Dadri NCTPS(Th.) Stage II	10.0	Coal	25 Years	Inter State

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NTPC Kahalgaon II	48.3	Coal	25 Years	Inter State
NTPC Singrauli STPS	46.0	Coal	30 Years	Inter State
NTPC Rihand STPS-II	39.0	Coal	25 Years	Inter State
NTPC Rihand STPS-I	31.0	Coal	28 Years	Inter State
NTPC Kahalgaon I	15.6	Coal	25 Years	Inter State
NTPC Unchahaar-II TPS	14.0	Coal	25 Years	Inter State
NTPC Unchahaar-III TPS	9.0	Coal	25 Years	Inter State
NTPC Unchahaar-I TPS	7.0	Coal	27 Years	Inter State
NTPC Farakka	7.0	Coal	25 Years	Inter State
CLP Jhajjar	132.0	Coal	25 Years	Inter State
Maithon Power Limited	300.0	Coal	30 Years	Inter State
CTPS 7 & CTPS 8	92.0	Coal	25 Years	Inter State
MTPS 6	31.0	Coal	25 Years	Inter State
Sasan	27 MW to 136 MW	**Coal**	25 Years	Inter State

Table 10: Type of Fuel for Generation

Type of Fuel	Generation Capacity (MW)
Gas	**507.6**
Renewable Energy	305.2
Hydro	204.2
Nuclear	31.0
Coal	1541.7

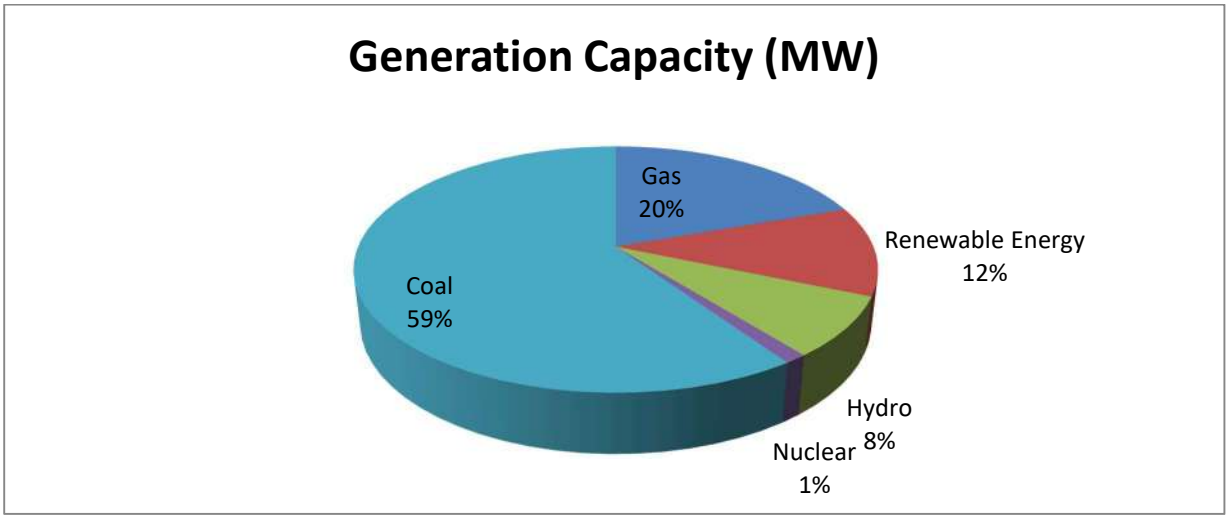


Figure 1: Generation Capacity (MW)

- Consumer wise connections & energy consumptions for FY 2020-21

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

Table 11: Energy consumption with type of consumers

Type of Consumers	Category of Consumers (EHT/HT/LT/Others)	Voltage Level (V)	No of Consumers	Total Consumption (In MU)
Domestic	HT/LT	11/.22/.4	1540657	4534.71
Commercial	LT		236046	942.86
Water Supply			1311	257.98
Public Lighting			4907	118.48
HT Industrial			384	239.84
HT Commercial			471	276.37
Others-1 (if any , specify in remarks)			40255	1939.91
		Total	1824031	8310.16

- Technical Parameters for FY 2020-21

Tata Power DDL supply to north & north-west part of Delhi, It is divided into five circles, twelve divisions & the overall purchased Energy, consumptions & AT &C losses for the FY-2020-2021 is sown in table below the AT&C losses for FY2020-2021 is 6.48% & the T&D losses of the sector is 7.15%.

Table 12: Technical Details (FY 2020-21)

Technical Details (FY2020-21)		
Energy Input Details	**UoM**	**Value**
Input Energy Purchase (From Generation Source)	Million kwh	10085.62
Net input energy (at DISCOM Periphery after adjusting the transmission losses and energy traded)	Million kwh	8950.12
Total Energy billed (is the Net energy billed, adjusted for energy traded))	Million kwh	8310.43
Transmission and Distribution (T&D) loss Details	Million kwh	639.68
	%	7.15%
Collection Efficiency	%	101%
Aggregate Technical & Commercial Loss	%	6%

The total purchased power by Tata Power-DDL is 10085.62 million kWh and the net energy after adjusting the transmission losses and energy sales is 8950.12 million kWh, The total energy billed or net energy billed after all the adjustment is 8310.43 million kWh. The total T & D loss for FY 2020-21 is 639.68 million kWh.

- Details of Input Energy & Infrastructure

The Input energy, consumption of the Tata Power-DDL & transmission losses of the Tata Power-DDL is shown in table below:

Table 13: Input energy & transmission losses

Parameters	FY 2020-21
Input Energy purchased (MU)	10085.6
Transmission loss (%)	3.22%
Transmission loss (MU)	324.35
Energy sold outside the periphery(MU)	811.16
Open access sale (MU)	68.64
EHT sale	90
Net input energy (received at DISCOM periphery or at distribution point)-(MU)	9012.06
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	90%
% of metering available at consumer end	100%
No of feeders at 66kV voltage level	134
No of feeders at 33kV voltage level	108
No of feeders at 11kV voltage level	1280
No of LT feeders level	15539
Line length (ckt. km) at 66kV voltage level	536.92
Line length (ckt. km) at 33kV voltage level	477.11
Line length (ckt. km) at 11kV voltage level	4999.2
Line length (km) at LT level	7354.1
Length of Aerial Bunched Cables	5556.2
Length of Underground Cables	5832
HT/LT ratio	0.8177

- Number of Consumers

The Distribution network of Tata Power-DDLis divided into five numbers of circles, twelve number of divisions & thirty-seven numbers of sub divisions The numbers of feeders, DT's & number of consumers is 1280,7248 &1824031 respectively.

Table 14: Number of Consumers

Parameters	Values
Number of circles	5
Number of divisions	12
Number of sub-divisions	37
Number of feeders	1280
Number of DTs	7248
Number of consumers	1824031

- Voltage wise Meter & Unmetered Consumers

The voltage wise meter types of meter values given table:

Table 15: Voltage wise meter types

Parameters	66kV and above	33kV	11/22kV	LT
Number of conventional metered consumers	0	0	0	1569119
Number of consumers with 'smart' meters	0	0	0	210285
Number of consumers with 'smart prepaid' meters	0	0	0	0
Number of consumers with 'AMR' meters	4	2	1012	43601
Number of consumers with 'non-smart prepaid' meters	0	0	0	5077
Number of unmetered consumers	0	0	0	
Number of total consumers	4	2	1012	1823013

- Numbers of Distribution Transformers(above 250kVA)

Table 16: Number of Distribution Transformers

Parameters	66kV and above	33kV	11/22kV	LT
Number of conventionally metered Distribution Transformers	0	0	0	252
Number of DTs with communicable meters	0	0	0	3868
Number of unmetered DTs	0	0	0	474
Number of total Transformers	0	0	0	4594

- Numbers of Feeders

Table 17: Numbers of Feeders

Parameters	66kV and above	33kV	11/22kV	LT
Number of metered feeders	134	108	1280	15539
Number of feeders with communicable meters	134	108	1280	0

Parameters	66kV and above	33kV	11/22kV	LT
Number of unmetered feeders	0	0	0	0
Number of total feeders	134	108	1280	15539

- Length of Cables

Table 18: Length of Cables

Particulars	Value (km)
Line length (ct km)	1979.1
Length of Aerial Bunched Cables	5556.2
Length of Underground Cables	5832

III Discussions & Analysis-

3.1 Energy Accounts for Previous Year

Current cycle of audit is first year of energy accounting base on the notification no. No. 18/1/BEE/DISCOM/2021 from BUREAU OF ENERGY EFFICIENCY dated 6th October, 2021.

3.2 Energy Accounts & Performance in current year

➢ Circle wise Connections & Input Energy

Tata Power DDL has five circles and twelve numbers of division & thirty-seven numbers of sub division, the circle wise total numbers of connections, connected load (MW), Input energy (MU) & metered energy (MU) is given in the table:

Table 19: Input & Metered Energy Circle Wise

Circle	Total No of Connections	Connected Load (MW)	Input Energy (MU)	Metered Energy (MU)
Urban Circle	488797	1064.07	1670.72	1527.51
Sub Urban Circle	205017	1150.44	1813.98	1626.33
Town Circle	419677	1659.27	2212.07	2113.02
Metro circle	587100	1583.78	2238.01	2142.07
City Circle	123440	568.297	1015.34	901.514
Total	**1824031**	**6025.86**	**8950.12**	**8310.43**

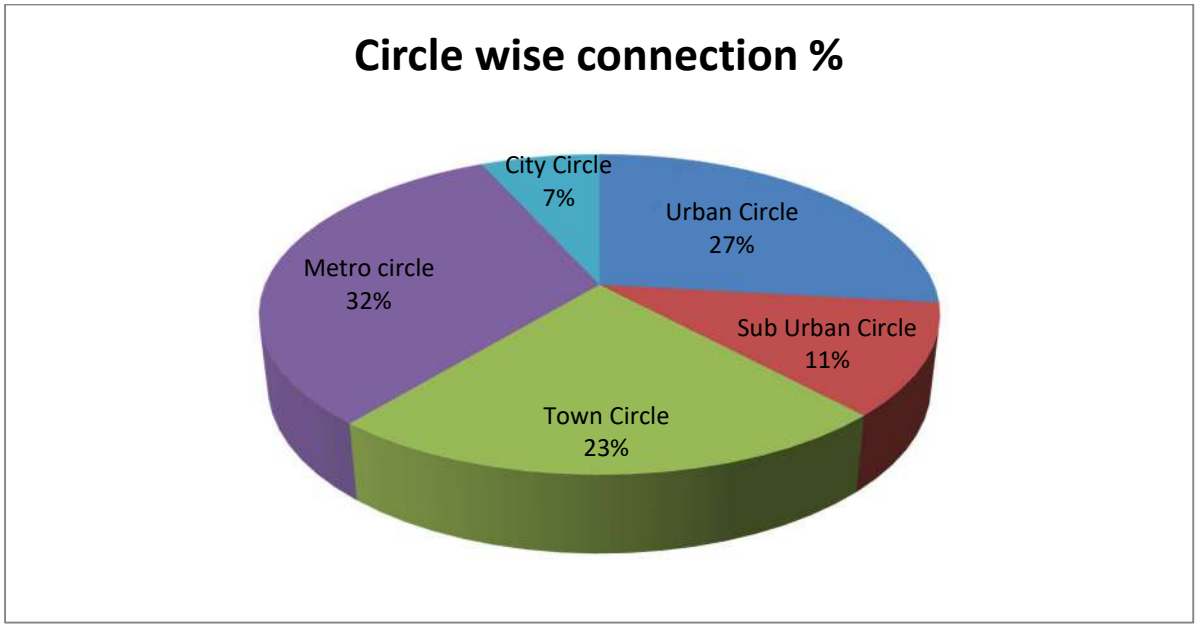


Figure 2: Circle wise connection

➢ Circle wise Energy Sharing

The circle wise connected load & input energy & metered energy with transmission & distribution losses is given in following table:

Circle	Connected Load (MW)	Input Energy (MU)	Metered Energy (MU)	T&D loss (MU)
Urban Circle	1064.07	1670.72	1527.51	143.21
Sub Urban Circle	1150.44	1813.98	1626.33	187.66
Town Circle	1659.27	2212.07	2113.02	99.05
Metro circle	1583.78	2238.01	2142.07	95.94
City Circle	568.30	1015.34	901.51	113.83
Total	**6025.86**	**8950.12**	**8310.43**	**639.68**

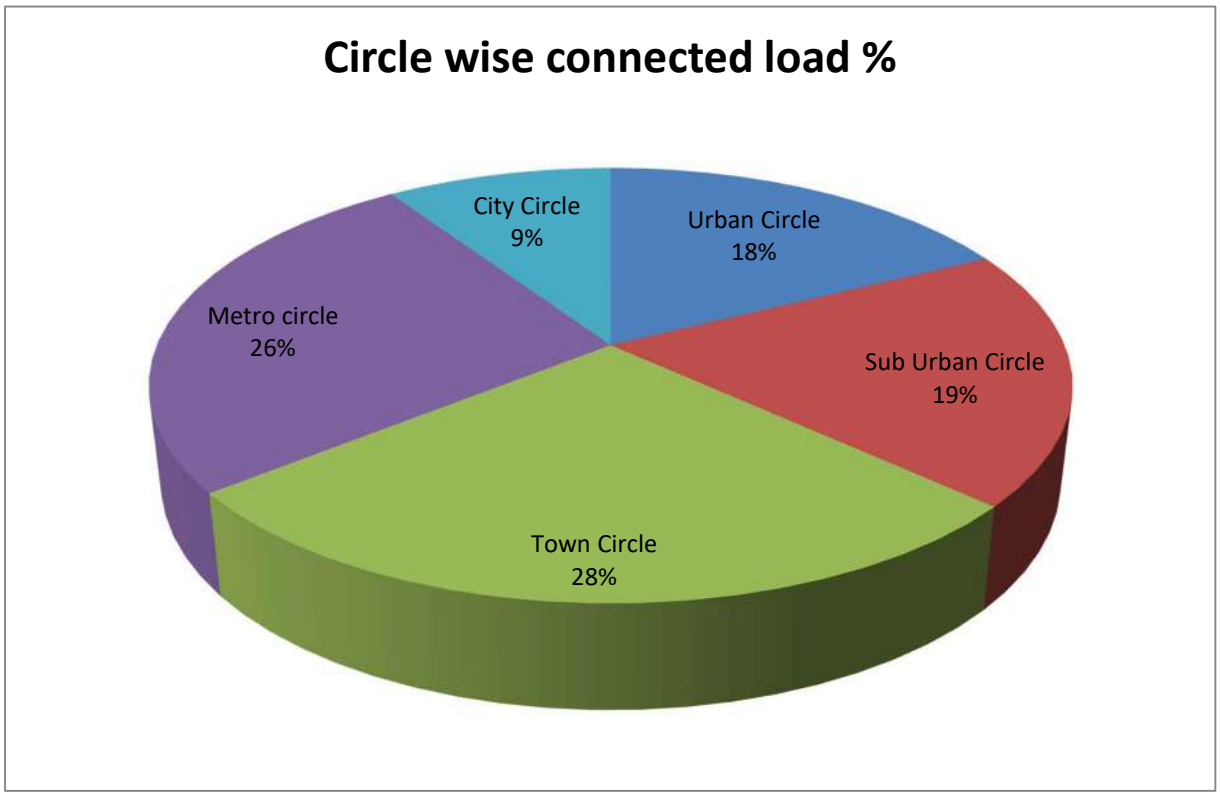


Figure 3: Circle wise connected Load

➢ Division wise energy parameters & Losses

The total twelve numbers of divisions, the energy parameter input energy, metered energy & T & D Losses of division wise is shown in below table:

Table 20: Division Wise Input, Metered, T&D Losses

Name of Division	Number of connections	Connected Load Metered (kW)	Input energy (MU)	Metered Energy (MU	T&D loss (MU)	T&D loss (%)
Badli	118023	361.627	572.640	506.245	66.394	11.59%
Bawana	86630	659.799	1211.328	1049.848	161.479	13.33%
CIVIL LINES	133677	516.163	717.655	698.062	19.593	2.73%
KESHAV PURAM	144883	554.117	776.536	732.968	43.568	5.61%
MANGOL PURI	195216	371.317	596.141	563.843	32.298	5.42%
MODEL TOWN	164580	479.634	627.765	596.412	31.353	4.99%
MOTI NAGAR	141117	588.989	717.875	681.988	35.887	5.00%
Narela	123440	568.297	1015.343	901.514	113.829	11.21%
PITAM PURA	118387	490.638	602.656	576.479	26.177	4.34%
ROHINI	227304	732.832	1014.100	981.811	32.289	3.18%
KIRARI	139833	217.586	373.879	334.896	38.983	10.43%
SHALIMAR BAGH	230941	484.861	724.199	686.368	37.831	5.22%
Total	**1824031**	**6025.86**	**8950.117**	**8310.435**	**639.682**	**7.15%**

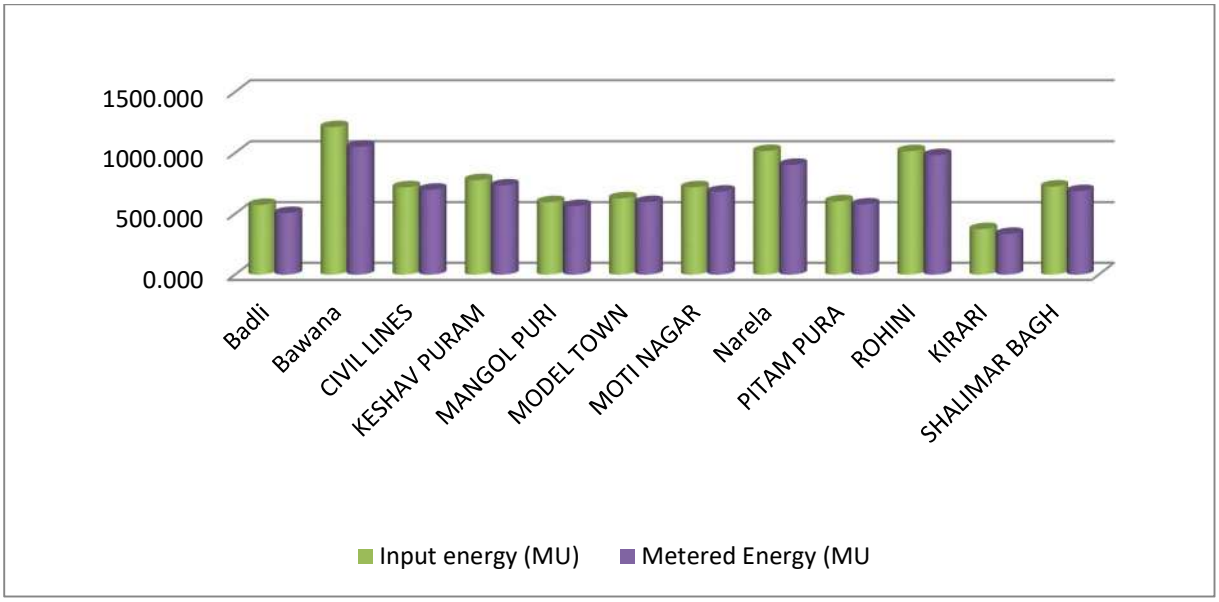


Figure 4: Input and Metered Energy (Division Wise)

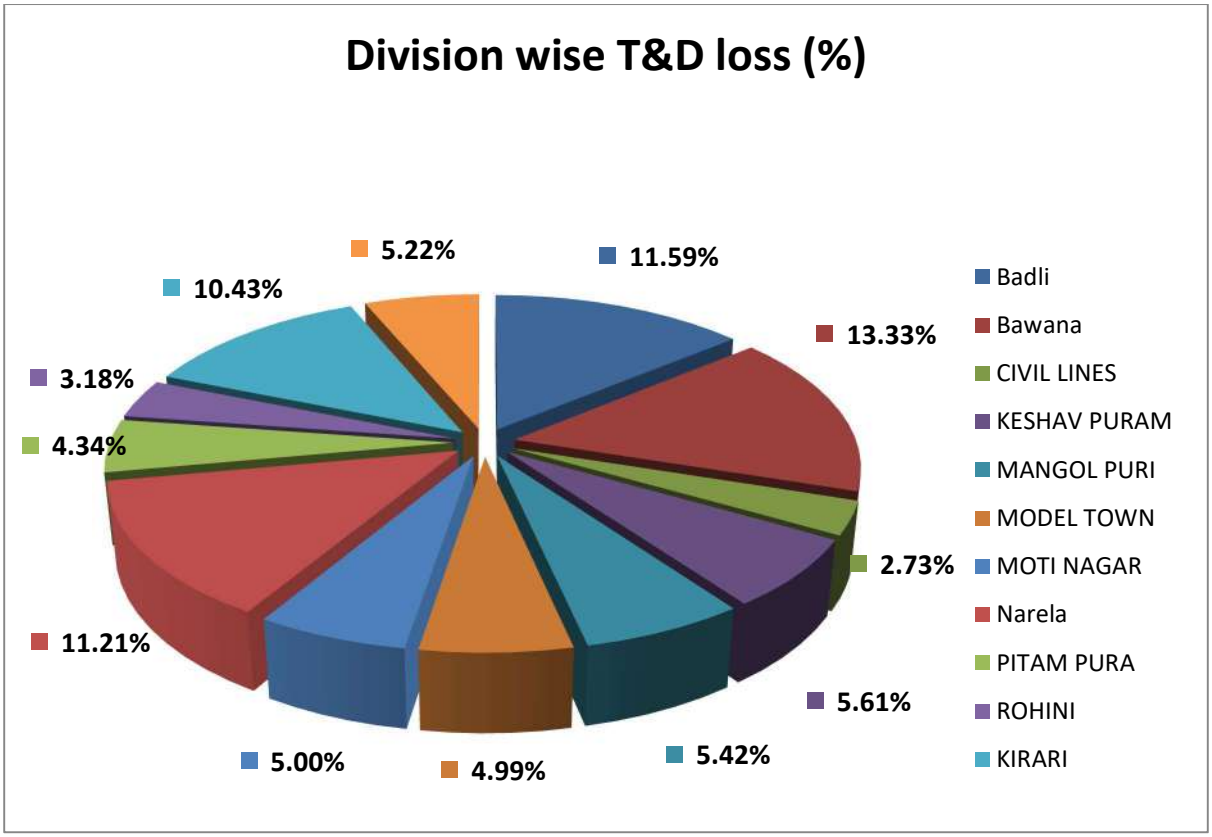


Figure 5: Division wise T&D loss (%)

➢ Consumer Category wise energy parameters & Losses

The consumer wise all the parameters like input energy, metered energy, no of consumers, billed amount, collection efficiency & AT&C losses are given in below table:

Table 21: Division Wise AT&C Losses

Name of Division	Consumer category	Total Number of connections (Nos)	Total Connected Load (MW)	Input energy (MU)	Total energy	T&D loss (MU)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency	AT & C loss (%)
BADLI	Residential	96876	142.27	572.64	216.94	66.39	151.13	100.44	66.46%	
	Agricultural	530	3.75		2.08		0.24	0.87	363.36%	
	Commercial/Industrial-LT	19852	194.53		248.63		309.28	337.36	109.08%	
	Commercial/Industrial-HT	54	13.69		20.70		18.10	24.60	135.89%	
	Others	711	7.39		17.90		10.52	32.89	312.75%	
		118023	**361.63**	**572.64**	**506.25**	**66.39**	**489.27**	**496.17**	**101.41%**	**10%**
BAWANA	Residential	63139	93.68	1211.33	134.79	161.48	69.06	68.81	99.64%	
	Agricultural	1791	9.98		4.52		2.98	2.87	96.38%	
	Commercial/Industrial-LT	21099	537.79		857.69		1084.06	1103.45	101.79%	
	Commercial/Industrial-HT	34	8.81		18.24		22.13	22.29	100.74%	
	Others	567	9.54		34.60		29.30	30.37	103.66%	
		86630	**659.80**	**1211.33**	**1049.85**	**161.48**	**1207.53**	**1227.81**	**101.68%**	**12%**
CIVIL LINES	Residential	108647	284.55	717.655	385.41	19.59	239.37	245.22	102.44%	

Name of Division	Consumer category	Total Number of connections (Nos)	Total Connected Load (MW)	Input energy (MU)	Total energy	T&D loss (MU)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency	AT & C loss (%)
	Agricultural	2	0.01		0.00		0.00	0.00	0.00%	
	Commercial/Industrial-LT	23900	102.43		88.82		132.84	133.50	100.50%	
	Commercial/Industrial-HT	67	47.63		57.20		99.92	101.42	101.50%	
	Others	1061	81.55		166.63		142.06	132.84	93.51%	
		133677	**516.16**	**717.66**	**698.06**	**19.59**	**614.19**	**612.99**	**99.80%**	**3%**
KESHAV PURAM	Residential	116732	266.22		369.21		217.41	217.42	100.00%	
	Agricultural	0	0.00		0.00		0.00	0.00	0.00%	
	Commercial/Industrial-LT	27213	238.83	776.54	278.43	43.57	375.33	382.21	101.83%	
	Commercial/Industrial-HT	127	40.41		68.88		81.36	81.28	99.90%	
	Others	811	8.67		16.45		13.54	8.90	65.74%	
		144883	**554.12**	**776.54**	**732.97**	**43.57**	**687.64**	**689.81**	**100.32%**	**5%**
MANGOL PURI	Residential	172277	261.21		426.08		208.94	208.73	99.90%	
	Agricultural	1	0.04		0.02		0.00	0.00	0.00%	
	Commercial/Industrial-LT	21989	93.85	596.14	100.52	32.29	138.05	138.95	100.65%	
	Commercial/Industrial-HT	23	9.27		17.23		19.61	20.68	105.47%	
	Others	926	6.95		19.99		17.23	19.93	115.65%	
		195216	**371.32**	**596.14**	**563.84**	**32.29**	**383.83**	**388.29**	**101.16%**	**4%**
MODEL TOWN	Residential	142130	322.65		441.85		265.72	265.43	99.89%	
	Agricultural	1	0.01	627.77	0.00	31.35	0.00	0.00	0.00%	
	Commercial/Industrial-LT	21526	105.84		93.78		138.36	138.51	100.11%	

Name of Division	Consumer category	Total Number of connections (Nos)	Total Connected Load (MW)	Input energy (MU)	Total energy	T&D loss (MU)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency	AT & C loss (%)
	Commercial/Industrial-HT	45	13.87		18.98		25.41	25.55	100.55%	
	Others	878	37.27		41.80		42.13	40.31	95.69%	
		164580	**479.63**	**627.77**	**596.41**	**31.35**	**471.62**	**469.80**	**99.62%**	**5%**
MOTI NAGAR	Residential	113015	294.67	717.88	384.62	35.89	235.76	235.12	99.73%	
	Agricultural	2	0.01		0.01		0.00	0.00	0.00%	
	Commercial/Industrial-LT	27125	219.48		207.57		306.08	307.83	100.57%	
	Commercial/Industrial-HT	133	65.04		73.31		98.62	99.05	100.44%	
	Others	842	9.80		16.48		15.51	15.56	100.32%	
		141117	**588.99**	**717.88**	**681.99**	**35.89**	**655.97**	**657.56**	**100.24%**	**5%**
NARELA	Residential	102214	157.62	1015.34	234.73	113.83	80.31	129.40	161.12%	
	Agricultural	2314	18.06		10.40		6.76	5.94	87.90%	
	Commercial/Industrial-LT	17558	336.73		539.70		700.56	689.56	98.43%	
	Commercial/Industrial-HT	152	40.44		88.67		113.17	106.56	94.16%	
	Others	1202	15.45		28.01		31.92	13.48	42.23%	
		123440	**568.30**	**1015.34**	**901.51**	**113.83**	**932.72**	**944.94**	**101.31%**	**10%**
PITAM PURA	Residential	100533	339.20	602.66	424.35	26.17	283.04	282.02	99.64%	
	Agricultural	0	0.00		0.00		0.00	0.00	0.00%	
	Commercial/Industrial-LT	16990	106.61		96.36		141.29	141.86	100.40%	
	Commercial/Industrial-HT	78	37.07		40.74		54.30	55.23	101.71%	
	Others	786	7.75		15.04		10.93	11.31	103.49%	
		118387	**490.64**	**602.66**	**576.48**	**26.17**	**489.56**	**490.42**	**100.17%**	**4%**

Name of Division	Consumer category	Total Number of connections (Nos)	Total Connected Load (MW)	Input energy (MU)	Total energy	T&D loss (MU)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency	AT & C loss (%)
ROHINI	Residential	196237	515.27	1014.10	702.94	32.29	422.86	422.24	99.85%	
	Agricultural	0	0.00		0.00		0.00	0.00	0.00%	
	Commercial/Industrial-LT	29233	121.57		106.04		157.30	157.44	100.09%	
	Commercial/Industrial-HT	66	44.38		51.06		68.39	72.25	105.65%	
	Others	1768	51.61		121.77		106.26	106.96	100.66%	
		227304	**732.83**	**1014.10**	**981.81**	**32.29**	**754.81**	**758.88**	**100.54%**	**3%**
KIRARI	Residential	124016	163.52	373.88	272.05	38.98	126.82	126.54	99.77%	
	Agricultural	63	0.34		0.20		0.11	0.10	94.88%	
	Commercial/Industrial-LT	15285	46.15		47.02		66.23	65.57	99.00%	
	Commercial/Industrial-HT	3	1.24		0.47		0.72	0.72	100.27%	
	Others	466	6.34		15.15		18.33	19.41	105.87%	
		139833	**217.59**	**373.88**	**334.90**	**38.98**	**212.21**	**212.33**	**100.06%**	**10%**
SHALIMAR BAGH	Residential	205767	343.20	724.20	517.80	37.83	270.87	270.47	99.85%	
	Agricultural	80	0.48		0.43		0.18	0.18	97.95%	
	Commercial/Industrial-LT	23905	96.30		103.81		143.89	143.34	99.62%	
	Commercial/Industrial-HT	81	35.24		43.15		53.02	56.58	106.72%	
	Others	1108	9.64		21.17		19.46	20.30	104.32%	
		230941	**484.86**	**724.20**	**686.37**	**37.83**	**487.42**	**490.87**	**100.71%**	**5%**

Name of Division	Consumer category	Total Number of connections (Nos)	Total Connected Load (MW)	Input energy (MU)	Total energy	T&D loss (MU)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency	AT & C loss (%)
TOTAL	Residential	1541583	3184.05	8950.12	4510.76	639.68	2571.29	2571.83	100.02%	
	Agricultural	4784	32.66		17.66		10.27	9.97	97.07%	
	Commercial/Industrial-LT	265675	2200.11		2768.38		3693.27	3739.58	101.25%	
	Commercial/Industrial-HT	863	357.09		498.63		654.75	666.21	101.75%	
	Others	11126	251.95		515.00		457.18	452.27	98.92%	
		1824031	**6025.86**	**8950.12**	**8310.43**	**639.68**	**7386.76**	**7439.86**	**100.72%**	**6.48%**

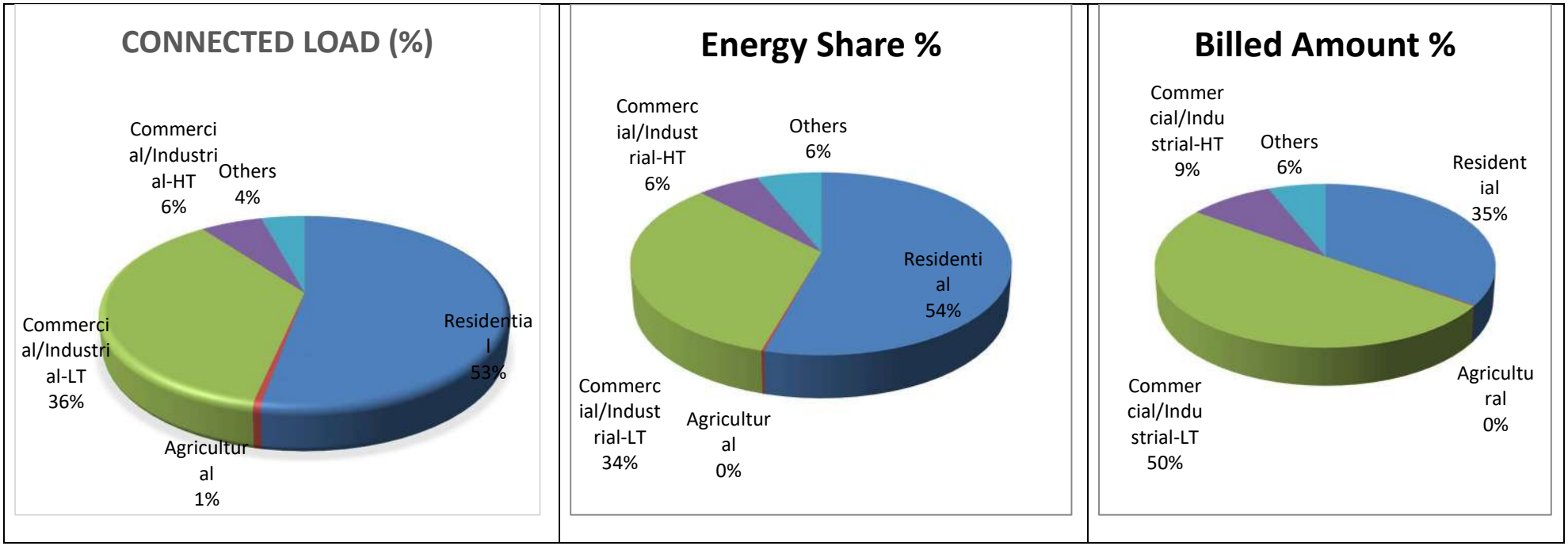


Figure 6: Connected Load, Energy Share & Billed Amount (%)

➢ Division wise Commercial Parameters & losses

The division wise AT & C losses of Tata Power DDL is calculated for the FY-2020-21 & is found 6.48%, the division wise losses is shown in below table:

Table 22: Division Wise AT&C Losses

Name of Division	Input energy (MU)	Metered energy	Total energy (MU)	T&D loss (MU)	T&D loss (%)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency	AT & C loss (%)
BADLI	572.64	506.25	506.25	66.39	11.59%	489.27	496.17	101.41%	10.35%
BAWANA	1211.33	1049.85	1049.85	161.48	13.33%	1207.53	1227.81	101.68%	11.88%
CIVIL LINES	717.66	698.06	698.06	19.59	2.73%	614.19	612.99	99.80%	2.92%
KESHAV PURAM	776.54	732.97	732.97	43.57	5.61%	687.64	689.81	100.32%	5.31%
MANGOL PURI	596.14	563.84	563.84	32.29	5.42%	383.83	388.29	101.16%	4.32%
MODEL TOWN	627.77	596.41	596.41	31.35	4.99%	471.62	469.80	99.62%	5.36%
MOTI NAGAR	717.88	681.99	681.99	35.89	5.00%	655.97	657.56	100.24%	4.77%
NARELA	1015.34	901.51	901.51	113.83	11.21%	932.72	944.94	101.31%	10.05%
PITAM PURA	602.66	576.48	576.48	26.17	4.34%	489.56	490.42	100.17%	4.18%
ROHINI	1014.10	981.81	981.81	32.29	3.18%	754.81	758.88	100.54%	2.66%
KIRARI	373.88	334.90	334.90	38.98	10.43%	212.21	212.33	100.06%	10.38%
SHALIMAR BAGH	724.20	686.37	686.37	37.83	5.22%	487.42	490.87	100.71%	4.55%
	8950.12	**8310.44**	**8310.44**	**639.68**	**7.15%**	**7386.76**	**7439.86**	**100.72%**	**6.48%**

Note: All five circles have input as well as billed metered energy separately.

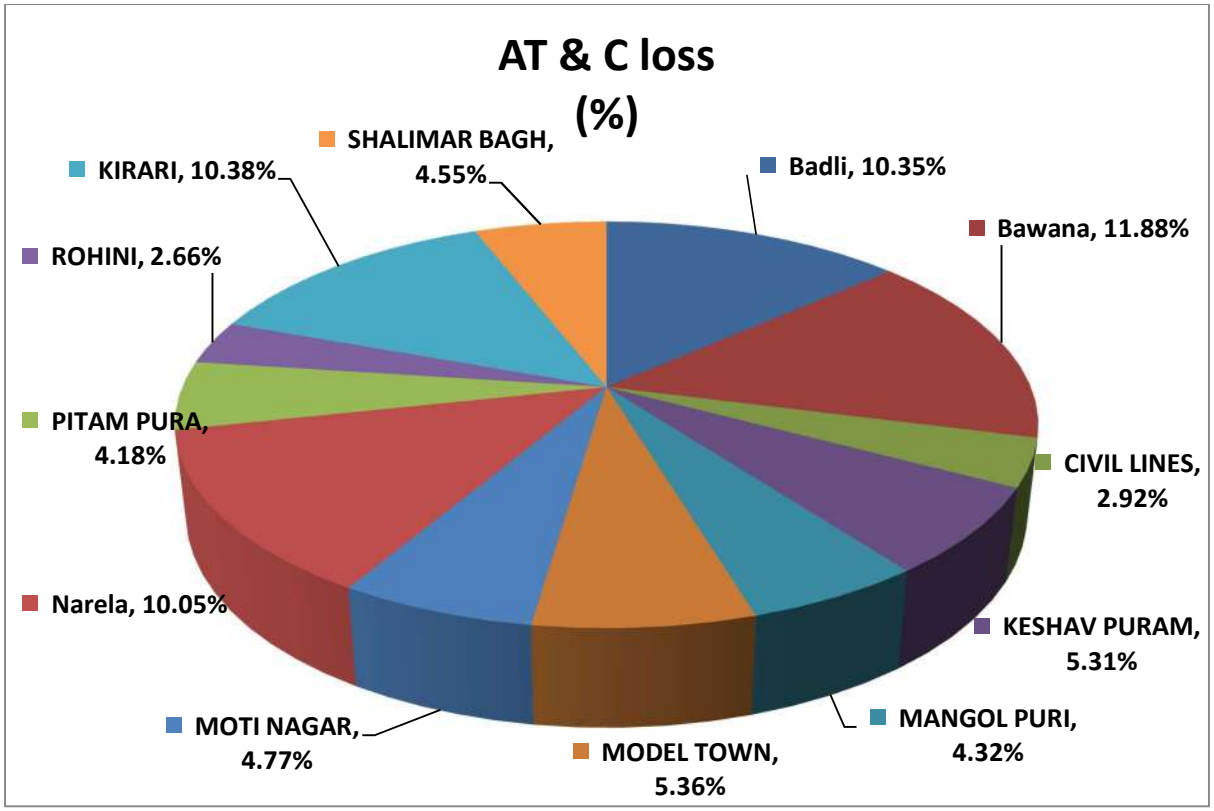


Figure 7: AT & C losses (%)

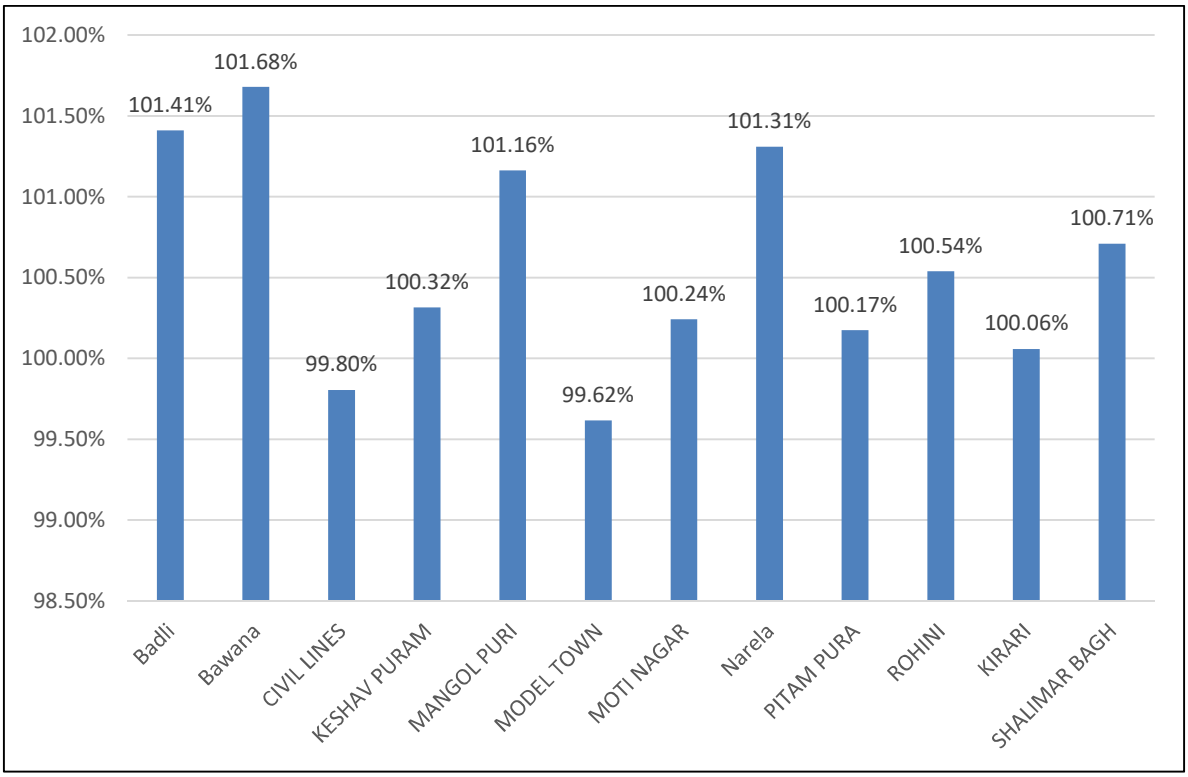


Figure 8: Collection Efficiency (%)

➢ Billed Energy

The collection efficiency of the Tata Power DDL as per the data provided is given in the following table:

Collection efficiency = Collected Amount/(Billed Amount*100)

Table 23: Collection Efficiency

Name of Division	No of connection	Connected Load Metered (kW)	Input energy (MU)	Metered energy (MU)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency
Badli	118023	361.63	572.64	506.25	489.27	496.17	101.41%
Bawana	86630	659.80	1211.33	1049.85	1207.53	1227.81	101.68%
CIVIL LINES	133677	516.16	717.66	698.06	614.19	612.99	99.80%
KESHAV PURAM	144883	554.12	776.54	732.97	687.64	689.81	100.32%
MANGOL PURI	195216	371.32	596.14	563.84	383.83	388.29	101.16%
MODEL TOWN	164580	479.63	627.77	596.41	471.62	469.80	99.62%
MOTI NAGAR	141117	588.99	717.88	681.99	655.97	657.56	100.24%
Narela	123440	568.30	1015.34	901.51	932.72	944.94	101.31%
PITAM PURA	118387	490.64	602.66	576.48	489.56	490.42	100.17%
ROHINI	227304	732.83	1014.10	981.81	754.81	758.88	100.54%
KIRARI	139833	217.59	373.88	334.90	212.21	212.33	100.06%
SHALIMAR BAGH	230941	484.86	724.20	686.37	487.42	490.87	100.71%
	1824031	**6025.86**	**8950.12**	**8310.44**	**7386.76**	**7439.86**	**100.72%**

➢ Voltage wise Energy Parameter

Tata Power-DDL having EHV, HV & LV voltage levels, voltage wise feeder name, energy parameter , input energy , export energy, metered , unmetered connections as per the data provided is given in the following table:

➢ 220kV Voltage feeder name & Energy Parameters

Table 24: Metering Details at 220 KV

S. No	Voltage Level	Feeder Name	Feeder Meter	Status of Meter	Meter S.No	Import MU	Export (MU)
1	220	Kashmiri Gate 220 KV DMRC 2	Metered	Functional	4902482	42.16	0
2	220	Kasmeri Gate 220 KV DMRC 1	Metered	Functional	5128473	23.85	0
3	220	SMB DMRC Jahangirpuri	Metered	Functional	4902494	19.53	0
4	220	DMRC SMB RSS	Metered	Functional	4902484	1.88	0
	220	**Total**				**87.43**	**0**

➢ 66 kV Voltage feeder name & Energy Parameters

Table 25: Metering Details at 66 KV

S. No	Voltage Level	Feeder Name	Feeder Meter	Status of Meter	Meter S.No	Import MU	Export (MU)
1	66	Narela T X 1	Metered	Functional	4864963	253.49	0
2	66	Narela T X 2	Metered	Functional	5128462	279.90	0
3	66	Narela T X 3	Metered	Functional	4865052	238.43	0
4	66	Gopal Pur T X 2	Metered	Functional	4864976	250.44	0
5	66	SMB T X 2	Metered	Functional	5128411	241.41	0
6	66	Rohini 220 Kv T X 1	Metered	Functional	4864964	209.27	0
7	66	Rohini 220 KV T X 2	Metered	Functional	4865022	206.65	0
8	66	Rohini 220 KV T X 3	Metered	Functional	4864997	264.13	0
9	66	Rohini 220 KV T X 4	Metered	Functional	5295166	240.30	0
10	66	Kanjawala T X 1	Metered	Functional	4865041	289.23	0
11	66	Kanjawala T X 2	Metered	Functional	5295182	328.96	0
12	66	66 KV DMRC MUNDKA	Metered	Functional	5128439	-5.38	0
13	66	Kanjawala T X 3	Metered	Functional	4864788	419.79	0
14	66	Bawana 400 KV I/C 100 MVA TR. No.1	Metered	Functional	4864911	272.94	0
15	66	Rohin-II 220 KV 66kV I/C No 1	Metered	Functional	4902505	305.86	0
16	66	Rohini II 220 KV 66kV I/C No 2	Metered	Functional	5128468	306.11	0
17	66	Nangloi Ckt 2	Metered	Functional	4864787	-74.14	0
18	66	Mundka to MGP-1	Metered	Functional	4864983	150.51	0
19	66	MGP T-off to Nangloi Ckt (-ve)	Metered	Functional	4864971	0.00	0

S. No	Voltage Level	Feeder Name	Feeder Meter	Status of Meter	Meter S.No	Import MU	Export (MU)
20	66	Mundka to Sawda Ghevra	Metered	Functional	4864950	22.03	0
21	66	sagarpur	Metered	Functional	5128441	20.26	0
22	66	Pappan Kalan	Metered	Functional	4864960	130.68	0
23	66	Rewari Line 66/11 Tr 3	Metered	Functional	4865005	-27.40	0
24	66	Bawana 220 T X 2	Metered	Functional	4864992	257.16	0
25	66	Bawana 220 T X 3	Metered	Functional	4864827	252.29	0
26	66	Bawana 220 T X 1	Metered	Functional	4864973	385.31	0
27	66	DELHI MSW			4864958	133.88	0
28	66	Railway Ckt-1			4864952	-11.04	0
29	66	Railway Ckt-2			5129958	-14.60	0
30	66	SMB T X 4			40001535	138.48	0
31	66	Gopal Pur T X 4 (160 MVA)			5295184	264.28	0
32	66	66kV Incomer 1-220kV SGTN			XF465246	16.02	0
33	66	66kV Incomer 2-220kV SGTN			XF465248	73.44	0
	66	**Total**				**5818.69**	**0**

- 33 kV Voltage feeder name & Energy Parameters

Table 26: Metering Details at 33 KV

S. No	Voltage Level	Feeder Name	Feeder Meter	Status of Meter	Meter S.No	Import MU	Export (MU)
1	33	Gopal Pur T X 1	Metered	Functional	5128429	195.43	0
2	33	Gopal Pur T X 3	Metered	Functional	4864924	262.91	0
3	33	Kasmeri Gate 33 KV Civil Line-1	Metered	Functional	4864791	29.25	0
4	33	Kasmeri Gate 33 KV Civil Line-2	Metered	Functional	4864867	17.44	0
5	33	Kasmeri Gate 20 MVA TR	Metered	Functional	4864797	21.31	0
6	33	O/G Payal Ckt	Metered	Functional	4864836	61.39	0
7	33	O/G REWARI LINE	Metered	Functional	4865182	51.60	0
8	33	INDER PURI Ckt-1	Metered	Functional	4864865	65.86	0
9	33	33 kV 16 MVA TR-1	Metered	Functional	4864880	27.03	0
10	33	33 kV 16 MVA TR-2	Metered	Functional	5295128	36.75	0
11	33	INDER PURI Ckt-2	Metered	Functional	4864873	66.34	0
12	33	33KV Naraina Pandav Nagar feeder	Metered	Functional	5295124	28.85	0
13	33	Rohtak Road O/G 33 KV Rama Road	Metered	Functional	4865179	39.92	0
14	33	Rohtak Road O/G 33 KV Shahzada Bagh-2	Metered	Functional	4864795	5.83	0

S. No	Voltage Level	Feeder Name	Feeder Meter	Status of Meter	Meter S.No	Import MU	Export (MU)
15	33	Rohtak Road O/G 33 KV Rampura-1	Metered	Functional	5295125	79.19	0
16	33	Rohtak Road O/G 33 KV Rampura-2	Metered	Functional	5295126	75.91	0
17	33	Rohtak Road T X 3	Metered	Functional	4865185	6.48	0
18	33	O/G 33 kV DLF Kirti Nagar	Metered	Functional	4864821	67.71	0
19	33	SMB T X 1	Metered	Functional	4864930	284.34	0
20	33	SMB T X 3	Metered	Functional	4864922	345.70	0
21	33	Subzi Mandi T X 2	Metered	Functional	5295137	289.88	0
22	33	O/G BG Rd-1 (To BSES)	Metered	Functional	4864831	-40.75	0
23	33	O/G BG Rd-2 (To BSES)	Metered	Functional	4864825	-67.65	0
24	33	SubziMandi T X 1	Metered	Functional	4864916	315.51	0
25	33	Wazir Pur 220 KV 33kV I/C No 1	Metered	Functional	4864903	278.85	0
26	33	Wazir Pur 220 KV 33kV I/C No 2	Metered	Functional	4864946	318.04	0
27	33	33 KV Peeragarhi CKT to CC ranibagh	Metered	Functional	4864901	77.09	0
28	33	Sudarshan Park 33KV Line-1	Metered	Functional	4864810	97.13	0
29	33	PUSA Ckt-I	Metered	Functional	4864843	44.96	0
30	33	PUSA Ckt-II	Metered	Functional	5295123	0.00	0
31	33	DMS BSES 33 kV Pandav Nagar	Metered	Functional	5295200	0.01	0
32	33	33 kV Vishal -1	Metered	Functional	4865158	-19.99	0
33	33	33 kV Vishal -2	Metered	Functional	4864816	-4.76	0
34	33	33 kV Mayapuri	Metered	Functional	4864808	-16.64	0
35	33	Rewari Line 33/11 Tr 1	Metered	Functional	4864822	-33.36	0
36	33	I/C from Rohtak road	Metered	Functional	4864866	36.23	0
37	33	Vishal (Imp/Exp)	Metered	Functional	4865149	-0.12	0
	33	**Total**				3043.69	**0**

- 11 kV Voltage feeder name & Energy Parameters

Table 27 : Metering Details at 11 KV

S. No	Voltage Level	Feeder Name	Feeder Meter	Status of Meter	Meter S.No	Import MU	Export (MU)
1	11	LOCAL TR Narela	Metered	Functional	4902583	-0.20	0
2	11	LOCAL TR Gopalpur	Metered	Functional	4865091	-0.18	0
3	11	ISBT K.Gate (F/o No.II Mahavir Ice factory)	Metered	Functional	4865074	5.71	0
4	11	LOCAL TR K Gate	Metered	Functional	4902530	-0.11	0

S. No	Voltage Level	Feeder Name	Feeder Meter	Status of Meter	Meter S.No	Import MU	Export (MU)
5	11	BUS COUPLER	Metered	Functional	4902528	-0.01	0
6	11	Gopi Nath Bazaar (-ve)	Metered	Functional	5295192	-10.88	0
7	11	LOCAL TR naraina	Metered	Functional	4902602	-0.34	0
8	11	BUS COUPLER	Metered	Functional	4902559	0.58	0
9	11	LOCAL TR SMB	Metered	Functional	4902561	-0.55	0
10	11	LOCAL TR Rohini	Metered	Functional	4902597	-0.39	0
11	11	LOCAL TR Kanjawala	Metered	Functional	4865071	-0.30	0
12	11	LOCAL TR Subzimandi	Metered	Functional	4902594	-0.11	0
13	11	DCM Nuruddin Park	Metered	Functional	4902579	4.88	0
14	11	DCM chowk	Metered	Functional	4902585	4.85	0
15	11	Sadar-S/S	Metered	Functional	4865090	6.31	0
16	11	CSA colony	Metered	Functional	4865088	0.00	0
17	11	DMS BSES Shadi Kham Pur(Ranjeet nagar c. centre)	Metered	Functional	4902538	0.00	0
18	11	DMS BSES 69 NG Road via Breakfast-2	Metered	Functional	4902549	0.00	0
19	11	DMS BSES H Block Kirti Nagar	Metered	Functional	4902578	0.00	0
20	11	DMS BSES J Block Kirti Nagar	Metered	Functional		0.00	0
21	11	DMS BSES Philips	Metered	Functional	4902568	4.96	0
22	11	Tibia College	Metered	Functional	4902540	9.43	0
23	11	EAST PARK ROAD	Metered	Functional	4902520	8.77	0
24	11	Manak Pura	Metered	Functional	4902536	6.34	0
25	11	Ramesh Nagar-1	Metered	Functional	4902572	0.00	0
26	11	Bali Nagar	Metered	Functional	4902541	4.74	0
27	11	ESI Hospital and Rameshnagar-2	Metered	Functional	4902539	5.38	0
28	11	Moti Nagar Tanga stand	Metered	Functional	4902548	0.00	0
29	11	41 Rama Road	Metered	Functional	4865089	0.00	0
30	11	51 Rama Road	Metered	Functional	4902565	0.91	0
31	11	Nazafgarh Road	Metered	Functional	4902564	7.58	0
32	11	Moti Nagar Kiosk	Metered	Functional	4902591	3.77	0
33	11	Sylvania(Philips)	Metered	Functional	4902529	0.00	0
34	11	BSES NDPL (EX) ON BUS 1&2	Metered	Functional	4902577	1.37	0
35	11	NDPL BSES (EX) ON BUS 2&3	Metered	Functional	4902525	-0.03	0
36	11	Local Tr	Metered	Functional	4902543	-0.24	0
	11	**Total**				62.25	0

➢ Voltage feeder name & Energy Parameters

The voltage wise total no of exchange points & energy consumptions of all the voltage level & the percentage share of energy & feeders are given in the graph:

Table 28: Input Energy at Various Voltage Level

Voltage Level (kV)	Exchange Points	Input Energy (MU)
220kV	4	87.43
66kV	33	5818.19
33kV	37	3043.69
11kV	36	62.25

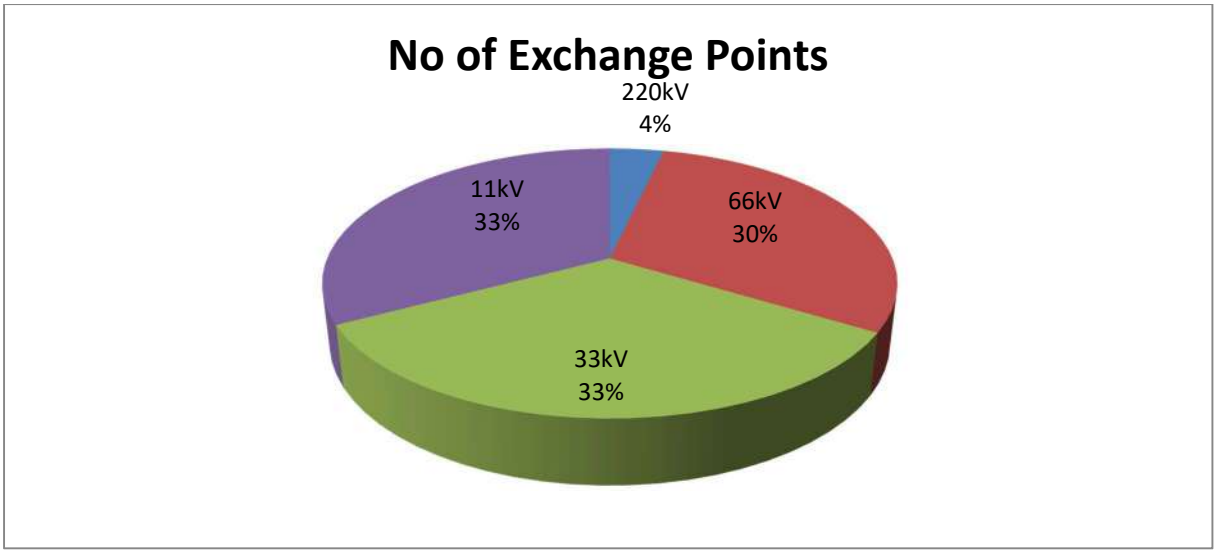


Figure 9: No of feeders

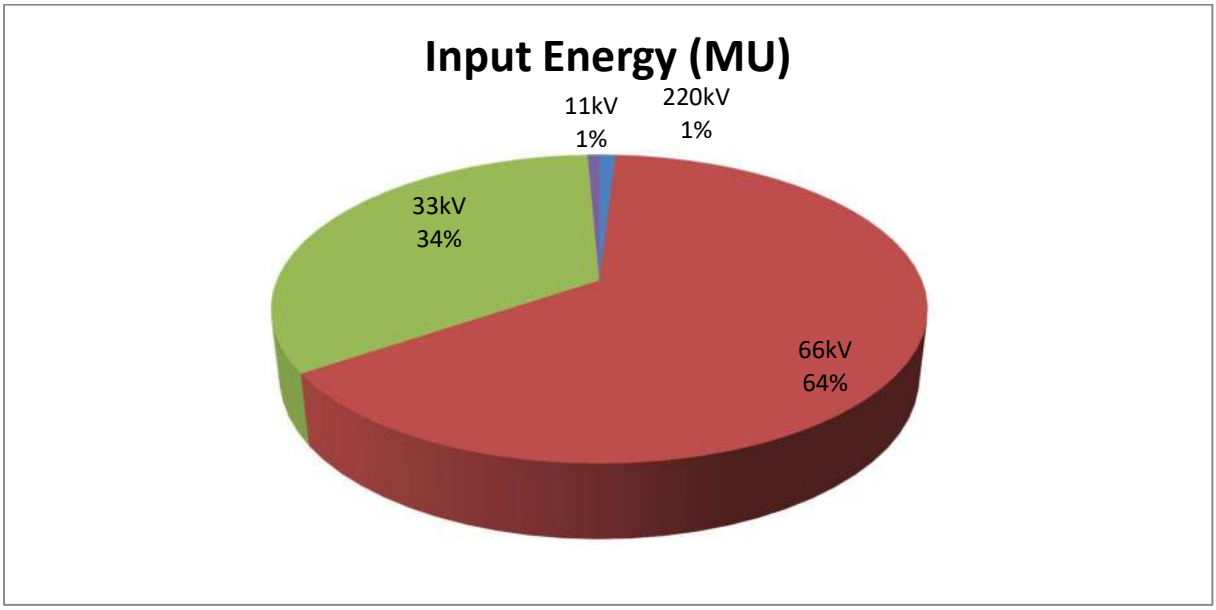


Figure 10: Input Energy (MU)

3.3 Unit wise Performance

Tata Power DDL has total five circles, twelve division & there are following category in which the energy consumption is divided Residential, agriculture, Commercial & others. The performance of all the division are shown in below table:

Table 29: Circle Wise Performance

Name of Division	Consumer category	Total Number of connections (Nos)	Total Connected Load (MW)	Input energy (MU)	Metered energy	Total energy	T&D loss (MU)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency	AT & C loss (%)
BADLI	Residential	96876	142.27	572.64	216.94	216.94	66.39	151.13	100.44	66.46%	
	Agricultural	530	3.75		2.08	2.08		0.24	0.87	363.36%	
	Commercial/Industrial -LT	19852	194.53		248.63	248.63		309.28	337.36	109.08%	
	Commercial/Industrial -HT	54	13.69		20.70	20.70		18.10	24.60	135.89%	
	Others	711	7.39		17.90	17.90		10.52	32.89	312.75%	
Badli		**118023**	361.63	572.64	506.25	506.25	**66.39**	489.27	496.17	**101.41%**	**10%**
BAWANA	Residential	63139	93.68	1211.33	134.79	134.79	161.48	69.06	68.81	99.64%	
	Agricultural	1791	9.98		4.52	4.52		2.98	2.87	96.38%	
	Commercial/Industrial -LT	21099	537.79		857.69	857.69		1084.06	1103.45	101.79%	
	Commercial/Industrial -HT	34	8.81		18.24	18.24		22.13	22.29	100.74%	
	Others	567	9.54		34.60	34.60		29.30	30.37	103.66%	
Bawana		**86630**	659.80	1211.33	1049.85	1049.85	**161.48**	1207.53	1227.81	**101.68%**	**12%**
CIVIL LINES	Residential	108647	284.55	717.65	385.41	385.41	19.59	239.37	245.22	102.44%	
	Agricultural	2	0.01		0.00	0.00		0.00	0.00	0.00%	

Name of Division	Consumer category	Total Number of connections (Nos)	Total Connected Load (MW)	Input energy (MU)	Metered energy	Total energy	T&D loss (MU)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency	AT & C loss (%)
	Commercial/Industrial -LT	23900	102.43		88.82	88.82		132.84	133.50	100.50%	
	Commercial/Industrial -HT	67	47.63		57.20	57.20		99.92	101.42	101.50%	
	Others	1061	81.55		166.63	166.63		142.06	132.84	93.51%	
CIVIL LINES		**133677**	516.16	717.65	698.06	698.06	**19.59**	614.19	612.99	**99.80%**	**3%**
KESHAV PURAM	Residential	116732	266.22	776.54	369.21	369.21	43.568	217.41	217.42	100.00%	
	Agricultural	0	0.00		0.00	0.00		0.00	0.00	0.00%	
	Commercial/Industrial -LT	27213	238.83		278.43	278.43		375.33	382.21	101.83%	
	Commercial/Industrial -HT	127	40.41		68.88	68.88		81.36	81.28	99.90%	
	Others	811	8.67		16.45	16.45		13.54	8.90	65.74%	
KESHAV PURAM		**144883**	554.12	776.54	732.97	732.97	**43.568**	687.64	689.81	**100.32%**	**5%**
MANGOL PURI	Residential	172277	261.21	596.14	426.08	426.08	32.29	208.94	208.73	99.90%	
	Agricultural	1	0.04		0.02	0.02		0.00	0.00	0.00%	
	Commercial/Industrial -LT	21989	93.85		100.52	100.52		138.05	138.95	100.65%	
	Commercial/Industrial -HT	23	9.27		17.23	17.23		19.61	20.68	105.47%	
	Others	926	6.95		19.99	19.99		17.23	19.93	115.65%	
		195216	371.32	596.14	563.84	563.84	**32.29**	383.83	388.29	**101.16%**	**4%**
MODEL TOWN	Residential	142130	322.65	627.77	441.85	441.85	31.35	265.72	265.43	99.89%	
	Agricultural	1	0.01		0.00	0.00		0.00	0.00	0.00%	
	Commercial/Industrial -LT	21526	105.84		93.78	93.78		138.36	138.51	100.11%	

Name of Division	Consumer category	Total Number of connections (Nos)	Total Connected Load (MW)	Input energy (MU)	Metered energy	Total energy	T&D loss (MU)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency	AT & C loss (%)
	Commercial/Industrial -HT	45	13.87		18.98	18.98		25.41	25.55	100.55%	
	Others	878	37.27		41.80	41.80		42.13	40.31	95.69%	
MODEL TOWN		**164580**	479.63	627.77	596.41	596.41	**31.35**	471.62	469.80	**99.62%**	**5%**
MOTI NAGAR	Residential	113015	294.67	717.87	384.62	384.62	35.88	235.76	235.12	99.73%	
	Agricultural	2	0.01		0.01	0.01		0.00	0.00	0.00%	
	Commercial/Industrial -LT	27125	219.48		207.57	207.57		306.08	307.83	100.57%	
	Commercial/Industrial -HT	133	65.04		73.31	73.31		98.62	99.05	100.44%	
	Others	842	9.80		16.48	16.48		15.51	15.56	100.32%	
MOTI NAGAR		**141117**	588.99	717.87	681.99	681.99	**35.89**	655.97	657.56	**100.24%**	**5%**
NARELA	Residential	102214	157.62	1015.34	234.73	234.73	113.83	80.31	129.40	161.12%	
	Agricultural	2314	18.06		10.40	10.40		6.76	5.94	87.90%	
	Commercial/Industrial -LT	17558	336.73		539.70	539.70		700.56	689.56	98.43%	
	Commercial/Industrial -HT	152	40.44		88.67	88.67		113.17	106.56	94.16%	
	Others	1202	15.45		28.01	28.01		31.92	13.48	42.23%	
Narela		**123440**	568.30	1015.34	901.51	901.51	**113.83**	932.72	944.94	**101.31%**	**10%**
PITAM PURA	Residential	100533	339.20	602.66	424.35	424.35	26.18	283.04	282.02	99.64%	
	Agricultural	0	0.00		0.00	0.00		0.00	0.00	0.00%	
	Commercial/Industrial -LT	16990	106.61		96.36	96.36		141.29	141.86	100.40%	
	Commercial/Industrial -HT	78	37.07		40.74	40.74		54.30	55.23	101.71%	

Name of Division	Consumer category	Total Number of connections (Nos)	Total Connected Load (MW)	Input energy (MU)	Metered energy	Total energy	T&D loss (MU)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency	AT & C loss (%)
	Others	786	7.75		15.04	15.04		10.93	11.31	103.49%	
PITAM PURA		**118387**	490.64	602.66	576.48	576.48	**26.18**	489.56	490.42	**100.17%**	**4%**
ROHINI	Residential	196237	515.27	1014.10	702.94	702.94	32.29	422.86	422.24	99.85%	
	Agricultural	0	0.00		0.00	0.00		0.00	0.00	0.00%	
	Commercial/Industrial -LT	29233	121.57		106.04	106.04		157.30	157.44	100.09%	
	Commercial/Industrial -HT	66	44.38		51.06	51.06		68.39	72.25	105.65%	
	Others	1768	51.61		121.77	121.77		106.26	106.96	100.66%	
ROHINI		**227304**	732.83	1014.10	981.81	981.81	**32.29**	754.81	758.88	**100.54%**	**3%**
KIRARI	Residential	124016	163.52	373.88	272.05	272.05	38.98	126.82	126.54	99.77%	
	Agricultural	63	0.34		0.20	0.20		0.11	0.10	94.88%	
	Commercial/Industrial -LT	15285	46.15		47.02	47.02		66.23	65.57	99.00%	
	Commercial/Industrial -HT	3	1.24		0.47	0.47		0.72	0.72	100.27%	
	Others	466	6.34		15.15	15.15		18.33	19.41	105.87%	
KIRARI		**139833**	217.59	373.88	334.90	334.90	**38.98**	212.21	212.33	**100.06%**	**10%**
SHALIMAR BAGH	Residential	205767	343.20	724.20	517.80	517.80	37.83	270.87	270.47	99.85%	
	Agricultural	80	0.48		0.43	0.43		0.18	0.18	97.95%	
	Commercial/Industrial -LT	23905	96.30		103.81	103.81		143.89	143.34	99.62%	
	Commercial/Industrial -HT	81	35.24		43.15	43.15		53.02	56.58	106.72%	
	Others	1108	9.64		21.17	21.17		19.46	20.30	104.32%	
SHALIMAR BAGH		**230941**	484.86	724.20	686.37	686.37	**37.84**	487.42	490.87	**100.71%**	**5%**

Name of Division	Consumer category	Total Number of connections (Nos)	Total Connected Load (MW)	Input energy (MU)	Metered energy	Total energy	T&D loss (MU)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency	AT & C loss (%)
	Residential	1541583	3184.05	8950.12	4510.76	4510.76	639.68	2571.29	2571.83	100.02%	
	Agricultural	4784	32.66		17.66	17.66		10.27	9.97	97.07%	
	Commercial/Industrial -LT	265675	2200.11		2768.38	2768.38		3693.27	3739.58	101.25%	
	Commercial/Industrial -HT	863	357.09		498.63	498.63		654.75	666.21	101.75%	
	Others	11126	251.95		515.00	515.00		457.18	452.27	98.92%	
		1824031	6025.86	8950.12	8310.43	8310.43	**639.68**	7386.76	7439.86	**100.72%**	**6.48%**

3.4 Energy Conservation measures already taken & proposed for Future

➢ Energy Conservation measures already taken

Tata Power DDL has done various energy conservation to reduce the energy consumptions in FY-2020-21, they have replaced the old inefficient AC's, with energy efficient AC's, all inefficient old fan with energy efficient BLDC Fan's & Non-conventional light with energy efficient light (LED's) etc. The total quantity is shown in table:

Table 30: Energy Conservation Measures Implemented – FY 2020-21

DSM Program	FY	Quantity (Nos)	Load reduction (MW)	Energy Saving (MU)	CO_2 reduction (mTon)
AC Replacement Program	FY-20-21	1350	0.63	1.36	1.1
BLDC Ceiling Fan	FY-20-21	30	0	0	0
LED Lighting Scheme	FY-20-21	58242	1	2	2

➢ Energy Conservation measures Proposed for Future

Table 31: Proposed Energy Conservation Measures – FY-2021-22

DSM Program	FY	Quantity (Nos)	Load reduction (MW)	Energy Saving (MU)	CO2 reduction (mTon)
AC Replacement Scheme	FY-21-22	2148	1	1.64	1.3
BLDC Ceiling Fan	FY-21-22	620	0.03	0.12	0.1
LED Lighting Scheme	FY-21-22	99006	1	2	2
Behavioural Demand Response (BDR)	FY-21-22	2044	7.69	-	-

3.5 Critical Analysis

I. Discom Parameter for evaluation of performance

- Evaluation of Discom performance in Delhi is being done on basis of yearly Distribution loss & AT & C loss targets.
- Aggregate Technical and Commercial (AT & C) losses is the appropriate index used in a situation where the system is associated with losses which occur due to various reasons.

- AT & C losses are the difference between energy injected into the system and the energy for which payment is made. It is the aggregate of the Transmission and Distribution (T and D) losses and loss due to non-realization of payable demand.

Transmission & Distribution losses (T&D losses)

T& D Losses = {1- (Total energy Billed/ Total energy Input in the system)} x 100

Aggregate technical and commercial losses (AT&C losses)

AT&C Losses = {1- (Billing Efficiency x Collection Efficiency) } x 100

Where

Billing efficiency= Total unit Billed/ Total unit Inputs

Collection efficiency = Revenue collected / Amount Billed

The overall average T & D Losses & AT & C Losses of the Tata Power DDL, are 7.15% & 6.48% which are significantly less than the average of all India figure which stands at close to 20%.

II. DISCOM T & D Losses computation approach

Transmission losses = Total Energy Purchased - Total Energy Sale - Total Input

Procedure followed

- Substation wise/feeder wise Monthly Input energy details are collected through main and check meters at various exchange points.
- The details of Input energy are then matched with the meters installed at Tata Power-DDL periphery
- Billed units are calculated by cumulating the sum of energy recorded by consumer meters.
- The difference in input energy and billed units is considered as T&D loss.

3.6 Inclusion & Exclusions

Not applicable

3.7 Detailed Formats to be annexed

- 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.
- List of measuring equipment and calibration certificates and frequency of calibration.
- Write up on energy scenario.
- Generation via solar, DG and any other source and share of energy consumption.
- 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).
- Disconnected consumers details
- Loss Analysis report
- Write up on procedure followed technical loss analysis.

IV Note of the EA/EM along with queries & replies to data gaps

Designated Consumer has T&D losses 7.15% & AT&C losses 6.48%. Various schemes have been implemented by DC to reduce losses which are shown in annual report and attached in the annexure of report.

DC is having the GIS software which is provided for verification. Also supporting documents for the same has been provided which is attached in annexure of report.

There is 100% metering available at feeder and consumer level but limited metering available at distribution transformers of 250 kVA and below. Expanding metering infrastructure for all DTs would require intensive capital expenditure and with insignificant improvement margins, therefore, the Discom has requested for exemption for metering at DTs rated 250 kVA & below.

V. Annexures

5.1 Introduction to 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. 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. Dr. P.P. Mittal, also received the "Energy Engineer" of South-East Asia Sub-continent award 2016 & 2018 at Washington DC & Charlotte USA respectively. Haryana Govt. also recognized the services of Dr. P.P. Mittal, Ph.D, MBA, Post Graduate Diploma in Power Distribution, Chartered Engineer, Leed Auditor - Indian Green Building Council Hyderabad, Accredited Energy Auditor (AEA-011).

Accolades

- Stand first in MSME Micro Services Award 2013 and award received from **Hon;ble Prime Minister of India on 18/10/2016 at Ludhaiana.** This award consist Trophy, Certifiate & cash prize of Rs. 3 lacs.
- Reveived prestigious "**Legend in Energy**" Award for Asian Sub-contitnet from AEE, Atlanta at Wahington, DC on 20/09/2016.
- Received Award from AEE Atlanta at Washington citing as "Energy Engineer–2016 & 2018" of South-East Aisa sub-continent
- Received Letter of appreciateion from **Chief Minister of Haryana**
- Winner Haryana State Energy Conservation Award 2012 with Certificate & Rs. 50,000/-
- National Energy Conservation Award 2013
- National Energy Conservation Award 2015
- National Energy Conservation Award 2016
- Appreciation from Sh. Kalraj Misra, Hon'ble Minister of State for MSME.
- Recevied Appreciation from Sh. Haribahi Parathibhai Chaudhary, Minister of State for MSME, Govt. of India
- Recevied Appreciation from Sh. K.K. Jalan, IAS Seecretary, MSME
- Received appcreciation from Sh. Devender Singh, IAS, Secretary Power, Haryana
- Recevied Appreciation from Institute of Engineers on Energy Day
- Received Appreciation from HAREDA, Chandigarh
- Received feedback & appreciation from 400 units including CERC, UNDP & CAG

I. Name of the Firm

Name of Accredited Firm	Accredited Energy Auditor
A-Z Energy Engineers Pvt. Ltd. Darya Ganj New Delhi-110002	Dr. P P Mittal :– AEA 0011 Registration Number:– EmAEA-0024

II. Composition of Team

Sr. No.	Name	Qualification	EM/EA/AEA/EmAEA Registration No	Experience (In Years)/ Sector
Team Leader				
1	Dr. P.P Mittal	Ph.D, MBA	AEA-011	+45 Years
Sector Expert				
2	Mr. Vipon Chanda	DISCOM Sector	-	30 Years
Team Members				
3	Mr. V.P Sharma	B. Tech	EA- 10061	32 Years
4	Mr. Alok Kumar Tiwari	Team Member	EM-300137	6 Years
5	Mr. Pankaj Chauhan	Team Member	-	8 Years

III. Registration No.

EmAEA – 0024

IV. Undertaking from EmAEA

We A-Z Energy Engineers Pvt. Ltd. hereby confirms that our AEA and all other audit team members mentioned in this report has conduct mandatory annual energy audit (Accounting) for Tata Power Delhi Distribution Limited (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.

For A-Z Energy Engineers Private Limited

Director

Authorised Signatory

(Dr. P.P. MITTAL)

Director

5.2 Minutes of Meeting with the Discom Firm.

Minutes of Meeting with DISCOM team

DISCOM:
TATA Power Delhi Distribution Limited

BEE Accredited Energy Auditor:
A-Z Energy Engineers Private Limited

Subject: Annual Energy Audit Report of Tata Power DDL DISCOM for FY 2020-21.

Tata Power DDL:
1. Mr. H C Sharma
2. Mr. Dhruba Banerjee
3. Ms. Sameeksha Raina
4. Mr. Akshay Kumar Gera

A-Z Energy Engineers Pvt. Ltd.
1. Mr. P P Mittal

With reference to BEE regulation No. 18/1/BEE/DISCOM/2021- the Bureau of Energy Efficiency (Manner and Intervals for Conduct of Energy Audit (Accounting) in Electrical Distribution companies) Regulation, 2021, joint meetings between Tata Power-DDL Energy Accounting team and A-Z Energy Engineers Pvt. Ltd. were held on 21st April, 26th April and 5th May 2022. Meetings involved detailed discussion on data filled in sector specific pro-forma document, scope of work including activities to be undertaken for completion of Annual Energy Audit Report of DISCOM for FY 2020-2021. Following points were discussed/reviewed during the meetings:

1. Annual Energy Accounting pro-forma provided by the DISCOM.
2. DISCOM has provided documents for purchase energy, input energy, billed energy, billed amount, collected amount and AT&C loss.
3. DISCOM has provided petition submitted to Delhi Electricity Regulatory Commission for True up and factsheets of GIS for number of consumers, number of distribution transformers, number of circles and distribution network length.
4. The auditor verified the purchase energy, input energy, billed energy, billed amount, collected amount and AT&C loss.

5. The auditor verified the category wise number of consumers, number of distribution transformers, number of circles and distribution network line length based on GIS data.
6. Verified T&D losses, AT&C losses & Collection Efficiency for the Discom for FY 20-21 was 7.15 %, 6.48 % & 101 % respectively.
7. All data which are being maintained by DISCOM has been collected as per the BEE specified energy accounting format and sample measurements have been completed successfully.

Signed on behalf of:
Tata Power DDL

Signed on Behalf of:
A-Z Energy Engineers Pvt. Ltd.

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

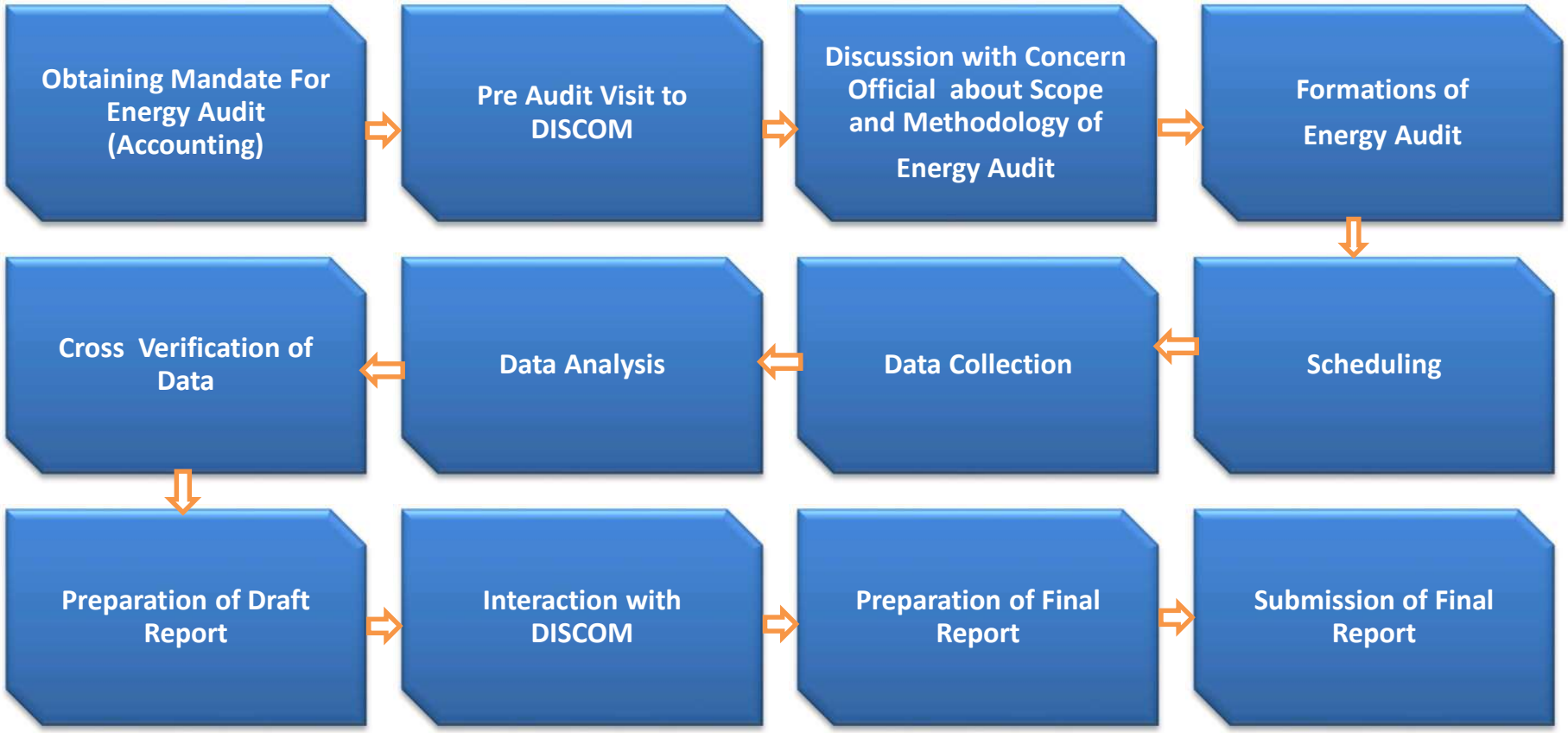
5.3 Check List prepared by EmAEA

List of documents required are:

- 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 dicsom 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.
- List of measuring equipment's and calibration certificates and frequency of calibration.
- Write up on energy scenario.
- Generation via solar, DG and any other source and share of energy consumption.
- 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).
- Disconnected consumers details
- Loss Analysis report
- Write up on procedure followed Technical loss analysis.

5.4 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



5.5 Infrastructure Details

Table 32: Infrastructure details

Form-Details of Input Infrastructure					
1	**Parameters**	**Total**	**Covered during in audit**	**Verified by Auditor in Sample Check**	**Remarks (Source of data)**
i	Number of circles	5			Organizational Structure
ii	Number of divisions	12			Organizational Structure
iii	Number of sub-divisions	37			Organizational Structure
iv	Number of feeders	1280			GIS database
v	Number of DTs	7248			GIS database
vi	Number of consumers	1824031			SAP System
2	**Parameters**	**66kV and above**	**33kV**	**11/22kV**	**LT**
a. i.	Number of conventional metered consumers	0	0	0	1569119
ii	Number of consumers with 'smart' meters	0	0	0	210285
iii	Number of consumers with 'smart prepaid' meters	0	0	0	0
Iv	Number of consumers with 'AMR' meters	4	2	1012	43601
V	Number of consumers with 'non-smart prepaid' meters	0	0	0	5077
Vi	Number of unmetered consumers	0	0	0	
vii	**Number of total consumers**	4	2	1012	1823013
b.i.	Number of conventionally metered Distribution Transformers	0	0	0	252
Ii	Number of DTs with communicable meters	0	0	0	3868
Iii	Number of unmetered DTs	0	0	0	474
Iv	**Number of total Transformers**	0	0	0	4594
c.i.	Number of metered feeders	134	108	1280	15539

Form-Details of Input Infrastructure					
Ii	Number of feeders with communicable meters	134	108	1280	0
Iii	Number of unmetered feeders	0	0	0	0
Iv	**Number of total feeders**	134	108	1280	15539
d.	Line length (ct km)	1979.1			
e.	Length of Aerial Bunched Cables	5556.2			
f.	Length of Underground Cables	5832			

5.6 Power Purchase details

Table 33: Power Purchase Details

Name of Generation Station	Generation Capacity (In MW)	Type of Station Generation (Based- Solid (Coal ,Lignite)/Liquid/Gas/Renewable (biomass-bagasse)/Others)	Type of Contract (in years/months/days)	Type of Grid (Intra-state/Inter-state)
NTPC Aravali Jhajjar	613.79	Coal	25 Years	Inter State
NTPC Dadri NCTPS(Th.) Stage II	10	Coal	25 Years	Inter State
NTPC Dadri NCTPS(Th) Stage I	9.98	Coal	25 Years	Inter State
NTPC Kahalgaon II	48.27	Coal	25 Years	Inter State
NTPC Singrauli STPS	46	Coal	30 Years	Inter State
NTPC Rihand STPS-II	39	Coal	25 Years	Inter State
NTPC Rihand STPS-I	31	Coal	28 Years	Inter State
NTPC Dadri GPS	28	Gas	25 Years	Inter State
NTPC Auriya GPS	22	Gas	35 Years	Inter State
NTPC Kahalgaon I	15.64	Coal	25 Years	Inter State
NTPC ANTA GPS	14	Gas	30 Years	Inter State
NTPC Unchahaar-II TPS	14	Coal	25 Years	Inter State
NTPC Unchahaar-III TPS	9	Coal	25 Years	Inter State
NTPC Unchahaar-I TPS	7	Coal	27 Years	Inter State
NTPC Farakka	7	Coal	25 Years	Inter State
NTPC Singrauli Small Hydro	2	RE	35 Years	Inter State
NHPC Dulhasti	15	Hydro	35 Years	Inter State
NHPC Parbati III	20	Hydro	40 Years	Inter State
NHPC Bairasiul	6	Hydro	25 Years	Inter State
NHPC Tanakpur	3.15	Hydro	35 Years	Inter State
NHPC Chamera -I	13	Hydro	35 Years	Inter State
NHPC Chamera-II	12	Hydro	35 Years	Inter State
NHPC Chamera-III	9	Hydro	35 Years	Inter State
NHPC URI-I	16	Hydro	35 Years	Inter State
NHPC Uri-II	10	Hydro	40 Years	Inter State
NHPC Dhauliganga	11	Hydro	35 Years	Inter State
NHPC Sewa II	5	Hydro	35 Years	Inter State
Narora APS	14	Nuclear	43 Years	Inter State
RAPP 5&6	17	Nuclear	43 Years	Inter State
CLP Jhajjar	132	Coal	25 Years	Inter State
Maithon Power Limited	299.98	Coal	30 Years	Inter State
SECI Solar (Renewable)	20	RE	35 Years	Inter State
Tala HEP	9	Hydro	35 Years	Inter State

Name of Generation Station	Generation Capacity (In MW)	Type of Station Generation (Based- Solid (Coal ,Lignite)/Liquid/Gas/Renewable (biomass-bagasse)/Others)	Type of Contract (in years/months/days)	Type of Grid (Intra-state/Inter-state)
CTPS 7 & CTPS 8	92	Coal	25 Years	Inter State
MTPS 6	31	Coal	25 Years	Inter State
Sasan	27 MW to 136 MW	Coal	25 Years	Inter State
Nathpa Jhakri HPS	44	Hydro	35 Years	Inter State
Tehri HPP	19	Hydro	35 Years	Inter State
Koteshwar HEP	12	Hydro	35 Years	Inter State
Pragati- I	63.61	Gas	25 Years	Intra State
Pragati III	298	Gas	25 Years	Intra State
IPGCL GT	82	Gas	20 Years	Intra State
Delhi Municipal Solid Waste Solutions Ltd. (Bawana) (Renewable)	7	RE	20 Years	Intra State
Nanti Hydro Power Pvt. Ltd. (Renewable)	13.5	RE	20 Years	Inter State
Suryakanta Hydro energies Pvt. Ltd. (Renewable)	14	RE	20 Years	Inter State
Timarpur Okhla Waste management co. Ltd. (Renewable)	6	RE	20 Years	Intra State
Sun Edison	180	RE	20 Years	Inter State
Taranda	12.65	RE	20 Years	Inter State
SECI WIND	50	RE	25 Years	Inter State

5.7 Category of service details

Table 34: Category of service details

Name of Division	Consumer category	Total Number of connections (Nos)	Total Connected Load (MW)	Input energy (MU)	Total energy	T&D loss (MU)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency	AT & C loss (%)
BADLI	Residential	96876	142.27	572.64	216.94	66.39	151.13	100.44	66.46%	
	Agricultural	530	3.75		2.08		0.24	0.87	363.36%	
	Commercial/Industrial-LT	19852	194.53		248.63		309.28	337.36	109.08%	
	Commercial/Industrial-HT	54	13.69		20.70		18.10	24.60	135.89%	
	Others	711	7.39		17.90		10.52	32.89	312.75%	
		118023	**361.63**	**572.64**	**506.25**	**66.39**	**489.27**	**496.17**	**101.41%**	**10%**
BAWANA	Residential	63139	93.68	1211.33	134.79	161.48	69.06	68.81	99.64%	
	Agricultural	1791	9.98		4.52		2.98	2.87	96.38%	
	Commercial/Industrial-LT	21099	537.79		857.69		1084.06	1103.45	101.79%	
	Commercial/Industrial-HT	34	8.81		18.24		22.13	22.29	100.74%	
	Others	567	9.54		34.60		29.30	30.37	103.66%	
		86630	**659.80**	**1211.33**	**1049.85**	**161.48**	**1207.53**	**1227.81**	**101.68%**	**12%**
CIVIL LINES	Residential	108647	284.55	717.655	385.41	19.59	239.37	245.22	102.44%	
	Agricultural	2	0.01		0.00		0.00	0.00	0.00%	
	Commercial/Industrial-LT	23900	102.43		88.82		132.84	133.50	100.50%	

Name of Division	Consumer category	Total Number of connections (Nos)	Total Connected Load (MW)	Input energy (MU)	Total energy	T&D loss (MU)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency	AT & C loss (%)
	Commercial/Industrial-HT	67	47.63		57.20		99.92	101.42	101.50%	
	Others	1061	81.55		166.63		142.06	132.84	93.51%	
		133677	**516.16**	**717.66**	**698.06**	**19.59**	**614.19**	**612.99**	**99.80%**	**3%**
KESHAV PURAM	Residential	116732	266.22	776.54	369.21	43.57	217.41	217.42	100.00%	
	Agricultural	0	0.00		0.00		0.00	0.00	0.00%	
	Commercial/Industrial-LT	27213	238.83		278.43		375.33	382.21	101.83%	
	Commercial/Industrial-HT	127	40.41		68.88		81.36	81.28	99.90%	
	Others	811	8.67		16.45		13.54	8.90	65.74%	
		144883	**554.12**	**776.54**	**732.97**	**43.57**	**687.64**	**689.81**	**100.32%**	**5%**
MANGOL PURI	Residential	172277	261.21	596.14	426.08	32.29	208.94	208.73	99.90%	
	Agricultural	1	0.04		0.02		0.00	0.00	0.00%	
	Commercial/Industrial-LT	21989	93.85		100.52		138.05	138.95	100.65%	
	Commercial/Industrial-HT	23	9.27		17.23		19.61	20.68	105.47%	
	Others	926	6.95		19.99		17.23	19.93	115.65%	
		195216	**371.32**	**596.14**	**563.84**	**32.29**	**383.83**	**388.29**	**101.16%**	**4%**
MODEL TOWN	Residential	142130	322.65	627.77	441.85	31.35	265.72	265.43	99.89%	
	Agricultural	1	0.01		0.00		0.00	0.00	0.00%	
	Commercial/Industrial-LT	21526	105.84		93.78		138.36	138.51	100.11%	
	Commercial/Industrial-HT	45	13.87		18.98		25.41	25.55	100.55%	
	Others	878	37.27		41.80		42.13	40.31	95.69%	

Name of Division	Consumer category	Total Number of connections (Nos)	Total Connected Load (MW)	Input energy (MU)	Total energy	T&D loss (MU)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency	AT & C loss (%)
		164580	**479.63**	**627.77**	**596.41**	**31.35**	**471.62**	**469.80**	**99.62%**	**5%**
MOTI NAGAR	Residential	113015	294.67	717.88	384.62	35.89	235.76	235.12	99.73%	
	Agricultural	2	0.01		0.01		0.00	0.00	0.00%	
	Commercial/Industrial-LT	27125	219.48		207.57		306.08	307.83	100.57%	
	Commercial/Industrial-HT	133	65.04		73.31		98.62	99.05	100.44%	
	Others	842	9.80		16.48		15.51	15.56	100.32%	
		141117	**588.99**	**717.88**	**681.99**	**35.89**	**655.97**	**657.56**	**100.24%**	**5%**
NARELA	Residential	102214	157.62	1015.34	234.73	113.83	80.31	129.40	161.12%	
	Agricultural	2314	18.06		10.40		6.76	5.94	87.90%	
	Commercial/Industrial-LT	17558	336.73		539.70		700.56	689.56	98.43%	
	Commercial/Industrial-HT	152	40.44		88.67		113.17	106.56	94.16%	
	Others	1202	15.45		28.01		31.92	13.48	42.23%	
		123440	**568.30**	**1015.34**	**901.51**	**113.83**	**932.72**	**944.94**	**101.31%**	**10%**
PITAM PURA	Residential	100533	339.20	602.66	424.35	26.17	283.04	282.02	99.64%	
	Agricultural	0	0.00		0.00		0.00	0.00	0.00%	
	Commercial/Industrial-LT	16990	106.61		96.36		141.29	141.86	100.40%	
	Commercial/Industrial-HT	78	37.07		40.74		54.30	55.23	101.71%	
	Others	786	7.75		15.04		10.93	11.31	103.49%	
		118387	**490.64**	**602.66**	**576.48**	**26.17**	**489.56**	**490.42**	**100.17%**	**4%**
ROHINI	Residential	196237	515.27	1014.10	702.94	32.29	422.86	422.24	99.85%	

Name of Division	Consumer category	Total Number of connections (Nos)	Total Connected Load (MW)	Input energy (MU)	Total energy	T&D loss (MU)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency	AT & C loss (%)
	Agricultural	0	0.00		0.00		0.00	0.00	0.00%	
	Commercial/Industrial-LT	29233	121.57		106.04		157.30	157.44	100.09%	
	Commercial/Industrial-HT	66	44.38		51.06		68.39	72.25	105.65%	
	Others	1768	51.61		121.77		106.26	106.96	100.66%	
		227304	**732.83**	**1014.10**	**981.81**	**32.29**	**754.81**	**758.88**	**100.54%**	**3%**
KIRARI	Residential	124016	163.52		272.05		126.82	126.54	99.77%	
	Agricultural	63	0.34		0.20		0.11	0.10	94.88%	
	Commercial/Industrial-LT	15285	46.15	373.88	47.02	38.98	66.23	65.57	99.00%	
	Commercial/Industrial-HT	3	1.24		0.47		0.72	0.72	100.27%	
	Others	466	6.34		15.15		18.33	19.41	105.87%	
		139833	**217.59**	**373.88**	**334.90**	**38.98**	**212.21**	**212.33**	**100.06%**	**10%**
SHALIMAR BAGH	Residential	205767	343.20		517.80		270.87	270.47	99.85%	
	Agricultural	80	0.48		0.43		0.18	0.18	97.95%	
	Commercial/Industrial-LT	23905	96.30	724.20	103.81	37.83	143.89	143.34	99.62%	
	Commercial/Industrial-HT	81	35.24		43.15		53.02	56.58	106.72%	
	Others	1108	9.64		21.17		19.46	20.30	104.32%	
		230941	**484.86**	**724.20**	**686.37**	**37.83**	**487.42**	**490.87**	**100.71%**	**5%**
TOTAL	Residential	1541583	3184.05	8950.12	4510.76	639.68	2571.29	2571.83	100.02%	

Name of Division	Consumer category	Total Number of connections (Nos)	Total Connected Load (MW)	Input energy (MU)	Total energy	T&D loss (MU)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency	AT & C loss (%)
	Agricultural	4784	32.66		17.66		10.27	9.97	97.07%	
	Commercial/Industrial-LT	265675	2200.11		2768.38		3693.27	3739.58	101.25%	
	Commercial/Industrial-HT	863	357.09		498.63		654.75	666.21	101.75%	
	Others	11126	251.95		515.00		457.18	452.27	98.92%	
		1824031	**6025.86**	**8950.12**	**8310.43**	**639.68**	**7386.76**	**7439.86**	**100.72%**	**6.48%**

5.8 Detailed Format to be annexed

General Information					
1	Name of the DISCOM	TATA POWER DELHI DISTRIBUTION LIMITED			
2	i) Year of Establishment	2002-03			
	ii) Government/Public/Private	Joint venture			
3	**DISCOM's Contact details & Address**				
i	City/Town/Village	New Delhi			
ii	District	Delhi			
iii	State	Delhi	Pin	110009	
iv	Telephone	011-66112202	Fax	011-27468042	
4	**Registered Office**				
i	Company's Chief Executive Name	Ganesh Srinivasan			
ii	Designation	CEO			
iii	Address	NDPL House, Hudson Lines, Kingsway Camp, Delhi-09			
iv	City/Town/Village	Delhi	P.O.	GTB Nagar	
v	District				
vi	State	Delhi	Pin	110009	
vii	Telephone	011-66112202	Fax	011-27468042	
5	**Nodal Officer Details***				
i	Nodal Officer Name (Designated at DISCOM's)	Mr. HC Sharma			
ii	Designation	General Manager			
iii	Address	NDPL House, Hudson Lines, Kingsway Camp, Delhi-09			
iv	City/Town/Village	Delhi	P.O.	GTB Nagar	
v	District				
vi	State	Delhi	Pin	110009	
vii	Telephone	91-1166050595	Fax		
6	**Energy Manager Details***				
i	Name	Md. Shadab Ahmad			
ii	Designation	Sr. Manager	Whether EA or EM	EM	
iii	EA/EM Registration No.	EM-5062			
iv	Telephone	91-1166050613	Fax		
v	Mobile	9717991957	E-mail ID	mdshadab.ahmad@tatapower-ddl.com	
7	**Period of Information**				
	Year of (FY) information including Date and Month (Start & End)	FY20-21, 1st April, 2020- 31st March, 2021			

Performance Summary of Electricity Distribution Companies			
1	Period of Information Year of (FY) information including Date and Month (Start & End)	FY20-21, 1st April, 2020- 31st March, 2021	
2	**Technical Details**		
(a)	**Energy Input Details**		
(i)	Input Energy Purchase (From Generation Source)	Million kwh	10085.62
(ii)	Net input energy (at DISCOM Periphery after adjusting the transmission losses and energy traded)	Million kwh	8950.12
(iii)	Total Energy billed (is the Net energy billed, adjusted for energy traded))	Million kwh	8310.43
(b)	Transmission and Distribution (T&D) loss Details	Million kwh	639.68
		%	7.15%
	Collection Efficiency	%	101%
(c)	Aggregate Technical & Commercial Loss	%	6%

I/We undertake that the information supplied in this Document and Pro-forma is accurate to the best of my knowledge and if any of the information supplied is found to be incorrect and such information result into loss to the Central Government or State Government or any of the authority under them or any other person affected, I/we undertake to indemnify such loss.

Authorised Signatory and Seal

Signature:- Md Shadab Ahmad

Name of Energy Manager*: Md. Shadab Ahmad

Registration Number: EM-5062

Name of Authorised Signatory

Name of the DISCOM:

Full Address:-

Seal

Head, Energy Audit

Form-Details of Input Infrastructure						Remarks (If any)
1	Parameters	Total	Covered during in audit	Verified by Auditor in Sample Check	Remarks (Source of data)	
i	Number of circles	5			Oganizational Structure	
ii	Number of divisions	12			Oganizational Structure	
iii	Number of sub-divisions	37			Oganizational Structure	Includes individual zones and business units
iv	Number of feeders	1280			GIS database	11kV Feeders
v	Number of DTs	7248			GIS database	Above 250kVA- 4594 nos, equal to and less than 250kVA- 2654 nos.
vi	Number of consumers	1824031			SAP System	
2	Parameters	66kV and above	33kV	11/22kV	LT	
a. i.	Number of conventional metered consumers	0	0	0	1569119	
ii	Number of consumers with 'smart' meters	0	0	0	210285	
iii	Number of consumers with 'smart prepaid' meters	0	0	0	0	All smart meters are provided with provision for 'smart prepaid metering'.
iv	Number of consumers with 'AMR' meters	4	2	1012	43601	
v	Number of consumers with 'non-smart prepaid' meters	0	0	0	5077	
vi	Number of unmetered consumers	0	0	0		
vii	Number of total consumers	4	2	1012	1823013	

b.i.	Number of conventionally metered Distribution Transformers	0	0	0	252	
ii	Number of DTs with communicable meters	0	0	0	3868	
iii	Number of unmetered DTs	0	0	0	474	As per organizational policy and incur of higher capital expenditure, distribution transformers with capacity above 250kVA are considered for installation of energy meters.
iv	**Number of total Transformers**	0	0	0	4594	
c.i.	Number of metered feeders	134	108	1280	15539	
ii	Number of feeders with communicable meters	134	108	1280	0	
iii	Number of unmetered feeders	0	0	0	0	
iv	**Number of total feeders**	134	108	1280	15539	Energy meter installed on LT side of distribution transformer acts as a source of energy recording of downstream network.
d.	Line length (ct km)	1979.1				Total Length of Bare conductors in network.
e.	Length of Aerial Bunched Cables	5556.2				
f.	Length of Underground Cables	5832				
3	**Voltage level**	**Particulars**	**MU**	**Reference**	**Remarks (Source of data)**	

i	66kV and above	Long-Term Conventional		Includes input energy for franchisees	Unable to provide details against serial numbers 3 & 4. For serial number 3, 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.
		Medium Conventional			
		Short Term Conventional			
		Banking			
		Long-Term Renewable energy			
		Medium and Short-Term RE		Includes power from bilateral/ PX/ DEEP	
		Captive, open access input		Any power wheeled for any purchase other than sale to DISCOM. Does not include input for franchisee.	
		Sale of surplus power			
		Quantum of inter-state transmission loss		As confirmed by SLDC, RLDC etc	
		Power procured from inter-state sources	0	Based on data from Form 5	
		Power at state transmission boundary	0		
ii	33kV	Long-Term Conventional			
		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	0					
iii		**Input in DISCOM wires network**	0					
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**	0					
4	**Voltage level**	**Energy Sales Particulars**	**MU**	**Reference**				
i	LT Level	DISCOM' consumers		Include sales to consumers in franchisee areas,				Majority of feeders are common to LT & HT. So input energy supplied is inseperable.

		Demand from open access, captive		unmetered consumers		
		Embedded generation used at LT level		Non DISCOM's sales		
			0	Demand from embedded generation at LT level		
		Sale at LT level				
		Quantum of LT level losses	0			
		Energy Input at LT level				
		DISCOM' consumers		Include sales to consumers in franchisee areas, unmetered consumers		Majority of feeders are common to LT & HT. So input energy supplied is inseperable.
ii	11 kV Level	Demand from open access, captive		Non DISCOM's sales		
		Embedded generation at 11 kV level used		Demand from embedded generation at 11kV level		
		Sales at 11 kV level	0			
		Quantum of Losses at 11 kV	0			
		Energy input at 11 kV level				
iii	33 kV Level	DISCOM' consumers		Include sales to consumers in franchisee areas,		

			unmetered consumers	Non DISCOM's sales	
	Demand from open access, captive			This is DISCOM and OA demand met via energy generated at same voltage level	
	Embedded generation at 33 kV or below level				
	Sales at 33 kV level	0			
	Quantum of Losses at 33 kV	0			
	Energy input at 33kV Level				
	DISCOM' consumers		Include sales to consumers in franchisee areas, unmetered consumers		
iv > 33 kV	Demand from open access, captive			Non DISCOM's sales	
	Cross border sale of energy				
	Sale to other DISCOMs				
	Banking				
	Energy input at > 33kV Level				
	Sales at 66kV and above (EHV)	0			
	Total Energy Requirement	0			
	Total Energy Sales	0			

Energy Accounting Summary

5	DISCOM	Input (in MU)	Sale (in MU)	Loss (in MU)	Loss %	
i	LT					Majority of feeders are common to LT & HT. So input energy supplied is inseperable.
ii	11 Kv					
iii	33 kv					
iv	> 33 kv					
6	Open Access, Captive	Input (in MU)	Sale (in MU)	Loss (in MU)		
i	LT					Need clarification on this section. When consumer is in open access mode, sale is not from utility.
ii	11 Kv					
iii	33 kv					
iv	> 33 kv					

Loss Estimation for DISCOM	
T&D loss	0
D loss	0
T&D loss (%)	#DIV/0!
D loss (%)	#DIV/0!

Details of Division Wise Losses (See note below**)

Division Wise Losses

Period From 1st April, 2020 To 31st March, 2021

S.No	Name of circle	Circle code	Name of Division	Consumer profile								Energy parameters					Losses		Commercial Parameter			AT & C loss (%)
													Billed energy (MU)									
				Consumer category	No of connection metered (Nos)	No of connection Un-metered (Nos)	Total Number of connections (Nos)	% of number of connections	Connected Load metered (MW)	Connected Load Un-metered (MW)	Total Connected Load (MW)	% of connected load	Input energy (MU)	Metered energy	Unmetered/assessment energy	Total energy	% of energy consumption	T&D loss (MU)	T&D loss (%)	Billed Amount in Rs. Crore	Collected Amount in Rs. Crore	Collection Efficiency	
1	URBAN CIRCL		BADLI	Residential	96876	0	96876	82%	142.265	0	142.265	39%		216.9362	0	216.9362482	43%			151.13	100.442975	66.46%	
				Agricultural	530	0	530	0%	3.752	0	3.752	1%		2.077436	0	2.07743635	0%			0.24	0.8720759	363.36%	
				Commercial/Industrial-LT	19852	0	19852	17%	194.533	0	194.533	54%	372.6397	248.6255	0	248.6254657	49%	66.39422	12%	309.28	337.360681	109.08%	
				Commercial/Industrial-HT	54	0	54	0%	13.692	0	13.692	4%		20.70445	0	20.70444634	4%			18.1	24.5935086	135.89%	
				Others	711	0	711	1%	7.385	0	7.385	2%		17.90189	0	17.90188464	4%			10.5177645	32.8940821	312.75%	
	Sub-total				118023	0	118023	100%	361.627	0	361.627	100%	372.6397	506.2455	0	506.2454915	100%	66.39422	12%	489.267784	496.165322	101.41%	10%
2	I-URBAN CIR		BAWANA	Residential	63139	0	63139	78%	93.681	0	93.681	14%		134.7942	0	134.794238	13%			69.06	68.8136868	99.64%	
				Agricultural	1791	0	1791	2%	9.976	0	9.976	2%		4.516986	0	4.516986	0%			2.98	2.87206182	96.38%	
				Commercial/Industrial-LT	21099	0	21099	24%	537.792	0	537.792	82%	1211.328	857.6935	0	857.693547	82%	161.4792	13%	1084.06	1103.4529	101.79%	
				Commercial/Industrial-HT	34	0	34	0%	8.812	0	8.812	1%		18.239841	0	18.239841	2%			22.13	22.2934348	100.74%	
				Others	567	0	567	1%	9.538	0	9.538	1%		34.60379	0	34.60379274	3%			28.3004973	30.3735122	103.66%	
	Sub-total				86630	0	86630	100%	659.799	0	659.799	100%	1211.328	1049.848	0	1049.848405	100%	161.4792	13%	1207.5305	1227.80559	101.68%	12%
3	TOWN CIRCL		CIVIL LINES	Residential	108647	0	108647	81%	284.554	0	284.554	55%		385.4136	0	385.413634	55%			220.37	245.21977	102.44%	
				Agricultural	2	0	2	0%	0.008	0	0.008	0%		0.000447	0	0.000447	0%			0	0.0006433	0.00%	
				Commercial/Industrial-LT	23900	0	23900	18%	102.427	0	102.427	20%	717.6548	88.82376	0	88.823762	13%	19.59327	3%	132.84	133.504272	100.50%	
				Commercial/Industrial-HT	67	0	67	0%	47.628	0	47.628	9%		57.19688	0	57.196883	8%			99.92	101.418179	101.50%	
				Others	1061	0	1061	1%	81.546	0	81.546	16%		166.6268	0	166.6267814	24%			142.056784	132.842553	93.51%	
	Sub-total				133677	0	133677	100%	516.163	0	516.163	100%	717.6548	698.0615	0	698.0615074	100%	19.59327	3%	634.186784	612.985418	99.80%	3%
4	TOWN CIRCL		SHAV PURA	Residential	116732	0	116732	81%	266.22	0	266.22	48%		369.2062	0	369.206239	50%			217.41	217.418147	100.00%	
				Agricultural	0	0	0	0%	0	0	0	0%		0	0	0	0%			0	0	0.00%	
				Commercial/Industrial-LT	27213	0	27213	19%	238.826	0	238.826	43%	776.536	278.4334	0	278.433432	38%	43.56784	6%	375.33	382.209926	101.83%	
				Commercial/Industrial-HT	127	0	127	0%	40.405	0	40.405	7%		68.88314	0	68.883141	9%			81.26	81.2772918	99.90%	
				Others	811	0	811	1%	8.866	0	8.866	2%		16.44539	0	16.44539494	2%			13.5399605	8.90108359	65.74%	
	Sub-total				144883	0	144883	100%	554.117	0	554.117	100%	776.536	732.9682	0	732.9681869	100%	43.56784	6%	667.639969	689.806448	100.32%	5%
5	METRO CIRCL		MANGOL PU	Residential	172277	0	172277	88%	261.21	0	261.21	70%		426.0843	0	426.084304	76%			208.94	208.730944	99.90%	
				Agricultural	1	0	1	0%	0.038	0	0.038	0%		0.022696	0	0.022696	0%			0	0	0.00%	
				Commercial/Industrial-LT	21989	0	21989	11%	93.849	0	93.849	25%	596.1414	100.5188	0	100.518784	18%	32.29803	5%	188.05	188.951108	100.65%	
				Commercial/Industrial-HT	23	0	23	0%	9.269	0	9.269	2%		17.22603	0	17.226027	3%			19.61	20.6838827	105.47%	
				Others	926	0	926	0%	6.951	0	6.951	2%		19.9916	0	19.99160152	4%			17.2315688	19.9280782	115.65%	
	Sub-total				195216	0	195216	100%	371.317	0	371.317	100%	596.1414	563.8434	0	563.8434125	100%	32.29803	5%	383.831569	388.293712	101.16%	4%
6	METRO CIRCL		ROOEL TOW	Residential	142130	0	142130	86%	322.65	0	322.65	67%		441.8493	0	441.849348	74%			265.72	265.424542	99.89%	
				Agricultural	1	0	1	0%	0.005	0	0.005	0%		0.002562	0	0.002562	0%			0	0.00140364	0.00%	
				Commercial/Industrial-LT	21526	0	21526	13%	105.838	0	105.838	22%	627.7652	93.78072	0	93.780717	16%	31.35317	5%	138.36	138.513462	100.11%	
				Commercial/Industrial-HT	45	0	45	0%	13.874	0	13.874	3%		18.97571	0	18.975713	3%			25.41	25.550959	100.55%	
				Others	878	0	878	1%	37.267	0	37.267	8%		41.80366	0	41.80366385	7%			42.1266627	40.3124512	95.69%	
	Sub-total				164580	0	164580	100%	479.634	0	479.634	100%	627.7652	596.412	0	596.4120039	100%	31.35317	5%	471.616663	469.803008	99.62%	5%
7	TOWN CIRCL		MOTI NAGA	Residential	113015	0	113015	80%	294.665	0	294.665	50%		384.6169	0	384.616912	56%			235.76	235.116126	99.73%	
				Agricultural	2	0	2	0%	0.007	0	0.007	0%		0.006508	0	0.006508	0%			0	0.00058736	0.00%	
				Commercial/Industrial-LT	27125	0	27125	19%	219.477	0	219.477	37%	717.8746	207.5716	0	207.571645	30%	35.88673	5%	306.08	307.829627	100.57%	
				Commercial/Industrial-HT	133	0	133	0%	65.037	0	65.037	11%		73.30992	0	73.309921	11%			98.62	99.0497531	100.44%	
				Others	842	0	842	1%	9.803	0	9.803	2%		16.48291	0	16.48290583	2%			15.5143456	15.5644633	100.32%	
	Sub-total				141117	0	141117	100%	588.989	0	588.989	100%	717.8746	681.9879	0	681.9878918	100%	35.88673	5%	655.974346	657.560557	100.24%	5%
8	CITY CIRCLE		NARELA	Residential	102214	0	102214	83%	157.619	0	157.619	28%		234.727	0	234.7270268	26%			80.31	129.397039	161.12%	
				Agricultural	2314	0	2314	2%	18.057	0	18.057	3%		10.40188	0	10.40187665	1%			6.76	5.94184561	87.90%	
				Commercial/Industrial-LT	17558	0	17558	14%	338.734	0	338.734	59%	1015.843	539.7002	0	539.7001573	60%	113.8289	11%	700.56	689.555992	98.43%	
				Commercial/Industrial-HT	152	0	152	0%	40.438	0	40.438	7%		88.67071	0	88.67070866	10%			113.17	106.562479	94.16%	
				Others	1202	0	1202	1%	15.449	0	15.449	3%		28.01383	0	28.01382677	3%			31.9177257	13.4799238	42.23%	

Sub-total					123440	0	123440	100%	568.297	0	568.297	100%	1015.343	901.5136	0	901.5135983	100%	113.8289	11%	932.717726	944.93758	101.31%	10%
				Residential	100533	0	100533	85%	339.202	0	339.202	69%		424.3471	0	424.347072	74%			283.04	282.022456	99.64%	
				Agricultural	0	0	0	0%	0	0	0	0%		0	0	0	0%			0	5.65666-05	0.00%	
9	-URBAN CIR		PITAM PURA	Commercial/Industrial-LT	16990	0	16990	14%	106.614	0	106.614	22%	602.6565	98.35534	0	96.355342	17%	26.17707	4%	141.29	141.856816	100.40%	
				Commercial/Industrial-HT	78	0	78	0%	37.07	0	37.07	8%		40.73932	0	40.739315	7%			54.3	55.2259547	101.71%	
				Others	786	0	786	1%	7.752	0	7.752	2%		15.03768	0	15.03767755	3%			10.9285505	11.3098836	103.49%	
Sub-total					118387	0	118387	100%	490.638	0	490.638	100%	602.6565	576.4794	0	576.4794065	100%	26.17707	4%	489.55855	490.415167	100.17%	4%
				Residential	196237	0	196237	86%	515.267	0	515.267	70%		702.937	0	702.936973	72%			422.86	422.237338	99.85%	
				Agricultural	0	0	0	0%	0	0	0	0%		0	0	0	0%			0	0	0.00%	
10	IETRO CIRC		ROHINI	Commercial/Industrial-LT	29233	0	29233	13%	121.574	0	121.574	17%	1014.1	106.0431	0	106.043144	11%	32.2894	3%	157.3	157.435045	100.09%	
				Commercial/Industrial-HT	66	0	66	0%	44.377	0	44.377	6%		51.06045	0	51.060452	5%			68.39	72.2512996	105.65%	
				Others	1768	0	1768	1%	51.614	0	51.614	7%		121.7701	0	121.7701215	12%			106.263493	106.960191	100.66%	
Sub-total					227304	0	227304	100%	732.832	0	732.832	100%	1014.1	981.8107	0	981.8106905	100%	32.2894	3%	754.813493	758.883873	100.54%	3%
				Residential	124016	0	124016	89%	163.52	0	163.52	75%		272.05	0	272.05008	81%			126.82	126.534539	99.77%	
				Agricultural	63	0	63	0%	0.337	0	0.337	0%		0.199809	0	0.199809	0%			0.11	0.10436615	94.88%	
11	IRBAN CIRCL		KIRARI	Commercial/Industrial-LT	15285	0	15285	11%	46.146	0	46.146	21%	373.8793	47.02394	0	47.023936	14%	38.98348	10%	66.23	65.5655756	99.00%	
				Commercial/Industrial-HT	3	0	3	0%	1.242	0	1.242	1%		0.469974	0	0.469974	0%			0.72	0.72195729	100.27%	
				Others	466	0	466	0%	6.341	0	6.341	3%		15.15211	0	15.15211151	5%			18.3313395	19.4066196	105.87%	
Sub-total					139833	0	139833	100%	217.586	0	217.586	100%	373.8793	334.8959	0	334.8958605	100%	38.98348	10%	212.211339	212.333058	100.06%	10%
				Residential	205767	0	205767	89%	343.198	0	343.198	71%		517.7949	0	517.794939	75%			270.87	270.473025	99.85%	
				Agricultural	80	0	80	0%	0.48	0	0.48	0%		0.433977	0	0.433977	0%			0.18	0.17631173	97.95%	
12	IRBAN CIRCL		ALIMAR BA	Commercial/Industrial-LT	23905	0	23905	10%	96.303	0	96.303	20%	724.199	103.8145	0	103.814451	15%	37.83089	5%	143.89	143.341778	99.62%	
				Commercial/Industrial-HT	81	0	81	0%	35.242	0	35.242	7%		43.15139	0	43.151385	6%			53.02	56.5827316	106.72%	
				Others	1108	0	1108	0%	9.638	0	9.538	2%		21.17333	0	21.17332793	3%			19.4555283	20.2965032	104.32%	
Sub-total					230941	0	230941	100%	484.861	0	484.861	100%	724.199	686.3681	0	686.3680799	100%	37.83089	5%	487.415528	490.870349	100.71%	5%
				Residential	0	0	0	0%	0	0	0	0%		0	0	0	0%			0	0	0.00%	
				Agricultural	0	0	0	0%	0	0	0	0%		0	0	0	0%			0	0	0.00%	
13				Commercial/Industrial-LT	0	0	0	0%	0	0	0	0%	0	0	0	0	0%	0	0%	0	0	0.00%	
				Commercial/Industrial-HT	0	0	0	0%	0	0	0	0%		0	0	0	0%			0	0	0.00%	
				Others	0	0	0	0%	0	0	0	0%		0	0	0	0%			0	0	0.00%	
Sub-total					0	0	0	100%	0	0	0	100%	0	0	0	0	100%	0	0%	0	0	0.00%	100%
				Residential	0	0	0	0%	0	0	0	0%		0	0	0	0%			0	0	0.00%	
				Agricultural	0	0	0	0%	0	0	0	0%		0	0	0	0%			0	0	0.00%	
14				Commercial/Industrial-LT	0	0	0	0%	0	0	0	0%	0	0	0	0	0%	0	0%	0	0	0.00%	
				Commercial/Industrial-HT	0	0	0	0%	0	0	0	0%		0	0	0	0%			0	0	0.00%	
				Others	0	0	0	0%	0	0	0	0%		0	0	0	0%			0	0	0.00%	
Sub-total					0	0	0	100%	0	0	0	100%	0	0	0	0	100%	0	0%	0	0	0.00%	100%
				Residential	0	0	0	0%	0	0	0	0%		0	0	0	0%			0	0	0.00%	
				Agricultural	0	0	0	0%	0	0	0	0%		0	0	0	0%			0	0	0.00%	
15				Commercial/Industrial-LT	0	0	0	0%	0	0	0	0%	0	0	0	0	0%	0	0%	0	0	0.00%	
				Commercial/Industrial-HT	0	0	0	0%	0	0	0	0%		0	0	0	0%			0	0	0.00%	
				Others	0	0	0	0%	0	0	0	0%		0	0	0	0%			0	0	0.00%	
Sub-total					0	0	0	100%	0	0	0	100%	0	0	0	0	100%	0	0%	0	0	0.00%	100%
				Residential	0	0	0	0%	0	0	0	0%		0	0	0	0%			0	0	0.00%	
				Agricultural	0	0	0	0%	0	0	0	0%		0	0	0	0%			0	0	0.00%	
16				Commercial/Industrial-LT	0	0	0	0%	0	0	0	0%	0	0	0	0	0%	0	0%	0	0	0.00%	
				Commercial/Industrial-HT	0	0	0	0%	0	0	0	0%		0	0	0	0%			0	0	0.00%	
				Others	0	0	0	0%	0	0	0	0%		0	0	0	0%			0	0	0.00%	
Sub-total					0	0	0	100%	0	0	0	100%	0	0	0	0	100%	0	0%	0	0	0.00%	100%
				Residential	0	0	0	0%	0	0	0	0%		0	0	0	0%			0	0	0.00%	
				Agricultural	0	0	0	0%	0	0	0	0%		0	0	0	0%			0	0	0.00%	
17				Commercial/Industrial-LT	0	0	0	0%	0	0	0	0%	0	0	0	0	0%	0	0%	0	0	0.00%	
				Commercial/Industrial-HT	0	0	0	0%	0	0	0	0%		0	0	0	0%			0	0	0.00%	
				Others	0	0	0	0%	0	0	0	0%		0	0	0	0%			0	0	0.00%	
Sub-total					0	0	0	100%	0	0	0	100%	0	0	0	0	100%	0	0%	0	0	0.00%	100%
				Residential	0	0	0	0%	0	0	0	0%		0	0	0	0%			0	0	0.00%	

		Commercial/Industrial-HT	0	0	0	#DIV/0!	0	0	0	#DIV/0!		0	0	0	#DIV/0!			0	0	0.00%	
		Others	0	0	0	#DIV/0!	0	0	0	#DIV/0!		0	0	0	#DIV/0!			0	0	0.00%	
	Sub-total		0	0	0	100%	0	0	0	100%	0	0	0	0	100%	0	0%	0	0	0.00%	100%
110		Residential	0	0	0	#DIV/0!	0	0	0	#DIV/0!		0	0	0	#DIV/0!			0	0	0.00%	
		Agricultural	0	0	0	#DIV/0!	0	0	0	#DIV/0!		0	0	0	#DIV/0!			0	0	0.00%	
		Commercial/Industrial-LT	0	0	0	#DIV/0!	0	0	0	#DIV/0!	0	0	0	0	#DIV/0!	0	0%	0	0	0.00%	
		Commercial/Industrial-HT	0	0	0	#DIV/0!	0	0	0	#DIV/0!		0	0	0	#DIV/0!			0	0	0.00%	
		Others	0	0	0	#DIV/0!	0	0	0	#DIV/0!		0	0	0	#DIV/0!			0	0	0.00%	
	Sub-total		0	0	0	100%	0	0	0	100%	0	0	0	0	100%	0	0%	0	0	0.00%	100%
76	Total	Residential	1541583	0	1541583	85%	3184.051	0	3184.051	53%		4510.757	0	4510.756964	54%			2571.29	2571.83149	100.02%	
		Agricultural	4784	0	4784	0%	32.66	0	32.66	1%		17.6623	0	17.662298	0%			10.27	9.96935209	97.07%	
		Commercial/Industrial-LT	265675	0	265675	15%	2200.113	0	2200.113	37%	8950.117	2768.384	0	2768.384363	33%	639.6822	7%	3693.27	3739.57737	101.25%	
		Commercial/Industrial-HT	863	0	863	0%	357.086	0	357.086	6%		498.6278	0	498.627807	6%			654.75	666.213132	101.75%	
		Others	11126	0	11126	1%	251.95	0	251.95	4%		515.0031	0	515.0031025	6%			457.184249	452.268744	98.92%	
77	At company level		1824031	0	1824031	100%	6025.85	0	6025.86	100%	8950.117	8310.435	0	8310.434534	100%	639.6822	7%	7386.76425	7439.86009	100.72%	6%

** Note - It shall be mandatory to record the energy supplied separately for each category of consumers which is being provided a separate rate of subsidy in the tariff, by the state government, so that the subsidy due for the electricity distribution company is quarterly calculated by multiplying the energy supplied to each of such category of consumers by the applicable rate of subsidy notified by the state government.

Color code	Parameter
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0	Please enter numeric value or 0
	Formula protected

I/We undertake that the information supplied in this Document and Pro-forma is accurate to the best of my knowledge and if any of the information supplied is found to be incorrect and such information result into loss to the Central Government or State Government or any of the authority under them or any other person affected, I/we undertake to indemnify such loss.

Authorised Signatory and Seal

Name of Authorised signatory:

Name of the DISCOM:

Full Address:-

Seal

Sarmistha
HOC, Energy Auditor

Signature: Md. Shadab Ahmad

Name of Energy Manager: Md. Shadab Ahmad

Registration Number: EM-5062

Form-Input energy(Details of Input energy & Infrastructure)				Remarks (If any)
A. Summary of energy input & Infrastructure				
S.No	Parameters	Period From 1st April, 2020 To 31st March, 2021	Remarks (Source of data)	
A.1	Input Energy purchased (MU)	10085.62	Power purchase invoice	Provisional values, will be revised at year end.
A.2	Transmission loss (%)	3%	Power purchase invoice	
A.3	Transmission loss (MU)	324.346		
A.4	Energy sold outside the periphery(MU)	811.15689	Power purchase invoice	PGCIL & DTL losses
A.5	Open access sale (MU)	68.635967	From Commercial data	Provisional values, will be revised at year end.
A.6	EHT sale	90	From Regulatory data	Energy supplies to consumers on open access mode, in the licensee area of Tata Power-DDL.
A.7	Net input energy (received at DISCOM periphery or at distribution point)-(MU)	9012.06		
A.8	Is 100% metering available at 66/33 kV (Select yes or no from list)	Yes		
A.9	Is 100% metering available at 11 kV (Select yes or no from list)	Yes		
A.10	% of metering available at DT	90%	Energy Audit and GIS Data (above 250kVA)	
A.11	% of metering available at consumer end	100%	From Billing data base	
A.12	No of feeders at 66kV voltage level	134	GIS Data base	
A.13	No of feeders at 33kV voltage level	108	GIS Data base	
A.14	No of feeders at 11kV voltage level	1280	GIS Data base	

A.15	No of LT feeders level	15539	GIS Data base
A.16	Line length (ckt. km) at 66kV voltage level	536.92	GIS Data base
A.17	Line length (ckt. km) at 33kV voltage level	477.11	GIS Data base
A.18	Line length (ckt. km) at 11kV voltage level	4999.2	GIS Data base
A.19	Line length (km) at LT level	7354.1	GIS Data base
A.20	Length of Aerial Bunched Cables	5556.2	GIS Data base
A.21	Length of Underground Cables	5832	GIS Data base
A.22	HT/LT ratio	0.8176704	

B. Meter reading of Input energy at injection points																
S.No	Zone	Circle	Voltge Level (KVA)	Feeder ID	Feeder Name	Feeder Metering Status (Metered/ unmetered/ AMI/AMR)	Status of Meter (Functional /Non-functional)	Meterin g Date	Feeder Type (Agri/ Industrial /Mixed)	Status of Communication			Period from...to...			
								Date of last actual meter reading/ communic ation		% data received through automatica lly if feeder AMR/AMI	Number of hours when meter was unable to communicat e in period	Total Number of hours in the period	Meter S.No	CT/PT ratio	Import (MU)	Export (MU)
B.1			66		Narela T X 1	Metered	Functional						4864963	1000	253.49	0.00
B.2			66		Narela T X 2	Metered	Functional						5128462	500	279.90	0.00
B.3			66		Narela T X 3	Metered	Functional						4865052	1000	238.43	0.00
B.4			11		LOCAL TR Narela	Metered	Functional						4902583	-10	-0.20	0.00
B.5			66		Gopal Pur T X 2	Metered	Functional						4864976	-625	250.44	0.00
B.6			33		Gopal Pur T X 1	Metered	Functional						5128429	-500	195.43	0.00
B.7			33		Gopal Pur T X 3	Metered	Functional						4864924	2000	262.91	0.00
B.8			11		LOCAL TR Gopalpur	Metered	Functional						4865091	1000	-0.18	0.00
B.9			220		Kasmeri Gate 220 KV DMRC 2	Metered	Functional						4902482	1000	42.16	0.00
B.10			220		Kasmeri Gate 220 KV DMRC 1	Metered	Functional						5128473	-7.5	23.85	0.00
B.11			33		Kasmeri Gate 33 KV Civil Line-1	Metered	Functional						4864791	1000	29.25	0.00
B.12			11		ISBT K.Gate (F/o No.II Mahavir Ice factory)	Metered	Functional						4865074	500	5.71	0.00
B.13			33		Kasmeri Gate 33 KV Civil Line-2	Metered	Functional						4864867	1000	17.44	0.00

B.14		33	Kasmeri Gate 20 MVA TR	Metered	Functional					4864797	266.66	21.31	0.00
B.15		11	LOCAL TR K Gate	Metered	Functional					4902530	133.33	-0.11	0.00
B.16		11	BUS COUPLER	Metered	Functional					4902528	500	-0.01	0.00
B.17		33	O/G Payal Ckt	Metered	Functional					4864836	100	61.39	0.00
B.18		33	O/G REWARI LINE	Metered	Functional					4865182	-7.5	51.60	0.00
B.19		33	INDER PURI Ckt-1	Metered	Functional					4864865	-400	65.86	0.00
B.20		33	33 kV 16 MVA TR-1	Metered	Functional					4864880	1000	27.03	0.00
B.21		33	33 kV 16 MVA TR-2	Metered	Functional					5295128	4000	36.75	0.00
B.22		11	Gopi Nath Bazaar (-ve)	Metered	Functional					5295192	1000	-10.88	0.00
B.23		11	LOCAL TR naraina	Metered	Functional					4902602	500	-0.34	0.00
B.24		33	INDER PURI Ckt-2	Metered	Functional					4864873	50	66.34	0.00
B.25		33	33KV Naraina Pandav Nagar feeder	Metered	Functional					5295124	-100	28.85	0.00
B.26		33	Rohtak Road O/G 33 KV Rama Road	Metered	Functional					4865179	-100	39.92	0.00
B.27		33	Rohtak Road O/G 33 KV Shahzada Bagh-2	Metered	Functional					4864795	1000	5.83	0.00
B.28		33	Rohtak Road O/G 33 KV Rampura-1	Metered	Functional					5295125	100	79.19	0.00
B.29		33	Rohtak Road O/G 33 KV Rampura-2	Metered	Functional					5295126	3750	75.91	0.00
B.30		11	BUS COUPLER	Metered	Functional					4902559	1000	0.58	0.00
B.31		33	Rohtak Road T X 3	Metered	Functional					4865185	140.63	6.48	0.00
B.32		33	O/G 33 kV DLF Kirti Nagar	Metered	Functional					4864821	166.67	67.71	0.00

B.33		33		SMB T X 1	Metered	Functional						4864930	300	284.34	0.00
B.34		66		SMB T X 2	Metered	Functional						5128411	625	241.41	0.00
B.35		220		SMB DMRC Jahangirpuri	Metered	Functional						4902494	150	19.53	0.00
B.36		11		LOCAL TR SMB	Metered	Functional						4902561	1000	-0.55	0.00
B.37		33		SMB T X 3	Metered	Functional						4864922	1000	345.70	0.00
B.38		220		DMRC SMB RSS	Metered	Functional						4902484	1000	1.88	0.00
B.39		66		Rohini 220 Kv T X 1	Metered	Functional						4864964	-7.5	209.27	0.00
B.40		66		Rohini 220 KV T X 2	Metered	Functional						4865022	1000	206.65	0.00
B.41		66		Rohini 220 KV T X 3	Metered	Functional						4864997	500	264.13	0.00
B.42		66		Rohini 220 KV T X 4	Metered	Functional						5295166	1000	240.30	0.00
B.43		11		LOCAL TR Rohini	Metered	Functional						4902597	1000	-0.39	0.00
B.44		66		Kanjawala T X 1	Metered	Functional						4865041	1000	289.23	0.00
B.45		66		Kanjawala T X 2	Metered	Functional						5295182	1000	328.96	0.00
B.46		11		LOCAL TR Kanjawala	Metered	Functional						4865071	500	-0.30	0.00
B.47		66		66 KV DMRC MUNDKA	Metered	Functional						5128439	-100	-5.38	0.00
B.48		66		Kanjawala T X 3	Metered	Functional						4864788	1000	419.79	0.00
B.49		33		Subzi Mandi T X 2	Metered	Functional						5295137	500	289.88	0.00
B.50		33		O/G BG Rd-1 (To BSES)	Metered	Functional						4864831	-266.66	-40.75	0.00
B.51		33		O/G BG Rd-2 (To BSES)	Metered	Functional						4864825	-800	-67.65	0.00
B.52		33		SubziMandi T X 1	Metered	Functional						4864916	2000	315.51	0.00

B.53		11	LOCAL TR Subzimandi	Metered	Functional							4902594	1000	-0.11	0.00
B.54		66	Bawana 400 KV I/C 100 MVA TR. No.1	Metered	Functional							4864911	-1000	272.94	0.00
B.55		66	Rohin-II 220 KV 66kV I/C No 1	Metered	Functional							4902505	-133.33	305.86	0.00
B.56		66	Rohini II 220 KV 66kV I/C No 2	Metered	Functional							5128468	1000	306.11	0.00
B.57		33	Wazir Pur 220 KV 33kV I/C No 1	Metered	Functional							4864903	-100	278.85	0.00
B.58		33	Wazir Pur 220 KV 33kV I/C No 2	Metered	Functional							4864946	1000	318.04	0.00
B.59		33	33 KV Peeragarhi CKT to CC ranibagh	Metered	Functional							4864901	2000	77.09	0.00
B.60		33	Sudarshan Park 33KV Line-1	Metered	Functional							4864810	1000	97.13	0.00
B.61		33	PUSA Ckt-I	Metered	Functional							4864843	1000	44.96	0.00
B.62		33	PUSA Ckt-II	Metered	Functional							5295123	1000	0.00	0.00
B.63		11	DCM Nuruddin Park	Metered	Functional							4902579	250	4.88	0.00
B.64		11	DCM chowk	Metered	Functional							4902585	200	4.85	0.00
B.65		11	Sadar-S/S	Metered	Functional							4865090	1000	6.31	0.00
B.66		11	CSA colony	Metered	Functional							4865088	500	0.00	0.00
B.67		33	DMS BSES 33 kV Pandav Nagar	Metered	Functional							5295200	500	0.01	0.00
B.68		11	DMS BSES Shadi Kham Pur(Ranjeet nagar c. centre)	Metered	Functional							4902538	500	0.00	0.00

B.69		11	DMS BSES 69 NG Road via Breakfast-2	Metered	Functional						4902549	166.66	0.00	0.00	0.00
B.70		11	DMS BSES H Block Kirti Nagar	Metered	Functional						4902578	100	0.00	0.00	0.00
B.71		11	DMS BSES J Block Kirti Nagar	Metered	Functional							100	0.00	0.00	0.00
B.72		11	DMS BSES Philips	Metered	Functional						4902568	-800	4.96	0.00	0.00
B.73		66	Nangloi Ckt 2	Metered	Functional						4864787	800	-74.14	0.00	0.00
B.74		66	Mundka to MGP-1	Metered	Functional						4864983	-800	150.51	0.00	0.00
B.75		66	MGP T-off to Nangloi Ckt (-ve)	Metered	Functional						4864971	2000	0.00	0.00	0.00
B.76		66	Mundka to Sawda Ghevra	Metered	Functional						4864950	100	22.03	0.00	0.00
B.77		11	Tibia College	Metered	Functional						4902540	100	9.43	0.00	0.00
B.78		11	EAST PARK ROAD	Metered	Functional						4902520	100	8.77	0.00	0.00
B.79		11	Manak Pura	Metered	Functional						4902536	100	6.34	0.00	0.00
B.80		11	Ramesh Nagar-1	Metered	Functional						4902572	100	0.00	0.00	0.00
B.81		11	Bali Nagar	Metered	Functional						4902541	100	4.74	0.00	0.00
B.82		11	ESI Hospital and Rameshnagar-2	Metered	Functional						4902539	100	5.38	0.00	0.00
B.83		11	Moti Nagar Tanga stand	Metered	Functional						4902548	100	0.00	0.00	0.00
B.84		11	41 Rama Road	Metered	Functional						4865089	1333.33	0.00	0.00	0.00
B.85		11	51 Rama Road	Metered	Functional						4902565	750	0.91	0.00	0.00
B.86		11	Nazafgarh Road	Metered	Functional						4902564	1000	7.58	0.00	0.00
B.87		11	Moti Nagar Kiosk	Metered	Functional						4902591	400	3.77	0.00	0.00
B.88		11	Sylvania(Philips)	Metered	Functional						4902529	400	0.00	0.00	0.00
B.89		66	sagarpur	Metered	Functional						5128441	-200	20.26	0.00	0.00
B.90		66	Pappan Kalan	Metered	Functional						4864960	-187.5	130.68	0.00	0.00

B.91		11	BSES NDPL (EX) ON BUS 1&2	Metered	Functional						4902577	-187.5	1.37	0.00
B.92		11	NDPL BSES (EX) ON BUS 2&3	Metered	Functional						4902525	-250	-0.03	0.00
B.93		33	33 kV Vishal -1	Metered	Functional						4865158	-100	-19.99	0.00
B.94		33	33 kV Vishal -2	Metered	Functional						4864816	1250	-4.76	0.00
B.95		33	33 kV Mayapuri	Metered	Functional						4864808	-187.5	-16.64	0.00
B.96		66	Rewari Line 66/11 Tr 3	Metered	Functional						4865005	1000	-27.40	0.00
B.97		33	Rewari Line 33/11 Tr 1	Metered	Functional						4864822	333.33	-33.36	0.00
B.98		33	I/C from Rohtak road	Metered	Functional						4864866	2000	36.23	0.00
B.99		33	Vishal (Imp/Exp)	Metered	Functional						4865149	-100	-0.12	0.00
B.100		66	Bawana 220 T X 2	Metered	Functional						4864992	500	257.16	0.00
B.101		66	Bawana 220 T X 3	Metered	Functional						4864827	2000	252.29	0.00
B.102		66	Bawana 220 T X 1	Metered	Functional						4864973	1	385.31	0.00
B.103		11	Local Tr	Metered	Functional						4902543	1	-0.24	0.00
B.104		66	DELHI MSW								4864958		133.88	0.00
B.105		66	Railway Ckt-1								4864952		-11.04	0.00
B.106		66	Railway Ckt-2								5129958		-14.60	0.00
B.107		66	SMB T X 4								4000153 5		138.48	0.00
B.108		66	Gopal Pur T X 4 (160 MVA)								5295184		264.28	0.00
B.109		66	66kV Incomer 1-220kV SGTN								XF46524 6		16.02	0.00
B.110		66	66kV Incomer 2-220kV SGTN								XF46524 8		73.44	0.00

B.13401	Total (MU)				9012.06	0.00
B.13402	Net input energy at DISCOM periphery (MU)			9012.06		

Color code			Parameter
			Please enter voltage level or leave blank
			Please enter feeder id and name or leave blank
			Enter meter no or leave blank
			Enter CT/PT ratio or leave blank
0			Please enter numeric value or 0
			Please select yes or no from list
			Formula protected

I/We undertake that the information supplied in this Document and Pro-forma is accurate to the best of my knowledge and if any of the information supplied is found to be incorrect and such information result into loss to the Central Government or State Government or any of the authority under them or any other person affected, I/we undertake to indemnify such loss.

Authorised Signatory and Seal

Signature:- Md. Shadab Ahmad

Name of Energy Manager*: Md. Shadab Ahmad

Registration Number: EM-5062.

Name of Authorised Signatory

Name of the DISCOM:

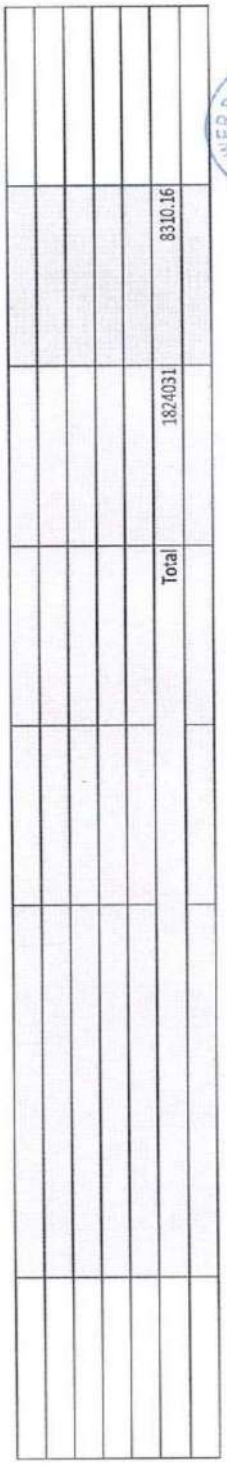
Full Address:-

Seal

TATA POWER DELHI DISTRIBUTION LIMITED

HOG, Energy Audit

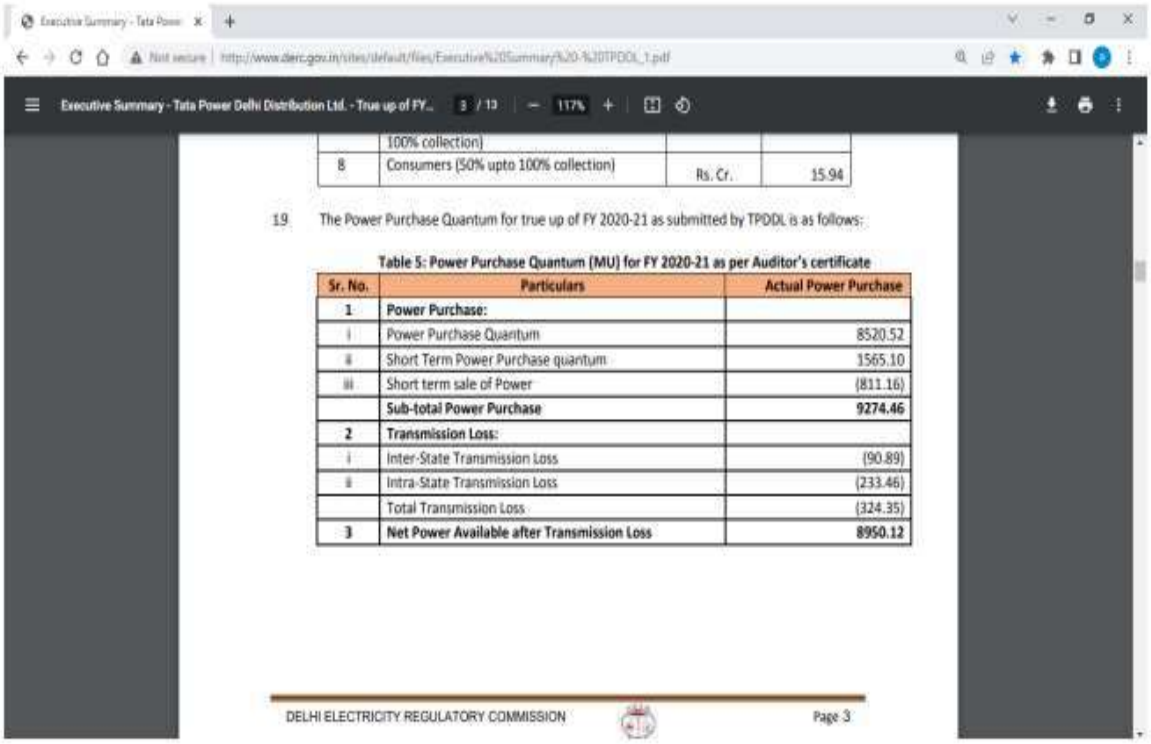
(Details of Consumers)						
Summary of Energy						
Period From 1st April, 2020 To 31st March, 2021						
S.No	Type of Consumers	Category of Consumers (EHT/HT/LT/Others)	Voltage Level (In Voltage)	No of Consumers	Total Consumption (In MU)	Remarks (Source of data)
1	Domestic	HT/LT	11/.22/.4	1540657	4534.709989	
2	Commercial	LT		236046	942.8584237	
3	IP Sets					
4	Hor. & Nur. & Coffee/Tea & Rubber (Metered)					
5	Hor. & Nur. & Coffee/Tea & Rubber (Flat)					
6	Heating and Motive Power					
7	Water Supply			1311	257.983066	
8	Public Lighting			4907	118.48063	
9	HT Water Supply					
10	HT Industrial			384	239.844313	
11	Industrial (Small)					
12	Industrial (Medium)					
13	HT Commercial			471	276.370495	
14	Applicable to Government Hospitals & Hospitals					
15	Lift Irrigation Schemes/Lift Irrigation Societies					
16	HT Res. Apartments Applicable to all areas					
17	Mixed Load					
18	Government offices and department					
19	Others-1 (if any , specify in remarks)			40255	1939.91	
20	Others-2 (if any , specify in remarks)					
21	Others-3 (if any , specify in remarks)					
22	Others-4 (if any , specify in remarks)					
23	Others-5 (if any , specify in remarks)					


8310.16
1824031
Total

5.9 List of Document Verified with each parameter

INSTRUCTION FOR FILLING UP THE FORM- INPUT ENERGY & KEEPING RECORDS AND INFORMATION FO VERIFICATION PROCESS

A.1	Please provide the details of purchased energy
A.2	Please provide the transmission loss %
A.4	Energy sold outside the periphery



Executive Summary - Tata Power Delhi Distribution Ltd. - True up of FY... 3 / 13 117%

	100% collection)		
8	Consumers (50% upto 100% collection)	Rs. Cr.	15.94

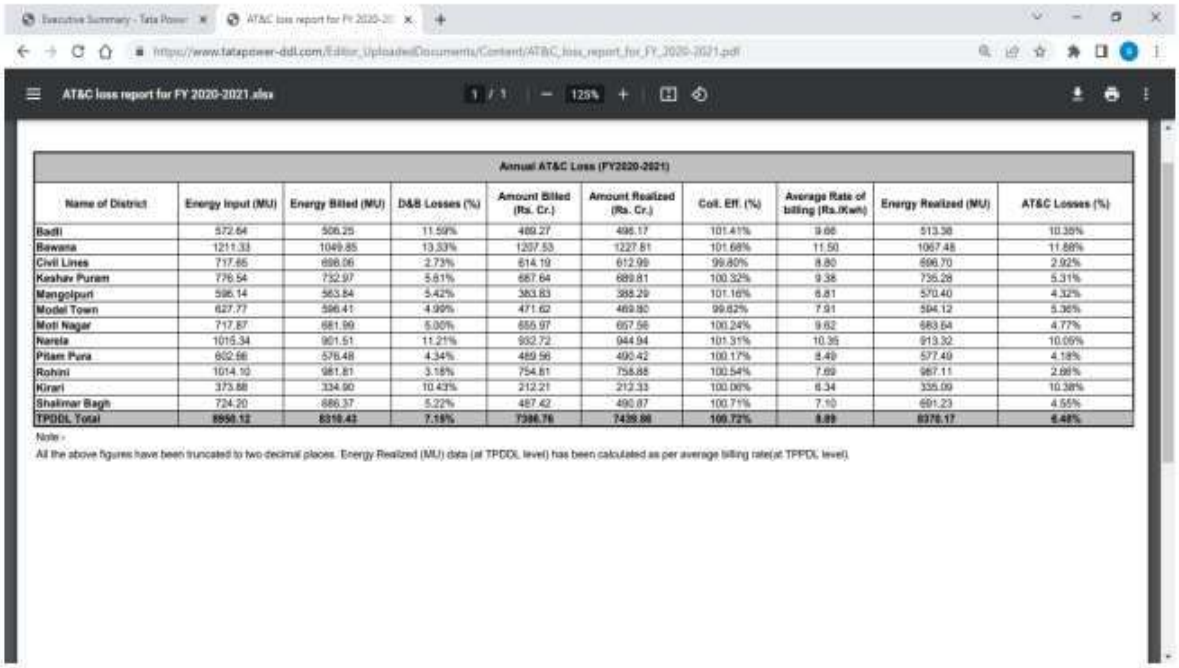
19 The Power Purchase Quantum for true up of FY 2020-21 as submitted by TPDDL is as follows:

Table 5: Power Purchase Quantum (MU) for FY 2020-21 as per Auditor's certificate

Sr. No.	Particulars	Actual Power Purchase
1	**Power Purchase:**	
i	Power Purchase Quantum	8520.52
ii	Short Term Power Purchase quantum	1565.10
iii	Short term sale of Power	(811.16)
	Sub-total Power Purchase	**9274.46**
2	**Transmission Loss:**	
i	Inter-State Transmission Loss	(90.89)
ii	Intra-State Transmission Loss	(233.46)
	Total Transmission Loss	(324.35)
3	**Net Power Available after Transmission Loss**	**8950.12**

DELHI ELECTRICITY REGULATORY COMMISSION Page 3

B.1	Please enter energy input details meter wise, with other mentioned details
B.2 to B.1000	Please enter energy input details meter wise, with other mentioned details of all input energy injections points



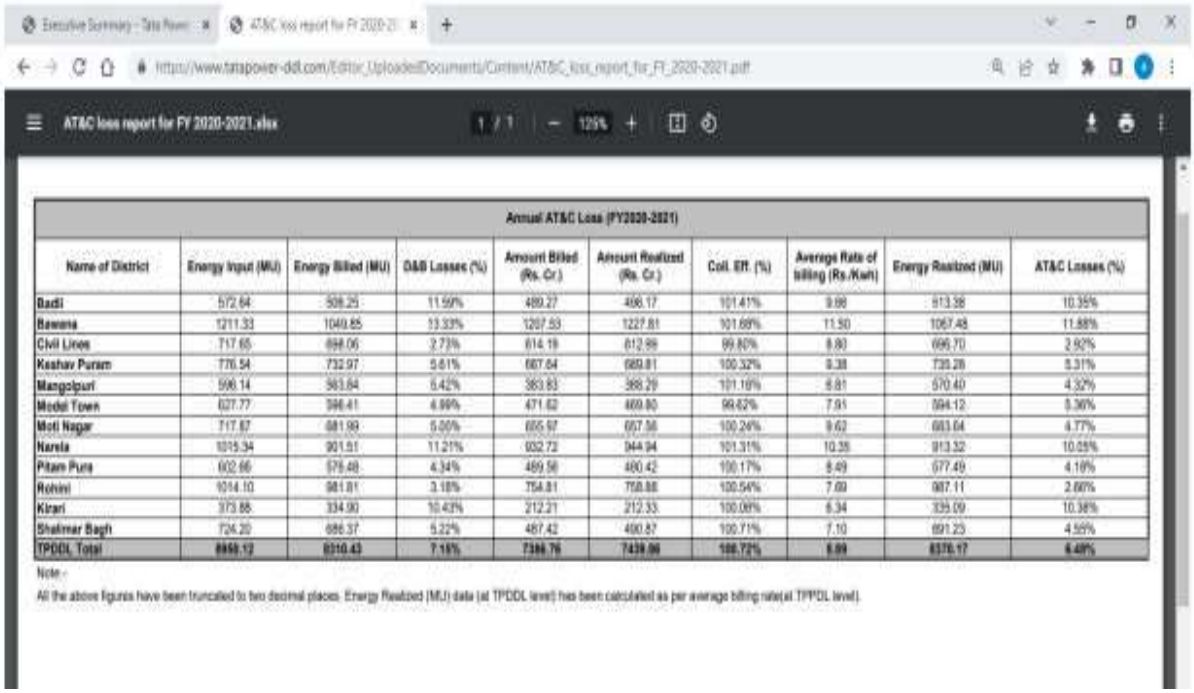
AT&C loss report for FY 2020-2021.xlsx

Annual AT&C Loss (FY2020-2021)

Name of District	Energy Input (MU)	Energy Billed (MU)	D&B Losses (%)	Amount Billed (Rs. Cr.)	Amount Realized (Rs. Cr.)	Coll. Eff. (%)	Average Rate of billing (Rs./Kwh)	Energy Realized (MU)	AT&C Losses (%)
Badli	572.64	506.25	11.59%	489.27	496.17	101.41%	9.66	513.38	10.35%
Bawana	1211.33	1049.85	13.33%	1207.53	1227.81	101.68%	11.50	1067.48	11.88%
Civil Lines	717.65	698.06	2.73%	614.19	612.99	99.80%	8.80	696.70	2.92%
Keshav Puram	776.54	732.97	5.61%	667.64	669.81	100.32%	9.38	735.28	5.31%
Mangolpuri	596.14	563.84	5.42%	383.83	388.29	101.16%	6.81	570.40	4.32%
Model Town	627.77	596.41	4.99%	471.62	469.80	99.62%	7.91	594.12	5.36%
Moti Nagar	717.87	681.99	5.00%	655.97	657.56	100.24%	9.62	683.64	4.77%
Narela	1015.34	901.51	11.21%	932.72	944.94	101.31%	10.35	913.32	10.05%
Pitam Pura	602.66	576.48	4.34%	489.56	490.42	100.17%	8.49	577.49	4.18%
Rohini	1014.10	981.81	3.18%	754.81	758.88	100.54%	7.69	987.11	2.66%
Kirari	373.88	334.90	10.43%	212.21	212.33	100.06%	6.34	335.09	10.38%
Shalimar Bagh	724.20	686.37	5.22%	487.42	490.87	100.71%	7.10	691.23	4.55%
TPDDL Total	8950.12	8310.43	7.15%	7386.76	7439.86	100.72%	8.89	8370.17	6.48%

Note -

All the above figures have been truncated to two decimal places. Energy Realized (MU) data (at TPDDL level) has been calculated as per average billing rate(at TPPDL level).



AT&C loss report for FY 2020-2021.xlsx

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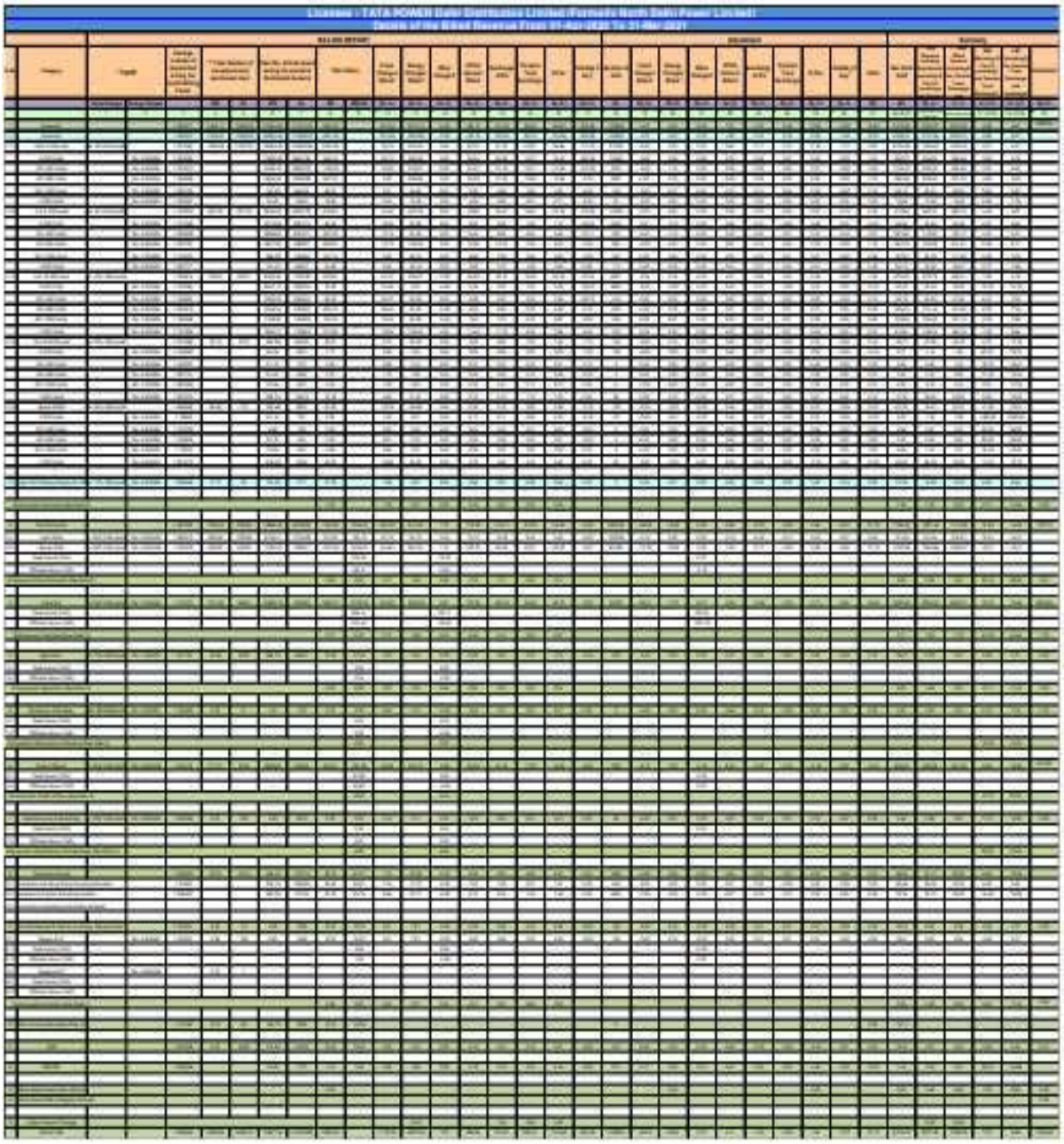
Note -

All the above figures have been truncated to two decimal places. Energy Realized (MU) data (at TPDDL level) has been calculated as per average billing rate(at TPPDL level).

S.No 1	Please enter no of metered consumers category wise of that circle only
	Please enter no of un-metered consumers category wise of that circle only
	Please enter connected load of metered consumers category wise of that circle only
	Please enter connected load of un-metered consumers category wise of that circle only
	Please enter input energy of the circle only
	Please enter billed metered energy category wise of that circle only
	Please enter billed un-metered energy category wise of that circle only



Annual AT&C Loss (FY2020-2021)

Name of District	Energy Input (MU)	Energy Billed (MU)	D&B Losses (%)	Amount Billed (Rs. Cr.)	Amount Realized (Rs. Cr.)	Coll. Eff. (%)	Average Rate of billing (Rs./Kwh)	Energy Realized (MU)	AT&C Losses (%)
Badli	572.64	506.25	11.59%	469.27	496.17	101.41%	9.66	513.38	10.35%
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Keshav Puram	776.84	732.97	5.61%	687.64	689.81	100.32%	9.38	735.28	5.31%
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Kirari	373.88	334.90	10.43%	212.21	212.33	100.06%	6.34	335.09	10.38%
Shalimar Bagh	724.20	686.37	5.22%	487.42	490.87	100.71%	7.10	691.23	4.55%
TPDDL Total	8950.12	8310.43	7.15%	7386.76	7439.86	100.72%	8.89	8370.17	6.48%

Note:-

All the above figures have been truncated to two decimal places. Energy Realized (MU) data (at TPDDL level) has been calculated as per average billing rate(at TPPDL level).

Table 3: Overachievement Incentive on account of reduction in Distribution Loss Level

Sr. No.	Particulars	UoM	MU
1	Billed Sales	MU	8,310.43
2	Actual Distribution Loss Level	%	7.15%
3	Target Distribution Loss Level	%	7.90%
4	Actual Input @ actual distribution loss level	MU	8.950.12
5	Desired Input @ Target distribution loss level	MU	9,017.49
6	Saving in Input due to lower distribution loss level	MU	67
7	Power Purchase Cost	Rs./kWh	5.94
8	Total Overachievement Incentive	Rs. Cr.	40.01
9	TPDDL's Share	Rs. Cr.	25.79

1.8 TPDDL has submitted collection efficiency as 100.76% for FY 2020-21 and Overachievement Incentive on account of higher collection efficiency as follows:

Table 4: Computation of Collection Efficiency and Incentive for FY 2020-21

Sr. No.	Particulars	UoM	Values
1	Amount Billed	Rs. Cr.	6,377.95
2	Amount Collected	Rs. Cr.	6,426.27
3	Collection Efficiency	%	100.76%
4	Target collection efficiency	%	99.50%
5	Amount of Collection over and above 99.50% target	Rs. Cr.	80.21
6	**Sharing of Incentive**		
7	Discoms (50% upto 100% and 100% beyond 100% collection)	Rs. Cr.	64.27
8	Consumers (50% upto 100% collection)	Rs. Cr.	15.94

1.9 The Power Purchase Quantum for true up of FY 2020-21 as submitted by TPDDL is as follows:

Table 5: Power Purchase Quantum (MU) for FY 2020-21 as per Auditor's certificate

Sr. No.	Particulars	Actual Power Purchase
1	**Power Purchase:**	
i	Power Purchase Quantum	8520.52
ii	Short Term Power Purchase quantum	1565.10
iii	Short term sale of Power	(811.16)
	Sub-total Power Purchase	**9274.46**
2	**Transmission Loss:**	
i	Inter-State Transmission Loss	(90.89)
ii	Intra-State Transmission Loss	(233.46)
	Total Transmission Loss	(324.35)
3	**Net Power Available after Transmission Loss**	**8950.12**

The component wise detailed information's are given in relevant paras of this chapter.

Truing up of Revenue Billed and Revenue available towards ARR

Revenue Billed for FY 20-21

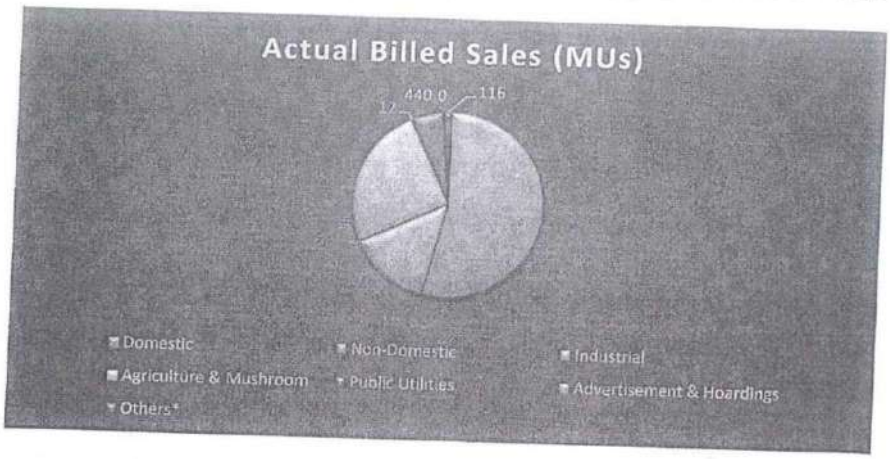
In its Tariff Order for FY 2020-21, the Hon'ble Commission had projected billed sale of energy of 8,316 MU for the FY 2020-21. Against the same, Tata Power- DDL has actually billed 8,310 MU as sale of energy including actual own consumption of 13.11 MU. Given below is the table showing the category wise comparative between projected energy sale and actual energy billed.

Table 3.1: Category wise billed energy sale (Projected vis-à-vis Actual) for FY 2020-21

S. No.	Category	Approved Projected Billed sale of Energy (MU)	Actual Billed sale of Energy (MU)
1	Domestic	4294	4474
2	Non-Domestic	1302	1182
3	Industrial	2078	2080
4	Agriculture & Mushroom	15	17
5	Public Utilities	514	440
6	Advertisement & Hoardings	0	0
7	Temporary Supply	56	60
8	Charging Stations for E-Rickshaw/ E-Vehicle on Single Delivery Point	27	16
9	Others*	29	40
	Grand Total	**8,316**	**8,310**

*others includes Enforcement, own consumption, staff, misuse & other adjustments

Based on actual energy billed, category wise % share in total energy billed is shown below:



The Hon'ble Commission in its Business Plan Regulations, 2017 has specified that for the purpose of truing up, the Own Consumption shall be considered @ 0.25% of the energy billed or the actual consumption of licensee whichever is lower. Thus, for the purpose of truing up, Tata Power- DDL has considered actual consumption of 13.11 MU towards own consumption against the normative own consumption of 20.78 MU.

Table 3.2: Category wise billed energy sale (MU) sought for truing up for FY 2020-21

S. No.	Category	Total Number of consumers and sanctioned load		Net Units Sold
		MW	No.	MU
1	Domestic	3,166	1529528	4474
2	Non-Domestic	1,234	233664	1182
3	Industrial	1,312	30403	2080
4	Agriculture	30	4303	17
5	Public Utilities	211	6189	440
6	Advertisement & Hoardings	1	238	0
7	Temporary Supply	39	15144	60
8	Charging Stations for E-Rickshaw/ E-Vehicle on Single Delivery Point	5	710	16
9	Others*	28	3852	40
	Grand Total	**6,026**	**1824031**	**8,310**

Further, the Hon'ble Commission in its Tariff Order for FY 2020-21 had projected total revenue of Rs. 6,519.33 Cr. out of which Rs. 6036.42 Cr. had been projected towards fixed charges and Energy Charges and balance Rs. 482.91 Cr. (i.e. 8% Deficit Recovery Surcharge

to be applied on fixed and energy charges) had been projected towards recovery of carrying cost and accumulated revenue gap. Given below is the category wise billed revenue projected for FY 2020-21.

Table 3.3: Category wise Projected billed energy sale (MU) and Revenue (Rs. Cr.) for FY 2020-21

S. No.	Category	Net Units Sold "A"	Fixed Charges Billed – "B"	Energy Charges Billed "C"	Total Revenue "D=(B+C)"	ABR/kWh E = D/A*10	Deficit Recovery Surcharge of 8% F = D*8%
		MU	Rs. Cr.				Rs. Cr.
1	Domestic	4294	199.00	1,830.61	2,029.61	4.73	162.37
2	Non-Domestic	1302	379.13	1,085.25	1,464.38	11.25	117.15
3	Industrial	2078	423.80	1,610.45	2,034.25	9.79	162.74
4	Agriculture & Mushroom	15	4.98	2.29	7.27	4.85	0.58
5	Public Utilities	514	77.29	321.13	398.42	7.75	31.87
6	Advertisement and hoarding	0	13.40	89.09	102.49	9.15	8.20
7	Vehicle on Single Delivery Point	27					
8	Others	85					
9	Grand Total	8,316	1,097.60	4,938.82	6,036.42	7.26	482.91

**others includes Enforcement, own consumption, staff, misuse, other adjustments and temporary supply*

Against the said projected billed revenue, Tata Power- DDL has actually billed energy revenue (net of E. tax and Pension Trust Surcharge) of Rs. 6,850.46 Cr. at approved Retail Supply Tariffs.

Methodology for computation of AT&C loss level has been provided in Regulation 4.7 (a), (b) and (c) of MYT Regulations, 2011.

From the above table, it can be seen that target Distribution Loss Level for FY 2020-21 has been fixed @ 7.90%. Against the said target, Tata Power DDL has achieved actual Distribution loss level of 7.15% for FY 2020-21. Computation of the actual distribution loss level is given below:

Table 3.6: Computation of T&D loss and overachievement for FY 2020-21

Sr. No	Particulars	MU	Remark
A	Input	8,950.12	Table 3.13
B	Billed Units	8,310.43	Table 3.4
C	Actual Distribution Loss Level	7.15%	(1-B/A)
D	Target Distribution Loss Level	7.90%	Table 3.7
E	Overachievement/(Underachievement)	0.75%	(D – C)

Further the 25(4) of the Business Plan Regulation, 2017 provided that *"Any financial Impact due to overachievement on account of Distribution Loss target by the distribution licensee for the relevant year shall be shared between the Distribution Licensee and consumers as follows:*

i. In case actual distribution loss is between the loss target and loss target minus [50%(Previous Year Target – Current Year Target)] for the relevant year shall be shared in the ratio of 2/3rd to Consumers and 1/3rd to the Distribution Licensee;*

ii. In case actual distribution loss is less than loss target minus[50%(Previous Year Target – Current Year Target)]for the relevant year shall be shared in the ratio of 1/3rd to Consumers and 2/3rd to Distribution Licensee."*

Previous year loss target was 8.00% for the purpose of computation of sharing of incentive.

Table 3.7: Actual Distribution loss level for FY 2020-21

S. No.	Particulars	Distribution Loss Level	Remark
A	Previous year target	8.00%	
B	Target Distribution Loss Level	7.90%	Table 15
C	Actual Distribution Loss Level	7.15%	Table 3.6

Table 3.8 Overachievement Incentive on account of reduction in Distribution Loss Level

Sr. No	Particulars	MU	Remark
A	Billed Sales	8,310.43	Table 3.6
B	Actual Distribution Loss Level	7.15%	Table 3.6
C	Target Distribution Loss Level	7.90%	Table 3.6
D	Actual Input @ actual distribution loss level	8,950.12	Table 3.13
E	Desired Input @ Target distribution loss level	9,017.49	D+D*(C-B)
F	Saving in Input (MU) due to lower distribution loss level	67	(E-D) or D*(C-B)
G	Power Purchase Cost	5.94	Table 3.27
H	Total Overachievement Incentive	40.01	F*G/10
I	TPDDL Share	25.79	

Revenue Realization

Computation of Collection Efficiency and overachievement incentive for FY 20-21

Regulation 10 of the DERC Tariff Regulations, 2017 provided that

"Collection efficiency, which shall be measured as ratio of total revenue realized to the total revenue billed in the same year:

Provided that Revenue Realised or Revenue Billed on account of electricity duty, late payment surcharge, any other surcharge shall be excluded from the computation of Collection Efficiency;"

Table 3.9: Revenue Billed for the purpose of computation of collection efficiency for FY 20-21

S. No.	Particular	UoM	Amount	Remark
A	Total Revenue Billed as per Form 2.1a	(Rs Cr)	7,386.76	Note 40.1 of the Audited Financial Statement
B	Less- Electricity Tax	(Rs Cr)	274.49	
C	Less- 8% Deficit Revenue Recovery Surcharge	(Rs Cr)	472.50	
D	Less- Pension Trust Surcharge of 3.80%	(Rs Cr)	261.82	
E	Net Revenue Billed	(Rs Cr)	6,377.95	(A-B-C-D)

During the FY 2020-21 Tata Power- DDL has realized an amount of Rs. 7,439.86 Cr against the total revenue billed of Rs. 7,386.76 Cr. Given below is the working of revenue collection to be considered for truing up of AT&C Loss Level:

Table 3.10: Amount of revenue available for AT&C Computation for FY 2020-21 (Rs Cr)

Sl. No.	Particular	Amount	Remarks
A	Total Revenue Realized	7439.86	Note 40.2 of the Audited Financial Statement
B	Less: Electricity Tax	274.29	
C	Less: 8% Deficit Revenue Recovery Surcharge	476.58	
D	Less: Pension Trust Surcharge	262.71	
E	Revenue Collected for Collection Efficiency	6,426.27	(A-B-C-D)

Based on above submission, computation of collection efficiency and corresponding incentive is calculated as below:

Table 3.11: Computation of Collection Efficiency and Incentive for FY 20-21

Sl. No.	Particular	UoM	Amount	Remarks
A	Amount Billed	(Rs Cr)	6,377.95	Table 3.4
B	Amount Collected	(Rs Cr)	6,426.27	Table 3.10
C	Collection Efficiency	%	100.76%	B/A
D	Target collection efficiency	%	99.50%	As per BPR,2019
E	Amount of Collection over and above 99.50% target	(Rs Cr)	80.21	A*(C-D)
F	**Sharing of Incentive**			
	Discoms (50% upto 100% and 100% beyond 100% collection)	(Rs Cr)	64.27	
	Consumers (50% upto 100% collection)	(Rs Cr)	15.94	

Computation of Revenue Available for FY 2020-21

The Computation of net revenue available after adjusting the Incentive towards lower Distribution Loss Level and Higher Collection Efficiency is given below. It is worth to mention that for the purpose of computing surplus or deficit for the year, the amount of net revenue is considered based on actual collection only.

Table 3.12: Computation of Revenue available for FY 20-21 (Rs Cr.)

Sl. No.	Particular	Collection Other than (DRS/PTS)	Remarks
A	Total Collection*	6,426.27	Table 3.10
B	Less- Overachievement Incentive towards Lower Distribution Loss	25.79	Table 3.8
C	Less- Overachievement incentive towards Collection	64.27	Table 3.11
D	Collection available towards ARR	6,336.22	(A-B-C)

Power Purchase

Power Purchase Quantum

During FY 2020-21, the Petitioner has purchased 10,085.62 MUs out of which 811.16 MUs of surplus energy was sold as short term sale of surplus power.

Deducting the Inter-State transmission loss of 233.46 MUs and Intra-State transmission loss of 90.89 MUs, the Petitioner has submitted a net power purchase quantum of 8,950.12 MUs (excluding open access quantum consumed by open access consumers) delivered at TPDDL distribution periphery.

The summary of power purchase quantum for FY 2020-21 as per Auditor certificate as Annexure A-3 is given below:

Table 3.13: Power Purchase Quantum (MUs) for FY 2020-21 as per Auditor's certificate

Sl. No.	Particulars	Actual Power Purchase (MUs)	Remarks /Ref
A	**Power Purchase:**		
i	Power Purchase Quantum	8,520.52	
ii	Short Term Power Purchase quantum	1,565.10	
iii	Short term sale of Power	-811.16	
iv	Net Power Purchase	9,274.46	(i+ii+iii)
B	**Transmission Loss:**		
i	Intra-State Transmission Loss	-90.89	
ii	Inter-State Transmission Loss	-233.46	
iii	Total Transmission Loss	-324.35	(i+ii)
C	**Net Power Available after Transmission Loss**	**8,950.12**	**(A+B)**

Actual consumption

It is submitted that Delhi SLDC issues weekly UI bills from where the actual drawl by a utility is finalized. It may be noted that there is a time lag of approx. 1months in issuing of the UI bills by Delhi SLDC and at the time of finalizing of accounts for FY 2020-21, the UI bills were not issued for the period 01st March 2021 to 31st March 2021. Hence TPDDL had taken a provision of the actual consumption MUs for the months for which bills were not issued. The breakup of consumption in FY 20-21 is as under:

Table 3.14: Input (MUs) as per Auditor Certificate

Particulars	MU
Actual demand of FY 20-21 as per Delhi SLDC UI bills	8,338.93
(-) Open Access consumer	-59.75
(+) TATA Power-DDL Solar generation	2.01
(+) Provisional	664.59
(+) Net metering	4.34
Total consumption	8,950.12

Hence, Input considered for FY 20-21 is 8,950.12 MU.

Summary of Central Generating Station wise power scheduled during the year is given below:

The Hon'ble Commission has projected energy purchase of 7,563 MU for FY 2020-21. During the year, the Petitioner has purchased 8,520.52 MU from long term sources.

Table 3.15: Energy Purchased (MU) from Central Generating Stations during FY 2020-21

Sr. No.	Particulars	Energy (MU) Projected	Energy (MU) Actuals	Difference
A	**NTPC**			
	Anta Gas Power Station	2	11.28	9.28
	Auraiya Gas Power Station	27	22.29	-4.71
	Dadri Gas Power Station	49	55.11	6.11
	FARAKKA	32	31.85	-0.15
	KAHALGAON - I	84	78.82	-5.18
	NCPP - DADRI	16	4.95	-11.05
	RIHAND – I	202	192.78	-9.22
	RIHAND – II	268	289.92	21.92
	SINGRAULI	314	292.05	-21.95
	UNCHAHAR - I	28	34.27	6.27
	UNCHAHAR - II	54	62.28	8.28
	UNCHAHAR - III	40	44.74	4.74
	KAHALGAON - II	311	233.25	-77.75
	DADRI EXTENSION	23	36.65	13.65
	ARAVALI	44	964.98	920.98
	Sub-Total NTPC	**1,494**	**2,355.22**	**861.22**
B	NHPC			
	BAIRA SIUL	16	14.64	-1.36
	CHAMERA – I	58	54.18	-3.82
	CHAMERA – II	49	27.14	-21.86

TATA POWER DELHI DISTRIBUTION LIMITED
A Tata Power and Delhi Government joint venture

TRUE UP FY 20-21

	CHAMERA – III	39	38.20	-0.80
	DHAULIGANGA	49	45.79	-3.21
	DULHASTI	82	87.38	5.38
	Parbati – III	26	23.59	-2.41
	SEWA –II	24	14.97	-9.03
	TANAKPUR	16	13.66	-2.34
	URI	99	97.29	-1.71
	Uri – II	65	63.49	-1.51
	Sub-Total NHPC	**523**	**480.34**	**-42.66**
C	**NUCLEAR**			
	RAPS – 5 & 6	124	119.66	-4.34
	NPCIL – NAPS	110	96.69	-13.31
	Sub-Total Nuclear	**234**	**216.35**	**-17.65**
D	**Other Stations**			
	THDC			
	KOTESHWAR HEP	36	36.39	0.39
	TEHRI HEP	59	58.42	-0.58
	SJVNL			
	NJPC (SJVNL)	213	203.16	-9.84
	DVC			
	Mejia unit - 6	130	154.22	24.22
	DVC Chandrapur (Ext. 7 & 8)	595	580.53	-14.47
	Other CSGS			
	Haryana CLP Jhajjar	404	403.37	-0.63
	MPL DVC - Maithon Power	1,907	1,871.87	-35.13
	Tala	36	30.59	-5.41
	Sasan UMPP	447	460.65	13.65
	SECI Solar Rajasthan	40		-40.00
	Suryakanta HEP	44		-44.00
	Nanti HEP	40		-40.00
	SEISPPL	167		-167.00
	Taranda HEP	48		-48.00
	Singrauli HEP	3		-3.00
	Sub Total (SJVNL+DVC+THDC+Other CSGS)	**4,169.00**	**3,799.20**	**-369.80**
E	State Generating Stations			
	Gas Turbine Power Station (GTPS)	126	122.21	-3.79
	Pragati – I	296	286.79	-9.21
	Pragati – III	636	694.30	58.30
	Timarpur-Okhla Waste Mgt. Co	50	50.01	0.01
	MSW Bawana	33		-33.00
	Tata Solar	2		-2.00
	SGS Total	**1,143.00**	**1,153.32**	**10.32**
F	RENEWABLE ENERGY			
	Net metering		4.34	4.34
	SECI 20 MW Solar		41.04	41.04

with you Non-Stop

110

	SEI Jyoti Swaroop		18.85	18.85
	SEI RaviKiran		20.84	20.84
	SEI Renewable		22.21	22.21
	SEI Solarvan		55.34	55.34
	SEI Sooraj		54.61	54.61
	SEI Sunshine		59.77	59.77
	Own Solar		2.01	2.01
	DMSWSL		39.17	39.17
	NANTI HYDRO POWER PRIVATE LIMITED		46.94	46.94
	SECI- Wind		53.05	53.05
	Taranda Hydro		49.96	49.96
	Suryakanta Hydro Energies Pvt. Ltd.		44.35	44.35
	Singrauli Small Hydro		3.61	3.61
	Renewable Total	**0**	**516.09**	**516.09**
	Grand Total	**7,563.0**	**8,520.52**	**957.52**

** MU scheduled to the petitioner in FY 20-21 as per invoices. Figures fetched from Audited Power Purchase Certificate Annexure A-3*

Short Term Power Purchase

During this financial year the Petitioner has purchased 1,565.10 MU through bilateral/exchange/UI/Intrastate/Banking as short-term power purchase. Out of 1,565.10 MU the Petitioner has received back 187.83 MUs of banking and purchased 10.57 MU through UI, 644.26 MU through Bilateral, 42.18 MU through intra state purchase and balance 680.26 MU through Exchange mode. A comparative summary of sources wise short term power purchase from various sources from FY 2018-19 onwards are shown below:

Table 3.16: Details of Short term Power Purchase

S. No.	Particulars	FY 18-19		FY 19-20		FY 20-21*	
		Energy (MU)	(%)	Energy (MU)	(%)	Energy (MU)	(%)
A	Bilateral	0	0%	465.80	20%	644.26	41%
B	Banking	852.65	78%	723.10	31%	187.83	12%
C	Exchange	138.98	13%	1071.10	46%	680.26	43%
D	Intra state	34.75	3%	89.70	4%	42.18	3%
E	UI	68.36	6%	4.20	0%	10.57	1%
F	**Total**	**1094.74**	**100%**	**2353.90**	**100%**	**1,565.10**	**100%**

**Figures fetched from Audited Power Purchase Certificate Annexure A-3*

Short Term Power Sale

During the year the Petitioner has sold 811.16 MU of surplus energy out of which 92.49 MU (11%) was sold through UI, 200.35 MU (25%) was banked, 403.16 MU (50%) was sold through exchange and 115.15 MU (14%) through intra-state arrangements.

A comparative summary of source wise short term power sales through various sources from FY 2018-19 onwards are shown below:

Table 3.17: Details of Short term Power Sales

S. No.	Particulars	FY 18-19		FY 19-20		FY 20-21*	
		Energy (MU)	(%)	Energy (MU)	(%)	Energy (MU)	(%)
A	Bilateral	201.97	10%	10.90	2%	-	0%
B	Banking	701.39	34%	198.40	39%	200.35	25%
C	Exchange	1,081.87	52%	134.80	27%	403.16	50%
D	Intra state	43.80	2%	22.60	4%	115.15	14%
E	UI	57.34	3%	137.40	27%	92.49	11%
F	**Total**	**2,086.37**	**100%**	**504.10**	**100%**	**811.16**	**100%**

**Figures fetched from Audited Power Purchase Certificate Annexure A-3*

Power Purchase Cost

The Petitioner has incurred gross power purchase cost of Rs. 4723 Cr (including cost of reversal of RE Cost) for the gross power purchase quantum of 10086 MUs in FY 2020-21 from all sources including intra-state, bilateral, UI and exchange. The revenue of Rs. 248 Cr on account of sale of 811 MU of surplus energy through bilateral, intra-state, UI and exchange has been adjusted against the gross power purchase cost. The Petitioner has also incurred transmission charges of Rs. 946 Cr.

Further in order to meet RPO obligations no cost has been incurred towards purchase of RE certificates. The Petitioner has arrived at total audited power purchase cost of Rs. 5315 Cr for FY 2020-21. Given below is the energy balance approved by Hon'ble DERC and the corresponding cost incurred by the petitioner.

Table 3.18: Details of Power Purchase Cost Station wise for FY 2020-21

Particulars	Energy (MU)	Total Charges (Rs. Cr.)	Rs./kwh	Energy (MU)	Fixed Charges (Rs. Cr.)	Variable Charges (Rs. Cr.)	Other Charges (Rs. Cr.)	Total Charges (Rs. Cr.)	Rs./kwh
	Approved in ARR			Sought for Trued Up					
NTPC									
Anta Gas Power Station	2.0	7.9	39.55	11.3	6.8	4.3	0.2	11.3	10.02
Auraiya Gas Power Station	27.0	21.3	7.90	22.3	10.0	8.0	2.3	20.3	9.11

5.10 Brief description of Unit

Tata Power Delhi Distribution Limited [Tata Power-DDL] is a joint venture between Tata Power and the Government of NCT of Delhi with the majority stake being held by Tata Power Company (51%).

Tata Power-DDL is acknowledged for its consumer-friendly practices. Since privatization, the Aggregate Technical & Commercial (AT&C) losses in Tata Power-DDL areas have shown a record decline.

To ensure reliable power supply and to provide best in class service to its consumers, Tata Power–DDL has implemented several world-class technologies such as Advance Distribution Management system or ADMS which is designed to replace the conventional SCADA-DMS-OMS system with features like real-time integration of Smart Meter Data / Distributed Generation integration and single data model from GIS , Integrated Geographical Information System (GIS) for instant services, Advanced Metering Infrastructure (AMI), Automated Demand Response (ADR), Smart Street Light Management system, Field Force Automation, Upgraded Network, Integrated Toll Free Helpline No. 19124, etc.

Tata Power-DDL is the first Indian utility to be a member of Global Intelligent Utility Network Coalition (GIUNC) which is a coalition of 14 power utilities worldwide and is working towards accelerating the development of common standards, technology solutions and processes for intelligent networks.

Tata Power-DDL provides various facilities and services to its consumers for their ease and convenience such as 24X7 Integrated Helpline, Mobile Application for both iOS and Android users, bilingual website, Multiple Payment Avenue, End to End online services for New Connection, etc.

Tata Power-DDL’s contribution towards improving the ease of getting electricity connection through process simplification improving India’s ranking twice, from 138 in 2015 to 22 in 2019.

TATA Power-DDL has also added solar generation as a part of its sustainable initiatives since 2008, and has installed fifteen (15) Solar Plants in its Licensed Area with a total generation capacity is 1.8 MW. It has a total of 1420 Rooftop solar plants under net metering with a cumulative capacity of 43MWp. The company is now working on setting up a Smart Grid with the integration of Roof Top Solar, Energy Storage, E-charging of Electric Vehicles, Home Automation etc. in its network.

Tata Power-DDL's change management experience, distributed leadership system, adoption of latest technology; robust competence development process and innovative & open work

culture are the key strategic boosters which helped in building and sustaining competitive advantage in the changing business scenario. A journey which began a decade ago for empowering the consumers in Delhi now holds the potential to transform the distribution sector in India and similarly help utilities across the globe. Tata Power-DDL has a presence in India in nearly 20+ States and working with 30+ Discoms including Goa, Haryana, Uttar Pradesh, Chhattisgarh etc. as well as in International cities such as Benin, Eko, Kaduna, Kano etc.

Tata Power-DDL is focused and committed to the road ahead and is exploring new opportunities to replicate its experience of distribution reforms both in India and abroad. It is leveraging its unique learning and skillsets solely and in collaboration with leading utilities and technology providers like GE, IBM, Enel, Omron, 3M, Panasonic, AES, Mitsubishi etc. in the areas of communications & smart grid technology, change management, consumer service delivery and business process re-engineering. Tata Power-DDL has also collaborated with leading international and national Institutions like Harvard, MIT, Ryerson University, IIT Delhi, Punjab Engineering College, Delhi University, Netaji Subhas Institute of Technology etc. to carry out research activities in energy space.

Table 35: About TATA POWER-DDL

World Class Technologies , Tata Power DDL	
Advance Distribution Management System (ADMS)	Advance Distribution Management System (ADMS) is a single integrated system which will facilitate advanced monitoring, analysis, as well as control and planning, thereby enabling Tata Power-DDL to enhance the reliability, safety and efficiency of the power for the consumers. This system has advanced features of reporting outages and intimating to customers upfront. This system facilitates system controller as well as maintenance team for faster restoration of supply.
Geographical information System (GIS)	Geographical Information System (GIS) is a foundational technology and single source to have repository of network, asset and consumer indexing for Tata Power-DDL. The data of this system gets integrated with ADMS, FFA, ERP, AMI, etc. for successful functioning of respective systems. This system enables delivering of results in terms of reliable & quality power along with advanced services and timely information to the consumers.

World Class Technologies , Tata Power DDL	
Smart Meter	Smart Meters are basic building blocks of Smart Grid. This technology encompasses Communication System (RF in Tata Power-DDL's case) and Data Handling Technologies (Meter Data Management System). Tata Power-DDL is implementing Smart Metering Technology (Advanced Metering Infrastructure-AMI) to bring operation efficiency in different IT and OT domains. This technology will bring transparency to consumers in terms of their consumption per month and monitoring of other critical parameters like MDI and PF on an instant basis. For Tata Power-DDL, it enables easy detection of pilferage and loss reduction. This last mile link will complete Smart Grid implementation by Tata Power-DDL.
Smart Street Light Management system	Tata Power-DDL jointly is working on a project for achieving a reduction in the demand of street lighting which coincides with peak load, thereby reducing the overall peak demand, improving the lux levels, improving the power factor and checking the carbon foot print as a responsibility to the society. This will translate into considerable saving to the exchequers. This system is entirely managed through a Smart Centralized Control & Monitoring System which can identify partially or completely affected streetlight circuits on a real-time basis and the type/nature of fault, thereby alerting the maintenance team without any requirement of consumer complaints for such purpose. This will enhance safety & security of general public. It can also detect pilferage from street light circuits and generate alerts.
Field Force Automation	Customer service through mobile workforce is the key to exceed the expectations of the consumer. Field Force Automation (FFA) is a system which optimizes the various tasks in hand and schedules & dispatches the nearest Crew to provide faster service to the consumers. This system not only enhances the service level but also completely tracks the allocation of workforce.

- Source of Input Energy

The source of input energy with generation station and generation capacity & contract period is given the table:

Table 36: Types of Generation

Type of Fuel	Generation Capacity (MW)
Gas	507.6
Renewable Energy	305.2
Hydro	204.2
Nuclear	31.0
Coal	1541.7

- Consumer wise connections & energy consumptions for FY 2020-21

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

Table 37: Energy consumption with type of consumers

Type of Consumers	Category of Consumers (EHT/HT/LT/ Others)	Voltage Level (V)	No of Consumers	Total Consumption (In MU)
Domestic	HT/LT	11/.22/.4	1540657	4534.71
Commercial	LT		236046	942.86
Water Supply			1311	257.98
Public Lighting			4907	118.48
HT Industrial			384	239.84
HT Commercial			471	276.37
Others-1 (if any , specify in remarks)			40255	1939.91
		Total	1824031	8310.16

VI. Number of Consumers

The Tata Power-DDLis divided into five numbers of circles, twelve number of divisions & thirty-seven numbers of sub divisions The numbers of feeders, DT's & number of consumers is 1280,7248 &1824031 respectively.

Table 38: No. of Consumers

Parameters	Values
Number of circles	5
Number of divisions	12
Number of sub-divisions	37
Number of feeders	1280
Number of DTs	7248
Number of consumers	1824031

VII. Voltage wise Meter & Unmetered Consumers

The voltage wise meter types of meter values given table:

Table 39: Voltage wise type of meters

Parameters	66kV and above	33kV	11/22kV	LT
Number of conventional metered consumers	0	0	0	1569119
Number of consumers with 'smart' meters	0	0	0	210285
Number of consumers with 'smart prepaid' meters	0	0	0	0
Number of consumers with 'AMR' meters	4	2	1012	43601
Number of consumers with 'non-smart prepaid' meters	0	0	0	5077
Number of unmetered consumers	0	0	0	
Number of total consumers	4	2	1012	1823013

VIII. Numbers of Distribution Transformers

Table 40: Numbers of Distribution Transformers

Parameters	66kV and above	33kV	11/22kV	LT
Number of conventionally metered Distribution Transformers	0	0	0	252
Number of DTs with communicable meters	0	0	0	3868
Number of unmetered DTs	0	0	0	474
Number of total Transformers	0	0	0	4594

IX. Numbers of Feeders

Table 41: Number of Feeders

Parameters	66kV and above	33kV	11/22kV	LT
Number of metered feeders	134	108	1280	15539
Number of feeders with communicable meters	134	108	1280	0
Number of unmetered feeders	0	0	0	0
Number of total feeders	134	108	1280	15539

X. Length of Cables

Table 42: Length of Cables

Particulars	Value (Km)
Line length (ct km)	1979.1
Length of Aerial Bunched Cables	5556.2
Length of Underground Cables	5832

5.11 List of parameters arrived through calculation or Formulae with list of source of data

Transmission and Distribution Losses (T&D Losses)

- Energy losses occur in the process of supplying electricity to consumers due to technical and commercial reasons.
- The technical losses are due to energy dissipated in the conductors, transformers and other equipment used for transmission, transformation, sub-transmission and distribution of power.
- These technical losses are inherent in a system and can be reduced to a certain level.
- Pilferage by hooking, bypassing meters, defective meters, errors in meter reading and in estimating un-metered supply of energy are the main sources of the commercial losses.
- When Commercial losses are added to Technical losses, it gives Transmission & Distribution (T&D) loss.
- There is another component of commercial losses, which is attributable to non-recovery of the billed amount, which is reflected in collection efficiency.
- T&D losses together with loss in collection give us Aggregate Technical & Commercial (AT&C) losses.

Calculation of transmission losses:

Transmission losses = Total Energy Purchased - Total Energy Sale - Total Input

Table 43: Calculation of transmission losses

Transmission losses (MU)	Value
Total Energy Purchased	10085.62
Total Energy Sale	811.16
Transmission losses	324.34
Total Input	8950.12
Transmission losses (%)	3.22