

# Annual Energy Audit Accounting

## 2021-22



**Designated Consumer**



**TATA POWER-DDL**

## **TATA POWER DELHI DISTRIBUTION LIMITED**

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

**FY 2021-2022**

**Conducted by**



### **A-Z Energy Engineers Private Limited**

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# ACKNOWLEDGEMENT

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A-Z Energy Engineers Pvt.Ltd. is grateful to the Tata Power Delhi Distribution Limited, for giving us an opportunity to conduct 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. Neeraj Singh – Manager, Energy Audit
- Ms.Gaganpreet Kaur –Sr.Executive, Energy Audit

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



  
(Dr.P.P.Mittal)  
Director

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## List of Abbreviations

|        |                                                       |
|--------|-------------------------------------------------------|
| AMI    | Advanced Metering Infrastructure                      |
| AMR    | Automated Meter Reading                               |
| AMRUT  | AtalMission 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

Bureau of Energy efficiency (BEE) notified the Bureau of Energy Efficiency (Manner and intervals for conduct the energy audit (Accounting) in Electricity Distribution Companies) Regulations, 2021 on 6th October 2021. As per regulation, all Electricity Distribution Companies are Mandate to conduct annual energy audit and periodic energy accounting on quarterly basis.

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 Distribute electricity from the end point of transmission to the end consumers. While the energy Purchased, Net Input & billed Tata Power-DDL for the customer is 11737.11MU, 9424.75MU& 8752.21MU. The monthly consumption per customer stands at 386.76 KWH/Month. Tata Power-DDL caters to area spread in 5 circles, 12Division

### ➤ Discom Energy Accounting FY-2021-2022

Net Energy Input to the Discom for FY 2021-2022 is estimated and presented in the table:

| S. No | Particulars                            | Values    |
|-------|----------------------------------------|-----------|
| 1     | Input Energy Purchase (MU)             | 11737.105 |
| 2     | Transmission Loss (%)                  | 4%        |
| 3     | Transmission Loss (MU)                 | 471.211   |
| 4     | Energy Sold Outside the periphery (MU) | 1841.142  |
| 5     | Open access sale (MU)                  | 88.704    |
| 6     | EHT Sale (MU)                          | 156.878   |
| 7     | Net Input Energy at Discom             | 9424.75   |

The T&D and AT&C losses for FY 2021-2022 are presented below:

| Total Losses | T & D Loss      |                | AT & C Loss (%) |
|--------------|-----------------|----------------|-----------------|
|              | T & D Loss (MU) | T & D Loss (%) | 6.80%           |
|              | 672.55          | 7.14%          |                 |



Some key details regarding company's distribution for FY 21-22 are mentioned below:

1. Source of Input Energy
2. Consumer wise connections & energy consumptions for FY 2021-22
3. Technical Parameters For FY 2021-22

➤ **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 |
|-----------------------------------------------------------------|--------------------------|-------------------------------|--------------------------|--------------|
| NTPCDadri GPS                                                   | 28                       | Gas                           | 25 Years                 | Inter State  |
| NTPCAuriya GPS                                                  | 22                       | Gas                           | 35 Years                 | Inter State  |
| NTPC ANTA GPS                                                   | 14                       | Gas                           | 30 Years                 | Inter State  |
| Pragati- I                                                      | 63.6                     | Gas                           | 25 Years                 | Intra State  |
| Pragati III                                                     | 298                      | Gas                           | 25 Years                 | Intra State  |
| IPGCL GT                                                        | 27                       | Gas                           | 20 Years                 | Intra State  |
| NHPCDulhasti                                                    | 15                       | Hydro                         | 35 Years                 | Inter State  |
| NHPCParbati III                                                 | 20                       | Hydro                         | 40 Years                 | Inter State  |
| NHPCBairasiul                                                   | 6                        | Hydro                         | 25 Years                 | Inter State  |
| NHPCTanakpur                                                    | 3.2                      | Hydro                         | 35 Years                 | Inter State  |
| NHPCChamera -I                                                  | 13                       | Hydro                         | 35 Years                 | Inter State  |
| NHPCChamera-II                                                  | 12                       | Hydro                         | 35 Years                 | Inter State  |
| NHPCChamera-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  |
| NHPCDhauliganga                                                 | 11                       | Hydro                         | 35 Years                 | Inter State  |
| NHPCSewa II                                                     | 5                        | Hydro                         | 35 Years                 | Inter State  |
| Tala HEP                                                        | 9                        | Hydro                         | 35 Years                 | Inter State  |
| NathpaJhakriHPS                                                 | 44                       | Hydro                         | 35 Years                 | Inter State  |
| TehriHPP                                                        | 19                       | Hydro                         | 35 Years                 | Inter State  |
| Koteshwar HEP                                                   | 12                       | Hydro                         | 35 Years                 | Inter State  |
| Narora APS                                                      | 14                       | Nuclear                       | 43 Years                 | Inter State  |
| RAPP 5&6                                                        | 17                       | Nuclear                       | 43 Years                 | Inter State  |
| NTPCSingrauli Small Hydro                                       | 2                        | RE                            | 35 Years                 | Inter State  |
| SECI Solar (Renewable)                                          | 2                        | RE                            | 35 Years                 | Inter 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  |

| Name of Generation station                          | Generation Capacity (MW) | Type of station based on fuel | Type of contract in Year | Type of Grid |
|-----------------------------------------------------|--------------------------|-------------------------------|--------------------------|--------------|
| Suryakanta Hydro energies Pvt. Ltd. (Renewable)     | 14                       | RE                            | 20 Years                 | Inter State  |
| TimarpurOkhla Waste management co. Ltd. (Renewable) | 6                        | RE                            | 20 Years                 | Intra State  |
| Sun Edison                                          | 180                      | RE                            | 20 Years                 | Inter State  |
| Taranda                                             | 12.7                     | RE                            | 20 Years                 | Inter State  |
| SECI WIND                                           | 50                       | RE                            | 25 Years                 | Inter State  |
| SECI 200 MW (SBSR)*                                 | 33                       | RE                            | 25 Years                 | Inter State  |
| Cosmos Hydro*                                       | 13                       | RE                            | 20 Years                 | Inter State  |
| NTPCARavaliJhajjar                                  | 613.8                    | Coal                          | 25 Years                 | Inter State  |
| NTPCDadriNCTPS(Th.) Stage II                        | 10                       | Coal                          | 25 Years                 | Inter State  |
| NTPCDadriNCTPS(Th) Stage I                          | 10                       | Coal                          | 25 Years                 | Inter State  |
| NTPCKahalgaon II                                    | 48.3                     | Coal                          | 25 Years                 | Inter State  |
| NTPCSingrauliSTPS                                   | 46                       | Coal                          | 30 Years                 | Inter State  |
| NTPCRihandSTPS-II                                   | 39                       | Coal                          | 25 Years                 | Inter State  |
| NTPCRihandSTPS-I                                    | 31                       | Coal                          | 28 Years                 | Inter State  |
| NTPCKahalgaon I                                     | 15.6                     | Coal                          | 25 Years                 | Inter State  |
| NTPCUnchahaar-II TPS                                | 14                       | Coal                          | 25 Years                 | Inter State  |
| NTPCUnchahaar-III TPS                               | 9                        | Coal                          | 25 Years                 | Inter State  |
| NTPCUnchahaar-I TPS                                 | 7                        | Coal                          | 27 Years                 | Inter State  |
| NTPCFarakka                                         | 7                        | Coal                          | 25 Years                 | Inter State  |
| CLPJhajjar                                          | 132                      | Coal                          | 25 Years                 | Inter State  |
| Maithon Power Limited                               | 300                      | Coal                          | 30 Years                 | 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  |

| Power Generation Source | Generation Capacity (MW) |
|-------------------------|--------------------------|
| Gas                     | 453                      |
| Renewable Energy        | 351                      |
| Hydro                   | 204                      |
| Nuclear                 | 31                       |
| Coal                    | 1542                     |

➤ **Category wise Consumer count & energy consumption for FY 2021-22**

**Table 2: Energy consumption and type of consumers**

| Category of Consumers                  | Voltage Level | No of Consumers | Total Consumption (In MU) |
|----------------------------------------|---------------|-----------------|---------------------------|
| Domestic                               | HT/LT         | 1603501         | 4478.55                   |
| Commercial                             | LT            | 239165          | 1069                      |
| Water Supply                           |               | 1429            | 255.39                    |
| Public Lighting                        |               | 4981            | 118.67                    |
| HT Industrial                          |               | 360             | 257.06                    |
| Industrial (Small)                     |               | 29842           | 2084                      |
| HT Commercial                          |               | 470             | 322.3                     |
| Agricultural                           |               | 4585            | 13.91                     |
| EV                                     |               | 877             | 23.32                     |
| Others-1 (if any , specify in remarks) |               | 368             | 129                       |
| <b>Total</b>                           |               | 1885578         | 8751.20                   |

➤ **Technical Parameters For FY 2021-22**

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, consumption and AT & C losses for the FY-2021-2022 is shown in table below. The AT&C loss for FY 2021-2022 is 6.80% & the T&D losses of the discom is 7.14%.

**Table 3: Technical Details (FY2021-22)**

| Technical Details (FY2021-22)                                                                    |             |          |
|--------------------------------------------------------------------------------------------------|-------------|----------|
| Energy Input Details                                                                             | UoM         | Value    |
| Input Energy Purchase<br>(From Generation Source)                                                | Million kwh | 11737.11 |
| Net input energy (at DISCOM Periphery after adjusting the transmission losses and energy traded) | Million kwh | 9424.75  |
| Total Energy billed (is the Net energy billed, adjusted for energy traded))                      | Million kwh | 8752.21  |
| Transmission and Distribution (T&D) loss<br>Details                                              | Million kwh | 672.55   |
|                                                                                                  | %           | 7.14%    |
| Collection Efficiency                                                                            | %           | 100.36%  |
| Aggregate Technical & Commercial Loss                                                            | %           | 6.80%    |

The total purchased power by Tata Power-DDL is 11737.11millionunits and the net energy after adjusting the transmission losses and energy sales is 9424.75million units. The total energy billed or net energy billed after all the adjustment is 8752.21millionunits. The total T&D losses for FY 2021-22was 672.55millionunits, the overall collection efficiency of the Tata Power-DDLwas100.36% & AT&C losses was 6.80% .

### ➤ Details of Input Energy & Infrastructure

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

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

| Parameters                                                                    | FY 2021-22 |
|-------------------------------------------------------------------------------|------------|
| Input Energy purchased (MU)                                                   | 11737.11   |
| Transmission loss (%)                                                         | 4%         |
| Transmission loss (MU)                                                        | 471.211    |
| Energy sold outside the periphery (MU)                                        | 1841.142   |
| Open access sale (MU)                                                         | 88.704     |
| EHT sale                                                                      | 156.878    |
| Net input energy (received at DISCOM periphery or at distribution point)-(MU) | 9507.35    |
| 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                                                 | 93%        |
| % of metering available at consumer end                                       | 100%       |
| No of feeders at 66kV voltage level                                           | 132        |
| No of feeders at 33kV voltage level                                           | 108        |
| No of feeders at 11kV voltage level                                           | 1341       |
| No of LT feeders' level                                                       | 16095      |
| Line length (ckt. km) at 66kV voltage level                                   | 538.7      |
| Line length (ckt. km) at 33kV voltage level                                   | 477.3      |
| Line length (ckt. km) at 11kV voltage level                                   | 5132       |
| Line length (km) at LT level                                                  | 7485       |
| Length of Aerial Bunched Cables                                               | 5641       |
| Length of Underground Cables                                                  | 6055       |
| HT/LT ratio                                                                   | 0.821376   |

## ➤ Goals and Objectives

Tata Power-DDL is a designated consumer in Discom sector. Being a designated Consumer Tata Power-DDL needs to undergo Annual energy audit (Accounting) as per BEE notification No 18/1/BEE/Discom/2021 dated 6th October 2021.

The Annual Energy Audit (Accounting) at Tata Power-DDL 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 analyses and processes the data with respect to consistency, improvement in accounting and reducing loss of DISCOM.
- Verification of the information submitted by DC to the SDA/BEE about status of energy input, Output and loss for the previous two year.
- Access the past performance of the establishment.
- Quantification of Energy losses and Energy Saving Potential.

## ➤ Energy Conservation measures already taken

Tata Power DDL has taken various energy conservation measures to reduce the energy consumptions in FY-2021-22. 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**

| <u>DSM Program</u>                | 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                | -                  | -                    |

➤ **Energy Conservation measures Proposed for Future**

- **Sub-Transmission Network Optimization:** Tata Power-DDL has a mesh network at the 33 & 66 kV level which is operated in a radial manner. The NOPs (Normal Open Points) are decided after conducting thorough loss studies and the most optimal configuration is adopted for minimum loss while meeting other operational & reliability requirements. The exercise is conducted annually to incorporate benefits from addition of new circuits. Also a separate configuration is adopted for the winter months (Nov to Mar) to take advantage of lower loading levels.
- **11 kV Network Optimization:** The 11 kV network is also a mesh network operated in a radial manner. We have initiated an internal project this year (FY22-23) to reconfigure the network for minimum loss while meeting other operational & reliability requirements.
- **Change in Cable Specifications:** Due to operational requirements, the standard rating of service cable catering to single phase consumers with sanctioned load 6 to 10 kW has been revised from 2x10sqmm Al XLPE to 2x25sqmm Al XLPE. The reduction in resistivity will result in reduction of technical losses.

## 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 While the energy Purchased, Net Input & billed Tata Power-DDL for the customer is 11737.11MU, 9424.75MU& 8752.21MU. The monthly consumption per customer stands at 386.76 KWH/Month. Tata Power-DDL caters to area spread in 5 circles, 12 Division, 37 numbers of sub-division, 1341 number of feeders, 7548 number of DTs and 1885578 numbers of consumers.
- Verified transmission losses, distribution (T&D) losses, collection efficiency & aggregate technical & commercial losses of Tata Power Delhi Distribution Limited for FY21-22, i.e., 1st April'2021 to 31st March'2022 was 4.01%, 7.14 %, 100.36 % & 6.80 % 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.
- Tata Power DDLhas implemented various energy conservation measures under DSM programme i.e., AC Replacement Scheme, BLDC Ceiling Fan, LED Lighting Scheme, Behavioural Demand Response (BDR) etc.
- 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 programmes 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 2021-22 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 for FY21-22, 1st April, 2021- 31st March, 2022.

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

## 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)<br>EM- 5062<br>Ph: 91-1166050613<br>Mobile: 9717991957<br>Email: <a href="mailto:mdshadab.ahmad@tatapower-ddl.com">mdshadab.ahmad@tatapower-ddl.com</a> |
| Authorized Signatory | Mr. HC Sharma (General Manager)<br>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.

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.

Achieving excellence through safety, technology adoption, collaborations and teamwork is the mission of Tata Power-DDL.

Consumer convenience is the driving force behind all initiatives at Tata Power – DDL. The organization 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 is committed to the sustainability goals and continuing to reduce its carbon footprints through RPOs and various clean energy initiatives.

TATA Power-DDL has 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 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.

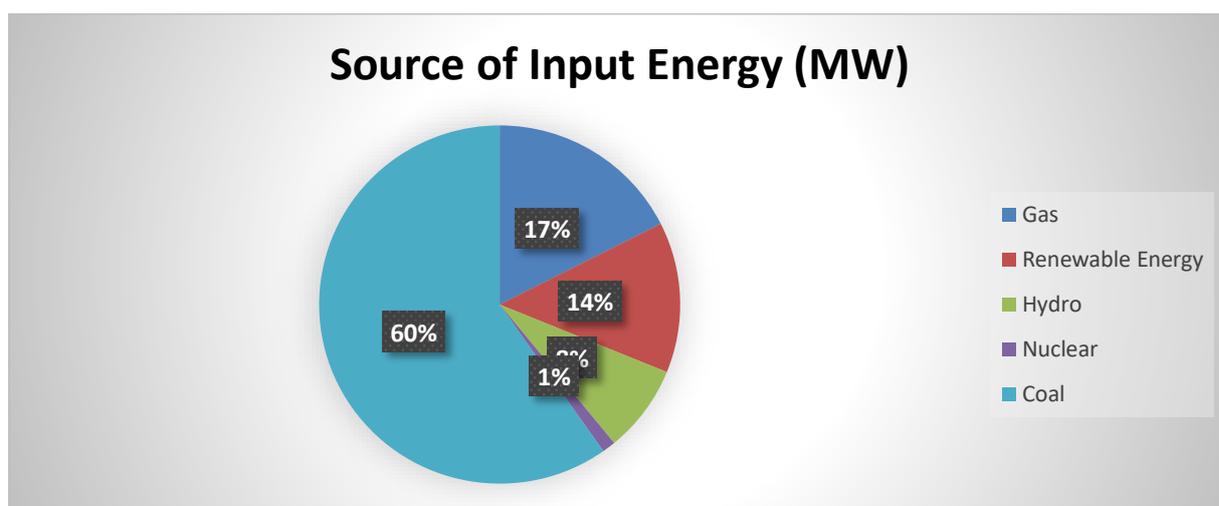
Key parameters regarding Tata Power DDL are mentioned below:-

#### Source of Input Energy

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

**Table 9: Input energy source and capacity**

| Source           | Capacity (MW) |
|------------------|---------------|
| Gas              | 453           |
| Renewable Energy | 351           |
| Hydro            | 204           |
| Nuclear          | 31            |
| Coal             | 1542          |

**Figure 1: Source of Input Energy (MW)**

- Consumer wise connections & energy consumptions for FY 2021-22

**Table 10: Energy consumption with type of consumers**

| Type of Consumers  | Category of Consumers (EHT/HT/LT/Others) | Voltage Level | No of Consumers | Total Consumption (In MU) |
|--------------------|------------------------------------------|---------------|-----------------|---------------------------|
| Domestic           | HT/LT                                    | 11/.22/.4     | 1603501         | 4478.55                   |
| Commercial         | LT                                       |               | 239165          | 1069                      |
| Water Supply       |                                          |               | 1429            | 255.39                    |
| Public Lighting    |                                          |               | 4981            | 118.67                    |
| HT Industrial      |                                          |               | 360             | 257.06                    |
| Industrial (Small) |                                          |               | 29842           | 2084                      |
| HT Commercial      |                                          |               | 470             | 322.3                     |
| Agricultural       |                                          |               | 4585            | 13.91                     |
| EV                 |                                          |               | 877             | 23.32                     |
| Others-1           |                                          |               | 368             | 129                       |
| <b>Total</b>       |                                          |               | <b>1885578</b>  | <b>8751.20</b>            |

- Technical Parameters for FY 2021-22

Tata Power DDL supplies power 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-2021-2022 is shown in table below the AT&C losses for FY2021-2022 is 6.80% & the T&D losses of the sector is 7.14%.

**Table 11: Technical Details (FY 2021-22)**

| Technical Details (FY2021-22)                                                                    |               |         |
|--------------------------------------------------------------------------------------------------|---------------|---------|
| Energy Input Details                                                                             | UoM           | Value   |
| Input Energy Purchase<br>(From Generation Source)                                                | Million Units | 11737   |
| Net input energy (at DISCOM Periphery after adjusting the transmission losses and energy traded) | Million Units | 9425    |
| Total Energy billed (is the Net energy billed, adjusted for energy traded))                      | Million Units | 8752    |
| Transmission and Distribution (T&D) loss<br>Details                                              | Million Units | 672.55  |
|                                                                                                  | %             | 7.14%   |
| Collection Efficiency                                                                            | %             | 100.36% |
| Aggregate Technical & Commercial Loss                                                            | %             | 6.80%   |

The total purchased power by Tata Power-DDL is 11737.11million kWh and the net energy after adjusting the transmission losses and energy sales is 9424.75million kWh, The total energy billed or net energy billed after all the adjustment is 8751.21million kWh. The total T & D loss for FY 2021-22 is 672.55million kWh.

- Category wise Consumers, Consumptions & Losses

**Table 12: Category wise Consumers, Consumption & Losses**

| Consumer category        | Total Number of connections (Nos) | Total Connected Load (MW) | Input energy (MU) | Total energy | T&D loss (MU) |
|--------------------------|-----------------------------------|---------------------------|-------------------|--------------|---------------|
| Residential              | 1603501                           | 3325                      | 9424.75           | 4478.55      | 672.55        |
| Agricultural             | 4585                              | 33                        |                   | 13.91        |               |
| Commercial/Industrial-LT | 269002                            | 2267                      |                   | 3153.49      |               |
| Commercial/Industrial-HT | 834                               | 360                       |                   | 579.36       |               |
| Others                   | 7656                              | 230                       |                   | 526.90       |               |
|                          | 1885578                           | 6215                      | 9424.75           | 8752.21      | 672.55        |

| Consumer category        | T&D loss (%) | Billed Amount in Rs. Crore | Collected Amount in Rs. Crore | Collection Efficiency | AT & C loss (%) |
|--------------------------|--------------|----------------------------|-------------------------------|-----------------------|-----------------|
| Residential              | 7.14%        | 2582.7                     | 2584.5                        | 100.07%               |                 |
| Agricultural             |              | 9.8                        | 9.7                           | 99.59%                |                 |
| Commercial/Industrial-LT |              | 4257.7                     | 4275.8                        | 100.43%               |                 |
| Commercial/Industrial-HT |              | 745.1                      | 744.5                         | 99.93%                |                 |
| Others                   |              | 527.5                      | 537.5                         | 101.90%               |                 |
|                          | 7.14%        | 8122.7                     | 8152.0                        | 100.36%               | 6.80%           |

- Administrative structure

The Distribution network of Tata Power-DDL is divided into five numbers of circles, twelve number of divisions & thirty-seven numbers of sub divisions.

**Table 13: Administrative structure**

| Parameters              | Values |
|-------------------------|--------|
| Number of circles       | 5      |
| Number of divisions     | 12     |
| Number of sub-divisions | 37     |

- Voltage wise Metered & Unmetered Consumers

**Table 14: Voltage wise metered & unmetered Consumers**

| Parameters                                      | 66kV and above | 33kV | 11/22kV | LT      |
|-------------------------------------------------|----------------|------|---------|---------|
| Number of conventional metered consumers        | 0              | 0    | 0       | 1589334 |
| Number of consumers with 'smart' meters         | 0              | 0    | 0       | 254226  |
| Number of consumers with 'smart prepaid' meters | 0              | 0    | 0       | 0       |
| Number of consumers with 'AMR' meters           | 5              | 2    | 1005    | 36273   |
| Number of consumers with 'non-                  | 0              | 0    | 0       | 4733    |

| Parameters                       | 66kV and above | 33kV | 11/22kV | LT      |
|----------------------------------|----------------|------|---------|---------|
| smart prepaid' meters            |                |      |         |         |
| Number of unmetered consumers    | 0              | 0    | 0       | 0       |
| <b>Number of total consumers</b> | 5              | 2    | 1005    | 1884566 |

- Numbers of Distribution Transformers( above 250kVA )

**Table 15: Number of Distribution Transformers**

| Parameters                                                 | 66kV and above | 33kV | 11/22kV | LT   |
|------------------------------------------------------------|----------------|------|---------|------|
| Number of conventionally metered Distribution Transformers | 0              | 0    | 0       | 229  |
| Number of DTs with communicable meters                     | 0              | 0    | 0       | 4179 |
| Number of unmetered DTs                                    | 0              | 0    | 0       | 336  |
| <b>Number of total Transformers</b>                        | 0              | 0    | 0       | 4744 |

- Numbers of Feeders

**Table 16: Numbers of Feeders**

| Parameters                                 | 66kV and above | 33kV | 11/22kV | LT    |
|--------------------------------------------|----------------|------|---------|-------|
| Number of metered feeders                  | 132            | 108  | 1341    | 16095 |
| Number of feeders with communicable meters | 132            | 108  | 1341    | 16095 |
| Number of unmetered feeders                | 0              | 0    | 0       | 0     |
| <b>Number of total feeders</b>             | 132            | 108  | 1341    | 16095 |

- Length of Cables

**Table 17: Length of Cables**

| Particulars         | Value (km) |
|---------------------|------------|
| Line length (ct km) | 1937       |

| Particulars                     | Value (km) |
|---------------------------------|------------|
| Length of Aerial Bunched Cables | 5641       |
| Length of Underground Cables    | 6055       |

- Energy Flow Diagram

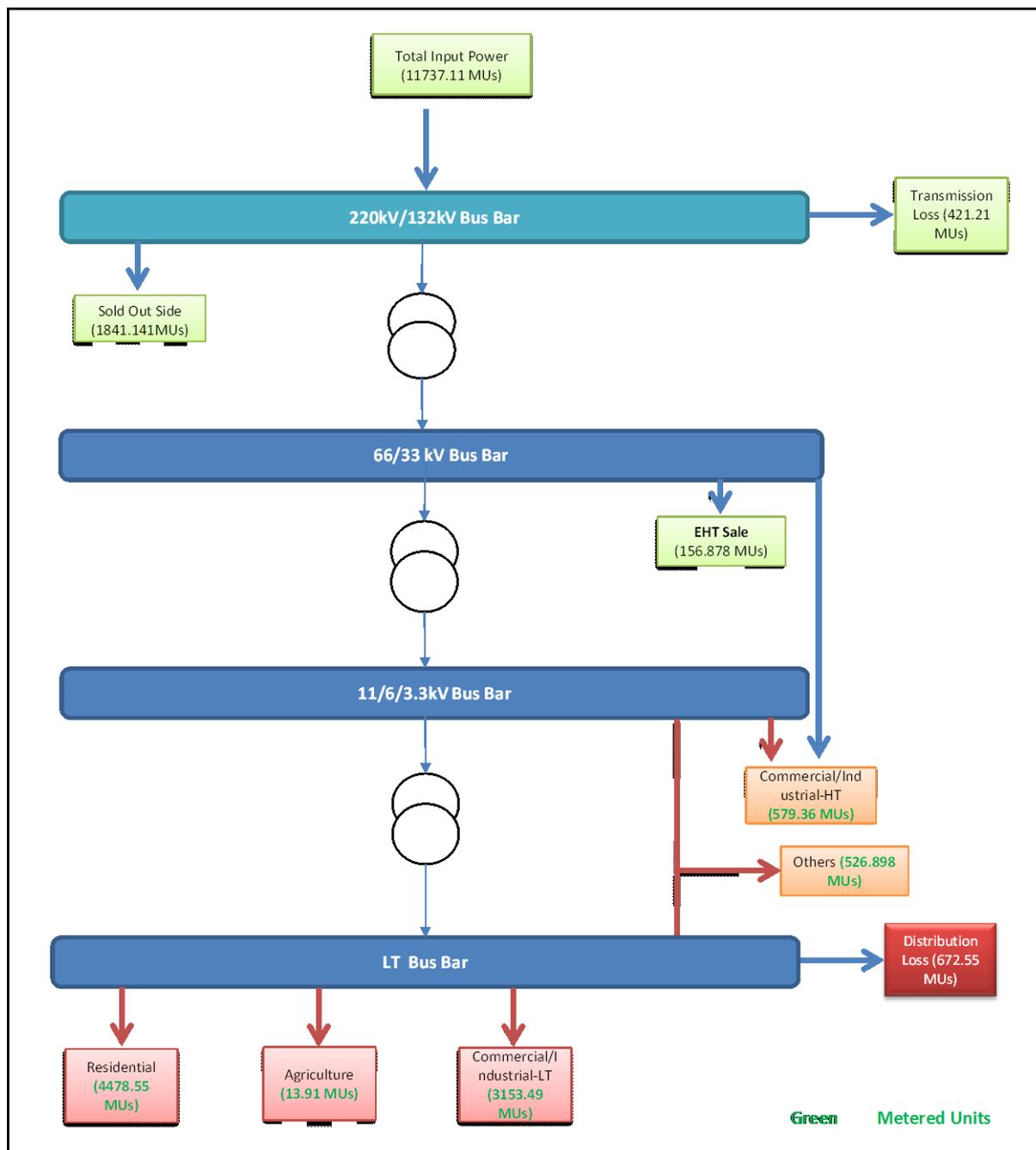


Figure 2: Energy Flow Diagram

### III Discussions & Analysis-

#### 3.1 Energy Accounts for Previous Year (FY 2020-2021)

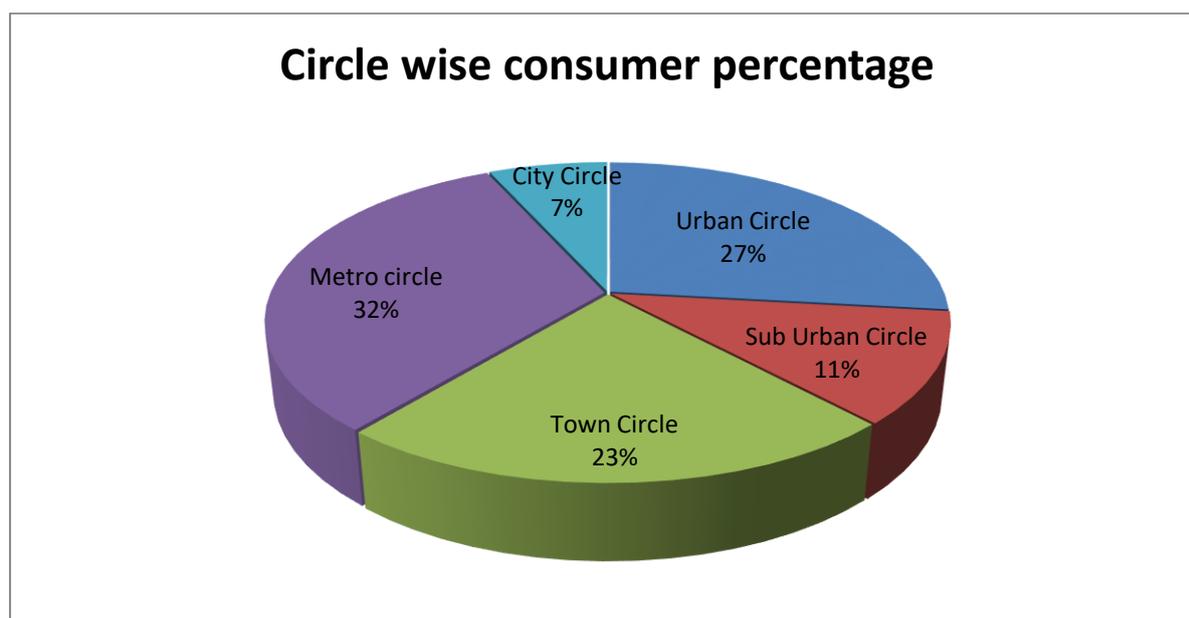
Tata Power DDL has undertaken second year of energy accounting as per notification. No. 18/1/BEE/DISCOM/2021 from BUREAU OF ENERGY EFFICIENCY dated 6th October, 2021.

##### ➤ 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 18: Input & Metered Energy Circle Wise**

| Circle           | Total No of Consumers | Connected Load (MW) | Input Energy (MU) | Metered Energy (MU) |
|------------------|-----------------------|---------------------|-------------------|---------------------|
| Urban Circle     | 488797                | 1064                | 1670.72           | 1527.51             |
| Sub Urban Circle | 205017                | 1150                | 1813.98           | 1626.33             |
| Town Circle      | 419677                | 1659                | 2212.07           | 2113.02             |
| Metro circle     | 587100                | 1584                | 2238.01           | 2142.07             |
| City Circle      | 123440                | 568                 | 1015.34           | 901.514             |
| <b>Total</b>     | <b>1824031</b>        | <b>6026</b>         | <b>8950.12</b>    | <b>8310.43</b>      |

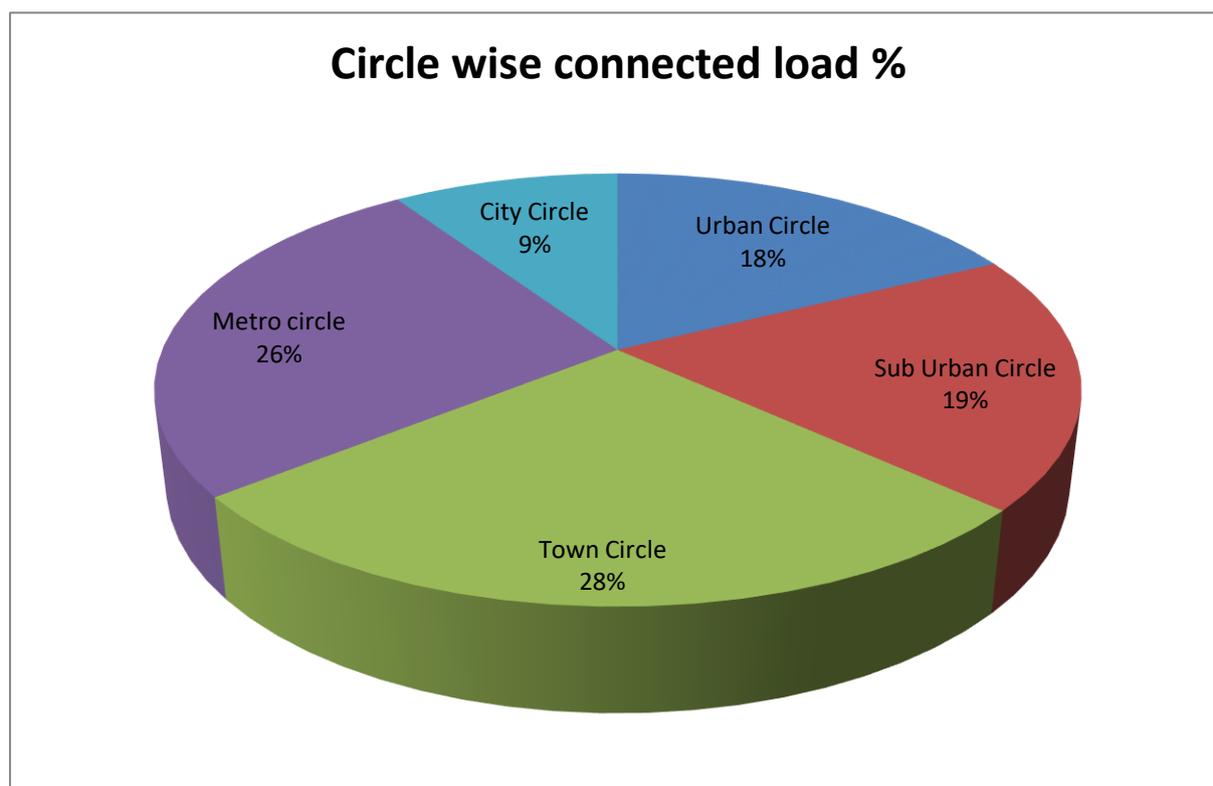


**Figure 3: Circle wise consumers**

### ➤ 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                | 1670.72           | 1527.51             | 143.21        |
| Sub Urban Circle | 1150                | 1813.98           | 1626.33             | 187.66        |
| Town Circle      | 1659                | 2212.07           | 2113.02             | 99.05         |
| Metro circle     | 1584                | 2238.01           | 2142.07             | 95.94         |
| City Circle      | 568                 | 1015.34           | 901.51              | 113.83        |
| <b>Total</b>     | <b>6026</b>         | <b>8950.12</b>    | <b>8310.43</b>      | <b>639.68</b> |



**Figure 4: Circle wise connected Load**

- 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 and 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 19: Technical Details (FY 2020-21)**

| Technical Details (FY2020-21)                                                                    |               |          |
|--------------------------------------------------------------------------------------------------|---------------|----------|
| Energy Input Details                                                                             | UoM           | Value    |
| Input Energy Purchase<br>(From Generation Source)                                                | Million Units | 10085.62 |
| Net input energy (at DISCOM Periphery after adjusting the transmission losses and energy traded) | Million Units | 8950.12  |
| Total Energy billed (is the Net energy billed, adjusted for energy traded))                      | Million Units | 8310.43  |
| Transmission and Distribution (T&D) loss<br>Details                                              | Million Units | 639.68   |
|                                                                                                  | %             | 7.15%    |
| Collection Efficiency                                                                            | %             | 101%*    |
| Aggregate Technical & Commercial Loss                                                            | %             | 6.48%    |

\* Collection efficiency is more than 100 % on account of arrears, prepayment etc.

### 3.2 Energy Accounts & Performance in current year (FY 2021-2022)

#### ➤ Summary of Energy Consumption

The category wise details of consumers is given in the table:

| S.No | Type of Consumers                      | Category of Consumers | Voltage Level | No of Consumers | Total Consumption (In MU) | % Share |
|------|----------------------------------------|-----------------------|---------------|-----------------|---------------------------|---------|
| 1    | Domestic                               | HT/LT                 | 11/.22/.4     | 1603501         | 4478.55                   | 51.2%   |
| 2    | Commercial                             | LT                    |               | 239165          | 1069                      | 12.2%   |
| 3    | Water Supply                           |                       |               | 1429            | 255.39                    | 2.9%    |
| 4    | Public Lighting                        |                       |               | 4981            | 118.67                    | 1.4%    |
| 5    | HT Industrial                          |                       |               | 360             | 257.06                    | 2.9%    |
| 6    | Industrial (Small)                     |                       |               | 29842           | 2084                      | 23.8%   |
| 7    | HT Commercial                          |                       |               | 470             | 322.3                     | 3.7%    |
| 8    | Agricultural                           |                       |               | 4585            | 13.91                     | 0.2%    |
| 9    | EV                                     |                       |               | 877             | 23.32                     | 0.3%    |
| 10   | Others-1 (if any , specify in remarks) |                       |               | 368             | 129                       | 1.5%    |
|      | <b>Total</b>                           |                       |               | 1885578         | 8751.20                   | 100.0%  |

### ➤ Circle wise Consumers & Input Energy

Tata Power DDL has five circles and twelve numbers of division & thirty-seven numbers of sub division. Circle wise, Input energy (MU) & metered energy (MU) is given in the table:

**Table 20: Circle Wise Input & Metered Energy**

| Circle           | Input Energy (MU) | Metered Energy (MU) |
|------------------|-------------------|---------------------|
| Urban Circle     | 1769.83           | 1608.718            |
| Sub Urban Circle | 1915.095          | 1744.993            |
| Town Circle      | 2330.31           | 2216.553            |
| Metro circle     | 2320.747          | 2187.902            |
| City Circle      | 1088.77           | 994.04              |
| <b>Total</b>     | <b>9424.753</b>   | <b>8752.208</b>     |

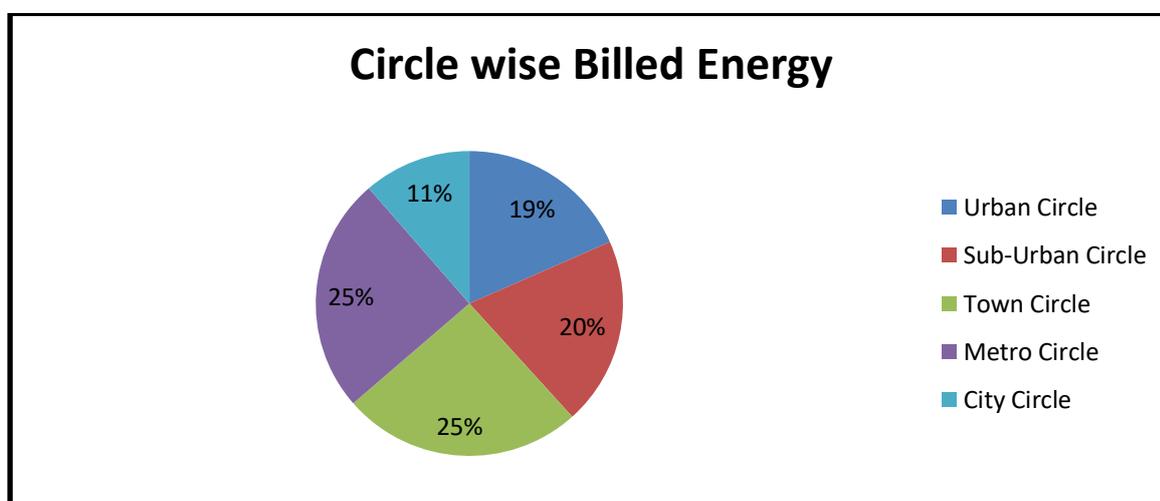
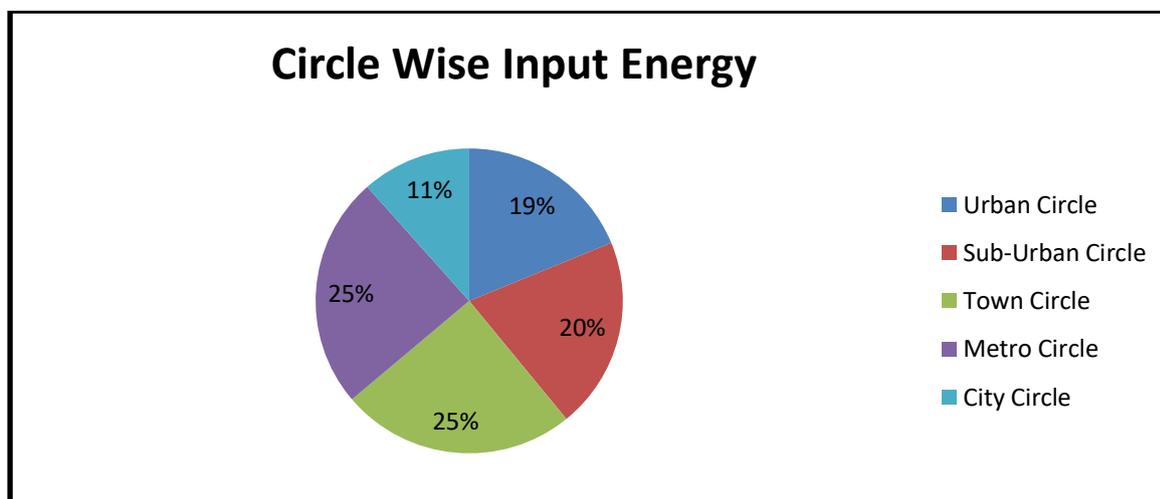


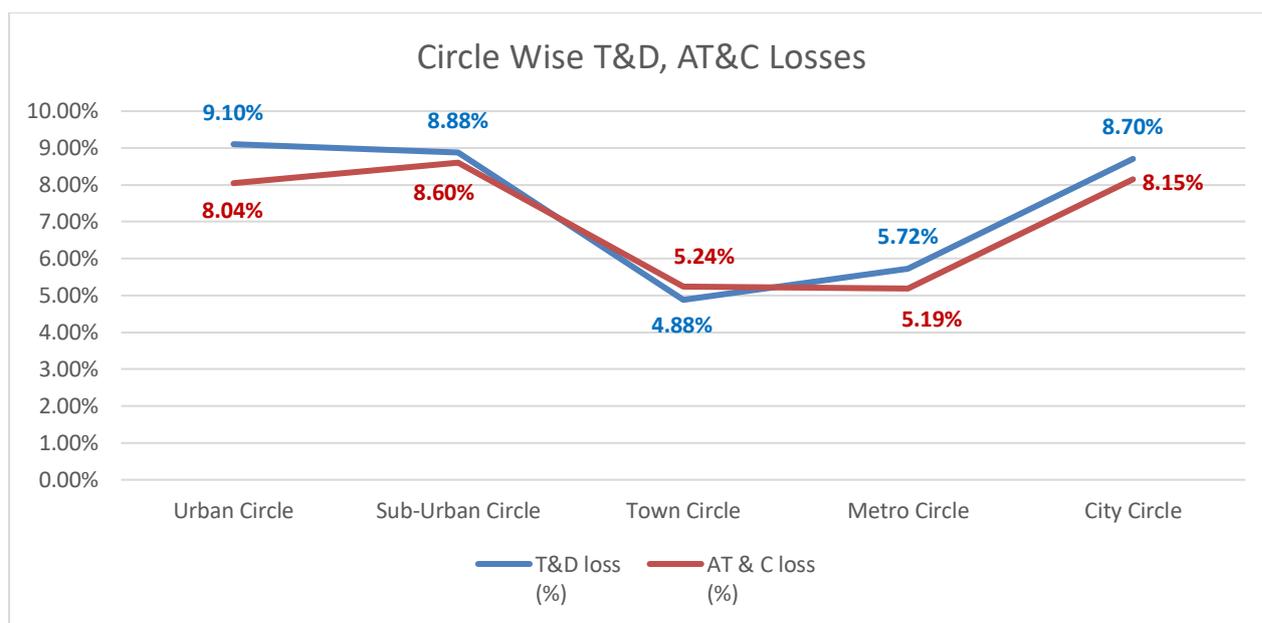
Figure 5: Circle wise Input & Billed Energy

### ➤ Circle wise T&D and AT&C Losses

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

**Table 21: T & D and AT&C Circle Wise**

| Name of Circle   | T&D loss (MU) | T&D loss (%) | Billed Amount in Rs. Crore | Collected Amount in Rs. Crore | Collection Efficiency | AT & C loss (%) |
|------------------|---------------|--------------|----------------------------|-------------------------------|-----------------------|-----------------|
| Urban Circle     | 161.11        | 9.10%        | 1314.65                    | 1329.98                       | 101.17%               | 8.04%           |
| Sub-Urban Circle | 170.10        | 8.88%        | 1900.49                    | 1906.32                       | 100.31%               | 8.60%           |
| Town Circle      | 113.76        | 4.88%        | 2126.25                    | 2118.22                       | 99.62%                | 5.24%           |
| Metro Circle     | 132.85        | 5.72%        | 1715.86                    | 1725.62                       | 100.57%               | 5.19%           |
| City Circle      | 94.73         | 8.70%        | 1065.43                    | 1071.90                       | 100.61%               | 8.15%           |
|                  | <b>672.55</b> |              | <b>8122.69</b>             | <b>8152.042</b>               |                       |                 |



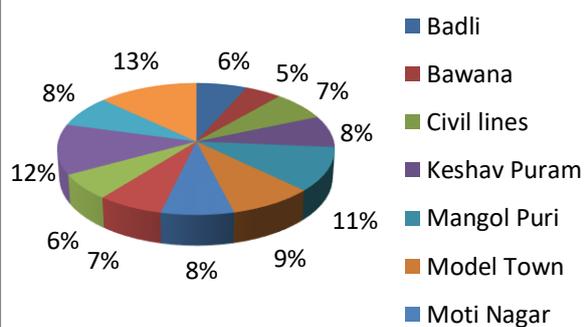
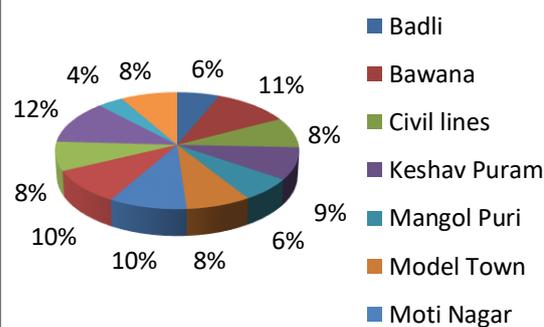
**Figure 6: Circle wise T&D, AT&C losses**

### ➤ Division wise energy parameters

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 22: Division Wise Input, Metered Energy**

| Name of Division | Total Number of connections (Nos) | Total Connected Load (MW) | Input energy (MUs) | Billed energy (MUs) |
|------------------|-----------------------------------|---------------------------|--------------------|---------------------|
| Badli            | 124298                            | 385                       | 621.60             | 553.61              |
| Bawana           | 90357                             | 691                       | 1302.72            | 1171.22             |
| Civil lines      | 135226                            | 519                       | 773.43             | 750.61              |
| KeshavPuram      | 147094                            | 556                       | 803.95             | 754.21              |
| MangolPuri       | 204301                            | 400                       | 618.99             | 576.76              |
| Model Town       | 167581                            | 486                       | 667.51             | 626.38              |
| Moti Nagar       | 143788                            | 586                       | 752.93             | 711.74              |
| Narela           | 130156                            | 595                       | 1088.77            | 994.04              |
| PitamPura        | 119866                            | 500                       | 612.37             | 573.77              |
| Rohini           | 231890                            | 749                       | 1034.25            | 984.75              |
| Kirari           | 146450                            | 233                       | 394.40             | 342.65              |
| Shalimar Bagh    | 244571                            | 516                       | 753.83             | 712.46              |
| <b>Total</b>     | <b>1885578</b>                    | <b>6215</b>               | <b>9424.75</b>     | <b>8752.21</b>      |

**Division wise share of Consumers****Division wise share of Connected Load**

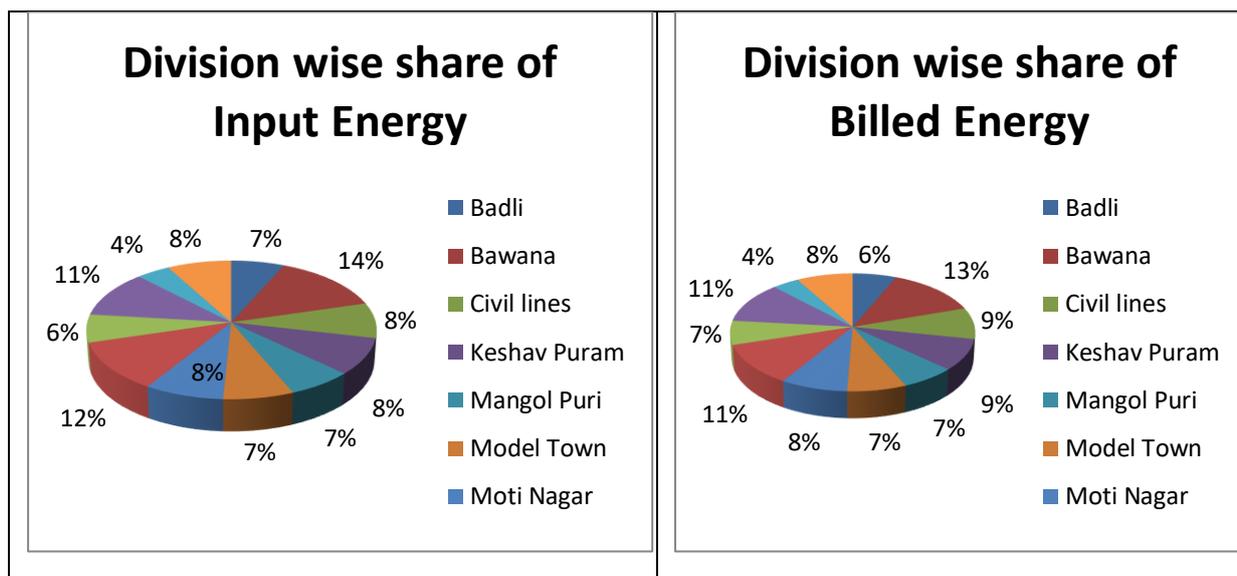


Figure 7: Division wise Input, Billed Energy, Consumers and Connected Load

➤ **Division wise energy parameters & Losses**

The Division wise T&D Losses, Billed Amount & Collected Amount with transmission & distribution losses is given in following table

Table 23: Division Wise T&amp;D Losses &amp; AT&amp;C losses

| Name of Division | T&D loss (MU) | T&D loss (%) | Billed Amount Rs. Crore | Collected Amount Rs. Crore | Collection Efficiency | AT & C loss (%) |
|------------------|---------------|--------------|-------------------------|----------------------------|-----------------------|-----------------|
| Badli            | 67.99         | 10.94%       | 562.8                   | 570.2                      | 101.31%               | 9.77%           |
| Bawana           | 131.50        | 10.09%       | 1394.2                  | 1397.5                     | 100.24%               | 9.88%           |
| Civil lines      | 22.82         | 2.95%        | 677.5                   | 675.5                      | 99.70%                | 3.24%           |
| KeshavPuram      | 49.75         | 6.19%        | 737.6                   | 730.6                      | 99.05%                | 7.08%           |
| MangolPuri       | 42.22         | 6.82%        | 410.4                   | 413.4                      | 100.73%               | 6.14%           |
| Model Town       | 41.12         | 6.16%        | 515.2                   | 515.6                      | 100.08%               | 6.09%           |
| Moti Nagar       | 41.19         | 5.47%        | 711.2                   | 712.2                      | 100.14%               | 5.34%           |
| Narela           | 94.73         | 8.70%        | 1065.4                  | 1071.9                     | 100.61%               | 8.15%           |
| PitamPura        | 38.60         | 6.30%        | 506.3                   | 508.9                      | 100.50%               | 5.83%           |
| Rohini           | 49.50         | 4.79%        | 790.3                   | 796.6                      | 100.80%               | 4.02%           |
| Kirari           | 51.75         | 13.12%       | 225.9                   | 229.9                      | 101.73%               | 11.62%          |
| Shalimar Bagh    | 41.37         | 5.49%        | 525.9                   | 530.0                      | 100.77%               | 4.76%           |
| <b>Total</b>     | <b>672.55</b> | <b>7.14%</b> | <b>8122.69</b>          | <b>8152.04</b>             | <b>100.36%*</b>       | <b>6.80%</b>    |

\* Collection efficiency is more than 100 % on account of arrears, prepayment etc.

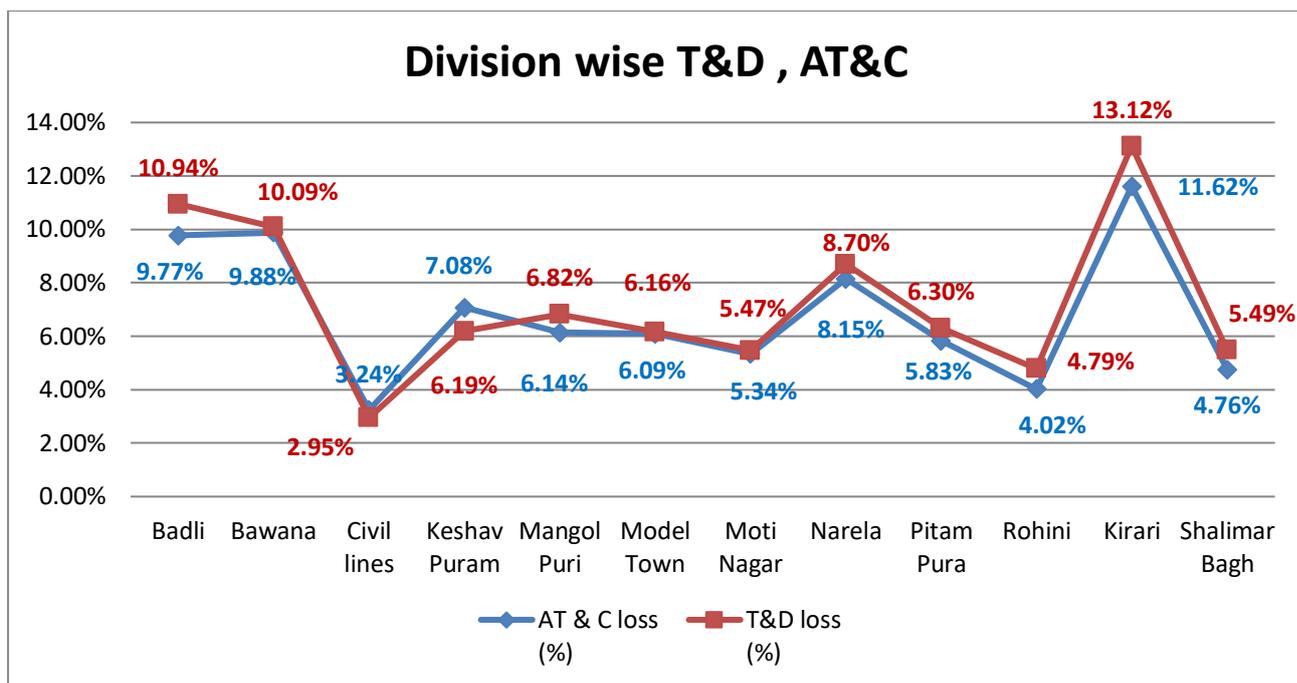


Figure 8: Division wise T&amp;D &amp; AT&amp;C

➤ 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 24: Consumer Category &amp; AT&amp;C Losses

| Consumer category        | Total Number of connections (Nos) | Total Connected Load (MW) | Input energy (MU) | Total energy   | T&D loss (MU) |
|--------------------------|-----------------------------------|---------------------------|-------------------|----------------|---------------|
| Residential              | 1603501                           | 3324                      | 9424.75           | 4478.55        | 672.55        |
| Agricultural             | 4585                              | 33                        |                   | 13.91          |               |
| Commercial/Industrial-LT | 269002                            | 2267                      |                   | 3153.49        |               |
| Commercial/Industrial-HT | 834                               | 360                       |                   | 579.36         |               |
| Others                   | 7656                              | 230                       |                   | 526.90         |               |
|                          | <b>1885578</b>                    | <b>6215</b>               | <b>9424.75</b>    | <b>8752.21</b> | <b>672.55</b> |

| Consumer category        | T&D loss (%) | Billed Amount in Rs. Crore | Collected Amount in Rs. Crore | Collection Efficiency | AT & C loss (%) |
|--------------------------|--------------|----------------------------|-------------------------------|-----------------------|-----------------|
| Residential              | 7.14%        | 2582.7                     | 2584.5                        | 100.07%               | 6.80%           |
| Agricultural             |              | 9.8                        | 9.7                           | 99.59%                |                 |
| Commercial/Industrial-LT |              | 4257.7                     | 4275.8                        | 100.43%               |                 |
| Commercial/Industrial-HT |              | 745.1                      | 744.5                         | 99.93%                |                 |
| Others                   |              | 527.5                      | 537.5                         | 101.90%               |                 |
|                          | 7.14%        | 8122.7                     | 8152.0                        | 100.36%               |                 |

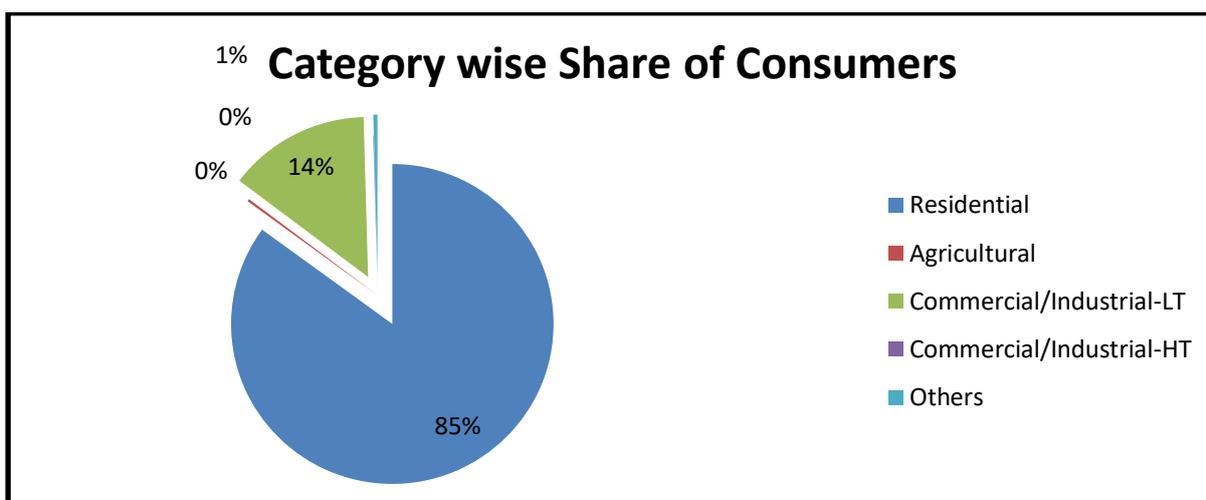


Figure 9: Category wise share of Consumers

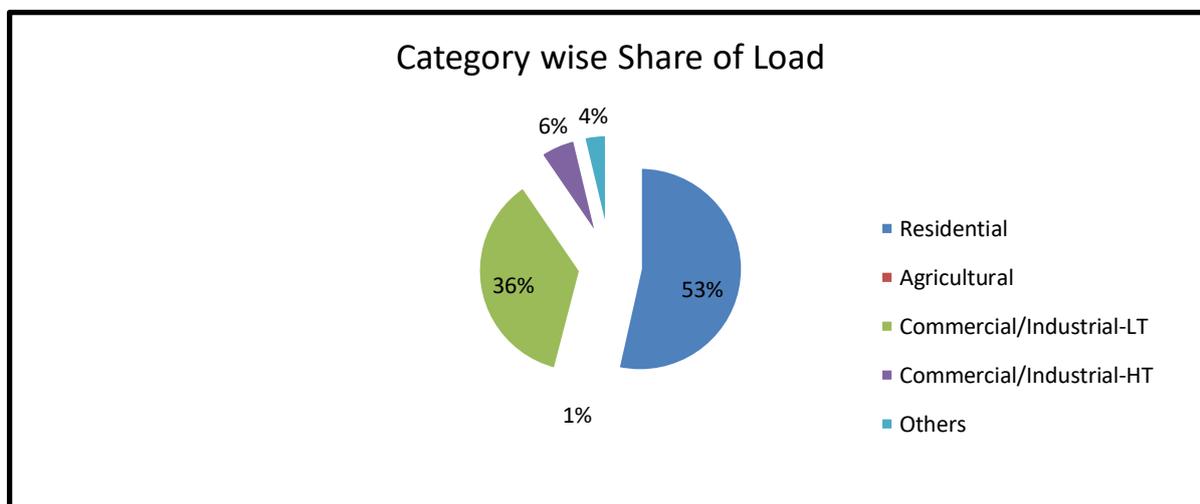
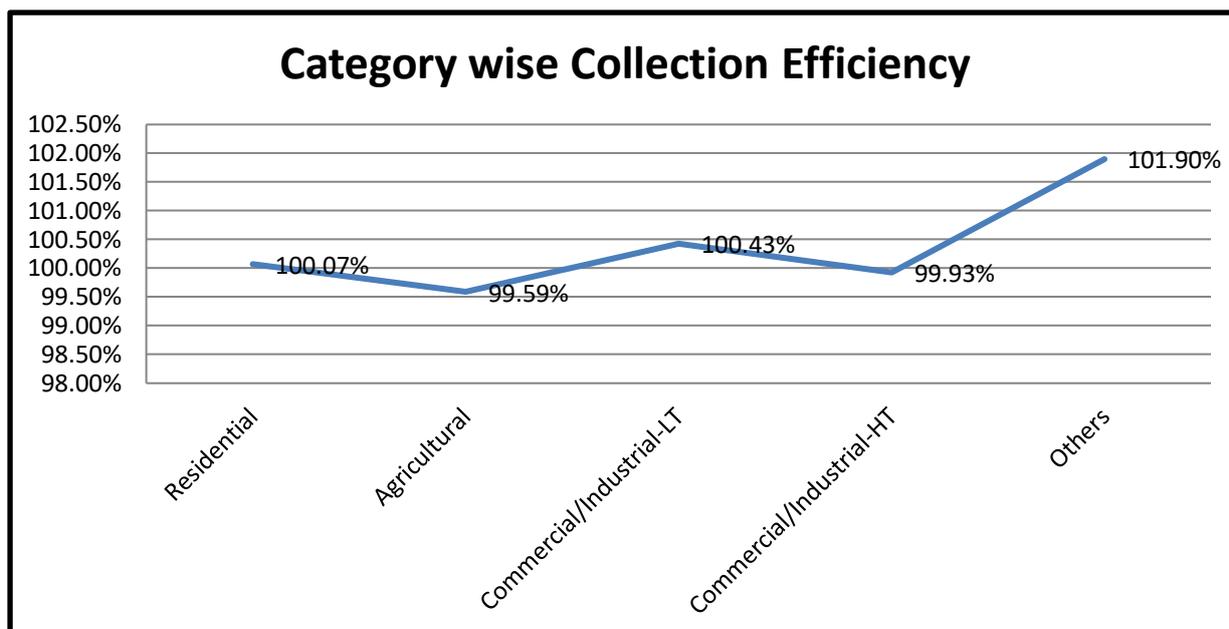


Figure 10: Category wise Share of Load



**Figure 11: Category wise Collection Efficiency**

➤ Range of Losses

The Range of T&D Losses, collection efficiency and AT & C losses among the divisions is tabulated below:

**Table 25: % Losses- Division Wise**

| Description                       | Data              |
|-----------------------------------|-------------------|
| T & D Losses                      | 7.14%             |
| T & D Losses Range                | 2.95% to 13.12%   |
| Division with highest losses      | Kirari            |
| Division with lowest losses       | Civil Lines       |
| Collection efficiency             | 100.36%           |
| Collection efficiency range       | 99.05% to 101.73% |
| AT & C Loss (%)                   | 6.80%             |
| AT & C Range                      | 3.24% to 11.62%   |
| Division with highest AT&C Losses | Kirari            |
| Division with lowest AT&C Losses  | Civil Lines       |

➤ **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 26: Metering Details at 220 KV**

| S. No | Circle | Feeder Name                 | Feeder Metering Status | Status of Meter | Feeder Type | Meter S.No | CT/PT ratio | Import (MU) |
|-------|--------|-----------------------------|------------------------|-----------------|-------------|------------|-------------|-------------|
| 1     | Urban  | DMRC Jahangirpuri           | Metered                | Functional      | Mixed       | 4902494    | 1000        | 15.34       |
| 2     | Urban  | DMRC SMB RSS                | Metered                | Functional      | Mixed       | 4902484    | 500         | 18.98       |
| 3     | Town   | Kashmeri Gate 220 KV DMRC 2 | Metered                | Functional      | Mixed       | 4902482    | 500         | 58.17       |
| 4     | Town   | Kashmeri Gate 220 KV DMRC 1 | Metered                | Functional      | Mixed       | 5128473    | 1000        | 55.44       |

➤ 66 kV Voltage feeder name & Energy Parameters

**Table 27: Metering Details at 66 KV**

| S. No | Circle   | Feeder Name              | Feeder Metering Status | Status of Meter | Feeder Type | Meter S.No | CT/PT ratio | Import (MU) |
|-------|----------|--------------------------|------------------------|-----------------|-------------|------------|-------------|-------------|
| 1     | SubUrban | Narela T X 1             | Metered                | Functional      | Mixed       | 4864963    | 1000        | 253.51      |
| 2     | SubUrban | Narela T X 2             | Metered                | Functional      | Mixed       | 5128462    | 500         | 279.27      |
| 3     | SubUrban | Narela T X 3             | Metered                | Functional      | Mixed       | 4865052    | 1000        | 163.52      |
| 4     | SubUrban | Railway Ckt-1            | Metered                | Functional      | Mixed       | 4864952    | -625        | -28.29      |
| 5     | SubUrban | Railway Ckt-2            | Metered                | Functional      | Mixed       | 4865039    | -500        | -14.2       |
| 6     | Town     | GopalPur T X 2           | Metered                | Functional      | Mixed       | 4864976    | 2000        | 34.02       |
| 7     | Town     | GopalPur T X 4 (160 MVA) | Metered                | Functional      | Mixed       | 5295184    | 1000        | 448.76      |
| 8     | Urban    | T X 2 Shalimar Bagh      | Metered                | Functional      | Mixed       | 5128411    | 1000        | 157.2       |
| 9     | Urban    | T X 4 Shalimar Bagh      | Metered                | Functional      | Mixed       | 40001535   | 1000        | 111.19      |
| 10    | Urban    | T X 1 Rohini 220 KV      | Metered                | Functional      | Mixed       | 4864964    | 1000        | 193.18      |
| 11    | Urban    | T X 2 Rohini 220 KV      | Metered                | Functional      | Mixed       | 4865022    | 1000        | 185.33      |
| 12    | Urban    | T X 3 Rohini 220 KV      | Metered                | Functional      | Mixed       | 4864997    | 1000        | 344.66      |
| 13    | Urban    | T X 4 Rohini 220 KV      | Metered                | Functional      | Mixed       | 5295166    | 500         | 310.47      |

| S. No | Circle    | Feeder Name                        | Feeder Metering Status | Status of Meter | Feeder Type | Meter S.No   | CT/PT ratio | Import (MU) |
|-------|-----------|------------------------------------|------------------------|-----------------|-------------|--------------|-------------|-------------|
| 14    | Sub Urban | T X 1 Kanjawala                    | Metered                | Functional      | Mixed       | 4865041      | 1000        | 176.68      |
| 15    | Sub Urban | T X 2 Kanjawala                    | Metered                | Functional      | Mixed       | 5295182      | 500         | 291.92      |
| 16    | Metro     | 66 KV DMRC MUNDKA                  | Metered                | Functional      | Mixed       | 5128439      | -800        | -3.88       |
| 17    | Sub Urban | T X 3 Kanjawala                    | Metered                | Functional      | Mixed       | 4864788      | 2000        | 493.73      |
| 18    | Sub Urban | I/C 100 MVA TR. No.1 Bawana 400 KV | Metered                | Functional      | Mixed       | 4864911      | 1000        | 308.78      |
| 19    | Metro     | 66kV I/C No 1 Rohini-II 220 KV     | Metered                | Functional      | Mixed       | 4902505      | 2000        | 344.98      |
| 20    | Metro     | 66kV I/C No 2 Rohini-II 220 KV     | Metered                | Functional      | Mixed       | 5128468      | 1000        | 345.09      |
| 21    | Metro     | NangloiCkt 2                       | Metered                | Functional      | Mixed       | 4864787      | -800        | 0.15        |
| 22    | Metro     | Mundka to MGP-1                    | Metered                | Functional      | Mixed       | 4864983      | 800         | 143.98      |
| 23    | Metro     | MGP T-off to NangloiCkt (-ve)      | Metered                | Functional      | Mixed       | 4864971      | -800        | 0           |
| 24    | Metro     | Mundka to SawdaGhevra              | Metered                | Functional      | Mixed       | 4864950      | 2000        | 22.29       |
| 25    | City      | sagarpurRewari Line                | Metered                | Functional      | Mixed       | 5128441      | 750         | 28.5        |
| 26    | City      | PappankalanRewari Line             | Metered                | Functional      | Mixed       | 4864960      | 1000        | 82.99       |
| 27    | City      | 66/11 Tr 3 Rewari Line             | Metered                | Functional      | Mixed       | 4865005      | -250        | -9.31       |
| 28    | Sub Urban | T X 2 Bawana                       | Metered                | Functional      | Mixed       | 4864992      | 1000        | 185.51      |
| 29    | Sub Urban | T X 3 Bawana                       | Metered                | Functional      | Mixed       | 4864827      | 333.3<br>3  | 200.07      |
| 30    | Sub Urban | T X 1 Bawana                       | Metered                | Functional      | Mixed       | 4864892      | 4000        | 250.25      |
| 31    | Sub Urban | DELHI MSW Bawana                   | Metered                | Functional      | Mixed       | 4864958      | 500         | 138.44      |
| 32    | Sub Urban | TRANSFORMER 4 (160MVA) Bawana      | Metered                | Functional      | Mixed       | 5128449      | 2000        | 232.69      |
| 33    | Urban     | 66kV Incomer 1- 220kV SGTN         | Metered                | Functional      | Mixed       | XF46524<br>6 | 1           | 336.12      |
| 34    | Urban     | 66kV Incomer 2- 220kV SGTN         | Metered                | Functional      | Mixed       | XF46524<br>8 | 1           | 227.53      |

➤ 33 kV Voltage feeder name & Energy Parameters

**Table 28: Metering Details at 33 KV**

| S. No | Circle | Feeder Name    | Feeder Metering Status | Status of Meter | Feeder Type | Meter S.No | CT/PT ratio | Import (MU) |
|-------|--------|----------------|------------------------|-----------------|-------------|------------|-------------|-------------|
| 1     | Town   | GopalPur T X 1 | Metered                | Functional      | Mixed       | 5128429    | 1000        | 227.91      |

| S. No | Circle | Feeder Name                              | Feeder Metering Status | Status of Meter | Feeder Type | Meter S.No | CT/PT ratio | Import (MU) |
|-------|--------|------------------------------------------|------------------------|-----------------|-------------|------------|-------------|-------------|
| 2     | Town   | GopalPur T X 3                           | Metered                | Functional      | Mixed       | 4864924    | 1000        | 265.54      |
| 3     | Town   | Kasmeri Gate 33 KV Civil Line-1          | Metered                | Functional      | Mixed       | 4864791    | 266.66      | 30.54       |
| 4     | Town   | Kasmeri Gate 33 KV Civil Line-2          | Metered                | Functional      | Mixed       | 4864867    | 500         | 17.06       |
| 5     | Town   | Kasmeri Gate 20 MVA TR                   | Metered                | Functional      | Mixed       | 4864797    | 100         | 21.44       |
| 6     | City   | O/G PayalCktNaraina                      | Metered                | Functional      | Mixed       | 4864836    | 1000        | 69.6        |
| 7     | City   | O/G REWARI LINE Naraina                  | Metered                | Functional      | Mixed       | 4865182    | 4000        | 57.41       |
| 8     | City   | INDERPURICKt-1 Naraina                   | Metered                | Functional      | Mixed       | 4864865    | 1000        | 73.75       |
| 9     | City   | 33 kV 16 MVATR-1 Naraina                 | Metered                | Functional      | Mixed       | 4864880    | 500         | 21.16       |
| 10    | City   | 33 kV 16 MVATR-2 Naraina                 | Metered                | Functional      | Mixed       | 5295128    | 50          | 44.67       |
| 11    | City   | INDERPURICKt-2 Naraina                   | Metered                | Functional      | Mixed       | 4864873    | 1000        | 77.48       |
| 12    | City   | 33KV Naraina Pandav Nagar feeder Naraina | Metered                | Functional      | Mixed       | 5295124    | 100         | 20.08       |
| 13    | Town   | O/G 33 KV Rama Road Rohtak Road          | Metered                | Functional      | Mixed       | 4865179    | 3750        | 66.16       |
| 14    | Town   | O/G 33 KV ShahzadaBagh-2 Rohtak Road     | Metered                | Functional      | Mixed       | 4865152    | 1000        | 7.33        |
| 15    | Town   | O/G 33 KV Rampura-1 Rohtak Road          | Metered                | Functional      | Mixed       | 4902497    | 140.63      | 76.7        |
| 16    | Town   | O/G 33 KV Rampura-2 Rohtak Road          | Metered                | Functional      | Mixed       | 4864790    | 166.67      | 73.37       |
| 17    | Town   | T X 3 Rohtak Road                        | Metered                | Functional      | Mixed       | 5128406    | 625         | 7.31        |
| 18    | Town   | O/G 33 kV DLFKirti Nagar Rohtak Road     | Metered                | Functional      | Mixed       | 4864821    | 150         | 69.71       |
| 19    | Urban  | T X 1 Shalimar Bagh                      | Metered                | Functional      | Mixed       | 4864930    | 1000        | 304.35      |
| 20    | Urban  | T X 3 Shalimar Bagh                      | Metered                | Functional      | Mixed       | 4864922    | 1000        | 288.41      |
| 21    | Town   | T X 2 Subzimandi                         | Metered                | Functional      | Mixed       | 5295137    | 1000        | 250.72      |
| 22    | Town   | O/G BG Rd-1 (To BSES)                    | Metered                | Functional      | Mixed       | 4864831    | -1000       | -48.36      |
| 23    | Town   | O/G BG Rd-2 (To BSES)                    | Metered                | Functional      | Mixed       | 4864825    | -133.33     | -46.85      |

| S. No | Circle | Feeder Name                        | Feeder Metering Status | Status of Meter | Feeder Type | Meter S.No | CT/PT ratio | Import (MU) |
|-------|--------|------------------------------------|------------------------|-----------------|-------------|------------|-------------|-------------|
| 24    | Town   | T X 1 Subzimandi                   | Metered                | Functional      | Mixed       | 4864916    | 1000        | 240.49      |
| 25    | Urban  | 33kV I/C No 1 Wazirpur             | Metered                | Functional      | Mixed       | 4864903    | 1000        | 337.89      |
| 26    | Urban  | 33kV I/C No 2 Wazirpur             | Metered                | Functional      | Mixed       | 4864946    | 1000        | 339.03      |
| 27    | Metro  | 33 KV PeeragarhiCKT to CC ranibagh | Metered                | Functional      | Mixed       | 4864901    | 250         | 45.04       |
| 28    | City   | Sudarshan Park 33KV Line-1         | Metered                | Functional      | Mixed       | 4864810    | 200         | 115.01      |
| 29    | City   | PUSACKt-I                          | Metered                | Functional      | Mixed       | 4864843    | 1000        | 33.44       |
| 30    | City   | 33 kV Pandav Nagar DMS             | Metered                | Functional      | Mixed       | 5295200    | 100         | -0.01       |
| 31    | City   | 33 kV Vishal -1 Rewari Line        | Metered                | Functional      | Mixed       | 4865158    | -200        | -23.33      |
| 32    | City   | 33 kV Vishal -2 Rewari Line        | Metered                | Functional      | Mixed       | 4864816    | -187.5      | -0.41       |
| 33    | City   | 33 kV MayapuriRewari Line          | Metered                | Functional      | Mixed       | 4864808    | -187.5      | -17.38      |
| 34    | City   | 33/11 Tr 1 Rewari Line             | Metered                | Functional      | Mixed       | 4864822    | -100        | -3.34       |
| 35    | Town   | I/C from Rohtak road Sudersan Park | Metered                | Functional      | Mixed       | 4864866    | 1250        | 28.64       |
| 36    | City   | Vishal (Imp/Exp) Sudersan Park     | Metered                | Functional      | Mixed       | 4865149    | -187.5      | -0.33       |

➤ 11 kV Voltage feeder name & Energy Parameters

**Table 29 : Metering Details at 11 KV**

| S. No | Circle    | Feeder Name                                | Feeder Metering Status | Status of Meter | Feeder Type | Meter S.No | CT/PT ratio | Import (MU) |
|-------|-----------|--------------------------------------------|------------------------|-----------------|-------------|------------|-------------|-------------|
| 1     | Sub-Urban | LOCAL TR Narela                            | Metered                | Functional      | Mixed       | 4902583    | -10         | -0.22       |
| 2     | Town      | LOCAL TRGopalpur                           | Metered                | Functional      | Mixed       | 4865091    | -7.5        | -0.19       |
| 3     | Town      | ISBTK.Gate ( F/o No.IIMahavir Ice factory) | Metered                | Functional      | Mixed       | 4865074    | 133.3<br>3  | 5.8         |

| S. No | Circle    | Feeder Name                            | Feeder Metering Status | Status of Meter | Feeder Type | Meter S.No | CT/PT ratio | Import (MU) |
|-------|-----------|----------------------------------------|------------------------|-----------------|-------------|------------|-------------|-------------|
| 4     | Town      | LOCAL TR K Gate                        | Metered                | Functional      | Mixed       | 4902530    | -7.5        | -0.12       |
| 5     | Town      | Kasmeri Gate BUS COUPLER               | Metered                | Functional      | Mixed       | 4902585    | -400        | -0.01       |
| 6     | City      | GopiNath Bazaar (-ve) Naraian          | Metered                | Functional      | Mixed       | 4902566    | -100        | -13.06      |
| 7     | City      | LOCAL TRnaraina                        | Metered                | Functional      | Mixed       | 4902602    | -100        | -0.32       |
| 8     | Town      | BUS COUPLER Rohtak Road                | Metered                | Functional      | Mixed       | 4902559    | 300         | 0.06        |
| 9     | Urban     | LOCAL TR SMB                           | Metered                | Functional      | Mixed       | 4902561    | -7.5        | -0.59       |
| 10    | Urban     | LOCAL TR Rohini                        | Metered                | Functional      | Mixed       | 4902597    | -100        | -0.45       |
| 11    | Sub Urban | LOCAL TRKanjawala                      | Metered                | Functional      | Mixed       | 4865071    | -266.66     | -0.26       |
| 12    | Town      | LOCAL TRSubzimandi                     | Metered                | Functional      | Mixed       | 4902604    | -100        | -0.15       |
| 13    | BSES      | DCMNuruddin Park BG Road               | Metered                | Functional      | Mixed       | 4902579    | 500         | 4.97        |
| 14    | BSES      | DCMchowk BG Road                       | Metered                | Functional      | Mixed       | 4902526    | 500         | 6.1         |
| 15    | BSES      | Sadar-S/S BG Road                      | Metered                | Functional      | Mixed       | 4865090    | 500         | 6.55        |
| 16    | BSES      | CSA colony BG Road                     | Metered                | Functional      | Mixed       | 4865088    | 166.66      | 0           |
| 17    | BSES      | Philips DMS                            | Metered                | Functional      | Mixed       | 4902568    | 100         | 4.39        |
| 18    | Town      | Tibia College Faiz Road                | Metered                | Functional      | Mixed       | 4902540    | 100         | 9.83        |
| 19    | Town      | EAST PARK ROAD Faiz Road               | Metered                | Functional      | Mixed       | 4902520    | 100         | 9.34        |
| 20    | Town      | ManakPuraFaiz Road                     | Metered                | Functional      | Mixed       | 4902536    | 100         | 6.16        |
| 21    | City      | ESI Hospital and Rameshnagar-2 Vishal  | Metered                | Functional      | Mixed       | 4902539    | 100         | 5.63        |
| 22    | City      | Moti Nagar Tanga stand S. B. Mill      | Metered                | Functional      | Mixed       | 4902548    | 100         | 0           |
| 23    | City      | 41 Rama Road (70 Rama Road) S. B. Mill | Metered                | Functional      | Mixed       | 4865089    | 100         | 0           |
| 24    | City      | 51 Rama Road S. B. Mill                | Metered                | Functional      | Mixed       | 4902528    | 100         | 0.08        |
| 25    | City      | Nazafgarh Road S. B. Milss             | Metered                | Functional      | Mixed       | 4902564    | 100         | 6.23        |
| 26    | City      | Moti Nagar Kiosk S B Mill              | Metered                | Functional      | Mixed       | 4902591    | 1333.33     | 4.49        |
| 27    | City      | BSES NDPL (EX) ON BUS 1&2 Rewari Line  | Metered                | Functional      | Mixed       | 4902577    | 400         | 0.09        |
| 28    | City      | NDPL BSES (EX) ON BUS 2&3 Rewari Line  | Metered                | Functional      | Mixed       | 4902525    | 400         | -0.08       |

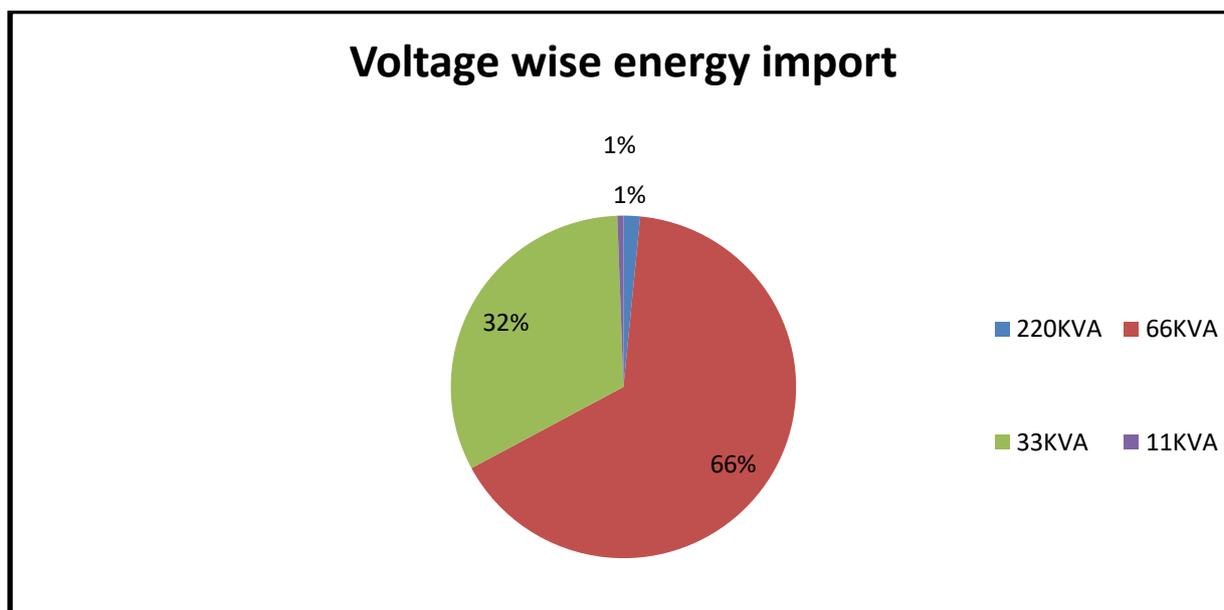
| S. No | Circle    | Feeder Name    | Feeder Metering Status | Status of Meter | Feeder Type | Meter S.No | CT/PT ratio | Import (MU) |
|-------|-----------|----------------|------------------------|-----------------|-------------|------------|-------------|-------------|
| 29    | Sub Urban | Local TrBawana | Metered                | Functional      | Mixed       | 4902543    | -100        | -0.23       |

➤ Voltage wise exchange point details

The voltage wise total no of exchange points & energy consumptions at all the voltage level are presented below:

**Table 30: Energy exchange points at Various Voltage Level**

| Voltage Level (kV) | Exchange Points | Input Energy (MU) |
|--------------------|-----------------|-------------------|
| 220kV              | 4               | 147.93            |
| 66kV               | 34              | 6235.13           |
| 33kV               | 36              | 3070.23           |
| 11kV               | 29              | 54.04             |



**Figure 12: Voltage wise Energy Import (%)**

### 3.3 Unit wise Performance

Tata Power DDL has total five circles, twelve divisions and 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 31: Unit Wise Performance**

| Division Wise Losses |                  |                  |                                                 |                                   |                           |                   |                    |               |              |                            |                               |                       |                 |
|----------------------|------------------|------------------|-------------------------------------------------|-----------------------------------|---------------------------|-------------------|--------------------|---------------|--------------|----------------------------|-------------------------------|-----------------------|-----------------|
| S.No                 | Name of circle   | Name of Division | Period From 1st April, 2021 To 31st March, 2022 |                                   |                           |                   |                    |               |              |                            |                               |                       |                 |
|                      |                  |                  | Consumer profile                                |                                   |                           | Energy parameters |                    | Losses        |              | Commercial Parameter       |                               |                       | AT & C loss (%) |
|                      |                  |                  | Consumer category                               | Total Number of connections (Nos) | Total Connected Load (MW) | Input energy (MU) | Billed energy (MU) | T&D loss (MU) | T&D loss (%) | Billed Amount in Rs. Crore | Collected Amount in Rs. Crore | Collection Efficiency |                 |
|                      |                  |                  |                                                 |                                   |                           |                   |                    |               |              |                            |                               |                       |                 |
| 1                    | URBAN CIRCLE     | BADLI            | Residential                                     | 102729                            | 156                       | 622               | 220                | 68            | 11%          | 115                        | 115                           | 100%                  |                 |
|                      |                  |                  | Agricultural                                    | 500                               | 4                         |                   | 2                  |               |              | 1                          | 1                             | 100%                  |                 |
|                      |                  |                  | Commercial/Industrial-LT                        | 20458                             | 203                       |                   | 294                |               |              | 401                        | 403                           | 100%                  |                 |
|                      |                  |                  | Commercial/Industrial-HT                        | 54                                | 15                        |                   | 24                 |               |              | 31                         | 30                            | 99%                   |                 |
|                      |                  |                  | Others                                          | 557                               | 7                         |                   | 13                 |               |              | 15                         | 21                            | 141%                  |                 |
| <b>Sub-total</b>     |                  |                  | <b>124298</b>                                   | <b>385</b>                        | <b>622</b>                | <b>554</b>        | <b>68</b>          | <b>11%</b>    | <b>563</b>   | <b>570</b>                 | <b>101%</b>                   | <b>10%</b>            |                 |
| 2                    | SUB-URBAN CIRCLE | BAWANA           | Residential                                     | 66739                             | 98                        | 1303              | 143                | 132           | 10%          | 74                         | 74                            | 100%                  |                 |
|                      |                  |                  | Agricultural                                    | 1673                              | 10                        |                   | 3                  |               |              | 3                          | 3                             | 101%                  |                 |
|                      |                  |                  | Commercial/Industrial-LT                        | 21551                             | 566                       |                   | 977                |               |              | 1265                       | 1267                          | 100%                  |                 |
|                      |                  |                  | Commercial/Industrial-HT                        | 32                                | 8                         |                   | 18                 |               |              | 22                         | 22                            | 100%                  |                 |
|                      |                  |                  | Others                                          | 362                               | 9                         |                   | 31                 |               |              | 30                         | 32                            | 105%                  |                 |
| <b>Sub-total</b>     |                  |                  | <b>90357</b>                                    | <b>691</b>                        | <b>1303</b>               | <b>1171</b>       | <b>132</b>         | <b>10%</b>    | <b>1394</b>  | <b>1397</b>                | <b>100%</b>                   | <b>10%</b>            |                 |
| 3                    | TOWN CIRCLE      | CIVIL LINES      | Residential                                     | 110501                            | 288                       | 773               | 376                | 23            | 3%           | 242                        | 242                           | 100%                  |                 |
|                      |                  |                  | Agricultural                                    | 0                                 | 0                         |                   | 0                  |               |              | 0                          | 0                             | 0%                    |                 |

| Division Wise Losses |              |              |                                                 |               |            |            |            |           |           |            |            |             |           |
|----------------------|--------------|--------------|-------------------------------------------------|---------------|------------|------------|------------|-----------|-----------|------------|------------|-------------|-----------|
| S.No                 | Name         | Name of      | Period From 1st April, 2021 To 31st March, 2022 |               |            |            |            |           |           |            |            |             |           |
|                      |              |              | Commercial/Industrial-LT                        | 23841         | 103        |            | 94         |           |           | 142        | 143        | 101%        |           |
|                      |              |              | Commercial/Industrial-HT                        | 68            | 54         |            | 88         |           |           | 116        | 116        | 100%        |           |
|                      |              |              | Others                                          | 816           | 74         |            | 192        |           |           | 178        | 174        | 98%         |           |
| <b>Sub-total</b>     |              |              |                                                 | <b>135226</b> | <b>519</b> | <b>773</b> | <b>751</b> | <b>23</b> | <b>3%</b> | <b>677</b> | <b>675</b> | <b>100%</b> | <b>3%</b> |
| 4                    | TOWN CIRCLE  | KESHAV PURAM | Residential                                     | 119262        | 272        | 804        | 361        | 50        | 6%        | 216        | 216        | 100%        |           |
|                      |              |              | Agricultural                                    | 0             | 0          |            | 0          |           |           | 0          | 0%         |             |           |
|                      |              |              | Commercial/Industrial-LT                        | 27184         | 240        |            | 311        |           |           | 423        | 425        | 101%        |           |
|                      |              |              | Commercial/Industrial-HT                        | 116           | 38         |            | 69         |           |           | 85         | 84         | 99%         |           |
|                      |              |              | Others                                          | 532           | 6          |            | 13         |           |           | 14         | 6          | 43%         |           |
| <b>Sub-total</b>     |              |              |                                                 | <b>147094</b> | <b>556</b> | <b>804</b> | <b>754</b> | <b>50</b> | <b>6%</b> | <b>738</b> | <b>731</b> | <b>99%</b>  | <b>7%</b> |
| 5                    | METRO CIRCLE | MANGOL PURI  | Residential                                     | 181356        | 286        | 619        | 428        | 42        | 7%        | 213        | 212        | 100%        |           |
|                      |              |              | Agricultural                                    | 0             | 0          |            | 0          |           |           | 0          | 0%         |             |           |
|                      |              |              | Commercial/Industrial-LT                        | 22335         | 98         |            | 113        |           |           | 157        | 157        | 100%        |           |
|                      |              |              | Commercial/Industrial-HT                        | 23            | 9          |            | 21         |           |           | 24         | 24         | 100%        |           |
|                      |              |              | Others                                          | 587           | 7          |            | 15         |           |           | 17         | 20         | 118%        |           |
| <b>Sub-total</b>     |              |              |                                                 | <b>204301</b> | <b>400</b> | <b>619</b> | <b>577</b> | <b>42</b> | <b>7%</b> | <b>410</b> | <b>413</b> | <b>101%</b> | <b>6%</b> |
| 6                    | METRO CIRCLE | MODEL TOWN   | Residential                                     | 145437        | 327        | 668        | 435        | 41        | 6%        | 264        | 265        | 100%        |           |
|                      |              |              | Agricultural                                    | 1             | 0          |            | 0          |           |           | 0          | 0%         |             |           |
|                      |              |              | Commercial/Industrial-LT                        | 21370         | 105        |            | 107        |           |           | 158        | 158        | 100%        |           |
|                      |              |              | Commercial/Industrial-HT                        | 44            | 14         |            | 22         |           |           | 30         | 30         | 99%         |           |
|                      |              |              | Others                                          | 729           | 40         |            | 62         |           |           | 63         | 62         | 98%         |           |
| <b>Sub-total</b>     |              |              |                                                 | <b>167581</b> | <b>486</b> | <b>668</b> | <b>626</b> | <b>41</b> | <b>6%</b> | <b>515</b> | <b>516</b> | <b>100%</b> | <b>6%</b> |
| 7                    | CITY CIRCLE  | MOTI NAGAR   | Residential                                     | 115755        | 296        | 753        | 378        | 41        | 5%        | 234        | 235        | 100%        |           |
|                      |              |              | Agricultural                                    | 0             | 0          |            | 0          |           |           | 0          | 0%         |             |           |
|                      |              |              | Commercial/Industrial-LT                        | 27257         | 219        |            | 237        |           |           | 348        | 350        | 100%        |           |
|                      |              |              | Commercial/Industrial-HT                        | 124           | 63         |            | 83         |           |           | 113        | 112        | 99%         |           |
|                      |              |              | Others                                          | 652           | 8          |            | 14         |           |           | 16         | 15         | 97%         |           |

| Division Wise Losses |                  |               |                                                 |               |            |             |            |           |            |             |             |             |            |
|----------------------|------------------|---------------|-------------------------------------------------|---------------|------------|-------------|------------|-----------|------------|-------------|-------------|-------------|------------|
| S.No                 | Name             | Name of       | Period From 1st April, 2021 To 31st March, 2022 |               |            |             |            |           |            |             |             |             |            |
| <b>Sub-total</b>     |                  |               |                                                 | <b>143788</b> | <b>586</b> | <b>753</b>  | <b>712</b> | <b>41</b> | <b>5%</b>  | <b>711</b>  | <b>712</b>  | <b>100%</b> | <b>5%</b>  |
| 8                    | SUB-URBAN CIRCLE | NARELA        | Residential                                     | 108737        | 172        | 1089        | 246        | 95        | 9%         | 126         | 126         | 100%        |            |
|                      |                  |               | Agricultural                                    | 2270          | 19         |             | 8          |           |            | 6           | 5           | 99%         |            |
|                      |                  |               | Commercial/Industrial-LT                        | 18130         | 350        |             | 622        |           |            | 792         | 796         | 101%        |            |
|                      |                  |               | Commercial/Industrial-HT                        | 145           | 40         |             | 91         |           |            | 111         | 110         | 99%         |            |
|                      |                  |               | Others                                          | 874           | 14         |             | 27         |           |            | 31          | 34          | 110%        |            |
| <b>Sub-total</b>     |                  |               |                                                 | <b>130156</b> | <b>595</b> | <b>1089</b> | <b>994</b> | <b>95</b> | <b>9%</b>  | <b>1065</b> | <b>1072</b> | <b>101%</b> | <b>8%</b>  |
| 9                    | METRO CIRCLE     | PITAM PURA    | Residential                                     | 102456        | 350        | 612         | 409        | 39        | 6%         | 276         | 278         | 100%        |            |
|                      |                  |               | Agricultural                                    | 0             | 0          |             | 0          |           |            | 0           | 0           | 0%          |            |
|                      |                  |               | Commercial/Industrial-LT                        | 16828         | 107        |             | 108        |           |            | 157         | 159         | 101%        |            |
|                      |                  |               | Commercial/Industrial-HT                        | 77            | 37         |             | 46         |           |            | 61          | 61          | 100%        |            |
|                      |                  |               | Others                                          | 505           | 6          |             | 11         |           |            | 11          | 11          | 102%        |            |
| <b>Sub-total</b>     |                  |               |                                                 | <b>119866</b> | <b>500</b> | <b>612</b>  | <b>574</b> | <b>39</b> | <b>6%</b>  | <b>506</b>  | <b>509</b>  | <b>101%</b> | <b>6%</b>  |
| 10                   | METRO CIRCLE     | ROHINI        | Residential                                     | 201287        | 530        | 1034        | 681        | 49        | 5%         | 413         | 413         | 100%        |            |
|                      |                  |               | Agricultural                                    | 0             | 0          |             | 0          |           |            | 0           | 0           | 0%          |            |
|                      |                  |               | Commercial/Industrial-LT                        | 29619         | 127        |             | 123        |           |            | 178         | 179         | 101%        |            |
|                      |                  |               | Commercial/Industrial-HT                        | 68            | 47         |             | 66         |           |            | 86          | 87          | 101%        |            |
|                      |                  |               | Others                                          | 916           | 45         |             | 116        |           |            | 113         | 118         | 104%        |            |
| <b>Sub-total</b>     |                  |               |                                                 | <b>231890</b> | <b>749</b> | <b>1034</b> | <b>985</b> | <b>49</b> | <b>5%</b>  | <b>790</b>  | <b>797</b>  | <b>101%</b> | <b>4%</b>  |
| 11                   | URBAN CIRCLE     | KIRARI        | Residential                                     | 130399        | 176        | 394         | 276        | 52        | 13%        | 130         | 131         | 100%        |            |
|                      |                  |               | Agricultural                                    | 62            | 0          |             | 0          |           |            | 0           | 0           | 100%        |            |
|                      |                  |               | Commercial/Industrial-LT                        | 15581         | 49         |             | 52         |           |            | 75          | 76          | 102%        |            |
|                      |                  |               | Commercial/Industrial-HT                        | 5             | 2          |             | 2          |           |            | 2           | 2           | 99%         |            |
|                      |                  |               | Others                                          | 403           | 6          |             | 13         |           |            | 18          | 21          | 114%        |            |
| <b>Sub-total</b>     |                  |               |                                                 | <b>146450</b> | <b>233</b> | <b>394</b>  | <b>343</b> | <b>52</b> | <b>13%</b> | <b>226</b>  | <b>230</b>  | <b>102%</b> | <b>12%</b> |
| 12                   | URBAN CIRCLE     | SHALIMAR BAGH | Residential                                     | 218843        | 373        | 754         | 527        | 41        | 5%         | 280         | 280         | 100%        |            |
|                      |                  |               | Agricultural                                    | 79            | 0          |             | 0          |           |            | 0           | 0           | 105%        |            |

| Division Wise Losses |                         |                          |                                                 |                |             |             |             |            |           |             |             |             |           |
|----------------------|-------------------------|--------------------------|-------------------------------------------------|----------------|-------------|-------------|-------------|------------|-----------|-------------|-------------|-------------|-----------|
| S.No                 | Name                    | Name of                  | Period From 1st April, 2021 To 31st March, 2022 |                |             |             |             |            |           |             |             |             |           |
|                      |                         |                          | Commercial/Industrial-LT                        | 24848          | 101         |             | 116         |            |           | 162         | 163         | 101%        |           |
|                      |                         |                          | Commercial/Industrial-HT                        | 78             | 33          |             | 51          |            |           | 63          | 65          | 103%        |           |
|                      |                         |                          | Others                                          | 723            | 8           |             | 19          |            |           | 21          | 23          | 108%        |           |
|                      | <b>Sub-total</b>        |                          |                                                 | <b>244571</b>  | <b>515</b>  | <b>754</b>  | <b>712</b>  | <b>41</b>  | <b>5%</b> | <b>526</b>  | <b>530</b>  | <b>101%</b> | <b>5%</b> |
| 76                   | Total                   |                          | Residential                                     | 1603501        | 3324        | 9425        | 4479        | 673        | 7%        | 2583        | 2584        | 100%        |           |
|                      |                         | Agricultural             | 4585                                            | 33             | 14          |             | 10          |            |           | 10          | 100%        |             |           |
|                      |                         | Commercial/Industrial-LT | 269002                                          | 2268           | 3153        |             | 4258        |            |           | 4276        | 100%        |             |           |
|                      |                         | Commercial/Industrial-HT | 834                                             | 360            | 579         |             | 745         |            |           | 745         | 100%        |             |           |
|                      |                         | Others                   | 7656                                            | 230            | 527         |             | 527         |            |           | 537         | 102%        |             |           |
| 77                   | <b>At company level</b> |                          |                                                 | <b>1885578</b> | <b>6215</b> | <b>9425</b> | <b>8752</b> | <b>673</b> | <b>7%</b> | <b>8123</b> | <b>8152</b> | <b>100%</b> | <b>7%</b> |



### 3.4 Energy Conservation measures already taken & proposed for Future

#### ➤ Energy Conservation measures already taken

Tata Power DDL has done various energy conservation measures to reduce the energy consumptions in FY-2021-22. 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 32: AC Replacement Program, BLDC Fan's & (LED's) Energy saving**

| <u>DSM Program</u>                | 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                | -                  | -                    |

#### ➤ Energy Conservation measures Proposed for Future

- **Sub-Transmission Network Optimization:** Tata Power-DDL has a mesh network at the 33 & 66 kV level which is operated in a radial manner. The NOPs (Normal Open Points) are decided after conducting thorough loss studies and the most optimal configuration is adopted for minimum loss while meeting other operational & reliability requirements. The exercise is conducted annually to incorporate benefits from addition of new circuits. Also a separate configuration is adopted for the winter months (Nov to Mar) to take advantage of lower loading levels.
- **11 kV Network Optimization:** The 11 kV network is also a mesh network operated in a radial manner. We have initiated an internal project this year (FY22-23) to reconfigure the network for minimum loss while meeting other operational & reliability requirements.
- **Change in Cable Specifications:** Due to operational requirements, the standard rating of service cable catering to single phase consumers with sanctioned load 6 to 10 kW has been revised from 2x10sqmm Al XLPE to 2x25sqmm Al XLPE. The reduction in resistivity will result in reduction of technical losses

### 3.5 Loss Reduction Measures

Tata Power- DDL has undertaken various initiative for loss reduction in its high loss districts. Some of those initiatives are as follows:

- Replacement of electromechanical meters with electronic meters
- Conducting raids in high loss areas for identifying pilferage of electricity
- Installation of meters on outer wall of premise in high loss areas
- Tata Power – DDL is actively pursuing measures to reduce losses in its high loss area.

### 3.6 Critical Comments

#### Transmission & Distribution losses (T&D losses)

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

#### Aggregate technical and commercial losses (AT&C losses)

$AT\&C\ Losses = \{1 - (\text{Billing Efficiency} \times \text{Collection Efficiency})\} \times 100$

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 7.14% & 6.80% which are significantly less than the average of all India figure which stands at close to 20%.

#### DISCOM T & D Losses computation approach

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

| Transmission losses (MU) | Value    |
|--------------------------|----------|
| Total Energy Purchased   | 11737.11 |
| Total Energy Sale        | 1841.14  |
| Transmission losses      | 471.21   |
| Total Input              | 9424.75  |
| Transmission losses (%)  | 4.01     |

3.7 Inclusion & Exclusions  
Not applicable

3.8 Detailed Formats to be annexed

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

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

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

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

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

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

Designated Consumer has T&D losses 7.14% & AT&C losses 6.80%. 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 and SAP report which is provided for verification. Also supporting documents for the same has been provided which is attached in annexure of report.

- (1) The Net Input Energy at Discom periphery as mentioned in the summary sheet is 9424.75 MUs, which is fetched from the Division wise losses sheet (This value is inclusive of energy from renewable generation (mentioned in sheet- “details of received sources”) and exclusive of open access energy); whereas net input energy in “Form Input Energy” sheet is fetched from summation of meter reading of Input energy at injection points, and is inclusive of Open access MUs & exclusive of energy from renewable generation.

| Particulars                                       | Formula | Value   |
|---------------------------------------------------|---------|---------|
| Division wise input energy                        | A       | 9424.75 |
| Open Access Data                                  | B       | 88.70   |
| Net Input including open access                   | C=A+B   | 9513.46 |
| Solar Units Received at Discom                    | D       | 6.11    |
| Meter reading of Input energy at injection points | E=C-D   | 9507.35 |

- (2) The entire EHT/HT/LT system is in Ring Main. For ring-main connectivity, the electrical connection keeps changing in fault conditions, maintenance purpose and optimization of asset. Thus, feeder-wise energy accounting will not be correct; it is calculated as a whole. 100% consumer indexing is not in place; thus, feeder wise /DTR wise energy accounting or loss calculation is not possible. TATA Power- DDL operates in small area comprising of single unit. Thus, loss of entire unit is given. However, from FY 21-22 onwards, unit wise loss can be provided by dividing the licensed area in units/divisions by proper arrangement at our end.
- (3) 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 Ludhiana**. This award consist Trophy, Certificate & cash prize of Rs. 3 lacs.
- Received prestigious “**Legend in Energy**” Award for Asian Sub-continent from AEE, Atlanta at Washington, DC on 20/09/2016.
- Received Award from AEE Atlanta at Washington citing as “Energy Engineer–2016 & 2018” of South-East Asia sub-continent
- Received Letter of appreciation 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.
- Received Appreciation from Sh. Haribahi Parathibhai Chaudhary, Minister of State for MSME, Govt. of India
- Received Appreciation from Sh. K.K. Jalan, IAS Secretary, MSME
- Received appreciation from Sh. Devender Singh, IAS, Secretary Power, Haryana
- Received 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.<br>Darya Ganj New Delhi-110002 | Dr. P P Mittal :- AEA 0011<br>Registration Number:- EmAEA-0024 |

## II. Composition of Team

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

Authorised Signatory



(Dr. P.P. MITTAL)  
Director

## 5.2 Minutes of Meeting with the Discom.

**TATA Power Delhi Distribution Ltd**

**A-Z Energy Engineers Pvt. Ltd.**

AZ Energy Engineers audit team visited the site during August and September 2022 and conduct the energy audit accounting with reference to the TATA Power work order dated 23<sup>th</sup> March 2022 and notification from the Bureau of Energy Efficiency dated 6<sup>th</sup> October 2021 for Conduct of Energy Audit (Accounting) in Electricity Distribution Companies.

Following are the key observations during audit.

- Filled in proforma for FY 2021-22 was available with TATA Power-DDL, New Delhi. Audit team verified the filled in proforma.
- Client has provided the following documents for purchase power, Input/Billed energy, No. of consumers, Nos. of DT's Nos. of Circle i.e. GIS software, Fact sheet, DERC True up & Petition Filled
- Client has provided details for action plan to reduce losses.
- Verified T&D losses, AT&C losses & Collection Efficiency is 7.14 %, 6.80 % & 100.36 % respectively based on the filled in proforma and verified source documents.

Signed on behalf of

Tata Power – DDL



A-Z Energy Engineers Pvt.Ltd.



(Dr.P.P.Mittal)

### 5.3 Check List prepared by EM/AEA

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

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

- ▶ List of Measures adopted for energy conservation and quantity of energy saved with proper document support.
- ▶ Checking & verification of over loading of feeders at Substation level either by the study of SCADA system or by the log book
  - Month wise input and billed energy.
  - T&D losses computation approach.
  - Un-metered energy consumption approach.
  - Internal field audit report of input and billed energy.
  - Performance of discom on distribution losses.
  - Outcome of internal filed audit.
  - Measures taken to reduce losses and improve losses.
  - Zone/circle/Division/Sub-division wise loss computation.
  - Reduction achieved, measures adopted for energy conservation and quantity of energy saved.
  - Report on distribution losses.
  - Write up on energy scenario.
  - Net Input Energy Computation Details.
  - Category wise consumer's details.
  - Category wise consumers connected load and % load
  - Bifurcation of Billed Energy (metered billed energy and unmetered billed energy).

### 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 6<sup>th</sup> October, 2021



## 5.5 Infrastructure Details

Table 33: Infrastructure details

| 1     | Parameters                                                 | Total          | Covered during in audit | Verified by Auditor in Sample Check | Remarks (Source of data) |
|-------|------------------------------------------------------------|----------------|-------------------------|-------------------------------------|--------------------------|
| I     | Number of circles                                          | 5              | 5                       |                                     | Organizational Structure |
| li    | Number of divisions                                        | 12             | 12                      |                                     | Organizational Structure |
| lii   | Number of sub-divisions                                    | 37             | 37                      |                                     | Organizational Structure |
| lv    | Number of feeders                                          | 1341           | 1341                    |                                     | GIS database             |
| V     | Number of DTs                                              | 7548           | 7548                    |                                     | GIS database             |
| Vi    | Number of consumers                                        | 1885578        | 1885578                 |                                     | SAP System               |
| 2     | Parameters                                                 | 66kV and above | 33kV                    | 11/22kV                             | LT                       |
| a. i. | Number of conventional metered consumers                   | 0              | 0                       | 0                                   | 1589334                  |
| li    | Number of consumers with 'smart' meters                    | 0              | 0                       | 0                                   | 254226                   |
| lii   | Number of consumers with 'smart prepaid' meters            | 0              | 0                       | 0                                   | 0                        |
| lv    | Number of consumers with 'AMR' meters                      | 5              | 2                       | 1005                                | 36273                    |
| V     | Number of consumers with 'non-smart prepaid' meters        | 0              | 0                       | 0                                   | 4733                     |
| Vi    | Number of unmetered consumers                              | 0              | 0                       | 0                                   | 0                        |
| Vii   | <b>Number of total consumers</b>                           | 5              | 2                       | 1005                                | 1884566                  |
| b.i.  | Number of conventionally metered Distribution Transformers | 0              | 0                       | 0                                   | 229                      |
| li    | Number of DTs with communicable meters                     | 0              | 0                       | 0                                   | 4179                     |
| lii   | Number of unmetered DTs                                    | 0              | 0                       | 0                                   | 336                      |
| lv    | <b>Number of total Transformers</b>                        | 0              | 0                       | 0                                   | 4744                     |
| c.i.  | Number of metered feeders                                  | 132            | 108                     | 1341                                | 16095                    |
| li    | Number of feeders with communicable meters                 | 132            | 108                     | 1341                                | 16095                    |

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|     |                                 |      |     |      |       |
|-----|---------------------------------|------|-----|------|-------|
| iii | Number of unmetered feeders     | 0    | 0   | 0    | 0     |
| iv  | <b>Number of total feeders</b>  | 132  | 108 | 1341 | 16095 |
| d.  | Line length (ct km)             | 1937 |     |      |       |
| e.  | Length of Aerial Bunched Cables | 5641 |     |      |       |
| f.  | Length of Underground Cables    | 6055 |     |      |       |

## 5.6 Power Purchase details

Table 34: Power Purchase Details

| Name of Generation station                                      | Generation Capacity (MW) | Type of station based on fuel | Type of contract in Year | Type of Grid |
|-----------------------------------------------------------------|--------------------------|-------------------------------|--------------------------|--------------|
| NTPCDadri GPS                                                   | 28                       | Gas                           | 25 Years                 | Inter State  |
| NTPCAuriya GPS                                                  | 22                       | Gas                           | 35 Years                 | Inter State  |
| NTPC ANTA GPS                                                   | 14                       | Gas                           | 30 Years                 | Inter State  |
| Pragati- I                                                      | 63.6                     | Gas                           | 25 Years                 | Intra State  |
| Pragati III                                                     | 298                      | Gas                           | 25 Years                 | Intra State  |
| IPGCL GT                                                        | 27                       | Gas                           | 20 Years                 | Intra State  |
| NHPCDulhasti                                                    | 15                       | Hydro                         | 35 Years                 | Inter State  |
| NHPCParbati III                                                 | 20                       | Hydro                         | 40 Years                 | Inter State  |
| NHPCBairasiul                                                   | 6                        | Hydro                         | 25 Years                 | Inter State  |
| NHPCTanakpur                                                    | 3.2                      | Hydro                         | 35 Years                 | Inter State  |
| NHPCChamera -I                                                  | 13                       | Hydro                         | 35 Years                 | Inter State  |
| NHPCChamera-II                                                  | 12                       | Hydro                         | 35 Years                 | Inter State  |
| NHPCChamera-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  |
| NHPCDhauliganga                                                 | 11                       | Hydro                         | 35 Years                 | Inter State  |
| NHPCSewa II                                                     | 5                        | Hydro                         | 35 Years                 | Inter State  |
| Tala HEP                                                        | 9                        | Hydro                         | 35 Years                 | Inter State  |
| NathpaJhakriHPS                                                 | 44                       | Hydro                         | 35 Years                 | Inter State  |
| TehriHPP                                                        | 19                       | Hydro                         | 35 Years                 | Inter State  |
| Koteshwar HEP                                                   | 12                       | Hydro                         | 35 Years                 | Inter State  |
| Narora APS                                                      | 14                       | Nuclear                       | 43 Years                 | Inter State  |
| RAPP 5&6                                                        | 17                       | Nuclear                       | 43 Years                 | Inter State  |
| NTPCSingrauli Small Hydro                                       | 2                        | RE                            | 35 Years                 | Inter State  |
| SECI Solar (Renewable)                                          | 20                       | RE                            | 35 Years                 | Inter State  |
| Delhi Municipal Solid Waste Solutions Ltd. (Bawana) (Renewable) | 7                        | RE                            | 20 Years                 | Intra State  |
| Nanti Hydro Power Pvt.                                          | 13.5                     | RE                            | 20 Years                 | Inter State  |

| Name of Generation station                          | Generation Capacity (MW) | Type of station based on fuel | Type of contract in Year | Type of Grid |
|-----------------------------------------------------|--------------------------|-------------------------------|--------------------------|--------------|
| Ltd. (Renewable)                                    |                          |                               |                          |              |
| Suryakanta Hydro energies Pvt. Ltd. (Renewable)     | 14                       | RE                            | 20 Years                 | Inter State  |
| TimarpurOkhla Waste management co. Ltd. (Renewable) | 6                        | RE                            | 20 Years                 | Intra State  |
| Sun Edison                                          | 180                      | RE                            | 20 Years                 | Inter State  |
| Taranda                                             | 12.7                     | RE                            | 20 Years                 | Inter State  |
| SECI WIND                                           | 50                       | RE                            | 25 Years                 | Inter State  |
| SECI 200 MW (SBSR)*                                 | 33                       | RE                            | 25 Years                 | Inter State  |
| Cosmos Hydro*                                       | 13                       | RE                            | 20 Years                 | Inter State  |
| NTPCAravaliJhajjar                                  | 613.8                    | Coal                          | 25 Years                 | Inter State  |
| NTPCDadriNCTPS(Th.) Stage II                        | 10                       | Coal                          | 25 Years                 | Inter State  |
| NTPCDadriNCTPS(Th) Stage I                          | 10                       | Coal                          | 25 Years                 | Inter State  |
| NTPCKahalgaon II                                    | 48.3                     | Coal                          | 25 Years                 | Inter State  |
| NTPCSingrauliSTPS                                   | 46                       | Coal                          | 30 Years                 | Inter State  |
| NTPCRihandSTPS-II                                   | 39                       | Coal                          | 25 Years                 | Inter State  |
| NTPCRihandSTPS-I                                    | 31                       | Coal                          | 28 Years                 | Inter State  |
| NTPCKahalgaon I                                     | 15.6                     | Coal                          | 25 Years                 | Inter State  |
| NTPCUnchahaar-II TPS                                | 14                       | Coal                          | 25 Years                 | Inter State  |
| NTPCUnchahaar-III TPS                               | 9                        | Coal                          | 25 Years                 | Inter State  |
| NTPCUnchahaar-I TPS                                 | 7                        | Coal                          | 27 Years                 | Inter State  |
| NTPCFarakka                                         | 7                        | Coal                          | 25 Years                 | Inter State  |
| CLPJhajjar                                          | 132                      | Coal                          | 25 Years                 | Inter State  |
| Maithon Power Limited                               | 300                      | Coal                          | 30 Years                 | 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  |

## 5.7 Details of Consumers

Table 35: Details of Consumers

| S.No | Type of Consumers                      | Category of Consumers (EHT/HT/LT/Others) | Voltage Level (In Voltage) | No of Consumers | Total Consumption (In MU) |
|------|----------------------------------------|------------------------------------------|----------------------------|-----------------|---------------------------|
| 1    | Domestic                               | HT/LT                                    | 11/.22/.4                  | 1603501         | 4478.55                   |
| 2    | Commercial                             | LT                                       |                            | 239165          | 1069                      |
| 3    | Water Supply                           |                                          |                            | 1429            | 255.39                    |
| 4    | Public Lighting                        |                                          |                            | 4981            | 118.67                    |
| 5    | HT Industrial                          |                                          |                            | 360             | 257.06                    |
| 6    | Industrial (Small)                     |                                          |                            | 29842           | 2084                      |
| 7    | HT Commercial                          |                                          |                            | 470             | 322.3                     |
| 8    | Agricultural                           |                                          |                            | 4585            | 13.91                     |
| 9    | EV                                     |                                          |                            | 877             | 23.32                     |
| 10   | Others-1 (if any , specify in remarks) |                                          |                            | 368             | 129                       |
|      | <b>Total</b>                           |                                          |                            | 1885578         | 8751.20                   |

## 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 <a href="mailto:mdshadab.ahmad@tatapower-ddl.com">mdshadab.ahmad@tatapower-ddl.com</a> |
| 7                   | Period of Information                                           |                                                   |                                                                                                  |
|                     | Year of (FY) information including Date and Month (Start & End) | FY21-22, 1st April, 2021- 31st March, 2022        |                                                                                                  |

| Performance Summary of Electricity Distribution Companies                                                                                                                                                                                               |                                                                                                  |                                            |                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------|---------------------------|
| <b>1</b>                                                                                                                                                                                                                                                | Period of Information<br>Year of (FY) information including Date and Month (Start & End)         | FY21-22, 1st April, 2021- 31st March, 2022 |                           |
| <b>2</b>                                                                                                                                                                                                                                                | <b>Technical Details</b>                                                                         |                                            |                           |
| <b>(a)</b>                                                                                                                                                                                                                                              | <b>Energy Input Details</b>                                                                      |                                            |                           |
| (i)                                                                                                                                                                                                                                                     | Input Energy Purchase<br>(From Generation Source)                                                | Million kwh                                | 11737.11                  |
| (ii)                                                                                                                                                                                                                                                    | Net input energy (at DISCOM Periphery after adjusting the transmission losses and energy traded) | Million kwh                                | 9424.75                   |
| (iii)                                                                                                                                                                                                                                                   | Total Energy billed (is the Net energy billed, adjusted for energy traded))                      | Million kwh                                | 8752.21                   |
| <b>(b)</b>                                                                                                                                                                                                                                              | Transmission and Distribution (T&D) loss Details                                                 | Million kwh                                | 672.55                    |
|                                                                                                                                                                                                                                                         |                                                                                                  | %                                          | 7.14%                     |
|                                                                                                                                                                                                                                                         | Collection Efficiency                                                                            | %                                          | 100%                      |
| <b>(c)</b>                                                                                                                                                                                                                                              | Aggregate Technical & Commercial Loss                                                            | %                                          | 7%                        |
| 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:-                                |                           |
|                                                                                                                                                                                                                                                         |                                                                                                  | Name of Energy Manager*:                   |                           |
| Name of Authorised Signatory                                                                                                                                                                                                                            |                                                                                                  | Registration Number:                       |                           |
| Name of the DISCOM:                                                                                                                                                                                                                                     |                                                                                                  |                                            |                           |
| Full Address:-                                                                                                                                                                                                                                          |                                                                                                  |                                            |                           |
|                                                                                                                                                                                                                                                         |                                                                                                  |                                            | Md Shadab Ahmad<br>EM5062 |
|                                                                                                                                                                                                                                                         |                                                                                                  |                                            |                           |
|                                                                                                                                                                                                                                                         |                                                                                                  |                                            |                           |
| Seal                                                                                                                                                                                                                                                    |                                                                                                  |                                            |                           |

Energy Audit (Accounting) Report – Tata Power Delhi Distribution Limited, Delhi

| Details of Division Wise Losses (See note below**) |              |            |                  |                   |                                |                                  |                                |                           |                     |                     |                           |                     |                    |                        |                             |                      |                |              |                            |                                |                       |                       |                        |                |
|----------------------------------------------------|--------------|------------|------------------|-------------------|--------------------------------|----------------------------------|--------------------------------|---------------------------|---------------------|---------------------|---------------------------|---------------------|--------------------|------------------------|-----------------------------|----------------------|----------------|--------------|----------------------------|--------------------------------|-----------------------|-----------------------|------------------------|----------------|
| Sl.No                                              | Name of area | Grade code | Name of Division | Consumer profile  |                                |                                  |                                |                           |                     |                     |                           |                     |                    | Energy parameters      |                             |                      |                |              |                            | Losses                         |                       |                       |                        | AF & Class (%) |
|                                                    |              |            |                  | Consumer category | No of connection metered (Nos) | No of connection Unmetered (Nos) | Total Number connections (Nos) | No. number of connections | Connected Load (kW) | Unmetered Load (kW) | Total Connected Load (kW) | % of connected load | Input energy (kWh) | Unmetered energy (kWh) | Unmetered % of Total energy | % Energy consumption | TDS loss (kWh) | TDS loss (%) | Billed Amount in Rs. Crore | Collection Amount in Rs. Crore | Collection Efficiency |                       |                        |                |
|                                                    |              |            |                  |                   |                                |                                  |                                |                           |                     |                     |                           |                     |                    |                        |                             |                      |                |              |                            |                                |                       | Diverted energy (kWh) | Unmetered energy (kWh) |                |
| 1                                                  | JAMALI       | C.I.C.     | B&D              | Reside #          | 10729                          | 0                                | 10729                          | 3.2%                      | 133942              | 0                   | 133942                    | 41%                 | 220.4              | 0                      | 220.4                       | 40%                  | 1.1438         | 114.35       | 99.97%                     |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Agri. #           | 302                            | 0                                | 302                            | 0%                        | 2.24                | 0                   | 2.24                      | 1%                  | 1.0                | 0                      | 1.0                         | 0%                   | 0              | 0            | 100.00%                    |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Com. #            | 20438                          | 0                                | 20438                          | 19%                       | 205515              | 0                   | 205515                    | 33%                 | 947.609            | 294.55                 | 294.55                      | 31%                  | 9.7024         | 401.2        | 100.00%                    |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Com. #            | 34                             | 0                                | 34                             | 0%                        | 14.9                | 0                   | 14.9                      | 0%                  | 25.38              | 0                      | 25.38                       | 0%                   | 0              | 0            | 100.00%                    |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Others            | 10023                          | 0                                | 10023                          | 10%                       | 7157                | 0                   | 7157                      | 2%                  | 15140.0            | 15140.0                | 15140.0                     | 2%                   | 13.3802        | 21.3348      | 140.37%                    |                                |                       |                       |                        |                |
| Sub-total                                          | 10729        | 0          | 10729            | 100%              | 133942                         | 0                                | 133942                         | 100%                      | 921.606             | 921.606             | 921.606                   | 100%                | 51.9024            | 115.27                 | 222.34%                     |                      |                |              |                            |                                |                       |                       |                        |                |
| 2                                                  | JAMALI       | C.I.C.     | B&D              | Reside #          | 1852                           | 0                                | 1852                           | 7%                        | 22119               | 0                   | 22119                     | 14%                 | 142.96             | 0                      | 142.96                      | 12%                  | 2.1325         | 213.25       | 99.94%                     |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Agri. #           | 0                              | 0                                | 0                              | 0%                        | 0                   | 0                   | 0                         | 0%                  | 0                  | 0                      | 0                           | 0%                   | 0              | 0            | 100.00%                    |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Com. #            | 2133                           | 0                                | 2133                           | 24%                       | 39638               | 0                   | 39638                     | 26%                 | 1302.124           | 976.528                | 976.528                     | 33%                  | 121.2044       | 1263.27      | 105.12%                    |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Com. #            | 52                             | 0                                | 52                             | 0%                        | 2.2                 | 0                   | 2.2                       | 1%                  | 17.24              | 0                      | 17.24                       | 1%                   | 0              | 0            | 100.00%                    |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Others            | 262                            | 0                                | 262                            | 1%                        | 332                 | 0                   | 332                       | 1%                  | 21291.15           | 51291.278              | 51291.278                   | 2%                   | 21291.15       | 12141.42     | 103.45%                    |                                |                       |                       |                        |                |
| Sub-total                                          | 1852         | 0          | 1852             | 100%              | 22119                          | 0                                | 22119                          | 100%                      | 1392.728            | 1175.210            | 1175.210                  | 100%                | 131.9044           | 1364.958               | 100.34%                     |                      |                |              |                            |                                |                       |                       |                        |                |
| 3                                                  | JAMALI       | C.I.C.     | B&D              | Reside #          | 0                              | 0                                | 0                              | 0%                        | 0                   | 0                   | 0                         | 0%                  | 0                  | 0                      | 0                           | 0%                   | 0              | 0            | 100.00%                    |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Agri. #           | 0                              | 0                                | 0                              | 0%                        | 0                   | 0                   | 0                         | 0%                  | 0                  | 0                      | 0                           | 0%                   | 0              | 0            | 100.00%                    |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Com. #            | 22841                          | 0                                | 22841                          | 100%                      | 152265              | 0                   | 152265                    | 28%                 | 7124020            | 5639                   | 5639                        | 1%                   | 222456         | 2            | 100.00%                    |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Com. #            | 50                             | 0                                | 50                             | 0%                        | 33201               | 0                   | 33201                     | 10%                 | 8021               | 0                      | 8021                        | 1%                   | 119.25         | 113.94       | 95.54%                     |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Others            | 318                            | 0                                | 318                            | 0%                        | 21967               | 0                   | 21967                     | 14%                 | 1821842            | 1821842                | 1821842                     | 28%                  | 177.9225       | 174.8283     | 98.24%                     |                                |                       |                       |                        |                |
| Sub-total                                          | 10224        | 0          | 10224            | 100%              | 318233                         | 0                                | 318233                         | 100%                      | 7740426             | 7650962             | 7650962                   | 100%                | 222456             | 67                     | 100.00%                     |                      |                |              |                            |                                |                       |                       |                        |                |
| 4                                                  | JAMALI       | C.I.C.     | B&D              | Reside #          | 11272                          | 0                                | 11272                          | 31%                       | 27155               | 0                   | 27155                     | 40%                 | 251.01             | 0                      | 251.01                      | 43%                  | 213.25         | 213.25       | 99.99%                     |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Agri. #           | 0                              | 0                                | 0                              | 0%                        | 0                   | 0                   | 0                         | 0%                  | 0                  | 0                      | 0                           | 0%                   | 0              | 0            | 100.00%                    |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Com. #            | 27134                          | 0                                | 27134                          | 18%                       | 22877               | 0                   | 22877                     | 43%                 | 3452945            | 21038                  | 21038                       | 41%                  | 474087         | 423.28       | 100.34%                    |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Com. #            | 118                            | 0                                | 118                            | 0%                        | 2752                | 0                   | 2752                      | 7%                  | 6038               | 0                      | 6038                        | 0%                   | 34             | 32.7         | 96.18%                     |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Others            | 322                            | 0                                | 322                            | 0%                        | 94                  | 0                   | 94                        | 1%                  | 1523968            | 1523968                | 1523968                     | 2%                   | 1523968        | 1523968      | 100.00%                    |                                |                       |                       |                        |                |
| Sub-total                                          | 11272        | 0          | 11272            | 100%              | 318233                         | 0                                | 318233                         | 100%                      | 3020420             | 3020420             | 3020420                   | 100%                | 467067             | 67                     | 100.00%                     |                      |                |              |                            |                                |                       |                       |                        |                |
| 5                                                  | JAMALI       | C.I.C.     | B&D              | Reside #          | 10125                          | 0                                | 10125                          | 29%                       | 22926               | 0                   | 22926                     | 33%                 | 1523968            | 0                      | 1523968                     | 2%                   | 1523968        | 1523968      | 100.00%                    |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Agri. #           | 0                              | 0                                | 0                              | 0%                        | 0                   | 0                   | 0                         | 0%                  | 0                  | 0                      | 0                           | 0%                   | 0              | 0            | 100.00%                    |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Com. #            | 22841                          | 0                                | 22841                          | 100%                      | 152265              | 0                   | 152265                    | 28%                 | 7124020            | 5639                   | 5639                        | 1%                   | 222456         | 2            | 100.00%                    |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Com. #            | 50                             | 0                                | 50                             | 0%                        | 33201               | 0                   | 33201                     | 10%                 | 8021               | 0                      | 8021                        | 1%                   | 119.25         | 113.94       | 95.54%                     |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Others            | 318                            | 0                                | 318                            | 0%                        | 21967               | 0                   | 21967                     | 14%                 | 1821842            | 1821842                | 1821842                     | 28%                  | 177.9225       | 174.8283     | 98.24%                     |                                |                       |                       |                        |                |
| Sub-total                                          | 10125        | 0          | 10125            | 100%              | 318233                         | 0                                | 318233                         | 100%                      | 3020420             | 3020420             | 3020420                   | 100%                | 467067             | 67                     | 100.00%                     |                      |                |              |                            |                                |                       |                       |                        |                |
| 6                                                  | JAMALI       | C.I.C.     | B&D              | Reside #          | 11272                          | 0                                | 11272                          | 31%                       | 27155               | 0                   | 27155                     | 40%                 | 251.01             | 0                      | 251.01                      | 43%                  | 213.25         | 213.25       | 99.99%                     |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Agri. #           | 0                              | 0                                | 0                              | 0%                        | 0                   | 0                   | 0                         | 0%                  | 0                  | 0                      | 0                           | 0%                   | 0              | 0            | 100.00%                    |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Com. #            | 27134                          | 0                                | 27134                          | 18%                       | 22877               | 0                   | 22877                     | 43%                 | 3452945            | 21038                  | 21038                       | 41%                  | 474087         | 423.28       | 100.34%                    |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Com. #            | 118                            | 0                                | 118                            | 0%                        | 2752                | 0                   | 2752                      | 7%                  | 6038               | 0                      | 6038                        | 0%                   | 34             | 32.7         | 96.18%                     |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Others            | 322                            | 0                                | 322                            | 0%                        | 94                  | 0                   | 94                        | 1%                  | 1523968            | 1523968                | 1523968                     | 2%                   | 1523968        | 1523968      | 100.00%                    |                                |                       |                       |                        |                |
| Sub-total                                          | 11272        | 0          | 11272            | 100%              | 318233                         | 0                                | 318233                         | 100%                      | 3020420             | 3020420             | 3020420                   | 100%                | 467067             | 67                     | 100.00%                     |                      |                |              |                            |                                |                       |                       |                        |                |
| 7                                                  | JAMALI       | C.I.C.     | B&D              | Reside #          | 10125                          | 0                                | 10125                          | 29%                       | 22926               | 0                   | 22926                     | 33%                 | 1523968            | 0                      | 1523968                     | 2%                   | 1523968        | 1523968      | 100.00%                    |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Agri. #           | 0                              | 0                                | 0                              | 0%                        | 0                   | 0                   | 0                         | 0%                  | 0                  | 0                      | 0                           | 0%                   | 0              | 0            | 100.00%                    |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Com. #            | 22841                          | 0                                | 22841                          | 100%                      | 152265              | 0                   | 152265                    | 28%                 | 7124020            | 5639                   | 5639                        | 1%                   | 222456         | 2            | 100.00%                    |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Com. #            | 50                             | 0                                | 50                             | 0%                        | 33201               | 0                   | 33201                     | 10%                 | 8021               | 0                      | 8021                        | 1%                   | 119.25         | 113.94       | 95.54%                     |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Others            | 318                            | 0                                | 318                            | 0%                        | 21967               | 0                   | 21967                     | 14%                 | 1821842            | 1821842                | 1821842                     | 28%                  | 177.9225       | 174.8283     | 98.24%                     |                                |                       |                       |                        |                |
| Sub-total                                          | 10125        | 0          | 10125            | 100%              | 318233                         | 0                                | 318233                         | 100%                      | 3020420             | 3020420             | 3020420                   | 100%                | 467067             | 67                     | 100.00%                     |                      |                |              |                            |                                |                       |                       |                        |                |
| 8                                                  | JAMALI       | C.I.C.     | B&D              | Reside #          | 11272                          | 0                                | 11272                          | 31%                       | 27155               | 0                   | 27155                     | 40%                 | 251.01             | 0                      | 251.01                      | 43%                  | 213.25         | 213.25       | 99.99%                     |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Agri. #           | 0                              | 0                                | 0                              | 0%                        | 0                   | 0                   | 0                         | 0%                  | 0                  | 0                      | 0                           | 0%                   | 0              | 0            | 100.00%                    |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Com. #            | 27134                          | 0                                | 27134                          | 18%                       | 22877               | 0                   | 22877                     | 43%                 | 3452945            | 21038                  | 21038                       | 41%                  | 474087         | 423.28       | 100.34%                    |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Com. #            | 118                            | 0                                | 118                            | 0%                        | 2752                | 0                   | 2752                      | 7%                  | 6038               | 0                      | 6038                        | 0%                   | 34             | 32.7         | 96.18%                     |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Others            | 322                            | 0                                | 322                            | 0%                        | 94                  | 0                   | 94                        | 1%                  | 1523968            | 1523968                | 1523968                     | 2%                   | 1523968        | 1523968      | 100.00%                    |                                |                       |                       |                        |                |
| Sub-total                                          | 11272        | 0          | 11272            | 100%              | 318233                         | 0                                | 318233                         | 100%                      | 3020420             | 3020420             | 3020420                   | 100%                | 467067             | 67                     | 100.00%                     |                      |                |              |                            |                                |                       |                       |                        |                |
| 9                                                  | JAMALI       | C.I.C.     | B&D              | Reside #          | 10125                          | 0                                | 10125                          | 29%                       | 22926               | 0                   | 22926                     | 33%                 | 1523968            | 0                      | 1523968                     | 2%                   | 1523968        | 1523968      | 100.00%                    |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Agri. #           | 0                              | 0                                | 0                              | 0%                        | 0                   | 0                   | 0                         | 0%                  | 0                  | 0                      | 0                           | 0%                   | 0              | 0            | 100.00%                    |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Com. #            | 22841                          | 0                                | 22841                          | 100%                      | 152265              | 0                   | 152265                    | 28%                 | 7124020            | 5639                   | 5639                        | 1%                   | 222456         | 2            | 100.00%                    |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Com. #            | 50                             | 0                                | 50                             | 0%                        | 33201               | 0                   | 33201                     | 10%                 | 8021               | 0                      | 8021                        | 1%                   | 119.25         | 113.94       | 95.54%                     |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Others            | 318                            | 0                                | 318                            | 0%                        | 21967               | 0                   | 21967                     | 14%                 | 1821842            | 1821842                | 1821842                     | 28%                  | 177.9225       | 174.8283     | 98.24%                     |                                |                       |                       |                        |                |
| Sub-total                                          | 10125        | 0          | 10125            | 100%              | 318233                         | 0                                | 318233                         | 100%                      | 3020420             | 3020420             | 3020420                   | 100%                | 467067             | 67                     | 100.00%                     |                      |                |              |                            |                                |                       |                       |                        |                |
| 10                                                 | JAMALI       | C.I.C.     | B&D              | Reside #          | 11272                          | 0                                | 11272                          | 31%                       | 27155               | 0                   | 27155                     | 40%                 | 251.01             | 0                      | 251.01                      | 43%                  | 213.25         | 213.25       | 99.99%                     |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Agri. #           | 0                              | 0                                | 0                              | 0%                        | 0                   | 0                   | 0                         | 0%                  | 0                  | 0                      | 0                           | 0%                   | 0              | 0            | 100.00%                    |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Com. #            | 27134                          | 0                                | 27134                          | 18%                       | 22877               | 0                   | 22877                     | 43%                 | 3452945            | 21038                  | 21038                       | 41%                  | 474087         | 423.28       | 100.34%                    |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Com. #            | 118                            | 0                                | 118                            | 0%                        | 2752                | 0                   | 2752                      | 7%                  | 6038               | 0                      | 6038                        | 0%                   | 34             | 32.7         | 96.18%                     |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Others            | 322                            | 0                                | 322                            | 0%                        | 94                  | 0                   | 94                        | 1%                  | 1523968            | 1523968                | 1523968                     | 2%                   | 1523968        | 1523968      | 100.00%                    |                                |                       |                       |                        |                |
| Sub-total                                          | 11272        | 0          | 11272            | 100%              | 318233                         | 0                                | 318233                         | 100%                      | 3020420             | 3020420             | 3020420                   | 100%                | 467067             | 67                     | 100.00%                     |                      |                |              |                            |                                |                       |                       |                        |                |
| 11                                                 | JAMALI       | C.I.C.     | B&D              | Reside #          | 10125                          | 0                                | 10125                          | 29%                       | 22926               | 0                   | 22926                     | 33%                 | 1523968            | 0                      | 1523968                     | 2%                   | 1523968        | 1523968      | 100.00%                    |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Agri. #           | 0                              | 0                                | 0                              | 0%                        | 0                   | 0                   | 0                         | 0%                  | 0                  | 0                      | 0                           | 0%                   | 0              | 0            | 100.00%                    |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Com. #            | 22841                          | 0                                | 22841                          | 100%                      | 152265              | 0                   | 152265                    | 28%                 | 7124020            | 5639                   | 5639                        | 1%                   | 222456         | 2            | 100.00%                    |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Com. #            | 50                             | 0                                | 50                             | 0%                        | 33201               | 0                   | 33201                     | 10%                 | 8021               | 0                      | 8021                        | 1%                   | 119.25         | 113.94       | 95.54%                     |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Others            | 318                            | 0                                | 318                            | 0%                        | 21967               | 0                   | 21967                     | 14%                 | 1821842            | 1821842                | 1821842                     | 28%                  | 177.9225       | 174.8283     | 98.24%                     |                                |                       |                       |                        |                |
| Sub-total                                          | 10125        | 0          | 10125            | 100%              | 318233                         | 0                                | 318233                         | 100%                      | 3020420             | 3020420             | 3020420                   | 100%                | 467067             | 67                     | 100.00%                     |                      |                |              |                            |                                |                       |                       |                        |                |
| 12                                                 | JAMALI       | C.I.C.     | B&D              | Reside #          | 11272                          | 0                                | 11272                          | 31%                       | 27155               | 0                   | 27155                     | 40%                 | 251.01             | 0                      | 251.01                      | 43%                  | 213.25         | 213.25       | 99.99%                     |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Agri. #           | 0                              | 0                                | 0                              | 0%                        | 0                   | 0                   | 0                         | 0%                  | 0                  | 0                      | 0                           | 0%                   | 0              | 0            | 100.00%                    |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Com. #            | 27134                          | 0                                | 27134                          | 18%                       | 22877               | 0                   | 22877                     | 43%                 | 3452945            | 21038                  | 21038                       | 41%                  | 474087         | 423.28       | 100.34%                    |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Com. #            | 118                            | 0                                | 118                            | 0%                        | 2752                | 0                   | 2752                      | 7%                  | 6038               | 0                      | 6038                        | 0%                   | 34             | 32.7         | 96.18%                     |                                |                       |                       |                        |                |
|                                                    |              |            |                  | Others            | 322                            | 0                                | 322                            | 0%                        | 94                  | 0                   | 94                        | 1%                  | 1523968            | 1523968                | 1523968                     | 2%                   | 1523968        | 1523968      | 100.00%                    |                                |                       |                       |                        |                |
| Sub-total                                          | 11272        | 0          | 11272            | 100%              | 318233                         | 0                                | 318233                         | 100%                      | 3020420             | 3020420</           |                           |                     |                    |                        |                             |                      |                |              |                            |                                |                       |                       |                        |                |

Energy Audit (Accounting) Report – Tata Power Delhi Distribution Limited, Delhi

|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 |                      |         |         |         |         |         |         |         |        |        |        |        |        |        |           |                        |       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|----------------------|---------|---------|---------|---------|---------|---------|---------|--------|--------|--------|--------|--------|--------|-----------|------------------------|-------|
| 99                                                                                                                                                                                                                                                                                                                                                                              |                                                 | Agre./Actual         | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Commercial/Actual-LF | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Commercial/Actual-HF | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Others               | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Sub-total            | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
| 100                                                                                                                                                                                                                                                                                                                                                                             |                                                 | Residual             | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Agre./Actual         | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Commercial/Actual-LF | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Commercial/Actual-HF | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Others               | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
| 101                                                                                                                                                                                                                                                                                                                                                                             |                                                 | Residual             | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Agre./Actual         | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Commercial/Actual-LF | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Commercial/Actual-HF | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Others               | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
| 102                                                                                                                                                                                                                                                                                                                                                                             |                                                 | Residual             | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Agre./Actual         | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Commercial/Actual-LF | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Commercial/Actual-HF | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Others               | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
| 103                                                                                                                                                                                                                                                                                                                                                                             |                                                 | Residual             | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Agre./Actual         | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Commercial/Actual-LF | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Commercial/Actual-HF | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Others               | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
| 104                                                                                                                                                                                                                                                                                                                                                                             |                                                 | Residual             | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Agre./Actual         | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Commercial/Actual-LF | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Commercial/Actual-HF | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Others               | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
| 105                                                                                                                                                                                                                                                                                                                                                                             |                                                 | Residual             | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Agre./Actual         | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Commercial/Actual-LF | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Commercial/Actual-HF | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Others               | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
| 106                                                                                                                                                                                                                                                                                                                                                                             |                                                 | Residual             | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Agre./Actual         | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Commercial/Actual-LF | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Commercial/Actual-HF | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Others               | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
| 107                                                                                                                                                                                                                                                                                                                                                                             |                                                 | Residual             | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Agre./Actual         | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Commercial/Actual-LF | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Commercial/Actual-HF | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Others               | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
| 108                                                                                                                                                                                                                                                                                                                                                                             |                                                 | Residual             | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Agre./Actual         | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Commercial/Actual-LF | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Commercial/Actual-HF | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Others               | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
| 109                                                                                                                                                                                                                                                                                                                                                                             |                                                 | Residual             | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Agre./Actual         | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Commercial/Actual-LF | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Commercial/Actual-HF | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Others               | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
| 110                                                                                                                                                                                                                                                                                                                                                                             |                                                 | Residual             | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Agre./Actual         | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Commercial/Actual-LF | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Commercial/Actual-HF | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Others               | 0       | 0       | 0       | 100%    | 0       | 0       | 0       | 100%   | 0      | 0      | 0      | 100%   | 0      | 0         | 0                      | 0.00% |
| 76                                                                                                                                                                                                                                                                                                                                                                              | Total                                           | Residual             | 1405301 | 0       | 1405301 | 0%      | 5524726 | 0       | 5524726 | 0%     | 447233 | 0      | 447233 | 0%     | 238275 | 238449    | 100.01%                |       |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Agre./Actual         | 4385    | 0       | 4385    | 0%      | 25025   | 0       | 25025   | 0%     | 1531   | 0      | 1531   | 0%     | 977    | 975       | 99.68%                 |       |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Commercial/Actual-LF | 269002  | 0       | 269002  | 1%      | 2297246 | 0       | 2297246 | 0%     | 213248 | 0      | 213248 | 0%     | 423787 | 423535    | 100.04%                |       |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Commercial/Actual-HF | 354     | 0       | 354     | 0%      | 190011  | 0%      | 190011  | 0%     | 37926  | 0      | 37926  | 0%     | 74307  | 74435     | 99.82%                 |       |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                 | Others               | 7636    | 0       | 7636    | 0%      | 23035   | 0%      | 23035   | 0%     | 326388 | 0      | 326388 | 0%     | 327485 | 327462522 | 101.00%                |       |
| 77                                                                                                                                                                                                                                                                                                                                                                              | A (company level)                               | 1385978              | 0       | 1385978 | 100%    | 6215393 | 0       | 6215393 | 100%    | 404733 | 0      | 404733 | 100%   | 672248 | 672248 | 100.00%   |                        |       |
| <p>** Note - It shall be mandatory to record the energy supplied separately for each category of consumer which is being provided a separate subsidy in the bill by the state government, so that the subsidy due for the month by the distribution company is quarterly calculated by multiplying the energy supplied to each category of consumer by the respective rate.</p> |                                                 |                      |         |         |         |         |         |         |         |        |        |        |        |        |        |           |                        |       |
| Code                                                                                                                                                                                                                                                                                                                                                                            | Parameter                                       |                      |         |         |         |         |         |         |         |        |        |        |        |        |        |           |                        |       |
| Code                                                                                                                                                                                                                                                                                                                                                                            | Name of consumer                                |                      |         |         |         |         |         |         |         |        |        |        |        |        |        |           |                        |       |
| Code                                                                                                                                                                                                                                                                                                                                                                            | Name of consumer code                           |                      |         |         |         |         |         |         |         |        |        |        |        |        |        |           |                        |       |
| Code                                                                                                                                                                                                                                                                                                                                                                            | Name of consumer category and category selected |                      |         |         |         |         |         |         |         |        |        |        |        |        |        |           |                        |       |
| <p>(We undertake that the information supplied in this Document 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 in loss to the Central Government or to the Government of the state (if under the control of the person affected) we undertake to indemnify such loss.</p>        |                                                 |                      |         |         |         |         |         |         |         |        |        |        |        |        |        |           |                        |       |
| Authorized Signatory and Seal                                                                                                                                                                                                                                                                                                                                                   |                                                 |                      |         |         |         |         |         |         |         |        |        |        |        |        |        |           | Signature              |       |
| Name of Authorized Signatory:                                                                                                                                                                                                                                                                                                                                                   |                                                 |                      |         |         |         |         |         |         |         |        |        |        |        |        |        |           | Name of Energy Manager |       |
| Name of the DSO:                                                                                                                                                                                                                                                                                                                                                                |                                                 |                      |         |         |         |         |         |         |         |        |        |        |        |        |        |           | Registration Number    |       |
| Full Address:-                                                                                                                                                                                                                                                                                                                                                                  |                                                 |                      |         |         |         |         |         |         |         |        |        |        |        |        |        |           |                        |       |
| Seal                                                                                                                                                                                                                                                                                                                                                                            |                                                 |                      |         |         |         |         |         |         |         |        |        |        |        |        |        |           |                        |       |

Energy Audit (Accounting) Report – Tata Power Delhi Distribution Limited, Delhi

| Form-Input energy (Details of input energy & Infrastructure) |                                                                                |        |                     |                |                    |           |                          |                                                  |                                                 | Remarks (if any)                        |                                                                                           |                                                               |                            |                            |            |             |              |              |                                                                                                                                       |
|--------------------------------------------------------------|--------------------------------------------------------------------------------|--------|---------------------|----------------|--------------------|-----------|--------------------------|--------------------------------------------------|-------------------------------------------------|-----------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------|----------------------------|----------------------------|------------|-------------|--------------|--------------|---------------------------------------------------------------------------------------------------------------------------------------|
| A. Summary of energy input & Infrastructure                  |                                                                                |        |                     |                |                    |           |                          |                                                  |                                                 |                                         |                                                                                           |                                                               |                            |                            |            |             |              |              |                                                                                                                                       |
| S.No                                                         | Parameters                                                                     |        |                     |                |                    |           |                          |                                                  | Period From 1st April, 2021 To 31st March, 2022 | Remarks (Source of data)                |                                                                                           |                                                               |                            |                            |            |             |              |              |                                                                                                                                       |
| A.1                                                          | Input Energy purchased (MWh)                                                   |        |                     |                |                    |           |                          |                                                  | 11737.403                                       | Power purchase Invoice                  | Provisional values will be revised at year end.                                           |                                                               |                            |                            |            |             |              |              |                                                                                                                                       |
| A.2                                                          | Transmission loss (%)                                                          |        |                     |                |                    |           |                          |                                                  | 4%                                              | Power purchase Invoice                  | PGCIL & DFL losses                                                                        |                                                               |                            |                            |            |             |              |              |                                                                                                                                       |
| A.3                                                          | Transmission loss (MWh)                                                        |        |                     |                |                    |           |                          |                                                  | 471.21062                                       |                                         |                                                                                           |                                                               |                            |                            |            |             |              |              |                                                                                                                                       |
| A.4                                                          | Energy sold outside the periphery (MWh)                                        |        |                     |                |                    |           |                          |                                                  | 1041.1416                                       | Power purchase Invoice                  | Provisional values will be revised at year end.                                           |                                                               |                            |                            |            |             |              |              |                                                                                                                                       |
| A.5                                                          | Open access sale (MWh)                                                         |        |                     |                |                    |           |                          |                                                  | 86.703869                                       |                                         | Energy supplies to consumers on open access mode, in the licensee area of Tata Power DDL. |                                                               |                            |                            |            |             |              |              |                                                                                                                                       |
| A.6                                                          | LHT sale                                                                       |        |                     |                |                    |           |                          |                                                  | 156.87787                                       | From regulatory data                    |                                                                                           |                                                               |                            |                            |            |             |              |              |                                                                                                                                       |
| A.7                                                          | Net input energy [received at DISCOM periphery or at distribution point] (MWh) |        |                     |                |                    |           |                          |                                                  | 3007.35                                         |                                         |                                                                                           |                                                               |                            |                            |            |             |              |              |                                                                                                                                       |
| A.8                                                          | Is 100% metering available at 66/33 kV (select yes or no from list)            |        |                     |                |                    |           |                          |                                                  | 76%                                             | Energy Audit and GIS Data (below 220kV) |                                                                                           |                                                               |                            |                            |            |             |              |              |                                                                                                                                       |
| A.9                                                          | Is 100% metering available at 11 kV (select yes or no from list)               |        |                     |                |                    |           |                          |                                                  | 33%                                             |                                         |                                                                                           |                                                               |                            |                            |            |             |              |              |                                                                                                                                       |
| A.10                                                         | % of metering available at BT                                                  |        |                     |                |                    |           |                          |                                                  | 100%                                            | From Billing data base                  |                                                                                           |                                                               |                            |                            |            |             |              |              |                                                                                                                                       |
| A.11                                                         | % of metering available at consumer end                                        |        |                     |                |                    |           |                          |                                                  | 100%                                            | From Billing data base                  |                                                                                           |                                                               |                            |                            |            |             |              |              |                                                                                                                                       |
| A.12                                                         | No of feeders at 66kV voltage level                                            |        |                     |                |                    |           |                          |                                                  | 143                                             | GIS Data base                           |                                                                                           |                                                               |                            |                            |            |             |              |              |                                                                                                                                       |
| A.13                                                         | No of feeders at 33kV voltage level                                            |        |                     |                |                    |           |                          |                                                  | 409                                             | GIS Data base                           |                                                                                           |                                                               |                            |                            |            |             |              |              |                                                                                                                                       |
| A.14                                                         | No of feeders at 11kV voltage level                                            |        |                     |                |                    |           |                          |                                                  | 1241                                            | GIS Data base                           |                                                                                           |                                                               |                            |                            |            |             |              |              |                                                                                                                                       |
| A.15                                                         | No of LT feeders level                                                         |        |                     |                |                    |           |                          |                                                  | 16085                                           | GIS Data base                           |                                                                                           |                                                               |                            |                            |            |             |              |              |                                                                                                                                       |
| A.16                                                         | Line length (k.t. km) at 66kV voltage level                                    |        |                     |                |                    |           |                          |                                                  | 338.7                                           | GIS Data base                           |                                                                                           |                                                               |                            |                            |            |             |              |              |                                                                                                                                       |
| A.17                                                         | Line length (k.t. km) at 33kV voltage level                                    |        |                     |                |                    |           |                          |                                                  | 477.3                                           | GIS Data base                           |                                                                                           |                                                               |                            |                            |            |             |              |              |                                                                                                                                       |
| A.18                                                         | Line length (k.t. km) at 11kV voltage level                                    |        |                     |                |                    |           |                          |                                                  | 5123                                            | GIS Data base                           |                                                                                           |                                                               |                            |                            |            |             |              |              |                                                                                                                                       |
| A.19                                                         | Line length (km) of LT wire                                                    |        |                     |                |                    |           |                          |                                                  | 7463                                            | GIS Data base                           |                                                                                           |                                                               |                            |                            |            |             |              |              |                                                                                                                                       |
| A.20                                                         | Length of Aerial Bundled Cables                                                |        |                     |                |                    |           |                          |                                                  | 5641                                            | GIS Data base                           |                                                                                           |                                                               |                            |                            |            |             |              |              |                                                                                                                                       |
| A.21                                                         | Length of Underground Cables                                                   |        |                     |                |                    |           |                          |                                                  | 6055                                            | GIS Data base                           |                                                                                           |                                                               |                            |                            |            |             |              |              |                                                                                                                                       |
| A.22                                                         | BT/LT ratio                                                                    |        |                     |                |                    |           |                          |                                                  | 0.8218781                                       |                                         |                                                                                           |                                                               |                            |                            |            |             |              |              |                                                                                                                                       |
| B. Meter reading of 10 subenergy injection points            |                                                                                |        |                     |                |                    |           |                          |                                                  |                                                 | Remarks (if any)                        |                                                                                           |                                                               |                            |                            |            |             |              |              |                                                                                                                                       |
| S.No                                                         | Zone                                                                           | Circle | Voltage Level (kVA) | Division (kVA) | Sub-Division (kVA) | Feeder ID | Feeder Name              | Feeder Status (Operational/ Suspended/ AMV/ AMR) | Status of Meter (Functional/ Non-Functional)    | Metering Date                           | Feeder Type (Ag/ Ret/ Inj/ M/ Feed)                                                       | Status of Consumption (% data received/ % metering available) | Number of meters available | Total % meters operational | Meter S.No | CT/PT ratio | Import (kWh) | Export (kWh) | Remarks (Source of data)                                                                                                              |
| B.1                                                          | Sub-Urban                                                                      |        | 66                  |                |                    |           | Narela TX 1              | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4864963    | 1000        | 253.51       |              | Period from 1st April, 2021 to 31st March, 2022. Circle denotes the geographical locations of respective feeders at injection points. |
| B.2                                                          | Sub-Urban                                                                      |        | 66                  |                |                    |           | Narela TX 2              | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 5128461    | 500         | 279.27       |              |                                                                                                                                       |
| B.3                                                          | Sub-Urban                                                                      |        | 66                  |                |                    |           | Narela TX 3              | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4865052    | 1000        | 163.52       |              |                                                                                                                                       |
| B.4                                                          | Sub-Urban                                                                      |        | 11                  |                |                    |           | LOCAL TR Narela          | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4902583    | -10         | -0.22        |              |                                                                                                                                       |
| B.5                                                          | Sub-Urban                                                                      |        | 66                  |                |                    |           | Railway CB-              | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4864952    | -625        | -28.29       |              |                                                                                                                                       |
| B.6                                                          | Sub-Urban                                                                      |        | 66                  |                |                    |           | Railway CB-              | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4865039    | -500        | -14.20       |              |                                                                                                                                       |
| B.7                                                          | Town                                                                           |        | 66                  |                |                    |           | Gopal Pur TX             | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4864976    | 2000        | 34.02        |              |                                                                                                                                       |
| B.8                                                          | Town                                                                           |        | 33                  |                |                    |           | Gopal Pur TX             | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 5128429    | 1000        | 227.91       |              |                                                                                                                                       |
| B.9                                                          | Town                                                                           |        | 33                  |                |                    |           | Gopal Pur TX             | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4864934    | 1000        | 285.54       |              |                                                                                                                                       |
| B.10                                                         | Town                                                                           |        | 11                  |                |                    |           | LOCAL TR Gopal           | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4865051    | -75         | -0.19        |              |                                                                                                                                       |
| B.11                                                         | Town                                                                           |        | 66                  |                |                    |           | Gopal Pur TX 4 [16]      | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 5255184    | 1000        | 448.78       |              |                                                                                                                                       |
| B.12                                                         | Town                                                                           |        | 220                 |                |                    |           | Kasmer Gate 220 KV       | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4902482    | 500         | 58.17        |              |                                                                                                                                       |
| B.13                                                         | Town                                                                           |        | 220                 |                |                    |           | Kasmer Gate 220 KV       | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 5128473    | 1000        | 55.44        |              |                                                                                                                                       |
| B.14                                                         | Town                                                                           |        | 33                  |                |                    |           | Kasmer Gate 33 KV C      | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4864791    | 266.66      | 30.54        |              |                                                                                                                                       |
| B.15                                                         | Town                                                                           |        | 11                  |                |                    |           | BSFT Gate / T/O No.1 Msh | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4865074    | 133.33      | 5.90         |              |                                                                                                                                       |
| B.16                                                         | Town                                                                           |        | 33                  |                |                    |           | Kasmer Gate 33 KV C      | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4864987    | 500         | 17.05        |              |                                                                                                                                       |
| B.17                                                         | Town                                                                           |        | 33                  |                |                    |           | Kasmer Gate 30 W         | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4864797    | 100         | 71.14        |              |                                                                                                                                       |
| B.18                                                         | Town                                                                           |        | 11                  |                |                    |           | LOCAL TR EGA             | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4902530    | -75         | -0.12        |              |                                                                                                                                       |
| B.19                                                         | Town                                                                           |        | 11                  |                |                    |           | Kasmer Gate BUS C        | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4902583    | -400        | -0.01        |              |                                                                                                                                       |
| B.20                                                         | Gty                                                                            |        | 33                  |                |                    |           | O/G Payal CH M           | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4864836    | 1000        | 69.60        |              |                                                                                                                                       |
| B.21                                                         | Gty                                                                            |        | 33                  |                |                    |           | O/G BAWALI LINE          | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4865182    | 4000        | 57.41        |              |                                                                                                                                       |
| B.22                                                         | Gty                                                                            |        | 33                  |                |                    |           | IND IR PURI CH-1 H       | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4864865    | 1000        | 73.75        |              |                                                                                                                                       |
| B.23                                                         | Gty                                                                            |        | 33                  |                |                    |           | 33 KV 36 MW/TH-1         | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4864890    | 500         | 21.16        |              |                                                                                                                                       |
| B.24                                                         | Gty                                                                            |        | 33                  |                |                    |           | 33 KV 36 MW/TH-2         | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4902428    | 500         | 44.67        |              |                                                                                                                                       |
| B.25                                                         | Gty                                                                            |        | 11                  |                |                    |           | Go pi NATH Bazar / JH    | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4902566    | -100        | -15.08       |              |                                                                                                                                       |
| B.26                                                         | Gty                                                                            |        | 11                  |                |                    |           | LOCAL TR narela          | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4902602    | -100        | -0.32        |              |                                                                                                                                       |
| B.27                                                         | Gty                                                                            |        | 33                  |                |                    |           | IND IR PURI CH-2 H       | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4864873    | 1000        | 77.48        |              |                                                                                                                                       |
| B.28                                                         | Gty                                                                            |        | 33                  |                |                    |           | 33KV Narela Pandav Nagar | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 5255124    | 100         | 20.08        |              |                                                                                                                                       |
| B.29                                                         | Town                                                                           |        | 33                  |                |                    |           | O/G 33 KV Rama Road R    | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4865179    | 3750        | 66.16        |              |                                                                                                                                       |
| B.30                                                         | Town                                                                           |        | 33                  |                |                    |           | O/G 33 KV Shalada Bagh   | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4865152    | 1000        | 7.33         |              |                                                                                                                                       |
| B.31                                                         | Town                                                                           |        | 33                  |                |                    |           | O/G 33 KV Ranap area-1 R | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4902497    | 140.88      | 76.70        |              |                                                                                                                                       |
| B.32                                                         | Town                                                                           |        | 33                  |                |                    |           | O/G 33 KV Ranap area-2 R | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4864790    | 166.67      | 73.37        |              |                                                                                                                                       |
| B.33                                                         | Town                                                                           |        | 11                  |                |                    |           | BUS COMPLETER BOM        | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4902559    | 100         | 0.06         |              |                                                                                                                                       |
| B.34                                                         | Town                                                                           |        | 33                  |                |                    |           | T X 3 Rohat Bc           | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 5128406    | 625         | 7.31         |              |                                                                                                                                       |
| B.35                                                         | Town                                                                           |        | 33                  |                |                    |           | O/G 33 KV DLF Biri Nagar | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4864821    | 150         | 69.71        |              |                                                                                                                                       |
| B.36                                                         | Urban                                                                          |        | 33                  |                |                    |           | T X 1 Shalimar B         | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4864930    | 1000        | 304.35       |              |                                                                                                                                       |
| B.37                                                         | Urban                                                                          |        | 66                  |                |                    |           | T X 2 Shalimar B         | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 5128441    | 1000        | 157.20       |              |                                                                                                                                       |
| B.38                                                         | Urban                                                                          |        | 220                 |                |                    |           | DMRC Jangpiti            | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4902644    | 1000        | 15.34        |              |                                                                                                                                       |
| B.39                                                         | Urban                                                                          |        | 11                  |                |                    |           | LOCAL TR SH              | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4902561    | -75         | -0.59        |              |                                                                                                                                       |
| B.40                                                         | Urban                                                                          |        | 33                  |                |                    |           | T X 3 Shalimar B         | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4864921    | 1000        | 288.41       |              |                                                                                                                                       |
| B.41                                                         | Urban                                                                          |        | 220                 |                |                    |           | DMRC S.M.B.R             | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4902484    | 500         | 18.98        |              |                                                                                                                                       |
| B.42                                                         | Urban                                                                          |        | 66                  |                |                    |           | T X 4 Shalimar B         | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 49001335   | 1000        | 111.19       |              |                                                                                                                                       |
| B.43                                                         | Urban                                                                          |        | 66                  |                |                    |           | T X 1 Rohat 220          | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4864964    | 1000        | 193.18       |              |                                                                                                                                       |
| B.44                                                         | Urban                                                                          |        | 66                  |                |                    |           | T X 2 Rohat 220          | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4865022    | 1000        | 185.33       |              |                                                                                                                                       |
| B.45                                                         | Urban                                                                          |        | 66                  |                |                    |           | T X 3 Rohat 220          | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4864997    | 1000        | 344.66       |              |                                                                                                                                       |
| B.46                                                         | Urban                                                                          |        | 66                  |                |                    |           | T X 4 Rohat 220          | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 5255166    | 500         | 310.47       |              |                                                                                                                                       |
| B.47                                                         | Urban                                                                          |        | 11                  |                |                    |           | LOCAL TR Roh             | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4902597    | -100        | -0.45        |              |                                                                                                                                       |
| B.48                                                         | Sub Urban                                                                      |        | 66                  |                |                    |           | T X 1 Kasjawa            | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4865041    | 1000        | 176.68       |              |                                                                                                                                       |
| B.49                                                         | Sub Urban                                                                      |        | 66                  |                |                    |           | T X 2 Kasjawa            | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 5255182    | 500         | 291.92       |              |                                                                                                                                       |
| B.50                                                         | Sub Urban                                                                      |        | 11                  |                |                    |           | LOCAL TR Kasjawa         | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4865071    | -266.66     | -0.26        |              |                                                                                                                                       |
| B.51                                                         | Sub Urban                                                                      |        | 66                  |                |                    |           | 66 KV DMRC M.U           | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 5128439    | -800        | -3.88        |              |                                                                                                                                       |
| B.52                                                         | Sub Urban                                                                      |        | 66                  |                |                    |           | T X 2 Kasjawa            | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4864788    | 2000        | 493.73       |              |                                                                                                                                       |
| B.53                                                         | Sub Urban                                                                      |        | 220                 |                |                    |           | T X 2 Sunam              | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 5255197    | 1000        | 250.72       |              |                                                                                                                                       |
| B.54                                                         | Town                                                                           |        | 33                  |                |                    |           | O/G BG Rd-1 [70]         | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4864821    | -1000       | -82.36       |              |                                                                                                                                       |
| B.55                                                         | Town                                                                           |        | 33                  |                |                    |           | O/G BG Rd-1 [70]         | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4864825    | -133.33     | -46.85       |              |                                                                                                                                       |
| B.56                                                         | Town                                                                           |        | 33                  |                |                    |           | T X 1 Subam              | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4864946    | 1000        | 240.49       |              |                                                                                                                                       |
| B.57                                                         | Town                                                                           |        | 11                  |                |                    |           | LOCAL TR Subam           | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4902604    | -100        | -0.15        |              |                                                                                                                                       |
| B.58                                                         | Sub Urban                                                                      |        | 66                  |                |                    |           | 1C 100 MW/ TR. No. 1 Bv  | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4864911    | 1000        | 308.78       |              |                                                                                                                                       |
| B.59                                                         | Metro                                                                          |        | 66                  |                |                    |           | 66KV 1C No 1 Rohat       | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4902505    | 2000        | 344.98       |              |                                                                                                                                       |
| B.60                                                         | Metro                                                                          |        | 66                  |                |                    |           | 66KV 1C No 2 Rohat       | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 5128468    | 1000        | 345.09       |              |                                                                                                                                       |
| B.61                                                         | Urban                                                                          |        | 33                  |                |                    |           | 33 KV 1C No 1 Wm         | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4864903    | 1000        | 337.89       |              |                                                                                                                                       |
| B.62                                                         | Urban                                                                          |        | 33                  |                |                    |           | 33 KV 1C No 2 Wm         | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4864946    | 1000        | 339.03       |              |                                                                                                                                       |
| B.63                                                         | Metro                                                                          |        | 33                  |                |                    |           | 33 KV Feeraga ni CRT to  | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4864901    | 250         | 45.04        |              |                                                                                                                                       |
| B.64                                                         | Gty                                                                            |        | 33                  |                |                    |           | Sudastha n Park 33 kV    | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4864810    | 200         | 115.01       |              |                                                                                                                                       |
| B.65                                                         | Gty                                                                            |        | 33                  |                |                    |           | FUSA CH-1                | Metered                                          | Functional                                      |                                         | Mixed                                                                                     |                                                               |                            |                            | 4864843    | 1000        | 33.44        |              |                                                                                                                                       |





| Consumer Category<br>(Separate for each subsidized consumer category) | Billed Energy<br>(in kWh) |             | Subsidized Billed Energy<br>(in kWh) |                            | Applicable rate of Subsidy as notified by State govt.<br>(in Rs./kWh) |                     | Subsidy Due from State Govt.<br>(in Rs. Cr.) |                   | Subsidy Actually Billed / claimed from State Govt. (As against col.12)<br>(in Rs. Cr.) | Balance Subsidy yet to be received from State Govt.<br>(in Rs. Cr.) |          |               |               |               |
|-----------------------------------------------------------------------|---------------------------|-------------|--------------------------------------|----------------------------|-----------------------------------------------------------------------|---------------------|----------------------------------------------|-------------------|----------------------------------------------------------------------------------------|---------------------------------------------------------------------|----------|---------------|---------------|---------------|
|                                                                       | Metered                   | Un-metered* | Metered (out of col.2)               | Un-metered* (out of col.3) | Metered Energy**                                                      | Un-metered Energy** | Metered Energy                               | Un-metered Energy |                                                                                        |                                                                     |          |               |               |               |
|                                                                       | 2                         | 3           | 4+2+3                                | 5                          | 6                                                                     | 7=5*6               | 8                                            | 9                 | 10=5*8                                                                                 | 11=6*9                                                              | 12=10+11 | 13            | 14            | 15=13+14      |
| 1.                                                                    |                           |             |                                      |                            |                                                                       |                     |                                              |                   |                                                                                        |                                                                     |          |               |               |               |
| B/F                                                                   |                           |             |                                      |                            |                                                                       |                     |                                              |                   |                                                                                        |                                                                     |          |               |               |               |
| Residential                                                           | 1008436654                |             | 1008436654                           | 1008436654                 |                                                                       | 1008436654          | Entire current demand                        |                   |                                                                                        |                                                                     |          | 881.17        |               |               |
| 201-400 units cat.                                                    | 1476093789                |             | 1476093789                           |                            |                                                                       |                     | Rs. 800 per month                            |                   |                                                                                        |                                                                     |          |               |               |               |
| Agriculture                                                           | 13110680                  |             | 13110680                             |                            |                                                                       |                     | Rs. 105 per kw/month                         |                   |                                                                                        |                                                                     |          | 4.35          | 921.93        |               |
| Commercial/Industrial                                                 |                           |             |                                      |                            |                                                                       |                     |                                              |                   |                                                                                        |                                                                     |          |               |               |               |
| 1-IT                                                                  |                           |             |                                      |                            |                                                                       |                     |                                              |                   |                                                                                        |                                                                     |          |               |               |               |
| 1-RT                                                                  |                           |             |                                      |                            |                                                                       |                     |                                              |                   |                                                                                        |                                                                     |          |               |               |               |
| Other (Specify)                                                       |                           |             |                                      |                            |                                                                       |                     |                                              |                   |                                                                                        |                                                                     |          |               |               |               |
| <b>Total</b>                                                          |                           |             |                                      |                            |                                                                       |                     |                                              |                   |                                                                                        |                                                                     |          | <b>888.27</b> | <b>921.93</b> | <b>-30.26</b> |

\*Basis of assessment of energy to be provided in the notes along with relevant Government Orders

\*\* Provide copy of relevant Government Orders

Residential includes 0-200 units & 201-400 units subsidy, OSHS & 5th Riots

Other includes Lawyer Chamber subsidy

i. Subsidy in 201-400 block is being given at flat rate of Rs. 800 per month, thus Subsidized Billed Energy cannot be ascertained.

ii. Subsidy in Agriculture category is being given at the flat of Rs. 105 per kw/month on Fixed charges

iii. Though Subsidy is also being given to Lawyer's chamber connections at court complexes but extraction of actual units consumer and subsidized billed energy cannot be extracted

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*Handwritten signature in blue ink*  
 (Committee)  
 (Rt. Hon.)  
 Hon. (EMH)

Md Shadab Ahmad  
EM5062

Tata Power-DDL\_Annual\_AT&C\_L X +

tatapower-ddl.com/Editor\_UploadedDocuments/Content/Tata\_Power-DDL\_Annual\_AT&C\_Loss\_FY\_2021-22.pdf

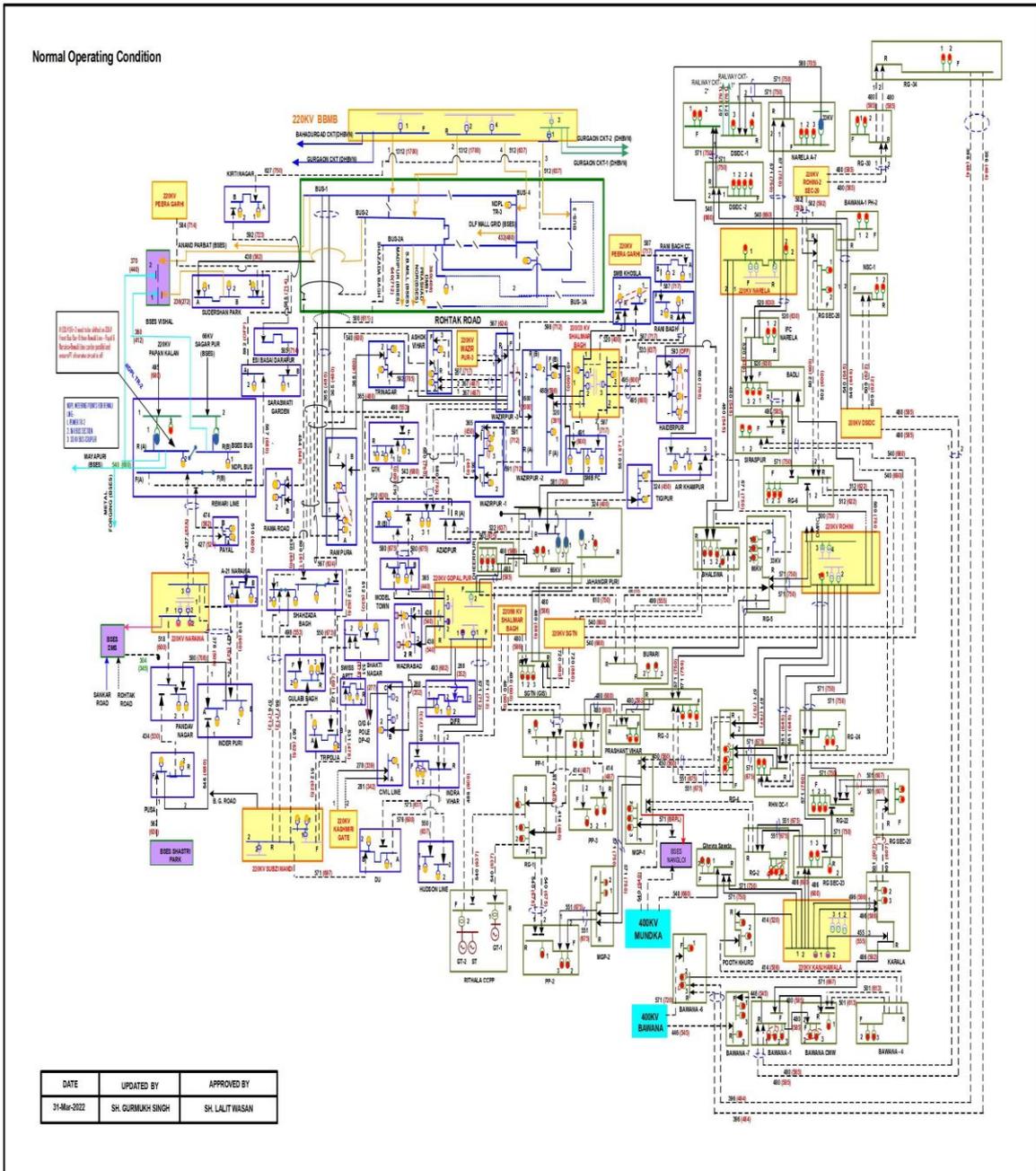
Tata Power-DDL\_Annual\_AT&C\_Loss\_FY\_2021-22.pdf 1 / 1 - 85%

| Annual AT&C Loss (FY2021-2022) |                   |                    |                |                         |                           |                |                                   |                      |                 |  |
|--------------------------------|-------------------|--------------------|----------------|-------------------------|---------------------------|----------------|-----------------------------------|----------------------|-----------------|--|
| Name of District               | Energy Input (MU) | Energy Billed (MU) | DAB Losses (%) | Amount Billed (Rs. Cr.) | Amount Realized (Rs. Cr.) | Coll. Eff. (%) | Average Rate of billing (Rs./Kwh) | Energy Realized (MU) | AT&C Losses (%) |  |
| Badli                          | 621.60            | 553.61             | 10.94%         | 582.80                  | 570.16                    | 101.31%        | 10.17                             | 560.85               | 9.77%           |  |
| Bawana                         | 1302.72           | 1171.22            | 10.09%         | 1394.15                 | 1397.45                   | 100.24%        | 11.90                             | 1173.99              | 9.88%           |  |
| Civil Lines                    | 773.43            | 750.61             | 2.95%          | 677.48                  | 675.47                    | 99.70%         | 9.03                              | 746.37               | 3.24%           |  |
| Keshav Puram                   | 803.95            | 754.21             | 6.19%          | 737.58                  | 730.59                    | 99.05%         | 9.78                              | 747.07               | 7.08%           |  |
| Mangolpuri                     | 618.99            | 576.76             | 6.82%          | 410.40                  | 413.41                    | 100.73%        | 7.12                              | 581.00               | 6.14%           |  |
| Model Town                     | 667.51            | 626.38             | 6.16%          | 515.16                  | 515.57                    | 100.08%        | 8.22                              | 626.88               | 6.09%           |  |
| Moti Nagar                     | 752.93            | 711.74             | 5.47%          | 711.20                  | 712.16                    | 100.14%        | 9.99                              | 712.70               | 5.34%           |  |
| Narela                         | 1088.77           | 994.04             | 8.70%          | 1065.43                 | 1071.69                   | 100.61%        | 10.72                             | 1000.07              | 8.15%           |  |
| Plam Pura                      | 612.37            | 573.77             | 6.30%          | 506.34                  | 508.87                    | 100.50%        | 8.82                              | 576.65               | 5.83%           |  |
| Robini                         | 1034.25           | 994.75             | 4.79%          | 790.30                  | 796.64                    | 100.80%        | 8.03                              | 992.65               | 4.02%           |  |
| Kirari                         | 394.40            | 342.65             | 13.12%         | 225.94                  | 228.85                    | 101.73%        | 6.59                              | 346.59               | 11.62%          |  |
| Shalimar Bagh                  | 753.83            | 712.46             | 5.49%          | 525.92                  | 529.97                    | 100.77%        | 7.38                              | 717.95               | 4.76%           |  |
| <b>TPDDL Total</b>             | <b>9424.75</b>    | <b>8752.21</b>     | <b>7.14%</b>   | <b>8122.69</b>          | <b>8152.04</b>            | <b>100.36%</b> | <b>9.28</b>                       | <b>8793.82</b>       | <b>6.80%</b>    |  |

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 TPDDL level).
- Rolling AT&C data is for last twelve months.

## 5.9 Single Line Diagram (SLD)



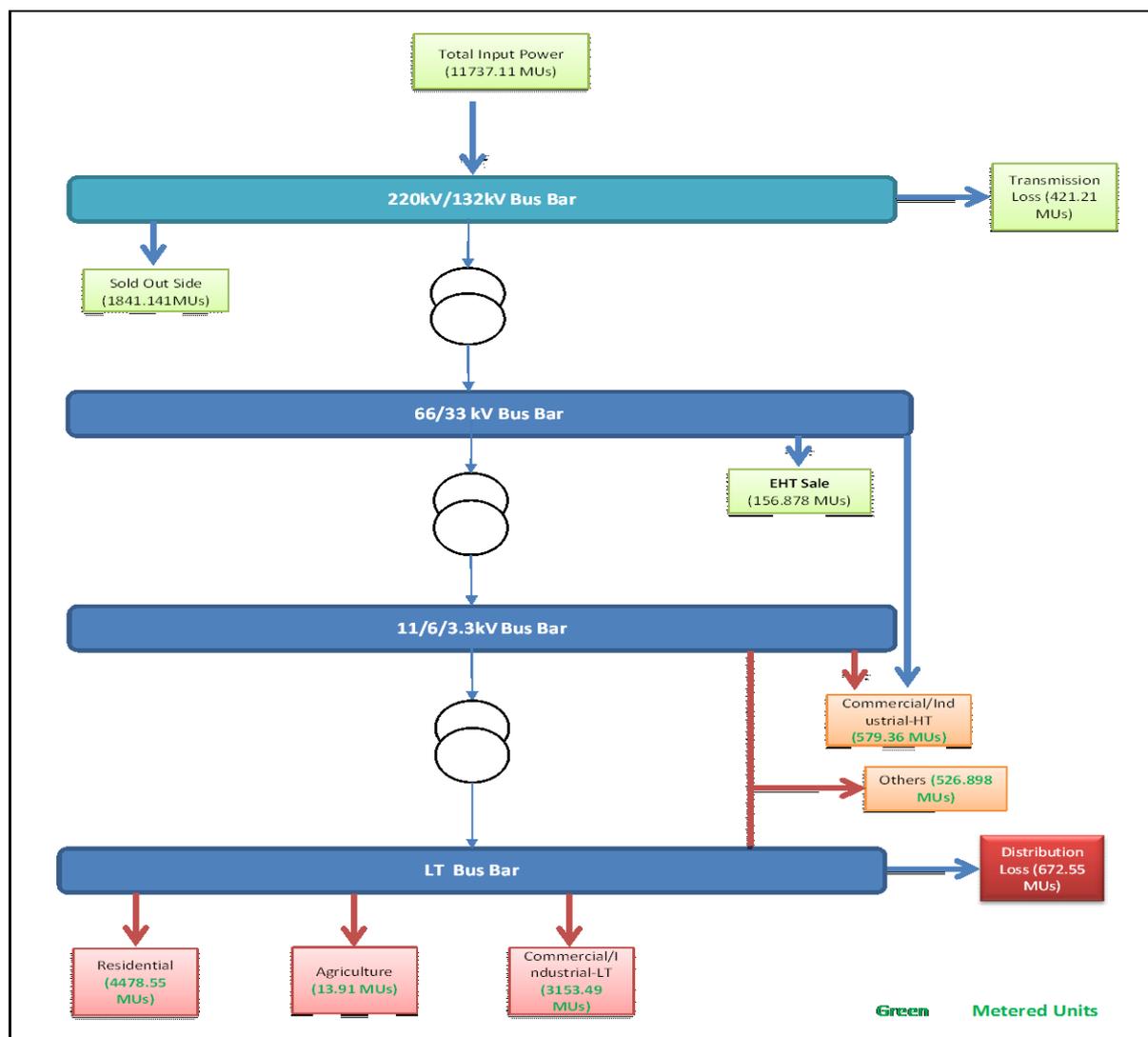
## 5.10 Electrical Distribution System

- ▶ Energy flow between transmission and 220kV/132kV/33kV/20 kV/11kV/6.0 kV/3.3 kV incoming distribution feeders
- ▶ Energy flow between 132kV/33kV outgoing and 20 kV/11kV/6.6 kV/6.0 kV incoming feeders
- ▶ Energy flow between 11kV/6.0 kV/3.3 kV feeders and distribution transformers, or high voltage distribution system

Energy flow between distribution transformer, or high voltage distribution system to end-consumer, including ring main system

Energy flow between Feeder to end-consumer &

Energy flow between 132kV/33kV/20 kV/11 kV/6.0 kV/3.3 kV directly to consumer



## 5.11 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 36: 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                               | <p>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.</p>                                                                                                                                          |
| Smart Street Light Management system      | <p>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 &amp; 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 &amp; security of general public. It can also detect pilferage from street light circuits and generate alerts.</p> |
| Field Force Automation                    | <p>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 &amp; 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.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## 5.12 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.
- 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 37: Calculation of transmission losses**

| Transmission losses (MU) | Value    |
|--------------------------|----------|
| Total Energy Purchased   | 11737.11 |
| Total Energy Sale        | 1841.14  |
| Transmission losses      | 471.21   |
| Total Input              | 9424.75  |
| Transmission losses (%)  | 4.01     |

