

**ODISHA ELECTRICITY REGULATORY COMMISSION  
BIDYUT NIYAMAK BHAVAN  
PLOT NO.4, CHUNOKOLI, SHAILASHREE VIHAR,  
BHUBANESWAR - 751021**

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**Present: Shri S. C. Mahapatra, Chairperson  
Shri G. Mohapatra, Member  
Shri S. K. Ray Mohapatra, Member**

**Case No. 05/2023**

M/s. TPSODL  
Vrs.  
DoE, GoO & Others

..... Petitioner  
..... Respondents

**In the matter of:**      **Application for approval of Capital Investment Plan for the FY 2023-24 in the Licensed Area of TP Southern Odisha Distribution Ltd.**

**For Petitioner:**      Shri Arvind Singh, Chief Executive Officer; and Shri Vidyadhar H Wagle, Chief Regulatory Affairs, TPSODL.

**For Respondents:**      Ms. Sonali Patnaik, ALO, DoE, GoO; Shri B. K. Das, Sr. GM, GRIDCO; Shri Lalit Mishra, DGM (Fin.), GRIDCO; Shri Subhasis Samantaray, DGM (Elect.) OPTCL; Shri B. B. Mehta, Director, SLDC; and Shri P. K. Satpathy, Sr. GM, SLDC.

**ORDER**

**Date of Hearing: 30.05.2023**

**Date of Order: 19.06.2023**

The Petitioner, M/s. TP Southern Odisha Distribution Limited (TPSODL), has filed an application for approval of Capital Expenditure (CAPEX) for FY 2023-24 to carry out various system improvement and safety related activities in its area of operation. In its original application on 04.01.2023, TPSODL has submitted its capital investment plan for FY 2023-24 to the tune of Rs.480.56 Cr. However, consequent upon the approval of the Board of Directors (BoD) of TPSODL, it has submitted a revised capital investment plan to the tune of Rs.338.34 Cr. before the Commission on 29.05.2023 and prayed for approval of the same. This application has been filed pursuant to the direction of the Commission at para 43 in the vesting order in Case No.83/2020.

TPSODL's licensed area is spread over a geographical area of 48751 sq. Km. and it serves a registered consumer base of around 24.13 lakhs. TPSODL procures power from GRIDCO through Odisha Power Transmission Corporation Limited (OPTCL)'s 220/132/33 kV grid substations at sub transmission voltage of 33 kV and then

distributes the power at 33 kV/ 11 kV/ 440V/ 230V depending on the demands of the consumers. The operation area, consumer base, no. of circles & divisions etc. are given in the Table below:

| Sl. No. | Particulars   | Unit   | Details<br>(as on 31-Mar-23) |
|---------|---------------|--------|------------------------------|
| 1.      | Area          | Sq. km | 48,751                       |
| 2.      | Consumers     | No.    | 24,13,165                    |
| 3.      | Circles       | No.    | 6                            |
| 4.      | Divisions     | No.    | 19                           |
| 5.      | Sub-divisions | No.    | 51                           |
| 6.      | Sections      | No.    | 135                          |

2. In line with the Vesting Order, TPSODL in compliance with the Vesting Order has to seek the approval of the Capital Expenditure Plan in line with the OERC (Terms and Conditions for Determination of Wheeling Tariff and Retail Supply Tariff) Regulations. The extracts from the Vesting Order are as follows:

“43. *Capital investment plan*

.....

- (b) *In its Bid submitted in response to the RFP, TPCL committed capital expenditure of Rs. 1,166 Crs (Indian Rupee One thousand one hundred and sixty six Crs) only for period FY 2021-22 to FY 2025-26 as follows:*

*Table 1: Capital Expenditure Commitment by TPCL*

| <b>Capex Commitment (INR Cr)</b> |                   |              |              |              |              |
|----------------------------------|-------------------|--------------|--------------|--------------|--------------|
| <b>FY 2021-22</b>                | <b>FY 2022-23</b> | <b>FY 24</b> | <b>FY 25</b> | <b>FY 26</b> | <b>Total</b> |
| 227                              | 316               | 241          | 233          | 150          | 1,166        |

- “(c) *To allow flexibility in the capital expenditure planning, the Commission stipulates that, in the capital expenditure plan to be submitted by TPSODL as per the license conditions, the capital expenditure commitment for each year of the period FY 2021-22 to FY 2025-26 must be such that capital expenditure proposed up to a year shall be at least equal to the cumulative capital expenditure committed up to that year in the Bid submitted by TPCL. For avoidance of doubt, the minimum cumulative capital expenditure to be proposed by TPSODL for the period FY 2021-22 to FY 2025-26 must be as provided in the table below:*

*Table 2: TPCL Cumulative Capital Expenditure for 5 years*

| <b>Cumulative Capex Expenditure (INR Cr)</b> |                         |                         |                         |                         |
|--|-------------------------|-------------------------|-------------------------|-------------------------|
| <b>Upto 31-Mar-2022</b>                      | <b>Upto 31-Mar-2023</b> | <b>Upto 31-Mar-2024</b> | <b>Upto 31-Mar-2025</b> | <b>Upto 31-Mar-2026</b> |
| 227  | 543                     | 783                     | 1,016                   | 1,166                   |

- (d) *TPSODL would be required to seek the Commission’s approval on the detailed capital expenditure plan in line with the regulations. TPSODL shall satisfy the*

*Commission that the capital expenditure plan submitted in line with regulations adheres to the capital expenditure plan submitted as part of the Bid.”*

3. Further, in line with OERC (Terms and Conditions for Determination of Wheeling Tariff and Retail Supply Tariff) Regulations, 2022 the licensee is required to take approval from the Commission for undertaking Capex in the licensed area. The relevant extracts of the regulations are as follows:

*“3.2 Capital Investment:*

- 3.2.1 The Distribution Licensee shall submit detailed capital investment plan, financing plan and physical targets for each year of the Control Period for strengthening and augmentation of distribution network, meeting the requirement of load growth, reduction in distribution losses, improvement in quality of supply, reliability, metering, reduction in congestion, etc., to the Commission for approval, as a part of the Business Plan applicable for the entire control period and annual proposal for each year of the Control Period.*
- 3.2.2 The Distribution Licensee shall file a separate annual Capital Investment Plan comprising of capital investment plan, financing plan and physical targets for each year of the Control Period as per the timelines specified in Annexure-I.*
- 3.2.4 Capital Investment in network expansion in Distribution shall be based on Load Flow studies and in accordance with the requirements of the State Grid Code.*
- 3.2.5 The Distribution licensee shall submit the Capital Investment Plan that shall show separately, on-going projects that will spill over from previous years, and new projects (along with justification) that will commence but may be completed within or beyond the control period. The capital investment plan shall contain the scheme details, justification for the work, scheduled / expected date of commissioning, justification for delay (if any) in commissioning, cost over-run, time over-run, capitalization schedule, capital structure and cost benefit analysis (wherever applicable).*
- 3.2.6 The Distribution Licensee shall submit the Detailed Project Reports (DPRs) for all the schemes (including network strengthening and expansion/augmentation projects based on load flow study) which shall include:*
- a. Scope and Objective;*
  - b. Purpose of investment;*
  - c. Broad Technical Specifications of the proposed investment and supporting details;*
  - d. Capital Structure;*
  - e. Capitalization Schedule;*
  - f. Financing Plan, including identified sources of investment;*
  - g. Physical targets;*
  - h. Cost-benefit analysis;*
  - i. Approval from Board of Directors (BoD);*
  - j. Prioritization of proposed Investments.*

- 3.2.8 *The Capital Investment Plan shall be accompanied by such information, particulars and documents as may be required including but not limited to the information such as number of power & distribution substations, consumer strength, transformation capacity (in MVA), HT:LT ratio, distribution line length at HT & LT level etc. showing the need for the proposed investments, alternatives considered, cost/benefit analysis and other aspects that may have a bearing on the wheeling charges of the Wheeling Business.*
- 3.2.10 *Capital investment plan shall incorporate list of schemes in order of priority so as to enable the Commission to approve the schemes in that order and in case lesser amount of capital expenditure is to be approved then the schemes of lower priority could be disallowed.*
- 3.2.11 *The Distribution Licensee shall be required to consider the annual capital investment plan as approved by the Commission in its Order, in preparation of the Petition for determination of Aggregate Revenue Requirement (ARR) for each year of the control period. The ARR Petition shall include details showing the progress of capital expenditure projects, together with such other information, particulars or documents as the Commission may require for assessing the progress.”*
4. As per the Licence Conditions No. 11 and 32, the investment above Rs. 5 Cr is to be made by the Distribution Licensee in the licensed business area of operation with the approval of the Commission. The relevant extracts of the Licence Conditions 11 & 32 are as follows:

*“11. INVESTMENTS*

- 11.1 *Unless otherwise directed by the Commission, every Licensee shall obtain prior approval of the Commission for making investment in the Licensed Business if such investment is above the limits laid down in Condition 32.*
- 11.2 *The Licensee shall duly comply with the Regulations, guidelines, directions and orders the Commission may issue from time to time in regard to the investments to be made in the Distribution Business.*
- 11.3 *The Licensee shall submit to the Commission investment plans as a part of the business plan under Condition 10.9 above giving details of investment schemes to be undertaken during the concerned period for the approval of the Commission. For new schemes formulated by the GoO, if TPSODL wishes to avail funding under such scheme, an agreement shall be signed between GoO/ GRIDCO/ OPTCL and TPSODL for utilization of such grants. The Licensee shall demonstrate to the satisfaction of the Commission that:*
- (a) there is a need for such investments in the Distribution System;*
  - (b) the Licensee has made techno-economic analysis and environmental aspects of all viable alternatives to the proposal for investing in or acquiring new Distribution System assets to meet such need;*
  - (c) the investment plan is in conformance to the conditions for capital investment specified in the Vesting Order.....”*

11.4 In the application for investment approval, the Licensee shall furnish the following information or particulars:

- (a) A detailed project report containing techno-economic analysis and environmental aspects of the investment together with the outline of the works to be undertaken the salient features and particulars demonstrating the need for investment;
- (b) The project cost together with the cost benefit analysis;
- (c) Whether the investment is in a new project or for expansion or up-gradation of an existing system;
- (d) Sanctions and statutory clearances required for execution of the project and status of such sanctions and statutory clearances;
- (e) Phasing of investment over the financial years and commissioning schedule;
- (f) The manner in which investments will be capitalised for the purposes of inclusion in the revenue requirements of the Licensee;
- (g) Constraints which the Licensee may face in making the investments or in implementing the project including constraints on information available;
- (h) Resource mobilisation and financial plans for meeting the investment;
- (i) Process for inviting and finalizing tenders for procurement of equipment, material and /or services relating to investment, in accordance with a transparent tendering procedure as may be approved by the Commission; and
- (j) Such other particulars as the Commission may from time to time direct.

“32. INVESTMENT AND TRANSFER OF ASSETS (IN CONTINUATION TO CONDITION 11 AND 12)

32.1. For the purposes of Condition 11.10, the term “major investment” means any planned scheme wise investment in or acquisition of distribution facilities like rural electrification, system improvement, major renovation & modernization works, the cost of which, when aggregated with all other investments or acquisitions (if any) forming part of the same overall transaction/ scheme, equals or exceeds Rs. 5 Cr (Indian Rupee Five Cr) or otherwise determined by the Commission from time to time by a general or special order. For smaller transactions for which prior approval of the Commission has not been obtained, the proposals will be considered at the time of annual true-up subject to prudence check by the Commission. ....”

5. Accordingly, in line with the above provisions, TPSODL had submitted Capex plan of Rs 480.56 Cr for the FY 2023-24 on 04.01.2023. Subsequently, the Board of Directors (BoD) of TPSODL in their meeting held on 21.03.2023 has approved an amount of Rs.338.34 Cr. after pruning the quantum of work in some of the schemes. Accordingly, TPSODL has submitted the revised DPR with Capex proposal of Rs 338.34 Cr on 29.05.2023 in line with the approval of BoD for the FY 2023-24. The Petitioner has also requested for approval of the Commission to permit to carry forward the works under

execution/pending works for which Capex approved for the FY 2021-22 & the FY 2022-23 to the FY 2023-24 and has prayed for approval of the Capex of Rs 338.34 Cr proposed for FY 2023-24.

6. The Petitioner, TPSODL has earlier filed the proposal for Capex of Rs 408.47 Cr for FY 2021-22 and the Commission had approved Rs 184.65 Cr. Similarly, TPSODL has proposed Capex of Rs.378.37 Cr. for FY 2022-23 and the Commission had approved Rs 294.82 Cr. The status of the Capex approved for FY 2021-22 & FY 2022-23 including the cumulative capitalization till FY 2022-23 vis-a-vis the committed Capex as per vesting order is presented below:

| Sl. No.                           | Capex Head                            | Vesting Order | Capex Approved by Commission | Actual Capex till 31/03/2023 | Assets capitalised till 31-03-2023 |
|-----------------------------------|---------------------------------------|---------------|------------------------------|------------------------------|------------------------------------|
| <b>For FY 2021-22</b>             |                                       |               |                              |                              |                                    |
| 1                                 | Statutory & Safety                    | 227.00        | 31.43                        | 28.90                        | 28.81                              |
| 2                                 | Loss Reduction                        |               | 15.69                        | 7.29                         | 7.26                               |
| 3                                 | Network Reliability                   |               | 37.47                        | 38.92                        | 38.80                              |
| 4                                 | Load Growth                           |               | 8.74                         | 10.52                        | 10.44                              |
| 5                                 | Technology & Infrastructure           |               | 91.32                        | 98.11                        | 96.41                              |
|                                   | <b>Total</b>                          | <b>227.00</b> | <b>184.65</b>                | <b>183.74</b>                | <b>181.72</b>                      |
| <b>For FY 2022-23</b>             |                                       |               |                              |                              |                                    |
| 1                                 | Statutory & Safety                    | 316.00        | 39.33                        | 36.92                        | 36.70                              |
| 2                                 | Loss Reduction                        |               | 60.72                        | 43.55                        | 38.92                              |
| 3                                 | Network Reliability                   |               | 123.75                       | 116.07                       | 104.01                             |
| 4                                 | Load Growth                           |               | 18.72                        | 22.59                        | 21.77                              |
| 5                                 | Technology Infrastructure             |               | 33.27                        | 36.23                        | 36.22                              |
| 6                                 | Civil Infrastructure & Administration |               | 19.04                        | 15.26                        | 14.26                              |
| 7                                 | Emergency Capex                       |               |                              | 1.88                         |                                    |
|                                   | <b>Total</b>                          | <b>316.00</b> | <b>294.83</b>                | <b>272.50</b>                | <b>251.88</b>                      |
| <b>Cumulative till 31.03.2023</b> |                                       |               |                              |                              |                                    |
| 1                                 | Statutory & Safety                    | 543.00        | 70.76                        | 65.82                        | 65.51                              |
| 2                                 | Loss Reduction                        |               | 76.41                        | 50.84                        | 46.18                              |
| 3                                 | Reliability                           |               | 161.22                       | 154.99                       | 142.81                             |
| 4                                 | Load Growth                           |               | 27.46                        | 33.11                        | 32.21                              |
| 5                                 | Technology Infrastructure             |               | 143.63                       | 149.60                       | 146.89                             |
| 6                                 | Civil Infrastructure & Administration |               |                              |                              |                                    |
| 7                                 | Emergency Capex                       |               |                              | 1.88                         |                                    |
|                                   | <b>Total</b>                          | <b>543.00</b> | <b>479.48</b>                | <b>456.24</b>                | <b>433.60</b>                      |

7. The Petitioner has submitted that it has inherited the power distribution network in dilapidated state at some places, which is not compliant with the requisite statutory standards and poses threat to consumers, staff, animals, etc. Further, underrated/ undersized/ worn out conductors with extremely long spans, having damaged/ bent/ tilted poles, poor joints, compromised safety clearances and non-availability of guard wires in MV Overhead feeders are existing in its distribution system. In addition to such operational, commercial, and safety related challenges, there are also challenges relating to Metering infrastructure, Customer Services and Technology usage. TPSODL has therefore, come up with this Capital Investment Plan with the objective of meeting its service obligation, ensuring safe reliable power supply and maintaining higher service standards and better customer service to its end consumers. TPSODL has categorised the various activities of the Capital Investment Plan under 6 major subheads, i.e., (i) statutory and safety, (ii) loss reduction, (iii) network reliability, (iv) load growth, (v) technology infrastructure, (vi) civil infrastructure and administration. Further, TPSODL have proposed capex for differential amount incurred for extending power supply to new consumers separately.
8. The petitioner has submitted that TPSODL is catering about 24,13,165 consumers. TPSODL receives power at 33 kV level from 35 nos. of 220/33 kV or 132/33kV or 220/132/33 kV substation of OPTCL. HT consumers are connected at 33 kV or 11 kV level and LT consumers are connected at 0.415kV/0.230 kV either as three phase or single phase consumer. The snapshot of distribution infrastructure in its area of operation is given in Table below:

| Sl. No. | Particulars                 | Unit     | Details<br>(as on 31-Mar-23) |
|---------|-----------------------------|----------|------------------------------|
| 1.      | 33/11 kV sub-stations       | No.      | 250                          |
| 2       | 33 kV feeders               | No.      | 132                          |
| 3.      | 11 kV feeders               | No.      | 892                          |
| 4       | 33/11 kV PTR                | No.      | 552                          |
| 5.      | 33/11kV PTR capacity        | MVA      | 2,594                        |
| 6.      | 33/0.415 or 11/0.415 kV DTR | No.      | 58,179                       |
| 7.      | 11/0.415 kV DTR Capacity    | MVA      | 2,535                        |
| 8.      | 33 kV OH Line               | Ckt. km. | 4,042                        |
| 9.      | 33 kV UG cable              | Ckt. km. | 5                            |
| 10.     | 11 kV OH Line               | Ckt. km. | 45,208                       |
| 11.     | 11 kV UG cable              | Ckt. km. | 101                          |
| 12.     | LT Bare Line                | Ckt. km. | 31,908                       |
| 13.     | LT ABC                      | Ckt. km. | 9119                         |

9. The petitioner has submitted that TPSODL has a significant network asset spread across vast geographical area and therefore it requires a huge investment to meet the desired expectation of the various stakeholders. In this regard, the existing infrastructure needs to be strengthened. The petitioner has proposed for enhancing Safety of equipment, addressing and increasing reliability, replacement of faulty equipment, uprating of lines, improvement of protection at substation and setting up of new lines and substations. The petitioner has also proposed to carry out a study of the entire network spread over the area of about 48000 sq km comprising several PSS, Power Transformers, associated lines and other equipment. The Study will cover the condition of the equipment, the line ratings and the conductor sizes, their safety clearances, availability of protection and other various aspects. The petitioner has also proposed to undertake mapping of equipment and consumers under the GIS project.
10. The petitioner has further submitted that most of the 33 kV and 11 kV feeders are long lengths (some of them are more than 100 Ckt. Km long) and are radially connected; most of the feeders do not have guard wire beneath conductors for the purpose of safety; poles are also not provided at appropriate distance; some of the existing 33/ 11 kV PSS are already overloaded or approaching the overload limit; boundary walls of some of the PSS are to be repaired; some PSS are facing issues due to damaged line isolators, AB switches and LAs; HT fuse and AB switches are bypassed in many DTRs; in place of LT fuse box/ MCCB box, aluminium wires are used in most locations of DTRs; earthing not done at appropriate depth; many PSS still does not have network connectivity; and many office buildings are old and need renovation. Further, many feeders pass through dense forest and attending the fault is only possible during day time. These leads to the high network downtime and affects SAIDI. Hence, TPSODL has proposed to put up fencing/ boundary wall; to replace old/ damaged conductors, insulators; to have PTR to meet N-1 contingency for PSS; to provide LT protection in the secondary side of DTRs; metering of 33 kV & 11 kV outgoing feeders as well as DTRs with relevant metering system and strengthening of office buildings with major civil works.
11. TPSODL has submitted the Detailed Project Report (DPR) for Capex plan of Rs. 338.34 Cr for the FY 2023-24 under 6 major heads. The detailed submission made by the petitioner under each head is as under:



### **A. Statutory & Safety:**

The following activities are considered under this head:

- a) Provision of Safety Equipment and electrical Testing Equipment for workforce (for STS, DOS, Protection, MMG & Enforcement Teams):
  - i. For creating a safe zone for employees, modern tools such as lock out-locks to lock isolating points while working, neon tester & discharge rod for high voltage testing & discharging, Fiber Reinforced Polymer (FRP) ladders, public safety gadgets and fire safety equipment are proposed for electrical safety equipment. The expenditure proposed under this category for FY 2023-24 is Rs 3.93 Crores.
  - ii. TPSODL does periodic maintenance of Lines and equipment to ensure its compliance at all levels for meeting Performance Standards. Testing of transformers, switchgear, and protective equipment in the Distribution System is being carried out at intervals for ensuring their serviceability, safety and efficiency. Such Testing Equipment are needed by field staff during preventive maintenance as well as attending breakdown due to fault in the system. The various electrical testing equipment proposed are STS equipment (CT analyzer, drone, oil breakdown and online filtration kit, etc.), and metering and other equipments (3ph portable generator set, lineman toolkit bag, TRMS value measuring clamp, CT-PT tester, etc.). The expenditure proposed under this category for FY 2023-24 is Rs 3.20 Crores.

Accordingly, TPSODL has proposed a sum of Rs 7.13 Cr for Safety Equipment and electrical Testing Equipment.

- b) Network refurbishment for Safety enhancement:
  - i. At present, most of the network is overhead and there is no provision of guard or cradle wire installed beneath the overhead conductors for most of the feeders. In such a scenario, cradle guard will help in avoiding accidents caused by snapping of conductors of overhead MV feeders. TPSODL proposes to put in place the cradle wire/guard wire at the vulnerable loading of the initial stage particularly in public places, road crossings, school area, etc. total 50 nos. of Cradle Guard with a cost estimate of Rs 0.65 Cr is proposed for FY 2023-24.
  - ii. During the survey, it was observed that fencing is either damaged or do not exist for many DSS thus posing a safety threat to stray animals and public at large. Fencing is one of the most important requirements which ensures overall first-hand protection of the transformer. Therefore, installation of fencing to

safeguard the DSS equipment and to maintain safety clearances is one of the major needs. Total 869 nos. of fencing of DSS with a cost estimate of Rs 15 Cr is proposed for FY 2023-24.

- iii. There have been several irregularities in the span length of these networks where the span length also found more than 70 m at some places. These large span lengths have resulted in sagging of conductors, low ground clearances - vertical clearance of conductor from ground is lower than the permissible limits of 5.5 m (for LT Lines) and 5.8 m (for HT Lines) resulting in accidents. The addition of intermediate poles will address the issue of sagging, low ground clearances & accidents caused due to this. Total 904 nos. of intermediate poles for 33 kV, 11 kV and LT lines have been proposed at a cost estimate of Rs 3.35 Cr.

Accordingly, TPSODL has proposed an investment of Rs 19 Cr towards Network Refurbishment for Safety.

The Summary of CAPEX proposed by TPSODL for FY 2023-24 under the head Statutory and Safety is as under:

| <b>S. No.</b> | <b>Activity</b>                              | <b>Total proposed Cost (Cr)</b> |
|---------------|--|---------------------------------|
| 1             | Safety & Electrical Testing Equipment        | 7.13                            |
| 2             | Network refurbishment for Safety enhancement | 19.00                           |
| <b>3</b>      | <b>Sub Total- Statutory &amp; Safety</b>     | <b>26.13</b>                    |

#### **B. Loss Reduction:**

The following activities are considered under this head:

##### **a) Feeder Meter for Energy Audit:**

As per the latest Gazette Notification of Bureau of Energy Efficiency, Ministry of Power, Government of India issued for Conduct of Energy Audit in Electricity Distribution Companies under Energy Conservation Act, 2001, TPSODL has to install meters on all feeders; DTs (above 25 kVA) and provide broad framework for conduct of Annual Energy Audit and Quarterly Periodic Energy Accounting with necessary Pre-requisites and reporting requirements to be met. This would allow TPSODL to have a very comprehensive and effective energy audit system which would help in taking corrective actions to minimize technical and financial losses. TPSODL in this proposal for FY 2023-24 has considered metering of all 33 kV

feeders Incomer to PSS, 11 kV Boundary Meters and has considered that metering for all 25KVA above DTRs. Metering for 33 kV & 11 kV Tapping Point and remaining DTRs will be considered in phased manner in future planning. Accordingly, TPSODL has proposed Road Map of Energy Audit Programme for FY 2023-24 with an investment of Rs 39.71 Cr. This will help to develop comprehensive energy accounting system to quantify and determine actual losses in the power distribution system, segregated across technical and commercial loss. Further, it will help to identify areas of leakage, theft, wastage or inefficient use.

b) LT Bare Line to ABC Conversion:

Bare conductor lines are more subject to electricity theft through direct hooking and thus causing revenue leakage in the system. Hence LT bare to ABC conversion has been proposed for about 62.3 Ckt. Km in theft prone areas to reduce thefts. This will also help in preventing transient fault in LT network and improve safety. TPSODL has proposed an investment of Rs 6.26 Cr under this activity.

c) GIS Implementation:

The petitioner has proposed network survey, asset mapping and consumer indexing for three circles namely Bhanjanagar, Rayagada and Jeypore. To ensure sustenance of network, it is proposed to deploy own Drone to fetch data from site. TPSODL has proposed an investment of Rs 38.32 Cr under this activity.

Accordingly, TPSODL has proposed an investment of Rs 84.29 Cr under the Loss Reduction head for FY 2023-24 summary of such investment is mentioned as under:

| Capex Head     | Activity                      | Total proposed Cost (Cr.) |
|----------------|-------------------------------|---------------------------|
| Loss Reduction | Feeder Meter for Energy Audit | 39.71                     |
|                | LT Bare to ABC Conversion     | 6.26                      |
|                | GIS Implementation            | 38.32                     |
|                | <b>Total Cost</b>             | <b>84.29</b>              |

**C. Network Reliability:**

The following activities are considered under this head:

a) Network and Equipment Assessment Study:

TPSODL proposes to carry out a study of the entire network spread over the area of about 48000 sq. km. comprising several PSS, Power Transformers, associated lines and other equipment. The Study will cover the condition of the equipment, the line ratings and the conductor sizes, their safety clearances, availability of protection and

other various aspects. The Study will be carried out by a suitable competent agency selected through the competitive bidding. TPSODL is going for the GIS project where mapping of equipment and consumers is being undertaken. The scope of GIS however does not include the study of condition and health of the equipment, the sag of lines, availability of protection at substation and other areas proposed to be covered through this study. Such expenditure is required to be included in the Capital Expenditure for TPSODL and not as an O&M expenditure as such study is required to be carried out to assess the capital expenditure requirement of TPSODL in the times to come. In this petition, based on the estimated time required for carrying out the study, TPSODL have proposed an investment of Rs 4 Cr for this activity.

b) Refurbishment of 33/11kV Primary Substations Station (Station Transformer):

In few of the TPSODL PSS, Auxiliary transformers are connected at 11 kV with rating 11/0.433 kV which is not reliable due to the frequent tripping of the 11 kV feeders. Hence in order to maintain reliability of protection system, it is necessary to keep station transformer at 33kV voltage level. For FY 2023- 24, TPSODL has proposed to install 7 nos. 33/0.415 kV Station Transformers. The Unit Rate for the station transformer is Rs 9.23 Lakh. Accordingly the capital expenditure proposed under this activity is Rs 0.65 Crores.

c) Mitigation of Single PTR (N-1 arrangement) & Replacement of Old PTR:

There are 20 numbers of PSS identified which have only one PTR installed in each of these PSS. There is no arrangement of N-1 at PTR level in these PSS. Due to non-availability of N-1 arrangement at PTR level, large nos. of consumers are being affected for long duration, during preventive maintenance and breakdown at these PSS. Hence Additional PTR is required at each of these PSS for extension of reliable power supply. Additional PTRs in 6 nos. of PSS were planned in Capex of FY 2022-23. Now, TPSODL has proposed to install additional power transformer in 9 nos. of PSS with Single PTR during i.e. FY 2023-24. TPSODL has submitted that with these additions, 15 numbers of Single PTR Locations would be addressed. The Balance 5 Nos of Single PTR cases would be addressed through 11 kV Network interconnection. TPSODL has proposed total investment of Rs 16.18 Cr under this activity.

- d) PSS Refurbishment for SCADA implementation in Conventional Non ODSSP PSS:
- TPSODL has planned to automate all Primary Substations (PSS) and monitor them remotely through a SCADA center in a phased manner. PSS constructed recently under ODSSP scheme are compatible for integration with SCADA however old PSS (Non ODSSP) are not compatible for SCADA integration. To make these PSS ready for SCADA integration, additional upgradation activities such as upgradation of old Control Relay Panels (CRP) with state-of-the-art CRP panels, replacement of defective/obsolete equipment, installation of transformer monitoring units, RMUs, isolators, FPI, FRTUs and RTUs for remote monitoring and control are required.
- At present, out of the total 250 nos. of 33/11 kV PSS in TPSODL area, 99 no. are developed under ODSSP scheme and 155 nos. are Non ODSSP/conventional PSS. These conventional substations are being planned with capabilities of being remotely managed with the help of communicable devices viz. relays, IEDs, RTUs, and routers with which the connectivity and integration with SCADA shall be implemented. These SCADA enabled substations shall bring in higher levels of operational efficiency and system performance.
- TPSODL has commissioned SCADA in March 2022 and connected 80 ODSSP PSS and 10 Non ODSSP PSS on SCADA. At the end of March 2023, 101 PSS have been handed over to the operators in Power System Control Centre (PSCC) to monitor, control and operate. It is planned to further Automate additional 28 conventional PSS and integrate these PSS with centralized SCADA for remote monitoring, control and real time operations from PSCC in FY 2023-24. TPSODL has proposed an investment of Rs 61.95 Cr. under this activity.
- e) Upgradation of 33 & 11 kV line:
- TPSODL has nearly 4045 Ckt. KMs of 33kV and 46209 Ckt. KMs of 11kV feeders under its operational area. TPSODL during site visits has observed that conductor of multiple sizes is used in different section which restricts the circuit capacity. This also leads to conductor heating and high losses. Hence it is required to increase the conductor size for such lines to meet loading as well as load growth for next 2 years. Inputs are taken into consideration from load flow studies carried out for 33 kV and 11kV Lines. TPSODL has identified total 7 lines (4 nos. 33kV namely in Aska, Hatiota, Berhampur-1 & Bhanjnagar feeders; and 3 nos. 11kV namely in Turudhi, Konkorda & Gandhinagar-II feeders) for conductor upgradation. Some other issues such as tilted poles, damaged insulators are observed in identified lines and

strengthening measures are also planned for these lines. Accordingly, TPSODL has proposed a sum of Rs 3.17 Cr under this activity.

f) 33 & 11 kV New lines for reliable power supply:

As per the site survey it is found that most of the 11kV network are lengthy and radial in nature. TPSODL submitted that due to lack of alternate PSS or 11kV feeder, it is not possible for the field teams to transfer the load during shutdown of radial feeder and thus all consumers connected to the affected feeders remain out of service till repair of the fault, TPSODL analyzing the above, proposed for construction of 11kV new line in phased manner for critical 11kV feeder to provide N-1 contingency arrangement in Capex FY 24. TPSODL to provide for construction of 11kV new line has considered 11 mtr H pole with a span of 40 mtr and beyond 60 km from the coastal belt, a 11 mtr WPB pole with a span of 50 mtr. Accordingly, 9 new 11 kV lines have been proposed by TPSODL with an investment of Rs 6.32 Cr under this activity.

g) Life enhancement of 33 & 11 kV Network:

TPSODL, during site visits, has observed that many of network components such as poles, cross arms, insulators, connectors etc. are in poor condition or damaged or high humid condition. Further, due to long span, vertical clearances of the feeders have reduced to the dangerous level. Hence, TPSODL has proposed various line strengthening measures to improve reliability and safety. Total 3 nos. of 33 kV and 5 nos. of 11 kV feeders have been proposed as a part of network refurbishment and upgradation of conductor. Some of the 33 & 11kV lines are crossing river through poles/ DP/ Old tower with more sag which is below permissible level. TPSODL has therefore proposed to upgrade river crossing infrastructure by PC+6 Tower at 100-300 mtr river crossing. Moreover, it is proposed to install 11 & 33 kV AB Switches so that in case of any tripping, maintenance engineer can isolate the faulty section and restore the supply of remaining consumers thereby improving the reliability. Accordingly, TPSODL has proposed an investment of Rs 7.47 Cr under this activity.

h) DSS Refurbishment & Installation of LV protection at DSS:

TPSODL during the preliminary site visits has observed that many of the existing DSS are in poor condition with damaged or ill-maintained HT & LT protection equipment. Many connections at pole mounted or plinth mounted substations are in very bad condition which not only cause high technical loss but also give rise to

undue interruptions. The Aluminium lug / sockets used in DTRs and other equipment in the substations are observed to be of inadequate size and proper crimping of lugs with the help of crimping tools found missing at almost all places. This is resulting into generation of hotspots and failure of connections. Refurbishment/Life Enhancement of DSS is required to address the above-mentioned issues.

Further, analysis of DTR failure data for the last few years suggest that effective HV & LV protection might have reduce the transformer failure. There are no LT Protection at DTR secondary side so any fault occurred during in LT shifts to 11kV System and tripping 11kV feeder. The Tripping of 11kV feeders impacts reliability indices SAIFI and SAIDI and all connected consumers are also affected due to shut down. In order to reduce the effect of LT fault on 11kV System, TPSODL recommended for installation MCCB on these Distribution Substations. TPSODL has proposed an amount of Rs 17.36 Cr. under this head which includes AB Switch, HG fuse, LA, earthing, plinth and MCCB.

i) Capacitor Bank and Voltage regulator for low voltage mitigation:

Most of the feeders are feeding power supply to rural areas, for which many of the feeders have long line length. The longest 33kV line has the total feeder length of 191 Km and the longest 11 kV line has the total feeder length of 350 Km. Such long distribution lines not only increase the line loss but also cause severe voltage dip at the fag-end of the line. There are low voltage complaints from consumers from areas where the Length of feeders are more with predominantly inductive loads. Hence to improve the Voltage in areas with high inductive loads, TPSODL has proposed to install capacitor bank for reactive compensation at 11 kV bus of 7 PSS during the FY 2023-24. A Capital Expenditure of Rs 1.45 Crore is proposed for installation of Capacitor Bank. TPSODL submitted that the Length of 33 kV lines are too long because of location of PSS without any mechanism for improvement of profile in between. This results into large number of complaints regarding poor quality of power supply & low reliability. To overcome the stated challenges & improve upon the voltage profile and quality of power supply, advance power system equipment, TPSODL has proposed Automatic voltage regulators (Power distribution voltage regulators) for very long 11 kV lines. In FY 2023-24, TPSODL has proposed to install 29 Nos. of 11 kV voltage regulators at strategic locations to improve upon voltage profile & quality with an investment of Rs 5.99 Cr.

Accordingly, a total cost of Rs 124.54 Cr is proposed under the head Network Reliability as part of Capex of FY 2023-24. The summary is as under:

| <b>Sr No</b> | <b>Activity</b>  | <b>Total proposed Cost (Rs. Cr)</b> |
|--------------|--|-------------------------------------|
| <b>1</b>     | Network and Equipment Assessment Study   | <b>4.00</b>                         |
| 2            | Refurbishment of 33/11kV Primary Substations (Station Transformer & Bus coupler arrangements)                              | 0.65                                |
| 3            | Mitigation of Single PTR (N-1 arrangement) & Replacement of Old PTR  | 16.18                               |
| 4            | PSS refurbishment for SCADA implementation in Conventional Non ODSSP PSS   | 61.95                               |
| 5            | Upgradation of 33 kV & 11 kV Line  | 3.17                                |
| 6            | 33 & 11 kV New Lines for reliable power supply   | 6.32                                |
| 7            | Life enhancement of 33 kV & 11 kV Network  | 7.47                                |
| 8            | DSS Refurbishment (Replacement of damaged AB Switch, HG Fuse, LA, Earthing, Plinth) & Installation of LV protection at DSS | 17.36                               |
| 9            | Capacitor Bank and Voltage regulator for Low voltage mitigation)   | 7.44                                |
| <b>10</b>    | <b>Sub-Total Network Reliability (3)</b>   | <b>124.54</b>                       |

#### **D. Load Growth:**

The following activities are considered under this head:

##### **a) Augmentation/ addition of Power and Distribution Transformer:**

TPSODL has undertaken assessment of the loading of PTR & DTR and has identified the Power Transformers loaded more than 80% of their capacity and developed for the plan to mitigation of overloading. The percentage of loading on Power Transformers in some of the PSS, are not uniform. Though one transformer is overloaded, other transformer is partly loaded. In such cases, TPSODL planned to shift load from overloaded transformer to other underloaded transformer. Augmentation of Power Transformer also is planned where spare capacity is not available with other Transformers in the same PSS. Total 4 nos. of PSS (Podgada, Jharigam, Balimela & Corporation Road) have been proposed by TPSODL for augmentation to mitigate overloading issue with an investment of Rs 3.38 Cr. Similarly, TPSODL has proposed to carry out DTR augmentation for overloaded DTRs (above 80% loading) at various locations. TPSODL has planned for augmentation of 126 nos. DTRs & addition of 50 nos. of DTRs at different locations



with an investment of Rs 11.32 Cr. Accordingly, investment of Rs 14.70 Cr has been proposed by TPSODL for augmentation/ addition of Power and Distribution Transformer.

b) Augmentation and addition of LT ABC line:

The LT AB cable has been proposed for augmentation to address addition of LT feeders due to DTR augmentation or new addition. The augmentation of DTR requires augmentation of associated LT AB cable to cater the additional load to be served to consumers seamlessly. A total of 65 Ckt. Km has been proposed to be taken up at an investment of Rs.7.33 Cr under this activity.

Accordingly, total investment of Rs 22.03 Cr has been proposed by TPSODL under the head Load Growth. The summary of the proposed investment is as under:

| Sr No | Activity                                 | Total proposed<br>(Rs Cr) |
|-------|--|---------------------------|
| 1     | Augmentation of Power Transformer        | 3.38                      |
| 2     | Augmentation of Distribution Transformer | 11.32                     |
| 3     | Augmentation of LT ABC Network           | 7.33                      |
|       | <b>Total Cost</b>                        | <b>22.03</b>              |

**E. Infrastructure- Technology:**

The following activities are considered under this head:

a) Build & Strengthen End user IT Infrastructure:

TPSODL has submitted that, till now they have procured and distributed around 1,200 laptops and 500 desktops to its officers. TPSODL is also installing around 200 heavy duty Multi-Functional Devices (MFD) across all offices of TPSODL. With the addition of new manpower and establishments as well as roll out of more and more IT applications, the end users need to be equipped with necessary IT infrastructure for performing day to day works in an effective manner. Hence, there is a need for procurement of Laptops with MS Licence and desktops with MS Licence & UPS, Web content filtering solution, Anti-Virus, HDD upgradation, Smart Monitor and Other associated equipment / software (AutoCAD, Adobe Acrobat, etc.). TPSODL has proposed an investment of Rs 4.03 Cr for this activity.

b) Strengthen Network Connectivity across TPSODL:

In order to strengthen the network connectivity of PSS which would help in building a reliable SCADA system, TPSODL has proposed to connect 45 numbers

of PSS over IP MPLS/VSAT connectivity taking the total number of PSS to around 185 nos be brought on to SCADA. In this connection, TPSODL has proposed to lay 50 Km OFC for connecting 15 PSS using the OPGW backbone of OPTCL or that of telecom service providers. The investment proposed by TPSODL under this activity is Rs 4.54 Cr.

c) Disaster Recovery Center – Hardware and Software:

TPSODL submitted that they have commissioned Data Center (DC) successfully at Berhampur in FY 22. This DC hosts SCADA, GIS and AMI applications. In line with the best practices followed up by critical DCs globally, TPSODL has proposed to set up a Disaster Recovery (DR) Center for this DC at Sambalpur, Odisha which will ensure business continuity in the aftermath of any breakdown of the DC owing to a natural calamity or other unforeseeable disaster. The DR will operate at 100% capacity of the DC and the same will be equipped with latest cyber security measures. DR will also ensure 100% data protection for all data stored at DC. For setting up the DR as proposed above, all hardware and software necessary for computation, storage, networking and cyber security compliance will have to be procured to ensure operation at full capacity in active-passive mode. This includes Server, SAP S4, SAN Storage, MPLS Firewall, DDOS, Virtualization, Web application firewall, SAN Switch, Windows OS, Leaf Switch, Linux, Spine Switch, Back up data domain with software, Tape Library, Antivirus, Management L3 Switch etc. TPSODL has proposed an investment of Rs 19.58 Cr. under this activity.

d) Augmentation of Data Center – additional Hardware and Software:

TPSODL has submitted that augmentation of Data Center (DC) infrastructure (both hardware and software) is required in order to cater to incremental growth expected in GIS, AMI, and ADMS implementation. Further, catering to third phase of GIS implementation to be undertaken in FY 24, the DC infra shall have to be suitably augmented. In case of extension of smart metering landscape in TPSODL, further augmentation of DC infrastructure will be required. For setting up of Data center hardware, items such as SAP S4, Oracle additional licence, SAN Storage, Windows OS, Virtualization, Linux, Antivirus are also required. For augmenting existing cyber security measures at TPSODL Data Center, additional infrastructure like Distributed Denial of Services (DDOS) and Web Application Firewalls are

proposed to be procured in the in FY 24. These will protect the DC from multiple malicious attacks and ensure safety of the DC. TPSODL has proposed an investment of Rs.13.12 Cr. under this activity.

Accordingly, TPSODL has proposed an investment of Rs 41.26 Cr under the head Infrastructure- Technology for FY 2023-24. The summary of the proposed investment is as under:

| <b>Sr No</b> | <b>Activity</b>   | <b>Total proposed Cost (Cr)</b> |
|--------------|---|---------------------------------|
| 1            | Build & Strengthen end user IT infrastructure                         | 4.03                            |
| 2            | Strengthen Network Connectivity across TPSODL                         | 4.54                            |
| 3            | Disaster Recovery Centre - Hardware and Software                      | 19.58                           |
| 4            | Augmentation of Data Center - additional Hardware and Cybers Security | 13.12                           |
| <b>5</b>     | <b>Total Infrastructure - Technology</b>                              | <b>41.27</b>                    |

#### **F. Infrastructure- Civil and Admin:**

The following activities are considered under this head:

a) Security Surveillance System and Employee Welfare:

TPSODL has submitted that the Security Surveillance System will help in surveillance in sensitive area to keep check upon theft and monitor unauthorized access. This will avoid chances of vandalism and enable to keep camera footage for evidence which can be helpful in claiming insurance in case of any theft or damage. Further, potable water availability for the staff is essential to meet the requirements of basic amenities for which Water Coolers, Dispensers and RO Water filters are to be provided at each of the office locations. TPSODL has also proposed for procurement of centralized network printers, emergency power supply systems, office furniture and Air Conditioners in their offices. An investment of Rs.3.37 Cr is proposed by TPSODL under this activity.

b) Restructuring/ Refurbishment of Infrastructures at Stores and Offices:

TPSODL has submitted that immediate strengthening, refurbishment and reconstruction works are required in large number of office establishments across all circles since they are very old (about 40-45 years). In all there are 211 office

establishments that are important from operational perspective out of which about 33 structures are refurbished as part of civil works in FY 22 & FY 23. Considering the rapid deterioration of these already dilapidated structures it is necessary to refurbish /rebuild at least 76 offices in FY 2023-24. Infrastructure of the offices also need revamping to provide conducive work environment for Employees and consumers visiting the offices. Besides, TPSODL is also planning to uplift the Corporate office set up at Berhampur by providing appropriate infrastructure through complete revamping and other civil interventions. TPSODL operates his distribution business inventory management through Five stores located at - Berhampur, Bhanjanagar, Jeypore, Rayagada and Phulbani. The boundary walls and drainage system at stores is not adequate. As a continuing endeavor towards environment and providing safe, hygienic work place, construction of drains and revamping of boundary walls to improve the safety and security of material and Person TPSODL has proposed an investment of Rs 16 Cr under this activity.

c) Development of new DTR Workshop:

Distribution transformer is one of the major and valuable asset in the power distribution utility. In TPSODL more than 55,000 DTRs are installed over large geographical area. Due to various reasons lots of DTRs are failing in regular intervals. Average failure rate of DTR are approximately 160 to 170 Nos. per month. Presently the existing DTR work shop do not have adequate equipment and maximum repair capacity is limited to 60-70 nos. DTRs per month. Hence it is taking more time for repairing of failed DTRs which leads to unavailability of DTRs to restore power supply, increase in SAIDI & SAIFI and customer dissatisfaction. TPSODL in order to mitigate the above situation, has proposed additional new DTR work shop. The total investment proposed under this activity is Rs 3.71 Cr.

d) Development of hostel building for trainees:

TPSODL submitted that they are in the process of hiring of 100 no. of management trainees each year to fulfill manpower requirements and these trainees would require permanent accommodation during their training period. Therefore, there is need for establishment of trainee hostel to cater to the above requirement on a long-term basis. Also, since trainees are hired at a minimum salary band, it is difficult for them

to afford self-arranged housing. Moreover, this will also ensure seamless campus to business transition with a conducive and a nurturing environment. TPSODL has prepared a scheme and detailed Civil design is under Process. The Preliminary estimated expenditure for hostel building for 50 nos. of GET occupants and also a Training Centre is Rs 20.09 Cr., which is planned to be spent in next two years. Therefore, TPSODL has proposed an investment of Rs. 12 Cr. under this activity for FY 2023-24.

Considering the above activities altogether, total investment of Rs 35.08 Cr has been proposed by TPSODL under the head Infrastructure- Civil and Admin. The summary of such investments is as under:

| <b>Sr No</b> | <b>Activity</b>  | <b>Total proposed Cost (Cr)</b> |
|--------------|--|---------------------------------|
| 1            | Security Surveillance System and Employee Welfare                      | 3.37                            |
| 2            | Restructuring / Refurbishment of Infrastructures at Stores and Offices | 16.00                           |
| 3            | Development of New DTR Workshop  | 3.71                            |
| 4            | Development of Hostel building for Trainees                            | 12.00                           |
|              | <b>TOTAL</b>   | <b>35.08</b>                    |

**G. Differential Capex to recover cost of new connection:**

TPSODL has submitted that while extending supply to the single-phase consumers i.e less than 5 KW, the expenditure incurred is much higher than the amount paid by the consumer for extension of supply (Service Line charges). The amount under this head would also cover the differential amount i.e amount incurred minus less amount recovered under this situation. TPSODL has proposed an amount of Rs 5.00 Crores under this head.

12. The Summary of the Capex as per original petition and the revised Capex as per approval of BoD is as under:

| <b>Summary of the Capex proposed for FY 2023-24</b> |                             |  |                                   |   |
|---|-----------------------------|--|-----------------------------------|---|
| <b>Sl. No.</b>                                      | <b>Capex Head</b>           | <b>Activity</b>  | <b>Original Proposal (Rs. Cr)</b> | <b>Revised Proposal as per Approval (Rs. Cr) of BoD</b> |
| A   | Statutory & Safety          | Safety & Electrical Testing Equipment  | 8.50                              | 7.13  |
|   |                             | Network refurbishment for Safety enhancement   | 26.45                             | 19.00   |
|   |                             | Sub Total- Statutory & Safety (1)  | 34.95                             | 26.14   |
| B   | Loss Reduction              | Feeder Meter for Energy Audit  | 39.71                             | 39.71   |
|   |                             | LT Bare to ABC Conversion  | 18.98                             | 6.26  |
|   |                             | GIS Implementation   | 38.32                             | 38.32   |
|   |                             | Sub Total- Loss Reduction (2)  | 97.01                             | 84.29   |
| C   | Network Reliability         | Network and Equipment Assessment Study   | 4.00                              | 4.00  |
|   |                             | Refurbishment of 33/11kV Primary Substations (Station Transformer)   | 1.96                              | 0.65  |
|   |                             | Mitigation of Single PTR (N-1 arrangement) & Replacement of Old PTR  | 17.85                             | 16.18   |
|   |                             | PSS refurbishment for SCADA implementation in Conventional Non ODSSP PSS   | 81.39                             | 61.95   |
|   |                             | Upgradation of 33 kV & 11 kV Line  | 12.87                             | 3.17  |
|   |                             | 33 & 11 kV New Lines for reliable power supply   | 27.32                             | 6.32  |
|   |                             | Life enhancement of 33 kV & 11 kV Network  | 31.33                             | 7.47  |
|   |                             | DSS Refurbishment (Replacement of damaged AB Switch, HG Fuse, LA, Earthing, Plinth) & Installation of LV protection at DSS | 28.08                             | 17.36   |
|   |                             | Capacitor Bank and Voltage regulator for Low voltage mitigation)   | 7.39                              | 7.44  |
|   |                             | Sub-Total Network Reliability (3)  | 212.20                            | 124.54  |
| D   | Load Growth                 | Augmentation / addition of Power and Distribution Transformer  | 20.61                             | 14.70   |
|   |                             | Augmentation and addition of LT ABC line   | 29.27                             | 7.33  |
|   |                             | Sub Total- Load Growth (4)   | 49.88                             | 22.03   |
| E   | Infrastructure - Technology | Build & Strengthen End user IT Infrastructure  | 4.03                              | 4.03  |
|   |                             | Strengthen Network Connectivity across TPSODL  | 4.54                              | 4.54  |
|   |                             | Disaster Recovery Centre - Hardware and Software   | 24.89                             | 19.58   |
|   |                             | Augmentation of Data Centre - additional Hardware and Software   | 13.12                             | 13.11   |
|   |                             | Sub Total- Technology (5)  | 46.58                             | 41.26   |
| F   | Infrastructure              | Security Surveillance System and Employee  | 3.37                              | 3.37  |

| Summary of the Capex proposed for FY 2023-24 |                   |  |                            |  |
|--|-------------------|--|----------------------------|--|
| Sl. No.                                      | Capex Head        | Activity   | Original Proposal (Rs. Cr) | Revised Proposal as per Approval (Rs. Cr) of BoD |
|  | - Civil and Admin | Welfare  |                            |  |
|  |                   | Restructuring / Refurbishment of Infrastructures at Stores and Offices | 15.87                      | 16.00  |
|  |                   | Development of New DTR Work Shop                                       | 3.71                       | 3.71   |
|  |                   | Development of Hostel building for Trainees                            | 12                         | 12   |
|  |                   | Sub Total – Civil Infrastructure & Admin (6)                           | 34.95                      | 35.08  |
|  |                   | Total (1+2+3+4+5+6)  | 475.56                     | 333.34   |
| G  |                   | Differential CAPEX to recover cost of new connection                   | 5.00                       | 5.00   |
|  |                   | <b>TOTAL</b>   | <b>480.56</b>              | <b>338.34</b>                                    |

13. The Original Capex proposal was submitted by TPSODL on 03.01.2023. The public hearing on this matter was held on 25.04.2023 and it was decided to issue public notice. The public notice was issued on 26.04.2023 inviting suggestions/ objections to the CAPEX Plan for FY 2023-24 of the DISCOMs. On approval by the BoD, TPSODL had submitted the revised DPR with the revised cost on 22.05.2023. The revised CAPEX was uploaded on the Commission's as well as on the DISCOM's website. The public hearing on the revised CAPEX of TPSODL was held on 30.05.2023. The Commission heard the Petitioner and respondents who had participated in the hearing. OPTCL and GRIDCO had participated in the hearing and submitted their response on 12.05.2023 & 07.06.2023 respectively. The oral submissions of Government of Odisha and SLDC during hearing were taken on record.

14. The Commission had raised various queries relating to the CAPEX proposal of TPSODL. The response of TPSODL on specific queries are as under:

a) As regards to fixed asset register

TPSODL has submitted details of the Fixed Asset Register (containing year wise, scheme wise, location wise, component wise details) along with unmetered feeders and nature of equipment proposed. This also includes various activities and assets to be created during FY 2023-24. However, TPSODL has submitted that during the year, the same may undergo a change based on the ROW issues and constraints at

the site during execution or any other urgent requirement as per field.

b) As regards to swapping of lower capacity DTRs/ PTRs

TPSODL has submitted the installation and swapping details of PTRs. TPSODL has planned augmentation of 126 nos. overloaded DTRs and have planned to transfer these old DTRs to stores after replacement. At stores, these DTRs will be inspected and necessary repairs/ Overhaul, if required, will be carried out for enhancement of life. During Post overhaul, these DTRs will be utilized for replacement of failed/ burnt DTRs. Presently around 58000 DTRs are in service in TPSODL network and on an average around 150 DTRs fail in a month. Considering lower quantity of DTRs available post augmentation, DTRs are not expected to be available for utilization for other augmentation requirement.

c) Regarding details on accounting treatment and movement of decapitalized assets

TPSODL has submitted that the Financial Statements of the Company is being prepared in accordance with Indian Accounting Standards (Ind AS) as notified under the Companies (Indian Accounting Standards) Rules, 2015 (as amended) read with section 133 of the Companies Act, 2013. The accounting treatment for decapitalization of assets is done in accordance with Ind-AS 16 (Indian Accounting Standards 16) - Property, Plant, and Equipment. Before considering decapitalization, Company assesses whether the carrying amount of the asset needs to be impaired. TPSODL further submitted that since the time of commencement of Operation as was on 1<sup>st</sup> January 2021, it has not decapitalized any asset.

d) TPSODL has declared that there is no duplication of work between the activities to be carried out under the proposed CAPEX and the assets created through Government Schemes/ support.

e) As regards to proposal of extended warranty (if any) with certain items under IT infrastructure as CAPEX and not OPEX

TPSODL has submitted that only the warranty which comes as bundled cost along with items like PC, Server, storage, etc. are taken under CAPEX. Any additional procurement of AMC or warranty are covered under OPEX.

f) As regards to inclusion of fencing of DTRs under CAPEX

TPSODL has submitted that through Fencing of DTR, a new asset is created. The schemes proposed by TPSODL under this head do not envisage “replacement” of fencing which may have qualified as OPEX. It involves installation of New fencing. Such Fencing did not exist at the time of original installation and has to be



installed now. Moreover, in case such fencing had been installed along with the DTRs, the amount towards the fencing would have been capitalized at that time. Hence, the expenditure of this nature where a new asset is created would qualify for CAPEX and the Commission has approved such expenditure in FY 2022-23 under the Capex proposal.

g) As regards to consideration for inclusion of fencing of DTRs in OPEX

TPSODL has submitted that in the Tariff Order, the Commission had approved certain amount towards “Repairs and Maintenance”. The amount approved for FY 2023-24 was Rs 152 Cr. As per budget planning, the cost of fencing has not been included in R&M. In other words, the cost of Rs 152 Crores approved by the Commission is not sufficient to cover the cost of such fencing. In case the Commission considers it appropriate to include such amounts in the OPEX, additional/special amount as envisaged under the Tariff Regulations may be allowed to that extent to TPSODL for FY 2023-24.

h) Regarding housing of DR centres in one centre and avoiding replication of equipment cost

TPSODL has submitted that for the proposed common Disaster Recovery Center (DR) at Sambalpur for TPCODL, TPWODL, TPNODL and TPSODL, all the concerned utilities have considered replication of computers, network and storage capacity of their respective Data Centres in the proposed DR. Individual Discoms have accordingly proposed the necessary IT equipment needed for replicating its Data Center capacity at the DR which will be exclusively used by them. Common DR components like Civil infrastructure, Building Management System, Cooling System etc. have been included in the FY 24 CAPEX Proposal by TPWODL only and these infra and facilities are not part of any other DISCOM's proposal.

i) Regarding variation in cost of Drones across DISCOMs

TPSODL has submitted that the estimate is based on the market data and includes additional set of batteries, charging station and cost of certification of the manpower by DGCA. The product comes with one year warranty and we have factored for additional extended warranty of 1 year. The costing is based on information received from reputed suppliers. It is expected to be negotiated further for optimisation at the time of actual procurement.

j) As regards to justification for proposal of survey cost under CAPEX

TPSODL has submitted that such expenditure is required to be included in the CAPEX and not as an O&M expenditure as such study is required to be carried out to assess the CAPEX requirement of TPSODL in the time to come. Hence, as the expenditure is related to creation of assets, this expenditure is required to be capitalised along with the assets. Moreover, in other projects such as any transmission project or generation project any expenditure required for preparation of DPR or any other report is capitalised along with the assets created. The network study is akin to such expenditure and therefore may be allowed to be included in Capital Investment Plan. Further, the quantum of O&M Expenditure allowed by the Commission under the head of R&M expenditure or A&G Expenditure is not adequate to cover this expenditure.

k) Regarding proposal of Rs 5 Cr for recovery in new service connection

TPSODL has submitted that the normative amount of Rs 8000 per Span allowed by the Commission is very less as compared to the actual cost per span which can go upto Rs 30000 per span. Therefore, the recovery of differential amount is proposed by TPSODL.

15. The Respondent, Energy Department, Government of Odisha has not submitted any specific observations/ comments in respect of various activities covered under CAPEX proposal for FY 2023-24. However, the representative of Government of Odisha has orally submitted the following during the hearing:

- a) It needs to be ensured that there is no duplication of work under the proposed CAPEX and the work already approved/executed under the Government funded schemes.
- b) Proper scrutiny of the CAPEX proposal may be carried out by the Commission to identify genuine investments and its associated costs while approving the CAPEX amount in order to avoid unnecessary burden on the consumers.

16. The Observation/Comments received from the Respondent OPTCL are summarized as follows:

- a) The IDC may be segregated for the entire interest amount considering the debt of capitalization of the asset. Similarly, Employee cost is the fixed cost of TPSODL and hence additional employee cost towards capitalization of the asset may be deducted.

- b) The majority of the investments during the first 5 years should be for construction/revamping of downstream assets and strengthening of the system. For FY 2021-22, TPSODL had completed 10 nos of conventional substation, for SCADA related work with approved amount of Rs 14.71 Cr. The proposal for additional S/s for FY 2023-24 appears to be high.
- c) TPSODL should furnish detailed information as regards progress & completion of Fencing work & Boundary wall work upto FY 2022-23.
- d) TPSODL should intimate the number of fuse-call camps /sections under their jurisdiction, quantifying how many of them are equipped till now with FRP ladders, Neon testers & Discharge Rods etc. and the further need since the same has already been approved in FY 2021-22 & FY 2022-23.
- e) TPSODL should submit utility of the proposed drone for GIS sustenance in details.
- f) The proposal for conversion of AIS to GIS may be taken up in urban areas with space constraints and also in coastal areas to achieve cyclone resilient system.
- g) TPSODL should inform the extent of work completed (location wise) in FY 2022-23 and cost incurred thereof for LT Bare to AB cable conversion. Further, such works should be restricted only to urban congested areas, busy road crossing and electricity theft prone areas to minimise tariff burden on Consumers.
- h) Owing to high cost in nature, the capital expenditure towards smart meter may be implemented after completion of work related to network augmentation and loss reduction.
- i) TPSODL may provide details regarding the place, expenses, progress of work etc. of 3 nos PTR scheduled to be replaced during FY 2022-23. Further, actual cost towards mitigation of N-1 contingency of single PTR PSS and replacement of old PTR for FY 2022-23 against the approved cost of Rs 12.52Cr may be provided. Since the replacement of 03 nos. of old PTR are under progress, the Commission may allow further Capital towards mitigation of N-1 contingency of single PTR PSS and replacement of old PTR for FY-2023-24 based on spending pattern progress of work.
- j) OPTCL has constructed many new 33/11kV substations under ODSSP, DDUGJY and IPDS schemes which are yet to be made fully operational by TPSODL. Government of Odisha Energy Department, vide Resolution No 12347/EENG-RR-

0004-2019, Bhubaneswar dt 24th December, 2021, has approved Rs 1796.73Cr for construction of 99 Nos. of 33/11 kV PSS and 64 nos. of independent 33 kV lines under ODSSP phase-IV. The Commission may approve necessary Capex considering such approval of the Government.

- k) TPSODL, in the present Capex have proposed for 7.39 Cr for installation of capacitor banks and 11kV voltage regulator. They may be asked to furnish detailed report in terms of their positioning, present voltage & VAR level at such PSS. Further, expected voltage gain after installation capacitor banks and 11kV voltage regulators may be provided. TPSODL may also intimate the operational status of the PSS & DSS constructed in those areas under ODSSP, DDUGJY and IPDS schemes. The Commission may allow capex taking the above into consideration.
- l) Commission may allow further Capex under the head – Load Growth after collecting trend of Load growth & spending pattern towards the same. Many OPTCL GRID S/s were constructed based on Power Demand Projections of DISCOMs and majority of them are in under-loaded condition, which means the actual load growth is much below than the expected growth. Accordingly, funds may be allocated.
- m) Many DTs were purchased & installed under numerous Government Schemes and it is apprehended that a large number of such DTs might be in under-loaded condition. The DISCOMs should carry out a study on the above aspect and try to shift/relocate such DTs to overloaded stations, thereby addressing the load growth for keeping the burden of Capex minimum on Consumers.
- n) The Commission have approved Rs.10.78Cr. towards refurbishment of infrastructure for store and office for FY 2022-23. However, TPSODL has again proposed Rs.15.87 Crs under the same heading - Infrastructure Civil & Admin for the current Capex plan for FY-2023-24. TPSODL may be asked to furnish the details of work completion status, location of stores, total expenditure made till date & capitalization thereof under the heading “refurbishment of infrastructure for store and office”, before allowing further Capex under this head.
- o) As per practice and standards, the end product of any Capex plan is revenue and tariff forecast which has not been done.

- p) Government of Odisha have accorded in principle approval for ODSSP Ph-V with an estimate outlay of Rs.1124.70Cr. As per the DPR furnished by TPSODL for the above programme, they have proposed works under different categories with an estimated cost of Rs.238.90 Cr. The Commission may kindly consider the above submission and allow necessary Capex in this regard.
- q) OPTCL has requested the Commission to a) appoint 3rd Party & Independent consultant to verify the claim of DISCOMs in the matter of quantum of works completed & expenditure incurred thereof under CAPEX-22-23, before allowing further CAPEX; b) allow Capex in areas where cost is neutralised in terms of lower tariff or lower loss and enhanced consumer satisfaction; c) allow as much Capex so that work can be completed within FY 2023-24 without any carry over to next FY 2024-25; and d) direct the petitioner to furnish the audited account from an independent consultant in terms of works completed, expenditure incurred thereof, pending works if any, schedule for completion of balance pending works, Assets capitalised etc. for present Capex.

17. The Observations/Comments received from the Respondent GRIDCO are summarized as follows:

- a) The CAPEX Plan was revised by TPSODL considering the suggestions given by MD, GRIDCO and President, Tata Power, keeping in view the funding provision under various Schemes by the Govt. of Odisha in respect of Infrastructure augmentation in TPSODL. The revised cost was accordingly approved by the BOD.
- b) GRIDCO appreciates the observations of the Commission in various orders and during review meetings for implementation of the CAPEX Plan based on requisite planning, design and operation of the distribution network in order to provide reliable & quality power to consumers with overall reduction of T&D losses.
- c) The CAPEX Plan should be implemented considering the actual requirement of new/ augmentation/ renovation of the system. Adequate requisite planning, as can be foreseeable, relatively for a longer period commensurate with latest technology as well as to cater the future load growth.
- d) The Commission can conduct due diligence and prudence check while approving the CAPEX Plan so as to meet the end objectives of CAPEX investments to be tariff neutral in the greater interest of the consumers.

- e) The proposal for hostel building with projected cost of Rs 12 Cr may be considered for all DISCOMs at a centralized location for development of Capacity Building Centre.
- f) The expenses earmarked in the nature of R&M activities and also of similar nature may be excluded from the scope of the Capex Plan and need to be considered under R&M heads.
18. The Respondent, SLDC has not submitted any specific Observations/Comments in respect of various activities covered under CAPEX proposal for FY 2023-24. However, the representative of SLDC during the hearing has stressed for installation of capacitor banks in areas with low voltage.
19. In response to the submission of OPTCL, TPSODL in its rejoinder has submitted the following:
- a) TPSODL with utmost care has been planning the capital expenditure in the past two years in the interest of the consumers after obtaining approval of OERC. Further, the CAPEX for FY 2023-24 has been proposed for further improvement of the distribution system particularly keeping in mind for network reliability and safety.
- b) TPSODL has spent almost all the expenditures under different heads approved by the Commission for the FY 2021-22 & FY 2022-23. The progress of CAPEX till 31.03.2023 vis-à-vis the approval are mentioned in the table below:

**FY 21-22 CAPEX ORDER**

| Head                              | Approved | Capitalised | AUC  | Project Stock | Total CAPEX |
|-----------------------------------|----------|-------------|------|---------------|-------------|
| Statutory & Safety                | 31.43    | 28.81       | 0.05 | 0.04          | 28.90       |
| Loss Reduction                    | 15.69    | 7.26        | -    | 0.03          | 7.29        |
| Reliability                       | 37.47    | 38.80       | 0.12 | -             | 38.92       |
| Load Growth                       | 8.74     | 10.44       | 0.08 | -             | 10.52       |
| Technology & Civil Infrastructure | 91.32    | 96.41       | 1.68 | 0.02          | 98.11       |
| Total                             | 184.65   | 181.72      | 1.93 | 0.08          | 183.74      |

**FY 21-22 CAPEX ORDER**

| Head                             | Approved | Capitalised | AUC  | Project Stock | Total CAPEX |
|----------------------------------|----------|-------------|------|---------------|-------------|
| Statutory & Safety               | 39.33    | 36.70       | 0.09 | 0.13          | 36.92       |
| Loss Reduction                   | 60.72    | 38.92       | 1.45 | 3.18          | 43.55       |
| Reliability                      | 123.75   | 102.13      | 5.72 | 8.22          | 116.07      |
| Load Growth                      | 18.72    | 21.77       | 0.19 | 0.63          | 22.59       |
| Infrastructure Technology        | 33.27    | 36.22       | 0.01 | -             | 36.23       |
| Infrastructure - Civil and Admin | 19.04    | 14.26       | 0.83 | 0.17          | 15.26       |
| Emergency-CAPEX                  | -        | 1.88        | -    | -             | 1.88        |
| Total                            | 294.81   | 251.87      | 8.29 | 12.33         | 272.50      |

- c) TPSODL is capable of executing the CAPEX of Rs.338 Cr. proposed for FY 2023-24. They have identified the requirement in each PSS after the site visits and proposed to undertake refurbishment activities of 40 nos. of PSS equipments including the implementation of SCADA in 28 nos. of PSS.
- d) TPSODL had procured 210 nos. of FRP ladder, 714 nos. of neon tester, 600 nos. of discharge rod during FY 2021-22 and distributed the same to sections & fuse call camps located in its area of operation. Further, 600 nos. of neon testers and 1560 of discharge rods were procured during FY 2022-23 primarily focusing on the safety of the workers. Further, a detailed requirement of FRP ladders, neon testers etc. are proposed as per the site requirement.
- e) TPSODL has proposed to procure drone for the purpose of survey of lines, inspection and thermal mapping.
- f) TPSODL has identified the theft prone areas during de-hooking drive/energy audit for replacement of LT bare conductors to AB cables. Accordingly, it has proposed the schemes to be carried out during FY 2023-24.
- g) TPSODL has submitted that there is no overlapping of the projects proposed to be executed under CAPEX and that of Government funded schemes.
20. TPSODL has not furnished any rejoinder to the Commission in response to the submission of GRDICO.

21. Heard the petitioner and respondents at length through hybrid mode (physical & virtual mode). As per Section 42 of the Electricity Act, 2003 read with Clause 7 of the Licence Conditions and Regulation 4 of the General Conditions of Distribution Licence, and the OERC (Conduct of Business) Regulations, 2004, it shall be the duty of the Distribution Licensee to develop and maintain an efficient, coordinated, economic distribution system in its area of supply/operation and to supply electricity in accordance with the provisions in the Act, Rules, Regulations and the directions of the Commission. The Commission is guided by Section 61(c) of the Electricity Act, 2003, i.e. “by the factors, which would encourage competition, efficiency, economical use of the resources, good performance and optimum investments” while determining the tariff.
22. As per the provisions in the OERC Wheeling & Retail Supply Tariff Regulations 2022, TPSODL has submitted the specific details of works i.e., location at which the works have been proposed, cost benefit analysis for majority of the schemes and the approval of Board of Directors for the same. As per the submissions of TPSODL, it is observed that TPSODL has been able to utilise almost 100% of the CAPEX approved by the Commission for the FY 2021-22 and more than 90% of the CAPEX approved by the Commission for the FY 2022-23. TPSODL has submitted that the pending works will be completed and capitalised in FY 2023-24.
23. The Commission at this stage has considered and analysed the CAPEX plan for FY 2023-24 based on the submissions made by TPSODL. In the present case as per para 43(b) of the Vesting Order, the petitioner’s minimum committed capital expenditure is Rs.1166 Cr for the FY 2021-22 to FY 2025-26. TPSODL has submitted that as per the Vesting Order, it has to achieve a minimum cumulative CAPEX of Rs. 783.00 Cr upto FY 2023-24. The Commission had approved Rs. 479.48 Cr till FY 2022-23. Hence, in compliance to the vesting order commitment, TPSODL is required to have minimum CAPEX of Rs. 303.52 Cr. for the FY 2023-24. TPSODL has proposed a Capex of Rs.338.34 Cr. under different activities for the FY 2023-24.
24. The Commission has examined the investments proposed by the petitioner and has considered the submissions by stakeholders. In TPSODL, TPCL is having 51% (fifty one percent) equity shares and Government of Odisha (“GoO”) through GRIDCO is having 49% (forty nine percent) equity shares. Any Capital Investment Plan should have approval of TPSODL’s Board of Directors before it approaches the Commission for grant of approval. During the analysis, the Commission observes that the revised



DPR proposed by TPSODL is in line with Capex Plan approved by their Board for FY 2023-24.

25. The detailed analysis of the proposed activities and the Commission's Observation for the proposed CAPEX by TPSODL for FY 2023-24 are as follows:

**A. Statutory and Safety**

26. The Commission has noted the importance of the Safety and corresponding statutory requirement considering the no. of fatal & non-fatal accident in distribution system. TPSODL has proposed procurement of tools like Neon tester, discharge rod, FRP Ladders, etc.; testing equipment; providing Cradle guard at major road crossings; fencing of Distribution substations (DSS) & Boundary wall for Primary substations (PSS) and Intermediate poles to maintain safe ground clearance.
27. TPSODL has made significant progress under the Statutory & Safety head as compared to other heads during the FY 2021-22 & FY 2022-23. The actual Capital Expenditure incurred is more than 90% of the approved Capital Expenditure for FY 2021-22 & FY 2022-23. Further, TPSODL has submitted that 100% capitalization will be achieved in FY 2023-24.
28. From the Accident Reports as submitted by TPSODL, it is observed that fatal accidents relating to humans is more than 50% of the total accidents in TPSODL area. The Commission is of the view that the proposals submitted by TPSODL under Statutory & Safety are essential to improve safety of human being & animals and reduce accident cases in future years. Accordingly, the Commission allows the following under Statutory and Safety head for FY 2023-24:

a) Provision of Safety Equipment and electrical Testing Equipment to workforce:

| <b>Sr No</b> | <b>Description of Project</b> | <b>Original Capex Proposed (Rs Cr)</b> | <b>Revised CAPEX as per Board Approval (Rs Cr)</b> | <b>Commission's Approval (Rs Cr)</b> |
|--------------|-------------------------------|--|--|--------------------------------------|
| 1            | Electrical Safety Equipment   | 3.93                                   | 3.93   | 3.93                                 |
| 2            | Electrical Testing Equipment  | 4.57                                   | 3.20   | 3.20                                 |
| <b>3</b>     | <b>Total</b>                  | <b>8.50</b>                            | <b>7.13</b>  | <b>7.13</b>                          |

b) Network refurbishment for Safety enhancement:

| Sr No | Description of Project   | Original Capex Proposed (Rs Cr) | Revised CAPEX as per Board Approval (Rs Cr) | Commission's Approval (Rs Cr) |
|-------|--|---------------------------------|---|-------------------------------|
| 1     | Cradle Guard at Major Road crossings in Populated area, School area. | 1.30                            | 0.650                                       | 0.650                         |
| 2     | Fencing of Distribution substations (DSS)                            | 15.00                           | 15.00                                       | 15.00                         |
| 3     | Intermediate pole for Unsafe to Safe Location                        | 10.15                           | 3.40  | 3.40                          |
| 4     | <b>Total</b>   | <b>34.95</b>                    | <b>19.00</b>                                | <b>19.00</b>                  |

29. Based on the above analysis and considering the importance of Safety enhancement, the Commission allows Capex of Rs. 26.13 Cr under the head Statutory & Safety for FY 2023-24.

**B. Loss Reduction**

30. The submission of the Petitioner has been examined under the Loss Reduction Scheme and it is observed that TPSODL has not fully utilised the CAPEX approved for the FY 2021-22 & FY 2022-23 under the Loss Reduction scheme. The progress of work as per submission shows that TPSODL has utilised Rs. 46.18 Cr (as against the approved Capex of Rs. 76.41 Cr) which is about 61% of the Capital Expenditure approved cumulatively for the FY 2021-22 & FY 2022-23. Further, TPSODL has submitted that 100% capitalization of the approved amount would be achieved by the end of FY 2023-24.

31. The analysis of the activities covered under loss reduction are as follows:

a) Feeder Meter for Energy Audit:

TPSODL has submitted that conduction of Energy Audit in Electricity Distribution Companies is required as per Energy Conservation Act, 2001, which requires TPSODL to install meters on all feeders DTRs and to provide broad framework for conduct of Annual Energy Audit and Quarterly Periodic Energy Accounting. TPSODL has considered metering of 33 kV feeders, 11 kV boundary meters, DTRs (above 25 KVA) & tapping points (at 33 kV & 11 kV) and has proposed road map for Energy Audit for the FY 2023-24. The Commission feels the necessity of

effective energy audit of the system to quantify & determine actual loss, identify theft prone area, areas of wastage or inefficient use so that corrective action can be taken for reducing technical & commercial loss. Hence, the Commission approves Rs 39.71 Cr under CAPEX for FY 2023-24 against loss reduction activity. Summary of the approved cost is as under:

| <b>Sl. No.</b> | <b>Description of Project</b>   | <b>Original Capex Proposed (Rs Cr)</b> | <b>Revised CAPEX as per Board Approval (Rs Cr)</b> | <b>Commission's Approval (Rs Cr)</b> |
|----------------|---|--|--|--------------------------------------|
| 33kV           | Smart Metering for 33kV Incoming Feeder at Primary Sub-Station (PSS).             | 4.57                                   | 4.57   | 4.57                                 |
| 11kV           | Smart Metering for Inter Section/Sub Division Boundary Points                     | 3.40                                   | 3.40   | 3.40                                 |
| 440V           | Smart Metering in Distribution Transformer  | 18.02                                  | 18.02  | 18.02                                |
| 440V           | 10Core 2.55qmm Control Cable for Smart Metering in Distribution Transformer       | 3.90                                   | 3.90   | 3.90                                 |
| 440V           | Ring type current transformer (CT) for Smart Metering in Distribution Transformer | 9.83                                   | 9.83   | 9.83                                 |
| <b>Total</b>   |   | <b>39.71</b>                           | <b>39.71</b>                                       | <b>39.71</b>                         |

b) LT Bare to ABC Conversion:

In the DPR, TPSODL has proposed replacement of 9158.84 Ckm (23%) + 62.3 ckm. overhead bare conductor by ABC to reduce tripping due to transient fault & enhance safety and to avoid theft of electricity in theft prone areas. Considering the importance of safety as well as reduction in theft of electricity in the theft prone area, the Commission allows Rs 6.26 Cr for conversion of LT Bare conductor to ABC as proposed by TPSODL for the FY 2023-24.

c) GIS Implementation:

TPSODL is planning to implement GIS for asset mapping & consumer indexing in three circles namely Bhanjanagar, Rayagada and Jeypore. Considering the importance of Geographical Information System to have better asset management and to strengthen various other business processes viz. energy audit, technical feasibility, network planning and developing, Outage Management System, the

proposed Capex for the FY 2023-24 is allowed. TPSODL has made significant progress in the implementation of GIS and utilised the Capex approved for FY 2021-22 & FY 2022-23. Further, TPSODL has also submitted the details of phase-wise Implementation plan of GIS which appears to be reasonable. Hence, the Commission allows Rs 38.32 Cr for GIS Implementation during the FY 2023-24.

| <b>Sr No</b> | <b>Description of Project</b>   | <b>Original Capex Proposed (Rs Cr)</b> | <b>Revised CAPEX as per Board Approval (Rs Cr)</b> | <b>Commission's Approval (Rs Cr)</b> |
|--------------|---|--|--|--------------------------------------|
| 1            | Network Survey for 3 circles - Rayagada, Bhanjanagar and Jeypore                    | 21.5                                   | 21.5   | 21.5                                 |
| 2            | Consumer Survey and Asset mapping for 2 circles - Rayagada, Bhanjanagar and Jeypore | 13.5                                   | 13.5   | 13.5                                 |
| 3            | GE Smallworld EO License -(Additional)  | 1                                      | 1  | 1                                    |
| 4            | Google Mobile Navigation, Address, WMS APIs   | 0.70                                   | 0.70   | 0.70                                 |
| 5            | Drone for GIS sustenance  | 0.25                                   | 0.25   | 0.25                                 |
| 6            | ARC GIS Standard  | 0.09                                   | 0.09   | 0.09                                 |
| 7            | Microsoft RDS (Additional 25)   | 0.025                                  | 0.025  | 0.025                                |
| 8            | Software & Application Development  | 1.25                                   | 1.25   | 1.25                                 |
|              | <b>Total</b>  | <b>38.32</b>                           | <b>38.32</b>                                       | <b>38.32</b>                         |

32. Based on the above analysis and considering the importance of Loss Reduction, GIS mapping and safety the Commission allows Capex of Rs. 84.29 Cr under Loss Reduction.

**C. Network Reliability**

33. In its DPR, TPSODL has proposed Rs.4 cr. for network & equipment assessment study covering condition & health of equipment, conductor size & rating, availability of protection & maintenance of safety clearances etc. TPSODL has carried out the load flow analysis and has planned network expansion accordingly to meet the growing power demand. As per the study, there is need for replacement of old PTR, providing (N-1) contingency plan for PTRs, implementation of SCADA & automation in conventional non-ODSSP PSS, installation of capacitor banks & automatic voltage regulators for low voltage mitigation etc., refurbishment of DSS which includes

replacement of damaged AB switch, HG Fuse, LA, Earthing etc. and installation of LV protection.

34. TPSODL has proposed to install 7 nos. of 33/0.415 kV station transformer (at an estimated cost of Rs.0.65 crores); 9 nos. of PSS have been identified for providing additional PTRs to meet (N-1) contingency (at an estimated cost of Rs.16.18 Cr.); 4 nos. of 33 kV lines & 3 nos. of 11 kV lines has been identified for replacement of conductor (estimated cost of Rs.3.17 Cr.), 9 nos. New 11 kV lines (estimated cost of Rs.6.32 Cr.), LT protection for DTRs (estimated cost of Rs.17.36 Cr.) capacitor bank (estimated cost of Rs.1.45 Cr) & 29 nos. of 11 kV Automatic voltage regulator (estimated cost of Rs.5.99 Cr.).
35. Since reliable network is the primary requirement for extension of quality power to the consumers, the Commission is inclined to approve Rs.124.54 Cr. under this head.

**D. Load Growth**

36. TPSODL has submitted that strengthening & augmentation of existing distribution infrastructure is essential to meet the growing demand as well as to extend power supply to new consumers etc. TPSODL has proposed for augmentation of PTR, augmentation & addition of DTR and additional LT AB cable in its distribution system at an investment of Rs.22.03 Cr.
37. It is observed that TPSODL has fully utilised the CAPEX approved for the FY 2021-22 & FY 2022-23 under Load growth. The rising trend of load growth justifies the Network expansion & augmentation, addition of 11 kV line, PTR, DTR and LT line.
38. The analysis of the activities covered under load growth are as follows:
  - a) Augmentation/ addition of Power and Distribution Transformer:

TPSODL has submitted that there are PTRs with loading more than 80% of its capacity and most of the PTRs are also not uniformly loaded. Four PSSs (Podgada, Jharigam, Balimela & Corporation Road) have been proposed for augmentation of transformation capacity to mitigate overloading issue at a cost of Rs 3.38 Cr. TPSODL has proposed to carry out augmentation of overloaded DTRs (above 80% loading) at various locations. 126 nos. of DTRs are planned for augmentation of transformation of capacity & 50 no. of locations are planned/identified for addition of DTRs at an estimated cost of Rs 11.32 Cr. The Commission observes that there is overloading of PTRs and DTRs in the proposed locations and augmentation of

transformation capacity of such DTRs/ PTRs would lead to reduction in technical loss, improvement in operational efficiency, providing (N-1) contingency, improving voltage profile at consumer end and reduce forced outages. Accordingly, the Commission approves a cost of Rs 14.70 Cr for Augmentation/ addition of PTR/ DTR as proposed.

b) Augmentation and addition of LT ABC line:

To meet load growth, 65 Ckt. Km of LT ABC (associated with Augmentation of DTRs) has been proposed at an estimated cost of Rs 7.33 Cr under this activity. Considering the need of LT ABC line to cater to additional load, the Commission approves Rs 7.33 Cr under this activity for FY 2023-24.

39. Based on the above analysis, the Commission allows Capex of Rs. 22.03 Cr under Load Growth head for CAPEX of FY 2023-24.

**E. Technology Infrastructure**

40. It is observed that TPSODL has fully utilised the approved CAPEX for the FY 2021-22 & FY 2022-23 under this head. New initiatives have been proposed under this head for improving efficiency and ensuring better consumer service.

41. The analysis of the activities covered under Technology infrastructure are as follows:

a) Build & Strengthen End user IT Infrastructure:

The IT infrastructure includes Laptops and desktops with MS Licence & UPS, Web content filtering solution, Anti-Virus, HDD upgradation, Smart Monitor, Other software (AutoCAD, Adobe Acrobat, etc.). Considering the need of such infrastructure to enhance performance, effectiveness and to provide better service to consumer, the Commission approves the proposed cost of Rs 4.03 Cr for this activity.

b) Strengthen Network Connectivity across TPSODL:

TPSODL has proposed IP MPLS/VSAT connectivity for 45 number of PSS which includes 50 kms of fibre optic cable for connectivity. Accordingly, the Commission approves the following under this activity:

| Sr No | Description of Project | Original Capex Proposed (Rs Cr) | Revised CAPEX as per Board Approval (Rs Cr) | Commission's Approval (Rs Cr) |
|-------|------------------------|---------------------------------|---|-------------------------------|
| 1     | SCADA PSS Network      | 0.81                            | 0.81  | 0.81                          |
| 2     | WAN Ring               | 2.74                            | 2.74  | 2.74                          |
| 3     | Locational Network     | 0.99                            | 0.99  | 0.99                          |
|       | <b>Total Cost</b>      | <b>4.54</b>                     | <b>4.54</b>                                 | <b>4.54</b>                   |

c) Disaster Recovery Center – Hardware and Software:

TPSODL has proposed to set up a Disaster Recovery (DR) Center for Data Centre (DC) at Sambalpur, Odisha which will ensure business continuity in the aftermath of any breakdown of the DC owing to a natural calamity or other unforeseeable disaster. The proposed hardwares and softwares (server, SAP S4, SAN storage, MPLS firewall etc.) are required for computation, storage, networking and cyber security compliances for setting up the DR center and therefore the Commission approves the proposed investment of Rs 19.58 Cr under this activity.

d) Augmentation of Data Center – additional Hardware and Software:

TPSODL has proposed for augmentation of TPSODL Data Center (DC) infrastructure (both hardware and software) in order to cater to incremental growth expected in GIS, AMI and ADMS implementation. The Commission approves the following proposal as augmentation of DC will help in implementation of GIS & smart metering etc.

| <b>Sr No</b> | <b>Description of Project</b>   | <b>Original Capex Proposed (Rs Cr)</b> | <b>Revised CAPEX as per Board Approval (Rs Cr)</b> | <b>Commission's Approval (Rs Cr)</b> |
|--------------|---|--|--|--------------------------------------|
| <b>1</b>     | DC Hardware (includes SAP S4, Oracle additional licence, SAN Storage, Windows OS, Virtualization, Linux, Antivirus) | 9.21                                   | 9.21   | 9.21                                 |
| <b>2</b>     | Augmentation of Cyber Security measures (includes DDOS, Web application firewall)                                   | 3.91                                   | 3.91   | 3.91                                 |
|              | <b>Total Cost</b>   | <b>13.12</b>                           | <b>13.12</b>                                       | <b>13.12</b>                         |

42. Considering the significant progress and efforts made by TPSODL during the previous years and the importance of Technology & IT Infrastructure, the Commission allows CAPEX proposal of Rs. 41.26 Cr as proposed by TPSODL under Technology Infrastructure for the FY 2023-24.

**F. Civil Infrastructure and Administration**

43. The Commission has examined the submission of TPSODL under Civil Infrastructure & Administration and is of the view that CAPEX proposal under this head is essential to provide conducive work environment for employees and to accommodate more repair of DTRs leading to faster replacement of failed DTRs etc.

44. It is observed that the progress of work (as per submission of TPSODL) shows that actual expenditure was Rs.15.26 cr. (against the approved CAPEX of Rs.19.04 Cr.), which is about 80% of the approved CAPEX for the FY 2022-23.
45. Considering the requirement of security surveillance system, restructuring refurbishment of stores and offices, establishment of new DTR workshops for timely repairing of DTRs and hostel building for trainees, the Commission approves the proposed investment of Rs.35.08 Cr. under this head which will bring long term benefit.
46. TPSODL in its DPR proposal has also requested for approval of Rs. 5.00 Cr to meet the differential cost paid for extending supply to the single-phase consumers (with <5 kW connected load). Considering that the differential cost is borne by the DISCOM for extending service line to consumers, the Commission approves Rs 5.00 Cr under this head.
47. It is observed that about 1/3rd of the capex proposal is related to IT infrastructure, SCADA & automation etc. Considering the present condition of Distribution infrastructure, focus should be on strengthening of existing infrastructure and expansion of distribution network to meet the project load growth, addressing the issues relating to reduction in losses, low voltage, overloading, smart metering, earthing etc. Priority should be given to works related to above issues. In view of the necessity of development of distribution infrastructure, reduction in AT&C loss, addressing safety related issues and improve reliability of power supply and better service to consumers etc., the Commission approves the following capital investment proposal of TPSODL for the FY 2023-24, which is summarized in the Table below:

**Summary of the Capex proposed by TPSODL & approved by the Commission for the FY 2023-24**

| Sl. No | Capex Head         | Activity                                     | Original Proposal (Rs. Cr) | Revised Proposal as per Board Approval (Rs. Cr) | Approval by the Commission (Rs Cr) |
|--------|--------------------|--|----------------------------|---|------------------------------------|
| 1      | Statutory & Safety | Safety & Electrical Testing Equipment        | 8.50                       | 7.13  | 7.13                               |
|        |                    | Network refurbishment for Safety enhancement | 26.45                      | 19.00   | 19.00                              |
|        |                    | <b>Sub Total</b>                             | <b>34.95</b>               | <b>26.14</b>                                    | <b>26.13</b>                       |
| 2      | Loss Reduction     | Feeder Meter for Energy Audit                | 39.71                      | 39.71   | 39.71                              |
|        |                    | LT Bare to ABC Conversion                    | 18.98                      | 6.26  | 6.26                               |
|        |                    | GIS Implementation                           | 38.32                      | 38.32   | 38.32                              |
|        |                    | <b>Sub Total</b>                             | <b>97.01</b>               | <b>84.29</b>                                    | <b>84.29</b>                       |



| Sl. No | Capex Head                       | Activity   | Original Proposal (Rs. Cr) | Revised Proposal as per Board Approval (Rs. Cr) | Approval by the Commission (Rs Cr) |
|--------|----------------------------------|--|----------------------------|---|------------------------------------|
| 3      | Network Reliability              | Network and Equipment Assessment Study   | 4.00                       | 4.00  | 4.00                               |
|        |                                  | Refurbishment of 33/11kV Primary Substations (Station Transformer )  | 1.96                       | 0.65  | 0.65                               |
|        |                                  | Mitigation of Single PTR (N-1 arrangement) & Replacement of Old PTR  | 17.85                      | 16.18   | 16.18                              |
|        |                                  | PSS refurbishment for SCADA implementation in Conventional Non ODSSP PSS   | 81.39                      | 61.95   | 61.95                              |
|        |                                  | Upgradation of 33 kV & 11 kV Line  | 12.87                      | 3.17  | 3.17                               |
|        |                                  | 33 & 11 kV New Lines for reliable power supply   | 27.32                      | 6.32  | 6.32                               |
|        |                                  | Life enhancement of 33 kV & 11 kV Network  | 31.33                      | 7.47  | 7.47                               |
|        |                                  | DSS Refurbishment (Replacement of damaged AB Switch, HG Fuse, LA, Earthing, Plinth) & Installation of LV protection at DSS | 28.08                      | 17.36   | 17.36                              |
|        |                                  | Capacitor Bank and Voltage regulator for Low voltage mitigation)   | 7.39                       | 7.44  | 7.44                               |
|        |                                  | <b>Sub-Total</b>   | <b>212.20</b>              | <b>124.54</b>                                   | <b>124.54</b>                      |
| 4      | Load Growth                      | Augmentation / addition of Power and Distribution Transformer  | 20.61                      | 14.70   | 14.70                              |
|        |                                  | Augmentation and addition of LT ABC line   | 29.27                      | 7.33  | 7.33                               |
|        |                                  | <b>Sub Total</b>   | <b>49.88</b>               | <b>22.03</b>                                    | <b>22.03</b>                       |
| 5      | Infrastructure -Technology       | Build & Strengthen End user IT Infrastructure  | 4.03                       | 4.03  | 4.03                               |
|        |                                  | Strengthen Network Connectivity across TPSODL  | 4.54                       | 4.54  | 4.54                               |
|        |                                  | Disaster Recovery Centre - Hardware and Software   | 24.89                      | 19.58   | 19.58                              |
|        |                                  | Augmentation of Data Centre - additional Hardware and Software   | 13.12                      | 13.11   | 13.11                              |
|        |                                  | <b>Sub Total</b>   | <b>46.58</b>               | <b>41.26</b>                                    | <b>41.26</b>                       |
| 6      | Infrastructure - Civil and Admin | Security Surveillance System and Employee Welfare  | 3.37                       | 3.37  | 3.37                               |

| Sl. No | Capex Head | Activity   | Original Proposal (Rs. Cr) | Revised Proposal as per Board Approval (Rs. Cr) | Approval by the Commission (Rs Cr) |
|--------|------------|--|----------------------------|---|------------------------------------|
|        |            | Restructuring / Refurbishment of Infrastructures at Stores and Offices | 15.87                      | 16.00   | 16.00                              |
|        |            | Development of New DTR Work Shop                                       | 3.71                       | 3.71  | 3.71                               |
|        |            | Development of Hostel building for Trainees                            | 12                         | 12  | 12                                 |
|        |            | <b>Sub Total</b>   | <b>34.95</b>               | <b>35.08</b>                                    | <b>35.08</b>                       |
|        |            | <b>Total (1+2+3+4+5+6)</b>   | <b>475.56</b>              | <b>333.34</b>                                   | <b>333.33</b>                      |
| 7      |            | Differential CAPEX to recover cost of new connection                   | 5.00                       | 5.00  | 5.00                               |
|        |            | <b>TOTAL</b>   | <b>480.56</b>              | <b>338.34</b>                                   | <b>338.33</b>                      |

48. The summary of year-wise and cumulative approval of Capex by the Commission against vesting order is as under:

| Financial Year                   | Minimum Capex required as per Vesting Order (Rs Cr) | Capex Approved by the Commission (Rs Cr) |
|----------------------------------|---|--|
| FY 2021-22                       | 227.00  | 184.65                                   |
| FY 2022-23                       | 316.00  | 294.82                                   |
| FY 2023-24                       | 260.00  | 338.33                                   |
| Cumulative Capex till FY 2023-24 | 783.00  | 817.80                                   |

49. The approved cost shall be passed in the ARR as per the norm subject to rational utilization by the petitioner and prudence check through audit.
50. In addition to the observations stated above, the Commission directs TPSODL to
- Prioritize the completion of important works like strengthening/expansion of distribution infrastructure, measures for loss reduction, metering, addressing overloading & low voltage issue etc. over the refurbishment of PSS (in non-ODSSP) for implementation of SCADA & work related to DR & DC etc.
  - Submit the Capex proposal along with the approval of Board of Director for FY 2024-25 onwards for consideration by the Commission.
  - Submit the Capital Investment Plan strictly adhering to the provisions of Wheeling & Retail Supply Tariff Regulations, Vesting Orders and the License

Conditions prioritizing the operation area of TPSODL (indicating the name of Division & activities undertaken) for proposed investment.

- (iv) Submit quarterly progress report for the works along with the details of materials utilised vis-à-vis various activities shown in the DPR.
- (v) Formulate implementation plan for the approved Capital Investment and take steps for execution accordingly to avoid cost and time overrun.
- (vi) Procure the materials/award the contracts only through transparent competitive bidding process. The requirement of materials shall be prepared based on standardisation of distribution elements. The ratings of equipment / material including DTRs & PTRs need to be standardized across the Discoms and standard specifications need to be adopted across the Discoms.
- (vii) Adopt latest technology for addition/augmentation of the existing infrastructure.
- (viii) Ensure that there is no duplication of work covered under the CAPEX approved for 2023-24 and the assets created/ to be created through Government Schemes/support.
- (ix) Planned new 33/11 kV substations shall have (N-1) contingency provision for incomer & Power Transformers (PTRs), double bus switching scheme/main & transfer bus scheme with Bus coupler and adequate space should be available in PSS for future expansion to avoid additional substations in the nearby areas.
- (x) TPSODL should have regular interaction with the OPTCL to ensure that the requirement of additional Grid Sub-stations (220/33 kV or 132/33 kV or 220/132/33 kV) are planned as per need of TPSODL which will help in resolving low voltage issues and at the same time the available 33 kV outlets from existing Grid Sub-stations of OPTCL should be utilised by TPSODL for their distribution system.
- (xi) Provide cost benefit analysis and quantification of benefits in terms of percentage of loss reduction, metering & billing, asset mapping, reduction in low voltage areas, reduction in tripping of 33 kV & 11 kV feeders, reduction in failure of equipment/material (PTRs, DTRs, CBs, SAs, etc.), and improvement in safety by reduction in fatal & non-fatal accidents of human being & animals etc. in different divisions of TPSODL's operating area due to addition of distribution infrastructure covered under the capex proposal for the FY 2023-24.

- (xii) Provide the financial plan for funding of capex proposal along with rate of interest for the FY 2023-24
- (xiii) The details of investment in development/augmentation of distribution infrastructure in various divisions of the TPSODL.
- (xiv) Submit details of compliances of the direction given in the Capex Orders of previous years.
- (xv) The system study report relating to installation capacitor banks.
- (xvi) TPSODL need to carry out load flow study of the distribution network for a longer time frame (at least 5 year) as directed during the approval of capex for the FY 2022-23.
- (xvii) Submit the status (on the date of taking over and as on 31.03.2023) of existing distribution system for each division indicating the achievement (quantification) in respect of following areas by September 2023:
  - Reduction in feeder / line / section length at 33kV & 11kV level;
  - Reduction in overloading of 33kV & 11kV lines, PTRS, DTRs;
  - Reduction in low voltage pockets;
  - Repairing of boundary walls for PSSs and fencing of DSSs;
  - (N-1) contingency for PTRs and incomer at 33kV level in existing PSS;
  - Smart metering of 33kV & 11kV feeders, PTRs, DTRs, Govt & non-Govt. establishments & 3 phase consumers etc;
  - Provision of protection for 33kV & 11kV overhead lines & UG cable, PTRs & DTRs (primary & secondary side);
  - Improvement in earthing in PSS & DSS;
  - Length (in ckt.km.) of overhead line converted and proposed to be converted to ABC in future.

51. Accordingly, the case is disposed of.

**Sd/-**  
**(S. K. Ray Mohapatra)**  
**Member**

**Sd/-**  
**(G. Mohapatra)**  
**Member**

**Sd/-**  
**(S. C. Mahapatra)**  
**Chairperson**