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

Present: Shri G. Mohapatra, Officiating Chairperson
Shri S. K. Ray Mohapatra, Member

Case No. 14/2022

M/s. TPCODL …… Petitioner
Vs.
DoE, GoO & Others …..... Respondents

In the matter of: **Application for approval of CAPEX Plan for the FY 2022-23 in compliance to the directions of the Commission vide para 42 of the Vesting Order dt 26.05.2020 passed in Case No. 11 of 2020.**

For Petitioner: Shri Shenbagam Manthiram, CEO, TPCODL,
Shri Puneet Munjal, Chief Regulatory & Govt. Affairs, TPCODL.

For Respondents: Ms. Sonali Patnaik, ALO, DoE, GoO, Shri Lalit Mishra, DGM (Fin.), GRIDCO, Shri B. K. Das, GM (RT&C), OPTCL and Shri R. P. Mahapatra.

ORDER

Date of Hearing: 10.05.2022 **Date of Order: 19.07.2022**

The TP Central Odisha Distribution Limited (TPCODL), the Petitioner has submitted an application for approval of Capital Expenditure to the tune of Rs.480.76 Cr. for FY 2022-23 to carry out various system improvement & safety activities in its area of operation. This application has been filed pursuant to the direction of the Commission at para 42 in the vesting order in Case No.11/2020.

2. TPCODL's licensed area is spread over 29,354 sq. km and serves a registered consumer base of around 28 lakhs. TPCODL procures power from GRIDCO through Odisha Power Transmission Corporation Limited (OPTCL)'s 220/132/33 kV grid sub-stations at sub transmission voltage level of 33 kV and then distributes the power at 33 kV/11 kV/440 volt/230 volt depending on the demands of the consumers. A snapshot of infrastructure of TPCODL has been provided in the table as follows:

Sl. No.	Particulars	Unit	Details (As on 31-Sep-21)
1	Area	Sq. km	29,354
2	Consumers	No.	27,92,773
3	Circles	No.	5
4	Divisions	No.	20
5	Subdivisions	No.	65

Sl. No.	Particulars	Unit	Details (As on 31-Sep-21)
6	Total No of PSS	No.	327
7	Total No's of 33/11 kV PTR	No.	710
8	PTR Installed Capacity	MVA	4,206
9	Total No's of 11kV feeders	No.	1,140
10	Total No's of Sections in network	No.	1,77,372
11	Total Length of 11kV Feeders	km	29,835
12	Length of OH & UG Cables	km	421
13	Length of OH & UG Conductors	km	29,414
14	Total No's of 11/0.433 kV DTR	No.	73,869
15	Installed Capacity of 11/0.433 kV DTR	MVA	5,479

3. TPCODL in line with the Vesting Order has to seek the approval of the Capital Expenditure Plan in line with the regulations. The extracts from the Vesting Order are as follows:

"42. Capital investment plan

(b) In its Bid submitted in response to the RFP, TPCL committed capital expenditure of Rs. 1,541 Crs (Indian Rupee One thousand five hundred and forty-one Cr only) for period FY 2021 to FY 2025 as follows:

Table 1: TPCL Capital Expenditure Commitment

(Values in Rs. Cr)

FY 2020-21	***FY 2021-22***	***FY 2022-23***	***FY 2023-24***	***FY 2024-25***	***Total***
201	*393*	*310*	*338*	*299*	*1541*

(c) To allow flexibility in the capital expenditure planning, the Commission stipulates that, in the capital expenditure plan to be submitted by TPCODL as per the license conditions, the capital expenditure commitment for each year of the period FY 2021 to FY 2025 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 TPCODL for the period FY 2021 to FY 2025 must be as provided in the table below:

Table 2: TPCL Cumulative Capital Expenditure for 5 years

(Values in Rs. Cr)

Up to 31-Mar-2021	***Up to 31-Mar-2022***	***Up to 31-Mar-2023***	***Up to 31-Mar-2024***	***Up to 31-Mar-2025***
201	*594*	*904*	*1,242*	*1,541*

(e) TPCODL would be required to seek the Commission's approval on the detailed capital expenditure plan in line with the regulations. TPCODL 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."

4. Further, in line with the Odisha Electricity Regulatory Commission (Terms and Conditions for Determination of Wheeling Tariff and Retail Supply Tariff) Regulations, 2014 the licensee is required to take approval from the Commission for undertaking Capex in the licensed area. The relevant extract of the OERC Tariff Regulations, 2014 is provided as follows:

"Capital Investment

7.33 Capital investment shall cover spending on capital equipment that augments fixed assets and capitalisation of corresponding interest expenses determined as per the applicable accounting policies and guidelines. Capital investments may address a variety of needs such as meeting load growth, refurbishment and replacement of equipment, reduction of losses, improvement of voltage profile, improvement of quality of supply and system reliability, metering, communication, computerisation etc.

7.34 The licensee shall propose in its filing a detailed capital investment plan. The plan must separately show ongoing projects that will spill into the year under review and new projects that will commence but may be completed within or beyond the tariff period. For the new projects, the filing must provide the justification as stipulated under relevant investment guidelines of the Commission.

7.35 In addition to the approved capital investment plan, the licensee can seek provision for additional capital expenditure anytime during the tariff year to meet natural calamities involving substantial investments. The Commission shall examine and if satisfied shall approve the corresponding costs for inclusion in revenue requirement in the next period.

7.38 The Commission shall review the licensees capital investment plan for approval and for this purpose may require the licensee to provide relevant technical and commercial details including corresponding transmission system feasibility. The costs corresponding to the approved capital investment plan of a licensee for a given year will normally be considered for its revenue requirement

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7.41 Licensee could retain financial benefit arising out of savings in financing costs due to faster implementation at lower cost because of better project management or procurement practices. Financial loss on account of time and cost overrun is to be an account of the licensees only."

5. As per the Licence Condition 11 and 32, 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. Licence Condition at 11 and 32 stipulate 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. 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.

11.10 For the purposes of this Condition 11, the term "Major Investment" means any planned investment in or acquisition of Distribution facilities, the cost of which, when aggregated with all other investments or acquisitions (if any) forming part of the same overall transaction, equals or exceeds an amount contained in the Specific Conditions applicable to the Licensee or otherwise decided by the

Commission from time to time by a general or special order (Refer Condition no. 32.1).

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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 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."

6. Accordingly, in line with the above, TPCODL has submitted the current petition for approval of Capital Expenditure Plan for FY 2022-23.

7. In July 2020, the Petitioner had submitted a petition for approval of capital expenditure to the tune of Rs. 344.44 Cr. for the FY 2020-21 to carry out various activities in its area of operation. The Commission vide its order dt.08.09.2020 in Case No. 32 of 2020 had disposed off the petition approving a Capex of Rs. 280.63 Cr. for FY 2020-21.

8. Subsequently, the Petitioner had submitted a petition for approval of capital expenditure to the tune of Rs. 607.46 Cr for the FY 2021-22 to carry out various activities in its area of operation. The Commission, vide its order dt 18.09.2021 in Case No. 05 of 2021, had disposed off the petition approving a Capex of Rs. 233.81 Cr. for FY 2021-22. In a separate order, the Commission, vide its order dt 04.09.2021 in Case No. 32 of 2020, had provided in-principle approval for implementation of Geographic Information System (GIS) for FY 2020-21 to FY 2022-23 amounting to Rs. 52.79 Cr. and Smart Metering Implementation from FY 2020-21 to FY 2023-24 amounting to Rs. 71.37 Cr. and had allowed expenditure of Rs. 17.32 Cr and Rs. 47.60 Cr for FY 2021-22 under respective schemes. In totality, the Commission approved a Capex of Rs. 298.72 Cr. for FY 2021-22.

9. TPCODL has submitted that it receives electrical power at 33 kV level from 51 numbers of 220/33 kV or 132/33 kV transmission substation located within and in the vicinity of TPCODL's area of operation. TPCODL distributes power at 33 kV/ 11 kV/ 440V/ 230V depending on the demand of the consumers.

10. One of the major challenges faced by TPCODL is that the present network condition at some locations is not compliant with the statutory safety guidelines and poses threat to safety of employees, public at large and animals. The 33 kV overhead lines are long and operating in radial mode with undersized & worn out bare conductor having very long spans; damaged, bent, tilted poles; poor joints; compromised safety clearances and without guard wires for MV overhead feeders/line at strategic locations. Therefore, the infrastructure needs urgent strengthening to address the operational, commercial, and safety related challenges to improve the reliability of supply, customer services, and safety of staff, general public and animals.

11. TPCODL has further submitted that it has identified a number of challenges related to Safety, 33 kV/11 kV/0.415 kV network, metering infrastructure, Customer Services, and technology usage. These challenges are planned to be addressed through a systematic investment plan, a part of which was proposed by TPCODL for FY 2020-21 and FY 2021-22.The proposed Capex plan represents a justified and efficient level of total capital investment to meet the service obligation, ensuring safe and reliable network, maintaining high level of service standards and to reflect upon the commitment of benchmark customer services through process improvement, capacity building and technology adoption.

12. The present Capex proposal was submitted by TPCODL on 08.03.2022. The public notice was issued on 21.04.2022 inviting suggestions/objections to the Capex Plan for FY 2022-23 of the DISCOMs which were to be filed on or before 04.05.2022. The public hearing in the matter was held on 10.05.2022. The Commission during hearing heard the Applicants who had filed their written views and participated in the hearing. There were three submissions received from the stakeholders namely OPTCL, GRIDCO and Shri R. P. Mahapatra.

13. As part of the hearing process, the Commission had sought clarifications and justification from TPCODL on the following important aspects relating to the Capex plan for FY 2022-23:

- System study report for the network and the time frame of completion
- Schemes proposed on the basis of load growth
- Augmentation of lines mentioning the proposed lines
- Focus on standardization and status of the actual works undertaken in this regard
- Design aspects for creation of a cyclone resilient power system

14. Several rounds of discussion were held with the concerned Officials of TPCODL in which they have submitted clarifications with respect to the queries raised by the Commission.

15. TPCODL has submitted that for meeting the growing load, TPCODL has proposed strengthening of 33kV infrastructure to avoid overloading and develop the system with (N-1) redundancy/contingency to provide reliable power supply. Also, TPCODL has submitted that a detailed load flow studies have been conducted and they have developed a network diagram of the existing 33/11 kV system. The load flow study would enable planning (both short and long-term) of the distribution infrastructure for meeting growth in demand and also for reducing AT&C loss. It would also help in planning EV Charging facility and Distributed rooftop Solar.

16. Based on the study, TPCODL has identified the following key issues/ concerns pertaining to the 33 kV infrastructure:

- 15 Nos. of 33 kV feeders have been identified which are overloaded. Capex has been proposed to mitigate such concerns in the Capex plan;
- 12 Nos. of 33/11 kV PTRs have been identified without (N-1) redundancy/ contingency and efforts are being made to mitigate the issue; and
- >30% of the 33 kV PSS are facing low voltage issues.

17. Also, following issues/ concerns were identified in the 11 kV infrastructure based on the study:

- Long 11 kV radial feeders (>20km): Approx. 45% of the total 1140 feeders are more than 20 km.
- Mixed type conductors: The total stretch of the 11kV feeders (trunk and branch line) includes different sizes of conductors and cables. Approx. 83% of the circuit lengths are 34 sq. mm and 55 sq. mm overhead conductors.
- Low rating Distribution transformers: Out of total installed 11/0.433 kV DT, about51% of DT are less than 25 kVA.
- Low voltage in 11kV feeder/line: The voltage at 33/11kV PSS is below permissible limit, i.e. -9% due to long 33kV feeders/lines.
- Overloaded feeders: Majority of 11kV feeders are radial with mixed conductor & lower conductor size, which results in overloading.

- Poor workmanship: The infrastructure is in dilapidated condition. Joints have been done using winding wire, adequate safety clearances are not maintained and standard norms & installation practices compromised.

18. In order to mitigate low voltage problem, TPCODL has also proposed replacement of 105 km. of conductor of 33 kV overhead lines interconnecting 10 PSS in Bhubaneswar-2, Cuttack and Dhenkanal circle.

19. TPCODL has further submitted that the equipment selection for all new projects have been standardized to maintain reliable power supply in licensee area. All the materials being procured for new projects are of standard rating.

20. TPCODL has submitted that (N-1) contingency is being planned for 33 kV system (incoming lines & PT). In its submissions, the Petitioner has mentioned that 67 numbers of RMUs have already been installed and augmented. Further, new lines of about 20 km are being proposed in order to provide (N-1) contingency of the existing feeders/lines.

21. There is need for replacement of conductors as conductors of different sizes have been used in different phases/in entire section of line and thereby limiting power flow to the lowest size of the conductor available in the circuit. This was also established/ verified during the field visits as discussed in respective sections of this report.

22. For creation of a cyclone resilient Distribution infrastructure, TPCODL has submitted that the entire area of operation has been divided into three zones depending on the distance from the coastal area. Zone wise proposed work is given below:

- Zone-1: Area within 60km from coastal line:
    - 33kV network has been proposed with H-Pole with 40mtr span length.
    - 33kV underground network preferably in case the network is within 20km from coastal line.
- Zone-2: Area beyond 60km and upto 100km from coastal line:
    - 33kV network has been proposed with WPB Pole with 40mtr span length.
- Zone-3: Area beyond 100km from coastal line:
    - 33kV network has been proposed with WPB Pole with 50mtr span length.

23. During the presentation, the Petitioner also highlighted that it is undertaking several steps for reliable operations and has included AB cabling, underground cabling,

transformer augmentation for limiting the loading to 60-70%, installation of RMU systems, capacitor installation, etc. under the Capex proposal.

24. Similar to the methodology adopted in capital expenditure plan for previous years, TPCODL has submitted Capital Expenditure for the FY 2022-23 under seven heads. TPCODL, in the proposed expenditure for the FY 2022-23, has covered the roadmap schemes wherein investments would be spread over more than one year. This includes two new multi-year schemes for implementation under the theme based proposals. The details of the Capex under various heads/ schemes/ activities are described as follows:

a) Statutory, Safety and Security:

As per TPCODL, DSM Regulations is likely to be implemented in the state of Odisha. In order to improve the accuracy of Load Forecasting, it is required that a System Based approach be adopted. Accordingly, TPCODL has proposed Capex for Load Forecasting Software which would provide clarity on day ahead demand/load forecasting. As a result, TPCODL would be able to adhere to its scheduled drawl and avoid any DSM charges. Also, long-term forecasting will be prepared taking into account seasonal, consumer type and geographical variations in compliance to the requirement.

TPCODL has proposed to implement Tata Safety & Health Management System (TSHMS) at TPCODL to prevent any work-related injuries & ill-health to the workers and provide a safe & healthy workplace to the employees. The implementation of TSHMS will lead to safety of all stakeholders – from employees to consumers.

TPCODL has also proposed Capex towards Construction of Training Institute for training of its employees and field staff which is of utmost importance. It enables employees to work safely and thus learn best practices.

TPCODL has proposed Capex for erecting intermediate poles between spans (wherever required) to ensure safety and reliable power supply to end consumers. TPCODL has proposed refurbishment of 33kV, 11kV and LV lines in a phased manner prioritizing critical areas such as schools, hospitals, markets and other key installations.

TPCODL has also proposed Capex for procurement of Testing Equipment and Test Lab development to ensure smooth operation of Meter Management Group

(MMG) and to establish a robust quality chain of meters and accessories within area of operations. Meter testing labs are planned to be developed in Cuttack with new test bench facility. TPCODL has also proposed to procure equipment like megger, Clamp-on meter, on-site testing kit, toolbox and JSA manuals for the testing lab. This facility will also be equipped for training on trouble shooting of AMR modems and Smart Meters NIC.

To improve the safety of people & stray animals as well as to improve the safety of the equipment's, TPCODL has further proposed Capex towards installation/ construction of Plinth for transformers and Boundary wall/Fencing across Primary and Distribution sub-stations.

For precautionary measures, it is important for every storage area to have fire extinguishing arrangement. Keeping this in mind, TPCODL has proposed Capex for Water hydrant system & Intrusion Detection System at three storage facilities – Bhubaneswar, Choudwar and Janla so that for any emergency situations of fire break out, fire protection system will be activated.

TPCODL has further proposed Capex for the purchase of standardized testing kits/ equipment, calibrate those kits, distribute kits for each of the EMR offices and provide training wherever required. Advanced testing kits will be provided on decentralized locations for better and quick response in the case of exigency. TPCODL has submitted that sufficient number of testing equipment will help TPCODL to monitor the healthiness of power equipment across the operating area of DISCOM. It will also help in taking preventive measures in advance in case any abnormality in observed during testing.

The petitioner has proposed Capex of Rs. 20.19 Cr. under the Statutory, Safety and Security head.

b) Loss Reduction:

Under this head, TPCODL has proposed Capex for replacement of LT bare conductor with LT AB Cable. For this, about 350 km of LT bare conductor is proposed to be converted to AB Cable. Frequent tripping would be avoided by use of aerial bunched insulated cables instead of bare conductors and theft of electricity through hooking will be reduced leading to lower AT&C losses.

To reduce AT&C loss level and make the electrical system safe for consumers TPCODL has proposed Capex for replacement of defective cables with joints/damaged /defective near the consumer's meter which have become a source of theft and safety hazards.

TPCODL has proposed Capex to install Smart meters on DTs, compact type meter box design has been envisaged for DT with rating 100 kVA and 250 kVA. TPCODL has also proposed for procurement of Smart HT meters and metering equipment, for installation at feeders metering points for facilitating Energy Audit.

TPCODL has proposed Capex for Smart Meter Implementation to develop DC and DR of Smart Metering project back-end IT system i.e., HES, MDMS and other IT communication hardware equipment and software required to run the hardware along with project management software.

In addition to above, TPCODL has also proposed Capex for purchase of SAP AMI license for AMI Deployment, which is a mandatory component of AMI system, without which many functionalities of AMI cannot be integrated thereby making it a single integrated system with billing.

The petitioner has proposed Capex of Rs. 74.12 Cr. against the various works under the Loss Reduction head.

c) Network Reliability:

Under this head, TPCODL has proposed to continue two major multi-year schemes viz. SCADA and Grid Substation Automation System (GSAS). Further, in order to improve the network reliability additional works towards augmentation of overloaded DTs, replacement of 33/ 11 kV sick equipment, 33/ 11 kV feeder refurbishment, and FLC & Switchgear workshop are planned to be undertaken.

In the DPR, TPCODL has submitted a Capex detailing its proposal for SCADA. As per the DPR, TPCODL has deployed GSAS in its working region and till now integrated 52 nos. of RAPDRP stations and 100 nos. of ODSSP stations from a centralized location in Bhubaneswar and unmanned 35 stations in overall. For FY 2022-23, TPCODL has planned integration of 67 conventional old stations spread across TPCODL area covering BBSR-I, BBSR-II and

Cuttack circles. Also, a further amount has been proposed by TPCODL for strengthening of Sub-station Automation System Infrastructure, deployment of new SCADA System to setup Main Control Centre (MCC) & Back-up Control Centre (BCC).

TPCODL has further proposed Capex for GSAS Automation- STS (PSS equipment replacement) which will cover three activities namely GSAS implementation in the network by replacement of age-old equipment, Earthing System for Substations, and FDS installation. This will ensure TPCODL in providing reliable power supply. The pre-site survey has been conducted for Phase-2 of the scheme for the GSAS enablement of 70 Nos. Primary Substations. As per the survey report, RTU along with the Communicable Digital IEDs are considered for Phase-2 of the scheme (FY 2022-23). For this purpose not only communicable relay but also old/defective/ prone to failure equipment are to be replaced for smooth functioning of GSAS. The proposed Capex further includes construction of boundary walls of the station.

For 33kV System Improvement, TPCODL has proposed providing new 33kV line to optimize the feeder/line loadings, achieving (N-1) contingency condition, avoiding feeder overloading, etc. This would strengthen the 33kV network and enable better service to consumers. From this investment, TPCODL envisages reliable power supply to the consumers, improved circuit capacity by replacing the weaker section with appropriately sized conductors, and further by putting interconnectors, (N-1)contingency of the feeders will be ensured and TPCODL would be able to transfer to alternate source in case of any exigency.

In order to provide reliable and quality power supply to the consumers, TPCODL has conducted survey of all 33kV feeders to identify the weaker sections of the network which require immediate attention. Based on the survey reports, TPCODL observed that in some of the feeders, conductor sizes is not uniform in entire section of line resulting in compromising the circuit capacity which is limited to the lowest size of the conductor available in the circuit. Reason behind such network is that post FANI, field teams restored the supply with whatever conductor sizes were made available. However, looking at the existing load demand and factoring the projected load growth, it is required to be rectified so as to avoid overloading of the network. This will help in

optimizing the feeder loading and will support in shifting the load in case of any source failure.

Power distribution network & its equipment health is a critical factor for ensuring reliable & quality power supply to the end consumers. Therefore, TPCODL has proposed 33kV and 11kV Sick Equipment replacement schemes. TPCODL intends to implement multiple activities under this to improve the reliability of power supply. This replacement will help in utilization of resources to an optimum level, managing the load in case of any exigency and mitigate the issues of overloading etc.

TPCODL has proposed works towards refurbishment of 33kV Network Infrastructure that will cover Conductor augmentation, new 11kV line to optimize the feeder loadings, achieving N-1 contingency condition, and feeder overloading. In TPCODL, most of the 11kV feeders are long and radial in nature. During contingency, it is not possible for the field teams to transfer the load to the healthy sections and thus all consumers connected to the affected feeders remain out of service till the field team locates and repairs the fault. TPCODL has proposed to convert the radial network into ring and mitigate the issue of single connectivity. Further, this interconnection would help in managing the load in case of any exigency and mitigate the issue of overloading. Such works may result in lower interruption and good quality power hence lead to satisfaction of consumers.

To give flexibility to the field teams in 11kV feeder/line operation, TPCODL has proposed Capex for 11kV and LT System Protection. To strengthen & make existing 11kV network more reliable, TPCODL has suggested to install Auto-reclosers, Sectionalizers, Fault Passage Indicators, RMU and MCCBs.

TPCODL has proposed Capex for 33kV feeder refurbishment for reliable and quality power supply to consumers. Based on TPCODL survey reports, it is observed that in some of the feeders/ line, conductor sizes are different in entire section of the line resulting in compromising the circuit capacity which is limited to the lowest size of the conductor available in the circuit. Looking at the existing load demand and factoring the projected load growth, it is required to be rectified so as to avoid overloading of the network.

Fault Locating Cell of TPCODL has been carrying out routine activities of fault location without supply of adequate equipment. For that reason, TPCODL has proposed a Capex for FLC (Fault Locating Cell) & Switchgear Workshop. These testing equipments will enhance the in-house capabilities of FLC team and reduce the total time required for fault restoration, thereby reducing cable down time and revival time. The outage duration will also reduce thereby enhancing consumer satisfaction.

To strengthen the earthing system in power distribution system, TPCODL has proposed Capex for Pipe Earthing. During site visits, it was observed that at most of the place's earthing is either not proper/in damaged condition or not available. This is because of the depletion of the earthing electrodes or connections and such situations may pose safety threat to the human beings or animals. Therefore, as a corrective measure, earthing is required to be done to ensure safety of man and material.

TPCODL has also proposed a Capex towards use of trolley mounted Distribution Transformers, to make the process of immediate power restoration at the time of natural calamities like storms and cyclones. This will reduce the restoration time, apart from lowering the requirement of man-hours. Mobile Distribution transformers rapidly restore electrical service. They are designed to withstand the road travel requirements and maximum stability and protection for safe movement over uneven pavement.

The Petitioner overall has proposed a Capex of Rs. 112.80 Cr. against the various works under the Network Reliability head.

d) Load Growth:

Under load growth, TPCODL has proposed Capex towards network augmentation. In order to meet the growing load, network infrastructure needs to be strengthened, and new energy meters needs to be installed to release new connections. Some of the connections can be released from the existing network and some may require augmentation/addition/extension before release of new connection. TPCODL has observed that while extending supply to the single-phase consumers i.e., less than 5 KW, the expenditure incurred by TPCODL is much higher than the amount paid by the consumer for extension of supply (Service Line charges). The amount proposed under this head also covers the

differential amount. Capex proposed shall ensure better availability of materials, faster process while providing new connections leading to more customer satisfaction.

To cater to the increasing load demand, PTR augmentation is required to avoid any overloading and for meeting (N-1) situations. Also, to ensure reliable power supply to consumers, PTRs have to be kept at optimum loading so as to avoid any mechanical stress on the transformers due to overloading. Keeping this in mind TPCODL has proposed Capex towards Power Transformer Addition/ Augmentation. TPCODL has undertaken the assessment of the loading of the power transformers and found that to meet the estimated load in the summer season of 2023, it is required to augment some of the power transformers in Bhubaneswar and Cuttack city area which may get overloaded considering the current peak demand and load growth for the next two years. To mitigate the same, TPCODL has planned works towards Power Transformer augmentation, New Transformer addition and shifting load from one transformer to other within the substation.

TPCODL has further proposed Capex for DT Augmentation to cater to the increasing load demand. Especially with the introduction of schemes such as 5T and others, DT augmentation is required to avoid overloading of transformer leading to transformer failure and power interruptions. Overloading of DTs not only hampers the power supply to the consumers but also may cause pre-mature failure of DTs due to operation on overload condition for long hours. Thus, to abide by the safe loading limits, augmentation of distribution transformers has been proposed by TPCODL for locations where loading is exceeding the safe limit.

Accordingly, in order to address the upcoming demand and enhance the existing infrastructure, the Petitioner has proposed Capex of Rs. 25 Cr. against the various works under the Load Growth head.

e) Infrastructure:

Under this head, TPCODL has proposed Capex for improving the facilities of PSCC Infrastructure. The focus areas would be 33kV remote operations (Central Power System Control Centre, CPSCC), 11kV remote operations, Area Power System Control (APSCC), Unmanning, Load Forecasting and Disaster

Management as Central Emergency Control Centre (CECC) to improve safety and achieve operational excellence as a part of organizational values and mission.

In a major technology push, TPCODL has submitted Capex for implementation of Technology Center for all the four Discoms of Odisha. This will help the Discoms to get a 360-Degree visibility of consumers and system information, Real-time status of activities and performance measurement, transparency in the transaction, improvement in reliability of power supply, reduction in maintenance time & enhanced equipment life, and ease of information access from remote location via secured connectivity.

TPCODL has proposed Capex for development of IT Infrastructure that will cover activities such as having a backup system of additional system, DIGI Gov E-Office solution, smart store warehouse management system, laptops, LAN equipment and LAN work at remote offices, and MS Products.

TPCODL has further proposed Capex for communication network to strengthen the current communication network.

In the DPR, TPCODL has proposed Capex for GIS under which the entire 33kV Network and 33/11kV PSS have been mapped. Apart from that the 11kV network and DTs of BBSR – I and Cuttack Circle are also mapped. For FY 2022-23, survey of 11 kV network, DT, LT network and connected consumer for Dhenkanal, BBSR II and Paradeep circles shall be carried out and will be migrated to the newly updated and integrated system. Moreover, satellite image for three circles shall be purchased for base map creation, and mobile application shall be deployed for data sustenance

TPCODL has further proposed Capex towards upgradation of Civil Infrastructure to improve the current conditions of Plinth of DT, provide infrastructure for closed door repair, enable maintenance of Transformer, facilitate/ augment transformer repairs, and to impart training to employees with bright guidance adhering to all safety parameters. As per TPCODL, the section offices are currently in dilapidated condition and refurbishment of the same is essential as maximum footfall is observed at these locations. Also, TPCODL has observed that all incoming and outgoing electrical equipment are stored haphazardly on uneven, muddy ground and in submerged conditions in

monsoons, which reduces their life expectancy. TPCODL has proposed to raise platform in stores for neat and segregated stacking of equipment. Currently, TPCODL is imparting training to employees from rented premises. Hence, TPCODL has proposed an urgent requirement to develop infrastructure for conducting training and seminars in order to eliminate the recurring expenditure.

TPCODL has plans to improve the current conditions of their store, repair workshop, seating arrangement and others. Against this, TPCODL has proposed a Capex under Transformer Repair Workshop. Presently, there is no infrastructure for closed door repair and maintenance of transformers in the area of operation. To facilitate /augment transformer repairs TPCODL has proposed to build in-house capability for repairing of transformers.

Accordingly, the Petitioner has proposed Capex of Rs. 78.65 Cr. against the various works under the Infrastructure head.

f) Others:

TPCODL has sought additional Capex of Rs. 20 Cr. towards Unplanned Capex which will cater to any kind of incidental expenditure that is not included in the planned Capex which may primarily include works such as replacement of burnt transformers, enhancement of feeders, replacement of sick and defective equipment etc.

g) Theme Based Proposals:

TPCODL in its proposal has proposed two theme-based Capex schemes namely Bhubaneswar Reliability Plan (BRP) and Scheme to rectify Low Voltage problem in urban areas.

Bhubaneswar Reliability Plan will ensure 24x7 reliable power supply to each consumer of BBSR city area. TPCODL has identified a number of challenges related to Safety, 33kV/11kV/0.415kV network, civil infrastructure and climate change. These challenges are planned to be addressed through a systematic investment plan by TPCODL to maintain 24x7 power supply in the BBSR City area. As per the Petitioner, the proposed Capex plan is in addition to the Capex works approved by the Commission for the FY 2021-22. The plan represents a justified and efficient level of total capital investment estimated by TPCODL to

meet the service obligation; improving safety, reliability of network, improve the level of service standards, etc.

To maintain 24x7 reliable power supply, TPCODL has felt the need to improve the existing facilities and infrastructure to provide better consumer experience and a modern, rich, and conducive work environment to the workforce for better performance. In line with this, installation of LT protection at DSS, replacement of defunct AB switches, installation of 11kV Breaker at O/G feeder from PSS (wherever required), provision of 11kV Bus coupler, PTR upgradation & interconnector between PSS or DSS to maintain ring are the various identified proposals which would be covered under this scheme. TPCODL has proposed to carry out the expenditure for network improvement in phased manner in next 4-5 years with an aim to address the key areas in first phase and other areas in subsequent phases.

Low Voltage Scheme for Urban Areas: To address the issue of low voltage in urban areas, TPCODL has further proposed Capex towards network strengthening. TPCODL has carried out the 33kV network study through load flow software to understand how power flows in and around the electrical network and what are the deficiencies which need to be attended to ensure reliable and quality power supply to the consumers. TPCODL observed that 117 numbers of Primary Substation (PSS) are operating at a voltage below the permissible voltage band of (-) 9% and hence require some mitigation solution to address the low voltage issues. The reasons identified for such voltage drop are as follows:

a) Improper conductor size being used in the feeders

b) Overloading of feeder and

c) PSS are commissioned at a long distance from OPTCL Grid substations

TPCODL submitted that it has evaluated various mitigation solutions and found that the voltage issues can be addressed by implementing different proposals like conductor augmentation, new feeder, NOP change, new grid substation, TAP change of the 33/11kV Power Transformers etc. On the basis of the evaluation, TPCODL observed that the proposal shall suffice the low voltage issues at 33kV level. Each type of proposal will help in mitigating the low voltage issues at PSS level.

Both Bhubaneswar Reliability Plan and resolution of Low Voltage problem in urban areas are multi-year schemes. Bhubaneswar Reliability Plan is expected to continue till FY 2024-25 with total outlay of Rs. 539.94 Cr and Plan for mitigation of Low Voltage problem in urban areas is expected to continue till FY 2023-24 with total outlay of Rs. 287.81 Cr.

However, the Petitioner has proposed a Capex of Rs. 150 Cr. for FY 2022-23 against the two schemes amounting to Rs 827.75 Cr under the Theme Based Proposal head.

25. The table below summarizes the overall Capex plan proposed by TPCODL for FY 2022-23:

Sl. No.	Particulars	Proposed Capex (Rs Cr)
A	**Statutory, Safety and Security**	
1	Load Forecasting Software as a part of compliance to DSM guidelines	0.15
2	Procurement of safety gadgets and equipment	5.05
3	Construction of Training Institute	1.50
4	Unsafe to Safe Location- Interposing Poles	5.00
5	Test Lab development at various MMG Divisions	0.49
6	Boundary wall/ FRP Fencing/ Construction of Plinth	3.49
7	Stores - Water hydrant system & Intrusion Detection System	2.00
8	Testing Instrument for STS	2.50
	Sub-Total	**20.19**
B	**Loss Reduction**	
1	Replacement of LT Bare Conductor with LT AB Cable	20.00
2	Defective cable replacement	11.00
3	Procurement for Mobile Phone & Bluetooth Printer	1.25
4	Cable for installation of DT Meter and Feeder Meter installation	8.32
5	Smart Meter implementation	23.55
6	SAP AMI license for AMI Deployment	10.00
	Sub-Total	**74.12**
C	**Reliability**	
1	GSAS: SCADA enablement of conventional substation with Electronic Earthing System	23.00
2	Strengthening of Sub-station Automation System Infrastructure, Deployment of new SCADA System to setup MCC & BCC	5.00
3	GSAS Automation- STS (PSS equipment replacement)	10.00
4	33kV Network Infrastructure	18.00
5	Sick Equipment Replacement (33kV & 11kV)	5.00

Sl. No.	Particulars	Proposed Capex (Rs Cr)
6	11kV Network Infrastructure	20.00
7	AR, FPI, RMU, MCCB, 160A, MCCB 500A	15.00
8	33kV Feeder refurbishment	7.00
9	FLC & Switchgear Workshop	7.00
10	Earthing	1.80
11	Mobile DT	1.00
	Sub-Total	**112.80**
D	**Load Growth**	
1	Network augmentation / addition to meet load growth	10.00
2	Power Transformer addition/augmentation	10.00
3	DT Augmentation	5.00
	Sub-Total	**25.00**
E	**Infrastructure**	
1	PSCC Infrastructure	0.06
2	Technology Center	15.40
3	IT Infrastructure	11.50
4	IT- Communication	2.70
5	GIS	33.00
6	Civil	13.49
7	Transformer Repair Workshop Equipment	1.00
8	Ready to Use Office Assets (Furniture & Fixture)	1.50
	Sub-Total	**78.65**
F	**Others**	
1	Unplanned Capex	20.00
	Sub-Total	**20.00**
G	**Theme Based Proposal**	
1	Bhubaneswar Reliability Plan	100.00
2	Low Voltage in Urban Areas	50.00
	Sub-Total	**150.00**
	Total	**480.76**

26. The following table summarizes the Capex approved by the Commission for FY 2021-22 vis-à-vis progress as on 31.03.2022.

Sl. No.	Particulars	Approved Capex (Rs Cr)	Actual Capex (Rs Cr)
A	**Statutory and Safety**		
1	Equipment enhancing Safe Work Environment	4.76	0.90
2	Installation / Construction of Plinth fencing or Boundary wall of DSS or GSS. Area development wherever substation	4.33	1.50
3	Development of Meter Testing Lab and its Accreditation	2.44	0.16
4	DSS refurbishment	6.06	0.88

Sl. No.	Particulars	Approved Capex (Rs Cr)	Actual Capex (Rs Cr)
	Sub-Total	**17.59**	**3.44**
B	**Loss Reduction**		
1	Old Electromechanical Meter and Defective Meters replacement	3.77	1.96
2	Smart Meter Implementation	47.60	-
3	Infrastructure for spot billing & spot collection	3.07	-
4	Equipment like Accu Check, CMRI, Digital Camera	0.80	0.39
5	LT O/H Bare to LT AB Cable conversion	12.12	9.92
	Sub-Total	**67.36**	**12.27**
C	**Reliability**		
1	SCADA implementation	21.64	-
2	GSAS Implementation	21.71	3.72
3	33kV and 11kV Sick Equipment Replacement	13.40	7.19
4	33kV System Improvement schemes - Feeders and Power Evacuation from OPTCL	25.97	25.92
5	33kV System Improvement schemes - Equipment like 33kV RMU, Isolators etc.	8.37	8.84
6	11kV System Improvement schemes - Feeders and Equipment like RMU, ACB, MCCB, AB Switches, Mobile DT, Earthing etc.	18.99	12.87
7	Distribution transformer augmentation	4.33	0.91
	Sub-Total	**114.42**	**59.45**
D	**Load Growth**		
1	Network Extension to release New Connection	17.32	6.65
2	Addition / Augmentation of Power Transformers	13.20	10.69
	Sub-Total	**30.52**	**17.35**
E	**Infrastructure**		
1	Infrastructure for Customer Care, Call Centre, Payment Centre and Section Offices	4.33	-
2	IT & Technology for process efficiency & enhanced productivity.	21.64	5.86
3	Implementation of GIS Roadmap	17.32	3.55
4	Augmentation of Communication Network in TPCODL Area	4.73	-
5	Transformer Repairing Workshop	1.73	-
6	Central Store development	4.33	1.75
7	Civil Upgradation	12.81	1.97
8	Ready to Use assets for Offices	1.95	0.25
	Sub-Total	**68.84**	**13.38**
	Total	**298.72**	**105.89**

27. As against the approved Capex of Rs. 298.72 Cr. for FY 2021-22, the Petitioner has submitted an actual Capex of Rs. 105.89 Cr. which is only ~35% of the approved Capex for FY 2021-22. It is observed that a significant quantum of Capex approved in the FY 2021-22 is yet to be taken up for implementation and is expected to spill over to the FY 2022-23. With regard to the slow pace of execution of works TPCODL has submitted that the time period available for implementation of Capex schemes was limited from the date of approval of the Capex plan by the Commission i.e. six months in FY 2021-22. TPCODL has sought approval of the Commission to carry forward the balance capital expenditure of the FY 2021-22 to the FY 2022-23.

28. The Commission also sought the Board approval from TPCODL in support of the Capex plan submitted for FY 2022-23. The petitioner has provided the Board approval for Capex proposal of Rs. 480.76 Cr.

29. The Commission also sought various queries across the major heads and sub heads of Capex proposal and TPCODL has submitted the following additional information:

a) General

i. The unit rates of majority of the equipment/material have been taken from approved Cost Data for FY 2018-19 for electrical equipments to be used in distribution system of Discoms issued by Department of energy, Government of Odisha. The rates for the items that are not available in Cost Data Book (CDB), the same are taken from TPCODL's last purchase price, Global Rate Contract and from Govt. schemes like ODSSP, SCRIPS etc. Further, overheads such as Contingency, Tools & Plants, Transportation, Erection Charges, others including supervision charges have been considered in accordance with the OERC (Conditions of Supply) Code, 2019. Additionally, GST has been considered over and above the total cost estimate.

ii. TPCODL clarified that schemes implemented by Govt. of Odisha are different from that proposed by TPCODL in the petition and there is no duplication of work in the proposed Capex.

iii. The scope of work covered in the Capex plan for FY 2022-23 is additional work over and above the Capex plan proposed in FY 2020-21 and FY 2021-22.

b) Safety, Statutory and Security

i. Installation/Construction of Boundary wall, fencing has been proposed at 359 locations within the sub-stations.

ii. Plinth fencing has been proposed at 74 No. of locations on priority basis wherever safety hazard is observed.

iii. TPCODL has proposed refurbishment of 33kV, 11kV and LV lines in a phased manner emphasizing on critical areas such as schools, hospitals, markets and other key installations

iv. Refurbishment works have been proposed in testing labs at Khorda, Angul, Dhenkanal, and Kendrapada

c) Loss Reduction

i. The Petitioner has proposed Capex for replacement of cables for about 7% of the meters. During field visits, cases of such damaged cables/ joints were also observed. Around 4 lakh meters have been identified for replacement of associated cables during the FY 2022-23

ii. Around 351 km of LT bare conductor is planned to be converted to AB Cable in the FY 2022-23

d) Network Reliability

i. Under GSAS and SCADA implementation, the Petitioner has submitted that 67 old conventional stations, spread across the area covering BBSR-I, BBSR-II and Cuttack in FY 2022-23, will be enabled for substation automation through GSAS.

ii. 15 Nos. of 33 kV feeders have been identified which are currently overloaded.

iii. 12 Nos. 33/11 kV PTRs have been identified without N-1 redundancy and efforts are being made to mitigate the issue. Further, more than 30% of the 33 kV PSS are facing low voltage issues

iv. 2,216 33 kV Isolators have been identified as sick and without earth switch hence need replacement

v. 45% of the total 1140 feeders are more than 20 km and Capex has been proposed against the same

vi. The 11kV feeders (trunk and branch line) have different sizes of conductors and cables. About 83% of the circuit length are with 34 sq. mm and 55 sq. mm overhead conductors.

vii. About 2,447 locations have been identified where earthing needs to be refurbished

viii. The conductor size has been standardized to replace low capacity conductors and Capex has been proposed accordingly.

e) Load Growth

i. At several locations, with outage of one PTR due to fault/preventive maintenance other PTR(s) is getting overloaded and load shedding is resorted to. To improve reliability, to achieve uninterrupted power supply &to provide N-1 contingency at PSS, TPCODL has proposed augmentation of PTR with higher MVA capacity meeting N-1 criteria.

ii. Total 54 Nos of DTs have been augmented during the FY 2021-22 and for FY 2022-23, TPCODL has proposed to augment 45 Nos. of 250 kVA and 20 Nos of 500 kVA DTs for the FY 2022-23. DT Augmentation would reduce over-loading and tripping of existing DTs thereby ensuring reliable power supply and reduced power interruptions.

f) Infrastructure

i. TPCODL has proposed to build a Technology center at Bhubaneswar that will house IT & OT Data Centre, Centralized Power System Control Centre and office space for IT, OT, GIS and PSCC along with other basic facilities. All the four Discoms of Odisha i.e. TPCODL, TPSODL, TPNODL & TPWODL are in the process of implementing SCADA/ ADMS system in respective licensed area with the concept of Main Control Centre and Backup Control Centre. The Main Control Centre is planned to be established in the respective headquarters Technology Centre, whereas Backup Control Centre is planned to be established at other geographical location in the state.

ii. Under GIS implementation, the Petitioner has submitted that the entire 33kV Network and 33/11kV PSS has been mapped under GIS. Further, 11kV network and DTs of BBSR – I and Cuttack Circle are also mapped. Consumer Indexing of about 8.4 Lakhs consumer has been completed from BBSR – I &

Cuttack Circle. Survey of 11 kV Network, DT, LT Network and connected consumer for Dhenkanal, BBSR II and Paradeep Circles is planned to be carried out and will be migrated to newly updated and integrated system

iii. The Petitioner has further proposed to upgrade the Civil infrastructure and strengthening of IT Infrastructure along with procurement of Ready to Use assets for better employee and customer experience as follows:

- Setting up of Locational Network, for which Switches, Routers, UPS supply & WIFI devices will be required.
- To improve the communication network between Bhubaneswar & Cuttack, Fiber Connectivity is planned between the two cities.
- To facilitate/ augment transformer repairs, TPCODL has proposed to develop in house capability for repairing of transformers.
- Development of new offices and refurbishment of existing offices to enhance the sitting capacities of employees. And also new section offices are proposed to be constructed
- Further, with increasing number of office locations, the requirement of furniture, fixtures and other administrative assets also increases. Hence, Capex against ready to use assets has been proposed which include:
    - Air Conditioning, Water Coolers/Purifies for visiting customers.
    - Furniture for staff and customers (Chairs in waiting area).
    - Desktop, Printers, Photocopiers etc.

30. The comments received from Respondent Sri R. P. Mahapatra are summarized as follows:

a) Since, GRIDCO holds 49% equity in TPCODL, therefore, while approving the Capex Plan for the FY 2022-23, the submissions of GRIDCO including the Report of the Consultant are important.

b) TPCODL may be directed to submit the cost of execution of the Capex Scheme for the FY 2021-22 in line with the order of the Commission.

31. The Comments received from the Respondent- GRIDCO are summarized as follows :

a) After compliance of its observations, TPCODL has filed its revised Capex

proposal to OERC only after getting approval of the Board.

b) The proposal may be approved for implementation in order to have a stable power distribution system, ensuring reliability and safety of equipment and man-power with optimum utilisation of existing resources as well as resources to be acquired through the Capex plan.

c) 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 as suggested by CEA.

d) The Capex Plan need to ensure optimum utilization of the existing assets considering the Residual life of the existing assets, utilization of the equipment/ assets being replaced through Capex expenditure with adequate Repair & Maintenance in order to make the equipment operational.

e) The infrastructure created out of Government funding through ODSSP and other Schemes over the recent years as well as from the upcoming projects need to be optimally utilized. Also, the future projects need to be taken up with proper load flow study justifying the requirement of the system.

f) The Capex plan should envisage the requirement of new/ augmentation/ renovation of the system with proper planning which is foreseeable and prudent for implementation in order to cater the future load growth over a relatively longer period.

32. The Comments received from the Respondent OPTCL are summarized as follows:

a) During the early days of takeover, the Applicant had mentioned about the unsafe and dilapidated nature of assets inherited from CESU and subsequently got approved to invest Capital in liberal terms to make it safe and O&M compliant. In spite of infusion of huge funds in terms of Capex and Opex, the complaint regarding the network condition remains the same, which means the condition of Distribution network has not improved. This investment is over and above the refurbishing and replacement of 33 kV, 11 kV and LT Lines, Replacement of poles, Breakers, CTs, transformers (Both Power & DTRs) etc already executed under Govt. funded schemes prior to take over by TPCODL.

b) The petitioner has not mentioned any cost–benefit analysis of the proposed Capex as mandated under license conditions. It is not known whether, the

proposed investment is at all beneficial and cost effective. If the investment is non-remunerative, it should be stopped forthwith. The applicant has only mentioned the perceived benefits both tangible/ intangible, but, not its cost effectiveness. The applicant is duty bound to point out the outcome/ benefits of the investments made till date both in terms of tangible and intangible terms, loss reduction and minimization of un-served energy/ lesser trippings, supply at requisite voltage etc. before going for further investment in this regard.

c) As in previous years, the Applicant has failed to mention the source of funding and if availed from external sources, like Banks/ other financial Institutions, the rate of Interest thereon.

d) The works related to earlier Capex are in progress and requested the Commission to pass over the works to next years and has not pointed out the latest progress of Capex related works for the FY 2020-21 and the FY 2021-22. The above averment of the Applicant shows that, even if further Capex is allowed for the FY 2022-23, they may not be able to execute the works for so many factors including some, attributable to them. So, the Capex proposal for the FY 2022-23 can be suitably shifted/ modified both in the interest of the consumers and the DISCOM concerned.

e) The Petitioner has failed to mention that a lot of works has been done under various Govt. funded schemes like SCRIPS, DDUJY, Soubhagya etc. where the downstream assets are to be constructed by the DISCOM such that the benefit is reaped by the consumers. Moreover, OPTCL in earlier occasions have repeatedly pointed out that majority of the investments during the first five years should be for construction/ revamping of downstream assets and strengthening of the system pending the value added services like SCADA/ AMI etc. which can be safely postponed till the system is healthy enough and loss is minimized.

f) Under Safety & Statutary, the Applicant has proposed Rs. 20.19 Cr for the FY 2022-23 which, inter alia includes Rs. 5.05 Cr for safety gadgets, which seems inflated and irrational as during the FY 2021-22, Rs. 4.76 Cr has already been approved for the purpose. At Page- 146 (Table-45) the Applicant has suggested to procure total 600 Nos ladders and 1500 Nos of Discharge rods which seem to be unrealistic. The No of Ladders seems to be more than the No of Line Men

available in the Applicant's organization. The Applicant has not mentioned the quantum of Safety gadgets purchased so far and the % of persons/ workmen covered thereon. This may be reviewed. In the similar context, proposal for purchase of 500 Nos. of HV Tester in a single year and in single go seems high as majority of those items may remain unutilized as such items are used sparingly during fault-rectification.

g) On Loss reduction front, defective Cable Replacement is a routine activity and is to be covered under R&M Activities via RST Order dt 24.03.2022. The associated cost, i.e. Rs. 11.0 Cr as proposed, may be excluded from the Capex proposal for the FY 2022-23.

h) In the earlier Capex for the FY 2021-22, the Commission had allowed Rs. 12.12 Cr for LT Bare to AB Cable conversion. OPTCL is duty bound to ask the extent of work completed location wise and the cost incurred in that context. The same is required only in urban congested areas and at busy road crossings and where there is risk of theft of electricity. In the last occasion, OPTCL had pointed that about 25.0 Lakh 1-phase-static meters were replaced under various Govt. funded schemes and the rental income for DISCOMs is Rs. 10 Cr per month. In the above context, the DISCOMs are deemed to have accumulated Rs. 120 Cr/ Annum towards meter rent which is sufficient to meet the expenses of replacement of faulty energy meters without support of Capex. Hence, the Capex proposed under Loss Reduction in respect of replacement of faulty meters may be rejected by the Commission.

i) In previous occasions, some of the Respondents have already pointed out regarding keeping in place some mechanism for and on behalf of the Commission to cross check the claim of the Applicant DISCOMs in the matter of quantum of works/ quality of works executed and expenditure incurred thereon. OPTCL also reiterates the same and insists on making such mechanism available so that the burden of Capex passed on to Consumers is minimized.

j) The Commission is vested with inherent power to amend/ modify its own order/s in the interest of the consumers. Keeping the same in view, the Capital Investment allowed to TPCODL vide vesting order dated 26.05.2020 should be suitably downsized keeping in view the ability of the Applicant to spend the money during the stipulated time *vis-a-vis* consumer interest.

k) TPCODL has proposed Rs. 18 Cr and Rs. 20 Cr for structure refurbishment of 33 kV & 11 kV respectively. OERC in the matter of Capex for the FY 2021-22 had already approved Rs. 34.35 Cr and Rs. 18.99 Cr respectively. This is over & above Rs. 13.40 Cr approved by the Commission for replacement of 33 kV & 11 kV old & sick equipment. The order was issued when 50% of the FY 2021-22 was almost over & the Petitioner must have struggled with time to incur the expenditure. Hence, the Commission may allow further capital based on their spending pattern and work progress.

l) The Applicant DISCOM has proposed Rs. 25 Cr for load growth while during the FY 2021-22 an amount of Rs. 30.50 Cr was allowed. The Commission may allow further Capex in the matter after collecting the trend of Load growth and spending pattern. In this context it may be prudent to mention that, many OPTCL grids were constructed based on the Power Demand projections of DISCOMs and majority of them are in under loaded condition except a few in urban areas like Cuttack and Bhubaneswar. Hundreds of DTs were purchased under various Govt. Schemes and majority of them must be in under loaded-condition, which can be shifted and relocated to avoid overloading at specific places and saving of Capex. In short, the issue of load growth can be best addressed by diligent operation research and reorientation of transformers matching the upcoming load without further procurement of Power Transformers and DTs.

m) OERC in Capex for the FY 2021-22 has already approved Rs. 51.50 Cr for Infrastructure & Civil and in the same area the applicant has come up with additional Capex of Rs. 78.65 Cr (including prior approval of Rs. 35.27 Cr). The Applicant has proposed for Technology Centre & IT infrastructure of Rs. 15.34 Cr and Rs. 11.50 Cr respectively. In earlier Capex, Commission has already allowed Rs 21.64 Cr for IT & Technology. The same appears to be misleading and the Applicant should clarify the same as there is a chance of duplication. However, the same may be allowed subject to actual requirement. Moreover, the proposal for Office furniture under Capex may be rejected as the same is to be covered under A&G Expenses already approved in the RST order for the FY 2022-23.

33. Heard the Petitioner and respondents at length through virtual mode. Before going to the merit of the proposal of the licensee we will discuss the background and provisions

based on which the investment plan shall be approved. As per section 42 of the Electricity Act, 2003 read with Condition 7 of the license condition and Regulation 4 of the General Conditions of Distribution License of the OERC (Conduct of Business) Regulation, 2004, it shall be the duty of the distribution licensee to develop and maintain an efficient, coordinated, economic distribution system in its area of operation and to supply electricity in accordance with the provisions in the Act, Rules, Regulations and the direction of the Commission. The Commission is guided under Section 61(c) of the Electricity Act, 2003 by the factors which would encourage, competition, efficiency, economic use of the resources, good performance and optimum investments while determining the tariff.

34. In the present case as per para 42(b) of the vesting order, the Petitioner committed capital expenditure of Rs.1,541 Cr. for the period FY 2020-21 to FY 2024-25 as follows:

(Value in Rs. Cr.)

FY 2020-21	**FY 2021-22**	**FY 2022-23**	**FY 2023-24**	**FY 2024-25**	**Total**
201	393	310	338	299	1541

i. As per para 42(c) of the vesting order:

"To allow flexibility in the capital expenditure planning, the Commission stipulates that, in the capital expenditure plan to be submitted by TPCODL as per the license conditions, the capital expenditure commitment for each year of the period FY 2021 to FY 2025 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 TPCODL for the period FY 2021 to FY 2025 must be as provided in the table below:

Table 2 : TPCL Cumulative Capital Expenditure for 5 years

(Values in Rs. Cr)

Up to 31-Mar-2021	*Up to 31-Mar-2022*	*Up to 31-Mar-2023*	*Up to 31-Mar-2024*	*Up to 31-Mar-2025*
201	*594*	*904*	*1,242*	*1,541*

ii. As per the Licence Condition 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.

35. The main objective of the investment plan is to develop and maintain an efficient, coordinated, and economical distribution system in its area of operation. TPCODL shall effect supply of electricity to consumers in accordance with the provisions of the Act, Rules, Regulations, Orders framed there under and the directions of the Commission.

The Commission further considers the following major aspects while finalizing the investment plan proposed by TPCODL.

i. Whether the scheme is required to meet the statutory standards set in the Act, specified under Regulations, standards etc.

ii. Whether it will be helpful to meet the consumer's expectations of economic, quality, and reliable power.

iii. Whether the investment is cost efficient?

iv. Whether the proposal shall have any tariff impact on the consumers?

36. The Commission also had decided to avail services of a third-party consultant to assist it in verification of each scheme, assessment of component wise requirements along with the cost. The Commission engaged a third party Consultancy firm for the evaluation of the Capital Expenditure Plan of TPCODL. The Consultants conducted some field visits and had several rounds of discussion with the concerned officials of Licensee and examined various aspects of the proposal including the requirement, investment priority, commercial rationale etc., keeping in mind the concerns raised by different stake holders during the process of hearing. The consultants submitted their report to the Commission.

37. The Commission has examined the Capex plan submitted by TPCODL in detail. The Commission, while examining the investment proposals has considered all the views/objections/suggestions expressed by the stakeholders in writing and during the public hearing to the extent relevant to the Capex petition.

38. Board's approval against each work /scheme has also been considered while approving the proposed Capex plan as Board is the ultimate decision-making body on behalf of the company and approval of Board is an integral part in undertaking important business initiatives. Therefore, the Capex to be approved for FY 2022-23 has been reviewed with reference to the Board's approved for each head and sub-head.

39. The Commission for the purpose of approval of Capex has reviewed the as-is-status of the infrastructure, the quantity of equipment proposed, and areas covered, and the unit rates assumed by TPCODL for the various equipment to be deployed. Further, the actual progress of each category of work/ activity during the previous year has also been considered while approving the Capex for FY 2022-23. The scheme wise analysis has been provided in subsequent paras.

A. Statutory, Safety and Security:

40. The Commission has noted the submissions of the Petitioner under this scheme. The unit rates of the various items proposed under the Capex plan are found to be in accordance with the Odisha Cost Data Book. For items, whose rates are not available in the Cost Data Book, the rates for such items have been considered based on previous Purchase Order, market determined rates etc. as submitted by the Petitioner.

41. The activity wise analysis of the schemes are as follows:

a) Load Forecasting Software:

TPCODL has submitted that presently the day ahead load forecasting is done using an Excel based approach using some historical data and the same is submitted to SLDC as the Discom's day ahead schedule. As per TPCODL, the draft Regulation for Deviation Settlement Mechanism (DSM) is likely to be published by OERC for comments and DSM Regulations would be finalized soon for adoption. As the current process of doing the forecasting manually involves errors and also does not take into account parameters such as climate, etc., TPCODL has proposed to get on board a partner for developing a system-based forecasting tool for accurate load forecasting in order to improve the accuracy of Load Forecasting. With implementation of this tool, TPCODL would get clarity on day ahead forecasting taking into account the seasonal variation.

Owing to the benefits of Load Forecasting software and to enable the Discom to forecast demand with greater accuracy, the Commission decides to approve Capex sought by the Petitioner for Load Forecasting Software.

b) Procurement of Safety Gadgets and Equipment:

TPCODL has submitted that safety gadgets are required to be provided to the workforce for safe execution of works. Currently, most of the sections are not equipped with discharge rods and neon testers which increases the chances of electrocution during maintenance / breakdown activities due to improper grounding leading to leakage current. Further, non-availability of abundant LOTO locks often lead to miscommunication between two field groups working on the same line and it leads to several cases of electrocution and often death.

The Commission observed that only 19% of the approved Capex for procurement of safety gadgets have been utilized for the FY 2021-22. Accordingly, the Commission decides to limit the Capex to 50% of the proposed amount (i.e. 50% of Rs 5.05 Cr) for the FY 2022-23 considering the capability of the DISCOM to utilize the aforesaid cost.

c) Construction of Training Institute for TPCODL:

Petitioner has submitted that training of employees and field staff is of utmost importance as it enables employees to work following safety norms and accordingly learn best practices. To train employees, provision for training and basic facilities is required. For this purpose, TPCODL has proposed to construct one permanent training centre apart from the 5 porta cabins.

Owing to the imminent need to invest on training of employees and field staff for safeguarding of employees, the Commission decides to approve the Capex under this head in line with the proposal of the Petitioner.

d) Unsafe to Safe Location- Interposing Poles:

TPCODL's area of operation spans over a geographical area of 29,354 sq.km and has a vast network having 11kV & LT network. Primarily PSC poles as well as WPB poles of 8m, 9m & 11m height have been used in TPCODL's networks. As per TPCODL, the span length between poles varies from 70m to more than 100m. The long span lengths have resulted in sagging of conductors and low ground clearances and possibility of accidents increases due to unsafe ground clearances. To ensure safety and reliable power supply to end consumers, TPCODL has proposed refurbishment of 33kV, 11kV and LV lines in phased manner emphasizing on critical areas such as schools, hospitals and market places etc.

In order to avoid violations of statutory safety norms and the need for public safety, the Commission decides to approve Capex proposed for interposing poles, wherever required, to increase ground clearance, thereby enhances safety.

e) Test Lab development at various MMG Divisions:

According to TPCODL, meter testing labs were planned to be developed in Cuttack with new test bench facility. This would ensure smooth operation of

Meter Management Group (MMG) and establish a robust quality chain of meters and accessories within the area of operations. Under this head, TPCODL has proposed to procure equipment like megger, Clamp-on meter, onsite testing kit, toolbox and JSA manuals for the testing lab. In addition, TPCODL has also proposed Capex for safety training expenditure which includes setting up of infrastructure for training purposes and associated expenses during trainings.

Accordingly, to ensure smooth functioning of MMG Labs, the Commission decides to approve the Capex under this head in accordance with the submission of the Petitioner.

f) Boundary wall/ FRP Fencing/ Construction of Plinth:

At many places, TPCODL has found that the condition of the Boundary wall of DSS were in a very poor and unsafe condition. During a survey, TPCODL observed that DSS have been installed along the road, public places, near the commercial areas etc. The boundary walls or fencing and plinth of transformer are either damaged or does not exist for these DSS, thus posing safety threat to stray animal and public at large.

During the field visits, conducted by the Commission, it was found that at many places, the condition of the Boundary wall of DSS was in a very poor and unsafe condition. Hence, to ensure safety of stray animals and public, the Commission decides to approve the Capex for boundary wall/ FRP fencing/ construction of plinth, etc.

g) Stores - Water hydrant system & Intrusion Detection System:

Currently, as per TPCODL, storage facilities are present at 3 different locations i.e., Bhubaneswar, Choudwar and Janla. The Stores house several materials such as transformers, cables, conductors, poles etc. Items such as transformer oils, paints, wood etc. are inflammable in nature and any small spark also may lead to severe explosion and fire may break out. Thus, for precautionary measures, TPCODL has proposed to deploy fire extinguishing arrangement and water hydrant system at all these locations. TPCODL has further proposed Intrusion Detection System at these locations to prevent theft of equipment etc.

Hence, to ensure safety of stores, equipment and workforce, the Commission decides to approve the Capex as proposed for deployment of Water hydrant system & Intrusion Detection System.

h) Testing Instrument for STS:

As per TPCODL, after taking over the electricity distribution business from erstwhile CESU, one of the major operational challenges was to provide uninterrupted power supply. Meeting the regulatory targets of improving AT&C loss along with reliability and safety improvement is also one of the foremost requirements. At present, TPCODL has only two locations i.e., in Bhubaneswar & Cuttack for the storage of equipment testing kit. Transportation of the heavy kits is one of the major concerns of TPCODL during the exigency breakdown condition. Due to presence of mechanical and electrical components, there were few instances when long distance transportation has caused problems in the circuit of testing instruments because of damping and vibration. Additionally, persisting fault in a network may cause failure of equipment and it would be a major safety concern for lives. Accordingly, the Petitioner has proposed to procure advanced testing kits that will be provided on decentralized locations for better and quick response in the case of exigency. Adequate quantity of testing equipment will help monitor the healthiness of power equipment throughout the year. In addition, Capex proposed also includes expenditure towards calibration of the kits, distribution of the kits to each EMR office and providing training wherever required.

In light of the concerns highlighted by the Petitioner, the Commission decides to approve Capex proposed under this head.

42. The summary of the analysis is provided as follows:

Sl. No.	Particulars	Proposed Capex (Rs Cr)	Board Approval (Rs Cr)	Approved Capex (Rs Cr)
1	Load Forecasting Software as a part of compliance to DSM guidelines	0.15	0.15	0.15
2	Procurement of Safety Gadgets and Equipment	5.05	5.05	2.53
3	Construction of Training Institute for TPCODL	1.50	1.50	1.50
4	Unsafe to Safe Location- Interposing Poles	5.00	5.00	5.00
5	Test Lab development at various MMG Divisions	0.49	0.49	0.49

Sl. No.	Particulars	Proposed Capex (Rs Cr)	Board Approval (Rs Cr)	Approved Capex (Rs Cr)
6	Boundary wall/ FRP Fencing/ Construction of Plinth	3.50	3.50	3.49^
7	Stores - Water hydrant system & Intrusion Detection System	2.00	2.00	2.00
8	Testing Instrument for STS	2.50	2.50	2.50
	Sub-Total	**20.19**	**20.19**	**17.66**

^Minor variation on account of submission vis-à-vis reconciliation by Commission based on documentary evidence submitted

43. Based on the above analysis and considering the amount approved by the Board, the Commission decides to allow Capex of Rs 17.66 Cr against claim of Rs 20.19 by the Petitioner. Further, it may be noted that the quantity of items such as FRP ladder, portable discharge rod etc. appears to be high in comparison to the number of employees engaged in O&M activity of the distribution network. Therefore, the Commission directs TPCODL to ascertain the actual requirement before procurement of such items.

B. Loss Reduction:

44. The Commission has noted the various submissions under this scheme and claims of the Petitioner. The Commission has reviewed the unit rates of the various items proposed under the Capex plan which are found to be in accordance with the Odisha Cost Data Book. For items, whose rates are not available in the Cost Data Book, the rates for the same have been considered based on previous Purchase Order, rates discovered in erstwhile CESU's approved scheme rates etc.

45. Activity wise analysis of the schemes are as follows:

a) Replacement of LT Bare Conductor with LT AB Cable:

TPCODL has submitted that LT network plays a very important role in supply of power and is spread across the entire TPCODL licensed area. Currently, the bare conductor used in overhead lines is more prone to transient fault due to lighting and touching of live conductor with tree branch or any foreign particle fall on the line resulting in frequent faults. These lines with bare conductor are also subject to theft of electricity through direct hooking and thus causing revenue leakage in the system. Though, bare conductor is easier to maintain and faster to restore during any fault but at the same time, it requires more safe electrical clearances. In order to avoid frequent tripping and theft of hooking,

use of Aerial Bunched insulated cables is proposed by TPCODL in place of bare conductors.

The Commission observed that about 80% of the approved Capex for Replacement of LT Bare Conductor with LT AB Cable have been utilized for the FY 2021-22. Accordingly, the Commission decides to limit the Capex to 80% of the proposed amount (i.e. 80% of Rs 20 Cr) for the FY 2022-23 considering the capability of the DISCOM to utilize the aforesaid cost.

b) Defective Cable Replacement:

During replacement of defective and mechanical meters and inspections by enforcement activities, TPCODL found that associated cables are having joints or are damaged, and therefore are a source of theft of electricity and safety hazard (electrocution of consumers). Further, it also results in increase in AT&C loss level.

However, the Commission observed that only 51% of the approved Capex for procurement of safety gadgets have been utilized for the FY 2021-22. Accordingly, the Commission decides to limit the Capex to 50% of the proposed amount (i.e. 50% of Rs 5.50 Cr) for the FY 2022-23 considering the capability of the DISCOM to utilize the aforesaid cost.

c) Cable for installation of DT Meter and Feeder Meter Installation:

TPCODL has envisaged that to install Smart meters on DTs, compact type meter boxes of ratings 100 kVA and 250 kVA are needed. TPCODL has proposed procurement of Smart HT meters and metering equipment, for installation at feeders metering points to ensure Energy Audit.

To ensure precision and real time energy audit of feeder and at DT level, the Commission allows Capex for the activities proposed by the Petitioner under this head.

d) Smart Meter Implementation:

As per TPCODL, all existing feeder/lines meters and upcoming new feeders/lines will be shifted to Smart Metering for integration of entire data into one system and thereafter enabling the same for the purpose of Energy audit and monitoring power outages and voltage across network.

TPCODL has proposed a Capex of Rs. 23.55 Cr. under smart meter implementation for the FY 2022-23. Upon review, it was found that TPCODL is yet to incur the expenditure of Rs. 47.6 Cr. that was approved under Capex for the FY 2021-22. Considering the slow progress during the previous year under this head, the Commission feels, it is appropriate to allow only 50% of the amount that has been proposed by the Petitioner under Capex for the FY 2022-23 i.e., Rs. 11.78 Cr.

Further, under this head, cost of purchase of SAP AMI license for AMI Deployment has been proposed as it is necessary for implementation of the smart metering infrastructure without which integration of entire system is not feasible. As part of its submission, the Petitioner has submitted that this component was not included under the approval of the Smart Metering implementation scheme. Owing to the necessity of the component/license, which forms an important requirement of the complete Smart Metering Scheme, the Commission allows the Capex proposed under this head.

e) Procurement for Mobile Phone & Bluetooth Printer:

Under this head, the Petitioner has proposed procurement of mobile phones and Bluetooth printers for the field staff, Ex-servicemen, Self Help Group (SHG), Bike Squad & DC Squads for online as well as offline collection activities.

In order to enhance the collection from consumers to assist in reducing the AT&C loss levels of the Discom, the Commission allows the Capex for the measures to be undertaken for loss reduction.

The summary of the analysis is provided as follows:

Sl. No.	Particulars	Proposed Capex (Rs Cr)	Board Approval (Rs Cr)	Approved Capex (Rs Cr)
1	Replacement of LT Bare Conductor with LT AB Cable	20.00	20.00	16.00
2	Defective Cable Replacement	11.00	11.00	5.50
3	Procurement for Mobile Phone & Bluetooth Printer	1.25	1.25	1.25
4	Cable for installation of DT Meter and Feeder Meter Installation	8.32	8.32	8.32
5	Smart Meter Implementation	23.55	23.55	11.78
6	SAP AMI license for AMI Deployment	10.00	10.00	10.00
	Sub-Total	**74.12**	**74.12**	**52.85**

46. Considering the need to reduce high loss levels in the TPCODL area and the requirement of the vesting order in respect of the AT&C loss trajectory, the Commission decides to allow Rs. 52.85 Cr. against the proposed Capex of Rs. 74.12 Cr. claimed under Loss Reduction scheme.

C. Reliability:

47. The Commission has noted and reviewed the various activities proposed under this scheme. The unit rates of the various items proposed under the Capex plan are found to be in accordance with the Odisha Cost Data Book. For items, whose rates are not available in the Cost Data Book, the rates for the same have been considered based on previous Purchase Order copies or from RC/PO provided by the Petitioner.

48. Activity wise analysis of the schemes are as follows:

a) Implementation of SCADA/GSAS:

The Petitioner has submitted that 67 old conventional stations, spread across the area covering BBSR-I, BBSR-II and Cuttack, will be enabled for substation automation through GSAS during the FY 2022-23. Further by avoiding catastrophic charging and savings on manpower deputation it will increase the asset life, maximize reliability, minimizing human interference, requirement of manpower and minimize MTTR. In addition, a centralized PSCC will take all the decisions for charging/ restoration at sub-station level and would make it human intervention free system.

During review, it was observed that TPCODL has only capitalized Rs. 3.27 Cr. out of Rs. 21.71 Cr. approved under Capex for the FY 2021-22. Considering the slow progress and completion of balance of work, the proposal for additional PSS doesn't seem realistic for the FY 2022-23. As a result, Commission has allowed only 50% of the Capex proposed by the Petitioner i.e., Rs. 11.50 Cr. for FY 2022-23.

b) Strengthening of Sub-station Automation System (SAS) Infrastructure, Deployment of New SCADA System to setup MCC & BCC:

According to the Petitioner, for deployment of New SCADA & ADMS System, Capex of Rs. 15.32 Cr. was allocated. Further, an approximate budget for placing the order for the same was of Rs. 20.4 Cr. As only Rs 15.4 Cr. out of Rs 20.4 Cr. were provisioned under Capex approved for the FY 2021-22, the

balance requirement of Rs 5 Cr. has been sought by TPCODL in the FY 2022-23 under the line item of strengthening of Sub-station Automation System Infrastructure, Deployment of new SCADA System to setup Main Control Centre (MCC) & Backup Control Centre (BCC).

The Commission is inclined to allow the Capex for measures to be undertaken under strengthening of Sub-station Automation System Infrastructure, Deployment of New SCADA System to setup MCC & BCC to the extent approved by the Board of the Petitioner.

c) GSAS Automation- STS (PSS equipment replacement):

In addition to SCADA/ GSAS implementation, TPCODL has proposed Capex for GSAS Automation that will cover activities namely GSAS implementation in the network by replacement of age-old equipment, Earthing System for Substations, and FDS installation. This will ensure providing reliable and quality power supply to consumers. The pre-site survey has been conducted for the Phase-2 scheme for GSAS enablement of 70 Nos. Primary Substations. As per the survey report, RTU along with the Communicable Digital IEDs are considered for the Phase-2 scheme to be taken up in FY 2022-23. For this purpose, not only communicable relay but also old age/ defective/ prone to failure equipment are to be replaced for smooth functioning of GSAS.

Considering the nature of the proposed Capex, the Commission allows the Capex for the purpose of GSAS Automation.

d) 33kV Network Infrastructure:

TPCODL submitted that 33kV network is the backbone of power supply system and is spread across TPCODL licensed area. It is connected with various 33/11kV transformers from where the power is transformed to 11kV for further distribution. At present, most of the 33kV lines are long and operating in radial mode. To strengthen existing 33kV network, TPCODL has suggested to lay some interconnectors in the existing network to make the system in ring and mitigate the issue of single connectivity. Further, this interconnection would help in managing the load in case of any exigency and mitigate the issue of overloading. Apart from the interconnectors, TPCODL has also proposed replacement of conductor in some cases to address the overloading issue.

The Commission observed that location-wise details of lines, etc. including the analysis for proposed network infrastructure addition are not available. Therefore, the Commission feels that it is appropriate to allow Rs. 10 Cr on lumpsum basis against additional amount of Rs. 18 Cr. proposed by the Petitioner for the FY 2022-23. TPCODL is hereby directed to submit details of break-up of actual expenditure along with the proposed expenditure in subsequent Capex proposals.

e) Sick Equipment Replacement:

Based on a survey conducted by the Petitioner, certain sick equipment's have been identified which are required to be replaced on immediate basis. As per the Petitioner, the 33/ 11 kV overhead lines are long, radial with undersized, worn-out bare conductor having extremely long spans. In order to strengthen existing 33 kV network, Petitioner has proposed to lay some interconnectors in the existing network to make the ring system and mitigate the issue of single connectivity. In addition, 33 kV RMU have been proposed to be installed at certain locations that will give flexibility to field teams while transferring the load without any interruption to existing consumers.

Sick transformer, equipment, etc. having low reliability were observed during field visits. Hence, in order to ensure reliable and quality power supply to end consumers, the Commission is inclined to allow the Capex proposed towards replacement of sick equipment by the Petitioner.

f) 11kV Network Infrastructure:

According to TPCODL, most of the 11kV feeders are long and radial in nature. During contingency, it is not possible for the field teams to transfer the load to the healthy section and thus all consumers connected to the affected feeders remain out of service till the field team locates and repairs the fault. At present, 67 number of RMUs have already been installed and augmented. Further, installation of new line of about 20 km is being proposed by TPCODL in order to increase the N-1 of the existing feeders.

Considering the spending pattern under this head in the previous year, the Commission decides to limit the Capex to 70% of the proposed amount (i.e. 70% of Rs 20.00 Cr) for the FY 2022-23.

g) 11kV and LT System Protection:

TPCODL has submitted that at some locations there is no LT protection for Distribution Transformer(s) and therefore to attend/work at LT feeder, outage is to be taken for 33/11kV transformer which eventually results in interruption to all consumers connected to a particular 11kV feeder. Moreover, in city area, interconnectors & load break switch are required to address the issue of overloading, load shifting during exigencies & improving reliability. TPCODL has further assured that with installation of RMU, communicable type Fault Passage Indicator, Auto-recloser & Sectionaliser, the equipment safety will be enhanced for the field operation team and at the same time implementation of SCADA would become easier.

To ensure ease of operation of field teams and improve the safety in terms of equipment operation, the Commission is inclined to allow the Capex under 11kV and LT System Protection.

h) 33kV Feeder Refurbishment:

Based on a survey conducted by TPCODL, it is observed that in some of the feeders/lines, conductor sizes are different in entire section of line resulting in compromise of the circuit capacity as it is limited to the lowest size of the conductor in the circuit. As per TPCODL, the primary reason behind such network is that post FANI, field teams have restored the supply with whatever conductor sizes were made available to them. But looking at the existing load demand and factoring the projected load growth, it is required to be rectified so as to avoid overloading of the network.

During the field visits, it was also observed that in some of the feeders/lines, the conductor in entire section is not identical and the power flow is limited to the lowest size of the conductor in the circuit.

As is evident from the field visits and in order to increase power flow in the circuit and ensure reliable power supply to consumers, the Commission is inclined to allow the Capex for 33kV feeder/line refurbishment in line with proposal of the Petitioner.

i) FLC & Switchgear Workshop:

TPCODL has submitted that their Fault Locating Cell has been carrying out routine activities of fault location without supply of adequate equipment. TPCODL has proposed for implementation of FLC & Switchgear Workshop that will reduce the total time required for breakdown & preventive maintenance of RMU & CSS.

Considering the nature of requirement, the Commission allows the Capex proposed for FLC & Switchgear Workshop.

j) Earthing:

TPCODL has submitted that during their site visits, it was observed that at most of the places earthing is either not proper or not available due to depletion of the earthing electrodes or connections. TPCODL emphasized that these situations may pose safety threat to the human beings or animals. Therefore, as a corrective measure, TPCODL has proposed requirement of earthing to ensure safety of man and material.

Considering the nature of requirement, the Commission is inclined to allow the Capex towards refurbishment of earthing in line with submission of the Petitioner.

k) Mobile DT:

TPCODL submitted that in the current scenario, in case of a failure of DT, the average time required for its repair is about 8-9 hours. The total process comprises of issuing of transformer from stores, loading/unloading, use of manpower and use of crane for mounting transformer over plinth or concrete foundation. This creates a considerable amount of lead time resulting in dissatisfaction among consumers. TPCODL has proposed Capex towards 5 number of 500kVA mobile DTs that will aid in rapid restoration of electricity service.

In order to reduce the power restoration time during DT failure, the Commission allows the proposed Capex towards Mobile DT in line with submission of the Petitioner.

49. The summary of the analysis is provided as follows:

Sl. No.	Particulars	Proposed Capex (Rs Cr)	Board Approval (Rs Cr)	Approved Capex (Rs Cr)
1	GSAS: SCADA enablement of conventional substation with Electronic Earthing System	23.00	23.00	11.50
2	Strengthening of Sub-station Automation System Infrastructure, Deployment of New SCADA System to setup MCC & BCC (Already Approved)	5.00	5.00	5.00
3	GSAS Automation- STS (PSS equipment replacement)	10.00	10.00	10.00
4	33kV Network Infrastructure (New Feeder, Feeder Augmentation, Feeder sectionalization, N-1 for 33kV consumer etc.)	18.00	18.00	10.00
5	Sick Equipment Replacement (33kV& 11kV)	5.00	5.00	5.00
6	11kV Network Infrastructure (New Feeder, Feeder Augmentation, Feeder sectionalization, N-1 for 11kV Industrial area, 11kV B/C at Industrial PSS, 11kV AB Switch etc.)	20.00	20.00	14.00
7	11kV and LT System Protection	15.00	15.00	15.00
8	33kV Feeder Refurbishment	7.00	7.00	7.47^
9	FLC & Switchgear Workshop	7.00	7.00	7.00
10	Earthing	1.80	1.80	1.80
11	Mobile DT	1.00	1.00	1.00
	Sub-Total	**112.80**	**112.80**	**87.77**

^Minor variation on account of submission vis-à-vis reconciliation by Commission based on documentary evidence submitted

50. To ensure reliable power supply to all the consumers there is an imminent need to upgrade the existing infrastructure with simultaneous introduction of new and upcoming technologies to enhance efficiency in operations. Hence, the Commission decides to allow Rs. 87.77 Cr. against the proposed Capex of Rs. 112.80 Cr. claimed under the Network Reliability scheme.

D. Load Growth:

51. The Commission has noted and reviewed various activities proposed under this scheme. The unit rates of the various items proposed under the Capex plan are found to be in accordance with the Odisha Cost Data Book. For items, whose rates are not available in the Cost Data Book, the rates for the same have been considered based on previous Purchase Order copies.

52. Activity wise analysis of the schemes are as follows:

a) Network augmentation / addition to meet load growth:

Under this head, the Petitioner has proposed Capex for release of new connections on account of increase in demand along with the cost of associated works to be undertaken for network augmentation/ addition to meet load growth. TPCODL has submitted that in order to meet the growing load, distribution infrastructure needs to be strengthened, and new energy meters are to be installed. TPCODL further submitted that some of the connections can be released/ accommodated within their existing network and some of the new connection may require augmentation/ addition/ extension before the release of such new connection. TPCODL also noted that while extending supply to the single-phase consumers, the expenditure incurred by TPCODL is much higher vis-à-vis the amount paid by the consumer for extension of supply (Service Line charges). The proposed Capex also covers the differential amount to be recovered under such situation.

The Commission feels that the differential amount (if incurred) for allowing the extension of power supply to a new single phase consumer may be considered under Capex. Therefore, the Commission approves the claim of the Petitioner owing to the need for augmentation/ addition of network to meet the load growth. However, TPCODL should exercise due diligence while spending the amount approved under this head.

b) Power Transformer Addition/ Augmentation:

TPCODL has conducted a load flow study and found that to meet the estimated load for Summer of 2023, it is required to augment some of the power transformers in Bhubaneswar and Cuttack city area that are bound to get overloaded considering the current peak and load growth for the next two years. It was observed that the present capacity of the transformers will not suffice the N-1 criteria. Hence, to mitigate the issues, TPCODL has proposed power transformer augmentation, new transformer addition, and shifting of load from one transformer to another transformer within the substation.

To cater the increasing load demand, avoid overloading and N-1 fail situations, the Commission is inclined to allow the Capex proposed towards Power Transformer Addition/ Augmentation in line with submission of the Petitioner.

c) DT Augmentation:

Petitioner has proposed Capex for DT augmentation to cater to the increasing load demand, and to avoid overloading of transformer leading to transformer failure and power interruptions. The Petitioner has submitted that DTs are facing pre-mature failure on account of overloading condition for long hours, which in turn hampers the power supply to the consumers. A total of 54 number of DTs have been augmented in FY 2021-22 and for FY 2022-23, TPCODL has proposed to augment 45 no. 250 kVA and 20 no. of 500 kVA DT.

The Commission approves the claim of the Petitioner owing to the need of DT Augmentation in line to cater with the increasing demand and rectification of overloading conditions.

53. The summary of the analysis is provided as follows:

Sl. No.	Particulars	Proposed Capex (Rs Cr)	Board Approval (Rs Cr)	Approved Capex (Rs Cr)
1	Network augmentation / addition to meet load growth	10.00	10.00	10.00
2	Power Transformer addition/ augmentation	10.00	10.00	9.88^
3	DT Augmentation	5.00	5.00	4.99^
	Sub-Total	**25.00**	**25.00**	**24.87**

^*Minor variation on account of submission vis-à-vis reconciliation by Commission based on documentary evidence submitted*

54. In line with other schemes, the Commission decides to approve the Capex for addition/augmentation of Network, Power Transformers and DT to the extent of data submitted by the petitioner against each scheme. With anticipated increase in demand and corresponding requirement to augment the existing infrastructure to cater to the demand, the Commission decides to allow Rs. 24.87 Cr. against the proposed Capex of Rs. 25 Cr. claimed under the Load Growth scheme.

E. Infrastructure:

55. Under Infrastructure, the Petitioner has proposed multiple works including revamping of PSCC Infrastructure, implementation of technology centre, robust IT infrastructure, strengthening of communication network, GIS implementation, construction of transformer repair workshop, renovation of other civil infrastructure, etc.

56. The Commission believes that there is a need to revamp the existing infrastructure to develop a robust consumer grievance redressal system and enhance the customer

experience. Further, IT interventions are required to develop a robust, theft free and secure network that is in sync with the latest technological innovations happening around the world.

57. Activity wise analysis of the schemes are as follows:

a) The Petitioner has submitted that the Technology Center at Bhubaneswar is proposed to be built at Power House, Unit-8 and will house IT & OT Data Centre, Centralized Power System Control Center and office space for IT, OT, GIS and PSCC along with other basic facilities. The Center is proposed to serve customers through digital platforms and to provide seamless support to Operation services for different processes towards management and control, ensuring 24x7 availability. All the four DISCOMs of Odisha are in the process of implementing SCADA/ ADMS system in respective licensed area with the Main Control Centre (MCC) and Backup Control Centre (BCC) required to be set up. The Main Control Centre is planned to be established in the respective headquarters Technology Centre, whereas Backup Control Centre is planned to be established at other geographical location in the state. The Petitioner has proposed to establish OT Backup Data Centre of TPWODL, TPSODL, TPNODL at the Technology Centre of TPCODL Bhubaneswar. Whereas the OT Backup Control Centre of TPCODL is planned to be established at Technology Centre of TPWODL, Sambalpur. Considering the importance of having a Technology Centre, in order to develop a backup centre for all the DISCOMs so as to leverage technology for better consumer experience, the Commission approves the claim of the Petitioner under this head.

b) Petitioner has further submitted plans to make its network more robust, theft free and secure. For achieving this objective, it has proposed to implement latest and updated versions of Firewall, Antivirus, email spam protection systems & Backup systems for critical applications. Further, it plans to set up locational network, for which switches, routers, UPS supply & Wi-Fi devices will be required and plan to connect Bhubaneswar & Cuttack through fibre optic cable. Considering the importance of deploying IT infrastructure and communication network and the need to use technology for enhancing the quality of supply, the Commission approves the claim of the Petitioner.

c) Under GIS, the Petitioner has proposed Capex of Rs. 33 Cr. for the FY 2022-23. The same is part of a multi-year scheme against which in-principle approval was granted by the Commission in FY 2021-22 in a separate order dt. 04.09.2021 in Case No. 32 of 2020. The Petitioner in FY 2021-22 had proposed Capex of Rs. 17.32 Cr. Upon review, it was found that execution of GIS has been limited, and it is expected that by September 2022 TPCODL would be able to utilize the Capex approved for FY 2021-22. Considering the slow execution of the GIS scheme and carry forward of a significant quantum of Capex to FY 2022-23, the Commission feels that it is appropriate to allow Rs. 20 Cr on lumpsum basis against additional amount of Rs. 33 Cr. proposed by the Petitioner for the FY 2022-23.

d) During review of Civil Infrastructure, it was found that the progress on refurbishment in the FY 2021-22 has been very low. Out of the Rs. 12.81 Cr. approved for the FY 2021-22, only 15% has been utilized. Again, for the FY 2022-23, TPCODL has proposed Capex of Rs. 13.49 Cr. under this head. Taking into consideration the status of utilization during the 2021-22, the Commission approves Capex of Rs. 8 Cr. on lumpsum basis under the Capex proposed for above activity by the Petitioner for also for the FY 2022-23.

e) The Commission further notes that TPCODL has proposed Capex for procurement of equipment of Transformer Repair Workshop which will focus on setting up of oil testing lab and transformer winding remaking infrastructures. Hence, the Commission approves the Capex proposed by the Petitioner for the same.

f) With regards to other civil infrastructure and procurement of ready to use assets, the Commission allows the Capex towards the same in order to develop a safe, hygienic and well-ventilated working environment for the employees.

58. The summary of the analysis is provided as follows:

Sl. No.	Particulars	Proposed Capex (Rs Cr)	Board Approval (Rs Cr)	Approved Capex (Rs Cr)
1	PSCC Infrastructure	0.06	0.06	0.06
2	Technology Center	15.40	15.40	15.40
3	IT Infrastructure	11.50	11.50	11.50
4	IT- Communication	2.70	2.70	2.70
5	GIS	33.00	33.00	20.00
6	Civil Infrastructure	13.49	13.49	8.00

Sl. No.	Particulars	Proposed Capex (Rs Cr)	Board Approval (Rs Cr)	Approved Capex (Rs Cr)
7	Transformer Repair Workshop Equipment	1.00	1.00	1.00
8	Ready to Use Office Assets (Furniture & Fixture)	1.50	1.50	1.50
	Sub-Total	**78.65**	**78.65**	**60.16**

59. In line with approach followed for above schemes, based on the detailed scrutiny of the necessary and requisite documents submitted by the Petitioner against its claim, the Commission decides to allow Rs 60.16 Cr against claim of Rs 78.65 Cr under this head.

F. Theme Based Proposal:

TPCODL has submitted two new multiyear schemes namely Bhubaneswar Reliability Plan (BRP) and addressing Low Voltage issues in Urban area. The major focus on the schemes is to ensure 24*7 power supply to each consumer in Bhubaneswar city area and to attend to all the low voltage pockets in urban areas.

TPCODL has submitted that in FY 2020-21, the total input energy to Bhubaneswar – I Circle was 2,076 MUs and Billed Energy was 1748 MUs. The AT&C loss was 17.65% with billing efficiency of 84.2% and collection efficiency of 97.8%. TPCODL has observed that many of the 33kV feeders are passing through dense vegetation and forestland leading to high frequency transient faults. There is poor relay coordination between GSS and PSS which causes uncoordinated tripping.

According to a survey by TPCODL, most of its 33kV networks are radial and highly unreliable and out of 47 numbers of PSS nearly 44% has only one 33kV incoming source, which is a major concern for maintaining reliable power supply in Bhubaneswar. Most of the PSS in TPCODL are having single bus bar without 33kV bus coupler arrangement while many 11kV feeders have conductor of different sizes used in different phases. This shortcoming restricts the circuit capacity based on the lowest size of the conductor used in the circuit and also leads to unbalanced power flow. Furthermore, the protection devices (Lighting arrester, LT Distribution Board (LTDB) and Air Break (AB) Switch) are either not available or in bypassed condition and the boundary walls of 11/0.433kV primary substation (DSS) are either broken or there is no fencing of the outdoor distribution substation.

TPCODL has conducted a load flow analysis of 33kV network & has identified 368 number of low voltage pockets & around 117 number of 33/11kV PSS which are having low voltage issues.

Based on the load flow study, TPCODL has proposed 27 no. of locations where 33/11kV PSS is required to be constructed, 26 no. of new 33kV line, 115 circuit km conductor augmentation which will resolve low voltage pockets & will benefit 5,86,520 number of consumers directly. Out of the 27 locations, 16 locations were identified in Rural location where 210 low voltage pockets will be upgraded to improve voltage and 11 locations identified in Urban and Semi- Urban areas where 158 low voltage pockets will be upgraded to improve voltage. To execute the 27 no. of PSS, Government of Odisha is providing fund to construct 16 no. 33/11kV PSS in rural areas along with 18 number of new lines from low loaded grid. For remaining 11 no. of PSS at urban or semi-urban areas, TPCODL will construct 33/11kV substation, which can help eradicate low voltage problem.

TPCODL has further proposed construction of 5 no. of new lines with total of 95.2 km that will benefit 27 no. of PSS. Further, TPCODL has proposed replacement of existing undersize conductor to higher capacity conductors (104.85 km) at 9 no. of 33kV interconnection.

The summary of proposal on Theme Based Scheme is as follows:

Sl. No.	Particulars	Total Scheme Value (Rs Cr)	Proposed Capex (Rs Cr)	Board Approval (Rs Cr)
1	Bhubaneswar Reliability Plan	539.94	100.00	100.00
2	Low Voltage in Urban Area	287.81	50.00	50.00
	Sub-Total	**827.75**	**150.00**	**150.00**

The Commission has the following observations:

a) The total scheme value of Rs 827.75 Cr for theme based schemes is more than 50% of the committed cumulative Capital expenditure of Rs 1541 Cr. to be carried out by TPCODL till FY 2024-25 as per the Vesting Order.

b) The proposal does not include the detailed DPR with load flow analysis, need analysis, tariff impact, cost-benefit analysis etc.

c) It appears that the scope of Bhubaneswar Reliability Plan with an investment of about Rs 540 Cr is only limited to Bhubaneswar City whereas the Capex

approved under other heads also includes the infrastructure development to be carried out in Bhubaneswar area.

d) Investment of Rs 125 Cr for 33 kV network improvement and Rs 228.72 Cr for 11kV network improvement for improving reliability in Bhubaneswar needs further justification.

e) It needs further clarification as to whether rationalizing the tariff for the whole TPCODL area against such huge investment in Bhubaneswar is justified.

f) Proposal for infrastructure addition at 33 kV and 11 kV level including the sub-stations have already been proposed under network reliability head. Therefore the activities proposed in similar heads under Low Voltage Mitigation Scheme with an investment of about Rs 288 Cr needs detailed justification.

g) There is possibility of duplication of work since Government of Odisha is also investing in renovation, modernization and expansion of distribution and transmission infrastructure for extending 24x7 quality power supply to the people in and around Bhubaneswar & Cuttack through SCRIPS. Further, the State Government is also investing in urban areas for laying of UG cables and construction of Sub-station for extending quality power to the important establishments like medical etc. for benefit of the public.

In view of the above observations, lack of sufficient justification and considering the additional huge investment proposed by TPCODL for Theme Based Schemes, the Commission at present is not inclined to approve the proposed Capex of Rs 150 Cr for FY 2022-23 under this head.

G. Others

60. TPCODL has sought additional Rs. 20 Cr. under unplanned Capex which will cater to any kind of incidental expenditure that is not included in the planned Capex which may primarily include works such as replacement of burnt transformers, enhancement of feeders, replacement of sick and defective equipment, etc. The Commission believes that any such incidental expenditure can be covered under various schemes/activities proposed under Capex plan for the FY 2022-23 and since sufficient Capex has been allowed under such heads there is no need to allow such expenditure separately over and above the proposed Capex plan for the FY 2022-23. Hence, the Commission is not inclined to allow Rs. 20 Cr proposed for unplanned Capex and any kind of

variation/additional requirement shall be considered at the time of true-up of the respective year.

61. In view of the necessity of the proposed capital investment plan, the Commission hereby grants in principle approval against various schemes for the FY 2022-23 as summarized below:

Sl. No.	Particulars	Proposed Capex (Rs Cr)	Board Approval (Rs Cr)	Approved Capex (Rs Cr)
A	**Statutory, Safety and Security**			
1	Load Forecasting Software as a part of compliance to DSM guidelines	0.15	0.15	0.15
2	Procurement of Safety Gadgets and Equipment	5.05	5.05	2.53
3	Construction of Training Institute for TPCODL	1.50	1.50	1.50
4	Unsafe to Safe Location- Interposing Poles	5.00	5.00	5.00
5	Test Lab development at various MMG Divisions	0.49	0.49	0.49
6	Boundary wall/ FRP Fencing/ Construction of Plinth	3.50	3.50	3.49
7	Stores - Water hydrant system & Intrusion Detection System	2.00	2.00	2.00
8	Testing Instrument for STS	2.50	2.50	2.50
	Sub-Total	**20.19**	**20.19**	**17.66**
B	**Loss Reduction**			
1	Replacement of LT Bare conductor with LT AB Cable	20.00	20.00	16.00
2	Defective Cable Replacement	11.00	11.00	5.50
3	Procurement for Mobile Phone & Bluetooth Printer	1.25	1.25	1.25
4	Cable for installation of DT Meter and Feeder Meter Installation	8.32	8.32	8.32
5	Smart Meter Implementation	23.55	23.55	11.78
6	SAP AMI license for AMI Deployment	10.00	10.00	10.00
	Sub-Total	**74.12**	**74.12**	**52.85**
C	**Reliability**			
1	GSAS: SCADA enablement of conventional substation with Electronic Earthing System	23.00	23.00	11.50
2	Strengthening of Sub-station Automation System Infrastructure, Deployment of New SCADA System to setup MCC & BCC	5.00	5.00	5.00
3	GSAS Automation- STS (PSS equipment replacement)	10.00	10.00	10.00

Sl. No.	Particulars	Proposed Capex (Rs Cr)	Board Approval (Rs Cr)	Approved Capex (Rs Cr)
4	33kV Network Infrastructure (New Feeder, Feeder Augmentation, Feeder sectionalization, N-1 for 33kV consumer etc.)	18.00	18.00	10.00
5	Sick Equipment Replacement (33kV & 11kV)	5.00	5.00	5.00
6	11kV Network Infrastructure (New Feeder, Feeder Augmentation, Feeder sectionalization, N-1 for 11kV Industrial area, 11kV B/C at Industrial PSS, 11kV AB Switch etc.)	20.00	20.00	14.00
7	11 kV & LT System protection including AR, FPI, RMU, MCCB, 160A, MCCB 500A	15.00	15.00	15.00
8	33kV Feeder Refurbishment	7.00	7.00	7.47
9	FLC & Switchgear Workshop	7.00	7.00	7.00
10	Earthing	1.80	1.80	1.80
11	Mobile DT	1.00	1.00	1.00
	Sub-Total	**112.80**	**112.80**	**87.77**
D	**Load Growth**			
1	Network augmentation / addition to meet load growth	10.00	10.00	10.00
2	Power Transformer addition/augmentation	10.00	10.00	9.88
3	DT Augmentation	5.00	5.00	4.99
	Sub-Total	**25.00**	**25.00**	**24.87**
E	**Infrastructure**			
1	PSCC Infrastructure	0.06	0.06	0.06
2	Technology Center	15.40	15.40	15.40
3	IT Infrastructure	11.50	11.50	11.50
4	IT- Communication	2.70	2.70	2.70
5	GIS	33.00	33.00	20.00
6	Civil Infrastructure	13.49	13.49	8.00
7	Transformer Repair Workshop Equipment	1.00	1.00	1.00
8	Ready to Use Office Assets (Furniture & Fixture)	1.50	1.50	1.50
	Sub-Total	**78.65**	**78.65**	**60.16**
F	**Others**			
1	Unplanned Capex	20.00	20.00	-
	Sub-Total	**20.00**	**20.00**	**-**
G	**Theme Based Proposal**			
1	Bhubaneswar Reliability Plan	100.00	100.00	-
2	Low voltage in Urban area	50.00	50.00	-

Sl. No.	Particulars	Proposed Capex (Rs Cr)	Board Approval (Rs Cr)	Approved Capex (Rs Cr)
	Sub-Total	**150.00**	**150.00**	**-**
	Total	**480.76**	**480.76**	**243.31**

62. The Commission's year-wise and cumulative approval under Capex upto the FY 2022-23 is summarized as under:-

Requirement of Minimum Capex as per Vesting Order for FY 2020-21	**Rs. 201.00 Cr.**
Capex Approved by the Commission for FY 2020-21	**Rs. 280.63 Cr.**
Requirement of Minimum Capex as per Vesting Order for FY 2021-22	**Rs. 393.00 Cr.**
Capex Approved by the Commission for FY 2021-22	**Rs. 298.73 Cr.**
Requirement of Minimum Capex as per Vesting Order for FY 2022-23	**Rs. 310.00 Cr.**
Capex Approved by the Commission for FY 2022-23	**Rs. 243.31 Cr.**
Total Minimum Cumulative Capex as per Vesting Order till FY 2022-23	**Rs. 904.00 Cr.**
Total Cumulative Capex Approved by the Commission till FY 2022-23	**Rs. 822.67 Cr.**

63. 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.

64. In addition to the observations stated above, the Commission directs TPCODL to submit the Capex DPR for the upcoming years with the following details for each proposed project:

a) Name of the Capital Investment Work

b) Nature of Capex Scheme (New/ Resubmitted / revised / modified /extended).

c) Details of the Location including Name of Zone, Circle/Area/Location) along with GPS Co-ordinates.

d) Objective of the Capital Investment

e) Timelines of the Project

f) Need Analysis – details of mandatory section under sections of EA 2003 or any mandatory Regulations, Policies if any.

g) Brief Scope and Specifications of Work.

h) Detailed Justification for Quantity of material proposed.

i) List of Identical schemes previously approved by the Commission and their progress report (since the taking over of Licensees) including plan of other utilities to avoid duplication of work.

j) Funding Arrangement for the Scheme along with the estimated cost including details of Hard Cost, IDC and Contingency Cost

k) Time Frame of the expenditure specifically mentioning corresponding years of Capital Expenditure and Capitalization along with the methodology for computing Percentage utilization of Project.

l) Cost Benefit Analysis for the project (% reduction in Loss over a specific period, Load Relief Details, % Voltage Regulation or any other benefit which are quantifiable).

m) Constraints - Technical, Physical and Financial constraints, if any, in execution of the Scheme may be highlighted, Risk Mitigation plan, Right of Way (RoW) Issues/Land availability/Forest Area/Delay in other clearances, etc.

n) Statutory Clearances and Project Layout.

o) Works intended for adaptation of latest Technology/ Improvement/ Upgradation of Existing Infrastructure.

65. The Commission further suggests that due care on the following aspects shall be taken by the DISCOM while submitting the Capex proposals for subsequent years:

a) Planning of distribution network (at least considering downstream network upto 11/0.4 kV transformers) has to be based on load flow study for different time frames (short term: for one year and long term for five years) considering the projected load growth including industrial load, (n-1) contingency criteria for 33 kV lines & 33/11 kV transformers and permissible range of operating voltage. The summary of study report for different time frame shall bring out:

i. List of existing lines getting over loaded at 33 kV & 11 kV level

ii. List of existing 33/11 kV, 11/0.4 kV sub-stations with over loaded transformers

iii. Requirement of additional lines & sub-stations

iv. Low voltage pockets

v. Technical loss etc.

The implementation plan in stages has to be formulated accordingly. The distribution planning study shall taking to account the capital investment by Govt. in form of transmission and distribution assets.

b) DPR is to be prepared based on above studies covering required augmentation/strengthening of existing distribution infrastructure and requirement of additional infrastructure (new sub-station and lines at 33 kV & 11 kV level) to meet the projected demand in different time frame.

c) The projected peak demand &energy requirement in area of operation of the TPCODL is to be indicated (for current FY 2022-23 and subsequent financial year upto the end of FY 2026-27).The projected load and energy requirement for each circle and divisions (for current FY 2022-23 and subsequent financial years upto the end of FY 2026-27) is also to be indicated.

d) Details of Distribution infrastructure, load & energy requirement are to be submitted in format provided in Annexure- 1.

e) Details of existing & proposed new lines and sub-station (considered for distribution network load flow study) are to be submitted. A suggested format with typical example is enclosed as Annexure-2, 3, 4, 5.

f) The DPR shall be prepared based on Standardization of (a) maximum MVA capacity of sub-station (33/11 kV, 11/.4 kV) for Urban & Rural area, (b) rating of Distribution Transformer (DT) & Power Transformer (PT), (c) (n-1) contingency Criteria for PT (d) maximum line length and the power flow in 11 kV & 33 kV lines, (e) span length of 33 kV & 11 kV overhead lines, (f) type (ACSR/ AAAC/ High Tempt & low Sag/ any other) & size (Dia & Area) of conductor for 33kV & 11kV overhead lines, (g) Rating of 33kV & 11kV Switchgear/Air break switch/Air Circuit Breaker(A, kA & duration, Type: SF/ Vacuum/ MCCB/ ACB/ Air break switch), (h) rating of RMU, Auto-recloser & sectionaliser, etc.

g) The specification for Distribution Transformer (DT) & Power Transformer (PT), switchgear, conductor, insulator, overhead structure (pole/Lattice structure/joist/ PCC, etc. underground cable, transformer foundation, foundation for LT & HT poles, lightening protection, fire fighting system, lighting system, AC/DC system, auto-recloser and RMU etc. need to be standardized across the DISCOMs keeping in view the development of cyclone

resilient Distribution infrastructure, wherever required. This would facilitate interchangeability of equipment / material and spares across the DISCOMs and would also facilitate the common pooling of spares.

h) Planning of new Sub-station shall have adequate provision for future expansion (additional bays for future lines & transformers) to avoid creation of another sub-station in nearby area.

i) The present status and identification of area &planning for conversion of radial system to ring main and time frame for implementation need to be indicated in the DPR.

j) The present status and the future planning of underground cable system or conversion of overhead to underground system indicating the area and the time frame for implementation are to be mentioned in the DPR.

k) Planning for establishment of fibre optic communication network and identification of area (indicating the lines with voltage level) for implementation of AB cable or covered conductor need to be brought out clearly.

66. The Petitioner is also directed to :

a) Expedite the execution of pending works (approved for the FY 2020-21 & FY 2021-22) and submit the report on execution of the activities approved in Capex Plan for the FY 2020-21 & FY 2021-22 along with actual Capital Expenditure and actual Capitalisation along with the ARR & Tariff Petition.

b) Submit the Capital investment plan strictly adhering to the provisions of the Tariff Regulations, Vesting Order and the license conditions from FY 2023-24 onwards.

c) More focus should be on the Safety aspects such as proper earthing, utilisation of proper testing equipment and other measures to ensure safety of human & animals as well as assets of distribution system;

d) Standard specification is to be followed for development of cyclone resilient Distribution infrastructure, wherever required for Distribution Transformer (DT) & Power Transformer (PT), switchgear, conductor, insulator, overhead structure (pole/Lattice structure/joist/ PCC, etc. underground cable, transformer foundation, foundation for LT & HT poles, lightening protection, fire fighting

system, lighting system, AC/DC system, auto-recloser and RMU etc.

e) Planning of new Sub-station shall be done having adequate provision for future expansion (additional bays for future lines & transformers) to avoid creation of another sub-station in nearby area.

f) Proper utilisation of the feeders available in the OPTCL substations is desired.

g) Submit the System study report along with details of Augmentation works and establishment of new infrastructure mentioning the name of lines & sub-stations in the format suggested at Annexure- 2, 3, 4, 5.

h) The Commission has allowed expenditure for Replacement of Damaged Service Cable in this Capex as an effort to strengthen the system in initial years of TPCODL. However, the Petitioner is directed to propose for Replacement of Damaged Service Cable in the ARR and not through Capex in the subsequent years.

i) Provide Cost Benefits analysis such as % loss reduction which are quantifiable, comparison for impact on tariff with and without the proposed investment, Target (Year wise Projection), Year wise Tariff impact due to Investment in terms of % of ARR and Rs/ kWh, Payback Period, NPV, IRR and other Financial Parameters for project assessment.

j) Provide the source of funding and the rate of interest thereon.

k) Provide justification for cost increment (if any) due to proposal for any specific quality product or increased no. of quantity than normally required. Further justification is also desired on why alternatives cannot be possible.

l) TPCODL may take appropriate action by diligent operation and reorientation of transformers matching with the upcoming load instead of proposal for addition of PTRs and DTRs.

m) Government of Odisha is also investing in renovation, modernization and expansion of distribution and transmission infrastructure for extending 24x7 quality power supply to the people in and around Bhubaneswar & Cuttack through SCRIPS. Further, the State Government is also investing in rural as well as urban areas for improvement of Distribution infrastructure to extend quality power to important establishments including the public. TPCODL is hereby directed to ensure that there should not be any overlapping or

duplication of work.

n) Detailed item-wise and cost-wise breakup of various sub-heads such as 33 kV network infrastructure, Technology Centre, etc. should be furnished along with their description/ justification so as to bring more clarity on the proposed sub-heads.

o) Submit the details of compliances of the directions given in the Capex Order of previous years.

p) Submit quarterly progress report of the works along with the details of materials utilized vis-à-vis various activities shown in the DPR.

q) Take stock of the inventory available in the stores and make its effective utilization.

r) Procure the material/award the Contracts only through transparent open competitive bidding process.

s) Approach the Commission for prior approval if the awarded cost of any work is exceeding the cost approved by the Commission.

t) Effort should be made to optimize project cost with efficient project management and leveraging various technology options so that the benefit can be passed on to consumers.

67. Accordingly the case is disposed of.

S/d-

(S.K. Ray Mohapatra)
Member

S/d-

(G. Mohapatra)
Officiating Chairperson

Annexure-1

Name of Circle : _____
Area (Sq. Km.) : _____

Sl. No.	Description	Existing	Expected addition at the end of				
			FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27
1	No. of Consumers						
2	Total Geographical area covered						
3	Total No. of Consumer base						
4	Load demand (MW)						
5	Energy Requirement (MU)						
6	AT&C loss						
7	Total No. of 33 kV Feeders						
8	Total Circuit length of 33 kV Lines						
9	Total No. of 33/11 kV Primary Substation						
10	Total No. of 33/11 kV Power Transformer (PT)						
11	Total No. of 33/0.4 kV PT						
12	Total Installed capacity of primary S/s						
13	Total No. of 11 kV outgoing Feeder						
14	Total Circuit length of 11 kV Lines						
15	Total No. of 11/0.4, 11/0.23 kV Distribution Transformer (DT)						
16	Total Installed Capacity of Distribution S/s						
17	Total Circuit length of LT Network (Bare Conductor)						
18	Total Circuit length of LT Network (AB Cable)						

Name of Circle	Division Name	Sub-Division Name	Load in MW	Energy requirement in MU
CIRCLE-1 (Name)	Division-1 (Name)			
	Division-2 (Name)			
	Division-3 (Name)			
CIRCLE-2 (Name)	Division-1 (Name)			
	Division-2 (Name)			
	Division-3 (Name)			

Annexure-2

Basic information of existing Sub-stations (the SLD & Power map to be enclosed covering 33 kV & 11 kV system upto 11/0.4 kV Transformers)																			
Sl. No.	Name of Circle / District, Division & Sub-station	33/11 kV or 11/0.4 kV or 33/0.4 kV	Present load (MW)	No. Of Bays [line bays & transformer bays (33 kV & 11 kV), etc.]	N-1 contingency for 33 kV incommer available or not (Y/N)	Transformation capacity (MVA) with voltage ratio (e.g. 33/11 kV, 2x5 MVA + 11/0.4 kV, 2x100 KVA)	Transformer pole mounted/plinth mounted (for 11/0.4 kV transformer)	N-1 contingency for Power Transformer (33/11 kV) available or not (Y/N)	Augmentation of Transformation capacity required or not (Y/N) (Based on load flow study/based on operation feed back)	Switchgear rating (Normal-A & short time rating with duration -A, kA & sec.) adequate or not (Y/N)	Lightning Protection for Transformer (PT/DT) provided as required on HV and/or LV side	Protection system (as per CEA Regulation) in place or not for lines, cables, transformers (HV & LV side) (Y/N)	Status of implementation of SCADA/ Automatic in substation (Existing/to be implemented)	Metering of all feeders & Transformer (HV/LV) side in place or not (Y/N)	Adequate battery Capacity (AH) & associated chargers available with standby battery (Y/N)	Earthing system is healthy or not (Y/N) & Required gravel thickness (if provided) maintained or not (Y/N)	Required Fire Fighting System provided or not (Y/N)	Lighting system adequate or not (Y/N)	Action Required/ Action being taken
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	A	33/11 kV	7 MW	33 kV: line bay-3 T/F bay -1 11 kV : line bay-5 T/F bay -1	N	33/11 kV, 8 MVA	-	N	N	Y	Y	Line – Y T/F HV side-Y T/F LV side-Y	To be implemented	Y	Y	N, N	N	Y`	

Annexure- 3

Basic information of proposed new substation (based on load flow study of Distribution network)															
Sl.No.	Name of Circle/ District, Division & Sub-station	33/11 kV or 11/0.4 kV or 33/0.4 kV	Expected load (MW)	No. Of Bays [line bays & transformer bays (33 kV & 11 kV), etc.]	Transformation capacity (MVA) with voltage ration (e.g. 33/11 kV, 2x5 MVA+11/0.4 kV, 2x100 KVA)	N-1 contingency provided or not for incommer and Power Transformer (Y/N)	Protection provided for lines, transfromers (on HV & LV side) in line with CEA Reg.	Adequate switchgear Rating (A, kA with duration) considered or not (Y/N)	Required Battery Capacity (AH) and associated charger provided with standby battery (Y/N)	Required lightning protection for Transformer (PT/DT), fire fighting system, earthing system, AC/DC system, lighting system provided or not (Y/N)	Target for completion				
											2022-23	2023-24	2024-25	2025-26	2026-27
1	2	3	4	5	6	7	8	9	10	11	12				
	A	33/0.4 kV	4 MW	33 kV: Line bays-4 T/F bays-1 11 kV: Line bays-5 T/F bays-2	33/11 kV, 2x5 MVA+11/0.4 kV, 500 KVA	Y	Y	Y	Y	Y					

Annexure- 4

Basic information of existing overhead lines (33 kV & 11 kV)														
Sl.No.	Name of Circle/ District & Division	From	To	Voltage level (kV)	Single circuit or Double circuit or more no. of circuit & Length of line (KM)	Type & size (dia & area) of conductor	Line over loaded or not (based on load flow study/based on operation feedback)	Design span (m)	Type of support structure (Pole/ Joist/ Lattice/PCC/Steel pole/ other type)	Adequate safety clearance maintained for over head line (Y/N)	Cradle guards provided below the line (wherever required)	Foundation healthy or not (Y/N)	Status of mapping of line Asset [completed/in progress(% of progress)/to be taken up]	Action Required/Action being taken
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	X	A	B	33	single circuit, 10 km	ACSR (DOG), Dia: 14.15 mm, Area: 117.69 sqmm	Based on load flow study & operation feedback	60 M	MS Joist	Y		Y	To be taken up	

Annexure- 5

Basic information of proposed new lines at 33 kV & 11 kV level (based on load flow study of Distribution network)																
Sl.No.	Name of Circle/ District & Division	From	To	Voltage level (kV)	Single circuit or Double circuit or more no. of circuits & Length of line (kM)	Type & size (dia & area) of conductor	Design span (m)	Type of support structure (Pole/ Joist/ Lattice/ PCC/ Steel pole/ other types, etc.)	Status of mapping of line Asset [completed/in progress(% of progress)/to be taken up]	Action Required/ Action being taken	Target for completion				
											2022-23	2023-24	2024-25	2025-26	2026-27
1	2	3	4	5	6	7	8	9	10	11	12				
1	Name	A	B	33 kV	D/C, 15 KM	ACSR (DOG), Dia: 14.15 mm, Area: 117.69 sqmm	60 M	Lattice Structure	To be taken up						