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

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

Case No. 13/2022

M/s. TPSODL ……... Petitioner
Vrs.
DoE, GoO & Others ……..... Respondents

In the matter of: **Application for approval of Annual CAPEX Plan for FY 2022-23 in compliance to the Commission's direction in the Vesting Order dt 28.12.2020 (Case no. 83/2020) vide Para 43.**

For Petitioner: Shri Arvind Singh, Chief Executive Officer, TPSODL.

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. Mohapatra.

O R D E R

Date of Hearing: 10.05.2022 **Date of Order: 14.07.2022**

The Petitioner, M/s. TP Southern Odisha Distribution Limited (TPSODL), has submitted an application for approval of Capital Expenditure (CAPEX) to the tune of Rs.378.37 Cr. for FY 2022-23 to carry out various system improvement and safety related activities in its area of operation. This application has been filed pursuant to the direction of the Commission at para 43 in the vesting order in Case No.83/2020.

TPSODL's licensed area is spread over a geographical area of 48751 sq. Km. and it serves a registered consumer base of around 23 lakhs. TPSODL procures power from GRIDCO through Odisha Power Transmission Corporation Limited (OPTCL)'s 220/132/33 kV grid substations at sub transmission voltage level of 33 kV and then distributes the power at 33 kV/11 kV/440 V/230 V depending on the demands of the consumers. A snapshot of infrastructure available with TPSODL has been provided in the table as follows:

Sl. No.	Particulars	Unit	Details (as on 31-Mar-22)
1.	Area	Sq. km	48,751
2.	Consumers	No.	24,22,168
3.	Circles	No.	6
4.	Divisions	No.	19
5.	Sub-divisions	No.	53
6.	Sections	No.	135
7.	33/11 kV sub-stations	No.	244
8.	33/11 kV PTR	No.	510
9.	33/11kV PTR capacity	MVA	2,344
10.	11/0.415 kV DTR	No.	55,717
11.	11/0.415 kV DTR Capacity	MVA	2,402
12.	33 kV OH & UG Line	Ckt. km.	3,808
13.	11 kV OH & UG Line	Ckt. km.	42,466
14.	LT Bare & ABC Line	Ckt. km.	39,094

2. TPSODL in compliance 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:

"43. Capital investment plan

.....

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

Table 1: Capital Expenditure Commitment by TPCL

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

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

Table 2: TPCL Cumulative Capital Expenditure for 5 years

Cumulative Capex Expenditure (INR Cr)				
Upto 31-Mar-2022	***Upto 31-Mar-2023***	***Upto 31-Mar-2024***	***Upto 31-Mar-2025***	***Upto 31-Mar-2026***
227	*543*	*783*	*1,016*	*1,166*

3. Further, OERC (Terms and Conditions for Determination of Wheeling Tariff and Retail Supply Tariff) Regulations, 2014 specifies the provisions related to Capital Investment Plan based on which the CAPEX proposal should be submitted by the DISCOMs. The relevant extracts of the regulations are as follows:

*"**Capital Investment:***

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.....

7.36 The Capital investment plan shall be divisionwise/ schemewise and with respect to each division/scheme, shall include---

a) Purpose of investment (i.e. replacement of existing assets, meeting load growth, technical loss reduction, non-technical loss reduction, meeting reactive energy requirements, customer service improvement, improvement in quality and reliability of supply etc.);

b) Capital Structure;

c) Capitalization Schedule;

d) Financing plan;

e) Cost-benefit analysis;

f) Performance improvement envisaged in the Control Period.

7.37 While presenting the justification for new projects, the licensee shall detail the specific nature of the works and outcome sought to be achieved. The detail must be shown in the form of physical parameters, e.g., new capacity added, to be added, meters replaced, customer service centers set up etc., so that it is amenable to physical verification. This is necessary to ensure that the approved investment plans are implemented and the licensee does not derive improper financial benefit by delaying or neglecting to make the proposed investment."

4. As per the Licence Conditions No. 11 and 32, the investment above Rs. 5 Cr is to be made by the Distribution Licensee in the licensed business area of operation with the approval of the Commission. The relevant extracts of the Licence Conditions are as follows:

"*11. INVESTMENTS*

11.1 Unless otherwise directed by the Commission, every Licensee shall obtain prior approval of the Commission for making investment in the Licensed Business if such investment is above the limits laid down in Condition 32.

11.2 The Licensee shall duly comply with the Regulations, guidelines,

directions and orders the Commission may issue from time to time in regard to the investments to be made in the Distribution Business.

11.3 The Licensee shall submit to the Commission investment plans as a part of the business plan under Condition 10.9 above giving details of investment schemes to be undertaken during the concerned period for the approval of the Commission. For new schemes formulated by the GoO, if TPSODL wishes to avail funding under such scheme, an agreement shall be signed between GoO/ GRIDCO/ OPTCL and TPSODL for utilization of such grants. The Licensee shall demonstrate to the satisfaction of the Commission that:

(a) there is a need for such investments in the Distribution System;

(b) the Licensee has made techno-economic analysis and environmental aspects of all viable alternatives to the proposal for investing in or acquiring new Distribution System assets to meet such need;

(c) the investment plan is in conformance to the conditions for capital investment specified in the Vesting Order……"

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

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

5. The Petitioner, TPSODL has submitted that it has inherited the power distribution network in dilapidated state at some places, which is not compliant with the requisite statutory standards and poses threat to consumers, staff, etc. Further, underrated/ undersized/ worn out conductors, poor earthing, presence of either faulty equipment or non-availability of equipment/ switchgears/ protection devices are creating potential safety hazards to the employees, consumers, children, animals, public, etc. TPSODL has therefore, come up with this Capital Investment Plan with the objective of ensuring safe reliable power supply and best customer service to its end consumers. TPSODL has categorised the various activities of the Capital Investment Plan under 6 major subheads, i.e., (i) statutory and safety, (ii) loss reduction, (iii) network reliability, (iv) load growth, (v) technology infrastructure, (vi) civil infrastructure and administration.

6. The petitioner has submitted that every area under its operation has different characteristics and thus, has different challenges. However, some common challenges have been identified for taking up the work in the initial years of its operation. TPSODL receives power from EHT Grid S/s and catering to above 23,68,462 consumers. The distribution infrastructure primarily includes 244 no. of 33/11 kV substations (510 nos. of transformer); 55,717 nos. of 33/ 0.415 kV & 11/ 0.415/ 0.230 kV DTR; 3803 ckt. km. of 33 kV Over Head (OH) line; 5 ckt. km. of 33 kV Under Ground (UG) cable link; 42466 ckt. km. of 11 kV OH line; 89 ckt. km. of 11 kV UG cable link; 9116 ckt. km. of bare LT line and 29,978 ckt. km. of LT ABC to meet the load demand in its area of operation.

7. The petitioner has submitted that due to vast geographical area, wide-spread network and absence of preventive maintenance, providing reliable of power supply to consumers through existing network is not possible. The existing infrastructure needs strengthening. The petitioner has proposed to replace the damaged poles, replace worn out conductors, re-stringing of the conductor, installation of the mid-span pole, installation of stay-wire at required locations. The petitioner has also proposed to strengthen earthing system by taking remedial measures in both Distribution Sub-Station (DSS) and Primary Sub-Station (PSS) as part of refurbishment activity, which will provide a safe operating environment and proper functioning of protection relays. The petitioner has also proposed various activities required to be performed for the aforesaid job.

8. The petitioner has further submitted that most of the 33/ 11 kV and 11/ 0.415 kV substations either have damaged boundary wall/fencing or without boundary wall/fencing. Hence, TPSODL has proposed to put up fencing/ boundary wall. The petitioner has also proposed to procure Personal Protection Equipment (PPE) and testing equipment for its staff to ensure safety which the Licensee is mandated to comply as per the prevailing Regulations.

9. TPSODL has submitted the Detailed Project Report (DPR) for Capex plan of Rs. 378.37 Cr for the FY 2022-23 under the following sub-heads:

   (i) **Statutory & Safety** –includes purchase of Safety and testing equipment, providing Cradle guard at major road crossings, Fencing of Distribution substations (DSS) & Boundary wall for Primary substations (PSS) and

Intermediate poles to maintain safe ground clearance.

(ii) **Loss Reduction** –includes Upgradation/ refurbishment of 33 kV & 11 kV Line, Feeder Meter for Energy Audit, conversion of LT Bare to ABC, Polycarbonate LT Distribution Box & Replacement of Damaged Service Cable and GIS implementation.

(iii) **Network Reliability –**includes Refurbishment of 33/11 kV Primary Substations (Station Transformer, VCB, Isolator, Relay, CT, PT, LA, Illumination, Battery & Chargers, Earthing, etc.), addition of Single PTR for meeting (N-1) contingency & Replacement of Old PTR, SCADA implementation in Conventional Non ODSSP PSS (Electrical + Automation + Civil), ADMS implementation, Construction of New 33 kV Lines for GSS Bay Utilisation, N-1 conteingency for 33 kV Lines, Life enhancement/Refurbishment of Network (Lines, V-Cross arm, Earthing, LA, UG cable & Covered Conductor), Refurbishment of DSS & LV Protection at DSS, 33 kV & 11 kV Line, AB Switch, FPI, RMU, ARC, Sectionalizer and Trolley mounted Mobile Substation.

(iv) **Load growth –**includes New 11 kV link Lines, Augmentation of Power Transformer, Augmentation of Distribution Transformer and Augmentation / addition of LT ABC line.

(v) **Technology infrastructure –** Technology includes Building & Strengthening end user IT infrastructure, Strengthen Network Connectivity across TPSODL, Augmentation of Data Centre infrastructure – Hardware and Software and IT infrastructure for 50-Seater Call Centre.

(vi) **Civil Infrastructure & Administration-** includes Customer Relation Centre (CRC), Infrastructure for store and offices and Security Surveillance System and Employee Welfare.

10. The petitioner has submitted various documents/ information in the Annexures of its DPR as listed below:

- **Annexure-9.1**: DPR with projected cost of Rs. 43.71 Cr has been submitted for meeting Safety & Statutory requirement. This shall ensure benefit in the shape of reduced physical harm/hazards, improved quality of work, reduced man-hour loss and quick decision on attempting work on an equipment

- **Annexure-9.2**: DPR with projected cost of Rs.64.62 Cr has been submitted for Loss reduction. This shall ensure benefit to develop comprehensive energy accounting system to quantify and determine actual losses in the power distribution system, segregating across commercial and technical losses.
- **Annexure-9.3**: DPR for network reliability, refurbishment of selected 33 kV feeder assets so as to restore the efficiency of the S/s and feeders and improve the safety and reliability of network assets including enhancing the operational life of the equipment. This shall ensure uninterrupted power supply system, meeting N-1 contingency at PTR level, improve operational efficiency, prevention of revenue loss etc. The total projected cost is Rs. 160.28 Cr.
- **Annexure-9.4**: DPR with projected cost of Rs.37.45 Cr has been submitted for Load Growth. The total projected cost is Rs. 37.45 Cr. By installing new link lines, reliability of the system will be improved. At present, 11 kV feeders are radial feeders and do not have any ring connectivity with other 11 kV feeder .Augmentation of Power Transformer with the PSS will improve reliable power supply by ensuring N-1 contingency at PTR level, reduced Over burdening of existing PTR and power cuts, reduction in chances of failure & interruption, reduction in over burdening of existing DTs resulting in reduced power cuts, Optimization of PTR loading, reduction in technical losses, improve reliability and improve the operational efficiency. Total 4 Nos of PTR augmentation was proposed by TPSODL in FY 2022-23. Augmentation of DT is required to avoid overloading of transformer, which was leading to failure of transformer and power interruptions. Augmentation of Distribution Transformer have following benefits:
  - Mitigation of overloading DTs. Thus, it will lead to lower interruption and quality power leading to satisfaction of consumers.
  - Reduce over-burdening of existing DTs thereby reducing power cuts.
  - Optimization of DTR loading.
  - Reduction of technical loss.
- **Annexure-9.5**: DPR for Technology Infrastructure has been submitted. The total projected cost is Rs. 33.27 Cr. DPR for Technology Infrastructure covers the following four (4) areas.

(i) Building & Strengthening end user IT Infrastructure: Rs. 8.05 Cr

(ii) Strengthening Network Connectivity Across TPSODL: Rs. 7.97 Cr

(iii) Augmentation of Data Centre Infrastructure: Rs. 15.55 Cr

Hardware & Software:

(iv) IT Infrastructure for 50 seater Call Centre: Rs. 1.7 Cr

TOTAL: Rs.33.27 Cr

- **Annexure-9.6**: DPR with cost Rs 19.04 Cr has been submitted for Civil Infrastructure & Administration. DPR for Civil Infrastructure & Administration covers the following three (3) areas.

(i) Customer Relation Centre (CRC) : Rs. 2.5 Cr
(ii) Infrastructure for store & offices : Rs. 10.78 Cr
(iii) Security Surveillance System & Employee Welfare : Rs. 5.76 Cr
TOTAL : Rs. 19.04 Cr

11. The summary of the above CAPEX as proposed by the petitioner is given in the table below:

Sl. No	Major Category	Activity	DPR Cost (Rs. Cr)
1	**Statutory & Safety**	Safety & Electrical Testing Equipment	14.89
		Cradle guard at major road crossings in Populated area, School area	6.79
		Fencing of Distribution substations (DSS) & Boundary wall for PSS	15.30
		Intermediate poles for unsafe to safe location	6.72
		Sub Total- Statutory & Safety (1)	**43.71**
2	**Loss Reduction**	Upgradation / refurbishment of 33 kV & 11 kV Line	24.84
		Feeder Meter for Energy Audit	8.15
		LT Bare to ABC Conversion	7.80
		LT Distribution Polycarbonate Box & Replacement of Damaged Service Cable	5.43
		GIS Implementation	18.40
		Sub Total- Loss Reduction (2)	**64.62**
3	**Network Reliability**	Refurbishment of 33/11kV Primary Substations (Station Transformer, VCB, Isolator, Relay, CT, PT, LA, Illumination, Battery & Chargers, Earthing, etc)	16.45
		Mitigation of Single PTR (N-1 arrangement) & Replacement of Old PTR	12.52
		SCADA implementation in Conventional Non ODSSP PSS (Electrical+ Automation +Civil)	59.86
		ADMS Implementation	12.00
		Construction of New 33 kV Lines for GSS Bay Utilisation	7.27
		N-1 arrangement for 33 kV Lines	7.59
		Life enhancement/Refurbishment of Network (Lines, V-Cross arm, Earthings, LA, UG & Covered Conductor)	8.17

Sl. No	Major Category	Activity	DPR Cost (Rs. Cr)
		Refurbishment of DSS & LV Protection at DSS	18.13
		33 kV & 11 kV Line AB Switch, FPI, RMU, ARC, Sectionalizer	16.88
		Trolley mounted Mobile Substation	1.41
		Sub-Total Network Reliability (3)	**160.28**
4	**Load Growth**	New 11kV link Lines	11.52
		Augmentation of Power Transformer	3.56
		Augmentation of Distribution Transformer	19.70
		Augmentation / addition of LT ABC line	2.67
		Sub Total- Load Growth (4)	**37.45**
5	**Technology Infrastructure**	Build & Strengthen end user IT infrastructure	8.05
		Strengthen Network Connectivity across TPSODL	7.97
		Augmentation of Data Centre infrastructure – Hardware and Software	15.55
		IT infrastructure for 50-Seater Call Centre.	1.70
		Sub Total -Technology Infrastructure (5)	**33.27**
6	**Civil Infrastructure & Administration**	Customer Relation Centre (CRC)	2.50
		Infrastructure for store and offices	10.78
		Security Surveillance System and Employee Welfare	5.76
		Sub Total – Civil Infrastructure & Admin (6)	**19.04**
		Total (1+2+3+4+5+6)	**358.37**
		Unforeseen CAPEX	20.00
		GRAND TOTAL	**378.37**

12. In addition to the above, the petitioner has submitted the following details, which are dealt in different Annexures as stated above:

(a) Details of the projects completed and the projects, which are in progress for all the Schemes approved in the Capex Plan for FY 2021-22.

(b) Details of accidents (fatal and non-fatal) from FY 2011-12 to FY 2021-22 and measures and preparedness of TPSODL to minimise accidents in the upcoming years.

(c) Circle wise actual performance (Energy Input, Energy Sales and AT&C loss) for the period from FY 2016-17 to FY 2021-22 and category wise Energy Sales for the period from FY 2022-23 to FY 2024-25.

(d) Quarter wise details SAIDI, SAIFI and MAIFI for the period from FY 2016-17 to FY 2021-22 and the projected SAIDI and SAIFI for the period from FY 2022-23 to FY 2026-27 .

(e) Circle wise details of the interruptions and outages for the period from FY 2020-21 to FY 2021-22 which includes the abstract of outages due to tripping's of HT

feeder, Failure of Transformer (nos.) and Major disturbances due to EHT failure.

(f) Details of consumer related information like Consumption details, Consumer Commercial Information, Information on System Demand, Status of Metering for the period from FY 2016-17 to FY 2021-22.

(g) Details of technical specifications of the major IT related items such as Antivirus, UPS, WiFi Access Point, Laptop etc.

(h) Details & evaluation criteria for procurement of cyber security Application.

(i) Details of Capex incurred, Capitalisation, Financial Progress, Technical Progress and Likely Date of completion of Projects considered as part of CAPEX – FY 2021-22.

13. The present Capex proposal was submitted by TPSODL on 07.03.2022. 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 participated in the hearing. There were three submissions received from the stakeholders namely OPTCL, GRIDCO and Shri R. P. Mohapatra.

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

a) As regards to submission of System Study and time frame of completion, TPSODL stated that they have completed the modeling of 33 KV Network for all six Circles and the same for 11KV Network is under progress. 90% of the 11 kV feeders have been modelled in Cyme Software. The balance work of network modelling for 11 KV feeders is under progress and the load flow analysis is expected to be completed by July'2022.

b) With respect to submission of any schemes proposed based on load growth, TPSODL submitted that the schemes namely construction of new 11 KV Line and augmentation of Power Transformer, Distribution Transformer & LT feeder are proposed under Load Growth in FY 2022-23 DPR. Further, location wise details have also been provided for the schemes by TPSODL.

c) As regards to the query on augmentation of lines specifically mentioning the proposed lines, TPSODL stated that they have considered augmentation of 33

kV and 11 kV lines under Loss reduction Head of Capex in the FY 2022-23. The lines proposed in CAPEX DPR were prioritised based on network analysis. Summary of the proposed feeders are provided along with the technical justification for 33 kV feeder and 11 kV feeder.

d) On the query regarding the steps taken on standardization, TPSODL submitted that they have already started the process of standardisation of technical specification of materials along with other three DISCOMS of Odisha. TPSODL is also standardising the rating of Power transformer and distribution Transformer in the network. All the materials are presently being procured for new projects with standard rating. The standardised material details are given below:

- 33kV OH lines - 100sqmm, 148sqmm, 232sqmm;
- 33kV UG cables - 3X400sqmm;
- 11kV OH lines - 55sqmm, 80sqmm, 100sqmm;
- 11kV UG cables - 3CX95sqmm, 3CX150sqmm, 3CX300sqmm;
- LTABC-4X35+1X35+1X16,4X50+1X50+1X16, 4x95+1x95+1x16;
- 33/11kV PTR - 3.15MVA, 5MVA, 8MVA;
- 11/0.433kV DTR Single Phase- 10KVA, 16KVA, 25KVA;
- Three Phase- 25KVA, 63KVA, 100KVA, 250KVA, 500KVA.

TPSODL further stated that they have already standardized more than 60 nos. of technical specification of various materials and the same will be used in procurement of materials.

e) In the matter relating to design aspects of Cyclone Resilient Power System, TPSODL has submitted that in order to design Cyclone Resilient Distribution Network, TPSODL have segregated the geographical area into two zones: Zone-1 comprising the network within 60 Km from the coastline and Zone-2 beyond 60 Km from the coastline. They have further standardized the type of pole and span length for overhead network as per the following:

- 33 kV new line (within 60 Km from the coastline) - H-Pole with span length 50 Mtr;
- 33 kV new line (Beyond 60 Km from the coastline) - WPB Pole with span length of 50Mtr;

- 11 kV new line with WPB Pole span length is 50Mtr;
- Refurbishment of existing lines is proposed to strengthen the lines;
- Interposing/ intermediate poles are considered to strengthen existing 33 kV as well as 11 kV lines;
- Stay set and cement concreting of poles are considered to strengthen the existing network. Cradle Guard is also considered;
- LA and strengthening of earthing system is also considered;
- All metallic structure shall be of Galvanized Iron in place of Mild Steel for protection against corrosion of steel structures;
- Trolley Mounted Mobile Sub-Stations are considered for ensuring faster restoration of power during breakdown. TPSODL has proposed 6 Nos. 500 kVA Trolley Mounted Sub-Station in the Capex DPR for FY 2022-23.

15. The comments received from Respondent Sri R. P. Mohapatra are summarized as follows :

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

b) TPSODL 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.

16. To the queries raised by Shri R. P. Mohapatra, TPSODL submitted that the respondent GRIDCO may be directed to serve a copy of their submissions to Shri Mohapatra. Further, TPSODL submitted that approved Capex was of Rs 184.65 Cr. for which Capitalization of Rs 121.06 Cr. has been done by TPSODL in the FY 2021-22.

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

a) After compliance of its observations, TPSODL 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 balance residual life of the existing assets, alternative 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 requisite planning, as can be foreseeable prudently and for implementation of the latest technology in order to cater the future load growth over a relatively longer period.

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

a) While taking over the erstwhile SOUTHCO, the Petitioner has cited about the unsafe/ dilapidated distribution system inherited for which the Commission was liberal enough to approve Capex of Rs. 184.65 Cr in the FY 2021-22 & Opex of Rs. 60.28 Cr. in the FY 2021-22, to strengthen the system to make it safer and O&M Compliant. However, from Para-1.5 (Page-26) of the present petition, it is understood that, the condition of the system has not improved at all, in spite of infusion of so much funds through Capex & Opex, which causes doubt about the seriousness of the applicant in above matter.

b) As in previous years, the applicant did not mention the Source of Funding and if available from external sources, the rate of interest thereon.

c) They have not identified about the works already completed and Assets capitalized thereof. As the Applicant was unable to utilize the funds approved under Capex for the FY 2021-22 due to several factors, some of these being

attributable to them, their Capex proposal for FY 2022-23 may be reduced accordingly by the Commission in the interest of the Consumers.

d) As in earlier occasions, majority of the investments during the first 5 years should be for construction/ revamping of downstream assets and strengthening of the system. The value addition service like SCADA/ AMI may be postponed till the system is healthy and loss is minimized.

e) Capex approved in FY 2021-22 under the Fencing work was Rs. 9.00 Cr & Boundary wall work was Rs.5.40 Cr. The applicant is proposing during FY 2022-23, Rs 10.37 Cr for fencing and Rs 4.93 Cr for Boundary wall towards fencing 900 no for DSS and 3000 RM Boundary wall for PSS. The applicant should furnish information on capitalization of Assets created in the FY 2021-22.

f) The Commission have allowed for procurement of around 680 Nos. FRP ladders, 136 nos. Neon testers & 50 Discharge Rods under Capex for the FY 2021-22. TPSODL have planned for procurement of 200 Nos. FRP ladders, 570 nos. Neon testers & 1500 Discharge Rods under Capex for FY 2022-23. The Petitioner should quantify the number of fuse-call camps/ sections under their jurisdiction, how many of them are equipped till now with above equipment and what is the further requirement, basing on which Commission may approve the quantity & cost thereof for the above items.

g) The Commission has approved Rs. 15.69 Cr. for the FY 2021-22 under Capex for improvement in AT&C losses. For the FY 2022-23, TPSODL have proposed for Rs. 64.62 Cr. for achieving loss reduction. TPSODL may submit the loss reduction achievement after implementation of Capex for FY 2021-22 and the projected loss reduction to be achieved during Capex for FY 2022-23.

h) At Para-4.5 (Page-69), the Petitioner has proposed for an expenditure of Rs. 4.11 Cr. towards replacement of damaged service cables. But the damaged Cable replacement is an R&M activity and supposed to be covered under RST Order dt 24.03.2022. So it is proposed to exclude Rs.4.11 Cr towards above replacement work from Capex proposal for FY 2022-23.

i) Under the Capex for the FY 2021-22, Rs. 7.01Cr. was approved by the

Commission for conversion of LT bare conductor to AB cable. So the Petitioner should inform the extent of work completed location wise and the cost incurred thereof. Further conversion of LT bare conductor to AB cable works should only be restricted to urban congested areas & busy road crossing and electricity theft prone areas, to minimise tariff burden on the Consumers.

j) TPSODL has proposed for Rs. 16.45 Cr. & 18.13 Cr. for refurbishment of PSS & DSS respectively. The Commission has approved for Rs. 36.6 Cr towards above works in the Capex for FY 2021-22. Further Rs. 33.21 Cr was allowed one time Opex over & above the RST order for FY 2021-22 towards R&M works. As the Petitioner have admitted that the previous Capex work is under progress, the Commission may allow further Capital based on their spending pattern & work progress.

k) OPTCL has constructed many new 33/11kV substations under ODSSP, DDUGJY and IPDS schemes which are yet to be made fully operational by TPSODL. The Commission may kindly consider the above submission and allow necessary Capex in this regard.

l) TPSODL have proposed for 06 Nos. Trolly mounted 500kVA Mobile s/s. In the previous Capex, the Commission has allowed for 01 No. Trolly mounted 650kVA Mobile s/s. Before allowing further capital on Trolley mounted S/s, the Commission may ask TPSODL to inform about their positioning & utilization in terms of attending breakdowns thereof.

m) TPSODL has proposed Rs. 37.45 Cr. for Load Growth, while the Commission have approved for Rs. 8.74 Cr. for above works in the Capex for FY 2021-22. The Commission may allow further Capital in the above matter after collecting trend of Load growth & spending pattern towards same. It is worth mentioning that, many OPTCL Grid S/s were constructed based on Power Demand Projections of DISCOMs and majority of them are operating in under-loaded condition, which means that either the load growth is zero/ negative. Accordingly the Commission may allocate funds in this area.

n) Lots of DTs were purchased & installed under numerous Government Schemes and it is apprehended that quite a large number of such DTs might be in under-loaded condition. So the DISCOMs should carry out a study on above and try to

shift/ relocate such DTs to overloaded stations, thereby addressing the load growth side by side keeping the burden of Capex minimum on Consumers.

o) More focus is stressed upon IT related activities, call centres, etc. under Technology & Civil Infrastructure (Rs. 52.31Cr.) instead of focusing more on the development of basic infrastructure.

p) The Capex cannot be Unplanned in nature. Further it is evident from the submission of the Petitioner that, they are not able to utilise the funds that were allowed to them by the Commission under Capex for the FY 2021-22. As the Applicant is unable to make use of the Planned Capex, it will be prudent enough not to allow them any fund towards unplanned Capex.

q) As per practice and standards, the end product of any Capex plan is revenue and tariff forecast which has not been done.

19. 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 Capex plan shall be approved. As per Section 42 of the Electricity Act, 2003 read with Condition 7 of the Licence Conditions and Regulation 4 of the General Conditions of Distribution Licence, and the OERC (Conduct of Business) Regulations, 2004, it shall be the duty of the Distribution Licensee to develop and maintain an efficient, coordinated, economic distribution system in its area of supply and to supply electricity in accordance with the provisions in the Act, Rules, Regulations and the directions of the Commission. The Commission is guided by Section 61(c) of the Electricity Act, 2003, i.e., by the factors, which would encourage, competition, efficiency, economical use of the resources, good performance and optimum investments while determining the tariff.

20. As per the provisions in the OERC Tariff Regulations 2014, the Commission has sought the petitioner to submit the details of cost benefit analysis, capital structure, capitalisation schedule, financing plan and specific details of work. TPSODL in its reply has submitted the capital structure, capitalisation schedule, and financing plan along with cost benefit analysis for most of the schemes. TPSODL has submitted the specific details of works i.e., location at which the works have been proposed along with cost benefit analysis for majority of the schemes. During the site visits, it was

stated by TPSODL that after the issuance of Order of Capital Investment Plan for FY 2021-22, there was limited time for execution of the schemes considered for FY 2021-22. TPSODL has been able to utilise 70% of the Capital Expenditure approved by OERC for the FY 2021-22 and TPSODL has submitted that the pending works will be completed and capitalised by Quarter-3 of FY 2022-23.

21. The Commission at this stage has considered and analyzed the Capex plan for FY 2022-23 based on the submissions made by TPSODL. In the present case as per para 43(b) of the Vesting Order, the petitioner committed capital expenditure of Rs.1166 Cr for the period FY 2021-22 to FY 2025-26 as follows:

(Value in Rs. Cr)

FY 2021-22	FY 2022-23	FY 24	FY 25	FY 26	Total
227	316	241	233	150	1,166

(i) As per para 43(c) of the Vesting Order:

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

Table 2: TPCL Cumulative Capital Expenditure for 5 years

Cumulative Capex Expenditure (INR Cr)				
Upto 31-Mar- 2022	***Upto 31-Mar-2023***	***Upto 31-Mar-2024***	***Upto 31-Mar-2025***	***Upto 31-Mar-2026***
227	*543*	*783*	*1,016*	*1,166*

22. With respect to Capex Proposal for FY 2022-23, TPSODL has submitted that as per the Vesting Order, it has to achieve a cumulative Capex of Rs. 543.00 Cr upto FY 2022-23. The Commission has approved Rs. 184.65 Cr for the Capex Plan – FY 2021-22. Hence, to comply with the commitment made in the Vesting Order, TPSODL has to submit minimum Capex of Rs. 358.35 Cr.

23. The main objective of the investment plan is to develop and maintain an efficient, coordinated and economic distribution system in its area of operation. TPSODL shall affect supply of electricity to consumers in accordance with the provisions of the Act, Rules, Regulations, Orders framed thereunder and the directions of the Commission.

The Commission has further considered the following major aspects while finalizing the investment plan proposed by TPSODL:

(i) Whether the Board Approval is available for the Capital Investment Plan?

(ii) Whether the scheme is required to meet the statutory standards stipulated in the Act, or specified under Regulations, standards, etc.

(iii) Whether it will be helpful to meet the consumer's expectations of economic, quality and reliable power?

(iv) Whether the investment is cost efficient?

(v) Whether the proposal shall have any tariff impact on the consumers?

(vi) Whether there is any backlog in the activities which are approved in FY 2021-22?

24. The Commission has also decided to avail services of a third-party consultant to assist in verification of each scheme, assessment of component wise requirements along with the cost. The Commission has engaged a third party Consultancy firm for the evaluation of the Capital Expenditure Plan of TPSODL. 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 consultant has submitted their report to the Commission.

25. The Commission has examined the investments proposed by the petitioner. The Commission has observed that there is no variation in the Capex proposed in the DPR for FY 2022-23 and as per TPSODL's Board's Approval for FY 2022-23 as shown below:

(Value in Rs. Cr)

Capex as per Vesting Order	Capex as per DPR Submitted	Board Approved Capex Value[#]
316*	378.37**	378.37**

** Capex Commitment by TPCL*

*** Inclusive of Unforeseen CAPEX proposal – Rs. 20.00 Cr*

26. The major category under CAPEX plan as claimed in the DPR and as per the Board's approval are as shown below:

Sl. No.	CAPEX Head	As per DPR (Rs. Cr)	As per Board Approval (Rs. Cr)
1	Statutory & Safety	43.71	43.71
2	Loss Reduction	64.62	64.62
3	Network Reliability	160.28	160.28
4	Load Growth	37.45	37.45
5	Technology Infrastructure	33.27	33.27
6	Civil Infrastructure & Administration	19.04	19.04
Total Proposed CAPEX		**358.37**	**358.37**
Unforeseen CAPEX		**20.00**	**20.00**
Total CAPEX		**378.37**	**378.37**

27. In TPSODL, TPCL is having 51% (fifty one percent) equity shares and Government of Odisha ("GoO") through GRIDCO is having 49% (forty nine percent) equity shares. The Commission notes that since the Board is the governing body of TPSODL, any Capital Investment Plan should be approved in their Board before approaching the Commission for granting approval. During the analysis, the Commission observes that the DPR proposed by TPSODL and Board's approval in respect of Capex Plan for FY 2022-23 are the same.

28. The Commission has analyzed each activity in the submission of TPSODL's Capex proposal and evaluated the same based on the following methodology:

(a) Site visit on sample basis for analyzing the present condition of the Distribution area.

(b) Verification of the Schemes claimed in line with the provision of various OERC Regulations, Codes, Licence Condition, etc.

(c) Analysis of the backlogs in the activities proposed in Capex for FY 2021-22

(d) Analysis the requirement of the activity/ work proposed for FY 2022-23.

(e) Verification of the required quantity as claimed in the proposal.

(f) For Cost Analysis, the cost of equipment/material submitted in the DPR with that of materials provided at the Cost Data Book, 2019 issued by Government of Odisha has been compared. For the materials, which are not mentioned in Cost

Data Book, 2019, the reference rates of other States like Maharashtra, Andhra Pradesh and Telangana or prevailing market rates have been considered.

29. The Scheme wise detailed analysis is discussed in the subsequent paragraphs in line with the above methodology for the evaluation of the Capital Expenditure claimed by TPSODL.

30. During the activity-wise analysis, for the Capex approved in FY 2021-22, it has been observed that there are a few activities where TPSODL has utilised less than 50% of the approved capital expenditure for the FY 2021-22 and again identical activity has also been proposed for FY 2022-23. Considering the importance of the activity, the Commission has decided to allow 50% of the Proposed Cost for various activity submitted in Capex DPR for FY 2022-23.

31. The summary of current status of schemes approved under Capex Plan for FY 2021-22 as submitted by TPSODL, are as follows:

Capex Head	OERC approved Capex (Rs. Cr)	Actual Capital Expenditure in FY 2021-22 (Rs. Cr)	Actual Capitalisation in FY 2021-22 (Rs. Cr)
Statutory Compliance/Safety	31.43	22.49	21.68
Loss Reduction	15.69	3.22	0.00
Reliability Improvement	37.47	11.34	8.83
Load Growth	8.74	1.84	1.20
Technology & Civil Infrastructure	91.32	89.93	89.35
Total	**184.65**	**128.82**	**121.06**

A. <u>Statutory and Safety</u>

32. The Commission notes the importance of all the parameters considered under the Statutory and Safety like Personal Protection Equipment(PPE), testing equipment, Cradle guard at major road crossings, fencing of Distribution substations (DSS) & Boundary wall for Primary substations (PSS) and Intermediate poles to maintain safe ground clearance. While comparing the Unit Rates of various items proposed in the DPR with the Cost Data Book, the Commission observed that there are no deviations in the rates considered for various items.

33. TPSODL has made significant progress under the Statutory & Safety head as compared to other heads during the FY 2021-22. The actual Capital Expenditure incurred till March 2022 is Rs.22.49 Cr as against the approved Capex of Rs. 31.43 Cr which is 71.55% of the OERC approved Capital Expenditure for FY 2021-22. Further, TPSODL

has submitted that 100% capitalization of the OERC approved amount of Rs. 31.43 Cr under Statutory and Safety Capex Scheme will be achieved by 3rd Quarter of FY 2022-23.

34. During the analysis of activities in the FY 2021-22, it has been observed that TPSODL has only utilized Rs. 0.09 Cr. (2%) as against the approved Capex value of Rs. 4.57 Cr towards cradle guard at major road crossings in Populated area. TPSODL is targeting to complete the backlogs under this activity by Quarter-3 of FY 2022-23. Hence, the Commission decides to allow only 50% of the Capex proposed for this activity i.e. (50% of Rs. 6.79 Cr) for the FY 2022-23.

35. From the Accident Reports (for the last 10 years) as submitted by TPSODL, it is observed that fatal accidents amount to almost 73% (Humans + Animals) of total accidents out of which 58% relates to humans. The Commission is of the view that the proposals submitted by TPSODL under Statutory & Safety considerations are essentially to reduce accident cases in the years to care.

36. The Commission decides to limit the Capex amount under Statutory and Safety to the value of Rs. 39.33 Cr as against Rs.43.71 Cr proposed in the DPR. The Commission expects that with the investments considered under Statutory and Safety, there should be substantial reduction in accident.

37. The summary of Capex proposed in the DPR, Capex approved by the Board and the Capex approved by the Commission are summarized as follows:

Description	Capex as per DPR (Rs. Cr)	Board Approved Capex (Rs. Cr)	OERC Approved Capex (Rs. Cr)
Safety & Electrical Testing Equipment	14.89	14.89	14.26
Cradle guard at major road crossings in Populated area, School area	6.79	6.79	3.40
Fencing of Distribution substations (DSS) & Boundary wall for PSS	15.30	15.30	15.30
Intermediate poles for unsafe to safe location	6.72	6.72	6.37
Total	**43.71**	**43.71**	**39.33**

B. <u>Loss Reduction</u>

38. The submission of the Petitioner has been examined under the Loss Reduction Scheme. While comparing the Unit Rates of various items proposed in the DPR with the Cost

Data Book, it is observed that there is no deviation in the rates considered for various items.

39. TPSODL has not utilised the CAPEX approved for the FY 2021-22 under the Loss Reduction scheme. As per the progress of work submitted by TPSODL, it is observed that TPSODL has utilised only Rs.3.22 Cr (as against the approved Capex of Rs. 15.69 Cr) which is 20.52% of the Capital Expenditure approved by OERC for the FY 2021-22. Further, TPSODL has submitted that 100% capitalization of the approved amount (i.e. Rs. 15.69 Cr) would be achieved by 2nd Quarter of FY 2022-23.

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

(a) Upgradation / refurbishment of 33 kV & 11 kV Line – It is observed that upgradation of 33 kV & 11 kV line was under progress in TPSODL. As per Capex approved for FY 2021-22, only erection of intermediate pole has been completed by TPSODL. Stringing of conductor is yet to be started due to unavailability of long time shut down. Hence, the Commission decides to allow the cost claimed for the Upgradation / refurbishment of 33 kV & 11 kV Line.

(b) Feeder Meter for Energy Audit – TPSODL in its DPR stated that Feeder energy meters in 33 kV and 11 kV feeders at GSS, PSS and DSS has to be provided. As per the Capex of FY 2021-22, refurbishment of DSS are still in progress. Further, TPSODL in its DPR has also given reference of Gazette of India notification, Bureau of Energy Efficiency, Ministry of Power, Government of India issued for Conduct of Energy Audit in Electricity Distribution Companies under the purview of Energy Conservation Act, 2001,which requires TPSODL to install meters on all feeders and provides broad framework for conduct of Annual Energy Audit and Quarterly Periodic Energy Accounting with necessary Pre-requisites and reporting requirements to be met. Hence, considering the above, the Commission allows the cost claimed for the Feeder meter installation at GSS and PSS substation as proposed by TPSODL in the CAPEX for FY 2022-23.

(c) LT Bare to ABC Conversion – During site visit, it was observed that over head lines in most of the areas are with bare conductor. TPSODL in its DPR has stated that 39,094 Ckm of bare conductor is to be replaced by ABC for achieving loss reduction and to avoid theft of electricity. It is observed that

TPSODL has utilized only Rs. 2.62 Cr (37%) of Capex approved for the FY 2021-22 (as against the approved Capex value of Rs. 7.01 Cr). Hence, the Commission decides to allow 50% of the total Cost under LT Bare to ABC conversion in the CAPEX proposal for the FY 2022-23.

(d) **LT Distribution Polycarbonate Box & Replacement of Damaged Service Cable –**TPSODL has proposed LT Distribution box at pole for all service connections to consumers to minimize the jumbling of service cable and to create a safe environment. The field staff can quickly restore the supply, maintenance can be done easily and it will also help in improving AT&C losses. During site visit, it was observed that there is need for replacement of damaged Service Cable and installation of LT Distribution Polycarbonate Box. Hence, the Commission allows the Capex for Polycarbonate LT Distribution Box & Replacement of Damaged Service Cable during the FY 2022-23.

(e) **GIS Implementation-** Considering the importance of Geographical Information System to have better asset management and to strengthen various other business processes viz. energy audit, technical feasibility, dues verification, network planning and developing Outage Management System, the proposed Capex for the FY 2022-23 is allowed. TPSODL has made significant progress in the GIS Implementation and utilised the Capex approved for FY 2021-22. Further, TPSODL has also submitted the detailed phase-wise GIS Implementation plan which appears to be reasonable. Hence, the Commission decides to allow the Capex for GIS Implementation during the FY 2022-23.

41. Based on the above analysis and considering the importance of Loss Reduction in the Capital Investment Plan, the Commission allows Capex of Rs. 60.72 Cr (against the proposed amount of Rs. 64.62 Cr) under Loss Reduction.

42. The Capex proposed in the DPR, Capex approved by the Board and the Capex approved by the Commission are summarized as follows:

Description	Capex as per DPR (Rs. Cr)	Board Approved Capex (Rs. Cr)	OERC Approved Capex (Rs. Cr)
Upgradation / refurbishment of 33 kV & 11 kV Line	24.84	24.84	24.84
Feeder Meter for Energy Audit	8.15	8.15	8.15

Description	Capex as per DPR (Rs. Cr)	Board Approved Capex (Rs. Cr)	OERC Approved Capex (Rs. Cr)
LT Bare to ABC Conversion	7.80	7.80	3.90
LT Distribution Polycarbonate Box & Replacement of Damaged Service Cable	5.43	5.43	5.43
GIS Implementation (considered under technology head last year)	18.40	18.40	18.40
Total	**64.62**	**64.62**	**60.72**

C. Network Reliability

43. The Commission has noted the schemes and claims of the petitioner under the Network Reliability Scheme. Considering the present condition of the distribution network of TPSODL, the Commission is of the view that all the schemes covered under the Network Reliability to strengthen the network are justified. While comparing the Unit Rates of various items proposed in the DPR with the Cost Data Book, some deviations in the rates is observed. The Commission has considered Unit Rate as per Cost Data Book while arriving at the total cost.

44. It is observed that under Network Reliability Scheme, TPSODL has utilised only Rs.11.34 Cr (as against the approved Capex of Rs. 37.47 Cr) which is 30.26% of the Capital Expenditure approved for FY 2021-22.

45. During the analysis, some deviations are observed in the rates with reference to Cost Data Book for following activities:

- **Construction of New 33 kV Lines for GSS Bay Utilisation** which is estimated to be Rs. 6.65 Cr against claimed amount of Rs. 7.27 Cr,
- **Cost for N-1 arrangement for 33 kV Lines** which is estimated to be Rs. 4.95 Cr against claimed amount of Rs. 7.59 Cr (Estimate for 33 kV line of 1 Km given by TPSODL was Rs. 0.21 Cr, but under this activity TPSODL calculated Rs. 0.3273 Cr for 1 Km of 33 kV line),

46. During the analysis, it has been observed there are pending works associated with Capex Plan approved for FY 2021-22 which are discussed below:

For the activity of Refurbishment of DSS & LV Protection at DSS, it is observed that TPSODL has utilized only Rs. 0.23 Cr (6%) as against the approved Capex of Rs. 4.08

Cr for DSS Refurbishment and Rs. 0.78 Cr (15%) as against the approved Capex of Rs. 5.08 Cr in the FY 2021-22. Further, as per submissions made by TPSODL, they are targeting to complete the pending work logs of this activity by Quarter-2 of FY 2022-23. Hence, the Commission allows only 50% of the Capex proposed for the activity, i.e., (50% of Rs. 18.30 Cr) for the FY 2022-23.

For the activity of 33 kV & 11 kV Line AB Switch, FPI, RMU, ARC, Sectionalizer, it has been observed that TPSODL has only utilized (a) Rs. 0.20 Cr (9%) as against the approved Capex of Rs. 2.23 Cr for Installation of 33 kV AB Switch, (b) Rs. 0.72 Cr (24%) as against the approved Capex of Rs. 3.05 Cr for Installation of 11 kV AB Switch and (c) Rs. 0.45 Cr (11%) as against the approved Capex of Rs. 3.95 Cr for Installation of Auto recloser /Sectionalizers, RMUs, &FPIs during the FY 2021-22. Further, as per submissions made by TPSODL, the pending work is targeted for completion by Quarter-2 of FY 2022-23. Hence, the Commission allows 50% of the Capex for this activity, i.e., (50% of Rs. 16.88 Cr) for the FY 2022-23.

Trolley mounted Mobile Substation - The Commission notes that already cost for 1 Trolley mounted mobile substation has been allowed in FY 2021-22 and TPSODL has procured the same. Since there are 6 circles in TPSODL, the Commission decides to allow cost of 5 no. of trolley mounted substation at a total cost of Rs.1.18 Cr (against claimed for Rs. 1.41 Cr).

ADMS Implementation - Implementation of ADMS requires inputs from SCADA and GIS. However, it has been observed that TPSODL has been installing SCADA and GIS in phased manner. Further, TPSODL has already proposed Rs. 59.86 Cr for SCADA implementation in Conventional Non ODSSP PSS (Electrical+ Automation +Civil) and also has proposed Rs.18.40 Cr for GIS Implementation. Hence, the Commission decides to defer the proposed ADMS implementation for the coming years till the significant progress is achieved in SCADA implementation. Further, the Commission directs TPSODL to implement SCADA at all the substations and GIS Implementation in whole area of operation TPSODL at the earliest.

47. Hence as discussed above, the Commission decides to limit the CAPEX under Network Reliability Rs.127.07 Cr against the proposed CAPEX for Rs.160.28 Cr.

48. The summary of Capex proposed in the DPR, approved by the Board and approved by the Commission are summarized as follows:

Description	Capex as per DPR (Rs. Cr)	Board Approved Capex (Rs. Cr)	OERC Approved Capex (Rs. Cr)
Refurbishment of 33/11kV Primary Substations (Station Transformer, VCB, Isolator, Relay, CT, PT, LA, Illumination, Battery & Chargers, Earthing, etc.)	16.45	16.45	16.45
Mitigation of Single PTR (N-1 arrangement) & Replacement of Old PTR	12.52	12.52	12.52
SCADA implementation in Conventional Non ODSSP PSS (Electrical+ Automation +Civil)	59.86	59.86	59.86
ADMS Implementation	12.00	12.00	0.00
Construction of New 33 kV Lines for GSS Bay Utilisation	7.27	7.27	6.65
N-1 arrangement for 33 kV Lines	7.59	7.59	4.95
Life enhancement/Refurbishment of Network (Lines, V-Cross arm, Earthings, LA, UG & Covered Conductor)	8.17	8.17	8.17
Refurbishment of DSS & LV Protection at DSS	18.13	18.13	8.85
33 kV & 11 kV Line AB Switch, FPI, RMU, ARC, Sectionalizer	16.88	16.88	8.44
Trolley mounted Mobile Substation	1.41	1.41	1.18
Total	**160.28**	**160.28**	**127.07**

D. Load Growth

49. The Commission has noted the schemes and claims of the petitioner under the Load Growth Scheme. After analysing the annual growth rate (in %) for the period from FY 2017-18 to FY 2020-21 in respect of different categories of consumers, it is observed that sales growth over the years is in the range of 2.5% to 9.5% with overall CAGR of around 4.36% and CAGR of Load Growth is around 10.37%. Load growth has increasing trend, which justifies the requirement of Network augmentation / addition of 11 kV line, PTR, DTR and LT line to meet growth in demand. Some deviations in the rates are observed while comparing the unit rates with cost data book. However, the Commission has considered Unit Rate as per Cost Data Book while arriving at the total cost.

50. During the analysis, it is observed that in the FY 2021-22 Capex Plan, for activity of Network augmentation / addition to meet load growth/11 KV line, PTR, DTR, LT line, TPSODL has only utilised Rs. 1.84 Cr (21%) of the approved Capex (Rs.8.74 Cr). Further, TPSODL has submitted to complete the pending activities by Quarter-2 of FY

2022-23. In the Capex DPR for the FY 2022-23, TPSODL has proposed the similar activities separately. Hence, the Commission allows 50% of Rs. 11.52 Cr under New 11kV link Lines, 50% of Rs 3.56 Cr. under augmentation of Power Transformer, and 50% of Rs 19.70 Cr under augmentation of Distribution Transformer and 50% of Rs. 2.67 Cr under augmentation/ addition of LT ABC line as Capex for the FY 2022-23.

51. Hence, the Commission decides to limit the CAPEX amount under Load Growth to Rs. 18.72 Cr for the FY 2022-23against the proposed CAPEX of Rs. 37.45 Cr.

52. The summary of Capex proposed in the DPR, approved by the Board and approved by the Commission are summarized as follows:

Description	Capex as per DPR (Rs. Cr)	Board Approved Capex (Rs. Cr)	OERC Approved Capex (Rs. Cr)
New 11kV link Lines	11.52	11.52	5.75
Augmentation of Power Transformer	3.56	3.56	1.78
Augmentation of Distribution Transformer	19.70	19.70	9.85
Augmentation / addition of LT ABC line	2.67	2.67	1.34
Total	**37.45**	**37.45**	**18.72**

E. <u>Technology Infrastructure</u>

53. The Commission has noted the schemes and claims of the petitioner under the Technology Infrastructure Scheme. The Commission is of the view that the CAPEX proposed under the Technology Infrastructure has to be considered in view of the long-term benefits as there are no. of schemes are related to IT infrastructure development, which are one-time investments. Further, in FY 2021-22, TPSODL has incurred maximum Capital Expenditure in the development of the Technology Infrastructure.

54. As per the work progress data submitted by TPSODL, it is observed that TPSODL has utilized Rs. 89.93 Cr as against the approved Capex of Rs. 91.32 Cr, which is 98 % of the OERC approved Capital Expenditure for FY 2021-22.

55. In case of activities related to Technology Infrastructure, TPSODL up to March 2022 has utilized actual Capital Expenditure of Rs. 72.86 Cr (as against the approved Capex of Rs. 71.12 Cr), which is 102.44 % of the OERC approved Capital Expenditure for FY 2021-22 and has submitted that Management approval has been taken for the schemes

such as SCADA and GIS Implementation where CAPEX incurred was more than the OERC approved value.

56. Considering the significant progress and efforts made by TPSODL during the FY 2021-22 and the importance of Technology Infrastructure, the Commission allows Capex proposal of Rs. 33.27 Cr as proposed by TPSODL under Technology Infrastructure for the FY 2022-23.

57. The summary of Capex proposed in the DPR, approved by the Board and approved by the Commission are summarized as follows:

Description	Capex as per DPR (Rs. Cr)	Board Approved Capex (Rs. Cr)	OERC Approved Capex (Rs. Cr)
Build & Strengthen end user IT infrastructure	8.05	8.05	8.05
Strengthen Network Connectivity across TPSODL	7.97	7.97	7.97
Augmentation of Data Centre infrastructure – Hardware and Software	15.55	15.55	15.55
IT infrastructure for 50-Seater Call Centre.	1.7	1.7	1.7
Total	**33.27**	**33.27**	**33.27**

F. Civil Infrastructure and Administration

58. The Commission has noted the schemes and claims of the petitioner under the Civil Infrastructure and Administration Scheme and is of the view that the Capex proposed is essential for long-term benefits and to comply with mandatory requirements.

59. TPSODL has partially utilized the CAPEX approved under the Civil Infrastructure & Administration scheme as compared to other schemes in FY 2021-22. As per the progress of work submitted by TPSODL, it is observed that actual Expenditure is Rs. 89.93 Cr as against the approved Capex of Rs. 91.32 Cr, which is 98 % of the approved Capital Expenditure for the FY 2021-22.

60. In case of activities related to Civil Infrastructure, TPSODL up to March 2022 has utilized actual Capital Expenditure of Rs. 17.07 Cr as against the approved Capex of Rs. 20.20 Cr, which is 84.50 % of the OERC approved Capital Expenditure for FY 2021-22.

61. Some of the schemes such as Civil & Electrical work for Call center &PSCC, STPI has been fully capitalized by TPSODL. TPSODL has also submitted that capitalization of

the Rs. 91.32 Cr approved by Commission under Technology & Civil Infrastructure Scheme will be achieved before 3rd Quarter of FY 2022-23.

62. Considering significant progress and efforts made by TPSODL during FY 2021-22 and importance of Civil Infrastructure, the Commission allows Capex proposal for Rs. 19.04 Cr as proposed by TPSODL under Civil Infrastructure and Administration for the FY 2022-23.

63. The summary of Capex proposed in the DPR, approved by the Board and the approved by the Commission are summarized as follows:

Description	Capex as per DPR (Rs. Cr)	Board Approved Capex (Rs. Cr)	OERC Approved Capex (Rs. Cr)
Customer Relation Centre (CRC)	2.50	2.50	2.50
Infrastructure for store and offices	10.78	10.78	10.78
Security Surveillance System and Employee Welfare	5.76	5.76	5.76
Total	**19.04**	**19.04**	**19.04**

64. TPSODL in its DPR proposal has also requested for approval of Rs. 20.00 Cr to meet Unforeseen Expenses. The Commission does not find any merit on allowing the Unforeseen Capex as part of Capex Plan for FY 2022-23 as no justification has been submitted by the Petitioner for such provision.

65. In view of the necessity of the proposed capital investment plan, the Commission hereby grants in principle approval to Capex proposals for the FY 2022-23, which is summarized as follows:

Approved Capex Plan for FY 2022-23

Sl. No.	Major Category	Activity	DPR Cost (Rs. Cr)	Board Approved Cost (Rs. Cr)	OERC Approved Cost (Rs. Cr) (Considering dis-allowance due to variation in CDB rates & last year backlogs)
1	**Statutory & Safety**	Safety & Electrical Testing Equipment	14.89	14.89	14.26
		Cradle guard at major road crossings in Populated area, School area	6.79	6.79	3.40
		Fencing of Distribution substations (DSS) & Boundary wall for PSS	15.30	15.30	15.30
		Intermediate poles for unsafe to safe location	6.72	6.72	6.37
		Sub Total- Statutory & Safety (1)	**43.71**	**43.71**	**39.33**
2	**Loss**	Upgradation / refurbishment of 33	24.84	24.84	24.84

Sl. No.	Major Category	Activity	DPR Cost (Rs. Cr)	Board Approved Cost (Rs. Cr)	OERC Approved Cost (Rs. Cr) (Considering dis-allowance due to variation in CDB rates & last year backlogs)
	Reduction	kV & 11 kV Line			
		Feeder Meter for Energy Audit	8.15	8.15	8.15
		LT Bare to ABC Conversion	7.80	7.80	3.90
		LT Distribution Polycarbonate Box & Replacement of Damaged Service Cable	5.43	5.43	5.43
		GIS Implementation	18.40	18.40	18.40
		Sub Total- Loss Reduction (2)	**64.62**	**64.62**	**60.72**
3	**Network Reliability**	Refurbishment of 33/11kV Primary Substations (Station Transformer, VCB, Isolator, Relay, CT, PT, LA, Illumination, Battery & Chargers, Earthing, etc)	16.45	16.45	13.13
		Mitigation of Single PTR (N-1 arrangement) & Replacement of Old PTR	12.52	12.52	12.52
		SCADA implementation in Conventional Non ODSSP PSS (Electrical+ Automation +Civil)	59.86	59.86	59.86
		ADMS Implementation	12.00	12.00	0.00
		Construction of New 33 kV Lines for GSS Bay Utilisation	7.27	7.27	6.65
		N-1 arrangement for 33 kV Lines	7.59	7.59	4.95
		Life enhancement/Refurbishment of Network (Lines, V-Cross arm, Earthings, LA, UG & Covered Conductor)	8.17	8.17	8.17
		Refurbishment of DSS & LV Protection at DSS	18.13	18.13	8.85
		33 kV & 11 kV Line AB Switch, FPI, RMU, ARC, Sectionalizer	16.88	16.88	8.44
		Trolley mounted Mobile Substation	1.41	1.41	1.18
		Sub-Total Network Reliability (3)	**160.28**	**160.28**	**123.75**
4	**Load Growth**	New 11kV link Lines	11.52	11.52	5.75
		Augmentation of Power Transformer	3.56	3.56	1.78
		Augmentation of Distribution Transformer	19.70	19.70	9.85
		Augmentation / addition of LT ABC line	2.67	2.67	1.34
		Sub Total- Load Growth (4)	**37.45**	**37.45**	**18.72**
5	**Technology Infrastructure**	Build & Strengthen end user IT infrastructure	8.05	8.05	8.05
		Strengthen Network Connectivity across TPSODL	7.97	7.97	7.97

Sl. No.	Major Category	Activity	DPR Cost (Rs. Cr)	Board Approved Cost (Rs. Cr)	OERC Approved Cost (Rs. Cr) (Considering dis-allowance due to variation in CDB rates & last year backlogs)
		Augmentation of Data Centre infrastructure – Hardware and Software	15.55	15.55	15.55
		IT infrastructure for 50-Seater Call Centre.	1.70	1.70	1.70
		Sub Total -Technology Infrastructure (5)	**33.27**	**33.27**	**33.27**
6	**Civil Infrastructure & Administration**	Customer Relation Centre (CRC)	2.50	2.50	2.50
		Infrastructure for store and offices	10.78	10.78	10.78
		Security Surveillance System and Employee Welfare	5.76	5.76	5.76
		Sub Total – Civil Infrastructure & Admin (6)	**19.04**	**19.04**	**19.04**
		Total (1+2+3+4+5+6)	**358.37**	**358.37**	**294.82**
		Unforeseen CAPEX	20.00	20.00	0.00
		GRAND TOTAL	**378.37**	**378.37**	**294.82**

66. In summary, the Commission's year-wise and cumulative approval for Capex is as under:

Requirement of Minimum Capex as per Vesting Order for FY 2021-22	**Rs. 227.00 Cr.**
Capex Approved by the Commission for FY 2021-22	**Rs. 184.65 Cr.**
Requirement of Minimum Capex as per Vesting Order for FY 2022-23	**Rs. 316.00 Cr.**
Capex Approved by the Commission for FY 2022-23	**Rs. 294.82 Cr.**
Total Minimum Cumulative Capex as per Vesting Order till FY 2022-23	**Rs. 543.00 Cr.**
Total Cumulative Capex Approved by the Commission till FY 2022-23	**Rs. 479.47 Cr.**

67. 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.

68. In addition to the observations stated above, the Commission directs TPSODL 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.

69. 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 take into 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 DISCOM 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 (i) maximum MVA capacity of sub-station (33/11 kV, 11/.4 kV) for Urban & Rural area, (ii) rating of Distribution Transformer (DT) & Power Transformer (PT), (iii) (n-1) contingency Criteria for lines and PT (iv) maximum line length and the power flow in 11 kV & 33 kV lines, (v) span length of 33 kV & 11 kV overhead lines, (vi) type (ACSR/AAAC/High Tempt & low Sag/any other) & size (Dia & Area) of conductor for 33kV & 11kV overhead lines, (vii) Rating of 33kV & 11kV Switchgear/Air break switch/Air Circuit Breaker (A, kA & duration, Type : SF/ Vacuum/ MCCB/ ACB/ Air break switch), (viii) rating of RMU, Auto-recloser

& sectionaliser and (ix) Suitable insulator (polymer/ long rod/ RTV coated porcelain insulator/ normal porcelain or long rod insulators).

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) 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.

i) 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.

j) 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.

70. The Petitioner is also directed to :

a) Expedite the execution of pending works (approved for the FY 2021-22) and submit the report on execution of the activities approved in CAPEX Plan for 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 TPSODL. 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 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.

k) Submit the details of compliances of the directions given in the CAPEX Order of previous years.

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

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

n) Procure the material/award the Contracts only through transparent open competitive bidding process;

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

p) 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.

71. Accordingly the case is disposed of.

Sd/-

(S. K. Ray Mohapatra)
Member

Sd/-

(G. Mohapatra)
Officiating Chairperson

Annexure-1

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

Sl. No.	Description	Existing	Expected addition at the end of				
			FY 2021-22-23	FY 2022-23-24	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 sq.mm	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						