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

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

Case No. 15/2022

M/s. TPNODL ……Petitioner
Vrs.
GRIDCO & Others ….....Respondents

In the matter of: Application for approval of Capital Investment Plan for the FY 2022-23 in the Licensed Area of TP Northern Odisha Distribution Ltd ("TPNODL").

For Petitioner: Shri Bhaskar Sarkar, Chief Executive Officer, TPNODL

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.

O R D E R

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

The Petitioner, M/s. TP Northern Odisha Distribution Limited (TPNODL), has submitted an application for approval of Capital Expenditure (Capex) to the tune of Rs. 442.97 Cr for FY 2022-23 to carry out various system improvement and safety activities in its area of operation. This application has been filed pursuant to the direction of the Commission at para 39 in the vesting order in Case No. 9/2021.

2. TPNODL's licensed area is spread over a geographical area of 27857 sq.km and it serves a registered consumer base of around 20 lakh. TPNODL 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 volt/230 volt depending on the demands of the consumers. A snapshot of infrastructure available with TPNODL has been provided in the table as follows:

Sl. No.	Particulars	Unit	Details (as on 31-Mar-22)
1.	Area	Sq. km	27,857
2.	Consumers	No.	20,51,642
3.	Circles	No.	5
4.	Divisions	No.	16
5.	Sub-divisions	No.	50
6.	Sections	No.	159
7.	33/11 kV sub-stations	No.	228
8.	33/11 kV PTR	No.	505
9.	33/11kV PTR capacity	MVA	2,313
10.	11/0.415 kV DTR	No.	71,358
11.	11/0.415 kV DTR Capacity	MVA	2,618
12.	33 kV OH & UG Line	Ckt. km.	2,868
13.	11 kV OH & UG Line	Ckt. km.	37,296
14.	LT Bare & ABC Line	Ckt. km.	66,469

3. TPNODL 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:

"39. Capital investment plan

…….

(b) In its Bid submitted in response to the RFP, TPCL committed capital expenditure of Rs. 1,270 Cr (Indian Rupee One thousand two hundred and seventy Cr) only for period FY 2021-22 to FY 2025-26 as follows:

Table 1: Capital Expenditure Commitment by TPCL

Capex Commitment (INR Cr)					
FY 22	***FY 23***	***FY 24***	***FY 25***	***FY 26***	***Total***
246	*376*	*259*	*247*	*141*	*1,270*

(c) To allow flexibility in the capital expenditure planning, the Commission stipulates that, in the capital expenditure plan to be submitted by TPNODL 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 TPNODL 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***
246	*622*	*882*	*1,129*	*1,270*

4. 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."

5. 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 TPNODL wishes to avail funding under such scheme, an agreement shall be signed between GoO/ GRIDCO/ OPTCL and TPNODL 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.

....."

6. The Petitioner, TPNODL has submitted that it has inherited the power distribution network in dilapidated state. At some places, the requisite statutory safety norms are not maintained and poses threat to consumers, staff etc. Further, underrated/ undersized/ worn out conductors, poor earthing, presence of either faulty equipments or non-availability of equipments/ switchgears/ protection devices are creating potential safety hazards to the employees, consumers, children, animals, public, etc. TPNODL has therefore come up with this Capital Investment Plan with the primary objective to ensure safe & reliable power supply and best customer service to its end consumers. TPNODL has categorized the various activities of the Capital Investment Plan under 6 major subheads i.e. (i) statutory and safety, (ii) loss reduction, (iii) Reliability, (iv) Network optimization and load growth (v) disaster mitigation (vi) technology and civil infrastructure.

7. 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. TPNODL receives power from 27 no. of Grid Substations to cater to the electricity demand of 20,51,642 consumers. It has 228 no. of 33/11 kV substations (505 nos. of transformer), 98 nos. of 33 kV feeder, 765 nos. of 11 kV feeder and 71358 nos. of DTR. There are 2868 ckt. km. of 33 kV line, 37296 ckt. km. of 11 kV line, 22695 ckt. km. of bare LT line and 43774 ckt. km. of ABC LT line.

8. The petitioner has submitted that due to vast geography, wide spread network and absence of preventive maintenance, the reliability of power supply through existing network has become difficult. Major elements responsible for such deteriorating condition are weak structures which have been affected by flood, cyclone, heavy vegetation, etc. 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 wherever required. The petitioner has also proposed to strengthen earthing system in both Distribution Sub-Station (DSS) and Primary Sub-Station (PSS) as a part of refurbishment activity, which will enhance the safety of the equipment and operating personnel and proper functioning of protection relays. The petitioner has also proposed various activities required to be performed for the aforesaid job.

9. The petitioner has further submitted that most of the 33/11 kV and 11/0.415 kV substations have either broken boundary wall/fence or no boundary/fence. Hence, TPNODL has proposed to put up fencing/building boundary wall as Statutory Safety measure.

10. Therefore, TPNODL has submitted the Detailed Project Report (DPR) for Capex plan of Rs. 442.97 Cr for the FY 2022-23 categorized under the following six broad subheads.

    (i) **Statutory & Safety** – includes Fencing of Distribution substations (DSS), Boundary wall for Primary substations (PSS) and Development of training infrastructure for safety and strengthening of LOTO system.

    (ii) **Loss Reduction** – includes Installation of AMR meters at Distribution transformers, Conversion of Bare LT conductor to AB Cable, Meters and metering equipment for energy audit, Equipment for Meter data downloading,

Equipment for AMR enablement of 3 phase consumer meters and Field Testing equipment – Metering (Portable Calibrator).

(iii) **Reliability –** includes Refurbishment of 33 kV/11 kV Primary Substation (PSS), 33 kV and 11 kV Conductor up gradation, Refurbishment of 11 kV/ 0.415 kV Distribution Substation (DSS), Installation of LV protection at DSS, Installation of Autorecloser/ Sectionalizers, RMUs & FPIs, 33 kV and 11 kV Voltage Regulators for voltage improvement, LT FLC System - Vehicle Fitted (5 Nos. -- 1 for each circle) + Power Analyzer for Transformer workshop (2 Nos.) +Ultrasound Scanner (5 Nos.-1 for each circle), Installation of station transformers, Capacitor Bank at PSS for low voltage improvement and Earthing of Power Transformers and Distribution Transformers.

(iv) **Network Optimization and Load growth –** includes augmentation of power & Distribution Transformers, addition of LT lines, addition of 11 kV Lines (O/H and U/G cable), addition of 33 kV Lines (O/H and U/G cables), addition of New PTR & New DTRs along with Associated HT/LT lines and Provision for Nua Balasore Project.

(v) **Disaster Mitigation** – includes Conversion of 2 nos PSS from AIS to GIS, Conversion pole mounted DTR to plinth mounted (100 KVA and above), Height enhancement of the lines at river crossing , Strengthening of poles in the cyclone prone area, Trolley Mounted Pad Substations, Overhead to Underground conversion for Major City and Emergency Preparedness (Life boat and other emergency accessories).

(vi) **Technology and Civil infrastructure –** includes DC Hardware, Software Licenses for IT Application, end computing devices, Cyber Security, automation of non ODSSP PSS, SCADA-ADMS, GIS Software Implementation and Land Base & Network Survey & Digitization for Balasore & Jajpur Circle, Civil Infrastructure (Office Buildings , PSS, Stores, approach roads, record room , Cafeteria Canteen , MRT office and others), Security cameras and heavy duty Racking system / Storage solutions for the store and Offices Equipment..

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

- **Annexure-1**: Sample Pictures of dilapidated network and civil infrastructure.

- **Annexure-2**: Statutory Guidelines of CEA's Safety Regulations which requires that lines, poles, earthing, transformer mounting, substation (S/S) fencing etc. should be in order.
- **Annexure-3**: DPR for Fencing of Distribution substations (DSS) has been submitted. This shall ensure safety to General Public and Stray Animals. The total projected cost is Rs. 4.68 Cr.
- **Annexure-4**: DPR for Boundary wall for Primary substations (PSS) has been submitted. It avoids unauthorized access of the people, animal inside the PSS which otherwise may lead to fatal accidents, ensure safety to General Public and Stray Animals. The Total projected cost is Rs. 4.95 Cr.
- **Annexure-5**: DPR for Development of training infrastructure for safety and strengthening of LOTO system has been submitted. This shall ensure safety of the TPNODL/ BA Employee and avoid accidents. The total projected cost is Rs. 3.05 Cr.
- **Annexure-6**: DPR for Installation of AMR meters at Distribution transformers has been submitted. This shall ensure to develop a comprehensive energy accounting strategy to reduce AT&C losses, reduction in technical losses, supply more power and improved voltage profile. The proposed cost is Rs. 4.50 Cr.
- **Annexure-7**: DPR for Conversion of LT Bare conductor to AB Cable has been submitted. LT AB cable installation shall bring down the commercial losses beside safety and comparatively lesser maintenance and it is proposed for the theft prone and low voltage area. The proposed cost is Rs. 9.86 Cr.
- **Annexure-8**: DPR for Meters and metering equipment for energy audit has been submitted. This shall ensure to develop a comprehensive energy accounting strategy to reduce AT&C losses. The total projected cost is Rs. 1.19 Cr.
- **Annexure-9**: DPR for Equipment for Meter data downloading has been submitted. This shall ensure to develop a comprehensive energy accounting strategy to reduce AT&C losses and providing automatic monitoring using CMRI and Bluetooth device. The projected cost is Rs. 0.92 Cr.
- **Annexure-10**: DPR for Equipment for AMR enablement of 3 phase consumer meter with projected cost of Rs. 0.50 Cr has been submitted. This shall ensure to develop a comprehensive energy accounting strategy to reduce AT&C losses.

- **Annexure-11**: DPR for Field Testing equipment - Metering (Portable Calibrator) has been submitted. LT/HT Accucheck required to check the accuracy of the meters at field. The total projected cost is Rs. 1.00 Cr.
- **Annexure-12**: DPR for Refurbishment of 33 kV/11 kV Primary Substation (PSS) has been submitted. The 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 result in benefits in the form of improved voltage profile, reliability improvement and reduction in Technical Losses. The projected cost is Rs. 20.00 Cr.
- **Annexure-13**: DPR for 33 kV Conductor up gradation with projected cost of Rs. 11.20 Cr has been submitted. This shall ensure benefit for voltage improvement and loss reduction.
- **Annexure-14**: DPR for 11 kV Conductor up gradation with projected cost of Rs. 8.80 Cr has been submitted. This shall ensure benefit for voltage improvement and loss reduction.
- **Annexure-15**: DPR for Refurbishment of 11 kV/0.415 kV Distribution Substation (DSS) has been submitted. It involves major overhauling of the existing DSS' by providing switchgear-controlled LV protection and appropriate switches. The refurbishment of 500 kVA DSS' shall require Rs. 0.79 Cr, refurbishment of 250 kVA DSS' shall require Rs. 1.67 Cr and refurbishment of 100 kVA DSS' shall require Rs. 2.34 Cr totaling to Rs. 4.80 Cr of investment. This shall ensure voltage improvement and loss reduction.
- **Annexure-16**: DPR for Installation of LV protection at DSS has been submitted. MCCBs shall be installed in the pole mounted 100 kVA (520 nos.) transformers at the cost of Rs. 3.65 Cr, 200/250 kVA (140 nos.) transformers at the cost of Rs. 1.68 Cr and ACB-500 kVA (6 nos.) at the cost of Rs. 0.21 Cr. This shall ensure lower power cuts, reduction of consumer complaints, better reliability, and improvement in SAIFI/SAIDI. The total projected cost is Rs. 5.54 Cr.
- **Annexure-17**: DPR for Installation of Autorecloser/ Sectionalizers, RMUs, &FPIs at a cost of Rs. 21.19 Cr has been proposed, comprising of Rs. 1.56 Cr for Autorecloser, Rs. 4.70 Cr for 11 kV sectionaliser, Rs. 1.25 Cr for FPI, Rs. 5.92

Cr for 4-way RMU outdoor at 11 kV, Rs. 5.13 Cr for 3-way RMU outdoor at 11 kV and Rs. 2.63 Cr for 4-way RMU outdoor at 33 kV. These shall provide benefit of easy fault location, reduced power outage, ensuring continuous power supply, ensuring safety to the operator, providing better flexibility to isolate faulty feeders only.

- **Annexure-18**: DPR for 33 kV and 11 kV Voltage Regulators for voltage improvement has been submitted. 33 kV Voltage Regulators of 10 nos. shall be installed at the cost of Rs. 2.00 Cr and 11 kV Voltage Regulators of 20 nos. shall be installed at the cost of Rs. 2.20 Cr. The total projected cost is Rs. 4.20 Cr.
- **Annexure-19**: DPR for LT FLC System - Vehicle Fitted (5 Nos. -- 1 for each circle) + Power Analyser for Transformer workshop (2 Nos.) +Ultrasound Scanner (5 Nos. -- 1 for each circle) has been submitted. The system is required to find out the fault in cable & panels. The total projected cost is Rs. 3.52 Cr.
- **Annexure-20**: DPR for Installation of station transformers (PPS) has been submitted which cost Rs. 2.55 Cr.
- **Annexure-21**: DPR for Capacitor Bank at PSS for low voltage improvement has been submitted. This shall ensure improvement in voltage profile. The total projected cost is Rs. 0.88 Cr.
- **Annexure-22**: DPR for Earthing of Power Transformers and Distribution Transformers, shall ensure the protection of equipments and human life. The total projected cost is Rs. 0.98 Cr.
- **Annexure-23**: DPR for Augmentation of Power Transformer has been submitted. The augmentation of lines, Power Transformers is proposed to take care of the current peak load and to avoid overloading. The total proposed cost is Rs. 9.96 Cr.
- **Annexure-24**: DPR for Augmentation of Distribution Transformer has been submitted. The augmentation of lines, Power Transformers is proposed to take care of the current peak load and to avoid overloading. The total projected cost is Rs. 20.81 Cr.
- **Annexure-25**: DPR for Addition of new LT Lines has been submitted. This shall ensure voltage improvement and avoid overloading. The total projected cost is Rs. 13.66 Cr.

- **Annexure-26**: DPR for Addition of 11 kV Lines (O/H and U/G) has been submitted. This shall ensure voltage improvement and avoid overloading. The total projected cost is Rs. 33.96 Cr.
- **Annexure-27:** DPR for Addition of 33 kV Lines (O/H and U/G) has been submitted. This shall ensure voltage improvement and avoid overloading. The total projected cost is Rs. 21.74 Cr.
- **Annexure-28**: DPR for Addition of New PTR and New DTRs along with Associated HT/LT lines has been submitted. This shall ensure voltage improvement and avoid overloading. The total projected cost is Rs. 31.15 Cr..
- **Annexure-29**: DPR for Provision for Nua Balasore Project has been submitted. This shall ensure benefit for providing N-1 connectivity and reliability improvement. The total projected cost is Rs. 10.00 Cr.
- **Annexure-30**: DPR for Conversion of 2nos PSS from AIS to GIS has been submitted. This shall ensure reliable power supply to consumers. The total projected cost is Rs. 20.40 Cr.
- **Annexure-31**: DPR for Conversion pole mounted DTR to plinth mounted (100 KVA and above) has been submitted. This shall ensure availability of substations during cyclonic conditions; maintenance of faults or fault restoration will be quickly restored when the transformer is on plinth foundation; fearness regarding pole mounted vs plinth mount was less by public; during cyclones and high-speed wind pole mounted DT's may fall down, but plinth mounted DT' are safe. The total projected cost is Rs. 3.52 Cr.
- **Annexure-32**: DPR for Height enhancement of the lines at river crossing has been submitted. This shall provide reliable Power Supply to consumers without shut down during rainy seasons. The projected cost is Rs. 4.50 Cr.
- **Annexure-33**: DPR for Strengthening of poles in the cyclone prone area provides reliable Power Supply. The projected cost is Rs. 2.40 Cr
- **Annexure-34**: DPR for Trolley Mounted Pad Substations has been submitted. Mobile trolley mounted substation can rapidly restore electrical service, easy mobilization for emergency service, forced outage repairs, temporary service restoration and protection for safe movement over uneven pavement. The projected cost is Rs.2.34 Cr.

- **Annexure-35**: DPR for Overhead to Underground conversion for Major City has been submitted. This shall ensure longer life expectancy, reduced maintenance cost, less service interruptions during storms, reduced fire hazards and prevention of accidents. The projected cost is Rs. 20.00 Cr.
- **Annexure-36**: DPR for Emergency Preparedness (Life boat and other emergency accessories) has been submitted. Life boats will help TPNODL to transport its own equipment without waiting for any NDRF team for restoring the power due to flow of water. The projected cost is Rs. 1.80 Cr.
- **Annexure-37**: DPR for DC Hardware has been submitted. This shall ensure Augmentation of Datacenter infrastructure to cover new IT & digital services for employees and consumers. The projected cost is Rs. 10.33 Cr.
- **Annexure-38**: DPR for Software Licenses for IT Application has been submitted. This shall enhances the digital enablement for employees and consumers for providing services in terms of e-governance of processes and mobile app for consumers. The projected cost is Rs. 12.66 Cr.
- **Annexure-39**: DPR for End computing devices has been submitted, the projected cost is Rs. 8.96 Cr.
- **Annexure-40**: DPR for Cyber Security has been submitted, the projected cost is Rs. 1.20 Cr.
- **Annexure-41**: DPR for Automation of non ODSSP PSS has been submitted, the projected cost is Rs. 15.31 Cr.
- **Annexure-42**: DPR for SCADA-ADMS has been submitted, the projected cost is Rs. 18.09 Cr.
- **Annexure-43**: DPR for GIS Software Implementation and Land Base & Network Survey & Digitization for Balasore & Jajpur Circle has been submitted, the projected cost is Rs. 35.87 Cr.
- **Annexure-44**: DPR for Civil Infrastructure (Office Buildings, PSS, Stores, Approach Roads, Record room, Cafeteria Canteen, MRT office and others) has been submitted, the projected cost shall be Rs. 25.12 Cr.
- **Annexure-45**: DPR for Security cameras and heavy duty Racking system / Storage solutions for the store has been submitted, the projected cost shall be Rs.

0.96 Cr. This shall ensure security of the materials at stores.

- **Annexure-46**: DPR for Offices Equipment has been submitted, the projected cost shall be Rs. 3.93 Cr. This shall ensure equipment required for offices.
- **Annexure-47:** The location wise details of Equipment 33 kV line Proposed for Conductor upgradation & New Lines.

12. The summary of the Capex as proposed by the petitioner for FY 2022-23 is given in the table below:

Sl. No.	Capex Head	Activity	DPR Cost (Rs. Cr)
1	Statutory and Safety	Fencing of Distribution substations	4.68
		Boundary wall for Primary substations	4.95
		Development of training infrastructure for safety and strengthening of LOTO system	3.05
		Total	**12.68**
2	Loss Reduction	Installation of AMR meters at Distribution transformers	4.50
		Conversion of LT Bare conductor to AB Cable	9.86
		Meters and metering equipment for energy audit	1.19
		Equipment for Meter data downloading	0.92
		Equipment for AMR enablement of 3 phase consumer meters	0.50
		Field Testing equipment - Metering (Portable Calibrator)	1.00
		Total	**17.97**
3	Reliability	Refurbishment of 33 kV/11 kV Primary Substation (PSS)	20.00
		33 kV Conductor up gradation	11.20
		11 kV Conductor up gradation	8.80
		Refurbishment of 11 kV /0.415 kV Distribution Substation (DSS)	4.80
		Installation of LV protection at DSS	5.54
		Installation of Auto reclosure / Sectionalizers, RMUs, and FPIs	21.19
		33 kV and 11 kV Voltage Regulators for voltage improvement	4.20
		LT FLC System - Vehicle Fitted (5 Nos. -- 1 for each circle) + Power Analyser for Transformer workshop (2 Nos.) +Ultrasound Scanner (5 Nos. -- 1 for each circle)	3.52
		Installation of station transformers (PPS)	2.55
		Capacitor Bank at PSS for low voltage improvement	0.88
		Earthing of Power Transformers and Distribution Transformers	0.98
		Total	**83.65**

Sl. No.	Capex Head	Activity	DPR Cost (Rs. Cr)
4	Network optimisation and Load Growth	Augmentation of Power Transformer	9.96
		Augmentation of Distribution Transformer	20.81
		Addition of LT lines	13.66
		Addition of 11 kV Lines (O/H and U/G)	33.96
		Addition of 33 kV Overhead Lines (O/H and U/G)	21.74
		Addition of New PTR and New DTRs along with Associated HT/LT lines	31.15
		Provision for Nua Balasore Project	10.00
		Total	**141.28**
5	Disaster Mitigation	Conversion of 2nos PSS from AIS to GIS	20.40
		Conversion pole mounted DTR to plinth mounted (100 KVA and above)	3.52
		Height enhancement of the lines at river crossing	4.50
		Strengthening of poles in the cyclone prone area	2.40
		Trolley Mounted Pad Substations	2.34
		Overhead to Underground conversion for Major City	20.00
		Emergency Preparedness (Life boat and other emergency accessories)	1.80
		Total	**54.96**
6	Technology and Civil Infrastructure	DC Hardware	10.33
		Software Licenses for IT Application	12.66
		End computing devices	8.96
		Cyber Security	1.20
		Automation of non ODSSP PSS	15.31
		SCADA-ADMS	18.09
		GIS Software Implementation and Land Base and Network Survey and Digitization for Balasore and Jajpur Circle	35.87
		Civil Infrastructure (Office Buildings, PSS, Stores, Approach Roads, Record room, Cafeteria Canteen, MRT office and others)	25.12
		Security cameras and heavy-duty Racking system / Storage solutions for the store	0.96
		Offices Equipment	3.93
		Total	**132.43**
Grand Total			**442.97**

13. 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 TPNODL to minimise accidents in the upcoming years.

(c) Circle-wise actual performance (Energy Input, Energy Sales and AT&C loss) for the FY 2021-22 and Circle-wise projected performance from FY 2022-23 to FY 2026-27.

(d) Year-wise details of SAIDI, SAIFI for the FY 2021-22 has been furnished.

(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 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 2020-21.

(g) Details of Status of consumer category wise applications for new service connections.

(h) Details of technical specifications of the major IT related items such as SAN switch and Storage, Server, Core Switch, EMS/NMS software licensee, cyber security etc.

(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.

(j) Circle-wise details of 11 kV feeder.

14. The present Capex proposal was submitted by TPNODL on 11.03.2022. The public notice was issued on 21.04.2022 inviting suggestions/objections to the Capex Plan for the FY 2022-23 of the DISCOMs which were to be filed on or before 04.05.2022. The public hearing on 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. Mohapatra.

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

a) As regards to submission of System Study and time frame of completion, TPNODL has submitted the system study report of Jajpur and Balasore circles. Further, the status of the other 3 circles and target date for completion has also been submitted by TPNODL.

b) With respect to submission of any schemes proposed based on load growth, TPNODL has submitted the list of proposals for PTR augmentation against the load growth scheme.

c) As regards to the query on augmentation of lines specifically mentioning the proposed lines, TPNODL has submitted the proposal for augmentation of 33 kV and 11 kV lines.

d) On the query regarding the steps taken on standardization, TPNODL submitted that they are in the process of standardization of the specifications with the other three DISCOMs of Odisha, till date 60 nos. of specification has been finalized.

e) In the matter relating to design aspects of Cyclone resilient Power System, TPNODL has submitted that they have proposed activities such as Conversion of 2 Nos. PSS from AIS to GIS, Conversion pole mounted DTR to plinth mounted (100 KVA and above), height enhancement of the lines at river crossing, strengthening of poles in the cyclone prone area, Trolley Mounted Pad Substations, Overhead to Underground conversion for major city and Emergency Preparedness (Life boat and other emergency accessories). Activity-wise justification has been submitted for the same.

16. In response to the directions in the Interim Order of the Commission dt. 10.05.2022, TPNODL has submitted as follows:

a) Regarding the Planning and development of distribution network for longer time frame and investment in phased manner, TPNODL has submitted that entire HT network of TPNODL (33 & 11KV) is now 100% documented in terms of single line diagram (SLD). These SLDs were prepared through a focused drive for more than 6 months where in network data was captured through the closed coordination with JE/SDOs/ Lineman. The captured data in terms of network topology, conductor size, DT ratings, PTR ratings, was subsequently modeled in the load flow software.

b) Regarding radial to Ring Main conversion plans and underground cabling plan in urban areas, TPNODL has submitted that currently most of 33 KV network is

operating on the radial mode. At present only 5% PSS are connected through the sources. However, TPNODL envisages increasing this feature of operation in phased manner. Further, as underground network is the most reliable as compare to O/H lines, conversion from overhead to underground lines are proposed to provide reliable power to important/ critical load during the cyclone period as well as normal days. The recommendations from report of "Task force on Cyclone Resilient robust T&D infrastructure in coastal area" are considered while keeping provision for conversion to underground cables of critical 33 and 11 kV O/H lines feeding District Headquarters. Accordingly, detailed studies are undertaken for Balasore and Bhadrak city, within 20 Km from sea coast.

c) Regarding the redundancy in transformation capacity at sub-stations, TPNODL has submitted that 226 Nos. of PSS have 505 Nos of PTRs. PSS audit revels that 39 nos of PTRs are loaded beyond 80 % and 17 PSS having single PTR- non-compliance to (N-1) criteria. To mitigate above, TPNODL have initiated PTR upgradation program with following objectives to be achieved by 2023:

- No 5 MVA PTR will be above 90 % of loading;
- No 3.15 MVA PTR will be above 80% of loading;
- No 1.6 MVA PTR will be above 80% loading;
- All PSS will have N-1 reliability at PTR level.

Higher capacity PTRs will be infused to augment overloaded lower capacity PTRs which will be redeployed for augmentation of further lower size PTR further spare PTRs will be kept as stand by as disaster mitigation reserve. PTR will be added to PSS that are having single PTR.

d) Regarding road map for implementation of SCADA, TPNODL submitted that supervisory Control and Data Acquisition (SCADA) & Advanced Distribution Management System (ADMS) are the software system through which TPNODL intends to monitor the 33/ 11 kV Primary Sub Station (PSS) and its electrical network topology on real time basis to ensure the network reliability and power availability through proactive remedial actions and necessary analysis for making the system robust and reliable to serve electric power to their consumers. Further, down the line, ADMS will be monitoring up to consumers outages through its integration with GIS and CRM and will initiate the remedial action to restore the supply and trigger to network planner to strengthen the areas to improve reliability and quality of power.

e) Regarding Mapping of assets & consumers, TPNODL has submitted that TPNODL is implementing GIS system to have better asset management, consumer mapping and its topology which will further facilitate to implement OT technologies by integrating with GIS. System once implemented will strengthen various other business processes viz. energy audit process, technical feasibility, dues verification, network planning. GIS will be backbone for Electrical linear and nonlinear asset repository as well as its connectivity topology. Being a large geography, GIS will be implemented in parts. In FY 2022-23, it is proposed to implement the GIS in two Circle namely Balasore & Jajpur and remaining Circles will be considered in scope in the upcoming financial year. TPNODL has also planned to procure pan TPNODL satellite image as it will help to create seamless data along with the scope covering survey and capturing of land base, network and consumer database as per actuals from field.

f) Regarding safety measures taken separately for humans and equipments, TPNODL has submitted the following safety measures taken for Humans:

- Installation of the fencing in the DSS;
- Making boundary walls in the PSS;
- Cradle guard under the line at road crossing and line passing through crowed places;
- PPE for every line man / helper;
- Safety trainings to all lineman / Helper /supervisor (including BA employee);
- One Practice Yard in all the circles.

The following safety measures are taken for equipments:

- Replacement/ repair of all faulty 11 kV and 33 kV circuit breaker;
- Refurbishment of the PSS;
- Refurbishment of DSS;
- Installation of LT protection at the DSS;
- Replacement of faulty Battery chargers and battery at the PSS;
- Installation of LAs at 11kV and 33 kV Lines DTs and PSS;
- New earthing at the DTs and PTRs;
- Installation of RMUs, Autoreclosers, Sectionlizer at 11 kV/ 33 kV lines;
- Installation of the energy meters at all 11 kV feeder, 33kV feeder, PTRs

and DTRs to monitor the loading.

g) Regarding the roadmap for design and engineering of cyclone resilient distribution system and standardization of ratings of transformers, switchgear, length of the line (11 kV, 33 kV), size of conductor etc., TPNODL has submitted that to ensure the supply continuity as well as timely restoration after cyclones/ floods, they have followed the recommendations of the Report of Task Force on Cyclone Resilient Robust Electricity Transmission & Distribution (T&D) Infrastructure in Coastal area published in March 2021. Based on the recommendations of above mentioned Task force, TPNODL has proposed to strengthen the OH lines by 1) installation of Spun Poles 2) providing additional poles in between span, and 3) Muffing around the pole. Presently TPNODL is following the standardization as under:

- DTRs: 25 KVA, 100 KVA, 250 KVA, 400KVA, 630 KVA;
- PTRs: 5 MVA, 8 MVA, 12.5 MVA;
- Conductor in 11 kV line: 100 Sqmm, 80 Sqmm, 55 sqmm at small T section where further extension/ back feeding not envisaged;
- Conductor in 33 kV line and Bus: 232 sqmm, 200 sqmm, 148 sqmm.

h) Regarding the use of covered conductor and AB cables, particularly in forest areas, TPNODL has submitted that the bare overhead used is more prone to transient fault due to tree branch touching or any foreign particle fall on the line. Due to this, consumer's experiences frequent fault however, this can be reduced by structured maintenance. Though, Bare conductor is easier to maintain and faster to restore during any fault but at the same time, it requires more clearances. These bare conductor lines are more subject to electricity theft through direct hooking and thus causing revenue leakage in the system. LT AB cables exist in the system and constitute approx. 66 % of the total LT network across TPNODL. In the current year TPNODL has considered conversion of 86 km of LT bare line and construction of 120 Km of LT AB lines.

i) Regarding metering at feeder and distribution transformer level, TPNODL has submitted that the energy meters installed at the exchange points i.e. all 33 kV feeders emanating from the OPTCL are metered and properly accounted. The energy accounting losses at the exchange levels are reduced to acceptable level by ensuring 100% installations of utility meters for 33 kV feeders at the OPTCL also by the correction of the defective wiring. Hence, accurate energy

accounting is ensured at the energy exchange points of utility so that there is no delay for payment of the bulk power purchase bills on account of any discrepancies or disputes but the most of the meters installed at 33 kV/ 11 kV at the PSS are not working properly or no meters are installed on the feeders. So in order to have proper energy audit at 33 kV and 11 kV level, TPNODL has proposed to install 2750 Nos. of DT meters and 610 Nos. of feeder meters for energy audit and monitoring the load on feeders & transformers.

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

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

b) TPNODL 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.

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

a) After compliance of its observations, TPNODL 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.

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

a) Capex approved in the FY 2021-22 under the Fencing work was Rs 9.80 Cr and for Boundary wall was Rs 6.24 Cr (For fencing 1000 no for DSS and Boundary wall for PSS 2593 no). The applicant has again proposed for fencing Rs 4.68 Cr and for Boundary wall Rs 4.95 Cr towards fencing 480 no for DSS and 2940 no Boundary wall for PSS during the FY 2022-23. So the applicant should furnish information on the progress and capitalization of above assets.

b) TPNODL has proposed for 5 no of training infrastructure with 16 practice yard which may have a negative impact on consumers in terms of tariff hike. So the applicant may be allowed for 2 no of training infrastructure and 5 no of practice yards during the FY 2022-23. The Commission may approve additional work in the same category after prudence check of previous work.

c) Procurement of 82 no CMRI was already approved in Capex of FY 2021-22 and Commission has approved Rs 0.28 Cr for the same. In FY 2022-23 TPNODL has proposed for 50 nos CMRI and projected an estimated cost of 0.92 Cr which is 3.28 times that of FY 2021-22.

d) The Commission approved a cost of Rs 1.37 Cr in Capex plan for the FY 2021-22 under GSM Modem for AMR Communication for a proposal of 2500 nos. Again in the FY 2022-23, TPNODL is proposing for same item for 1500 nos and proposed Rs 0.50 Cr. The logic behind procurement 4000 numbers of same equipment may be clarified by the applicant. Further, the proposal for installation of 2750 nos of AMR meter at DTs amounting to a cost of Rs 4.50 Cr. is huge and may be planned over a period of 3 years on priority basis.

e) 66 % of bare conductors were already replaced (Para 7.2.2 of DPR). During the FY 2021-22 TPNODL was allowed Rs 13.1 Cr for above work. The progress of above work in percentage should have been taken care of before proposal for the FY 2022-23 with Rs 9.86 Cr.

f) OPTCL has constructed many 33/11kV substations under ODSSP, DDUGJY and IPDS schemes which are not being taken over by TPNODL and made operational. The Commission may kindly consider the above submission while allowing refurbishment of PSS as proposed under Capex for the FY 2022-23. Various new 33 kV and 11 kV lines have been constructed by OPTCL under DDUGJY and IPDS schemes in NESCO Command area. Even though No. of existing 33 kV and 11 kV lines have also been augmented (Renovation & Modernization works) still TPNODL didn't mention about the said infrastructural developmental works being executed under DDUGJY and IPDS.

g) The Commission had allowed Rs 94.35 Cr under the heading network reliability for procurement of FPI, RMU, earthing, auto-recloser which should have reduced the number and duration of tripping. But as per the DPR the no. of tripping has increased in the FY 2022-23 which implies that the investment made so far are not effective.

h) The commission in its order dt 18.09.2021 in case no 41 of 2021 has directed TPNODL to submit the information related to utilization of 11 kV bays available in 33/11 KV substation in the Capex proposal for the FY 2022-23. But same is missing in the DPR.

i) TPNODL is proposing evacuation of Power from OPTCL Grid substations by laying new 33 kV feeders without identification of particular feeders. The applicant should commit evacuation with identified feeders.

j) In Capex for FY 2021-22 TPNODL has suggested for 10 no of trolley mounted S/Ss. Before placing a proposal for another 14 numbers for the FY 2022-23, TPNODL should mention the status of implementation of the previous Capex plan i.e. for the FY 2021-22.

k) It seems more focus is stressed upon SCADA, IT related stuff, GIS under Technology & Civil Infrastructure (Rs 132.43 Cr.) instead of focusing more on the development of basic infrastructure. The details of various infrastructure development works and installation of single phase and three phase meters along with smart meters (IPDS-IT phase-II) being executed through different government funded schemes are missing.

l) As per practice and standards, the end product of any Capex plan is revenue and tariff forecast which has not been done. Further, the applicant has not submitted any cost benefit analysis in terms of AT&C loss reduction which will restrict the tariff hike.

20. Heard the petitioner & 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 condition and Regulation 4 of the General conditions of Distribution License and 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 supply and to supply electricity in accordance with the provisions in the Act, Rules, Regulations and the direction 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.

21. As per the above provisions in the OERC Tariff Regulations, the Commission asked the petitioner to submit the details of cost benefit analysis, capital structure, capitalisation schedule, financing plan and specific details of work. TPNODL in its reply has submitted the capital structure, capitalization schedule and financing plan. TPNODL has submitted the specific details of works i.e., location at which the works have been proposed for some of the schemes. During the site visits, it was stated by TPNODL that after the issuance of Order of Capital Investment Plan for FY 2021-22, there was very limited time for execution of the schemes considered for FY 2021-22. TPNODL has only utilized 34% of the total Capital Expenditure approved by OERC for FY 2021-22 and TPNODL has submitted that the pending works will be completed and capitalized by Quarter-3 of FY 2022-23.

22. The Commission at this stage has considered and analyzed the Capex plan for FY 2022-23 based on the submissions made by TPNODL. In the present case as per para 39(b) of the Vesting Order, the petitioner committed capital expenditure of Rs.1270 Cr for the period FY 2021-22 to FY 2025-26 as follows :

(Value in Rs. Cr)

FY 22	FY 23	FY 24	FY 25	FY 26	Total
246	376	259	247	141	1,270

(i) As per para 39 (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 TPNODL 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 TPNODL 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***
246	*622*	*882*	*1,129*	*1,270*

23. As regards Capex Proposal for FY 2022-23, TPNODL has submitted that as per the Vesting Order it has to achieve a cumulative Capex of Rs. 622.00 Cr upto FY 2022-23. The Commission has approved Rs. 258.78 Cr under the Capex Plan for FY 2021-22. Hence, to comply with the commitment made in the Vesting Order, TPNODL should have submitted minimum Capex of Rs. 363.22 Cr to meet the cumulative Capex commitment of Rs. 622.00 Cr. However, TPNODL in the current Capex DPR has proposed an investment of Rs. 442.97 Cr.

24. The main objective of the investment plan is to develop and maintain an efficient, coordinated and economic distribution system in its area of operation. TPNODL shall affect supply of electricity to consumers in accordance with the provisions of the Act, Rules, Regulations, Orders framed there under and the direction of the Commission. The Commission further considers the following major aspects while finalizing the investment plan proposed by TPNODL.

(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 are any backlogs in the activities which are approved in FY 2021-22?

25. The Commission also 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 has engaged a third party Consultancy firm for the evaluation of the Capital Expenditure Plan of TPNODL. 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.

26. The Commission has examined the investments proposed by the petitioner. The Commission has observed that TPNODL has proposed higher DPR Cost than the Cost approved as per the Vesting Order. Further, it is also observed that there is no variation in the Capex value proposed in the DPR for FY 2022-23 and the Capex as approved by their Board's 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****
376*	442.97	442.97

**Capex Commitment by TPCL*

27. The major heads under proposed Capex plan are as shown below:

Sl. No.	**Capex Head**	**As per DPR (Rs. Cr)**	**As per Board Approval* (Rs. Cr)**
1	Statutory and Safety	12.68	12.68
2	Loss Reduction	17.97	17.97
3	Reliability	83.65	83.65
4	Network Optimisation and Load Growth	141.28	141.28
5	Disaster Mitigation	54.96	54.96
6	Technology and Civil Infrastructure	132.43	132.43
Total Proposed Capex		**442.97**	**442.97**

28. In TPNODL, 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 TPNODL, any Capital Investment Plan should have Board's Approval before the Commission's

approval is granted. During the analysis, the Commission observed that the DPR for Proposed Capex Plan and Board Approved Capex Plan for FY 2022-23 are the same.

29. The Commission has analyzed each activity in the submission of TPNODL's Capex DPR and evaluated the same considering the following methodology:

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

(b) Verification of the Schemes claimed in line with the provision of various Regulations of OERC, Act, Orders etc.

(c) Analysis of the pending activity/work approved for FY 2021-22.

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

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

(f) For Cost Analysis, comparison of the cost submitted in the DPR along with the cost of materials provided at the Cost Data Book, 2019 issued by Government of Odisha has been done. For the materials which are not mentioned in Cost Data Book, 2019, the reference rates of other States like Maharashtra and Telangana or prevailing market rates has been considered.

30. 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 TPNODL.

31. During the activity-wise analysis for the Capex approved in FY 2021-22, it has been observed that there are few activities where TPNODL has utilized less than 50% of the approved capital expenditure for FY 2021-22 and again same activity has been proposed in FY 2022-23. In such cases, according to the importance of the activity, the Commission has allowed 50% of the Proposed Cost for the activity submitted in Capex DPR for FY 2022-23.

32. The summary of current status of schemes approved under Capex Plan for FY 2021-22 as submitted by TPNODL 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 & Safety	28.45	7.07	0.24
Loss Reduction	16.39	7.64	0.36
Reliability Improvement	94.35	22.28	3.79

Capex Head	OERC approved Capex (Rs. Cr)	Actual Capital Expenditure in FY 2021-22 (Rs. Cr)	Actual Capitalisation in FY 2021-22 (Rs. Cr)
Load Growth	21.71	5.66	0.33
Technology & Civil Infrastructure	97.88	45.77	39.65
Total	**258.78**	**88.42**	**44.38**

A. Statutory and Safety

33. The Commission has noted the importance of all the parameters considered under the Statutory and Safety head viz. Personal Protection Equipment (PPE) & testing equipments, Cradle guard at major road crossings, fencing of Distribution substations (DSS), Boundary wall for Primary substations (PSS) and establishment of meter testing lab, etc. 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 activities.

34. During the analysis, for Statutory and Safety, it is observed that TPNODL has been able to utilize only 22% of the approved Capex in the FY 2021-22 for the activity under Fencing of Distribution Substations (DSS). Further, TPNODL is targeting to complete the backlog of this activity by Quarter-2 of FY 2022-23. Hence, the Commission decides to allow 50% of the Capex proposed for this activity (i.e. 50% of Rs. 4.68 Cr) for FY 2022-23.

35. During the analysis, for Statutory and Safety, it is observed that TPNODL has been able to utilize 78% of the approved Capex in the FY 2021-22 for the activity under Boundary wall for Primary substations (PSS). Hence, the Commission decides to allow 80% of the Capex proposed for this activity (i.e. 80% of Rs. 4.95 Cr) for FY 2022-23.

36. The Commission has also observed that as per the Accident Reports submitted by TPNODL (based on last 10 years data), 64% (Humans + Animals) of accidents are fatal, out of which 62% relate to humans. The Commission is of the view that the proposals submitted by TPNODL under Statutory & Safety are essential to minimize of accidents in the upcoming years.

37. The Commission approves the Capex for Rs. 9.35 Cr as proposed in the DPR under Statutory and Safety. The Commission expects that with the investments considered under Statutory and Safety, there should be substantial reduction in accidents.

38. 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)
Fencing of Distribution substations (DSS)	4.68	4.68	2.34
Boundary wall for Primary substations (PSS)	4.95	4.95	3.96
Development of training infrastructure for safety and strengthening of LOTO system	3.05	3.05	3.05
Total	**12.68**	**12.68**	**9.35**

B. Loss Reduction

39. The Commission has noted the schemes and claims of the petitioner under the Loss Reduction Scheme. While comparing the Unit Rates of various items proposed in the DPR with the Cost Data Book, the Commission observed some deviations in the rates considered for several schemes. Under such cases, the Commission has considered Unit Rate as per Cost Data Book while arriving at the total cost.

40. TPNODL has not been able to utilize the Capex approved under the Loss Reduction scheme. As per the work progress data submitted, it is observed that TPNODL has incurred Rs. 7.64 Cr (as against the approved Capex of Rs. 16.39 Cr) which is 46.60% of the OERC approved Capital Expenditure for the FY 2021-22. Further, TPNODL has submitted that 100% capitalization of the OERC approved amount of Rs. 16.39 Cr under Loss Reduction Scheme will be achieved by 3rd Quarter of FY 2022-23.

41. During analysis, the Commission observed some deviations in the rates of Equipment for the following activities:

- AMR enablement of 3 phase consumer meters (considering the rates as per the Cost Data Book and Rate Contract of TPNODL, the total cost under this head works out to Rs. 0.45 Cr against claimed amount of Rs. 0.50 Cr).
- It is observed that TPNODL has been able to utilize 51% of the approved Capex in the FY 2021-22 for the activity under Conversion of LT Bare conductor to AB Cable. Hence, the Commission decides to allow 50% of the Capex proposed for this activity (i.e. 50% of Rs. 9.86 Cr) for FY 2022-23.
- Under equipment for meter data downloading, TPNODL was unable to utilize completely the Capex approved for FY 2021-22. Hence, the Commission decides to allow 50% of the Capex proposed for this activity (i.e. 50% of Rs.

0.92 Cr) for FY 2022-23.

It has also been observed that TPNODL has not utilized approved Capex for the activity – Field Testing equipment – Metering (Portable Calibrator) in the FY 2021-22. Further, TPNODL is targeting to complete the backlog of this activity by Quarter-2 of FY 2022-23. Considering the importance of the activity, the Commission decides to allow Rs. 1.00 Cr as proposed by TPNODL.

42. Based on the above analysis and considering the importance of Loss Reduction under the Capital Investment Plan, the Commission decides to allow Capex of Rs. 12.53 Cr against the proposed Capex amount of Rs. 17.97 Cr claimed under Loss Reduction.

43. 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)
Installation of AMR meters at Distribution transformers.	4.50	4.50	4.50
Conversion of LT Bare conductor to AB Cable	9.86	9.86	4.93
Meters and metering equipment for energy audit	1.19	1.19	1.19
Equipment for Meter data downloading	0.92	0.92	0.46
Equipment for AMR enablement of 3 phase consumer meters	0.50	0.50	0.45
Field Testing equipment – Metering (Portable Calibrator)	1.00	1.00	1.00
Total	**17.97**	**17.97**	**12.53**

C. <u>Network Reliability</u>

44. 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 TPNODL, the Commission is of the view that all the schemes covered under the Network Reliability aims to strengthen the network. While comparing the Unit Rates of various items proposed in the DPR with the Cost Data Book, the Commission observed that some deviations in the rates considered for several schemes. Under such cases, the Commission has considered Unit Rate as per Cost Data Book while arriving at the total cost.

45. TPNODL has not been able to utilise the Capex approved under the Network Reliability

scheme. As per the work progress data submitted, it is observed that TPNODL has incurred Rs. 22.28 Cr (as against the approved Capex of Rs. 94.35 Cr) which is 24% of the OERC approved Capital Expenditure for the FY 2021-22. Further, TPNODL has submitted that 100% capitalization of the OERC approved amount of Rs. 94.35 Cr under Network Reliability Scheme will be achieved by 3rd Quarter of FY 2022-23.

46. During the analysis, it is observed there has been backlogs in some of the activities approved under the Capex Plan for the FY 2021-22 which are discussed below:

- **Refurbishment of 33kV/11kV Primary Substation (PSS)**, it is observed that TPNODL has utilised only Rs. 3.08 Cr (19%) as against the approved Capex of Rs. 16.29 Cr under Refurbishment of 33kV/11kV Primary Substation (PSS) in the FY 2021-22. Further, TPNODL is targeting to complete the backlog of this activity by Quarter-3 of FY 2022-23. Hence, the Commission decides to partially allow 50% of the Capex proposed for this activity (i.e. 50% of Rs. 20.00 Cr) for FY 2022-23.

- **Refurbishment of 11 kV/0.415 kV Distribution Substation (DSS)**, it is observed that TPNODL has utilised only Rs. 1.88 Cr (21%) as against the approved Capex of Rs. 8.90 Cr under Refurbishment of 11 kV/0.415 kV Distribution Substation (DSS) in the FY 2021-22. Further, TPNODL is targeting to complete the backlog of this activity by Quarter-3 of FY 2022-23. Hence, the Commission decides to allow 50% of Capex proposed for this activity (i.e. 50% of Rs. 4.80 Cr) for FY 2022-23.

- **Installation of Autorecloser/ Sectionalizers, RMUs, and FPIs**, it is observed that TPNODL has not utilised Capex (0%) as against the approved Capex value of Rs. 5.07 Cr under Installation of 33 kV AB Switch, Rs. 0.72 Cr (24%) as against the approved Capex of Rs. 3.05 Cr for Installation of Autorecloser / Sectionalizers, RMUs, and FPIs in the FY 2021-22. Further, TPNODL is targeting to complete the backlog of this activity by Quarter-3 of FY 2022-23. Hence, the Commission decides to allow 50% of the Capex proposed for this activity (i.e. 50% of Rs. 21.19 Cr) for FY 2022-23.

- **Earthing of Power Transformers and Distribution Transformers,** it has been observed that less than 40% of approved Capex for FY 2021-22 has been utilized. Hence, the Commission decides to allow 50% of the Capex proposed for this activity (i.e. 50% of Rs. 0.98 Cr) for FY 2022-23.

47. Hence as discussed above, the Commission decides to limit the Capex under Network Reliability to Rs. 60.18 Cr against the proposed Capex of Rs. 83.65 Cr.

48. The summary of Capex proposed in the DPR, Capex 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 33kV/11kV Primary Substation (PSS)	20.00	20.00	10.00
33 kV Conductor up gradation	11.20	11.20	11.20
11 kV Conductor up gradation	8.80	8.80	8.80
Refurbishment of 11kV/0.415 kV Distribution Substation (DSS)	4.80	4.80	2.40
Installation of LV protection at DSS	5.54	5.54	5.54
Installation of Auto reclosure / Sectionalizers, RMUs, and FPIs	21.19	21.19	10.60
33 kV and 11 kV Voltage Regulators for voltage improvement	4.20	4.20	4.20
LT FLC System - Vehicle Fitted (5 Nos. -- 1 for each circle) + Power Analyser for Transformer workshop (2 Nos.) +Ultrasound Scanner (5 Nos. -- 1 for each circle)	3.52	3.52	3.52
Installation of station transformers (PPS)	2.55	2.55	2.55
Capacitor Bank at PSS for low voltage improvement	0.88	0.88	0.88
Earthing of Power Transformers and Distribution Transformers	0.98	0.98	0.49
Total	**83.65**	**83.65**	**60.18**

D. Load Growth

49. The Commission has noted the schemes and claims of the petitioner under the Load Growth Scheme. After analyzing the annual growth rate for the period from FY 2017-18 to FY 2020-21 for different category of consumers, it is observed that category-wise sales growth is in the range of 4% to 7% with overall CAGR of around 3% and CAGR

of Load Growth is around 6.74%. Load growth has been showing rising trend, which justifies the requirement of additional 11 kV line, PTR, DTR and LT line to meet the growth in demand. While comparing the Unit Rates of various items proposed in the DPR with the Cost Data Book, the Commission observed some deviations in the rates considered for several schemes. Under such cases, the Commission has considered Unit Rate as per Cost Data Book while arriving at the total cost.

50. TPNODL has not been able to utilize the Capex approved towards the Load Growth scheme in FY 2021-22. As per the work progress data submitted, it is observed that TPNODL has utilized Rs. 5.66 Cr (as against the approved Capex of Rs. 21.71 Cr) which is 26.06 % of the OERC approved Capital Expenditure for the FY 2021-22. Further, TPNODL has submitted that 100% capitalization of the OERC approved amount of Rs. 21.71 Cr under Load Growth Scheme will be achieved by 2nd Quarter of the FY 2022-23.

51. During analysis, the Commission observed some deviations in the rates for the following activities:

- **Augmentation from 5 MVA to 8 MVA Power Transformer**, it has been observed that TPNODL has not utilised the approved Capex of Rs. 8.70 Cr in the FY 2021-22. Further, TPNODL is targeting to complete the backlog of this activity by Quarter-2 of FY 2022-23. Hence, the Commission decides to allow 50% of the Capex proposed for Augmentation of Power Transformers (i.e. 50% of Rs. 9.96 Cr) for the FY 2022-23.

- **Addition of 11 kV Overhead Line**, it is observed that TPNODL has utilised only Rs. 0.44 Cr against the approved Capex value of Rs. 1.68 Cr in the FY 2021-22. Further, TPNODL is targeting to complete the backlog of this activity by Quarter-2 of FY 2022-23. Hence, the Commission decides to allow 50% of the Capex proposed for addition of 11 kV lines (O/H and U/G cable) (i.e. 50% of Rs. 33.96 Cr) for the FY 2022-23.

- **Addition of 33 kV Overhead Line:** It is observed that TPNODL is unable to utilize Capex under load growth approved for FY 2021-22 and has utilized overall 26% of the approved Capex. Accordingly, the Commission decides to allow 50% of the Capex proposed under this head (i.e. 50% of Rs 21.74 Cr) for the FY 2022-23 considering the ability of TPNODL to utilize the proposed investment.

- **Addition of New PTR and New DTRs along with Associated HT/LT lines:** It is observed that TPNODL is unable to utilize Capex under load growth approved for FY 2021-22 and has utilized overall 26% of the approved Capex. Accordingly, the Commission decides to allow 50% of the Capex proposed under this head (i.e. 50% of Rs 31.15 Cr) for the FY 2022-23 considering the ability of TPNODL to utilize the proposed investment.

52. Hence as discussed above, the Commission decides to limit the Capex under Load Growth to Rs. 92.88 Cr against the proposed Capex of Rs. 141.28 Cr.

53. 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)
Augmentation of Power Transformers	9.96	9.96	4.98
Augmentation of Distribution Transformers	20.81	20.81	20.81
Addition of LT lines	13.66	13.66	13.66
Addition of 11 kV Lines (O/H and U/G)	33.96	33.96	16.98
Addition of 33 kV Overhead Lines (O/H and U/G)	21.74	21.74	10.87
Addition of New PTR and New DTRs along with Associated HT/LT lines	31.15	31.15	15.58
Provision for Nua Balasore Project	10.00	10.00	10.00
Total	**141.28**	**141.28**	**92.88**

E. <u>Disaster Mitigation</u>

54. The Commission has noted the schemes and claims of the petitioner under the Disaster Mitigation. The Commission is of the view that the requirement of the Capex proposed under the Disaster Mitigation has to ensure the supply continuity as well as early restoration of the system after cyclones/ floods and follow the recommendations of the Report of Task Force on Cyclone Resilient Robust Electricity Transmission and Distribution (T&D) Infrastructure in Coastal area published in March 2021.

- **Trolley Mounted Pad Substations:** It is observed that TPNODL has proposed 14 Nos. of Trolley Mounted Pad Substations at Annexure-34. The Commission decides to allow 50% of the Capex proposed under this head (i.e. 50% of Rs 2.34 Cr) for the FY 2022-23.

55. Based on the analysis and considering the importance of Disaster Mitigation, the Commission decides to allow the Capex amount of Rs. 53.79 Cr as proposed in the DPR.

56. 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)
Conversion of 2nos PSS from AIS to GIS	20.40	20.40	20.40
Conversion pole mounted DTR to plinth mounted (100 KVA and above)	3.52	3.52	3.52
Height enhancement of the lines at river crossing	4.50	4.50	4.50
Strengthening of poles in the cyclone prone area	2.40	2.40	2.40
Trolley Mounted Pad Substations	2.34	2.34	1.17
Overhead to Underground conversion for Major City	20.00	20.00	20.00
Emergency Preparedness (Life boat and other emergency accessories)	1.80	1.80	1.80
Total	**54.96**	**54.96**	**53.79**

F. <u>Technology and Civil Infrastructure</u>

57. The Commission has noted the schemes and claims of the petitioner under the Technology and Civil Infrastructure Scheme. The Commission is of the view that the requirement of the Capex proposed under the Technology and Civil Infrastructure has to be considered in view of the long-term benefits as there are number of schemes under IT infrastructure development, which are one-time investments and the Civil works are also essential requirements.

58. TPNODL has partially not been able to utilize the Capex approved under the Technology Infrastructure scheme. As per the work progress data submitted, it is observed that TPNODL has utilized Rs. 45.77 Cr (as against the approved Capex of Rs. 97.88 Cr) which is 46.76 % of the OERC's approved Capital Expenditure for the FY 2021-22. Some of the schemes such as IT Infrastructure, End user Devices i.e., Laptop, desktop, Printer, scanner, Software Licenses and Building shed for material storage with racking system has been fully capitalized by TPNODL. TPNODL has also submitted that capitalization of the OERC approved amount of Rs. 39.65 Cr under Technology and Civil Infrastructure Scheme will be achieved before 4th Quarter of FY 2022-23.

59. During the analysis, it is observed there has been backlogs in some of the activities approved in the Capex Plan for the FY 2021-22 which are discussed below:

- **Automation of non ODSSP PSS and SCADA-ADMS (20 nos ODSSP & 10 nos Old PSS)**: It is observed that TPNODL has utilised only Rs. 0.20 Cr (8%) against the approved Capex value of Rs. 2.55 Cr in the FY 2021-22. Further, TPNODL is targeting to complete the backlog of this activity by Quarter-2 of FY 2022-23. Hence, the Commission decides to allow 50% of the Capex proposed under Automation of non ODSSP PSS (i.e. 50% of Rs. 15.31 Cr) and for SCADA-ADMS (i.e. 50% of Rs. 18.09 Cr) for FY 2022-23.

- **GIS Implementation for One Division** - It is observed that TPNODL has not utilised Capex against the approved Capex of Rs. 3.00 Cr in the FY 2021-22. Further, TPNODL has requested OERC for allowing Rs. 4.91 Cr in addition to the approved Capex value for FY 2021-22. OERC, vide letter dated 06/12/2021, has provided in-principle approval for GIS Implementation. During the site visit it was clarified by the TPNODL officials that the work order has been placed for GIS implementation. Further, TPNODL is targeting to complete the backlog of this activity by Quarter-3 of FY 2022-23. Hence, the Commission decides to allow 50% of the Capex proposed under GIS Software Implementation and Land Base and Network Survey and Digitization for Balasore and Jajpur Circle (i.e. 50% of Rs. 35.87 Cr) for the FY 2022-23.

60. The Commission decides to limit the Capex under Technology and Civil Infrastructure to Rs. 97.81 Cr against the Capex Proposal of Rs. 132.43 Cr for the FY 2022-23.

61. 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)
DC Hardware	10.33	10.33	10.33
Software Licenses for IT Application	12.66	12.66	12.66
End computing devices	8.96	8.96	8.96
Cyber Security	1.20	1.20	1.20
Automation of non ODSSP PSS	15.31	15.31	7.66
SCADA-ADMS	18.09	18.09	9.05
GIS Software Implementation and Land Base and Network	35.87	35.87	17.94

Description	Capex as per DPR (Rs. Cr)	Board Approved Capex (Rs. Cr)	OERC Approved Capex (Rs. Cr)
Survey and Digitization for Balasore and Jajpur Circle			
Civil Infrastructure (Office Buildings, PSS, Stores, Approach Roads, Record room, Cafeteria Canteen, MRT office and others)	25.12	25.12	25.12
Security cameras and heavy-duty Racking system / Storage solutions for the store	0.96	0.96	0.96
Offices Equipment	3.93	3.93	3.93
Total	**132.43**	**132.43**	**97.81**

62. In view of the necessity of the proposed capital investment plan, the Commission hereby grants in principle approval to following proposals and the summary of the approved cost under the Capex plan for the FY 2022-23 are as follows:

Approved Capex Plan 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 and Safety	Fencing of Distribution substations	4.68	4.68	2.34
		Boundary wall for Primary substations	4.95	4.95	3.96
		Development of training infrastructure for safety and strengthening of LOTO system	3.05	3.05	3.05
		Total	**12.68**	**12.68**	**9.35**
2	Loss Reduction	Installation of AMR meters at Distribution transformers	4.50	4.50	4.50
		Conversion of LT Bare conductor to AB Cable	9.86	9.86	4.93
		Meters and metering equipment for energy audit	1.19	1.19	1.19
		Equipment for Meter data downloading	0.92	0.92	0.46
		Equipment for AMR enablement of 3 phase consumer meters	0.50	0.50	0.45
		Field Testing equipment - Metering (Portable Calibrator)	1.00	1.00	1.00
		Total	**17.97**	**17.97**	**12.53**
3	Reliability	Refurbishment of 33KV/11KV Primary Substation (PSS)	20.00	20.00	10.00
		33 KV Conductor up gradation	11.20	11.20	11.20
		11 KV Conductor up gradation	8.80	8.80	8.80
		Refurbishment of 11KV/0.415 KV Distribution Substation (DSS)	4.80	4.80	2.40
		Installation of LV protection at DSS	5.54	5.54	5.54
		Installation of Auto reclosure / Sectionalizers, RMUs, and FPIs	21.19	21.19	10.60
		33 kV and 11 kV Voltage Regulators for voltage improvement	4.20	4.20	4.20

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)
		LT FLC System - Vehicle Fitted (5 Nos. -- 1 for each circle) + Power Analyser for Transformer workshop (2 Nos.) +Ultrasound Scanner (5 Nos. -- 1 for each circle)	3.52	3.52	3.52
		Installation of station transformers (PPS)	2.55	2.55	2.55
		Capacitor Bank at PSS for low voltage improvement	0.88	0.88	0.88
		Earthing of Power Transformers and Distribution Transformers	0.98	0.98	0.49
		Total	**83.65**	**83.65**	**60.18**
4	Network Optimisation & Load Growth	Augmentation of Power Transformer	9.96	9.96	4.98
		Augmentation of Distribution Transformer	20.81	20.81	20.81
		Addition of LT lines	13.66	13.66	13.66
		Addition of 11 kV Lines (O/H and U/G)	33.96	33.96	16.98
		Addition of 33 kV Overhead Lines (O/H and U/G)	21.74	21.74	10.87
		Addition of New PTR and New DTRs along with Associated HT/LT lines	31.15	31.15	15.58
		Provision for Nua Balasore Project	10.00	10.00	10.00
		Total	**141.28**	**141.28**	**92.88**
5	Disaster Mitigation	Conversion of 2nos PSS from AIS to GIS	20.40	20.40	20.40
		Conversion pole mounted DTR to plinth mounted (100 KVA and above)	3.52	3.52	3.52
		Height enhancement of the lines at river crossing	4.50	4.50	4.50
		Strengthening of poles in the cyclone prone area	2.40	2.40	2.40
		Trolley Mounted Pad Substations	2.34	2.34	1.17
		Overhead to Underground conversion for Major City	20.00	20.00	20.00
		Emergency Preparedness (Life boat and other emergency accessories)	1.80	1.80	1.80
		Total	**54.96**	**54.96**	**53.79**
6	Technology and Civil Infrastructure	DC Hardware	10.33	10.33	10.33
		Software Licenses for IT Application	12.66	12.66	12.66
		End computing devices	8.96	8.96	8.96
		Cyber Security	1.20	1.20	1.20
		Automation of non ODSSP PSS	15.31	15.31	7.66
		SCADA-ADMS	18.09	18.09	9.05
		GIS Software Implementation and Land Base and Network Survey and Digitization for Balasore and Jajpur Circle	35.87	35.87	17.94
		Civil Infrastructure (Office Buildings, PSS, Stores, Approach Roads, Record room, Cafeteria Canteen, MRT office and others)	25.12	25.12	25.12

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)
		Security cameras and heavy-duty Racking system / Storage solutions for the store	0.96	0.96	0.96
		Offices Equipment	3.93	3.93	3.93
		Total	**132.43**	**132.43**	**97.81**
Grand Total			**442.97**	**442.97**	**326.54**

63. In summary, the year-wise and cumulative Capex approved by the Commission is as under:

Requirement of Minimum Capex as per Vesting Order for FY 2021-22	**Rs. 246.00 Cr.**
Capex Approved by the Commission for FY 2021-22	**Rs. 258.78 Cr.**
Requirement of Minimum Capex as per Vesting Order for FY 2022-23	**Rs. 376.00 Cr.**
Capex Approved by the Commission for FY 2022-23	**Rs. 326.54 Cr.**
Total Minimum Cumulative Capex as per Vesting Order till FY 2022-23	**Rs. 622.00 Cr.**
Total Cumulative Capex Approved by the Commission till FY 2022-23	**Rs. 585.32 Cr.**

64. 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.

65. In addition to the observations stated above, the Commission directs TPNODL 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.

66. 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 should 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.

67. 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) Provide Cost Benefits analysis such as % loss reduction which is 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.

i) 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.

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

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

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

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

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

o) 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.

68. 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 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						