TPNODL

Detailed Project Report (DPR)

For

Capex Plan- FY 2024-25 & FY 2025-26

Submitted By

TP Northern Odisha Distribution Ltd

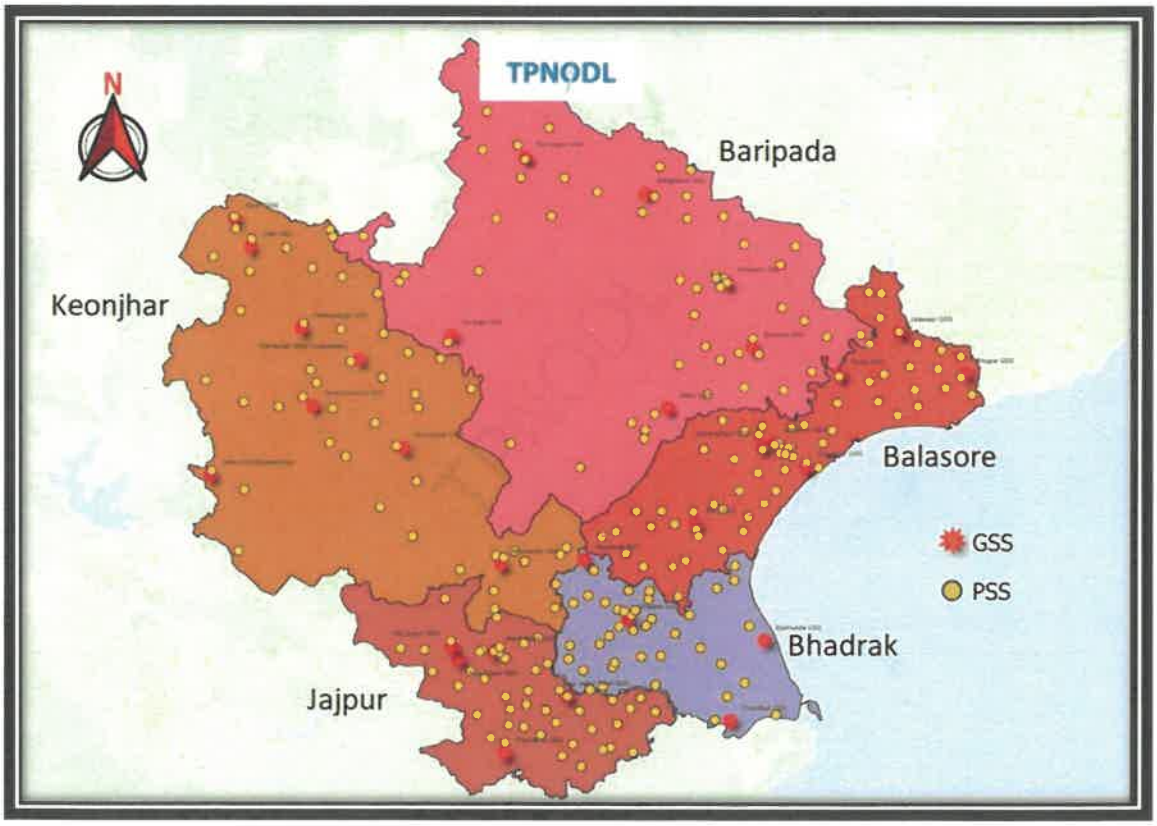


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Glossary	
AB SWITCH	Air Break Switch
AC	Alternating Current
ADMS	Advanced Distribution Management System
U/G	Under Ground
AMI	Automatic Meter Infrastructure
AMR	Automated Meter Reading
UPS	Uninterrupted Power Supply
AT&C	Aggregate Technical and Commercial
BA	Business Associate
LTCT	Low Tension Current Transformer
BO	Business Output
BPL	Below Poverty Limit
BW	Business Warehouse
CAIDI	Customer Average Interruption Duration Index
CAPA	Corrective Action and Preventive Action
CAPEX	Capital Expenditure
CC	Control Centre
CIS	Customer Information System
Ckt.KM	Circuit Kilo meters
COTS	Commercial of the shelf
COVID	Corona Virus Disease
CPSCC	Central Power System Control Centre
CRM	Customer Relationship Management
CSR	Corporate Social Responsibility
CT	Current Transformer
CWIP	Current Work in Progress

Glossary	
MBC	Metering Billing and Collection
MCC	Master Control Centre
MCCB	Moulded Case Circuit breaker
MM	Material Management
MMG	Meter Management Group
MPG	Maintenance Planning Group
MPLS	Multi-Protocol Label Switching
MRT	Meter Reading & Testing
MS	Microsoft
MTTR	Mean Time to Repair
MU	Million Unit
MV	Medium Voltage
MVA	Mega Volt Ampere
MW	Mega Watt
NABL	National Accreditation Board for Testing and Calibration Laboratories
NCC	No Current Complaint
NESCO	North Eastern Electricity supply Company of Odisha Ltd.
O&M	Operation & Maintenance
ODSSP	Odisha Distribution System Strengthening Project
OEM	Original Equipment Manufacturer
OERC	Odisha Electricity Regulatory Commission
OFC	Optic Fibre Cable
O/H	Over head
OMS	Outage Management System
OPEX	Operational Expenditure
OPGW	Optical Ground Wire

Glossary	
CYMEDIST	Distribution System Analysis Package of CYME
DC	Direct Current
DCP	Data Collection Point
DD	Drop Down
DMS	Distribution Management System
DPR	Detailed Project Report
DSS	Distribution Sub-Station
DT	Distribution Transformer
EHT	Extra High Tension
ELCB	Earth Leakage Circuit Breaker
EPC	Engineering Procurement and Construction
ERP	Enterprise Resource Planning
FCC	Fuse Call Centre
FPI	Fault Passage Indicator
FY	Financial Year
GIGO	Garbage in, garbage out
GIS	Geographical Information System
GoI	Government of India
GoO	Government of Odisha
GRIDCO	Grid Corporation of Odisha
GSAS	Grid Station Automation System
GSS	Grid Sub Station
HMC	Hub Maintenance Crew
HT	High Tension
HTCT	High Tension Current Transformer
HVAC	Heating, Ventilation and Air Conditioning
HVDS	High Voltage Distribution System

Glossary	
OPTCL	Odisha Power Transmission Corporation Limited
OS	Operating System
OT	Operational Technology
PBMC	Performance Based Maintenance Contracts
PC	Personal Computer
PGCIL	Power Grid Corporation of India Limited
PoC	Proofing of Concept
LV	Low Voltage
PP	Production Planning
PSC	Power System Control
PT	Potential Transformer
PTR	Power Transformer
PTW	Permit to Work
RoW	Right of Way
R&R	Reward & Recognition
RCA	Root Cause Analysis
RMU	Ring Main Unit
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
SAP	System Application and Products
SBM	Spot Billing Module
SCADA	Supervisory Control and Data Acquisition
SD	Sales and Distribution
SDO	Sub Divisional Officer
SHG	Self help Group
SITC	Supply Installation Testing and Commissioning
SLA	Service Level Agreement

Glossary	
IEC	International Electro technical Commission
IED	Intelligent Electronic Devices
IEMS	Input Energy Monitoring System
IMS	Integrated Management System
IPDS	Integrated Power development scheme
ISU	Industry Specific Solution Utility
IT	Information Technology
ITIA	IT Implementation Agency
JE	Junior Engineer
KM	Kilo meter
KV	Kilo Volt
KVA	Kilo Volt Ampere
LDMS	Local Data Monitoring System

Glossary	
SLDC	State Load Dispatch Centre
SLMC	System Line Maintenance Crew
SMC	Substation Maintenance Crew
SMS	Short Message Service
SOP	Standard Operating Procedure
SSL	Secure Sockets Layer
STS	Sub Transmission System
STS	Sub transmission system
T&D	Training & Development
TBEM	TATA Business Excellence Model
TCOC	TATA Code of Conduct
TPCODL	TP Central Odisha Distribution Limited
LT	Low Tension

BEFORE THE ODISHA ELECTRICITY REGULATORY COMMISSION
PLOT NO.4, CHUNUKOLI, SAILASHREE VIHAR
CHANDRASEKHARPUR, BHUBANESWAR

IN THE MATTER OF Application for approval of Capital Investment Plan for the FY 2024-25 and FY 2025-26 in the licensed area of operation of TP Northern Odisha Distribution Limited in compliance to Vesting order of Hon'ble Commission and in in conformity with the applicable regulations.

And

IN THE MATTER OF TP Northern Odisha Distribution Limited (TPNODL), Registered & Corporate Office: Januganj, Balasore, Odisha-756019, Represented by its Chief Executive Officer.

--------Applicant

And

IN THE MATTER OF: All Stake Holders

Affidavit verifying the application for approval of Capital Investment plan for the FY 2024-25 and FY 2025-26.

I, Bhaskar Sarkar, aged about 58 years, son of Late Arup Kumar Sarkar, residing at Balasore, do hereby solemnly affirm and state as follows: -

I am the Chief Executive Officer of TP Northern Odisha Distribution Limited-the applicant in the above matter and duly authorised to swear this affidavit on its behalf.

The statements made in the application along with the annexures annexed to this application are based on information provided to me and I believe them to be true.

DEPONENT

Date: 31.10.2023
Place: Balasore

J.N. BEHERA, NOTARY, BLS
Sl. No. 6010 Vol. 11/22
Date 31/10/2023

SPECIAL ADHESIVE
GOVT. OF ODISHA (INDIA)

The deponent being identified by Sri. Advocate Balasore solemnly affirm and state that the facts stated above are true to his/her knowledge and belie and put his/her signature / LTI on this day of 2023 A.M/P.M

J.N. BEHERA
Notary Public, Balasore

BEFORE THE ODISHA ELECTRICITY REGULATORY COMMISSION
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--------Applicant

And

IN THE MATTER OF: All Stake Holders

TPNODL, the above named applicant, most respectfully showeth:

The Hon'ble Commission in order of Case No 9/2021 dated 25.03.2021 (herein after called the "Vesting Order") had directed TPNODL to seek Hon'ble Commission's approval for the Capital Expenditure Plan in line with the regulations. The relevant extract from the Vesting Order is as follows:

39. Capital investment plant

(d) TPNODL would be required to seek the Commission's approval on the detailed capital expenditure plan in line with regulations. TPNODL shall satisfy the Commissions that the capital expenditure plan submitted in line with regulations adheres to the capital expenditure plan submitted as part of the Bid.

NOTARY J.N. BEHERA BALASORE No-ON-26/1999 GOVT. OF ODISHA

Hon'ble Commission had directed the licensee to submit the Capital Investment Plan for FY 2024-25 and FY 2025-26 vide letter No. OERC/Engg-05/2023/1030 dated 20.07.2023. Subsequently, considering the request of the licensee, Hon'ble Commission has been kind enough to grant time upto 31st October' 2023 for submission of the Capex Plan vide letter No. OERC/Engg-05/2023/1358 dated 21.09.2023.

In compliance to the direction of Hon'ble Commission, the licensee is submitting herewith the proposal for Capital Investment Plan for the FY 2024-25 and FY 2025-26 for kind approval of the Hon'ble Commission.

Prayer before the Hon'ble Commission:

Most humbly, the above applicant, TPNODL prays before the Hon'ble Commission to kindly

i. Approve the Capital Expenditure for the FY 2024-25 and FY 2025-26 as enclosed.

ii. Issue any other direction as deem fit in this regard.

Place: Balasore

Date: 31.10.2023

Chief Executive Officer

NOTARY
J.N. BEHERA
BALASORE
No-ON-26/1999
GOVT. OF ODISHA (INDIA)

Preamble:

TPNODL started its business on 1st April 21. In line with the vesting order, capex commitment of Rs 258.78 Cr for the **first year** of the operation (FY21-22), was approved by Hon'ble commission in Sep-21. All the capex works were subsequently taken up for the execution. Capex work to the tune of 217.57 Cr was capitalized till Sep-23.

Further, DPR for capex commitment of Rs 326.54 Cr for **second year** of operation (FY-22-23) was approved by Hon'ble commission in July-22. All the capex works were subsequently taken up for the execution. Capex work to the tune of 210.52 Cr was capitalized till Sep-23.

Subsequently DPR for capex commitment of Rs 433.10 Cr for **third year** of operation (FY-22-23) was approved by Hon'ble commission in June-23. All the capex works were subsequently taken up for the execution. Capex work to the tune of 29.01 Cr was capitalized till Sep-23.

To speed up the various capex work under above approved DPRs. TPNODL has taken up multiple initiatives as below:

1. Engaging in-house teams for supervision of capex works execution under the Rate contracts in addition to existing project team.
2. Strengthening of project team by deploying 9 nos. of outsourced employees and 9 consultants on limited term basis (Project duration).
3. Engagement of the 35 nos of BAs in last year for execution of capex work under Rate contracts and standalone order basis. In addition to this, 9 nos. of new BAs are identified and included in New Capex RCs.
4. Restructuring and development of Project Monitoring Unit under EPC and Strengthening of manpower considering criticality and volume of work.
5. Creation of shutdown management team and availing the opportunity shutdown for project works for speedy execution.

As a result of the above initiative, the progress on various capex works against total approved DPRs of three years (Rs 1018.42 cr.) as on 30th Sep 2023 can be seen in table mentioned below.

Capex year	Approved Amount from Hon'ble OERC	Capex as on 30th Sep 23	Capitalization as 30th Sep 23	WIP as 30th Sep 23
FY 21-22	258.78	235.09	217.57	34.39
FY 22-23	326.54	264.94	210.52	110.03
FY 23-24	433.10	98.48	29.01	195.91
Total	**1018.42**	**598.51**	**457.10**	**340.33**

Considering the load growth and various activities on network strengthening aspects, TPNODL is now proposing the DPR for Capex work under 4th & 5th year of operation for amount in the tone of **Rs 447.29 Cr.** for **FY 24-25** and **415.65 Cr.** for **FY 25-26.**

Proposed capex plan is centred around the below mentioned four major themes: -

A. Improvement of Reliability:

Rapid economic growth and urbanization have significantly increased the demand for electrical power in recent 2-3 years in TPNODL area. A robust and reliable power distribution system is critical for sustaining this growth.

The present power distribution network in TPNODL area in not a very good condition at present although the situation has been improved in the last 2-3 years. To improve the reliability and provide the uninterrupted power to its consumers TPNODL has proposed Capex of Rs. 220.86 Cr. in next two years (Rs 117.15 Cr. in FY 24-25 and Rs. 103.71 Cr in FY25-26) which is approximate 26% of the total capex plan in the different activities like upgradation of conductors in the 33KV/11KV lines, Addition/ Upgradation of network component in 33/11kV Primary Substation, Installation of RMUs, Autoreclosure, FPIs, line AB switch etc.

This will help in converting the existing network into a more reliable network by reducing the overloading on the network and curbing the fault at the local level.

With Load Break Switch, RMU, Autoreclosure on feeders, field engineers would have the flexibility to isolate the section locally instead of switching off the entire feeder.

Thus, consumers will experience the more reliable power by the execution of the proposed work.

B. Loss reduction through Network Optimization:

Efficient power distribution is paramount for economic growth and societal development. However, losses incurred during power distribution, both technical and non-technical, pose significant challenges to the energy sector.

With increasing load demand and the long length of most feeders in the network, losses increase concurrently. To mitigate the increasing feeder losses, conductor augmentation is proposed in some cases to address the overloading issue. Also, new feeders have been proposed to evacuate power from the existing lightly loaded feeders.

To utilise the electrical network optimally, TPNODL has proposed Capex of Rs. 317.97 Cr. in next two years (Rs 161.65 Cr. in FY 24-25 and Rs. 156.32 Cr in FY25-26) which is approximate 37% of the total capex plan. Different activities like addition of 11 KV/33KV/ LT new lines, installation of new DTR in the load center, upgradation of overloaded transformer etc. have been proposed.

CYME dist Software, have been used to study the 33 KV / 11KV network and find out the optimal network with the 5-year load growth.

C. Pilferage proofing of LT Lines:

The company operates 67,850 km of LT network. About 31 % of this network is composed of bare conductors.

The network with bare conductors is observed to be theft-prone as power conductors are easily available for illegal tapings.

Given the same, it is proposed to convert 333 KM in FY 24-25 and 291 KM in FY 25-26 of bare conductor to AB cable requiring a capex provision of Rs. 39.91 Cr. for FY 24-25 and 34.70 Cr. for FY 25-26

D. Infrastructure Development for New LT Connections:

Taking reference from the past two years, it is expected that approximately 65K – 75K new connections will be applied in FY 24-25 and FY 25-26 in total. Out of which approximately 1500-2000 connections per year are being applied at the location where the LT line does not yet exist or the existing LT line is overloaded.

To mitigate this load growth and provide new connections, network infrastructure needs to be strengthened in timely manner involving installation of new LT Lines / new DTR along with HT, LT lines.

So, LT network extension/ Addition of a new LT line / new DTR along with HT, LT lines of Rs 62.22 Cr have been proposed in the DPR in next 2 years (Rs 34.93 Cr. in FY 24-25 and Rs. 27.29 Cr in FY25-26).



1. Introduction:

TP North Odisha Distribution Limited (TPNODL) was incorporated as a joint venture of The Tata Power Company (51%) and Odisha Government (49%) on the Public-Private Partnership (PPP) model. TPNODL took over the license to distribute electricity in the northern part of Odisha, which was earlier served by erstwhile NESCO Utility, through a competitive bidding process. The business of TPNODL is governed by the provisions of license issued by Hon'ble Odisha Electricity Regulatory Commission (OERC) for distribution and retail supply of electricity in North Odisha. OERC regulates the working of the entire power sector of Odisha state, including determination of tariff chargeable to end consumers and establishing performance norms (mainly related to Loss reduction, Safety, Reliability of power supply and Consumer service delivery). The core business activities of TPNODL are summarized as follows:

1. Operation and maintenance of distribution network (33 kV and downstream up to customer premises).
2. Restoration of power after interruptions.
3. Meter reading, billing, and revenue collection.
4. Customer complaint resolution.
5. General customer care including provision of information on services.
6. Connection of new customers to the distribution network.
7. Expansion of distribution network.

2. Our Business Area:

TPNODL license area is spread over a geography of 27857 Sq. Km having coastal line of about 150 Km serving the registered consumer base of 1.94 million. TPNODL procures power from GRIDCO which is a state-owned company. It receives electrical power at a sub transmission voltage of 33KV from **O**disha **P**ower **T**ransmission **C**ompany **L**imited's (OPTCL) 220/132/33 kV Grid Substations and then distributes the power at 33KV / 11KV / 440V / 230V depending on the demand of the consumers. For effective operations, license area is divided in 5 circles which is further sub divided in 16 Divisions, 50 Sub-division & 159 sections which manages the commercial and O&M activities in order to serve its consumer. The detail of the same is as tabulated below

Sr. No.	Circle	Division	Sub-div
1	Balasore	**BED, Balasore**	Supply No-I
			Supply No-II
		BTED, Basta	Basta
			Jamsuli
		JED, Jaleswar	Jaleswar S/D
			Bhograi S/D
		CED, Balasore	RE-I
			RE-II
			Nilagiri
		SED, Soro	Soro
			Bahanaga
			Markona
			Khaira
2	Bhadrak	**BNED, Bhadrak**	No.I Bhadrak
			No.II Bhadrak
			Basudevpur
			Dhamra
			Tihidi
		BSED, Bhadrak	Bhadrak Rural
			Dhamnagar
			Asurali S/D

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Sr. No.	Circle	Division	Sub-div
3	Baripada	**BPED, Baripada**	Baripada
			Rural S/D, Baripada
			Betnoti
			Kuliana
			Moroda
		UED, Udala	Khunta
			Udala
		RED, Rairangpur	Rairangpur-I
			Rairangpur-II
			Karanjia
			Joshipur
4	Jajpur Road	**JRED, Jajpur Road**	Panikoili
			Jajpur Road
			Duburi
		JTED, Jajpur Town	No.I Jajpur Town
			Dasharathpur
			Binjharpur
		KUED, Kuakhia	Bari
			Dharamasala
			Kuakhia
5	Keonjhar	**KED, Keonjhar**	No.I Keonjhar
			No.II Keonjhar
			Turumunga
		JOED, Joda	Joda
			Champua
			Barbil
		AED, Anandapur	Anandapur
			Ghatagaon
			Bidyadharpur

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3. Existing Supply System:

TPNODL receives electrical power at 33kV level from 29 numbers of Grid Sub stations (GSS) out of which 4 nos. GSS are rated at 220/33kV and 25 nos. at 132/33kV located within the licence area of TPNODL. TPNODL distributes the power at 33kV / 11kV / 415V / 230V depending on the demand of the consumers.

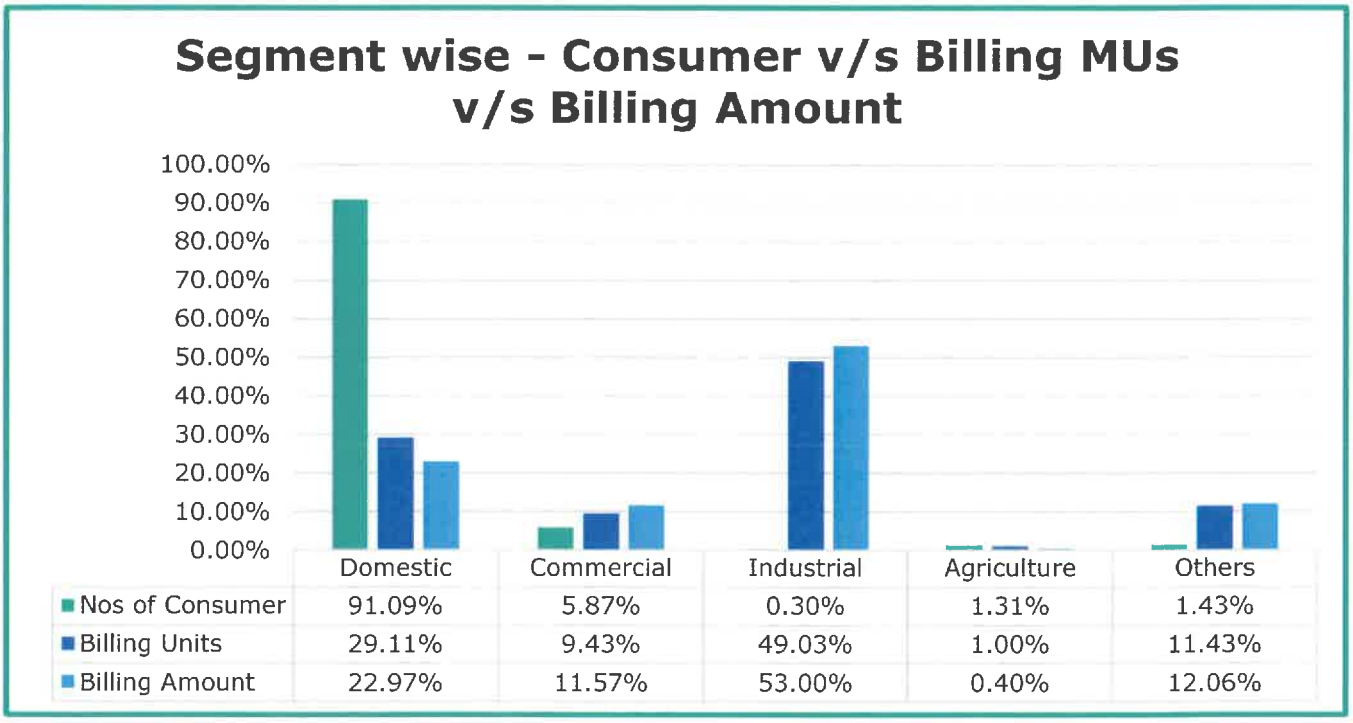
At present, there are 111 numbers of 33KV feeders with a combined route length of approximately 3074.1 KMs supplying power to 245 numbers of 33/11KV Primary Substation (Structures). The 33KV supply is stepped down to 11KV level through 553 numbers of 33/11KV power transformers at these primary substations with an installed capacity of 2640.2 MVA. Nearly 835 numbers of 11KV feeders radiates from the 33/11KV primary substations having length of approximately 40,747.5 KMs and supply power to HT consumers connected at 11KV level and LT customers connected to 11/0.415KV distribution substation. Approximately 76,366 numbers of distribution transformers are installed in all five circles with an installed capacity of 2861.9 MVA. The length of the LT feeders is 67,850.5 KMs approximately. These LT feeders supply power to three phase and single-phase consumers, right from large Industrial to BPL.

The information is summarized in the table below:

Name of Circle	Balasore	Bhadrak	Jajpur	Keonjhar	Baripada	TPNODL Total
Area in Sq km	3806	2505	2888	8240	10418	27857
No.of Consumers in lakhs	5.2	2.8	3.01	3.4	5.0	19.4
No. of GSS	7	4	5	7	6	29
Total Nos of 33 kV Feeders	31	13	18	28	21	111
Nos of 33/11 kV Sub-Station	67	36	42	48	52	245
Nos of Power Transformer	149	80	91	106	127	553
33/11kV Transformer Capacity in MVA	728.5	408.1	460.25	511.2	532.2	2640.2
Nos of 11kV Feeder	224	128	134	163	186	835
Nos of DTR	22477	12892	14256	12040	14701	76366
33/0.415 kV, 11/.415/0.230 kV Transformer Capacity in MVA	910.1	478.9	597.2	398.3	477.6	2861.9
33 kV Line in kms	632.3	406.1	496.6	669.2	870.0	3074.1
11 kV Line in kms	9395.3	5327.0	5406.7	7312.7	13305.8	40747.6

Name of Circle	Balasore	Bhadrak	Jajpur	Keonjhar	Baripada	TPNODL Total
LT Line with Bare Conductor in kms	7516.0	1962.0	3986.9	3459.5	4179.3	21103.3
LT Line with Ab Cable in kms	8321.0	5945.2	5912.0	6772.3	19796.8	46747.3
Total LT Line in kms	15837	7906.8	9898.8	10231.8	23976.1	67850.6

The graph below represents the share of customer base, their energy consumption and contribution in revenue based on H1 data of FY23-24



4. Key Challenges:

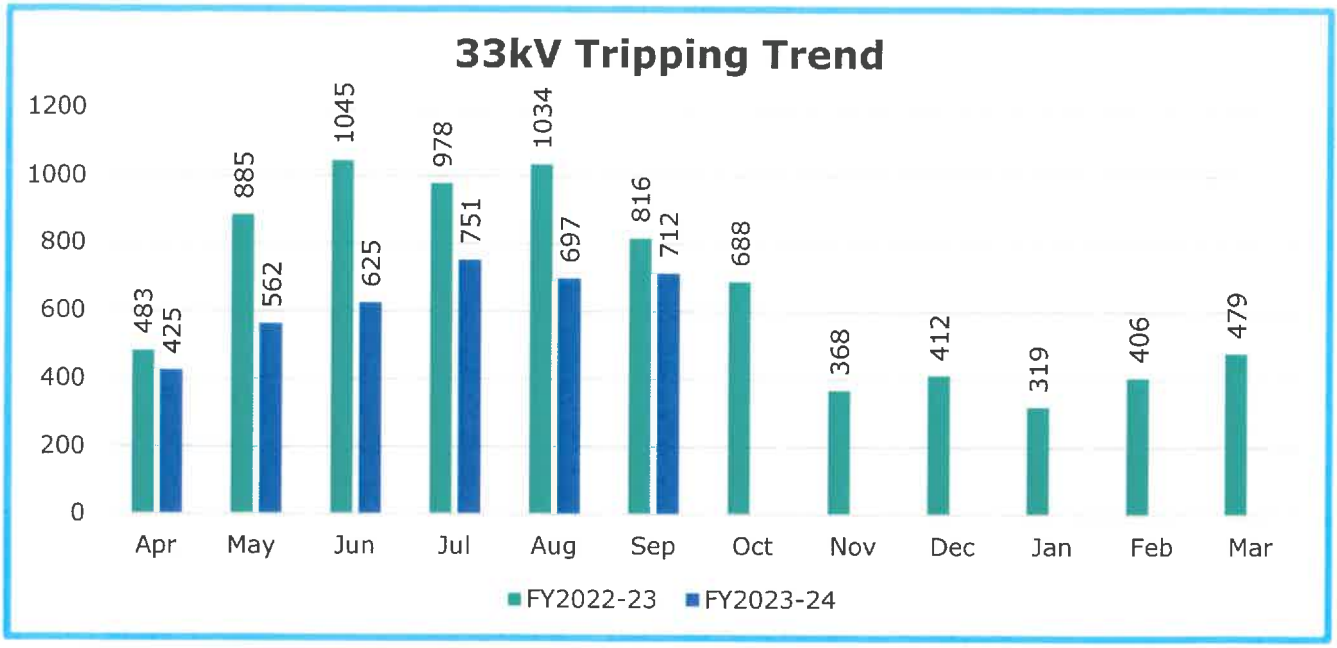
The brief inspection of the network reveals that the network in TPNODL is in very poor state and seriously lacks compliance with respect to the statutory guidelines. While this affects the system reliability due to frequent breakdowns, it may pose threat to safety of employees, public at large and animals. In the FY 21-22, FY 22-23 & FY 23-24 many actions have been taken to improve the network condition but still lots of improvement required as requirement of the network is huge.

4.1. 33 kV Lines/Feeders

33kV feeders connect a Primary substation (PSS) to the Grid substation (GSS) and supply primary substations and some 33/0.415 kV distribution transformers. These feeders are the main source of supply and reliability to the PSS. We have the following observations on 33 kV feeders.

1. Most of the feeders have long length and radially connected. The long overhead feeders are prone to faults. It is always difficult to inspect the feeder after occurrence of a fault leading to high equipment downtime and SAIDI.
2. At many of the locations these lines are installed on damaged, bent, and tilted poles which is unsafe for the asset as well as the public. Further these lines are observed with undersized & worn out bare conductor, having extremely long spans, multiple and poorly executed joints, and compromised safety clearances.
3. Most of the locations of feeders do not have guard wire beneath conductors, even in urban areas, for safety of public against conductor snapping and subsequent accidents.
4. We observed encroachment on RoW i.e. houses / structures constructed below 33 kV, 11kV and LV overhead feeders at many locations both in urban and rural areas.
5. At many locations two feeders running on single pole structure.
6. It is also observed that no intermediate H pole is used in 33 kV feeders for mechanical strength and for conductor jointing. These H poles are essential to avoid cascading effect of failure of a pole.
7. The installation of majority of poles is not as per standards.

Below Graph shows the month wise tripping comparison data of 33 KV feeders for FY 22-23 & FY 23-24.

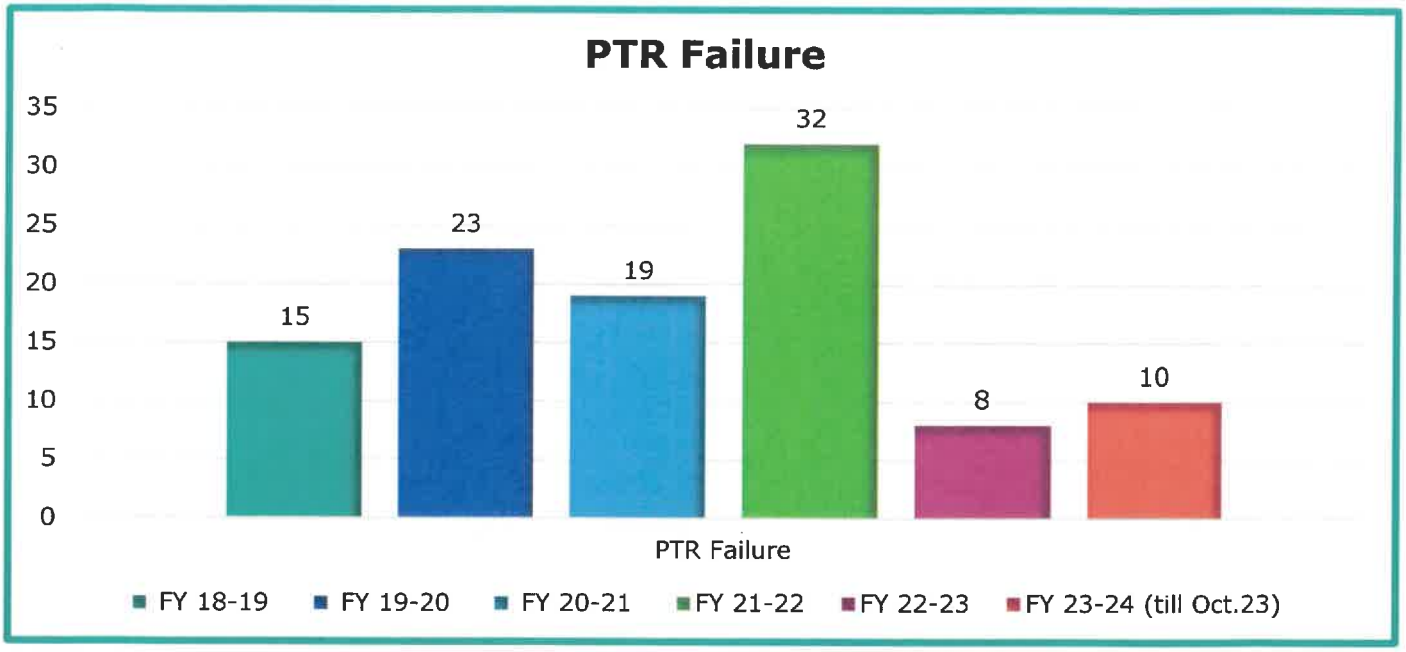


4.2. 33/11 kV Primary Substations (PSS)

Primary substations transform 33 kV voltage to 11kV level. There are one or more 33 kV feeders supplying power to the PSS. 33 kV voltage is stepped down to 11kV through power transformers of various capacity viz. 1.0 MVA 1.6 MVA, 2 MVA, 3.15 MVA, 5 MVA, 7.5 MVA 8 MVA, 10 MVA and 12.5 MVA. At multiple 33/11 kV primary substations, the Power Transformers are not appropriately maintained. The connections in the outdoor yard, between bus bar and equipment, are done with poor jointing methods, leading to hotspots which may add to the technical losses. The technical loss due to poor jointing can be reduced significantly by using PG clamp.

The analysis shows that some of the existing 33/11kV substation are already overloaded or approaching the overload limit. It is anticipated that some of the substation may be overloaded in next 2 to 3 years with the consumer growth of around 9% per annum. There is an obvious reliability concern for the substations with only power transformer in service at some substations. Below is the trend of power transformer (PTR) failure for past 5 years and comparison of year wise failure of the PTR of FY18-19 to FY 23-24(till Oct-23).

Particulars	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24 (till Oct.23)
Failure of Power Transformers (PTR)	15	23	19	32	8	10



Boundary walls for most of the substations are in damaged condition / not available and there is no fencing between the substation premises and 33kV outdoor switchyard. This makes the PSS highly unsafe as there are chances of entry of unauthorized persons and animals into the live switchyard which may result in accidents.

Earthing system is most important for safety & protection of men and equipment. The existing earthing system is in very bad condition and ineffective.

Many circuit breakers and CTs are lying bypassed since long for want of spares. This is another major threat for protection of the equipment. The failure of the substation equipment can result in substantial revenue loss due to breakdown of the equipment.

Automobile batteries and underrated battery chargers are used at many substations due to non-availability of standard equipment in stores. This makes the basic protection system ineffective and there are chances of major damage to substation capital intensive equipment if the defects are not addressed urgently.

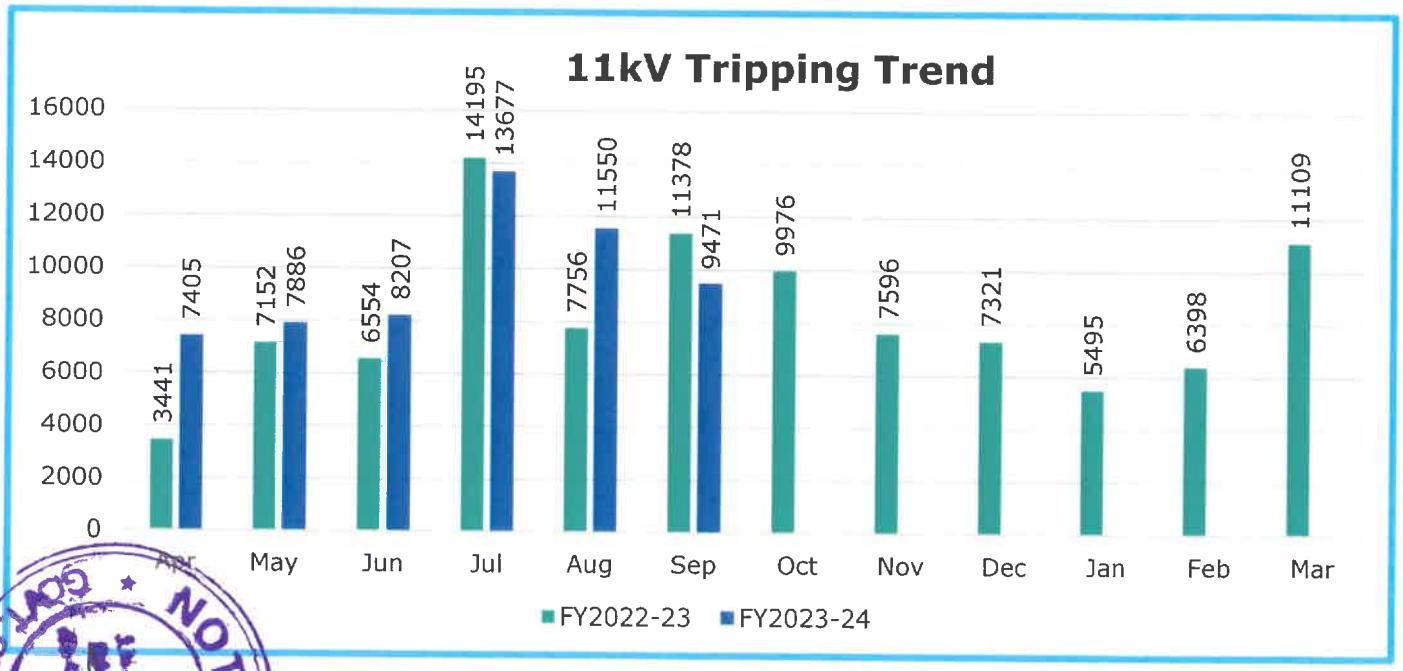
Some of the pictures depicting the network condition and violation of statutory compliance posing safety threat to Public, Employees and animals are captured and presented in **Annexure - 1**

4.3.11 kV Lines /Feeders: 11kV feeders connect a Primary substation (PSS) to the distribution transformers and TPNODL have many long overhead feeders and some of

these are more than 100 Ckt.KM length. We have identified following observations on the 11 kV feeders.

1. Most of the feeders are radially connected have longer length compared to the standard engineering practices. Some of the feeders are more than 100 Ckt. km long. The long overhead feeders are prone to faults. It is always difficult to inspect the feeder after occurrence of a fault leading to high equipment downtime and SAIDI.
2. At many of the locations these lines are installed on damaged, bent, and tilted poles which is unsafe for the asset as well as the public. Further these lines are observed with undersized & worn out bare conductor, having extremely long spans, multiple and poorly executed joints, and compromised safety clearances.
3. Most of the locations of feeders do not have guard wire beneath conductors, even in urban areas for safety of public against conductor snapping and subsequent accidents.
4. We observed encroachment on RoW i.e. houses / structures constructed below the overhead feeders at many locations both in urban and rural areas.
5. It is also observed that no intermediate H pole is used in 11 kV feeders for mechanical strength and for conductor jointing. These H poles are essential to avoid cascading effect of failure of a pole.
6. The installation of majority of poles is not appropriate to the standards.

Below Graph shows the month wise tripping comparison data of 11 KV feeders for FY 22-23 and FY 23-24.



4.4. Distribution Substations (DSS)

TPNODL has three types of distribution substations according to voltage levels i.e. 33/0.415 kV, 11/0.415 kV and 11/0.230 kV. The substations are either plinth mounted, or pole mounted. DD fuse is the primary protection equipment for the distribution transformer in a DSS which protects the DT, the costliest equipment of the DSS, in case of faults. It is noticed that AB switch and DD fuse are bypassed in some of the 11/0.415 kV Distribution Substations (DSS), thus compromising the life of the equipment beside network reliability. Following is the trend of Distribution Transformer (DTR) failure for past 5 years.

Below table shows Failure of Distribution Transformers.

Particulars	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24 (till Oct-23)
Failure of Distribution Transformers (DTR)	2347	2416	2312	2533	2067	2391 up to Oct-23

4.5. LT Network

LT feeders emanate from DT secondary side and serve the electrical energy to the end customers. There is no effective LT feeder protection system in place on the secondary side of most of the DSS. In place of LT Fuse box/MCCB box; aluminium wire is used as fuses on the secondary side of the distribution substations at almost all substations. These fuse units are installed at very low height without any fencing of the DSS. The rating of the aluminium wires, used as fuses is not appropriate to the rating of the DT, and thus compromising the life of the distribution transformer, in case of fault in the LT network. This is a potential safety threat to public at large and animals

4.6. Earthing

In an electrical installation, earthing system play important role for proper working of the power distribution system, and protection of human beings against electric shock. Metal frame of all power distribution equipment are connected with the general mass of the earth which is always at zero potential. It's worth mentioning that the general mass of the earth doesn't have any resistance.

In case the earthing of any power equipment or network becomes weak or defective due to corroded connections or damaged connection, clearance of fault may take more time and putting stress on the equipment connected in the network.

4.7. IT infrastructure scenario

The journey of IT from last three years has been challenging, many bespoke application and enterprise application including implementation of SAP with different module has been done. But to streamline IT system and to equip employee pan TPNODL with IT assets and secure communication with full Cyber Security many more steps need to be taken. Also we have established IT Data Centre at BBSR OPTCL Data Centre and OT Data Centre at Balasore OpCenEx building.

Since the company is growing in a rapid rate we need to have our own data storage, also planning to have our own OS/DB Licenses for GIS software.

In addition to above, these systems need to be secured completely form Virus and Cyber-attack for that we are planning to have fire wall, own optical fibre network with various other applications.

Further we are planning to implement GIS system in balance two Circle Baripada and Keonjhar with proper consumer indexing which will help to identify and locate all consumers. Also planning to automate 71 PSS alongside with SCADA software which will help to increase the reliability of power in those areas of TPNODL

4.8. Civil infrastructure

The level of hygiene and sanitation at the workplaces and different offices is poor. Office buildings, in general, are very old which need strengthening through major civil works. Infrastructure of the offices need revamping and major civil works are to be addressed for ensuring conducive work environment for Employees and consumers visiting the offices. Substantial investment is required to address the above stated challenges and to safeguard the assets, public & animals from the accident and ensuring statutory compliant network.

Besides TPNODL is also planning to improve the office infrastructure through revamping and other civil interventions. These activities are urgently needed to provide conducive work environment to TPNODL employees and all consumers visiting TPNODL offices. Many of the office buildings are very old and need urgent strengthening to avoid mishap. Call Centre

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and Customer Care Centres needs to be established / developed further to provide better connectivity to all category of consumers with TPNODL and provide them a unique service experience.

In the FY 21-22, FY 22-23 & FY 23-24 many actions have been taken to improve the offices condition and civil infrastructure, however, some of the offices / store / PSS require improvement.

4.9. Natural Calamities

Apart from the vast geographical area, Odisha being a coastal State, it repeatedly encounters devastating storms / Cyclones. The loss due to these storms / cyclones are huge which is a major challenge for a distribution utility. The main concern related to these natural calamities are that not only it results in disruption of power supply to consumers over extended period but also it damages the power distribution infrastructure resulting into requirement of huge funds to refix the network infrastructure. A permanent solution to address the issue of virtually annual disruption of supply and repeated infusion of CAPEX to restore/replace damaged infrastructure need to be developed.

Name	Lowest Pressure(mbar)	Year	Winds(km/hr)
Odisha Cyclone	912	1999	276
Phailin	940	2013	215
Hudhud	950	2014	185
Titli	978	2018	110
Fani	932	2019	250
Amphan	920	2020	260
YAAS	970	2021	140

Source: - https://en.wikipedia.org/wiki/List_of_tropical_cyclones_that_affected_India

So, it can be seen from the history that Odisha is prone to the natural disastrous cyclones which effected erstwhile NESCO in a very bad manner and will surely a major natural challenge for TPNODL. Apart from this there are other natural challenges like

1. Saline Coastal weather which deteriorates the electrical assets
2. Different forest ranges through which rural lines are running prone to unsafe situations

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5. Network Analysis- Statutory Guidelines:

In TPNODL, each division has different characteristics and thus have different challenges. However, some common challenges which were witnessed during our limited site visits, appears to be unsafe network from safety point of view to our employees, public and animals. Objective of site visit was to understand the issues, reasons and area where improvement can be made. The following issues were observed and the same needs urgent attention to make the network safe, reliable and statutory compliant:

- Unsafe horizontal / vertical clearances in 33 kV and 11kV feeders. **(Regulation 58)**
- Damaged Conductor / Poles / Stay wire / Boundary walls.
- No or poor earthing of the Poles & Structure. **(Regulation 41 & 72)**
- Absence of cradle wire in overhead MV feeders. **(Regulation 70)**
- Damaged / Missing fence at most of the Distribution Transformers Substations & 33/11kV Primary Substations (Structures) resulting into easy accessibility for Public and animals.

Regulations mentioned in the bracket are the applicable regulation of CEA (Measures relating to Safety and Electric Supply – 2010). Details are in Annexure 2

From the analysis of last 9 years' accident data, it is observed that most of the accident happened either due to deficiency in the network infrastructure or easy accessibility of the live parts to the Public and Animals. Even to operate network, necessary PPEs are also not available in sufficient quantity. Some of the PPEs were never procured by the erstwhile NESCO. Table below shows Year wise details of Fatal / Non-fatal Electrical accidents occurred under NESCO's / TPNODL operational area during Financial Year 2015-16 to 2023-24(till September).

Sl no	Financial Year	Human			Animal			Total
		Fatal	Non-fatal	Total	Fatal	Non-fatal	Total	
1	2015-16	21	42	63	13	0	13	76
2	2016-17	24	28	52	24	0	24	76
3	2017-18	33	41	74	16	0	16	90
4	2018-19	31	20	51	40	1	41	92
5	2019-20	34	34	68	12	0	12	80
6	2020-21	20	8	28	25	0	25	53
7	2021-22	29	9	38	32	0	32	70
8	2022-23	45	43	88	14	0	14	102
9	2023-24 (till September)	13	34	47	18	0	18	65

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It is pertinent to mention here that the number of fatal accidents are more than the number of non- fatal accident, for both Human and Animals.

Below figure shows the detailed analysis of accidents.

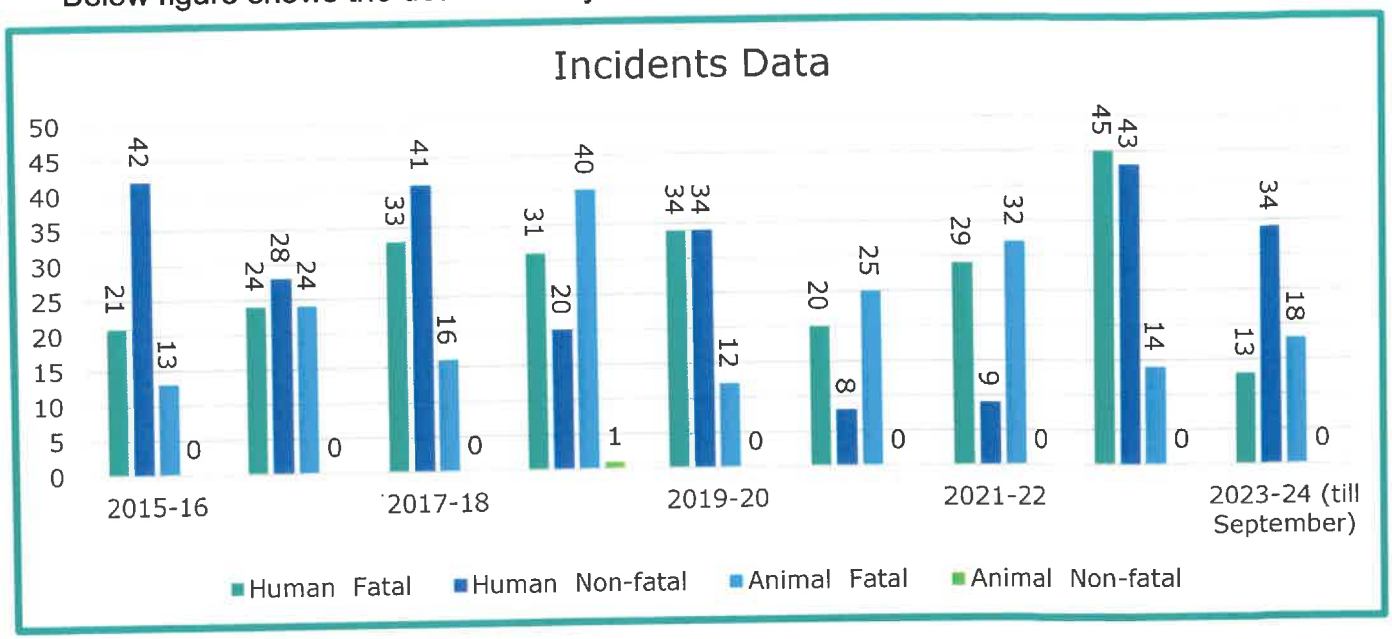


Table below shows the Fatal and non-fatal accident happened during the last 4 Years at different voltage level.

Voltage Level	FY 21-22				FY 22-23				FY 23-24 till September			
	Fatal		Non-Fatal		Fatal		Non-Fatal		Fatal		Non-Fatal	
	Human	Animal	Human	Animal	Human	Animal	Human	Animal	Human	Animal	Human	Animal
33KV	0	0	0	0	3	0	4	0	0	0	2	0
11KV	7	27	7	0	22	5	30	0	9	9	25	0
LV	2	5	2	0	20	9	9	0	4	9	7	0
Total	**9**	**32**	**9**	**0**	**45**	**14**	**43**	**0**	**13**	**18**	**34**	**0**

From the above table, it is observed that majority of the fatal and non-fatal accident occurred in 11kV & LV network and thus focused approach must be followed on these segments to make the network safe & secure. As a responsible distribution utility, we need to curtail it further. Hence potentially unsafe locations need to be addressed in time so as to ensure safe network for employees, Public and Animals.

Apart from high number of Accidents, other major problem is DT failure and extremely high number of interruptions at 11 kV and 33 kV level due to bad network condition. This affects the supply system very badly. The interruption at 11 kV feeders is too high by any utility standard.

6. Status of previous years approved Capex:

6.1 Capex Status of approved DPR FY 21-22 as on 30th Sep-2023

S. No.	Major Category	Activity	Amount approved by Hon'ble OERC in 21-22	Capex as on 30th Sep 23	Capitalization as on 30th Sep 23	WIP as on 30th Sep 23
1	Statutory & Safety	Safety & Testing equipment	7.78	2.35	1.68	3.75
		Cradle guard at major road crossings	2.46	1.61	1.37	0.67
		Fencing of Distribution substations	9.80	5.47	5.41	0.06
		Boundary wall for Primary substations	6.24	9.57	9.57	0.17
		Establishment of Meter Testing Lab	2.17	2.51	2.51	0.00
		Total (1)	**28.45**	**21.51**	**20.55**	**4.65**
2	Loss Reduction	Equipment for Meter data downloading	0.16	0.12	0.00	0.12
		AMR enabled equipment	1.37	0.92	0.00	1.08
		Conversion of LT Bare conductor to AB Cable	13.10	13.79	13.21	0.58
		Field Testing equipment - Metering and enforcement	1.76	0.19	0.19	0.00
		Total (2)	**16.39**	**15.03**	**13.40**	**1.79**
3	Reliability	33 KV Network refurbishment & AB switch	22.96	21.11	14.28	11.02
		Refurbishment of 33KV/11KV Primary Substation (PSS)	16.29	14.45	11.97	3.28
		11 KV Network refurbishment & AB switch	26.13	18.74	17.61	2.23
		Refurbishment of 11KV/0.415 KV Distribution Substation (DSS)	8.90	8.90	8.06	2.02
		Installation of LV protection at DSS	6.49	6.79	6.75	0.11
		Installation of Auto recloser / Sectionalizers, RMUs, &FPIs	5.07	4.21	4.16	0.07
		Trolley Mounted Pad Substations	1.15	0.76	0.76	0.00
		Underground cable Fault Locating Van and oil filtration machine	0.00	2.83	2.72	0.10
		Testing equipment for PSS	*4.90*	5.33	4.61	0.72
		Earthing of Power Transformers and Distribution Transformers	*0.81*	0.68	0.67	0.14
		33KV & 11 KV Lightning Arrestor	*1.65*	1.05	0.85	0.43
		Total (3)	**94.35**	**84.86**	**72.44**	**20.12**
4	Load Growth	Augmentation from 5 MVA to 8 MVA Power Transformer	8.70	9.41	8.67	0.84
		Augmentation from 200/250 to 315 KVA Distribution Transformer	5.19	6.37	6.36	0.00
		Augmentation 63/25 to 100 KVA Distribution Transformer	4.08	4.03	4.01	0.03

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S. No.	Major Category	Activity	Amount approved by Hon'ble OERC in 21-22	Capex as on 30th Sep 23	Capitalization as on 30th Sep 23	WIP as on 30th Sep 23
		Addition of 11 kV Overhead Line	*1.68*	0.95	0.95	0.00
		Addition of 33 kV Overhead Line	*2.06*	2.58	2.58	0.00
		Total	**21.71**	**23.34**	**22.57**	**0.87**
5	Technology & Civil Infrastructure	Data Center (DC) Development Cost	5.39	2.77	2.77	0.05
		IT Infrastructure Hardware Cost	5.31	7.60	7.60	0.00
		End user Devices i.e. Laptop, desktop, Printer, scanner	16.02	15.24	15.12	0.14
		Software Licenses	15.00	16.12	16.12	0.32
		Communication Network Infrastructure at DC and office locations	4.98	3.70	3.43	0.63
		Mini SCADA Implementation (20 nos ODSSP & 10 nos Old PSS)	2.55	2.34	1.57	0.94
		GIS Implementation for One Division	3.00	9.19	9.14	0.15
		Smart Metering Infrastructure (HES & MDM on 4G/ NBIOT Communication)	10.50	7.28	7.28	0.00
		Call Center Implementation (System & Infrastructure)	5.00	1.08	1.08	0.35
		Civil Infrastructure (Office Buildings, Meter Test Lab, Customer Care center, Records Rooms, Power System Control)	17.30	19.93	19.88	0.86
		Establishment of DT workshop	3.60	0.22	0.07	0.35
		High mast light in the Center store	*0.75*	0.70	0.70	0.00
		Assets for Offices	*5.23*	3.39	3.29	0.95
		Building shed for material storage with racking system	3.25	0.79	0.57	2.22
		Total (5)	**97.88**	**90.36**	**88.60**	**6.96**
Grand Total (1+2+3+4+5+6)			**258.78**	**235.09**	**217.57**	**34.39**

6.2 Capex Status approved DPR FY 22-23 as on 30th Sep-2023

S. No.	Major Category	Activity	Amount approved by Hon'ble OERC in 22-23	Capex as on 30th Sep 23	Capitalization as on 30th Sep 23	WIP as on 30th Sep 23
1	Statutory & Safety	Fencing of Distribution substations	2.34	11.08	10.94	1.09
		Boundary wall for Primary substations	3.96	2.90	2.89	0.09
		Development of training infrastructure for safety & strengthening of LOTO system	3.05	3.03	2.66	0.95
		Total (1)	**9.35**	**17.01**	**16.48**	**2.14**

S. No.	Major Category	Activity	Amount approved by Hon'ble OERC in 22-23	Capex as on 30th Sep 23	Capitalization as on 30th Sep 23	WIP as on 30th Sep 23
2	Loss Reduction	Installation of AMR meters at Distribution transformers.	4.50	3.29	1.28	2.15
		Conversion of LT Bare conductor to AB Cable	4.93	6.07	5.92	0.31
		Meters and metering equipment for energy audit	1.19	0.82	0.17	1.07
		Equipment for Meter data downloading	0.46	0.33	0.33	0.00
		Equipment for AMR enablement of 3 phase consumer meters	0.45	0.00	0.00	0.00
		Field Testing equipment - Metering (Portable Calibrator)	1.00	1.88	1.03	0.86
		Total (2)	**12.53**	**12.39**	**8.73**	**4.38**
3	Reliability	Refurbishment of 33KV/11KV Primary Substation (PSS)	10.00	10.91	7.58	4.45
		33 KV Conductor up gradation	11.20	9.08	5.01	6.69
		11 KV Conductor up gradation	8.80	9.82	7.03	5.18
		Refurbishment of 11KV/0.415 KV Distribution Substation (DSS)	2.40	4.55	2.88	3.84
		Installation of LV protection at DSS	5.54	3.82	1.33	4.12
		Installation of Auto reclosure / Sectionalizers ,RMUs, &FPIs	10.60	9.63	6.86	3.68
		33KVand 11 Kv Voltage Regulators for voltage improvement	4.20	0.36	0.36	0.14
		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	0.87	0.87	1.52
		Installation of station transformers (PPS)	2.55	0.75	0.45	0.38
		Capacitor Bank at PSS for low voltage improvement	0.88	0.00	0.00	0.02
		Earthing of Power Transformers and Distribution Transformers	0.49	0.53	0.42	1.33
		Total (3)	**60.18**	**50.31**	**32.78**	**31.36**
4	Load Growth	Augmentation Power Transformers	4.98	6.56	6.52	0.04
		Augmentation of Distribution Transformers	20.81	17.05	8.61	13.44
		Addition of LT lines	13.66	10.04	6.20	6.43
		Addition of 11 kV Lines (O/H and U/G)	16.98	18.31	17.09	1.65
		Addition of 33 kV Overhead Lines (O/H and U/G)	10.87	10.54	2.35	10.44

S. No.	Major Category	Activity	Amount approved by Hon'ble OERC in 22-23	Capex as on 30th Sep 23	Capitalization as on 30th Sep 23	WIP as on 30th Sep 23
		Addition of New PTR and New DTRs along with Associated HT/LT lines	15.58	30.30	28.03	3.18
		Provision for Nua Balasore Project	10.00	2.65	2.61	0.08
		Vehicle for the Capex related work		0.14	0.00	0.14
		Total	**92.88**	**95.60**	**71.41**	**35.40**
5	Disaster Mitigation	Conversion of 2nos PSS from AIS to GIS	20.40	0.00	0.00	0.00
		Conversion pole mounted DTR to plinth mounted (100 KVA and above)	3.52	2.41	1.97	1.27
		Height enhancement of the lines at river crossing	4.50	2.57	2.40	2.21
		Strengthening of poles in the cyclone prone area	2.40	0.73	0.63	0.56
		Trolley Mounted Pad Substations	1.17	0.00	0.00	0.00
		Overhead to Underground conversion for Major City	20.00	6.34	3.98	4.04
		Emergency Preparedness (Life boat and other emergency accessories)	1.80	0.01	0.00	0.54
		Total (5)	**53.79**	**12.06**	**8.98**	**8.62**
6	Technology & Civil Infrastructure	DC Hardware	10.33	4.36	4.22	0.14
		Software Licenses for IT Application	12.66	9.21	9.17	7.10
		End computing devices	8.96	6.10	6.10	0.00
		Cyber Security	1.20	0.00	0.00	0.00
		Automation of non ODSSP PSS	7.66	7.09	5.48	2.17
		SCADA-ADMS	9.05	10.81	10.80	4.81
		GIS Software Implementation and Land Base & Network Survey & Digitization for Balasore & Jajpur Circle	17.94	8.80	8.80	8.37
		Civil Infrastructure (Office Buildings , PSS, Stores, Approach Roads, Record room , Cafeteria Canteen , MRT office and others)	25.12	28.49	25.21	4.86
		Security cameras and heavy duty Racking system / Storage solutions for the store	0.96	0.37	0.22	0.40
		Offices Equipment	3.93	2.34	2.14	0.28
		Total (6)	**97.81**	**77.57**	**72.14**	**28.13**
		Grand Total (1+2+3+4+5+6)	**326.54**	**264.94**	**210.52**	**110.03**

6.30 Capex Status approved DPR FY 22-23 as on 30th Sep-2023

S. No.	Major Category	Activity	Amount approved by Hon'ble OERC in 23-24	Capex as on 30th Sep 23	Capitalization as on 30th Sep 23	WIP as on 30th Sep 23
1	Statutory & Safety	Fencing of Distribution Substations	11.55	4.13	3.99	7.27
		Boundary wall work at Primary Substations	10.73	5.11	4.09	5.43
		Life enhancement of network and maintaining safe horizontal / vertical clearances	8.43	1.16	0.11	2.71
		Yard Fencing with in PSS	0.98	0.07	0.04	0.92
		Fire Extinguisher & Water Hydrant System for Jajpur Store	2.09	0.00	0.00	0.00
		Fire wall for PTR **"6Mtr*8Mtr"**	1.14	0.00	0.00	0.00
		Defective cable replacement	10.00	0.00	0.00	0.00
		Shifting of O/H lines on safety ground on public request	4.34	0.00	0.00	3.61
		Intrusion system for theft prevention is store	0.15	0.00	0.00	0.00
Total (1)			**49.41**	**10.47**	**8.23**	**19.94**
2	Loss Reduction	Testing equipment for Meter, Meter Reading, HT/LT Accucheck& other material.	5.91	5.35	0.00	5.84
		Conversion of LT Bare conductor to AB Cable	43.35	11.94	2.27	25.32
		Meters and metering equipment for energy audit	2.83	0.55	0.00	2.18
		Equipment for AMR enablement of 3phase consumer meters	0.56	0.00	0.00	0.00
		Field Testing equipment (PTR testing, PQ analizer, Switch gear testing kit)	3.96	0.05	0.04	0.91
Total (2)			**56.61**	**17.88**	**2.31**	**34.25**
3	Reliability	11 KV Conductor up gradation	15.07	7.39	1.33	10.12
		Refurbishment of 11KV/0.415 KV Distribution Substation (DSS)	3.11	1.46	1.06	1.70
		Installation of LV protection at DSS	33.38	1.80	0.22	4.74
		Installation of Auto recloser /Sectionalizers, RMUs	7.52	3.76	1.37	3.47
		Installation of FPIs for O/H Lines	1.86	0.11	0.00	1.85
		Installation of AB Switch, HG Fuse & LA for DTRs	25.47	1.08	0.00	3.54
		11 KV Voltage Regulators for voltage improvement	1.73	0.00	0.00	0.11
		Installation of Station Transformers(PPS)	0.72	0.15	0.00	0.17

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S. No.	Major Category	Activity	Amount approved by Hon'ble OERC in 23-24	Capex as on 30th Sep 23	Capitalization as on 30th Sep 23	WIP as on 30th Sep 23
		Earthing of Transformer	14.29	0.03	0.00	1.35
Total (3)			**103.15**	**15.79**	**3.97**	**27.03**
4	Network Optimisation & Load Growth	Augmentation of Power Transformer	2.60	0.88	0.00	0.93
		Augmentation of Distribution Transformer	24.57	11.65	1.20	20.71
		Addition of 11 kV Lines (O/H and U/G)	24.12	12.61	1.73	17.43
		Addition of 33 kV Overhead Lines(O/H and U/G)	9.80	4.26	0.00	6.80
		Addition of New PTR at PSS	5.08	3.67	0.00	4.50
		Addition New DTRs along with Associated HT/LT lines	17.37	4.98	2.92	5.51
		New 33/11kV PSS with Associated Lines	18.60	0.00	0.00	0.00
Total (4)			**102.14**	**38.05**	**5.85**	**55.89**
5	Technology and Civil Infrastructure	Security cameras, heavy-duty Racking system / Storage solutions for Jajpur store	1.50	0.00	0.00	0.00
		Civil Infrastructure (Office Buildings, PSS, Stores, Approach Roads, Record room, Cafeteria Canteen, MRT office, STS office, STS Lab and others)	29.68	9.25	5.90	19.40
		Office Administration	3.95	1.00	0.90	2.99
		Automation of Non-ODSSP & SCADA Integration	12.00	3.12	0.00	9.51
		Bluetooth printer, cash drop box, RRG App	0.88	0.00	0.00	0.00
		Data Recovery (DR) for Hardware Equipment	16.82	0.00	0.00	7.67
		Data Center (DC) for Hardware Equipment	3.50	0.00	0.00	0.98
		End computing devices	0.75	0.19	0.00	0.52
		Cyber Security	7.70	0.00	0.00	0.00
		Communication	4.01	0.17	0.12	1.52
		SCADA-ADMS	10.10	1.64	1.41	6.30
		GIS Software Implementation and Land Base & Network Survey & Digitization for 9 Division	27.86	0.71	0.31	9.14
		Software and Application	0.75	0.22	0.00	0.78
		Drones and its licence	0.30	0.00	0.00	0.00

S. No.	Major Category	Activity	Amount approved by Hon'ble OERC in 23-24	Capex as on 30th Sep 23	Capitalization as on 30th Sep 23	WIP as on 30th Sep 23
Total (5)			**119.80**	**16.29**	**8.65**	**58.81**
6	Reducing Carbon Footprint	Budget for Electric Scooter/Car	1.00	0.00	0.00	0.00
		Rooftop Solar System on office building (Solar Roof top system (Corp office , circle offices , Balasore Store)	0.99			0.00
Total (6)			**1.99**	**0.00**	**0.00**	**0.00**
Grand Total = 1+2+3+4+5+6			**433.10**	**98.48**	**29.01**	**195.91**

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Glimpse of the project executed at site: -




















TPNODL
TP NORTHERN ODISHA DISTRIBUTION LIMITED
DTR augmentation from 100 KVA to 250 KVA
After
Before
Location - Telkoi section, Kendujhar district
#PoweringProgress
TPNODL
TP NORTHERN ODISHA DISTRIBUTION LIMITED
Upgraded a 100KVA to a 250KVA DSS, strengthened the existing 6-pole structure and fenced the entire area
After
Before
#PoweringProgress





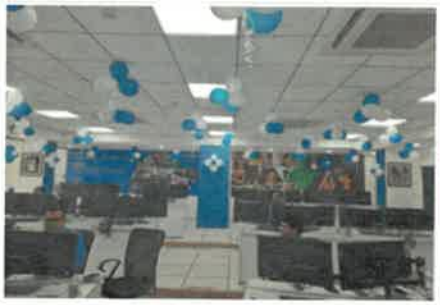



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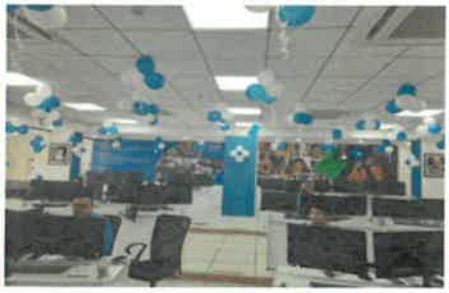











Jharpokharia PSS, Baripada


Kantabani PSS, RED


Turumunga, KED


Jurudi Joda


Sundara PSS, Joda


Rahanja, Bhadrak


Circle Office, Bhadrak


BSED, Bhadrak Div Office


Soro Division Office


MRT, Balasore

7. Proposed CAPEX Plan for FY 24-25 & FY 25-26:

As explained earlier, TPNODL has identified several challenges related to Safety, 33kV/11kV/0.415kV/0.230 kV network, Metering infrastructure, Customer Services and Technology usage. These challenges are planned to be addressed through a systematic investment plan by TPNODL. The proposed CAPEX plan represents a justified and efficient level of total capital investment estimated by TPNODL to meet the service obligation, improving safety, reliability of network, level of service standards.

In order to improve the reliability and reduce the losses, major interventions like Network reinforcement, Technology adoption is proposed in this plan so that equipment failure / tripping can be reduced and reliability, billing & collection efficiency can be improved. The network demands urgent refurbishment like re-conductoring of feeders, optimization of feeder length, dedicated feeders for industrial/ commercial customers, replacement of damaged / tilted poles, provision of intermediate poles, replacement of joints, enhancing system protection, replacement of sick equipment and network augmentation to improve the reliability of power supply.

Introduction of advanced technologies and analytics will be prime focus area for improving the accuracy of the meter reading, curtail tampering of the meters and providing better and effective customer services. Further Business process re-engineering is required to improve the customer services. Technology adoption is also required to provide quality customer services, manage revenue cycle processes for reduction of AT&C losses and efficiently manage to deliver reliable and quality supply in safe manner to its consumer by meeting various standards of operation.

During the initial phase, capital investments are proposed under the following broad cost centres that shall be aligned with multiple initiatives and schemes so as to reduce AT&C losses, improve system reliability and augment the network to support continuous load growth. Further, a need is also felt to improve the existing facilities and infrastructure to provide a better consumer experience and a modern, rich, and conducive work environment to all employees for better performance.

With this objective of ensuring reliable power supply and ensuring best customer services to the end consumers, TPNODL has come up with a capital investment plan under the

major 6 heads. These heads are detailed in subsequent sections along with budgetary requirement and activities to be performed.

1) Statutory Compliance/Safety
2) Loss Reduction
3) Reliability Improvement
4) Load Growth
5) Technology
6) Civil Infrastructure and Administration

The Company has completed detailed Network studies for all the 5 circles through Inhouse team with five-year load growth scenario. Based on the outcome of the studies, the following business imperatives have been identified to be addressed through the total Capex Investments of **Rs. 447.29 Cr.** during FY 24-25 & **Rs. 415.65 Cr.** during FY 25-26 under 6 major categories

For each of the above major categories, the investment has been further detailed below:

S. No	Major Category	Activity	FY 24-25 amount in Cr.	FY 25-26 amount in Cr.	Annexure
1	Statutory & Safety	Safety HOTT & LOTO deployment	9.60	8.00	Annexure-3
		Fencing of Distribution Substations	13.10	13.10	Annexure-4
		Boundary wall work at Primary Substations	12.59	6.78	Annexure-5
		Fire wall for PTR between the PTRs **"6Mtr*8Mtr"**	1.14	1.21	Annexure-6
		Defective service cable replacement	8.00	7.50	Annexure-7
		Gravel Filling and S-Yard Development in PSS	2.65	2.32	Annexure-8
Total (1)			**47.08**	**38.91**	
2	Loss Reduction	Conversion of LT Bare conductor to AB Cable	39.91	34.70	Annexure-9
		Meters and metering equipment for energy audit	13.78	9.18	Annexure-10
		Equipment for Meter testing ,Meter Reading, HT/LT Accucheck etc.	1.58	0.51	Annexure-11
Total (2)			**55.27**	**44.39**	
3	Reliability	Addition/Upgradation of network components in 33/11kV Primary Substation	21.95	21.95	Annexure-12
		33 KV Conductor up gradation	30.51	25.25	Annexure-13
		11 KV Conductor up gradation	28.56	27.04	Annexure-14
		Refurbishment of 11KV/0.415 KV Distribution Substation (DSS)	13.03	11.97	Annexure-15
		Installation of Auto reclosure /Sectionalizers, RMUs	11.71	9.52	Annexure-16

S. No	Major Category	Activity	FY 24-25 amount in Cr.	FY 25-26 amount in Cr.	Annexure
		Installation of FPIs for O/H Lines	4.87	2.95	Annexure-17
		Installation of Line AB Switch/Isolator	5.92	5.03	Annexure-18
		Installation of Station Transformers in PSS	0.60	0.00	Annexure-19
Total (3)			**117.15**	**103.71**	
4	Network Optimisation & Load Growth	Augmentation of Power Transformer	9.90	5.60	Annexure-20
		Augmentation of Distribution Transformer	23.32	25.02	Annexure-21
		Conversion of 1Ph DTR to 3Ph DTR along with lines	32.35	43.13	Annexure-22
		Addition of LT for New connection & mitigation of over load LT feeders.	12.04	8.97	Annexure-23
		Addition of 11 kV Lines (O/H and U/G) along with Bay arrangment in PSS	31.44	29.99	Annexure-24
		Addition of 33 kV Lines(O/H and U/G) along with Bay arrangement in PSS	29.70	25.30	Annexure-25
		Addition of new DTRs along with associated HT/LT lines	22.89	18.31	Annexure-26
Total (4)			**161.65**	**156.32**	
5	Technology	Automation of Conventional PSS	12.23	12.23	Annexure-27
		Disaster Recovery Centre-Hardware and Software	3.40	1.75	Annexure-28
		Data Center Hardware and Software	9.58	7.78	Annexure-29
		End user IT Infrastructure	2.77	7.24	Annexure-30
		Strengthen Network Connectivity	6.14	3.51	Annexure-31
		Balance GIS mapping of 2 Circle (Baripada & Keonjhar)	2.45	1.58	Annexure-32
Total (5)			**36.57**	**34.09**	
6	Civil Infrastructure and Administration	Civil Infrastructure (Office Buildings, PSS, Storage Room, Approach Roads, STS office, Cafeteria Canteen and others)	18.50	27.22	Annexure-33
		Office Administration	2.60	2.60	Annexure-34
		Security cameras, heavy-duty Racking system / Storage solutions for Balasore, Jajpur & Betnoti	8.48	8.42	Annexure-35
Total (6)			**29.58**	**38.24**	
Grand Total = 1+2+3+4+5+6			**447.29**	**415.65**	

Note: The Grand Total cost is exclusive of capitalizable Project Employee Cost and calculated Interest during Construction (IDC).

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7.1 Statutory & safety:

7.1.1 Safety HOTT & LOTO Development:

We have around 11000 business associate employees working. They are not enough competent to work in the system. Incidents are happening due to lack of competency and safety operation maintenance knowledge. So, hands on technical training including safety training will be provided to all workers to develop their skill and building competency. We will be developing 5 nos. **H**ands **O**n **T**echnical **T**raining center (HOTT) at 5 circles (Balasore, Baripada, Keonjhar, Jajpur and Bhadrak).

We have innovated discharge clamp and applied for patent. This is unique, lightweight and easy to handle multiple numbers in a backpack at remote location in rural area on two-wheeler. It is detachable type. Only one rod is required to connect 6 discharge clams. Earlier it was required 6 rods to connect discharge clamp. Which was heavy around 25 KG and it was difficult to carry on two-wheeler at remote location in rural area. So, we will replace all old model fixed type discharge rod with clamp by 6000 nos this new innovated discharge clamp without rod and its weight about 350 gm of singe unit.

We have innovated pole climber to climb on pole to replace ladder. Carrying ladder on two wheelers to attend fuse call at rural area is very difficult. To overcome this problem, we have innovated pole climber. The line man can climb on pole on sitting position. Its weight is about 4.5 KG and it is carrying in the same backpack with multiple innovated discharge clamp.

Full body harness shall be used and anchoring at height while working or during ascending and descending from ladder. Incidents are happening due to fall from height and supervisor was not able to monitoring that line man is anchoring both hook of full body harness. To monitoring this issue, we developed audio visual indicator if line man is not properly wearing full body harness and anchoring the hooks. It will blink in red colour. Supervisor can monitor it at a distance also and counselling the line man to anchoring the hooks. It will be carried in the same backpack.

Virtual reality (VR) training module developed as our PTW and isolation process. During the VR training each line man can feel that he is working in a real scenario how to isolate AB switch, breaker and safety zone creation. It is like simulation programme. It is required for safety competency building during operation and maintenance activities.

Emergency lights are required during the emergency situations while working at night to prevent any incidents.

Fire is the major hazard at store at Betnoti and Keonjhar store. There is not available fire detection and protection system. It is most important to install fire protection, detection and alarm system.

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KIOSK is one of data base module required to maintain different training data and assessment data of all 12000 participants of different training modules. It is difficult to maintain manual mode at different location and unable to monitor who is getting training training or completed trainings.

Safety mirror is the new initiative for self-assessment, while seeing it will trigger to wear PPE and prevent the incidents.

Lock **O**ut and **T**ag **O**ut (LOTO) is very important for positive isolation with locking and tagging facilities. Incidents are happening due to operation of isolating point by other person or due to miscommunication between working gang and PSS operators and it leads to major incidents. To avoid this incidents, lock with tag provision required at every isolation points at all PSS.

7.1.2 Installation / Construction of Plinth fencing for DSS, Boundary wall for PSS:

Distribution Substation are located at various locations catering the power supply requirement to the consumers. Since these are installed at various scattered locations along the Road, public places, near the commercial areas etc. During the survey, it is observed that boundary walls or fencing are either damaged or do not exist thus posing a safety threat to stray animals and public at large.

At many of the places it was found that the condition of the Fencing of DSS and Boundary wall for PSS is in a very bad condition. Ensuring safety of People & equipment is very much needed for safe operation. Hence it is proposed for Construction of fencing for DSS and Boundary wall of PSS, wherever required.

Distribution Substation (DSS) comprises of various equipment which perform specific task to ensure delivery of power supply at appropriate voltage to the end consumers. Main components are 11 kV Switching device, 11 kV Protection, Transformer, LV Protection, Earthing, fencing and O/G LV feeders. The most expensive equipment in the DSS is the Transformer and its life depends upon healthy condition of all other components be it LV Protection, HV Protection, Earthing or fencing. Thus, fencing is one of the most important part which ensures overall first-hand protection of the transformer. Therefore, installation of fencing and boundary wall to safeguard the DSS and PSS equipment and to maintain safety clearances is one of the major needs.

It will benefit by improving the safety of people and the equipment. DSS failure will be reduced, hence power cuts will decrease.

Safety of public and stray animals

In this proposal, TPNODL intends to carry out new fencings in phase manner. In this year around **800 Nos. for FY 24-25 & 800 Nos. for FY 25-26** of locations are being proposed for carrying out Fencing of DSS & In this year around **7482 Nos. for FY 24-25 & 4028 Nos. for FY 25-26** Running meters of Boundary wall at PSS.

Detailed cost estimates for Fencing & Boundary Wall are attached in annexure No. 4 & 5.

- **Circle wise Requirement of Fencing of DSS:**

Circle Name	No of Division	Total no of 3 Ph DT >100 KVA	Proposed Qty FY 24-25	Proposed Qty FY 25-26	Unit Cost for each DSS Fencing (in Rs)	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
Balasore	5	3360	250	250	163775.2	4.09	4.09
Bhadrak	2	1389	100	100		1.64	1.64
Baripada	3	1063	150	150		2.46	2.46
Jajpur	3	1754	150	150		2.46	2.46
Keonjhar	3	858	150	150		2.46	2.46
Total	**16**	**8424**	**800**	**800**		**13.10**	**13.10**

- **Circle wise Requirement of Boundary wall for PSS:**

Circle Name	No of Division	No of PSS considered for boundary wall (Mtr)	Proposed Qty FY 24-25	Proposed Qty FY 25-26	Unit Cost for per meter Boundary wall for PSS in Rs.	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
Balasore	5	8247	1878	1187	16829.6	3.16	2.00
Bhadrak	2	3650	1264	573		2.13	0.96
Baripada	3	6294	1464	773		2.46	1.30
Jajpur	3	4242	864	500		1.45	0.84
Keonjhar	3	5419	2014	996		3.39	1.68
Total	**16**	**27852**	**7482**	**4028**		**12.59**	**6.78**

7.1.3 Fire wall for PTRs:

TPNODL has 239 nos of PSS with 538 nos power transformers of 1.0 MVA 1.6 MVA, 2 MVA, 3.15 MVA, 5 MVA, 7.5 MVA 8 MVA, 10 MVA and 12.5 MVA. As per CEA regulation and IS 1646 fire wall require to be constructed between two PTRs in the following conditions

Transformers and equipment installed outdoors, having an individual or aggregate oil content of 2,000 litres or more shall be located in a suitably fenced and locked enclosure separated on all sides by at least 6 m from any building including substation. Separating walls are necessary between transformers having an individual or aggregate oil content of 2,000 litres.

EI during last visits has also recommended installation of fire wall in PSS between two transformers where applicable.

In view of above, TPNODL is proposing the 60 nos of firewall in the proposed DPR.

Transformer Firewall necessity:

1. **Background:** Transformers are vital components of the electrical distribution system, responsible for stepping up or down voltage levels. While they provide essential functionality, transformers also pose certain risks, particularly the potential for fire incidents. Fire in a transformer can lead to significant damage to equipment, disruption of power supply, and potential safety hazards. To mitigate these risks, transformer firewalls are implemented as a preventive measure.

2. **Purpose of Transformer Firewalls:** A transformer firewall acts as a physical barrier between adjacent PTRs, ensuring that any fire originating from one transformer does not spread to the adjoining PTR. The main purposes of a transformer firewall are as follows:

   a) Fire Containment: In the event of a fire, the firewall prevents its spread to adjacent areas, limiting the extent of damage and reducing the risk to personnel and property.

   b) Thermal Isolation: Transformers generate substantial heat during operation. The transformer wall helps in isolating the heat within the transformer room, preventing its transfer to neighbouring PTRs, which may house other critical equipment.

   c) Fire Rating: Transformer firewalls are designed with specific fire ratings to withstand the heat and flames generated during a fire incident. These fire ratings are determined based on regulatory guidelines and standards.

3. **Importance of Transformer Firewalls:** Having a transformer firewall between adjacent PTRs offers several significant advantages, including:

   a) **Safety:** The primary concern is ensuring the safety of personnel working in the vicinity. A transformer firewall minimizes the risk of injury or fatality by containing fires and preventing their spread to adjacent areas.

   b) **Equipment Protection:** PTRs often house valuable and critical electrical equipment. A transformer firewall safeguards this equipment, reducing the likelihood of damage caused by fire incidents.

   c) **Business Continuity:** Fires in PTRs can disrupt power supply and result in significant downtime. The presence of a transformer wall helps minimize such disruptions, ensuring continuity of operations.

4. **Photographic Evidence:** Please find attached photographs depicting examples of transformer firewalls implemented between adjacent PTRs. The photographs highlight the physical construction of the firewalls and their positioning in relation to the transformers. These visuals provide a clear representation of how the firewalls act as barriers to fire spread.

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5. **Conclusion:** In conclusion, the installation of a transformer firewall between two adjacent PTRs is crucial for safety, equipment protection, and business continuity. It serves as a preventive measure to contain fires and prevent their propagation to neighbouring areas. The provided photographs offer a visual understanding of the transformer firewalls' importance and how they are implemented in practice.

Transformer firewalls are typically constructed using fire-resistant materials, such as concrete or masonry, with specific fire ratings. These fire ratings indicate the duration for which the firewall can withstand exposure to fire without losing its structural integrity. The fire ratings are determined based on regulatory guidelines and industry standards.

Key features and considerations of transformer firewalls include:

1. **Fire Resistance:** Transformer firewalls are designed to withstand high temperatures and flames generated during a fire incident. The fire resistance rating determines the duration for which the firewall can effectively contain the fire.
2. **Structural Integrity:** The firewall should be structurally stable and capable of withstanding the force of a fire. It should not collapse or fail under the thermal and mechanical stresses exerted during a fire.
3. **Thermal Isolation:** Transformers generate heat during operation. A transformer firewall helps in isolating the heat within the transformer room, preventing its transfer to adjacent areas and minimizing the risk of fire incidents in neighbouring transformers or rooms.
4. **Ventilation and Cooling:** Adequate ventilation and cooling provisions should be in place to prevent overheating of transformers. The firewall should be designed to accommodate proper airflow and cooling mechanisms while maintaining its fire-resistant properties.

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5. **Regulatory Compliance:** Transformer firewalls are subject to specific regulatory requirements and standards, which may vary depending on the jurisdiction and industry. Compliance with these regulations ensures the effectiveness and safety of the fire protection measures.

   Transformer firewalls play a crucial role in ensuring the safety of personnel, protecting equipment, and minimizing the impact of fire incidents in transformer installations. They are an essential component of fire safety measures and are typically mandated in electrical codes and standards to mitigate the risks associated with transformer fires.

7.1.4 Defective cable replacement:

During the meter replacement activity, it has been observed that the existing service line of the most of the meters are very old and having multiple joints specially in govt connections like hospitals, govt school, govt offices, etc. At many locations these joints are necked and assessable to the consumer/public, which may be the safety risk to the consumer or general public.

So, for the eliminations of the safety risk the replacement of damaged service line proposed for replacement as and when required.

7.1.5 Gravel Filling and S-Yard Development in PSS:

In 11kV and 33kV switchyards, gravel is often used as part of the grounding system for various reasons:

a. **Electrical Safety**: Gravel is an excellent conductor and can provide a low-resistance path to dissipate fault currents in case of electrical faults or lightning strikes. This helps in preventing the formation of dangerous voltage gradients in the ground, reducing the risk of electric shock hazards.

b. **Soil Stabilization**: Gravel helps in stabilizing the soil and prevents it from eroding or becoming too soft due to environmental factors such as rain or moisture. This ensures a consistent and reliable grounding system over time.

c. **Corrosion Protection**: Gravel can act as a protective layer over grounding conductors, rods, or plates, shielding them from direct contact with the soil. This helps in reducing the risk of corrosion, which can degrade the effectiveness of the grounding system.

d. **Easy Maintenance**: Gravel is relatively easy to install and maintain compared to other materials. It allows for regular inspection of the grounding system and easy access if any repairs or adjustments are needed.

It's important to note that proper engineering analysis and adherence to safety standards and guidelines are crucial in designing and implementing an effective grounding system that addresses step and touch potential in high voltage switchyards. The specific measures used may vary depending on the particular characteristics and requirements of the switchyard.

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- **Circle wise Requirement of Gravel Filling and S-Yard Development in PSS:**

Sr. No	Circle	Divisions	Gravel Filling in PSS
1	Balasore	BED	8
2	Balasore	BTED	8
3	Balasore	CED	11
4	Balasore	JED	9
5	Balasore	SED	8
6	Baripada	BPED	14
7	Baripada	RED	14
8	Baripada	UED	8
9	Bhadrak	BNED	10
10	Bhadrak	BSED	11
11	Jajpur	JRED	9
12	Jajpur	KUED	9
13	Jajpur	JTED	10
14	Keonjhar	KED	6
15	Keonjhar	AED	8
16	Keonjhar	JOED	7
Total no. of PSS			**150**

7.1.6 CAPEX requirement for Statutory & Safety:

Considering the vast geography involved leading to very high requirement of investment to make the network fully compliant to safety and statutory standards, TPNODL has proposed to attend the deficiencies on priority basis based on criticality of locations. Table below indicates the activities to be performed along with funds required under Statutory and Safety Head.

S. No.	Major Category	Activity	FY 24-25 amount in Cr.	FY 25-26 amount in Cr.	Annexure
1	Statutory & Safety	Safety HOTT & LOTO deployment	9.60	8.00	Annexure-3
		Fencing of Distribution Substations	13.10	13.10	Annexure-4
		Boundary wall work at Primary Substations	12.59	6.78	Annexure-5
		Fire wall for PTR between the PTRs **"6Mtr*8Mtr"**	1.14	1.21	Annexure-6
		Defective service cable replacement	8.00	7.50	Annexure-7
		Gravel Filling and S-Yard Development in PSS	2.65	2.32	Annexure-8
		Total (1)	**47.08**	**38.91**	

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7.2 Loss Reduction:

During site inspections, energy meters were not found at consumer's premises which were energized under Soubhagya scheme, an initiative of GoI. Further, at number of places where energy meters are installed and available at site, the same are not functioning properly. The above issues are resulting into reduction in billing efficiency, high AT&C losses, increased provisional billing, defective bills, and increased consumer complaints leading to customer dissatisfaction. Errors in bills leads to non-payment of bills and thus hampers the collection efficiency. It is required to test meters on-site to detect any abnormality/theft thereby reducing AT&C losses. The Electronics meters have capacity for recording data in its memory. This meter data is required to be analysed for detecting any metering abnormality.

Therefore, in this head, following activities are planned for execution:

- Conversion of LT Bare conductor to AB Cable.
- Meters and metering equipment for energy audit.
- Equipment for AMR enablement of 3phase consumer meters.
- Testing equipment for Meter, Meter Reading, HT/LT Accucheck & other material.

7.2.1 Conversion of LT Bare conductor to AB Cable.

LT network plays important role of the Power supply distribution system and spread across TPNODL licensed area for power distribution. 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. Moreover, 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.

To improve the safety factor, minimize the safety accident risk, reduce the chances of fault & strengthen existing 415V network, it is suggested for replacement of overhead bare conductors with new aerial bundled cables. This in turn will help in providing reliable power supply for all consumers & stakeholders.

Moreover, during the survey, it is observed that LT bare conductor are more prone to hooking result into direct theft of the electricity. To avoid direct hooking, it is proposed to

convert LT OH bare conductor into LT AB cable. This will help in eliminating the direct theft and thus protecting the revenue leakage.

The same resulted in reduced direct 'hooking' done on bare LT conductor lines thereby reducing commercial losses drastically in theft prone areas. LT Bare Line to ABC conversion would encompass following scope:

1. LT Bare shall be replaced with LT ABC.
2. Erection of mid span pole.
3. Earthing of every 5th Pole and poles which are installed across the road.
4. Erection of Mid span pole wherever the span length is more than 40 Mtrs to reduce the Sag.
5. Installation of Distribution Box and removing of jumbling of service line cables

Benefit to customer:

By executing the proposals as made in this head, 415V network can be strengthened and we would be able to serve our consumers in much better way. Following benefits are envisaged from this investment:

1. Reliable Power supply to the Consumers since bare conductor will get converted into insulated cable.
2. Comparatively safer than the LT Bare conductor and eliminate the element of risk if comes in proximity.
3. Simpler installation, as crossbars and insulators are not required.
4. Suitable for congested lanes as well.
5. Electricity theft is becoming hard as hooking would not be possible.
6. Less required maintenance and necessary inspections of lines.

7.2.2 Meters and metering equipment for energy audit

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 level are reduced to acceptable level by ensuring 100% installation of utility meters for 33 kV feeders at the OPTCL also by the correction of the defective wiring. Moreover, 33 kV PSS feeder and 11 kV feeder metering revival is in progress by the replacement of the burnt, defective meters and installation of new meters at the no meter

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cases. Till now out of 835 Feeder 11 kV feeder meters we have replaced 737 meters and for 33 kV 207 Nos of meters installed against the 239 Nos. of 33 kV Feeders. We need to replace them with the upgraded technology meters and are communicable with the AMR. There are around more than 500 meters which are required to be installed for group metering and transformer side metering.

Following the BEE guidelines, it is mandatory to have 100% feeder metering by next financial year. Hence, the aforesaid activity is very critical for the DISCOM to comply the feeder metering status as per the BEE targeted timelines so that feeder wise energy audit can be carried out

Considering the above it is proposed to install 500 nos. meter for 33 kV & 11 kV Feeder metering so that energy audit can be carried out.

7.2.3 Equipment for Meter testing, Meter Reading, HT/LT Accucheck etc.

Meter testing equipment are required to ensure the statutory guidelines of testing of meters in field and to address the meter testing against consumer request for fast/faulty meter.

As per the guideline of OERC supply code, Clause No. 111(iii) *"The licensee/supplier shall also conduct periodical inspection/testing of the meters at site as per the following schedule or earlier":*

(a) *Single phase meters at least once every five years*
(b) LT three phase meters at least once every three years
(c) HT/EHT meters including MDI at least once a year

To ensure high quality in bulk supply of meters, TPNODL has estimated that meter testing lab has to be developed in Jajpur Circle. This lab will ensure the statutory requirement of meter testing in pan TPNODL.

As per the clause no. 102 (d) of OERC Supply code *"The licensee/supplier shall set up appropriate number of accredited testing laboratories or utilize the services of other accredited testing laboratories. The licensee/supplier shall take immediate action to get the accreditations of their existing meter testing laboratories from NABL, if not already done".*

Below mentioned testing equipment are required to be procured in addition to facilities already available.

S No.	Item Description	Unit	Quantity for FY24-25	Quantity for FY25-26
1	LT Three Phase four Wire Accucheck 110 V input grade (.2) Class direct mode LED display for onsite Meter Testing Purpose (Handy)	EA	75	24
2	Single Phase four Wire Accucheck 110 V input grade (.5) Class direct mode LED display for onsite Meter Testing Purpose (Handy)	EA	74	24

S No.	Item Description	Unit	Quantity for FY24-25	Quantity for FY25-26
3	Auto BL 25 mm 400 A AC/DC Auto Ranging Digital Clamp on Meter (Measuring Instrument)	EA	200	40
4	Leakage Clamp on Meter For HT metering Battery Powered Digital	EA	20	0
5	GNSS GPS receiver For Lat/ Long Collection	EA	2	1
6	Android Mobile Hand Set 5.3 Class BLE Enable For MY MMG mobile application /BLE Meter Reading	EA	2	0
7	Android Mobile Hand Set 5.1 Class BLE Enable For MY MMG mobile application /BLE Meter Reading	EA	120	60

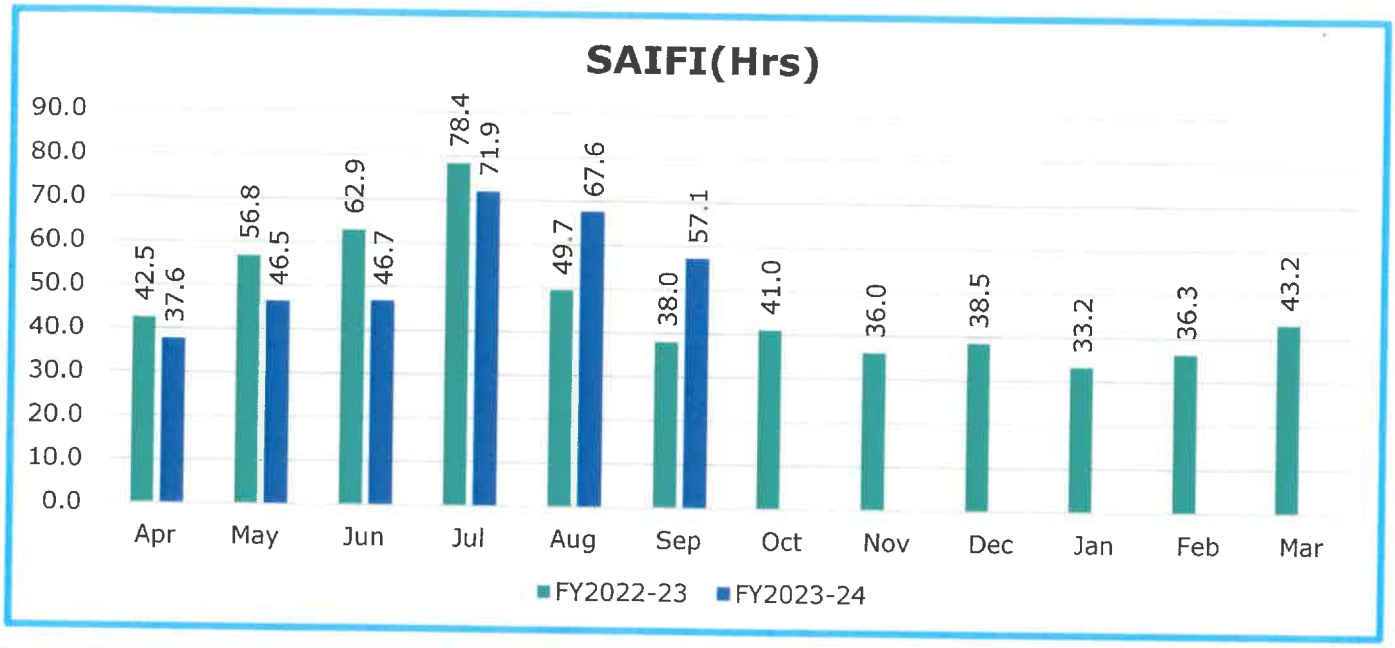
7.2.4 CAPEX requirement for AT&C Loss Reduction

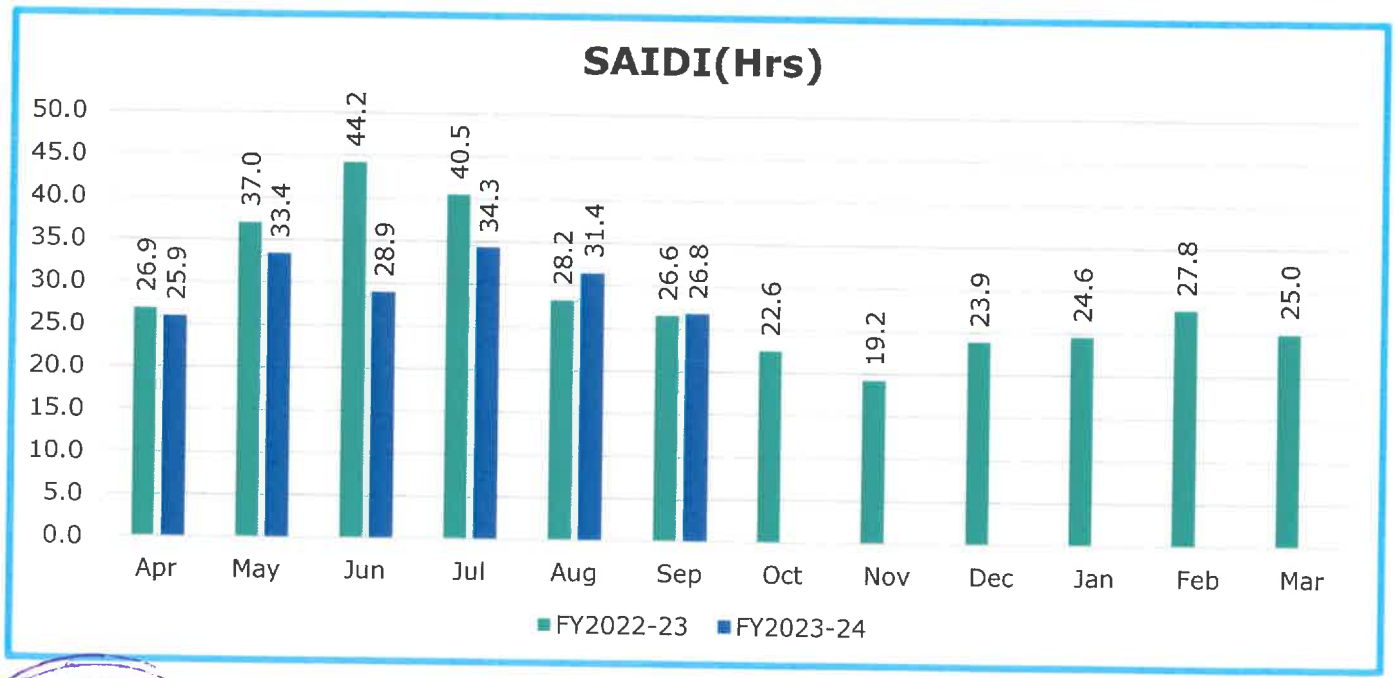
Table below indicates the activities to be performed along with funds required under Loss Reduction Head.

S. No.	Major Category	Activity	FY 24-25 amount in Cr.	FY 25-26 amount in Cr.	Annexure
2	Loss Reduction	Conversion of LT Bare conductor to AB Cable	39.91	34.70	Annexure-9
		Meters and metering equipment for energy audit	13.78	9.18	Annexure-10
		Equipment for Meter testing ,Meter Reading, HT/LT Accucheck etc.	1.58	0.51	Annexure-11
Total (2)			**55.27**	**44.39**	

7.3 Network Reliability:

TPNODL have many long overhead feeders. The present power distribution network is in bad condition resulting into frequent tripping's and as a result consumer are not getting reliable and quality power supply. Below graphs show the comparison of SAIDI and SAIFI





TPNODL intends to implement the following actions to improve the reliability of power supply

- Identification and replacement of faulty / sick equipment causing frequent tripping.
- Introduction of technology to ensure faster restoration of supply in case of any tripping.

Most faults that occur on overhead lines are transient faults caused by lightning and tree branches touching the live line conductor. The transient fault caused by lightning results in damage to insulators if lightning arresters are not provided or not working. Transient faults caused by tree branches interfering with line conductor are removed immediately by operation of a protection relay.

Regular inspection of feeders followed by tree trimming regularly helps to minimize transient faults and in most cases trial recloser are found to be successful in feeder with higher transient fault. However, each time the feeders are tripped due to transient fault, all customers connected to the feeder experience outage. Utilities at times finds it difficult to identify the exact reason of the fault. In a long distribution feeder with many unprotected branches, it becomes difficult to identify the faulty and healthy sections of the feeder. TPNODL intends to use Auto-reclosers, Sectionalizers, and fault passage indicators to improve the reliability of overhead feeders. Apart from installing the above stated equipment, it is also planned to introduce AB switches at 33kV & 11kV long feeders so as to sectionalize at the appropriate location for any planned / unplanned shutdown thereby reducing the no. of affected consumers.

As discussed earlier, most of the LT feeders emanating from 11/0.415/0.230kV distribution substations don't have protection and control as a result, fault in any one LT circuit is likely to affect the supply of all customers connected on the same DT. Same is true with maintenance outages. To overcome this situation, TPNODL is planning to provide circuit breakers on LT feeders for control and protection of the feeder. Various initiatives proposed to improve the reliability of power supply in 11kV and downstream network are given below

1. 33 kV &11 kV Network refurbishment to ensure Horizontal / Vertical clearances.
2. Addition / Upgradation of network components in 33/11kV Primary Substation (PSS) and Refurbishment Distribution Substation (DSS).
3. Installation of RMUs, Auto Reclosers & Sectionalizers in important and critical feeders.

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4. Installation of Communicable overhead FPIs for faster identification of faults.
5. Installation of line AB switches / Isolator at 33kV & 11kV lengthy feeders for improving Reliability during planned / unplanned outages.
6. Installation of station transformer at PSS.

7.3.1 Addition / Upgradation of network components in 33/11kV Primary Substation (PSS)

The Power distribution network & its equipment health is a critical factor for ensuring reliable & quality power supply to the end consumers. Although field teams are committed to upkeep the equipment by doing preventive maintenance, but still some of the equipment gets faulty and may result into pre-mature failure due to frequent tripping.

Pre-mature failure of the equipment results into long duration outage as it becomes difficult to restore the power supply if it happens during odd hours or if spare equipment is not available in the inventory. Hence, to ensure highest reliability, all equipment needs to operate properly at all the time.

To strengthen the existing network, it is suggested to replace the sick equipment in the existing network. Further, this replacement will help in utilization of the resource to the optimum level, managing the load in case of any exigency and mitigate the issue of overloading etc.

It is important factor to rid the moisture ingress in the PSS. The excessive rainwater stores under the control room cable trench, new ODSSP cable chamber & switchyards. This may cause moisture ingress to 33kV & 11kV SWBDs, cables and flashover. This flashover rate increase during rainy seasons. Sometimes, flashover occurs during long time planned shutdown, due to this settled water. More than 70 PSS identified about this issue.

The Cable Trench of Old NESCO PSS deteriorated due to aging and no rehabilitation work processed since it was constructed. During rainy season, no proper root found to drain the water. This weaken the Power/Control cable and makes failure/fire issue.

Budget is proposed for Sick equipment replacement to improve reliability of Power supply. Also, this will ensure better operation & control of the network & faster restoration of supply in case of interruptions.

1. Addition/Replacement of the faulty equipment (VCB, CT/PT, CRP, Isolator, etc.) in PSS.
2. Addition/Replacement / provision of AB switches.
3. Provision of new / additional earthing as per site requirement.
4. Carry out civil works as per site requirement: to protect water ingress inside PSS, Cable trench rehabilitation works
5. Refurbishment of damaged support structure at PSS. This includes MS / GI structure, channels etc. Dismantling of existing structure and erection of new structure at same location has been considered in scope of the work.
6. Upgradation of all undersize bus bars with standard size to remove hotspot.
7. Carry out civil works as per site requirement.
8. Detailed technical inspection and testing of the equipment.
9. Moisture issue shall rid by, installing De-humidifier at cable & bus compartment. Providing sufficient space heaters

7.3.2 33 kV & 11 kV Conductor upgradation:

33kV or 11kV feeders are important asset for a distribution utility which connects various substations and provide power to end consumers. TPNODL has 3074 Ckt. KMs of 33kV and 40747.5 Ckt. KMs of 11kV feeders under its operational area. Besides, 67850 Ckt. KMs of LT feeders provides power to the end customers.

Proper upkeep of the feeders is important for ensuring safety and reliability of power supply. During site visits, it was observed that most of the 33kV / 11kV / LV lines are in very poor condition and pose safety threat to the human beings and animals. Most of the feeders have binding wire / multiple joints. As a result, there are chances of snapping of conductors and subsequent electrocution of human beings or animals since cradle guards are not provided. Due to scarcity of staff and materials, there is no structured maintenance program. Tree branches / creepers are interfering with live conductor at many locations. Huge number of tripping's are reported on 33 and 11kV feeders in previous years. With poor condition of network and absence of maintenance program, it is difficult for utility to ensure delivery of reliable and quality power supply to the end users. During site visits, it has been observed that conductor of different sizes is used in different phases which restricts the circuit capacity limiting to the lowest size of the conductor used in the circuit. Moreover, over sagged wires in 33kV or 11kV feeders are posing major threat to the lives

of human beings and animals. At some places, due to re-construction/ widening of roads, vertical clearances of the feeders have reduced to the dangerous level. This is not only causing violation of statutory guidelines but also enhancing chances of fatal accidents.

Based on the load flow studies, we have identified new line installation. Detail load flow studies have been carried out in this regard and same can be refer to **"Annexure – 36"**.

To ensure safety of equipment and human beings / animals / refurbishment / upgradation of 33kV, 11kV and LV lines is urgently required in phase manner starting from critical area where movement of public / animals is high. Refurbishment job would encompass following scope.

1. Straightening of tilted poles.
2. Replacement of damaged poles, insulators, and accessories.
3. Earthing of every 5th Pole and poles which are installed across the road.
4. Erection of Mid span pole wherever the span length is more than 50 Mtrs to reduce the Sag.
5. Restringing of conductor to increase the vertical clearance by reducing the sag.
6. Upgradation of the conductor in the sections having multiple joints.
7. Replacement of weak Jumpers and connections.
8. Replacement of binding wire joints with wedge connector to remove hotspots.
9. Installation of Danger boards, Anti climbing devices, stay sets etc. to ensure safety & statutory compliance.

7.3.3 Refurbishment of 11/0.415kV Distribution Substation (DSS):

Distribution Substation (DSS) comprises of various equipment which perform specific task to ensure delivery of power supply at appropriate voltage to the end consumers. Main components are 11 kV Switching device, 11 kV Protection, Distribution Transformer, LV Protection, Earthing, fencing and O/G LV feeders. The most expensive equipment in the DSS is Distribution Transformer and its life depends upon healthy condition of all other components be it LV Protection, HV Protection, Earthing or fencing. The age of Distribution Transformer can be enhanced by ensuring healthiness of all other components. Generally, in power distribution utility, most of the transformers are either approaching or have outlived their operational life. TPNODL, however, is of opinion that

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replacement of power distribution equipment merely on the basis of ageing is not advisable and other factors such as health of the assets & their associated components, loading conditions, and other operational criticalities also needs to be considered. The above exercise is necessary as replacement of equipment is capital intensive and has direct impact on tariff.

In our preliminary site visits, it is observed that existing DSS are in shabby condition with damaged or ill-maintained HT & LT protection equipment. All connections at pole mounted or plinth mounted substations are in very bad condition which not only cause high technical loss but also give rise to undue interruptions. The Aluminium lug / sockets used in DTs and other equipment in the substations are observed to be of inadequate size and proper crimping of lugs with the help of crimping tools found missing at almost all places. This is resulting into generation of hotspots and failure of connections.

At all location, fuse cut-out arrangement found with oversize fuse wire. Most of the fuse cut-outs are installed at a lower height accessible to public and animals thus creating safety hazard. Analysis of distribution transformer's failure data for the last few years also suggest that effective HV & LV protection might have reduced the transformer failure. For example, if there is no effective protection on LV side and any fault occur on the load side, the fault current will pass through the transformer for a longer duration till such time the fault is isolated by upstream network. Since the magnitude of the fault current is high, it is likely to produce mechanical and thermal stresses in the transformer causing pre-mature failure of the transformer.

During the survey, it is observed that boundary walls and fencing are either damaged or do not exists thus poses safety threat to stray animal and public at large. At many of the places it was found that the condition of the Fencing of DSS was in a very bad condition.

Ensuring safety of People & equipment is very much needed for safe operation. Hence it is proposed for Construction of fencing for DSS wherever required. Refurbishment/Life Enhancement of DSS helps in addressing the above-mentioned issues, improve the reliability of power system and above all ensures safety. TPNODL proposes for activities under Refurbishment of Distribution Substation:

- Detailed technical inspection and testing of the equipment.

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- Replacement of damaged support structure at DSS. This includes MS / GI structure, channels etc. Dismantling of existing structure and erection of new structure at same location has been considered in scope of the work.
- Installation of palm connectors at HT and LT side of Distribution Transformers and ensuring that all connections are through palm connectors.
- Replacement of all undersize conductors with standard size to remove hotspot.
- Replacement / provision of AB switch, DD Fuse units, LT ACB or MCCB (depending on Transformer ratings) and all associated cables / conductors.
- Provision of new / additional earthing in all DSS as per site requirement.
- Installation of fencing to safeguard the DSS equipment and to maintain safety clearances.
- Installation of danger boards, anti-climbing devices, stay-sets etc. to ensure safety & statutory compliance.
- Carry out civil works as per site requirement.

Activity considered at DTR refurbishment:

S. No	Description	UOM	Unit Rate	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	100 KVA DSS	EA	0.03	193	177	6.51	5.98
2	250 KVA DSS	EA	0.04	124	114	5.04	4.64
3	500 KVA DSS	EA	0.04	36	33	1.48	1.35
Total				**353**	**324**	**13.03**	**11.97**

7.3.4 Installation of Auto-recloser / Sectionalizers, RMUs & FPIs:

Auto-recloser are very efficient in minimizing outages from transient faults on overhead feeders. When installed along with Sectionalizers, they can isolate the faulty sections of the feeder while re- energizing the rest of the feeders. In case of very long circuits, the Sectionalizers can also be connected in series.

TPNODL currently has many very long overhead feeders. Moreover, it is observed that multiple 11kV feeders are controlled through single 11kV breaker or AB switch in some primary substation. Fault in any 11kV feeder or maintenance activity in 11kV breaker at primary substation affects the supply of consumers connected on all 11kV feeders controlled from that breaker. To improve reliability of power supply at such substations,

installation of Auto-recloser, Sectionalizers, Ring Main Units (RMU) and FPIs is being proposed in phase manner. In FY 24-25 total of 54 nos. & FY 25-26 total of 49 nos. Auto recloser / Sectionaliser have been proposed for installation.

TPNODL is also planning to proposed in FY 24-25 total 21 nos. & FY 25-26 total 13 nos. of RMUs to improve reliability. This will help in improving the reliability since currently entire feeder is forced tripped for such outages.

Installation of overhead Fault Passage Indicators (O/H FPIs) is proposed for faster identification and restoration of faults on long 11kV feeders with multiple sections. In FY 24-25 total 874 sets & FY 25-26 total 529 sets of FPIs are proposed for installation

S.No	Description	UOM	Unit Rate	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Supply & Installation Auto Recloser/ Sectionalizer for 11kV	Nos	0.13	42	41	5.59	5.47
2	Supply & Installation Auto Recloser/ Sectionalizer for 33kV	Nos	0.24	12	8	2.82	1.89
3	Supply & Installation RMU 4 way O/D at 11 KV	Nos	0.15	12	8	1.77	1.18
4	Supply & Installation RMU 3 way O/D at 11 KV	Nos	0.14	8	4	1.11	0.56
5	Supply & Installation RMU 4 way O/D at 33 KV	Nos	0.42	1	1	0.42	0.42
6	Supply & Installation FPI for OH Lines	set of 3	0.006	874	529	4.87	2.95
Total						**16.58**	**12.47**

Benefits

Auto-Recloser and Sectionaliser-Benefits

Continuity of power supply for the consumers resulting in less complaints from citizens.

1. Reduce the time of power supply disconnection in cases of transient faults.
2. Reduce the unsold energy due to faults.
3. Reduce the cost of manpower operating in managing disconnected lines.
4. Maximum utilization of the network components.

5. Event Log and Remote control.
6. Reduce cost of fault finding.

RMU- Benefits:

1. The major advantage of Ring Main Units is the safety they provide to the operators. Like the operation of switching devices with interlocking system requires less knowledge and effort.
2. Working with IEDs allows remote operation. SCADA implementation is easy with smart Ring main units.
3. The space occupied by RMUs is less as they are Gas Insulated Switchgear.
4. The time taken for installation and commissioning of RMUs is very less. RMUs require less maintenance.
5. Beautification in the network

FPI - Benefits

1. Easy fault identification.
2. Easy to install, even on live network.
3. Detects both short circuit and low current earth faults.
4. Indicates both permanent and transient faults.
5. Highly visible red flashlight.
6. Reduction in supply restoration time by 1-2 hrs.
7. Reduction in unserved Energy
8. Enhancing customer satisfaction

7.3.5 Installation of Line AB Switch/Isolator:

TPNODL currently has many very long overhead feeders. It is observed that multiple 33kV & 11kV feeders are controlled through single breaker or AB switch in primary substation. During fault in any 33kV / 11kV feeder and maintenance activity in 33kV / 11kV outage to be taken from the breaker available at primary substation which affects the supply of consumers connected on all 33kV / 11kV feeders.

To improve reliability of power supply at such substations, installation of Line AB switch or Isolator at different location is being proposed in phase manner. In FY 24-25 total 181 sets

& FY 25-26 total 152 sets have been proposed for installation to have provision of isolation of section during any planned / unplanned outages.

7.3.6 Installation of station transformer in PSS:

Station Transformer supply the total 'station' load (due to outage of the other station transformer) as well as supply the starting load of a PSS. Supply its proportion of the station load. During the PSS survey it has been gathered that in 5 nos of PSS station transformer has not been installed.

So, it is proposed to installed 5 station transformers in the PSS to provide the reliable power to the consumers

7.3.7 CAPEX requirement for Network Reliability:

Table below indicates the activities to be performed along with funds required under Network Reliability Head.

S. No.	Major Category	Activity	FY 24-25 amount in Cr.	FY 25-26 amount in Cr.	Annexure
3	Reliability	Addition/Upgradation of network components in 33/11kV Primary Substation	21.95	21.95	Annexure-12
		33 KV Conductor up gradation	30.51	25.25	Annexure-13
		11 KV Conductor up gradation	28.56	27.04	Annexure-14
		Refurbishment of 11KV/0.415 KV Distribution Substation (DSS)	13.03	11.97	Annexure-15
		Installation of Auto reclosure /Sectionalizers, RMUs	11.71	9.52	Annexure-16
		Installation of FPIs for O/H Lines	4.87	2.95	Annexure-17
		Installation of Line AB Switch/Isolator	5.92	5.03	Annexure-18
		Installation of Station Transformers in PSS	0.60	0.00	Annexure-19
Total (3)			**117.15**	**103.71**	

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7.4 Load Growth:

Every year DISCOM have to release applied new connection. To meet this consumer growth, both HT and LT network infrastructure needs to be extended, strengthened, or augmented and new energy meters to be installed to release the new connection. Some of the connections can be released from the existing network and some may require augmentation/addition/extension before release of new connection.

The following tables represent the data for consumer base in FY-19 to FY-23.

Consumer Base in Lacs	FY -19	FY-20	FY -21	FY-22	FY-23	Avg. Consumer Growth
	17.16	19.06	20.08	20.89	19.43	3%

Also, with the increase in consumer base there is load on DTR. Few DTR's get overloaded & get burnt. Below table shows the details of Burnt transformers in previous years and in current FY till Oct-23.

Particulars	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24 (till Oct-23)
Failure of Power Transformers (PTR)	15	23	19	32	8	10 up to Oct-23
Failure of Distribution Transformers (DTR)	2347	2416	2312	2533	2067	2391 up to Oct-23

Hence for carrying out network extension / augmentation / addition, we propose expenditure under this head to consider load growth, network extension / augmentation / addition is expected to be carried out to cater the new demand.

Benefit to customer: Better the availability of supply, faster will be process of providing new connection hence more will be the customer satisfaction.

Reduce over-burdening of existing Distribution transformers, lines etc. thereby reducing power cuts.

7.4.1 Augmentation / Addition of Power Transformers and Distribution Transformers.

Augmentation/ addition of Power Transformers

To cater the increasing load demand, PTR augmentation/ Addition is required to avoid any overloading and N-1 fail situations. Also, to ensure reliable power supply to our consumers, PTRs has to be kept at optimum loading so as to avoid any mechanical stress on the transformers due to overloading.

To avoid any overloading issues especially in urban areas where the load growth is high, it is required to augment some of the power transformers in city area which are over loaded /may get overloaded considering load growth for the next two years. It will give benefit to consumers as follows:

1. Reliable power supply by ensuring N-1 reliability at PTR level.
2. Reduce over-burdening of existing PTRs thereby reducing power cuts.

In this proposal, TPNODL intends to carry out PTR augmentation for those PTRs which are identified as overloaded at various locations. Total 2 nos PTR are proposed for Augmentation from 8 MVA to 12.5 MVA, 8 nos PTR are proposed for Augmentation fraom 5 MVA to 8 MVA on PSS.

- **Augmentation/ Addition of Distribution transformer**

To cater the increasing load demand, DT augmentation and new DT addition is required to avoid overloading of transformer leading to transformer failure and power interruptions. Also, to ensure reliable power supply to our consumers, Distribution Transformers need to be kept at optimum loading to avoid any mechanical stress on the transformers due to overloading.

When a distribution transformer loading exceeds 80% of the rated capacity of the transformer, then it is "overloaded".

To avoid these overloading issues especially in urban areas where the load growth is high, it is required to augment the capacity of the Distribution transformers/ addition of new distribution transformer to mitigate the overloading issue. It will provide benefit to consumers as follows:

1. Reliable power supply by reducing chances of fault in network, thereby reducing power interruptions
2. Reduce over-burdening of existing Distribution transformers thereby reducing power cuts.

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In case of overloading of the Distribution Transformer, it not only hampers the power supply to the consumers but also may cause pre-mature failure of DT due to operating for long hours on overload condition. Thus, to abide by the safe loading limits, augmentation of distribution transformers is proposed for locations, where loading is exceeding the rated value.

In this proposal, TPNODL intends to carry out Distribution Transformer's augmentation for those DTs which are identified as overloaded at various locations. In FY 24-25 122 nos. & FY 25-26 130 nos. of Three-Phase Transformers are proposed for Augmentation from 25/63 kVA to 100 KVA Three Phase DTs, In FY 24-25 70 nos. & FY 25-26 75 nos of DTs Proposed for augmentation from 100 KVA to 250 KVA, In FY 24-25 14 nos. & FY 25-26 15 nos of DTs Proposed for augmentation from 200/250 KVA to 500 KVA at different locations and In FY 24-25 123 nos. & FY 25-26 99 nos of 100 KVA New DTs proposed for addition. And in FY 24-25 117 nos. & FY 25-26 157 nos of single-phase Transformer conversion in to Three Phase Transformer along with associated HT/LT lines.

7.4.2 Addition of 33kV lines, 11Kv lines and LT lines:

- **Addition of 33kV line:**

In order to provide the reliable and Quality power supply to the consumers in TPNODL's Licensed area, we have conducted the survey of all 33KV feeders to identify the weaker section which require immediate attention. Based on the CYME dist. study reports, it is observed that in some of the feeders, conductor sizes are different resulting into compromising the circuit capacity which is limited to the lowest size of the conductor available in the ckt. Looking at the existing load demand and factoring the projected load growth, it is required to be rectified so as to avoid overloading of the network.

Further, a network study carried out for five circle areas considering the 5 Yrs. load growth and found that some interventions are required to be taken under Capex to provide alternate source to the existing feeders, load balancing on the feeders and reducing the length of the lengthy feeders. This will help in optimizing the feeder loading and will support in shifting the load to another structure or OPTCL grid in case of any source failure.

- **Addition of 11kV lines:**

During site survey it is observed that most of 33/11kV Primary Sub-Stations are having single incoming 33kV source. With failure of single existing 33kV source entire 33/11kV PSS gets shutdown thereby causing shutdown to all the downstream 11kV & LT network consumers.

It is also observed that HT consumers on 33kV and 11kV are being fed through tapping point instead of a dedicated feeder. There are multiple HT consumers source also mixed with incoming source of 33/11kV PSS. In case of technical fault at one of the HT consumers leads to tripping of incoming source and another connected HT consumer.

To overcome this issue, it is proposed to study to establish link line from alternative available source.

At present 11kV feeders are radial and do not have ring connectivity with another 11kV feeder as per N-1 philosophy. It is proposed to study ring connectivity between nearest 11kV feeder in the vicinity and adjacent PSS 11kV feeders like Hospitals, town, commercial and key government establishments.

- **Addition of LT for New connection & mitigation of over load LT feeder:**

Taking reference from past two years, it is expected that approximately 65K – 75K new connections would be applied in FY 24-25 and FY 25-26. Out of which approximate 1500-2000 connections per year are being applied at the location where, the LT line not exist or existing LT line is overloaded. In order to mitigate this load growth and provide the new connections, LT network infrastructure needs to be strengthened / new laid. So LT network extension/ Addition of new LT line is proposed in the DPR.

The licensee also noted that while extending supply to the single -phase consumers, the expenditure incurred by TPNODL is much higher vis-à-vis the amount paid by the consumer for extension of supply as approved by Hon'ble Commission (Service line charges). Provision for such differential amount for allowing extension of power supply to new single-phase consumer has been considered in the DPR.

7.4.3 CAPEX Summary for Network Optimisation & Load Growth

Table below indicates the activities to be performed along with funds required under Network Optimisation & Load Growth Head.

S. No.	Major Category	Activity	FY 24-25 amount in Cr.	FY 25-26 amount in Cr.	Annexure
4	Network Optimisation & Load Growth	Augmentation of Power Transformer	9.90	5.60	Annexure-20
		Augmentation of Distribution Transformer	23.32	25.02	Annexure-21
		Conversion of 1Ph DTR to 3Ph DTR along with lines	32.35	43.13	Annexure-22
		Addition of LT for New connection & mitigation of over load LT feeder	12.04	8.97	Annexure-23
		Addition of 11 kV Lines (O/H and U/G) along with Bay arrangement in PSS	31.44	29.99	Annexure-24
		Addition of 33 kV Lines (O/H and U/G) along with Bay arrangement in PSS	29.70	25.30	Annexure-25
		Addition of new DTRs along with Associated HT/LT lines	22.89	18.31	Annexure-26
Total (4)			**161.65**	**156.32**	

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7.5 Technology:

Proposed Technology Transformation Background IT & OT commenced its journey in FY 22, the very first year of TPNODL, by initiating large scale computerization & digitalization efforts in the Company. For year 2021-2022, IT & OT was given Rs 67.75 Cr, for the year 2022-2023 IT & OT was given Rs 67.8 Cr and for the year 2023-2024 IT & OT was given budget of Rs 71.49 Cr towards CAPEX by honourable Commission towards nine themes, seven themes and eight themes respectively. The journey of IT & OT adoption, introduction and stabilizing different technologies has been done along with many digital initiatives has been achieved. The journey will continue to ensure large scale adoption across TPNODL, scale up the pilots which began in FY 2024 and train more and more employee to the new initiatives and introduce path breaking applications built to take advantage of the new interventions so as to maximize the operational gains and efficiencies which would ultimately help reduce the AT&C levels and enhance Consumer Experience.

Activities for IT & OT – The proposed CAPEX plans for FY 24-25 and FY 25-26 revolve around the same themes which were introduced last year with addition to enhancement of Data Recovery Centre. The idea is to scale up, strengthen the existing by covering more consumer services, new application and Smart meter and build redundancies in the schemes which have commenced operations in last three financial years. Following activity are considering in this year of Capex DPR.

I. Disaster Recovery Centre-Hardware and Software
II. Data Center Hardware and Software
III. End user IT Infrastructure
IV. Strengthen Network Connectivity
V. Balance GIS mapping of two Circle (Baripada & Keonjhar).

The detail proposals are as follows:

7.5.1 Automation of Conventional PSS:

OpCenEx has been set up with the best of operation technology-SCADA to monitor and control the 33KV/11KV network operations. Hon'ble Commission has approved Rs. 2.55 Cr. for implementation of Mini SCADA in FY 21-22.

However, we have also initiated to implement Main SCADA/ADMS. 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 consumer's outages through its integration with GIS and CRM

TPNODL 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.
IT infra of SCADA has been commissioned at MCC (Master Control Centre), Balasore and at BCC (Backup Control Centre), Bhubaneswar and configuration of SCADA system in progress and expected to launch the system from Dec 23 onwards.

Below mentioned table shown the year wise automation plan of PSS

S. No	Description	UOM	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
1	Automation of Conventional PSS	Nos.	30	75	55	45	40

Automation of Conventional PSS

S No.	Item Description	Unit	Proposed Qty FY 24-25	Proposed Qty FY 25-26
1	33KV Control Relay Panel For Transformer	EA	20	20
2	33KV Control Relay Panel For IC/OG	EA	26	26
3	CR PANEL FOR 11KV VCB	EA	28	28
4	RTU 24-48 V WITH PANEL (Urban)	EA	20	5
5	RTU 24-48 V WITH/WITHOUT PANEL (Rural ODSSP/OLD)	EA	40	38
6	FRTU and allied Service for Distribution RMU automation	EA	22	18
7	Low cost Communication (RMU+Rural)	EA	22	18
8	Transducer Misc Items	EA	65	35
9	RELAY TRANSFORMER DIFFERENTIAL NUMERICAL	EA	30	15

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S No.	Item Description	Unit	Proposed Qty FY 24-25	Proposed Qty FY 25-26
10	RELAY OVER CURRENT&EARTH FAULT NUMERICAL	EA	210	150
11	RELAY MASTER TRIP 24V-48V DC	EA	290	170
12	SITC of Fire Alarm	EA	50	90
13	Ethernet Switch (12/24 Port)	EA	71	30
14	CCTV Camera for PSS Surveillance	EA	105	100
15	Integration support for ODSSP/Conventional PSS	EA	25	20
16	Revamping of Panels with new relays	EA	25	25
17	ITC cost of Relays, RTUs, CRP	LS	1	1
18	Digital Substation for space constraints PSS	EA	2	6
19	Automation Lab (Balasore & Jajpur)	EA	1	1

- **RDS- (Rural Digital Substation)**

1. INTRODUCTION

For a power distribution utility, to improve reliability, it is very essential that the down time to its end consumers have to be minimal. It is, therefore, always the endeavour of the utility engineers to restore the interruption, if any, in the shortest possible time by isolating the faulty equipment and charging the healthy network. While this requires all the necessary information related to the fault should available at central control room to carry out the necessary operations. All PSS are automated to effect the operations from the remote control room to reduce the interruption time of the consumers. This is arrangement is called as Substation Automation System (SAS).

In conventional Substation Automation approach, control reply panels (CRP) used to be installed in control room and all control signals and CT connections connected in CRP. All BCPU's then connected to RTU and finally communicating with SCADA system.

For revamping of Rural PSS, following challenges where faced,

- Huge execution time for installation of CRP and RTU Panels
- Requirement of multiple outages
- New/ Refurbishment cables for status, control and CT circuit.
- Refurbishment of cable trench

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- Refurbishment of control room/construction of control room

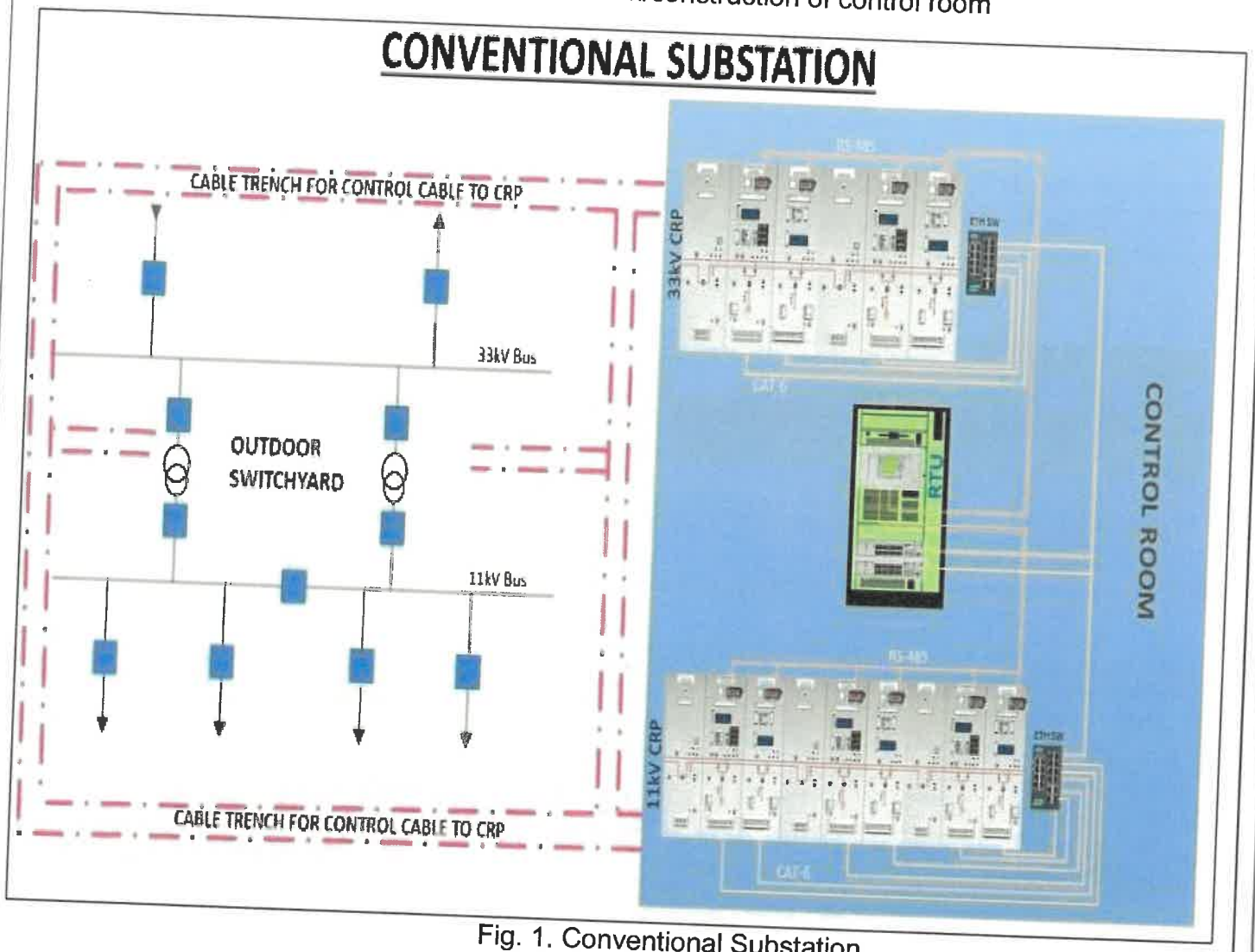


Fig. 1. Conventional Substation

2. RDS – RURAL DIGITAL SUBSTATION

In order to avoid above challenges, it is proposed to have digital substation approach which in-turn, will help to reduce cost on big CRP's, control room, outages, and so on.

Rural Digital Sub-station (RDS) is a smart digital solution for refurbishment of PSS with digital communication. In RDS solution, every old CRP need to be replaced with small CRP which has complete CRP functionalities and the same will be installed near outdoor CT (Current Transformer) or outdoor CB (Circuit Breaker).

All these CRP's will be communicating over IEC61850 protocol and connected in ring/star topology to connect to RTU (Remote Terminal Unit) using CAT6 cable. Only RTU and local HMI (Human Machine Interface) will be installed in control room from where operator can monitor and control the PSS. This RTU will communicate with SCADA system over IEC104 protocol.

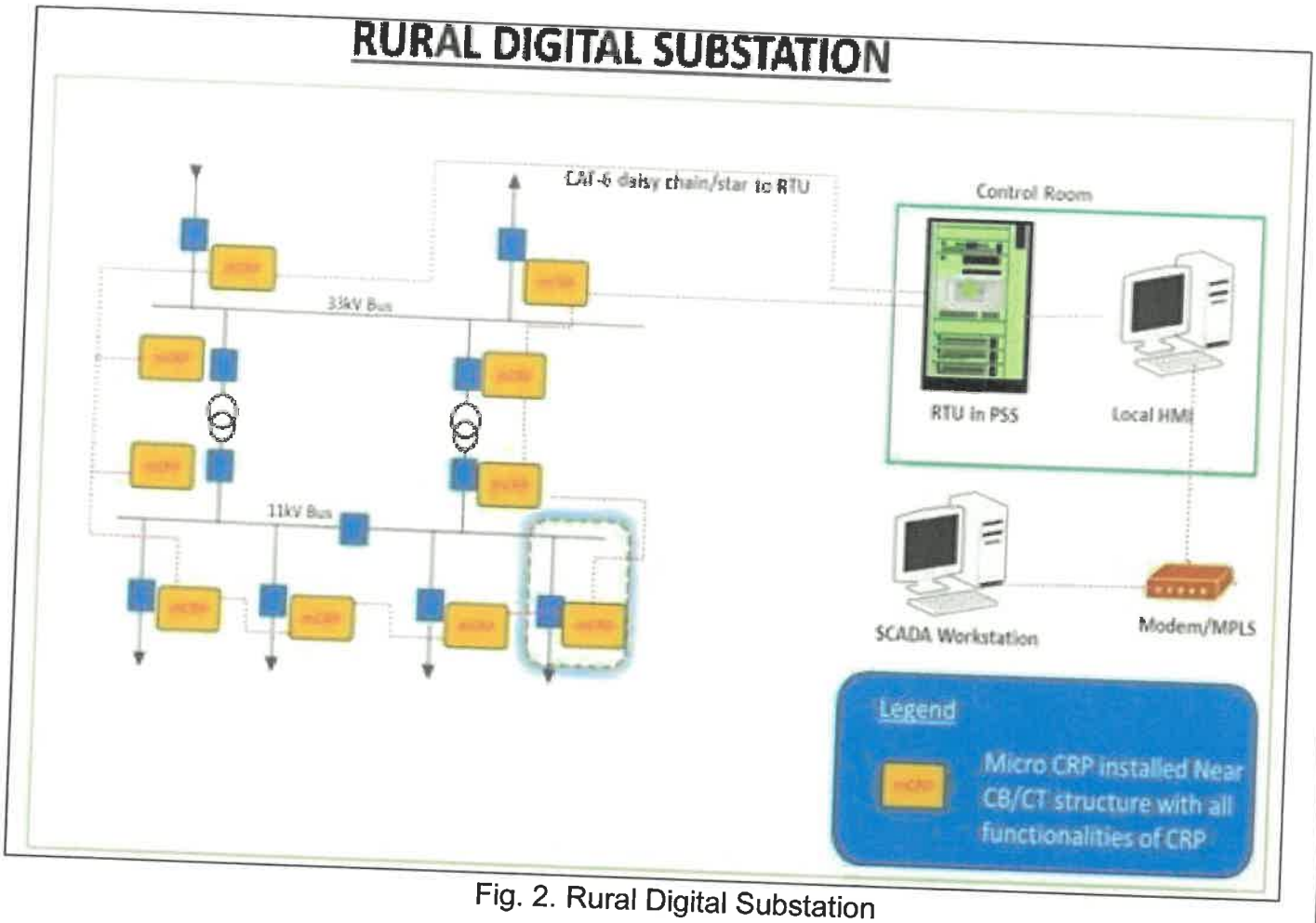


Fig. 2. Rural Digital Substation

3. BENEFITS

3.1 TO CONSUMERS:

Minimal Interruption Time: As RDS enables remote monitoring and control of PSS, quick response to various faults, results in reduction in interruption time.

3.2 TO UTILITY:

- Improvement in the reliability indices.
- Life of the transformers and associated equipment's will increase due to better monitoring and control of network through PSCC.
- Cables with plug type connection are reducing huge commissioning time and provide additional safety in isolating equipment's while taking outages, also helps to reduce fictitious alarms on account of oxidation and loose connections.
- By using RDS solution, which in-turn reduces copper consumption by almost 60%.

3.3 TO ENVIORNMENT:

- Reduced use of transport vehicles for performing manual operations at remote PSS due to better visibility of complete network in PSCC.
- Greater CO_2 saving in kilograms, thereby reducing carbon footprint.

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4. CONCLUSION

Distribution utilities can adopt an RDS approach to implement SAS in rural PSS to monitor and control the network for achieving the best restoration time for its consumers. Deployment of RDS for PSS helps in modernization of grids at almost 50% lesser cost than conventional approach with minimal outages. Pilot is planning to implement at City PSS in Balasore, TPNODL.

The proposal for themes is as follows

Activity	Amount in Rs Cr
Automation of conventional PSS & Rural Digital Sub station	24.47

Benefits

- Adoption of very strong integrated automated application for pan TPNODL area
- Ensure secured and much better services to customers.
- Integrated and secure processes with strong access control of PSS
- Monitoring of PSS network assets.
- Ensure customer delight and effective solutions for addressing needs
- Enhanced user experience with extensive standard features & functionalities
- Standardized process workflow across organization
- Centralized data base for synchronized data.

Automation Lab:

Automation labs are essential for RTUs for several reasons:

1. Training and Education
2. Security Testing
3. Regulatory Compliance Testing

In summary, an automation lab for RTUs is a critical component in the development, testing, and validation process.

ODSSP RTU:

ODSSP RTU was not a full-fledged RTU (basically its BCU), we had to replace all RTU's in four financial years. We intend to replace the ODSSP RTU due to the following issues.

1. A problem with the RTU's firmware.
2. RTU Hardware issues.
3. RTU hanging & Data reporting problem
4. Due to a hanging issue, the Dual Master is unable to report.

Year	FY 23-24	FY 24-25	FY 25-26	FY 26-27	Total
RTU-ODSSP Replacement	25	25	24	25	99

7.5.2 Disaster Recovery Centre-Hardware and Software:

TPNODL Data Center (DC) has been commissioned successfully in OPTCL Data center at Bhubaneswar in FY 22. This DC hosts IT Enterprise Applications, Customer Centric Applications, GIS and AMI applications.

In line with the best practices followed up by IT and to maintain the business continuity due to any failure of Infra at one site and also to mitigate the risk cyber security, it is utmost important to have DR site for all Business Applications. So, Hon'ble Commission has approved CAPEX for DR site at Sambalpur in FY 23-24. This budget was put up for approx. 70% of complete DR requirements. To serve DR for all applications, balance amount is proposed in next two-year CAPEX. The DR will ensure business continuity in the aftermath of any breakdown of the Data Center (DC) owing to a natural calamity or other unforeseeable disaster. The DR will operate under replica of DC and the same will be equipped with cyber security measures. DR will also ensure data protection for all data stored at DC.

Accordingly following is being proposed in FY 25 and FY 26 under this head:

For FY 24-25:

S. No.	Description	Unit cost** (INR inclusive of Tax)	Qty	Amt. (Rs Cr inclusive of Tax)
1	Server (FY 23-24, 70% was approved). Another Approx. 15% is covered	38,00,000	4	1.52
2	Windows OS (Data Center Edition)	64,000	72	0.46
3	Linux	3,65,000	36	1.31
4	Antivirus (Server Edition)	51,000	20	0.10
Total Cost in Cr.				**3.40**

For FY 25-26:

S. No.	Description	Unit cost** (INR inclusive of Tax)	Qty	Amt. (Cr inclusive of Tax)
1	Server (FY 23-24, 70% was approved, FY24-25, another 15% is proposed). Another Approx. 10% is covered.	42,00,000	2	0.84
2	Windows OS (Data Center Edition)	64,000	48	0.31
3	Linux	3,65,000	15	0.55
4	Antivirus (Server Edition)	51,000	10	0.05
Total Cost in Cr.				**1.75**

*** The Unit rates are inclusive of taxes and are taken from either competitively discovered rates in FY 22/23/24 and against which orders have been placed or prevailing market rates. We have taken*

reasonable escalation in the unit rates to accommodate the unknown developments and semi-conductor crisis that is affecting the industry currently.

The sum total proposal for all mentioned above one theme is described as below:

Description	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
Disaster Recovery Centre-Hardware and Software	3.40	1.75

Benefits

I. Disaster Recovery Center shall ensure business continuity in case of breakdown of Data Center or disaster.
II. Disaster Recovery Center shall ensure recovery of data in case of any data loss at Data Center

Note - In absence of DR, if DC goes down, it would take around 10 day's time to restore the DC and may result in data loss of 24 hours' maximum. With proposed DR plan which is requirement for It practices and security measures, the system can be brought up within maximum 2 to 6 hours and the data loss can be minimized to less than one hour.

The intangible benefits like reputation, compliance to MoP and MeIT, CERC and compliance under ISO 27001 is another important perspective which demand the availability of DR site

7.5.3 Data Center Hardware and Software:

TPNODL Data Center (DC) has been commissioned successfully in OPTCL Data center at Bhubaneswar in FY 22. This DC hosts IT Enterprise Applications, Customer Centric Applications, GIS and AMI applications.

TPNODL is embarking on various technologies and digital platform to run the various processes through system to bring agility resulting to better consumer's services. For implementing digital platforms and applications as well as enhancement in existing applications like Advanced Metering Infrastructure (AMI), Head End System (HES) GIS and CIS Data base in FY 25 and FY 26 due to increase in data size and user base, it is required to have additional and augmenting IT Infra.

Accordingly following is being proposed in FY 25 and FY 26 under this head:

For FY 24-25:

S. No.	Description	Unit cost (INR inclusive of Tax)	Qty	Amt. (Rs Cr inclusive of Tax)
1	MDM Development/Licences	35.4	150000	0.53
3	HES Licences	300	150000	4.50
5	Server	3800000	4	1.52

S. No.	Description	Unit cost (INR inclusive of Tax)	Qty	Amt. (Rs Cr inclusive of Tax)
6	Windows OS (Data Center Edition)	64,000	72	0.46
7	Linux	3,65,000	36	1.31
8	Antivirus (Server Edition)	51,000	20	0.10
9	MS SQL 2 Core Enterprise license	14,45,000	8	1.16
Total Cost in Cr.				**9.58**

For FY 25-26:

S. No.	Description	Unit cost (INR inclusive of Tax)	Qty	Amt. (INR inclusive of Tax)
1	MDM Development/Licences	35.4	1,50,000	0.53
3	HES Licences	300	1,50,000	4.50
5	Server	4200000	2	0.84
6	Windows OS (Data Center Edition)	64000	48	0.31
7	Linux	3,65,000	15	0.55
8	Antivirus (Server Edition)	51,000	10	0.05
9	Storage & back up	1,00,00,000	1	1.00
Total				**7.78**

** *The Unit rates are inclusive of taxes and are taken from either competitively discovered rates in FY 22/23/24 and against which orders have been placed or prevailing market rates. We have taken reasonable escalation in the unit rates to accommodate the unknown developments and semi-conductor crisis that is affecting the industry currently*

The sum total proposal for all mentioned above one theme is described as below:

Description	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
Data Centre-Hardware and Software	9.58	7.78

Benefits

Augmentation of TPNODL Data Center infrastructure will enable extension of AMI landscape leading to efficient billing and collection towards reduction of AT&C loss.

7.5.4 End user IT Infrastructure:

Till date, TPNODL has procured and distributed around 2050 laptops and 300 desktops for its officers. TPNODL has also installed around 400 printers and 300 scanners across all offices of TPNDOL. End user devices have been given to all employees of OCSR and CTC employees so that they can work on system. Laptop is very convenient in this large geography as need to travel by the officers.

With the addition of new manpower and establishments as well as roll out of more and more IT applications, in both FY 25 and FY 26, it is imperative that the end users need to be equipped with necessary IT infrastructure for smoothly performing day to day works.

Additionally, for FY 26, a portion of laptops procured in year 2021 will reach their end of life as laptop comes with a warranty of 4 years and hence replacement of such laptops shall also be required along with new joinees.

Proposal for end computing devices is mentioned below

For FY 24-25:

S.No	Description	Unit cost (INR , inclusive of tax)	Qty	Amt. (Rs Cr inclusive of Tax)
1	Laptops with OS for new Joinees	72,000	200	1.44
2	MS Office License for Laptop	32,000	200	0.64
3	Anti Virus for Laptop	3,650	200	0.07
4	AD Cal License for Laptop	3,250	200	0.07
5	Printer	45,000	50	0.23
6	Scanner	35,000	20	0.07
7	Access point	50,000	50	0.25
Total Cost in Cr.				**2.77**

For FY 25-26:

S.No	Description	Unit cost (INR , inclusive of tax)	Qty	Amt. (INR inclusive of Tax)
1	Laptops with OS for new Joinees	74,000	200	1.48
2	MS Office License for Laptop for new Joinees	35,000	200	0.7
3	Anti-Virus for Laptop	3,950	200	0.08
4	AD Cal License for Laptop for new Joinees	3,650	200	0.07
5	Laptops with OS for replacement of Laptop of employees after 4 years	74,000	400	2.96
6	MS Office Licenses post end of support	35,000	500	1.75
7	Printer	45,000	25	0.11

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8	Scanner	35,000	25	0.09
Total Cost in Cr.				**7.24**

** *The Unit rates are inclusive of taxes and are taken from either competitively discovered rates in FY 22/23/24 and against which orders have been placed or prevailing market rates. We have taken reasonable escalation in the unit rates to accommodate the unknown developments and semi-conductor crisis that is affecting the industry currently.*

summary of prices of end computing devices is mentioned below:

Description	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
End user IT Infrastructure	2.77	7.24

Benefits

I. Enhancing the reach of computerization across the organization.
II. Build a culture of following online processes and less of paper movement
III. Availability of end user computing devices up to section level for proper use of various IT applications towards more effective and transparent execution of business processes.

7.5.5 Strengthen Network Connectivity:

Till date we established MPLS connectivity at all Major offices and 105 PSS across TPNODL. The technology used was a combination of IP MPLS and OFC. We laid 20 Km of Optical Fiber Cable (OFC) in FY 22 in the form of separate rings connecting 50 offices. The OFC connectivity has allowed us to enhance the reliability at these locations by giving a redundant connectivity route. In all offices having cumulative more than 400 users, we also established WiFi connectivity.

In FY 24, we are in the process of connecting 60 numbers of PSS via IP MPLS for SCADA implementation. We are also laying 50 Km of OFC network which will connect 10 PSS and 50 offices thereby establishing redundant secure network.

Continuing the endeavour of creating our own reliable network, we have proposed to lay 20 Km and 30 Km OFC respectively in FY 25 and FY 26 for connecting 15 PSS (7 numbers in FY 25 and 8 numbers in FY 26) using the OPGW backbone of OPTCL or that of telecom service providers.

For all new office buildings/extension of office buildings coming up in FY 25 and FY 26, necessary extension of LAN connectivity and new MPLS connectivity, if required, shall also be planned.

Proposal for strengthen network connectivity is mentioned below

For FY 24-25:

S. No.	Description	Unit cost (INR inclusive of Tax)	Qty	Amt. (Rs Cr inclusive of Tax)
1	Locational LAN Work for offices	40,00,000	1	0.40
2	Layer -II & III Switch	1,52,000	25	0.38
3	2/5 kVA UPS (Rack Mounting) with battery	1,08,000	30	0.32
4	SMPS with battery (rack mounted)	1,08,800	40	0.44
5	Aggregator Router	10,91,000	20	2.18
6	OFC network for interconnection of Offices	1,50,00,000	1	1.50
7	Layer- 3 Router (VPN)	1,10,000	15	0.17
8	DC/AC Router & Rack	150000	50	0.75
Total Cost in Cr.				**6.14**

For FY 25-26:

S. No.	Description	Unit cost (INR inclusive of Tax)	Qty	Amt. (Rs Cr inclusive of Tax)
1	Locational LAN Work for offices	20,00,000	1	0.20
2	Layer -II & III Switch	1,52,000	5	0.08
3	2/5 kVA UPS (Rack Mounting) with battery	1,08,000	10	0.11
4	SMPS with battery (rack mounted)	1,08,800	30	0.33
5	Aggregator Router	10,91,000	2	0.22
6	OFC network for interconnection of Offices	2,00,00,000	1	2.00
7	Layer- 3 Router (VPN)	1,10,000	20	0.22
8	MPLS link installation	5,00,000	1	0.05
9	DC/AC Router & Rack	150000	20	0.30
Total Cost in Cr.				**3.51**

** *The Unit rates are inclusive of taxes and are taken from either competitively discovered rates in FY 22/23/24 and against which orders have been placed or prevailing market rates. We have taken reasonable escalation in the unit rates to accommodate the unknown developments and semi-conductor crisis that is affecting the industry currently.*

summary of prices of end computing devices is mentioned below:

Description	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)

Strengthen Network Connectivity	6.14	3.51

Benefits

OFC and IP-MPLS connectivity in PSS and offices will create a reliable redundant network which can be used for delivering reliable SCADA connectivity of PSS as well as to ensure high availability of critical IT applications across TPNODL.

7.5.6 GIS Balance GIS mapping of two Circle (Baripada & Keonjhar).

TPNODL has implemented GIS software in FY 22 along with survey of land base, network, asset and consumer indexing for one Division. For remaining 15 division survey for base map survey along with Network and consumer indexing has been initiated. Capex for GIS in last three years is approved where we have considered approx. 80% of the areas for Baripada and Keonjhar. To cover up these two large geographical circles, in FY 25 and 26 balance base map, network asset along with pole numbering is proposed to be covered in these two circles.
Proposal for Balance GIS mapping of 2 Circle (Baripada & Keonjhar) is mentioned below

GIS implementation for Baripada & Keonjhar Circle

Sr. No	Item	Unit	Proposed Qty FY 24-25	Proposed Qty FY 25-26
1	Project Management, Site Visit & logistics	No	1	1
2	Lanbase Survey and mapping of Baripada Circle	Sq Km	3000	0
3	LT Network Survey and mapping with assets Baripada Circle	Km	0	2000
4	Asset Numbering and Pole Painting Baripada Circle	No	0	50000
5	33 Kv Line Survey and mapping with assets Baripada Circle	Km	100	0
6	11Kv Line Survey and mapping with assets Baripada Circle	Km	1500	0
7	Migration / Updation Baripada Circle	Sq Km	0	3000
Total Survey Data for Baripada Circle				
8	Project Management, Site Visit & logistics	No	1	1
9	Lanbase Survey and mapping of Keonjhar Circle	Sq Km	3000	0
10	LT Network Survey and mapping with assets Keonjhar Circle	Km	0	750
11	Asset Numbering and Pole Painting Keonjhar Circle	No	0	50000

Sr. No	Item	Unit	Proposed Qty FY 24-25	Proposed Qty FY 25-26
12	33 Kv Line Survey and mapping with assets Keonjhar Circle	Km	100	0
13	11Kv Line Survey and mapping with assets Keonjhar Circle	Km	500	0
14	Migration / Updation Keonjhar Circle	Sq Km	0	3000
Total Survey Data for Keonjhar Circle				

The proposal for scheme is as follows

GIS Software Implementation and Land Base & Network Survey & Digitization for Baripada & Keonjhar Circle	For FY 24-25 Amount in Rs Cr	For FY 25-26 Amount in Rs Cr
GIS implementation of three Circle Bhadrak, Baripada & Keonjhar along with land base, network & consumer survey	2.45	1.58

*** The Unit rates are inclusive of taxes and are taken from either competitively discovered rates in FY 22/23/24 and against which orders have been placed or prevailing market rates. We have taken reasonable escalation in the unit rates to accommodate the unknown developments.*

Benefits

100% GIS mapping in system will strengthen various other business processes viz. energy audit process, technical feasibility, dues verification, network planning. GIS will become the backbone for Electrical linear and nonlinear asset repository as well as its connectivity topology.

7.5.7 CAPEX Summary for Technology:

Table below indicates the activities to be performed along with funds required under Technology Head.

S. No.	Major Category	Activity	FY 24-25 amount in Cr.	FY 25-26 amount in Cr.	Annexure
5	Technology	Automation of Conventional PSS	12.23	12.23	Annexure-27
		Disaster Recovery Centre-Hardware and Software	3.40	1.75	Annexure-28
		Data Center Hardware and Software	9.58	7.78	Annexure-29
		End user IT Infrastructure	2.77	7.24	Annexure-30
		Strengthen Network Connectivity	6.14	3.51	Annexure-31
		Balance GIS mapping of 2 Circle (Baripada & Keonjhar)	2.45	1.58	Annexure-32

Total (5)	**36.57**	**34.09**	

7.6 Civil Infrastructure and Administration:

7.6.1 Civil Infrastructure:

TPNODL currently have offices in all the five circles and subdivisions. Some of them are owned and about 40% offices are on rented property. TPNODL is facing challenge while accommodating additional new employees in current office buildings and infrastructure. The current existing infrastructure are old and needs modernization to provide hygienic, well ventilated and spacious work environment. These office locations are touch base points between end consumers and utility. Hence, aesthetic along with safety of each stakeholders needs to be focused. To ensure above it is proposed to carry out civil infrastructure of designated offices in phase manner.

❖ **Up gradation of Road and Offices:**

It is observed that various Primary Sub Stations, access road needs repair and strengthening along with drainage system. In addition, it is required to complete structural rehabilitation and refurbishment of existing Offices/ Control Rooms. The area grading/ levelling, repairs to existing cable trenches and trench covers needs to be done for maintaining safety during operation. During rainy season road condition further, worsen.

Following activities are planned to improve the civil infrastructure:

1. Repair/ New wash room construction for substation.
2. Additional Material Storage area
3. New Store building /storage yard

4. New Building for Division/ Subdivision Section/Commercial Office
5. Refurbishment of old building for office at various location
6. Approach road of Offices and PSS

- **Renovation of various office buildings**

All field offices building up to the section level which are in dilapidated conditions will be completely renovated to increase their usable life. Further the existing furniture which are in poor condition will be replaced by modern workstations, cabins, etc.

- **Remodelling & Creation of Additional Workspaces in various office buildings.**

The office buildings up to Division offices need to be remodelled to create additional space for accommodating the new recruits, provisions for conference rooms, canteens, visitors lounge, etc.

- **Record rooms**

Record rooms of Structural Steel and covered with Percolated Sheets will be set at each circle with "State of the Art" provision of storage, protection, fire proofing, mass scanning, bar coding of all records & files for easy access to employees.

- **Cafeteria Canteen**

Canteen facilities are the necessity of satisfying employees with a better range of foods and healthy options. Workplace canteens need to provide with options to cater for lunch with meals or light breakfast items and fruit or snacks for mid-afternoon along with tea/ cold drinks/ coffee in order to promote healthy eating & refreshments for employees and stakeholders so as to ensure maximum focus of employees on their work without worrying about their meals.

7.6.2 Office Administration:

In TPNODL, the office space is currently crowded and haphazardly planned for seating arrangements, moreover, most of the circulation area has been occupied with files, documents etc. Some of offices are owned and others are on rented property.

The challenges exist in TPNODL using current buildings and infrastructure is to accommodate more employees and providing a hygienic, well ventilated, and spacious working environment to them.

To provide best in class services to consumers, earn consumer delight, and improve satisfaction among other stakeholders and maintaining a clean & safe working environment, following infrastructures are required at above stated workplace.

- **Office air conditioning systems** are required to provide a comfortable working environment to bring and control Energy Efficiency, Humidity, Air Quality, and Reduction in Noise & Keeping Business Critical Equipment at the Right Temperature.

- **Water cooler & Purifiers** are required for proper hydration employees and to ensure good health and improve overall efficiency. An employee should drink at least eight glasses of water a day to be properly hydrated as Water increases the amount of blood flow and oxygen to the brain and other body parts which in turn increases brain activity and attentiveness. **New Technology Pilot Air to water generator.**
- **Tables and Ergonomic office chairs** for sitting long periods with ease. This naturally helps employees work more efficiently and productively. Another benefit is reduction in healthcare expenses related to poor posture from unsuitable office chairs.
- **Photocopier machines** to offer a fast and easy way of getting single or multiple copies of documents & Improves Functionality of businesses.
- **Projector and Display screen:** Required in different office to project the data to the team for better understanding during the meetings

7.6.3 Security cameras, heavy-duty Racking System/ Storage solution at Jajpur Store

In the past few years, surveillance technology has seen an incredible level of evolution that not only makes it far more advanced but also affordable and available to everyone. Security cameras is one of the example of the same.

In our store material of worth crores are available for mitigation of the maintenance and capex activity and the may be always a possibility of the theft /pilferage of the material. so, for better monitoring and recording the activities during 24 hrs. security cameras are required at store of the TPNODL.

There many important items of the different categories are available in the store. As the space in the stores is limited so to accommodate the more material in the limited space with easily accessible manner heavy-duty storage racking is proposed.

HD racking system Benefits

1. Organised Raw materials, inventory and equipment
2. Faster access to inventory
3. Reduced downtime
4. Optimised cube space
5. Minimum damage of the materials
6. Improve Warehouse safety
7. Improved visibility of all the stored materials
8. Adjustable as per the requirement
9. space-efficient and budget-friendly

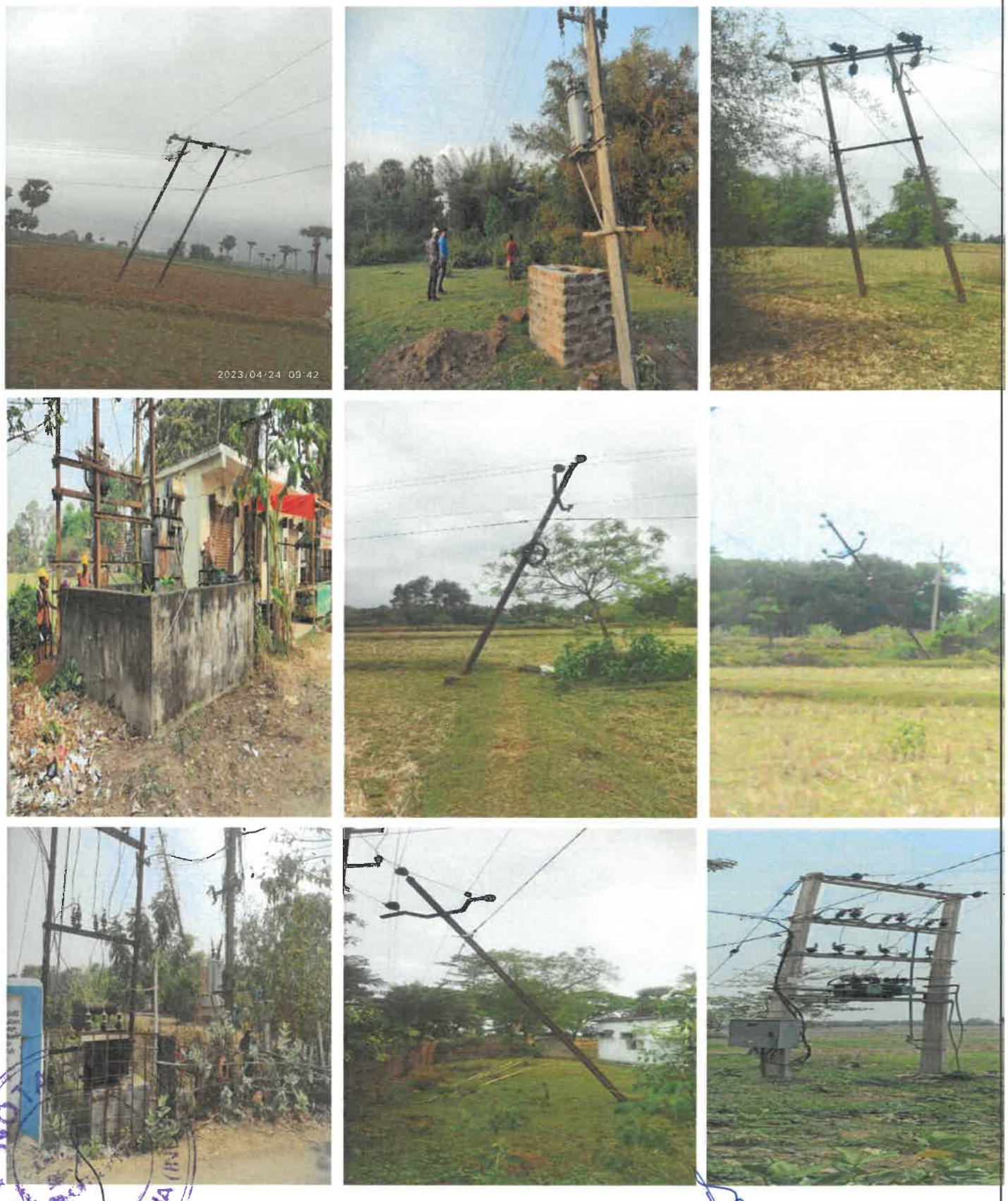
7.6.4 Civil Infrastructure and Administration:

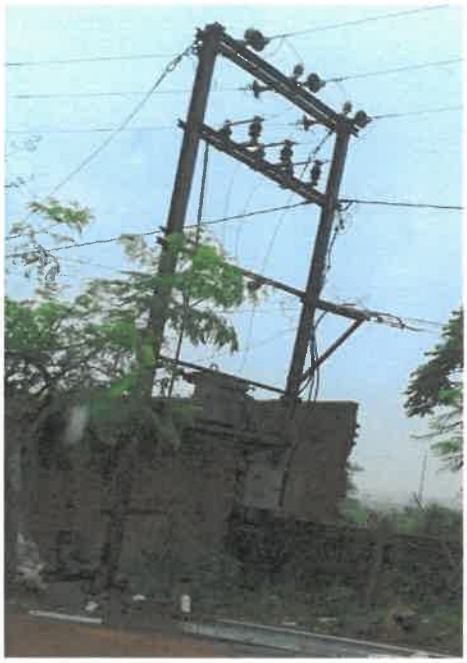
Table below indicates the activities to be performed along with funds required under Civil Infrastructure and Administration Head.

S. No.	Major Category	Activity	FY 24-25 amount in Cr.	FY 25-26 amount in Cr.	Annexure
6	Civil Infrastructure and Administration	Civil Infrastructure (Office Buildings, PSS, Storage Room, Approach Roads, STS office, Cafeteria Canteen and others)	18.50	27.22	Annexure-33
		Office Administration	2.60	2.60	Annexure-34
		Security cameras, heavy-duty Racking system / Storage solutions for Balasore, Jajpur & Betnoti	8.48	8.42	Annexure-35
Total (6)			**29.58**	**38.24**	

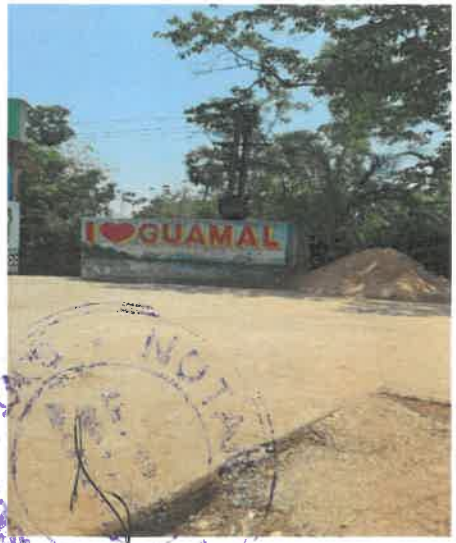
8. Annexure

8.1 Annexure 1: Sample Photographs related to depilated network & civil infrastructure







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8.2 Annexure 2: CEA regulations

CEA regulations (Measures relating to Safety and Electric Supply – 2010)

41. Connection with earth-

The following conditions shall apply to the connection with earth of systems at voltage normally exceeding 125 V but not exceeding 650 V, namely: -

(i) neutral conductor of a 3-phase, 4-wire· system and the middle conductor of a 2- phase, 3-wire system shall be earthed by not less than two separate and distinct connections with a minimum of two different earth electrodes or such large number as may be necessary to bring the earth resistance to a satisfactory value both at the generating station and at the sub-station.

(ii) Neutral conductor shall also be earthed at one or more points along the distribution system or service line in addition to any connection with earth which may be at the consumer's premises.

58 (1) No conductor of an overhead line, including service lines, erected across a street shall at any part thereof be at a height of less than—

- For lines of voltage not exceeding 650 volts—5.8 meters
- For lines of voltage exceeding 650 volts but not exceeding 33 kV-6.1 metres

58 (2) No conductor of an overhead line, including service lines, erected along any street shall at any part thereof be at a height less than—

- For lines of voltage not exceeding 650 volts—5.5 metres
- For lines of voltage exceeding 650 volts but not exceeding 33 kV—5.8 meters

58 (3) No conductor of an overhead line, including service lines, erected elsewhere than along or across any street shall be at a height less than—

- For lines of voltage up to and including 11000 volts, if bare----4.6 meters.
- For lines of voltage up to & including 11,000 volts, if insulated—4.0 meters.
- For lines of voltage exceeding 11,000 volts—but not exceeding 33 kV----5.2 meters.

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60. Maximum interval between supports-

All conductors shall be attached to supports at intervals not exceeding the safe limits based on the ultimate tensile strength of the conductor and the factor of safety specified under regulations 57. Provided that in the case of overhead lines carrying conductors of voltage not exceeding 650 V when erected in, over, along or across any street, the interval shall not, without the consent in writing of the Electrical Inspector, exceed 65 meters.

69. Lines crossing or approaching each other and lines crossing- Street and road.

ii) Guarding shall be provided where lines of voltage not exceeding 33 kV cross a road or street.

(iii) Where an overhead line crosses or is in proximity to another overhead line, guarding arrangements shall be provided so to guard against the possibility of their coming into contact with each other.

69. Guarding-

(1) Where guarding is required under these regulations the following shall be observed namely:

a) Every guard-wire shall be connected with earth at each point at which its electrical continuity is broken.
b) Every guard-wire shall have an actual breaking strength of not less than 635 kg and if made of iron or steel, shall be galvanized.
c) Every guard-Wire or cross-connected systems of guard-wires shall have sufficient current-carrying capacity to ensure them rendering dead, without risk of fusing of the guard-wire or wires, till the contact of any live wire has been removed.

72. Earthing-

1. All metal supports and all reinforced and pre-stressed cement Concrete supports of overhead lines and metallic fittings attached thereto, shall be either permanently and efficiently earthed by providing a continuous earth wire and securely fastening to each pole and connecting with earth ordinarily at three points in every km with the spacing between the points being as neatly equidistant as possible or each support and the metallic fitting attached thereto shall be efficiently earthed.

2. Metallic bearer wire used for supporting insulated wire of overhead service lines of voltage not exceeding 650 V shall be efficiently earthed or insulated.
3. Each stay-wire shall be similarly earthed unless insulator has been placed· in it at a height not less than 3.0 metres from the ground.

Statutory guidelines (CEA – Technical Standards for Construction of Electrical Plants and Electric Lines,2010) in respect of Lines and its associated Poles and Towers, Span Length, Erection of Poles, and Stay.

95. Supports (Poles and Towers)-

1. The supports shall be poles or narrow based lattice towers with fully galvanized structure as per site requirement.
2. Poles may be used for 33 kV, 22 kV, 11 kV and LT lines (lines below 500 V) as per requirement. The poles shall be pre-cast concrete (PCC) pole, pre-stressed cement concrete (PSCC) pole, steel joist, rail pole or steel tubular pole as required, provided PCC and PSCC poles shall not be used at cut-points and as end poles.
3. Poles shall conform to relevant IS as the case may be.
4. Concrete poles shall be preferred in plain areas.
5. In hilly areas appropriate snow or ice loading shall be considered for design of poles and towers.
6. For locations involving long spans or higher clearances on account of crossing of power or communication lines or a railway line, specially designed poles/lattice towers may be used.
7. For angles of deviation of more than 10-degree, double pole structure shall be used.
8. The height of the pole above the ground level, length of pole below ground and working load shall be decided taking into consideration wind zone, terrain, topography, and the statutory clearances required to be maintained and these shall conform to relevant IS.

96. Line Span-

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1. Line span shall be decided taking into consideration topography, wind pressure, type of support, conductor configuration and ultimate tensile strength of conductor.
2. The span shall be within the range specified by IS.
3. Uniform span shall be maintained as far as possible between consecutive pole structures.
4. While constructing a line, if a road crossing occurs at mid span, then a pole shall be placed on one side of the road so as to avoid mid span at the road crossing.
5. While crossing another power line, the lower voltage line shall be underneath. The lower line shall normally not cross at mid span of the upper line.
6. While placing poles on high ground, shorter poles can be used while maintaining proper ground clearance at the middle of the span.
7. Poles shall normally not be placed along the edges, cuts, or embankments of creeks and streams.
8. At all the places where the new line crosses over roads or another existing line, adequately earthed guard wire mesh below the line shall be provided to avoid the conductor of the new line falling over the areas below, in case of any break. In cases where the line passes below an existing line, the guard wire mesh shall be provided above the new line under construction.

97. Erection of Poles-

Erection of poles shall be carried out in accordance with the provisions of relevant IS.

98. Factor of Safety-

The supports shall be suitable for the wind loads as per relevant IS. The minimum factor of safety for supports shall be as per Central Electricity Authority (Measures Relating to Safety and Electricity Supply), Regulations as and when these are notified by the Authority.

100. Stay Arrangements-

1. To prevent tilting of a pole from its normal position due to abnormal wind pressure and deviation of alignment, the pole shall be kept in position by stays. The stays shall be provided at:

a. Angle locations.
b. Dead end locations.
c. Tee off points.
d. Steep gradient locations.
e. cut- point.
f. Along the straight run at minimum two locations in 1 km.

2. Galvanized iron stay wires and stay rods of adequate size shall be used. The individual wire used to form "stranded stay-wire" shall have a minimum tensile strength complying with relevant IS. For double pole structure, four stays along the line, two in each direction and two stays along the bisection of the angle of deviation or as required depending on the angle of deviation shall be provided.
3. When two or more stays are provided on the same pole, each stay shall be grouted entirely separate from the other.
4. The angle between the pole and stay wire shall be about 45 degrees and in no case it shall be less than 30 degrees. ·
5. Stays shall be anchored by either providing base plates, angle iron or rail.
6. Stay wires shall be connected to the pole with a Porcelain Guy Strain Insulator. The standard Guy Strain insulators shall be as per relevant IS. The Porcelain insulator shall be inserted in the stay wire at a height of minimum 3 m vertically above the ground level. The strain insulators shall be free from defects, thoroughly vitrified and smoothly glazed.
7. Wooden insulators shall not be used for stay/guy wire.

99. Earthing of Poles-

1. All metallic supports shall be permanently and effectively earthed. The Earthing arrangement shall conform to relevant IS.
2. Metal cross arms and insulator pins for PCC and PSCC poles shall be bonded together and normally earthed at every pole for 33 kV or 22 kV or 11 kV lines and at every 5th pole for lines below 500 volts.
3. The support on each side of a road crossing, railway crossing or river crossing shall be earthed.
4. Normally coil Earthing shall be provided except for locations involving railways,

telegraph line, power line crossings and special structures where pipe/rod type Earthing shall be provided. Whenever the electric lines pass close to a well or a permanently moist place, an earth should be provided in the well or the marshy place and connected to the electric line pole.

5. All steel poles on which switches, transformers, fuses etc. are mounted shall be earthed.

6. All poles above 650 volts, irrespective of inhabited areas, shall be earthed. For poles below 650 V guarding with continuous earth-wire shall be provided invariably, connected to earth at three equidistant points in one km.

101. Protective Guard-

Guard wire shall be used where an overhead line crosses or is in proximity to any telecommunication line or any other overhead line and in populated localities. Every guard wire shall be connected to earth wherever its electrical continuity is broken. The minimum factor of safety for stay wires, guard and bearer wires shall not be less than 2.5 based on ultimate strength of the wire.

71. Fencing and Approach Arrangement-

Fencing shall be provided around the sub- station. A metalled approach road to transport the equipment should be provided leading from the main road.

77. Transformer Mounting Structure-

1. The transformer shall be mounted on a single pole, H pole structure or on a plinth depending upon site requirements, size and weight of the transformer.
2. Direct single pole mounting shall be used for transformers up to 25 kVA only.
3. The transformers of more than 25 kVA and up to 250 kVA can be mounted on H pole structure or on plinth. Transformers above 250 kVA shall be mounted on plinth only.
4. The structures shall be provided with anti-climbing devices and danger board.
5. The plinth shall be higher than the surroundings. The plinth foundation shall be of concrete.
6. Plinth mounted distribution sub-stations shall be adequately protected by fencing so as to prevent access to the equipment by unauthorized persons, animals and shall be provided with standard danger boards. The enclosure shall permit free circulation of air on all sides.

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8.3 Annexure 3: Cost Estimate for Safety HOTT & LOTO deployment.

S No.	Item Description	Quantity for FY24-25	Quantity for FY25-26	Amount for FY 24-25 (in Cr.)	Amount for FY 25-26 (in Cr.)
1	HOTT	4	1	3.6	0.90
2	Innovative Discharge clamps	2800	3200	0.98	1.12
3	Safety kit bag contains (Neon tester and rod, Pole climber, Audio visual indicator with full body harness	180	120	0.81	0.54
4	VR training module with equipment	8	8	1.12	1.12
5	Emergency light	6	4	0.09	0.06
6	Betnoti and Keonjhar store fire preparedness	1	1	1.8	1.80
7	Kiosk for safety training	8	8	0.08	0.08
8	Safety mirror and display	145	155	0.0725	0.08
9	LOTO deployment	126	114	1.05	0.95
Total Cost of materials				**9.60**	**6.65**
Per Sqmtr Cost in Cr.				**9.60**	**6.65**

8.4 Annexure 4: Cost Estimate for Fencing of Distribution Substations

Annexure-4 Fencing of Distribution substations							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Excavation in all types of ordinary soils	M3	232	5536.3	5536.3	1284429.1	1284429.1
2	Providing and spreading metal 20mm	M3	2900	1730.1	1730.1	5017301.0	5017301.0
3	Supplying, Providing and laying in position plain cement concrete of grade M15 placed to correct line and level in levelling course/fill under or around foundations pits, (Min cement content 300 Kg/m3)	M3	6275	657.4	657.4	4125432.5	4125432.5
4	Providing all material and constructing brick masonry 230 mm. thick below plinth	M3	6200	2768.2	2768.2	17162629.8	17162629.8
5	Providing all material and constructing brick masonry 230 mm. thick above plinth	M3	6350	5190.3	5190.3	32958477.5	32958477.5
6	Providing and plastering - 18 mm thk	M2	450	42906.6	42906.6	19307958.5	19307958.5
7	Painting exterior	M2	220	42906.6	42906.6	9439446.4	9439446.4

8	Providing steel and supplying all material, fabricating and erecting structural steel work	MT	110500	138.4	138.4	15294117.6	15294117.6
9	Providing and fixing reinforced barbed wire tape (RBT)	RM	34	41522.5	41522.5	1411764.7	1411764.7
10	Providing cartage service and transporting, excavated soil, debris, bricks, concrete,	M3	450	4152.2	4152.2	1868512.1	1868512.1
11	Providing , stretching and fixing Galvanised Iron chain link fencing 2" square and of gauge 10 (bare metal thickness)	M2	390	6228.4	6228.4	2429065.7	2429065.7
12	Painting Synthetic Enamel	M2	212.38	3460.2	3460.2	734878.9	734878.9
					Total Cost of materials	11,10,34,013.8	11,10,34,013.8
					GST @ 18% of Sub-Total	1,99,86,122.5	1,99,86,122.5
					Sub-Grand Total	13,10,20,136.3	13,10,20,136.3
					Per DTR Cost	13,10,20,136.3	13,10,20,136.3
					Total Cost in Cr.	13.10	13.10

8.5 Annexure 5: Cost Estimate for Boundary wall for Primary substation

Annexure-5 Boundary wall for Primary substations							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Excavation in all types of ordinary soils / hard murrum including all necessary permissions, depositing / stacking of all materials, removal of vegetation, backfilling with excavated earth in layers, well watered, compacted, transporting of surplus excavated material for backfilling or stacking or spreading or removal of surplus excavated earth within a basic lead of 100 mtrs as directed for a depth from 0.0 to 1.5 mtrs	M3	226.8	9011.3	4851.3	2043542.3	1100158.8
2	Providing and laying 225 or 300 mm thick dry rubble soling with approved quality stones including filling gaps with small chips ramming with hand rammer etc. complete.	M3	1930.0	1480.7	797.1	2857727.5	1538482.5

Annexure-5 Boundary wall for Primary substations							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
3	Providing and placing to correct line and level, in position, machine mixed reinforced cement concrete RCC of grade M25 with required slump for Raft / footings at all levels including vibrating, curing, providing construction joints, leaving cutouts/ pockets, placing of inserts/ embedment, dewatering wherever necessary etc., complete all as per drawing , including cost of providing form work for all shapes (including steel plate/ply wood shuttering, strutting, steel scaffolding etc.), but excluding the cost of providing reinforcement, inserts / embedment, and as directed by the ENGINEER	M3	7527.0	1609.4	866.4	12113789.7	6521564.4
4	Providing and placing to correct line and level, in position, machine mixed reinforced cement concrete RCC of grade M25 with required slump for Pedestals, columns, walls at all levels including vibrating, curing, providing construction joints, leaving cut-outs/ pockets, placing of inserts/ embedment, dewatering wherever necessary etc., complete all as per drawing , including cost of providing form work for all shapes (including steel plate/ply wood shuttering, strutting, steel scaffolding etc.), but excluding the cost of providing reinforcement, inserts / embedment, and as directed by the ENGINEER	M3	7720.0	835.0	449.5	6446132.1	3470331.5

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Annexure-5 Boundary wall for Primary substations							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Propose d Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
5	Providing and placing to correct line and level, in position, machine mixed reinforced cement concrete RCC of grade M25 with required slump for Beams / slabs at all levels including vibrating, curing, providing construction joints, leaving cut-outs/ pockets, placing of inserts/ embedment, dewatering wherever necessary etc., complete all as per drawing , including cost of providing form work for all shapes (including steel plate/ply wood shuttering, strutting, steel scaffolding etc.), but excluding the cost of providing reinforcement, inserts / embedment, and as directed by the ENGINEER .	M3	7720.0	559.7	301.3	4320525.8	2325992.8
6	Supplying, Providing and laying in position plain cement concrete of grade M10 machine mixed, vibrated and placed to correct line and level in levelling course/fill under or around foundations pits, slabs on grade, sumps, soak pits, etc. at any depth with 30 mm downgraded coarse aggregates including curing, compacting, de-watering wherever necessary, providing marine plywood shuttering form work wherever required etc. complete. (Min cement content 210Kg/m3)	M3	6079.5	690.6	371.8	4198433.4	2260263.3
7	Supplying, Providing and laying in position plain cement concrete of grade M15 machine mixed, vibrated and placed to correct line and level in levelling course/fill under or around foundations pits, slabs on grade, sumps, soak pits, etc. at any depth with 30 mm downgraded coarse aggregates including curing, compacting, de-watering wherever necessary, providing marine plywood shuttering form work wherever	M3	6272.5	219.2	118.0	1375073.8	740283.0

Annexure-5 Boundary wall for Primary substations							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
	required etc. complete. (Min cement content 300 Kg/m3)						
8	Providing all the materials including binding wires, cleaning, bending, cutting, hoisting, placing in position, lapping and binding with 16 SWG annealed soft iron wire or tack welding reinforcement steel for all types of RCC / Precast work irrespective of locations & levels all as per drawings including steel scaffolding, handling and transporting from site stores, complete as directed by using High yield strength deformed bars conforming to IS 1786 - HYSD Bars	TON	72375.0	336.7	181.3	24367938.8	13118692.5
9	Providing all material and constructing brick masonry 230mm. thick and above in cement mortar (1:5) using approved quality, class 50 conforming to IS:3102 table moulded bricks, including leaving inserts / pockets, steel scaffolding, curing, raking joints, etc.	M3	6272.5	2725.7	1467.4	17096906.8	9204269.0
10	Providing all materials and carrying out sand faced plaster 18 mm thick in single layer and plastering external surfaces of concrete and brick work such as walls, columns, beams etc. with 1:4 cement mortar, including providing & erecting steel scaffolding, hacking of concrete surfaces, curing including bands, drip moulds, grooves, etc. complete with 2% Accoproof or approved waterproofing compound	M2	434.3	29928.0	16112.0	12996234.0	6996636.0
11	Providing all materials, tools tackles and labour, preparing the surface by scrapping / sand papering to remove loose scales, making the surface to receive exterior quality paint, Applying a coat of approved Primer and Two Coats of Paint. Including necessary scaffolding / staging etc. complete.	M2	212.3	29928.0	16112.0	6353714.4	3420577.6

Annexure-5 Boundary wall for Primary substations							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
	as directed. Paint shall be of First Quality Manufactured by Asian / Burger / Shalimar paints Exterior quality Plastic Emulsion paint						
12	Providing all materials, tools tackles and labour, preparing the surface by scrapping / sand papering to remove loose scales, making the surface plain by applying putty, Applying a coat of approved Primer and Two Coats of Paint. Including necessary steel scaffolding / staging etc. complete as directed. Paint shall be of First Quality Manufactured by Asian / Burger / Shalimar paints Synthetic Enamel Paint	M2	212.3	448.9	241.7	95305.7	51308.7
13	Providing steel and supplying all material, fabricating and erecting structural steel work at all heights including steel scaffolding for roof trusses, purlins, beams, columns, chequered plate flooring, treads, risers, stringers, bracings, runners etc. at all heights including welding and gas cutting, drilling of holes etc. complete as per the approved drawing or as directed. Contractor shall use his own welding set, gas cutting set, gas, electrodes, drill machine and other accessories, required for carrying out the entire work. The rate shall include supply and fixing of MS bolts, and nuts, and washers and applying one coat of Shalimar or any other approved make red oxide (primer) paint to all the exposed surfaces of steel. Structural steel section shall be of primary manufacturer and confirm to IS2062 requirements	TON	86743.9	52.4	28.2	4543122.4	2445829.6
14	Providing and fixing G I barbed wire of 10 gauge along the boundary wall / fencing on angle iron post with all necessary fitting such as	M	33.8	52374.0	28196.0	1768931.9	952319.9

Annexure-5 Boundary wall for Primary substations							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
	welding of nuts, bolts, clips, split pins, manpower etc. complete						
15	Providing and fixing concertina coil of 610 mm dia., 80 Nos. of circles, 200 Nos. of clips, hot dip galvanized. The wire shall be of 12 SWG tensile wire, covering 10 RM with one coil, each RM will have 8 Nos. of circles, including labour, fixing in position on existing V shaped angles including 2 nos. of guard wires and painting with 2 coats of Bus green paint complete at all heights including scaffolding.	M	458.4	7482.0	4028.0	3429561.8	1846334.5
16	Providing, Fabricating and erecting MS gates consisting of MS hollow rectangular or square box sections with 6mm to 8mm thk. MS joining plates, including welding of sections as per design approved by the Owner. Fabricating the framework with necessary hinges, locking arrangement including applying synthetic enamel paint of approved make over one coat of primer. Contractor shall use his own welding set, gas cutting set, gas, electrodes and other accessories, steel scaffolding required to complete the entire job. All hollow box steel section shall be of primary manufacturer and confirm to IS 4923 requirements	MT	86743.9	29.9	16.1	2596069.9	1397616.9
17	Clearing jungle including uprooting of rank vegetation, grass, brush wood, trees and saplings of girth upto 30 cm measured at a height of 1m above ground level and removal of rubbish upto a distance of 100 m outside of periphery of the area cleared	M2	14.5	7482.0	4028.0	108264.5	58285.2
					Total Cost of materials	10,67,11,274.6	5,74,48,946.0
					GST @ 18% of Sub-Total	1,92,08,029.4	1,03,40,810.3
					Sub-Grand Total	12,59,19,304.1	6,77,89,756.3
					Total Cost in Cr.	12.59	6.78

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8.6 Annexure 6: Cost Estimate for Fire wall for PTR "6Mtr*8Mtr"

Annexure-6 Fire wall for PTR "6Mtr*8Mtr"							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Exc in soil, 0-1.5m	M3	232	28800.0	30600.0	6681600.0	7099200.0
2	Prvd & placing rmc m25 for raft	M3	7550	5760.0	6120.0	43488000.0	46206000.0
3	Prvd & placing rmc m25 for columns	M3	7720	2419.2	2570.4	18676224.0	19843488.0
4	Prvd & placing rmc m25 for beams and slabs	M3	7720	2682.7	2850.4	20710598.4	22005010.8
5	PCC, M15 in levelling course	M3	6275	1440.0	1530.0	9036000.0	9600750.0
6	Reinforcement, hysd bars	TON	100800	1267.2	1346.4	127733760.0	135717120.0
7	Prvd & const brick masonry, 230mm	M3	6300	13910.4	14779.8	87635520.0	93112740.0
8	Prov sand faced plaster, 18mm	M2	450	138240.0	146880.0	62208000.0	66096000.0
9	Paint, exterior plastic emulsion	M2	220	138240.0	146880.0	30412800.0	32313600.0
					Total Cost of materials	40,65,82,502.4	43,19,93,908.8
					GST @ 18% of Sub-Total	7,31,84,850.4	7,77,58,903.6
					Sub-Grand Total	47,97,67,352.8	50,97,52,812.4
					Per Sqmtr Cost in Cr.	1.14	1.21

8.7 Annexure 7: Cost Estimate for Defective Cable Replacement

Annexure-7 Service cable replacement							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Replacement of 1.1 KV Voltage Grade 2 Core 4 Sqmm Al Armoured Service Wire Replacement, considering average service Length Is 30 Meter. (JD -Laying of Single phase Service wire including removal of OLD damaged Service wire including T&P)	Mtr	85	939900	880800	8,00,04,288.0	7,49,73,696.00
					Total Cost of materials	8,00,04,288.00	7,49,73,696.00
					Total cost in Cr	8.00	7.50

8.8 Annexure 8: Cost Estimate for Gravel Filling and S-Yard Development in PSS

Annexure-8 Gravel Filling and S-Yard Development							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Gravel Filling and S-Yard Development	M3	281097	80.0	70	2,24,87,760.00	1,96,76,790.00
					Total Cost of materials	2,24,87,760.00	1,96,76,790.00
					GST @ 18% of Sub-Total	40,47,796.80	35,41,822.20
					Sub-Grand Total	2,65,35,556.80	2,32,18,612.20
					Total Cost of one RM	2.65	2.32

8.9 Annexure 9: Cost Estimate for Conversion of LT Bare conductor to AB Cable

S. No.	Description	UOM	Quantity for FY 24-25	Quantity for FY 25-26	Amount for FY 24-25 (in Cr.)	Amount for FY 24-25 (in Cr.)
A	4x95+1x95+1x16 Sqmm LT AB Cable	Km	180	152	24.30	20.52
B	4x50+1x50+1x16 Sqmm LT AB Cable	Km	153	139	15.61	14.18
Total Cost in Cr.					**39.91**	**34.70**

A. Cost Estimate Conversion of LT Bare to 4x95+1x95+1x16 Sqmm LT AB Cable

Annexure-9A Conversion of LT Bare conductor to 4x95+1x95+1x16mm2 AB cable							
Conversation of LT Bare conductor to 4x95+1x95+1x16mm2(considering 29 nos. existing pole "Min 35% pole are rusted & damage condition"+ 14 nos. intermediate pole) total = 33 poles							
Out of 14 nos. proposed pole, considering 22 nos. straight point and 11 nos. angular point. In Existing line considering 30% angular point (7 nos. pole) and 70% straight point. (29 nos.) i.e. in Total Line Straight point pole - 22 nos. ; Angular pole - 11 nos.							
S No.	Item Description	UoM	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	1.1KV LT AB Cable 4x95+1x95+1x16mm2	Mtr	421.67	185400	156560	7,81,77,618.0	6,60,16,655.2
2	9 mtr long 300 kg PSC pole	No	3900	2520	2128	98,28,000.0	82,99,200.0
3	RCC base Plate for PSC pole	No	1782	2520	2128	44,91,290.3	37,92,645.2
4	Danger Plate	No	104	5940	5016	6,17,760.0	5,21,664.0
5	Back Clamp for danger Plate 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.310mtr 1 no	Kg	97.5	1787.3	1509.3	1,74,266.2	1,47,158.2
6	GI barbed wire anticlimbing device	Kg	104	5940	5016	6,17,760.0	5,21,664.0

7	Back Clamp for Barbed wire anticlimbing device 25X3mm. flat, 0.59Kg/Mtr. Flat of 0.510 mtr length 4 no's	Kg	97.5	7149.4	6037.3	6,97,064.9	5,88,632.6
8	Pole clamp for EYE hook for XLPE Aerial bunched Cable	Pair	260	7920	6688	20,59,200.0	17,38,880.0
9	Suspension Clamp with EYE hook for ABC	No.	442	3960	3344	17,50,320.0	14,78,048.0
10	Eye Hook for AB cable for dead end point	No.	78	1980	1672	1,54,440.0	1,30,416.0
11	Conductor Dead End Clamp suitable for bare messenger XLPE Aerial bunched cable(25-70 sq mm)	No.	84.5	1980	1672	1,67,310.0	1,41,284.0
12	LT Stay Set (Complete)	Set	676	2340	1976	15,81,840.0	13,35,776.0
13	LT Stay Insulator	No	39	2340	1976	91,260.0	77,064.0
14	LT Stay clamp	Pair	143	2340	1976	3,34,620.0	2,82,568.0
15	7/12 SWG Stay Wire	Kg	97.5	23400	19760	22,81,500.0	19,26,600.0
16	Earthing of Support (Coil Type)	EA	215.8	2520	2128	5,43,816.0	4,59,222.4
17	PIPE HDPE SIZE 25 MM	Mtr	35.2	17820	15048	6,27,723.9	5,30,077.9
18	Lug AL 70 Sqmm for 7/8 SWG Wire/Earthing	EA	8.9	5940	5016	52,933.1	44,699.0
19	LT Distribution Box Polycarbonate	No	969.8	4140	3496	40,14,798.4	33,90,274.2
20	Cap cable end for ABC	EA	114.3	3600	3040	4,11,311.6	3,47,329.8
21	IPC 50-150, 50-150 SQ.MM ST.LT Type A	EA	92.6	20700	17480	19,16,035.4	16,17,985.5
22	IPC EP 95 LT ABC 16-95 & 1.5-16 SQMM ST.LT Type C	EA	92.6	8280	6992	7,66,414.2	6,47,194.2
23	IPC KZ 2X150 LTABC 25-150 & 6-35(50) sqmm Type B	EA	54.3	4140	3496	2,24,698.5	1,89,745.4
24	STEEL STRAP SIZE 20 MMX50 M LONG	ROL	1547.6	720	608	11,14,247.6	9,40,920.2
25	BUCKLES FOR STEEL STRAP (1 EA = 100 NOS)	EA	514.4	720	608	3,70,376.7	3,12,762.6
26	Cable 1.1kV Al 4CX25 Sq.mm Armoured	Mtr	177.7	8280	6992	14,71,629.8	12,42,709.6
27	Gland for 1.1kV Al 4X25 Sq.mm	EA	180.8	8280	6992	14,96,630.0	12,63,820.9
28	Lug AL Crimping 25 Sqmm XLPE Single Hole	EA	14.2	4140	3496	58,594.4	49,479.7
29	25x6 mm GI flat	Kg	97.5	57024	48153.6	55,59,840.0	46,94,976.0
30	GI Nut , Bolt & Washer of different sizes	Kg	101.4	11880	10032	12,04,632.0	10,17,244.8
31	Tie Plastic Black size 7.6mmX380mm	EA	7.0	7200	6080	50,196.8	42,388.4
32	Tie Plastic size 9mmX265mm	EA	23.4	10800	9120	2,52,833.2	2,13,503.6
33	Black Paint	Ltr	286.0	1260	1064	3,60,360.0	3,04,304.0
34	Yellow Colour Paint for Background	Ltr	230.6	2520	2128	5,81,225.8	4,90,812.9

Total Cost of materials	12,41,02,546.8	10,47,97,706.2
Stock, Storage & Insurance i.e 3%	37,23,076.4	31,43,931.2
Sub Total	12,78,25,623.2	10,79,41,637.4
Contingency @ 3%	38,34,768.7	32,38,249.1
Tools & Plants @ 2%	25,56,512.5	21,58,832.7
Transportation @ 7.5%	95,86,921.7	80,95,622.8
Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%	-	-
Erection Other @ 10%.	1,12,31,505.3	94,84,382.3
Erection PSC Pole @ 20%	-	-
Sub Total	15,50,35,331.4	13,09,18,724.3

Sl no	Civil & Services	UoM	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Fixing of complete LT line stay set includes Turn Buckle Assembly, Stay Rod & Stay plate, Stay Insulator, Stay Wire, stay clamps with Nuts & bolts BA will do the excavation, supply of 0.5Cum cement concrete foundation 1:2:4 size (500mmx500mmx800mm)	No	2362.5	1980	1672	46,77,750.0	39,50,100.0
2	Erection of 9 MTR PSC Pole including loading and unloading, transportation .Concreting to be done with PCC-1:1.5:3. of size - 500x500x1500 & Padding 500x500x150mm.Scope of work also includes 5 days curing & zebra painting (In Black & Yellow Strips/Zebra)	No	6300	2520	2128	1,58,76,000.0	1,34,06,400.0
3	Dismantling of 9/8 Mtr. PCC/Joist Pole (Serviceable Pole) after digging the pit & taking out the pole, transportation & stacking the pole at a proper place in safe position & refilling the pit with loose earth, ramming including removal & disposal of malba	No.	945	1800	1520	17,01,000.0	14,36,400.0
4	Dismantling of ACSR/AAAC 34/55 mm2 from overhead line,recoiling,loading,transportation,unloading and stacking at a proper place in safe position/site store	Mtr	15.75	180000	152000	28,35,000.0	23,94,000.0
5	Installation, testing & commissioning transportation from store and unloading at site of 2CX4 sq mm Armoured,	Mtr.	25	283500	239400	70,87,500.0	59,85,000.0

	stranded aluminium conductor, PVC insulated and PVC sheathed cable including their termination materials like glands, lugs, ferrule, tagging etc as per TPNODL specification						
6	Installation, testing & commissioning transportation from site to site of 4CX10 sq mm armoured, stranded aluminium conductor, PVC insulated and PVC sheathed cable including their termination materials like glands, lugs, ferrule, tagging etc as per TPNODL specification	Mtr.	30	121500	102600	36,45,000.0	30,78,000.0
7	Dismantling of Steel Structure, Nuts & Bolt including loading, transportation, unloading & staking of dismantled material at a proper place in TPNODL store	Kg	78.75	22500	19000	17,71,875.0	14,96,250.0
					Total Civil Part	3,75,94,125.0	3,17,46,150.0
					Sub-Total	19,26,29,456.4	16,26,64,874.3
					Other Over Head (Including Supervision charges)@ 6%	1,15,57,767.4	97,59,892.5
					Sub-total	20,41,87,223.8	17,24,24,766.8
					GST @ 18% of Sub-Total	3,67,53,700.3	3,10,36,458.0
					CESS @ 1% of Sub-Total	20,41,872.2	17,24,247.7
					Sub-Grand Total	24,29,82,796.3	20,51,85,472.4
					Inspection Fee	-	-
					Drawing Approval	-	-
					Grand Total	24,29,82,796.3	20,51,85,472.4
					Grand Total in Cr.	24.30	20.52

B. Cost Estimate Conversion of LT Bare to 4x50+1x50+1x16 Sqmm LT AB Cable

Annexure-9B Conversion of LT Bare conductor to 4x50+1x50+1x16mm2 AB cable+G1							
Conversation of LT Bare conductor to 4x95+1x95+1x16mm2(considering 29 nos. existing pole "Min 35% pole are rusted & damage condition"+ 14 nos. intermediate pole) total = 33 poles							
Out of 14 nos. proposed pole, considering 22 nos. straight point and 11 nos. angular point. In Existing line considering 30% angular point (7 nos. pole) and 70% straight point. (29 nos.) i.e. in Total Line Straight point pole - 22 nos. ; Angular pole - 11 nos.							
S No.	Item Description	Uo	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	1.1KV LT AB Cable 4x50+1x50+1x16mm2	Mtr	228.42	157590	143170	3,59,96,707.8	3,27,02,891.4
2	9 mtr long 300 kg PSC pole	No	3900.0	2142	1946	83,53,800.0	75,89,400.0
3	RCC Base Plate for PSC pole	No	1782.3	2142	1946	38,17,596.8	34,68,274.2

4	Danger Plate	No	104.0	5049	4587	5,25,096.0	4,77,048.0
5	Back Clamp for danger Plate 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr 1 no	Kg	97.5	1519.2	1380.2	1,48,126.3	1,34,572.3
6	GI barbed wire anticlimbing device	Kg	104.0	5049	4587	5,25,096.0	4,77,048.0
7	Back Clamp for Barbed wire anticlimbing device 25X3mm. flat, 0.59Kg/Mtr. Flat of 0.510 mtr length 4 no's	Kg	97.5	6077.0	5520.9	5,92,505.2	5,38,289.0
8	Pole clamp for EYE hook for XLPE Aerial bunched Cable	Pair	260.0	6732	6116	17,50,320.0	15,90,160.0
9	Suspension Clamp with EYE hook for ABC	No.	442.0	3366	3058	14,87,772.0	13,51,636.0
10	Eye Hook for AB cable for dead end point	No.	78.0	1683	1529	1,31,274.0	1,19,262.0
11	Conductor Dead End Clamp suitable for bare messenger XLPE Aerial bunched cable(25-70 sq mm)	No.	84.5	1683	1529	1,42,213.5	1,29,200.5
12	LT Stay Set (Complete)	Set	676.0	1989	1807	13,44,564.0	12,21,532.0
13	LT Stay Insulator	No	39.0	1989	1807	77,571.0	70,473.0
14	LT Stay clamp	Pair	143.0	1989	1807	2,84,427.0	2,58,401.0
15	7/12 SWG Stay Wire	Kg	97.5	19890	18070	19,39,275.0	17,61,825.0
16	Earthing of Support (Coil Type)	EA	215.8	2142	1946	4,62,243.6	4,19,946.8
17	PIPE HDPE SIZE 25 MM	Mtr	35.2	15147	13761	5,33,565.3	4,84,742.3
18	Lug AL 70 Sqmm for 7/8 SWG Wire/Earthing	EA	8.9	5049	4587	44,993.1	40,876.1
19	LT Distribution Box Polycarbonate	No	969.8	3519	3197	34,12,578.6	31,00,316.5
20	Cap cable end for ABC	EA	114.3	3060	2780	3,49,614.9	3,17,624.0
21	IPC 50-150, 50-150 SQ.MM ST.LT Type A	EA	92.6	17595	15985	16,28,630.1	14,79,605.1
22	IPC EP 95 LT ABC 16-95 & 1.5-16 SQMM ST.LT Type C	EA	92.6	7038	6394	6,51,452.0	5,91,842.0
23	IPC KZ 2X150 LTABC 25-150 & 6-35(50) sqmm Type B	EA	54.3	3519	3197	1,90,993.7	1,73,517.2
24	STEEL STRAP SIZE 20 MMX50 M LONG	ROL	1547.6	612	556	9,47,110.5	8,60,446.8
25	BUCKLES FOR STEEL STRAP (1 EA = 100 NOS)	EA	514.4	612	556	3,14,820.2	2,86,013.1
26	Cable 1.1kV Al 4CX25 Sq.mm Armoured	Mtr	177.7	7038	6394	12,50,885.3	11,36,425.2
27	Gland for 1.1kV Al 4X25 Sq.mm	EA	180.8	7038	6394	12,72,135.5	11,55,731.0
28	Lug AL Crimping 25 Sqmm XLPE Single Hole	EA	14.2	3519	3197	49,805.2	45,247.9
29	25x6 mm GI flat	Kg	97.5	48470.4	44035.2	47,25,864.0	42,93,432.0
30	GI Nut , Bolt & Washer of different sizes	Kg	101.4	10098	9174	10,23,937.2	9,30,243.6
31	Tie Plastic Black size 7.6mm X 380mm	EA	7.0	6120	5560	42,667.3	38,763.1

32	Tie Plastic size 9mmX265mm	EA	23.4	9180	8340	2,14,908.2	1,95,243.4
33	Black Paint	Ltr	286.0	1071	973	3,06,306.0	2,78,278.0
34	Yellow Colour Paint for Background	Ltr	230.6	2142	1946	4,94,041.9	4,48,835.5
					Total Cost of materials	7,50,32,897.3	6,81,67,142.0
					Stock, Storage & Insurance i.e 3%	22,50,986.9	20,45,014.3
					Sub Total	7,72,83,884.2	7,02,12,156.2
					Contingency @ 3%	23,18,516.5	21,06,364.7
					Tools & Plants @ 2%	15,45,677.7	14,04,243.1
					Transportation @ 7.5%	57,96,291.3	52,65,911.7
					Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%	-	-
					Erection Other @ 10%.	64,09,990.0	58,23,454.9
					Erection PSC Pole @ 20%	-	-
					Sub Total	9,33,54,359.7	8,48,12,130.7

Sl no	Civil & Services	UoM	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Fixing of complete LT line stay set includes Turn Buckle Assembly, Stay Rod & Stay plate, Stay Insulator, Stay Wire, Stay clamps with Nuts & bolts BA will do the excavation, supply of 0.5Cum cement concrete foundation 1:2:4 size (500mmx500mmx800mm)	No	2362.5	1683	1529	39,76,087.5	36,12,262.5
2	Erection of 9 MTR PSC Pole including loading and unloading, transportation .Concreting to be done with PCC-1:1.5:3. of size - 500x500x1500 & Padding 500x500x150mm.Scope of work also includes 5 days curing & zebra painting (In Black & Yellow Strips/Zebra)	No	6300	2142	1946	1,34,94,600.0	1,22,59,800.0
3	Dismantling of 9/8 Mtr. PCC/Joist Pole (Serviceable Pole) after digging the pit & taking out the pole, transportation & stacking the pole at a proper place in safe position & refilling the pit with loose earth, ramming including removal & disposal of malba	No.	945	306	278	2,89,170.0	2,62,710.0
4	Dismantling of ACSR/AAAC 34/55 mm2 from overhead line,recoiling,loading,transportation,unloading and stacking at a proper place in safe position/site store	Mtr	15.75	153000	139000	24,09,750.0	21,89,250.0

5	Installation, testing & commissioning transportation from store and unloading at site of 2CX4 sq mm armoured, stranded aluminium conductor, PVC insulated and PVC sheathed cable including their termination materials like glands, lugs, ferrule, tagging etc as per TPNODL specification	Mtr.	25	240975	218925	60,24,375.0	54,73,125.0
6	Installation, testing & commissioning transportation from site to site of 4CX10 sq mm armoured, stranded aluminium conductor, PVC insulated and PVC sheathed cable including their termination materials like glands, lugs, ferrule, tagging etc as per TPNODL specification	Mtr.	30	103275	93825	30,98,250.0	28,14,750.0
7	Dismantling of Steel Structure, Nuts & Bolt including loading, transportation, unloading & staking of dismantled material at a proper place in TPNODL store	Kg	78.75	13770	12510	10,84,387.5	9,85,162.5
					Total Civil Part	3,03,76,620.0	2,75,97,060.0
					Sub-Total	12,37,30,979.7	11,24,09,190.7
					Other Over Head (Including Supervision charges)@ 6%	74,23,858.8	67,44,551.4
					Sub-total	13,11,54,838.5	11,91,53,742.1
					GST @ 18% of Sub-Total	2,36,07,870.9	2,14,47,673.6
					CESS @ 1% of Sub-Total	13,11,548.4	11,91,537.4
					Sub-Grand Total	15,60,74,257.8	14,17,92,953.1
					Inspection Fee	-	-
					Drawing Approval	-	-
					Grand Total	15,60,74,257.8	14,17,92,953.1
					Grand Total in Cr.	15.61	14.18

NOTARY GOVT. OF ODISHA (INDIA)

8.10 Annexure 10: Cost Estimate for Meters and metering equipment for energy audit.

S No.	Item Description	Quantity for FY24-25	Quantity for FY25-26	Amount for FY 24-25 (in Cr.)	Amount for FY 25-26 (in Cr.)
1	Ring Type CTs 200/5A	5500	4500	0.55	0.45
2	DT Smart Meter for 63kVA	11409	8591	4.60	3.47
3	HTTV 3P4W,-/110V,-/1A,0.2s Meters	275	225	0.14	0.11

S No.	Item Description	Quantity for FY24-25	Quantity for FY25-26	Amount for FY 24-25 (in Cr.)	Amount for FY 25-26 (in Cr.)
4	Equipment for AMR Installation	550	450	0.21	0.18
5	Software Application for AMR	1	0	0.25	0.00
6	LT CT Meter Boxes (200/5, 400/5 A) with Ring Type CT	9800	5700	6.94	4.04
7	Metering Units 200/5A	55	45	0.28	0.23
8	4 Core Control Cable (2.5sq. mm)	33	27	0.01	0.01
9	Panels Fabrication and Civil Work for mounting TPNODL Meters at GSS	16	14	0.80	0.70
Total Cost of materials in Cr.				**13.78**	**9.18**

8.11 Annexure 11: Cost Estimate for Equipment for Meter testing, Meter Reading, HT/LT Accucheck etc.

Annexure-11 Testing equipment for Meter, Meter Reading, HT/LT Accucheck& other material							
S No.	Item Description	Unit	Unit Rate in Rs.	Quantity for FY24-25	Quantity for FY25-26	Amount for FY 24-25 (in Cr.)	Amount for FY 25-26 (in Cr.)
1	LT Three Phase four Wire Accucheck 110 V input grade (.2) Class direct mode LED display for onsite Meter Testing Purpose (Handy)	Nos.	1,05,000.00	75	24	78,75,000.0	25,20,000.0
2	Single Phase four Wire Accucheck 110 V input grade (.5) Class direct mode LED display for onsite Meter Testing Purpose (Handy)	Nos.	61,000.00	74	24	45,14,000.0	14,64,000.0
3	Auto BL 25 mm 400 A AC/DC Auto Ranging Digital Clamp on Meter (Measuring Instrument)	Nos.	4,500.00	200	40	9,00,000.0	1,80,000.0
4	Leakage Clamp on Meter For HT metering Battery Powered Digital	EA	30,000.00	20	0	6,00,000.0	-
5	GNSS GPS receiver For Lat/ Long Collection	EA	2,00,000.00	2	1	4,00,000.0	2,00,000.0
6	Android Mobile Hand Set 5.3 Class BLE Enable For MY MMG mobile application /BLE Meter Reading	EA	30,000.00	2	0	60,000.0	-
7	Android Mobile Hand Set 5.1 Class BLE Enable For MY MMG mobile application /BLE Meter Reading	EA	12,000.00	120	60	14,40,000.0	7,20,000.0
Total Cost of materials						**1,57,89,000.0**	**50,84,000.0**

Annexure-11 Testing equipment for Meter, Meter Reading, HT/LT Accucheck& other material							
S No.	Item Description	Unit	Unit Rate in Rs.	Quantity for FY24-25	Quantity for FY25-26	Amount for FY 24-25 (in Cr.)	Amount for FY 25-26 (in Cr.)
Total Cost in Cr.						1.58	0.51

8.12 Annexure 12: Cost Estimate of Addition/Upgradation of network components in 33/11kV Primary Substation.

Annexure-12 Sick Equipment replacement-BOQ for Sick Equipment replacement (VCB, CT/PT, CRP, Isolator etc)							
S No.	Item Description	UoM	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	33KV VCB -800A	EA	222091	40	40	8883640	8883640
2	33KV CT- 800-400-200/1-1-1	EA	33356	120	120	4002752	4002752
3	PT 33KV O/D OIL FILLED	EA	20820	60	60	1249220	1249220
4	11KV VCB - 1200A	EA	210750	105	60	22128750	12645000
5	CT 11KV O/D 1P CTR 600-300-150/1-1-1A	EA	28124	153	90	4303016	2531186
6	CT 11KV 1P O/C CTR 800-400-200/1-1-1A	EA	28859	162	90	4675118	2597288
7	11KV PT	EA	14901	75	75	1117585	1117585
8	ISOLATOR 33KV 800A DBLE BRK W/O ETH S/W	EA	40239	80	117	3219128	4707975
9	ISOLATOR 33KV 1250A DOUBLE BREAK W/ ES	EA	60827	80	117	4866147	7116740
10	ISOLATOR 11KV 1250A DOUBLE BREAK W/ES	EA	49597	175	92	8679522	4562949
11	14 C 2.5 mm sq Cu Control Cable, un armoured	Mtr	361	10000	22700	3605200	8183804
12	10 C 1.5 mm sq Cu Control Cable, un armoured	Mtr	330	7000	13000	2310000	4290000
13	2C 2.5mm sq Cu Control Cable, un armoured	Mtr	68	7000	13000	476000	884000
14	SURGE ARRESTER 33KV W/MONITOR	EA	4840	1000	1000	4840000	4840000
15	SURGE ARRESTER 11KV	EA	2602	1000	1000	2602000	2602000
16	Control Cable 2Cx 50 Sq mm	Mtr	203	800	800	162400	162400
17	LA 33KV 10KA 30KV	EA	4800	105	90	504000	432000
18	LA 11KV 5KA SINGLE POLE 9KV/11KV	EA	2600	200	200	520000	520000
19	11M RSJ GIST POLE	EA	27349	180	220	4922820	6016780
20	33 KV Porcelain Pin Insulator including GI pin	EA	504	240	160	120960	80640
21	33 KV Porcelain Disc Insulator	EA	2884	240	160	692160	461440

Annexure-12 Sick Equipment replacement-BOQ for Sick Equipment replacement (VCB, CT/PT, CRP, Isolator etc)							
S No.	Item Description	UoM	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
22	11 kV Porcelain Pin Insulator including GI Pin	EA	490	105	95	51450	46550
23	11 KV Porcelain Disc Insulator	EA	2500	105	95	262500	237500
24	ACDB PANEL 400 V	EA	115367	30	20	3460999	2307332
25	ACDB PANEL 230V	EA	21495	60	40	1289677	859785
26	11kV switchboard AIS	EA	1100000	18	21	19800000	23100000
27	11kV AL 3CX300 Sqmm XLPE Cable armoured	Mtr	1482	1500	2300	2222700	3408140
28	Heat shrinkable jointing kit for 3Cx300mm² 11KV XLPE Cable(Outdoor type)	EA	17186	108	120	1856088	2062320
29	Heat shrinkable jointing kit for 3Cx300mm² 11KV XLPE Cable(indoor type)	EA	11795	108	120	1273849	1415388
30	Moisture ingress prevention in 33/11kV PSS	EA	423729	17	13	7203390	5508475
31	Construction of Cable Trenches in S-Yard	EA	420339	45	55	18915254	23118644
					Total Cost of materials	140216325.3	139951532.2
					Stock, Storage & Insurance i.e 3%	**4206489.8**	**4198546.0**
					Sub Total	**144422815.1**	**144150078.2**
					Contingency @ 3%	**4332684.5**	**4324502.3**
					Tools & Plants @ 2%	**2888456.3**	**2883001.6**
					Transportation @ 7.5%	**10831711.1**	**10811255.9**
					Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%	**2870363.3**	**2608239.1**
					Erection Other @ 10%.	**8701554.9**	**9198529.6**
					Sub Total	**174047585.2**	**173975606.6**
					Other Over Head (Including Supervision charges)@ 6%	10442855.1	10438536.4
					Sub-total	184490440.3	184414143.0
					GST @ 18% of Sub-Total	33208279.3	33194545.7
					CESS @ 1% of Sub-Total	1844904.4	1844141.4
					Grand Total	219543623.9	219452830.2
					Grand Total in Cr.	21.95	21.95



8.13 Annexure 13: Cost Estimate for 33 KV Conductor up gradation

S. No.	Description	UOM	Quantity for FY 24-25	Quantity for FY 25-26	Amount for FY 24-25 (in Cr.)	Amount for FY 24-25 (in Cr.)
A	33 kV Conductor Upgradation with 232 sqmm AAAC	CKm	94	80	24.75	20.99
B	33 kV Conductor Upgradation with 148 sqmm AAAC	Ckm	27	20	5.76	4.26
Total Cost in Cr.					**30.51**	**25.25**

A. Cost Estimate for 33 kV Conductor Upgradation with 232 sqmm AAAC.

Annexure-13A 33 KV Overhead conductor up gradation with 232 sq.mm AAAC							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	WPB 160x152 (30.44KG/Mtr.),13 mtr	No	40427.2	1504	1280	60802508.8	51746816.0
2	Top Channel 100X50X5mm,9.56 KG/mtr, each channel length 2.8 Mtr.	Kg	97.5	14528.6	11364.8	1416542.4	1108068.0
3	Cross Channel 75X40X6mm, 6.8 KG/mtr, each channel length 2.8 Mtr.	Kg	97.5	10738.6	8139.2	1047009.6	793572.0
4	Cross Angle 50X50X5mm, 4.5 KG/mtr, each angle length 2.8 Mtr.	Kg	97.5	7106.4	5048.0	692874.0	492180.0
5	Fish Plate 50X8 mm., 0.97kg/Mtr., each 0.280 mtr. Length	Kg	97.5	459.5	391.1	44805.9	38132.6
6	Danger Plate	No	104.0	2444	2080	254176.0	216320.0
7	Back Clamp for danger Plate 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr 1 no	Kg	97.5	735.4	625.9	71701.5	61022.5
8	GI barbed wire anticlimbing device	Kg	104.0	6110	5200	635440.0	540800.0
9	Back Clamp for Barbed wire anticlimbing device 25X3mm. flat, 0.59Kg/Mtr. Flat of 0.510 mtr length 4 no's	Kg	97.5	7354.0	6258.7	717014.6	610225.2
10	33kV,10kN pin insulator polymer	No	624.0	6768	5760	4223232.0	3594240.0
11	33kV V cross Arm (GI)	No	2340.0	2256	1920	5279040.0	4492800.0
12	GI Back Clamp for 33kV 'V' Cros Arm	No	195.0	2256	1920	439920.0	374400.0
13	Top bracket 100X50X5mm GI channel	No	195.0	2256	1920	439920.0	374400.0
14	33kV H/W fitting(B&S) 120KN,4 Bolt	Set	791.5	1692	1440	1339272.6	1139806.5
15	33kV Disc insulator (B&S) 120KN polymer	No	1872.0	1692	1440	3167424.0	2695680.0
16	Earthing of Support (Coil Type)	EA	215.8	1504	1280	324563.2	276224.0

17	No-8 GI wire (Dia 4.6mm) 0.131 KG/ Mtr.- 2 Mtr. For connecting pole with Coil earthing	Kg	97.5	2167.3	1844.5	211308.2	179836.8
18	PG Clamp for 232 mm2 AAAC conductor	No	1495.0	1692	1440	2529540.0	2152800.0
19	GI Nut , Bolt & Washer of different sizes	Kg	101.4	5621.2	3784.0	569989.7	383697.6
20	H.T. Stay clamp	Pair	162.5	752	640	122200.0	104000.0
21	H.T. Stay set (Complete)	Set	1365.0	752	640	1026480.0	873600.0
22	H.T. Stay Insulator	No	65.0	752	640	48880.0	41600.0
23	7/8 SWG Stay Wire	Kg	97.5	8272	7040	806520.0	686400.0
24	AAA conductor,232 mm2	Km	203450.0	290.5	247.2	59094087.0	50292840.0
25	Black Paint	Ltr	286.0	752	540	215072.0	154440.0
26	Yellow Colour Paint for Background	Ltr	230.6	1203.2	824	277512.3	190051.6
					Total Cost of materials	14,57,97,033.7	12,36,13,952.8
					Stock, Storage & Insurance i.e 3%	43,73,911.0	37,08,418.6
					Sub Total	15,01,70,944.7	12,73,22,371.4
					Contingency @ 3%	45,05,128.3	38,19,671.1
					Tools & Plants @ 2%	30,03,418.9	25,46,447.4
					Transportation @ 7.5%	1,12,62,820.9	95,49,177.9
					Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%	-	-
					Erection Other @ 10%.	84,97,279.6	71,91,155.7
					Erection PSC Pole @ 20%	-	-
					Sub Total	17,74,39,592.4	15,04,28,823.5

Sl no	Civil & Services	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Fixing of complete 33kV line stay set includes Turn Buckle Assembly, Stay Rod & Stay plate, Stay Insulator, stay wire, stay clamps with Nuts & bolts.BA will do the excavation, supply of 0.5Cum C.C foundation 1:2:4 size (500mmx500mmx800mm)	No.	2362.5	752	640	1776600	15,12,000.0
2	Erection of 13 Mtr long WPB Pole including loading & unloading, transportation, providing & laying of 1:1.5:3, M20 Grade C.C-500x500X2200 mm& cooping of 500x500x450 mm, includes 5 days curing and zebra painting (In Black & Yellow Strips/Zebra)	No	7980	1504	1280	12001920	1,02,14,400.
3	Dismantling of 9/8 Mtr. PCC/Joist Pole (Serviceable Pole) after digging the pit & taking out the pole, transportation & stacking the pole at a proper place in safe position & refilling the pit with	No.	945	940	800	888300	7,56,000.0

	loose earth, ramming including removal & disposal of malba						
4	Dismantling of ACSR/AAAC 80/100/148/232 mm2 from overhead line, recoiling, loading, transportation, unloading and stacking at a proper place in safe position/site store	Mtr	12.6	290460	247200	3659796	31,14,720.0
5	Dismantling of insulator with pin, disc type including loading, transportation, unloading and stacking at a proper place in a safe position /Site store	EA	8.505	8460	7200	71952.3	61,236.0
6	Dismantling/Removal of V cross arm from pole including loading, transportation, unloading and stacking of dismantled material at a proper place in safe position at site store	EA	43.47	2820	2640	122585.4	1,14,760.8
7	Dismantling of Steel Structure, Nuts & Bolt including loading, transportation, unloading & staking of dismantled material at a proper place in TPNODL store	Kg	78.75	3464	2240	272790	1,76,400.0
					Total Civil Part	1,87,93,943.7	1,59,49,516.8
					Sub-Total	19,62,33,536.1	16,63,78,340.3
					Other Over Head (Including Supervision charges)@ 6%	1,17,74,012.2	99,82,700.4
					Sub-total	20,80,07,548.3	17,63,61,040.7
					GST @ 18% of Sub-Total	3,74,41,358.7	3,17,44,987.3
					CESS @ 1% of Sub-Total	20,80,075.5	17,63,610.4
					Sub-Grand Total	24,75,28,982.5	20,98,69,638.4
					Inspection Fee	-	-
					Drawing Approval	-	-
					Grand Total	24,75,28,982.5	20,98,69,638.4
					Grand Total in Cr.	24.75	20.99

B. Cost Estimate for 33 kV Conductor Upgradation with 148 sqmm AAAC.

Annexure-13B 33 KV Overhead conductor up gradation with 148 sq.mm AAAC							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	WPB 160x152 (30.44KG/Mtr.),13 mtr	No	40427	432	320	17464550.4	12936704.0
2	Top Channel 100X50X5mm,9.56 KG/mtr, each channel length 2.8 Mtr	Kg	97.5	4173.1	3091.2	406879.2	301392.0
3	Cross Channel 75X40X6mm, 6.8 KG/mtr, each channel length 2.8 Mtr	Kg	97.5	3084.5	2284.8	300736.8	222768.0

4	Cross Angle 50X50X5mm, 4.5 KG/mtr, each angle length 2.8 Mtr.	Kg	97.5	2041.2	1512.0	199017.0	147420.0
5	Fish Plate 50X8 mm., 0.97kg/Mtr., each 0.280 mtr. Length	Kg	97.5	132.0	97.8	12869.8	9533.2
6	Danger Plate	No	104.0	702	520	73008.0	54080.0
7	Back Clamp for danger Plate 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr 1 no	Kg	97.5	211.2	156.5	20595.1	15255.6
8	GI barbed wire anticlimbing device	Kg	104.0	1755	1300	182520.0	135200.0
9	Back Clamp for Barbed wire anticlimbing device 25X3mm. flat, 0.59Kg/Mtr. Flat of 0.510 mtr length 4 no's	Kg	97.5	2112.3	1564.7	205951.0	152556.3
10	33kV,10kN pin insulator polymer	No	624.0	1944	1440	1213056.0	898560.0
11	33kV V cross Arm (GI)	No	2340.0	648	480	1516320.0	1123200.0
12	GI Back Clamp for 33kV 'V' Cros Arm	No	195.0	648	480	126360.0	93600.0
13	Top bracket 100X50X5mm GI channel	No	195.0	648	480	126360.0	93600.0
14	33kV H/W fitting(B&S) 120KN,4 Bolt	Set	791.5	486	360	384684.7	284951.6
15	33kV Disc insulator (B&S) 120KN polymer	No	1872.0	486	360	909792.0	673920.0
16	Earthing of Support (Coil Type)	EA	215.8	432	320	93225.6	69056.0
17	No-8 GI wire (Dia 4.6mm) 0.131 KG/ Mtr.- 2 Mtr. For connecting pole with Coil earthing	Kg	97.5	622.5	461.1	60694.9	44959.2
18	PG Clamp for 148 mm2 AAAC conductor	No	806.0	486	360	391716.0	290160.0
19	GI Nut , Bolt & Washer of different sizes	Kg	101.4	1614.6	1196	163720.4	121274.4
20	H.T. Stay clamp	Pair	162.5	216	160	35100.0	26000.0
21	H.T. Stay set (Complete)	Set	1365.0	216	160	294840.0	218400.0
22	H.T. Stay Insulator	No	65.0	216	160	14040.0	10400.0
23	7/8 SWG Stay Wire	Kg	97.5	2376	1760	231660.0	171600.0
24	AAA conductor,148 mm2	Km	106600.	83.4	61.8	8893638.0	6587880.0
25	Black Paint	Ltr	286.0	108	80	30888.0	22880.0
26	Yellow Colour Paint for Background	Ltr	230.6	216	160	49819.4	36903.2
					Total Cost of materials	3,34,02,042.3	2,47,42,253.5
					Stock, Storage & Insurance i.e 3%	10,02,061.3	7,42,267.6
					Sub Total	3,44,04,103.5	2,54,84,521.1
					Contingency @ 3%	10,32,123.1	7,64,535.6
					Tools & Plants @ 2%	6,88,082.1	5,09,690.4
					Transportation @ 7.5%	25,80,307.8	19,11,339.1
					Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%	-	-
					Erection Other @ 10%.	15,73,957.9	11,65,894.7
					Erection PSC Pole @ 20%	-	-
					Sub Total	4,02,78,574.4	2,98,35,981.0

Sl no	Civil & Services	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Fixing of complete 33kV line stay set includes Turn Buckle assembly, Stay Rod & Stay plate, Stay Insulator, stay wire, stay clamps with Nuts & bolts.BA will do the excavation, supply of 0.5Cum C.C foundation 1:2:4 size (500mmx500mmx800mm)	No.	2362.5	216	160	510300	3,78,000.0
2	Erection of 13 Mtr long WPB Pole including loading & unloading,transportation,providing & laying of 1:1.5:3,M20 Grade C.C-500x500X2200 mm& cooping of 500x500x450 mm,includes 5 days curing and zebra painting (In Black & Yellow Strips/Zebra)	No	7980	432	320	3447360	25,53,600.0
3	Dismantling of 9/8 Mtr. PCC/Joist Pole (Serviceable Pole) after digging the pit & taking out the pole, transportation & stacking the pole at a proper place in safe position & refilling the pit with loose earth, ramming including removal & disposal of malba	No.	945	270	200	255150	1,89,000.0
4	Dismantling of ACSR/AAAC 80/100/148/232 mm2 from overhead line, recoiling, loading, transportation, unloading and stacking at a proper place in safe position/site store	Mtr	12.6	83430	61800	1051218	7,78,680.0
5	Dismantling of insulator with pin, disc type including loading, transportation, unloading and stacking at a proper place in a safe position /Site store	EA	8.505	2430	1800	20667.15	15,309.0
6	Dismantling/Removal of V cross arm from pole including loading, transportation, unloading and stacking of dismantled material at a proper place in safe position at site store	EA	43.47	810	600	35210.7	26,082.0
7	Dismantling of Steel Structure, Nuts & Bolt including loading, transportation, unloading & staking of dismantled material at a proper place in TPNODL store	Kg	78.75	540	400	42525	31,500.0
					Total Civil Part	53,62,430.9	39,72,171.0
					Sub-Total	4,56,41,005.2	3,38,08,152.0

Other Over Head (Including Supervision charges)@ 6%	27,38,460.3	20,28,489.1
Sub-total	4,83,79,465.5	3,58,36,641.1
GST @ 18% of Sub-Total	87,08,303.8	64,50,595.4
CESS @ 1% of Sub-Total	4,83,794.7	3,58,366.4
Sub-Grand Total	5,75,71,564.0	4,26,45,602.9
Inspection Fee	-	-
Drawing Approval	-	-
Grand Total	5,75,71,564.0	4,26,45,602.9
Grand Total in Cr.	5.76	4.26

8.14 Annexure 14: Cost Estimate for 11 KV Conductor up gradation

S. No.	Description	UOM	Quantity for FY 24-25	Quantity for FY 25-26	Amount for FY 24-25 (in Cr.)	Amount for FY 24-25 (in Cr.)
A	11 KV Conductor up gradation	CKm	169	160	28.56	27.04
Total Cost in Cr.					**28.56**	**27.04**

Annexure-14 11 KV Overhead conductor up gradation with 100 sq.mm AAAC							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	WPB 160x152 (30.44KG/Mtr.),11 mtr	No	34322	2704	2560	9,28,05,390.1	8,78,63,091.2
2	Top Channel 100X50X5mm,9.56 KG/mtr, each channel length 2.8 Mtr.	Kg	97.5	26120.6	24729.6	25,46,762.4	24,11,136.0
3	Cross Channel 75X40X6mm, 6.8 KG/mtr, each channel length 2.8 Mtr.	Kg	97.5	19306.6	18278.4	18,82,389.6	17,82,144.0
4	Cross Angle 50X50X5mm, 4.5 KG/mtr, each angle length 2.8 Mtr.	Kg	97.5	12776.4	12096.0	12,45,699.0	11,79,360.0
5	Fish Plate 50X8 mm., 0.97kg/Mtr., each 0.280 mtr. Length	Kg	97.5	826.2	782.2	80,555.2	76,265.3
6	Danger Plate	No	104.0	4394	4160	4,56,976.0	4,32,640.0
7	Back Clamp for danger Plate 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr 1 no	Kg	97.5	1322.2	1251.7	1,28,910.1	1,22,045.0
8	GI barbed wire anticlimbing device	Kg	104.0	10985	10400	11,42,440.0	10,81,600.0
9	Back Clamp for Barbed wire anticlimbing device 25X3mm flat, 0.59Kg/Mtr. Flat of 0.510 mtr length 4 no's	Kg	97.5	13221.5	12517.4	12,89,100.7	12,20,450.4

10	11kV,5kN pin insulator polymer	No	260.0	12168	11520	31,63,680.0	29,95,200.0
11	11kV V cross Arm (GI)	No	1053.0	4056	3840	42,70,968.0	40,43,520.0
12	GI Back Clamp for 11kV 'V' Cros Arm	No	104.0	4056	3840	4,21,824.0	3,99,360.0
13	11kV F Clamp	No	312.0	4056	3840	12,65,472.0	11,98,080.0
14	H/W fitting(B&S) 70KN,3 Bolt	Set	455.0	3042	2880	13,84,110.0	13,10,400.0
15	11kV Disc insulator (B&S) 70KN polymer	No	1495.0	3042	2880	45,47,790.0	43,05,600.0
16	Earthing of Support (Coil Type)	EA	215.8	2704	2560	5,83,523.2	5,52,448.0
17	No-8 GI wire (Dia 4.6mm) 0.131 KG/ Mtr.- 2 Mtr. For connecting pole with Coil earthing	Kg	97.5	3896.5	3689.0	3,79,905.2	3,59,673.6
18	PG Clamp for 100 mm2 AAAC conductor	No	754.0	3042	2880	22,93,668.0	21,71,520.0
19	GI Nut , Bolt & Washer of different sizes	Kg	101.4	10106.2	9568	10,24,768.7	9,70,195.2
20	H.T. Stay clamp	Pair	162.5	1352	1280	2,19,700.0	2,08,000.0
21	H.T. Stay set (Complete)	Set	1365.0	1352	1280	18,45,480.0	17,47,200.0
22	H.T. Stay Insulator	No	65.0	1352	1280	87,880.0	83,200.0
23	7/10 SWG Stay Wire	Kg	97.5	14872	14080	14,50,020.0	13,72,800.0
24	AAA conductor,100 mm2	Km	71500.0	522.21	494.4	3,73,38,015.0	3,53,49,600.0
25	Black Paint	Ltr	286.0	676	640	1,93,336.0	1,83,040.0
26	Yellow Colour Paint for Background	Ltr	230.6	1352	1280	3,11,832.3	2,95,225.8
					Total Cost of materials	16,23,60,195.5	15,37,13,794.5
					Stock, Storage & Insurance i.e 3%	48,70,805.9	46,11,413.8
					Sub Total	16,72,31,001.3	15,83,25,208.4
					Contingency @ 3%	50,16,930.0	47,49,756.3
					Tools & Plants @ 2%	33,44,620.0	31,66,504.2
					Transportation @ 7.5%	1,25,42,325.1	1,18,74,390.6
					Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%	-	-
					Erection Other @ 10%.	67,40,995.4	63,82,007.5
					Erection PSC Pole @ 20%	-	-
					Sub Total	19,48,75,871.9	18,44,97,866.9

Sl no	Civil & Services	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Fixing of complete 11KV line stay set includes Turn Buckle assembly, Stay Rod & Stay plate, Stay Insulator, stay wire, stay clamps with Nuts & bolts BA will do the excavation, supply of 0.5Cum cement concrete foundation 1:2:4 size (500mmx500mmx800mm)	No.	2362.5	1352	1280	31,94,100.0	30,24,000.0

2	Erection of 11 Mtr long WPB Pole including loading & unloading, transportation, providing & laying of 1:1.5:3, M20 Grade, C.C-500x500X1800 mm & cooping of 500x500x450 mm, includes 5 days curing and zebra painting (In Black & Yellow Strips/Zebra)	No	6300	2704	2560	1,70,35,200.0	1,61,28,000.0
3	Dismantling of 9/8 Mtr. PCC/Joist Pole (Serviceable Pole) after digging the pit & taking out the pole, transportation & stacking the pole at a proper place in safe position & refilling the pit with loose earth, ramming including removal & disposal of malba	No.	945	1690	1600	15,97,050.0	15,12,000.0
4	Dismantling of insulator with pin, disc type including loading, transportation, unloading and stacking at a proper place in a safe position /Site store	EA	8.505	15210	14400	1,29,361.1	1,22,472.0
5	Dismantling of ACSR/AAAC 80/100 mm2 from overhead line,recoiling,loading,transportation, unloading and stacking at a proper place in safe position/site store	Mtr	15.75	522210	494400	82,24,807.5	77,86,800.0
6	Dismantling/Removal of V cross arm from pole including loading, transportation, unloading and stacking of dismantled material at a proper place in safe position at site store	EA	43.47	1690	1600	73,464.3	69,552.0
7	Dismantling of Steel Structure, Nuts & Bolt including loading, transportation, unloading & staking of dismantled material at a proper place in TPNODL store	Kg	78.75	16055	15200	12,64,331.3	11,97,000.0
					Total Civil Part	3,15,18,314.1	2,98,39,824.0
					Sub-Total	22,63,94,186.0	21,43,37,690.9
					Other Over Head (Including Supervision charges)@ 6%	1,35,83,651.2	1,28,60,261.5
					Sub-total	23,99,77,837.1	22,71,97,952.3
					GST @ 18% of Sub-Total	4,31,96,010.7	4,08,95,631.4
					CESS @ 1% of Sub-Total	23,99,778.4	22,71,979.5
					Sub-Grand Total	28,55,73,626.2	27,03,65,563.3
					Inspection Fee	-	-
					Drawing Approval	-	-
					Grand Total	28,55,73,626.2	27,03,65,563.3
					Grand Total in Cr.	28.56	27.04

NOTARY GOVT. OF ODISHA (INDIA)

8.15 Annexure 15: Cost Estimate for Refurbishment of 11KV/0.415 KV Distribution Substation (DSS)

S.No	Description	UOM	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
A	Refurbishment of 11KV/0.415 KV, 100 KVA DTR	Nos.	193	177	6.51	5.98
B	Refurbishment of 11KV/0.415 KV, 250 KVA DTR	Nos.	124	114	5.04	4.64
C	Refurbishment of 11KV/0.415 KV, 500 KVA DTR	Nos.	36	33	1.48	1.35
Total			**357**	**328**	**13.03**	**11.97**

A. Cost Estimate for Refurbishment of 100 KVA 11/0.4 KV DSS.

Annexure-15A Refurbishment of 11KV/0.415 KV Distribution Substation (DSS) 100 KVA DTR							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	100 KVA,11/0.4KV(Al) Transformer	No	198000	0	0	-	-
2	11kV AB Switch,200A.3pole,50Hz,Horizontal Type	Set	9555.0	193	177	18,44,115.0	16,91,235.0
3	Lightning Arrester (12kV,10kA) DH Class	No	2299.45	579	531	13,31,381.6	12,21,008.0
4	HG Fuse(11KV,200A,3 Pole,50Hz) with PI	Set	7956.0	193	177	15,35,508.0	14,08,212.0
5	Conductor 80 mm sq ACSR Rabbit	Mtr	34.4	4632	4248	1,59,232.5	1,46,031.9
6	Cable 1.1kV Al 1CX150 Sq.mm Un-armoured	Mtr	273.0	6176	5664	16,86,048.0	15,46,272.0
7	Gland for 1.1kV Al 1CX150 Sq.mm	EA	134.5	772	708	1,03,840.2	95,231.7
8	CABLE 1.1KV AL 4CX150 SQMM ARM	Mtr	720.1	2895	2655	20,84,675.5	19,11,852.7
9	GLAND FOR ARM CABLE 4X150 SQ.MM	EA	134.5	193	177	25,960.1	23,807.9
10	Top Channel 100X50X5mm (2800 mm long) (9.56Kg./Mtr) (Each 26.77Kg)	Kg	97.5	10332.4	9475.9	10,07,413.7	9,23,897.5

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11	Transformer Base GI Channel 100X50X5mm (2800 mm long) (9.56Kg./Mtr) (Each 26.77 Kg)	Kg	97.5	10332.4	9475.9	10,07,413.7	9,23,897.5
12	AB Switch Mounting Channel 75X40X4.8 mm GI Channel (2800 mm long) (7.14Kg./Mtr)	Kg	97.5	7716.9	7077.2	7,52,398.9	6,90,023.9
13	HG Fuse Channel 75X40X4.8 mm GI Channel (2800 mm long) (7.14Kg./Mtr)	Kg	97.5	7716.9	7077.2	7,52,398.9	6,90,023.9
14	Transformer Belting angle (50X50X6) mm 2800 mm long 2 nos. (7.14 Kg./Mtr.)with side angle	Kg	97.5	9646.1	8846.5	9,40,498.7	8,62,529.9
15	AB Switch Operating Pipe Channel Support 75X40X4.8 mm GI Channel (625 mm long)(7.14Kg./Mtr)	Kg	97.5	861.3	789.9	83,973.1	77,011.6
16	AB Switch Side Support Channel 75X40X4.8 mm GI Channel(330 mm long)(7.14Kg./Mtr)	Kg	97.5	1271.9	1166.4	1,24,007.3	1,13,726.9
17	HG Fuse Side Support Channel 75X40X4.8 mm GI Channel(330 mm long)(7.14Kg./Mtr)	Kg	97.5	1271.9	1166.4	1,24,007.3	1,13,726.9
18	Cantilever Support Channel 75X40X4.8 mm GI Channel(810 m long)(7.14Kg./Mtr)	Kg	97.5	1116.2	1023.7	1,08,829.1	99,807.0
19	AB Switch Operating Pipe Diagonal Angle Support 50X50X6mm GI(388 mm long)(4.5Kg./Mtr)	Kg	97.5	337.0	309.0	32,855.4	30,131.6
20	AB Switch Operating Pipe Diagonal Base Angle Support 50X50X6mm (340 mm long) GI(4.5Kg./Mtr)	Kg	97.5	295.3	270.8	28,790.8	26,404.0
21	Cantilever Support Angle 50X50X6mm GI (1282 mm long) (4.5Kg./Mtr)	Kg	97.5	1113.4	1021.1	1,08,558.2	99,558.5
22	H/W fitting(B&S) 70KN,3 Bolt	Set	455.0	579	531	2,63,445.0	2,41,605.0
23	11kV Disc insulator (B&S) 70KN polymer	No	1495.0	579	531	8,65,605.0	7,93,845.0
24	50x6 mm GI flat	Kg	97.5	1158	1062	1,12,905.0	1,03,545.0
25	25x6 mm GI flat	Kg	97.5	1158	1062	1,12,905.0	1,03,545.0
26	GI Nut , Bolt & Washer of different sizes	Kg	101.4	4825	4425	4,89,255.0	4,48,695.0
27	Lug AL 70 Sqmm for 7/8 SWG Wire/Earthing	EA	8.9	10422	9558	92,873.5	85,174.1
28	Lug AL Crimping 150 Sqmm XLPE One Hole	EA	18.6	1544	1416	28,667.3	26,290.8

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29	40mm nominal bore GI pipe (medium gauge) earthing device with 3 mtr .Long	No	1365.0	965	885	13,17,225.0	12,08,025.0
30	PIPE HDPE SIZE 25 MM	Mtr	35.2	579	531	20,395.7	18,704.9
31	Energy Meter Installation (Smart Meter) with BOX	LS	16531.0	193	177	31,90,483.0	29,25,987.0
32	Connector Mini Wedge 25 Sqmm to Dog	EA	76.4	579	531	44,239.3	40,571.8
					Total Cost of materials	2,03,79,904.7	1,86,90,378.9
					Stock, Storage & Insurance i.e 3%	6,11,397.1	5,60,711.4
					Sub Total	2,09,91,301.8	1,92,51,090.3
					Contingency @ 3%	6,29,739.1	5,77,532.7
					Tools & Plants @ 2%	4,19,826.0	3,85,021.8
					Transportation @ 7.5%	15,74,347.6	14,43,831.8
					Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%		
					Erection Other @ 10%.	19,63,456.0	18,00,682.5
					Erection PSC Pole @ 20%		
					Sub Total	2,55,78,670.6	2,34,58,159.0

Sl no	Civil & Services	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Installation of Earthing pipe with 40mm dia 3 Mtr long Class-B GI Pipe & include supply of all required material like Salt, Charcoal, Nuts-Bolt ,PVC Pipe PCC & brick work for earthing chamber (Size: 2'x2') and RCC or other suitable slab cover	No	2415	965	885	23,30,475.0	21,37,275.0
2	Providing and fixing including loading, unloading & transportation of FRP Fencing including Fluorescent Sticker (two Mtr. in each post),Supply of Latch Lock, Supply of Hings,Supply of SS Lock with Key excluding civil works as per TPNODL specification.	M2	3310	5790	5310	1,91,64,900.0	1,75,76,100.0
3	Supply, Installation of Outdoor Joint Kit for 1.1 kV XLPE AL Cable 4CX150 sqmm	No	3994	386	354	15,41,684.0	14,13,876.0
4	Supply and laying including loading , unloading & transportation of HDPE Pipe PN 4 CLASS PE 80 of size125 mm.Dia as per IS:4984	Mtr	713	579	531	4,12,827.0	3,78,603.0
5	Dismantling of Steel Structure, Nuts & Bolt including loading,	Kg	78.75	10615	10620	8,35,931.3	8,36,325.0

	transportation, unloading & staking of dismantled material at a proper place in TPNODL store						
6	Dismantling of SINGLE phase DD Fuse/ DO Fuse set arrangement fitted on structure including removal of all Electric/Earth connections etc., loading, transportation, unloading and staking at a proper place in TPNODL Store	EA	840	193	177	1,62,120.0	1,48,680.0
7	Dismantling of 11 kV GO/AB Switch including removal of all Electric/Earth connections etc., loading, transportation, unloading and staking at a proper place/ site and finally at TPNODL store as per instruction of EIC.	EA	1400	193	177	2,70,200.0	2,47,800.0
8	Dismantling of Lightening Arrester(LA) 9KV 5KA including removal of all Electric/Earth connections etc., loading, transportation, unloading and staking at a proper place/ site and finally at TPNODL store as per instruction of EIC.	EA	2335	579	531	13,51,965.0	12,39,885.0
					Total Civil Part	2,60,70,102.3	2,39,78,544.0
					Sub-Total	5,16,48,772.8	4,74,36,703.0
					Other Over Head (Including Supervision charges)@ 6%	30,98,926.4	28,46,202.2
					Sub-total	5,47,47,699.2	5,02,82,905.2
					GST @ 18% of Sub-Total	98,54,585.9	90,50,922.9
					CESS @ 1% of Sub-Total	5,47,477.0	5,02,829.1
					Sub-Grand Total	6,51,49,762.0	5,98,36,657.2
					Inspection Fee	-	-
					Drawing Approval	-	-
					Grand Total	6,51,49,762.0	5,98,36,657.2
					Grand Total in Cr.	6.51	5.98

B. Cost Estimate for Refurbishment of 250 KVA 11/0.4 KV DSS.

Annexure-15B Refurbishment of 11KV/0.415 KV Distribution Substation (DSS) 250 KVA DTR							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	250 KVA,11/0.4Kv(Cu) Transformer	No	604966	0	0	-	-
2	11kV AB Switch,200A,3pole,50Hz,Horizontal Type	Set	9555.0	124	114	11,84,820.0	10,89,270.0

3	Lightning Arrester (12kV,10kA) DH Class	No	2299.45	372	342	8,55,395.4	7,86,411.9
4	HG Fuse(11KV,200A,3 Pole,50Hz) with PI	Set	7956.0	124	114	9,86,544.0	9,06,984.0
5	Conductor 80 mm sq ACSR Rabbit	Mtr	34.4	2976	2736	1,02,304.8	94,054.4
6	Cable 1.1kV Al 1CX300 Sq.mm Un-armoured	Mtr	496.6	3968	3648	19,70,508.8	18,11,596.8
7	Gland for 1.1kV Al 1CX300 Sq.mm	EA	880.6	496	456	4,36,800.0	4,01,574.2
8	CABLE 1.1KV AL 4CX300 SQMM ARM	Mtr	1222.4	3720	3420	45,47,400.0	41,80,674.2
9	GLAND FOR ARM CABLE 4X300 SQ.MM	EA	134.5	496	456	66,716.0	61,335.7
10	Top Channel 100X50X5mm (2800 mm long) (9.56Kg./Mtr) (Each 26.77 Kg)	Kg	97.5	6638.464	6103.1	6,47,250.2	5,95,052.6
11	Transformer Base GI Channel 100X50X5mm (2800 mm long) (9.56Kg./Mtr) (Each 26.77 Kg)	Kg	97.5	6638	6103.1	6,47,250.2	5,95,052.6
12	AB Switch Mounting Channel 75X40X4.8 mm GI Channel (2800 mm long) (7.14Kg./Mtr)	Kg	97.5	4958.016	4558.2	4,83,406.6	4,44,422.2
13	HG Fuse Channel 75X40X4.8 mm GI Channel (2800 mm long) (7.14Kg./Mtr)	Kg	97.5	4958.016	4558.2	4,83,406.6	4,44,422.2
14	Transformer Belting angle (50X50X6) mm 2800 mm long 2 nos. (7.14 Kg./Mtr.)with side angle	Kg	97.5	6197.5	5697.7	6,04,258.2	5,55,527.7
15	AB Switch Operating Pipe Channel Support 75X40X4.8 mm GI Channel (625 mm long)(7.14Kg./Mtr)	Kg	97.5	553.4	508.7	53,951.6	49,600.7
16	AB Switch Side Support Channel 75X40X4.8 mm GI Channel(330 mm long)(7.14Kg./Mtr)	Kg	97.5	817.2	751.3	79,673.1	73,247.9
17	HG Fuse Side Support Channel 75X40X4.8 mm GI Channel(330 mm long)(7.14Kg./Mtr)	Kg	97.5	817.2	751.3	79,673.1	73,247.9
18	Cantilever Support Channel 75X40X4.8 mm GI Channel(810 m long)(7.14Kg./Mtr)	Kg	97.5	717.1	659.3	69,921.3	64,282.5
19	AB Switch Operating Pipe Diagonal Angle Support 50X50X6mm GI(388 mm long)(4.5Kg./Mtr)	Kg	97.5	216.5	199.0	21,109.1	19,406.8
20	AB Switch Operating Pipe Diagonal Base Angle Support 50X50X6mm (340 mm long) GI(4.5Kg./Mtr)	Kg	97.5	189.7	174.4	18,497.7	17,006.0
21	Cantilever Support Angle 50X50X6mm GI(1,282 mm long) (4.5Kg./Mtr)	Kg	97.5	715.4	657.7	69,747.2	64,122.4
22	H/W fitting(B&S) 70KN,3 Bolt	Set	455.0	372	342	1,69,260.0	1,55,610.0

23	11kV Disc insulator (B&S) 70KN polymer	No	1495.0	372	342	5,56,140.0	5,11,290.0
24	50x6 mm GI flat	Kg	97.5	744	684	72,540.0	66,690.0
25	25x6 mm GI flat	Kg	97.5	744	684	72,540.0	66,690.0
26	GI Nut , Bolt & Washer of different sizes	Kg	101.4	3100	2850	3,14,340.0	2,88,990.0
27	Lug AL 70 Sqmm for 7/8 SWG Wire/Earthing	EA	8.9	6696	6156	59,670.0	54,857.9
28	Lug AL Crimping 300 Sqmm XLPE One Hole	EA	40.3	992	912	39,956.8	36,734.5
29	40mm nominal bore GI pipe (medium gauge) earthing device with 3 mtr .Long	No	1365.0	620	570	8,46,300.0	7,78,050.0
30	PIPE HDPE SIZE 25 MM	Mtr	35.2	2852	2622	1,00,464.0	92,362.1
31	Energy Meter Installation (Smart Meter) with BOX	LS	16531.0	124	114	20,49,844.0	18,84,534.0
32	Connector Mini Wedge 25 Sqmm to Dog	EA	76.4	372	342	28,423.2	26,131.0
					Total Cost of materials	1,77,18,112.0	1,62,89,232.0
					Stock, Storage & Insurance i.e 3%	5,31,543.4	4,88,677.0
					Sub Total	1,82,49,655.3	1,67,77,908.9
					Contingency @ 3%	5,47,489.7	5,03,337.3
					Tools & Plants @ 2%	3,64,993.1	3,35,558.2
					Transportation @ 7.5%	13,68,724.2	12,58,343.2
					Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%	-	-
					Erection Other @ 10%.	17,37,796.6	15,97,651.7
					Erection PSC Pole @ 20%	-	-
					Sub Total	2,22,68,658.9	2,04,72,799.3

Sl no	Civil & Services	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Installation of Earthing pipe with 40mm dia 3 Mtr long Class-B GI Pipe & include supply of all required material like Salt, Charcoal, Nuts-Bolt ,PVC Pipe PCC & brick work for earthing chamber (Size: 2'x2') and RCC or other suitable slab cover	No	2415	620	570	14,97,300.0	13,76,550.0
2	Providing and fixing including loading, unloading & transportation of FRP Fencing including Fluorescent Sticker (two Mtr. in each post),Supply of Latch Lock, Supply of Hings,Supply of SS Lock with Key excluding civil works as per TPNODL specification.	M2	3310	3720	3420	1,23,13,200.0	1,13,20,200.0
3	Supply, Installation of Outdoor Joint Kit for 1.1 kV XLPE AL Cable 4cX300 sqmm	No	8511	248	228	21,10,728.0	19,40,508.0

4	Supply and laying including loading , unloading & transportation of HDPE Pipe PN 4 CLASS PE 80 of size125 mm.Dia as per IS:4984	Mtr	713	372	342	2,65,236.0	2,43,846.0
5	Dismantling of Steel Structure, Nuts & Bolt including loading, transportation, unloading & staking of dismantled material at a proper place in TPNODL store	Kg	78.75	4960	4560	3,90,600.0	3,59,100.0
6	Dismantling of SINGLE phase DD Fuse/ DO Fuse set arrangement fitted on structure including removal of all Electric/Earth connections etc., loading, transportation, unloading and staking at a proper place in TPNODL Store	EA	840	124	114	1,04,160.0	95,760.0
7	Dismantling of 11 kV GO/AB Switch including removal of all Electric/Earth connections etc., loading, transportation, unloading and staking at a proper place/ site and finally at TPNODL store as per instruction of EIC.	EA	1400	124	114	1,73,600.0	1,59,600.0
8	Dismantling of Lightening Arrester(LA) 9KV 5KA including removal of all Electric/Earth connections etc., loading, transportation, unloading and staking at a proper place/ site and finally at TPNODL store as per instruction of EIC.	EA	2335	372	342	8,68,620.0	7,98,570.0
					Total Civil Part	1,77,23,444.0	1,62,94,134.0
					Sub-Total	3,99,92,102.9	3,67,66,933.3
					Other Over Head (Including Supervision charges)@ 6%	23,99,526.2	22,06,016.0
					Sub-total	4,23,91,629.1	3,89,72,949.3
					GST @ 18% of Sub-Total	76,30,493.2	70,15,130.9
					CESS @ 1% of Sub-Total	4,23,916.3	3,89,729.5
					Sub-Grand Total	5,04,46,038.6	4,63,77,809.7
					Inspection Fee	-	-
					Drawing Approval	-	-
					Grand Total	5,04,46,038.6	4,63,77,809.7
					Grand Total in Cr.	5.04	5.64

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C. Cost Estimate for Refurbishment of 500 KVA 11/0.4 KV DSS.

Annexure-15C Refurbishment of 11KV/0.415 KV Distribution Substation (DSS) 500 KVA DTR

S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	500 KVA,11/0.4KV(Cu) Transformer	No	1056630	0	0	-	-
2	11kV AB Switch,200A.3pole,50Hz,Horizontal Type	Set	9555.0	36	33	3,43,980.0	3,15,315.0
3	Lightning Arrester (12kV,10kA) DH Class	No	2299.45	108	99	2,48,340.6	2,27,645.6
4	HG Fuse(11KV,200A,3 Pole,50Hz) with PI	Set	7956.0	36	33	2,86,416.0	2,62,548.0
5	Conductor 80 mm sq ACSR Rabbit	Mtr	34.4	864	792	29,701.4	27,226.3
6	Cable 1.1kV Al 1CX630 Sq.mm Un-armoured	Mtr	648.4	1152	1056	7,46,928.0	6,84,684.0
7	CABLE 1.1KV AL 4CX300 SQMM ARM	Mtr	1222.4	1080	990	13,20,212.9	12,10,195.2
8	GLAND FOR ARM CABLE 4X300 SQ.MM	EA	134.5	144	132	19,369.2	17,755.1
9	Gland for 1.1kV Al 1CX630 Sq.mm	EA	535.2	144	132	77,075.1	70,652.1
10	Top Channel 100X50X5mm (2800 mm long) (9.56Kg./Mtr) (Each 26.77 Kg)	Kg	97.5	1927.3	1766.7	1,87,911.4	1,72,252.1
11	Transformer Base GI Channel 100X50X5mm (2800 mm long) (9.56Kg./Mtr) (Each 26.77 Kg)	Kg	97.5	1927.3	1766.7	1,87,911.4	1,72,252.1
12	AB Switch Mounting Channel 75X40X4.8 mm GI Channel (2800 mm long) (7.14Kg./Mtr)	Kg	97.5	1439.4	1319.5	1,40,343.8	1,28,648.5
13	HG Fuse Channel 75X40X4.8 mm GI Channel (2800 mm long) (7.14Kg./Mtr)	Kg	97.5	1439.4	1319.5	1,40,343.8	1,28,648.5
14	Transformer Belting angle (50X50X6) mm 2800 mm long 2 nos. (7.14 Kg./Mtr.)with side angle	Kg	97.5	1799.3	1649.3	1,75,429.8	1,60,810.7
15	AB Switch Operating Pipe Channel Support 75X40X4.8 mm GI Channel (625 mm long)(7.14Kg./Mtr)	Kg	97.5	160.7	147.3	15,663.4	14,358.1
16	AB Switch Side Support Channel 75X40X4.8 mm GI Channel(330 mm long)(7.14Kg./Mtr)	Kg	97.5	237.2	217.5	23,130.9	21,203.3
17	HG Fuse Side Support Channel 75X40X4.8 mm GI Channel(330 mm long)(7.14Kg./Mtr)	Kg	97.5	237.2	217.5	23,130.9	21,203.3
18	Cantilever Support Channel 75X40X4.8 mm GI Channel(810 m long)(7.14Kg./Mtr)	Kg	97.5	208.2	190.9	20,299.7	18,608.1

19	AB Switch Operating Pipe Diagonal Angle Support 50X50X6mm GI(388 mm long)(4.5Kg./Mtr)	Kg	97.5	62.9	57.6	6,128.5	5,617.8
20	AB Switch Operating Pipe Diagonal Base Angle Support 50X50X6mm (340 mm long) GI(4.5Kg./Mtr)	Kg	97.5	55.1	50.5	5,370.3	4,922.8
21	Cantilever Support Angle 50X50X6mm GI (1282 mm long) (4.5Kg./Mtr)	Kg	97.5	207.7	190.4	20,249.2	18,561.8
22	H/W fitting(B&S) 70KN,3 Bolt	Set	455.0	108	99	49,140.0	45,045.0
23	11kV Disc insulator (B&S) 70KN polymer	No	1495.0	108	99	1,61,460.0	1,48,005.0
24	50x6 mm GI flat	Kg	97.5	216	198	21,060.0	19,305.0
25	25x6 mm GI flat	Kg	97.5	216	198	21,060.0	19,305.0
26	GI Nut , Bolt & Washer of different sizes	Kg	101.4	900	825	91,260.0	83,655.0
27	Lug AL 70 Sqmm for 7/8 SWG Wire/Earthing	EA	8.9	1944	1782	17,323.5	15,879.9
28	Lug AL Crimping 630 Sqmm XLPE One Hole	EA	142.5	288	264	41,048.1	37,627.5
29	40mm nominal bore GI pipe (medium gauge) earthing device with 3 mtr .Long	No	1365.0	180	165	2,45,700.0	2,25,225.0
30	PIPE HDPE SIZE 25 MM	Mtr	35.2	828	759	29,167.0	26,736.4
31	Energy Meter Installation (Smart Meter) with BOX	LS	16531.0	36	33	5,95,116.0	5,45,523.0
32	Connector Mini Wedge 25 Sqmm to Dog	EA	76.4	108	99	8,251.9	7,564.2
					Total Cost of materials	52,98,522.7	48,56,979.2
					Stock, Storage & Insurance i.e 3%	1,58,955.7	1,45,709.4
					Sub Total	54,57,478.4	50,02,688.5
					Contingency @ 3%	1,63,724.4	1,50,080.7
					Tools & Plants @ 2%	1,09,149.6	1,00,053.8
					Transportation @ 7.5%	4,09,310.9	3,75,201.6
					Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%	-	-
					Erection Other @ 10%.	5,20,440.7	4,77,070.7
					Erection PSC Pole @ 20%	-	-
					Sub Total	66,60,104.0	61,05,095.3

Sl no	Civil & Services	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Installation of Earthing pipe with 40mm dia 3 Mtr long Class-B GI Pipe & include supply of all required material like Salt, Charcoal, Nuts-Bolt ,PVC Pipe PCC & brick work for earthing chamber	No	2415	180	165	4,34,700.0	3,98,475.0

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	(Size: 2'x2') and RCC or other suitable slab cover						
2	Providing and fixing including loading, unloading & transportation of FRP Fencing including Fluorescent Sticker (two Mtr. in each post),Supply of Latch Lock, Supply of Hings,Supply of SS Lock with Key excluding civil works as per TPNODL specification.	M2	3310	1062	973.5	35,15,220.0	32,22,285.0
3	Supply, Installation of Outdoor Joint Kit for 1.1 kV XLPE AL Cable 4CX300 sqmm	No	8511	72	66	6,12,792.0	5,61,726.0
4	Supply and laying including loading , unloading & transportation of HDPE Pipe PN 4 CLASS PE 80 of size125 mm.Dia as per IS:4984	Mtr	713	108	99	77,004.0	70,587.0
5	Dismantling of Steel Structure, Nuts & Bolt including loading, transportation, unloading & staking of dismantled material at a proper place in TPNODL store	Kg	78.75	1080	990	85,050.0	77,962.5
6	Dismantling of SINGLE phase DD Fuse/ DO Fuse set arrangement fitted on structure including removal of all Electric/Earth connections etc., loading, transportation, unloading and staking at a proper place in TPNODL Store	EA	840	36	33	30,240.0	27,720.0
7	Dismantling of 11 kV GO/AB Switch including removal of all Electric/Earth connections etc., loading, transportation, unloading and staking at a proper place/ site and finally at TPNODL store as per instruction of EIC.	EA	1400	36	33	50,400.0	46,200.0
8	Dismantling of Lightening Arrester(LA) 9KV 5KA including removal of all Electric/Earth connections etc., loading, transportation, unloading and staking at a proper place/ site and finally at TPNODL store as per instruction of EIC.	EA	2335	108	99	2,52,180.0	2,31,165.0
					Total Civil Part	50,57,586.0	46,36,120.5
					Sub-Total	1,17,17,690.0	1,07,41,215.8
					Other Over Head (Including Supervision charges)@ 6%	7,03,061.4	6,44,472.9
					Sub-total	1,24,20,751.4	1,13,85,688.7

GST @ 18% of Sub-Total	22,35,735.2	20,49,424.0
CESS @ 1% of Sub-Total	1,24,207.5	1,13,856.9
Sub-Grand Total	1,47,80,694.1	1,35,48,969.6
Inspection Fee	-	-
Drawing Approval	-	-
Grand Total	1,47,80,694.1	1,35,48,969.6
Grand Total in Cr.	1.48	1.35

8.16 Annexure 16: Cost Estimate for Installation of Auto Recloser /Sectionalizer, RMUs, and FPIs for OH Lines

S.No	Description	UOM	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
A	Supply & Installation Auto Recloser/ Sectionalizer for 11kV	Nos	42	41	5.59	5.47
B	Supply & Installation Auto Recloser/ Sectionalizer for 11kV	Nos	12	8	2.82	1.89
C	Supply & Installation RMU 4 way O/D at 11 KV	Nos	12	8	1.77	1.18
D	Supply & Installation RMU 3 way O/D at 11 KV	Nos	8	4	1.11	0.56
E	Supply & Installation RMU 4 way O/D at 33 KV	Nos	1	1	0.42	0.42
Total					**11.71**	**9.52**

A. Cost Estimate for Installation of Auto Recloser for 11kV

Annexure-16A Installation of 11 Kv Auto recloser							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	WPB 160x152 (30.44KG/Mtr.),11 mtr	No	34322	84	82	28,83,007.7	28,14,364.6
2	11kV Auto Recloser	EA	696058.0	42	41	2,92,34,436.0	2,85,38,378.0
3	Lightning Arrester (12kV,10kA) DH Class	No	2299.45	126	123	2,89,730.7	2,82,832.4
4	25x6 mm GI flat	Kg	97.5	630	815	61,425.0	79,462.5
5	Danger Plate	No	104.0	84	82	8,736.0	8,528.0
6	Back Clamp for danger Plate 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr 1 no	Kg	97.5	25.3	24.7	2,464.4	2,405.7
7	GI barbed wire anticlimbing device	Kg	104.0	252	246	26,208.0	25,584.0
8	Back Clamp for Barbed wire anticlimbing device 25X3mm. flat, 0.59Kg/Mtr. Flat of 0.510 mtr length 4 no's	Kg	97.5	101.1	98.7	9,857.5	9,622.8
9	11kV,5kN pin insulator polymer	No	260.0	126	123	32,760.0	31,980.0

10	Double Pole Belting Channel 75X40X4.8mm.,7.14KG/Mtr.,each channel length 1.66 Mtr.,4 no's channel required	Kg	97.5	1991.2	2043.8	1,94,142.3	1,99,269.9
11	Top Channel 100X50X5mm, 9.56 KG/Mtr., each channel length 2.3 mtr., 2 no's channel required	Kg	97.5	1847.0	1903.0	1,80,081.7	1,85,544.1
12	50X50X6mm.GI Bracing Angle, 4.5Kg./mtr., each angle length 2.671 mtr., 4 nos angle required	Kg	97.5	2019.3	2071.2	1,96,879.4	2,01,941.8
13	Fish Plate 50x8 mm., 0.97kg/Mtr., each 0.280 mtr. Length	Kg	97.5	68.44	66.81	6,673.2	6,514.3
14	H/W fitting(B&S) 70KN,3 Bolt	Set	455.0	252	246	1,14,660.0	1,11,930.0
15	11kV Disc insulator (B&S) 70KN polymer	No	1495.0	252	246	3,76,740.0	3,67,770.0
16	Earthing of Support (Coil Type)	EA	215.8	84	82	18,127.2	17,695.6
17	No-8 GI wire (Dia 4.6mm) 0.131 KG/ Mtr.- 2 Mtr. For connecting pole with Coil earthing	Kg	97.5	22.0	21.5	2,145.8	2,094.7
18	PG Clamp for 100 mm2 AAAC conductor	No	754.0	252	246	1,90,008.0	1,85,484.0
19	GI Nut , Bolt & Washer of different sizes	Kg	101.4	504	542	51,105.6	54,958.8
20	H.T. Stay clamp	Pair	162.5	168	164	27,300.0	26,650.0
21	H.T. Stay set (Complete)	Set	1365.0	168	164	2,29,320.0	2,23,860.0
22	H.T. Stay Insulator	No	65.0	168	164	10,920.0	10,660.0
23	7/10 SWG Stay Wire	Kg	97.5	1680	1640	1,63,800.0	1,59,900.0
24	40mm nominal bore GI pipe (medium gauge) earthing device with 3 mtr .Long	No	1365.0	84	82	1,14,660.0	1,11,930.0
25	AAA conductor,100 mm2	Km	71500.0	0.63	0.62	45,045.0	43,972.5
26	Black Paint	Ltr	286.0	42	51	12,012.0	14,586.0
27	Yellow Colour Paint for Background	Ltr	230.6	84	92	19,374.2	21,219.4
					Total Cost of materials	**3,45,01,619.7**	**3,37,39,139.0**
					Stock, Storage & Insurance i.e 3%	**10,35,048.6**	**10,12,174.2**
					Sub Total	**3,55,36,668.3**	**3,47,51,313.1**
					Contingency @ 3%	**10,66,100.0**	**10,42,539.4**
					Tools & Plants @ 2%	**7,10,733.4**	**6,95,026.3**
					Transportation @ 7.5%	**26,65,250.1**	**26,06,348.5**
					Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%	-	-
					Erection Other @ 10%.	**32,00,479.0**	**31,30,352.8**
					Erection PSC Pole @ 20%	-	-
					Sub Total	**4,31,79,230.8**	**4,22,25,580.0**

Sl no	Civil & Services	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)

1	Fixing of complete 11KV line stay set includes Turn Buckle assembly, Stay Rod & Stay plate, Stay Insulator, stay wire, stay clamps with Nuts & bolts BA will do the excavation, supply of 0.5Cum cement concrete foundation 1:2:4 size (500mmx500mmx800mm)	No.	2362.5	168	164	3,96,900.0	3,87,450.0
2	Erection of 11 Mtr long WPB Pole including loading & unloading,transportation,providing & laying of 1:1.5:3,M20 Grade,C.C-500x500X1800 mm & cooping of 500x500x450 mm,includes 5 days curing and zebra painting (In Black & Yellow Strips/Zebra)	No	6300	84	82	5,29,200.0	5,16,600.0
3	Installation of Earthing pipe with 40mm dia 3 Mtr long Class-B GI Pipe & include supply of all required material like Salt, Charcoal, Nuts-Bolt ,PVC Pipe PCC & brick work for earthing chamber (Size: 2'x2') and RCC or other suitable slab cover	No	2415	84	82	2,02,860.0	1,98,030.0
					Total Civil Part	11,28,960.0	11,02,080.0
					Sub-Total	4,43,08,190.8	4,33,27,660.0
					Other Over Head (Including Supervision charges)@ 6%	26,58,491.4	25,99,659.6
					Sub-total	4,69,66,682.3	4,59,27,319.7
					GST @ 18% of Sub-Total	84,54,002.8	82,66,917.5
					CESS @ 1% of Sub-Total	4,69,666.8	4,59,273.2
					Sub-Grand Total	5,58,90,351.9	5,46,53,510.4
					Inspection Fee	-	-
					Drawing Approval	-	-
					Grand Total	5,58,90,351.9	5,46,53,510.4
					Grand Total in Cr.	5.59	5.47



B. Cost Estimate for Installation of Auto Recloser for 33kV

Annexure-16B Installation of 33 Kv Auto recloser							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	WPB 160x152 (30.44KG/Mtr.),11 mtr	No	34322	24	16	8,23,716.5	5,49,144.3
2	33kV Auto Recloser	EA	1300000.0	12	8	1,56,00,000.0	1,04,00,000.0
3	Lightning Arrester(30KV,10KA) (Station Class,class-2)	No	13455.0	36	24	4,84,380.0	3,22,920.0
4	25x6 mm GI flat	Kg	97.5	180	320	17,550.0	31,200.0

5	Danger Plate	No	104.0	24	16	2,496.0	1,664.0
6	Back Clamp for danger Plate 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr 1 no	Kg	97.5	7.2	4.8	704.1	469.4
7	GI barbed wire anticlimbing device	Kg	104.0	72	48	7,488.0	4,992.0
8	Back Clamp for Barbed wire anticlimbing device 25X3mm. flat, 0.59Kg/Mtr. Flat of 0.510 mtr length 4 no's	Kg	97.5	28.9	19.3	2,816.4	1,877.6
9	33kV,10kN pin insulator polymer	No	624.0	36	24	22,464.0	14,976.0
10	Double Pole Belting Channel 75X40X4.8mm.,7.14KG/Mtr. Each channel length 1.66 Mtr.,4 no's channel required	Kg	97.5	568.9	479.3	55,469.2	46,729.5
11	Top Channel 100X50X5mm, 9.56 KG/Mtr., each channel length 2.3 mtr., 2 no's channel required	Kg	97.5	527.7	451.8	51,451.9	44,051.3
12	50X50X6mm.GI Bracing Angle, 4.5Kg./mtr., each angle length 2.671 mtr., 4 nos angle required	Kg	97.5	576.9	484.6	56,251.3	47,250.8
13	Fish Plate 50x8 mm., 0.97kg/Mtr., each 0.280 mtr. Length	Kg	97.5	19.6	13.0	1,906.6	1,271.1
14	33kV H/W fitting(B&S) 120KN,4 Bolt	Set	800.3	72	48	57,621.6	38,414.4
15	33kV Disc insulator (B&S) 120KN polymer	No	1892.7	72	48	1,36,277.0	90,851.3
16	Earthing of Support (Coil Type)	EA	215.8	24	16	5,179.2	3,452.8
17	No-8 GI wire (Dia 4.6mm) 0.131 KG/ Mtr.- 2 Mtr. For connecting pole with Coil earthing	Kg	97.5	6.3	4.2	613.1	408.7
18	PG Clamp for 100 mm2 AAAC conductor	No	754.0	72	48	54,288.0	36,192.0
19	GI Nut , Bolt & Washer of different sizes	Kg	101.4	144	146	14,601.6	14,804.4
20	H.T. Stay clamp	Pair	162.5	48	32	7,800.0	5,200.0
21	H.T. Stay set (Complete)	Set	1365.0	48	32	65,520.0	43,680.0
22	H.T. Stay Insulator	No	65.0	48	32	3,120.0	2,080.0
23	7/10 SWG Stay Wire	Kg	97.5	480	320	46,800.0	31,200.0
24	40mm nominal bore GI pipe (medium gauge) earthing device with 3 mtr .Long	No	1365.0	24	16	32,760.0	21,840.0
25	AAA conductor,100 mm2	Km	71500.0	0.18	0.12	12,870.0	8,580.0
26	Black Paint	Ltr	286.0	12	8	3,432.0	2,288.0
27	Yellow Colour Paint for Background	Ltr	230.6	24	16	5,535.5	3,690.3
					Total Cost of materials	**1,75,73,112.0**	**1,17,69,228.0**
					Stock, Storage & Insurance i.e 3%	**5,27,193.4**	**3,53,076.8**
					Sub Total	**1,81,00,305.4**	**1,21,22,304.8**

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Contingency @ 3%	5,43,009.2	3,63,669.1
Tools & Plants @ 2%	3,62,006.1	2,42,446.1
Transportation @ 7.5%	13,57,522.9	9,09,172.9
Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%	-	-
Erection Other @ 10%.	17,09,119.7	11,44,956.6
Erection PSC Pole @ 20%	-	-
Sub Total	2,20,71,963.3	1,47,82,549.6

Sl no	Civil & Services	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Fixing of complete 33KV line stay set includes Turn Buckle assembly, Stay Rod & Stay plate, Stay Insulator, stay wire, stay clamps with Nuts & bolts BA will do the excavation, supply of 0.5Cum cement concrete foundation 1:2:4 size (500mmx500mmx800mm)	No.	2362.5	48	32	1,13,400.0	75,600.0
2	Erection of 11 Mtr long WPB Pole including loading & unloading, transportation, providing & laying of 1:1.5:3, M20 Grade, C.C-500x500X1800 mm & cooping of 500x500x450 mm, includes 5 days curing and zebra painting (In Black & Yellow Strips/Zebra)	No	6300	24	16	1,51,200.0	1,00,800.0
3	Installation of Earthing pipe with 40mm dia 3 Mtr long Class-B GI Pipe & include supply of all required material like Salt, Charcoal, Nuts-Bolt ,PVC Pipe PCC & brick work for earthing chamber (Size: 2'x2') and RCC or other suitable slab cover	No	2415	24	16	57,960.0	38,640.0

Total Civil Part	3,22,560.0	2,15,040.0
Sub-Total	2,23,94,523.3	1,49,97,589.6
Other Over Head (Including Supervision charges)@ 6%	13,43,671.4	8,99,855.4
Sub-total	2,37,38,194.7	1,58,97,444.9
GST @ 18% of Sub-Total	42,72,875.0	28,61,540.1
CESS @ 1% of Sub-Total	2,37,381.9	1,58,974.4
Sub-Grand Total	2,82,48,451.7	1,89,17,959.5
Inspection Fee	-	-
Drawing Approval	-	-
Grand Total	2,82,48,451.7	1,89,17,959.5
Grand Total in Cr.	2.825	1.892

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C. Cost Estimate for Installation of 11kV 4 Way RMU

Annexure-16C Installation of 11 Kv 4W RMU							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	RMU 11kV 4 Way 2x630A BKR O/D LLVV	EA	532991	12	8	63,95,892.0	42,63,928.0
2	WPB 160x152 (30.44KG/Mtr.),11 mtr	No	34322	24	16	8,23,716.5	5,49,144.3
3	Top Channel 100X50X5mm, 9.56 KG/Mtr., each channel length 2.3 mtr., 2 no's channel required	Kg	97.5	618.24	412.16	60,278.4	40,185.6
4	75X40X4.8 mm G.I Channel (7.14Kg. / Mtr)	Kg	97.5	456.96	304.64	44,553.6	29,702.4
5	50X50X6mm.GI Bracing Angle, 4.5Kg./mtr., each angle length 2.671 mtr., 4 nos angle required	Kg	97.5	302.40	201.6	29,484.0	19,656.0
6	50x6 mm GI flat	Kg	97.5	720	580	70,200.0	56,550.0
7	25x6 mm GI flat	Kg	97.5	120	180	11,700.0	17,550.0
8	Danger Plate	No	104.0	60	40	6,240.0	4,160.0
9	Back Clamp for danger Plate 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr 1 no	Kg	97.5	18.05	12.04	1,760.3	1,173.5
10	40mm nominal bore GI pipe (medium gauge) earthing device with 3 mtr .Long	No	1365.0	48	32	65,520.0	43,680.0
11	GI Nut , Bolt & Washer of different sizes	Kg	101.4	60.00	40	6,084.0	4,056.0
12	11kV AL 3CX300 Sqmm XLPE Cable armoured	Mtr	1553.5	840	560	13,04,940.0	8,69,960.0
13	Heat shrinkable jointing kit for 3Cx300mm² 11KV XLPE Cable(indoor type)	No	11794.9	36.00	24	4,24,616.4	2,83,077.6
14	Heat shrinkable jointing kit for 3Cx300mm² 11KV XLPE Cable(outdoor type)	No	17186.0	36.00	24	6,18,696.0	4,12,464.0
15	PIPE G.I.100MM DIA HEAVY CLASS PLAIN END	Mtr	1670.8	72.00	48	1,20,298.6	80,199.1
16	PIPE HDPE SIZE 25 MM	Mtr	35.2	72.00	48	2,536.3	1,690.8
17	Lug AL Crimping 95 Sqmm XLPE Single hole	EA	12.4	48	32	595.3	396.9
18	AAA conductor,100 mm2	Km	71500.0	0.24	0.16	17,160.0	11,440.0
					Total Cost of materials	**1,00,04,271.4**	**66,89,014.2**
					Stock, Storage & Insurance i.e 3%	**3,00,128.1**	**2,00,670.4**
					Sub Total	**1,03,04,399.5**	**68,89,684.7**
					Contingency @ 3%	**3,09,132.0**	**2,06,690.5**
					Tools & Plants @ 2%	**2,06,088.0**	**1,37,793.7**
					Transportation @ 7.5%	**7,72,830.0**	**5,16,726.4**
					Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%	**3,29,388.4**	**2,19,592.3**
					Erection Other @ 10%.	**3,64,914.5**	**2,45,284.8**

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					Erection PSC Pole @ 20%	-	-
					Sub Total	**1,22,86,752.4**	**82,15,772.4**
Sl no	**Civil & Services**	**Unit**	**Unit Rate in Rs.**	**Proposed Qty FY 24-25**	**Proposed Qty FY 25-26**	**FY 24-25 Amount (in Cr.)**	**FY 25-26 Amount (in Cr.)**
1	Providing and fixing including loading, unloading & transportation of FRP Fencing (6Mtr x 5 Mtr) including Fluorescent Sticker (two Mtr. in each post),Supply of Latch Lock, Supply of Hings,Supply of SS Lock with Key excluding civil works as per TPNODL specification.	M2	3310	360	240	11,91,600.0	7,94,400.0
2	Erection of 11 Mtr long WPB Pole including loading & unloading, transportation, providing & laying of 1:1.5:3, M20 Grade, C.C-500x500X1800 mm & cooping of 500x500x450 mm, includes 5 days curing and zebra painting (In Black & Yellow Strips/Zebra)	No	6300	24	16	1,51,200.0	1,00,800.0
3	Construction of 3-way/4-way/5way RMU Plinth with Brick, Mortar, 12 mm cement plaster. Scope includes excavation of earth for foundation and supply of raw material i.e. sand, cement, bricks and removal of extra malba if any	LS	24150	12	8	2,89,800.0	1,93,200.0
4	Installation of Earthing pipe with 40mm dia 3 Mtr long Class-B GI Pipe & include supply of all required material like Salt, Charcoal, Nuts-Bolt ,PVC Pipe PCC & brick work for earthing chamber (Size: 2'x2') and RCC or other suitable slab cover	No	2415	48	32	1,15,920.0	77,280.0
					Total Civil Part	17,48,520.0	11,65,680.0
					Sub-Total	1,40,35,272.4	93,81,452.4
					Other Over Head (Including Supervision charges)@ 6%	8,42,116.3	5,62,887.1
					Sub-total	1,48,77,388.7	99,44,339.5
					GST @ 18% of Sub-Total	26,77,930.0	17,89,981.1
					CESS @ 1% of Sub-Total	1,48,773.9	99,443.4
					Sub-Grand Total	1,77,04,092.6	1,18,33,764.0
					Inspection Fee	-	-
					Drawing Approval	-	-
					Grand Total	1,77,04,092.6	1,18,33,764.0
					Grand Total in Cr.	1.770	1.183

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D. Cost Estimate for Installation of 11kV 3 Way RMU

Annexure-16D Installation of 11 Kv 3W RMU							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	RMU 11kV 3 Way 2x630A BKR O/D LVV	EA	484749	8	4	38,77,992.0	19,38,996.0
2	WPB 160x152 (30.44KG/Mtr.),11 mtr	No	34322	16	8	5,49,144.3	2,74,572.2
3	Top Channel 100X50X5mm, 9.56 KG/Mtr., each channel length 2.3 mtr., 2 no's channel required	Kg	97.5	412.16	206.08	40,185.6	20,092.8
4	75X40X4.8 mm G.I Channel (7.14Kg. / Mtr)	Kg	97.5	304.64	152.32	29,702.4	14,851.2
5	50X50X6mm.GI Bracing Angle, 4.5Kg./mtr., each angle length 2.671 mtr., 4 nos angle required	Kg	97.5	201.60	100.8	19,656.0	9,828.0
6	50x6 mm GI flat	Kg	97.5	480	340	46,800.0	33,150.0
7	25x6 mm GI flat	Kg	97.5	80	140	7,800.0	13,650.0
8	Danger Plate	No	104.0	40	20	4,160.0	2,080.0
9	Back Clamp for danger Plate 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr 1 no	Kg	97.5	12.04	6.018	1,173.5	586.8
10	40mm nominal bore GI pipe (medium gauge) earthing device with 3 mtr .Long	No	1365.0	32	16	43,680.0	21,840.0
11	GI Nut , Bolt & Washer of different sizes	Kg	101.4	40.00	20	4,056.0	2,028.0
12	11kV AL 3CX300 Sqmm XLPE Cable armoured	Mtr	1553.5	560	280	8,69,960.0	4,34,980.0
13	Heat shrinkable jointing kit for 3Cx300mm² 11KV XLPE Cable(indoor type)	No	11794.9	24.00	12	2,83,077.6	1,41,538.8
14	Heat shrinkable jointing kit for 3Cx300mm² 11KV XLPE Cable(outdoor type)	No	17186.0	24.00	12	4,12,464.0	2,06,232.0
15	PIPE G.I.100MM DIA HEAVY CLASS PLAIN END	Mtr	1670.8	48.00	24	80,199.1	40,099.5
16	PIPE HDPE SIZE 25 MM	Mtr	35.2	48.00	24	1,690.8	845.4
17	Lug AL Crimping 95 Sqmm XLPE Single hole	EA	12.4	32	16	396.9	198.4
18	AAA conductor,100 mm2	Km	71500.0	0.16	0.08	11,440.0	5,720.0
					Total Cost of materials	**62,83,578.2**	**31,61,289.1**
					Stock, Storage & Insurance i.e 3%	**1,88,507.3**	**94,838.7**
					Sub Total	**64,72,085.6**	**32,56,127.8**
					Contingency @ 3%	**1,94,162.6**	**97,683.8**
					Tools & Plants @ 2%	**1,29,441.7**	**65,122.6**
					Transportation @ 7.5%	**4,85,406.4**	**2,44,209.6**
					Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%	**1,99,716.6**	**99,858.3**
					Erection Other @ 10%.	**2,43,276.3**	**1,23,646.7**

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Sl no	Civil & Services	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
					Erection PSC Pole @ 20%	-	-
					Sub Total	77,24,089.2	38,86,648.7
1	Providing and fixing including loading, unloading & transportation of FRP Fencing (5Mtr x 5 Mtr) including Fluorescent Sticker (two Mtr. in each post),Supply of Latch Lock, Supply of Hings,Supply of SS Lock with Key excluding civil works as per TPNODL specification.	M2	3310	220	110	7,28,200.0	3,64,100.0
2	Erection of 11 Mtr long WPB Pole including loading & unloading, transportation, providing & laying of 1:1.5:3, M20 Grade, C.C-500x500X1800 mm & cooping of 500x500x450 mm, includes 5 days curing and zebra painting (In Black & Yellow Strips/Zebra)	No	6300	16	8	1,00,800.0	50,400.0
3	Construction of 3-way/4-way/5way RMU Plinth with Brick, Mortar, 12 mm cement plaster. Scope includes excavation of earth for foundation and supply of raw material i.e. sand, cement, bricks and removal of extra malba if any	LS	24150	8	4	1,93,200.0	96,600.0
4	Installation of Earthing pipe with 40mm dia 3 Mtr long Class-B GI Pipe & include supply of all required material like Salt, Charcoal, Nuts-Bolt ,PVC Pipe PCC & brick work for earthing chamber (Size: 2'x2') and RCC or other suitable slab cover	No	2415	32	16	77,280.0	38,640.0
					Total Civil Part	10,99,480.0	5,49,740.0
					Sub-Total	88,23,569.2	44,36,388.7
					Other Over Head (Including Supervision charges)@ 6%	5,29,414.2	2,66,183.3
					Sub-total	93,52,983.4	47,02,572.1
					GST @ 18% of Sub-Total	16,83,537.0	8,46,463.0
					CESS @ 1% of Sub-Total	93,529.8	47,025.7
					Sub-Grand Total	1,11,30,050.2	55,96,060.8
					Inspection Fee	-	-
					Drawing Approval	-	-
					Grand Total	1,11,30,050.2	55,96,060.8
					Grand Total in Cr.	1.113	0.560

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E. Cost Estimate for Installation of 33kV 4 Way RMU

Annexure-16E Installation of 33 Kv 4W RMU							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	RMU 33kV 4 Way 2x630A BKR O/D	EA	2133866	1	1	21,33,866.0	21,33,866.0
2	WPB 160x152 (30.44KG/Mtr.),13 mtr	No	34322	2	2	68,643.0	68,643.0
3	Top Channel 100X50X5mm, 9.56 KG/Mtr., each channel length 2.3 mtr., 2 no's channel required	Kg	97.5	51.52	51.52	5,023.2	5,023.2
4	75X40X4.8 mm G.I Channel (7.14Kg. / Mtr)	Kg	97.5	38.08	38.08	3,712.8	3,712.8
5	50X50X6mm.GI Bracing Angle, 4.5Kg./mtr., each angle length 2.671 mtr., 4 nos angle required	Kg	97.5	25.20	25.2	2,457.0	2,457.0
6	50x6 mm GI flat	Kg	93.00	60	60	5,580.0	5,580.0
7	25x6 mm GI flat	Kg	93.00	10	10	930.0	930.0
8	Danger Plate	No	99.20	5	5	496.0	496.0
9	Back Clamp for danger Plate 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr 1 no	Kg	93.00	1.50	1.50	139.9	139.9
10	40mm nominal bore GI pipe (medium gauge) earthing device with 3 mtr .Long	No	1302.00	4	4	5,208.0	5,208.0
11	GI Nut , Bolt & Washer of different sizes	Kg	96.72	5.00	5	483.6	483.6
12	33kV AL 3CX300 Sqmm XLPE Cable armoured	Mtr	2177.44	70	70	1,52,420.8	1,52,420.8
13	Heat shrinkable jointing kit for 3Cx300 mm² 33KV XLPE Cable(indoor type)	N	25423.72	3.00	3	76,271.2	76,271.2
14	Heat shrinkable jointing kit for 3Cx300mm² 33KV XLPE Cable(outdoor type)	No	41236.20	3.00	3	1,23,708.6	1,23,708.6
15	PIPE G.I.100MM DIA HEAVY CLASS PLAIN END	Mtr	1593.70	6.00	6	9,562.2	9,562.2
16	PIPE HDPE SIZE 25 MM	Mtr	33.60	6.00	6	201.6	201.6
17	Lug AL Crimping 95 Sqmm XLPE Single hole	EA	11.83	4	4	47.3	47.3
18	AAA conductor,148 mm2	Km	101680.0	0.02	0.02	2,033.6	2,033.6
					Total Cost of materials	**25,90,784.8**	**25,90,784.8**
					Stock, Storage & Insurance i.e 3%	**77,723.5**	**77,723.5**
					Sub Total	**26,68,508.4**	**26,68,508.4**
					Contingency @ 3%	**80,055.3**	**80,055.3**
					Tools & Plants @ 2%	**53,370.2**	**53,370.2**
					Transportation @ 7.5%	**2,00,138.1**	**2,00,138.1**
					Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%	**1,09,894.1**	**1,09,894.1**
					Erection Other @ 10%.	**46,526.2**	**46,526.2**
					Erection PSC Pole @ 20%	-	-

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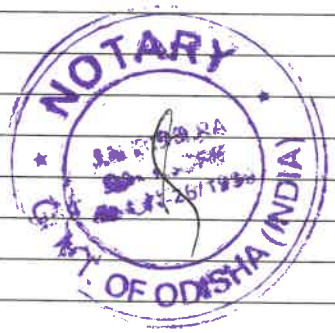
					Sub Total	31,58,492.2	31,58,492.2
Sl no	Civil & Services	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Providing and fixing including loading, unloading & transportation of FRP Fencing (5Mtr x 5Mtr) including Fluorescent Sticker (two Mtr. in each post),Supply of Latch Lock, Supply of Hings,Supply of SS Lock with Key excluding civil works as per TPNODL specification.	M2	3310	25	25	82,750.0	82,750.0
2	Erection of 13 Mtr long WPB Pole including loading & unloading, transportation, providing & laying of 1:1.5:3, M20 Grade C.C-500x500X2200 mm& cooping of 500x500x450 mm, includes 5 days curing and zebra painting (In Black & Yellow Strips/Zebra)	No	7980	2	2	15,960.0	15,960.0
3	Construction of 1-Way/3-way/4-way/5way RMU Plinth with Brick, Mortar, 12 mm cement plaster. Scope includes excavation of earth for foundation and supply of raw material i.e. sand, cement, bricks and removal of extra malba if any	LS	24150	1	1	24,150.0	24,150.0
4	Installation of Earthing pipe with 40mm dia 3 Mtr long Class-B GI Pipe & include supply of all required material like Salt, Charcoal, Nuts-Bolt ,PVC Pipe PCC & brick work for earthing chamber (Size: 2'x2') and RCC or other suitable slab cover	No	2415	4	4	9,660.0	9,660.0
					Total Civil Part	1,32,520.0	1,32,520.0
					Sub-Total	32,91,012.2	32,91,012.2
					Other Over Head (Including Supervision charges)@ 6%	1,97,460.7	1,97,460.7
					Sub-total	34,88,473.0	34,88,473.0
					GST @ 18% of Sub-Total	6,27,925.1	6,27,925.1
					CESS @ 1% of Sub-Total	34,884.7	34,884.7
					Sub-Grand Total	41,51,282.8	41,51,282.8
					Inspection Fee	-	-
					Drawing Approval	-	-
					Grand Total	41,51,282.8	41,51,282.8
					Grand Total in Cr.	0.415	0.415

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8.17 Annexure 17: Cost Estimate for Installation of FPI for OH Lines

S.No	Description	UOM	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
A	Supply & Installation FPI for OH Lines	set of 3	874	529	4.87	2.95
Total					**4.87**	**2.95**

Annexure-17 Installation FPI for OH Line							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	COMMUNICABLE FPI 11KV O/H	Set	35033.9	874	529	3,06,19,637.3	1,85,32,938.4
					Total Cost of materials	3,06,19,637.3	1,85,32,938.4
					Stock, Storage & Insurance i.e 3%	9,18,589.1	5,55,988.2
					Sub Total	3,15,38,226.5	1,90,88,926.5
					Contingency @ 3%	9,46,146.8	5,72,667.8
					Tools & Plants @ 2%	6,30,764.5	3,81,778.5
					Transportation @ 7.5%	23,65,367.0	14,31,669.5
					Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%	-	-
					Erection Other @ 10%.	31,53,822.6	19,08,892.7
					Erection PSC Pole @ 20%	-	-
					Sub Total	3,86,34,327.4	2,33,83,935.0
					Other Over Head (Including Supervision charges)@ 6%	23,18,059.6	14,03,036.1
					Sub-total	4,09,52,387.1	2,47,86,971.1
					GST @ 18% of Sub-Total	73,71,429.7	44,61,654.8
					CESS @ 1% of Sub-Total	4,09,523.9	2,47,869.7
					Sub-Grand Total	4,87,33,340.6	2,94,96,495.6
					Inspection Fee	-	-
					Drawing Approval	-	-
					Grand Total	4,87,33,340.6	2,94,96,495.6
					Grand Total in Cr.	4.87	2.95



8.18 Annexure 18: Cost Estimate for Installation of Line AB Switch & Isolator

S.No	Description	UOM	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
A	Installation of Line AB Switch/Isolator for 11kV	Set	127	104	3.42	2.81

S.No	Description	UOM	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
B	Installation of Line AB Switch/Isolator for 33kV	Set	54	48	2.50	2.22
Total			**145**	**122**	**5.92**	**5.03**

A. Cost Estimate for Installation of Line AB Switch/Isolator for 11kV

Annexure-18A Installation of Line AB Switch/Isolator for 11kV Lines							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	WPB 160x152 (30.44KG/Mtr.),11 mtr	No	34321.52	254	208	87,17,666.1	71,38,876.2
2	Top Channel 100X50X5mm, 9.56 KG/Mtr., each channel length 4.5mtr., 2 no's channel required	KG	76.0	21854.2	18396.3	16,60,916.2	13,98,120.3
3	Fish Plate 50x6 mm., 2.36 kg/Mtr., each 0.280 mtr. length, 24 no's required = (24x2.36x0.280)	KG	97.5	503.5	412.3	49,094.1	40,203.1
4	AB switch Mounting Channel 75X40X4.8mm, 7.14KG/Mtr, each channel length 3 Mtr., 2 no's channel required =(7.14x3x2) /AB Switch	KG	76.0	5440.7	4455.4	4,13,491.7	3,38,607.4
5	AB Switch Side Support Channel 100X50X6mm,9.56 KG/Mtr., each channel length 0.35 mtr., 2 no's channel required =(9.56x2x0.35) /AB Switch	KG	76.0	849.9	696.0	64,591.2	52,893.6
6	Channel Support for down Pipe 75X40X 4.8mm., 7.14KG/Mtr., each channel length 0.8 Mtr., 1 no's channel required =(7.14x0.8x1) /AB Switch	KG	76.0	725.4	594.0	55,132.2	45,147.6
7	Pole Belting Channel 75X40X 4.8mm., 7.14KG/Mtr., each channel length 3.0 Mtr., 4 no's channel required =(7.14x3x4)	KG	76.00	10881.4	8910.7	8,26,983.4	6,77,214.7
8	50x50x6mm.GI Bracing Angle, 4.5Kg./mtr., each angle length 3.512 mtr., 4 nos angle required = (4.5x3.512x4)	KG	76.0	8028.4	6574.5	6,10,160.8	4,99,659.3
9	Danger Plate, 2 no's	No.	104.0	254	208	26,416.0	21,632.0
10	Back Clamp for danger Plate 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr length 2 no's = (2x0.59x0.510)	KG	97.5	76.4	62.6	7,451.8	6,102.3

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11	Gi Pipe Earthing 40mm. 3 Mtr. Long	No.	1365.0	381	312	5,20,065.0	4,25,880.0
12	50x6mm GI Flat for earthing, 2.36kg/mtr., (12.5 Mtr. For L.A, 3 Mtr for AB Switch Body, 2.5 mtr. For mesh formation and 5 mtr. For raising)= 23x2.36	KG	97.5	6893.6	5645.1	6,72,122.1	5,50,399.2
13	GI barbed wire anticlimbing device 3 Kg. Per support, 4 no's qty. required =(4x3kg)	Kg	104.0	1524	1248	1,58,496.0	1,29,792.0
14	Back Clamp for anticlimbing device 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr length 16 no's = (16x0.59x0.510)	KG	97.5	611.4	500.7	59,614.3	48,818.0
15	Lightning Arrester (12kV,10kA) DH Class	No	2299.45	381	312	8,76,090.5	7,17,428.4
16	AB Switch (11KV,400A.3pole,50Hz)	Set	15405.0	127	104	19,56,435.0	16,02,120.0
17	11 KV pin insulator polymer	No.	260.0	762	624	1,98,120.0	1,62,240.0
18	H W fitting(B&S) 70KN, 3Bolt	No.	455.0	762	624	3,46,710.0	2,83,920.0
19	Disc insulator (B&S) 70 KN polymer	No.	1495.0	762	624	11,39,190.0	9,32,880.0
20	PG Clamp for 100 sq.mm AAA conductor	NO.	754.0	1524	1248	11,49,096.0	9,40,992.0
21	100 sq.mm AAA conductor	Mtr.	71.5	3924.3	3213.6	2,80,587.5	2,29,772.4
22	GI Nut , Bolt & Washer of different sizes	Kg	101.4	3302	2704	3,34,822.8	2,74,185.6
23	Black Paint	Ltr	286.0	177.8	145.6	50,850.8	41,641.6
24	Yellow Colour Paint for Background	Ltr	216.0	190.5	156	41,148.0	33,696.0
					Total Cost of materials	2,02,15,251.4	1,65,92,221.6
					Stock, Storage & Insurance i.e 3%	6,06,457.5	4,97,766.6
					Sub Total	2,08,21,708.9	1,70,89,988.2
					Contingency @ 3%	6,24,651.3	5,12,699.6
					Tools & Plants @ 2%	4,16,434.2	3,41,799.8
					Transportation @ 7.5%	15,61,628.2	12,81,749.1
					Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%		
					Erection Other @ 10%.	11,84,251.3	9,73,694.6
					Erection PSC Pole @ 20%		
					Sub Total	2,46,08,673.8	2,01,99,931.3

Sl no	Civil & Services	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Erection of 11 Mtr long WPB Pole including loading & unloading, transportation, providing & laying of 1:1.5:3, M20 Grade, C.C-500x500X1800 mm & cooping of 500x500x450 mm, includes 5 days curing and zebra painting (In Black & Yellow Strips/Zebra)	No	6300	254	208	16,00,200.0	13,10,400.0

2	Installation of Earthing pipe with 40mm dia 3 Mtr long Class-B GI Pipe & include supply of all required material like Salt, Charcoal, Nuts-Bolt ,PVC Pipe PCC & brick work for earthing chamber (Size: 2'x2') and RCC or other suitable slab cover	No	2415	381	312	9,20,115.0	7,53,480.0
					Total Civil Part	**25,20,315.0**	**20,63,880.0**
					Sub-Total	**2,71,28,988.8**	**2,22,63,811.3**
					Other Over Head (Including Supervision charges)@ 6%	**16,27,739.3**	**13,35,828.7**
					Sub-total	**2,87,56,728.1**	**2,35,99,640.0**
					GST @ 18% of Sub-Total	**51,76,211.1**	**42,47,935.2**
					CESS @ 1% of Sub-Total	**2,87,567.3**	**2,35,996.4**
					Sub-Grand Total	**3,42,20,506.5**	**2,80,83,571.6**
					Inspection Fee	-	-
					Drawing Approval	-	-
					Grand Total	**3,42,20,506.5**	**2,80,83,571.6**
					Grand Total in Cr.	**3.42**	**2.81**

B. Cost Estimate for Installation of Line AB Switch/Isolator for 33kV

Annexure-18B Installation of Line Isolator for 33kV Lines							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	WPB(GI) Pole 160x152 (13Mtr. Long, 30.44KG/Mtr.)	No	40427.2	108	96	43,66,137.6	38,81,011.2
2	Top Channel 100X50X6mm, 9.56 KG/Mtr., each channel length 4.3 mtr., 4 no's channel required =(8x9.56x4.3)	KG	76.0	8879.3	7892.7	6,74,828.9	5,99,847.9
3	Fish Plate 50x6 mm., 2.36 kg/Mtr., each 0.280 mtr. length, 24 no's required = (24x2.36x0.280)	KG	97.5	214.1	190.3	20,874.7	18,555.3
4	Isolator Support Channel 75X40X 4.8mm., 7.14KG/Mtr., each channel length 4.3 Mtr., 2 no's channels required =(2x7.14x4.3)/ Isolator	KG	76.0	3315.8	2947.4	2,52,002.0	2,24,001.8
5	Double Pole Belting Channel 75X40X 4.8mm., 7.14KG/Mtr., each channel length 4.3 Mtr., 8 no's channel required =(8x7.14x4.3)	KG	76.0	6631.6	5894.8	5,04,004.0	4,48,003.6
6	50x50x6mm.GI Bracing Angle, 4.5Kg./mtr., each angle length 4.927 mtr., 4 nos angle required = (8*4.5*4.927)	KG	76.0	4789.0	4256.9	3,63,967.3	3,23,526.5

7	Isolator Operating Down Pipe Support Channel 75X40X 4.8mm., 7.14KG/Mtr., each channel length 0.8 Mtr., 1 no channel required =(1x7.14x0.8)/ Isolator	KG	76.00	308.4	274.2	23,442.0	20,837.4
8	Down Pipe Diagonal Support Angle, 4.5Kg./mtr., each angle length 0.388mtr., 1 no angle required = (1*4.5*0.388)/ Isolator	KG	76.0	94.3	83.8	7,165.6	6,369.4
9	Down Pipe Base Support Angle, 4.5Kg./mtr., each angle length 0.34mtr., 1 no angle required = (1*4.5*0.340)/ Isolator	KG	76.0	82.62	73.44	6,279.1	5,581.4
10	Isolator Support Side Channel 100X50X6mm, 9.56 KG/Mtr., each channel length 0.5 mtr., 2 no's channel required =(2x9.56x0.5)/ Isolator	KG	76.0	516.2	458.9	39,234.2	34,874.9
11	Danger Plate, 2 no's.	No.	104.0	108	96	11,232.0	9,984.0
12	Back Clamp for danger Plate 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr length 2 no's = (2x0.59x0.510)	KG	97.5	32.5	28.9	3,168.5	2,816.4
13	Gi Pipe Earthing 40mm. 3 Mtr. Long	No.	1365.0	162	144	2,21,130.0	1,96,560.0
14	50x6mm GI Flat for earthing, 2.36kg/mtr., (15 Mtr. For L.A, 4 Mtr for Isolator Body, 2.5 mtr. For mesh formation and 5 mtr. For raising)	KG	97.5	3377.2	3001.9	3,29,273.1	2,92,687.2
15	GI barbed wire anticlimbing device 3 Kg. Per support, 4 no's qty. required =(4x3kg)	Kg	104.00	648	576	67,392.0	59,904.0
16	Back Clamp for anticlimbing device 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr length 16 no's = (16x0.59x0.510)	KG	97.5	259.9776	231.0912	25,347.8	22,531.4
17	Lightning Arrester(30KV,10KA) (Station Class,class-2)	EA	13455.0	162	144	21,79,710.0	19,37,520.0
18	33 KV 1250 AMP Double break (Turn & twist center rotating) isolator without earth switch with PI(Polymer)	Set	66000.0	54	48	35,64,000.0	31,68,000.0
19	33KV pin insulator polymer	No.	624.0	324	288	2,02,176.0	1,79,712.0
20	H W fitting(B&S)90KN,4 Bolt	No.	650.0	324	288	2,10,600.0	1,87,200.0
21	Disc insulator (B&S) 90 KN polymer	No.	1495.0	324	288	4,84,380.0	4,30,560.0
22	PG Clamp for 232 sq.mm AAA conductor	NO.	1495.0	648	576	9,68,760.0	8,61,120.0
23	232 sq.mm AAA conductor	Mtr.	203.5	1668.6	1483.2	3,39,476.7	3,01,757.0

24	GI Nut , Bolt & Washer of different sizes	Kg.	101.4	1350	1200	1,36,890.0	1,21,680.0
25	Black Paint	Ltr	286.0	108	96	30,888.0	27,456.0
26	Yellow Colour Paint for Background	Ltr	216.0	108	96	23,328.0	20,736.0
					Total Cost of materials	**1,50,55,687.6**	**1,33,82,833.5**
					Stock, Storage & Insurance i.e 3%	**4,51,670.6**	**4,01,485.0**
					Sub Total	**1,55,07,358.3**	**1,37,84,318.5**
					Contingency @ 3%	**4,65,220.7**	**4,13,529.6**
					Tools & Plants @ 2%	**3,10,147.2**	**2,75,686.4**
					Transportation @ 7.5%	**11,63,051.9**	**10,33,823.9**
					Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%	-	-
					Erection Other @ 10%.	**11,01,023.7**	**9,78,687.7**
					Erection PSC Pole @ 20%	-	-
					Sub Total	**1,85,46,801.7**	**1,64,86,046.0**

Sl no	Civil & Services	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Erection of 13 Mtr long WPB Pole including loading & unloading, transportation, providing & laying of 1:1.5:3, M20 Grade C.C-500x500X2200 mm& cooping of 500x500x450 mm, includes 5 days curing and zebra painting (In Black & Yellow Strips/Zebra)	No	7982	108	96	8,62,056.0	7,66,272.0
2	Installation of Earthing pipe with 40mm dia 3 Mtr long Class-B GI Pipe & include supply of all required material like Salt, Charcoal, Nuts-Bolt ,PVC Pipe PCC & brick work for earthing chamber (Size: 2'x2') and RCC or other suitable slab cover	No	2415	162	144	3,91,230.0	3,47,760.0
					Total Civil Part	**12,53,286.0**	**11,14,032.0**
					Sub-Total	**1,98,00,087.7**	**1,76,00,078.0**
					Other Over Head (Including Supervision charges)@ 6%	**11,88,005.3**	**10,56,004.7**
					Sub-total	**2,09,88,093.0**	**1,86,56,082.6**
					GST @ 18% of Sub-Total	**37,77,856.7**	**33,58,094.9**
					CESS @ 1% of Sub-Total	**2,09,880.9**	**1,86,560.8**
					Sub-Grand Total	**2,49,75,830.6**	**2,22,00,738.4**
					Inspection Fee	-	-
					Drawing Approval	-	-
					Grand Total	**2,49,75,830.6**	**2,22,00,738.4**
					Grand Total in Cr.	**2.50**	**2.22**

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8.19 Annexure 19: Cost Estimate for Installation of Station Transformer in PSS

S. No	Description	UOM	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
A	Installation of Station Transformers in PSS)	Nos.	5	0	0.60	0.00
Total			**5**	**0**	**0.60**	**0.00**

Annexure-19 Installation of Station Transformer 33/0.4KV at PSS					
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	FY 24-25 Amount (in Cr.)
1	100 KVA,33/0.4 KV(Cu) Transformer, IS Energy level-II	No	477000	5	23,85,000.0
2	WPB 160x152 (30.44KG/Mtr.),11 mtr	No	34321.5	10	3,43,215.2
3	Top Channel 100X50X5mm, 9.56 KG/Mtr., each channel length 4.5mtr., 2 no's channel required	Kg	97.5	500	48,750.0
4	AB Switch Mounting Channel 75X40X4.8 mm GI Channel 4500mm long (7.14Kg./Mtr),2 no's Channel required	Kg	97.5	500	48,750.0
5	HG Fuse Channel 75X40X4.8 mm GI Channel 4.5mtr long (7.14Kg./Mtr), 2 no's channel required	Kg	97.5	500	48,750.0
6	Cantilever Support Channel Supporting AB Switch 75X40X4.8mm GI 1.5mtr long) (7.14Kg./Mtr),2 no's channel required	Kg	97.5	60	5,850.0
7	Cantilever Support Channel Supporting HG Fuse 75X40X4.8mm GI 1.5mtr long) (7.14Kg./Mtr),2 no's channel required	Kg	97.5	225	21,937.5
8	Angle for cantilever arrangement for AB switch 75X40X4.8mm,7.14Kg/mtr ,3mtr long, 2 no's angle required	Kg	97.5	200	19,500.0
9	Angle for cantilever arrangement for HG fuse 75X40X4.8mm,7.14Kg/mtr, 3mtr long, 2 no's required	Kg	97.5	100	9,750.0
10	LTDB Mounting Support Angle 75X40X4.8mm GI (3 mtr long) (7.14Kg./Mtr)	Kg	97.5	60	5,850.0
11	33kV H/W fitting(B&S) 120KN,4 Bolt	Set	791.5	30	23,746.0
12	33kV Disc insulator (B&S) 120KN polymer	No	1872	30	56,160.0
13	33kV AB Switch,200A,3Pole,50Hz,Horizontal Type	Set	19630	5	98,150.0
14	HG Fuse(33KV,200A,3 Pole,50Hz) with PI	Set	16861	5	84,305.0
15	Lightning Arrester(30KV,10KA) (Station Class,class-2)	EA	13455.0	15	2,01,825.0
16	LTDB for 100KVA, 33/0.433kV Station Transformer	No	31744.7	5	1,58,723.5
17	H.T. Stay clamp	Pair	162.5	10	1,625.0
18	H.T. Stay set (Complete)	Set	1365	10	13,650.0
19	H.T. Stay Insulator	No	65	10	650.0
20	7/10 SWG Stay Wire	Kg	97.5	100	9,750.0
21	Earthing of Support (Coil Type)	EA	215.8	10	2,158.0
22	No-8 GI wire (Dia 4.6mm) 0.131 KG/ Mtr.- 2 Mtr. For connecting pole with Coil earthing	Kg	97.5	2.62	255.5

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23	25x6 mm GI flat	Kg	97.5	225	21,937.5
24	GI Nut , Bolt & Washer of different sizes	Kg	101.4	125	12,675.0
25	40mm nominal bore GI pipe (medium gauge) earthing device with 3 mtr .Long	No	1365	25	34,125.0
26	Cable 1.1kV Al 1CX150 Sq.mm Un-armoured	Mtr	273	50	13,650.0
27	Gland for 1.1kV Al 1CX150 Sq.mm	EA	134.51	40	5,380.3
28	AAA conductor,100 mm2	Km	71500	0.5	35,750.0
29	PG Clamp for 100 mm2 AAAC conductor	No	754	60	45,240.0
30	GI Plate base(500X500X10mm)	No	1950	0	-
31	Danger Plate	No	104	10	1,040.0
32	Back Clamp for danger Plate 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr 1 no	Kg	97.5	3.009	293.4
33	GI barbed wire anticlimbing device	Kg	104	30	3,120.0
34	Back Clamp for Barbed wire anticlimbing device 25X3mm. flat, 0.59Kg/Mtr. Flat of 0.510 mtr length 4 no's	Kg	97.5	12.036	1,173.5
35	Black Paint	Ltr	286	5	1,430.0
36	Yellow Colour Paint for Background	Ltr	230.6	10	2,306.5
				Total Cost of materials	**37,66,471.8**
				Stock, Storage & Insurance i.e 3%	**1,12,994.2**
				Sub Total	**38,79,465.9**
				Contingency @ 3%	**1,16,384.0**
				Tools & Plants @ 2%	**77,589.3**
				Transportation @ 7.5%	**2,90,959.9**
				Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%	**1,22,827.5**
				Erection Other @ 10%.	**1,00,396.2**
				Erection PSC Pole @ 20%	
				Sub Total	**45,87,622.8**

Sl no	Civil & Services	Unit	Unit Rate in Rs.	Quantity	Amount (INR)
1	Fixing of complete 11KV line stay set includes Turn Buckle assembly, Stay Rod & Stay plate, Stay Insulator, stay wire, stay clamps with Nuts & bolts BA will do the excavation, supply of 0.5Cum cement concrete foundation 1:2:4 size (500mmx500mmx800mm)	No.	2362.5	10	23,625.0
2	Erection of 11 Mtr long WPB Pole including loading & unloading, transportation, providing & laying of 1:1.5:3, M20 Grade, C.C-500x500X1800 mm & cooping of 500x500x450 mm, includes 5 days curing and zebra painting (In Black & Yellow Strips/Zebra)	No	6300	10	63,000.0
3	Installation of Earthing pipe with 40mm dia 3 Mtr long Class-B GI Pipe & include supply of all required material like Salt, Charcoal, Nuts-Bolt ,PVC Pipe PCC & brick work for earthing chamber (Size: 2'x2') and RCC or other suitable slab cover	No	2415	25	60,375.0
				Total Civil Part	1,47,000.0
				Sub-Total	47,34,622.8
				Other Over Head (Including Supervision charges)@ 6%	2,84,077.4
				Sub-total	50,18,700.2
				GST @ 18% of Sub-Total	9,03,366.0
				CESS @ 1% of Sub-Total	50,187.0

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Sub-Grand Total	59,72,253.3
Inspection Fee	-
Drawing Approval	-
Grand Total	59,72,253.3
Grand Total in Cr.	0.60

8.20 Annexure 20: Cost Estimate for Augmentation of Power Transformer

S. No	Description	UOM	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
A	Augmentation of PTR 8 MVA to 12.5 MVA	Nos.	2	0	4.76	0.00
B	Augmentation of PTR 5 MVA to 8 MVA	Nos.	4	4	5.14	5.60
Total			**6**	**4**	**9.90**	**5.60**

A. Cost Estimate for Augmentation of PTR 8 MVA to 12.5 MVA

Annexure-20A Augmentation of PTR 8 MVA to 12.5 MVA					
S No.	Item Description	Unit	Quantity	Unit Rate in Rs.	Amount (INR)
1	12.5MVA 33/11KV Power Transformer with OLTC	No	2	15260700.00	3,05,21,400.0
2	AAA conductor,232 mm2	Km	0.5	213294.35	1,06,647.2
3	PG Clamp for 232 mm2 AAAC conductor	No	36	1567.34	56,424.2
4	12 bolted (M-12) "T" clamp for 232 mm² conductor	No	24	1308.39	31,401.3
5	40mm nominal bore GI pipe (medium gauge) earthing device with 3 mtr .Long	No	30	1365.0	40,950.0
6	33KV Post Insulator	No	6	2153.39	12,920.3
7	Lightning Arrester(30KV,10KA) (Station Class,class-2)	No	12	11176.33	1,34,116.0
8	GI Nut , Bolt & Washer of different sizes	Kg	80	97.5	7,800.0
9	50x6 mm GI flat	Kg	300	97.5	29,250.0
				Total Cost of materials	**3,09,40,909.0**
				Stock, Storage & Insurance i.e 3%	**9,28,227.3**
				Sub Total	**3,18,69,136.2**
				Contingency @ 3%	**9,56,074.1**
				Tools & Plants @ 2%	**6,37,382.7**
				Transportation @ 7.5%	**23,90,185.2**
				Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%	**15,71,852.1**
				Erection Other @ 10%.	**43,209.4**
				Erection PSC Pole @ 20%	-
				Sub Total	**3,74,67,839.8**
Sl no	Civil & Services	Unit	Quantity	Unit Rate in Rs.	Amount (INR)

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1	Installation of Earthing pipe with 40mm dia 3 Mtr long Class-B GI Pipe & include supply of all required material like Salt, Charcoal, Nuts-Bolt ,PVC Pipe PCC & brick work for earthing chamber (Size: 2'x2') and RCC or other suitable slab cover	No	30	2415	72,450.0
2	Dismantling of 5/8/12.5MVA 33/11kV PTR, Loading, Transportation within 30 Kms	No	2	79695	1,59,390.0
3	Dismantling of Steel Structure, Nuts & Bolt including loading, transportation, unloading & staking of dismantled material at a proper place in TPNODL store	Kg	200	78.75	15,750.0
				Total Civil Part	2,47,590.0
				Sub-Total	3,77,15,429.8
				Other Over Head (Including Supervision charges)@ 6%	22,62,925.8
				Sub-total	3,99,78,355.6
				GST @ 18% of Sub-Total	71,96,104.0
				CESS @ 1% of Sub-Total	3,99,783.6
				Sub-Grand Total	4,75,74,243.1
				Inspection Fee	-
				Drawing Approval	-
				Grand Total	4,75,74,243.1
				Grand Total in Cr.	4.76

B. Cost Estimate for Augmentation of PTR 5 MVA to 8 MVA

Annexure-20A Augmentation of PTR 5 MVA to 8 MVA							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	8MVA 33/11KV Power Transformer with OLTC	No	8126483.1	4	4	32505932.2	3,25,05,932.2
2	AAA conductor,232 mm2	Km	213294.4	1	0.5	213294.4	1,06,647.2
3	PG Clamp for 232 mm2 AAAC conductor	No	1567.3	72	72	112848.4	1,12,848.4
4	12 bolted (M-12) "T" clamp for 232 mm² conductor	No	1308.4	48	48	62802.6	62,802.6
5	40mm nominal bore GI pipe (medium gauge) earthing device with 3 mtr .Long	No	1365.0	20	20	27300.0	27,300.0
6	33KV Post Insulator	No	2153.4	12	12	25840.6	25,840.6
7	33KV O/D VCB-1600A, with indoor CR panel without PT, with outdoor CT (600-300-150/1-1A, 15VA, STC 25KA/3sec, class: 0.5, 5P10) for Transformer protection	No	767000.0	0	4	0.0	30,68,000.0

8	Lightning Arrester(30KV,10KA) (Station Class,class-2)	No.	13455.0	24	21	322920.0	2,82,555.0
9	GI Nut , Bolt & Washer of different sizes	Kg	97.5	160	60	15600.0	5,850.0
10	50x6 mm GI flat	Kg	97.5	200	100	19500.0	9,750.0
					Total Cost of materials	**3,33,06,038.2**	**3,62,07,526.0**
					Stock, Storage & Insurance i.e 3%	**9,99,181.1**	**10,86,225.8**
					Sub Total	**3,43,05,219.3**	**3,72,93,751.8**
					Contingency @ 3%	**10,29,156.6**	**11,18,812.6**
					Tools & Plants @ 2%	**6,86,104.4**	**7,45,875.0**
					Transportation @ 7.5%	**25,72,891.5**	**27,97,031.4**
					Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%	**16,74,055.5**	**16,74,055.5**
					Erection Other @ 10%.	**82,410.9**	**3,81,264.2**
					Erection PSC Pole @ 20%	-	-
					Sub Total	**4,03,49,838.2**	**4,40,10,790.4**

Sl no	Civil & Services	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Installation of Earthing pipe with 40mm dia 3 Mtr long Class-B GI Pipe & include supply of all required material like Salt, Charcoal, Nuts-Bolt ,PVC Pipe PCC & brick work for earthing chamber (Size: 2'x2') and RCC or other suitable slab cover	No	2415	20	20	48300	48,300.0
2	Dismantling of 5/8/12.6MVA 33/11kV PTR, Loading, Transportation within 30 Kms	No	79695	4	4	318780	3,18,780.0
3	Dismantling of Steel Structure, Nuts & Bolt including loading, transportation, unloading & staking of dismantled material at a proper place in TPNODL store	Kg	78.75	200	160	15750	12,600.0
					Total Civil Part	3,82,830.0	3,79,680.0
					Sub-Total	4,07,32,668.2	4,43,90,470.4
					Other Over Head (Including Supervision charges)@ 6%	24,43,960.1	26,63,428.2
					Sub-total	4,31,76,628.3	4,70,53,898.7
					GST @ 18% of Sub-Total	77,71,793.1	84,69,701.8
					CESS @ 1% of Sub-Total	4,31,766.3	4,70,539.0
					Sub-Grand Total	5,13,80,187.6	5,59,94,139.4

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Inspection Fee	-	-
Drawing Approval	-	-
Grand Total	5,13,80,187.6	5,59,94,139.4
Grand Total in Cr.	5.14	5.60

8.21 Annexure 21: Cost Estimate for Augmentation of Distribution Transformer

S.No	Description	UOM	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
A	Augmentation of 25/63 KVA to 100 KVA DTR	Nos.	122	130	8.31	8.88
B	Augmentation of 100 KVA to 250 KVA DTR	Nos.	70	75	9.92	10.63
C	Augmentation of 200/250 KVA to 500 KVA DTR	Nos.	14	15	5.09	5.51
Total			**206**	**220**	**23.32**	**25.02**

A. Cost Estimation for Augmentation of DTR 25/63 KVA to 100 KVA

Annexure-21A Augmentation of DTR 25/63 KVA to 100 KVA							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	100 KVA,11/0.4KV(Al) Transformer	No	198000.0	122	130	2,41,56,000.0	2,57,40,000.0
2	LT Distribution Box for 100 KVA S/S.	EA	31744.7	122	130	38,72,853.4	41,26,811.0
3	11kV AB Switch,200A.3pole,50Hz,Horizontal Type	Set	9555.0	122	130	11,65,710.0	12,42,150.0
4	Lightning Arrester (12kV,10kA) DH Class	No	2299.5	366	390	8,41,598.7	8,96,785.5
5	HG Fuse(11KV,200A,3 Pole,50Hz) with PI	Set	7956.0	122	130	9,70,632.0	10,34,280.0
6	Conductor 62 mm sq. ACSR Rabbit	Mtr	34.4	2928	3120	1,00,654.7	1,07,255.0
7	Cable 1.1kV Al 1CX150 Sq.mm Un-armoured	Mtr	273.0	3904	4160	10,65,792.0	11,35,680.0
8	Gland for 1.1kV Al 1CX150 Sq.mm	EA	134.5	488	520	65,639.9	69,944.2
9	CABLE 1.1kV Al 4CX150 SQMM ARM	Mtr	720.1	1830	1950	13,17,774.1	14,04,185.6

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10	GLAND FOR ARM CABLE 4X150 SQ.MM	EA	134.5	488	520	65,639.9	69,944.2
11	Top Channel 100X50X5mm (2800 mm long) (9.56Kg./Mtr) (Each 26.77 Kg)	Kg	97.5	6490.4	6916.0	6,32,814.0	6,74,310.0
12	Transformer Base GI Channel 100X50X5mm (2800 mm long) (9.56Kg./Mtr) (Each 26.77 Kg)	Kg	97.5	6490.4	6916.0	6,32,814.0	6,74,310.0
13	AB Switch Mounting Channel 75X40X4.8 mm GI Channel (2800 mm long) (7.14Kg./Mtr)	Kg	97.5	4645.8	4950.4	4,52,961.6	4,82,664.0
14	HG Fuse Side Support Channel 75X40X4.8 mm GI Channel(330 mm long)(7.14Kg./Mtr)	Kg	97.5	4645.8	4950.4	4,52,961.6	4,82,664.0
15	Transformer Belting angle (50X50X6) mm 2800 mm long 2 nos. (4.5 Kg./Mtr.)with side angle	Kg	97.5	3074.4	3276.0	2,99,754.0	3,19,410.0
16	AB Switch Operating Pipe Channel Support 75X40X4.8 mm GI Channel (625 mm long)(7.14Kg./Mtr)	Kg	97.5	544.4	580.1	53,081.4	56,562.2
17	AB Switch Side Support Channel 75X40X4.8 mm GI Channel(330 mm long)(7.14Kg./Mtr)	Kg	97.5	804.0	856.7	78,388.1	83,528.3
18	HG Fuse Side Support Channel 75X40X4.8 mm GI Channel(330 mm long)(7.14Kg./Mtr)	Kg	97.5	804.0	856.7	78,388.1	83,528.3
19	Cantilever Support Channel 75X40X4.8 mm GI Channel(810 m long)(7.14Kg./Mtr)	Kg	97.5	705.6	751.8	68,793.5	73,304.6
20	AB Switch Operating Pipe Diagonal Angle Support 50X50X6mm GI(388 mm long)(4.5Kg./Mtr)	Kg	97.5	213.0	227.0	20,768.7	22,130.6
21	AB Switch Operating Pipe Diagonal Base Angle Support 50X50X6mm (340 mm long) GI(4.5Kg./Mtr)	Kg	97.5	186.7	198.9	18,199.4	19,392.8
22	Cantilever Support Angle 50X50X6mm GI (1282 mm long) (4.5Kg./Mtr)	Kg	97.5	703.8	750.0	68,622.3	73,122.1
23	LTDB Mounting Support Angle 75X40X4.8mm GI (3 mtr long) (7.14Kg./Mtr)	Kg	97.5	549	585	53,527.5	57,037.5
24	H/W fitting (B&S) 70KN,3 Bolt	Set	455.0	366	390	1,66,530.0	1,77,450.0
25	11kV Disc Insulator (B&S) 70KN polymer	No	1495.0	366	390	5,47,170.0	5,83,050.0
26	50x6 mm GI flat	Kg	97.5	732	780	71,370.0	76,050.0

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27	25x6 mm GI flat	Kg	97.5	732	780	71,370.0	76,050.0
28	GI Nut , Bolt & Washer of different sizes	Kg	101.4	1525	1625	1,54,635.0	1,64,775.0
29	Lug AL 70 Sqmm for 7/8 SWG Wire/Earthing	EA	8.9	2928	3120	26,092.3	27,803.2
30	Lug AL Crimping 150 Sqmm XLPE One Hole	EA	18.6	976	1040	18,121.3	19,309.6
31	40mm nominal bore GI pipe (medium gauge) earthing device with 3 mtr .Long	No	1365.0	610	650	8,32,650.0	8,87,250.0
32	PIPE HDPE SIZE 25 MM	Mtr	35.2	2806	2990	98,843.6	1,05,325.2
33	Energy Meter Installation (Smart Meter) with BOX	LS	16531.0	122	130	20,16,782.0	21,49,030.0
34	Connector Mini Wedge 25 Sqmm to Dog	EA	76.4	366	390	27,964.8	29,798.5
					Total Cost of materials	**4,05,64,897.9**	**4,32,24,891.2**
					Stock, Storage & Insurance i.e 3%	**12,16,946.9**	**12,96,746.7**
					Sub Total	**4,17,81,844.8**	**4,45,21,637.9**
					Contingency @ 3%	**12,53,455.3**	**13,35,649.1**
					Tools & Plants @ 2%	**8,35,636.9**	**8,90,432.8**
					Transportation @ 7.5%	**31,33,638.4**	**33,39,122.8**
					Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%	**12,44,034.0**	**13,25,610.0**
					Erection Other @ 10%.	**16,79,935.6**	**17,90,095.3**
					Erection PSC Pole @ 20%	-	-
					Sub Total	**4,99,28,545.0**	**5,32,02,547.9**

Sl no	Civil & Services	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Installation of Earthing pipe with 40mm dia 3 Mtr long Class-B GI Pipe & include supply of all required material like Salt, Charcoal, Nuts-Bolt ,PVC Pipe PCC & brick work for earthing chamber (Size: 2'x2') and RCC or other suitable slab cover	No	2415	610	650	14,73,150.0	15,69,750.0
2	Dismantling of existing 11/0.4kV,3 Phase Distribution Transformer 63KVA including removal of HT/LT leads, earth connections & unloading by crane. Scope also includes loading, transportation, unloading & staking at a proper place in safe position/site store	No	1890	122	130	2,30,580.0	2,45,700.0

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3	Providing and fixing including loading, unloading & transportation of FRP Fencing including Fluorescent Sticker (two Mtr. in each post),Supply of Latch Lock, Supply of Hings,Supply of SS Lock with Key excluding civil works as per TPNODL specification.	M2	3310	3355	3627	1,11,05,050.0	1,20,05,370.0
3.1	Civil work for FRP	LS	496.5	3355	3627	16,65,757.5	18,00,805.5
4	Supply, Installation of Outdoor Joint Kit for 1.1 kV XLPE AL Cable 4CX150 sqmm	No	3994	244	260	9,74,536.0	10,38,440.0
5	Dismantling of Steel Structure, Nuts & Bolt including loading, transportation, unloading & staking of dismantled material at a proper place in TPNODL store	Kg	78.75	6100	6500	4,80,375.0	5,11,875.0
					Total Civil Part	1,59,29,448.5	1,71,71,940.5
					Sub-Total	6,58,57,993.5	7,03,74,488.4
					Other Over Head (Including Supervision charges)@ 6%	39,51,479.6	42,22,469.3
					Sub-total	6,98,09,473.1	7,45,96,957.7
					GST @ 18% of Sub-Total	1,25,65,705.2	1,34,27,452.4
					CESS @ 1% of Sub-Total	6,98,094.7	7,45,969.6
					Sub-Grand Total	8,30,73,273.0	8,87,70,379.7
					Inspection Fee	-	-
					Drawing Approval	-	-
					Grand Total	8,30,73,273.0	8,87,70,379.7
					Grand Total in Cr.	8.31	8.88

B. Cost Estimation for Augmentation of DTR 100 KVA to 250 KVA

Annexure-21B Augmentation of DTR 100 KVA to 250 KVA							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	250 KVA,11/0.4KV(Cu) Transformer	No	6,04,965.7	70	75	4,23,47,600.4	4,53,72,429.0
2	ACB LT 400 A	EA	41,850.6	70	75	29,29,539.5	31,38,792.3
3	11kV AB Switch,200A.3pole,50Hz,Horizontal Type	Set	9,555.0	70	75	6,68,850.0	7,16,625.0
4	Lightning Arrester (12kV,10kA) DH Class	No	2,299.5	210	225	4,82,884.5	5,17,376.3
5	HG Fuse(11KV,200A,3 Pole,50Hz) with PI	Set	7,956.0	70	75	5,56,920.0	5,96,700.0

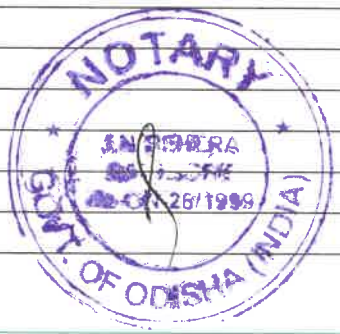
6	Conductor 62 mm sq. ACSR Rabbit	Mtr	34.4	1680	1800	57,752.7	61,877.9
7	Cable 1.1kV Al 1CX300 Sq.mm Un-armoured	Mtr	496.6	2240	2400	11,12,384.0	11,91,840.0
8	Gland for 1.1kV Al 1CX300 Sq.mm	EA	880.6	280	300	2,46,580.6	2,64,193.5
9	CABLE 1.1KV AL 4CX300 SQMM ARM	Mtr	1,222.4	2100	2250	25,67,080.6	27,50,443.5
10	GLAND FOR ARM CABLE 4X300 SQ.MM	EA	134.5	280	300	37,662.3	40,352.4
11	Top Channel 100X50X5mm (2800 mm long) (9.56Kg./Mtr) (Each 26.77 Kg)	Kg	97.5	3747.5	4015.2	3,65,383.2	3,91,482.0
12	Transformer Base GI Channel 100X50X5mm (2800 mm long) (9.56Kg./Mtr) (Each 26.77 Kg)	Kg	97.5	0.0	0.0	-	-
13	AB Switch Mounting Channel 75X40X4.8 mm GI Channel (2800 mm long) (7.14Kg./Mtr)	Kg	97.5	2798.9	2998.8	2,72,890.8	2,92,383.0
14	HG Fuse Channel 75X40X4.8 mm GI Channel (2800 mm long) (7.14Kg./Mtr)	Kg	97.5	2798.9	2998.8	2,72,890.8	2,92,383.0
15	Transformer Belting angle (50X50X6) mm 2800 mm long 2 nos. (7.14 Kg./Mtr.)with side angle	Kg	97.5	0	0	-	-
16	AB Switch Operating Pipe Channel Support 75X40X4.8 mm GI Channel (625 mm long)(7.14Kg./Mtr)	Kg	97.5	312.4	334.7	30,456.6	32,632.0
17	AB Switch Side Support Channel 75X40X4.8 mm GI Channel(330 mm long)(7.14Kg./Mtr)	Kg	97.5	461.3	494.3	44,976.8	48,189.4
18	HG Fuse Side Support Channel 75X40X4.8 mm GI Channel(330 mm long)(7.14Kg./Mtr)	Kg	97.5	461.3	494.3	44,976.8	48,189.4
19	Cantilever Support Channel 75X40X4.8 mm GI Channel(810 m long)(7.14Kg./Mtr)	Kg	97.5	404.8	433.8	39,471.7	42,291.1
20	AB Switch Operating Pipe Diagonal Angle Support 50X50X6mm GI(388 mm long)(4.5Kg./Mtr)	Kg	97.5	122.2	131.0	11,916.5	12,767.6
21	AB Switch Operating Pipe Diagonal Base Angle Support 50X50X6mm (340 mm long) GI(4.5Kg./Mtr)	Kg	97.5	107.1	114.8	10,442.3	11,188.1

22	Cantilever Support Angle 50X50X6mm GI (1282 mm long) (4.5Kg./Mtr)	Kg	97.5	403.8	432.7	39,373.4	42,185.8
23	LTDB Mounting Support Angle 75X40X4.8mm GI (3 mtr long) (7.14Kg./Mtr)	Kg	97.5	315	337.5	30,712.5	32,906.3
24	H/W fitting(B&S) 70KN,3 Bolt	Set	455.0	210	225	95,550.0	1,02,375.0
25	11kV Disc insulator (B&S) 70KN polymer	No	1,495.0	210	225	3,13,950.0	3,36,375.0
26	50x6 mm GI flat	Kg	97.5	385	412.5	37,537.5	40,218.8
27	25x6 mm GI flat	Kg	97.5	385	412.5	37,537.5	40,218.8
28	GI Nut , Bolt & Washer of different sizes	Kg	101.4	1750	1875	1,77,450.0	1,90,125.0
29	Lug AL 70 Sqmm for 7/8 SWG Wire/Earthing	EA	8.9	3780	4050	33,684.7	36,090.7
30	Lug AL Crimping 300 Sqmm XLPE One Hole	EA	40.3	560	600	22,556.3	24,167.4
31	40mm nominal bore GI pipe (medium gauge) earthing device with 3 mtr .Long	No	1,365.0	350	375	4,77,750.0	5,11,875.0
32	PIPE HDPE SIZE 25 MM	Mtr	35.2	1400	1500	49,316.1	52,838.7
33	Energy Meter Installation (Smart Meter) with BOX	LS	16,531.0	70	75	11,57,170.0	12,39,825.0
34	Connector Mini Wedge 25 Sqmm to Dog	EA	76.4	210	225	16,045.4	17,191.5
					Total Cost of materials	**5,45,89,293.3**	**5,84,88,528.5**
					Stock, Storage & Insurance i.e 3%	**16,37,678.8**	**17,54,655.9**
					Sub Total	**5,62,26,972.1**	**6,02,43,184.4**
					Contingency @ 3%	**16,86,809.2**	**18,07,295.5**
					Tools & Plants @ 2%	**11,24,539.4**	**12,04,863.7**
					Transportation @ 7.5%	**42,17,022.9**	**45,18,238.8**
					Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%	**21,80,901.4**	**23,36,680.1**
					Erection Other @ 10%.	**12,55,814.8**	**13,45,515.9**
					Erection PSC Pole @ 20%	-	-
					Sub Total	**6,66,92,059.8**	**7,14,55,778.4**

Sl no	Civil & Services	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Installation of Earthing pipe with 40mm dia 3 Mtr long Class-B GI Pipe & include supply of all required material like Salt, Charcoal, Nuts-Bolt ,PVC Pipe PCC & brick work for earthing chamber (Size: 2'x2') and RCC or other suitable slab cover	No	2415	350	375	8,45,250.0	9,05,625.0

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2	Dismantling of existing 11/0.4kV,3 Phase Distribution Transformer 63KVA including removal of HT/LT leads, earth connections & unloading by crane. Scope also includes loading, transportation, unloading & staking at a proper place in safe position/site store	No	1890	70	75	1,32,300.0	1,41,750.0
3	Dismantling of Steel Structure, Nuts & Bolt including loading, transportation, unloading & staking of dismantled material at a proper place in TPNODL store	Kg	78.75	3500	3750	2,75,625.0	2,95,312.5
4	Providing and fixing including loading, unloading & transportation of FRP Fencing including Fluorescent Sticker (two Mtr. in each post),Supply of Latch Lock, Supply of Hings,Supply of SS Lock with Key excluding civil works as per TPNODL specification.	M2	3310	1918	2055	63,48,580.0	68,02,050.0
4.1	Civil work for FRP	LS	496.5	1918	2055	9,52,287.0	10,20,307.5
4	Supply, Installation of Outdoor Joint Kit for 1.1 kV XLPE AL Cable 4CX300 sqmm	No	8511	140	150	11,91,540.0	12,76,650.0
5	Construction of Plinth with Brick, Mortar, 12 mm cement plaster and for 250-1000KVA transformer as per TPNODL drawing. Scope of work includes excavation of earth, supply of Civil material for construction, disposal of extra malba	LS	31878	70	75	22,31,460.0	23,90,850.0
					Total Civil Part	1,19,77,042.0	1,28,32,545.0
					Sub-Total	7,86,69,101.8	8,42,88,323.4
					Other Over Head (Including Supervision charges)@ 6%	47,20,146.1	50,57,299.4
					Sub-total	8,33,89,247.9	8,93,45,622.8
					GST @ 18% of Sub-Total	1,50,10,064.6	1,60,82,212.1
					CESS @ 1% of Sub-Total	8,33,892.5	8,93,456.2
					Sub-Grand Total	9,92,33,205.0	10,63,21,291
					Inspection Fee	-	-
					Drawing Approval	-	-
					Grand Total	9,92,33,205.0	10,63,21,291



Grand Total in Cr.	9.92	10.63

C. Cost Estimation for Augmentation of DTR 200/250 KVA to 500 KVA

Annexure-21C Augmentation of DTR 250 KVA to 500 KVA							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	500 KVA,11/0.4KV(Cu) Transformer	No	12,01,619.0	14	15	1,68,22,666.3	1,80,24,285.3
2	ACB LT 400 A	EA	41,850.6	28	30	11,71,815.8	12,55,516.9
3	11kV AB Switch,200A.3pole,50Hz,Horizontal Type	Set	95,550.0	14	15	13,37,700.0	14,33,250.0
4	Lightning Arrester (12kV,10kA) DH Class	No	22,994.5	42	45	9,65,769.0	10,34,752.5
5	HG Fuse(11KV,200A,3 Pole,50Hz) with PI	Set	79,560.0	14	15	11,13,840.0	11,93,400.0
6	Conductor 62 mm sq. ACSR Rabbit	Mtr	34.4	336	360	11,550.5	12,375.6
7	Cable 1.1kV Al 1CX300 Sq.mm Un-armoured	Mtr	496.6	896	960	4,44,953.6	4,76,736.0
8	Gland for 1.1kV Al 1CX300 Sq.mm	EA	880.6	112	120	98,632.3	1,05,677.4
9	CABLE 1.1KV AL 4CX300 SQMM ARM	Mtr	12,224.2	420	450	51,34,161.3	55,00,887.1
10	GLAND FOR ARM CABLE 4X300 SQ.MM	EA	1,345.1	56	60	75,324.5	80,704.8
11	Top Channel 100X50X5mm (2800 mm long) (9.56Kg./Mtr) (Each 26.77 Kg)	Kg	97.5	749.5	803.0	73,076.6	78,296.4
12	Transformer Base GI Channel 100X50X5mm (2800 mm long) (9.56Kg./Mtr) (Each 26.77 Kg)	Kg	97.5	0.0	0.0	-	-
13	AB Switch Mounting Channel 75X40X4.8 mm GI Channel (2800 mm long) (7.14Kg./Mtr)	Kg	97.5	559.8	599.8	54,578.2	58,476.6
14	HG Fuse Channel 75X40X4.8 mm GI Channel (2800 mm long) (7.14Kg./Mtr)	Kg	97.5	559.8	599.8	54,578.2	58,476.6
15	Transformer Belting angle (50X50X6) mm 2800 mm long 2 nos. (7.14 Kg./Mtr.)with side angle	Kg	97.5	0	0	-	-
16	AB Switch Operating Pipe Channel Support 75X40X4.8 mm GI Channel (625 mm long)(7.14Kg./Mtr)	Kg	97.5	62.5	66.9	6,091.3	6,526.4



17	AB Switch Side Support Channel 75X40X4.8 mm GI Channel(330 mm long)(7.14Kg./Mtr)	Kg	97.5	92.3	98.9	8,995.4	9,637.9
18	HG Fuse Side Support Channel 75X40X4.8 mm GI Channel(330 mm long)(7.14Kg./Mtr)	Kg	97.5	92.3	98.9	8,995.4	9,637.9
19	Cantilever Support Channel 75X40X4.8 mm GI Channel(810 m long)(7.14Kg./Mtr)	Kg	97.5	81.0	86.8	7,894.3	8,458.2
20	AB Switch Operating Pipe Diagonal Angle Support 50X50X6mm GI(388 mm long)(4.5Kg./Mtr)	Kg	97.5	24.4	26.2	2,383.3	2,553.5
21	AB Switch Operating Pipe Diagonal Base Angle Support 50X50X6mm (340 mm long) GI(4.5Kg./Mtr)	Kg	97.5	21.4	23.0	2,088.5	2,237.6
22	Cantilever Support Angle 50X50X6mm GI (1282 mm long) (4.5Kg./Mtr)	Kg	97.5	80.8	86.5	7,874.7	8,437.2
23	LTDB Mounting Support Angle 75X40X4.8mm GI (3 mtr long) (7.14Kg./Mtr)	Kg	97.5	126	135	12,285.0	13,162.5
24	H/W fitting(B&S) 70KN,3 Bolt	Set	455.0	42	45	19,110.0	20,475.0
25	11kV Disc insulator (B&S) 70KN polymer	No	1,495.0	42	45	62,790.0	67,275.0
26	50x6 mm GI flat	Kg	97.5	168	180	16,380.0	17,550.0
27	25x6 mm GI flat	Kg	97.5	168	180	16,380.0	17,550.0
28	GI Nut , Bolt & Washer of different sizes	Kg	101.4	350	375	35,490.0	38,025.0
29	Lug AL 70 Sqmm for 7/8 SWG Wire/Earthing	EA	8.9	756	810	6,736.9	7,218.1
30	Lug AL Crimping 300 Sqmm XLPE One Hole	EA	40.3	224	240	9,022.5	9,667.0
31	40mm nominal bore GI pipe (medium gauge) earthing device with 3 mtr .Long	No	1,365.0	70	75	95,550.0	1,02,375.0
32	PIPE HDPE SIZE 25 MM	Mtr	35.2	322	345	11,342.7	12,152.9
33	Energy Meter Installation (Smart Meter) with BOX	LS	1,65,310.0	14	15	23,14,340.0	24,79,650.0
34	Connector Mini Wedge 25 Sqmm to Dog	EA	76.4	42	45	3,209.1	3,438.3
					Total Cost of materials	**3,00,05,605.3**	**3,21,48,862.8**
					Stock, Storage & Insurance i.e 3%	**9,00,168.2**	**9,64,465.9**
					Sub Total	**3,09,05,773.4**	**3,31,13,328.7**
					Contingency @ 3%	**9,27,173.2**	**9,93,399.9**

Tools & Plants @ 2%	6,18,115.5	6,62,266.6
Transportation @ 7.5%	23,17,933.0	24,83,499.6
Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%	8,66,367.3	9,28,250.7
Erection Other @ 10%.	13,56,674.4	14,53,579.7
Erection PSC Pole @ 20%	-	-
Sub Total	3,69,92,036.8	3,96,34,325.2

Sl no	Civil & Services	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Installation of Earthing pipe with 40mm dia 3 Mtr long Class-B GI Pipe & include supply of all required material like Salt, Charcoal, Nuts-Bolt ,PVC Pipe PCC & brick work for earthing chamber (Size: 2'x2') and RCC or other suitable slab cover	No	2415	70	75	1,69,050.0	1,81,125.0
2	Dismantling of existing 11/0.4kV,3 Phase Distribution Transformer 63KVA including removal of HT/LT leads, earth connections & unloading by crane. Scope also includes loading, transportation, unloading & staking at a proper place in safe position/site store	No	1890	14	15	26,460.0	28,350.0
3	Dismantling of Steel Structure, Nuts & Bolt including loading, transportation, unloading & staking of dismantled material at a proper place in TPNODL store	Kg	78.75	1456	1560	1,14,660.0	1,22,850.0
4	Providing and fixing including loading, unloading & transportation of FRP Fencing including Fluorescent Sticker (two Mtr. in each post),Supply of Latch Lock, Supply of Hings,Supply of SS Lock with Key excluding civil works as per TPNODL specification.	M2	3310	616	780	20,38,960.0	25,81,800.0
4.1	Civil work for FRP	LS	496.5	616	780	3,05,844.0	3,87,270.0
5	Supply, Installation of Outdoor Joint Kit for 1.1 kV XLPE AL Cable 4CX300 sqmm	No	8511	28	30	2,38,308.0	2,55,330.0

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6	Construction of Plinth with Brick, Mortar, 12 mm cement plaster and for 250-1000KVA transformer as per TPNODL drawing. Scope of work includes excavation of earth, supply of Civil material for construction, disposal of extra malba	LS	31878	14	15	4,46,292.0	4,78,170.0
					Total Civil Part	33,39,574.0	40,34,895.0
					Sub-Total	4,03,31,610.8	4,36,69,220.2
					Other Over Head (Including Supervision charges)@ 6%	24,19,896.6	26,20,153.2
					Sub-total	4,27,51,507.5	4,62,89,373.4
					GST @ 18% of Sub-Total	76,95,271.3	83,32,087.2
					CESS @ 1% of Sub-Total	4,27,515.1	4,62,893.7
					Sub-Grand Total	5,08,74,293.9	5,50,84,354.3
					Inspection Fee	-	-
					Drawing Approval	-	-
					Grand Total	5,08,74,293.9	5,50,84,354.3
					Grand Total in Cr.	5.09	5.51

8.22 Annexure 22: Cost Estimate for Conversion of Single Phase to Three Phase along with associate lines

S. No	Description	UOM	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
A	Conversion of 1Ph DTR to 3Ph DTR along with lines	Nos.	117	157	32.35	43.13
Total			**120**	**160**	**32.35**	**43.13**

Annexure-22 Conversion of 1Ph DTR to 3Ph DTR along with lines							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	100 KVA,11/0.4KV(Al) Transformer	No	198000.0	117	157	2,31,66,000.0	3,10,86,000.0
1.1	WPB 160x152 (30.44KG/Mtr.),11 mtr	No	34321.5	234	314	80,31,235.7	1,07,76,957.3
2	LT Distribution Box for 100 KVA S/S.	EA	31744.7	117	157	37,14,129.9	49,83,917.9
3	11kV AB Switch,200A.3pole,50Hz,Horizontal Type	Set	9555.0	117	157	11,17,935.0	15,00,135.0
4	Lightning Arrester (12kV,10kA) DH Class	No	2299.5	351	471	8,07,107.0	10,83,041.0

5	HG Fuse(11KV,200A,3 Pole,50Hz) with PI	Set	7956.0	117	157	9,30,852.0	12,49,092.0
6	Conductor 80 mm sq. ACSR Rabbit	Mtr	34.4	2808	3768	96,529.5	1,29,531.1
7	Cable 1.1kV Al 1CX150 Sq.mm Un-armoured	Mtr	273.0	3744	5024	10,22,112.0	13,71,552.0
8	Gland for 1.1kV Al 1CX150 Sq.mm	EA	134.5	468	628	62,949.8	84,471.1
9	Cable 1.1kV Al 4CX150 Sq.mm Un-armoured	Mtr	801.6	2925	3925	23,44,711.1	31,46,321.7
10	Gland for 1.1kV Al 4CX150 Sq.mm	EA	346.2	936	1256	3,24,011.0	4,34,783.9
11	Top Channel 100X50X5mm (2800 mm long) (9.56Kg./Mtr) (Each 26.77 Kg)	Kg	97.5	6263.7	8405.2	6,10,711.9	8,19,502.3
12	Transformer Base GI Channel 100X50X5mm (2800 mm long) (9.56Kg./Mtr) (Each 26.77 Kg)	Kg	97.5	0.0	0.0	-	-
13	AB Switch Mounting Channel 75X40X4.8 mm GI Channel (2800 mm long) (7.14Kg./Mtr)	Kg	97.5	4678.1	6277.5	4,56,117.5	6,12,055.1
14	HG Fuse Side Support Channel 75X40X4.8 mm GI Channel(330 mm long)(7.14Kg./Mtr)	Kg	97.5	4678.1	6277.5	4,56,117.5	6,12,055.1
15	AB Switch Operating Pipe Channel Support 75X40X4.8 mm GI Channel (625 mm long)(7.14Kg./Mtr)	Kg	97.5	522.1	700.6	50,906.0	68,309.7
16	AB Switch Side Support Channel 75X40X4.8 mm GI Channel(330 mm long)(7.14Kg./Mtr)	Kg	97.5	771.0	1034.6	75,175.4	1,00,876.4
17	HG Fuse Side Support Channel 75X40X4.8 mm GI Channel(330 mm long)(7.14Kg./Mtr)	Kg	97.5	771.0	1034.6	75,175.4	1,00,876.4
18	Cantilever Support Channel 75X40X4.8 mm GI Channel(810 m long)(7.14Kg./Mtr)	Kg	97.5	676.7	908.0	65,974.1	88,529.4
19	AB Switch Operating Pipe Diagonal Angle Support 50X50X6mm GI(388 mm long)(4.5Kg./Mtr)	Kg	97.5	204.3	274.1	19,917.5	26,726.9
20	AB Switch Operating Pipe Diagonal Base Angle Support 50X50X6mm (340 mm long) GI(4.5Kg./Mtr)	Kg	97.5	179.0	240.2	17,453.5	23,420.5
21	Cantilever Support Angle 50X50X6mm GI (1282 mm long) (4.5Kg./Mtr)	Kg	97.5	675.0	905.7	65,809.9	88,309.0

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22	LTDB Mounting Support Angle 75X40X4.8mm GI (3 mtr long) (7.14Kg./Mtr)	Kg	97.5	526.5	706.5	51,333.8	68,883.8
23	H/W fitting(B&S) 70KN,3 Bolt	Set	455.0	351	471	1,59,705.0	2,14,305.0
24	11kV Disc insulator (B&S) 70KN polymer	No	1495.0	351	471	5,24,745.0	7,04,145.0
25	50x6 mm GI flat	Kg	97.5	702	942	68,445.0	91,845.0
26	25x6 mm GI flat	Kg	97.5	702	942	68,445.0	91,845.0
27	GI Nut , Bolt & Washer of different sizes	Kg	101.4	2925	3925	2,96,595.0	3,97,995.0
28	Lug AL 70 Sqmm for 7/8 SWG Wire/Earthing	EA	8.9	6318	8478	56,301.5	75,549.9
29	Lug AL Crimping 150 Sqmm XLPE One Hole	EA	18.6	936	1256	17,378.7	23,320.1
30	40mm nominal bore GI pipe (medium gauge) earthing device with 3 mtr .Long	No	1365.0	585	785	7,98,525.0	10,71,525.0
31	PIPE HDPE SIZE 25 MM	Mtr	35.2	2691	3611	94,792.6	1,27,200.4
32	Energy Meter Installation (Smart Meter) with BOX	LS	16531.0	117	157	19,34,127.0	25,95,367.0
33	Connector Mini Wedge 25 Sqmm to Dog	EA	76.4	351	471	26,818.7	35,987.4
Part – B HT Line							
S No.	**Item Description**	**Unit**	**Unit Rate in Rs.**	**Proposed Qty FY 24-25**	**Proposed Qty FY 25-26**	**FY 24-25 Amount (in Cr.)**	**FY 25-26 Amount (in Cr.)**
1	WPB 160x152 (30.44KG/Mtr.),11 mtr	No	34321.5	702	942	2,40,93,707.0	3,23,30,871.8
2	Top Channel 100X50X5mm, 9.56 KG/Mtr., each channel length 2.3 mtr., 2 no's channel required	Kg	97.5	6027.8	8088.6	5,87,714.4	7,88,642.4
3	Double Pole Belting Channel 75X40X4.8mm.,7.14KG/Mtr. Each channel length 1.66 Mtr.,4 no's channel required	Kg	97.5	4455.4	5978.6	4,34,397.6	5,82,909.6
4	50X50X6mm.GI Bracing Angle, 4.5Kg./mtr., each angle length 2.671 mtr., 4 nos angle required	Kg	97.5	3145.0	4220.2	3,06,633.6	4,11,465.6
5	Straight Cross Arm Channel 100X50X5mm, 9.56 KG/Mtr., each channel length 1.2 mtr.	Kg	97.5	2340	3140	2,28,150.0	3,06,150.0
6	Straight Cross Arm Top Channel 100X50X5mm, 9.56 KG/mtr, each channel length 0.306 Mtr.	Kg	97.5	2018.1	2708.1	1,96,768.0	2,64,039.1
7	Fish Plate 50X8 mm, 0.97kg/Mtr., each 0.280 mtr. Length	Kg	97.5	190.7	255.8	18,589.7	24,945.1
8	Danger Plate	No	104.0	819	1099	85,176.0	1,14,296.0

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9	Back Clamp for danger Plate 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr 1 no	Kg	97.5	819	1099	79,852.5	1,07,152.5
10	GI barbed wire anticlimbing device	Kg	104.0	2106	2826	2,19,024.0	2,93,904.0
11	Back Clamp for Barbed wire anticlimbing device 25X3mm. flat, 0.59Kg/Mtr. Flat of 0.510 mtr length 4 no's	Kg	97.5	844.9	1133.8	82,380.4	1,10,544.6
12	11kV,5kN pin insulator polymer	No	260.0	2106	2826	5,47,560.0	7,34,760.0
13	11kV V cross Arm (GI)	No	1053.0	585	785	6,16,005.0	8,26,605.0
14	GI Back Clamp for 11kV 'V' Cross Arm	No	104.0	585	785	60,840.0	81,640.0
15	Top bracket 100X50X5mm GI channel	No	195.0	585	785	1,14,075.0	1,53,075.0
16	H/W fitting(B&S) 70KN,3 Bolt	Set	455.0	702	942	3,19,410.0	4,28,610.0
17	11kV Disc insulator (B&S) 70KN polymer	No	1495.0	702	942	10,49,490.0	14,08,290.0
18	Earthing of Support (Coil Type)	EA	215.8	702	942	1,51,491.6	2,03,283.6
19	No-8 GI wire (Dia 4.6mm) 0.131 KG/ Mtr.- 2 Mtr. For connecting pole with Coil earthing	Kg	97.5	186.0	249.6	18,137.9	24,338.9
20	PG Clamp for 100 mm2 AAAC conductor	No	754.0	702	942	5,29,308.0	7,10,268.0
21	GI Nut , Bolt & Washer of different sizes	Kg	101.4	2305	3093	2,33,716.9	3,13,620.1
22	H.T. Stay clamp	Pair	162.5	468	628	76,050.0	1,02,050.0
23	H.T. Stay set (Complete)	Set	1365.0	468	628	6,38,820.0	8,57,220.0
24	H.T. Stay Insulator	No	65.0	468	628	30,420.0	40,820.0
25	7/10 SWG Stay Wire	Kg	97.5	4680	6280	4,56,300.0	6,12,300.0
26	40mm nominal bore GI pipe (medium gauge) earthing device with 3 mtr .Long	No	1365.0	117	157	1,59,705.0	2,14,305.0
27	AAA conductor,100 mm2	Km	71500.0	108.5	145.5	77,54,818.5	1,04,06,038.5
28	50x6 mm GI flat	Kg	97.5	702	942	68,445.0	91,845.0
29	Black Paint	Ltr	286.0	351	471	1,00,386.0	1,34,706.0
30	Energy Meter Installation (Smart Meter) with BOX	LS	16531.0	117	157	19,34,127.0	25,95,367.0
31	Yellow Colour Paint for Background	Ltr	230.6	702	942	1,61,912.9	2,17,267.7

Part – C LT Line

S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	9 Mtr. long 300 Kg. PSC Pole	No.	3900.0	3510	4710	1,36,89,000.0	1,83,69,000.0
2	LT Stay set Complete	Set	676.0	1053	1413	7,11,828.0	9,55,188.0
3	7/12 SWG GI stay wire, Grade -2	Kg	97.5	12636.0	16956	12,32,010.0	16,53,210.0
4	LT stay Clamp (1.40Kg/pair)	Pair	143.0	1053	1413	1,50,579.0	2,02,059.0

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5	LT Stay insulator	No.	39.0	1053	1413	41,067.0	55,107.0
6	**LT Accessories with Eye hook and Clamp**				0	-	-
6.i.	Pole clamp for EYE hook for (XLPE Aerial bunched Cable)	Pair	260.0	4563	6123	11,86,380.0	15,91,980.0
6.ii.	EYE hook for XLPE Aerial bunched Cable (25-70 sq.mm)	No.	78.0	2106	2826	1,64,268.0	2,20,428.0
6.iii.	Dead End Clamp suitable for messenger XLPE Aerial bunched Cable (25-70 sq.mm)	No.	84.5	2106	2826	1,77,957.0	2,38,797.0
6.iv.	Suspension Clamp with EYE hook for ABC (25-70 sq.mm)	Pair	442.0	2457	3297	10,85,994.0	14,57,274.0
7	1.1KV LT AB Cable 4x70+1x70+1x16mm2	K.M	305000.0	122.85	164.85	3,74,69,250.0	5,02,79,250.0
8	LT Distribution Box Polycarbonate	No.	969.8	2340	3140	22,69,233.9	30,45,040.3
9	Cable 1.1kV Al 4CX25 Sq.mm Armoured	Mtr	177.7	3510	4710	6,23,843.1	8,37,122.7
10	Gland for 1.1kV Al 4X25 Sq.mm	EA	180.8	2340	3140	4,22,960.7	5,67,562.6
11	Lug AL Crimping 25 Sqmm XLPE Single Hole	EA	14.2	9360	12560	1,32,474.2	1,77,764.5
12	Insulated piercing connector. Type-A-main 50 to 150 sq.mm & Tap-50 to 150 sq.mm	No.	98.6	2340	1884	2,30,770.8	1,85,800.1
13	Insulated piercing connector. Type-B-main 25 to 150 sq.mm & Tap-6 to 35 sq.mm	No.	51.8	9360	471	4,84,567.2	24,383.7
14	Insulated piercing connector. Type-C-main 16 to 95 sq.mm & Tap-1.5 to 16 sq.mm	No.	40.1	2340	0	93,740.4	-
15	40mm nominal bore GI pipe (medium gauge) earthing device with 3 mtr .Long (each 5th pole to earth)	No.	1365.0	702	942	9,58,230.0	12,85,830.0
16	Coil Earthing	No's	215.8	2808	3768	6,05,966.4	8,13,134.4
17	No-8 GI wire (Dia 4.6mm) 0.131 KG/ Mtr.- 2 Mtr. For connecting pole with Coil earthing	Kg	97.5	919.6	1234.0	89,663.0	1,20,317.0
18	Danger plate (LT)	No	104.0	3510	4710	3,65,040.0	4,89,840.0
19	Back Clamp for danger Plate 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr length 1 no's = (1x0.59x0.510)	KG	97.5	1056.2	1417.2	1,02,975.5	1,38,180.8
20	GI barbed wire anticlimbing device 3 Kg. Per support	Kg	104.0	10530.0	14130.0	10,95,120.0	14,69,520.0
21	Back Clamp for anticlimbing device 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr length 4 no's = (4x0.59x0.510)	KG	97.5	4224.6	5669.0	4,11,902.0	5,52,723.2

22	GI Nut , Bolt & Washer of different sizes (0.5 Kg/ Pole)	Kg	101.4	1755	2355	1,77,957.0	2,38,797.0
23	Black Paint	Ltr	286.0	3510	4710	10,03,860.0	13,47,060.0
24	Yellow Colour Paint for Background	Ltr	286.0	7020	9420	20,07,720.0	26,94,120.0
					Total Cost of materials	**15,59,45,912.8**	**20,83,85,252.1**
					Stock, Storage & Insurance i.e 3%	**46,78,377.4**	**62,51,557.6**
					Sub Total	**16,06,24,290.2**	**21,46,36,809.7**
					Contingency @ 3%	**48,18,728.7**	**64,39,104.3**
					Tools & Plants @ 2%	**32,12,485.8**	**42,92,736.2**
					Transportation @ 7.5%	**1,20,46,821.8**	**1,60,97,760.7**
					Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%	**24,33,874.9**	**32,65,968.9**
					Erection Other @ 10%.	**1,79,04,462.0**	**2,39,35,468.8**
					Erection PSC Pole @ 20%	**28,19,934.0**	**37,84,014.0**
					Sub Total	**20,38,60,597.3**	**27,24,51,862.5**

Sl no	Civil & Services	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Installation of Earthing pipe with 40mm dia 3 Mtr long Class-B GI Pipe & include supply of all required material like Salt, Charcoal, Nuts-Bolt ,PVC Pipe PCC & brick work for earthing chamber (Size: 2'x2') and RCC or other suitable slab cover	No	2415	1404	1884	33,90,660.0	45,49,860.0
2	Dismantling of existing 11/0.4kV,3 Phase Distribution Transformer 16KVA including removal of HT/LT leads, earth connections & unloading by crane. Scope also includes loading, transportation, unloading & staking at a proper place in safe position/site store	No	1417.5	117	157	1,65,847.5	2,22,547.5
3	Fixing of LT Complete stay set includes 1) Turn Buckle Assembly 2) Stay Rod & Stay plate 3) Stay Insulator 4) Stay Wire. 5)Stay clamps with Nuts & bolts, including excavation, supply of 0.5Cum cement concrete foundation 1:2:4 size (500mmx500mmx800mm) using 20mm BHG metal with all labour and material (Excavation of earth will be done of size 500X500X1500 mm.)	No	2250	1521	2041	34,22,250.0	45,92,250.0

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4	Erection of 11 Mtr long WPB Pole including loading & unloading, transportation, providing & laying of 1:1.5:3, M20 Grade, C.C-500x500X1800 mm & cooping of 500x500x450 mm, includes 5 days curing and zebra painting (In Black & Yellow Strips/Zebra)	No	6300	936	1256	58,96,800.0	79,12,800.0
5	Erection of 9 MTR PSC Pole including loading and unloading, transportation .Concreting to be done with PCC-1:1.5:3. of size - 500x500x1500 & Padding 500x500x150mm.Scope of work also includes 5 days curing & zebra painting (In Black & Yellow Strips/Zebra)	No	6300	3510	4710	2,21,13,000.0	2,96,73,000.0
6	Providing and fixing including loading, unloading & transportation of FRP Fencing including Fluorescent Sticker (two Mtr. in each post),Supply of Latch Lock, Supply of Hings,Supply of SS Lock with Key excluding civil works as per TPNODL specification.	M2	3310	3896.1	4914.1	1,28,96,091.0	1,62,65,671.0
6.1	Civil work for FRP	LS	496.5	3896.1	4914.1	19,34,413.7	24,39,850.7
7	Construction of Plinth with Brick, Mortar, 12 mm cement plaster and for 63-1000KVA transformer as per TPNODL drawing. Scope of work includes excavation of earth, supply of Civil material for construction, disposal of extra malba	LS	35000	117	157	40,95,000.0	54,95,000.0
8	Supply, Installation of Outdoor Joint Kit for 1.1 kV XLPE AL Cable 4CX150 sqmm	No	3994	234	314	9,34,596.0	12,54,116.0
9	Dismantling of Steel Structure, Nuts & Bolt including loading, transportation, unloading & staking of dismantled material at a proper place in TPNODL store	Kg	78.75	2925	3925	2,30,343.8	3,09,093.8
					Total Civil Part	5,50,79,001.9	7,27,14,188.9
					Sub-Total	25,89,39,599.2	34,51,66,051.4
					Other Over Head (Including Supervision charges)@ 6%	1,29,46,980.0	1,72,58,302.6
					Sub-total	27,18,86,579.2	36,24,24,354.0
					GST @ 18% of Sub-Total	4,89,39,584.2	6,52,36,383.7
					CESS @ 1% of Sub-Total	27,18,865.8	36,24,243.5

Sub-Grand Total	32,35,45,029.2	43,12,84,981.3
Inspection Fee	-	-
Drawing Approval	-	-
Grand Total	32,35,45,029.2	43,12,84,981.3
Grand Total in Cr.	32.35	43.13

8.23 Annexure 23: Cost Estimate for Addition of New LT Lines

S.No	Description	UOM	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
A	Addition of LT for New connection & mitigation of over load LT feeder 4x95+1x95+1x16	Km	35	24.5	5.50	3.85
B	Addition of LT for New connection & mitigation of over load LT feeder 4x50+1x50+1x16	Km	46	36	6.54	5.12
Total			**81**	**60.5**	**12.04**	**8.97**

A. Cost Estimation for Addition of New LT Line 4x95+1x95+1x16

Annexure-23A New LT Line AB Cable 4x95+1x95+1x16 mm2							
Total 30 nos. proposed pole, considering 21 nos. straight point and 9 nos. angular point. Avg span length - 33 Mtr							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	1.1KV LT AB Cable 4x95+1x95+1x16mm2	Mtr	421.7	36050	25235	1,52,01,203.5	1,06,40,842.5
2	9 mtr long 300 kg PSC pole	No	3900.0	1050	735	40,95,000.0	28,66,500.0
3	RCC base Plate for PSC pole	No	1782.3	1050	735	18,71,371.0	13,09,959.7
4	Danger Plate	No	104.0	1050	735	1,09,200.0	76,440.0
5	Back Clamp for danger Plate 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr 1 no	Kg	97.5	315.9	221.2	30,804.6	21,563.2
6	GI barbed wire anticlimbing device	Kg	104.0	3150	2205	3,27,600.0	2,29,320.0
7	Back Clamp for Barbed wire anticlimbing device 25X3mm. flat, 0.59Kg/Mtr. Flat of 0.510 mtr length 4 no's	Kg	97.5	1263.8	884.6	1,23,218.6	86,253.0
8	Pole clamp for EYE hook for XLPE Aerial bunched Cable	Pair	260.0	1050	735	2,73,000.0	1,91,100.0
9	Suspension Clamp with EYE hook for ABC	No.	442.0	735	514.5	3,24,870.0	2,27,409.0
10	Eye Hook for AB cable for dead end point	No.	78.0	315	220.5	24,570.0	17,199.0

11	Conductor Dead End Clamp suitable for bare messenger XLPE Aerial bunched cable (25-70 sq. mm)	No.	84.5	315	220.5	26,617.5	18,632.3
12	LT Stay Set (Complete)	Set	676.0	315	220.5	2,12,940.0	1,49,058.0
13	LT Stay Insulator	No	39.0	315	220.5	12,285.0	8,599.5
14	LT Stay clamp	Pair	143.0	315	220.5	45,045.0	31,531.5
15	7/12 SWG Stay Wire	Kg	97.5	3150	2205	3,07,125.0	2,14,987.5
16	Earthing of Support (Coil Type)	EA	215.8	1050	735	2,26,590.0	1,58,613.0
17	PIPE HDPE SIZE 25 MM	Mtr	35.2	3150	2205	1,10,961.3	77,672.9
18	Lug AL 70 Sqmm for 7/8 SWG Wire/Earthing	EA	8.9	2100	1470	18,713.7	13,099.6
19	LT Distribution Box Polycarbonate	No	969.8	735	514.5	7,12,772.2	4,98,940.5
20	Cap cable end for ABC	EA	114.3	1575	1102.5	1,79,948.8	1,25,964.2
21	IPC 50-150, 50-150 SQ.MM ST.LT Type A	EA	92.6	8400	5880	7,77,521.6	5,44,265.1
22	IPC EP 95 LT ABC 16-95 & 1.5-16 SQMM ST.LT Type C	EA	92.6	6300	4410	5,83,141.2	4,08,198.8
23	IPC KZ 2X150 LTABC 25-150 & 6-35(50) sqmm Type B	EA	54.3	10500	7350	5,69,887.5	3,98,921.3
24	STEEL STRAP SIZE 20 MMX50 M LONG	ROL	1547.6	140	98	2,16,659.3	1,51,661.5
25	BUCKLES FOR STEEL STRAP (1 EA = 100 NOS)	EA	514.4	140	98	72,017.7	50,412.4
26	Cable 1.1kV Al 4CX25 Sq.mm Armoured	Mtr	177.7	2205	1543.5	3,91,901.4	2,74,331.0
27	Gland for 1.1kV Al 4X25 Sq.mm	EA	180.8	735	514.5	1,32,853.0	92,997.1
28	Lug AL Crimping 25 Sqmm XLPE Single Hole	EA	14.2	2100	1470	29,721.8	20,805.2
29	25x6 mm GI flat	Kg	97.5	13702.5	9591.75	13,35,993.8	9,35,195.6
30	GI Nut , Bolt & Washer of different sizes	Kg	101.4	630	441	63,882.0	44,717.4
31	Tie Plastic Black size 7.6mmX380mm	EA	7.0	1400	980	9,760.5	6,832.3
32	Tie Plastic size 9mmX265mm	EA	23.4	2100	1470	49,162.0	34,413.4
33	Black Paint	Ltr	286.0	1050	735	3,00,300.0	2,10,210.0
34	Yellow Colour Paint for Background	Ltr	230.6	1785	1249.5	4,11,701.6	2,88,191.1
					Total Cost of materials	**2,91,78,339.5**	**2,04,24,837.7**
					Stock, Storage & Insurance i.e 3%	**8,75,350.2**	**6,12,745.1**
					Sub Total	**3,00,53,689.7**	**2,10,37,582.8**
					Contingency @ 3%	**9,01,610.7**	**6,31,127.5**
					Tools & Plants @ 2%	**6,01,073.8**	**4,20,751.7**
					Transportation @ 7.5%	**22,54,026.7**	**15,77,818.7**
					Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%	-	-
					Erection Other @ 10%.	**24,50,776.1**	**17,15,543.3**
					Erection PSC Pole @ 20%	-	-

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					Sub Total	3,62,61,177.0	2,53,82,823.9
Sl no	Civil & Services	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Fixing of complete LT line stay set includes Turn Buckle assembly, Stay Rod & Stay plate, Stay Insulator, stay wire, stay clamps with Nuts & bolts BA will do the excavation, supply of 0.5Cum cement concrete foundation 1:2:4 size (500mmx500mmx800mm)	No	2362.5	315	220.5	7,44,187.5	5,20,931.3
2	Erection of 9 MTR PSC Pole including loading and unloading, transportation .Concreting to be done with PCC-1:1.5:3. of size - 500x500x1500 & Padding 500x500x150mm.Scope of work also includes 5 days curing & zebra painting (In Black & Yellow Strips/Zebra)	No	6300	1050	735	66,15,000.0	46,30,500.0
					Total Civil Part	73,59,187.5	51,51,431.3
					Sub-Total	4,36,20,364.5	3,05,34,255.2
					Other Over Head (Including Supervision charges)@ 6%	26,17,221.9	18,32,055.3
					Sub-total	4,62,37,586.4	3,23,66,310.5
					GST @ 18% of Sub-Total	83,22,765.6	58,25,935.9
					CESS @ 1% of Sub-Total	4,62,375.9	3,23,663.1
					Sub-Grand Total	5,50,22,727.8	3,85,15,909.5
					Inspection Fee	-	-
					Drawing Approval	-	-
					Grand Total	5,50,22,727.8	3,85,15,909.5
					Grand Total in Cr.	5.50	3.85

B. Cost Estimation for Addition of New LT Line 4x50+1x50+1x16

Annexure-23B New LT Line AB Cable 4x50+1x50+1x16 mm2							
Total 30 nos. proposed pole, considering 21 nos. straight point and 9 nos. angular point. Avg span length - 33 Mtr							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	1.1KV LT AB Cable 4x50+1x50+1x16mm2	Mtr	213.3	47380	37080	1,01,04,258.8	79,07,680.8
2	9 mtr long 300 kg PSC pole	No	3900.0	1380	1080	53,82,000.0	42,12,000.0
3	RCC base Plate for PSC pole	No	1782.3	1380	1080	24,59,516.1	19,24,838.7
4	Danger Plate	No	104.0	1380	1080	1,43,520.0	1,12,320.0

5	Back Clamp for danger Plate 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr 1 no	Kg	97.5	415.2	325.0	40,486.1	31,684.8
6	GI barbed wire anticlimbing device	Kg	104.0	4140	3240	4,30,560.0	3,36,960.0
7	Back Clamp for Barbed wire anticlimbing device 25X3mm. flat, 0.59Kg/Mtr. Flat of 0.510 mtr length 4 no's	Kg	97.5	1661.0	1299.9	1,61,944.4	1,26,739.1
8	Pole clamp for EYE hook for XLPE Aerial bunched Cable	Pair	260.0	1380	1080	3,58,800.0	2,80,800.0
9	Suspension Clamp with EYE hook for ABC	No.	442.0	966	756	4,26,972.0	3,34,152.0
10	Eye Hook for AB cable for dead end point	No.	78.0	414	324	32,292.0	25,272.0
11	Conductor Dead End Clamp suitable for bare messenger XLPE Aerial bunched cable(25-70 sq mm)	No.	84.5	414	324	34,983.0	27,378.0
12	LT Stay Set (Complete)	Set	676.0	414	324	2,79,864.0	2,19,024.0
13	LT Stay Insulator	No	39.0	414	324	16,146.0	12,636.0
14	LT Stay clamp	Pair	143.0	414	324	59,202.0	46,332.0
15	7/12 SWG Stay Wire	Kg	97.5	4140	3240	4,03,650.0	3,15,900.0
16	Earthing of Support (Coil Type)	EA	215.8	1380	1080	2,97,804.0	2,33,064.0
17	PIPE HDPE SIZE 25 MM	Mtr	35.2	4140	3240	1,45,834.8	1,14,131.6
18	Lug AL 70 Sqmm for 7/8 SWG Wire/Earthing	EA	8.9	2760	2160	24,595.2	19,248.4
19	LT Distribution Box Polycarbonate	No	969.8	966	756	9,36,786.3	7,33,137.1
20	Cap cable end for ABC	EA	114.3	2070	1620	2,36,504.2	1,85,090.2
21	IPC 50-150, 50-150 SQ.MM ST.LT Type A	EA	92.6	11040	8640	10,21,885.5	7,99,736.5
22	IPC EP 95 LT ABC 16-95 & 1.5-16 SQMM ST.LT Type C	EA	92.6	8280	6480	7,66,414.2	5,99,802.4
23	IPC KZ 2X150 LTABC 25-150 & 6-35(50) sqmm Type B	EA	54.3	13800	10800	7,48,995.0	5,86,170.0
24	STEEL STRAP SIZE 20 MMX50 M LONG	ROL	1547.6	184	144	2,84,752.2	2,22,849.5
25	BUCKLES FOR STEEL STRAP (1 EA = 100 NOS)	EA	514.4	184	144	94,651.8	74,075.3
26	Cable 1.1kV Al 4CX25 Sq.mm Armoured	Mtr	177.7	2898	2268	5,15,070.4	4,03,098.6
27	Gland for 1.1kV Al 4X25 Sq.mm	EA	180.8	966	756	1,74,606.8	1,36,648.8
28	Lug AL Crimping 25 Sqmm XLPE Single Hole	EA	14.2	2760	2160	39,062.9	30,571.0
29	25x6 mm GI flat	Kg	97.5	18009	14094	17,55,877.5	13,74,165.0
30	FRP CROSS ARM 1070MM 415V	EA	1029.0	1932	1512	19,87,992.2	15,55,820.0
31	ISA-50X50C6 GI Angel (4.5KG/M)	Kg	97.5	9660	7560	9,41,850.0	7,37,100.0
32	ISMC-75X40X4.8 GI Channel (7.14KG/M)	Kg	97.5	9660	7560	9,41,850.0	7,37,100.0

33	GI Nut , Bolt & Washer of different sizes	Kg	101.4	460	360	46,644.0	36,504.0
34	2C X 4sq. mm. Armoured Aluminium Cable - XLPE Insulated	Mtr	50.3	9200	7200	4,62,967.7	3,62,322.6
35	2C X 10sq. mm. Armoured Aluminium Cable - XLPE Insulated	Mtr	66.4	4738	3708	3,14,626.1	2,46,229.1
36	4C X 10sq. mm. Armoured Aluminium Cable - XLPE Insulated	Mtr	103.0	9476	7416	9,75,867.5	7,63,722.4
37	Tie Plastic Black size 7.6mmX380mm	EA	7.0	1840	1440	12,828.1	10,039.4
38	Tie Plastic size 9mmX265mm	EA	23.4	2760	2160	64,612.9	50,566.6
39	Black Paint	Ltr	286.0	1380	1080	3,94,680.0	3,08,880.0
40	Yellow Colour Paint for Background	Ltr	230.6	2070	1620	4,77,435.5	3,73,645.2
					Total Cost of materials	**3,39,98,389.3**	**2,66,07,435.1**
					Stock, Storage & Insurance i.e 3%	**10,19,951.7**	**7,98,223.1**
					Sub Total	**3,50,18,340.9**	**2,74,05,658.1**
					Contingency @ 3%	**10,50,550.2**	**8,22,169.7**
					Tools & Plants @ 2%	**7,00,366.8**	**5,48,113.2**
					Transportation @ 7.5%	**26,26,375.6**	**20,55,424.4**
					Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%	-	-
					Erection Other @ 10%.	**27,79,497.4**	**21,75,258.8**
					Erection PSC Pole @ 20%	-	-
					Sub Total	**4,21,75,131.0**	**3,30,06,624.2**

Sl no	Civil & Services	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Fixing of complete LT line stay set includes Turn Buckle assembly, Stay Rod & Stay plate, Stay Insulator, stay wire, stay clamps with Nuts & bolts BA will do the excavation, supply of 0.5Cum cement concrete foundation 1:2:4 size (500mmx500mmx800mm)	No	2362.5	414	324	9,78,075.0	7,65,450.0
2	Erection of 9 MTR PSC Pole including loading and unloading, transportation .Concreting to be done with PCC-1:1.5:3. of size - 500x500x1500 & Padding 500x500x150mm.Scope of work also includes 5 days curing & zebra painting (In Black & Yellow Strips/Zebra)	No	6300	1380	1080	86,94,000.0	68,04,000.0
					Total Civil Part	96,72,075.0	75,69,450.0
					Sub-Total	5,18,47,206.0	4,05,76,074.2
					Other Over Head (Including Supervision charges)@ 6%	31,10,832.4	24,34,564.5

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Sub-total	5,49,58,038.3	4,30,10,638.7
GST @ 18% of Sub-Total	98,92,446.9	77,41,915.0
CESS @ 1% of Sub-Total	5,49,580.4	4,30,106.4
Sub-Grand Total	6,54,00,065.6	5,11,82,660.1
Inspection Fee	-	-
Drawing Approval	-	-
Grand Total	6,54,00,065.6	5,11,82,660.1
Grand Total in Cr.	6.54	5.12

8.24 Annexure 24: Cost Estimate for Addition of 11 kV Lines (O/H and U/G) along with Bay arrangement in PSS

S. No	Description	UOM	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
A	Addition of 11 kV Lines O/H	Km	89	77	17.45	15.10
B	Addition of 11 kV Lines UG	Km	10	12	10.69	12.83
C	11kV Bay at PSS	Nos.	18	11	3.30	2.07
Total			**117**	**100**	**31.44**	**29.99**

A. Cost Estimation for Addition of New 11KV O/H Line with 100 Sqmm AAAC

Annexure-24A Construction of 11kV Overhead New Line with 100 sq.mm AAAC							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	WPB 160x152 (30.44KG/Mtr.),11 mtr	No	34321.5	1958	1694	6,72,01,536.2	5,81,40,654.9
2	Top Channel 100X50X5mm, 9.56 KG/Mtr., each channel length 2.3 mtr., 2 no's channel required	Kg	97.5	7827.6	6772	7,63,186.1	6,60,284.6
3	Double Pole Belting Channel 75X40X4.8mm.,7.14KG/Mtr. Each channel length 1.66 Mtr.,4 no's channel required	Kg	97.5	8438.1	7300	8,22,713.8	7,11,786.1
4	50X50X6mm.GI Bracing Angle, 4.5Kg./mtr., each angle length 2.671 mtr., 4 nos angle required	Kg	97.5	9612.0	8316	9,37,170.0	8,10,810.0
5	Straight Cross Arm Channel 100X50X5mm, 9.56 KG/Mtr., each channel length 1.2 mtr.	Kg	97.5	0	0	-	-
6	Straight Cross Arm Top Channel 100X50X5mm, 9.56 KG/mtr, each channel length 0.306 Mtr.	Kg	97.5	0	0	-	-

7	Fish Plate 50X8 mm., 0.97kg/Mtr., each 0.280 mtr. Length	Kg	97.5	290.1	251	28,281.5	24,468.3
8	Danger Plate	No	104.0	1958	1694	2,03,632.0	1,76,176.0
9	Back Clamp for danger Plate 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr 1 no	Kg	97.5	1958	1694	1,90,905.0	1,65,165.0
10	GI barbed wire anticlimbing device	Kg	104.0	5874	5082	6,10,896.0	5,28,528.0
11	Back Clamp for Barbed wire anticlimbing device 25X3mm. flat, 0.59Kg/Mtr. Flat of 0.510 mtr length 4 no's	Kg	97.5	2356.6	2039	2,29,773.1	1,98,792.4
12	11kV,5kN pin insulator polymer	No	260.0	4539	3927	11,80,140.0	10,21,020.0
13	11kV V cross Arm (GI)	No	1053.0	1424	1232	14,99,472.0	12,97,296.0
14	GI Back Clamp for 11kV 'V' Cross Arm	No	104.0	1424	1232	1,48,096.0	1,28,128.0
15	Top bracket 100X50X5mm GI channel	No	195.0	1424	1232	2,77,680.0	2,40,240.0
16	H/W fitting(B&S) 70KN,3 Bolt	Set	455.0	1068	924	4,85,940.0	4,20,420.0
17	11kV Disc insulator (B&S) 70KN polymer	No	1495.0	1068	924	15,96,660.0	13,81,380.0
18	Earthing of Support (Coil Type)	EA	215.8	1958	1694	4,22,536.4	3,65,565.2
19	No-8 GI wire (Dia 4.6mm) 0.131 KG/ Mtr.- 2 Mtr. For connecting pole with Coil earthing	Kg	97.5	513.0	444	50,017.1	43,273.2
20	PG Clamp for 100 mm2 AAAC conductor	No	754.0	1068	924	8,05,272.0	6,96,696.0
21	GI Nut , Bolt & Washer of different sizes	Kg	101.4	2225	1925	2,25,615.0	1,95,195.0
22	H.T. Stay clamp	Pair	162.5	712	616	1,15,700.0	1,00,100.0
23	H.T. Stay set (Complete)	Set	1365.0	712	616	9,71,880.0	8,40,840.0
24	H.T. Stay Insulator	No	65.0	712	616	46,280.0	40,040.0
25	7/10 SWG Stay Wire	Kg	97.5	7120	6160	6,94,200.0	6,00,600.0
26	40mm nominal bore GI pipe (medium gauge) earthing device with 3 mtr .Long	No	1365.0	178	154	2,42,970.0	2,10,210.0
27	GI Plate base(500X500X10mm)	No	1950.0	1958	1694	38,18,100.0	33,03,300.0
28	AAA conductor,100 mm2	Km	71500.0	275.0	238	1,96,63,215.0	1,70,11,995.0
29	50x6 mm GI flat	Kg	97.5	1068	924	1,04,130.0	90,090.0
30	Crimping type Midspan Compression Joint for 100mm2 AAA Conductor	No	4717.7	0	0	-	-
31	Black Paint	Ltr	286.0	712	616	2,03,632.0	1,76,176.0
32	Yellow Colour Paint for Background	Ltr	230.6	1602	1386	3,69,493.5	3,19,674.2
					Total Cost of materials	**10,39,09,122.7**	**8,98,98,903.9**
					Stock, Storage & Insurance i.e 3%	**31,17,273.7**	**26,96,967.1**

Sub Total	10,70,26,396.4	9,25,95,871.0
Contingency @ 3%	32,10,791.9	27,77,876.1
Tools & Plants @ 2%	21,40,527.9	18,51,917.4
Transportation @ 7.5%	80,26,979.7	69,44,690.3
Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%	-	-
Erection Other @ 10%.	35,08,533.4	30,35,472.7
Erection PSC Pole @ 20%	-	-
Sub Total	12,39,13,229.3	10,72,05,827.6

Sl no	Civil & Services	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Fixing of complete 11KV line stay set includes Turn Buckle assembly, Stay Rod & Stay plate, Stay Insulator, stay wire, stay clamps with Nuts & bolts BA will do the excavation, supply of 0.5Cum cement concrete foundation 1:2:4 size (500mmx500mmx800mm)	No.	2362.5	712	616	16,82,100.0	14,55,300.0
2	Erection of 11 Mtr long WPB Pole including loading & unloading, transportation, providing & laying of 1:1.5:3, M20 Grade, C.C-500x500X1800 mm & cooping of 500x500x450 mm, includes 5 days curing and zebra painting (In Black & Yellow Strips/Zebra)	No	6300	1958	1694	1,23,35,400.0	1,06,72,200.0
3	Installation of Earthing pipe with 40mm dia 3 Mtr long Class-B GI Pipe & include supply of all required material like Salt, Charcoal, Nuts-Bolt ,PVC Pipe PCC & brick work for earthing chamber (Size: 2'x2') and RCC or other suitable slab cover	No	2415	178	154	4,29,870.0	3,71,910.0

Total Civil Part	1,44,47,370.0	1,24,99,410.0
Sub-Total	13,83,60,599.3	11,97,05,237.6
Other Over Head (Including Supervision charges)@ 6%	83,01,636.0	71,82,314.3
Sub-total	14,66,62,235.2	12,68,87,551.8
GST @ 18% of Sub-Total	2,63,99,202.3	2,28,39,759.3
CESS @ 1% of Sub-Total	14,66,622.4	12,68,875.5
Sub-Grand Total	17,45,28,059.9	15,09,96,186.7
Inspection Fee	-	-
Drawing Approval	-	-
Grand Total	17,45,28,059.9	15,09,96,186.7
Grand Total in Cr.	17.45	15.10

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B. Cost Estimation for Addition of New 11KV U/G Line with 3Cx400 Sqmm XPLE

Annexure-24B UG Cable 3Cx400 sqmm XLPE Cable for 11KV Line							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	11kV AL 3CX400 Sqmm XLPE Cable armoured	Mtr	2296	20000	24000	4,59,25,600.0	5,51,10,720.0
2	Heat shrinkable jointing kit for 3Cx400mm² 11KV XLPE Cable(outdoor type)	No	18075	40	48	7,23,008.0	8,67,609.6
3	Heat shrinkable jointing kit for 3Cx400mm² 11KV XLPE Cable(Straight Through)	No	32912	60	72	19,74,726.0	23,69,671.2
4	Lightning Arrester (12kV,10kA) DH Class	EA	2299	60	72	1,37,967.0	1,65,560.4
5	40mm nominal bore GI pipe (medium gauge) earthing device with 3 mtr .Long	No	1365.0	40	48	54,600.0	65,520.0
6	50x6 mm GI flat	Kg	97.50	500	600	48,750.0	58,500.0
					Total Cost of materials	**4,88,64,651.0**	**5,86,37,581.2**
					Stock, Storage & Insurance i.e 3%	**14,65,939.5**	**17,59,127.4**
					Sub Total	**5,03,30,590.5**	**6,03,96,708.6**
					Contingency @ 3%	**15,09,917.7**	**18,11,901.3**
					Tools & Plants @ 2%	**10,06,611.8**	**12,07,934.2**
					Transportation @ 7.5%	**37,74,794.3**	**45,29,753.1**
					Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%	-	-
					Erection Other @ 10%.	**2,97,098.5**	**3,56,518.1**
					Erection PSC Pole @ 20%	-	-
					Sub Total	**5,69,19,012.8**	**6,83,02,815.4**

Sl no	Civil & Services	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Laying, Commissioning & Testing of Trenchless ducts with 200 mm dia HDPE pipe casing using HDD machine including supply of HDPE pipe as per IS 4984, PN4 Class PE63 as per IS:4984. UG cable including looping at cable terminations and straight through, This is including laying of cable-11kV for all type of rating (Double Run)	Mtr	2762	10000	12000	2,76,20,000.0	3,31,44,000.0
2	Supply and Installation of cable Route marker including transportation from site/tent, excavation, refilling, disposing of malba, flooding with water,	No	1012	100	120	1,01,200.0	1,21,440.0

	ramming/compacting of foundation as per TPNODL specifications and drawing.						
3	Installation of Earthing pipe with 40mm dia 3 Mtr long Class-B GI Pipe & include supply of all required material like Salt, Charcoal, Nuts-Bolt ,PVC Pipe PCC & brick work for earthing chamber (Size: 2'x2') and RCC or other suitable slab cover	No	2415	40	48	96,600.0	1,15,920.0
					Total Civil Part	2,78,17,800.0	3,33,81,360.0
					Sub-Total	8,47,36,812.8	10,16,84,175.4
					Other Over Head (Including Supervision charges)@ 6%	50,84,208.8	61,01,050.5
					Sub-total	8,98,21,021.6	10,77,85,225.9
					GST @ 18% of Sub-Total	1,61,67,783.9	1,94,01,340.7
					CESS @ 1% of Sub-Total	8,98,210.2	10,77,852.3
					Sub-Grand Total	10,68,87,015.7	12,82,64,418.8
					Inspection Fee	-	-
					Drawing Approval	-	-
					Grand Total	10,68,87,015.7	12,82,64,418.8
					Grand Total in Cr.	10.69	12.83

c. Cost Estimation for Addition of New 11KV Bay Arrangement in PSS

Annexure-24C Construction of new 11kV Bay at PSS							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	WPB 160x152 (30.44KG/Mtr.),11 mtr	No	34321.5	36	22	12,35,574.7	7,55,073.4
2	100 x 50 x 6 mm GI Channel for Four pole & inline tapping DP with ISO arrangement.	Kg	97.5	16200	9900	15,79,500.0	9,65,250.0
3	75 x 40 x 6 mm GI Channel For FP/DP Belting	Kg	97.5	6300	3850	6,14,250.0	3,75,375.0
4	50 x 50 x 5 mm GI Angle	Kg	97.5	2700	1650	2,63,250.0	1,60,875.0
5	GI Nuts & Bolts of different sizes with Washer	Kg	101.4	630	385	63,882.0	39,039.0
6	33kV Disc insulator (B&S) 120KN polymer	No.	1872.0	216	132	4,04,352.0	2,47,104.0
7	33kV H/W fitting(B&S) 120KN,4 Bolt	No.	791.5	216	132	1,70,971.0	1,04,482.3
8	33kV,10kN pin insulator polymer	No.	624.0	54	33	33,696.0	20,592.0
9	18 mm GI HT Stay Set Complete for DP	No	1365.0	36	22	49,140.0	30,030.0
10	7/10 (SWG) GI Stay wire (Dia 4.47mm.) (10 kg. / Stay)	Kg	97.5	360	220	35,100.0	21,450.0

11	HT stay Clamp (1.95kg/pair)	Pair	162.5	36	22	5,850.0	3,575.0
12	HT Stay Insulator Type C	No	65.0	36	22	2,340.0	1,430.0
13	40mm nominal bore GI pipe (medium gauge) earthing device with 3 mtr .Long	No.	1365.0	216	132	2,94,840.0	1,80,180.0
14	AAA conductor,232 mm2	Km	213294	3.6	2.2	7,67,859.7	4,69,247.6
15	Lightning Arrester (12kV,10kA) DH Class	No	2299.5	54	33	1,24,170.3	75,881.9
16	11KV I/D VCB with CR panel without PT, CT (600-300-150/1-1, 30VA, STC 25KA/3sec, class: 0.5, 5P10) for feeder protection	No.	448500.0	18	11	80,73,000.0	49,33,500.0
17	11KV 800 AMP isolator with earth switch with PI(polymer)	Set	56212.0	36	22	20,23,632.0	12,36,664.0
18	11KV single Phase PT(11KV/√3/110V/√3)(resin cast for Cubicle)CLASS 0.5 with O/P burden of 30VA	No	14901.1	54	33	8,04,661.0	4,91,737.3
19	10 Core 2.5sqmm Un-Armoured cable for control Panel	mtr	335.4	1800	1100	6,03,720.0	3,68,940.0
20	4 Core 2.5sqmm Un-Armoured cable for control Panel	mtr	145.6	1800	1100	2,62,080.0	1,60,160.0
21	T Clamps for 232 sqmm AAAC	No.	1248.0	216	132	2,69,568.0	1,64,736.0
22	50x6mm GI flat	Kg	97.5	1800	1100	1,75,500.0	1,07,250.0
23	Earthing Materials	LS	2457.0	216	132	5,30,712.0	3,24,324.0
					Total Cost of materials	**1,83,87,648.7**	**1,12,36,896.4**
					Stock, Storage & Insurance i.e 3%	**5,51,629.5**	**3,37,106.9**
					Sub Total	**1,89,39,278.1**	**1,15,74,003.3**
					Contingency @ 3%	**5,68,178.3**	**3,47,220.1**
					Tools & Plants @ 2%	**3,78,785.6**	**2,31,480.1**
					Transportation @ 7.5%	**14,20,445.9**	**8,68,050.2**
					Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%	**4,15,759.5**	**2,54,075.3**
					Erection Other @ 10%.	**10,32,040.3**	**6,30,691.3**
					Erection PSC Pole @ 20%	-	-
					Sub Total	**2,27,54,487.7**	**1,39,05,520.3**

Sl no	Civil & Services	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Fixing of complete 33kV line stay set includes Turn Buckle assembly, Stay Rod & Stay plate, Stay Insulator, stay wire, stay clamps with Nuts & bolts.BA will do the excavation, supply of 0.5Cum C.C foundation 1:2:4 size (500mmx500mmx800mm)	No.	2362.5	36	22	85050	51,975.0
2	Erection of 11 Mtr long WPB Pole including loading & unloading, transportation, providing & laying of 1:1.5:3, M20 Grade, C.C-	No	6300	36	22	226800	1,38,600.0

	500x500X1800 mm & cooping of 500x500x450 mm, includes 5 days curing and zebra painting (In Black & Yellow Strips/Zebra)						
3	Installation of Earthing pipe with 40mm dia 3 Mtr long Class-B GI Pipe & include supply of all required material like Salt, Charcoal, Nuts-Bolt ,PVC Pipe PCC & brick work for earthing chamber (Size: 2'x2') and RCC or other suitable slab cover	No	2415	216	132	521640	3,18,780.0
4	Plinth for VCB	LS	35000	18	11	630000	3,85,000.0
5	Construction of cable trench in PSS	Mtr	3500	558	451	1953000	15,78,500.0
					Total Civil Part	34,16,490.0	24,72,855.0
					Sub-Total	2,61,70,977.7	1,63,78,375.3
					Other Over Head (Including Supervision charges)@ 6%	15,70,258.7	9,82,702.5
					Sub-total	2,77,41,236.4	1,73,61,077.8
					GST @ 18% of Sub-Total	49,93,422.5	31,24,994.0
					CESS @ 1% of Sub-Total	2,77,412.4	1,73,610.8
					Sub-Grand Total	3,30,12,071.3	2,06,59,682.6
					Inspection Fee	-	-
					Drawing Approval	-	-
					Grand Total	3,30,12,071.3	2,06,59,682.6
					Grand Total in Cr.	3.30	2.07

8.25 Annexure 25: Cost Estimate for Addition of 33 kV Lines (O/H and U/G) along with Bay arrangement in PSS

S.No	Description	UOM	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
A	Addition of 33 kV Lines O/H	Km	50	38	17.28	13.16
B	Addition of 33 kV Lines U/G	Km	8	8	9.55	9.55
C	33kV Bay at PSS	Nos.	10	9	2.88	2.59
Total			**68**	**55**	**29.70**	**25.30**

A. Cost Estimation for Addition of New 33KV O/H Line with 148/232 Sqmm AAAC

Annexure-25A Construction of 33kV Overhead New Line with 232 sq.mm AAAC						
S No.	Item Description	Unit	Unit Rate in Rs.	Propose d Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)

1	WPB 160x152 (30.44KG/Mtr.),13 mtr	No	40427.2	1350	1026	5,45,76,720.0	4,14,78,307.2
2	Top Channel 100X50X5mm, 9.56 KG/Mtr., each channel length 4.4 mtr., 2 no's channel required	Kg	97.5	8412.8	6993.7	8,20,248.0	6,81,888.5
3	Double Pole Belting Channel 75X40X4.8mm.,7.14KG/Mtr. Each channel length 4.4 Mtr.,5 no's channel required	Kg	97.5	12566.4	10150.5	12,25,224.0	9,89,670.2
4	50X50X6mm.GI Bracing Angle, 4.5Kg./mtr., each angle length 4.9 mtr., 4 nos angle required	Kg	97.5	8820.0	7203.2	8,59,950.0	7,02,312.0
5	Straight Cross Arm Channel 100X50X5mm,9.56 KG/mtr, each channel length 1.8 Mtr.	Kg	97.5	0	0	-	-
6	Fish Plate 50X8 mm., 0.97kg/Mtr., each 0.280 mtr. Length	Kg	97.5	163.0	123.8	15,888.6	12,075.3
7	Danger Plate	No	104.0	1350	1026	1,40,400.0	1,06,704.0
8	Back Clamp for danger Plate 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr 1 no	Kg	97.5	1350	1026	1,31,625.0	1,00,035.0
9	GI barbed wire anticlimbing device	Kg	104.0	4050	3078	4,21,200.0	3,20,112.0
10	Back Clamp for Barbed wire anticlimbing device 25X3mm. flat, 0.59Kg/Mtr. Flat of 0.510 mtr length 4 no's	Kg	97.5	1624.9	1234.9	1,58,423.9	1,20,402.1
11	33kV,10kN pin insulator polymer	No	624.0	3750	2850	23,40,000.0	17,78,400.0
12	33kV V cross Arm (GI)	No	2340.0	1150	874	26,91,000.0	20,45,160.0
13	GI Back Clamp for 33kV 'V' Cross Arm	No	195.0	1150	874	2,24,250.0	1,70,430.0
14	Top bracket 100X50X5mm GI channel	No	195.0	1150	874	2,24,250.0	1,70,430.0
15	33kV H/W fitting(B&S) 120KN,4 Bolt	Set	791.5	600	456	4,74,919.4	3,60,938.7
16	33kV Disc insulator (B&S) 120KN polymer	No	1872.0	600	456	11,23,200.0	8,53,632.0
17	Earthing of Support (Coil Type)	EA	215.8	1350	1026	2,91,330.0	2,21,410.8
18	No-8 GI wire (Dia 4.6mm) 0.131 KG/ Mtr. - 2 Mtr. For connecting pole with Coil earthing	Kg	97.5	353.7	268.8	34,485.8	26,209.2
19	PG Clamp for 232 mm2 AAAC conductor	No	1495.0	600	456	8,97,000.0	6,81,720.0
20	GI Nut , Bolt & Washer of different sizes	Kg	101.4	3000.0	2280.0	3,04,200.0	2,31,192.0
21	H.T. Stay clamp	Pair	162.5	400	304	65,000.0	49,400.0
22	H.T. Stay set (Complete)	Set	1365.0	400	304	5,46,000.0	4,14,960.0
23	H.T. Stay Insulator	No	65.0	800	608	52,000.0	39,520.0

24	7/8 SWG Stay Wire	Kg	97.5	6000	4560	5,85,000.0	4,44,600.0
25	40mm nominal bore GI pipe (medium gauge) earthing device with 3 mtr .Long	No	1365.0	100	76	1,36,500.0	1,03,740.0
26	GI Plate base(500X500X10mm)	No	1950.0	1350	1026	26,32,500.0	20,00,700.0
27	AAA conductor,232 mm2	Km	203450.0	154.5	117.4	3,14,33,025.0	2,38,89,099.0
28	50x6 mm GI flat	Kg	97.5	3185	2420.6	3,10,537.5	2,36,008.5
29	Black Paint	Ltr	286.0	1350	1026	3,86,100.0	2,93,436.0
30	Yellow Colour Paint for Background	Ltr	230.6	2700	2052	6,22,741.9	4,73,283.9
					Total Cost of materials	**10,37,23,719.0**	**7,89,95,776.4**
					Stock, Storage & Insurance i.e 3%	**31,11,711.6**	**23,69,873.3**
					Sub Total	**10,68,35,430.6**	**8,13,65,649.7**
					Contingency @ 3%	**32,05,062.9**	**24,40,969.5**
					Tools & Plants @ 2%	**21,36,708.6**	**16,27,313.0**
					Transportation @ 7.5%	**80,12,657.3**	**61,02,423.7**
					Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%	**-**	**-**
					Erection Other @ 10%.	**48,15,626.7**	**36,76,948.5**
					Erection PSC Pole @ 20%	**-**	**-**
					Sub Total	**12,50,05,486.1**	**9,52,13,304.5**

Sl no	Civil & Services	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Fixing of complete 33kV line stay set includes Turn Buckle assembly, Stay Rod & Stay plate, Stay Insulator, stay wire, stay clamps with Nuts & bolts.BA will do the excavation, supply of 0.5Cum C.C foundation 1:2:4 size (500mmx500mmx800mm)	No.	2362.5	400	304	9,45,000.0	7,18,200.0
2	Erection of 13 Mtr long WPB Pole including loading & unloading, transportation, providing & laying of 1:1.5:3, M20 Grade C.C-500x500X2200 mm& cooping of 500x500x450 mm, includes 5 days curing and zebra painting (In Black & Yellow Strips/Zebra)	No	7980	1350	1026	1,07,73,000.0	81,87,480.0
3	Installation of Earthing pipe with 40mm dia 3 Mtr long Class-B GI Pipe & include supply of all required material like Salt, Charcoal, Nuts-Bolt ,PVC Pipe PCC & brick work for earthing	No	2415	100	76	2,41,500.0	1,83,540.0

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	chamber (Size: 2'x2') and RCC or other suitable slab cover						
					Total Civil Part	1,19,59,500.0	90,89,220.0
					Sub-Total	13,69,64,986.1	10,43,02,524.5
					Other Over Head (Including Supervision charges)@ 6%	82,17,899.2	62,58,151.5
					Sub-total	14,51,82,885.2	11,05,60,675.9
					GST @ 18% of Sub-Total	2,61,32,919.3	1,99,00,921.7
					CESS @ 1% of Sub-Total	14,51,828.9	11,05,606.8
					Sub-Grand Total	17,27,67,633.4	13,15,67,204.4
					Inspection Fee	-	-
					Drawing Approval	-	-
					Grand Total	17,27,67,633.4	13,15,67,204.4
					Grand Total in Cr.	17.28	13.16

B. Cost Estimation for Addition of New 33KV U/G Line with 3Cx400 Sqmm XPLE

Annexure-25B UG Cable 3Cx400 sqmm XLPE Cable for 33KV Line							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	33kV AL 3CX400 Sqmm XLPE Cable armoured	Mtr	3028.0	14000	14000	4,23,92,000.0	4,23,92,000.0
2	Heat shrinkable jointing kit for 3Cx400mm² 33KV XLPE Cable(outdoor type)	No	43231.5	28	28	12,10,482.0	12,10,482.0
3	Heat shrinkable jointing kit for 3Cx400mm² 33KV XLPE Cable(Straight Through)	No	89172.2	42	42	37,45,232.4	37,45,232.4
4	Lightning Arrester (30kV,10kA) (Station Class, Class 2)	EA	10730.1	42	42	4,50,663.4	4,50,663.4
5	40mm nominal bore GI pipe (medium gauge) earthing device with 3 mtr .Long	No	1365.0	28	28	38,220.0	38,220.0
6	50x6 mm GI flat	Kg	97.5	700	700	68,250.0	68,250.0
					Total Cost of materials	**4,79,04,847.8**	**4,79,04,847.8**
					Stock, Storage & Insurance i.e 3%	**14,37,145.4**	**14,37,145.4**
					Sub Total	**4,93,41,993.2**	**4,93,41,993.2**
					Contingency @ 3%	**14,80,259.8**	**14,80,259.8**
					Tools & Plants @ 2%	**9,86,839.9**	**9,86,839.9**
					Transportation @ 7.5%	**37,00,649.5**	**37,00,649.5**
					Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%	-	-
					Erection Other @ 10%.	**5,63,886.7**	**5,63,886.7**
					Erection PSC Pole @ 20%	-	-
					Sub Total	**5,60,73,629.0**	**5,60,73,629.0**

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Sl no	Civil & Services	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Laying, Commissioning & Testing of Trenchless ducts with 200 mm dia HDPE pipe casing using HDD machine including supply of HDPE pipe as per IS 4984, PN4 Class PE63 as per IS:4984. UG cable including looping at cable terminations and straight through, This is including laying of cable-33kV for all type of rating (Double Run)	Mtr	2783.9	7000	7000	1,94,87,300.0	1,94,87,300.0
2	Supply and Installation of cable Route marker including transportation from site/tent, excavation, refilling, disposing of malba, flooding with water, ramming/compacting of foundation as per TPNODL specifications and drawing.	No	1012	70	70	70,840.0	70,840.0
3	Installation of Earthing pipe with 40mm dia 3 Mtr long Class-B GI Pipe & include supply of all required material like Salt, Charcoal, Nuts-Bolt ,PVC Pipe PCC & brick work for earthing chamber (Size: 2'x2') and RCC or other suitable slab cover	No	2415	28	28	67,620.0	67,620.0
					Total Civil Part	1,96,25,760.0	1,96,25,760.0
					Sub-Total	7,56,99,389.0	7,56,99,389.0
					Other Over Head (Including Supervision charges)@ 6%	45,41,963.3	45,41,963.3
					Sub-total	8,02,41,352.3	8,02,41,352.3
					GST @ 18% of Sub-Total	1,44,43,443.4	1,44,43,443.4
					CESS @ 1% of Sub-Total	8,02,413.5	8,02,413.5
					Sub-Grand Total	9,54,87,209.3	9,54,87,209.3
					Inspection Fee	-	-
					Drawing Approval	-	-
					Grand Total	9,54,87,209.3	9,54,87,209.3
					Grand Total in Cr.	9.55	9.55

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c. Cost Estimation for Addition of New 33KV Bay Arrangement in PSS

Annexure-25C Construction of new 33kV Bay at PSS							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)

1	WPB 160x152 (30.44KG/Mtr.),11 mtr	No	34321.5	40	36	13,72,860.80	12,35,574.72
2	WPB 160x152 (30.44KG/Mtr.),13 mtr	No.	40427.2	20	18	8,08,544.00	7,27,689.60
3	100 x 50 x 6 mm GI Channel for Four pole & inline tapping DP with ISO arrangement.	Kg	97.5	3500	3150	3,41,250.00	3,07,125.00
4	75 x 40 x 6 mm GI Channel For FP/DP Belting	Kg	97.5	3500	3150	3,41,250.00	3,07,125.00
5	50 x 50 x 5 mm GI Angle	Kg	97.5	1500	1350	1,46,250.00	1,31,625.00
6	GI Nuts & Bolts of different sizes with Washer	Kg	101.4	250	225	25,350.00	22,815.00
7	33kV Disc insulator (B&S) 120KN polymer	No.	1872.0	120	108	2,24,640.00	2,02,176.00
8	33kV H/W fitting(B&S) 120KN,4 Bolt	No.	791.5	120	108	94,983.87	85,485.48
9	33kV,10kN pin insulator polymer	No.	624.0	30	27	18,720.00	16,848.00
10	18 mm GI HT Stay Set Complete for DP	No	1365.0	20	18	27,300.00	24,570.00
11	7/10 (SWG) GI Stay wire (Dia 4.47mm.) (10 kg. / Stay)	Kg	97.5	200	180	19,500.00	17,550.00
12	HT stay Clamp (1.95kg/pair)	Pair	162.5	20	18	3,250.00	2,925.00
13	HT Stay Insulator Type C	No	65.0	20	18	1,300.00	1,170.00
14	40mm nominal bore GI pipe (medium gauge) earthing device with 3 mtr .Long	No.	1365.0	120	108	1,63,800.00	1,47,420.00
15	AAA conductor,232 mm2	Km	213294.4	2	1.8	4,26,588.71	3,83,929.84
16	Lightning Arrester(30KV,10KA) (Station Class,class-2)	No.	13455.0	90	81	12,10,950.00	10,89,855.00
17	33KV Outdoor VCB - 1600 A with indoor CR panel without PT with outdoor CT (600-300-150/1-1A, 15VA, STC 25KA/3sec, class: 0.5, 5P10) for feeder protection.	No.	702000.0	10	9	70,20,000.00	63,18,000.00
18	33 KV 800 Amp Double Break (Turn & Twist centre rotating) Isolator with Earth Switch with PI (Polymer)	Set	109915.0	20	18	21,98,300.00	19,78,470.00
19	33kv single phase PT(33kv/v3/110/v3)oil cooled class 0.5/3P,with O/p burden of 100 VA	No	33046.0	30	27	9,91,380.00	8,92,242.00
20	10 Core 2.5sqmm Un-Armoured cable for control Panel	mtr	335.4	1000	900	3,35,400.00	3,01,860.00
21	4 Core 2.5sqmm Un-Armoured cable for control Panel	mtr	145.6	1000	900	1,45,600.00	1,31,040.00
22	T Clamps for 232 sqmm AAAC	No.	1248.0	120	108	1,49,760.00	1,34,784.00

23	50x6mm GI flat	Kg	97.5	1000	900	97,500.00	87,750.00
24	Earthing Materials	LS	2457.0	120	108	2,94,840.00	2,65,356.00
					Total Cost of materials	**1,64,59,317.4**	**1,48,13,385.6**
					Stock, Storage & Insurance i.e 3%	**4,93,779.5**	**4,44,401.6**
					Sub Total	**1,69,53,096.9**	**1,52,57,787.2**
					Contingency @ 3%	**5,08,592.9**	**4,57,733.6**
					Tools & Plants @ 2%	**3,39,061.9**	**3,05,155.7**
					Transportation @ 7.5%	**12,71,482.3**	**11,44,334.0**
					Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%	**3,61,530.0**	**3,25,377.0**
					Erection Other @ 10%.	**9,55,378.3**	**8,59,840.5**
					Erection PSC Pole @ 20%	-	-
					Sub Total	**2,03,89,142.3**	**1,83,50,228.1**

Sl no	Civil & Services	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Fixing of complete 33kV line stay set includes Turn Buckle assembly, Stay Rod & Stay plate, stay insulator, stay wire, stay clamps with Nuts & bolts.BA will do the excavation, supply of 0.5Cum C.C foundation 1:2:4 size (500mmx500mmx800mm)	No.	2362.5	20	18	47250	42,525.0
2	Erection of 13 Mtr long WPB Pole including loading & unloading, transportation, providing & laying of 1:1.5:3, M20 Grade C.C-500x500X2200 mm& cooping of 500x500x450 mm, includes 5 days curing and zebra painting (In Black & Yellow Strips/Zebra)	No	7980	20	18	159600	1,43,640.0
3	Erection of 11 Mtr long WPB Pole including loading & unloading, transportation, providing & laying of 1:1.5:3, M20 Grade, C.C-500x500X1800 mm & cooping of 500x500x450 mm, includes 5 days curing and zebra painting (In Black & Yellow Strips/Zebra)	No	6300	40	36	252000	2,26,800.0
4	Installation of Earthing pipe with 40mm dia 3 Mtr long Class-B GI Pipe & include supply of all required material like Salt, Charcoal, Nuts-Bolt ,PVC Pipe PCC & brick work for earthing	No	2415	120	108	289800	2,60,820.0

	chamber (Size: 2'x2') and RCC or other suitable slab cover						
5	Plinth for VCB	LS	35000	10	9	350000	3,15,000.0
6	Construction of cable trench in PSS	Mtr	3500	380	342	1330000	11,97,000.0
					Total Civil Part	24,28,650.0	21,85,785.0
					Sub-Total	2,28,17,792.3	2,05,36,013.1
					Other Over Head (Including Supervision charges)@ 6%	13,69,067.5	12,32,160.8
					Sub-total	2,41,86,859.8	2,17,68,173.9
					GST @ 18% of Sub-Total	43,53,634.8	39,18,271.3
					CESS @ 1% of Sub-Total	2,41,868.6	2,17,681.7
					Sub-Grand Total	2,87,82,363.2	2,59,04,126.9
					Inspection Fee	-	-
					Drawing Approval	-	-
					Grand Total	2,87,82,363.2	2,59,04,126.9
					Grand Total in Cr.	2.88	2.59

8.26 Annexure 26: Cost Estimate for Addition of New DTRs along with Associated HT/LT lines

S.No	Description	UOM	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
A	Addition New DTRs along with Associated HT/LT lines	Nos.	123	99	22.89	18.31
Total			**123**	**99**	**22.89**	**18.31**

A. Cost Estimate for Addition of New 100 KVA Transformer with Associated Lines

Annexure-26 Addition of New 11/0.4 KV 100 KVA DTR along with Associated HT/LT lines							
S No.	Item Description	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
Part - A DTR							
1	100 KVA,11/0.4KV(Al) Transformer	No	198000.0	123	99	2,43,54,000.0	1,96,02,000.0
2	WPB 160x152 (30.44KG/Mtr.),11 mtr	No	34321.5	246	198	84,43,093.9	67,95,661.0
3	LT Distribution Box for 100 KVA S/S.	EA	31744.7	123	99	39,04,598.1	31,42,725.3
4	11kV AB Switch,200A.3pole,50Hz,Horizontal Type	Set	9555.0	123	99	11,75,265.0	9,45,945.0
5	Lightning Arrester (12kV,10kA) DH Class	No	2299.5	369	297	8,48,497.1	6,82,936.7

6	HG Fuse(11KV,200A,3 Pole,50Hz) with PI	Set	7956.0	123	99	9,78,588.0	7,87,644.0
7	Conductor 80 mm sq. ACSR Rabbit	Mtr	34.4	2952	2376	1,01,479.8	81,678.8
8	Cable 1.1kV Al 1CX150 Sq.mm Un-armoured	Mtr	273.0	3936	3168	10,74,528.0	8,64,864.0
9	Gland for 1.1kV Al 1CX150 Sq.mm	EA	134.5	492	396	66,178.0	53,265.2
10	CABLE 1.1KV AL 4CX150 SQMM ARM	Mtr	720.1	1845	1485	13,28,575.6	10,69,341.3
11	GLAND FOR ARM CABLE 4X150 SQ.MM	EA	134.5	492	396	66,178.0	53,265.2
12	Top Channel 100X50X5mm (2800 mm long) (9.56Kg./Mtr) (Each 26.77 Kg)	Kg	97.5	8364	6732	8,15,490.0	6,56,370.0
13	Transformer Base GI Channel 100X50X5mm (2800 mm long) (9.56Kg./Mtr) (Each 26.77 Kg)	Kg	97.5	7995	6435	7,79,512.5	6,27,412.5
14	AB Switch Mounting Channel 75X40X4.8 mm GI Channel (2800 mm long) (7.14Kg./Mtr)	Kg	97.5	6027	4851	5,87,632.5	4,72,972.5
15	HG Fuse Side Support Channel 75X40X4.8 mm GI Channel(330 mm long)(7.14Kg./Mtr)	Kg	97.5	6027	4851	5,87,632.5	4,72,972.5
16	Transformer Belting angle (50X50X6) mm 2800 mm long 2 nos. (7.14 Kg./Mtr.)with side angle	Kg	97.5	7257	5841	7,07,557.5	5,69,497.5
17	AB Switch Operating Pipe Channel Support 75X40X4.8 mm GI Channel (625 mm long)(7.14Kg./Mtr)	Kg	97.5	984	792	95,940.0	77,220.0
18	AB Switch Side Support Channel 75X40X4.8 mm GI Channel(330 mm long)(7.14Kg./Mtr)	Kg	97.5	984	792	95,940.0	77,220.0
19	HG Fuse Side Support Channel 75X40X4.8 mm GI Channel(330 mm long)(7.14Kg./Mtr)	Kg	97.5	984	792	95,940.0	77,220.0
20	Cantilever Support Channel 75X40X4.8 mm GI Channel(810 m long)(7.14Kg./Mtr)	Kg	97.5	711.4	572.6	69,357.4	55,824.3
21	AB Switch Operating Pipe Diagonal Angle Support 50X50X6mm GI(388 mm long)(4.5Kg./Mtr)	Kg	97.5	214.8	172.9	20,938.9	16,853.3
22	AB Switch Operating Pipe Diagonal Base Angle Support 50X50X6mm (340 mm long) GI(4.5Kg./Mtr)	Kg	97.5	188.2	151.5	18,348.5	14,768.3

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23	Cantilever Support Angle 50X50X6mm GI (1282 mm long) (4.5Kg./Mtr)	Kg	97.5	709.6	571.1	69,184.7	55,685.3
24	LTDB Mounting Support Angle 75X40X4.8mm GI (3 mtr long) (7.14Kg./Mtr)	Kg	97.5	553.5	445.5	53,966.3	43,436.3
25	H/W fitting(B&S) 70KN,3 Bolt	Set	455.0	369	297	1,67,895.0	1,35,135.0
26	11kV Disc insulator (B&S) 70KN polymer	No	1495.0	369	297	5,51,655.0	4,44,015.0
27	50x6 mm GI flat	Kg	97.5	1107	891	1,07,932.5	86,872.5
28	25x6 mm GI flat	Kg	97.5	1107	891	1,07,932.5	86,872.5
29	GI Nut , Bolt & Washer of different sizes	Kg	101.4	3075	2475	3,11,805.0	2,50,965.0
30	Lug AL 70 Sqmm for 7/8 SWG Wire/Earthing	EA	8.9	6642	5346	59,188.8	47,639.8
31	Lug AL Crimping 150 Sqmm XLPE One Hole	EA	18.6	984	792	18,269.9	14,705.0
32	40mm nominal bore GI pipe (medium gauge) earthing device with 3 mtr .Long	No	1365.0	615	495	8,39,475.0	6,75,675.0
33	PIPE HDPE SIZE 25 MM	Mtr	35.2	2829	2277	99,653.8	80,209.2
34	Energy Meter Installation (Smart Meter) with BOX	LS	16531.0	123	99	20,33,313.0	16,36,569.0
35	Connector Mini Wedge 25 Sqmm to Dog	EA	76.4	369	297	28,194.0	22,692.7
Part - B HT Line							
S No.	**Item Description**	**Unit**	**Unit Rate in Rs.**	**Propose d Qty FY 24-25**	**Proposed Qty FY 25-26**	**FY 24-25 Amount (in Cr.)**	**FY 25-26 Amount (in Cr.)**
1	WPB 160x152 (30.44KG/Mtr.),11 mtr	No	34321.5	861	693	2,95,50,828.7	2,37,84,813.4
2	Top Channel 100X50X5mm, 9.56 KG/Mtr., each channel length 2.3 mtr., 2 no's channel required	Kg	97.5	6337.0	5100.5	6,17,853.6	4,97,296.8
3	Double Pole Belting Channel 75X40X4.8mm.,7.14KG/Mtr. Each channel length 1.66 Mtr.,4 no's channel required	Kg	97.5	9367.7	7539.8	9,13,348.8	7,35,134.4
4	50X50X6mm.GI Bracing Angle, 4.5Kg./mtr., each angle length 2.671 mtr., 4 nos angle required	Kg	97.5	6612.5	5322.2	6,44,716.8	5,18,918.4
5	Straight Cross Arm Channel 100X50X5mm, 9.56 KG/Mtr., each channel length 1.2 mtr.	Kg	97.5	8466.3	6814.4	8,25,467.8	6,64,400.9
6	Straight Cross Arm Top Channel 100X50X5mm, 9.56 KG/mtr., each channel length 0.806 Mtr.	Kg	97.5	2158.9	1737.7	2,10,494.3	1,69,422.2
7	Fish Plate 50X8 mm., 0.97kg/Mtr., each 0.280 mtr Length	Kg	97.5	200.4	161.3	19,543.0	15,729.7

8	Danger Plate	No	104.0	861	693	89,544.0	72,072.0
9	Back Clamp for danger Plate 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr 1 no	Kg	97.5	861	693	83,947.5	67,567.5
10	GI barbed wire anticlimbing device	Kg	104.0	2583	2079	2,68,632.0	2,16,216.0
11	Back Clamp for Barbed wire anticlimbing device 25X3mm. flat, 0.59Kg/Mtr. Flat of 0.510 mtr length 4 no's	Kg	97.5	1036.3	834.1	1,01,039.2	81,324.2
12	11kV,5kN pin insulator polymer	No	260.0	2214	1782	5,75,640.0	4,63,320.0
13	11kV V cross Arm (GI)	No	1053.0	615	495	6,47,595.0	5,21,235.0
14	GI Back Clamp for 11kV 'V' Cross Arm	No	104.0	615	495	63,960.0	51,480.0
15	Top bracket 100X50X5mm GI channel	No	195.0	615	495	1,19,925.0	96,525.0
16	H/W fitting(B&S) 70KN,3 Bolt	Set	455.0	738	594	3,35,790.0	2,70,270.0
17	11kV Disc insulator (B&S) 70KN polymer	No	1495.0	738	594	11,03,310.0	8,88,030.0
18	Earthing of Support (Coil Type)	EA	215.8	861	693	1,85,803.8	1,49,549.4
19	No-8 GI wire (Dia 4.6mm) 0.131 KG/ Mtr. - 2 Mtr. For connecting pole with Coil earthing	Kg	97.5	225.6	181.6	21,994.2	17,702.7
20	PG Clamp for 100 mm2 AAAC conductor	No	754.0	738	594	5,56,452.0	4,47,876.0
21	GI Nut , Bolt & Washer of different sizes	Kg	101.4	2423.1	1950.3	2,45,702.3	1,97,760.4
22	H.T. Stay clamp	Pair	162.5	492	396	79,950.0	64,350.0
23	H.T. Stay set (Complete)	Set	1365.0	492	396	6,71,580.0	5,40,540.0
24	H.T. Stay Insulator	No	65.0	492	396	31,980.0	25,740.0
25	7/10 SWG Stay Wire	Kg	97.5	4920	3960	4,79,700.0	3,86,100.0
26	40mm nominal bore GI pipe (medium gauge) earthing device with 3 mtr .Long	No	1365.0	123	99	1,67,895.0	1,35,135.0
27	GI Plate base(500X500X10mm)	No	1950.0	861	693	16,78,950.0	13,51,350.0
28	AAA conductor,100 mm2	Km	71500.0	114.0	91.8	81,52,501.5	65,61,769.5
29	50x6 mm GI flat	Kg	97.5	738	594	71,955.0	57,915.0
30	Crimping type Midspan Compression Joint for 100mm2 AAA Conductor	No	4717.7	0	0	-	-
31	Black Paint	Ltr	286.0	430.5	346.5	1,23,123.0	99,099.0
32	Yellow Colour Paint for Background	Ltr	230.6	861	693	1,98,585.5	1,59,837.1
Part - C LT Line							
S No.	**Item Description**	**Unit**	**Unit Rate in Rs.**	**Propose d Qty FY 24-25**	**Proposed Qty FY 25-26**	**FY 24-25 Amount (in Cr.)**	**FY 25-26 Amount (in Cr.)**

1	1.1KV LT AB Cable 4x95+1x95+1x16mm2	Mtr	421.7	30750	24750	1,29,66,352.5	1,04,36,332.5
2	9 mtr long 300 kg PSC pole	No	3900.0	615	495	23,98,500.0	19,30,500.0
3	RCC base Plate for PSC pole	No	1782.3	615	495	10,96,088.7	8,82,217.7
4	Danger Plate	No	104.0	615	495	63,960.0	51,480.0
5	Back Clamp for danger Plate 25X3 mm. flat, 0.59Kg/Mtr. Flat of 0.510mtr 1 no	Kg	97.5	185.1	148.9	18,042.7	14,522.2
6	GI barbed wire anticlimbing device	Kg	104.0	1537.5	1237.5	1,59,900.0	1,28,700.0
7	Back Clamp for Barbed wire anticlimbing device 25X3mm. flat, 0.59Kg/Mtr. Flat of 0.510 mtr length 4 no's	Kg	97.5	740.2	595.8	72,170.9	58,088.7
8	Pole clamp for EYE hook for XLPE Aerial bunched Cable	Pair	260.0	615	495	1,59,900.0	1,28,700.0
9	Suspension Clamp with EYE hook for ABC	No.	442.0	369	297	1,63,098.0	1,31,274.0
10	Eye Hook for AB cable for dead end point	No.	78.0	246	198	19,188.0	15,444.0
11	Conductor Dead End Clamp suitable for bare messenger XLPE Aerial bunched cable (25-70 sq. mm)	No.	84.5	246	198	20,787.0	16,731.0
12	LT Stay Set (Complete)	Set	676.0	246	198	1,66,296.0	1,33,848.0
13	LT Stay Insulator	No	39.0	246	198	9,594.0	7,722.0
14	LT Stay clamp	Pair	143.0	246	198	35,178.0	28,314.0
15	7/12 SWG Stay Wire	Kg	97.5	2460	1980	2,39,850.0	1,93,050.0
16	Earthing of Support (Coil Type)	EA	215.8	615	495	1,32,717.0	1,06,821.0
17	PIPE HDPE SIZE 25 MM	Mtr	35.2	1845	1485	64,991.6	52,310.3
18	Lug AL 70 Sqmm for 7/8 SWG Wire/Earthing	EA	8.9	1230	990	10,960.9	8,822.2
19	LT Distribution Box Polycarbonate	No	969.8	615	495	5,96,401.2	4,80,030.2
20	Cap cable end for ABC	EA	114.3	1230	990	1,40,531.5	1,13,110.7
21	IPC 50-150, 50-150 SQ.MM ST.LT Type A	EA	92.6	4920	3960	4,55,405.5	3,66,545.9
22	IPC EP 95 LT ABC 16-95 & 1.5-16 SQMM ST.LT Type C	EA	92.6	3690	2970	3,41,554.1	2,74,909.4
23	IPC KZ 2X150 LTABC 25-150 & 6-35(50) sqmm Type B	EA	54.3	6150	4950	3,33,791.3	2,68,661.3
24	STEEL STRAP SIZE 20 MMX50 M LONG	ROL	1547.6	123	99	1,90,350.6	1,53,209.0
25	BUCKLES FOR STEEL STRAP (1 EA = 100 NOS)	EA	514.4	123	99	63,272.7	50,926.8
26	Cable 1.1kV Al 4CX25 Sq.mm Armoured	Mtr	177.7	1845	1485	3,27,917.5	2,63,933.6
27	Gland for 1.1kV Al 4X25 Sq.mm	EA	180.8	615	495	1,11,162.7	89,472.4

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28	Lug AL Crimping 25 Sqmm XLPE Single Hole	EA	14.2	1230	990	17,408.5	14,011.7
29	25x6 mm GI flat	Kg	97.5	9225	7425	8,99,437.5	7,23,937.5
30	FRP CROSS ARM 1070MM 415V	EA	1029.0	1230	990	12,65,647.2	10,18,691.6
31	ISA-50X50C6 GI Angel (4.5KG/M)	Kg	97.5	6457.5	5197.5	6,29,606.3	5,06,756.3
32	ISMC-75X40X4.8 GI Channel (7.14KG/M)	Kg	97.5	6457.5	5197.5	6,29,606.3	5,06,756.3
33	GI Nut , Bolt & Washer of different sizes	Kg	101.4	307.5	247.5	31,180.5	25,096.5
34	2C X 4sq. mm. Armoured Aluminium Cable - XLPE Insulated	Mtr	50.3	7687.5	6187.5	3,86,854.8	3,11,371.0
35	2C X 10sq. mm. Armoured Aluminium Cable - XLPE Insulated	Mtr	66.4	3075	2475	2,04,194.9	1,64,352.0
36	4C X 10sq. mm. Armoured Aluminium Cable - XLPE Insulated	Mtr	103.0	6150	4950	6,33,345.8	5,09,766.2
37	Tie Plastic Black size 7.6mmX380mm	EA	7.0	1230	990	8,575.3	6,902.1
38	Tie Plastic size 9mmX265mm	EA	23.4	1845	1485	43,192.3	34,764.6
39	Black Paint	Ltr	286.0	615	495	1,75,890.0	1,41,570.0
40	Yellow Colour Paint for Background	Ltr	230.6	615	495	1,41,846.8	1,14,169.4
					Total Cost of materials	**12,49,26,293.2**	**10,05,50,431.1**
					Stock, Storage & Insurance i.e 3%	**37,47,788.8**	**30,16,512.9**
					Sub Total	**12,86,74,082.0**	**10,35,66,944.0**
					Contingency @ 3%	**38,60,222.5**	**31,07,008.3**
					Tools & Plants @ 2%	**25,73,481.6**	**20,71,338.9**
					Transportation @ 7.5%	**96,50,556.1**	**77,67,520.8**
					Erection Transformer/Breaker/WPB/H Pole/Joist Poles @ 5%	**12,54,231.0**	**10,09,503.0**
					Erection Other @ 10%.	**58,77,054.1**	**47,30,311.8**
					Erection PSC Pole @ 20%	-	-
					Sub Total	**15,18,89,627.3**	**12,22,52,626.8**

Sl no	Civil & Services	Unit	Unit Rate in Rs.	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Fixing of complete 11KV line stay set includes Turn Buckle assembly, Stay Rod & Stay plate, stay insulator, stay wire, stay clamps with Nuts & bolts BA will do the excavation, supply of 0.5Cum cement concrete foundation 1:2:4 size (500mmx500mmx800mm)	No.	2362.5	492	396	11,62,350.0	9,35,550.0

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2	Erection of 11 Mtr long WPB Pole including loading & unloading, transportation, providing & laying of 1:1.5:3, M20 Grade, C.C-500x500X1800 mm & cooping of 500x500x450 mm, includes 5 days curing and zebra painting (In Black & Yellow Strips/Zebra)	No	6300	1107	891	69,74,100.0	56,13,300.0
3	Installation of Earthing pipe with 40mm dia 3 Mtr long Class-B GI Pipe & include supply of all required material like Salt, Charcoal, Nuts-Bolt ,PVC Pipe PCC & brick work for earthing chamber (Size: 2'x2') and RCC or other suitable slab cover	No	2415	738	594	17,82,270.0	14,34,510.0
4	Fixing of complete LT line stay set includes Turn Buckle assembly, Stay Rod & Stay plate, stay insulator, stay wire, stay clamps with Nuts & bolts BA will do the excavation, supply of 0.5Cum cement concrete foundation 1:2:4 size (500mmx500mmx800mm)	No	2362.5	246	198	5,81,175.0	4,67,775.0
6	Providing and fixing including loading, unloading & transportation of FRP Fencing including Fluorescent Sticker (two Mtr. in each post),Supply of Latch Lock, Supply of Hings,Supply of SS Lock with Key excluding civil works as per TPNODL specification.	M2	3310	3739.2	2772	1,23,76,752.0	91,75,320.0
6.1	Civil work for FRP	LS	496.5	3739.2	2772	18,56,512.8	13,76,298.0
7	Supply, Installation of Outdoor Joint Kit for 1.1 kV XLPE AL Cable 4CX150 sqmm	No	3994	246	198	9,82,524.0	7,90,812.0
8	Erection of 9 MTR PSC Pole including loading and unloading, transportation .Concreting to be done with PCC-1:1.5:3. of size - 500x500x1500 & Padding 500x500x150mm.Scope of work also includes 5 days curing & zebra painting (In Black & Yellow Strips/Zebra)	No	6300	615	495	38,74,500.0	31,18,500.0
					Total Civil Part	2,95,90,183.8	2,29,12,065.0
					Sub-Total	18,14,79,811.1	14,51,64,691.8

Other Over Head (Including Supervision charges)@ 6%	1,08,88,788.7	87,09,881.5
Sub-total	19,23,68,599.8	15,38,74,573.4
GST @ 18% of Sub-Total	3,46,26,348.0	2,76,97,423.2
CESS @ 1% of Sub-Total	19,23,686.0	15,38,745.7
Sub-Grand Total	22,89,18,633.7	18,31,10,742.3
Inspection Fee	-	-
Drawing Approval	-	-
Grand Total	22,89,18,633.7	18,31,10,742.3
Grand Total in Cr.	22.89	18.31

8.27Annexure 27: Cost Estimate for Automation of Conventional PSS.

S No.	Item Description	Unit	Unit Cost with GST (in lacs)	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	33KV Control Relay Panel For Transformer	EA	4.2	20	20	0.83	0.83
2	33KV Control Relay Panel For IC/OG	EA	2.6	26	26	0.68	0.69
3	CR PANEL FOR 11KV VCB	EA	2.5	28	28	0.70	0.70
4	RTU 24-48 V WITH PANEL (Urban)	EA	3.4	20	5	0.68	0.17
5	RTU 24-48 V WITH/WITHOUT PANEL (Rural ODSSP/OLD)	EA	2.3	40	38	0.93	0.88
6	FRTU and allied Service for Distribution RMU automation	EA	1.8	22	18	0.39	0.32
7	Low cost Communication (RMU+Rural)	EA	0.2	22	18	0.05	0.04
8	Transducer+ Misc. Items	EA	0.3	65	35	0.17	0.09
9	RELAY TRANSFORMER DIFFERENTIAL NUMERICAL	EA	1.2	30	15	0.35	0.18
10	RELAY OVER CURRENT&EARTH FAULT NUMERICAL	EA	1.1	210	150	2.35	1.68
11	RELAY MASTER TRIP 24V-48V DC	EA	0.1	290	170	0.29	0.17
12	SITC of Fire Alarm	EA	1.1	50	90	0.57	1.03
13	Ethernet Switch (12/24 Port)	EA	1.5	71	30	1.05	0.44
14	CCTV Camera for PSS surveillance	EA	1.3	105	100	1.40	1.33
15	Integration support for ODSSP/Conventional PSS	EA	0.5	25	20	0.13	0.10
16	Revamping of Panels with new relays	EA	0.6	25	25	0.15	0.15
17	ITC cost of Relays, RTUs, CRP	LS	42.0	1	1	0.42	0.33
18	Digital Substation for space constraints PSS	EA	50.0	2	6	1.00	3.00
19	Automation Lab (Balasore & Jajpur)	EA	10.0	1	1	0.1	0.10
	Total Cost in Cr.					**12.23**	**12.23**

8.28 Annexure 28: Cost Estimate for Disaster Recovery Centre- Hardware and Software.

S. No.	Description	Unit cost (INR inclusive of Tax)	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Server (FY 23-24, 70% was approved). Part is covered	38,00,000	4	-	1.52	-
1.1	Server	42,00,000	-	2	-	0.84
2	Windows OS (Data Center Edition)	64,000	72	48	0.46	0.31
3	Linux	3,65,000	36	15	1.31	0.55
4	Antivirus (Server Edition)	51,000	20	10	0.10	0.05
Total in Cr.					**3.40**	**1.75**

8.29 Annexure 29: Cost Estimate for Data Center Hardware and Software.

S. No.	Description	Unit cost (INR inclusive of Tax)	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	MDM Development/Licences	35.4	150000	150000	0.53	0.53
2	HES Licences	300	150000	150000	4.50	4.50
3	Server	3800000	4	0	1.52	-
3.1	Server	4200000	0	2	-	0.84
4	Windows OS (Data Center Edition)	64,000	72	48	0.46	0.31
5	Linux	3,65,000	36	15	1.31	0.55
6	Antivirus (Server Edition)	51,000	20	10	0.10	0.05
7	MS SQL 2 Core Enterprise license	14,45,000	8	-	1.16	-
8	Storage & back up	1,00,00,000	-	1	-	1.00
Total in Cr.					**9.58**	**7.78**

8.30 Annexure 30: Cost Estimate for End user IT Infrastructure.

S.No	Description	Unit cost (INR , inclusive of tax)	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Laptops with OS	72,000	200	0	1.44	-
1.1	Laptops with OS for new Joinees	74,000	0	200	-	1.48

2	MS Office License for Laptop	32,000	200	0	0.64	-
2.1	MS Office License for Laptop for new Joninees	35,000	0	200	-	0.70
3	Anti Virus for Laptop	3,650	200	0	0.07	-
3.1	Anti Virus for Laptop foe new Joninees	3,950	0	200	-	0.08
4	AD Cal License for Laptop	3,250	200	0	0.07	-
4.1	AD Cal License for Laptop for new Joninees	3,650	0	200	-	0.07
5	Laptops with OS for replacement of Laptop of employees after 4 years	74,000	0	400	-	2.96
6	MS Office Licenses post end of support	35,000	0	500	-	1.75
7	Printer	45,000	50	25	0.23	0.11
8	Scanner	35,000	20	25	0.07	0.09
9	Access point	50,000	50	0	0.25	-
Total in Cr.					**2.77**	**7.24**

8.31 Annexure 31: Cost Estimate for Strengthen Network Connectivity

S. No.	Description	Unit cost (INR inclusive of Tax)	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Locational LAN Work for offices	40,00,000	1	-	0.40	-
1.1	Locational LAN Work for offices	20,00,000	-	1	-	0.20
2	Layer -II & III Switch	1,52,000	25	5	0.38	0.08
3	2/5 kVA UPS (Rack Mounting) with battery	1,08,000	30	10	0.32	0.11
4	SMPS with battery (rack mounted)	1,08,800	40	30	0.44	0.33
5	Aggregator Router	10,91,000	20	2	2.18	0.22
6	OFC network for interconnection of Offices	1,50,00,000	1	-	1.50	-
6.1	OFC network for interconnection of Offices	2,00,00,000	-	1	-	2.00
7	Layer- 3 Router (VPN)	1,10,000	15	20	0.17	0.22
8	MPLS link installation	5,00,000	0	1	-	0.05
9	DC/AC Router & Rack	150000	50	20	0.75	0.30
Total in Cr.					**6.14**	**3.50**

NOTARY GOVT. OF ODISHA (INDIA)

8.32 Annexure 32: Cost Estimate for Balance GIS mapping of 2 Circle (Baripada & Keonjhar)

Sr.No	Item	Unit cost (INR inclusive of Tax)	Unit	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Project Management, Site Visit & logistics	720000	No	1	1	0.07	0.07
2	Lanbase Survey and mapping of Baripada Circle	3345	Sq Km	2870	0	0.96	-
3	LT Network Survey and mapping with assets Baripada Circle	2183	Km	0	1950	-	0.43
4	Asset Numbering and Pole Painting Baripada Circle	45	No	0	40000	-	0.18
5	33 Kv Line Survey and mapping with assets Baripada Circle	1593	Km	100	0	0.02	-
6	11Kv Line Survey and mapping with assets Baripada Circle	2043	Km	1500	0	0.31	-
7	Migration / Updation Baripada Circle	869	Sq Km	0	2800	-	0.24
Total Baripada Circle Data Survey Costing						**1.35**	**0.92**
8	Project Management, Site Visit & logistics	720000	No	1	1	0.07	0.07
9	Lanbase Survey and mapping of Keonjhar Circle	3345	Sq Km	2700	0	0.90	-
10	LT Network Survey and mapping with assets Keonjhar Circle	2183	Km	0	750	-	0.16
11	Asset Numbering and Pole Painting Keonjhar Circle	46	No	0	40000	-	0.18
12	33 Kv Line Survey and mapping with assets Keonjhar Circle	1593	Km	100	0	0.02	-
13	11Kv Line Survey and mapping with assets Keonjhar Circle	2043	Km	500	0	0.10	-
14	Migration / Updation Keonjhar Circle	869	Sq Km	0	2720	-	0.24
Total Keonjhar Circle Data Survey Costing						**1.09**	**0.66**
Total in Cr.						**2.45**	**1.58**

8.33 Annexure 33: Cost Estimate for Civil Infrastructure

Annexure-28 Civil Infrastructure

S No.	Item Description	Unit	Unit Rate in Lacs	Proposed Qty FY 24-25	Propose d Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	New Section Office	NOS	50	3	6.0	1.50	3.00
2	New PSS Control room	NOS	60	2	2.0	1.20	1.20
3	STS Office	NOS	65	1	3.0	0.65	1.95
4	Circle Office (Bhadrak Internal Finishes for 2 floors)	NOS	100	1	0	1.00	0.00
5	Approach Road	RMT	0.17	1,015.00	2,644.00	1.73	4.49
6	Storage Yard	Sqm	0.1	2,250.0	2,250.0	2.25	2.25
7	Extension of Opcenex Block B	NOS	350	0.45	0.55	1.58	1.93
8	Construction of New GRF and Customer care BED	NOS	200	0.5	0.5	1.00	1.00
9	Storage room for stores at PSS	NOS	8	10.0	10.0	0.80	0.80
10	Cafeteria Canteen	Sqm	0.2	300.00	800.00	0.60	1.60
11	Guest House	No	150		1.0	0.00	1.50
12	Area Development around Office Premises	No	50	1	2.0	0.50	1.00
13	Auditorium with facilities	No	400	0.5	0.5	2.00	2.00
14	New Construction for Division Office	No	150		3.0	0.00	4.50
15	Conference Hall	No	50	1	0	0.50	0.00
16	Safety Training Centre	No	65	4	0	2.60	0.00
17	Conversion of Old Quarters to office (Keonjhar)	AU	60	1	0	0.60	0.00
Grand Total in Cr.						**18.50**	**27.22**

8.34 Annexure 34: Cost Estimate for Office Administration

Sr. No	Item Description	Unit Cost in Lacs	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Air conditioners	40000	25	25	0.10	0.10
2	Chairs/Executive chairs/Visitors Chairs	4000	500	500	0.20	0.20
3	Fixed chairs	2000	1020	1020	0.20	0.20
4	Tables	7000	204	204	0.14	0.14
5	Other furniture & fixture	1000000	1	1	0.10	0.10
6	Water Cooler	40000	50	50	0.20	0.20
7	Water Dispenser	10000	10	10	0.01	0.01
8	RO / Aqua guard	15000	50	50	0.08	0.08
9	Photocopy Machine	400000	10	10	0.40	0.40
10	Fan ceiling / Wall mounted / Pedestal Fan / Exhaust Fan	3000	200	200	0.06	0.06

Sr. No	Item Description	Unit Cost in Lacs	Proposed Qty FY 24-25	Proposed Qty FY 25-26	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
11	Refrigerator	15000	50	50	0.08	0.08
12	Induction Plate	3000	160	160	0.05	0.05
13	Electric Kettle	1200	150	150	0.02	0.02
14	White Board	3000	150	150	0.05	0.05
15	Notice / Pin up Board	3600	150	150	0.05	0.05
16	Emergency Light	200000	1	1	0.02	0.02
17	TV / LED	1000000	1	1	0.10	0.10
18	EPBAX System	2000000	1	1	0.20	0.20
19	Boom barrier in stores gate	50000	10	10	0.05	0.05
20	Metal detector (car)	5000	10	10	0.01	0.01
21	Walky talky handsets	10000	10	10	0.01	0.01
22	Various (Misl)	2000000	1	1	0.20	0.20
23	Electrical Vehicles on hiring bases (ORIDA)	62241	45	45	0.28	0.28
Total Cost in Cr.					**2.60**	**2.60**

8.35 Annexure 35: Cost Estimate for Security cameras, heavy-duty Racking system / Storage solutions for Balasore, Jajpur & Betnoti store.

S. No.	Major Category	UoM	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
1	Development of Shed (3 Tier Structure) at Betnoti	LS	1	1
2	Development of Shed (3 Tier Structure) at Jajpur	LS	1	1
3	Development of Shed (3 Tier Structure) at Balasore	LS	2	0
4	Drainage System for All Stores & Scrap Store	LS	0.5	0
9	Roads & Plinth Work	LS	1.5	0
10	Plinth & Shed for Hazardous Oil	LS	0.5	0
11	Visitor Room , Security Room,Labor Room	LS	0	0.25
12	Scrap Meter Crushing Machine	LS	0.25	0
13	Weighing Machine	LS	0	0.5
14	Camera	LS	0.5	0.5

S. No.	Major Category	UoM	FY 24-25 Amount (in Cr.)	FY 25-26 Amount (in Cr.)
15	Store Automation	LS	0.5	0
16	Vertical Carousal	LS	0	1
17	Intrusion Detection System	LS	0	1
18	Store Automation	LS	0.5	0
19	Wi Fi Enablement in Stores	LS	0	1
20	Store Automation (Warehouse Management System (WMS) including Barcoding & Digital Gate Pass with Acknowledgement)	LS	0	2
21	Parking Space	LS	0.1	0.1
22	Record Room	LS	0.1	0.05
23	Signage & Boards	LS	0.03	0.02
Total Cost in Cr.			**8.48**	**8.42**

36. Annexure

Annexure – 36A: 33kV Lines Conductor upgradation work Detail:

- **For FY 24-25**

S No	Name Of the Circle	Name of division	S/Stn Name	Feeder Name	Location from	Location to	Line over loaded or not (based on load flow study/based on operation feedback)	Existing Conductor	Proposed Conductor	Length In Km	Benefits after Refurbishment of Lines
1	Baripada	BPED	BETNOTI GSS	33KV BETNOTI-II	BETNOTI PSS	BAISINGA PSS	OVERLOAD&UNDER VOLTAGE	80/100	148	6.5	1. % LOSS IS REDUCED FROM 6.45% TO 4.00% 2. TAIL END VOLTAGE IMPROVED FROM 29.5KV TO 30.6 KV 3. RELIABLE POWER SUPPLY
2	Baripada	RED	KARANJIA GSS	33KV KARANJIA	KARANJIA GSS	KARANJIA PSS	OVERLOAD&UNDER VOLTAGE	34/55/100	148	11	1. % LOSS IS REDUCED FROM 7.20% TO 4.20% 2. TAIL END VOLTAGE IMPROVED FROM 26.4KV TO 30.3 KV 3. RELIABLE POWER SUPPLY
3	Baripada	UED	UDALA GSS	33KV KHUNTA	UDALA GSS	KHUNTA PSS	Old line and Undervoltage	80	232	8.1	1. % LOSS IS REDUCED FROM 9.08% TO 3.57% 2. TAIL END VOLTAGE IMPROVED FROM 29.4 KV TO 31.3 KV 3. RELIABLE POWER SUPPLY
4	Baripada	UED	UDALA GSS	33KV UDALA	UDALA GSS	UDALA PSS	OVERLOAD	100	232	6.5	1. % LOSS IS REDUCED FROM 4.38% TO 2.34% 2. TAIL END VOLTAGE IMPROVED FROM 31 KV TO 31.9 KV 3. RELIABLE POWER SUPPLY
5	Bhadrak	BNED	SORO GRID	BASUDEVPUR FEEDER	BASUDEVPUR PSS	ERAM PSS	UNDER VOLTAGE	100	232	9	1.AFTER REFURBUSIGMENT THE VOLTAGE LEVEL IS IMPROVED FROM 28.1 TO 30.3 AT TAIL END 2. POWER SUPPLY IS RELAIBALE 2.LOSS IS REDUCE FROM 8.71% TO 6.47%

S No	Name Of the Circle	Name of division	S/Stn Name	Feeder Name	Location from	Location to	Line over loaded or not (based on load flow study/based on operation feedback)	Existing Conductor	Proposed Conductor	Length In Km	Benefits after Refurbishment of Lines
6	Bhadrak	BNED	BALIMUNDA GRID	DHAMARA FEEDER	SOURCE HEAD	DHAMARA PSS	OVER LOAD	55	232	4	1.AFTER REFURBUSIGMENT OVERLOAD PROBLEM RESOLVED 2. POWER SUPPLY IS RELAIBALE 3.LOSS IS REDUCE FROM 14.95 % TO 6.57%
7	Bhadrak	BNED	BHADRAK GRID	GOPINATH PUR FEEDER	SORCE HEAD	ASURA PSS	OVER LOAD	55	148	2	1.AFTER REFURBUSIGMENT THE OVERLOAD PROBLEM RESOLVED 2. POWER SUPPLY IS RELAIBALE 2.LOSS IS REDUCE FROM 3.57% TO 3.14%
8	Jajpur	JTED	132/33 KV JAJPUR TOWN GSS	BINJHARPUR FEEDER	SOURCE HEAD	NEAR MAINDA PSS [SEC ID - 30060023]	OVERLOADING LINE (UPTO 15.5KM) Conductor Upgradation is considered for Upcoming Industrial Load Growth.	80/100	232	7.3	33 KV Binjharpur Feeder - Line Upgradation along with Load Shifting resulted in to, Overloading Alleviation (From 118.4 % to 48.8 %) Undervoltage Mitigation (From 28.46 KV to 31.51 KV) at its tail end (PRITIPUR (BITANA) PSS Bus). Reduction in Losses (From 13.27 % to 2.60 %) Improves Network Reliability.
9	Jajpur	JRED	220/132/33 KV OLD DUBURI GSS	SUKINDA FEEDER	NEAR DUBURI PSS [SEC ID - 30100013]	NEAR DANAGADI PSS [SEC ID - 30100034]	OVERLOADING LINE (UPTO 5KM) Conductor Upgradation is considered for Upcoming Industrial Load Growth.	100	232	10	33 KV Sukinda Feeder - Line Upgradation resulted in to, Overloading Alleviation (From 110.3 % to 79.6 %) Improvement in Voltage Level (From 31.19 KV to 31.58 KV) at its tail end (Mantira PSS Bus). Reduction in Losses (From 4.99 % to 3.56 %) Improves Network Reliability.
10	Jajpur	KuED	132/33 KV CHANDIKHOLE GSS	JARAKA FEEDER	NEAR NEULPUR PSS [SEC ID - 30110027]	NEAR TAPPING POINT OF JARAKA PSS [SEC ID - 30110046]	OVERLOADING LINE (UPTO 2KM)	55/100	232	4.4	33 KV Jaraka Feeder – Line Upgradation along with Load Shifting resulted in to, Overloading Alleviation (From 110.8 % to 31.4 %) Improvement in Voltage Level (From 31.40 KV to 32.47 KV) at its tail end (Narasinghpur PSS Bus).

S No	Name Of the Circle	Name of division	S/Stn Name	Feeder Name	Location from	Location to	Line over loaded or not (based on load flow study/based on operation feedback)	Existing Conductor	Proposed Conductor	Length In Km	Benefits after Refurbishment of Lines
											Reduction in Losses (From 3.63 % to 2.65 %) Improves Network Reliability.
11	Keonjhar	KED	Ranki GSS	Keonjhar-1 feeder	Baliayagoda	Gamharia PSS	Overload	100	232	4.00	1. Keonjhar -1 feeder loss will reduced from 8.68 % to 3.65 %. 2. Gambharia PSS bus voltage will improved from 29.6 KV to 31.5KV. 3. Reliability will improved.
12	Keonjhar	KED	Ranki GSS	Judia feeder	Judia PSS bus	Suakati PSS bus	1.55 sqmm old conductor. 2.Safety point of view. 3.Reliability. 4. Operation feed back.	55	232	4.00	1. Judia feeder loss will reduced from 3.46 % to 3.13%. 2. After refurbishment of Judia feeder voltage will improved in below PSS: Suakati PSS bus - 31.8 KV to 32 KV. Banspal PSS bus - 31.2 KV to 31.3 KV. Kusakala PSS- 31.1 KV to 31.3 KV. 3. Safety point of view. Existing 55 sqmm conductor is old conductor. 4. Reliability will improved.
13	Keonjhar	JoED	Joda GSS	Rugudi feeder/ Barbil-1 feeder	3.3 km after Joda GSS	Rugudi PSS	Overload	100/148	232	7.10	1. Rugudi feeder loss will reduced from 8.22 % to 1.45%. 2.Rugudi PSS bus voltage will improved from 29.7 KV to 30.8 KV. 3. It is an industrial feeder. New industry proposal is already taken. Existing 100 sqmm/ 148 sqmm conductor can not abide heavy load due to industrial load growth. So, for this reason 232 sqmm conductor refurbishment is to be needed. 4. Reliability will improved.



S No	Name Of the Circle	Name of division	S/Stn Name	Feeder Name	Location from	Location to	Line over loaded or not (based on load flow study/based on operation feedback)	Existing Conductor	Proposed Conductor	Length In Km	Benefits after Refurbishment of Lines
14	Keonjhar	AED	Agarpada GSS	Bidyadhar pur feeder	Bidyadharpu r PSS	Orali PSS	Undervoltage	55	148	7.50	1. Bidyadharpur feeder loss will reduced from 7.51% to 5.90%. 2.After refurbishment of Bidyadharpur feeder voltage will improved in below PSS: Salania PSS bus- 29.5 KV to 30.2 KV. Orali PSS-29.8 KV to 30.5 KV. Dhenka PSS- 31.7 KV to 31.8 KV. 3. Reliability will improved.
15	Balasore	BED	Balasore GSS	Gopalgaon link line	City PSS	four pole	Overloaded with peak load of Kalimandir & Gopalgaon combined	100	232	5.5	1.100 sqmm old conductor. 2.increasing Load of Kalimandir & Gopalgaon PSS 3.Reliability. 4. Operation feed back.
16	Balasore	CED	Balasore GSS	BALGOPAL PUR FEEDER	GSS	Remuna PSS		100	232	6.1	1. Load increase in Balgopalpur feeder. 2. Also to cater the load of all 4 PSS after n-1 configuration completed between emami feeder & Balgopalpur feeder
17	Balasore	BTED	Basta GSS	Basta feeder	Basta PSS	Nalabahar chak	Damaged condition Underrated conductor	80	232	8	1. Under ODSSP-V Rupsa feeder Is connected to Basta feeder. With upgradation of line, N-1 connectivity will be feasibile.
18	Balasore	JED	Jaleswar GSS	Bhograi feeder	Dehurda PSS	Jagannathpu r PSS	LOW VOLTAGE	100	232	10	1. under ODSSP-IV, 2 NEW PSS (Rankotha & Jayrampur PSS) are under construction at bhograi, Rankotha PSS will be radially connected from Jagannathpur PSS & N-1 connectivity from Jayrampur PSS will be established. Hence to cater the upcoming load, upstream network needs to be upgraded.
Total Length in Km.										**121.00**	

For FY 25-26

S No	Name Of the Circle	Name of Division	S/Stn Name	FEEDER Name	Location from	Location to	Line over loaded or not (based on load flow study/based on operation feedback)	Existing Conductor	Proposed Conductor	Length In Km	Benefits after Refurbishment of Lines
1	Balasore	BED	Balasore GSS	Chandipur 33kV	near RMU cut point	Nist College		100	232	5.0	To allow Back feed from Chandipur GSS to City PSS
2	Balasore	CED	Balasore GSS	Srijung	Saragaon PSS	Rasalpur PSS tap point	UNDER VOLTAGE	55	232	10.0	Srijung feeder is totally 55sqmm conductor. After construction of new line between Chandipur & Saragaon it can cater the load of downstream PSS. Total refurbishment required is 20km till Srijung PSS but for the first phase till rasalpur tap point need to be refurbished.
3	Balasore	BTED	Basta GSS	Basta 33 kv	Basta GSS	basta PSS	UNDER VOLTAGE	100	232	0.5	to cater Load increase on Basta feeder after N-1 connectivity from Rupsa feeder.
4	Balasore	JED	Jaleswar GSS	Basta feeder	Jaleswar GSS	Baghabli cutpoint	UNDER VOLTAGE	80/100	232	7.0	old conductor with frequent snapping.
5	Balasore	JED	Bhograi GSS	New kamardha 33kV	Bhograi GSS	Batagram 4pole	UNDER VOLTAGE	100	232	3.5	old conductor with future load growth.
6	Balasore	Soro	Soro	Kupari	Khaira PSS	Kupari PSS	UNDER VOLTAGE	80	232	10.0	Due to overloading and frequent snapping, to meet the future load growth, to make ring arrangement from agarpada 132/33 gss
7	Baripada	BPED	BETNOTI GSS	33KV BETNOTI-I	BETNOTI PSS	BARKAND PSS	UNDER VOLTAGE	80	148	20.0	1. % LOSS IS REDUCED FROM 5.88% TO 4.40% 2. TAIL END VOLTAGE IMPROVED FROM 29.2 KV TO 30.2 KV 3. RELIABLE POWER SUPPLY
8	Baripada	RED	RAIRANGPUR GSS	33KV BAHALDA	KANTABANI PSS	BAHALDA PSS	OVER LOAD	100	232	10.0	1. % LOSS IS REDUCED FROM 12.9% TO 6.11% 2. TAIL END VOLTAGE IMPROVED FROM 27.1 KV TO 30.2 KV 3. RELIABLE POWER SUPPLY

S No	Name Of the Circle	Name of Division	S/Stn Name	FEEDER Name	Location from	Location to	Line over loaded or not (based on load flow study/based on operation feedback)	Existing Conductor	Proposed Conductor	Length In Km	Benefits after Refurbishment of Lines
9	Keonjhar	KED	Ranki GSS	Judia feeder	Judia PSS bus	Suakati PSS bus	1.55 sqmm old conductor. 2.Safety point of view. 3.Reliability. 4. Operation feed back.	55	232	6.0	1. Judia feeder loss will reduced from 3.46 % to 2.63%. 2. After refurbishment of Judia feeder voltage will improved in below PSS, Suakati PSS bus - 31.8 KV to 32.2 KV. Banspal PSS bus - 31.2 KV to 31.6 KV. Kusakala PSS- 31.1 KV to 31.5KV. 3. Safety point of view. Existing 55 sqmm conductor is old conductor. 4. Reliability will improved.
10	Keonjhar	AED	Agarpada GSS	Bidyadharpur feeder	Bidyadharpur PSS	Orali PSS	Undervoltage	55	232	7.5	1. Bidyadharpur feeder loss will reduced from 7.51% to 4.690%. 2.After refurbishment of Bidyadharpur feeder voltage will improved in below PSS: Salania PSS bus- 29.5 KV to 30.8 KV. Orali PSS-29.8 KV to 31.1KV. Dhenka PSS- 31.7 KV to 31.8 KV. 3. Reliability will improved.
11	Keonjhar	JOED	Palaspanga GSS	Remuli feeder	Remuli PSS bus	Champua PSS bus	Undervoltage from Remulee PSS to Champua PSS(Section id- REMULEE FEEDER13 and REMULEE FEEDER6886).	80	232	6.1	1. Remulee feeder loss will recuced from 5.26 % to 3.36%. 2.After refurbishment of Remulee feeder voltage will improved in below PSS: Remulee PSS- 30.4 KV to 31.3 KV. Champua PSS- 29.6 KV to 30.7 KV. Basudevpur PSS- 30.4 KV to 31.2 KV. 3. Reliability will improved.
12	Jajpur	JTED	132/33 KV JAJPUR TOWN GSS	BINJHARPUR FEEDER	SOURCE HEAD	MANSARA PSS	OVER LOAD	80/100	232	9.4	33 KV Binjharpur Feeder - Line Upgradation along with Load Shifting resulted in to,Overloading Alleviation (From 118.4 % to 48.8 %), Undervoltage Mitigation (From 28.46 KV to 31.51 KV) at its tail end (PRITIPUR (BITANA) PSS Bus).

S No	Name Of the Circle	Name of Division	S/Stn Name	FEEDER Name	Location from	Location to	Line over loaded or not (based on load flow study/based on operation feedback)	Existing Conductor	Proposed Conductor	Length In Km	Benefits after Refurbishment of Lines
											Reduction in Losses (From 13.27 % to 2.60 %) Improves Network Reliability.
13	Jajpur	JRED	220/132/33 KV OLD DUBURI GSS	SUKINDA FEEDER	SOURCE HEAD	30100051	OVERLOAD	80/100	232	5.0	33 KV Sukinda Feeder - Line Upgradation resulted in to,Overloading Alleviation (From 137.9 % to 99.5 %)
Total Length in Km.										**100.0**	

Annexure – 36B: 11kV Lines Conductor upgradation work Detail:

- **For FY 24-25**

SL NO.	Name Of the Circle	Name of division	S/Stn Name	Existing Feeder Name	Location from	Location to	Line over loaded or not (based on load flow study/based on operation feedback)	Existing Conductor	Proposed Conductor	Length In Km	Benefits after Refurbishment of Lines
1	Baripada	BPED	BAISINGA PSS	BACHURIPADA	source	NUAGAON /25KVA	UNDERVOLTAGE	55	100	12.8	1.AFTER REFURBISHMENT THE TAIL END VOLTAGE LEVEL IMPROVED FROM 9.5 KV TO 10.3 KV 2.LOSS IS REDUCED FROM 9.8% TO 4.7% 3. POWER SUPPLY IS RELAIBALE.
2	Baripada	RED	KANTABANI PSS	DUBULABEDA	source	KHASILKATA/100KVA	UNDERVOLTAGE	55	100	6.9	1.AFTER REFURBISHMENT THE TAIL END VOLTAGE LEVEL IMPROVED FROM 9.1 KV TO 10.4 KV 2.LOSS IS REDUCED FROM 16.1% TO 4.8% 3. POWER SUPPLY IS RELAIBALE.

SL NO.	Name Of the Circle	Name of division	S/Stn Name	Existing Feeder Name	Location from	Location to	Line over loaded or not (based on load flow study/based on operation feedback)	Existing Conductor	Proposed Conductor	Length In Km	Benefits after Refurbishment of Lines
3	Baripada	RED	KANTABANI PSS	RAIRANGPUR TOWN	source	GTL PURUNA GHATY/25 KVA	UNDERVOLTAGE	55	100	7.0	1.AFTER REFURBISHMENT THE TAIL END VOLTAGE LEVEL IMPROVED FROM 9.8 KV TO 10.6 KV 2.LOSS IS REDUCED FROM 8.1% TO 3.0% 3. POWER SUPPLY IS RELAIBALE.
5	Bhadrak	BSED	BILANA PSS	BILANA FEEDER	ANANDARA (63kva)	BANIGARI (25kva)	UNDER VOLTAGE	34	100	3.0	1.AFTER REFURBISHMENT THE VOLTAGE LEVEL IS IMPROVED FROM 9.8KV TO 10.4KV AT TAIL END. 2.RELIABLE POWER SUPPLY 3. LOSS IS REDUCE FROM 5.64% TO 3.62 %
6	Bhadrak	BSED	DHAMNAGAR PSS	DOBALA FEEDER	SOURCE HEAD	NEAR TOWER LI (25KVA)	UNDER VOLTAGE	34	100	3.0	1.AFTER REFURBISHMENT THE VOLTAGE LEVEL IS IMPROVED FROM 10.2KV TO 10.6KV AT TAIL END. 2.RELIABLE POWER SUPPLY 3. LOSS IS REDUCE FROM 4.86% TO 3.14%
7	Bhadrak	BSED	RANIPOKHARI PSS	KHANGARA FEEDER	BALADIA CHHAK (25KVA)	BALADIA CHHAK (63KVA)	UNDER VOLTAGE	34	100	2.3	1.AFTER REFURBISHMENT THE VOLTAGE LEVEL IS IMPROVED FROM 10.2KV TO 10.3KV AT TAIL END. 2.RELIABLE POWER SUPPLY 3. LOSS IS REDUCE FROM 4.33% TO 4.21%
8	Bhadrak	BNED	NANDAPUR PSS	TIHIDI FEEDER	SOURCE HEAD	OLD SDO OFFICE (100kva)	UNDER VOLTAGE	34	100	1.2	1.AFTER REFURBISHMENT THE VOLTAGE LEVEL IS IMPROVED FROM 10.3KV TO 10.5KV AT TAIL END. 2.RELIABLE POWER SUPPLY.

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SL NO.	Name Of the Circle	Name of division	S/Stn Name	Existing Feeder Name	Location from	Location to	Line over loaded or not (based on load flow study/based on operation feedback)	Existing Conductor	Proposed Conductor	Length In Km	Benefits after Refurbishment of Lines
											3. LOSS IS REDUCE FROM 3.96% TO 2.8 %
9	Bhadrak	BSED	DAHALA PSS	OLD MANJURI ROAD FEEDER	SOURCE HEAD	CHATABAR RANI 2 HOTEL (16kva)	UNDER VOLTAGE	34	100	1.7	1.AFTER REFURBISHMENT THE VOLTAGE LEVEL IS IMPROVED FROM 9.5KV TO 10.5KV 2.POWER SUPPLY IS RELIABLE. 3. LOSS IS REDUCE FROM 6.44% TO 2.8%
10	Bhadrak				PUJA DHABA (63kva)	MEDICAL RANJIT (25kva)	UNDER VOLTAGE	34	100	2.9	
11	Bhadrak	BSED	BILANA PSS	NANDORE FEEDER	SORCE HEAD	GOPANAG AR(LI) (25KVA)	UNDER VOLTAGE	55	100	2.0	FIELD REQUIREMENT DUE TO DAMAGE CONDUCTOR
14	Jajpur	JTED	JAJPUR TOWN PSS	DASRATHPUR FEEDER	SOURCE HEAD	NEAR ITACHAITI DTR - 16_1_PH [SEC ID-30290019]	MAINLY CONSIDERED FOR UPCOMMING LOAD GROWTH.	55	100	4.0	11 KV Dasarathpur Feeder - Line Upgradation (to divert some load of 11 KV Town No.2 Feeder, 11 KV Chitala Feeder and 11 KV Nathasahi Feeder to this Feeder) - Previously dead line. Network of Existing 11 KV Town No.2, 11 KV Chitala & 11 KV Nathasahi after this planning runs OK (Mitigation of Overload, Undervoltage Problem as well as loss reduction of these feeders to much extent). Reduce chances of pilferage of line/conductor (uncharged). Improves Network Reliability.

SL NO.	Name Of the Circle	Name of division	S/Stn Name	Existing Feeder Name	Location from	Location to	Line over loaded or not (based on load flow study/based on operation feedback)	Existing Conductor	Proposed Conductor	Length In Km	Benefits after Refurbishment of Lines
15	Jajpur	JTED	KANTIPADIA (DASRATHPUR) PSS	RAMBAG FEEDER	SOURCE HEAD	NEAR LI POINT DTR - 25_3_PH [SEC ID-30880055]	LINE OVERLOADING (3.66KM)/ REST PART UNDER VOLTAGE	34/55	100	6.6	11 KV Rambag Feeder - Line Upgradation along its load shifting resulted in to, Overloading Alleviation (From 121.7 % to 48.8 %) Undervoltage Mitigation (From 8.75 KV to 10.44 KV) at its tail end. Reduction in Losses (From 13.61 % to 4.52 %). Improves Network Reliability.
16	Jajpur	JRED	DALA PSS	DALA BAZAR FEEDER	SOURCE HEAD	NEAR JANHA DHABA DTR - 25_3_PH [SEC ID - 30840040]	MAINLY CONSIDERED FOR UPCOMMING LOAD GROWTH. LINE OVERLOADING (10M - 55SQMM)	34/55	100	2.5	11 KV Dala Bazar Feeder - Line Upgradation resulted in to, Overloading Alleviation (From 122.2 % to 78.7 %) Reduction in Losses (From 1.67 % to 1.36 %). Improves Network Reliability.
17					NEAR PARMESHWAR NAYAK DTR - 25_3_PH [SEC ID-30840003]	NEAR TARINI MARKET DTR - 250_3_PH [SEC ID - 30840016]				1.0	
18					NEAR JENA BABU DTR - 25_3_PH [SEC ID - 30840057]	NEAR KOPANDA DTR - 250_3_PH [SEC ID - 30840173]				1.5	

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SL NO.	Name Of the Circle	Name of division	S/Stn Name	Existing Feeder Name	Location from	Location to	Line over loaded or not (based on load flow study/based on operation feedback)	Existing Conductor	Proposed Conductor	Length In Km	Benefits after Refurbishment of Lines
19	Jajpur	JRED	CHORDA PSS	CHORDA BAZAR FEEDER	SOURCE HEAD	NEAR PSD DTR - 250_3_PH [SEC ID - 30040364]	LINE OVERLOADING (UPTO 1.46KM) UNDERVOLTAGE AT TAIL END (0.95KM)	80	100	3.5	11 KV Chorda Bazar Feeder - Line reconductoring along with its Load Bifurcation resulted in to, Overloading Alleviation (From 172.6% to 59.3 %) Undervoltage Mitigation (From 10.30 KV to 10.86 KV) at its tail end. Reduction in Losses (From 4.69 % to 1.53 %). Improves Network Reliability.
20	Jajpur	JRED	CHORDA PSS	SAPAGADIA FEEDER	SOURCE HEAD	NEAR BENGALIS AHI DTR - 16_1_PH [SEC ID - 30180386]	LINE OVERLOADING (UPTO 1.48KM)	55	100	2.0	11 KV Sapagadia Feeder - Line Upgradation along with its Load Shifting resulted in to, Overloading Alleviation (From 143.9% to 47.1%) Improvement in Voltage Level (From 10.47 KV to 10.87 KV) at its tail end. Reduction in Losses (From 4.88% to 2.25%) Improves Network Reliability.
21	Jajpur	KUED	KABATABA NDHA PSS	NEW BAGHUA FEEDER (PROPOSED) (50% OF THE EXISTING BAGHUA FEEDER)	SOURCE HEAD	NEAR PERSONAL (NEAR OLIC) DTR 10_1_PH [SEC ID - 30630106]	UNDERVOLTAGE AT TAIL END (18.17KM)	34/55	100	4.5	11 KV Baghua Feeder - Line Reconductoring along with its Load Shifting resulted in to, Undervoltage Mitigation (From 10.28 KV to 10.85 KV) at its tail end. Reduction in Losses (From 5.95 % to 2.18 %). Improves Network Reliability.
25	Keonjhar	AED	Anandpur	Anandpur	Anandpur PSS	Mina Mandap DTR	YES	34/55	100	2.0	1.Tail End Voltage Level improved from 9.5 kv to 10.4 kv 2. % Loss is reduced from 5.6% to 4.33% 3. Network Reliability is improved.

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SL NO.	Name Of the Circle	Name of division	S/Stn Name	Existing Feeder Name	Location from	Location to	Line over loaded or not (based on load flow study/based on operation feedback)	Existing Conductor	Proposed Conductor	Length In Km	Benefits after Refurbishment of Lines
26	Keonjhar	AED	Ramchand rapur	Alati	ALATI FEEDER738	ALATI FEEDER877	YES	55	100	0.8	1.Tail End Voltage Level improved from 10.2 KV to 10.6 KV 2. % Loss is reduced from 3.21 to 2.91% 3. Network Reliability is improved.
27	Keonjhar	AED	Ramchand rapur	Alati	ALATI FEEDER627	ALATI FEEDER637	YES	55	100	1.5	1.Tail End Voltage Level improved from 10.2 KV to 10.6 KV 2. % Loss is reduced from 3.21 to 2.91% 3. Network Reliability is improved.
28	Keonjhar	AED	Ghasipura	Dhakotha	kasinath health centre	Gohira Chowk	YES and very old and small size ocnductor	34/55	100	2.4	1. % Loss is reduced from 2.5% to 1.8% 2. Network Reliability is improved. 3. Old small size conductor is replaced with upgraded conductor
29	Keonjhar	JED	Jhumpura	Handibhanga	Handibhanga-1	Handibhanga-45	YES	34/55	100	6.8	1.Tail End Voltage Level improved from 8 kv to 10.6 kv 2. % Loss is reduced from 18.1% to 3.8 % 3. Network Reliability is improved.
30	Keonjhar	JED	Jhumpura	Handibhanga	HANDIBHANGA-203	HANDIBHANGA-382	YES	34	100	4.0	1.Tail End Voltage Level improved from 8 kv to 10.6 kv 2. % Loss is reduced from 18.1% to 3.8 % 3. Network Reliability is improved.
31	Keonjhar	JED	Jhumpura	Jhumpura	Jhumpura-1	Jhumpura-62	Undeervoltage Situation	34/55	100	7.0	1.Tail End Voltage Level improved from 9.1 kv to 10.4 kv 2. % Loss is reduced from 5.1% to

SL NO.	Name Of the Circle	Name of division	S/Stn Name	Existing Feeder Name	Location from	Location to	Line over loaded or not (based on load flow study/based on operation feedback)	Existing Conductor	Proposed Conductor	Length In Km	Benefits after Refurbishment of Lines
											4% 3. Network Reliability is improved.
32	Keonjhar	KED	Gambharia	No-III	Govindpur New Colony Badahal chhak	Bampar Pabitradiha Tikergumura Mining	YES	55	100	1.8	1.Tail End Voltage Level improved from 10 kv to 10.5 kv 2. % Loss is reduced from 3.6% to 2.4% 3. Network Reliability is improved.
33	Keonjhar	KED	Gambharia	Express	Ambuaposi	Jharbelda	Low height old construction in elephant movement area	55	100	1.5	1.Tail End Voltage Level improved from 9.9 kv to 10.4 kv 2. % Loss is reduced from 3.02% to 2.9% 3. Network Reliability is improved.
34	Keonjhar	KED	Telkoi	Kaliahota	New Trunk Line Begin	New Trunk line End	YES and very old and small size ocnductor	34	100	5.0	1. Proposed Trunk section conductor is upgraded 2. Network Reliability is improved.
35	Keonjhar	KED	Gambharia	Janghira	personal near ghuthur-2 tap point	JANGHIRA (GAMBHARIA)-76	YES	55	100	1.2	1.Tail End Voltage Level improved from 9.8 kv to 10.5 kv 2. Network Reliability is improved.
37	Balasore	BED	City PSS	No-2	CITY PSS	FOUR POLE	Overloaded	55	100	5.0	1. Field Requirement. 2. Balasore -2 is heavily loaded with 55sqmm& 80sqmm mixed conductor. 3. Reliability will be ensured after upgradation of conductor
38	Balasore	BED	Ganeswar pur PSS	Town	Madgadia	BHIMPURA GAON 250KVA	Conductor Damaged	34	100	2.0	1. Field Requirement. 2. Old & DAMAGED CONDUCTOR with low sag
39	Balasore	BED	Digarania PSS	Sunhat	FANDI S/S	KHAJUABAG	Conductor Damaged	34/55	100	1.0	1. Field Requirement. 2. refurbishment of Old &

SL NO.	Name Of the Circle	Name of division	S/Stn Name	Existing Feeder Name	Location from	Location to	Line over loaded or not (based on load flow study/based on operation feedback)	Existing Conductor	Proposed Conductor	Length In Km	Benefits after Refurbishment of Lines
											DAMAGED CONDUCTOR with low sag
40	Balasore	BED	KASIMABAD PSS	MAKALPUR	MANSINGBAZAR NIRANJAN PANDA	SAHANILANE	Overloaded	55	100	2.0	1. Future load of City sunhat feeder will be transferred on this feeder. 2. Safe vertical & Horizontal clearance with reduce of span length & avoid snapping consideering future load growth
41	Balasore	BED	Sovarampur pss	Balia feeder	forest office	tail end	Overloaded	55	100	5.0	1. Field requirement 2. Avoid frequent snapping of conductor due to overloading and to withsatnd the load of planned rmu in same feeder
42	Balasore	CED	Srijung PSS	Kuligan feeder	HATAPADA	BAISHNABSAHI C/P	low voltage	34	100	1.2	1. field requirement 2. very old conductor along the road, long span,damaged conductor,snapping of conductor
43	Balasore	CED	Srijung PSS	Srijung Feeder	SANAPOKHARI ADI	MOHADBAD AB SWITCH	low voltage	34	100	2.0	1. field requirement 2. very old & damaged conductor, long span,damaged joist pole,snapping of conductor
44	Balasore	CED	DURGADEVI PSS	GANIPUR FEEDER	ANJIBEHERA CUT POINT	RAINAGAR	Overloaded	34	100	0.7	1. field requirement 2. damaged conducter (multiple joints)
45	Balasore	CED	DURGADEVI PSS	GANIPUR FEEDER	KURUNIA CUT POINT	SITOLA MANDIR	Overloaded	34	100	0.5	1. field requirement 2. damaged conducter (multiple joints)
46	Balasore	CED	Remuna PSS	Nuapadhi Feeder	PSS Remuna	Nuapadi	Overloaded	34/55	100	5.0	1. field requirement 2. under size conductor with low height
47	Balasore	CED	Sergarh PSS	Industrial feeder	BIRUAN	BIRUAN	Overloaded	55	100	1.0	1. field requirement 2. trunk line upgradation required damage conductor

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SL NO.	Name Of the Circle	Name of division	S/Stn Name	Existing Feeder Name	Location from	Location to	Line over loaded or not (based on load flow study/based on operation feedback)	Existing Conductor	Proposed Conductor	Length In Km	Benefits after Refurbishment of Lines
48	Balasore	CED	Sergarh PSS	Patara feeder	Sergarh PSS	WisdomSchool LI point	Overloaded	34	100	1.0	1. n-1 between patara & kuruda feeder. 2. 2mw load from kuruda feeder to be shifted in this feeder.
49	Balasore	CED	Fuladi PSS	fuladi feeder	FULADI PSS	MAHALIK SAHI	Overloaded	34	100	4.0	1. field requirement 2. as the conductor is 40years aged and at peak load time conductor snapping occurred.
50	Balasore	CED	RUPSA PSS	KASIPADA FEEDER	BHUTKHANDI RAILWAY GATE	BHUTKHANDI VILLAGE END	Overloaded	34	100	0.9	1. field requirement 2. railway crossing site with long span with low height
51	Balasore	CED	RUPSA PSS	KASIPADA FEEDER	BHAGABATI MANDAP	BALIGOHIRI RAILWAY GATE	Overloaded	55	100	0.9	1. field requirement 2. railway crossing site with long span with low height
52	Balasore	BTED	KUSUDIHA PSS	Manudiha Feeder	manudiha	Nalbar and haldipal	Overloaded	34	100	8.0	1. field requirement 2. load shift from kusudiha feeder to manudiha feeder 3. n-1 between manudiha & kusudiha feeder
53	Balasore	BTED	Baliapal PSS	Khaprapada Feeder	HIRANANDA	NAMKNA	Overloaded	34	100	4.5	1. field requirement 2. under size conductor with low height
54	Balasore	JED	Jaleswar PSS	Salikotha feeder	JALESWAR PSS	BARTANA GAJIANI	Overloaded	55	100	9.0	1. field requirement 2. under size conductor with low height 3. height safety not maintained prone to accident
55	Balasore	SED	Soro PSS	Uttareswar feeder	College Chak	Railway Station	Overloaded	34/55	100	5.0	1. field requirement 2. loadgrowth in soro town region. 3. overload & bare conductor damaged

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SL NO.	Name Of the Circle	Name of division	S/Stn Name	Existing Feeder Name	Location from	Location to	Line over loaded or not (based on load flow study/based on operation feedback)	Existing Conductor	Proposed Conductor	Length In Km	Benefits after Refurbishment of Lines
56	Balasore	SED	Soro PSS	Town feeder	COLLEGE CHAK PSS	ANTAPUR CHAK	Overloaded	55	100	4.0	1. field requirement 2. loadgrowth in soro town region.
57	Balasore	SED	Iswarpur PSS	Barakoili feeder	Ishwarpur PSS	Jokagadia	Overloaded	34/55	100	4.0	1. load shift from panchalingeswar feeder 2. trunk line upgrdation due to increasing load 3. n-1 between panchalingeswar temple & barakoili feeder
Total Length in Km.										**169.0**	

- **For FY 25-26**

SL NO.	Name Of the Circle	Name of division	S/Stn Name	Existing Feeder Name	Location from	Location to	Line over loaded or not (based on load flow study/based on operation feedback)	Existing Conductor	Proposed Conductor	Length In Km	Benefits after Refurbishment of Lines
1	Baripada	UED	KHUNTA PSS	DUKURA	source	KANTAMARA/25KVA	UNDERVOLTAGE	55	100	10.20	1.AFTER REFURBISHMENT THE TAIL END VOLTAGE LEVEL IMPROVED FROM 9.0 KV TO 9.5 KV 2.LOSS IS REDUCED FROM 11.4% TO 8.1% 3. POWER SUPPLY IS RELAIBALE.
2	Bhadrak	BNED	GADI PSS	Pirahat Sindole Feeder	Habudasingh	Jhinkiria Play Ground	UNDER VOLTAGE	55	100	2.50	FIELD REQUIREMENT DUE TO DAMAGE CONDUCTOR
3	Bhadrak	BSED	BILANA PSS	BODAK	SOURCE HEAD	HATANAGAR	UNDER VOLTAGE	34	100	2.00	FIELD REQUIREMENT DUE TO DAMAGE CONDUCTOR

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SL NO.	Name Of the Circle	Name of division	S/Stn Name	Existing Feeder Name	Location from	Location to	Line over loaded or not (based on load flow study/based on operation feedback)	Existing Conductor	Proposed Conductor	Length In Km	Benefits after Refurbishment of Lines
4	Jajpur	KuED	ARUHA PSS	MANDIA FEEDER	NEAR TOWER DTR - 25_3_PH [SEC ID - 30450303]	NEAR BPL DTR - 16_1_PH [SEC ID - 30450633]	MAINLY CONSIDERED FOR UPCOMMING LOAD GROWTH.	34	100	2.5	11 KV Mandia Feeder - Line Upgradation resulted in to, Improvement in Voltage Level (From 10.43 KV to 10.49 KV) at its tail end. Reduction in Losses (From 5.19 % to 5.07 %) Improves Network Reliability.
					NEAR JIO TOWER DTR - 25_3_PH [SEC ID - 30450220]	NEAR TURANG DTR - 16_1_PH [SEC ID - 30450231]		34	100	3.01	
					NEAR JIO TOWER DTR - 25_3_PH [SEC ID - 30450204]	NEAR KAMPALU DTR - 25_3_PH [SEC ID - 30450215]		34	100	0.69	
5	Keonjhar	KED	Naranpur	Gopalpur	Ramachandrapur	Orion Plant	Frequent snapping due to old age and Elephant Movement Area	34	100	2	Critical consumer load and trunk line conductor upgradation done.
6	Balasore	CED	RE-II	ODANGI	BAGHAJATIN SCHOOL	ANANTAPUR CP	UNDER VOLTAGE	34	100	5	1. Field Requirement 2. CONDUCTOR IS VERY OLD AGED ABOUT 45 YEARS AND IT CARRIES MAXIMUM LOAD NEAR ABOUT 55AMP.SO CONDUCTOR UPGRADATION REQUIRED.
7	Balasore	CED	NILAGIRI	NILAGIRI	NILAGIRI PSS	NUASAHI	UNDER VOLTAGE	34	100	8	1. Field Requirement 2. Overcome FREQUENT SNAPPING OF CONDUCTOR
8	Balasore	CED	RE-I	CHHANUA	CHHANUA STRUCTURE	SOLPATA	UNDER VOLTAGE	55	100	4	

SL NO.	Name Of the Circle	Name of division	S/Stn Name	Existing Feeder Name	Location from	Location to	Line over loaded or not (based on load flow study/based on operation feedback)	Existing Conductor	Proposed Conductor	Length In Km	Benefits after Refurbishment of Lines
9	Balasore	CED	RE-I	CHHANUA	CHHANUA SULA	CHHANUA PAHI	UNDER VOLTAGE	55	100	3	
10	Balasore	BtED	JAMSULI	LANGALESWAR	LANGALESWAR PSS	BHAMARESWAR	UNDER VOLTAGE	34/55	100	6.3	aged conductor
11	Balasore	BtED	BASTA	KUSUDIHA	UDISHAL AB SWITCH	NUNKUNDI ABSWITCH	UNDER VOLTAGE	34/55	100	6	aged conductor
12	Balasore	JED	BHOGRAI	DEHURDA	KALI CHAKA CUT POINT	KUSUTI	UNDER VOLTAGE	34	100	6	
13	Balasore	JED	BHOGRAI	DEHURDA	THANACHAKA BARAKE	CHAKASAN JALESWARPUR & RIHS CANTEEN TO MAHANASAHI	UNDER VOLTAGE	34	100	4	
14	Baripada	BPED	RAGHUNATHPUR PSS	KULIANA	source	GIRLS SCHOOL BETNA/25KVA	UNDER VOLTAGE	55	100	7	1.AFTER REFURBISHMENT THE TAIL END VOLTAGE LEVEL IMPROVED FROM 9.8 KV TO 10.6 KV 2.LOSS IS REDUCED FROM 8.4% TO 3.9% 3. POWER SUPPLY IS RELAIBALE.
15	Baripada	BPED	BARKAND PSS	MORODA	HARAKURSANAPUR/16 kva	MHULIA-3 LI	UNDER VOLTAGE	55	100	8.1	1.AFTER REFURBISHMENT THE TAIL END VOLTAGE LEVEL IMPROVED FROM 10.3 KV TO 10.4 KV 2.LOSS IS REDUCED FROM 5.4% TO 5.3% 3. POWER SUPPLY IS RELAIBALE.
16	Baripada	RED	JOSHIPUR PSS	BHANJIKIA	source	DANGULIPOSI/25KVA	UNDER VOLTAGE	55	100	8.7	1.AFTER REFURBISHMENT THE TAIL END VOLTAGE LEVEL IMPROVED FROM 9.8 KV TO 10.4 KV 2.LOSS IS REDUCED FROM 7.6%

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SL NO.	Name Of the Circle	Name of division	S/Stn Name	Existing Feeder Name	Location from	Location to	Line over loaded or not (based on load flow study/based on operation feedback)	Existing Conductor	Proposed Conductor	Length In Km	Benefits after Refurbishment of Lines
											TO 4.0% 3. POWER SUPPLY IS RELAIBALE.
17	Baripada	UED	KAPTIPADA PSS	OLD SARAT	NADI SAHI/25KVA	SUNEI RIVER TALA SAHI/100KVA	UNDER VOLTAGE	55	100	4.5	1.AFTER REFURBISHMENT THE TAIL END VOLTAGE LEVEL IMPROVED FROM 10.2 KV TO 10.5 KV 2.LOSS IS REDUCED FROM 4.2% TO 3.9% 3. POWER SUPPLY IS RELAIBALE.
18	Baripada	UED	UDALA PSS	PURUNA KHUNTA	source	CHULIAPOSI /63KVA	UNDER VOLTAGE	55	100	9	1.AFTER REFURBISHMENT THE TAIL END VOLTAGE LEVEL IMPROVED FROM 9.9 KV TO 10.7 KV 2.LOSS IS REDUCED FROM 7.7% TO 5.7% 3. POWER SUPPLY IS RELAIBALE.
19	Baripada	RED	KARANJIA PSS	KERKERA	NEAR NALO SAHI/16KVA	ROAD SAHI/25KVA	UNDER VOLTAGE	55	100	10.8	1.AFTER REFURBISHMENT THE TAIL END VOLTAGE LEVEL IMPROVED FROM 9.1 KV TO 10.8 KV 2.LOSS IS REDUCED FROM 13.2% TO 2.7% 3. POWER SUPPLY IS RELAIBALE.
20	Bhadrak	BSED	11	RAMAKRUSHNAPUR FEEDER	4295	4965	UNDER VOLTAGE	34	100	5.00	1.AFTER REFURBISHMENT THE VOLTAGE LEVEL IS IMPROVED FROM 9.8KV TO 10.4KV AT TAIL END. 2.RELIABLE POWER SUPPLY 3. LOSS IS REDUCE FROM 5.64% TO 3.62 %
21	Bhadrak	BSED	11	OLD BANDHATIA	SOURCE HEAD	GAMAGADA SCHOOL 1 (63KVA)	UNDER VOLTAGE	34	100	6.00	REQUIREMENT FROM COS TEAM OF PRIME FEEDER

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SL NO.	Name Of the Circle	Name of division	S/Stn Name	Existing Feeder Name	Location from	Location to	Line over loaded or not (based on load flow study/based on operation feedback)	Existing Conductor	Proposed Conductor	Length In Km	Benefits after Refurbishment of Lines
22	Bhadrak	BNED	11	KHERANGA FEEDER	SOURCE HEAD	PORUKHA(1) (16KVA)	UNDER VOLTAGE	34	100	7.00	1.AFTER REFURBISHMENT THE VOLTAGE LEVEL IS IMPROVED FROM 9.5KV TO 10.4KV AT TAIL END. 2.RELIABLE POWER SUPPLY 3. LOSS IS REDUCE FROM 6.7% TO 2.81 %
23	Bhadrak	BNED	11	KACHERY BAZAR	4818	4883	OVERLOAD	55	100	1.48	1.AFTER REFURBISHMENT THE OVERLOAD PROBLEM RESOLVED. 2.RELIABLE POWER SUPPLY
24	Bhadrak	BNED	11	COLLEGE FEEDER	SOURCE HEAD	BAJAJ (25KVA)	OVERLOAD	34	100	2.00	1.AFTER REFURBISHMENT THE OVERLOAD PROBLEM RESOLVED. 2.RELIABLE POWER SUPPLY 3. LOSS IS REDUCE FROM9.38% TO 2.87 %
25	Keonjhar	AED	11	salania	Salania Bazar 63KVA	Bishnupur Bazar 25 KVA	UNDER VOLTAGE	55	100	2	due to againg of conductor and to meet the loading of the feeder
26	Keonjhar	AED	11	KANSA	BARIPAL AB SWITCH	KHAILO	UNDER VOLTAGE	55	100	1.5	FREQUENTLY SNAPPING OF CONDUCTOR
27	Keonjhar	AED	11	SALADEI	TARUAN	SANKARPUR	UNDER VOLTAGE	55	100	3	TO MINIMIZE FREQUENT SNAPPING OF CONDUCTOR AND CONTROL LINE LOSS
28	Keonjhar	KED	11	No-II	Bhalukipatal a lane3	New Court	UNDER VOLTAGE	55	100	3	For making the No-II feeder tail end as main trunk line of new feeder proposed from New PSS govindpur(Ranki)
29	Keonjhar	KED	11	No-II	Jail road	Power house (Collectorate)	UNDER VOLTAGE	55	100	3.2	.AFTER REFURBISHMENT THE OVERLOAD PROBLEM RESOLVED. And feeder is available to Backfeed No-I & No-II feeder through RMU
30	Keonjhar	JoED	11	Bhanda	BHANDA1458	BHANDA1471	UNDER VOLTAGE	55	100	1.5	Old conductor

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SL NO.	Name Of the Circle	Name of division	S/Stn Name	Existing Feeder Name	Location from	Location to	Line over loaded or not (based on load flow study/based on operation feedback)	Existing Conductor	Proposed Conductor	Length In Km	Benefits after Refurbishment of Lines
31	Keonjhar	JoED	11	Handibhanga	HANDIBHANGA-46	HANDIBHANGA-82	UNDER VOLTAGE	55	100	2.9	1.AFTER REFURBISHMENT THE VOLTAGE LEVEL IS IMPROVED FROM 9.7 KV TO 10.4KV AT TAIL END. 2.RELIABLE POWER SUPPLY 3. LOSS IS REDUCE FROM 6.7% TO 2.81 %
32	Jajpur	JTED	JAJPUR TOWN PSS	SIMILIA FEEDER	SOURCE HEAD	30900011	UNDER VOLTAGE	55	100	4.77	1.AFTER REFURBISHMENT THE TAIL END VOLTAGE LEVEL IMPROVED FROM 10.2 KV TO 10.4 KV 2.LOSS IS REDUCED FROM 7.26% TO 5.4% 3. POWER SUPPLY IS RELAIBALE.
33	Jajpur	JRED	PANIKOILI PSS	SOTI FEEDER	SOURCE HEAD	-	OVERLOAD &UNDER VOLTAGE	34	100	3.45	1.AFTER REFURBISHMENT THE TAIL END VOLTAGE LEVEL IMPROVED FROM 9.5 KV TO 10.4 KV 2.LOSS IS REDUCED FROM 10.6% TO 4.6% 3. POWER SUPPLY IS RELAIBALE.
Total Length in Km.										**160.0**	



Annexure – 36C: 33kV New Lines Work Detail:

- **For FY 24-25**

SL No.	Name Of the Circle	Name of division	Connection From			Connection To			Cut Out Point	Cut Point Location	Length in Km	Length(KM) for UG Cable	BENEFITS
			Existing GSS Name	Existing PSS Name	Feeder Name	New GSS Name	New PSS Name	Feeder name					
1	Baripada	UED	UDALA GSS	AMBADALI PSS	KHUNTA FEEDER	BETNOTI GSS	BADASAHI PSS	BADASAHI FEEDER	-	-	5	0	1.BY THIS 5KM LINK LINE BOTH AMBADALI PSS AND BADASAHI PSS WILL GET N-1 SUPPLY. 2.AFTER THIS PROPOSAL THERE WILL BE N-1 INTER CONNECTIVITY BETWEEN BETNOTI GSS AND UDALA GSS. 3. ALSO THERE IS N-1 INTERCONNECTIVITY BETWEEN 33KV BADASAHI FEEDER AND 33KV KHUNTA FEEDER
2	Baripada	UED	BETNOTI GSS	BETNOTI PSS	BETNOTI -2 FEEDER	BETNOTI GSS	BADASAHI PSS	BADASAHI FEEDER	-	-	9	0	BY THIS 9KM LINK LINE BOTH BETNOTI PSS AND BADASAHI PSS WILL GET N-1 SUPPLY. AFTER THIS PROPOSAL THERE WILL BE N-1 INTER CONNECTIVITY BETWEEN 33KV BETNOTI FEEDER AND 33KV BADASAHI FEEDER.
3	Baripada	BPED	BANGIRI POSI GSS	-	BANGIRI POSI NEW	BANGIRI POSI GSS	BANGIRIPOSI PSS	-	-	-	10	0	N-1 SUPPLY TO BANGIRIPOSI PSS. ALONG WITH THIS ALSO N-1 SUPPLY TO JHARPOKHARIA PSS,SIRSA PSS&CHANDUA PSS
4	Bhadrak	BSED	BHADRAK GRID	DHAMNAGAR CHHAK PSS	DHAMNAGAR FEEDER	BHADRAK GRID	DHAMNAGAR CHHAK PSS	DHAMNAGAR 2 NEW FEEDER	DHAMNAGAR SW 1	AFTER TAHASIL PSS	0.20	0.50	1. AFTER LOAD SHIFTING THE VOLTAGE LEVEL IS IMPROVED FROM 28.3KV TO 31.5KV 2. LENTH IS REDUCED FROM 59.94KM TO 5.12KM 3. RELIABLE POWER SUPPLY.

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SL No.	Name Of the Circle	Name of division	Connection From			Connection To			Cut Out Point	Cut Point Location	Length in Km	Length(KM) for UG Cable	BENEFITS
			Existing GSS Name	Existing PSS Name	Feeder Name	New GSS Name	New PSS Name	Feeder name					
													4. LOSS IS REDUCED FROM 10.24 % TO 3.34%
5	Jajpur	JRED	220/132/ 33 KV OLD DUBURI GSS	NEAR DUBURI PSS	SUKINDA FEEDER	132/33 KV JAJPUR ROAD GSS	-	NEW SUKINDA FEEDER (PROPOSED)	S/W ID - 11705	NEAR DUBURI PSS	5	1	33 KV Sukinda Feeder - Load Shifting along with its Line Reconductoring resulted in to, Overloading Alleviation (From 110.3 % to 58.1 %) Improvement in Voltage Level (From 31.19 KV to 31.69 KV) at its tail end (Mantira PSS Bus). Reduction in Losses (From 9.62 % to 3.17 %) Improves Network Reliability. N-1 INTERCONNECTIVITY BETWEEN GRID S/Ss [OLD DUBURI GSS & JAJPUR ROAD GSS]
6	Jajpur	KUED	132/33 KV CHANDIKHOL GSS	-	KABATABANDHA FEEDER	132/33 KV CHANDIKHOL GSS	ARUHA PSS	NEW KABATABANDHA FEEDER (PROPOSED)	CB ID - 10899 & S/W Id- 11591	NEAR ARUHA PSS & NEAR TAPPING POINT OF CHADHEIDHARA PSS	9.3	0	33 KV Kabatabandha Feeder - Load Bifurcation along with its Line Reconductoring and Capacitor Placement resulted in to, Overloading Alleviation (From 110.8 % to 45.2 %) Undervoltage Mitigation (From 28.01 KV to 31.58 KV) at its tail end (Kabatabandha PSS Bus). Reduction in Losses (From 9.62 % to 3.17 %) Improves Network Reliability.

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SL No.	Name Of the Circle	Name of division	Connection From			Connection To			Cut Out Point	Cut Point Location	Length in Km	Length(KM) for UG Cable	BENEFITS
			Existing GSS Name	Existing PSS Name	Feeder Name	New GSS Name	New PSS Name	Feeder name					
7	Keonjhar	KED	132/33 KV Proposed Turmunga GSS	Keonjhar -1 feeder	33 KV Proposed Turmunga feeder	Turumunga GSS feeder head	28 KM before Turumunga pss	28 km before Turumunga pss	-	-	1.5	0	1.After proposed Khireitangiri feeder and Turmunga feeder the length will be as below: Existing Keonjhar -1 feeder -**87 km to 24.90 km.** Proposed Khirentangiri feeder - 16.45 km Proposed Turmunga feeeder - 43.80 Km.2.Keonjhar -1 feeder loss will reduced from 8.68% to 3.65 %. 3.After proposed Khireitangiri feeder and Turmunga feeder voltage will improved in below PSS: Khirentangir PSS bus - 29 KV to 33KV. Turumunga pss bus - 28.4 kv to 32.4 kv. Jyotipur PSS bus - 28.2 KV to 32.2 KV Gambharia PSS bus -29.6 KV to 31.5KV. 4.**N-1 connectivity** between **Ranki GSS** and proposed **Turmunga GSS**. N-1 connectivity between **Keonjhar-1 feeder,Proposed Turmunga feeder and proposed Khireitangiri feeder**.N-1 connectivity between **Gambharia PSS, khirentangiri PSS, Jyotipur PSS, Turmunga PSS, Kendeiposi PSS , Patna PSS and Musakhori PSS.**

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SL No.	Name Of the Circle	Name of division	Connection From			Connection To			Cut Out Point	Cut Point Location	Length in Km	Length(KM) for UG Cable	BENEFITS
			Existing GSS Name	Existing PSS Name	Feeder Name	New GSS Name	New PSS Name	Feeder name					
8	Balasore	SED	132/33K V SORO GSS	Markona PSS	Jamujha di feeder	132/33K V SORO GSS	ADA PSS	Khaira Feeder	-	-	10	0	1. Khaira Feeder 74 km Long is already proposed to bifurcate by construction of 10km new line from Agarpada GSS . 2. After this new line Khaira feeder will have N-2 connectivity between Khaira feeder & Jamujhadi Feeder.
Total Length in Km.											**50.00**		

- **For FY 25-26**

SL NO.	Name of the Circle	Name of Division	Connection From			Connection To			Cut Out Point	Cut Point Location	Length in Km	Length(KM) for UG Cable	BENEFITS
			Existing GSS Name	Existing PSS Name	Feeder Name	New GSS Name	New PSS Name	Feeder name					
1	Keonjhar	JOED	132/33 KV Barbil GSS	Rugudi/Barbil-1	33 KV proposed New Rugudi feeder (Barbil-1)	Barbil GSS feeder head	Rugudi PSS	Before Rugudi PSS			18	0.35	1. Rugudi feeder loss will reduced from 8.22 % to 1.45%. 2.Rugudi PSS bus voltage will improved from 29.7 KV to 30.8 KV. 3. **N-1 connectivity** between existing **Rugudi feeder** and **Proposed new Rugudi feeder**. N-1 connectivity between Barbil **GSS** and **Joda GSS.** And N-1 connectivity of **Rugudi PSS.** 4 .Earlier Rugudi feeder feeds Rugudi PSS and industries .
2	Balasore	CED	220/132kV	Mitrapur PSS	Emami Feeder	220/132 kV	Remuna PSS	Balgopalpur feeder			3	0	1. Emami feeder Conductor size is 232 sqmm which is capable to bear load of Remuna PSS &

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SL NO.	Name of the Circle	Name of Division	Connection From			Connection To			Cut Out Point	Cut Point Location	Length in Km	Length(KM) for UG Cable	BENEFITS
			Existing GSS Name	Existing PSS Name	Feeder Name	New GSS Name	New PSS Name	Feeder name					
			Balasore GSS			Balasore GSS							Durgadevi PSS in case of Balgopalpur feeder fault.
3	Keonjhar	KED	132/33 KV Proposed Turmunga GSS	Keonjhar -1 feeder	33 kv proposed khireitangiri feeder	Turumunga GSS feeder head	Tapping point of khirentangiri pss	28 km before Turumunga pss	-	-	1.5		1.After proposed Khireitangiri feeder and Turmunga feeder the length will be as below: Existing Keonjhar -1 feeder -**87 km to 24.90 km.** Proposed Khirentangiri feeder - 16.45 km Proposed Turmunga feeeder - 43.80 Km. 2.Keonjhar -1 feeder loss will reduced from 8.68% to 3.65 %.
4	Balasore	BTED	Basta GSS	Langaleswar PSS	Basta feeder	Basta GSS	Sahada PSS	link line	lilo from Sahada PSS		10		New line from Basta GSS to Sahada PSS will be constructed. Langaleswar PSS can be shifted to the new line to reduce load from Jamsuli feeder
5	Keonjhar	KED	132/33 KV Dhenkikote (Tikira GSS)	-	Megalift Silipada	132/33 KV Dhenkikote (Tikira GSS)		Begunaposi	After Karanjia PSS	After Karanjia PSS	5		1. Karajia feeder length will reduced from 75.20 KM to 47.7 KM. 2. Karanjia feeder loss will reduced from 7.51% to 6.87%. 3. N-1 connectivity between Tikira GSS , Karanjia GSS and Proposed Turmunga GSS.N-1 connectivity between Karanjia feeder,Silipada feeder,Turmunga feeder, Khireitangiri feeder , Kendeiposi feeder .N-1 connectivity between Karanjia PSS,Thakurmunda PSS, Begunaposi PSS, Saharpada PSS and Machhagarh PSS.

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SL NO.	Name of the Circle	Name of Division	Connection From			Connection To			Cut Out Point	Cut Point Location	Length in Km	Length(KM) for UG Cable	BENEFITS
			Existing GSS Name	Existing PSS Name	Feeder Name	New GSS Name	New PSS Name	Feeder name					
													4.Overloading problem will solved for Karanjia feeder. 5.Reliabilioty will improved.
6	Baripada	BPED	BETNOTI GSS	BETNOTI	BETNOTI-1						0.5		LINK LINE AMONG ALL PSSS UNDER MORODA ELECTRICAL SECTION WITH TWO 33KV FEEDER NAMELY BARKAND AND RAJGHAT 33KV
Total Length in Km.											**38.00**		

Annexure – 36D: 11kV New Lines Work Detail:

- **For FY 24-25**

SL NO.	Name Of the Circle	Name of division	Existing S/Stn Name	Existing Feeder Name	New S/Stn Name	NEW Feeder name	Cut Point Location	Length of line (kM)	type of conductor	BENEFITS
1	Baripada	BPED	RANDASAHI PSS	KUSUMBANDH	RANDASAHI PSS	KUSUMBANDH -2 PROP.	KUSUMBANDH HOSPITAL/100KVA	7	100	1. Tailend voltage is improved from 8.1 KV to 10.5 KV 2. Feeder length is reduced from 162 Km to 95.5 Km. 3. % loss is reduced from 16.3% to 6.2%
2	Baripada	RED	JOSHIPUR PSS	TOWN(JOSHIPUR)	JOSHIPUR PSS	TOWN(JOSHIPUR) -2 PROP.	25 KVA BSNL/ JAMUKESWAR PART	8	100	1. Tailend voltage is improved from 9.7 KV to 10.5 KV 2. Feeder length is reduced from 78.8 Km to 45.4 Km. 3. % loss is reduced from 7.1% to 3.2%
3	Bhadrak	BNED	ERAM PSS	BARAPUR FEEDER	NEW BARAPUR PSS	MOHANPUR NEW FEEDER	PADHI BAZAR	5.00	100	1.AFTER LOAD SHIFTING THE VOLTAGE LEVEL IS IMPROVED FROM 8.2 KV TO 10.9 KV AT TAIL END.
4						BARAPUR NEW FEEDER	JAGANNATH SAHI 8-1	0.50	100	

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SL NO.	Name Of the Circle	Name of division	Existing S/Stn Name	Existing Feeder Name	New S/Stn Name	NEW Feeder name	Cut Point Location	Length of line (kM)	type of conductor	BENEFITS
5						BAINCHA NEW FEEDER		1.00	100	2.LENGTH REDUCE FROM 48.76 KM TO 10.75 KM 3.RELIABLE POWER SUPPLY 4. LOSS IS REDUCE FROM 12.18% TO 2.26 %
6	Bhadrak	BNED	ASURA PSS	COLLEGE FEEDER	NEW TALANGA PSS	TALANGA NEW FEEDER	JHATIA BARIK SAHI	0.5	100	1.AFTER LOAD SHIFTING THE VOLTAGE LEVEL IS IMPROVED FROM 8.9 KV TO 10.7 KV AT TAIL END. 2.LENGTH REDUCE FROM 107.4 KM TO 39.96 KM 3.RELIABLE POWER SUPPLY 4. LOSS IS REDUCE FROM 9.38% TO 3.17 %
7						BANDHAGAN NEW FEEDER	JENA FLY ASH	0.5	100	
8						RAMBHALIA NEW FEEDER	11KV COLLEGE FEEDER-664-1 (25KVA)	0.03	100	
9	Bhadrak	BSED	NILAK PSS	OLMA FEEDER	CHAYAL SING PSS	TILO FEEDER	TILO PANCHAYAT	2.50	100	1.AFTER LOAD SHIFTING THE VOLTAGE LEVEL IS IMPROVED FROM 8. 2KV TO 10.5 KV AT TAIL END. 2.LENGTH REDUCE FROM 52.66 KM TO 37.64KM 3.RELIABLE POWER SUPPLY 4. LOSS IS REDUCE FROM 9% TO 2.87%
10	Jajpur	JTED	KANTIPADIA (DASRATHPUR) PSS	RAMBAG FEEDER	KANTIPADIA (DASRATHPUR) PSS	NANDIPUR FEEDER	Near palada DTR 16_1_PH	2	100	11 KV Rambag Feeder - Load Shifting along with its line reconductoring resulted in to, Overloading Alleviation (From 121.7 % to 48.8 %) Undervoltage Mitigation (From 8.75 KV to 10.44 KV) at its tail end. Reduction in Losses (From 13.61 % to 4.52 %). Length Reduction (From 64.02 Km to 42.36 Km). Ensures N-1 Interconnectivity (11 KV Rambag Feeder - Kantipadia PSS and 11 KV Nandipur Feeder -

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SL NO.	Name Of the Circle	Name of division	Existing S/Stn Name	Existing Feeder Name	New S/Stn Name	NEW Feeder name	Cut Point Location	Length of line (kM)	type of conductor	BENEFITS
										Kantipadia PSS). Improves Network Reliability.
11	Jajpur	JTED	JAJPUR TOWN PSS	TOWN NO.2 FEEDER	JAJPUR TOWN PSS	DASRATHPUR FEEDER	Near Naharapur DTR 16_1_PH	1	100	11 KV Town No.2 Feeder - Load Shifting resulted in to, Overloading Alleviation (From 163.2 % to 98.2 %) Improvement in voltage level (From 10.58 KV to 10.74 KV) at its tail end. Reduction in Losses (From 4.09 % to 2.60 %). Length Reduction (From 10.60 Km to 6.03 Km). Ensures N-1 Interconnectivity (11 KV Town No. 2 Feeder - Jajpur Town PSS and 11 KV Dasarathpur Feeder- Jajpur Town PSS). Improves Network Reliability.
12	Jajpur	JTED	KANTIPADIA (DASRATHPUR) PSS	NEW DASRATHPUR FEEDER	BOULANGA PSS	OLD AHIYAS FEEDER	Near balada DTR 63_3_PH	2	100	11 KV Dasarathpur Feeder - Load Shifting resulted in to, Overloading Alleviation (From 119.6 % to 85.8 %) Undervoltage Mitigation (From 10.27 KV to 10.70 KV) at its tail end. Reduction in Losses (From 4.98 % to 3.09 %). Length Reduction (From 35.96 Km to 26.26 Km). Ensures N-1 Interconnectivity (11 KV Dasarathpur Feeder-Kantipadia PSS and 11 KV Old Ahiyas Feeder-Boulanga PSS). Improves Network Reliability.

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SL NO.	Name Of the Circle	Name of division	Existing S/Stn Name	Existing Feeder Name	New S/Stn Name	NEW Feeder name	Cut Point Location	Length of line (kM)	type of conductor	BENEFITS
13	Jajpur	JTED	MANSARA PSS	SINGHPUR FEEDER	NEW SINGHPUR PSS (PROPOSED) - ODSSP PH4 (WIP)	NEW SINGHPUR FEEDER (PROPOSED)	Near Airtel 2 DTR (25_3_PH)	0.5	100	11 KV Singhpur Feeder - Load Shifting resulted in to, Improvement in Voltage Level (From 10.45 KV to 10.86 KV) at its tail end. Reduction in Losses (From 4.49% to 2.13%). Length Reduction (From 50.69 Km to 32.47 Km). Ensures N-1 Interconnectivity (11 KV Singhpur Feeder - Mansara PSS and 11 KV New Singhpur Feeder (Proposed) - New Singhpur PSS-ODSSP PH4 (WIP)). Improves Network Reliability.
14	Jajpur	JRED	PANIKOILI PSS	SOTI FEEDER	PANIKOILI PSS	ADARSHA FEEDER	Near Ketanaguan DTR - 25_3_PH	1	100	11 KV Soti Feeder - Load Shifting along with its Line Reconductoring resulted in to, Overloading Alleviation (From 173.8 % to 71.5 %) Undervoltage Mitigation (From 9.54 KV to 10.44 KV) at its tail end. Reduction in Losses (From 10.62% to 4.44%). Length Reduction (From 60.07 Km to 56.25 Km). Ensures N-1 Interconnectivity (11 KV Soti Feeder - Panikoili PSS and 11 KV Adarsha Feeder - Panikoili PSS). Improves Network Reliability.
15	Jajpur	JRED	CHORDA PSS	CHORDA BAZAR FEEDER	CHORDA PSS	NEW CHORDA BAZAR FEEDER (PROPOSED)	Near Hotel Royal Kalinga DTR - 63_3_PH Near Radhanagar Marg DTR - 25_3_PH Near Suryansh DTR - 250_3_PH	0.5	100	11 KV Chorda Bazar Feeder - Load Bifurcation along with its Line Reconductoring resulted in to, Overloading Alleviation (From 172.6% to 59.3 %) Undervoltage Mitigation (From 10.30 KV to 10.86 KV) at its tail end. Reduction in Losses (From 4.69 % to 1.53 %). Length Reduction (From 10.37 Km to 4.73 Km). Ensures N-1 Interconnectivity

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SL NO.	Name Of the Circle	Name of division	Existing S/Stn Name	Existing Feeder Name	New S/Stn Name	NEW Feeder name	Cut Point Location	Length of line (kM)	type of conductor	BENEFITS
16					FIRE STATION PSS	CHANDANA FEEDER	Near Hotel Royal Kalinga DTR - 63_3_PH	1.5	100	(11 KV Chorda Bazar Feeder - Chorda PSS and 11 KV Chandana Feeder - Fire Station PSS). Improves Network Reliability.
17	Jajpur	JRED	CHORDA PSS	KANHEIPUR FEEDER	CHORDA PSS	RANIPADA OLD FEEDER	Near Bomfor Godown DTR - 25_3_PH	0.4	100	11 KV Kanheipur Feeder - Load Shifting along with it Line Reconductoring resulted in to, Overloading Alleviation (From 128.8 % to 76.9 %) Improvement in Voltage Level (From 10.74 KV to 10.83 KV) at its tail end. Reduction in Losses (From 2.72 % to 2.03 %). Length Reduction (From 7.12 Km to 6.58 Km). Ensures N-1 Interconnectivity (11 KV Kanheipur Feeder - Chorda PSS and 11 KV Ranipada Old Feeder - Chorda PSS). Improves Network Reliability.
18	Jajpur	JRED	PANIKOILI PSS	PALASA FEEDER	SATHIPUR PSS (NEW) - ODSSP PH3 (WIP)	NEW PALASA FEEDER (PROPOSED)	Near LI (Near Depeda) DTR - 25_3_PH	0.5	100	11 KV Palasa Feeder - Load Shifting along with its Line Reconductoring resulted in to, Overloading Alleviation (From 174.6% to 45.4%) Undervoltage Mitigation (From 8.96 KV to 10.62 KV) at its tail end. Reduction in Losses (From 14.63% to 4.10%). Length Reduction (From 84.78 Km to 55.94 Km). Ensures N-1 Interconnectivity (11 KV Palasa Feeder - Panikoili PSS and 11 KV New Palasa Feeder (Proposed) - New Sathipur PSS-ODSSP PH3 (WIP)). Improves Network Reliability.

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SL NO.	Name Of the Circle	Name of division	Existing S/Stn Name	Existing Feeder Name	New S/Stn Name	NEW Feeder name	Cut Point Location	Length of line (kM)	type of conductor	BENEFITS
19	Jajpur	KUED	KABATABANDHA PSS	OLD JENAPUR FEEDER	CHADHEIDHARA PSS	NEW JENAPUR- 3 (PROPOSED) FEEDER	Near Bharatpur RWSS DTR - 25_3_PH Near Dahipur DTR 16_1_PH	5.5	100	11 KV Jenapur Feeder - Load Shifting along with its Line Reconductoring resulted in to, Overloading Alleviation (From 115.2% to 66.9%) Undervoltage Mitigation (From 9.15 KV to 10.56 KV) at its tail end. Reduction in Losses (From 10.12% to 4.31%). Length Reduction (From 71.26 Km to 45.41 Km). Ensures N-1 Interconnectivity (11 KV Jenapur Feeder - Kabatabandha PSS and 11 KV New Jenapur Feeder - Chadheidhara PSS). Improves Network Reliability.
20	Keonjhar	AED	Ramachandrapur	Alati	Ramachandrapur	Alati	Baranga 2 (16 KVA)	2.5	100	Tail End Voltage improved from 10.2 KV to 10.6 KV New Line will divide the feeder to its own circle region and minimise radial dist % loss is reduced from 3.21 to 2.91 %.
21	Keonjhar	AED	Dhenka	Dhenka	Dhenka	Sangam	Debananda Jena DTR	1.2	100	Load divert from Dhenka 11kv feeder to Sangam 11 KV Feeder. Improved maintanence of 10 nos of TRF Feeder length is reduced from 23.5 to 19 km % loss is reduced from 1.96 to 1.67%
22	Keonjhar	AED	Ghatgaon	Ghatgaon	Ghatgaon	Ghatgaon Feeder Bifur	Ghatagaon 100 KVA DTR	2	100	Dedicated feeder for Ghatagaon Market and Over load Mitigation Feeder length rediced from 11 to 4 km % loss reduced from 2.06 to 1.6%

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Sl. NO.	Name Of the Circle	Name of division	Existing S/Stn Name	Existing Feeder Name	New S/Stn Name	NEW Feeder name	Cut Point Location	Length of line (kM)	type of conductor	BENEFITS
23	Keonjhar	JED	Jhumpura	Handibhanga	Jhumpura	Handibhanga New Bifur	HANDIBHANGA-168	8	100	Overload Mitigation and urban feeder reliability improvement Feeder Lnegth reduced from 115 to 47 km % loss reduced from 18.1 to 3.8 %
24	Keonjhar	KED	Patna PSS	Patna		-	Near Rengalbeda DTR Tap	0.6	100	To charge the idle 25KVA DTR
25	Keonjhar	KED	Gambharia	Town No.2	Gambharia	New Town No.2 Feeder	NEW TOWN NO.2 BIFUR1	4.5	100	Overload Mitigation of feeder, and urban load reliability improvement. Feeder Length reduced from 25 to 17 km %loss reduced from 7.3% to 2.6 %
26	Keonjhar	JED	Sundara	Bolani-2	Sundara	New Bolani-2 Bifur	11 KV BALANI-2 FEEDER4	1.5	100	N-1 Supply for 11 KV RMU Feeding Balani-2 Feeder Feeder Length reduced from 35 to 16 km % loss reduced from 5 to 3%
27	Keonjhar	KED	Naranpur	Gopalpur		-	Near Railway Crossing 2	4	100	Elephant movement area(A link line to avoid total feeder power cut during elephant movement)
28	Balasore	BED	Ganeswarpur PSS	Kuruda feeder	City PSS	NewKuruda-prop	City PSS to Kulasandha village	2	3CX300	1.SE Sir Proposal 2. Kuruda feeder Bifurcation 3. Load Shift From Kuruda Feeder(Ganeswarpur PSS) to City PSS 4. N-1 connectivity from City PSS
29	Balasore	BED	Ganeswarpur PSS	Town Feeder	Rameswar Mandir	New-Town feeder prop	RameswarMandir to Bhimpura Chak	0.5	100	1. Load shift from town feeder (GaneswarpurPSS) to RameswarMandir PSS 2. N-1 Connectivity

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SL NO.	Name Of the Circle	Name of division	Existing S/Stn Name	Existing Feeder Name	New S/Stn Name	NEW Feeder name	Cut Point Location	Length of line (kM)	type of conductor	BENEFITS
30	Balasore	BED	sovarampur pss	sahadevkhunta feeder	sovarampur pss	New sahadevkhunta feeder_prop	sovarampur pss to Ananda Bazar	2	3CX300	1.Field Requirement 2. Sahadevkhunta feeder Bifurcation
31	Balasore	BED	Ganeswarpur PSS	Januganj Feeder	Ganeswarpur PSS	Januganj Feeder	LV HOSPITAL to SRIKRUSHNAPUR S/S	0.8	100	1.Field Requirement 2. Better Maintainence & reduce length of tailend loads
32	Balasore	CED	DURGADEVI PSS	Durgadevi Dharaganj	DURGADEVI PSS	Dharaganj separate feeder	DURGADEVI PSS to Balipal Chak	2	100	1.DURGADEVI AND DHARAGANJ FDR ARE JOINTLY ATTACHED IN ONE BREAKER . DURING BREAKDOWN OF ONE FDR THE SECOND FDR ARE FULLY IN DARK . SO SEPARATION OF THESE TWO FDR IS REQUIRED.
33	Balasore	CED	Remuna PSS	Remuna Feeder	DURGADEVI PSS	Ganipur feeder	Kankarali Barja pokhari to Kuto pokari (Ganipur feeder)	1	100	1. Load shift from Remuna feeder (Remuna PSS) to Ganipur feeder (durgadevi PSS) 2. N-1 Connectivity. 3. reduce length of Remuna feeder from 52km to 30km
34	Balasore	CED	Nilagiri PSS	Nilgiri Feeder	Nilagiri PSS	Panchalingeswar feeder	Busstand (Nilgiri feeder) to Mirigini (Panchalingeswar feeder)	3	100	1. Field Requirement. 2. N-1 Connectivity. 3. reduce length of Panchalingeswar feeder from 50km to 30km 4. Part load shift (100A) from Remuna feeder to Ganipur Feeder
35	Balasore	BTED	Basta PSS	Sartha feeder	Kusudiha PSS	Kusudiha feeder	Madhupura Chak to Gilajodi	1.5	100	1. Field requirement 2. kusdia and sartha n-1
36	Balasore	BTED	Baliapal PSS	Khaprapada feeder	Sitadiha PSS	Khaprapada feeder	Remu to Kumbhari	0.7	100	1. Field requirement 2. Baliapal Khaparapada and sitadiha khaparapada N-1

SL NO.	Name Of the Circle	Name of division	Existing S/Stn Name	Existing Feeder Name	New S/Stn Name	NEW Feeder name	Cut Point Location	Length of line (kM)	type of conductor	BENEFITS
37	Balasore	BTED	Basta PSS	Basta feeder	Anla PSS	Paikasahi feeder	Near Saradiha	1	100	1. Load shift of 70A approx from Basta Feeder to Paikasahi feeder. 2. Reduction of Length from 68km to 43km 3. N-1 from Baripada Circle
38	Balasore	BTED	Rajghat PSS	Vellora feeder	Sitadiha PSS	Macharanka Feeder	Near Gilajori	0.8	100	1. Load shift from Vellora Feeder to Macharanka feeder. 2. Reduction of Length from 67km to 44km 3. Load shift of 60A approx from vellora feeder to Macharanka feeder 4. n-1 connectivity
39	Balasore	BTED	jamsuli pss	mukulsi	jamsuli pss	mukulsi	near collage	1	3CX300	1. Field Requirement 2. unsafe condition
40	Balasore	BTED	Bagada	Nuagon feeder	Bagada	Nuagon feeder	dangapita to kantadiha	0.5	100	1. Field Requirement 2. 1km reduce Danger condition
41	Balasore	JED	Hatigarh PSS	Rajnagar feeder	Hatigarh PSS	New Rajnagar feeder_prop	Hatigarh PSS to Raibania T-pont	5	100	1.Bifurcate Rajnagar Feeder which is almost 100km in length into 60km & 40km respectively.
42	Balasore	SED	Bishnupur PSS	Alada feedeer	Bishnupur PSS	Bishnupur fdr	near Avana GP	0.5	100	1. Bifurcate Alada feeder which is almost 80km in length. 2. Length reduction from 80km to 50km 3. N-1 connectivity from Bishnupur PSS

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SL NO.	Name Of the Circle	Name of division	Existing S/Stn Name	Existing Feeder Name	New S/Stn Name	NEW Feeder name	Cut Point Location	Length of line (kM)	type of conductor	BENEFITS
43	Balasore	SED	Rahanja PSS	IDCO feeder (Ranital Feeder)	Markona PSS	Biranchipur feeder	Near Maitapur Camp(Simulia College)	2.5	100	1. field requirement 2. Currently this region is fed from IDCO feeder from Rahanja PSS(BNED). To provide supply from nearby Markona PSS, link line of 2.5km is required. 3. Ease of maintainence 4. N-1 connectivity between RahanjaPSS & Markona PSS
44	BARIPADA	BPED	BARKAND PSS	MORODA	BARKAND PSS	MORODA -2 PROP.	NA	5	100	1. Field Requirement 2. unsafe condition
Total Length in Km.								**89.00**		

- **For FY 25-26**

SL NO.	Name Of the Circle	Name of division	Existing S/Stn Name	Existing Feeder Name	New S/Stn Name	NEW Feeder name	Cut Point Location	Length of line (kM)	type of conductor	BENEFITS
1	Baripada	RED	THAKURMUNDA PSS	MAHULDIHA	THAKURMUNDA PSS	MAHULDIHA-2 PROP.	GAYALMUNDA RWSS/25KVA	5	100	1. Tailend voltage is improved from 8.4 KV to 10.4KV 2. Feeder length is reduced from 204.6 Km to 104.4 Km. 3. % loss is reduced from 14.4% to 4.5%
2	Bhadrak	BNED	Nandapur PSS	Tihidi Feeder	Nandapur PSS	Tihidi Feeder	IB(200KVA)	1.5	100	field requirement
3	Bhadrak	BNED	Sindole PSS	Pirahat Sindole Feeder	GADI PSS	Pirahat Gaddi Feeder	AIRTEL@ (25KVA)	2	100	
4	Bhadrak	BNED	Rahanja PSS	Rahanja Feeder	Asura PSS	Chandrapan Feeder		0.5	100	

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SL NO.	Name Of the Circle	Name of division	Existing S/Stn Name	Existing Feeder Name	New S/Stn Name	NEW Feeder name	Cut Point Location	Length of line (kM)	type of conductor	BENEFITS
5	Jajpur	JRED	DEULKANA (TAMAKA) PSS	NACCHIPURA FEEDER	DEULKANA (TAMAKA) PSS	NEW NACCHIPURA FEEDER (PROPOSED)	Near Patharabandha Sahi - 16_1_PH	1.5	100	11 KV Nachhipura Feeder - Load Shifting along with its Line Reconductoring resulted in to, Overloading Alleviation (From 99.5 % to 34.4%) Undervoltage Mitigation (From 9.96 KV to 10.51 KV) at its tail end. Reduction in Losses (From 7.81 % to 5.09 %). Length Reduction (From 92.35 Km to 37.26 Km). Ensures N-1 Interconnectivity (11 KV Nachhipura Feeder and 11 KV New Nachhipura Feeder (Proposed)) through respectively connected PTRS. Improves Network Reliability.
6	Jajpur	KUED	JARAKA PSS	DHARAMSHALA FEEDER	JARAKA PSS	NEW DHARAMSHALA FEEDER (PROPOSED)	Near Bus Stand DTR - 10_1_PH	0.5	100	11 KV Dharamshala Feeder - Load Shifting along with its Line Reconductoring resulted in to, Overloading Alleviation (From 196.5 % to 79.5 %) Improvement in Voltage Level (From 10.51 KV to 10.62 KV) at its tail end. Reduction in Losses (From 4.14 % to 3.37 %). Length Reduction (From 39.05 Km to 30.93 Km). Ensures N-1 Interconnectivity (11 KV Dharamshala Feeder - Jaraka PSS with 11 KV Kaima Feeder and Nakpole Feeder - Jaraka PSS). Improves Network Reliability.
7	Balasore	BTED	Basta PSS	Basta feeder	Basta PSS	Basta feeder	Gandhichhack to postamatom	1	100	1. Field Requirement 2. Reduce 3km line on basta feeder 3. ease of maintainence

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SL NO.	Name Of the Circle	Name of division	Existing S/Stn Name	Existing Feeder Name	New S/Stn Name	NEW Feeder name	Cut Point Location	Length of line (kM)	type of conductor	BENEFITS
8	Balasore	SED	Iswarpur PSS	Barakoili feeder	Nilagiri PSS	Panchalingeswar feeder	Panchalingeswar high school to Shyamsundarpur-kantabania (Barkoili feeder)	0.8	100	1. Part load shift (30A) from Panchalingeswar feeder to Barkoili Feeder 2. N-1 from SED div to Panchalingeswar feeder
9	Balasore	BED	GANESWARPUR	Town feeder	GANESWARPUR	Town feeder	BACKSIDE OF INDUSTRIAL ESTATE TO JARKAPADA	2	100	1. Field requirement 2. NEW LINK LINE with SAME FEEDER for EASY MAINTENANCE
10	Balasore	BED	Ganeshwarpur PSS	Suelpur	Ganeshwarpur PSS	Suelpur	Aparna Club to Manikhamba	0.3	100	1. Field requirement 2. NEW LINK LINE with SAME FEEDER for EASY MAINTENANCE
11	Balasore	CED	Bhalkasuni PSS	Sajnagarh feeder	Ajodhya PSS	Ajodhya feeder	Near Gopalpur school to kalani sahi	1	100	1. 30A approx Load shift from Sajnagarh feeder to Ajodhya feeder. 2. N-1 connectivity between Sajnagarh feeder to Ajodhya feeder. 3. 8 km length reduction of Sajnagarh feeder from 52km to 44km
12	Balasore	CED	Berhampur PSS	Gohira feeder	Berhampur PSS	New Gohira_Bifurcated	Behampur PSS to Chatrapur	6	100	1. Field requirement 2. bifurcate Gohira feeder. 3. reduction of length in Gohira feeder from 70km to 37km 4. 100A approx Load reduction. 5. Voltage improvement at tail end from 9.9kV to 10.6kV
13	Balasore	BTED	Basta PSS	Basta Feeder	Basta Pss	New Basta feeder_Prop	Basta PSS to Petrol pump near Gandhi chak	1.5	100	1. Field requirement. 2. Bifurcate Basta Feeder. 3. Reduce Basta feeder length & load reduction
14	Balasore	BTED	Langaleswar PSS	Chada Feeder	Baliapal PSS	Khaprapada feeder	Sonaruhi to sonaruhi field	0.5	100	1. Field requirement. 2. link line to shift load from Khaprapada feeder to Chada feeder

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SL NO.	Name Of the Circle	Name of division	Existing S/Stn Name	Existing Feeder Name	New S/Stn Name	NEW Feeder name	Cut Point Location	Length of line (kM)	type of conductor	BENEFITS
15	Balasore	JED	Jagannathpur PSS	Chandaneswar feeder	Jagannathpur PSS	new Chandaneswar feeder_prop	Jagannathpur PSS to Bijupatnaik chak	2	100	New line to bifurcate chandaneswar feeder
16	Balasore	SED	Markona PSS	Khirkona feeder			khirkona college to PAHITORONA RWSS	1.5	100	TO SHORT THE FEEDER LENGTH OF 40 SPAN.LINK LINE
17	Balasore	SED	Balikhanda PSS	Begunia feeder			PSS to PITHAKHIAPADA	0.5	100	FOR BALIKHANDA BAZAR AND INDUSTRIAL FEEDER
18	Baripada	RED	SUKRULI PSS	KHICHING	SUKRULI PSS	KHICHING -2 PROP.	JAMUNALIA-3	13	100	1. Tailend voltage is improved from 9.3 KV to 10.6 KV 2. Feeder length is reduced from 106.6 Km to 58.4 Km. 3. % loss is reduced from 10.7% to 3.4%
19	Baripada	RED	KARANJIA PSS	KERKERA	KARANJIA PSS	KERKERA-2 PROP.	HATIDANDI-3/63KVA	9	100	1. Tailend voltage is improved from 9.1 KV to 10.7 KV 2. Feeder length is reduced from 113.4 Km to 37.6 Km. 3. % loss is reduced from 13.2% to 2.7%
20	Baripada	BPED	BARKAND PSS	MORODA	BARKAND PSS	MORODA -2 PROP.		7	100	FIELD REQUIREMENT
21	Bhadrak	BSED	CHAYALSINGH PSS	ODANGA FEEDER	CHAYAL SING PSS	GANIGANJ NEW FEEDER	ODANGA SW 1	0.78	100	1.AFTER LOAD SHIFTING THE VOLTAGE LEVEL IS IMPROVED FROM 10 KV TO 10.6 KV AT TAIL END. 2.LENGTH REDUCE FROM 121.97 KM TO 41.82 KM 3.RELIABLE POWER SUPPLY 4. LOSS IS REDUCE FROM 4.17% TO 3.19%
22	Bhadrak	BNED	JASHIPUR PSS	GHANTESWAR FEEDER	GADI PSS	NARENDRAPUR FEEDER1	GHANTESWAR SW 1	0.50	100	1.AFTER LOAD SHIFTING THE VOLTAGE LEVEL IS IMPROVED FROM 8.2 KV TO 10.5 KV AT TAIL END. 2.LENGTH REDUCE FROM 52.66 KM TO 37.64 KM

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SL NO.	Name Of the Circle	Name of division	Existing S/Stn Name	Existing Feeder Name	New S/Stn Name	NEW Feeder name	Cut Point Location	Length of line (kM)	type of conductor	BENEFITS
										3.RELIABLE POWER SUPPLY 4. LOSS IS REDUCE FROM 9% TO 2.87 %
23	Bhadrak	BSED	CHAYALSING PSS	SENDHATIRA FEEDER	NILAK PSS	SIALIA FEEDER	SENDHATRIA SW 1	0.50	100	1.AFTER LOAD SHIFTING THE VOLTAGE LEVEL IS IMPROVED FROM 8.2 KV TO 10.9 KV AT TAIL END. 2.LENGTH REDUCE FROM 48.76 KM TO 10.75 KM 3.RELIABLE POWER SUPPLY 4. LOSS IS REDUCE FROM 6.92% TO 3.08 %
24	Bhadrak	BNED	TAHASIL PSS	BONTH CHHAK FEEDER	TAHASIL PSS	BAGURAI FEEDER	BONTH CHHAK SW 2	1.00	100	1.AFTER LOAD SHIFTING THE VOLTAGE OVERLOAD PROBLEM RESOLVED 2.LENGTH REDUCE FROM 9.84 KM TO 3.14 KM 3.RELIABLE POWER SUPPLY 4. LOSS IS REDUCE FROM 3.86% TO 1.7 %
25	Bhadrak	BNED	TAHASIL PSS	SANTHIA FEEDER	TAHASIL PSS	SANTHIA NEW	SANTHIA SW 1	5.00	100	1.AFTER LOAD SHIFTING THE VOLTAGELEVEL IS REDUCED FROM 8.8KV TO 10.5KV 2.LENGTH REDUCE FROM 24.03 KM TO 9.95 KM 3.RELIABLE POWER SUPPLY 4. LOSS IS REDUCE FROM 10.05% TO 3.29 %
26	Bhadrak	BSED	ASURALI FEEDER	DHUSURI FEEDER	RAHAPITA PSS	BANDHATIA NEW FEEDER	DHUSURI SW 1	0.21	100	1.AFTER LOAD SHIFTING THE VOLTAGE LEVEL IS IMPROVED FROM 9.1 KV TO 10.8 KV AT TAIL END. 2.LENGTH REDUCE FROM 77.83 KM TO 18.1 KM 3.RELIABLE POWER SUPPLY 4. LOSS IS REDUCE FROM 9.39% TO 2.7 %

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SL NO.	Name Of the Circle	Name of division	Existing S/Stn Name	Existing Feeder Name	New S/Stn Name	NEW Feeder name	Cut Point Location	Length of line (kM)	type of conductor	BENEFITS
27	Bhadrak	BNED	KUDIBAG PSS	BARANGA FEEDER	PADMAPUR NEW PSS	KAPAGADIA NEW FEEDER	BARANGA SW 1	0.21	100	1.AFTER LOAD SHIFTING THE VOLTAGE LEVEL IS IMPROVED FROM 10.2 KV TO 10.4 KV AT TAIL END. 2.LENGTH REDUCE FROM 38.78 KM TO 33.75 KM 3.RELIABLE POWER SUPPLY 4. LOSS IS REDUCE FROM 4.19% TO 3.88 %
28	Keonjhar	AED 2	Pandapada	Rutisila	Pandapada	Rutisila Bifur	Near Chowk 4 Pole	0.2	100	1.AFTER LOAD SHIFTING THE VOLTAGE LEVEL IS IMPROVED FROM 10.2 KV TO 10.4 KV AT TAIL END. 2.RELIABLE POWER SUPPLY 4. LOSS IS REDUCE FROM 6.13% TO 5.8%
29	Keonjhar	AED 3	Pandapada	Rutisila	Pandapada	Rutisila Bifur	Near Chowk 4 Pole	0.2	100	1.AFTER LOAD SHIFTING THE VOLTAGE LEVEL IS IMPROVED FROM 10.2 KV TO 10.4 KV AT TAIL END. 2.RELIABLE POWER SUPPLY 4. LOSS IS REDUCE FROM 6.13% TO 5.8%
30	Keonjhar	JOED 2	Bhadrasahi	Bhadrasahi Town	Bhadrasahi	Bhadrasahi Town Bifur New	11KV BHADRASAHI TOWN59	1	100	1.AFTER LOAD SHIFTING THE VOLTAGE LEVEL IS IMPROVED FROM 10 KV TO 10.5 KV AT TAIL END. 2.RELIABLE POWER SUPPLY 4. LOSS IS REDUCE FROM 3.34% TO 2.6%
31	Keonjhar	KED 2	Gambharia	Express	Gambharia	Express	Jharbelda	1.5	100	New link line for taking Line Out Of Elephant Movement Jungle Area To Nh Side
32	Keonjhar	KED 1	Gambharia	No-II	Jail road	Thana Chhak	Thana Chhak	0.8	100	1.AFTER LOAD SHIFTING THE VOLTAGE LEVEL IS IMPROVED FROM 10.1 KV TO 10.4 KV AT TAIL END. 2.RELIABLE POWER SUPPLY

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SL NO.	Name Of the Circle	Name of division	Existing S/Stn Name	Existing Feeder Name	New S/Stn Name	NEW Feeder name	Cut Point Location	Length of line (kM)	type of conductor	BENEFITS
										4. LOSS IS REDUCE FROM 4.55% TO 4.3%
33	Keonjhar	JOED 1	Remuli	Chauthia	Remuli	NEW CHAUTHIA BIFUR	NEW CHAUTHIA BIFUR7	8	100	1.AFTER LOAD SHIFTING THE VOLTAGE LEVEL IS IMPROVED FROM 9.6 KV TO 10.4 KV AT TAIL END. 2.RELIABLE POWER SUPPLY 3. Feeder length reduced from 133 kms to 86 kms. 4. LOSS IS REDUCE FROM 5.02% TO 3.8%
Total Length in Km.								**77.00**		

PRAYER:

Pursuant to the direction of Hon'ble Commission in vesting order dated 25.03.2021, case no 09/2021, under para 39, and direction of Hon'ble Commission vide letter No. OERC/Engg-05/2023/1030 dated 20.07.2023 and vide letter No. OERC/Engg-05/2023/1358 dated 21.09.2023, TPNODL is supposed to file the Capital investment plan for the FY 2024-25 and FY 2025-26 for kind approval of Hon'ble Commission.

In compliance to above, the licensee is submitting herewith CAPEX plan to the tune of **₹ 447.29 Cr** for FY 2024-25 and CAPEX plan to the tune of **₹ 415.65** Cr for FY 2025-26 before Hon'ble Commission, which may kindly be approved.

Dated: 31.10.2023

Chief Executive Officer

TP Northern Odisha Distribution Limited

NOTARY
GOVT. OF ODISHA (INDIA)