ODISHA ELECTRICITY REGULATORY COMMISSION
PLOT NO. 4, CHUNOKOLI, SHAILASHREE VIHAR,
BHUBANESWAR – 751021
Tel. No. (0674) 2721048/ 2721049 (PBX),
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PUBLIC NOTICE
Case No. 78 of 2023

Hearing of Application for approval of Essential Capital Investment Plan for the FY 2023-24 in its Licensed area of supply in compliance to the directions of the Commission in the vesting order dated 28.12.2020 passed in Case No.83 of 2020 as well as the OERC (Terms and Conditions for determination of Wheeling Tariff and Retail Supply Tariff) Regulations, 2022.

M/s. TP Southern Odisha Distribution Ltd. (**TPSODL)** has filed an application before this Commission for approval of Essential/urgent Capital Investment Plan for the FY 2023-24 in its Licensed area of supply. The Commission has registered it as **Case No.78of 2023**and has decided to dispose of this case through a public hearing. The petition along with all Annexures submitted by M/s. TPSODL in this regard is available in OERC website (www.orierc.org) and also in TPSODL's website www.tpsouthernodisha.com. The persons/ organizations those who are interested to participate in the above proceeding may file their objections/suggestions, if any, on the present petition of M/s. TPSODL by **25.08.2023** with a copy to the petitioner. M/s. TPSODL is directed to file its rejoinder to the objections/suggestions of the Respondents by **28.08.2023** with a copy to the Respondents.The Commission will hear the matter on 29.08.2023 at 11.00A.M.

By Order of the Commission

Dated16.08.2023

Sd/-
S E C R E T A R Y

August 11, 2023

File No TPSODL/Regulatory /2023/___/_____

Secretary
Odisha Electricity Regulatory Commission
Bidyut Niyamak Bhawan
Plot No 4, Chunokoli
Shailashree Vihar
Bhubaneshwar 751021

Dear Sir

Sub: Petition for Approval of the Essential Capex Under ODSSP IV for TPSODL

The Government of Odisha is implementing the Odisha Distribution System Strengthening Project (ODSSP) for the last many years with the objective of improving the Distribution System. Recently, the GOO had approved ODSSP Phase IV for implementation in the entire state including in the Licensed Area of TPSODL.

The implementation of ODSSP IV may be delayed as the bidding process for selection of the Business Associate for carrying out this project is under litigation. In the meantime, TPSODL has identified certain elements of the project which needs to completed urgently to improve the power supply in time ("Essential Capital Expenditure") .

Accordingly, TPSODL is filing this petition with the Hon'ble Commission for approval of this Essential Capital Expenditure under the ODSSP IV programme

We trust our submissions are in order

Yours faithfully

(Vidyadhar H Wagle)
Chief Regulatory Affairs

TP SOUTHERN ODISHA DISTRIBUTION LIMITED
(A Tata Power and Odisha Government Joint Venture)
Regd./Corp Office: Kamapally, Courtpeta, Berhampur, Ganjam, Odisha- 760004
Website: www.tpsouthernodisha.com Email: tpsodl@tpsouthernodisha.com
Corporate Identity Number (CIN)- U40109OR2020PLC035195

BEFORE THE ODISHA ELECTRICITY REGULATORY COMMISSION,
BIDYUT NIYAMAK BHAWAN.
PLOT No-4, CHUNOKOLI, SHAILASHREE VIHAR, BHUBANESWAR-751021

Case No:_____/2023

IN THE MATTER OF:	Application for approval of Essential Capital Investment Plan for the FY 2023-24 under the ODSSP Phase IV in the Licensed Area of TP Southern Odisha Distribution Ltd.
	And
IN THE MATTER OF:	TP Southern Odisha Distribution Ltd. (Formerly Southco Utility), Corporate Office, represented by its Chief Regulatory Affairs , Registered Officer at Kamapally, Coutpeta, Berhampur, Ganjam, Odisha 760004 ….Petitioner
IN THE MATTER OF:	All Concerned Stake Holders. Respondents
IN THE MATTER OF:	All Concerned Stake Holders. ***. Respondents***

A. Background for Submission of the Petition

1. The Government of Odisha is implementing the Odisha Development System Strengthening Project (ODSSP) Phase IV in the entire state of Odisha vide its resolution No 12347/[Eng-RR-RR-0004-2019] dated 24th December 2021. Under this Phase, several (i.e 99 No) 33 KV/11 KV Power Substations (PSS) are planned to be set up in the entire State out of which 25 PSS would be set up in TPSODL area. Along with the same, several 33 KV feeders and 11 KV feeders would also be implemented. The list of projects in TPSODL area under ODSSP IV are as follows:

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Table 1 Scope of ODSSP IV approval dated 24th December 2021 by the GOO

Sr No	District	Name of the Substation	Capacity of the Substation (MVA)	Length of 33 KV Line (Km)	Length of 11 KV Line (Km)	No of 11 KV Feeders	Cost (Rs Cr)
1	Ganjam	Mahura Kalua	2 x 5	9	3.5	3	11.37
2	Ganjam	Jayantipur	2 x 5	12	5	4	12.42
3	Ganjam	Kendupadar near Jayapur	2 x 5	15	6	4	13.39
4	Ganjam	Sankulei	2 x 5	14	21	3	15.34
5	Ganjam	Jharana (Bhutasarasing)	2 x 5	15	16.5	4	13.96
6	Ganjam	Baroda	2 x 5	13	25	3	15.66
7	Boudh	Khatkatia (Ghulghula padar)	2 x 5	4	20	4	12.23
8	Boudh	Gundulia	2 x 5	16	8	4	12.9
9	Boudh	Khuntigora	2 x 5	10	14.5	3	12.62
10	Kandhamal	Grisingia	2 x 5	10	15	4	12.71
11	Kandhamal	Ora	2 x 5	30	16	4	16.97
12	Kandhamal	Simanbadi	2 x 5	2	16	4	11.22
13	Koraput	Kotia	2 x 5	27	24	4	17.55
14	Koraput	Almunda	2 x 5	19	5.5	4	13.14
15	Koraput	Chandili	2 x 5	15	5	3	12.23
16	Nawrangpur	Jodinga	2 x 5	16	13	4	13.79
17	Nawrangpur	Godakhunta	2 x 5	19	33	3	17.25
18	Nawrangpur	Badambeda	2 x 5	22	20	4	16.06
19	Nawrangpur	Gona	2 x 5	14	13.2	4	13.4
20	Nawrangpur	Dhorda	2 x 5	4	19	4	12.08
21	Malkangiri	Motu (MV -88)	2 x 5	18	26	4	16.14
22	Rayagada	Rupakona (Kumbikota)	2 x 5	35	2	4	15.91
23	Rayagada	Dukum	2 x 5	20	5.2	4	13.3
24	Rayagada	Kendguda	2 x 5	12	10	4	12.38
25	Rayagada	Sunger	2 x 5	27	4.5	4	14.64
		Total		**398**	**346.9**	**94**	**348.66**

2. After floating of the tenders, the cost approval of Rs 348.66 Crores was found to be inadequate. On an application from TPSODL, the GOO was thereafter pleased to revise the approval amount to Rs 446. 58 Crores.

3. While TPSODL had made considerable progress in terms of floating and selection of Vendors/Business Associates (BA) for implementation, the above process has been stalled due to a pending litigation in the court. However keeping in mind the urgency of requirement of infrastructure at certain places and after assessing the present condition, TPSODL has identified capital expenditure ("Essential Capital Expenditure") to the extent of **Rs 34.85 Crores** for early implementation.

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4. TPSODL is filing the present petition with the Hon'ble Commission for approval of such Essential Capital Expenditure. The summary of the expenditure proposed (without IDC and Employee Cost Capitalisation) is as given in the table below:

Table 2 Summary of the Capital Investment Proposal

Sl. No.	Proposal	UOM	Quantity	Amount (in Rs Cr.)
1	33/11kV substations and associated 33KV&11KV lines	No's	1	20.2
2	33kV Lines	Nos / CKT.KM	4/48	14.7
	Total			**34.85**

5. The detailed justification for the above schemes along with the breakup of the expenditure is given in **Annexure 1- Detailed Project Report**

6. The Bill of Quantities (BOQ) is given in **Annexure 2- Bill of Quantities**

B. Employee Costs and Interest During Construction to be capitalised

7. It is submitted that Employee Cost associated with the projects or capex schemes would also form a part of the Capex and would be eventually capitalized with the capital expenditure scheme. The above cost submitted for approval does not include such Employee Costs capitalised or Interest During Construction. We wish to submit that the Employee Costs to be capitalized would in term depend on the employees working on the scheme and the time spent by them on the same.

8. Considering the Capitalisation for FY 2022-23, we have worked out the share of Employee Costs to be capitalized and also the IDC to be capitalized. The same are as shown in the table below:

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Table 3 Employee Cost Capitalisation and IDC for FY 2022-23

Sr No	Particulars	Rs Cr	% of Base Capitalisation
1	Base Capitalisation (i.e without EDC and IDC)	315.02	
2	Employee Cost Capitalisation (EDC)	28.37	9.0%
3	Interest During Construction	0.78	0.2%

9. On the basis of the above, the estimated capitalization from the above scheme is as given in the table below:

Table 4 : Total Capital Cost including EDC and IDC

Sr No	Particulars	Amt (Rs Cr)
1	Capex without Employee Costs and IDC	34.85
	Add	
2	Employee Costs	3.14
3	IDC	0.09
4	**Total Including Employee Costs and IDC**	**38.08**

C. Basis for estimation of Cost

10. The estimation of capital costs for large number of items have been made on the basis of Cost Data Book (CDB) published by the Government of Odisha for various items. The CDB has been published by the Government of Odisha for the FY 2018-19. Subsequently, in the meeting dated 23rd November 2021, it was decided that 6% p.a towards escalation may be considered till the rates are revised. The relevant extracts from the Minutes of the meeting are as given below

E. A Technical Committee to be constituted under the Chairmanship of EIC-cum- PCEI, to look into the revision of rates. EIC(Electricity) clarified that pending finalization of the rates, price escalation of 6% per year may be allowed.

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11. Accordingly, the escalation rate of 6% p.a from FY 2018-19 i.e a total escalation of 30 % till FY 2023-24 has been considered for estimation of capital expenditure for items covered by the CDB. For items, which are not covered by the CDB, the rates discovered by TPSODL through the last competitive bidding conducted has been considered. The rates so discovered have been escalated suitably to reflect the present market conditions. The expenditure of items which do not have the reference of the discovered rates since the same are being placed for the first time, budgetary quotes have been used.

12. For a few items where the above references are not available, engineering estimates have been made by TPSODL to arrive at the capital expenditure.

13. The Hon'ble Commission in their letter No OERC/Engg-09/2022/893 dated 3rd July 2023 had clarified that 6% supervision charges cannot levied for schemes which are executed by the Discoms for themselves (i.e not on behalf of consumers). Accordingly, TPSODL has not considered such charges while preparation of the scheme value.

D. Proposed Funding of the Capex

14. The Capital Expenditure is proposed to be funded through a Debt to Equity mix in the ratio of 70:30. The Debt raised for this Capital Expenditure would be long term debt and the Equity would be subscribed by Tata Power and Gridco in the ratio of 51% and 49% respectively. Further, Gridco is expected to subscribe to its share of 49% through transfer of assets owned by the Government i.e make contribution in kind and Tata Power would subscribe in the form of cash to the extent of its share of 51%. Accordingly, since cash resources need to be raised in the form of cash to meet the expenditure, the resources need to be raised additionally for compensating the Gridco Equity in Kind. Accordingly, the Debt and Equity required for meeting the capital expenditure (without considering employee cost and IDC that would be capitalized is as follows:

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Table 5 : Proposed funding of Capital Expenditure

Sr No	Particulars	Amount (Cr)
1	A. Proposed Capex Plan –	38.08
2	B. Add- GRIDCO capex (in Kind) (i.e. equivalent to GRIDCO share of 49% in 30% Equity) @ 17.23 % of Sr No 1	6.56
3	Total Capex (A+B)	44.64
	Funding of the above Capex	
4	70% through Debt	31.2
5	30% through Equity	13.4
5a	TPC share @ 51%	6.830
5b	GRIDCO share @ 49%	6.56

E. Approval of the Board

15. TPSODL is in the process of obtaining the Board Approval and will submit the same to the Hon'ble Commission. In light of the urgency of this Capital Expenditure required to be completed, the Hon'ble Commission is requested to approve the proposal in this petition on the basis that such Board Approval would be obtained by TPSODL

F. Prayers to the Hon'ble Commission

16. TPSODL prays for the following to the Hon'ble Commission

i. Approve the Capital Expenditure plan and breakup as proposed in **Table 2 Summary of the Capital Investment Proposal** i.e an amount of **Rs 34.85 Crores** for executing a part of the schemes envisaged under ODSSP IV.

ii. Pass any other orders as the Hon'ble Commission may think appropriate

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1 Annexure 1- Detailed Project Report

1.1 TPSODL Network Overview

17. TPSODL has a wide geographical area of 48,751 Sq KM. spread across 8 districts of Odisha state namely Ganjam, Gajapati, Boudh, Kandhamala, Rayagada, Koraput, Nabarangpur and Malkangiri and serves the consumer base of about 24.13 Lakhs. For operational simplicity the area is divided into 6 Circles viz. City, Berhampur, Aska, Bhanjanagar, Jeypore & Rayagada Circles. In order to have the smooth operation of electrical network and to provide satisfactory services to its consumers, above circles are further sub divided into 19 Divisions and 51 Sub-division.

18. At present, there are 140 numbers of 33 kV feeders with a combined circuit length of approximately 3883 Ckt. KMs supplying power to 246 numbers of 33/11kV Primary Substations. The 33kV supply is stepped down to 11kV level through 535 numbers of 33/11kV power transformers with an installed capacity of 2518 MVA at these primary substations. Further, nearly 892 numbers of 11 kV feeders emanates from the 33/11 kV primary substations having cumulative length of approximately 43250 Ckt. KMs and supply power to HT consumers connected at 11 kV level and LT customers connected to 11/0.415 kV & 11/0.230 kV distribution substations. 57706 numbers of distribution transformers are installed in all six circles with an installed capacity of 3878 MVA. The length of the LT network is approximately 40000 Ckt. KMs. These LT feeders supply power to three-phase and single-phase consumers.

19. TPSODL receives electrical power at 33kV level from 35 nos. of Grid Substations (GSS) out of which 5 nos. GSSs are rated at 220/132/33kV, 5 nos. at 220/33kV and 25 nos. at 132/33kV located within and in the vicinity of TPSODL operational area. TPSODL distributes the power at 33kV / 11kV / 440V / 230V depending on the demand of the consumers.

1.2 Key Information about TPSODL

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20. The information of TPSODL in terms of its Assets used for consumers are given in the following tables

Table 6 : Statistics about TPSODL

Sl. No.	Particulars	Unit	Details
1	Area	Sq km	48,751
2	Population	Crore	0.96
3	Number of Circle	Nos.	6
4	Number of Divisions	Nos.	19
5	Number of Sub Divisional Offices	Nos.	51
6	Number of 33kV feeders	Nos.	140
7	Number of 11kV feeders	Nos.	892
8	33kV Ckt length	Ckm	3883
9	11kV Ckt length	Ckm	43250
10	No. of 33/11kV PSS	Nos.	246
11	No. of 33/11kV PTRs	Nos.	535
12	No. of DT	Nos.	57706
13	LT length	Ckm	39895
14	Installed Capacity (PTR)	MVA	2518
15	Installed Capacity (DT)	MVA	3878
16	Number of Consumers	Nos.	2413165

Table 7 : Details of Distribution lines

SN	Description	City	Berhampur	Aska	Bhanjanagar	Rayagada	Jeypore	Grand Total
1	33KV LINES	147	383	244	885	814	1410	3883
2	11 KV LINES	1241	3500	2746	10274	8255	17233	43250
3	LT. BARE LINES	557	1088	706	1511	2738	2559	9159
4	LT LINE AB CABLE	1025	3454	1677	7126	3951	13503	30736

Table 8 : Details of Power Transformers (PTR)

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Sr No	Circle	Units	10 MVA	8 MVA	7.5 MVA	5 MVA	3.15 MVA	1.6 MVA	Total
1	City	No.	3	12	1	23	6	2	47
2	Berhampur	No.	0	14	0	47	11	1	73
3	Aska	No.	1	5	0	40	9	3	58
4	Bhanjanagar	No.	0	7	0	57	27	6	97
5	Jeypore	No.	0	8	0	88	48	15	159
6	Rayagada	No.	0	9	1	60	24	7	101
7	**TOTAL QUANTITY**	**No.**	**4**	**55**	**2**	**315**	**125**	**34**	**535**
8	**TOTAL CAPACITY**	**MVA**	**40**	**440**	**15**	**1575**	**393.8**	**54.4**	**2518.2**

1.3 Proposed Plan for areas facing low voltage and N-1 issues

21. Under this Essential Capital Expenditure TPSODL is submitting proposal towards the following:

    a. New 33/11kV Primary Substations (PSS) and associated lines
    b. New 33kV Lines

22. The details of Projects mentioned in below table:

Table 9 : Details of Power Transformers (PTR)

Sl. No.	Proposal	UOM	Quantity	Amount (in Rs Cr.)
1	33/11kV substations and associated 33KV&11KV lines	No's	1	20.2
2	33kV Lines	Nos / CKT.KM	4/48	14.7
	Total			**34.85**

1.4 Part-A: New 33/11kV substation in Low Voltage area

1.4.1 JODINGA PSS (2X5MVA)

1.4.1.1 Proposal:

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23. Construction of 33/11kV Primary Substation with 2 X 5MVA power transformer with construction of 33kV incoming line from 33/11kV Raighar PSS at Jodinga along with construction of 4nos. 11kV feeders.

1.4.1.2 Objective:

24. The proposal is prepared with a view to ensure reliable power supply to the consumers for mitigating low voltage issues as well as to meet the increasing load demand due to prospective loads. The main thrust is laid on improvement of voltage profile, to minimize interruption of power supply to the consumers, availability of alternate power supply and socio-economic development of the inhabitants. In last 2 to 3 years, frequent protests were held by local farmers from the said area for low voltage and frequent interruptions. The said issue was also highlighted in Collector grievance discussions. Hence, it is a necessary for construction of the said PSS in time bound in order to overcome low voltage issues in the area.

1.4.1.3 Existing Scenario:

25. Presently the area covering Turudhi, Udaypur, Jalangpara, Kacharapara, Hatabhrandi, Koskonga, Parchipara, Bobei, Ganjapara, Hatigam and Naktisimoda are getting power supply from existing 33/11kV Raighar substation through Turudhi & Kundei 11kV feeders with the following:

- 11kV Turudhi feeder of 33/11kV Raighar PSS is very lengthy having total length of 245 Ckm (trunk and spur lines) carrying 4.9MVA in FY 22-23. Anticipated peak load in FY 23-24 is around 5.7MVA.

- 11kV Kundei feeder of 33/11kV Raighar PSS is having total length of 141 CKM (Trunk and Spur Lines) and carries 2.51MVA in FY 22-23. Anticipated peak load in FY 23-24 is around 2.8 MVA. This feeder provides power supply to areas mainly Turudhi, Udaypur, Jalangpara, Kacharapara, Hatabhrandi, Koskonga, Parchipara, Bobei, Ganjapara, Hatigam, Naktisimoda area etc feeding around 18350 nos. of consumers.

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- The consumers in these areas are facing low voltage problem and frequent breakdowns due to lengthy line and lower size conductor.

- Tail end voltages are very low for both 11kV feeders due to long length. 33kV voltage at Raighar is currently around 28kV. The 33kV source feeder and 11kV feeder details for Raighar PSS and the Voltage profile at the existing PSS is as given in the Table below

Table 10 : Voltage Profile at existing PSS

Name of Grid	Name of 33kV Feeder	Load of 33kV Feeder (in Amp)	Name of 33/11kV PSS	33kV Bus Voltage at PSS (kV)	11kV Bus Voltage at PSS (kV)
Adhikariguda (Umerkote)	Beheda	376	Raighar	28	9.4

Table 11 : Voltage Profile for 11 KV feeders emanating from Raigarh PSS at tail end

Sr No	PSS Name	11kV Feeder Name	11kV Feeder Length (Km)	Type of conductor	11kV Feeder Load (MVA)	11kV Feeder Tail End Voltage (KV)
1	Raighar	Turudhi	245	34, 55sqmm	4.9	5.4
2	Raighar	Kundei	141	34, 55sqmm	2.8	6.7

1.4.1.4 PTR Load Analysis:

26. The load at Raigarh PSS is captured in the following table

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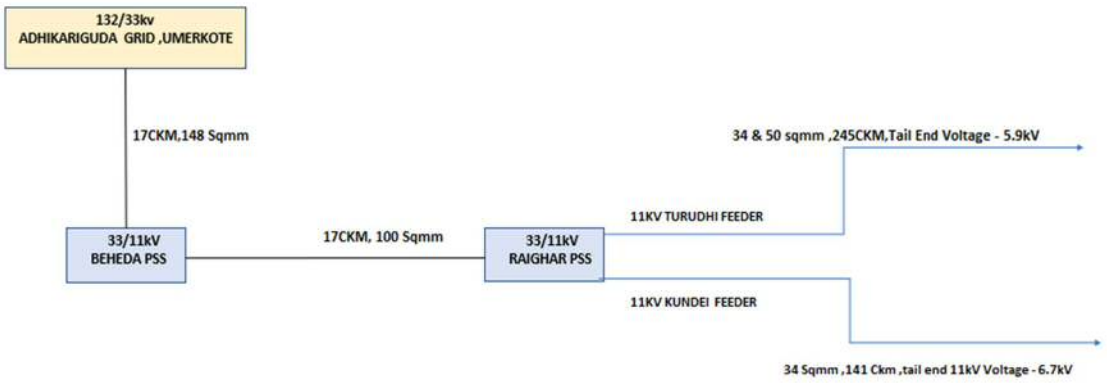
Table 12 : PTR Load Analysis at Raigarh PSS

SN	Name of 11KV Feeder	PTR Rating (MVA)	Peak Load in FY 2022-23 (Amp)	Anticipated peak Load in FY 2023-24	Peak Load (MVA)	PTR	Remarks
1	Town	5	82	88.6	4.6	91	Analysing the existing condition, all PTR are loaded 90% and above of its rated Capacity which needs to divert the load to new PSS.
2	Chatabeda		104	116.5			
3	Debagam		30	34.5			
4	Gurusingha	5	235	270.3	5.1	103	
5	Gona	5	99	106.9	4.5	90	
6	Kundei		115	128.8			
7	Turudhi	5	260	306.8	5.8	117	

27. In above analysis, additional load is considered due to increasing Agricultural load in the area. In FY 22-23, lot of issues were faced in Turudhi feeder due to PTR overloading resulting into loss of supply to some consumers and frequent protests from local population. The Situation is expected to worsen in coming year due to increasing agricultural load in the area hence shifting of part of load to some other transformer is necessary. The Existing SLD is provided in the table below

Figure 1: Existing SLD at Raigarh PSS



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1.4.1.5 Proposed Scenario:

28. The proposed Jodinga S/S is planned to be connected from Raighar PSS with 16 CKM 33kV line. The voltage is expected to be improved to 10.12kV.

Table 13 : Proposal with new PSS at Jodinga

Sl No	Name of the proposed S/S	Name of the existing 33/11kV ss from which load to be diverted	Name of the existing 11KV feeder whose load to be diverted	load diverted from existing S/S (MVA)
1	JODINGA	RAIGHAR	TURUDIHI	3.92
2	JODINGA	RAIGHAR	KUNDEI	2.24

29. The proposed load diversion would be as follows

Table 14 : Load Diversion to Jodinga

Sl No	Name of the proposed S/S	No of 11KV O/G Feeders	Name of the of 11KV O/G Feeders	Feeder length (in KM)		Cond. Size / Type of 11kV linking line	11kV linking line length (in km)	Connected load (MVA)	Name of villages
				Total length (Trunk + branch line)	Trunk line				
1	JODINGA	4	Turudhi	80	15	100 mm2	3	1.3	Jodinga, Sovapara, Nuagam
			Parchipada	85	17	100 mm2	5	1.7	Udayapur, Daspur, Jolangapara, Pourbella, Turudihi
			Hatabharandi	75	13	100 mm2	3	1.6	Ganjapara, Hatibena, Kusumpur, Lalmati, Bobei
			Kaudola	69	14	100 mm2	5	1.8	Jodapara, Koskonga, Parchipara, Parchipara dnk

30. Based on the above, the proposed SLD is as follows:

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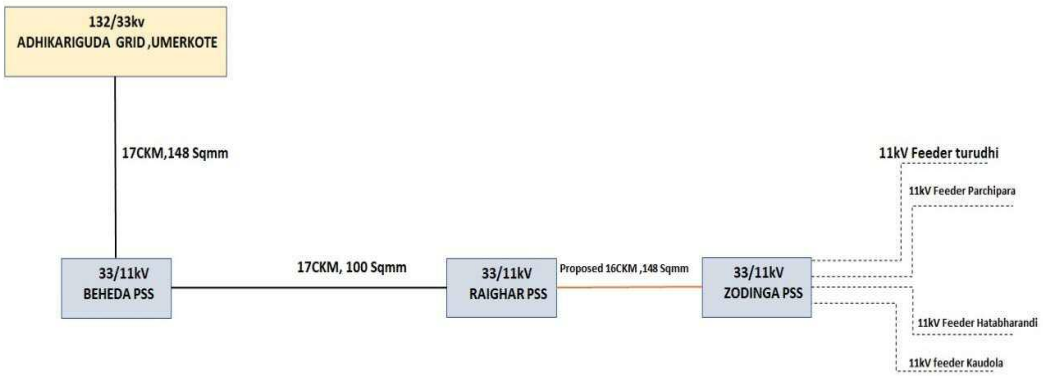
Figure 2: Proposed SLD with New Jodinga Substation



1.4.1.6 Detailed Scope of Work for above mentioned new PSS and associated lines:

i. Construction of 33kV OH conductor of 13Ckm from Dhodrapara Location to proposed Jodinga PSS.
ii. Construction of 33kV Covered conductor of 3 km length from Raighar PSS to Dhodrapara is being considered for safety reasons as it will cross the busy town area.
iii. Construction of 33/11kV Primary Substation with 2X5MVA power transformer, including complete Control Room Building and all equipments for Supply, Erection, Commissioning, Testing, Civil Works with supply of all materials, Labour, T&P etc.
iv. Construction of 11kV link line of 16CKM using 100 sq.mm, AAAC is considered for segregation of existing 11kV Turudhi and Kundei feeder into 4 nos. of proposed 11kV associated feeders as shown in the above table.
v. Construction of 33/11kV New PSS at Jodinga

31. The abstracts of Estimates are as given below

Table 15 : Abstracts of the PSS at Jodinga

Name of the Division: -	**Nabarangpur**
Name of the Sub-Division: -	Umerkote
Name of the Section: -	Raighar
Name of the Work: -	33/11kV New PSS at Jodinga
Scope of work: -	1. Construction of 33/11kV New PSS at Jodinga
	2. Construction of 3Ckm 33kV Covered Conductor Using 13mtr WPB Pole with 159sqmm Covered Conductor from Raighar PSS to Dhodrapara.
	3. Construction of 33kV O/H line Line using 13mtr WPB Pole with 148sqmm AAAC conductor 13Ckm from Dhodrapara Location to Proposed Jodinga PSS.
	4. Construction of 04 nos of 11kV link line using 11mtr WPB Pole with 100sqmm AAAC conductor- 16Ckm from 33/11kV New Jodinga PSS
	5. Construction of 01 no 33KV bay at source 33/11kV Raighar PSS.
Names of Schemes: -	TPSODL CAPEX

ABSTRACT OF ESTIMATE

Sl. No.	Part	Description	Amount
1	A	33/11kV New PSS at Jodinga	125209135.87
2	B	Construction of 33kV Covered Conductor Line using 13mtr WPB Pole with 159sqmm Covered Conductor -3Ckm from Raighar PSS to Dhodrapara Location.	12254431.36
3	C	Construction of 33kV O/H line Line using 13mtr WPB Pole with 148sqmm AAAC conductor- 13Ckm from Dhodrapara to Proposed Jodinga PSS.	34152277.83
4	D	Construction of 04 nos of 11kV link line using 11mtr WPB Pole with 100sqmm AAAC conductor- 16Ckm from 33/11kV New Jodinga PSS	27120851.48
5	E	Construction of 01 no 33KV bay at source 33/11kV Raighar PSS.	3168205.03
		Total Amount	20,19,04,901.57
		Total Amount (In Cr)	**₹ 20.19**

1.4.1.7 Benefits:

- Improvement of voltage profile at the area around GP of Turudhi, Udaypur, Jalangpara, Kacharapara, Hatabhrandi, Koskonga, Parchipara, Bobei, Ganjapara, Hatigam, Naktisimoda.
- Reduced 11kV feeder length through feeder segregation
- PSS will be present at the load centre for provision of reliable power supply
- Faster feeder restoration and interruption minimization

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- After load diversion to New Jodinga PSS, PTR loading and voltage improvement is anticipated in Raighar PSS

1.5 PART-B: Construction of 33kV New Lines

32. In TPSODL, 33kV network is the back bone of power supply system and is spread across vast area of TPSODL connecting various 33/11kV PSS from where the power is transformed at 11kV for further distribution. 33kV network is lengthy and radial in nature at most of the places. In such lengthy 33kV feeders, low voltage issues have been faced at the far end of the feeder and at PSS level in some cases.

33. 33kV new lines are proposed to reduce the length of the existing feeder, by which voltage profile will be improved, overloading of 33kV feeders will be mitigated and N-1 reliability can be achieved. In this proposal 4 nos. 33kV new lines will be constructed as given below for low voltage mitigation, overloading mitigation and N-1 relaibility proposals. The proposed lines are as follows

Table 16 : Proposed New 33 KV lines

Sl No	District	Circle	Division	From	To	Approx Length (Ckt. km)	Project cost (in Cr)
1	Ganjam	Berhampur	PSED	Hatiota PSS	Belagaon PSS	10	3.97
2	Kandhamal	Bhanjanagar	PED	Dangasorda PSS	Kotagarh PSS	30	8.51
3	Koraput	Jeypore	KED	Lamptaput GSS	Lamptaput PSS	3	0.87
4	Rayagada	Rayagada	GED	Padampur PSS	Bahupadar Location	5	1.31
TOTAL						48	14.66

1.5.1 33kV new link line from Hatiota PSS – Belagaon (Polasara) PSS

1.5.1.1 Proposal:

34. Proposal for construction of 33kV OH line with 148sqmm conductor having feeder length 10Ckm from 33/11kV Hatiota PSS to 33/11kV Belagaon PSS and construction of 2no. 33kV Bay extension at both PSS.

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1.5.1.2 Objective:

35. To provide reliable power supply to the consumers and improve low voltage issues of areas fed from 33/11kV Belagaon and Chirikipada PSS during peak loading condition along with ensuring N-1 contingency connectivity from 33kV feeder proposed from Hatiota PSS during peak loading condition.

1.5.1.3 Existing Scenario (Summer'22):

- 33kV Voltage level of Budhamba feeder from Aska Old GSS reaches below the permissible limit of -9% of 33kV i.e., 30.03kV at Budhamba PSS resulting in Low voltage issues at Belagaon PSS and Chirikipada PSS of PSED Division.

- There is a frequent interruption in 33kV line between Aska Old GSS to Budhamba PSS which causes power interruptions at Belagaon & Chirikipada PSS too.

- There is no auxillary Power supply to the Belagaon PSS in case of Breakdown of 33kV Line from Aska Old GSS to Bhudamba PSS hence Main Polasara Town (NAC) Load is currently shifted from 11kV Polasara Town Feeder of Belagaon PSS to the 11kV Kalamba Feeder fed from Hatiota PSS for the uninterrupted power supply to the Town, having max. load of 230Amps.

- The low voltage and overloading situation is expected to worsen further with load growth (10%) for each year.

- There is another PSS namely Hatiota PSS fed from Aska New GSS which is available at 10km distance from Belagaon PSS.

36. Details of 33kV feeder loading and 33kV bus voltage at PSS, the voltages are given below

Table 17 : Loading of Budambha Substation

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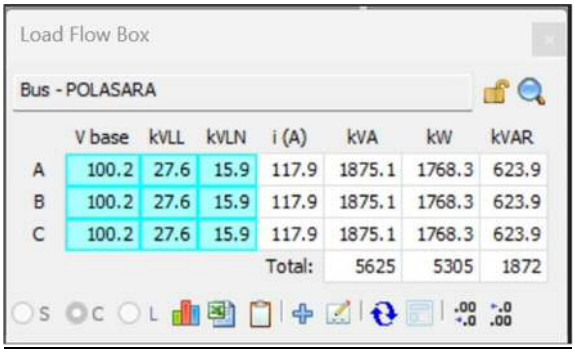
Name of Grid	Name of 33kV Feeder	Feeder Capacity (MVA)	Peak Loading Summer'22 (MVA)	% Loading	Feeder Over loading Status (AS IS)	Projected load FY' 24-25 (MVA)	Projected load FY' 27-28 (MVA)	% Loading
Aska Old Grid	Budhamba	18.58	14.68	79%	Ok	17.77	23.64	127%

Table 18 : Voltage Profile of Budambha Substation

Name of Grid	Name of 33kV Feeder	Name of 33/11kV PSS	Voltage (in kV)
Aska Old GSS	Budhamba	Budhamba	27.6
		Polasara	27.6
		Chirikipada	27.6

Figure 3: Snapshot from Cyme Software (Existing Scenario) Belagaon (Polasara) PSS



1.5.1.4 Existing SLD for Budambha PSS

37. The existing SLD is as given in the figure below

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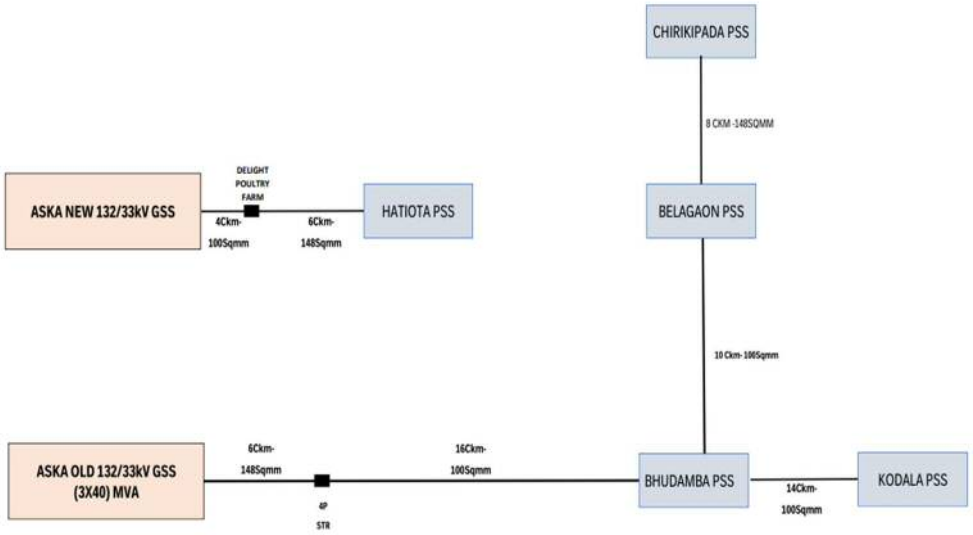
Figure 4: Existing SLD for Budambha PSS



1.5.1.5 Proposed Scenario (Summer'24):

- Construction of of 33kV OH line 148 sqmm conductor feeder of length 10Ckm from 33/11kV Hatiota PSS to 33/11kV Belagaon PSS.

- Construction of 1no. 33kV outdoor bay each at 33/11kV Hatiota PSS & Belagaon PSS.

- 33kV voltage level at Hatiota PSS is between 31kV-33.6kV, after linking Belagaon PSS to Hatiota PSS voltage issue faced by Belagaon PSS will be mitigate.

- Maintenance time will be reduced as the new 33kV line will be under the jurisdiction of PSED Division.

- After 33kV new linking Line from Hatiota PSS to Belagaon PSS, there will be permanent load diversion of 33/11kV Belagaon PSS and Chirikipada PSS from Budhamba feeder to Hatiota feeder.

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- With above proposal 33kV feeder length from source GSS for Belagaon PSS and Chirikipada PSS will reduce from 40Ckm to 28Ckm by diversion of both above PSSs from Aska Old GSS to Aska New GSS.

- Also, there will be N-1 Connectivity from both above GSS to improve network reliability during exigency.

- Also, this proposal will mitigate overload condition due to future load growth & improve the voltage profile at 33/11kV Polasara PSS and Chirikipada PSS.

Table 19 : Loading after construction of 10 Km 33 KV Line

Name of Grid	Name of 33kV Feeder	Feeder Capacity (MVA)	Projected load FY' 24-25 (MVA)	% Loading	Feeder Over loading Status	Projected load FY' 27-28 (MVA)	% Loading	Feeder Over loading Status
Aska Old GSS	Budhamba	18.58	9.152	49%	OK	12.18	65%	OK
Aska New GSS	Hatiota	22.83	8.613	38%	OK	11.46	50%	OK

Table 20 : Voltage improvement after construction of the feeder

Name of Grid	Name of 33kV Feeder	Name of 33/11kV PSS	33kV Voltage (in kV)
Aska Old GSS	Budhamba	Budhamba	32.8
Aska New GSS	Hatiota	Belagaon	30.6
(Charimilai)		Chirikipada	30.5

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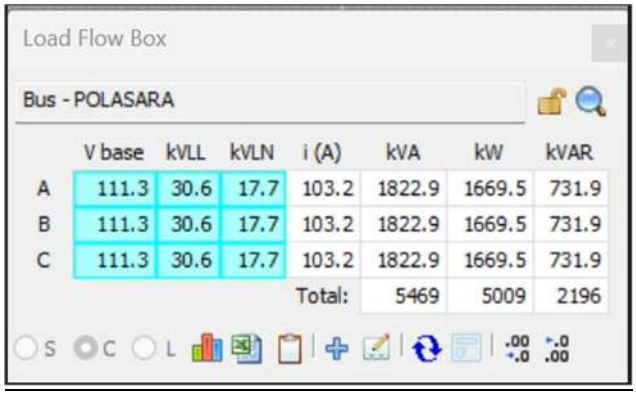
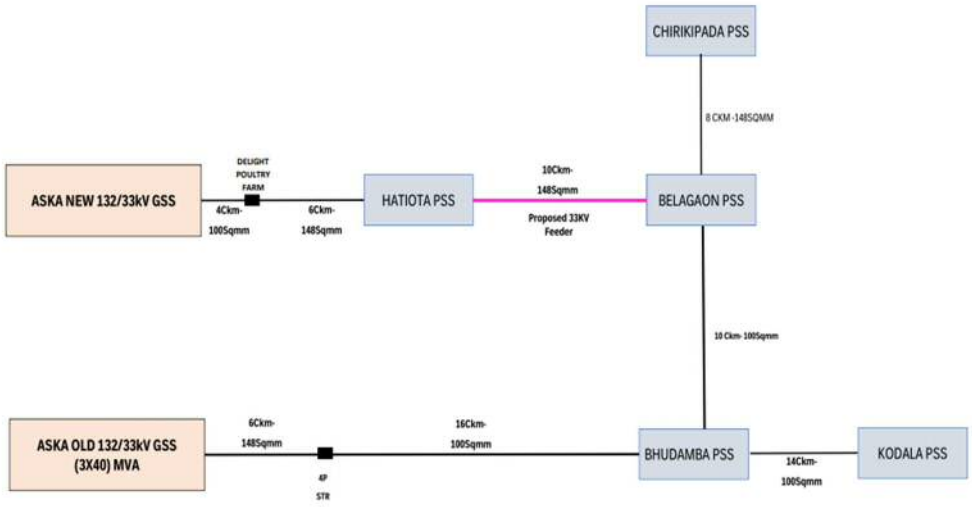
Figure 5: Snapshot from Cyme Software (Proposed Scenario)



	V base	kVLL	kVLN	i (A)	kVA	kW	kVAR
A	111.3	30.6	17.7	103.2	1822.9	1669.5	731.9
B	111.3	30.6	17.7	103.2	1822.9	1669.5	731.9
C	111.3	30.6	17.7	103.2	1822.9	1669.5	731.9
				Total:	5469	5009	2196

Figure 6: Proposed SLD for Network connectivity



1.5.1.6 Detailed Scope of Work:

38. Construction of 33kV OH line 148sqmm conductor feeder of length 10Ckm. Construction of 2no. 33kV outdoor bay each at 33/11kV Hatiota PSS & Belagaon PSS.

Table 21 : Abstract of Estimate for Overhead line

Name of the Division:-	**Purshottampur**
Name of the Sub-Division: -	Polasara
Name of the Section: -	Polasara
Name of the Work:-	33kV New Line from Hatiota PSS to Belagaon PSS
Scope of work: -	Construction of 33kV O/H Line using 13mtr RLP Pole & 148sqmm AAAC conductor-
Names of Schemes: -	TPSODL CAPEX

ABSTRACT OF ESTIMATE

Sl. No.	Part	Description	Amount
1	A	Construction of 33kV O/H Line using RLP Pole with 148sqmm AAAC conductor- 10Ckm from Hatiota PSS to Belagaon PSS	33339438.07
2	B	Construction for 1 no. of 33kV Outdoor Bay at Hatiota PSS.	3168205.03
3	C	Construction for 1 no. of 33kV Outdoor Bay at Belagaon PSS.	3168205.03
		Total Amount	39675848.13
		Total Amount (In Cr)	**3.97**

1.5.1.7 Benefits:

- By construction of 33kV link line, there will be permanent Load diversion from Budhamba overloaded feeder (from Aska Old GSS) to Hatiota under loaded feeder (from Aska New GSS).

- There will be reduction 33kV feeder length from source GSS and mitigation of low voltage issue at 33/11kV Belagaon PSS and Chirikipada PSS.

- Feeder outage will possible for strengthening/maintenance work without taking shutdown of PSS.

- Also, there will be N-1 Connectivity from both above GSS to improve network reliability during exigency.

- Will mitigate overload condition due future load growth and improving low voltage issues at 33/11kV Budhamba, Belagaon and Chirkipada PSS.

1.5.2 33kV new link line from Kotagarh PSS - Dangasorda PSS

1.5.2.1 Proposal:

39. Proposal for construction of 33kV OH line with 148 sqmm conductor having feeder length of 30 Ckm from 33/11kV Dangasorda PSS to 33/11kV Kotagarh PSS and Construction of 2 nos. 33kV Bay extension at both PSS.

1.5.2.2 Objective:

40. To provide reliable power supply to the consumers and improve low voltage issues of areas fed from 33/11kV Kotagarh PSS during peak loading condition along with ensuring N-1 contingency connectivity from 33kV feeder proposed from Dangasorda PSS during peak loading condition.

1.5.2.3 Existing Scenario (Summer'22):

- 33/11kV Kotagarh PSS is fed from Phulbani GSS through 33kV Balliguda feeder at a distance of 119 km and has a mixed conductor type 55/80/100 sqmm.
- For which the voltage experienced during peak load condition at 33/11kV Kotagarh PSS are below the permissible limit of -9% of 33kV i.e; 20.7 kV.
- The low voltage and overloading situation are expected to worsen further with load growth (10%) for each year.
- There is another PSS namely Dangasorda PSS fed from Hata Muniguda GSS which is available at 30km distance from Kotagarh PSS.

The details of 33kV feeder loading and 33kV bus voltage at PSS are given below

Table 22 : Loading of Kotagarh Substation

GSS	Name of 33kV Feeder	Feeder Capacity (MVA)	Peak Loading Summer' 22 (MVA)	% Loading	Feeder Over loading Status (AS IS)	Projected load FY' 24-25 (MVA)	Projected load FY' 27-28 (MVA)	% Loading
Phulbani	Balliguda	14.89	12.12	81%	Over loading	14.67	19.51	131%

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Table 23 : Voltage at Kotagarh PSS

Name of Grid	Name of 33kV Feeder	Name of 33/11kV PSS	33kV Voltage (in kV)
Phulbani	Balliguda	Kotagarh	20.7

Figure 7 **Snapshot from Cyme Software (Existing Scenario)**

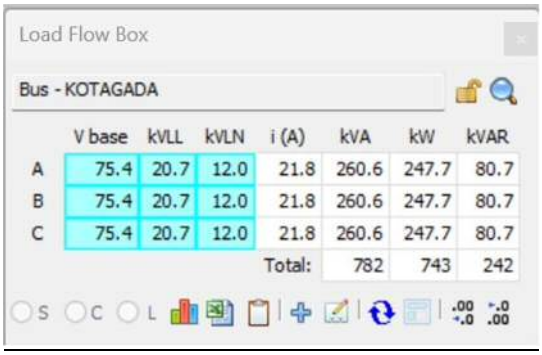
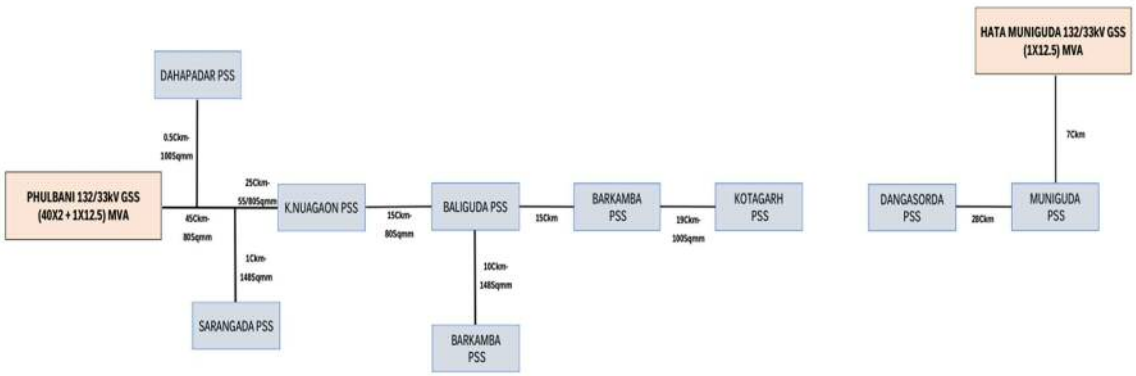


Figure 8 Existing SLD for Kotagada PSS



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1.5.2.4 Proposed Scenario (Summer'24):

- Construction of 33kV OH line 148sqmm conductor feeder of length 30 Ckm from 33/11kV Dangasorda PSS to 33/11kV Kotagarh PSS.
- Construction of 2no. 33kV outdoor bay at 33/11kV Kotagarh PSS & Dangasorda PSS.
- After linking new feeder from Dangasorda PSS, the proposed Kotagarh feeder will deliver power supply to Kotagarh 33/11kV PSS and will provide N-1 Connectivity at both PSS to improve network reliability.
- Also, this proposal will mitigate overload condition at present as well as considering future load growth & improve the voltage profile to some extent at 33/11kV Kotagarh PSS.

Table 24 : Loading of Kotagarh Substation

Name of Grid	Name of 33kV Feeder	Feeder Capacity (MVA)	Projected load FY' 24-25 (MVA)	% Loading	Feeder Over loading Status	Projected load FY' 27-28 (MVA)	% Loading	Feeder Over loading Status
Phulbani	Balliguda	14.89	8.89	59%	OK	11.83	79%	OK

Table 25 : Voltage Improvement at Kotagarh PSS

Name of Grid	Name of 33kV Feeder	Name of 33/11kV PSS	33kV Voltage (in KV)
Hata Muniguda	New Kotagarh	Kotagarh	28

Figure 9 Snapshot from Cyme Software (Proposed Scenario)

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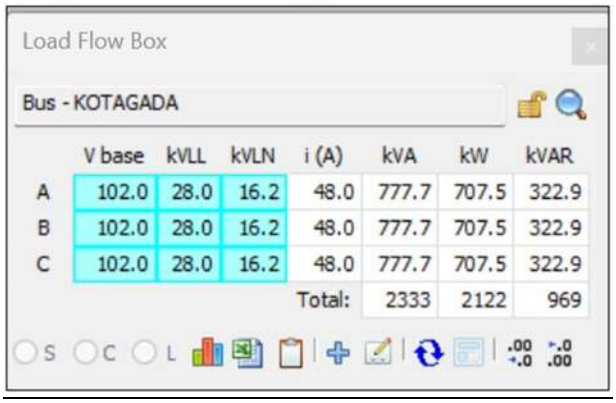
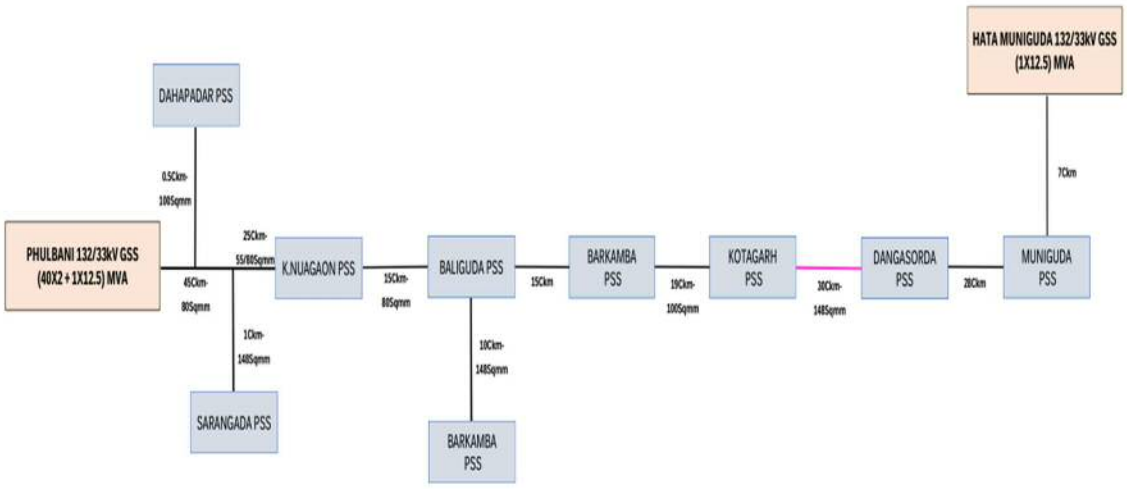


Figure 10 : Proposed SLD for Kotagada Substation



1.5.2.5 Detailed Scope of Work:

41. The estimates of Construction of 33kV OH line 148sqmm conductor feeder of length 30Ckm. Construction of 2 nos. 33kV outdoor bay at 33/11kV Kotagarh PSS & Dangasorda PSS is as given in the table below

Table 26 : Abstract of Estimate for Overhead line for Kotagarh PSS

Name of the Section: -	Tumudibandha
Name of the Work: -	33kV New Line from Dangasorda PSS to Kotagarh PSS
Scope of work: -	Construction of 33kV O/H Line using 13mtr WPB Pole & 148sqmm AAAC conductor- 30Ckm. Construction of 02 no 33kV outdoor line bay at 33/11kV
Names of Schemes: -	TPSODL CAPEX

ABSTRACT OF ESTIMATE

Sl. No.	Part	Description	Amount
1	A	Construction of 33kV O/H Line using WPB Pole & 148sqmm AAAC conductor- 30Ckm for Dangasorda PSS to Kotagarh PSS	78812948.84
2	B	Construction of 1no. 33kV outdoor line bay at 33/11kV Kotagarh PSS	3168205.03
3	C	Construction of 1no. 33kV outdoor line bay at 33/11kV Dangasorda PSS	3168205.03
		Total Amount	**₹ 8,51,49,358.90**
		Total Amount (In Cr)	**₹ 8.51**

1.5.2.6 Benefits:

- By construction of 33kV link line, there will be permanent Load diversion from Baliguda feeder (from Phulbani GSS) to Dangasorda feeder (from Hata Muniguda GSS).

- There will be reduction of 33kV feeder length from source GSS and mitigation of low voltage issue to certain extent at 33/11kV Kotagarh PSS.

- Also, there will be N-1 Connectivity from both above GSS to improve network reliability during exigency.
- The proposal will also mitigate overload condition and improve low voltage issues at 33/11kV Kotagarh & Tumudibandh PSS to a certain extent.

1.5.3 33kV new link line from 132/33kV New Lamtaput GSS(Under Construction) - 33/11kV Lamptaput PSS)

1.5.3.1 Proposal:

42. Proposal for construction of 33kV OH Link line of length 3 Ckm using 148 sqmm conductor from 132/33kV New Lamtaput GSS (Under Construction) to 33/11kV Lamtaput PSS and construction of 1no. 4P str at Lamtaput PSS.

1.5.3.2 Objective:

43. To provide reliable power supply to the consumers and improve power supply issues of areas fed from 33/11kV Lamtaput PSS ensuring reliability of power supply by providing N-1 connectivity.

1.5.3.3 Existing Scenario (Summer'22):

- 33/11kV Lamtaput PSS is fed from Sunabeda GSS by 33kV Nandapur feeder and length of this feeder is around 50Ckm.
- The voltage experienced during peak load condition at 33/11kV Lamtaput PSS are below the permissible limit of -9% of 33kV i.e; 29.1 kV.
- The low voltage situation is expected to worsen further with load growth (10%) for each year and in future the feeder will be overloaded considering the load growth.
- One number GSS at Lamtaput is under construction which is at 3km from Lamtaput PSS.

44. Details of 33kV feeder loading and 33kV bus voltage at PSS are given below

Table 27 : Loading at Lamtapur PSS

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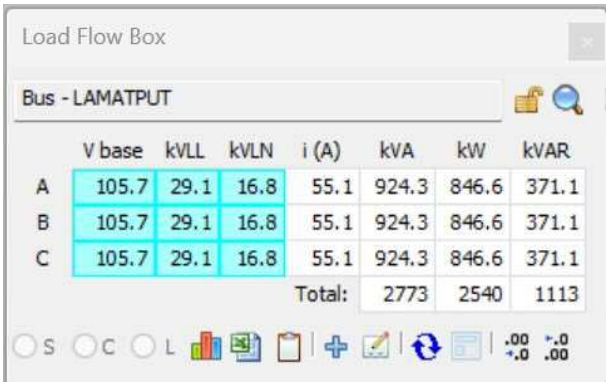
Name of Grid	Name of 33kV Feeder	Feeder Capacity (MVA)	Peak Loading Summer'22 (MVA)	% Loading	Feeder Over loading Status (AS IS)	Projected load FY' 24-25 (MVA)	Projected load FY' 27-28 (MVA)	% Loading
Sunabeda	Nandapur	18.58	12	65%	OK	13.5	16	86%

Table 28 : Voltage at Lamtapur PSS

Name of Grid	Name of 33kV Feeder	Name of 33/11kV PSS	33kV Voltage (in kV)
Sunabeda	Nandapur	Belaiguda	31.5
		Nandapur	30.4
		Padua	30.2
		Lamtaput	29.1
		Mathamput	29

Figure 11 : Snapshot from Cyme Software (Existing Scenario)



1.5.3.4 Existing SLD

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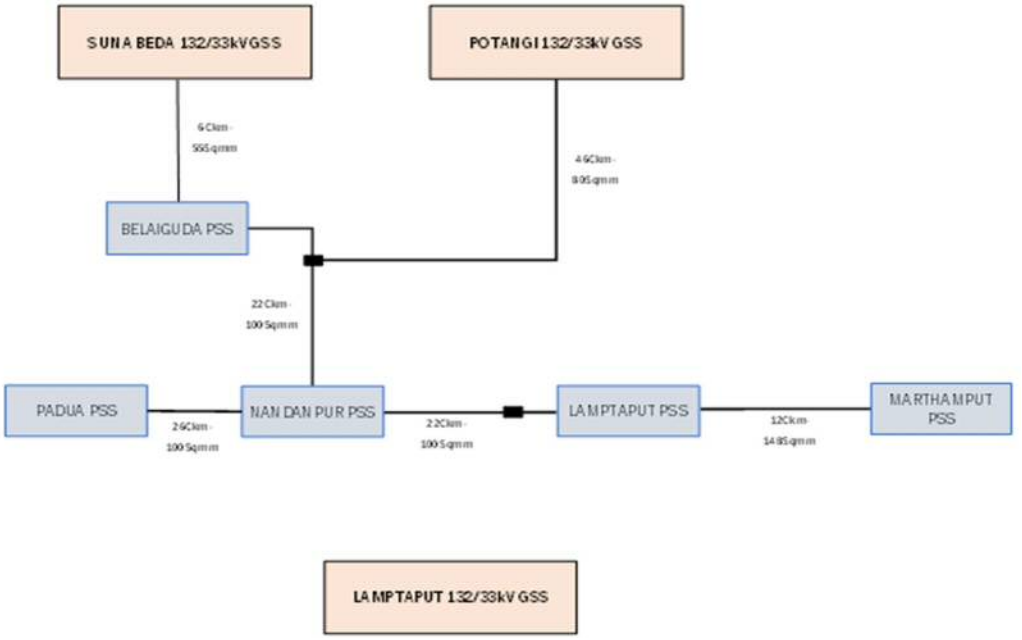
Figure 12 : Existing SLD for Lamptaput



1.5.3.5 Proposed Scenario (Summer'24):

- Construction of 33kV OH Link line with 148 sqmm conductor of length 3Ckm from 132/33kV Lamtaput GSS to 33/11kV Lamtaput PSS.
- Construction of 1 No. 4P Str. for LILO arrangement at Lamtaput 33/11 KV PSS.

45. Based on the above, the improvement in the loading and also voltage profile is as given the following tables and figures

Table 29 :Revised Loading at Lamtapur PSS

Name of Grid	Name of 33kV Feeder	Feeder Capacity (MVA)	Projected load FY' 24-25 (MVA)	% Loading	Feeder Over loading Status	Projected load FY' 27-28 (MVA)	% Loading	Feeder Over loading Status
Sunabeda	Nandapur	18.58	10.1	54%	OK	12	65%	OK
Lamptaput	Lamtaput	22.83	3.4	15%	OK	4	18%	OK

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Table 30 :Improvement in Voltages

Name of Grid	Name of 33kV Feeder	Name of 33/11kV PSS	33kV Voltage (Kv)
Lamptaput	Nandapur	Nandapur	31.1
	Lamptaput	Lamptaput	32.9
	Padua	Padua	32.9
	Mathamput	Mathamput	32.9

Figure 13 : Snapshot from Cyme Software (Proposed Scenario)

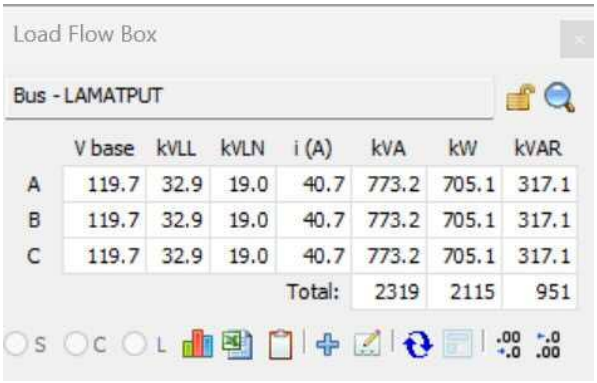

Figure 14 : Proposed SLD:

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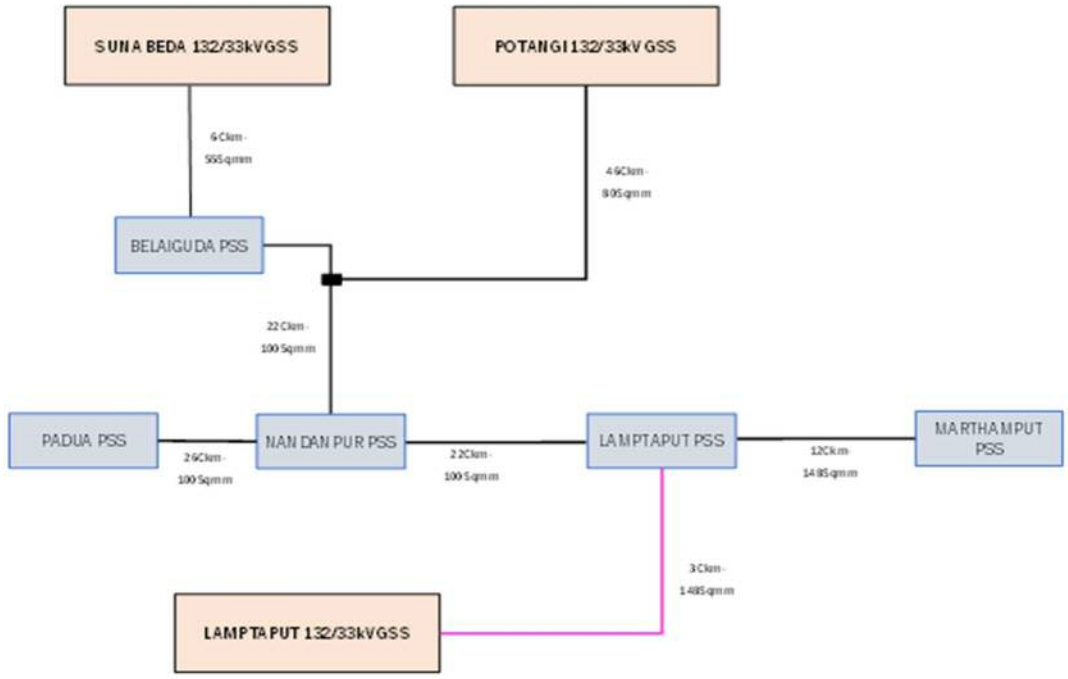

1.5.3.6 Detailed Scope of Work:

- Construction of 33kV OH line with 148sqmm AAAC conductor of length 3Ckm.
- Construction of 1no. 4P Str. for LILO arrangement at Lamtaput 33/11 KV PSS.

Table 31 : Abstract of Estimate for 3 Km Line at Lamtaput PSS

Name of the Division :-	**KORAPUT ELECTRICAL DIVISION (KED)**		
Name of the Sub-Division : -	Sunabeda		
Name of the Section : -	Nandapur		
Name of the Work :-	33kV link line of length 3Ckm (Approx) using 148sqmm conductor from proposed 132/33kV Lamtaput Grid to 33/11kV Lamtaput PSS		
Scope of work:-	Construction of 33kV link line of length 3Ckm (Approx) using 148sqmm conductor from proposed 132/33kV Lamtaput Grid to 33/11kV Lamtaput PSS Construction of 1no. 4P Str. for LILO arrangement at Lamtaput 33/11 KV PSS.		
Names of Schemes: -	TPSODL CAPEX		
	ABSTRACT OF ESTIMATE		
Sl. No.	**Part**	**Description**	**Amount**
1	A	Construction of 33kV O/H Line using 13mtr WPB Pole with 148sqmm AAAC conductor- 3Ckm from 132/33kV Lamtaput GSS to 33/11kV Lamtaput PSS	7881294.88
2	B	Construction of 1no. 4P Str. for LILO arrangement at Lamtaput 33/11 KV PSS.	794963.19
		Total Amount	8676258.08
		Total Amount (In Cr)	**0.87**

1.5.3.7 Benefits:

- By construction of 33kV link line, there will be permanent Load diversion from Nandapur feeder (from Sunabeda GSS) to new 33kV lamptaput feeder from Lamptaput GSS (under construction).

- 33kV feeder length will reduce from 50 Ckm to 3Ckm from source GSS, which will address the low voltage issue at Lamptaput PSS and Mathamput PSS.

- Also, there will be N-1 Connectivity from both above GSS to improve network reliability during exigency.

1.5.4 33kV new link line from Bahupadar Location- Padampur PSS

1.5.4.1 Proposal:

46. Proposal for construction of 33kV OH line with 148sqmm AAAC of length 5Ckm from Bahupadar Location near 132/33kV Ankusing Grid to 33/11kV Padampur PSS.

1.5.4.2 Objective:

47. To provide reliable power supply and to improve low voltage issues of areas fed from 33/11kV Padampur PSS during peak loading condition.

1.5.4.3 Existing Scenario (Summer'22):

- 33/11kV Padampur PSS, Domdosora PSS, Ukamba PSS are fed from 33kV Padampur OH feeder emanating from Akhusingh Grid, having mixed type conductor of size 55/100 sqmm.
- 33kV Padampur feeder from Akhusingh Grid to Padampur PSS is having old aged, de-rated and under sized conductor. Frequent interruption occurs due to conductor snapping and tripping of the feeder.
- Overloading of the feeder is anticipated in future considering load growth (10%) for each year.

48. The details of 33kV feeder loading is given below

Table 32 : Feeder loading at Padampur PSS

Name of Grid	Name of 33kV Feeder	Feeder Capacity (MVA)	Peak Loading Summer'22 (MVA)	% Loading	Feeder Over loading Status (AS IS)	Projected load FY' 24-25 (MVA)	Projected load FY' 27-28 (MVA)	% Loading
Akhusing Grid	Padampur	10.8	4.7	44%	Ok	6.7	9	83%

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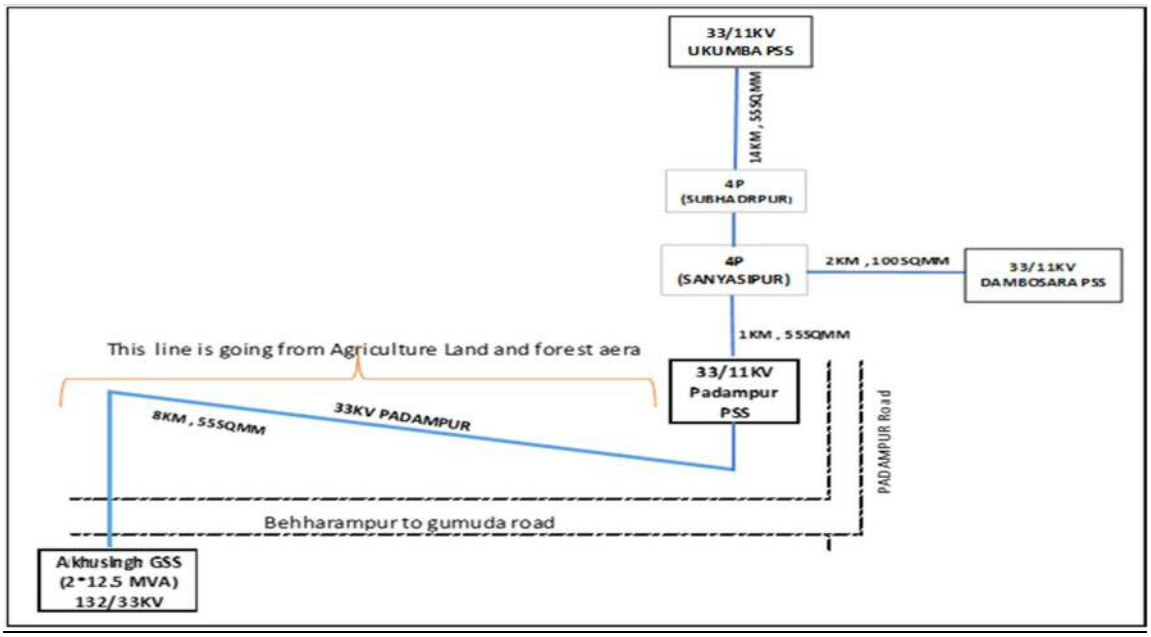
Figure 15 :Existing SLD for Padampur PSS



1.5.4.4 Proposed Scenario (Summer'24):

49. Proposal for construction of 33kV OH line with 148sqmm conductor of length 5 Ckm from Bahupadar Location near 132/33kV Akhusingh Grid to 33/11kV Padampur PSS.

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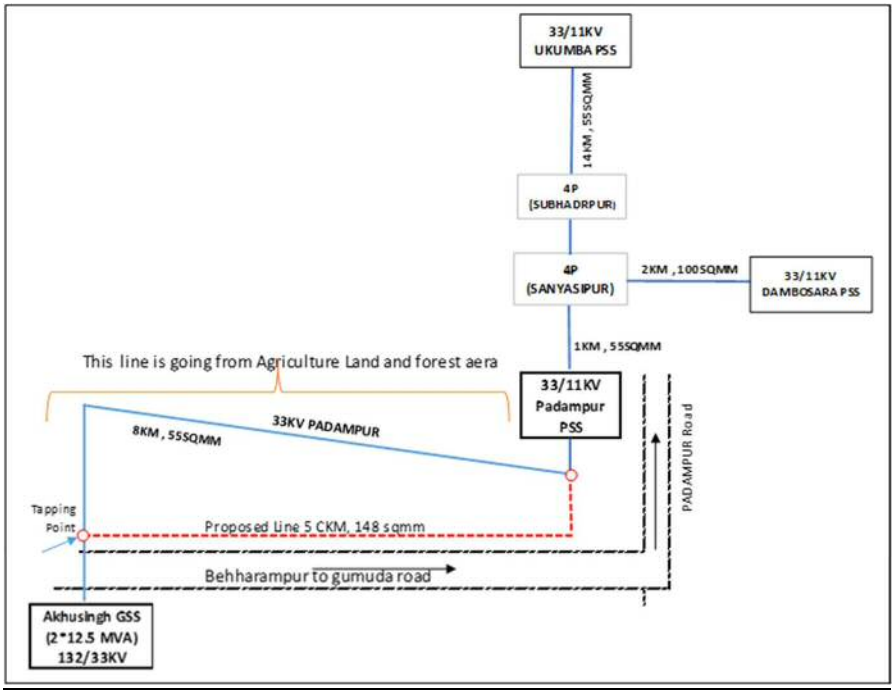
1.5.4.5 Proposed SLD:

Figure 16 :Proposed SLD for Padampur PSS



1.5.4.6 Detailed Scope of Work:

- Proposal for construction of 33kV OH line with 148sqmm conductor of length 5Ckm from Bahupadar Location near 132/33kV Akhusingh Grid to 33/11kV Padampur PSS.

Table 33 : Abstract of Estimate for 5 Ckm Line to Padampur PSS

Name of the Division: -	**Gunupur**
Name of the Sub-Division: -	Gumuda
Name of the Section: -	Padampur
Name of the Work: -	33kV New Line from 33kV Padampur Taping point to Bahupadar Location Near PSS
Scope of work: -	Construction of 33kV O/H Line using 13mtr WPB Pole with 148sqmm AAAC conductor- 5Ckm.
Names of Schemes: -	TPSODL CAPEX

ABSTRACT OF ESTIMATE

Sl. No.	Part	Description	Amount
1	A	Construction of 33kV O/H Line using 13mtr WPB Pole with 148sqmm AAAC conductor- 5Ckm from Bahupadar Location to 33/11kV Padampur PSS.	13135491.47
		Total Amount	13135491.47
		Total Amount (In Cr)	**1.31**

1.5.4.7 Benefits:

- By construction of the 33kV link line, there will be reduction 33kV feeder length.
- Operational efficiency & feeder restoration will be improved.
- Reliable power supply to the consumers will be improved in the areas fed by Padampur, Dombosora and Ukamba PSS.
- The proposal will mitigate the overloading condition of the feeder anticipated in future.

2 Annexure 2- Bill of Quantities

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