Refer 6.4.3 of the Petition

1. <u>Augmentation of Power Transformer at Unit-6 Substation</u>

Proposal:
Augmentation of existing 33/11kV 5MVA Power Transformer-1 to 12.5MVA at Unit -6 power substation in BCDD-1 to mitigate N-1 fail condition.
Existing Scenario:

- Loading of 33/11kV Unit-6 was 6.9 MVA w.r.t. installed capacity of 17.5 MVA as per peak loading of summer'20. Considering 2.03% load growth, Projected loading of summer'22 would be 7.18 MVA.
- PTR 1 & PTR 2 shall be 31% & 45% loaded in summer'22 respectively.
- N-1 on the PTR will fail on PTR-2 in summer'22 as per below table.

Existing summer 20 Loading:

Structure Name	Voltage Ratio	T/F No.	T/F Capacity (MVA) in Summer'20	PTR Load MVA (Summer'20)	Load Growth (%)	Projected PTR Load (MVA) Summer'22	% PTR Loading (Summer22)	PTR N-1 Capacity	N-1
Unit 6	33/11	TRF-1	5	1.5	2.03%	1.56	31%	4.5	Ok
Unit 6	33/11	TRF-2	12.5	5.4	2.03%	5.62	45%	11.25	Fail

Proposal:

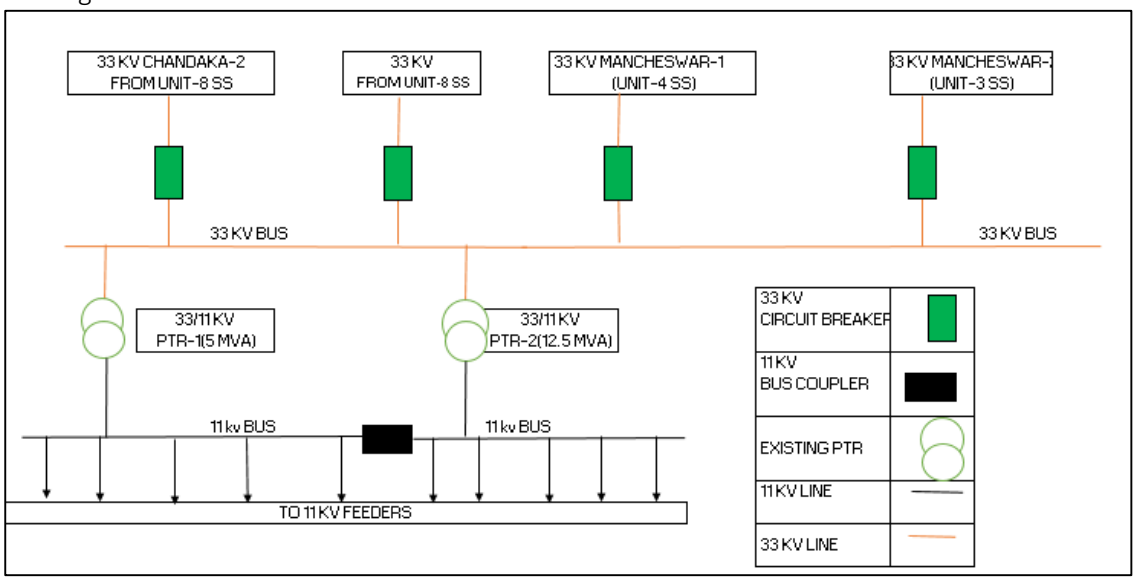
- Overload on single PTR is considered 45%. N-1 loading has been kept at 90% for FY'22.
- Augmentation of existing PTR-1 from 5MVA to 12.5MVA at Unit-6 is considered keeping in view of exigency of Scrips load and N-1 fail at PTR level.

Proposed summer'22 Loading:

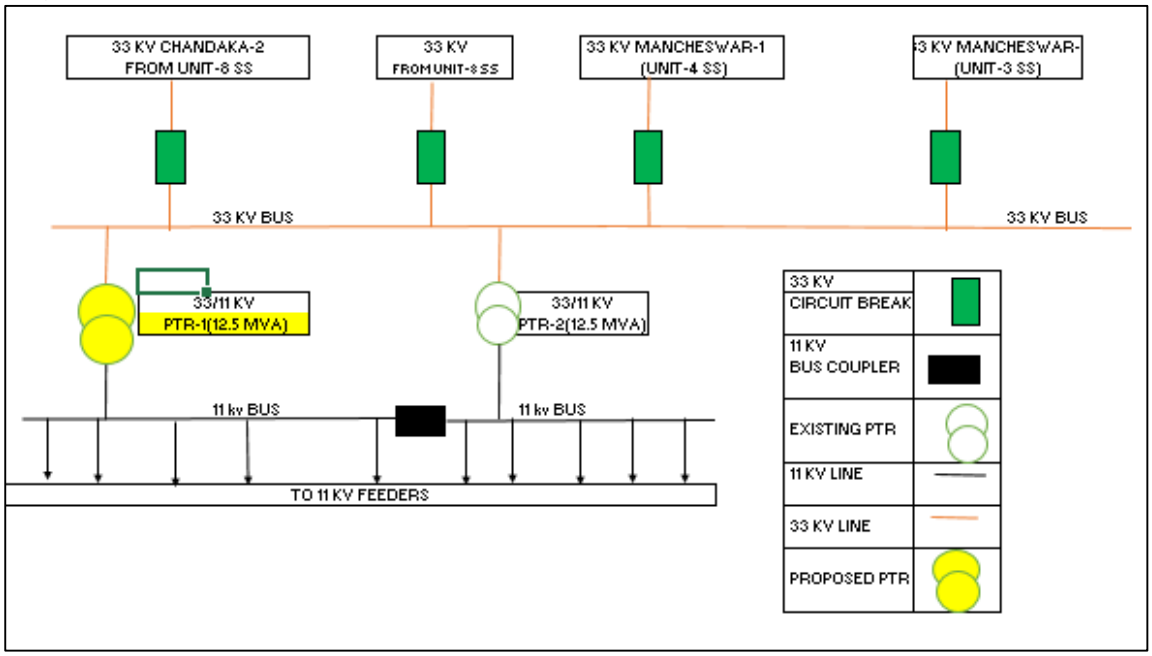
Structure Name	Voltage Ratio	T/F No.	T/F Capacity (MVA) in Summer'20	PTR Load MVA (Summer'20 Peak)	Load Growth (%)	Projected PTR Load (MVA) Summer'22	% PTR Loading	PTR N-1 Capacity	N-1
Unit 6	33/11	TRF-1	12.5	1.5	2.03%	1.56	12%	11.25	Ok
Unit 6	33/11	TRF-2	12.5	5.4	2.03%	5.62	45%	11.25	Ok

Refer 6.4.3 of the Petition

Existing SLD of Unit-6:



Proposed SLD of Unit-6:



Refer 6.4.3 of the Petition

BOQ for Augmentation of PTR-Unit 6

Sl. No.	Item-Description	Unit	Qty.	Rate	Total Price
1	2	3	4	5	6
	Part-A				
2	**Earthing and Grounding as per applicable TS**				
b	GI flat 90X6 mm size under ground for mat	**MT**	**1**	**75000**	75000
c	GI flat 50X6 mm size for riser	**MT**	**0.3**	**75000**	22500
d	GI flat 25X6 mm size for riser	**MT**	**0.3**	**75000**	22500
e	8 swg GI wire	**MT**	**0.05**	**75000**	3750
3	**Busbar, droppers, jumpers and interconnections with all outdoor equipment using 232 sq.mm AAA Conductor , all associated conductor, insulator, hardwares,clamps, 8 SWG wire etc as per applicable TS**				
a	33 KV & 11 KV Bus bar with 232 sq.mm AAA Conductor	**km**	**0.2**	**186230.83**	37246.17
b	Equipment jumpering with 232 sq.mm AAA Conductor	**km**	**0.2**	**186230.83**	37246.166
c	3 Bolted(3 pair M-16 U bolts to be used) 33 Kv H/W fitting with 4 nos Insulator (70KN) String Suitable for 232 sq.mm AAA Conductor	**Set**	**9**	**2952**	26568
d	12 bolted (M-12)"T" clamp, 232 sq.mm AAAC run & 230 mm drop	**No**	**3**	**1000**	3000
e	3 Bolted (M- 16) PG Clamp suitable for 232 sq.mm AAA Conductor	**No**	**12**	**384**	4608
5	**33Kv Isolator without earth switch**	Set	1	67500	67500
7	**33Kv O/D VCB with CT & In-Door Control Relay Panel (Excluding Foundation)**				
A	**For Transformer**	Set	1	590000	590000
9	**33/11 KV, 12.5 Power Transformer (Excluding Foundation)**	No	1	12,000,000.00	12000000
10	**33Kv Post Insulator**	No	3	1050	3150
16	TOTAL OF SUPPLY				**12,893,068.33**
17	Dismantling of existing transformer	EA	1	200,000.00	200,000.00
18	Testing	LS	1	200000	200000
A	GRAND TOTAL(29+30+31)				**13,293,068.33**
B	Stock & Storage @ 3% of A				398792.05
C	Sub - Total (A+B)				13,691,860.38
D	Contingency @ 3 %+T&P Charges @2%+Transportation 7.5% +Errection 10%=22.5 % of C				3,080,668.59
E	Sub - Total (C+D)				16,772,528.97
F	Other Overheads including supervision charges @ 6% of E				1,006,351.74
G	Total estimated Capital Cost (E+F)				17,778,880.71
H	GST 18% of G				3,200,198.53
I	CESS 1% of G				177,788.81
J	**Total Cost**				**21,156,868.04**

Benefits:

1. To help mitigating N-1 fail of PTR-2.
2. Reliable power supply to consumer during exigencies.

Refer 6.4.3 of the Petition

2. Augmentation of Power Transformer at Unit-4 Substation
3.

Proposals:
Augmentation of existing 33/11kV 5MVA Power Transformer-1 to 12.5MVA and Power transformer-2 from 5MVA to 12.5MVA at Unit -4 power substation in BCDD-1 for mitigating overload and N-1 issue.
Existing Scenario:

- Loading of 33/11kV Unit-4 was 4.7 MVA w.r.t. installed capacity of 10 MVA as per peak loading of Summer'20. Considering 2.03% load growth Projected loading of Summer'22 would be 4.89 MVA.
- PTR 1 & PTR 2 shall be 27% & 71% loaded in Summer'22 respectively.
- N-1 on the PTR will fail in Summer'22 as per below table.

Existing Summer 20 Loading:

Structure Name	Voltage Ratio	T/F No.	T/F Capacity (MVA) in Summer' 20	PTR Load MVA (Summer' 20)	Load Growth (%)	Projected PTR Load (MVA) Summer' 22	% PTR Loading	PTR N-1 Capacity	N-1
Unit 4	33/11	TRF -1	5	1.3	2.03%	1.35	27%	4.5	Fail
Unit 4	33/11	TRF -2	5	3.4	2.03%	3.54	71%	4.5	Fail

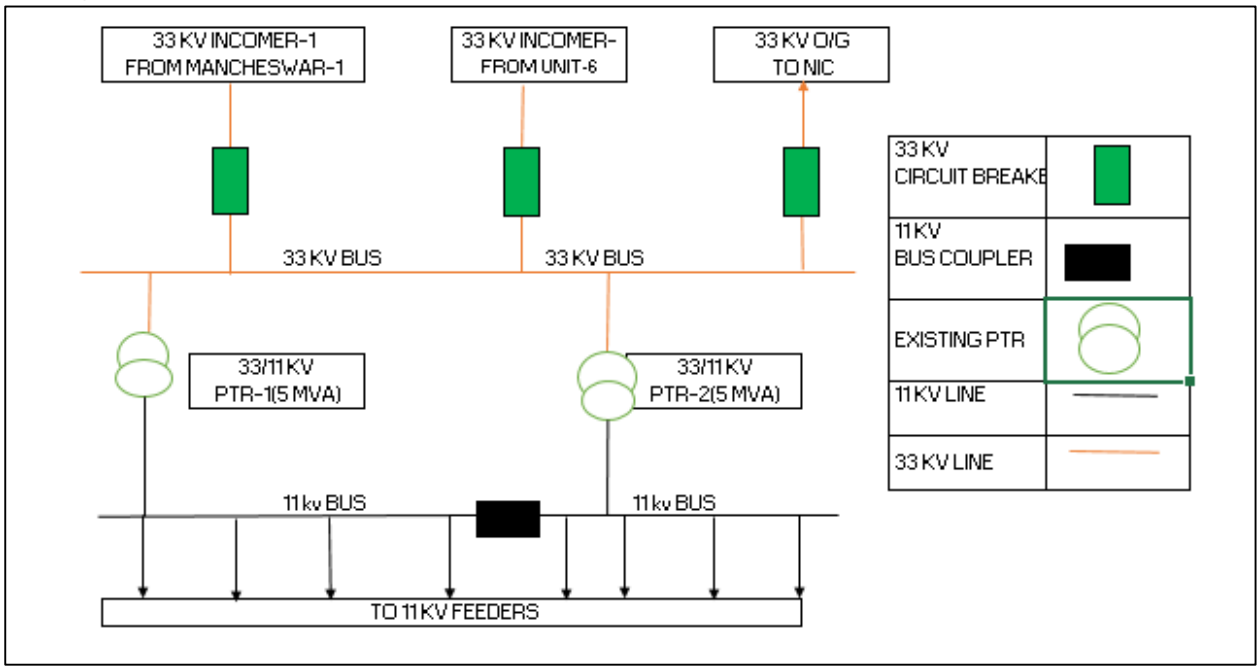
Proposal:

- Overload on single PTR is considered 45%. N-1 loading has been kept at 90% for FY'22.
- Augmentation of both PTR-1 and PTR-2 from 5MVA to 12.5MVA at Unit-4 is proposed considering exigency of SCRIPS load and N-1 fail at PTR level.

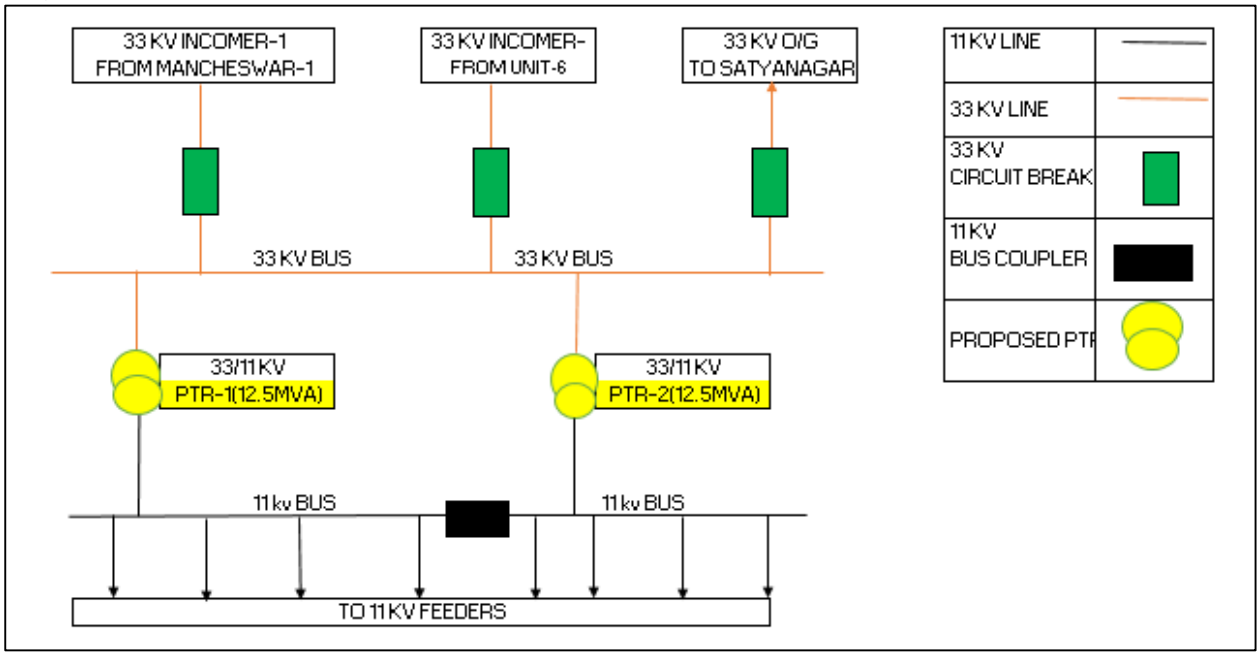
Structure Name	Voltage Ratio	T/F No.	T/F Capacity (MVA) in Summer'20	PTR Load MVA (Summer'20 Grid Peak)	Load Growth (%)	Projected PTR Load (MVA) Summer'22	% PTR Loading	PTR N-1 Capacity	N-1
Unit 4	33/11	TRF-1	12.5	1.3	2.03%	1.35	11%	11.25	OK
Unit 4	33/11	TRF-2	12.5	3.4	2.03%	3.54	28%	11.25	OK

Refer 6.4.3 of the Petition

Existing SLD of Unit-4:



Proposed SLD of Unit-4:



Refer 6.4.3 of the Petition

BOQ for Augmentation of PTR-Unit 4

Sl. No	Item-Description	Unit	Qty.	Rate	Total Price
1	2	3	4	5	6
	Part-A				
1	Hot Dipped Galvanised steel structure and Nuts, Bolts, spring washer etc. as required for 33 KV & 11 KV tower, grantry, post insulator and equippments.				
2	Earthing and Grounding as per applicable TS				
c	GI flat 50X6 mm size for riser	MT	0.6	75000	45000
d	GI flat 25X6 mm size for riser	MT	0.6	75000	45000
e	8 swg GI wire	MT	0.1	75000	7500
3	Busbar, droppers, jumpers and interconnections with all outdoor equipment using 232 sq.mm AAA Conductor , all associated conductor, insulator, hardwares,clamps, 8 SWG wire etc as per applicable TS				
a	33 KV & 11 KV Bus bar with 232 sq.mm AAA Conductor	km	0.4	186230.83	74492.33
b	Equipment jumpering with 232 sq.mm AAA Conductor	km	0.4	186230.83	74492.332
c	3 Bolted(3 pair M-16 U bolts to be used) 33 Kv H/W fitting with 4 nos Insulator (70KN) String Suitable for 232 sq.mm AAA Conductor	Set	18	2952	53136
d	12 bolted (M-12)"T" clamp, 232 sq.mm AAAC run & 230 mm drop	No	6	1000	6000
e	3 Bolted (M- 16) PG Clamp suitable for 232 sq.mm AAA Conductor	No	24	384	9216
5	33Kv Isolator without earth switch	Set	2	67500	135000
7	33Kv O/D VCB with CT & In-Door Control Relay Panel (Excluding Foundation)				
b	For Transformer	Set	2	590000	1180000
9	33/11 KV, 12.5 Power Transformer (Excluding Foundation)	No	2	12,000,000.00	24000000
10	33Kv Post Insulator	No	6	1050	6300
15	11Kv out door VCB (630 A) complete set with CT & Indoor Control Relay Panel (Excluding Foundation)	Set			
16	11Kv INDOOR door VCB (630 A) complete set with CT & Indoor Control Relay Panel (Excluding Foundation)	EA	2	672580	1345160
29	TOTAL OF SUPPLY				26,981,296.66
30	Dismantling of existing transformer	EA	2	200,000	400,000.00
31	Testing	LS	1	300000	300000
A	GRAND TOTAL(29+30+31)				27,681,296.66
B	Stock & Storage @ 3% of A				830438.8999
C	Sub - Total (A+B)				28,511,735.56
D	Contingency @ 3 %+T&P Charges @2%+Transportation 7.5% +Errection 10%=22.5 % of C				6,415,140.50
E	Sub - Total (C+D)				34,926,876.07
F	Other Overheads including supervision charges @ 6% of E				2,095,612.56
G	Total estimated Capital Cost (E+F)				37,022,488.63
H	GST 18% of G				6,664,047.95
I	CESS 1% of G				370,224.89
J	Total Cost				44,056,761.47

Benefits:-

1. To help mitigating N-1 fail condition on power transformer.
2. Reliable power supply to consumer during exigencies.

Refer 6.4.3 of the Petition

4. Augmentation of Power Transformer at Nayapalli Substation

Proposal:-

Augmentation of existing 33/11kV 8MVA both Power Transformer-1 to 12.5MVA, providing bus-section between existing PTR-2 and existing PTR-3 at Nayapalli power substation in BCDD-2.

Existing Scenario:

- Loading of 33/11kV Nayapalli sub-station was 15.3 MVA w.r.t. installed capacity of 33 MVA (1*8+2*12.5 MVA) as per peak loading of summer' 20. Considering 6.83 % load growth Projected loading of summer' 22 would be 17.41 MVA.
- PTR 1, PTR 2 & PTR 3 shall be 94%, 59% & 20% loaded in summer' 22. Average loading of substation comes to be 58%.
- N-1 of PTR-1 and PTR-2 will fail in summer'22.

Existing summer 20 Loading:

Structure name	PTR Name	Installed Capacity (MVA)	PTR Load MVA (Summer'20)	Load Growth	Projected PTR Load (MVA) Summer'22	Loading'22	PTR N-1 Capacity '22	PTR N-1 status
Nayapalli	PTR-1	8	6.6	6.83%	7.53	94%	7.2	7.2
Nayapalli	PTR-2	12.5	6.5	6.83%	7.41	59%	11.25	11.25
Nayapalli	PTR-3	12.5	2.2	6.83%	2.47	20%	11.25	11.25

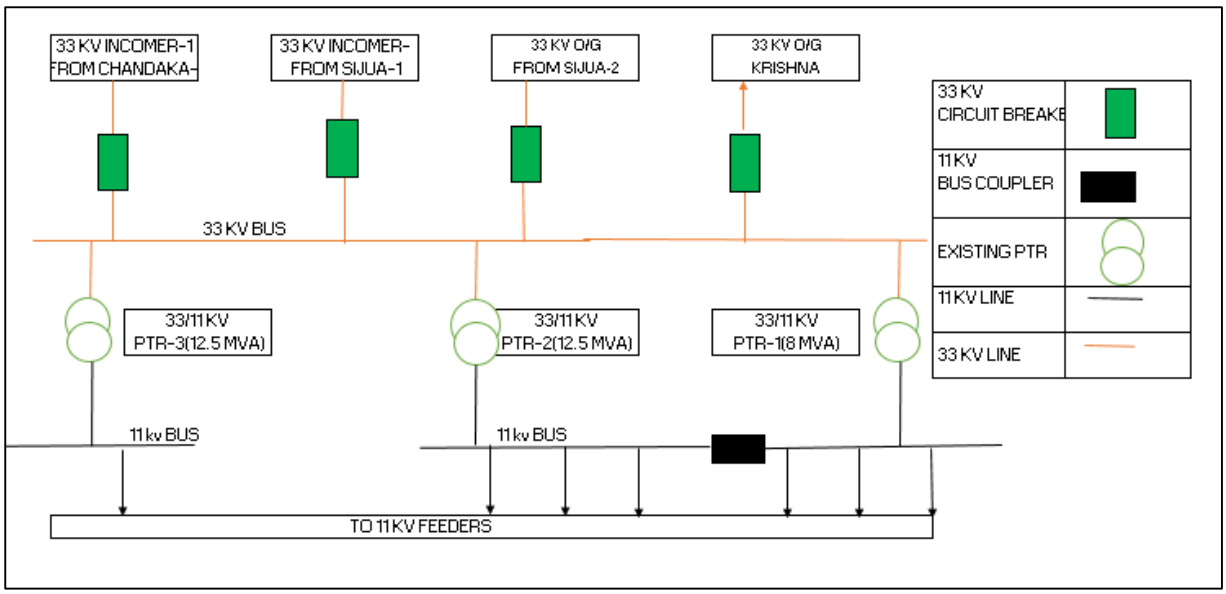
Proposal:

- Augmentation of existing PTR-1 from 8MVA to 12.5MVA at Nayapalli is considered keeping in view of N-1 fail at PTR level.
- Load transfer of 2MVA from existing PTR-1 to PTR-3 for equal load distribution.
- Providing 11kv bus-section between PTR-2 and PTR-3 so that in case of failure of any one of the two, the 11kV feeders emanating from both PTRs remain charged.

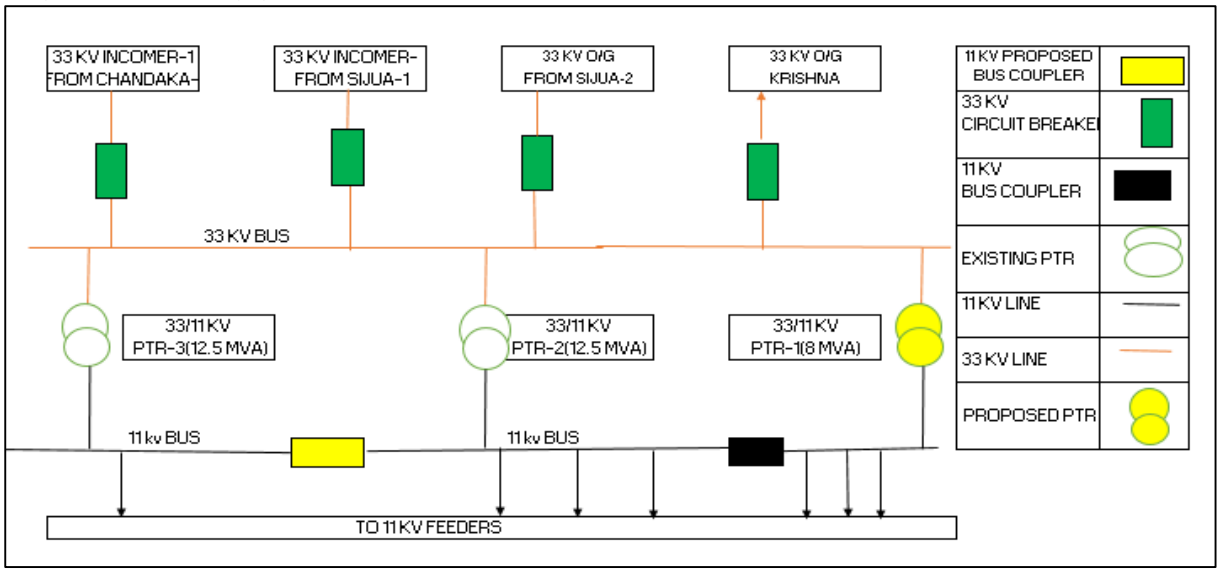
Structure Name	PTR Name	T/F Capacity (MVA) in Summer'22	PTR Load MVA (Summer'20 Grid Peak)	Load Growth (%)	Load transfer (in MVA)	Proposed PTR Load (MVA) Summer'22	% PTR Loading	PTR N-1 Capacity	N-1
Nayapalli	TRF-1	12.5	6.6	6.83%	-2	5.53	44%	11.25	Ok
Nayapalli	TRF-2	12.5	6.5	6.83%	0	7.41	59%	11.25	Ok
Nayapalli	TRF-3	12.5	2.2	6.83%	+2	4.47	36%	11.25	Ok

Existing SLD of Nayapalli:

Refer 6.4.3 of the Petition



Proposed SLD of Nayapalli:



BOQ-

Refer 6.4.3 of the Petition

Sl. No	Item-Description	Unit	Qty.	Rate	Total Price
1	2	3	4	5	6
	Part-A				
1	**Hot Dipped Galvanised steel structure and Nuts, Bolts, spring washer etc. as required for 33 KV & 11 KV tower, grantry, post insulator and equippments.**				
2	**Earthing and Grounding as per applicable TS**				
b	GI flat 90X6 mm size under ground for mat	**MT**	**1**	**75000**	75000
c	GI flat 50X6 mm size for riser	**MT**	**0.3**	**75000**	22500
d	GI flat 25X6 mm size for riser	**MT**	**0.3**	**75000**	22500
e	8 swg GI wire	**MT**	**0.05**	**75000**	3750
3	**Busbar, droppers, jumpers and interconnections with all outdoor equipment using 232 sq.mm AAA Conductor , all associated conductor, insulator, hardwares,clamps, 8 SWG wire etc as per applicable TS**				
a	33 KV & 11 KV Bus bar with 232 sq.mm AAA Conductor	**km**	**0.2**	**186230.83**	37246.17
b	Equipment jumpering with 232 sq.mm AAA Conductor	**km**	**0.2**	**186230.83**	37246.166
c	3 Bolted(3 pair M-16 U bolts to be used) 33 Kv H/W fitting with 4 nos Insulator (70KN) String Suitable for 232 sq.mm AAA Conductor	**Set**	**9**	**2952**	26568
d	12 bolted (M-12)"T" clamp, 232 sq.mm AAAC run & 230 mm drop	**No**	**3**	**1000**	3000
e	3 Bolted (M- 16) PG Clamp suitable for 232 sq.mm AAA Conductor	**No**	**12**	**384**	4608
5	**33Kv Isolator without earth switch**	Set	1	67500	67500
7	**33Kv O/D VCB with CT & In-Door Control Relay Panel (Excluding Foundation)**				
b	**For Transformer**	Set	1	590000	590000
9	**33/11 KV, 12.5 Power Transformer (Excluding Foundation)**	No	1	12,000,000.00	12000000
10	**33Kv Post Insulator**	No	3	1050	3150
11	**11Kv Post insulators**	No		350	0
12	**11 KV 800 Amp Isolator without earth switch with PI (porcelain) (for Transformer Bay)**	Set		45000	0
13	**11Kv AB Switch 400 A (For outgoing Feeder Bay)**	Set		12000	0
14	**11Kv HG fuse**	Set		12000	0
	11kV Bus-Coupler Indoor AIS Panel consisting of Breaker-630A, Bus-bar-800A (Copper)	No	1	686990	686990
	3C*400 sqmm cable 11kv	Mtr	100	1500	150000
15	**11Kv out door VCB (630 A) complete set with CT & Indoor Control Relay Panel (Excluding Foundation)**	Set			
28	**Supply, Laying of following size control cable & Termination. This includes Fixing of cable rack by full welding with two emboded GI flat, placing of cable trays with supply of required jointing sleeve and GI bolt nuts, etc., laying of cable over the cable tray by providing cable markers cable glands at both end with terminations by providing ferruls, cable lugs (ring type) with dressing**				
c	Fire Extinguisher				
29	TOTAL OF SUPPLY				**13,730,058.33**
30	Dismantling of existing transformer	EA	1	200,000.00	200,000.00
31	Testing	1 LS		200000	200000
A	GRAND TOTAL(29+30+31)				**14,130,058.33**
B	Stock & Storage @ 3% of A				423901.75
C	Sub - Total (A+B)				14,553,960.08
D	Contingency @ 3 %+T&P Charges @2%+Transportation 7.5% +Errection 10%=22.5 % of C				3,274,641.02
E	Sub - Total (C+D)				17,828,601.10
F	Other Overheads including supervision charges @ 6% of E				1,069,716.07
G	Total estimated Capital Cost (E+F)				18,898,317.17
H	GST 18% of G				3,401,697.09
I	CESS 1% of G				188,983.17
J	**Total Cost**				**22,488,997.43**

Benefits:-

1) To help mitigating N-1 fail condition on power transformer through load shifting via 11kv bus section.

2) Reliable power supply to consumer during exigencies.

Refer 6.4.3 of the Petition

5. Augmentation of Power Transformer at Chandrashekharpur 1 (C S Pur -1) substation
6.

Proposal:-
Augmentation of existing 33/11kV Power Transformers 1 and 3 to 12.5MVA respectively to mitigate overload and N-1 fail. Providing bus-section between existing PTR-1 and PTR-3 at CS pur-1 power substation in BCDD-2.
Existing Scenario:

- Loading of 33/11kV Chandrasekharpur-1 sub-station was 17.2 MVA w.r.t. installed capacity of 21 MVA (2*8+1*5 MVA) as per peak loading of summer' 20. Considering 6.83 % load growth Projected loading of summer' 22 would be 19.63 MVA.
- PTR 1, PTR 2 & PTR 3 shall be 100%, 103% & 68% loaded in summer' 22. Average loading of substation comes to be 93%.
- N-1 of PTR-1, PTR-2 and PTR-3 will fail in summer'22.

Existing summer 20 Loading:

Name of Structure	PTR Name	Installed Capacity (MVA)	PTR Load MVA (Summer'20)	Load Growth	Projected PTR Load (MVA) Summer'22	Loading'22	PTR N-1 Capacity '22	N-1 Status (Fail/Ok)'22
C S Pur -I	PTR-1	8	7.0	6.83%	7.99	100%	7.2	Fail
C S Pur -I	PTR-2	8	7.2	6.83%	8.22	103%	7.2	Fail
C S Pur -I	PTR-3	5	3.0	6.83%	3.42	68%	4.5	Fail

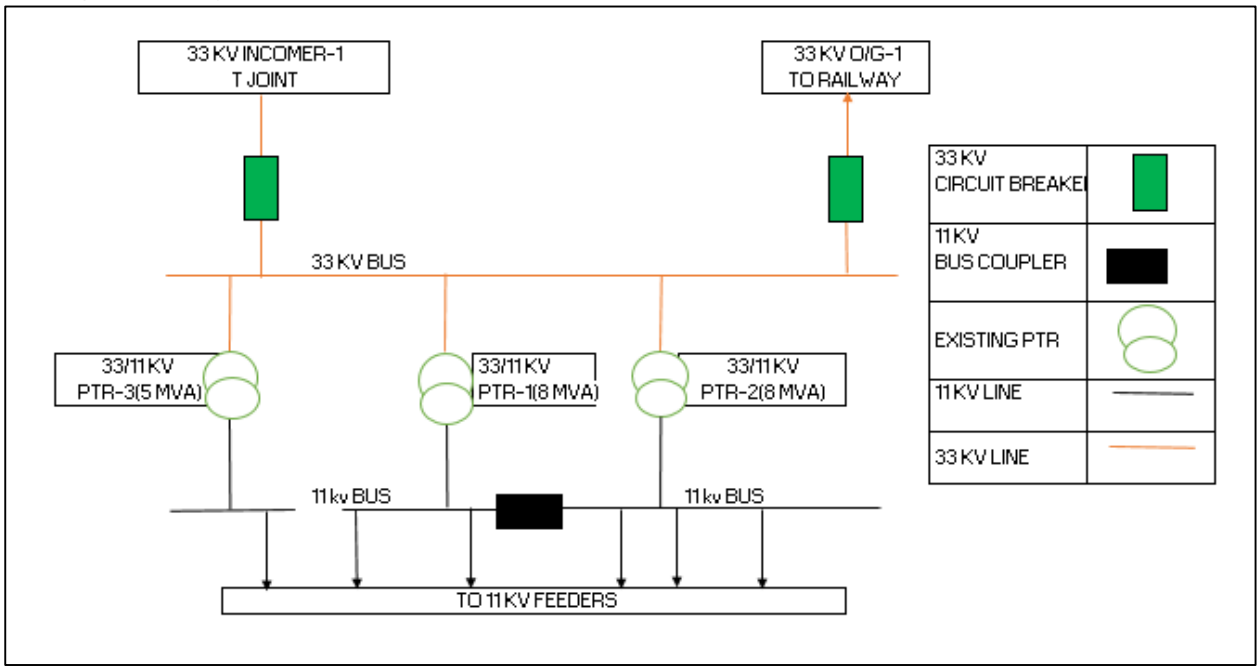
Proposal:

- Augmentation of existing PTR-1 and 3 to 12.5/16MVA respectively considering overload and N-1 fail at PTR level.
- Shifting of 1 MVA load from PTR-1 to PTR-3 and 3 MVA load from PTR-2 to PTR-3 which will lead to equal load distribution between PTRs.
- Providing bus-section between PTR-1 and PTR-3 so that in case of failure of any one of the 2, the 11kV feeders emanating from both PTRs remain charged.

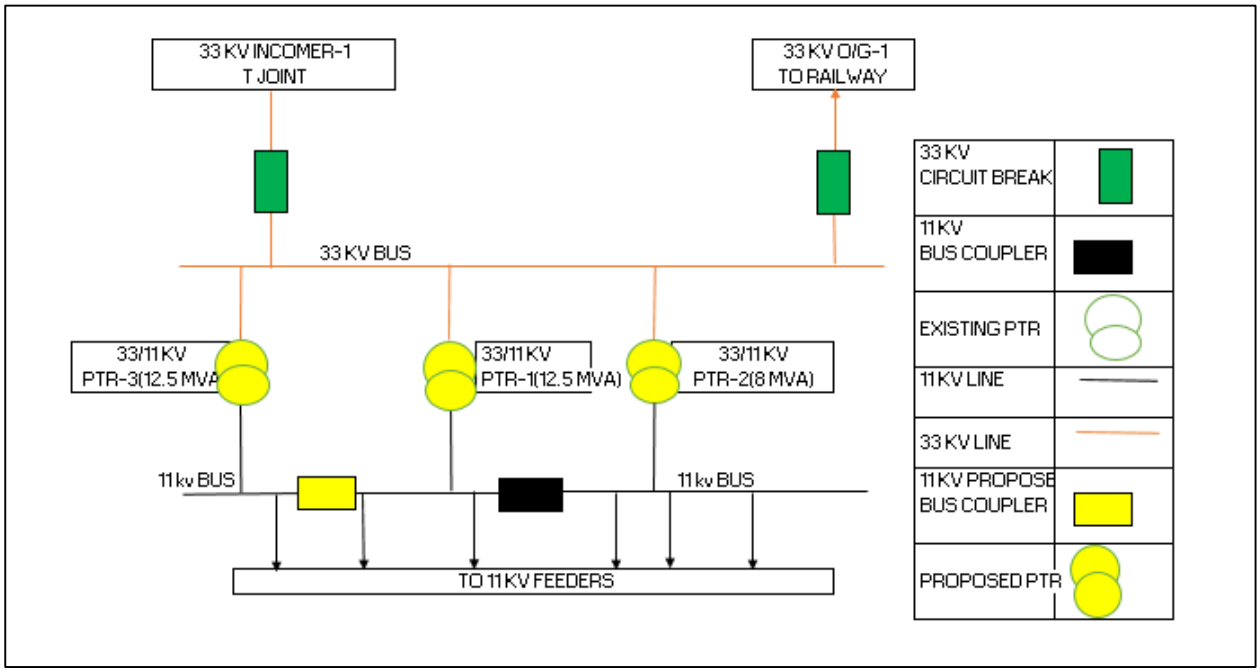
Name of Structure	PTR name	T/F Capacity (MVA) in Summer'22	PTR Load MVA (Summer'20 Grid Peak)	Load Growth (%)	Load transfer (in MVA)	Proposed PTR Load (MVA) Summer'22	% PTR Loading	PTR N-1 capacity	N-1
C S Pur – I	PTR-1	12.5	7.0	6.83%	-1	6.99	56%	15	Ok
C S Pur – I	PTR-2	8	7.2	6.83%	-3	5.22	65%	15	Ok
C S Pur -I	PTR-3	12.5	3.0	6.83%	+4	7.42	59%	15	Ok

Refer 6.4.3 of the Petition

Existing SLD of CS pur-1:



Proposed SLD of CS Pur-1:



Refer 6.4.3 of the Petition

BOQ:

Sl. No	Item-Description	Unit	Qty.	Rate	Total Price
1	2	3	4	5	6
	Part-A				
2	**Earthing and Grounding as per applicable TS**				
c	GI flat 50X6 mm size for riser	**MT**	**0.6**	**75000**	45000
d	GI flat 25X6 mm size for riser	**MT**	**0.6**	**75000**	45000
e	8 swg GI wire	**MT**	**0.1**	**75000**	7500
3	**Busbar, droppers, jumpers and interconnections with all outdoor equipment using 232 sq.mm AAA Conductor , all associated conductor, insulator, hardwares,clamps, 8 SWG wire etc as per applicable TS**				
a	33 KV & 11 KV Bus bar with 232 sq.mm AAA Conductor	**km**	**0.4**	**186230.83**	74492.33
b	Equipment jumpering with 232 sq.mm AAA Conductor	**km**	**0.4**	**186230.83**	74492.332
c	3 Bolted(3 pair M-16 U bolts to be used) 33 Kv H/W fitting with 4 nos Insulator (70KN) String Suitable for 232 sq.mm AAA Conductor	**Set**	**18**	**2952**	53136
d	12 bolted (M-12)"T" clamp, 232 sq.mm AAAC run & 230 mm drop	**No**	**6**	**1000**	6000
e	3 Bolted (M- 16) PG Clamp suitable for 232 sq.mm AAA Conductor	**No**	**24**	**384**	9216
5	**33Kv Isolator without earth switch**	Set	2	67500	135000
7	**33Kv O/D VCB with CT & In-Door Control Relay Panel (Excluding Foundation)**				
b	**For Transformer**	Set	2	590000	1180000
9	**33/11 KV, 12.5 Power Transformer (Excluding Foundation)**	No	2	12,000,000.00	24000000
10	**33Kv Post Insulator**	No	6	1050	6300
	11kV Bus-Coupler Indoor AIS Panel consisting of Breaker-630A, Bus-bar-800A (Copper)	No	1	686990	686990
	3C*400 sqmm cable 11kv	Mtr	400	1500	600000
15	**11Kv out door VCB (630 A) complete set with CT & Indoor Control Relay Panel (Excluding Foundation)**	Set			
16	**11Kv INDOOR door VCB (630 A) complete set with CT & Indoor Control Relay Panel (Excluding Foundation)**	EA	0	672580	0
c	Fire Extinguisher				
29	TOTAL OF SUPPLY				**26,923,126.66**
30	Dismantling of existing transformer	EA	2	200000	400,000.00
31	Testing	LS	1	200000	200000
A	GRAND TOTAL(29+30+31)				**27,523,126.66**
B	Stock & Storage @ 3% of A				825693.7999
C	Sub - Total (A+B)				28,348,820.46
D	Contingency @ 3 %+T&P Charges @2%+Transportation 7.5% +Errection 10%=22.5 % of C				6,378,484.60
E	Sub - Total (C+D)				34,727,305.07
F	Other Overheads including supervision charges @ 6% of E				2,083,638.30
G	Total estimated Capital Cost (E+F)				36,810,943.37
H	GST 18% of G				6,625,969.81
I	CESS 1% of G				368,109.43
J	**Total Cost**				**43,805,022.61**

Benefits:-

1. To help mitigating N-1 fail condition on power transformer through load shifting via 11kv bus section.
2. Reliable power to consumer during exigencies.

Refer 6.4.3 of the Petition

7. Augmentation of Power Transformer at Kanan Vihar Substation

Proposal:-
Augmentation of existing 33/11kV Power Transformers- 2 from 8MVA to 12.5MVA to mitigate overload and N-1 fail in Kanan-vihar power substation of BCDD-2.
Existing Scenario:

- Loading of 33/11kV Kanan Vihar sub-station was 15.5 MVA w.r.t. installed capacity of 20.5 MVA (12.5+8 MVA) as per peak loading of Summer' 20. Considering 6.83 % load growth, projected loading of summer' 22 would be 17.69 MVA.
- PTR 1 & PTR 2 shall be 73% and 107% loaded in summer' 22. Average loading of substation comes to be 86%.
- N-1 of PTR-1 and PTR-2 will fail in summer'22.

Existing summer 20 Loading:

Name of Structure	PTR Name	Installed Capacity (MVA)	PTR Load MVA (Summer'20)	Load Growth	Projected PTR Load (MVA) Summer'22	Loading'22	PTR N-1 Capacity '22	N-1 Status (Fail/Ok)'22
Kanan vihar	PTR-1	12.5	8.0	6.83%	9.13	73%	11.25	Fail
Kanan vihar	PTR-2	8	7.5	6.83%	8.56	107%	7.2	Fail

Proposal:

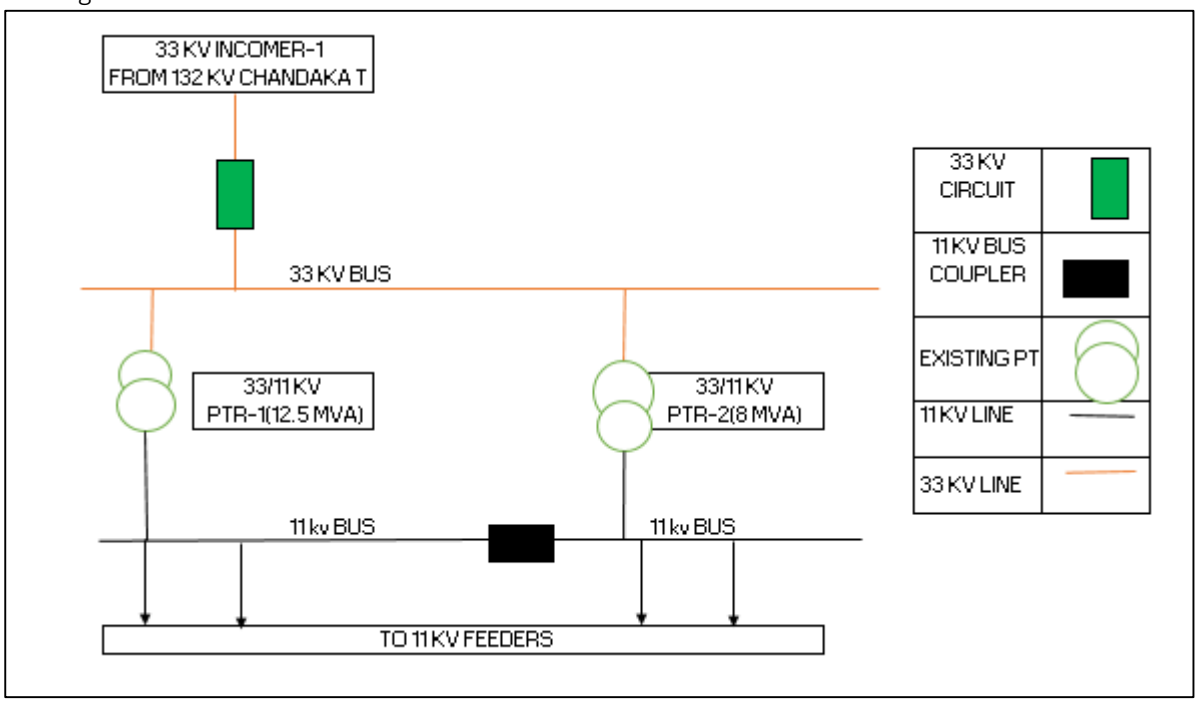
- Augmentation of existing PTR-2 from 8MVA to 12.5/16 MVA at Kanan Vihar considering N-1 fail at PTR level.
- Load transfer of 2MVA from PTR-1 and 1MVA from PTR-2 to newly proposed sub-station of Shailashree Vihar (PTR-2).
- Change 33kv PTR-1 and 2 CT ratio from 200/1 to 300/1.

Proposed summer 22 Loading

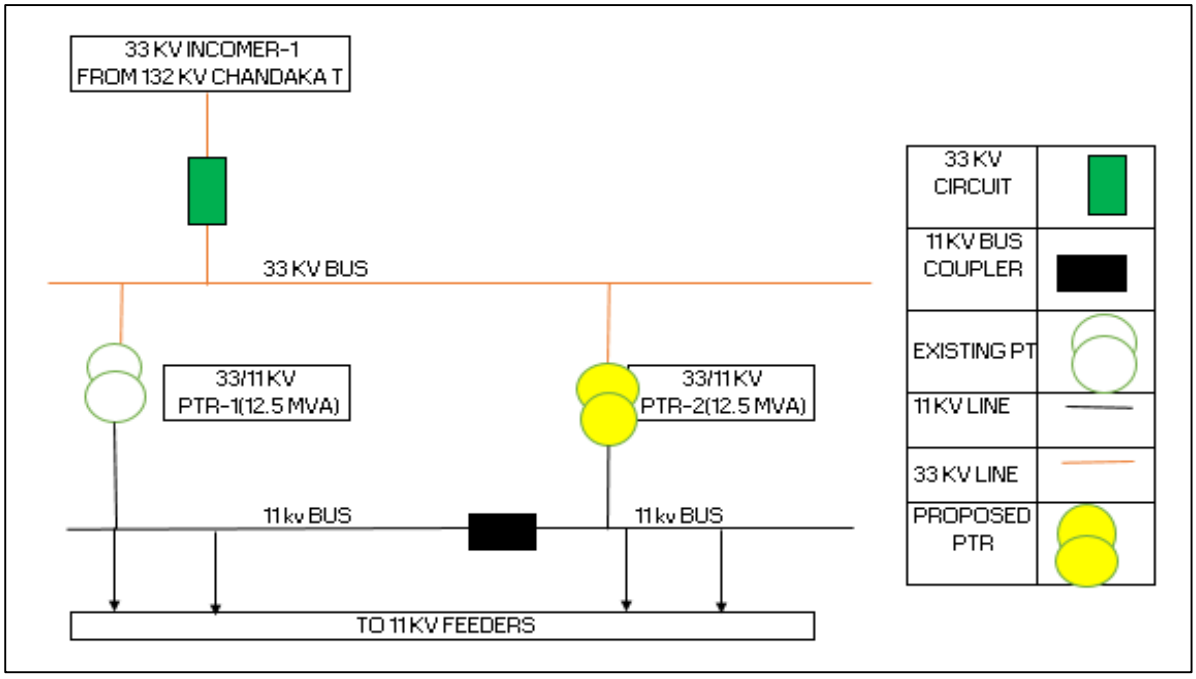
Name of Structure	T/F No.	T/F Capacity (MVA) in Summer'22	PTR Load MVA (Summer'20 Grid Peak)	Load Growth (%)	Load transfer (in MVA)	Proposed PTR Load (MVA) Summer'22	% PTR Loading	PTR N-1 capacity	N-1
Kanan Vihar	PTR-1	12.5	8.0	6.83%	-2	7.13	57%	15.00	Ok
Kanan Vihar	PTR-2	12.5	7.5	6.83%	-1	7.56	60%	15.00	Ok

Refer 6.4.3 of the Petition

Existing SLD of Kanan Vihar:



Proposed SLD of Kanan Vihar:



Refer 6.4.3 of the Petition

BOQ-

Sl. No	Item-Description	Unit	Qty.	Rate	Total Price
1	2	3	4	5	6
	Part-A				
2	**Earthing and Grounding as per applicable TS**				
b	GI flat 90X6 mm size under ground for mat	**MT**	**1**	**75000**	75000
c	GI flat 50X6 mm size for riser	**MT**	**0.3**	**75000**	22500
d	GI flat 25X6 mm size for riser	**MT**	**0.3**	**75000**	22500
e	8 swg GI wire	**MT**	**0.05**	**75000**	3750
3	**Busbar, droppers, jumpers and interconnections with all outdoor equipment using 232 sq.mm AAA Conductor , all associated conductor, insulator, hardwares,clamps, 8 SWG wire etc as per applicable TS**				
a	33 KV & 11 KV Bus bar with 232 sq.mm AAA Conductor	**km**	**0.2**	**186230.83**	37246.17
b	Equipment jumpering with 232 sq.mm AAA Conductor	**km**	**0.2**	**186230.83**	37246.166
c	3 Bolted(3 pair M-16 U bolts to be used) 33 Kv H/W fitting with 4 nos Insulator (70KN) String Suitable for 232 sq.mm AAA Conductor	**Set**	**9**	**2952**	26568
d	12 bolted (M-12)"T" clamp, 232 sq.mm AAAC run & 230 mm drop	**No**	**3**	**1000**	3000
e	3 Bolted (M- 16) PG Clamp suitable for 232 sq.mm AAA Conductor	**No**	**12**	**384**	4608
5	**33Kv Isolator without earth switch**	Set	1	67500	67500
7	**33Kv O/D VCB with CT & In-Door Control Relay Panel (Excluding Foundation)**				
b	**For Transformer**	Set	1	590000	590000
9	**33/11 KV, 12.5 Power Transformer (Excluding Foundation)**	No	1	12,000,000.00	12000000
10	**33Kv Post Insulator**	No	3	1050	3150
15	**11Kv out door VCB (630 A) complete set with CT & Indoor Control Relay Panel (Excluding Foundation)**	Set			
16	**11Kv INDOOR door VCB (630 A) complete set with CT & Indoor Control Relay Panel (Excluding Foundation)**	EA	0	672580	0
28	**Supply, Laying of following size control cable & Termination. This includes Fixing of cable rack by full welding with two emboded GI flat, placing of cable trays with supply of required jointing sleeve and GI bolt nuts, etc., laying of cable over the cable tray by providing cable markers cable glands at both end with terminations by providing ferruls, cable lugs (ring type) with dressing**				
c	Fire Extinguisher				
29	TOTAL OF SUPPLY				**12,893,068.33**
30	Dismantling of existing transformer	EA	1	200,000.00	200,000.00
31	Testing	LS	1	200000	200000
A	GRAND TOTAL(29+30+31)				**13,293,068.33**
B	Stock & Storage @ 3% of A				398792.05
C	Sub - Total (A+B)				13,691,860.38
D	Contingency @ 3 %+T&P Charges @2%+Transportation 7.5% +Errection 10%=22.5 % of C				3,080,668.59
E	Sub - Total (C+D)				16,772,528.97
F	Other Overheads including supervision charges @ 6% of E				1,006,351.74
G	Total estimated Capital Cost (E+F)				17,778,880.71
H	GST 18% of G				3,200,198.53
I	CESS 1% of G				177,788.81
J	**Total Cost**				**21,156,868.04**

Benefits:-

1. To help mitigating N-1 fail condition on power transformer.
2. Reliable power supply to consumer during exigencies.