

TAMIL NADU POWER DISTRIBUTION CORPORATION LIMITED
ABSTRACT

Electricity – Vellore Region – Vellore EDC- Establishment of Vilapakkam 33/11 kV SS with 1x8 MVA, 33/11 kV power transformer - Administrative Approval - Accorded.

TECHNICAL BRANCH

(Per.) MD TNPDC Proceedings No:35

Dated:18.05.2026

Vaikasi 04,

Sri Parabhava Varudam,

Thiruvalluvar Aandu 2057.

READ: Chairman cum Managing Director's approval dated. 13.05.2026

PROCEEDINGS:

1. The Tamil Nadu Power Distribution Corporation Ltd hereby approves the proposal for establishment of Vilapakkam 33/11 kV SS with 1x8 MVA power transformer in Vellore EDC of Vellore Region at an estimated cost of Rs.629.94 lakhs Gross and Nett. The detailed estimate and report are annexed to these proceedings.
2. The expenditure is chargeable to "TNPDC - Capital expenditure - Vellore EDC- ERP No.1020300.
3. By virtue of the provisions contained in sub-section (2) (a) of section 185 of the Electricity Act, 2003, the TNPDC being the Licensee and successor entity of Tamil Nadu Electricity Board will exercise the powers of the Telegraph Authority under the provisions of section 164 of the Electricity Act, 2003, which have already been conferred upon the Board under section 51 of the Indian Electricity Act, 1910.
4. The work is to be taken up after ensuring budget provision.

// BY ORDER OF THE CMD //

J.PUSHPALATHA
CHIEF ENGINEER / PLANNING & RC

Encl: Report and detailed estimate.

To

The Chief Engineer / Distribution / Vellore Region / Vellore

Copy to:

The Director/Distribution/ TNPDC /Chennai-2

The Director/Finance/ TNPDC / Chennai -2

The Chief Engineer/MM/Chennai-2

The Superintending Engineer/ Vellore EDC/ Vellore

The Superintending Engineer /RE & I(D)/ Chennai -2

The Company Secretary / TNPDC /Chennai- 2

The Resident Audit Officer (AGO'S Unit) / Chennai -2

B. P. Section (Administrative Branch)

Stock file

// FORWARDED BY ORDER //


EXECUTIVE ENGINEER/MASTER PLAN II

REPORT TO ACCOMPANY THE ESTIMATE

This proposal envisages establishment of Vilapakkam 33/11 kV SS with 1x8 MVA power transformer in Vellore EDC of Vellore Region at an estimated cost of Rs.629.94 lakhs Gross and Nett.

Need:

At present Vilapakkam and its surrounding areas are being fed by Timiri 110/33-11 KV SS. The details of the substation is furnished below:

At Timiri 110/33-11 KV SS, 1x16 MVA, 110/11 kV and 2x16 MVA, 110/33 KV power transformers are in service. The peak reached on 110/11 kV side is 14.85 MVA and loaded to 92.81% of its capacity. The load growth of this substation is 5.00%.The details of the feeder feeding Vilapakkam area is furnished below:

Sl. No	Name of the feeder-(#)	Length in kms	CL in MVA	Peak in MVA	Voltage regn. %	Line loss in LU
1	11 kV Vilapakkam #	13.25	10.69	4.29	26.85	19.65
2	11 KV Timiri #	7.52	9.58	3.43	14.26	8.84

Anaimallur 33/11 kV SS is in service with 1x8 MVA, power transformer and the sustained peak reached is 7.72 MVA and is loaded to 96.5 % of its installed capacity. Load growth in this area is 3.0 % per annum. The details of the feeder feeding the remaining area of Vilapakkam is as below:

Sl. No	Name of the feeder (#)	Length in kms	CL in MVA	Peak in MVA	Voltage regn. %	Line loss in LU
1	11 kV Sambasivapuram #	6.76	3.085	1.56	6.21	1.59

The voltage regulation of the 11 kV Vilapakkam feeder and 11 kV Timiri feeder are beyond the permissible limit of 8 % and also it is observed that the 11 kV Timiri – Villapakkam feeder is lengthy for about 13.25 km. Bifurcation of the above feeders will not solve the low voltage problem, since loads are at tail end of the feeders. Even if the 11 kV Timiri - Vilapakkam feeder is strengthened with 7/4.09 ACSR conductor till the tail end, the voltage regulation could not be brought down below 8%.

There is no possibility to transfer the loads from Timiri 110/33-11 kV to nearby Ranipet 33 kV SS and Pudupadi 33 kV SS , as Timiri 110 kV SS is located at about 15.3 km and 12.6 km away and will lead to low voltage complaints.

Further, there is no possibility to transfer the loads from Anaimallur 33/11 kV SS to nearby Kathiyavadi 33 kV SS and Dhamaraipakkam 33 kV SS, as Anaimallur 33/11 kV SS is located at about 12.4 km and 11.3 km away and will lead to low voltage complaints and also enhancement of power transformer capacity at Anaimallur 33 kV SS from 1x8 MVA to 2x8 MVA is not possible due to space constraints.

Hence, in order to improve the voltage regulation of the feeders, to reduce line loss and to accommodate future load growth in and around Vilapakkam, it becomes necessary to establish a 33/11 kV SS at Vilapakkam.

The Chief Engineer/Distribution/Vellore Region has stated that 33 kV source to the proposed Vilapakkam 33 kV SS is proposed to be extended from 33 kV Timiri – Ranipet feeder. At present 33 kV Timiri – Ranipet feeder with Dog conductor is feeding only Pudupadi 33 kV SS having 2x5 MVA (Peak – 5.7 MVA) power transformer capacity and it is adequate to cater now proposed Vilapakkam 33 kV SS (1x8 MVA) load. Hence, provision towards 33 kV bay extension at Timiri 110 kV SS is not necessary and not included in this proposal.

Further, it is to be stated that establishment of Vilapakkam 33 kV SS is included in the 14th & 15th Master plan and proposed to be effected during the year 2028-29. This proposal is now put up for approval as establishment of new SS will take considerable amount of time.

Reduction in line loss :

On establishment of 33/11 kV SS with 1x8 MVA power transformer at Vilapakkam, the voltage regulation and line losses of the existing feeder after load transfer to Vilapakkam 33/11 kV SS is furnished below:

Sl. No	Name of the feeder (#)	Length in kms	CL in MVA	Voltage regn. %	Line loss in LU
1	11 kV Timiri – Vilapakkam #	4.63	2.902	2.87	0.59
2	11 kV Timiri – Timiri #	7.52	7.845	8.72	4.86
3	11 kV Anaimallur - Sambasivapuram	4.94	1.681	2.24	0.294

On establishment of the proposed 33/11 kV SS at Vilapakkam, the savings in line loss will be 18.93 LU per annum. The financial savings due to the above is Rs.205.20 lakhs per annum.

Adequacy of power transformer capacity:

A connected load of about 10.931 MVA (9.527 MVA from Timiri 110 kV SS and 1.404 MVA from Anaimallur 33/11 kV SS) is proposed to be transferred to the proposed Vilapakkam 33/11 kV SS. The anticipated peak to be incident on the

proposed Vilapakkam 33/11 kV SS will be of 4.52 MVA with diversity factor of 2.42 Hence, it is proposed to install 1x8 MVA, 33/11 kV power transformer.

Adequacy of Transmission system:

Details of the source SS:

a.	Name of the substation	Timiri 110 /33-11 KVSS
b.	110/33 KV power transformer capacity	2x16 MVA
c.	Peak reached in MVA	25.55 MVA
d.	Proposed addition in MVA	8 MVA now proposed.
e.	Anticipated peak in MVA	33.55 MVA
f.	Whether power tr. capacity of the source SS is adequate: Adequate at present, since the proposed load of 8 MVA will not be incident instantly. However, as and when the peak reached at the existing 110/33 kV Power Transformer reaches 85% of its capacity at Timiri 110 kV SS, the Chief Engineer/Distribution/TVellore Region may be requested to take necessary action for enhancement of 110/33 kV power transformer capacity from 2x16 MVA to 3x16 MVA at Timiri 110 kV SS.	

Details of Source Feeder:

a.	Name of the feeder	33 KV Timiri – Ranipet feeder
b.	Size/Loading capacity of the conductor	Dog conductor 17.78 MVA
c.	Present loading in MVA	5.7 MVA
d.	Proposed addition in MVA	8 MVA now proposed
e.	Anticipated load in MVA	13.7 MVA
f.	Whether the conductor is adequate: Adequate.	

Details of works involved:

- Establishment of 33/11 kV SS at Vilapakkam with 1x8 MVA, 33/11 kV power transformer with associated equipments.
- Erection of 33 kV link line with Dog conductor tapped in the existing 33 kV Timiri – Ranipet feeder fed from Timiri 110 kV SS to the proposed Vilapakkam 33/11 kV SS for a distance of 4.6 km.

Land Availability:

- Patta land to an extent of 0.8 Acres (34848 sqfeet), S.F.No.4881A,488/1B & 488/3 at Vilapakkam village in Vellore District has been acquired. SE/GCC/Salem has certified that the above land is suitable for establishing the proposed 33/11 kV SS.


 EXECUTIVE ENGINEER / MASTER PLAN II

DETAILED ESTIMATE FOR ESTABLISHMENT OF 33/11 kV SS WITH 1x8 MVA, 33/11 kV POWER TRANSFORMER AT VILAPAKKAM IN VELLORE EDC

Part I: Cost of new asset

				Rs. In Lakhs		
SL.NO	DESCRIPTION	QTY	RATE	PER	AMOUNT	TOTAL
I	CIVIL WORKS					
1	Land Cost (actuals)				46.697	
2	Civil works such as construction of control room with lighting, cable duct, road, fencing & gate, culvert, yard filling, retaining wall, borewell & water works, watering arrangement for earth pits, power transformer plinth, provision for sand drums & sand, supply of furnitures, T & P etc. (inclusive of contingencies, labour, administrative expenses, all statutory levies etc.)			LS	175.000	
3	Total				221.697	221.70
II	Electrical Works					
1	33 kV AB Switch	3 Nos	0.466	E	1.398	
2	33 kV SF6/VCB Breaker	1 No	2.930	E	2.930	
3	33 kV CTs	3 Nos	0.308	E	0.924	
4	33 kV PTs	3 Nos	0.336	E	1.008	
5	33 kV LAS stn. Type	3 Nos	0.038	E	0.114	
6	11 kV Breaker (1 LV+ 3 fdrs)	4 Nos	1.626	E	6.504	
7	11 kV CTS	12 Nos	0.250	E	3.000	
8	11 kV AB Switch	7 Nos	0.236	E	1.652	
9	11 kV Bus PT	3 Nos	0.511	S	1.533	
10	11 kV LAS stn. Type	3 Nos	0.018	E	0.054	
11	11 kV LAS distn. Type	9 Nos	0.008	E	0.072	
12	Earthing painting and Yard lighting			LS	10.000	
13	Control cable			LS	10.000	
14	110 V Battery with 2 charger	1 set	8.707	set	8.707	
15	100 kVA, 11 kV/433 V Stn. Tr.	1 No	4.737	set	4.737	
16	Fire fighting equipments				3.000	
17	P&T Phone				0.100	
18	Scientific instruments				5.000	
19	C&R panel			LS	15.000	
20	DC panel	1 No	0.980	E	0.980	
21	AC panel	1 No	1.028	E	1.028	
22	110 V DC Annunciator Panel	1 No	1.145	E	1.145	
23	Sub Total				78.886	
24	Contingencies @ 1%				0.789	
25	Total for materials				79.675	
26	Labour and Transport charges @ 15%				11.951	
27	GST on labour & transport @ 18%				2.151	
28	Total for material and labour				93.777	
29	1x8 MVA 33/11 kV Pr.Tr. with OLTC	1 No	88.374		88.374	
30	Labour and transport including GST	1 Loc	8.000	Loc	8.000	
31	Earthing	1 Loc	0.500	Loc	0.500	
32	Sub Total				190.651	
33	Estt & Sup.Charges 15%				28.598	
34	Sub total				219.249	219.25
35	Plinth for breakers	5 Nos.	2.500	E	12.500	
36	33 kV Structure	1 set	38.090	set	38.090	
37	11 kV Structure	1 set	33.791	set	33.791	
38	11 KV capacitor bank	1 set	27.008		27.008	
39	11 kV Link line with 7/4.09 ACSR	2.8 kms.	8.000	km	22.400	
40	33 kV line with Doq conductor	4.6 kms.	12.000	Loc	55.200	
41	Subtotal				188.99	188.99
42	Total Gross & Nett.					629.94


 EXECUTIVE ENGINEER/MASTER PLAN II