TAMIL NADU TRANSMISSION CORPORATION LTD
ABSTRACT

TANTRANSCO – Enhancement of existing Power transformer capacity from 2x16 MVA to 3x16 MVA at Vaduganthangal 110/11 kV SS in Thiruvalam Operation Circle (Vellore EDC) in Vellore Region - Administrative approval – Reg.

TECHNICAL BRANCH

(Per) CH TANTRANSCO Proceedings No: 38

Dated:08.05.2026.
Parabhaava Varudam,
Chithirai - 25 ,
Thiruvalluvar Aandu - 2057.

READ: Chairman's approval dated 08.04.2026.

PROCEEDINGS:

1. The Tamil Nadu Transmission Corporation Limited hereby approves the proposal for the enhancement of existing Power transformer capacity from 2x16 MVA to 3x16 MVA at Vaduganthangal 110/11 kV SS in Thiruvalam Operation Circle (Vellore EDC) of Vellore Region at an estimated cost of Rs.424.451 Lakhs Gross & Nett. subject to condition that no further loads shall be connected at Vaduganthangal 110/11 kV SS to avoid 110 kV source overloading in order to maintain system reliability and to meet the (N-1) condition. The detailed estimate and report are annexed to these proceedings.
2. The expenditure is chargeable to "TANTRANSCO - Funds - Capital expenditure – Thiruvalam Operation Circle - A/c code no: 1020400.
3. By virtue of the provisions contained in sub-section (2) (a) of section 185 of the Electricity Act, 2003, TANTRANSCO being the Transmission utility, 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 works will be taken up after ensuring the budget provision.

// BY ORDER OF THE CHAIRMAN//

J.PREMALATHA
CHIEF ENGINEER / TRANSMISSION

Encl: Report and detailed estimate.

To

The Chief Engineer/ Distribution/ Vellore Region

Copy to:

The Managing Director/TANTRANSCO/Chennai-2.
The Director/Transmission Projects/TANTRANSCO/Chennai-2.
The Director/Operation/TANTRANSCO/Chennai-2.
The Director/Distribution/TNPDCL/Chennai-2.
The Director/Finance/TANTRANSCO /Chennai-2.
The Chief Engineer/Transmission/ Chennai-2.
The Chief Engineer/Civil Transmission /Chennai -2.
The Superintending Engineer/Planning/Transmission/Chennai - 2
The Superintending Engineer/System Studies/Transmission/Chennai - 2
The Superintending Engineer/Operation/Thiruvalam
The Superintending Engineer/GCC/Salem
The Superintending Engineer/Vellore EDC
The Resident Audit Officer (AGO'S Unit)/Chennai –2
B .P. Section (Administrative Branch)
Stock file

//FORWARDED BY ORDER//

08/05/2026

EXECUTIVE ENGINEER/MASTER PLAN II

Enclosure to (Per) CH TANTRANSCO Proceedings No:38, dated:08.05.2026.

REPORT TO ACCOMPANY THE ESTIMATE

This proposal envisages enhancement of existing Power transformer capacity from 2x16 MVA to 3x16 MVA at Vaduganthangal 110/11 kV SS in Thiruvalam Operation Circle (Vellore EDC) of Vellore Region at an estimated cost of Rs.424.451 Lakhs Gross & Nett subject to the condition that no further loads shall be connected at Vaduganthangal 110/11 kV SS to avoid 110 kV source overloading in order to maintain system reliability and to meet the (N-1) condition.

Need :

At present, Vaduganthangal 110/11 kV SS is in service with 2x16 MVA, 110/11 kV power transformers. The combined peak reached on the existing 110/11 kV Power Transformers is 31.24 MVA which is loaded to 97.6 % of its capacity.

The details of the nearby substations to Vaduganthangal 110/11 kV SS are as below:

Sl. No.	Name of the SS	Pr.Tr.cap in MVA (11 kV level)	Peak in MVA	% of loading	Distance
1.	Katpadi 110/33-11 kV SS	2x16	31.43	98.22 %	15 kms.
2.	Pakkam 110/33-11 kV SS	2x10	19.43	97.15 %	35 kms.

The existing power transformers at the nearby Katpadi 110/33-11 kV SS and Pakkam 110/33-11 kV SS are already loaded to more than 95 % of their capacity and hence load transfer from Vaduganthangal 110 kV SS is not feasible.

The salient features of 11 kV feeders fed off Vaduganthangal 110/11 kV SS are given below:

Sl. No.	Name of the 11 kV feeder	CL in MVA	MD in MVA	Length in km	Voltage regulation in %
1	Melmoil	5.65	4.57	12.37	9.91
2	Panamadangi	9.25	6.10	12.39	24.38
3	Latheri	6.79	4.76	12.91	20.69
4	Tirumani	9.40	5.33	13.26	19.75
5	Pasumathur	5.60	3.81	9.58	9.01
6	Senji	3.99	3.43	12.13	14.05
7	D.R.Kuppam	9.75	5.14	16.64	27.01
8	K.V.Kuppam	8.15	5.72	12.21	21.32
9	Kothamangalam	2.85	1.14	7.27	5.62

From the above, it is observed that the voltage regulation of all 11 kV feeders except 11 kV Kothamangalam feeder are well beyond the permissible limit of 8%. In order to reduce overloading of existing 11 kV Melmoil feeder, 11 kV D.R.Kuppam feeder and 11 kV K.V.Kuppam feeder, 3 Nos. of new feeders, namely 11 kV Moolakongkuppam feeder, 11 kV Nagal feeder and 11 kV Kongkuppam feeder respectively are proposed to be erected from the newly proposed 16 MVA power transformer at Vaduganthangal 110/11 kV SS. Partial loads of 11 kV Pasumathur feeder is bifurcated to 11 kV Kothamangalam feeder of Vaduganthangal 110/11 kV SS.

Further, the partial loads of 11 kV Panamadangi, 11 kV Latheri, 11 kV Tirumani and 11 kV Senji will be transferred to newly proposed Kalambattu 33/11 kV SS which is covered under RDSS scheme.

The SE/GCC/Salem has certified that the space is adequate for enhancement of 110/11 kV power transformer subject to certain conditions addressed to SE/Vellore EDC dated: 12.09.2025 at Vaduganthangal 110/11 kV SS. The SE/Vellore EDC may arrange to evolve the same separately and obtain the approval of the competent authority before erection of the proposed additional 16 MVA power transformer .

The introduction of 110/33 kV ratio with 1x16 MVA power transformer at Vaduganthangal 110/11 kV SS was sanctioned vide (Per).CH.TANTRANSCO Proceedings No.115, dated: 09.12.2021. A separate GC breaker for the proposed 110/33 kV ratio has been proposed, as per the existing standards in the sanction.

At present, the existing 2x16 MVA, 110/11 kV Power Transformers are being controlled by a single 110 kV GC breaker. Now, as 3rd 16 MVA is being proposed, as per norms, when the aggregate power transformer capacity exceeds 32 MVA in a particular ratio and hence one more additional 110 kV GC breaker is to be provided and provision towards the same has been made in this estimate. Necessary arrangements/re-alignments has to be made to erect the additional 110 kV GC breaker and the same may be carried out after obtaining approval from the competent authority.

Being TRANSCO scheme, provision for erecting 11 kV feeders at Vaduganthangal 110/11 kV SS has not been included in the estimate. Hence, the CE/Distribution/Vellore Region may arrange to evolve the same separately and obtain the approval of the competent authority.

Hence, in order to avoid overloading of the existing power transformers and to provide uninterrupted supply, it becomes necessary to enhance the existing 110/11 kV power transformers from 2x16 MVA to 3x16 MVA at Vaduganthangal 110/11 kV SS.

Adequacy of Transmission system:

Details of the source SS:

a.	Name of the substation	Thiruvalam 230/110 kV SS
b.	230/110 kV auto transformer capacity	4x100 MVA
c.	Peak reached in MVA	379 MVA
d.	Whether power transformer capacity of the source SS is	Load flow study result states that overloading of Thiruvalam 230/110 kV SS auto transformers has been observed. However, the 110/11 kV power transformer

	adequate	enhancement from 2x16 to 3x16 MVA at Vaduganthangal 110/11 kV SS may be considered in order to maintain system reliability and to meet the (N-1) condition of 110/11 kV power transformers at Vaduganthangal 110/11 kV SS subject to the condition that no further loads shall be connected at Vaduganthangal 110/11 kV SS

Details of the source feeder:

a.	Name of the feeder	110 kV Thiruvalam– Gudiyatham feeder
b.	Size/Loading capacity of the conductor	Leopard - 55 MVA Panther - 84 MVA
c.	Present loading in MVA	51 MVA
d.	Whether the conductor is adequate	Load flow study result reveals that, 110 kV Thiruvalam - Gudiyatham feeder is overloaded. However, the 110/11 kV power transformer enhancement from 2x16 to 3x16 MVA at Vaduganthangal 110/11 kV SS may be considered in order to maintain system reliability and to meet the (N-1) condition of 110/11 kV power transformers at Vaduganthangal 110/11 kV SS subject to the condition that no further loads shall be connected at Vaduganthangal 110/11 kV SS

Also in Thiruvalam – Gudiyatham 110 kV feeder, the leopard conductor section to be replaced with Panther conductor to avoid overloading.

The proposed loads that will be incident after enhancement of power transformer is given below:

Sl. No	Name of the SS/EHT feeder	Capacity/ Sanctioned load	Present peak reached	Load transfer to the enhanced transformer	Anticipated peak
1	Vaduganthangal 110/11 kV SS		31.24 MVA	The power transformer will be connected in parallel to the existing power transformers to avoid overloading and to share the load	31.24 MVA

Details of work:

- Erection of 1 No. 16 MVA, 110/11 kV power transformer with associated equipments at Vaduganthangal 110/11 kV SS.
- Erection of 1 No. 110 kV GC Breaker along with its associated equipments at Vaduganthangal 110/11 kV SS.

08/05/2026

Executive Engineer/ Master Plan II

Estimate for enhancement of existing power transformer capacity from 2x16 MVA into 3x16 MVA at Vaduganthangal110/11 kV SS in Thiruvalam Operation Circle (Vellore EDC)

S.No	DESCRIPTION	QTY	RATE	PER	AMOUNT in Lakhs	TOTAL in lakhs
I	**Civil Works**					
1	Civil works such as plinth for power transformer and other equipments, cable duct, extension of Control room and other allied civil works such as water supply line to earth pits, metal spreading over a layer of quarry dust,painting,etc.,				39.042	
2	Total (including Contingencies @1%, Establishment & Supervision charges @15% LWF@1% & GST @18%)				53.667	
3	**Total (Civil work)**				**53.667**	**53.667**
II	**Electrical Works**					
1	110 kV AB Switch w/o earth	3 Nos	1.814	E	5.442	
2	110 kV SF6 breaker	1 No	5.648	E	5.648	
3	110 kV CT	3 Nos	1.665	E	4.995	
4	110 kV LAS (Station type)	3 Nos	0.323	E	0.969	
5	11 kV VCB for LV	1 No	1.378	E	1.378	
6	11 kV AB switch	1 No.	0.177	E	0.177	
7	11 kV LAS	3 Nos.	0.016	E	0.048	
8	11 kV CT	3 Nos.	0.212	E	0.636	
9	Control & Relay Panel			LS	10.000	
10	Control cable and conductor			LS	10.000	
11	Earthing and Yard lighting			LS	5.000	
12	110 and 11 kV Structure modification and re-engineering works (busbar arrangements, jumpering arrangements,clamps and connectors etc.)			LS	20.000	
13	Cost of materials				64.293	
14	Contingencies @1%				0.643	
15	Sub Total				64.936	
16	Labour & Transport Charges @ 15%				9.740	
17	Sub total for material, labour & transport (A)				74.676	
18	16 MVA, 110/11 kV Power transformer with OLTC	1 No.	188.012	E	188.012	
19	Labour & transport for transformer	1 loc	10.000	loc	10.000	
20	Earthing	1 loc	0.550	loc	0.550	
21	Sub total for material,labour & transport (B)				198.562	
22	Sub total (A)+(B)				273.238	
23	Establishment & Supervision charges @15%				40.986	
24	Sub total				314.224	
25	GST @18%				56.560	
26	Total Electrical				**370.784**	**370.784**
27	**Total (Civil & Electrical work)**				**424.451**	

08/05/2026

Executive Engineer/Master Plan II