

**SINGLE STAGE REQUEST FOR PROPOSAL**

**FOR**

**SELECTION OF TRANSMISSION SERVICE  
PROVIDER THROUGH TARIFF BASED  
COMPETITIVE BIDDING PROCESS**

**TO**

**DEVELOP INTRA-STATE TRANSMISSION SYSTEM**

**CONSISTING OF (i) KAVATHAMPALAYAM 765/400  
KV AIS SS ALONG WITH 765 KV & 400 KV  
TRANSMISSION LINES AND (ii) EDAYARPALAYAM  
400/230-110 KV AIS SUBSTATION**

**ISSUED BY**

**TAMIL NADU TRANSMISSION CORPORATION  
LIMITED  
(TANTRANSCO)**

**Registered Office:  
TANTRANSCO HQ BUILDING, 144, Annasalai,  
Chennai – 600002, Tamil Nadu  
Email:cetr@tnebnet.org**

**12.02.2026**

**Tamil Nadu Transmission Corporation Limited (TANTRANSCO)  
TANTRANSCO HQ Building, 144, Annasalai,  
Chennai-600002, Tamil Nadu**

**Request for Proposal Document for selection of Transmission Service Provider through Tariff Based Competitive Bidding process for “Development of Intra-State Transmission System consisting of (i) Kavathampalayam 765/400 kV AIS SS along with 765 kV & 400 kV Transmission Lines and (ii) Edayarpalayam 400/230-110 kV AIS Substation” is issued by Tamil Nadu Transmission Corporation Limited.**

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## REQUEST FOR PROPOSAL NOTIFICATION

**Tamil Nadu Transmission Corporation Limited  
(TANTRANSCO) HQ BUILDING, 144, Annasalai,  
Chennai- 600002, Tamil Nadu**

1. The RFP document has been developed based on Tariff based Competitive Bidding Guidelines for Intra-State Transmission Systems issued by TANTRANSCO, as per Section 63 of the Electricity Act, 2003, and considers Suo-Motu Order No. 2 of 2024 (dated February 13, 2024) from the Tamil Nadu Electricity Regulatory Commission, along with the Ministry of Power, Government of India's guidelines (dated August 10, 2021) for Encouraging Competition in Development of Transmission Projects, and any subsequent amendments. TANTRANSCO is the Bid Process Coordinator (BPC) for the purpose of selection of a Transmission Service Provider (TSP) to **“Develop Intra-State transmission system consisting of (i) Kavathampalayam 765/400 kV AIS SS along with 765 kV & 400 kV Transmission Lines and (ii) Edayarpalayam 400/230-110 kV AIS Substation”** through tariff based competitive bidding process.
2. Tamil Nadu Transmission Corporation Limited (hereinafter referred to as BPC) hereby invites all prospective Bidders for issue of Request for Proposal (RFP) for selection of a Transmission Service Provider (TSP) on the basis of international competitive bidding in accordance with the Bidding Guidelines issued by TANTRANSCO under section – 63 of The Electricity Act, 2003 and as amended from time to time. The responsibility of the TSP would be to **“Develop the Intra-State Transmission System consisting of (i) Kavathampalayam 765/400 kV AIS SS along with 765 kV & 400 kV Transmission Lines and (ii) Edayarpalayam 400/230-110 kV AIS Substation”** (hereinafter referred to as ‘Project’) on build, own, operate & transfer basis and to provide transmission service.
3. The TSP shall ensure that design, construction and testing of all equipment, facilities, components and systems of the Project shall be in accordance with the provisions of the Transmission Service Agreement (TSA) and applicable Rules/ Regulations, Orders, Codes and Guidelines issued by the State Government and State Commission and other relevant Orders, Rules/ Regulations of Central Government and Central Commission, as applicable.
4. **Transmission License:** The TSP shall obtain the Transmission License from the State Commission.
5. **Bidding Process:** The Transmission Service Provider shall be selected through tariff based competitive bidding process for the Project based on meeting stipulated Qualification Requirements prescribed in Clause 2.1 of Section 2 of RFP and the lowest Quoted Transmission Charges discovered from Final Offers quoted during the e-reverse bidding. The selection of the TSP shall be subject to it obtaining Transmission License from the State Commission, which, after expiry, may be further extended by such period as deemed appropriate by the State Commission under powers vested with it to amend the conditions of the Transmission License.

The entire bidding process shall be conducted on e-procurement portal of Tamil Nadu (<https://tntenders.gov.in>)

The Bid shall be a single stage two envelope bid comprising the Technical Bid and the Financial Bid. The Bidders shall submit the Bid online through the electronic bidding platform. In addition to the online submission, the Bidder with lowest Final Offer will be required to submit original hard copies of Annexure 3, Annexure 4 (if applicable), Annexure 6 (if applicable) and Annexure 14 before issuance of LoI. There shall be no physical submission of the Financial Bid.

The Technical Bid shall be opened first and the Financial Bid of only the bidders who have qualified in the Technical Bid shall be opened. The Financial Bid will comprise of two rounds. In the first round, the Initial Offer of the responsive bids would be opened and Quoted Transmission Charges of Initial Offer shall be ranked on the basis of ascending order. The Bidders, in the first fifty per cent (50%) of the ranking (with any fraction rounded off to higher integer) or four Bidders, whichever is higher, shall qualify for participating in the electronic reverse auction stage and submit their Final Offer.

6. The objective of the bidding process is to select a Successful Bidder pursuant to this RFP, who shall acquire one hundred percent (100%) of the equity shares of KAVATHAMPALAYAM SS DEVELOPMENT LIMITED along with all its related assets and liabilities as per the provisions of the Share Purchase Agreement, at the Acquisition Price to be intimated by the TANTRANSCO, twenty (20) days prior to the Bid Deadline. The variation will not be more than 5% between tentative acquisition price to be intimated to bidders and final acquisition price to be intimated to the Successful bidder at the time of acquisition of SPV.

The KAVATHAMPALAYAM SS DEVELOPMENT LIMITED, of which one hundred percent (100%) equity shares will be acquired by the Selected Bidder, shall be responsible as the TSP, for ensuring that it undertakes ownership, financing, development, design, engineering, procurement, construction, commissioning, operation and maintenance of the Project, and to provide Transmission Service as per the terms of the RFP Project Documents.

The TSP shall ensure transfer of all Project Assets along with surrender of substation land, right of way and clearances to STU or its successors or an agency as decided by the Government of Tamil Nadu after the expiry of Transmission Service Agreement at Zero Cost and free from any encumbrance and liability. The transfer shall be completed within 90 days from the expiry of Transmission Service Agreement failing which, STU or its successors or an agency as decided by the Government of Tamil Nadu shall be entitled to take over the Project Assets suo moto.

7. **Commencement of Transmission Service:** The Bidder shall have to commence Transmission Service in accordance with the provisions of the Transmission Service Agreement.
8. **Transmission Charges:** The Transmission Charges shall be payable by the Nodal Agency in Indian Rupees. Bidders shall quote the Annual Transmission Charges as per the pre-specified structure, as mentioned in the RFP.
9. **Issue of RFP document:** The detailed terms and conditions for qualification and selection of the Transmission Service Provider for the Project and for submission of Bid are indicated in the RFP document.

Any interested bidder participating in the bidding process shall download the official copy of the RFP documents from the Tamil Nadu e-procurement portal (<https://tntenders.gov.in>). To obtain the Survey Report, bidders must submit a formal request to [tbcbtantransco@gmail.com](mailto:tbcbtantransco@gmail.com); the report will be shared via email upon receipt of the request. Alternatively, the RFP documents may be downloaded from the TANTRANSCO website (<https://www.tantransco.org/en/tantransco/>) for reference purposes only.

10. **Receipt and opening of Bid:** The Bid must be uploaded online through the electronic bidding platform i.e., e-procurement portal of Tamil Nadu (<https://tntenders.gov.in>) on or before **1100 hours (IST) on 10.04.2026**. Technical Bid will be opened by the Tender Scrutiny Committee on the **same day at 1500 hours (IST)** in the office of TANTRANSCO, in the online presence of Bidders' representatives who wish to attend. If the Bid Deadline is a public holiday at the place of submission of Bid, it shall be opened on the next working day at the same time and venue. In addition to the online submission, the Bidder with lowest Final Offer will be required to submit original hard copies of Annexure 3, Annexure 4 (if applicable), Annexure 6 (if applicable) and Annexure 14 before issuance of LoI. Bidders meeting the Qualification Requirements, subject to evaluation as specified in Clause **3.2** to **3.4** shall be declared as "Qualified Bidders" and eligible for opening of Initial Offer.
11. The RFP document is not transferable. TANTRANSCO reserves the right to reject all Bids and/or annul the process of tariff based competitive bidding for selection of Bidder as TSP to execute the Project without assigning any reason. TANTRANSCO shall not bear any liability, whatsoever, in this regard.

12. **Nodal person for enquiries and clarifications**

All correspondence and clarifications in respect of RFP documents shall be addressed to:

**Chief Engineer/Transmission, V floor, Northern wing,  
Tamil Nadu Transmission Corporation Limited (TANTRANSCO)  
NPKRR, Maaligai 144, Annasalai,  
Chennai- 600002, Tamil Nadu  
Email: cetr@tnebnet.org**

**DISCLAIMER**

1. This Request for Proposal (RFP) document is not an agreement or offer by the TANTRANSCO to the prospective Bidders or to any other party. The purpose of this RFP document is to provide interested parties with information to assist the formulation of their Bid. The RFP document is based on material and information available in public domain.
2. This RFP, along with its Annexures, is not transferable and the information contained therein are to be used only by the person to whom it is issued. It may not be copied or distributed by the recipient to third parties (other than in confidence to the recipient's professional advisors). In the event that the recipient does not continue with its involvement in the Project in accordance with this RFP, this RFP must be kept confidential.
3. While this RFP has been prepared in good faith, neither the TANTRANSCO nor its employees or advisors/consultants make any representation or warranty expressed or implied as to the accuracy, reliability or completeness of the information contained in this RFP. The Bidders shall satisfy themselves, on receipt of the RFP document, that the RFP document is complete in all respects. Intimation of any discrepancy shall be given to this office immediately. If no intimation is received from any Bidder within ten (10) days from the date of issue of this RFP document on or before the date & time mentioned in this RFP, it shall be considered that the issued document, complete in all respects, has been received by the Bidders.

This bidding process is in accordance with the Bidding Guidelines issued by TANTRANSCO under Section 63 of the Electricity Act, 2003. Revisions or amendments in these Bidding Guidelines may cause the TANTRANSCO to modify, amend or supplement this RFP document, including the RFP Project Documents to be in conformance with the Bidding Guidelines.

4. This RFP document includes statements, which reflect various assumptions arrived at by TANTRANSCO in order to give a reflection of current status in the RFP. These assumptions should not be entirely relied upon by Bidders in making their own assessments. This RFP document does not purport to contain all the information each Bidder may require and may not be appropriate for all persons. It is not possible for TANTRANSCO to consider the investment objectives, financial situation and particular needs of each party who reads or uses this RFP document. Certain Bidders may have a better knowledge of the Project than the others. Each Bidder should conduct its own investigations and analysis and should check the accuracy, reliability and completeness of the information in this RFP document and obtain independent advice from appropriate sources.
5. Neither TANTRANSCO nor their employees or consultants make any representation or warranty as to the accuracy, reliability or completeness of the information in this RFP document.
6. Neither TANTRANSCO, its employees nor its consultants will have any liability to any Bidder or any other person under the law of contract, tort, the principles of restitution or unjust enrichment or otherwise for any loss, expense or damage which may arise from or be incurred or suffered in connection with anything contained in this RFP document, any matter deemed to form part of this RFP document, the award of the Project, the information supplied by or on behalf of TANTRANSCO or its employees, any consultants or otherwise arising in any way from the qualification process for the said Project.
7. By participating in the bidding process, each of the Bidder shall have acknowledged and

accepted that it has not been induced to enter into such agreement by any representation or warranty, expressed or implied, or relied upon any such representation or warranty by or on behalf of TANTRANSCO or any person working in the bidding process.

8. TANTRANSCO may, in its absolute discretion, but without being under any obligation to do so, update, amend or supplement this RFP document. Such updations, amendments or supplements, if any, will however be circulated to the Bidders not later than 15 days prior to the last date for submission of Bid.
9. Each Bidder unconditionally agrees, understands and accepts that TANTRANSCO reserves the rights to accept or reject any or all Bids without giving any reason. Neither TANTRANSCO nor its advisers shall entertain any claim of any nature, whatsoever, including without limitations, any claim seeking expenses in relation to the preparation of Bids.
10. This RFP may be withdrawn or cancelled by TANTRANSCO at any time without assigning any reasons thereof. TANTRANSCO further reserves the right, at its complete discretion, to reject any or all of the Bids without assigning any reasons whatsoever.

## INDEX

SECTION	CONTENTS	PAGE NO.
	DEFINITIONS	10
1.	INTRODUCTION	16
2.	INFORMATION AND INSTRUCTIONS FOR BIDDERS	26
3.	EVALUATION OF THE TECHNICAL AND FINANCIAL BID	60
4.	ANNEXURES FOR BID	66
	ANNEXURES	
1	Format for the Covering Letter	67
2	Format for Letter of Consent from Consortium Members	71
3	Format for evidence of authorized signatory's authority (Power of Attorney)	73
4	Format for Power of Attorney (POA) to be provided by the other member of the Consortium in favor of the Lead Member	75
5	Format for Bidder's composition and ownership structure and Format for Authorization	77
6	Format for Consortium Agreement	80
7A	Format for Qualification Requirement – Net worth	85
7B	Format for Technical Requirement	88
7C	Format for Technical and Financial Requirement – Relationship & Equity Shareholding	91
7D	Format for Additional Information for verification of Financial and Technical Capabilities of Bidders	93
8	Format for Undertaking and Details of Equity Investment	96
9	Format for Authorization from Parent /Ultimate Parent/ Affiliate of Bidding Company / Member of Bidding Consortium whose technical / financial capability has been used by the Bidding Company / Member of Bidding Consortium.	106
10	Format for Undertaking by Parent/Ultimate Parent Company	108
11	Format for Board Resolution	110
11A	Illustration for Applicable Board Resolution Requirements under Clause 2.5.2	113
12	Format for illustration of Affiliates	114
13	Format for disclosure	115
14	Format For Bid Bond	116
15	Format for Contract Performance Guarantee	118

RFP for Selection of Transmission Service Provider

<b>SECTION</b>	<b>CONTENTS</b>	<b>PAGE NO.</b>
16	Format for Checklist for Technical Bid Submission Requirements	120
17	List of Banks	123
18	Grid Map of the Project	124
19	Format for Clarifications / Amendments on the RFP / RFP Project Documents	126
20	Formats For RFP Project Documents	127
21	Format For Financial Bid	128
22	Format of Affidavit	129
	Annexure A	131
	Annexure-B	142
	Annexure C	252

## DEFINITIONS

Any capitalized term, used but not defined in this RFP, shall have the meaning ascribed to such term in the RFP Project Documents, or the Bidding Guidelines, in that order. In the absence of availability of definitions in the foregoing references, the capitalized terms shall be interpreted in accordance with the Electricity Act 2003, Grid Code or any other relevant electricity law, rule or regulation prevalent in India, as amended or re-enacted from time to time, in that order.

### **The following terms are defined for use in this RFP:**

**"Acquisition Price"** shall have the same meaning as defined in the Share Purchase Agreement;

**"Affiliate"** shall mean a company that either directly or indirectly

- i. controls or
- ii. is controlled by or
- iii. is under common control with

a Bidding Company (in the case of a single company) or a Member (in the case of a Consortium) and **"control"** means ownership by one entity of at least twenty six percent (26%) of the voting rights of the entity. As an illustration a chart is annexed hereto as Annexure – 12;

**"Bid"** shall mean Technical Bid and Financial Bid (Initial Offer and Final Offer) submitted by the Bidder, in response to this RFP, in accordance with the terms and conditions thereof;

**"Bidder"** shall mean either a single company (including its permitted successors and legal assigns) or a Consortium of companies (including its permitted successors and legal assigns) submitting a Bid in response to this RFP. Any reference to the Bidder includes Bidding Company, Bidding Consortium/ Consortium, Member in a Bidding Consortium and Lead Member of the Bidding Consortium jointly and severally, as the context may require;

**"Bidding Company"** shall refer to such single company (including its permitted successors and legal assigns) that has submitted a Bid for the Project;

**"Bidding Consortium/ Consortium"** shall refer to a maximum of two (2) companies including lead member (along with their permitted successors and legal assigns) that has collectively submitted a Bid for the Project;

**"Bidding Guidelines"** shall mean the Tariff Based Competitive-Bidding Guidelines issued by TANTRANSCO under Section – 63 of Electricity Act as amended from time to time;

**"Bid Bond"** shall mean the unconditional and irrevocable e-BG (e-Bank Guarantee) for Rs 35 Crore (Rupees Thirty Five Crore only), to be submitted through the e-Procurement Portal along with the Technical Bid by the Bidder under Clause 2.11 of this RFP, as per the format prescribed in Annexure 14 (for e-Bank Guarantee);

**"Bid Deadline"** shall mean the last date and time for submission of online Bid in response to this RFP, specified in Clause 2.7.1;

**"Bid Process Coordinator (BPC)"** shall mean Tamil Nadu Transmission Corporation Limited (TANTRANSCO). As specified in the Tariff Based Competitive-Bidding Guidelines issued by

TANTRANSCO, the BPC is responsible for carrying out the bidding process for selection of Transmission Service Provider;

"CEA" shall mean the Central Electricity Authority constituted under Section - 70 of the Electricity Act;

"Central Commission" or "CERC" shall mean the Central Electricity Regulatory Commission of India constituted under Section-76 of The Electricity Act, 2003 and any successors and assigns thereof;

"Central Government" shall mean the Government of India;

"Conflict of Interest" A Bidder shall be considered to be in a Conflict of Interest with one or more Bidders in the same bidding process if they have a relationship with each other, directly or through a common company, that puts them in a position to have access to information about or influence the Bid of another Bidder.

Provided that if two or more bidders in the bidding process have formed a Joint Venture Company or Consortium to execute another project, the Bidders will not be considered to have Conflict of Interest;

"Commercial Operation Date (COD)" shall mean the date as per Article 6.2 of the Transmission Service Agreement;

"Consents, Clearances, Permits" shall mean all authorizations, licenses, approvals, registrations, permits, waivers, privileges, acknowledgements, agreements, or concessions required to be obtained from or provided by any concerned authority for the development, execution and performance of Project including without any limitation on the construction, ownership, operation and maintenance of the transmission lines and/or sub-stations;

"Contract Performance Guarantee" shall have the meaning as per Clause 2.12 of this RFP;

"Contract Year" shall mean the period beginning on the Scheduled COD, and ending on the immediately succeeding March 31 and thereafter each period of 12 months beginning on April 1 and ending on March 31 provided that:

- (i) the last Contract Year shall end on the last day of the term of the Transmission Service Agreement;

"CTU/Central Transmission Utility" shall have same meaning as defined in the Electricity Act, 2003;

"Effective Date" shall have the meaning as ascribed thereto in the Transmission Service Agreement;

"Element" shall mean-each Transmission Line or each circuit of the Transmission Lines (where there are more than one circuit) or each bay of the Sub-station or switching station or HVDC terminal or inverter station of the Project, including ICTs, Reactors, SVC, FSC, etc. forming part of the Intra-State Transmission System which will be owned, operated and maintained by the concerned Licensee, and which may have a separate scheduled COD as per Schedule 2 of the

Transmission Service Agreement and may have a separate percentage for recovery of Transmission Charges on achieving COD as per Schedule 5 of the Transmission Service Agreement;

**"State Empowered Committee on Transmission"** shall mean a Committee Notified under TBCB guidelines by TANTRANSCO for Intra State Transmission System of Tamil Nadu;

**"Final Offer"** shall mean the Quoted Transmission Charges, required to be submitted as part of the Financial Bid on the electronic bidding platform during the e-reverse bidding stage. In case, no Final Offer is received during the e-reverse bidding stage, then the lowest "Initial Offer" shall be deemed to be the Final Offer;

**"Financial Bid"** shall mean the Initial Offer and Final Offer, containing the Bidder's Quoted Transmission Charges, as per the format at Annexure-21 of this RFP;

**"Financially Evaluated Entity" or "FEE"** shall mean the company which has been evaluated for the satisfaction of the financial requirement set forth in Clause 2.1.3 hereof;

**"Grid Code" / "IEGC" or "State Grid Code"** shall mean the Grid Code specified by the Central Commission under clause (h) of sub-section (1) of Section 79 of the Electricity Act and/or the State Grid Code as specified by the concerned State Commission referred under clause (h) of sub-section (1) of Section 86 of the Electricity Act as applicable;

**"Initial Offer"** shall mean the Quoted Transmission Charges, required to be submitted as part of the Financial Bid on the electronic bidding platform along with the Technical Bid;

**"Inter State Generating Station" or "ISGS"** shall mean a Central / other generating station in which two or more states have shares and whose scheduling is to be coordinated by the Regional Load Despatch Centre;

**"Inter-State Transmission System"** shall have same meaning as defined in the Electricity Act, 2003;

**"Intra-State Transmission System"** shall have same meaning as defined in the Electricity Act, 2003;

**"Lead Member of the Bidding Consortium" or "Lead Member"** shall mean a company who commits at least twenty six percent (26%) equity stake in the SPV, meets the technical requirement as per Clause 2.1.2 and so designated by other Member in Bidding Consortium;

**"Letter of Intent" or "LoI"** shall mean the letter to be issued by TANTRANSCO to the Bidder, who has been identified as the Selected Bidder, for award of the Project to such Bidder;

**"Member in a Bidding Consortium/Member"** shall mean each company in the Bidding Consortium;

**"MOP"** shall mean the Ministry of Power, Government of India;

**"MOEF"** shall mean the Ministry of Environment, Forest and Climate Change, Government of India;

**"Nodal Agency"** shall mean Tamil Nadu Transmission Corporation Limited (TANTRANSCO),

which shall execute and implement the Transmission Service Agreement (TSA).

**"Technical Bid"** shall mean the bid submitted online through the electronic bidding platform, containing the documents as listed out in Clause 2.5.2 of this RFP;

**"Parent Company"** shall mean an entity that holds more than fifty percent (50%) of the paid-up equity capital directly in the Bidding Company or in the Member of a Bidding Consortium, as the case may be;

**"Power Sector"** shall refer to Electricity Generation, Transmission, Distribution, and Renewable Energy.

**"Qualification Requirements"** shall mean the qualification requirements as set forth in Section-2, Clause 2.1 of this RFP;

**"Quoted Transmission Charges"** shall mean the quoted Single Annual Transmission Charges submitted online through the electronic bidding platform by the Bidder as part of its Financial Bid as per the format in Annexure-21 of this RFP;

**"RFP"** shall mean Request for Proposal document along with all schedules, formats, annexure and RFP Project Documents attached hereto, issued by TANTRANSCO for tariff based competitive bidding process for selection of bidder who will acquire the TSP through e-reverse bidding to execute the Project, and shall include any modifications, amendments or alterations or clarifications thereto;

**"RFP Project Documents"** shall mean the following documents to be entered into in respect of the Project, by the parties to the respective agreements:

- a. Transmission Service Agreement (TSA),
- b. Share Purchase Agreement,
- c. Any other agreement, as may be required;

**"Scheduled COD"** shall have the meaning as ascribed hereto in Clause 2.6 of this RFP;

**"State Commission" or "TNERC"** shall mean the Tamil Nadu Electricity Regulatory Commission constituted under Section-82 of The Electricity Act, 2003 and any successors and assigns thereof;

**"State Government"** shall mean the Government of Tamil Nadu (GoTN);

**"Statutory Auditor"** shall mean the auditor appointed under the provisions of the Companies Act, 1956 / Companies Act, 2013 (as the case may be) or under the provisions of any other applicable governing law;

**"STU" or "State Transmission Utility"** shall mean Tamil Nadu Transmission Corporation Limited (TANTRANSCO);

**"Share Purchase Agreement"** shall mean the agreement amongst Tamil Nadu Transmission Corporation Limited, KAVATHAMPALAYAM SS DEVELOPMENT LIMITED and the Successful Bidder for the purchase of one hundred (100%) per cent of the shareholding of the KAVATHAMPALAYAM SS DEVELOPMENT LIMITED for the Acquisition Price, by the Successful Bidder on the terms and conditions as contained therein;

**"Successful Bidder"** or **"Selected Bidder"** shall mean the Bidder selected pursuant to this RFP to acquire one hundred percent (100%) equity shares of KAVATHAMPALAYAM SS DEVELOPMENT LIMITED, along with all its related assets and liabilities, which will be responsible as the TSP to establish the Project on build, own, operate and transfer basis as per the terms of the Transmission Service Agreement and other RFP Project Documents;

**"Survey Report"** shall mean the report containing initial information regarding the Project and other details provided as per the provisions of Clause 1.6.2.1.1 of this RFP;

**"Technically Evaluated Entity" or "TEE"** shall mean the company which has been evaluated for the satisfaction of the technical requirement set forth in Clause 2.1.2 hereof;

**"Transmission Charges"** shall mean the Final Offer quoted by Selected Bidder and adopted by the State Commission, and as computed in terms of the provisions of Schedule 4 of the TSA, payable to the Licensee by the TANTRANSCO as per provisions of Transmission Service Agreement;

**"Transmission License"** shall mean the license granted by the State Commission in terms of the relevant regulations for grant of such license issued under the Electricity Act, 2003;

**"Transmission Service Agreement" or "TSA"** shall mean the agreement entered into between TANTRANSCO and the TSP, pursuant to which the TSP shall build, own, operate and transfer the Project and make available the assets of the Project on a commercial basis;

**"Transmission Service Provider" or "TSP"** shall mean KAVATHAMPALAYAM SS DEVELOPMENT LIMITED which has executed the Transmission Service Agreement and which shall be acquired by the Selected Bidder;

**"Ultimate Parent Company"** shall mean an entity which owns more than fifty percent (50%) paid-up equity directly in the Parent Company of the Bidding Company or the Member in a Bidding Consortium, as the case may be;

# **SECTION – 1**

# **INTRODUCTION**

## SECTION 1

## 1. INTRODUCTION

- 1.1 The RFP document has been developed based on Tariff based Competitive Bidding Guidelines for Intra-State Transmission Systems issued by TANTRANSCO, as per Section 63 of the Electricity Act, 2003, and considers Suo-Motu Order No. 2 of 2024 (dated February 13, 2024) from the Tamil Nadu Electricity Regulatory Commission, along with the Ministry of Power, Government of India's guidelines (dated August 10, 2021) for Tariff based Competitive-bidding Guidelines for Transmission Service and Guidelines for Encouraging Competition in Development of Transmission Projects, and any subsequent amendments. TANTRANSCO is nominated to be the Bid Process Coordinator (BPC) for the purpose of selection of Bidder as Transmission Service Provider (TSP) to establish Intra-State transmission system for **“Development of (i) Kavathampalayam 765/400 kV AIS Substation along with 765 kV & 400 kV Transmission Lines and (ii) Edayarpalayam 400/230-110 kV AIS Substation”** through tariff based competitive bidding process.

The TANTRANSCO hereby invites Bids from all prospective Bidders in accordance with this Request for Proposal (RFP) to select prospective Transmission Service Provider (TSP) in accordance with the Bidding Guidelines issued by TANTRANSCO under Section – 63 of the Electricity Act. The TANTRANSCO shall select the Bidder having the prescribed technical and financial capability to become TSP and be responsible for establishing the Project in the state of Tamil Nadu. The TSP will make the Project available against payment of Transmission Charges, as adopted by the State Commission, payable to the TSP, as per the provisions of Transmission Service Agreement.

- 1.2 The TSP will be required to undertake the following Intra State Transmission System works – **“Development of (i) Kavathampalayam 765/400 kV AIS Substation along with 765 kV & 400 kV Transmission Lines and (ii) Edayarpalayam 400/230-110 kV AIS Substation”** (hereinafter referred to as ‘Project’) on build, own, operate and transfer basis, and to provide transmission service.

Sl. No.	Scope of the Transmission Scheme	Scheduled COD in months from Effective Date
1	<p><b>Establishment of Kavathampalayam 765/400 kV Substation:</b></p> <p>a) Supply and Erection of 765 kV bus with 4 dia comprising of following:</p> <ul style="list-style-type: none"> <li>• 2 nos. of feeder bays for connecting Ariyalur 765 kV DC feeders with Switchable Line Reactors. (240 MVar -3×80 MVar)</li> <li>• 2 nos. for the HV bay of ICTs. (765/400 kV, 500 MVA, Single Phase ICTs-7nos. Including 1 No. switchable Spare ICT)</li> <li>• 2 nos. bay for 240 MVar (3×80MVar) Bus</li> </ul>	30 Months

Sl. No.	Scope of the Transmission Scheme	Scheduled COD in months from Effective Date
	<p>Reactors with 1 No. Bay arrangement for Single Phase Switchable Reactor spare unit</p> <ul style="list-style-type: none"> <li>• 2 nos. of feeder bays for connecting Virudhunagar 765 kV DC feeders with Switchable Line Reactors, 240 MVAR (3×80 MVAR)</li> <li>• 1 No. bay arrangement for Single Phase Switchable Line Reactor spare unit for all 765 kV line feeders.</li> </ul> <p>b) Supply and Erection of 400 kV Bus with 5 dia comprising of following:</p> <ul style="list-style-type: none"> <li>• 2 nos. of feeder bays for connecting Edayarpalayam 400 kV DC Feeders.</li> <li>• 2 nos. of feeder bays for connecting Rasipalayam 400 kV DC Feeders</li> <li>• 2 nos. of feeder bays for connecting Palavady 400 kV DC Feeders</li> <li>• 2 nos. for the LV side of ICTs.</li> <li>• 2 nos. of spare bays with equipment</li> </ul> <p>c) Supply and Erection of 765/400 kV, 500 MVA ICTs-7 Nos. (2×1500 MVA ICT Bank + 1 No. Single Phase 500 MVA Spare ICT) with Nitrogen fire quenching system and online gas and Tan Delta monitoring system.</p> <p>d) Supply and Erection of 765 kV, 3×80 MVAR single phase line Reactor with 1 no. spare-13 Nos. with Nitrogen fire quenching system and online gas and Tan Delta monitoring system.</p> <p>e) Supply and Erection of 765 kV, 3 x 80 MVAR single phase bus Reactor with 1 no. spare - 7 Nos. with Nitrogen fire quenching system and online gas and Tan Delta monitoring system.</p>	
2	<p>a) 400kV Multi Circuit (MC) line with Quad Moose conductor for making LILO of <i>Rasipalayam to Palavadi feeder (Circuit 1 and 2)</i> at Kavathampalayam 765/400 kV SS.)</p> <p>b) OPGW (Optical Ground Wire) cable with 48 optical fibers shall be used as the optical fiber communication ground wire, including all necessary accessories, for the</p>	<b>30 Months</b>

Sl. No.	Scope of the Transmission Scheme	Scheduled COD in months from Effective Date
	<p>erection of 400 kV Multi circuit (MC) transmission lines in one of the designated tower peaks.</p> <p>c) An earth wire shall be provided for the 400 kV Multi circuit (MC) transmission lines in the other designated tower peaks.</p>	
3	<p><b>Establishment of Edayarpalayam 400/230-110 kV substation:</b></p> <p><b>A. Supply and Installation of 400kV Quad Moose ACSR Double Bus with 5 Nos Full Dia (2 Main Bays + 1 Tie Bay) comprising for the following Bays:</b></p> <p>a) 2 Nos. of 400kV line bays to PGCIL, for terminating 400 kV DC Quad line from Pugalur PGCIL 400 kV HVDC station.</p> <p>b)1 No. of 400 kV Line Bay to PGCIL, for terminating 400KV DC Quad line II from Myvadi PGCIL 400 kV SS.</p> <p>c) 2 Nos. 400 kV line bays for terminating the 400 kV DC Quad line from proposed Kavathampalayam 765 kV AIS to the proposed Edayarpalayam 400 kV AIS</p> <p>d) 2 Nos. ICT HV Bays for 2 Nos 500 MVA, 400/230/33 kV 3 Phase ICTs.</p> <p>e) 2 Nos. of 400KV, 3 Phase 125 MVAR Bus reactor Bay.</p> <p>f) 1 No. ICT HV Bay for 1 No 200 MVA, 400/110/33 kV 3 Phase ICTs.</p> <p><b>B. Supply and Installation of 400kV Quad Moose ACSR Double Bus with 3 Nos half Dia (1 Main Bay + 1 Tie Bay) comprising the following Bays:</b></p> <p>a) 1 No. of 400 kV Line Bay to PGCIL, for terminating 400 kV DC Quad line I from Myvadi PGCIL 400 kV SS.</p> <p>b) 2 Nos. 400KV Spare feeder bays. The foundations for all equipment in these Bays shall be proposed without equipment due to rocky terrain. Also, the Sub-Station Towers, Girders. Main Bus and Jack Bus shall be Proposed and Installed.</p> <p>c) 1 No. ICT HV Bay for 1 No. 500 MVA, 400/230/33 kV future 3 Phase ICTs.</p> <p>d) 2 Nos. ICT HV Bays for 2 Nos. 200 MVA, 400/110/33 kV 3 Phase ICTs.</p>	30 Months

Sl. No.	Scope of the Transmission Scheme	Scheduled COD in months from Effective Date
	<p><b>C. Supply and Installation of 230kV Quad Moose ACSR Double Bus with Single Breaker scheme comprising the following Bays:</b></p> <p>a) 2 Nos. 230 kV ICT IV Bays for 2 Nos 500 MVA, 400/230/33KV 3 Phase ICTs.</p> <p>b) 1 No. 230KV ICT IV Bay for 1 No Future 500 MVA, 400/230/33 kV 3 Phase ICT. The foundations for all equipment in these Bays shall be proposed without equipment due to rocky terrain. Also, the Sub-Station Towers, Girders. Main Bus and Jack Bus shall be Proposed and Installed.</p> <p>c) 5 Nos. 230 kV Line Bays with allied equipment for the following 230 kV Line Connectivity.</p> <ul style="list-style-type: none"> <li>• 230 kV Edayarpalayam – Selvapuram Feeder (Future 230 kV Edayarpalayam-Othakkalmandapam Feeder. I)</li> <li>• 230 kV Edayarpalayam – Othakkalmandapam Feeder.II</li> <li>• 230 kV Edayarpalayam – Ponnapuram Feeder (Future 230 kV Edayarpalayam – KongalNagaram Feeder).</li> <li>• 230 kV Edayarpalayam – Palladam Feeder.</li> <li>• 230 kV Edayarpalayam – Kalivelampatty Feeder</li> </ul> <p>d) 1 No 230 kV future Bay for Terminating the future 230 kV Line. The foundations for all equipment in these Bays shall be proposed without equipment due to rocky terrain. Also, the Sub-Station Towers, Girders. Main Bus and Jack Bus shall be Proposed and Installed.</p> <p>e) 1 No 230 kV Bus Coupler Bay for an alternate feeding path for circuits and allows for Busbar switching without interrupting power supply to connected feeders.</p> <p><b>D. Supply and Installation of 110kV Quad Moose ACSR Double Bus with Single Breaker scheme comprising the following Bays:</b></p> <p>a) 3 Nos. 110 kV ICT IV Bays for 3 Nos 200 MVA, 400/110/ 33 kV 3 Phase ICTs.</p> <p>b) 7 Nos.110 kV Line Bays with allied equipment for the following 110 kV Line Connectivity.</p>	

Sl. No.	Scope of the Transmission Scheme	Scheduled COD in months from Effective Date
	<ul style="list-style-type: none"> <li>• 110 kV Edayarpalayam – Othakkalmandapam Feeder</li> <li>• 110 kV Edayarpalayam – Podanur Feeder</li> <li>• 110 kV Edayarpalayam – Arasur Feeder</li> <li>• 110 kV Edayarpalayam – Irugur Feeder</li> <li>• 110 kV Edayarpalayam – Kethanur Feeder</li> <li>• 110 kV Edayarpalayam – Poolavadi Feeder</li> <li>• 110 kV Edayarpalayam – Edayarpalayam Feeder (Existing 110KV Edayarpalayam AIS)</li> </ul> <p>c) 1 No 110 KV future Bay for Terminating the future 110 kV Line. The foundations for all equipment in these Bays shall be proposed without equipment due to rocky terrain. Also, the Sub-Station Towers, Girders. Main Bus and Jack Bus shall be Proposed and Installed.</p> <p>d) 1 No 110 kV Bus Coupler Bay for an alternate feeding path for circuits and allows for Busbar switching without interrupting power supply to connected feeders.</p> <p>e) Supply and Installation of 500 MVA, 400/230/33 kV3 Phase ICTs - 2 Nos, with Nitrogen Injection Fire Prevention and Extinguishing Systems (NIPES) Online DGA and Tan delta monitoring system.</p> <p>f) Supply and Installation of 200MVA, 400/110/33KV 3 phase ICTs - 3 Nos with Nitrogen Injection Fire Prevention and Extinguishing System (NIFPES), Online DGA and Tan delta monitoring system.</p> <p>g) Supply and Installation of 400kV,3 phase 125MVAr Bus Reactor - 2 Nos. with Nitrogen Injection Fire Prevention and Extinguishing System (NIFPES) Online DGA and Tan delta monitoring system.</p>	
4	<p>a) 765kV Double Circuit (DC) line with Hexa zebra conductor from Kavathampalayam 765/400 kV SS to Ariyalur 765/400 kV SS.</p> <p>b) OPGW (Optical Ground Wire) cable with 48 optical fibers shall be used as the optical fiber communication ground wire, including all necessary accessories, for the erection of 765 kV double circuit (DC) transmission lines in one of the designated tower peaks.</p>	36 Months

Sl. No.	Scope of the Transmission Scheme	Scheduled COD in months from Effective Date
	c) An earth wire shall be provided for the 765 kV double circuit (DC) transmission lines in the other designated tower peaks.	
5	a) 400kV Double Circuit (DC) line with Quad Moose conductor from Kavathampalayam 765/400kV SS to Edayarpalayam 400-230-110 kV SS. b) OPGW (Optical Ground Wire) cable with 48 optical fibers shall be used as the optical fiber communication ground wire, including all necessary accessories, for the erection of 400 kV double circuit (DC) transmission lines in one of the designated tower peaks. c) An earth wire shall be provided for the 400 kV double circuit (DC) transmission lines in the other designated tower peaks.	36 Months
6	<b>Bay Extension at Ariyalur 765 kV SS comprising of following:</b> Supply and Erection of 765 kV Bays as per Latest CEA guidelines: a) 765 kV Bay Extension for 2 nos. feeder bays in different Dias. b) 765 kV, 240MVAr Switchable Line Reactors (3×80MVAr) - 2 sets. (6 Nos.) with Nitrogen Fire Quenching System and online Gas and Tan delta monitoring system	36 Months

**Note:**

1. TANTRANSCO shall provide land for establishment of the Kavathampalayam 765/400kV Substation at Kavathampalayam village Uthukuli Taluk, Tiruppur District and shall be handed over to TSP on as-is-where-is basis.
2. TANTRANSCO shall provide land for establishment of the Edayarpalayam Substation at Kallapalayam village, Sulur Taluk, Coimbatore District and shall be handed over to TSP on as-is-where-is basis.
3. The Land Area of approx. 99.16 acres for development of Kavathampalayam 765 kV SS and approx. 27.25 acres for development of Edayarpalayam 400 kV Substation shall be arranged within 6 months of TSA signing.
4. Land for development of Substations (Kavathampalayam and Edayarpalayam) shall be provided through Right-of-Use (RoU) basis by TANTRANSCO to the TSP, at an annual lease charge of Rs 1 per site per Year. This RoU agreement will be formalized and will

remain in effect, *co-terminus with the Transmission Service Agreement (TSA), until its termination. Format for Right-to-Use Agreement is attached as Annexure-C.*

### 1.3 Project Description

In order to cater the load growth in western and north-western regions of Tamil Nadu, it is very much essential to develop 765/400 kV Substation at Kavathampalayam village in Tiruppur district along with 765 kV Double Circuit line from existing 765 kV Ariyalur Substation to the proposed Kavathampalayam Substation, 400 kV Multi Circuit line for making LILO of Rasipalayam to Palavadi feeder at Kavathampalayam SS, Establishment of Edayarpalayam 400 /230/110 kV Substation and 400 kV lines from Kavathampalayam 765 kV Substation to Edayarpalayam Substation.

### 1.4 Transmission Grid Map

Transmission Grid Map indicating the location of the Project is enclosed as Annexure 18 of this RFP for information and reference of the Bidders.

- 1.5 The objective of the bidding process is to select a Successful Bidder pursuant to this RFP, who shall acquire one hundred percent (100%) of the equity shares of KAVATHAMPALAYAM SS DEVELOPMENT LIMITED along with all its related assets and liabilities as per the provisions of the Share Purchase Agreement, at the Acquisition Price to be intimated by the TANTRANSCO, twenty (20) days prior to the Bid Deadline.

The KAVATHAMPALAYAM SS DEVELOPMENT LIMITED, of which one hundred percent (100%) equity shares will be acquired by the Selected Bidder, shall be responsible as the TSP, for ensuring that it undertakes ownership, financing, development, design, engineering, procurement, construction, commissioning, operation and maintenance of the Project, and to provide Transmission Service as per the terms of the RFP Project Documents.

The TSP shall ensure transfer of all project assets along with surrender of substation land, right of way and clearances to STU or its successors or an agency as decided by the Government of Tamil Nadu after expiry of Transmission Service Agreement at Zero Cost and free from any encumbrance and liability. The transfer shall be completed within 90 days from the expiry of Transmission Service Agreement, failing which STU or its successors or an agency as decided by the Government of Tamil Nadu shall be entitled to take over the Project Assets Suo moto.

### 1.6 Brief Scope of Work

#### 1.6.1 Scope of Work of Transmission Service Provider

The TSP's scope of work for the Project shall comprise, but not necessarily be limited, to the following:

- 1.6.1.1 Establishment, operation and maintenance of the Project on build, own, operate and transfer basis and completion of all the activities for the Project, including survey, detailed project report formulation, arranging finance, project management, necessary Consents, Clearances and Permits (way leave, environment & forest, civil aviation,

railway/ road/ river/ canal/ power crossing/ PTCC, etc.), land compensation, design, engineering, equipment, material, construction, erection, testing & commissioning.

- 1.6.1.2 The TSP shall ensure that design, construction and testing of all equipment, facilities, components and systems of the Project shall be in accordance with Transmission Service Agreement and applicable Rules/ Regulations, Orders, Codes and Guidelines issued by State Government and State Commission and other relevant Orders, Rules/ Regulations of Central Government and Central Commission, as applicable.
- 1.6.1.3 The TSP shall ensure timely completion of the entire scope of Project in all respects and its operation and maintenance, as specified in the RFP documents.
- 1.6.1.4 The TSP shall seek Transmission License from the State Commission, as per the provisions of the Electricity Act and regulations made thereunder.
- 1.6.1.5 The TSP shall seek approval under Section 164 of Electricity Act, from Energy Department, Government of Tamil Nadu after acquisition of KAVATHAMPALAYAM SS DEVELOPMENT LIMITED. The approval shall be granted by Energy Department, Government of Tamil Nadu upon receipt of application (complete in all aspects).
- 1.6.1.6 The TSP agrees that, in future, the additional and /or augmentation work, if any, in the substations to be constructed in the Project will be executed as decided by Nodal Agency. The TSP shall extend necessary support to Nodal Agency/ other TSPs, in case it is decided to execute the additional works by Nodal Agency itself or through other TSP(s). O&M Charges shall be paid as per prevailing norms of the State Commission. Any dispute arising in this regard shall be resolved by the State Level Committee on Transmission. The decision of the State Level Committee on Transmission shall be binding on all parties.

#### 1.6.2 **Scope of Bid Process Coordinator (BPC)**

BPC's scope of work is briefly outlined hereunder:

- 1.6.2.1 The BPC has initiated development of the Project and shall be responsible for the tasks in this regard as specified hereunder:
1. Provide Bidders a Survey Report for the Project along with RFP documents. The Survey Report shall include the suggested route with approximate route length, type of terrain likely to be encountered and its likely implication in terms of Right of Way (ROW), statutory clearances, location of substations or converter stations and land area to be acquired for the substation or converter station:-
  2. To obtain approval for laying of overhead transmission lines under Section 68 of Electricity Act, from the Energy Department, Government of Tamil Nadu at least twenty (20) days prior to Bid Deadline.
  3. To initiate process of seeking forest clearance, if required
  4. The BPC shall intimate to the Bidders, the Acquisition Price payable by the Selected Bidder to the Tamil Nadu Transmission Corporation Limited for the acquisition of one hundred percent (100%) of the equity shareholding of KAVATHAMPALAYAM SS

DEVELOPMENT LIMITED along with all its related assets and liabilities at least twenty (20) days prior to the Bid Deadline.

5. The BPC shall ensure issuance of all amendments /corrigenda, if any, to the RFP Project Documents, at least fifteen (15) days prior to the Bid Deadline.

Provided that for any delay in meeting the above obligations of the BPC within the specified time period above, the Bid Deadline as per Clause 2.7.1 shall be extended on a day-for-day basis.

- 1.6.2.2 The details and documents as may be obtained by the BPC/ project specific SPV in relation to the Project shall be handed over to the TSP on an as-is-where-is basis, so that it may take further actions to obtain Consents, Clearances and Permits.
- 1.7 All costs (including direct and indirect) incurred by the BPC/ project specific SPV in connection with the activities concerning the Project shall be recovered from the TSP, which shall be included in the Acquisition Price.
- 1.8 The Project is required to be completed progressively in accordance with the schedule prescribed in this RFP.
- 1.9 A company under the Companies Act, 2013 by the name KAVATHAMPALAYAM SS DEVELOPMENT LIMITED has been incorporated to initiate the activities for execution of the Project. The said company shall be acquired by the successful Bidder as per terms and conditions as prescribed in the RFP.
- 1.10 The Energy Department, Government of Tamil Nadu shall provide their support to the TSP, by issuing recommendation letters, whenever requested, in enabling the TSP to develop the Project.
- 1.11 All Bidders are required to submit their Bid in accordance with the instructions set forth in this RFP.
- 1.12 Once the Successful Bidder is selected, the details and documents as may be obtained by the BPC/ project specific SPV in relation to the Project, shall be handed over to the Successful Bidder on an as-is-where-is basis, so that it may take further actions to obtain all necessary Consents, Clearances and Permits and the TSP shall not be entitled for any extensions in the Scheduled COD of the Project except as provided for in the TSA.
- 1.13 The Project Assets shall be made available by the TSP on a commercial basis as per the terms and conditions of the Transmission Service Agreement.

**SECTION - 2**

**INFORMATION AND  
INSTRUCTIONS FOR  
BIDDERS**

**SECTION – 2****a. INFORMATION AND INSTRUCTIONS FOR BIDDERS****2.1 Qualification Requirements**

- 2.1.1 The Bidder should be a company duly incorporated under the relevant laws (Bidding Company) or a Consortium of companies (Bidding Consortium) with one of the companies acting as the Lead Member of the Bidding Consortium. The Bidder shall be selected on meeting the Qualification Requirements specified in Section 2 of this RFP, as demonstrated by the Bidder's Technical Bid and the lowest Quoted Transmission Charges discovered from Final Offers quoted during the e-reverse bidding. A Bidding Consortium can participate in the bidding process for the Project if any Member of the Consortium has purchased the RFP document for such Project. Bidders who agree and undertake to procure the products associated with the Transmission System as per provisions of Public Procurement (Preference to Make in India) orders issued by Ministry of Power vide orders No. 11/5/2018 - Coord. dated 28.07.2020 as amended vide order No. A1/2021FSC-Part(5) dated 16.11.2021 and No.: P45021/2/2017-PP (BE-II)-Part-4 Vol.II dated 19.07.2024 issued by Ministry of Power for transmission sector as may be further amended from time to time, read with Department for Promotion of Industry and Internal Trade (DPIIT) orders in this regard, shall be eligible hereunder. Further, it is clarified that Procuring Entity as defined in orders shall be deemed to have included Selected Bidder and/ or TSP.

Besides, Department of Expenditure, Ministry of Finance issued Order (Public Procurement No 4) bearing File No. F.7/10/2021-PPD dated 23.02.2023, as amended from time to time, have issued directions regarding public procurement from a bidder of a country, which shares land border with India.

**2.1.2 Technical requirement to be met by the Bidding Company or Lead Member of Bidding Consortium**

The Bidder must fulfill any one of the following technical requirements:

- (i) Experience of development of Projects in the Power Sector in the last five (5) years with aggregate capital expenditure of not less than **Rs.1,650 Crore** or equivalent USD (calculated as per provisions in Clause 3.4.1). However, the capital expenditure of each project shall not be less than **Rs.350 Crore** or equivalent USD (calculated as per provisions in Clause 3.4.1).

For this purpose, capital expenditure incurred on projects that have been commissioned/completed at least seven (7) days prior to Bid Deadline shall be considered. The capital expenditure discussed above shall be as capitalized and reflected in the audited books of accounts of the Technically Evaluated Entity. In case a clearly identifiable part of a project has been put into commercial operation, the capital expenditure on such part of the project shall be considered. The Technically Evaluated Entity must have either executed such projects itself or must have held directly or indirectly at least twenty six percent (26%) of the shareholding in the company that has executed the project(s) from the date of financial closure of the project(s) till the time of commissioning/completion of such project(s).

OR

- (ii) Experience in construction of Projects in Power Sector: The Technically Evaluated Entity should have received aggregate payments of not less than **Rs. 1650 Crore** or equivalent USD (calculated as per provisions in Clause 3.4.1) from its client(s) for construction works fully completed during the last five (5) financial years. However, the payment received from each project shall not be less than **Rs.350 Crore** or equivalent USD (calculated as per provisions in Clause 3.4.1).

For this purpose, payments received on projects that have been commissioned/completed at least seven (7) days prior to Bid Deadline shall be considered. Further only the payments (gross) actually received, during such 5 (five) financial years shall qualify for purposes of computing the technical capacity. For the avoidance of doubt, construction works shall not include cost of land, supply of goods or equipment except when such goods or equipment form part of a turn-key construction contract/ EPC contract for the project. Further, in cases where different individual contracts are signed between same entities for the same project, the cumulative payments received under such individual contracts shall be considered for meeting the qualification requirement.

The Technically Evaluated Entity may be the Bidding Company or the Lead Member of a Consortium or an Affiliate or Parent of such Bidding Company or the Lead Member, as the case may be.

Bidders shall furnish documentary evidence duly certified by authorized signatory of the Bidder who has been issued Power of Attorney in support of their technical capability as defined in Clause 2.1.2 of this RFP.

### 2.1.3 Financial requirement to be met by the Bidding Company/Bidding Consortium

2.1.3.1 The Bidder must fulfill following financial requirements:

#### A. Networth:

Networth should be not less than **Rs. 675 Crore** or equivalent USD (calculated as per provisions in Clause 3.4.1) computed as the Networth based on unconsolidated audited annual accounts (refer to Note below) of any of the last three (3) financial years as provided in Clause 2.2.3, immediately preceding the Bid Deadline. Also, the Networth of any of the last three (3) financial years should not be negative.

Note: Audited consolidated annual accounts of the Bidder may be used for the purpose of financial criteria provided the Bidder has at least 26% equity in each company whose accounts are merged in the audited consolidated accounts and provided further that the financial capability of such companies (of which accounts are being merged in the consolidated accounts) shall not be considered again for the purpose of evaluation of the Technical Bid. Bidders shall furnish prescribed Annexure 7 (A) duly certified by authorized signatory of the Bidder who has been issued Power of Attorney and the Statutory Auditor and separate computation sheet for Networth duly certified by Statutory

Auditor in support of their financial capability as defined in Clause 2.1.3 of this RFP.

2.1.3.2 The Networth shall be computed in the following manner by the Bidder:

**A. Networth**

=	Equity share capital
Add:	Reserves
Subtract:	Revaluation Reserves
Subtract:	Intangible Assets
Subtract:	Miscellaneous expenditures to the extent not written off and carry forward losses

2.1.3.3 If the Technical Bid is submitted by a Bidding Consortium, the financial requirement shall be met individually and collectively by all the Members in the Bidding Consortium. The financial requirement to be met by each Member of the Bidding Consortium shall be computed in proportion to the equity commitment made by each of them for investment in the Project.

2.1.4 The Bidder may seek qualification on the basis of technical and financial capability of its Parent and/ or its Affiliate(s) for the purpose of meeting the Qualification Requirements. However, in the case of the Bidder being a Consortium, the Lead Member has to meet the technical requirement on its own or by seeking the technical capability of its Parent and/or its Affiliate(s). Authorization for use of such technical or financial capability shall have to be provided from its Parent and/or Affiliate(s) as per Annexure 9. The technical and financial capability of a particular company/particular project, including its Parents and/or Affiliates, shall not be used directly or indirectly by more than one Bidder/ Member of a Bidding Consortium/ Bidding Company.

The determination of the relationship of Parent or Affiliate with the Bidding Company or with the Member of the Bidding Consortium, including the Lead Member, shall be on the date at the most seven (7) days prior to the last date of submission of the Bid. Documentary evidence to establish such relationship shall be furnished by the Bidder along with the Technical Bid.

If the Technically Evaluated Entity and/or Financially Evaluated Entity is an entity other than the Bidding Company or a Member in a Bidding Consortium, the Bidding Company or Member relying on such Technically Evaluated Entity and/or Financially Evaluated Entity will have to submit a legally binding undertaking supported by a board resolution from the Parent Company (in case Technical Evaluated Entity and/or Financially Evaluated Entity is a Parent Company) and/or Ultimate Parent Company (in case Technical Evaluated Entity and/or Financially Evaluated Entity is an Affiliate other than Parent Company), that all the equity investment obligations of the Bidding Company or the Member of the Consortium shall be deemed to be equity investment obligations of the Parent Company/Ultimate Parent Company, and in the event of any default the same shall be met by the Parent /Ultimate Parent Company, as the case may be. The Bidding Company or the Consortium Member shall have to provide information and documents relating to its relationship with such Parent / Ultimate Parent Company including details about the equity shareholding between them as per Annexure 7(C).

2.1.5 A Bidder shall submit only one Bid in the same bidding process, either individually as

Bidding Company or as a Member of a Bidding Consortium (including the Lead Member). It is further clarified that any of the Parent/Affiliate/Ultimate Parent of the Bidder/ Member in a Bidding Consortium shall not separately participate directly or indirectly in the same bidding process. Further, if any Bidder is having a Conflict of Interest with other Bidders participating in the same bidding process, the Bids of all such Bidders shall be rejected.

- 2.1.6 Notwithstanding anything stated above, TANTRANSCO reserves the right to verify the authenticity of the documents submitted for meeting the Qualification Requirements and request for any additional information and documents. TANTRANSCO reserves the right at its sole discretion to contact the Bidder's bank and project references and verify the Bidder's information and documents for the purpose of bid evaluation.
- 2.1.7 The Qualified Bidder(s) will be required to continue to maintain compliance with the Qualification Requirements throughout the bidding process and till execution of the Transmission Service Agreement. Where the Technically Evaluated Entity and/or the Financially Evaluated Entity is not the Bidding Company or a Member in a Bidding Consortium, as the case may be, the Bidding Company or Member shall continue to be an Affiliate of the Technically Evaluated Entity and/or Financially Evaluated Entity till the execution of the Transmission Service Agreement. Failure to comply with the aforesaid provisions shall make the Bid liable for rejection at any stage.
- 2.1.8 The Selected Bidder will be required to continue to maintain compliance with the Qualification Requirements till the COD of the Project. Where the Technically Evaluated Entity and/or the Financially Evaluated Entity is not the Bidding Company or a Member in a Bidding Consortium, as the case may be, the Bidding Company or Member shall continue to be an Affiliate of the Technically Evaluated Entity and/or Financially Evaluated Entity till the COD of the Project. Failure to comply with the aforesaid provisions shall be dealt with as per provisions of Transmission Service Agreement.
- 2.1.9 On the Bid Deadline, for the Bidder to be eligible to participate in the bidding process:
- a. the Bidder & any of its Affiliate including any Consortium Member & any of its Affiliate, their directors or key personnel should not have been barred or included in the blacklist by any central or state government agency or authority in India, the government of the jurisdiction of the Bidder or Members where they are incorporated or the jurisdiction of their principal place of business, any international financial institution such as the World Bank Group, Asian Development Bank, African Development Bank, Inter-American Development Bank, Asian Infrastructure Investment Bank etc. or the United Nations or any of its agencies; or
  - b. the Bidder & any of its Affiliate including any Consortium Member & any of its Affiliate or their directors should not have been convicted of any offence in India or abroad.

In case any investigation is pending against the Bidder, including any Consortium Member or Affiliate, or CEO or any of the directors/ manager/key managerial personnel of the Bidder /Consortium /Member or their Affiliates, full details of such investigation including the name of the investigating agency, the charge/offence for which the investigation has been launched, name and designation of persons against whom the

investigation has been launched and other relevant information should be disclosed while submitting the Bid.

The Bidders shall confirm the above through a notarized affidavit as per Annexure 22.

## **2.2 Submission of Bid by the Bidder**

- 2.2.1 The information and documents in Technical Bid will be submitted by the Bidder as per the formats specified in Section – 4 (Formats for RFP) of this document.
- 2.2.2 Strict adherence to the formats wherever specified, is required. Wherever information has been sought in specified formats, the Bidder shall refrain from referring to brochures/pamphlets. Non-adherence to formats and/ or submission of incomplete information may be a ground for declaring the Technical Bid as non-responsive. Each format has to be duly signed and stamped by the authorized signatory of Bidder.
- 2.2.3 The Technical Bid shall contain unconsolidated/consolidated audited annual accounts (consisting of unabridged Balance Sheet, Profit and Loss Account, profit appropriation account, Auditors Report, etc.), as the case may be, of Bidding Company or each Member in Consortium including Lead Member or the Financially Evaluated Entity for the last three (3) financial years immediately preceding the last date for submission of Bid for the purpose of calculation of Networth.

In case the annual accounts for the financial year immediately preceding the Bid Deadline are not audited, the Bidder shall give declaration in this regard duly certified by its statutory auditor. In such a case, the Bidder shall provide the audited annual accounts for the three (3) financial years preceding the financial year as above for which the annual accounts have not been audited.

### **2.2.4 Bid submitted by a Bidding Consortium:**

- 2.2.4.1 The Technical Bid shall contain a legally enforceable Consortium Agreement entered between the Members in the Bidding Consortium, designating one of the Members to be the Lead Member (as per Annexure 6). There shall be only one Lead Member which shall continue to hold at least twenty six percent (26%) equity in the TSP and cannot be changed upto two (2) years from the Commercial Operation Date (COD) of the Project. Each Member in Bidding Consortium shall duly sign the Consortium Agreement making it liable for raising the required funds for its respective equity investment commitment as specified in the Consortium Agreement. In the absence of Consortium Agreement, the Technical Bid will not be considered for evaluation and will be rejected.

Provided that the Lead Member of the Bidding Consortium will be required to be liable to the extent of 100% of the total proposed commitment of equity investment of the Bidding Consortium i.e. for both its own equity contribution as well as the equity contribution of the other Member.

Provided further that the Consortium Agreement shall not be amended without the explicit approval of the TANTRANSCO.

The Lead Member of the Consortium will be the single point of contact for the purposes of the bidding process before the date of signing of Share Purchase Agreement. Settlement

of any dispute between the Consortium Members shall not be the responsibility of the TANTRANSCO and/or the Long-Term Transmission Customer and the TANTRANSCO and/or the Long-Term Transmission Customer shall not bear any liability whatsoever on this account.

- 2.2.4.2 The Lead Member should designate, at the most, two persons to represent the Consortium in its dealings with the TANTRANSCO. The person(s) designated by the Lead Member should be authorized through a Power of Attorney (as per Annexure 3) to perform all tasks including, but not limited to providing information, responding to enquiries, signing of Technical Bid on behalf of the Consortium, etc. The Bidding Consortium shall provide board resolutions from their respective Boards for committing their respective portion of equity requirement for the Project. Additionally, the Lead member shall provide a Board resolution committing to make good any shortfall in the equity for the project, in case of any member not meeting its equity commitment.
- 2.2.4.3 The Technical Bid should also contain signed Letter of Consent (as per Annexure 2) from each Member in Consortium confirming that the entire Technical and Financial Bid has been reviewed, and each element of the Technical and Financial Bid is agreed to by them including investment commitment for the Project.

In addition, the Technical Bid should also contain Board Resolution from each Member of the Consortium, other than the Lead Member, in favour of their respective authorized representatives for executing the POA, Consortium Agreement and signing of the requisite formats.

2.2.5 Bid submitted by a Bidding Company

- 2.2.5.1 The Bidding Company should designate at most two persons to represent the Bidding Company in its dealings with TANTRANSCO. The person(s) should be authorized to perform all tasks including, but not limited to providing information, responding to enquiries, signing of Technical and Financial Bids etc. The Bidding Company should submit, along with Technical Bid, a Power of Attorney (as per Annexure 3), authorizing the signatory of the Technical and Financial Bids. The Bidding Company shall submit the board resolution committing 100% of equity requirement for the Project, in the Technical Bid.

**2.3 Clarifications & Pre-Bid Meeting**

- 2.3.1 The Bidders may seek clarifications or suggest amendments to the RFP by sending an email to the TANTRANSCO at the email ID indicated in Clause 2.14 within the date and time mentioned in Clause 2.7.2. For any such clarifications or amendments, the Bidders should adhere to the format as per Annexure – 19.
- 2.3.2 Only those Interested Bidders or their authorized representatives, are invited to attend the pre-bid meeting(s), which will take place on date as specified in Clause 2.7.2, or any such date as notified by the TANTRANSCO.
- 2.3.3 The purpose of the pre-bid meeting will be to clarify any issues regarding the RFP, including in particular, issues raised in writing by the Bidders as per the provisions of Clause 2.3.1.

- 2.3.4 Non-attendance at the pre-bid meeting will not be a cause for disqualification of a Bidder.
- 2.3.5 TANTRANSCO is not under any obligation to entertain / respond to suggestions made or to incorporate modifications sought for.
- 2.3.6 In case Bidders need any further clarifications not involving any amendments in respect of final RFP, they should ensure that request for such clarification is submitted through e-mail to TANTRANSCO at least ten (10) days prior to the Bid Deadline as mentioned in Clause 2.7.1. The TANTRANSCO may issue clarifications only, as per its sole discretion, which is considered reasonable by it. Any such clarification issued shall be sent to all the Bidders to whom the RFP has been issued. Clarifications sought after this date shall not be considered in any manner and shall be deemed not to have been received. There shall be no extension in Bid Deadline on account of clarifications sought as per this clause 2.3.6.

## **2.4 Amendment of RFP**

- 2.4.1. At any time before the timeline mentioned in Clause 2.7.1, the TANTRANSCO may, for any reason, whether at its own initiative or in response to clarifications requested by any Bidder, modify or amend the RFP, including the timelines specified in Clause 2.7.2 by issuance of addendum/corrigendum/ errata and/or revised document. Such document shall be notified in writing through an e-mail to all the entities to whom the RFP has been issued and shall be binding on them. In order to ensure that Bidders have reasonable time to take the modification into account in preparing their Bid, or for any other reasons, TANTRANSCO may, at its discretion, extend the due date for submission of Bid. Late receipt of any addendum/ corrigendum/ errata and/or revised document will not relieve the Bidder from being bound by that modification.
- 2.4.2. All modifications shall become part of the terms and conditions of this RFP. No interpretation, revision or communication regarding this RFP is valid, unless made in writing.
- 2.4.3. The amendment to the RFP shall be notified to all the Bidders through the electronic bidding platform and shall be binding on them.

## **2.5 The Bidding Process**

The entire bidding process shall be conducted on e-procurement portal of Tamil Nadu (<https://tntenders.gov.in>). The Bid shall comprise of the Technical Bid and the Financial Bid. The Bidders shall submit the Technical Bid & Financial Bid through the electronic bidding platform. In addition to the online submission, the Bidder with lowest Final Offer will be required to submit original hard copies of Annexure 3, Annexure 4 (if applicable), Annexure 6 (if applicable) and Annexure 14 before issuance of LoI. There shall be no physical submission of the Financial Bid.

Evaluation of Technical Bid will be carried out considering the information and documents furnished by the Bidders as required under this RFP. This step would involve responsiveness check, technical and financial evaluation of the details/ documents furnished by the Bidding Company / Bidding Consortium in support of meeting the Qualification Requirements. Bidders meeting the Qualification Requirements, subject to evaluation as specified in Clause 3.2 to 3.4 shall be declared as “Qualified Bidders” and eligible for opening of Initial Offer. TANTRANSCO shall also upload the list of all

Qualified Bidders and Non-Qualified Bidders onto the bidding portal along with the reasons for non-qualification. Also, the Financial Bids of the Qualified Bidders shall be opened after at least 24 hours from the date of declaration of the Qualified Bidders.

The Financial Bid will comprise two rounds. In the first round, the Initial Offer (submitted online along with the Technical Bids) of the responsive bids would be opened and Quoted Transmission Charges of Initial Offer shall be ranked on the basis of ascending order for determination of the Qualified Bidders as provided in Section-III of RFP. The Qualified Bidders, in the first fifty per cent (50%) of the ranking (with any fraction rounded off to higher integer) or four Qualified Bidders, whichever is higher, shall qualify for participating in the electronic reverse auction stage and submit their Final Offer.

Provided that in the event the number of qualified Technical Bids is between two and four, then each of the qualified Bidder shall be considered as “Qualified Bidders”.

Provided that in the event of identical Quoted Transmission Charges discovered from the Initial Offer having been submitted by one or more Bidders, all such Bidders shall be assigned the same rank for the purposes of determination of Qualified Bidders. In such cases, all the Qualified Bidders who share the same rank till 50% of the rank (with any fraction rounded off to higher integer) determined above, shall qualify to participate in the electronic e-reverse auction stage. In case 50% of the ranks (with any fraction rounded off to higher integer) is having less than four (4) Bidders and the rank of the fourth (4<sup>th</sup>) Bidder is shared by more than one (1) Bidder, then all such Bidders who share the rank of the fourth (4<sup>th</sup>) Bidder shall qualify to participate in the electronic reverse auction.

The Qualified Bidders shall submit their Final Offer in **INR** on the electronic e-reverse bidding platform. Each reduction must be a **minimum of 0.25%** of the prevailing lowest Quoted Transmission Charges. Any reduction higher than the minimum must be in **multiples of 0.25%** (e.g., 0.50%, 0.75%, 1.00%, etc.) of the prevailing lowest Quoted Transmission Charges.

The initial period for conducting the e-reverse bidding shall be 2 hours which will be extended by 30 minutes from the last received bid time, if the bid is received during the last 30 minutes of the scheduled or extended bid time. Subsequently, it will be extended again by 30 minutes from the latest received bid time.

The technical details with respect to access to the electronic bidding platform and reverse auction are provided in Annexure-A.

In case of any technical clarification regarding access to the electronic reverse auction platform or conduct of the auction process, the Bidders may contact the Helpdesk Ph. No. 044 – 24461505 at National Informatics Centre for support on the e-procurement portal.

### **2.5.1 Bid Formats**

The Bids in response to this RFP will be submitted online only, through the electronic bidding platform by the Bidders in the manner provided in Clause 2.9. The Bids shall comprise of the following:

### **2.5.2 Technical Bid comprising of:**

1. Covering Letter (as per prescribed format enclosed as **Annexure 1**);
2. Letter of Consent from Consortium Members in **Annexure 2**;
3. Power of attorney issued by the Bidding Company or the Lead Member of the Consortium, as the case may be, in favour of the person signing the Bid, in the format attached hereto as **Annexure 3**.

Additionally, in case of a Bidding Consortium, the power of attorney in favour of the Lead Member issued by the other Members of the Consortium shall be provided as per format attached hereto as **Annexure 4**. Further, the Lead Member shall furnish Board resolution(s) from each Member of the Consortium, other than the Lead Member, in favour of their respective authorized representatives for executing the POA and signing of the requisite formats.

Provided that in the event the Bidding Company or the Lead Member of the Consortium or any Member of the Bidding Consortium, as the case may be, is a foreign entity, it may issue Board resolutions in place of power of attorney for the purpose of fulfilling these requirements.

4. Bidder's composition and ownership structure in **Annexure 5**
5. Format for Authorization submitted in Non-Judicial stamp paper duly notarized as per **Annexure 5** from the Bidding Company / each Member of the Consortium authorizing the TANTRANSCO to seek reference from their respective bankers & others.
6. In case of Bidding Consortium, the Consortium Agreement shall be provided as per format attached hereto as **Annexure 6**
7. Format of Qualification Requirement (**Annexures 7A, 7B, 7C and 7D**)
8. Bidder's Undertakings and details of equity investment in Project (as per prescribed formats 1 and 2 of **Annexure 8**);
9. Authorization from Parent/ Ultimate Parent/Affiliate of Bidding Company / Member of Bidding Consortium whose technical / financial capability has been used by the Bidding Company / Member of Bidding Consortium (**Annexure 9**).
10. Undertaking from the Parent/ Ultimate Parent Company, for total equity investment commitment, in the prescribed format in **Annexure – 10**, to meet any shortfall in the equity investment by the Selected Bidder in the KAVATHAMPALAYAM SS DEVELOPMENT LIMITED.
11. Board resolutions, as per prescribed formats enclosed as Annexure – 11, duly certified by the Company Secretary or any Whole-time Director / Manager (supported by a specific Board Resolution), as applicable to the Bidder and mentioned hereunder,
  - (a) Board resolution from the Bidding Company committing one hundred percent (100%) in aggregate of the equity requirement for the Project - Format-1 of **Annexure 11**;

- (b) Board resolutions from each of the Consortium Member of the Bidding Consortium together committing to one hundred percent (100%) in aggregate of equity requirement for the Project, in case Bidder is a Bidding Consortium - Format-1 of **Annexure 11**;
- (c) In either of the cases as in (a) or (b) above as applicable, Board resolutions as per Format 2 of **Annexure 11** for total equity investment commitment from the Parent/ Ultimate Parent of Technically / Financially Evaluated Entity(ies) whose technical / financial credentials had been considered for the purpose of meeting Qualification Requirements as per the RFP

Provided that such Board resolutions, as specified in (a) or (b) or (c) above, in case of a foreign entity, shall be supported by an unqualified opinion issued by an independent legal counsel practicing in the relevant country, stating that the Board resolutions are in compliance with the applicable laws of the respective jurisdictions of the issuing company and the authorizations granted therein are true and valid.

For clarity's sake, illustrations identifying which Board Resolution shall be applicable in typical cases are provided in **Annexure 11A**.

- 12. Format for Illustration of Affiliates at the most seven (7) days prior to Bid Deadline, duly certified by Company Secretary and supported by documentary evidence (**Annexure 12**).

Certified copy of the Register of Members / Demat Account Statement, Share Certificate, Annual Return filed with ROC etc. submitted as documentary evidence along with **Annexure 12**.

- 13. Disclosure as per **Annexure 13** regarding participation of any related companies in this bidding process.
- 14. Bid Bond, as per the prescribed format at **Annexure 14**
- 15. Checklist for Technical Bid submission requirements as per **Annexure 16**.
- 16. Last three (3) financial years' unconsolidated / consolidated audited annual accounts / statements, as the case may be, of the Financially Evaluated Entity / Technical Evaluated Entity.
- 17. Unconsolidated audited annual accounts of both the TEE and the Bidding Company/Lead member, as applicable, for the financial years in which financial closure was achieved and the financial year in which the said project was completed / commissioned.
- 18. Copy of the Memorandum and Articles of Association and certificate of incorporation or other organizational document (as applicable), including their amendments, certified by the Company Secretary of Bidding Company or each Member in case of a Consortium including Lead Member.

19. For each project listed in Annexure 7(D), certified true copy of the certificates of final acceptance and / or certificates of good operating performance duly issued by owners or clients for the project, duly signed by authorized signatory.

In addition to the online submission of above formats through the electronic platform, the Bidder with lowest Final Offer will be required to submit original hard copies of Annexure 3, Annexure 4 (if applicable), Annexure 6 (if applicable) and Annexure 14 before issuance of LoI. In case there is a discrepancy between the online submission and physical documents, the bid would be out rightly rejected, and the Bidder shall be construed to have engaged in the fraudulent practice as defined in Clause 2.19.3 with consequences as mentioned in Clause 2.19.2.

### 2.5.3 Financial Bid (as per prescribed format at Annexure-21)

Financial Bid shall comprise of: (i) the Initial Offer; and (ii) the Final Offer. The Initial Offer is required to be submitted along with the Technical Bid. It is hereby clarified that the Financial Bid will comprise of two rounds. In the first round, the Initial Offer of the responsive bids would be opened and Quoted Transmission Charges of Initial Offer shall be ranked on the basis of ascending order for determination of the Qualified Bidders as provided in Section-III of RFP.

In accordance with clause 2.5 of this RFP, the qualified Bidders shall be eligible to participate in the electronic reverse auction and submit their Final Offer.

The applicable ceiling for electronic reverse bidding shall be the lowest Quoted Transmission Charges discovered from the Initial Offer received from the Qualified Bidders. The Qualified Bidders shall submit their Final Offer in **INR** on the electronic bidding platform. Each reduction must be a **minimum of 0.25%** of the prevailing lowest Quoted Transmission Charges. Any reduction higher than the minimum must be in **multiples of 0.25%** (e.g., 0.50%, 0.75%, 1.00%, etc.) of the prevailing lowest Quoted Transmission Charges.

The initial period for conducting the e-reverse bidding shall be 2 hours which will be extended by 30 minutes from the last received bid time, if the bid is received during the last 30 minutes of the scheduled or extended bid time. Subsequently, it will be extended again by 30 minutes from the latest received bid time.

The Bidders shall inter-alia take into account the following while preparing and submitting the Initial Offer and Final Offer of Financial Bid:

- a. The Bidders shall quote single annual Quoted Transmission Charges for a period of 35 years commencing from the Scheduled COD of the Project.
- b. The Quoted Transmission Charges as per the format at Annexure-21 shall be inclusive of all charges and no exclusions shall be allowed. The Bidders shall take into account all costs including capital and operating, statutory taxes, duties, levies. Availability of the inputs necessary for operation and maintenance of the Project should be ensured by the TSP at the Project site and all costs involved in procuring the inputs (including statutory taxes, duties, levies thereof) at the Project site must be included in the Quoted Transmission Charges.

c. Annexure 21 shall be duly digitally signed by authorized signatory.

2.5.4 Wherever information has been sought in specified formats, the Bidders shall fill in the details as per the prescribed formats and shall refrain from referring to any other document for providing any information required in the prescribed format.

### **2.5.5 Transmission Charges (annual)**

2.5.5.1. The Transmission Charges shall be specified in the Transmission Service Agreement and shall be payable to the TSP in Indian Rupees only. The Bidders shall quote single Transmission Charges as per the format at Annexure – 21.

2.5.5.2. The Transmission Charges of the Selected Bidder shall be inserted in Schedule 5 of the Transmission Service Agreement.

### **2.5.6 Bidders may note that:**

- a) All the information and documents in Bid shall be submitted in English language only.
- b) Bidders shall mention the name, designation, telephone number, fax number, email address of the authorized signatory and complete address of the Bidder in the covering letter.
- c) All pages of the Bid submitted shall be initialed and stamped by the authorized signatory on behalf of the Bidder.
- d) A Bidder shall submit only one Bid in the same bidding process, either individually as Bidding Company or as a Member of a Bidding Consortium.
- e) The technical and financial capability of a particular company / particular project (Parent and/ or Affiliate) shall not be used directly or indirectly by more than one Bidder/ Member of a Bidding Consortium including Lead Member / Bidding Company.
- f) This Request for Proposal (RFP) document is not transferable. The RFP document and the information contained therein is for use only by the Bidder to whom it is issued. It may not be copied or distributed by the recipient to third parties (other than in confidence to the recipient's professional advisors). In the event that the recipient does not continue with its involvement in the Project, this RFP document must be kept confidential.
- g) Though adequate care has been taken while preparing this RFP document, the Bidder shall satisfy himself that the document is complete in all respects. Intimation of any discrepancy shall be given to TANTRANSCO immediately. If no intimation is received from any Bidder within twenty (20) days prior to Bid Deadline, it shall be considered that the RFP document is complete in all respects and has been received by the Bidder.
- h) Bids submitted by the Bidder and opened on scheduled date and time as stipulated in this RFP shall become the property of the TANTRANSCO and TANTRANSCO shall have no obligation to return the same to the Bidder.

- i) If any Bidder conceals any material information or makes a wrong statement or misrepresents facts or makes a misleading statement in its Bid, in any manner whatsoever, TANTRANSCO reserves the right to reject such Bid or cancel the Letter of Intent, if issued. If such event is discovered after the Effective Date, consequences specified in Transmission Service Agreement shall apply.
- j) If for any reason the Bid of the Bidder with the lowest Quoted Transmission Charges is not selected or Letter of Intent issued to such Selected Bidder is cancelled or such Bidder withdraws its Bids, the TANTRANSCO may:
- i. Invite all the remaining Bidders to revalidate or extend their respective Bid Security, as necessary, and match the Bid of the Bidder with the lowest Quoted Transmission Charges (the “second round of bidding”) with following cases:
    - If in the second round of bidding, only one Bidder matches the Bid of the Bidder with lowest Quoted Transmission Charges, it shall be the Selected Bidder.
    - If two or more Bidders match the Bid of the Bidder with the lowest Quoted Transmission Charges in the second round of bidding, then the Bidder whose Quoted Transmission Charges was lower as compared to other Bidder(s) in the first round of bidding shall be the Selected Bidder. For example, if the third and fifth lowest Bidders in the first round of bidding offer to match the Bid of the Bidder with lowest Quoted Transmission Charges in the second round of bidding, the said third lowest Bidder shall be the Successful Bidder.
    - In the event that no Bidder offers to match the Bid of the Bidder with the lowest Quoted Transmission Charges in the second round of bidding, the TANTRANSCO may, in its discretion, invite fresh Bids (the “third round of bidding”) from all Bidders except the Bidder which quoted the lowest Quoted Transmission Charges in the first round of bidding. In case the Bidders are invited for the third round of bidding to revalidate or extend their Bid Security, as necessary, and offer fresh Bids, they shall be eligible for submission of fresh Bids provided, however, that in such third round of bidding only such Bids shall be eligible for consideration which are lower than the Quoted Transmission Charges of the second lowest Bidder in the first round of bidding; or;
  - ii. Annul the bid process; or
  - iii. Take any such measure as may be deemed fit in the sole discretion of the TANTRANSCO <sup>1</sup>
- k) The TANTRANSCO may, at its sole discretion, ask for additional information / document and/or seek clarifications from a Bidder after the Bid Deadline, inter alia, for the purposes of removal of inconsistencies or infirmities in its Bid. However, no change in the substance of the Quoted Transmission Charges shall be sought or permitted by TANTRANSCO.

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<sup>1</sup> TANTRANSCO shall record reasons for the same.

- l) Non submission and/or submission of incomplete data/ information required under the provisions of RFP shall not be construed as waiver on the part of TANTRANSCO of the obligation of the Bidder to furnish the said data / information unless the waiver is in writing.
- m) Bidders shall familiarize themselves with the procedures and time frames required to obtain all Consents, Clearances and Permits.
- n) All Bidders are required to ensure compliance with the standards and codes mentioned in Clause 1.6.1.2.
- o) TANTRANSCO reserves the right to reject all Bids and/or annul this process of selection of TSP without assigning any reason. TANTRANSCO shall not bear any liability, whatsoever, in this regard.
- p) Foreign companies submitting the Bid are required to follow the applicable law in their respective country for execution of POA, Consortium Agreement and affixation of Common Seal (wherever required) and in such cases, their Bid should be supported by an unqualified opinion issued by an independent legal counsel practicing in the relevant country, stating that execution of such POA, Consortium Agreement and the authorizations granted therein are true and valid. Foreign companies executing POA outside India shall necessarily pay the adequate stamp charges in India as per the provisions of Stamp Act.
- q) Selected bidder is required to submit the “Detailed BOQ and cost based on quoted transmission charges” before signing of transmission agreement as per clause 12.2.3. of TSA.

### **2.5.7 Bidders to inform themselves fully**

- 2.5.7.1. The Bidders shall make independent enquiry and satisfy themselves with respect to all the required information, inputs, conditions and circumstances and factors that may have any effect on their Bid. Once the Bidders have submitted their Bids, the Bidders shall be deemed to have inspected and examined the site conditions (including but not limited to its surroundings, its geological condition and the adequacy of transport facilities to the site), the laws and regulations in force in India, the transportation facilities available in India, the grid conditions, the adequacy and conditions of roads, bridges, railway sidings, ports, etc. for unloading and/or transporting heavy pieces of material and has based its design, equipment size and fixed its price taking into account all such relevant conditions and also the risks, contingencies and other circumstances which may influence or affect the transmission of power. Accordingly, each Bidder acknowledges that, on being selected as Successful Bidder and on acquisition of one hundred percent (100%) of the equity shares of the KAVATHAMPALAYAM SS DEVELOPMENT LIMITED, the TSP shall not be relieved from any of its obligations under the RFP Project Documents nor shall the TSP be entitled to any extension in Scheduled COD mentioned in this RFP or financial compensation for any reason whatsoever.
- 2.5.7.2. In their own interest, the Bidders are requested to familiarize themselves with all relevant laws of India, including without limitation, the Electricity Act 2003, the Income Tax Act 1961, the Companies Act, 1956 / Companies Act, 2013 (as the case may be),

Environment Protection Act 1986 and Forest (Conservation) Act, 1980, the Customs Act, the Foreign Exchange Management Act, Land Acquisition Act, 1894, the Indian Telegraph Act 1885, Labour & Employment Laws of India, [Insurance Act], the regulations/standards framed by the Central Commission, State Commission and CEA, all other related acts, laws, rules and regulations prevalent in India and Tamil Nadu Transparency in Tenders Act, 1998, Tamil Nadu Transparency in Tender Rules, 2000 and Tamil Nadu Transparency in Tender (Public Private Partnership Procurement) Rules, 2012 issued by GoTN and as amended from time to time.

In addition to the above, the Bidders are required to familiarize themselves with all relevant technical codes and standards, including but not limited to the Grid Code / State Grid Code, Central Electricity Authority (Installation and Operations of Meters) Regulations, 2006, Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007, TNERC (Terms and Conditions for Determination of Tariff) Regulations, 2005, TNERC ( Terms and Conditions for Determination of Tariff) Regulations, 2010, Central Electricity Authority (Technical Standards for construction of Electrical Plants and Electric Lines) Regulation, 2022, Central Electricity Authority (Technical Standards for Communication System in Power System Operation) Regulations, 2020, and other relevant Rules/ Regulations/ Guidelines issued by the Central Government, State Government, Central Commission, State Commission and the CEA and amendments thereof.

TANTRANSCO shall not entertain any request for clarifications from the Bidders regarding the above laws / acts / rules / regulations / standards. Non-awareness of the same shall not be a reason for the Bidder to request for extension in Bid Deadline. The Bidders undertake and agree that, before submission of their Bid, all such factors as generally brought out above, have been fully investigated and considered while submitting their Bids.

- 2.5.7.3. The Survey Report has been prepared in good faith, and on best endeavor basis. Neither TANTRANSCO & Nodal Agency nor their employees or advisors/consultants make any representation or warranty, express or implied, or accept any responsibility or liability, whatsoever, in respect of any statements or omissions made in the Survey Report, or the accuracy, completeness or reliability of information contained therein, and shall incur no liability under any law, statute, rules or regulations as to the accuracy, reliability or completeness of such Survey Report, even if any loss or damage is caused to the Bidders by any act or omission on their part.
- 2.5.7.4. Bidders shall make best efforts and carry out their own due diligence upon Survey Report provided by TANTRANSCO and shall consider all possible techno-commercial factors before submission of Bid. Bidders may also visit the route of the Transmission Lines associated with the Project and the surrounding areas and obtain / verify all information which they deem fit and necessary for the preparation of their Bid. Bidders may also carry out required surveys and field investigation for submission of their Bid. Bidders may also opt for any other route and are not bound to follow the route suggested in Survey Report provided by TANTRANSCO.
- 2.5.7.5. Failure to investigate, examine and to inspect site or subsurface conditions fully shall not be grounds for a Bidder to alter its Bid after the Bid Deadline, nor shall it relieve a Bidder from any responsibility for appropriately eliminating the difficulty or costs of successfully completing the Project.

- 2.5.7.6. The Selected Bidder shall obtain all necessary Consents, Clearances and Permits as required. The Bidders shall familiarize themselves with the procedures and time frame required to obtain such Consents, Clearances and Permits.
- 2.5.7.7. The technical requirements of integrated grid operation are specified in the Indian Electricity Grid Code (IEGC)/ State Grid Code. The Bidders should particularly acquaint themselves with the requirements of connection conditions, operating code for regional grids, scheduling and dispatch instructions/codes, etc. The Bidders are also advised to fully familiarize themselves with the real time grid conditions in the country. Information regarding grid parameters such as voltage and frequency is available on the websites of Regional / State Load Despatch Centres.

### 2.5.8 Minimum Equity holding/Equity Lock-in

- 2.5.8.1. (a) The aggregate equity share holding of the Selected Bidder, in the issued and paid up equity share capital of KAVATHAMPALAYAM SS DEVELOPMENT LIMITED shall not be less than hundred percent (100%) till COD of the Project and shall not be less than Fifty one percent (51%) up to a period of (2) two years after COD of the Project;
- (b) In case the Selected Bidder is a Bidding Consortium, then the members of such Bidding Consortium shall be allowed to divest its equity as long as they hold the minimum equity specified in (a) above. The minimum equity shareholding of Lead Member of Bidding Consortium shall not be less than twenty six percent (26%) up to a period of (2) two years after COD of the project.

For clarity, the equity shareholding to be held by the Bidding Company/Consortium is given in following table:

S. No.	Year from COD	Shareholding to be held by the Bidding Company/ Bidding Consortium	Minimum shareholding to be held by the lead member in Bidding Consortium	Shareholding which can be held by entity outside the Bidding Consortium
1	Up to COD	100%	26%	-
2	COD – 2 <sup>nd</sup> anniversary	Minimum 51%	26%	49%

(c) If the equity shareholding of Bidding Company/ Bidding Consortium is diluted (reduced) after two (2) years from the Commercial Operation Date (COD), the new entities acquiring the shares must have a minimum of two (2) years experience in the Operation and Maintenance (O&M) of at least one 400 kV Substation or above. All necessary documents proving this experience must be submitted to the Nodal Agency.

(d) All transfer(s) of shareholding in KAVATHAMPALAYAM SS DEVELOPMENT LIMITED by any of the entities referred to above, shall be after prior written intimation to the Nodal Agency.

2.5.8.2. The Selected Bidder shall only invest in the equity share capital of KAVATHAMPALAYAM SS DEVELOPMENT LIMITED. In case, any equity is to be infused by the Affiliate/Parent Company/Ultimate Parent Company, the same shall be done through the Selected Bidder only.

2.5.8.3. Deleted

2.5.8.4. The provisions, as contained in this Clause 2.5.8 and Article 19.1 of the Transmission Service Agreement shall override the terms of the Consortium Agreement submitted by the Bidder as part of the RFP.

## 2.6 Project Schedule

2.6.1. All Elements of the Project are required to be commissioned progressively as per the schedule given in the following table:

Sl. No.	Scope of the Transmission Scheme	Scheduled COD in months from Effective Date	Percentage of Quoted Transmission Charges recoverable on Scheduled COD of the Element of the Project	Element(s) which are pre-required for declaring commercial operation (COD) of the respective Element
1	<p><b>Establishment of Kavathampalayam 765/400 kV Substation:</b></p> <p>a) Supply and Erection of 765 kV bus with 4 dia comprising of following:</p> <ul style="list-style-type: none"> <li>• 2 nos. of feeder bays for connecting Ariyalur 765 kV DC feeders with Switchable Line Reactors. (240 MVAr -3×80 MVAr)</li> <li>• 2 nos. for the HV bay of ICTs. (765/400 kV, 500 MVA, Single Phase ICTs-7nos. Including 1 No. switchable Spare ICT)</li> <li>• 2 nos. Bays for 240 MVAr (3×80MVAr) Bus Reactors with 1 No. Bay arrangement for Single Phase Switchable Reactor spare unit</li> <li>• 2 nos. of feeder bays for</li> </ul>	30 Months	21%	Elements in S. No 1 & 2 are required to be commissioned simultaneously as their utilization is dependent on each other

Sl. No.	Scope of the Transmission Scheme	Scheduled COD in months from Effective Date	Percentage of Quoted Transmission Charges recoverable on Scheduled COD of the Element of the Project	Element(s) which are pre-required for declaring commercial operation (COD) of the respective Element
	<p>connecting Virudhunagar 765 kV DC feeders with Switchable Line Reactors, 240 MVA (3×80 MVA)</p> <ul style="list-style-type: none"> <li>• 1 No. bay arrangement for Single Phase Switchable Line Reactor spare unit for all 765 kV line feeders.</li> </ul> <p>b) Supply and Erection of 400 kV Bus with 5 bays comprising of following:</p> <ul style="list-style-type: none"> <li>• 2 nos. of feeder bays for connecting Edayarpalayam 400 kV DC Feeders.</li> <li>• 2 nos. of feeder bays for connecting Rasipalayam 400 kV DC Feeders</li> <li>• 2 nos. of feeder bays for connecting Palavady 400 kV DC Feeders</li> <li>• 2 nos. for the LV side of ICTs.</li> <li>• 2 nos. of spare bays with equipment</li> </ul> <p>c) Supply and Erection of 765/400 kV, 500 MVA ICTs-7 Nos. (2×1500 MVA ICT Bank + 1 No. Single Phase 500 MVA Spare ICT) with Nitrogen fire quenching system and online gas and Tan Delta monitoring system.</p> <p>d) Supply and Erection of 765 kV, 3×80 MVA single phase line Reactor with 1 no. spare-13 Nos. with Nitrogen</p>			

Sl. No.	Scope of the Transmission Scheme	Scheduled COD in months from Effective Date	Percentage of Quoted Transmission Charges recoverable on Scheduled COD of the Element of the Project	Element(s) which are pre-required for declaring commercial operation (COD) of the respective Element
	<p>fire quenching system and online gas and Tan Delta monitoring system.</p> <p>e) Supply and Erection of 765 kV, 3 x 80 MVA single phase bus Reactor with 1 no. spare - 7 Nos. with Nitrogen fire quenching system and online gas and Tan Delta monitoring system.</p>			
2	<p>a) 400kV Multi Circuit (MC) line with Quad Moose conductor for making LILO of <i>Rasipalayam to Palavadi feeder (Circuit 1 and 2)</i> at Kavathampalayam 765/400 kV SS.</p> <p>b) OPGW (Optical Ground Wire) cable with 48 optical fibers shall be used as the optical fiber communication ground wire, including all necessary accessories, for the erection of 400 kV Multi circuit (MC) transmission lines in one of the designated tower peaks.</p> <p>c) An earth wire shall be provided for the 400 kV Multi circuit (MC) transmission lines in the other designated tower peaks.</p>	30 Months	3%	Elements in S. No 1 & 2 are required to be commissioned simultaneously as their utilization is dependent on each other
3	<p><b>Establishment of Edayarpalayam 400/230-110 kV substation:</b></p> <p><b>A. Supply and Installation of 400kV Quad Moose ACSR Double Bus with 5 Nos Full Dia (2 Main Bay + 1 Tie Bay) comprising for the following Bays:</b></p>	30 Months	10%	Utilization of Elements in S. No 3 is independent from other elements

Sl. No.	Scope of the Transmission Scheme	Scheduled COD in months from Effective Date	Percentage of Quoted Transmission Charges recoverable on Scheduled COD of the Element of the Project	Element(s) which are pre-required for declaring commercial operation (COD) of the respective Element
	<p>a) 2 Nos. of 400kV line bays to PGCIL, for terminating 400 kV DC Quad line from Pugalur PGCIL 400 kV HVDC station.</p> <p>b) 1 No. of 400 kV Line Bay to PGCIL, for terminating 400KV DC Quad line II from Myvadi PGCIL 400 kV SS.</p> <p>c) 2 Nos. 400 kV line bays for terminating the 400 kV DC Quad line from proposed Kavathampalayam 765 kV AIS to the proposed Edayarpalayam 400 kV AIS</p> <p>d) 2 Nos. ICT HV Bays for 2 Nos 500 MVA, 400/230/33 kV 3 Phase ICTs.</p> <p>e) 2 Nos. of 400KV, 3 Phase 125 MVAR Bus reactor Bay.</p> <p>f) 1 No. ICT HV Bay for 1 No 200 MVA, 400/110/33 kV 3 Phase ICTs.</p> <p><b>B. Supply and Installation of 400kV Quad Moose ACSR Double Bus with 3 Nos half Dia (1 Main Bay + 1 Tie Bay) comprising the following Bays:</b></p> <p>a) 1 No. of 400 kV Line Bay to PGCIL, for terminating 400 kV DC Quad line I from Myvadi PGCIL 400 kV SS.</p> <p>b) 2 Nos. 400KV Spare feeder bays. The foundations for all equipment in these Bays shall be proposed without equipment due to rocky</p>			

Sl. No.	Scope of the Transmission Scheme	Scheduled COD in months from Effective Date	Percentage of Quoted Transmission Charges recoverable on Scheduled COD of the Element of the Project	Element(s) which are pre-required for declaring commercial operation (COD) of the respective Element
	<p>terrain. Also, the Sub-Station Towers, Girders. Main Bus and Jack Bus shall be Proposed and Installed.</p> <p>c) 1 No. ICT HV Bay for 1 No. 500 MVA, 400/230/33 kV future 3 Phase ICTs.</p> <p>d) 2 Nos. ICT HV Bay for 2 Nos. 200 MVA, 400/110/33 kV 3 Phase ICTs.</p> <p><b>C. Supply and Installation of 230kV Quad Moose ACSR Double Bus with Single Breaker scheme comprising the following Bays:</b></p> <p>a) 2 Nos. 230 kV ICT IV Bays for 2 Nos 500 MVA, 400/230/33KV 3 Phase ICTs.</p> <p>b) 1 No. 230KV ICT IV Bay for 1 No Future 500 MVA, 400/230/33 kV 3 Phase ICT. The foundations for all equipment in these Bays shall be proposed without equipment due to rocky terrain. Also, the Sub-Station Towers, Girders. Main Bus and Jack Bus shall be Proposed and Installed.</p> <p>c) 5 Nos. 230 kV Line Bays with allied equipment for the following 230 kV Line Connectivity.</p> <ul style="list-style-type: none"> <li>• 230 kV Edayarpalayam – Selvapuram Feeder (Future 230 kV Edayarpalayam - Othakkalmandapam Feeder.I)</li> <li>• 230 kV Edayarpalayam – Othakkalmandapam Feeder.II</li> </ul>			

Sl. No.	Scope of the Transmission Scheme	Scheduled COD in months from Effective Date	Percentage of Quoted Transmission Charges recoverable on Scheduled COD of the Element of the Project	Element(s) which are pre-required for declaring commercial operation (COD) of the respective Element
	<ul style="list-style-type: none"> <li>• 230 kV Edayarpalayam – Ponnapuram Feeder (Future 230 kV Edayarpalayam – KongalNagaram Feeder).</li> <li>• 230 kV Edayarpalayam – Palladam Feeder.</li> <li>• 230 kV Edayarpalayam – Kalivelampatty Feeder</li> </ul> <p>d) 1 No 230 kV future Bay for Terminating the future 230 kV Line. The foundations for all equipment in these Bays shall be proposed without equipment due to rocky terrain. Also, the Sub-Station Towers, Girders. Main Bus and Jack Bus shall be Proposed and Installed.</p> <p>e) 1 No 230 kV Bus Coupler Bay for an alternate feeding path for circuits and allows for Busbar switching without interrupting power supply to connected feeders.</p> <p><b>D. Supply and Installation of 110kV Quad Moose ACSR Double Bus with Single Breaker scheme comprising the following Bays:</b></p> <p>a) 3 Nos. 110 kV ICT IV Bays for 3 Nos 200 MVA, 400/110/ 33 kV 3 Phase ICTs.</p> <p>b) 7 Nos.110 kV Line Bays with allied equipment for the following 110 kV Line Connectivity.</p> <ul style="list-style-type: none"> <li>• 110 kV Edayarpalayam – Othakkalmandapam Feeder</li> </ul>			

Sl. No.	Scope of the Transmission Scheme	Scheduled COD in months from Effective Date	Percentage of Quoted Transmission Charges recoverable on Scheduled COD of the Element of the Project	Element(s) which are pre-required for declaring commercial operation (COD) of the respective Element
	<ul style="list-style-type: none"> <li>• 110 kV Edayarpalayam – Podanur Feeder</li> <li>• 110 kV Edayarpalayam – Arasur Feeder</li> <li>• 110 kV Edayarpalayam – Irugur Feeder</li> <li>• 110 kV Edayarpalayam – Kethanur Feeder</li> <li>• 110 kV Edayarpalayam – Poolavadi Feeder</li> <li>• 110 kV Edayarpalayam – Edayarpalayam Feeder (Existing 110KV Edayarpalayam AIS)</li> </ul> <p>c) 1 No 110 KV future Bay for Terminating the future 110 kV Line. The foundations for all equipment in these Bays shall be proposed without equipment due to rocky terrain. Also, the Sub-Station Towers, Girders, Main Bus and Jack Bus shall be Proposed and Installed.</p> <p>d) 1 No 110 kV Bus Coupler Bay for an alternate feeding path for circuits and allows for Busbar switching without interrupting power supply to connected feeders.</p> <p>e) Supply and Installation of 500 MVA, 400/230/33 kV 3 Phase ICTs - 2 Nos, with Nitrogen Injection Fire Prevention and Extinguishing Systems (NIFPES) Online DGA and Tan delta monitoring system.</p>			

Sl. No.	Scope of the Transmission Scheme	Scheduled COD in months from Effective Date	Percentage of Quoted Transmission Charges recoverable on Scheduled COD of the Element of the Project	Element(s) which are pre-required for declaring commercial operation (COD) of the respective Element
	<p>f) Supply and Installation of 200MVA, 400/110/33KV 3 phase ICTs - 3 Nos with Nitrogen Injection Fire Prevention and Extinguishing System (NIFPES), Online DGA and Tan delta monitoring system.</p> <p>g) Supply and Installation of 400kV, 3 phase 125MVAR Bus Reactor - 2 Nos. with Nitrogen Injection Fire Prevention and Extinguishing System (NIFPES) Online DGA and Tan delta monitoring system.</p>			
4	<p>a) 765kV Double Circuit (DC) line with Hexa zebra conductor from Kavathampalayam 765/400 kV SS to Ariyalur 765/400 kV SS.</p> <p>b) OPGW (Optical Ground Wire) cable with 48 optical fibers shall be used as the optical fiber communication ground wire, including all necessary accessories, for the erection of 765 kV double circuit (DC) transmission lines in one of the designated tower peaks.</p> <p>c) An earth wire shall be provided for the 765 kV double circuit (DC) transmission lines in the other designated tower peaks.</p>	36 Months	50%	Elements in S. No 4, 5 & 6 are required to be commissioned simultaneously as their utilization is dependent on each other
5	a) 400kV Double Circuit (DC) line with Quad Moose conductor from Kavathampalayam 765/400kV SS to Edayarpalayam 400-230-110 kV SS.	36 Months	12%	Elements in S. No 4, 5 & 6 are required to be commissioned simultaneously

Sl. No.	Scope of the Transmission Scheme	Scheduled COD in months from Effective Date	Percentage of Quoted Transmission Charges recoverable on Scheduled COD of the Element of the Project	Element(s) which are pre-required for declaring commercial operation (COD) of the respective Element
	b) OPGW (Optical Ground Wire) cable with 48 optical fibers shall be used as the optical fiber communication ground wire, including all necessary accessories, for the erection of 400 kV double circuit (DC) transmission lines in one of the designated tower peaks. c) An earth wire shall be provided for the 400 kV double circuit (DC) transmission lines in the other designated tower peaks.			as their utilization is dependent on each other
6	<b>Bay Extension at Ariyalur 765 kV SS comprising of following:</b> Supply and Erection of 765 kV Bays as per Latest CEA guidelines: a) 765 kV Bay Extension for 2 nos. feeder bays in different Dias. b) 765 kV, 240MVA <sub>r</sub> Switchable Line Reactors (3×80MVA <sub>r</sub> ) - 2 sets. (6Nos.) with Nitrogen Fire Quenching System and online Gas and Tan delta monitoring system	36 Months	4%	Elements in S. No 4, 5 & 6 are required to be commissioned simultaneously as their utilization is dependent on each other

The payment of Transmission Charges for any Element irrespective of its successful commissioning on or before its Scheduled COD shall only be considered after successful commissioning of the Element(s) which are pre-required for declaring the commercial operation of such Element as mentioned in the above table.

**Scheduled COD for overall Project:** 36 Months from effective date.

## 2.7 Due dates

- 2.7.1. The Bidders should submit the Bids online through the electronic bidding platform before the Bid Deadline i.e. on or before **1100 Hrs (IST) on 10.04.2026**. In addition to the online submission, the Bidder with lowest Final Offer will be required to submit

original hard copies of Annexure 3, Annexure 4 (if applicable), Annexure 6 (if applicable) and Annexure 14 before issuance of LoI.

2.7.2. Important timelines are mentioned below:

<b>Date</b>	<b>Event</b>
12.02.2026	Issuance of RFP
25.03.2026	Submission of written clarifications/amendments, if any, on the RFP / RFP Project Documents by Bidders so as to reach TANTRANSCO by 1700 hours. Such written clarifications/amendments shall be in the format provided in Annexure-19.
02.03.2026	Pre-Bid meeting(s) Virtual meeting(VC) link will be uploaded In portal at least two days in advance.
10.04.2026	Last date for downloading of RFP documents from the e-procurement portal & TANTRANSCO website
25.03.2026	Submission of Bid (Online submission of Bid through electronic bidding portal)
10.04.2026	Opening of Technical Bid
To be intimated later	Shortlisting and announcement of Qualified Bidders on bidding portal
To be intimated later	Opening of Financial Bid - Initial Offer
To be intimated later	Electronic reverse auction (Financial Bid – Final Offer) for the Qualified Bidders.
To be intimated later	Submission of original hard copies of Annexure 3, Annexure 4, Annexure 6, as applicable and Annexure 14 by the Bidder with lowest Final Offer
To be intimated later	Selection of Successful Bidder and issue of LOI

2.7.3. To enable TANTRANSCO to meet the schedule, all Bidders are expected to respond expeditiously during the bidding process. If any milestone/activity falls on a day which is not a working day or which is a public holiday, then the milestone/activity shall be achieved/ completed on the next working day.

## **2.8 Validity of the Bid**

2.8.1. The Bid shall remain valid for a period of one hundred and eighty (180) days from the Bid Deadline. TANTRANSCO reserves the right to reject any Bid which does not meet aforementioned validity requirement.

2.8.2. The TANTRANSCO may solicit the Bidders' consent for an extension of the period of validity of the Bid. The request and the response, thereafter, shall be in writing. In the event any Bidder refuses to extend its Bid validity as requested by the TANTRANSCO, the TANTRANSCO shall not be entitled to invoke the Bid Bond of such Bidder. A Bidder accepting the TANTRANSCO's request for validity extension shall not be permitted to modify its Bid and such Bidder shall, accordingly, extend the validity of the Bid Bond as requested by the TANTRANSCO within seven (7) days of such request, failing which the Bid shall not be considered as valid.

## **2.9 Method of Submission**

- 2.9.1. Both the Technical and Financial Bids duly filled in, all formats and supporting shall be scanned and uploaded online through electronic bidding platform in the manner specified in Annexure A.
- 2.9.2. It may be noted that Technical Bid shall not contain any information/document relating to Financial Bid. If Technical Bid contains any such information/documents, the TANTRANSCO shall not be responsible for premature opening of the Financial Bid.

All pages of the Bid, except for the Bid Bond (Annexure 14) and any other document executed on non-judicial stamp paper, forming part of the Bid and corrections in the Bid, if any, must be signed by the authorized signatory on behalf of the Bidder. It is clarified that the same authorized signatory shall sign all pages of the Bid. However, any published document submitted in this regard shall be signed by the authorized signatory at least on the first and last page of such document.

- 2.9.3. No change or supplemental information to a Bid already submitted will be accepted after the Bid Deadline, unless the same is requested for by the TANTRANSCO as per Clause 2.5.6 (k).

Provided that a Bidder shall always have the right to modify its Bid before the Bid Deadline. Bidders must ensure its accuracy by saving and reviewing it before submission, as no withdrawals are permitted post submission of the Bid.

No Technical Bid or Initial Offer shall be modified or substituted by the Bidder on or after the Bid Deadline.

## **2.10 Preparation cost**

- 2.10.1. The Bidders shall be responsible for all the costs associated with the preparation of the Bid and participation in discussions and attending pre-bid meetings, and finalization and execution of the RFP Project Documents (other than the TSA), etc. TANTRANSCO shall not be responsible in any way for such costs, regardless of the conduct or outcome of the bidding process as per Bidding Guidelines.

## **2.11 Bid Bond**

- 2.11.1. Each Bidder shall submit the Bid accompanied by Bid Bond in the form of e-BG (e-Bank Guarantee) issued by any of the Banks listed in Annexure-17. The Bid Bond shall be valid for a period of thirty (30) days beyond the validity of the Bid.
- 2.11.2. Subject to the provisions of Clause 2.15.5, the Bid Bond may be invoked by the TANTRANSCO or its authorized representative, without any notice, demur, or any other legal process upon occurrence of any of the following:
  - Bidder withdraws during the period of Bid Validity as specified in this RFP or as extended by mutual consent of the respective Bidder(s) and the TANTRANSCO

- Failure to execute the Share Purchase Agreement as per the provisions of Clause 2.15.2; or
- Failure to furnish the Contract Performance Guarantee as per Clause 2.12; or
- Failure to acquire one hundred percent (100%) equity shares of KAVATHAMPALAYAM SS DEVELOPMENT LIMITED, along with all its related assets and liabilities, in accordance with the provisions of Clause 2.15.2; or
- Failure to comply with the provisions of Clause 2.15.5 and Clause 2.15.6, leading to annulment of the award of the Project.
- Bidders submitting any wrong information or making any misrepresentation in their Bid as mentioned in Clause 2.5.6.

Intimation of the reasons of the invocation of the Bid Bond shall be given to the Selected Bidder by the TANTRANSCO within three (3) working days after such invocation.

- 2.11.3. The Bid Bond of the Selected Bidder shall be returned on submission of the Contract Performance Guarantee as per Clause 2.12 and the relevant provisions of the Transmission Service Agreement.
- 2.11.4. The Bid Bond of all the Bidders, whose Bids are declared non-responsive, shall be returned within a period of thirty (30) days after the date on which the Financial Bids are opened.
- 2.11.5. The Bid Bond of all the unsuccessful Bidders shall be returned and released by the TANTRANSCO, within five (5) working days from the date on which the KAVATHAMPALAYAM SS DEVELOPMENT LIMITED is transferred to the Selected Bidder.

## **2.12 Contract Performance Guarantee**

- 2.12.1. Within ten (10) days from the date of issue of the Letter of Intent, the Selected Bidder, on behalf of the TSP, will provide to the Nodal Agency the Contract Performance Bank Guarantee in the form of e-BG (e-Bank Guarantee) for an amount of **Rs. 85 Crore (Rupees Eighty Five Crore Only)**. The Contract Performance Guarantee shall be initially valid for a period up to three (3) months after the Scheduled COD of the Project and shall be extended from time to time to be valid for a period up to three (3) months after the COD of the Project and thereafter shall be dealt with in accordance with the provisions of the Transmission Service Agreement. The Contract Performance Guarantee shall be issued by any of the banks listed in Annexure-17 as per format given at Annexure-15.

## **2.13 Opening of Bids**

- 2.13.1. Technical Bid will be opened by the Tender Scrutiny Committee as per the following time schedule and in the office of TANTRANSCO, in the online presence of Bidders' representatives who wish to attend:

Opening of Envelope (Technical Bid): 1500 hours (IST) on 10.04.2026.

or such other dates as may be intimated by TANTRANSCO to the Bidders.

In the event of any of above dates falling on a day which is not a working day, or which is a public holiday, then the bids shall be opened on the next working day at the same venue and at the same time.

Opening of Initial Offer: To be intimated later.

2.13.2. The following information from each Bid will be read out to all the Bidders at the time of opening of Technical Bid:

- Name of the Bidding Company / Consortium Members in case of Bidding Consortium.

**Information to be provided after opening of Initial Offer:**

Only the lowest Initial Offer (s) shall be communicated to all the Qualified Bidders to participate in the e-reverse bidding process. During the e-reverse bidding process only the lowest prevailing bid shall be visible to all the Bidders on the electronic platform.

**2.14 Enquiries**

Written clarifications on the RFP and other RFP Project Documents as per Clause 2.3 and 2.4 may be sought from:

**Chief Engineer /Transmission,  
Tamil Nadu Transmission Corporation Limited (TANTRANSCO)  
144, Annasalai,  
Chennai- 600002, Tamil Nadu  
Email:cetr@tnebnet.org**

**2.15 Other Aspects**

2.15.1. The draft of the Transmission Service Agreement has been attached to this RFP. In addition to above, the following documents have also been attached to this RFP:

- a) Share Purchase Agreement

The drafts of the above RFP Project Documents are provided by the TANTRANSCO, these RFP Project Documents shall form part of this RFP as per Formats – 1 & 2 of Annexure 20.

Any Amendments, Corrigendum or Addendum if any pursuant to Clause 2.4 of RFP Documents shall be issued by TANTRANSCO to the Bidders and shall be uploaded in e-procurement portal of GoTN and TANTRANSCO website, at least fifteen (15) days prior to the Bid Deadline.

The Transmission Service Agreement and Share Purchase Agreement shall be signed in required number of originals so as to ensure that one (1) original is retained by each party to the Agreement(s) on the date of transfer of SPV.

2.15.2. Within thirty (30) days of the issue of the Letter of Intent, the Selected Bidder shall:

- a) provide the Contract Performance Guarantee in favour of the Nodal Agency as per the provisions of Clause 2.12;
- b) execute the Share Purchase Agreement and the Transmission Service Agreement;
- c) acquire, for the Acquisition Price, one hundred percent (100%) equity shareholding of KAVATHAMPALAYAM SS DEVELOPMENT LIMITED from Tamil Nadu Transmission Corporation Limited (TANTRANSCO), who shall sell to the Selected Bidder, the equity shareholding KAVATHAMPALAYAM SS DEVELOPMENT LIMITED, along with all its related assets and liabilities;

Stamp duties payable on purchase of one hundred percent (100%) of the equity shareholding of KAVATHAMPALAYAM SS DEVELOPMENT LIMITED, along with all its related assets and liabilities, shall also be borne by the Selected Bidder.

Provided further that, if for any reason attributable to the TANTRANSCO, the above activities are not completed by the Selected Bidder within the above period of thirty (30) days as mentioned in this Clause, such period of thirty (30) days shall be extended, on a day for day basis till the end of the Bid validity period.

2.15.3. After the date of acquisition of the equity shareholding of KAVATHAMPALAYAM SS DEVELOPMENT LIMITED, along with all its related assets and liabilities, by the Selected Bidder,

- i. the authority of TANTRANSCO as Bid Process Coordinator in respect of this Bid Process shall forthwith cease and any actions to be taken thereafter will be undertaken by the Nodal Agency
- ii. all rights and obligations of KAVATHAMPALAYAM SS DEVELOPMENT LIMITED, shall be of the TSP
- iii. any decisions taken by the BPC prior to the Effective Date shall continue to be binding on the Nodal Agency and
- iv. contractual obligations undertaken by the TANTRANSCO shall continue to be fulfilled by the TSP.

2.15.4. Within five (5) working days of the issue of the acquisition of the SPV by the Successful Bidder, the TSP shall apply to the State Commission for grant of Transmission License and make an application to the State Commission for the adoption of Transmission Charges, as required under Section – 63 of The Electricity Act 2003.

2.15.5. If the Selected Bidder / TSP fails or refuses to comply with any of its obligations under Clauses 2.15.2, 2.15.3 and 2.15.4, and provided that the other parties are willing to execute the Share Purchase Agreement and Tamil Nadu Transmission Corporation Limited (TANTRANSCO) is willing to sell the entire equity shareholding of KAVATHAMPALAYAM SS DEVELOPMENT LIMITED, along with all its related

assets and liabilities, to the Selected Bidder, such failure or refusal on the part of the Selected Bidder shall constitute sufficient grounds for cancellation of the Letter of Intent. In such cases, the TANTRANSCO / its authorized representative(s) shall be entitled to invoke the Bid Bond of the Selected Bidder.

- 2.15.6. If the TSP fails to obtain the Transmission License from the State Commission, it will constitute sufficient grounds for annulment of award of the Project.
- 2.15.7. The annulment of award, as provided in Clauses 2.15.5 and 2.15.6 of this RFP, will be done by the Nodal Agency on the recommendations of State Empowered Committee on Transmission. However, before recommending so, State Empowered Committee on Transmission will give an opportunity to the Selected Bidder / TSP to present their viewpoint.
- 2.15.8. The annulment of the award, under Clause 2.15.5 or 2.15.6 of this RFP, shall be sufficient grounds for blacklisting the Bidder, whose award has been annulled, for a period of five years or more, as decided by the State Empowered Committee on Transmission, provided that the blacklisting shall be done only after giving the Bidder an opportunity for showing cause.

## **2.16 Confidentiality**

- 2.16.1. The parties undertake to hold in confidence this RFP and RFP Project Documents and not to disclose the terms and conditions of the transaction contemplated hereby to third parties, except:
- a) to their professional advisors;
  - b) to their officers, contractors, employees, agents or representatives, financiers, who need to have access to such information for the proper performance of their activities;
  - c) disclosures required under Law, without the prior written consent of the other parties of the concerned agreements.

Provided that the TSP agrees and acknowledges that the Nodal Agency may, at any time, disclose the terms and conditions of the RFP and RFP Project Documents to any person, to the extent stipulated under the Law or the Bidding Guidelines.

## **2.17 Right of the BPC to reject any Bid**

BPC reserves the right to reject all or any of the Bids/ or cancel the RFP without assigning any reasons whatsoever and without any liability.

- 2.18** Non submission and/or submission of incomplete data/ information required under the provisions of RFP shall not be construed as waiver on the part of BPC of the obligation of the Bidder to furnish the said data / information unless the waiver is in writing.

## **2.19 Fraudulent and Corrupt Practices**

- 2.19.1. The Bidders and their respective officers, employees, agents and advisers shall observe

the highest standard of ethics during the Bid process and subsequent to the issue of the LoI. Notwithstanding anything to the contrary contained herein, or in the LoI, the TANTRANSCO shall reject a Bid, withdraw the LoI, as the case may be, without being liable in any manner whatsoever to the Bidder, if it determines that the Bidder has, directly or indirectly or through an agent, engaged in corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice in the Bid process. In such an event, TANTRANSCO shall forfeit the Bid Bond, without prejudice to any other right or remedy that may be available to TANTRANSCO hereunder or otherwise.

2.19.2. Without prejudice to the rights of the TANTRANSCO under Clause 2.19.1 hereinabove and the rights and remedies which the TANTRANSCO may have under the LoI, if a Bidder is found by the TANTRANSCO to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice during the Bid process, or after the issue of the LoI, such Bidder & its Affiliates shall not be eligible to participate in any tender or RFP issued by TANTRANSCO for three (3) years period from the date such Bidder is found by the TANTRANSCO to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practices, as the case may be.

2.19.3. For the purposes of this Clause 2.19, the following terms shall have the meaning hereinafter respectively assigned to them:

- a) **“corrupt practice”** means (i) the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the actions of any person connected with the Bid process (for avoidance of doubt, offering of employment to or employing or engaging in any manner whatsoever, directly or indirectly, any official of the BPC who is or has been associated or dealt in any manner, directly or indirectly with the Bid process or the LoI or has dealt with matters concerning the Transmission Service Agreement or arising there from, before or after the execution thereof, at any time prior to the expiry of one year from the date such official resigns or retires from or otherwise ceases to be in the service of the BPC, shall be deemed to constitute influencing the actions of a person connected with the Bid Process); or (ii) engaging in any manner whatsoever, whether during the Bid Process or after the issue of the LoI or after the execution of the Transmission Service Agreement, as the case may be, any person in respect of any matter relating to the Project or the LoI or the Transmission Service Agreement, who at any time has been or is a legal, financial or technical adviser of the BPC in relation to any matter concerning the Project;
- b) **"Fraudulent practice"** means a misrepresentation or omission of facts or suppression of facts or disclosure of incomplete facts, in order to influence the Bid process;
- c) **“Coercive practice”** means impairing or harming, or threatening to impair or harm, directly or indirectly, any person or property to influence any person’s participation or action in the Bid process;
- d) **"undesirable practice"** means (i) establishing contact with any person connected with or employed or engaged by the BPC with the objective of canvassing, lobbying

or in any manner influencing or attempting to influence the Bid process; or (ii) having a Conflict of Interest; and

- e) **"Restrictive practice"** means forming a cartel or arriving at any understanding or arrangement among Bidders with the objective of restricting or manipulating a full and fair competition in the Bid process.

## **SECTION - 3**

# **EVALUATION OF THE TECHNICAL AND FINANCIAL BID**

## SECTION 3

### 1. EVALUATION OF BID

#### 3.1. The evaluation process of Bids comprises the following five steps:

- Step I – Responsiveness check
- Step II – Compliance with submission requirements
- Step III – Evaluation of Technical Bids
- Step IV – Evaluation of Financial Bids
- Step V – Bidder Selection

#### 3.2. STEP I – Responsiveness check

The Technical Bid submitted by the Bidder shall be initially scrutinized to establish “Responsiveness”. Subject to clause 2.5.6 (k), any of the following conditions shall cause the Technical Bid to be “Non-responsive”:

- a) Technical Bid that are incomplete.
- b) Technical Bid not signed by authorized signatory and / or stamped in the manner indicated in this RFP.
- c) All pages of the Technical Bid submitted but not initialed by the authorized signatories on behalf of the Bidder.
- d) Technical Bid not including the covering letter as per Annexure 1.
- e) Technical Bid submitted by a Bidding Consortium not including the Consortium Agreement.
- f) Technical Bid contains material inconsistencies in the information and documents submitted by the Bidder, affecting the Qualification Requirements.
- g) Bidder submitting or participating in more than one Bid either as a Bidding Company or as a Member of Bidding Consortium.
- h) More than one Member of the Bidding Consortium or a Bidding Company using the credentials of the same Parent/Affiliate.
- i) Information not submitted in formats specified in the RFP.
- j) Applicable Board resolutions, or any other document, as provided in Clause 2.5.2, not being submitted;
- k) Bid not accompanied by a valid Bid Bond;
- l) Non submission of power of attorney, supported by a Board resolution;
- m) Bid validity being less than that required as per Clause 2.8 of this RFP;
- n) Bid not containing Format-1 (Bidders' Undertakings) of Annexure-8;

- o) Bidder having Conflict of Interest
- p) The Bidder has not submitted a disclosure as per Annexure 13.
- q) Bidder delaying in submission of additional information or clarifications sought by TANTRANSCO.
- r) If the Bidder makes any misrepresentation as specified in Clause 3.7.
- s) Bid being conditional in nature.
- t) Any of the details pertaining to Financial Bid included in the Technical Bid.

### **3.3. STEP II - Compliance with submission requirements**

Each Bidder's Technical Bid shall be checked for compliance with the submission requirements set forth in this RFP before the evaluation of Technical Bid is taken up. Annexure 16 and Annexure 11A shall be used to check whether each Bidder meets the stipulated requirements.

### **3.4. STEP III - Evaluation of Technical Bid**

Evaluation of Technical Bid will be carried out considering the information and documents furnished by the Bidders as required under this RFP. This step would involve technical and financial evaluation of the details/ documents furnished by the Bidding Company / Bidding Consortium in support of meeting the Qualification Requirements

#### **3.4.1. Interpolation of financial data**

For the Qualification Requirements data provided by the Bidders in foreign currency, equivalent rupees of Networth will be calculated using Reserve Bank of India (RBI) Rates prevailing on the date of closing of the accounts for the respective financial year.

For the purpose of calculating the aggregate capital expenditure/construction experience of the projects completed/ commissioned where such projects are executed outside India and capital expenditure is denominated in foreign currency, RBI Rates prevailing on the date of closing of the financial year in which the projects were completed shall be considered.

For the projects executed in the current financial year, RBI Rates prevailing on seven (7) days prior to the last date of submission of Technical Bid shall be considered.

For currency other than USD, Bidders shall convert such currency into USD as per the exchange rates certified by their Banker prevailing on the relevant date and used for such conversion. Such Bidders shall submit necessary certification from their Banker for the exchange rate used in the conversion.

If the exchange rate for any of the above dates is not available, the rate for the immediately available previous day shall be taken into account.

3.4.2. Bidders meeting the Qualification Requirements, subject to evaluation as specified in Clauses 3.2 to 3.4 shall be declared as Qualified Bidders and eligible for opening of Initial Offer.

3.4.3. The BPC shall upload the list of all the Qualified Bidders and Non-Qualified Bidders on the bidding portal along with the reasons for non-qualification.

### **3.5. STEP IV - Evaluation of Financial Bids**

3.5.1. The Bids which have been found Qualified by the TANTRANSCO, based on the Steps I to III as specified above in Clauses 3.2 to 3.4, shall be opened and Quoted Transmission Charges of such Initial Offer shall be ranked on the basis of the ascending Initial Offer submitted by each Qualified Bidder.

Based on such ranking, the Qualified Bidders in the first fifty per cent (50%) of the ranking (with any fraction rounded off to higher integer) or four Qualified Bidders, whichever is higher, shall qualify for participating in the electronic reverse auction.

Provided that in the event the number of Qualified Bidders is between two and four, then each of the responsive Bidder shall be considered as Qualified Bidders.

Provided that in the event of identical Quoted Transmission Charges discovered from the Initial Offer having been submitted by one or more Bidders, all such Bidders shall be assigned the same rank for the purposes of determination of Qualified Bidders. In such cases, all Qualified Bidders who share the same rank till 50% of the rank (with any fraction rounded off to higher integer) determined above, shall qualify to participate in the electronic reverse auction stage. In case 50% of the rank is having less than four (4) Bidders and the rank of the fourth (4<sup>th</sup>) Bidder is shared by more than one Bidder, then all such Bidders who share the rank of the fourth Bidder shall qualify to participate in the electronic reverse auction. The e-reverse auction shall be carried out as per the procedure indicated in Clause 2.5.3

3.5.2. The Financial Bids comprising of both Initial Offer and Final Offer submitted by the Bidders shall be scrutinized to ensure conformity with the provisions of Clause 2.5.3 of this RFP. Any Bid not meeting any of the requirements as per Clause 2.5.3 of this RFP may cause the Bid to be considered "Non-responsive", at the sole decision of the TANTRANSCO. Financial Bid not in conformity with the requirement of SI. No.(c) of Clause 2.5.3 of this RFP shall be rejected.

3.5.3. The Bidders shall quote the single annual Quoted Transmission Charges as specified in the format at Annexure – 21.

### **3.6. STEP V - Bidder Selection**

3.6.1. The prevailing lowest Quoted Transmission Charges discovered from Final Offers shall only be displayed during the e-reverse bidding and the Bidder quoting such Final Offer will always remain anonymous during the e-reverse bidding. The Bidder with the prevailing lowest Quoted Transmission Charges discovered from Final Offers at the close of the scheduled or extended period of e-reverse bidding as mentioned in clause 2.5 shall be declared as the Successful Bidder, subject to verification of the original hard copies of Annexure 3, Annexure 4 (if applicable), Annexure 6 (if applicable) and Annexure 14. The Letter of Intent (LOI) shall be issued to such Successful Bidder in two (2) copies.

However, if no bid is received during the e-reverse bidding stage then the Bidder with lowest quoted initial transmission charges ("Initial Offer") during e-bidding stage shall be declared as the Successful Bidder, subject to verification of the original hard copies of Annexure 3, Annexure 4 (if applicable), Annexure 6 (if applicable) and Annexure 14. The Letter of Intent shall be issued to such Successful Bidder in two (2) copies.

In case, there is a discrepancy between the online submission and physical documents, the bid would be out rightly rejected, and the Bidder shall be construed to have engaged in the fraudulent practice as defined in Clause 2.19.3 with consequences as mentioned in Clause 2.19.2. Further, in such a case, the provisions of Clause 2.5.6 (j) shall apply.

- 3.6.2. The Selected Bidder shall unconditionally accept the LoI, and record on one (1) copy of the LoI, "Accepted unconditionally", under the signature of the authorized signatory of the Successful Bidder and return such copy to the TANTRANSCO within seven (7) days of issue of LoI.
- 3.6.3. If the Successful Bidder, to whom the Letter of Intent has been issued, does not fulfill any of the conditions specified in Clauses 2.15.2, 2.15.3 and Clause 2.15.4, then subject to Clause 2.15.5, the TANTRANSCO reserves the right to annul the award of the Project and cancel the Letter of Intent. Further, in such a case, the provisions of Clause 2.5.6 (j) shall apply.
- 3.6.4. TANTRANSCO, on its own discretion, has the right to reject all Bids if the Quoted Transmission Charges are not aligned to the prevailing prices.

### **3.7. Misrepresentation by the Bidder**

If the Bidder conceals any material information or makes a wrong statement or misrepresents facts or makes a misleading statement in the Technical Bid or Bid, as the case may be, in any manner whatsoever, in order to create circumstances for the acceptance of its Technical Bid/Bid, the TANTRANSCO reserves the right to reject such Technical Bid/Bid, and/ or cancel the Letter of Intent, if issued. Further, in case Letter of Intent is cancelled, consequences as per provisions of the RFP shall follow.

### **3.8. Disposition of Technical Bid**

- 3.8.1. Technical Bid found to be Non-responsive as per Clause 3.2, due to any of the following conditions, shall be liable for rejection:
  - Technical Bid that is incomplete.
  - Technical Bid not signed by authorized signatory and / or stamped in the manner indicated in this RFP.
  - All pages of the Technical Bid submitted but not initialed by the authorized signatories on behalf of the Bidder.
  - Technical Bid not including the covering letter as per Annexure 1.
  - Technical Bid contains material inconsistencies in the information and documents submitted by the Bidder, affecting the Qualification Requirements.
  - Information not submitted in formats specified in the RFP.
  - The Bidder has not submitted a disclosure as per Annexure 13.

- Bidder delaying in submission of additional information or clarifications sought by TANTRANSCO.

3.8.2. Technical Bid found to be Non-responsive as per Clause 3.2, due to any of the following conditions, shall be rejected.

- Technical Bid not received by the scheduled date and time.
- Technical Bid submitted by a Bidding Consortium not including the Consortium Agreement.
- Bidder submitting or participating in more than one response either as a Bidding Company or as a Member of Bidding Consortium.
- More than one Member of the Bidding Consortium or a Bidding Company using the credentials of the same Parent/Affiliate.
- Technical Bid having Conflict of Interest.
- If the Bidder makes any misrepresentation as specified in Clause 3.7.
- Any of the details pertaining to Financial Bid included in the Technical Bid.

3.9. TANTRANSCO reserves the right to interpret the Bid in accordance with the provisions of this RFP document and make its own judgment regarding the interpretation of the same. In this regard, TANTRANSCO shall have no liability towards any Bidder and no Bidder shall have any recourse to TANTRANSCO with respect to the qualification process.

TANTRANSCO shall evaluate Bid using the process specified in Clause 3.1 to 3.6, at its sole discretion. TANTRANSCO's decision in this regard shall be final and binding.

# **SECTION - 4**

# **ANNEXURES FOR**

# **BID**

## SECTION – 4

### I. Formats for Bid

The following formats are required to be included in the Bidder's Technical and Financial Bid. These formats are designed to demonstrate the Bidder's compliance with the Qualification Requirements set forth in Clause 2.1 of Section – 2.

#### Technical Bid

1. Format for the Covering Letter
2. Format for Letter of Consent from Consortium Members
3. Format for evidence of authorized signatory's authority (Power of Attorney)
4. Format for Power of Attorney to be provided by each of the other Members of the Consortium in favor of the Lead Member
5. Format for Bidder's composition and ownership structure and Format for Authorization
6. Format for Consortium Agreement
7. Formats for Qualification Requirement
8. Format of Bidder's Undertaking and details of Equity Investment
9. Authorization from Parent/Ultimate Parent/Affiliate of Bidding Company/Member of Bidding Consortium whose technical/financial capability has been used by the Bidding Company/Member of Bidding Consortium.
10. Undertaking from the Parent/Ultimate Parent Company for equity investment
11. Format of Board Resolutions
12. Format for Illustration of Affiliates
13. Format for Disclosure
14. Format for Bid Bond
15. Format for Contract Performance Guarantee
16. Checklist for Technical Bid submission requirements
22. Format for Affidavit

In addition to the online submission, the Bidder with lowest Final Offer will be required to submit original hard copies of Annexure 3, Annexure 4 (if applicable), Annexure 6 (if applicable) and Annexure 14 before issuance of LoI.

#### Financial Bid

21. Format for Financial Bid

### II. The following formats are for the information to the Bidders to enable them to submit their Bid.

- 11A. Illustration for Applicable Board Resolution Requirements Under Clause 2.5.2
17. List of Banks
18. GRID Map of the Project
19. Format for clarification/amendments on the RFP/RFP Project Documents
20. Formats for RFP Project Documents

Bidder may use additional sheets to submit the information for its detailed Bid.

**ANNEXURE 1 - COVERING LETTER**

**(The covering letter should be on the Letterhead of the Bidding Company/ Lead Member of the Consortium)**

Date: .....  
From: .....  
.....  
.....  
Tel. No.: .....  
Fax No.: .....  
E-mail address:.....

To,

**Chief Engineer /Transmission  
Tamil Nadu Transmission Corporation Limited (TANTRANSCO)  
144, Annasalai,  
Chennai- 600002, Tamil Nadu**

Dear Sir,

**Sub: Bid for selection of Bidder as Transmission Service Provider to establish Intra-State Transmission System for “Development of (i) Kavathampalayam 765/400 kV AIS SS along with 765 kV & 400 kV Transmission Lines and (ii) Edayarpalayam 400/230-110 kV AIS Substation” through tariff based competitive bidding process.**

1. Being duly authorized to present and act on behalf of M/s ..... (insert name of Bidding Company / Bidding Consortium) (hereinafter called the “Bidder”) and having read and examined in detail the Request for Proposal (RFP) document, the undersigned hereby submit our Technical Bid with duly signed formats and Financial Bid (Initial Offer) as stipulated in RFP document for your consideration.
2. It is confirmed that our Bid is consistent with all the requirements of submission as stated in the RFP document and subsequent clarifications/amendments as per Clause 2.3 and 2.4 of RFP.
3. The information submitted in our Bid is complete, is strictly as per the requirements stipulated in the RFP document and is correct to the best of our knowledge and understanding. We would be solely responsible for any errors or omissions in our Bid.
4. We hereby agree and undertake to procure the products associated with the Transmission System as per provisions of Public Procurement (Preference to Make in India) orders issued by Ministry of Power vide orders No. 11/5/2018 - Coord. dated 28.07.2020 for transmission sector, as amended vide order No. A1/2021FSC- Part(5) dated 16.11.2021 and No.: P45021/2/2017-PP (BE-II)-Part-4 Vol.II dated 19.07.2024 issued by Ministry of Power for transmission sector, as may be further amended from time to time read with Department for Promotion of Industry and Internal Trade (DPIIT) orders in this regard.

We hereby also agree and undertake to comply with Department of Expenditure, Ministry of Finance Order (Public Procurement No 4) bearing File No. F.7/10/2021-PPD dated 23.02.2023, as amended from time to time, regarding public procurement from a bidder of a country, which shares land border with India.

5. We hereby agree to comply with Ministry of Power order no. 25-11/6/2018 – PG dated 02.07.2020 as amended from time to time.
6. We are herewith submitting legally binding board resolution for the total equity requirement of the Project.
7. We hereby confirm that in accordance with Clause 2.1.4 of the RFP, we are herewith submitting legally binding undertaking supported by a board resolution from the .....(Insert name of Parent Company (in case Technical Evaluated Entity and/or Financially Evaluated Entity is a Parent Company) or Ultimate Parent Company (in case Technical Evaluated Entity and/or Financially Evaluated Entity is an Affiliate other than Parent Company), as the case may be) that all the equity investment obligations of ..... (Insert name of the Bidding Company) shall be deemed to be equity investment obligations of the ..... (Insert name of Parent Company (in case Technical Evaluated Entity and/or Financially Evaluated Entity is a Parent Company) or Ultimate Parent Company (in case Technical Evaluated Entity and/or Financially Evaluated Entity is an Affiliate other than Parent Company), as the case may be) and in the event of any default by..... (Insert name of the Bidding Company), the same shall be met by ..... (Insert name of Parent Company (in case Technical Evaluated Entity and/or Financially Evaluated Entity is a Parent Company) or Ultimate Parent Company (in case Technical Evaluated Entity and/or Financially Evaluated Entity is an Affiliate other than Parent Company), as the case may be) directly through Bidding Company. Such infusion of equity by the Parent Company or the Ultimate Parent Company as the case may be, shall be allowed through the Bidding Company only.

**[Sl. No 7 to be inserted only in case the Bidder is a Bidding Company / Lead Member of a Consortium and has sought qualification on the basis of technical and financial capability of its Affiliate(s) and/or its Parent]**

8. We confirm that there are no litigations or disputes against us, which materially affect our ability to fulfill our obligations with regard to the Project.
9. We hereby confirm that we shall continue to maintain compliance with Qualification Requirements till the execution of the Transmission Service Agreement. Further, in case we emerge as Selected Bidder for the Project, we shall continue to maintain compliance with Qualification Requirements till the COD of the Project.
10. We confirm that we have studied the provisions of relevant Indian laws and regulations required to enable us to build, own, operate and transfer the said Project and to prepare this Bid.
11. We hereby confirm that we shall abide unreservedly with TANTRANSCO's decision in the qualification process for selection of Qualified Bidder and further warrant that under no circumstances shall we challenge either TANTRANSCO's decision or its right to make such decision at any time in the future.

12. We confirm that the Bid shall remain valid for a period of one eighty (180) days from the Bid Deadline.
13. The details of contact person are furnished as under:  
Name: .....  
Designation: .....  
Name of the Company: .....  
Address of the Bidder: .....  
Phone Nos.: .....  
Fax Nos.: .....  
E-mail address: .....

**14. Bid Bond**

We have enclosed a Bid Bond of Rupees.....Crores (Rs.....) only or US\$..... (.....US Dollars), in the form of bank guarantee no.....[Insert number of the Bank Guarantee] dated..... [Insert Date of the Bank Guarantee] as per your proforma (Annexure-14) from .....[Insert name of bank providing Bid Bond] and valid up to .....in terms of Clause 2.11 of the RFP -

**15. Acceptance**

We hereby unconditionally and irrevocably agree and accept that the decision made by TANTRANSCO on any matter regarding or arising out of the RFP shall be binding on us. We hereby expressly waive any and all claims in respect of Bid process.

**16. Familiarity With Relevant Indian Laws & Regulations**

We confirm that we have studied the provisions of relevant Indian laws and regulations as required to enable us to submit this Bid and execute the RFP Project Documents (other than TSA), in the event of our selection as the TSP. We further undertake and agree that all such factors as mentioned in Clause 2.5.7 of RFP have been fully examined and considered while submitting the Bid.

It is confirmed that our Bid is consistent with all the requirements of submission as stated in the RFP and subsequent communications from TANTRANSCO.

The information submitted in our Bid is complete, strictly as per the requirements stipulated in the RFP and is correct to the best of our knowledge and understanding. We would be solely responsible for any errors or omissions in our Bid.

We confirm that we have not taken any deviation so as to be deemed non-responsive with respect to the provisions stipulated at Clause 2.5.1, of this RFP.

Thanking you,

Yours sincerely,

.....

**(Name and Signature of the authorized signatory in whose name Power of Attorney/ Board Resolution as per Clause 2.5.2 is issued)**

Name: .....

Designation: .....

Address: .....

Date: .....

Place: .....

**Company Rubber Stamp**

**ANNEXURE 2 - LETTER OF CONSENT FROM CONSORTIUM MEMBERS**

**(On the letterhead of each Member of the Consortium including Lead Member)**

Date: .....  
From: .....  
.....  
.....  
Tel. No.: .....  
Fax No.: .....  
E-mail address:.....

To,

**Chief Engineer/Transmission  
Tamil Nadu Transmission Corporation Limited (TANTRANSCO)  
144, Annasalai,  
Chennai- 600002, Tamil Nadu**

Dear Sir,

**Sub: Bid for selection of Bidder as Transmission Service Provider to establish Intra-State Transmission System for “Development of (i) Kavathampalayam 765/400 kV AIS SS along with 765 kV & 400 kV Transmission Lines and (ii) Edayarpalayam 400/230-110 kV AIS Substation” through tariff based competitive bidding process.**

We, the undersigned Member of ..... (Insert name of the Bidding Consortium) have read, examined and understood the RFP document for the short-listing of Bidders as prospective TSP to establish Intra-State Transmission System for **“Development of (i) Kavathampalayam 765/400 kV AIS SS along with 765 kV & 400 kV Transmission Lines and (ii) Edayarpalayam 400/230-110 kV AIS Substation”** (through tariff based competitive bidding process. We hereby confirm our concurrence with the Bid including in particular the Consortium Agreement submitted by ..... (Insert name of the Lead Member) in response to the RFP document.

We hereby confirm our commitment to participate in the said Bidding Consortium and invest ..... % of the total equity requirement for the Project as per the terms of the Consortium Agreement dated ..... and board resolution for such investment commitment is enclosed herewith.

We hereby confirm that in accordance with Clause 2.1.4 of the RFP, we are enclosing legally binding undertaking supported by a board resolution from the ..... (Insert name of Parent Company in case Technical Evaluated Entity and/or Financially Evaluated Entity is a Parent Company or Ultimate Parent Company in case Technical Evaluated Entity and/or Financially Evaluated Entity is an Affiliate other than Parent Company, as the case may be) that all the equity investment obligations of ..... (Insert name of the Member) shall be deemed to be equity investment obligations of the ..... (Insert name of Parent Company in case Technical Evaluated Entity and/or Financially Evaluated Entity is a Parent Company or Ultimate Parent Company in case Technical Evaluated Entity and/or Financially Evaluated Entity is an Affiliate other than Parent Company, as the case may be) and in the event of any default by..... (Insert name of the Member), the same shall be met by..... (Insert name of Parent Company in case Technical Evaluated Entity and/or

Financially Evaluated Entity is a Parent Company or Ultimate Parent Company in case Technical Evaluated Entity and/or Financially Evaluated Entity is an Affiliate other than Parent Company, as the case may be directly through Bidder). Such infusion of equity by the Parent Company or the Ultimate Parent Company as the case may be, shall be allowed through the Bidding Company only). [Insert if applicable]

**[To be inserted by the Lead Member only]** We are also enclosing legally binding board resolution for the total equity requirement of the Project in case of any breach of any of the equity investment commitment by any of the Consortium Members, in line with the provisions of the Consortium Agreement dated ..... [Bidder to insert date of Consortium Agreement].

The details of contact person are furnished as under:

Name: .....  
Designation: .....  
Name of the Company: .....  
Address: .....  
Phone Nos.: .....  
Fax Nos.: .....  
E-mail address: .....

Dated the ..... day of ..... of 20...

Thanking you,

Yours faithfully,

.....  
**(Signature)**

**Name:** .....  
**Designation:** .....

(Signature, Name, Designation of Authorized Signatory of Consortium Member and Company's Seal)

**ANNEXURE 3 - FORMAT FOR EVIDENCE OF AUTHORIZED SIGNATORY'S  
AUTHORITY (POWER OF ATTORNEY)**

**POWER OF ATTORNEY**

**(To be on non-judicial stamp paper of appropriate value as per Stamp Act relevant to place of execution. Foreign companies submitting bids are required to follow the applicable law in their country)**

Know all men by these presents, We .....(name and address of the registered office of the Bidder) do hereby constitute, appoint and authorize Mr./Ms.....(name and residential address) who is presently employed with us and holding the position of ..... as our attorney, to do in our name and on our behalf, all such acts, deeds and things necessary in connection with or incidental to our Bid for selection of Bidder as Transmission Service Provider to establish Intra-State Transmission System for “**Development of (i) Kavathampalayam 765/400 kV AIS SS along with 765 kV & 400 kV Transmission Lines and (ii) Edayarpalayam 400/230-110 kV AIS Substation**” (through tariff based competitive bidding process in the country of India, including signing and submission of all documents related to the Bid, including, undertakings, letters, certificates, acceptances, clarifications, guarantees, etc., making representations to the TANTRANSCO, and providing information / responses to the TANTRANSCO, representing us in all matters before the TANTRANSCO, and generally dealing with the TANTRANSCO in all matters in connection with our Bid for the said Project till the completion of the bidding process in accordance with the RFP and signing of the Share Purchase Agreement by all the parties thereto.

We hereby agree to ratify all acts, deeds and things lawfully done by our said attorney pursuant to this Power of Attorney and that all acts, deeds and things done by our aforesaid attorney shall and shall always be deemed to have been done by us.

All the terms used herein but not defined shall have the meaning ascribed to such terms under the RFP.

**For ..... [Insert name of the Bidder on whose behalf PoA is executed]**

.....  
**(Signature)**

Name: .....  
Designation: .....

**Accepted**

.....  
**(Signature of the Attorney)**

Name: .....  
Designation: .....  
Address: .....

.....  
**(Name, Designation and Address of the Attorney)**

Specimen signatures of attorney attested by the Executant

.....  
**(Signature of the Executant)**

.....  
**(Signature of Notary Public)**

Place: .....

Date: .....

**Notes:**

- 1) To be executed by Bidding Company or the Lead Member, in the case of a Bidding Consortium, as the case maybe.
- 2) The mode of execution of the Power of Attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executant(s) and when it is so required, the same should be under common seal of the executant affixed in accordance with the applicable procedure. Further, the person whose signatures are to be provided on the power of attorney shall be duly authorized by the executant(s) in this regard.
- 3) Also, wherever required, the executant(s) should submit for verification the extract of the charter documents and documents such as a Board resolution / power of attorney, in favour of the Person executing this power of attorney for delegation of power hereunder on behalf of the executant(s).
- 4) In case of foreign Bidders, refer to clause 2.5.6 (p)

**ANNEXURE 4- FORMAT FOR POWER OF ATTORNEY TO BE PROVIDED BY EACH OF THE OTHER MEMBERS OF THE CONSORTIUM IN FAVOUR OF THE LEAD MEMBER**

**POWER OF ATTORNEY**

**(To be on non-judicial stamp paper of appropriate value as per Stamp Act relevant to place of execution. Foreign companies submitting bids are required to follow the applicable law in their country)**

**KNOW ALL MEN BY THESE PRESENTS THAT** M/s....., having its registered office at ....., .....,and M/s ..... having its registered office at ....., (Insert names and registered offices of all Members of the Consortium), the Members of Consortium, have formed a Bidding Consortium named ..... (insert name of the Consortium) (hereinafter called the **“Consortium”**) vide Consortium Agreement dated..... and having agreed to appoint M/s..... as the Lead Member of the said Consortium do hereby constitute, nominate and appoint M/s.....a company incorporated under the laws of .....and having its Registered / Head Office at .....as our duly constituted lawful Attorney (hereinafter called as **“Lead Member”**) which is one of the Members of the Consortium, to act as the Lead Member and our true and lawful attorney, to do in our name and on our behalf, all such acts, deeds and things necessary in connection with or incidental to submission of Consortium's Bid for the Project, including signing and submission of the Bid and all documents related to the Bid, including, undertakings, letters, certificates, acceptances, clarifications, guarantees, etc, making representations to the TANTRANSCO, and providing information / responses to the TANTRANSCO, representing us and the Consortium in all matters before the TANTRANSCO, and generally dealing with the TANTRANSCO in all matters in connection with our Bid for the said Project, till completion of the bidding process in accordance with the RFP and signing of the Share Purchase Agreement by all the parties thereto.

It is expressly understood that in the event of the Consortium being selected as Successful Bidder, this Power of Attorney shall remain valid, binding and irrevocable until the Bidding Consortium achieves execution of all RFP Project Documents.

We, as the Member of the Consortium, agree and undertake to ratify and confirm all whatsoever the said Attorney/Lead Member has done on behalf of the Consortium Members pursuant to this Power of Attorney and the same shall bind us and deemed to have been done by us.

All the terms used herein but not defined shall have the meaning ascribed to such terms under the RFP.

**IN WITNESS WHEREOF** M/s ....., as the Member of the Consortium have executed these presents on this..... day of .....

For and on behalf of  
Consortium Member

.....  
**(Signature of the Authorized Signatory)**

Name: .....  
Designation: .....  
Place: .....  
Date: .....

Name: .....  
Designation: .....  
Place: .....  
Date: .....

**Accepted**

Specimen signatures of attorney attested

.....  
(Signature)

.....

.....  
(Signature of Notary Public)

.....  
(Name, Designation and Address  
of the Attorney)

Place: .....  
Date: .....

**Notes:**

1. The mode of execution of the power of attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executant(s) and when it is so required, the same should be under common seal of the executant affixed in accordance with the applicable procedure. Further, the person whose signatures are to be provided on the power of attorney shall be duly authorized by the executant(s) in this regard.
2. Also, wherever required, the executant(s) should submit for verification the extract of the charter documents and documents such as a Board resolution / power of attorney, in favour of the Person executing this power of attorney for delegation of power hereunder on behalf of the executant(s).
3. In case of foreign Bidders, refer to clause 2.5.6 (p)

**ANNEXURE 5- FORMAT FOR BIDDER'S COMPOSITION AND OWNERSHIP STRUCTURE**

**1. Corporate Details:**

Please provide the following information for the Bidder. If the Bidder is a Consortium, please provide this information for each Member including the Lead Member:

**a. Company's Name, Address, and Nationality:**

Name: .....

Address: .....  
.....  
.....

Website Address: .....

Country of Origin: .....

**b. Year Organized:** .....

**c. Company's Business Activities:** .....  
.....

**d. Status as a Bidder:**

- i. Bidding Company
- ii. Lead Member of the Bidding Consortium
- iii. Member of the Bidding Consortium

**Note: tick the applicable serial number**

**e. Company's Local Address in India (if applicable):**

.....  
.....  
.....

**f. Name of the Authorized Signatory:** .....

**g. Telephone Number:** .....

**h. Email Address:** .....

**i. Telefax Number:** .....

**j. Please provide the following documents:**

- i. Copy of the Memorandum and Articles of Association and certificate of incorporation or other equivalent organizational document (as applicable), including their amendments, certified by the Company Secretary as **Attachment 1** for Bidding Company / each Member of Bidding Consortium including Lead Member.

- ii. Authority letter (as per format for authorization given below) in favour of TANTRANSCO from the Bidder/every Member of the Consortium authorizing TANTRANSCO to seek reference from their respective bankers & others as **Attachment 2** as per Clause 2.1.6 of the RFP.

**2. Details of Ownership Structure:**

Equity holding of Bidding Company/ each Member of Bidding Consortium including Lead Member owning 10% or more of total paid up equity.

Name of the Bidding Company / Consortium Member: .....

Status of equity holding as on .....

Name of the Equity Holder	Type and No. of Shares owned	Extent of Voting Control (%)
1. ....		
2. ....		
3. ....		
4. ....		
5. ....		
6. ....		
7. ....		
8. ....		
....		

**Notes:**

1. The above table is to be filled in separately for each Consortium Member.
2. Status of equity holding should be provided not earlier than thirty (30) days prior to Bid Deadline.

**For and on behalf of Bidding Company / Lead Member of the Bidding Consortium**

M/s.....

.....  
**(Signature of authorized representative)**

Name: .....

Designation: .....

.....  
**(Stamp)**

Date: .....

Place: .....

**FORMAT FOR AUTHORISATION**

**(In case of Bidding Consortium, to be given separately by each Member)  
(On Non – judicial stamp paper duly attested by notary public. Foreign companies  
submitting bids are required to follow the applicable law in their country)**

The undersigned hereby authorize(s) and request(s) all our Bankers, including its subsidiaries and branches, any person, firm, corporation or authority to furnish pertinent information deemed necessary and requested by \_\_\_\_\_[Name of BPC] to verify our Bid for selection of Bidder as Transmission Service Provider to establish Intra-State Transmission system for **“Development of (i) Kavathampalayam 765/400 kV AIS SS along with 765 kV & 400 kV Transmission Lines and (ii) Edayarpalayam 400/230-110 kV AIS Substation”** (through tariff based competitive bidding process or regarding our project development experience, financial standing and general reputation.

**For and on behalf of M/s..... (Insert Name of Bidding Company or Member of the Consortium)**

.....  
**(Signature)**

Name of Authorized Signatory: .....

**(Signature and Name of the authorized signatory of the Company)**

Place: .....

Date: .....

.....  
**(Company rubber stamp/seal)**

.....  
**(Signature of Notary Public)**

Place: .....

Date: .....

**ANNEXURE 6 - FORMAT FOR CONSORTIUM AGREEMENT**

**(To be on non-judicial stamp paper of appropriate value as per Stamp Act relevant to place of execution. Foreign companies submitting bids are required to follow the applicable law in their country)**

**THIS CONSORTIUM AGREEMENT** executed on this..... day of .....Two thousand.....between M/s....., a company incorporated under the laws of ..... and having its Registered Office at ..... (herein after called the "Party 1", which expression shall include its successors, executors and permitted assigns) and M/s.....a Company incorporated under the laws of ..... and having its Registered Office at ..... (hereinafter called the "Party 2", which expression shall include its successors, executors and permitted assigns) and for the purpose of submitting the Bid, acquisition of {**Name of the SPV Company or "Project specific SPV to be incorporated by the BPC"**}(in case of award) and entering into other Agreement(s) as specified in the RFP (hereinafter referred to as "Agreements") as may be entered into with the Nodal Agency.

**WHEREAS**, the BPC had invited Bid in response to RFP issued to ..... (insert the name of bidder) for selection of the Bidder as the Transmission Service Provider to establish Intra-State Transmission System for "                    [**Name of Project**]".

**AND WHEREAS**, Clause 2.2.4 of the RFP document stipulates that the Bidders qualifying on the strength of a Bidding Consortium will have to submit a legally enforceable Consortium Agreement in a format specified in the RFP document wherein the Consortium Members have to commit equity of a specific percentage in the Project.

**AND WHEREAS**, Clause 2.2.4 of the RFP document also stipulates that the Bidding Consortium shall provide along with the Bid, a Consortium Agreement as per prescribed format whereby the Consortium Members undertake to be liable for raising the required funds for its respective equity investment commitment as specified in Consortium Agreement.

**NOW THEREFORE, THIS INDENTURE WITNESSTH AS UNDER:**

In consideration of the above premises and agreement all the parties in this Consortium do hereby mutually agree as follows:

1. In consideration of the selection of the Consortium as the Selected Bidder by the TANTRANSCO, we the Members of the Consortium and parties to the Consortium Agreement do hereby unequivocally agree that M/s..... (Insert name of the Lead Member), shall act as the Lead Member as defined in the RFP for self and agent for and on behalf of ....., ....., ..... (the names of all the other Members of the Consortium to be filled in here).
2. The Lead Member is hereby authorized by the Members of Consortium and parties to the Consortium Agreement to bind the Consortium and receive instructions for and on behalf of the Members.

3. Notwithstanding anything contrary contained in this Consortium Agreement, the Lead Member shall always be liable for the equity investment obligations of all the Consortium Members, i.e., for both its own equity contribution as well as the equity contribution of other Members in the Consortium.
4. The Lead Member shall be liable and responsible for ensuring the individual and collective commitment of each of the Members of the Consortium in discharging all their respective equity obligations. Each Consortium Member further undertakes to be individually liable for the performance of its part of the obligations without in any way limiting the scope of collective liability envisaged in this agreement.
5. Subject to the terms of this agreement, the share of each Member of the Consortium in the “issued equity share capital of the project company” shall be in the following proportion: (if applicable)

Name	Percentage of equity holding in the Project
Party 1	.....
Party 2	.....
<b>Total</b>	<b>100%</b>

[**Note:** The percentage equity holding for any Consortium Member in the Project cannot be zero in the above table]

6. The Lead Member shall inter alia undertake full responsibility for liaising with lenders and mobilizing debt resources for the Project and achieving financial closure.
7. In case of any breach of any of the equity investment commitment by any of the Consortium Members, the Lead Member shall be liable for the consequences thereof.
8. Except as specified in the Agreement, it is agreed that sharing of responsibilities as aforesaid and equity investment obligations thereto shall not in any way be a limitation of responsibility of the Lead Member under these presents.
9. It is further specifically agreed that the financial liability for equity contribution of Lead Member shall, not be limited in any way so as to restrict or limit its liabilities. The Lead Member shall be liable irrespective of their scope of work or financial commitments.
10. It is expressly understood and agreed between the Members that the responsibilities and obligations of each of the Members shall be as delineated as annexed hereto as **Appendix-I**, forming integral part of this Agreement. It is further agreed by the Members that the above sharing of responsibilities and obligations shall not in any way be a limitation of joint and several responsibilities and liabilities of the Members, with regards to all matters relating to the Project.
11. It is clearly agreed that the Lead Member shall ensure performance under the Agreements and if one or more Consortium Members fail to perform its /their respective obligations under the Agreement(s), the same shall be deemed to be a default by all the Consortium Members.

12. This Consortium Agreement shall be construed and interpreted in accordance with the Laws of India and courts at **Tamil Nadu** alone shall have the exclusive jurisdiction in all matters relating thereto and arising there under.
13. It is hereby agreed that, the Lead Member shall furnish the bid bond, as stipulated in the RFP, on behalf of the Consortium Members.
14. It is hereby agreed that in case of selection of Bidding Consortium as the Selected Bidder, the parties to this Consortium Agreement do hereby agree that they shall furnish the Contract Performance Guarantee on behalf of the TSP in favor of the Nodal Agency, as stipulated in the RFP and Transmission Service Agreement.
15. It is further expressly agreed that the Consortium Agreement shall be irrevocable and shall form an integral part of the RFP Project Document and shall remain valid till the execution of the Share Purchase Agreement, unless expressly agreed to the contrary by the Nodal Agency.
16. The Lead Member is authorized and shall be fully responsible for the accuracy and veracity of the representations and information submitted by the Consortium Members respectively from time to time in response to the RFP and for the purposes of the Project.
17. It is hereby expressly agreed between the parties to this Consortium Agreement that neither party shall assign or delegate its rights, duties or obligations under this Agreement except with the prior written consent of the Nodal Agency.

**THIS CONSORTIUM AGREEMENT:**

- a. has been duly executed and delivered on behalf of each party hereto and constitutes the legal, valid, binding and enforceable obligation of each such party,
- b. sets forth the entire understanding of the parties hereto with respect to the subject matter hereof;
- c. may not be amended or modified except in writing signed by each of the parties and with prior written consent of the Nodal Agency.

**IN WITNESS WHEREOF**, the parties to the Consortium Agreement have, through their authorized representatives, executed these present on the Day, Month and Year first mentioned above.

For and on behalf of Consortium Member 1 (Party 1)  
M/s.....

.....  
**(Signature of authorized signatory)**

Name: .....  
Designation: .....  
Place: .....

Date: .....

For and on behalf of Consortium Member 2 (Party 2)

M/s.....

.....  
**(Signature of authorized signatory)**

Name: .....

Designation: .....

Place: .....

Date: .....

**Attested:**

.....

**(Signature)**

**(Notary Public)**

Place: .....

Date: .....

Note: In case of foreign Bidders, refer to clause 2.5.6 (p)

**Appendix 1 to the Consortium Agreement:**

<b>Name of the Consortium Member</b>	<b>Responsibilities under the Consortium Agreement</b>
M/s ..... (Party 1)	
M/s ..... (Party 2)	

**ANNEXURE 7 A - FORMAT FOR QUALIFICATION REQUIREMENT****A. NET WORTH**

To,  
**Chief Engineer/Transmission**  
**Tamil Nadu Transmission Corporation Limited (TANTRANSCO)**  
**144, Annasalai,**  
**Chennai- 600002, Tamil Nadu**

Dear Sir,

**Sub: Bid for selection of Bidder as Transmission Service Provider to establish Intra-State Transmission System for “Development of (i) Kavathampalayam 765/400 kV AIS SS along with 765 kV & 400 kV Transmission Lines and (ii) Edayarpalayam 400/230-110 kV AIS Substation” through tariff based competitive bidding process**

**1. [Note: Applicable in case of Bidding Company]**

We certify that the Financially Evaluated Entity(ies) had a Networth of Rs. .... Crore or equivalent USD\* computed as per instructions in this RFP based on unconsolidated audited annual accounts (refer Note-2 below) of any of the last three (3) financial years as provided in Clause 2.2.3, immediately preceding the Bid Deadline. Also, the Networth of any of the last three (3) financial years is not negative.

<b>Name of Financially Evaluated Entity(ies)</b>	<b>Relationship with Bidding Company**</b>	<b>Financial Year</b>	<b>Networth (Rs. Crore)</b>
1. ....			
2. ....			
3. ....			
....			
<b>Total Networth</b>			

\*Equivalent USD shall be calculated as per provisions of Clause 3.4.1.

\*\* The column for “Relationship with Bidding Company” is to be filled in only in case financial capability of Parent/Affiliate has been used for meeting Qualification Requirements.

**2. [Note: Applicable in case of Bidding Consortium]**

We certify that the Financially Evaluated Entity(ies) had a minimum Networth of Rs. .... Crore or equivalent USD\* computed as per instructions in the RFP and based on unconsolidated audited annual accounts (refer Note-2 below) of any of the last three (3) financial years as provided in Clause 2.2.3, immediately preceding the Bid Deadline. Also, the Networth of any of the last three (3) financial years is not negative.

<b>Name of Consortium Member</b>	<b>Equity Commitment in the Project (%)</b>	<b>Networth of Member (Rs. Crore)</b>	<b>Networth Requirement to be met by Member in proportion to the Equity Commitment (Rs. Crore)</b>	<b>Whether the Member meets the Networth Requirement</b>
(1)	(2)	(3)	(4) = (2 x Total Networth	(5)

Name of Consortium Member	Equity Commitment in the Project (%)	Networth of Member (Rs. Crore)	Networth Requirement to be met by Member in proportion to the Equity Commitment (Rs. Crore)	Whether the Member meets the Networth Requirement
		(As per table below)	requirement for the Project)	
1. ....				Yes / No
2. ....				Yes / No
<b>Total Networth for financial requirement</b>				

**Member – I (Lead Member)**

[Note: Similar particulars for each Member of the Consortium is to be furnished, duly certified by the Member's Statutory Auditors]

- i. Name of Member: .....
- ii. Total Networth requirement: Rs ..... Crore
- iii. Percentage of equity commitment for the Project by the Member: .....%
- iv. Networth requirement for the Member\*\*\*: Rs. .... Crore
- v. Financial year considered for the Member: .....

Name of Financially Evaluated Entity(ies)	Relationship** with Member of Consortium	Financial Year	Networth (Rs. Crore)
1. ....			
2. ....			
3. ....			
<b>Total Networth</b>			

\* Equivalent USD shall be calculated as per provisions of Clause 3.4.1;

\*\* The column for "Relationship with Member of Consortium" is to be filled in only in case the financial capability of Parent / Affiliate has been used for meeting Qualification Requirements;

\*\*\* Networth requirement to be met by Member should be in proportion to the equity commitment of the Member for the Project.

**Yours faithfully**

.....  
(Signature and name of the authorized signatory of the Company and Stamp)

Name: .....  
Date: .....  
Place: .....

.....  
**(Signature and Stamp of statutory Auditors of Bidding Company / each Member of Consortium)**

Name: .....  
Date: .....  
Place: .....

Date: .....

**Notes:**

1. Along with the above format, in a separate sheet, please provide details of computation of Networth of last three (3) financial years duly certified by Statutory Auditor.
2. Audited consolidated annual accounts of the Bidder may be used for the purpose of financial criteria provided the Bidder has at least 26% equity in each company whose accounts are merged in the audited consolidated accounts and provided further that the financial capability of such companies (of which accounts are being merged in the consolidated accounts) shall not be considered again for the purpose of evaluation of the Bid.
3. In case Bidder or a Member of Consortium takes recourse to its Parent/Affiliate for meeting technical / financial requirements, then the financial years considered for such purpose should be same for the Bidder / Member of Consortium and their respective Parent / Affiliate.

**ANNEXURE 7B - FORMAT FOR TECHNICAL REQUIREMENT**

To,

**Chief Engineer//Transmission  
Tamil Nadu Transmission Corporation Limited (TANTRANSCO)  
144, Annasalai,  
Chennai- 600002, Tamil Nadu**

Dear Sir,

**Sub: Bid for selection of Bidder as Transmission Service Provider to establish Intra-State Transmission System for “Development of (i) Kavathampalayam 765/400 kV AIS SS along with 765 kV & 400 kV Transmission Lines and (ii) Edayarpalayam 400/230-110 kV AIS Substation” (through tariff based competitive bidding process)**

**1. To be used by Bidder using the development experience in Power Sector**

We certify that M/s. .... (Insert name of Technically Evaluated Entity(ies)) have experience of development of projects in the Power Sector in the last five (5) years whose aggregate capital expenditure is Rs. .... Crore or equivalent USD\*. We further certify that the capital expenditure of any single project considered for meeting the technical Qualification Requirement is not less than Rs. .... Crore or equivalent USD\*. For this purpose, capital expenditure incurred on projects which have been either wholly completed / commissioned or partly completed projects put under commercial operation and for which operation has commenced till at least seven (7) days prior to the Bid Deadline has been considered.

The project(s) considered for the purpose of technical experience (as per table given below) have been executed and owned to the extent as indicated in the table below (to be atleast twenty – six percent (26%)) by the Bidding Company / Lead Member of the Consortium / our Parent / our Affiliate(s) [strike off whichever is not applicable] on operation of the projects.

This technical requirement has been calculated as per the instructions provided in the RFP on the basis of following projects:

Name of Company (which has executed the project at (3)) whose technical capability has been used for Qualification Requirement	Relationship** with Bidding Company / Lead Member	Project name	Nature of Project (BOOT, BOT, BOOM, DBFOT etc.)	Relevant Power Sector	Date of Financial Closure of the Project (in DD / MM / YYYY)	Date of Completion / Commissioning / Commercial Operation of partly completed projects	Project cost (Rs. Crore)	Percentage Equity Holding of Company at (1) in Completed project(s)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
.....		..... (Project 1)						
.....		.....						
<b>Total (Rs. Crore)</b>								

- \* Equivalent USD shall be calculated as per provisions of Clause \_\_\_\_
- \*\* The column for “Relationship with Bidding Company / Lead Member” is to be filled in only in case technical capability of Parent/Affiliate has been used for meeting Qualification Requirements.

We further certify that the Company(ies) as indicated in column (1) of the above table, whose technical capability has / have been used for meeting the qualification requirement, has / have held shareholding respectively of atleast twenty – six percent (26%) from the date of financial closure till the date of commissioning / completion of the above project(s).

**2. To be used by Bidder using construction experience in Power Sector.**

We certify that M/s. .... (Insert name of Technically Evaluated Entity(ies)) have received aggregate payments of not less than Rs. .... Crore or equivalent USD (calculated as per provisions in Clause 3.4.1) from its client(s) for construction works fully completed during the last five (5) financial years. We further certify that the payment received from each project is not less than Rs. .... Crore or equivalent USD (calculated as per provisions in Clause 3.4.1). For this purpose, payments received on projects that have been commissioned/completed at least seven (7) days prior to the Bid Deadline shall be considered. Further only the payments (gross) actually received, during such five (5) financial years shall qualify for the purposes of computing the technical capacity.

We also confirm that construction works do not include cost of land, supply of goods or equipment except when such goods or equipment form part of a turn-key construction contract/ EPC contract for the project.

This technical requirement has been calculated as per the instructions provided in the RFP on the basis of following projects:

Name of Company (which has executed the project at (3)) whose technical capability has been used for Qualification Requirement	Relationship** with Bidding Company / Lead Member	Project name	Nature of Project (EPC, Turnkey etc)	Relevant Power Sector	Date of award of contract (in dd/mm/yy)	Date of Completion / Commissioning	Payment received (Rs. Crore)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
.....		..... Project 1					
.....		.....					
.....		.....					
Total (Rs. Crore)							

Yours faithfully

.....  
**(Signature and name of the authorized signatory of the Company and stamp)**

Name: .....  
Date: .....  
Place: .....

.....  
**(Signature and Stamp of statutory Auditors of Bidding Company/ Lead Member of Consortium)**

Name: .....  
Date: .....  
Place: .....

Date: .....

**Notes:**

1. Along with the above format, in a separate sheet, please provide details of computation of capital expenditure of projects duly certified by Statutory Auditor of the project company. In addition, the Statutory Auditor of the project company should also certify that the capital expenditure of projects commissioned or completed 7 days prior to Bid Deadline has been capitalized in the books of accounts.

Additionally, in case construction experience is used, a certificate(s) from the statutory auditors stating the payments received and the concerned client(s) stating the works commissioned during the past 5 years in respect of the projects specified above. In case a particular job/ contract has been jointly executed by the Bidder (as part of a consortium), it should further support its claim for the share in work done for that particular job/ contract by producing a certificate from its statutory auditor or the client.

2. In case the accounts for the financial year in which the project claimed for meeting qualification requirement has been commissioned are not audited, the Bidder shall give declaration in this regard duly certified by its statutory auditor. In such a case, Bidder shall provide details of computation of capital expenditure of such project(s) duly certified by Statutory Auditor of the project company and the Statutory Auditor of the project company should also certify that the capital expenditure of projects commissioned or completed shall be capitalized in the books of accounts upon finalization.
3. The unconsolidated audited annual accounts of both the Technically Evaluated Entity and the Bidding Company / Lead Member for the respective financial years (financial years in which financial closure was achieved to the financial year in which the said project was completed / commissioned) should be submitted.

**ANNEXURE 7C - FORMAT FOR TECHNICAL & FINANCIAL REQUIREMENT –  
RELATIONSHIP & DETAILS OF EQUITY SHAREHOLDING**

[To be filled by Bidding Company / each Member of the Bidding Consortium including Lead Member if credentials of Parent and / or Affiliates have been used by them]

To,

**Chief Engineer/Transmission  
Tamil Nadu Transmission Corporation Limited (TANTRANSCO)  
144, Annasalai,  
Chennai- 600002, Tamil Nadu**

Dear Sir,

**Sub: Bid for selection of Bidder as Transmission Service Provider to establish Intra-State Transmission System for “Development of (i) Kavathampalayam 765/400 kV AIS SS along with 765 kV & 400 kV Transmission Lines and (ii) Edayarpalayam 400/230-110 kV AIS Substation” through tariff based competitive bidding process.**

We certify that M/s. .... (insert name of the **Bidding Company / Consortium Members**) have considered the technical and financial capability of its Parent and / or Affiliates, for the purpose of meeting Qualification Requirements as per the instructions provided in the RFP. The name of Parent and / or Affiliate, nature of relationship(s) with such Parent and / or Affiliate and details of equity holding are as follows:

<b>Name of Company whose credentials considered</b>	<b>Type of credentials considered (technical and / or financial)</b>	<b>Relationship with Bidding Company / Consortium Member (Parent / Affiliate)</b>	<b>Details of equity shareholding (refer notes below)</b>
Company 1			
.....			
.....			
.....			
.....			

**NOTES:**

- i. In case of Parent, the equity holding of the Parent in the Bidding Company / Member of the Bidding Consortium, including the Lead Member of the Consortium, needs to be specified.
- ii. In case of Affiliate under direct control of Bidder, the equity holding of the Bidding Company / Member of the Bidding Consortium, including the Lead Member of the Consortium in the Affiliate, needs to be specified.

- iii. In case of Affiliate under common control of Parent, the equity holding of the Parent in the Affiliate of the Bidding Company / Member of the Bidding Consortium, including the Lead Member of the Consortium, needs to be specified.
- iv. Relationship of Parent / Affiliate with Bidding Company / Member of Consortium to be at the most seven (7) days prior to the Bid Deadline (as per Clause 2.1.4 of RFP)

Yours faithfully

.....  
**(Signature and name of the authorized signatory of the Company and stamp)**

Name: .....  
Date: .....  
Place: .....

.....  
**(Signature and Stamp of statutory Auditors of Bidding Company / each Member of Bidding Consortium)**

Name: .....  
Date: .....  
Place: .....  
Date: .....

**ANNEXURE 7D -ADDITIONAL INFORMATION FOR VERIFICATION OF  
FINANCIAL AND TECHNICAL CAPABILITIES OF BIDDERS.**

.....  
**(Name of Bidder (Bidding Company/ Bidding Consortium or Technically/Financially Evaluated Entity(ies))**

**(Note:** In case of Consortium, details to be filled in by Lead Member for each Member of the Consortium including the Lead Member and in case of the qualification requirements of Technically / Financially Evaluated Entity(ies) being used, to be filled by each of such entity(ies)

**i. Financial capability (Attachment 1):**

1. Bidders shall attach unconsolidated / consolidated audited annual accounts, statements, as the case may be, (refer Clause 2.1.3) for the last three (3) financial years as Attachment 1. Such unconsolidated audited annual accounts shall include a Balance Sheet, Profit and Loss Account, Auditors Report and profit appropriation account.

**ii. Technical capability (Attachment 2):**

- a. This attachment shall include details of projects completed/commissioned or partly completed projects for which commercial operation has commenced to be considered for the purpose of meeting Qualification Requirements.

1. To be used by Bidder using development experience in Power Sector:

<b>Particulars</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>
Name(s) of project(s) from Power Sectors					
Location(s) including country(s) where project was set up					
Nature of Project					
Voltage level (if any)					
Capital cost of project(s) Rs. in Crore					
*Status of the project					
% of equity owned in the project(s)					

**\*Note 1:** Date of completion/commissioning/commercial operation to be mentioned

**Note 2:** For each project listed in the table, the Bidder shall furnish an executive summary including the following information:

- Project model, i.e., BOO, BOOT, BOOM;
- Debt financing and equity raised and provided by Bidder/Bidder's Parent/Bidder's Affiliate for the project, including names of lenders and investors;

- Size and type of installation;
- Technical data/information on major equipment installed
- Description of role performed by the Bidder/Bidder's Parent/Bidder's Affiliate on the project
- Clearances taken by the Bidder/Bidder's Parent/Bidder's Affiliate including but limited to right-of-way (RoW), forest clearance and other statutory / Govt. clearances.
- Cost data (breakdown of major components)
- Name of EPC and/or other major contractor
- Construction time for the project
- Names, addresses and contact numbers of owners of the projects
- Operating reliability over the past five (5) years or since date of commercial operation
- Operating environmental compliance history
- Names of supervisory entities or consultant, if any
- Date of commercial operation
- Total duration of operation

2. To be used by Bidder using construction experience in Power Sector:

Particulars	Year 1	Year 2	Year 3	Year 4	Year 5
Name(s) of project(s) from Power Sector					
Location(s) including country(s) where project was set up					
Nature of Project					
Voltage level (if any)					
Revenue received Rs. in Crore					
*Status of the project					
% of equity owned in the project(s)					

**\*Note 1:** Date of completion/commissioning/commercial operation to be mentioned

**Note 2:** For each project listed in the table, the Bidder shall furnish an executive summary including the following information:

- Project model, i.e., EPC, Turnkey;
- Size and type of installation;
- Technical data/information on major equipment installed
- Description of role performed by the Bidder/Bidder's Parent/Bidder's Affiliate on the project
- Cost data (breakdown of major components)
- Name of sub-contractor
- Construction time for the project
- Names, addresses and contact numbers of owners of the projects
- Operating reliability over the past five (5) years or since date of commercial operation
- Operating environmental compliance history
- Names of supervisory entities or consultant, if any
- Date of commercial operation
- Total duration of operation

**iii. Attachment-3:**

- a. For each project listed in Attachment 2 above, certificates of final acceptance and/or certificates of good operating performance duly issued by owners for the project and the same shall be certified as true by authorized signatory of the Bidding Company or the Lead Member of Consortium). In case the project listed in Attachment 2 is under BOOT / DBFOT mechanism, the certificates of final acceptance and/or certificates of good operating performance must be issued by the authority / independent engineer of the project as defined in the respective project agreement.

For and on behalf of Bidding Company/Consortium

M/s.....

.....  
**(Signature of authorized signatory)**

Name: .....

Designation: .....

Date: .....

Place: .....

**ANNEXURE 8 -UNDERTAKING AND DETAILS OF EQUITY INVESTMENT**

**Format 1: Bidders' Undertakings**

**[On the Letter Head of the Bidding Company/Lead Member of Bidding Consortium]**

**Date:** .....

**To,**

**Chief Engineer/Transmission  
Tamil Nadu Transmission Corporation Limited (TANTRANSCO)  
144, Annasalai,  
Chennai- 600002, Tamil Nadu**

Dear Sir,

**Sub: Bidders' Undertakings in respect of Bid for selection of Bidder as TSP to establish Intra-State transmission system for “Development of (i) Kavathampalayam 765/400 kV AIS SS along with 765 kV & 400 kV Transmission Lines and (ii) Edayarpalayam 400/230-110 kV AIS Substation”**

We hereby undertake on our own behalf and on behalf of the TSP, that if selected as the Successful Bidder for the Project:

1. The Project shall comply with all the relevant electricity laws, codes, regulations, standards and Prudent Utility Practices, environment laws and relevant technical, operational and safety standards, and we shall execute any agreements that may be required to be executed as per law in this regard.
2. We confirm that the Project shall also comply with the standards and codes as per Clause 1.6.1.2 of the RFP and the TSP shall also comply with the provisions contained in the Tamil Nadu Electricity Regulatory Commission - Intra State Open Access Regulations 2005, as amended from time to time.
3. We give our unconditional acceptance to the RFP dated XX.XX.2025 issued by the TANTRANSCO and the RFP Project Documents, as amended, and undertake to ensure that the TSP shall execute all the RFP Project Documents, as per the provisions of this RFP.
4. We have submitted the Bid on the terms and conditions contained in the RFP and the RFP Project Documents. Further, the Financial Bid submitted by us is strictly as per the format provided in Annexure 21 of the RFP, without mentioning any deviations, conditions, assumptions or notes in the said Annexure.
5. Our Bid is valid up to the period required under Clause 2.8 of the RFP.
6. Our Bid has been duly signed by authorized signatory and stamped in the manner and to the extent indicated in this RFP and the power of attorney / Board resolution in requisite format as per RFP has been enclosed with this undertaking.

7. We have assumed that if we are selected as the Successful Bidder, the provisions of the Consortium Agreement, to the extent and only in relation to equity lock in and our liability thereof shall get modified to give effect to the provisions of Clause 2.5.8 of this RFP and Article 19.1 of the Transmission Service Agreement. *(Note: This is applicable only in case of a Bidding Consortium)*
8. We confirm that our Bid meets the Scheduled COD of each transmission Element and the Project as specified below:

Sl. No.	Scope of the Transmission Scheme	Scheduled COD in months from Effective Date	Percentage of Quoted Transmission Charges recoverable on Scheduled COD of the Element of the Project	Element(s) which are pre-required for declaring the commercial operation (COD) of the respective Element
1	<p><b>Establishment of Kavathampalayam 765/400 kV Substation:</b></p> <p>a) Supply and Erection of 765 kV bus with 4 dia comprising of following:</p> <ul style="list-style-type: none"> <li>• 2 nos. of feeder bays for connecting Ariyalur 765 kV DC feeders with Switchable Line Reactors. (240 MVAR - 3×80 MVAR)</li> <li>• 2 nos. for the HV bay of ICTs. (765/400 kV, 500 MVA, Single Phase ICTs - 7nos. including 1 No. switchable Spare ICT)</li> <li>• 2 nos. bay for 240 MVAR (3×80MVAR) Bus Reactors with 1 No. Bay arrangement for Single Phase Switchable Reactor spare unit</li> <li>• 2 nos. of feeder bays for connecting Virudhunagar 765 kV DC feeders with Switchable Line Reactors, 240 MVAR (3×80 MVAR)</li> <li>• 1 No. bay arrangement for</li> </ul>	30 Months	21%	Elements (S. No 1 & 2) of scheme are required to be commissioned simultaneously as their utilization is dependent on each other

	<p>Single Phase Switchable Line Reactor spare unit for all 765 kV line feeders.</p> <p>b) Supply and Erection of 400 kV Bus with 5 dia comprising the following:</p> <ul style="list-style-type: none"> <li>• 2 nos. of feeder bays for connecting Edayarpalayam 400 kV DC Feeders.</li> <li>• 2 nos. of feeder bays for connecting Rasipalayam 400 kV DC Feeders</li> <li>• 2 nos. of feeder bays for connecting Palavady 400 kV DC Feeders</li> <li>• 2 nos. for the LV side of ICTs.</li> <li>• 2 nos. of spare bays with equipment</li> </ul> <p>c) Supply and Erection of 765/400 kV, 500 MVA ICTs – 7 Nos. (2×1500 MVA ICT Bank + 1 No. Single Phase 500 MVA Spare ICT) with Nitrogen fire quenching system and online gas and Tan Delta monitoring system.</p> <p>d) Supply and Erection of 765 kV, 3×80 MVA single phase line Reactor with 1 no. spare-13 Nos. with Nitrogen fire quenching system and online gas and Tan Delta monitoring system.</p> <p>e) Supply and Erection of 765 kV, 3 x 80 MVA single phase bus Reactor with 1 no. spare – 7 Nos. with Nitrogen fire quenching system and online gas and Tan Delta monitoring system.</p>			
2	a) 400kV Multi Circuit (MC) line with Quad Moose conductor for making LILO of <i>Rasipalayam to Palavadi feeder (Circuit 1 and 2)</i> at Kavathampalayam 765/400 kV SS.	<b>30 Months</b>	<b>3%</b>	Elements (S. No 1 & 2) of scheme are required to be commissioned simultaneously as their utilization is dependent on each other

	<p>b) OPGW (Optical Ground Wire) cable with 48 optical fibers shall be used as the optical fiber communication ground wire, including all necessary accessories, for the erection of 400 kV Multi circuit (MC) transmission lines in one of the designated tower peaks.</p> <p>c) An earth wire shall be provided for the 400 kV Multi circuit (MC) transmission lines in the other designated tower peaks.</p>			
<b>3</b>	<p><b>Establishment of Edayarpalayam 400/230-110 kV substation:</b></p> <p><b>A. Supply and Installation of 400kV Quad Moose ACSR Double Bus with 5 Nos Full Dia (2 Main Bays + 1 Tie Bay) comprising for the following Bays:</b></p> <p>a) 2 Nos. of 400kV line bays to PGCIL, for terminating 400 kV DC Quad line from Pugalur PGCIL 400 kV HVDC station.</p> <p>b) 1 No. of 400 kV Line Bay to PGCIL, for terminating 400KV DC Quad line II from Myvadi PGCIL 400 kV SS.</p> <p>c) 2 Nos. 400 kV line bays for terminating the 400 kV DC Quad line from proposed Kavathampalayam 765 kV AIS to the proposed Edayarpalayam 400 kV AIS</p> <p>d) 2 Nos. ICT HV Bays for 2 Nos. 500 MVA, 400/230/33 kV 3 Phase ICTs.</p> <p>e) 2 Nos. of 400KV, 3 Phase 125 MVAR Bus reactor Bay.</p> <p>f) 1 No. ICT HV Bay for 1 No 200 MVA, 400/110/33 kV 3 Phase ICTs.</p> <p><b>B. Supply and Installation of 400kV Quad Moose ACSR Double Bus with 3 Nos half Dia (1 Main Bay</b></p>	<b>30 Months</b>	<b>10%</b>	Utilization of Elements (S. No 3) of scheme is Independent from other elements

	<p><b>+ 1 Tie Bay) comprising the following Bays:</b></p> <p>a) 1 No. of 400 kV Line Bay to PGCIL, for terminating 400 kV DC Quad line I from Myvadi PGCIL 400 kV SS.</p> <p>b) 2 Nos. 400KV Spare feeder bays. The foundations for all equipment in these Bays shall be proposed without equipment due to rocky terrain. Also, the Sub-Station Towers, Girders. Main Bus and Jack Bus shall be Proposed and Installed.</p> <p>c) 1 No. ICT HV Bay for 1 No. 500 MVA, 400/230/33 kV future 3 Phase ICTs.</p> <p>d) 2 Nos. ICT HV Bays for 2 Nos. 200 MVA, 400/110/33 kV 3 Phase ICTs.</p> <p><b>C. Supply and Installation of 230kV Quad Moose ACSR Double Bus with Single Breaker scheme comprising the following Bays:</b></p> <p>a) 2 Nos. 230 kV ICT IV Bays for 2 Nos 500 MVA, 400/230/33KV 3 Phase ICTs.</p> <p>b) 1 No. 230KV ICT IV Bay for 1 No Future 500 MVA, 400/230/33 kV 3 Phase ICT. The foundations for all equipment in these Bays shall be proposed without equipment due to rocky terrain. Also, the Sub-Station Towers, Girders. Main Bus and Jack Bus shall be Proposed and Installed.</p> <p>c) 5 Nos. 230 kV Line Bays with allied equipment for the following 230 kV Line Connectivity.</p> <ul style="list-style-type: none"> <li>• 230 kV Edayarpalayam – Selvapuram Feeder (Future 230 kV Edayarpalayam - Othakkalmandapam Feeder.I)</li> <li>• 230 kV Edayarpalayam – Othakkalmandapam Feeder.II</li> </ul>			
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	<ul style="list-style-type: none"> <li>• 230 kV Edayarpalayam – Ponnapuram Feeder (Future 230 kV Edayarpalayam – KongalNagaram Feeder).</li> <li>• 230 kV Edayarpalayam – Palladam Feeder.</li> <li>• 230 kV Edayarpalayam – Kalivelampatty Feeder</li> </ul> <p>d) 1 No 230 kV future Bay for Terminating the future 230 kV Line. The foundations for all equipment in these Bays shall be proposed without equipment due to rocky terrain. Also, the Sub-Station Towers, Girders. Main Bus and Jack Bus shall be Proposed and Installed.</p> <p>e) 1 No 230 kV Bus Coupler Bay for an alternate feeding path for circuits and allows for Busbar switching without interrupting power supply to connected feeders.</p> <p><b>D. Supply and Installation of 110kV Quad Moose ACSR Double Bus with Single Breaker scheme comprising the following Bays:</b></p> <p>a) 3 Nos. 110 kV ICT IV Bays for 3 Nos 200 MVA, 400/110/ 33 kV 3 Phase ICTs.</p> <p>b) 7 Nos.110 kV Line Bays with allied equipment for the following 110 kV Line Connectivity.</p> <ul style="list-style-type: none"> <li>• 110 kV Edayarpalayam – Othakkalmandapam Feeder</li> <li>• 110 kV Edayarpalayam – Podanur Feeder</li> <li>• 110 kV Edayarpalayam – Arasur Feeder</li> <li>• 110 kV Edayarpalayam – Irugur Feeder</li> <li>• 110 kV Edayarpalayam – Kethanur Feeder</li> </ul>			
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	<ul style="list-style-type: none"> <li>• 110 kV Edayarpalayam – Poolavadi Feeder</li> <li>• 110 kV Edayarpalayam – Edayarpalayam Feeder (Existing 110KV Edayarpalayam AIS)</li> </ul> <p>c) 1 No 110 KV future Bay for Terminating the future 110 kV Line. The foundations for all equipment in these Bays shall be proposed without equipment due to rocky terrain. Also, the Sub-Station Towers, Girders. Main Bus and Jack Bus shall be Proposed and Installed.</p> <p>d) 1 No 110 kV Bus Coupler Bay for an alternate feeding path for circuits and allows for Busbar switching without interrupting power supply to connected feeders.</p> <p>e) Supply and Installation of 500 MVA, 400/230/33 kV 3 Phase ICTs - 2 Nos, with Nitrogen Injection Fire Prevention and Extinguishing Systems (NIFPES) Online DGA and Tan delta monitoring system.</p> <p>f) Supply and Installation of 200 MVA, 400/110/33KV 3 phase ICTs - 3 Nos with Nitrogen Injection Fire Prevention and Extinguishing System (NIFPES), Online DGA and Tan delta monitoring system.</p> <p>g) Supply and Installation of 400kV, 3 phase 125MVAr Bus Reactor - 2 Nos. with Nitrogen Injection Fire Prevention and Extinguishing System (NIFPES) Online DGA and Tan delta monitoring system.</p>			
<b>4</b>	<p>a) 765kV Double Circuit (DC) line with Hexa zebra conductor from Kavathampalayam 765/400 kV SS to Ariyalur 765/400 kV SS.</p> <p>b) OPGW (Optical Ground Wire) cable with 48 optical fibers shall be used</p>	<b>36 Months</b>	<b>50%</b>	Elements (S. No 4,5 & 6) of scheme are required to be commissioned simultaneously as their utilization is

	<p>as the optical fiber communication ground wire, including all necessary accessories, for the erection of 765 kV double circuit (DC) transmission lines in one of the designated tower peaks.</p> <p>c) An earth wire shall be provided for the 765 kV double circuit (DC) transmission lines in the other designated tower peaks.</p>			dependent on each other
<b>5</b>	<p>a) 400kV Double Circuit (DC) line with Quad Moose conductor from Kavathampalayam 765/400kV SS to Edayarpalayam 400-230-110 kV SS.</p> <p>b) OPGW (Optical Ground Wire) cable with 48 optical fibers shall be used as the optical fiber communication ground wire, including all necessary accessories, for the erection of 400 kV double circuit (DC) transmission lines in one of the designated tower peaks.</p> <p>c) An earth wire shall be provided for the 400 kV double circuit (DC) transmission lines in the other designated tower peaks.</p>	<b>36 Months</b>	<b>12%</b>	Elements (S. No 4,5 & 6) of scheme are required to be commissioned simultaneously as their utilization is dependent on each other
<b>6</b>	<p><b>Bay Extension at Ariyalur 765 kV SS comprising of following:</b></p> <p>Supply and Erection of 765 kV Bays as per Latest CEA guidelines:</p> <p>a) 765 kV Bay Extension for 2 nos. feeder bays in different Dias.</p> <p>b) 765 kV, 240MVAr Switchable Line Reactors (3×80MVAr) - 2 sets. (6Nos.) with Nitrogen Fire Quenching System and online Gas and Tan delta monitoring system</p>	<b>36 Months</b>	<b>4%</b>	Elements (S. No 4,5 & 6) of scheme are required to be commissioned simultaneously as their utilization is dependent on each other

We agree that the payment of Transmission Charges for any Element irrespective of its successful commissioning on or before its Scheduled COD shall only be considered after the successful commissioning of Element(s) which are pre - required for declaring the commercial operation of such Element as mentioned in the above table.

**Scheduled COD for the Project:** 36 Months from effective date.

9. We confirm that our Financial Bid conforms to all the conditions mentioned in this RFP, and in particular, we confirm that:
  - a. Financial Bid in the prescribed format of Annexure 21 has been submitted duly signed by the authorized signatory.
  - b. Financial Bid is unconditional.
  - c. Only one Financial Bid has been submitted.
10. We have neither made any statement nor provided any information in this Bid, which to the best of our knowledge is materially inaccurate or misleading. Further, all the confirmations, declarations and representations made in our Bid are true and accurate. In case this is found to be incorrect after our acquisition of KAVATHAMPALAYAM SS DEVELOPMENT LIMITED, pursuant to our selection as Selected Bidder, we agree that the same would be treated as a TSP's Event of Default under Transmission Service Agreement, and relevant provisions of Transmission Service Agreement shall apply.
11. We confirm that there are no litigations or other disputes against us which materially affect our ability to fulfill our obligations with regard to the Project as per the terms of RFP Project Documents.
12. Power of attorney/ Board resolution as per Clause 2.5.2 is enclosed.

**Signature and name of the authorized signatory of the Company and stamp of Bidding Company or Lead member of Consortium**

**Note:**

1. In case of foreign Bidders, refer to clause 2.5.6 (p)

**Format 2: Details of equity investment in Project**

1.1.a Name of the Bidding Company/ Bidding Consortium:

1.1.b Name of the Lead Member in the case of a Bidding Consortium:

1.2 Investment details of the Bidding Company/Member of the Bidding Consortium investing in \_\_\_\_\_ [Name of the SPV] as per Clause 2.5.8.2.

S. No.	Name of the Bidding Company/ Member in case of a Bidding Consortium	% of equity participation in the _____ [Name of SPV]
(1)	(2)	(3)
TOTAL		100%

\*The Selected Bidder shall only invest in the equity share capital of KAVATHAMPALAYAM SS DEVELOPMENT LIMITED. In case, any equity is to be infused by the Affiliate/Parent Company/Ultimate Parent Company, the same shall be done through Selected Bidder only.

**Signature and Name of authorized signatory in whose name power of attorney has been issued**

Signature of authorized signatory

Name: .....

Designation: .....

Date.....

Company rubber stamp

**ANNEXURE 9 - AUTHORISATION FROM PARENT/ULTIMATE PARENT / AFFILIATE OF BIDDING COMPANY / MEMBER OF BIDDING CONSORTIUM WHOSE TECHNICAL / FINANCIAL CAPABILITY HAS BEEN USED BY THE BIDDING COMPANY / MEMBER OF BIDDING CONSORTIUM.**

**[On the Letter Head of the Parent/Ultimate Parent /Affiliate]**

Name:.....  
Full Address: .....  
Telephone No.:.....  
E-mail address:.....  
Fax / No.:.....

**To**

**Chief Engineer/Transmission  
Tamil Nadu Transmission Corporation Limited (TANTRANSCO)  
144, Annasalai,  
Chennai- 600002, Tamil Nadu**

Dear Sir,

**Sub: Authorization for use of Technical / Financial Capability of M/s.....  
(Insert name of Parent / Affiliate) by M/s ..... (Insert name of Bidding  
Company / Member of Bidding Consortium).**

We refer to the RFP dated XX.XX.2025 ('RFP') issued by you for selection of Bidder as Transmission Service Provider for establishing the Intra-State Transmission System for **“Development of (i) Kavathampalayam 765/400 kV AIS SS along with 765 kV & 400 kV Transmission Lines and (ii) Edayarpalayam 400/230-110 kV AIS Substation”**.

We confirm that M/s. .... (Insert name of Bidding Company/ Consortium Member) has been authorized by us to use our technical and/or financial capability [strikeout whichever is not applicable] for meeting the Qualification Requirements for “\_\_\_\_ [Name of Project]”.

.....  
**(Signature and Name of the authorized signatory of the Company and stamp)**

Name: .....  
Date: .....  
Place: .....

**Notes:**

1. The above undertaking can be furnished by Ultimate Parent of Technically Evaluated Entity or Financially Evaluated Entity, as the case maybe, if legally binding undertaking is also furnished by the Ultimate Parent on behalf of such Financially Evaluated Entity/Technically Evaluated Entity.

**ANNEXURE 10 - FORMAT OF UNDERTAKING BY PARENT /ULTIMATE PARENT COMPANY**

*(This Annexure to be given by Parent Company in case Technical Evaluated Entity and/or Financially Evaluated Entity is a Parent Company and to be given by Ultimate Parent Company in case Technical Evaluated Entity and/or Financially Evaluated Entity is an Affiliate other than Parent Company)*

**[On the Letter Head of the Parent /Ultimate Parent Company]**

Name: .....

Full Address: .....

Telephone No.: .....

E-mail address: .....

Fax/No.: .....

**To:**

**Chief Engineer/Transmission  
Tamil Nadu Transmission Corporation Limited (TANTRANSCO)  
144, Annasalai,  
Chennai- 600002, Tamil Nadu**

**Sub: Undertaking for equity investment**

Dear Sir,

We refer to the Request for Proposal dated XX.XX.XXXX ('RFP') issued by you regarding setting up of Intra-State transmission system for \_\_\_\_\_ [Name of Project] Project on build, own, operate and transfer basis.

We have carefully read and examined in detail the RFP and the RFP Project Documents, including in particular, Clause 2.1.4 of the RFP and Clauses 2.5.2 and 2.5.8 of the RFP, requiring submission of an undertaking regarding the investment in the equity share capital of \_\_\_\_\_ [Name of SPV] and provisions for minimum equity holding and equity lock-in. We have also noted the amount of the equity investment required to be made in ..... (Insert the name of SPV) \_\_\_\_\_ [Name of SPV] by the ..... [Insert the name of the Bidder or the Consortium Member] for the Project.

In view of the above, we are hereby submitting legally binding undertaking supported by a Board Resolution that all the equity investment obligations of M/s..... (Insert Name of Bidding Company / Consortium Member), shall be deemed to be our equity investment obligations and in the event of any default the same shall be met by us. We further hereby undertake to you and confirm by way of reiterating that in the event of failure of .....[Insert the name of the Bidder or the Consortium Member] to invest in full or in part, in the equity share capital of \_\_\_\_\_[Name of SPV] as specified in the Bid, we shall invest the said amount not invested by.....[Insert the name of the Bidder or the Consortium Member] in \_\_\_\_\_[Name of SPV] by purchase of existing shares or subscribing to the new shares of \_\_\_\_\_[Name of SPV], as stipulated by you.

We have attached hereto certified true copy of the Board resolution whereby the Board of Directors of our Company has approved issue of this Undertaking by the Company.

All the terms used herein but not defined, shall have the meaning as ascribed to the said terms under the RFP.

Certified as true.

.....

**(Signature and Name of the authorized signatory of the Company and stamp)**

**Note:**

1. Wherever required, extract of the charter documents and documents such as a Board resolution should be submitted for verification.

**ANNEXURE 11 - FORMATS FOR BOARD RESOLUTIONS**

**Format 1**

**Format of the Board resolution for the Bidding Company / each Member of the Consortium**

[Reference Clause 2.5.2 of the RFP and the illustrations in Annexure 11A]

[**Note:** The following resolution no.1 needs to be passed by the Boards of each of the entity/(ies) making equity investment]

The Board, after discussion, at the duly convened Meeting on ..... [Insert date], with the consent of all the Directors present and in compliance of the provisions of the Companies Act, 1956/2013, passed the following Resolution:

**1. RESOLVED THAT** pursuant to the provisions of the Companies Act, 1956 / Companies Act 2013 (as the case may be) and compliance thereof and as permitted under the Memorandum and Articles of Association of the company, approval of the Board be and is hereby accorded for investment of.....% (.....per cent) of the total equity share capital of \_\_\_\_\_[Name of SPV] representing the entire amount proposed to be invested by the company for the transmission system for \_\_\_\_\_[Name of Project], partly by acquisition of the existing equity shares from \_\_\_\_\_[Name of BPC] and / or partly by subscribing to the new equity shares, as per the terms of the RFP.

[**Note:** Equity investment obligations by the Bidding Company/each Member of the Bidding Consortium should add up to 100%.]

[**Note:** In the event the Bidder is a Bidding Consortium, the following Board resolution no. 2 also needs to be passed by the Lead Member of the Bidding Consortium]

**2. RESOLVED THAT** approval of the Board be and is hereby accorded to contribute such further amount over and above the ..... percentage (\_\_\_%) limit to the extent becoming necessary towards the total equity share in the \_\_\_\_\_ [Name of SPV], obligatory on the part of the company pursuant to the terms and conditions contained in the Consortium Agreement dated ..... executed by the company as per the provisions of the RFP.

**3.** [Deleted]

[**Note:** The following resolution no. 4 is to be provided by the Bidding Company / Lead Member of the Consortium only]

**4. FURTHER RESOLVED THAT** MR/MS .....be and is hereby authorized to take all the steps required to be taken by the Company for submission of the Bid, including in particular, signing of the Bid, making changes thereto and submitting amended Bid, all the documents related to the Bid, certified copy of this Board resolution or letter or undertakings etc, required to be submitted to TANTRANSCO as part of the Bid or such other documents as may be necessary in this regard.

Certified True Copy

Company rubber stamp to be affixed

**[Notes:**

- 1) This certified true copy should be submitted on the letterhead of the Company, signed by the Company Secretary or any Whole Time Director/ Manager (supported by a specific board resolution) of the Bidding Company or the Lead Member of Consortium.
- 2) The contents of the format may be suitably re-worded indicating the identity of the entity passing the resolution, i.e., the Bidding Company, each Member of the Bidding Consortium.
- 3) This format may be modified only to the limited extent required to comply with the local regulations and laws applicable to a foreign entity submitting this resolution. For example, reference to Companies Act 1956 / Companies Act 2013 (as the case may be) may be suitably modified to refer to the law applicable to the entity submitting the resolution. However, in such case, the foreign entity shall submit an unqualified opinion issued by the legal counsel of such foreign entity, stating that the Board resolutions are in compliance with the applicable laws of the respective jurisdictions of the issuing company and the authorizations granted therein are true and valid.]

**Format 2**

**Format for the Board resolution of Parent Company/Ultimate Parent Company (in case credentials of such TEE/ FEE have been utilized by the Bidding Company or Bidding Consortium)**

The Board, after discussion, at the duly convened Meeting on ..... [Insert date], with the consent of all the Directors present and in compliance of the provisions of the Companies Act, 1956 / 2013, passed the following Resolution:

**RESOLVED THAT** pursuant to the provisions of the Companies Act, 1956 / Companies Act, 2013 (as the case may be) and compliance thereof and as permitted under the Memorandum and Articles of Association of the company, approval of the Board be and is hereby accorded for issuing an Undertaking to the TANTRANSCO, in the format specified in the RFP issued by the TANTRANSCO, draft of which is attached hereto and initialed by the Chairman whereby the company undertakes to invest .....percent (.... %) of the total equity share capital of \_\_\_\_\_[Name of SPV] through Selected Bidder representing the entire amount proposed to be invested by .....[insert the name of the Bidder or Member] for the said Project, in case of failure of .....[Insert the name of the Bidder or Member] to make such investment".

**FURTHER RESOLVED THAT** .....,be and is hereby authorized to take all the steps required to be taken by the Company, including in particular, signing the said Undertaking, submitting the same to the TANTRANSCO through .....[Insert name of Bidding Company/Lead Member of the Consortium] of all the related documents, certified copy of this Board resolution or letter, undertakings etc., required to be submitted to TANTRANSCO as part of the Bid or such other documents as may be necessary in this regard.

**Certified True Copy**

**Company rubber stamp to be affixed**

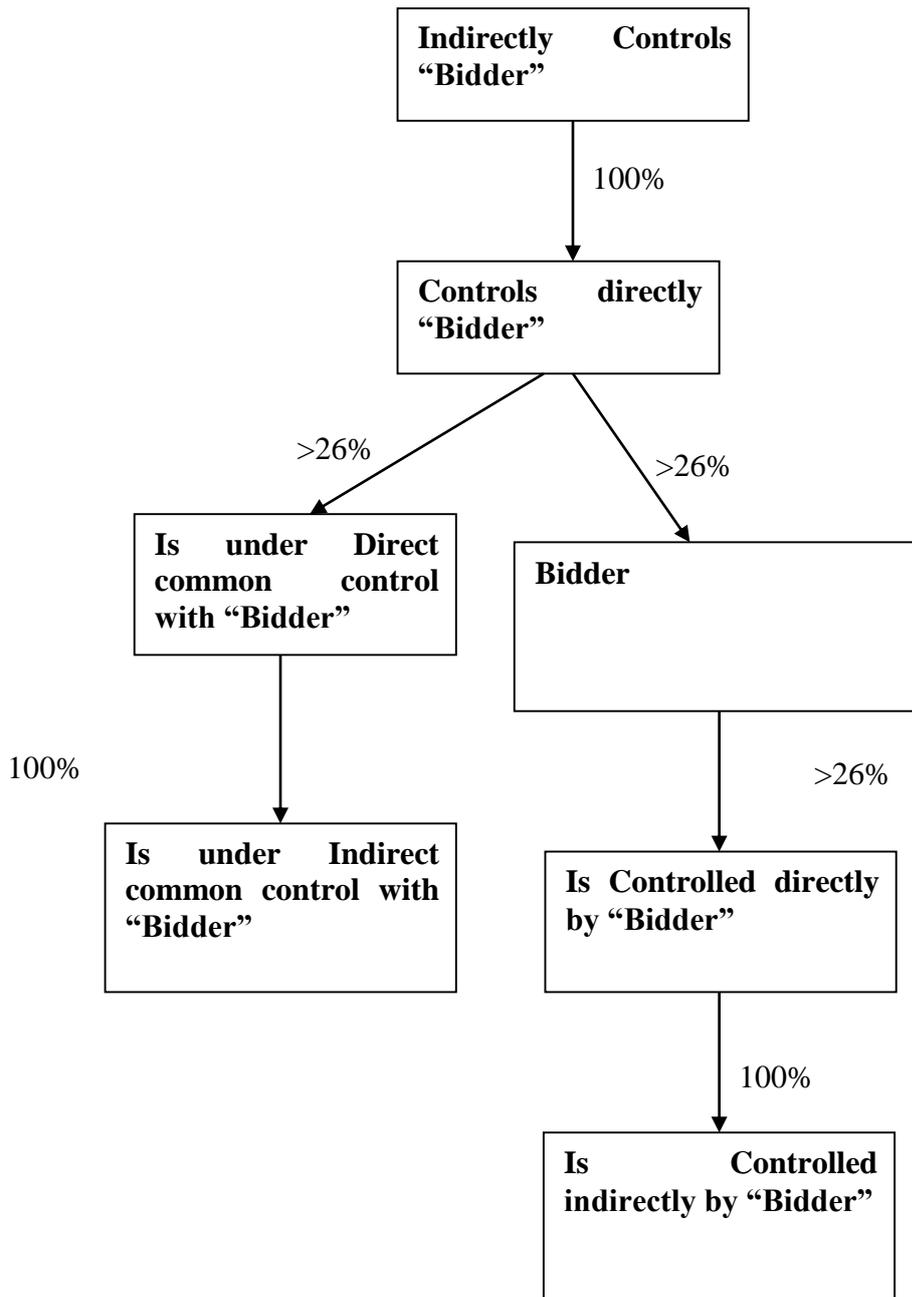
**Note:**

1. This certified true copy should be submitted on the letterhead of the Company, signed by the Company Secretary or any Whole-time Director/Manager (supported by a specific board resolution) of Bidding Company or Lead Member of the Consortium.
2. The contents of the format may be suitably re-worded indicating the identity of the entity passing the resolution.
3. This format may be modified only to the limited extent required to comply with the local regulations and laws applicable to a foreign entity submitting this resolution. For example, reference to Companies Act 1956 / Companies Act 2013 (as the case may be) may be suitably modified to refer to the law applicable to the entity submitting the resolution. However, in such case, the foreign entity shall submit an unqualified opinion issued by the legal counsel of such foreign entity, stating that the Board resolutions are in compliance with the applicable laws of the respective jurisdictions of the issuing company and the authorizations granted therein are true and valid.

**ANNEXURE 11A – ILLUSTRATION FOR APPLICABLE BOARD RESOLUTION REQUIREMENTS UNDER CLAUSE 2.5.2**

<b>Investor in the TSP</b>	<b>Entities (other than Bidder) whose credentials (financial and/or technical) used by the Bidder for meeting RFP criteria</b>	<b>Applicable Board Resolutions</b>	<b>Requirement of Undertaking (Annexure 10)</b>
Bidder himself for 100% equity	None	a) Format 1 of Annexure 11 - Resolution: 1, 2 and 4 from the Bidder	None
Bidder himself for 100% equity	Affiliate and/or Parent Company and/or Ultimate Parent	<p>a) Format 1 of Annexure 11 - Resolution: 1, 2, and 4 from the Bidder</p> <p>b) Format 2 of Annexure 11 by Parent/Ultimate Parent of Technically/ Financially Evaluated Entity(ies) whose credentials have been used, or Ultimate Parent.</p> <p>Provided, if the Bidder himself is the Ultimate Parent, then Format 2 need not be provided.</p>	<p>Yes, by <i>Parent Company in case TEE and/or FEE is a Parent Company and by Ultimate Parent Company in case TEE/FEE is an Affiliate other than Parent Company</i></p> <p>Provided, if the Bidder himself is the Ultimate Parent, then the undertaking need not be provided.</p>

**ANNEXURE 12 - FORMAT FOR ILLUSTRATION OF AFFILIATES**



**NOTE:** Bidder to provide the illustration, as applicable in their case, duly certified by the Company Secretary and supported by documentary evidence in this regard.

**ANNEXURE 13 - FORMAT FOR DISCLOSURE**

**[On the letter head of Bidding Company / Each Member in a Bidding Consortium]**

**Date:.....**

**DISCLOSURE**

We hereby declare that the following companies with which we/ have direct or indirect relationship are also separately participating in this Bid process as per following details:

<b>S. No.</b>	<b>Name of the Company</b>	<b>Relationship</b>
<b>1.</b>		
<b>2.</b>		
<b>3.</b>		

In case there is no such company please fill in the column “name of the company” as Nil.

Further we confirm that we don't have any Conflict of Interest with any other company participating in this bid process.

**Certified as True**

.....  
(Signature)

**Name:** .....

**Signature & Name of authorized signatory of the Company and Stamp**

The above disclosure should be signed and certified as true by the authorized signatory of the Bidding Company or of the Member, in case of a Consortium).

**ANNEXURE 14 - FORMAT OF THE BID BOND**

**FORMAT OF THE UNCONDITIONAL AND IRREVOCABLE BANK  
GUARANTEE FOR BID BOND**

**(To be on non-judicial stamp paper of appropriate value as per Stamp Act relevant to place of execution.)**

In consideration of the .....[Insert name of the Bidder] submitting the Bid inter alia for establishing the Intra-State transmission system for \_\_\_\_\_[Name of Project] on build, own, operate and transfer basis, in response to the RFP dated \_\_\_\_\_ issued by \_\_\_\_\_[Name of BPC], and the Bid Process Coordinator (hereinafter referred to as BPC) agreeing to consider such Bid of .....[Insert the name of the Bidder] as per the terms of the RFP, the [Insert name and address of the bank issuing the Bid Bond, and address of the Head Office] (hereinafter referred to as "Guarantor Bank") hereby agrees unequivocally, irrevocably and unconditionally to pay to \_\_\_\_\_[Name of BPC] or its authorized representative at \_\_\_\_\_[Address of BPC] forthwith on demand in writing from \_\_\_\_\_[Name of BPC] or any representative authorized by it in this behalf, any amount up to and not exceeding Rupees \_\_\_\_\_ Only (Rs \_\_\_\_\_ Crore), on behalf of M/s.....[Insert name of the Bidder].

This guarantee shall be valid and binding on the Guarantor Bank up to and including ..... [Date to be inserted on the basis of Clause 2.11 of this RFP] and shall not be terminable by notice or any change in the constitution of the Guarantor Bank or by any other reasons whatsoever and our liability hereunder shall not be impaired or discharged by any extension of time or variations or alternations made, given, or agreed with or without our knowledge or consent, by or between concerned parties.

Our liability under this Guarantee is restricted to Rupees \_\_\_\_\_ Only (Rs \_\_\_\_\_ Crore). Our Guarantee shall remain in force until ..... [Date to be inserted on the basis of Clause 2.11 of this RFP]. \_\_\_\_\_ [Name of BPC] or its authorized representative shall be entitled to invoke this Guarantee until ..... [Insert Date, which is three sixty five days (365) days after the date in the preceding sentence]. The Guarantor Bank hereby expressly agrees that it shall not require any proof in addition to the written demand from \_\_\_\_\_[Name of BPC] or its authorized representative, made in any format, raised at the above mentioned address of the Guarantor Bank, in order to make the said payment to \_\_\_\_\_[Name of BPC] or its authorized representative.

The Guarantor Bank shall make payment hereunder on first demand without restriction or conditions and notwithstanding any objection, disputes, or disparities raised by the Bidder or any other person. The Guarantor Bank shall not require \_\_\_\_\_[Name of BPC] or its authorized representative to justify the invocation of this BANK GUARANTEE, nor shall the Guarantor Bank have any recourse against \_\_\_\_\_[Name of BPC] or its authorized representative in respect of any payment made hereunder.

This BANK GUARANTEE shall be interpreted in accordance with the laws of India.

The Guarantor Bank represents that this BANK GUARANTEE has been established in such form and with such content that it is fully enforceable in accordance with its terms as against the Guarantor Bank in the manner provided herein.

This BANK GUARANTEE shall not be affected in any manner by reason of merger, amalgamation, restructuring or any other change in the constitution of the Guarantor Bank.

This BANK GUARANTEE shall be a primary obligation of the Guarantor Bank and accordingly \_\_\_\_\_[Name of BPC] or its authorized representative shall not be obliged before enforcing this BANK GUARANTEE to take any action in any court or arbitral proceedings against the Bidder, to make any claim against or any demand on the Bidder or to give any notice to the Bidder to enforce any security held by \_\_\_\_\_[Name of BPC] or its authorized representative or to exercise, levy or enforce any distress, diligence or other process against the Bidder.

Notwithstanding anything contained hereinabove, our liability under this Guarantee is restricted to Rupees \_\_\_\_\_ Only (Rs \_\_\_\_ Crore) and it shall remain in force until ..... [Date to be inserted on the basis of Clause 2.11 of RFP], with an additional claim period of three hundred sixty five (365) days thereafter. We are liable to pay the guaranteed amount or any part thereof under this BANK GUARANTEE only if \_\_\_\_\_ [Name of BPC] or its authorized representative serves upon us a written claim or demand.

In witness whereof the Bank, through its authorized officer, has set its hand and stamp on this..... day of ..... at.....

**Witness:**

1.....  
Name and Address

Signature: .....  
Name: .....

2. ....  
Name and Address

Designation with Stamp:

Signature .....

Attorney as per power of attorney  
No.....

For:  
..... [Insert Name of the Bank]

**Banker's Stamp and Full Address:**

Dated this.....day of..... 20.....

**Notes:**

- 1. The Stamp Paper should be in the name of the Executing Bank.

**ANNEXURE 15 - FORMAT FOR CONTRACT PERFORMANCE GUARANTEE**

**(To be on non-judicial stamp paper of appropriate value as per Stamp Act relevant to place of execution.**

**Foreign entities submitting Bids are required to follow the applicable law in their country)**

In consideration of the ..... [Insert name of the SPV or Selected Bidder on behalf of SPV or Lead Member in case of the Consortium, with address] agreeing to undertake the obligations under the Transmission Service Agreement dated ..... and the other RFP Project Documents and the Nodal Agency and ..... [Name of BPC], agreeing to execute the RFP Project Documents with the Selected Bidder, regarding setting up the Project, the.....[Insert name and address of the bank issuing the guarantee and address of the head office] (hereinafter referred to as "Guarantor Bank") hereby agrees unequivocally, irrevocably and unconditionally to pay to the Nodal Agency at..... [Insert Place and Address of the Nodal Agency indicated in TSA] forthwith on demand in writing from the Nodal Agency or any Officer authorized by it in this behalf, any amount up to and not exceeding Rupees.....Crores (Rs.....) only [Insert the amount of the bank guarantee] on behalf of M/s..... [Insert name of the Selected Bidder / SPV].

This guarantee shall be valid and binding on the Guarantor Bank up to and including .....and shall not be terminable by notice or any change in the constitution of the Bank or the term of the Transmission Service Agreement or by any other reasons whatsoever and our liability hereunder shall not be impaired or discharged by any extension of time or variations or alternations made, given, or agreed with or without our knowledge or consent, by or between parties to the respective agreement.

Our liability under this Guarantee is restricted to Rupees ..... Crores (Rs.....) only. Our Guarantee shall remain in force until..... [Insert the date of validity of the Guarantee as per Clause 2.12.1 of the RFP]. The Nodal Agency shall be entitled to invoke this Guarantee up to three hundred sixty five (365) days of the last date of the validity of this Guarantee.

The Guarantor Bank hereby expressly agrees that it shall not require any proof in addition to the written demand from the Nodal Agency, made in any format, raised at the above-mentioned address of the Guarantor Bank, in order to make the said payment to the Nodal Agency.

The Guarantor Bank shall make payment hereunder on first demand without restriction or conditions and notwithstanding any objection by \_\_\_\_\_ [Name of SPV], ..... [Insert name of the Selected Bidder], ..... [Insert name of the TSP] and/or any other person. The Guarantor Bank shall not require the Nodal Agency to justify the invocation of this BANK GUARANTEE, nor shall the Guarantor Bank have any recourse against the Nodal Agency in respect of any payment made hereunder.

**This BANK GUARANTEE shall be interpreted in accordance with the laws of India.**

The Guarantor Bank represents that this BANK GUARANTEE has been established in such form and with such content that it is fully enforceable in accordance with its terms as against the Guarantor Bank in the manner provided herein.

**This BANK GUARANTEE** shall not be affected in any manner by reason of merger, amalgamation, restructuring, liquidation, winding up, dissolution or any other change in the constitution of the Guarantor Bank.

**This BANK GUARANTEE** shall be a primary obligation of the Guarantor Bank and accordingly the Nodal Agency shall not be obliged before enforcing this BANK GUARANTEE to take any action in any court or arbitral proceedings against \_\_\_\_\_[Name of SPV]or the Selected Bidder, to make any claim against or any demand on \_\_\_\_\_[Name of SPV] or the Selected Bidder, as the case may be, or to give any notice to \_\_\_\_\_[Name of SPV]or the Selected Bidder, as the case may be, or to enforce any security held by the Nodal Agency or to exercise, levy or enforce any distress, diligence or other process against ..... [Name of SPV] or the Selected Bidder, as the case may be.

The Guarantor Bank acknowledges that this BANK GUARANTEE is not personal to the Nodal Agency and may be assigned, in whole or in part, (whether absolutely or by way of security) by Nodal Agency to any entity to whom the Nodal Agency is entitled to assign its rights and obligations under the Transmission Service Agreement.

The Guarantor Bank hereby agrees and acknowledges that the Nodal Agency shall have a right to invoke this Bank Guarantee either in part or in full, as it may deem fit.

Notwithstanding anything contained hereinabove, our liability under this Guarantee is restricted to Rupees ..... Crores (Rs .....) only and it shall remain in force until ..... [Date to be inserted on the basis of Article 3.1.2 of TSA], with an additional claim period of three hundred sixty five (365) days thereafter. This BANK GUARANTEE shall be extended from time to time for such period, as may be desired by..... [Insert name of the Selected Bidder or Lead Member in case of the Consortium or SPV]. We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only if the Nodal Agency serves upon us a written claim or demand.

**In witness where of:**

Signature.....

Name: .....

Power of attorney No.: .....

**For:**

..... [Insert Name of the Bank]  
Banker's Seal and Full Address, including mailing address of the Head Office

**Notes:**

1. The Stamp Paper should be in the name of the Executing Bank.

## ANNEXURE 16 – FORMAT OF CHECKLIST FOR TECHNICAL BID SUBMISSION REQUIREMENTS

**[This format needs to be duly filled in, signed by the authorized signatory of the Bidder (Bidding Company / Lead Member in case of a Bidding Consortium) and submitted along with the Bidder's Technical Bid]**

Technical Bid Submission Requirements	Response (Yes / No)
1. Format for the Covering Letter on the letterhead of Bidding Company or Lead Member of the Consortium, as applicable as per <b>Annexure 1</b> ;	
2. Format for Letter of Consent from each Consortium Member, including Lead Member, on their respective letterheads as per <b>Annexure 2</b> ;	
3. Format for evidence of authorized signatory's authority as per <b>Annexure 3</b> ;	
4. Board resolution from the Bidding Company / Lead Member of the Consortium in favour of the person executing the Power of Attorney as per Annexure 3;	
5. Power of Attorney from each Consortium Member in favour of Lead Member to be provided by each of the other Members of the Consortium as per <b>Annexure 4</b> ;	
6. Board Resolution from each Member of the Consortium, other than the Lead Member, in favour of their respective authorized representatives for executing the POA, Consortium Agreement and signing of the requisite formats;	
7. Format for Bidder's composition and ownership structure, along with status of equity holding (owning ten percent or more of the total paid up equity) not earlier than thirty (30) days prior to the Bid Deadline as per <b>Annexure 5</b> ;	
8. Consortium Agreement duly signed as per <b>Annexure 6</b> , along with Appendix-1, indicating the responsibilities and obligations of each Member of the Consortium;	
9. Format for Qualification Requirement: <ol style="list-style-type: none"> <li>a. Calculation sheets, detailing computation of Networth considered for meeting Qualifying Requirements, duly signed and stamped by the Statutory Auditor of the Bidding Company / each Member in case of a Bidding Consortium / FEE in cases where credentials of FEE is taken;</li> </ol>	

Technical Bid Submission Requirements	Response (Yes / No)
<p>b. Calculation sheets, detailing computation of capital expenditure of projects and revenue received in construction projects considered for meeting Qualification Requirements, duly signed and stamped by the Statutory Auditor of the Bidding Company / Lead Member in case of Bidding Consortium / TEE in cases where credentials of TEE is taken;</p> <p>c. Last financial year unconsolidated / consolidated audited annual accounts / statements, as the case may be, of the Financially Evaluated Entity / Technical Evaluated Entity</p> <p>d. Unconsolidated audited annual accounts of both the TEE and the Bidding Company/Lead member, as applicable, from the financial year in which financial closure was achieved till the financial year in which the said project was completed / commissioned.</p> <p>10. Copy of the Memorandum and Articles of Association and certificate of incorporation or other organizational document (as applicable), including their amendments, certified by the Company Secretary of Bidding Company or each Member in case of a Consortium including Lead Member.</p> <p>11. Attachment of <b>Annexure 7(D)</b>, detailing projects completed / commissioned and for which commercial operation has commenced including Executive Summary for each project.</p> <p>12. For each project listed in the attachment above, certified true copy of the certificates of final acceptance and / or certificates of good operating performance duly issued by owners or clients for the project, duly signed by authorized signatory in support of technical capability as defined in Clause 2.1.2 of RFP.</p> <p>13. Authority letter in favour of TANTRANSCO from the Bidder/every Member of the Consortium authorizing the TANTRANSCO to seek reference from their respective bankers &amp; others.</p> <p>14. Authorization from Parent/Ultimate Parent/Affiliate of Bidding Company / Member of Bidding Consortium whose technical / financial capability has been used by the Bidding Company / Member of Bidding Consortium.</p> <p>15. Initialing of all pages of Technical Bid by the Authorized Signatory in whose favour the POA (Annexure 3) has been executed.</p>	

Technical Bid Submission Requirements	Response (Yes / No)
16. Format for Illustration of Affiliates at the most seven (7) days prior to the Bid Deadline, duly certified by Company Secretary and supported by documentary evidence.	
17. Certified copy of the Register of Members / Demat Account Statement, Share Certificate, Annual Return filed with ROC etc. submitted as documentary evidence along with <b>Annexure 12</b> .	
18. Format for Disclosure by Bidding Company / each Member of the Consortium.	
19. Format for Affidavit by the Bidding Company / each Member of the Consortium	
20. Format for Authorization submitted in Non-Judicial stamp paper duly notarized.	
21. Bidders Undertaking and details of Equity Investment	
22. Bid Bond/ Bid Security Declaration (As applicable)	
23. Board Resolution as per <b>Annexure 11</b> (If required)	

[**Note:** The checklist is not exhaustive. Bidders are required to submit all the information/documents as per requirement of RFP]

**For and on behalf of Bidder**

M/s. ....

.....  
(Signature of authorized signatory)

**ANNEXURE 17 – LIST OF BANKS**

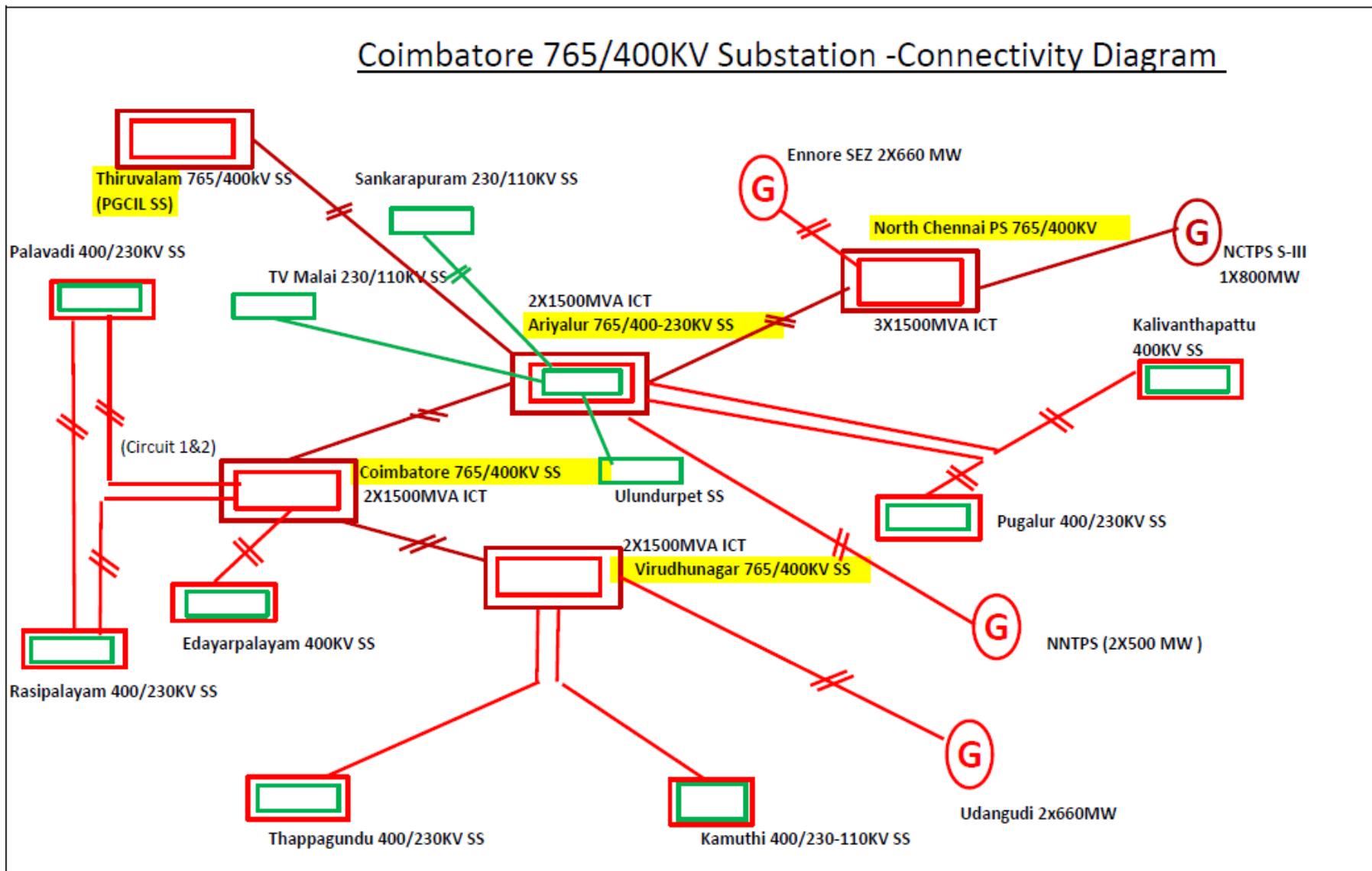
The list of Banks integrated with TN Procurement Portal for e-BG as on 20.11.2025

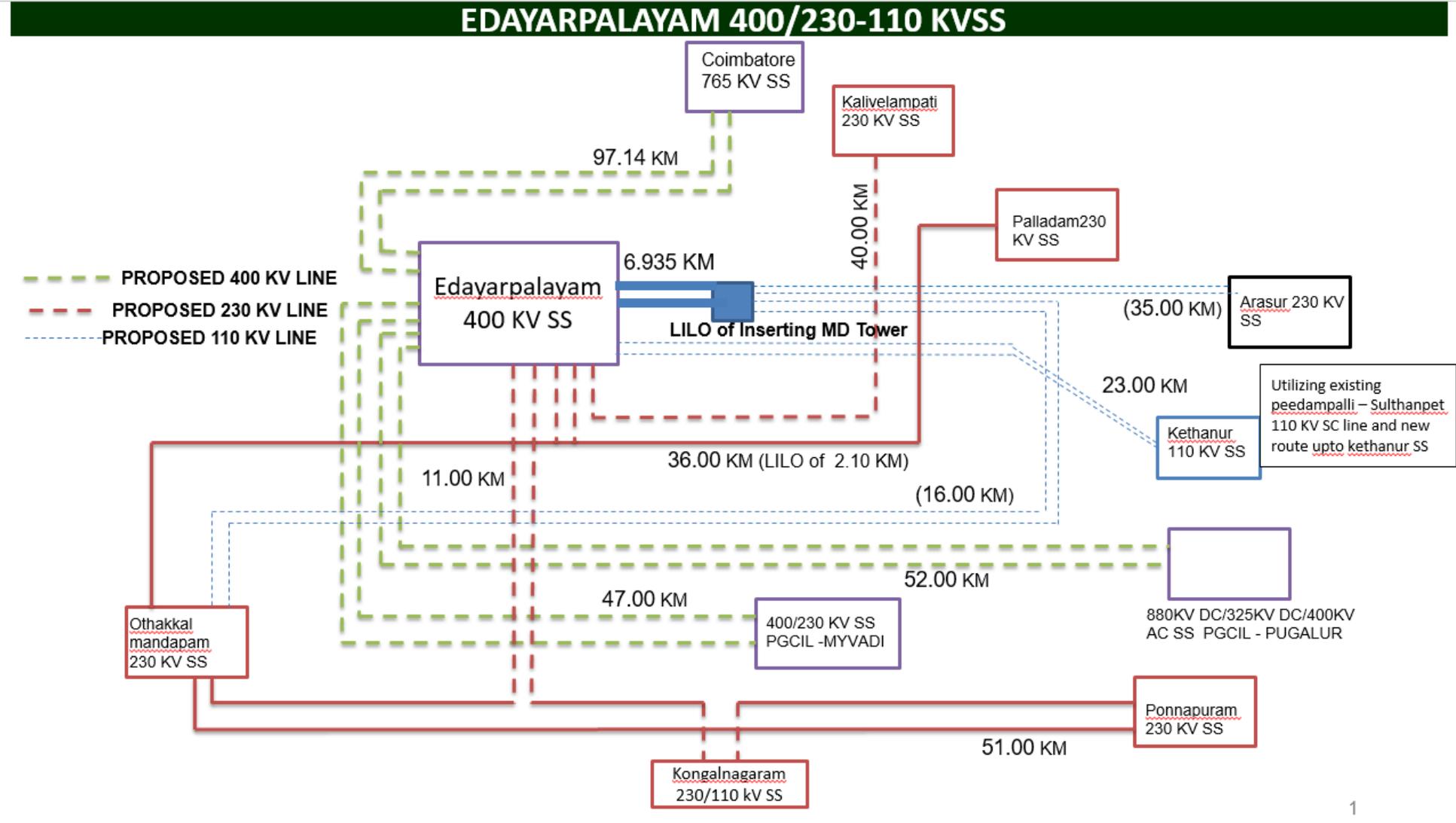
Sl.No	Bank Name
1	Bank of Baroda
2	Canara Bank
3	HDFC Bank
4	ICICI Bank
5	Indian Bank
6	Indian Overseas Bank
7	Karur Vysya Bank
8	Punjab National Bank
9	State Bank of India
10	Union Bank of India
11	City Union Bank
12	South Indian Bank

**Note:**

The above list of banks is indicative and can be modified by TANTRANSCO/NIC as required and any such change shall not be construed as a deviation from this document.

**ANNEXURE 18 - GRID MAP OF THE PROJECT**





**ANNEXURE 19 - FORMAT FOR CLARIFICATIONS / AMENDMENTS ON THE  
RFP / RFP PROJECT DOCUMENTS**

<b>S. No.</b>	<b>Name of the Document</b>	<b>Clause No. and Existing provision</b>	<b>Clarification required</b>	<b>Suggested text for the amendment</b>	<b>Rationale for the Clarification or Amendment</b>

Signature .....

Name.....

For

**Bidder's Rubber Stamp and Full Address.**

(Note: This format shall be used for submission of requests for clarifications/ amendments on the draft RFP Project Documents as per the provisions of Clause 2.3.1)

**ANNEXURE 20 - LIST FOR RFP PROJECT DOCUMENTS**

**ENCLOSURE 1: TRANSMISSION SERVICE AGREEMENT (Provided separately)**

**ENCLOSURE 2: SHARE PURCHASE AGREEMENT (Provided Separately)**

**ANNEXURE 21 - INSTRUCTIONS FOR FINANCIAL BID**

**[To be uploaded online]**

**Quoted Transmission Charges .....**

**Notes**

1. The Bidders are required to ensure compliance with the provisions of Clause 2.5.3 of this RFP.
2. Quotes to be in Rupees (INR).
3. The contents of this format shall be clearly typed.
4. The Financial Bid shall be digitally signed by the authorized signatory in whose name power of attorney as per Clause 2.5.2 is issued.
5. Ensure only one value for annual Transmission Charges is quoted. The same charge shall be payable every year to TSP for the term of TSA.

**ANNEXURE 22 – FORMAT FOR AFFIDAVIT**

**[On non-judicial stamp paper. Foreign companies submitting bids are required to follow the applicable law in their country]**

**AFFIDAVIT**

We [including any of our Affiliate and Consortium Member & any of its Affiliate], hereby declare that as on Bid Deadline:

- a. the Bidder & any of its Affiliate including any Consortium Member & any of its Affiliate, their directors or key personnel have not been barred or included in the blacklist by any government agency or authority in India, the government of the jurisdiction of the Bidder or Members where they are incorporated or the jurisdiction of their principal place of business, any international financial institution such as the World Bank Group, Asian Development Bank, African Development Bank, Inter-American Development Bank, Asian Infrastructure Investment Bank etc. or the United Nations or any of its agencies; or
- b. the Bidder & any of its Affiliate including any Consortium Member & any of its Affiliate or their directors have not been convicted of any offence in India or abroad.

We further declare that following investigations are pending / no investigation is pending [strike off whichever is not applicable] against us [including any of our Consortium Member or Affiliate or Parent or Ultimate Parent or Affiliate] or CEO or any of our directors/ manager/key managerial personnel of the Bidder /Consortium Member or their Affiliates.

We further undertake to inform TANTRANSCO of any such matter as mentioned above on its occurrence after the date of this affidavit till the Effective Date.

We undertake that, in case, any information provided in relation to this affidavit is found incorrect at any time hereafter, our BID / Letter of Intent / Transmission Service Agreement (if entered) would stand rejected / recalled / terminated, as the case may be.

.....  
Signature and Name of the authorized signatory of the Company Bidding Company / Lead Member of the Bidding Consortium

.....  
(Signature of Notary Public)

Place:.....  
Date:.....

Note: In case any investigation is pending against the Bidder, including any Consortium Member or Affiliate, or CEO or any of the directors/ manager/key managerial personnel of the Bidder /Consortium /Member or their Affiliates, full details of such investigation including the name of the investigating agency, the charge/offence for which the investigation has been launched, name and designation of persons against whom the investigation has been launched and other relevant information should be disclosed under this affidavit.

## ANNEXURE A

### Technical Details with respect to electronic bidding

#### Instructions for Online Bidding

Website for online bid submission: <https://tntenders.gov.in/nicgep/app>

Service Provider: **National Informatics Centre**

#### INSTRUCTION TO BIDDERS FOR SUBMISSION OF ONLINE BIDS E- REVERSE BIDDING IN 'E-TENDER'

**Bidders are requested to read these instructions and terms & conditions before submitting their online tenders.**

#### INSTRUCTIONS FOR ONLINE BID SUBMISSION:

**The Bidders are required to submit soft copies of their Bids electronically on the TAMILNADU GOVERNMENT E-PROCUREMENT Portal, using valid Digital Signature Certificates. The instructions given below are meant to assist the Bidders in registering on the TAMILNADU GOVERNMENT E-PROCUREMENT Portal, prepare their Bids in accordance with the requirements and submitting their Bids online on the TAMILNADU GOVERNMENT E PROCUREMENT Portal.**

*More useful information for submitting online Bids on the TAMILNADU GOVERNMENT E-PROCUREMENT Portal may be obtained at: <https://tntenders.gov.in/nicgep/app>*

#### **A. REGISTRATION:**

Bidders are required to enroll on the e-Procurement module of the Tamil Nadu Government E-procurement Portal (URL: <https://tntenders.gov.in/nicgep/app>)

- 1) By clicking on the link “**Online Bidder Enrolment**” on the TAMILNADU GOVERNMENT E -PROCUREMENT Portal which is free of charge.
- 2) As part of the enrolment process, the Bidders will be required to choose a unique username and assign a password for their accounts.
- 3) Bidders are advised to register their valid email address and mobile numbers as

part of the registration process. These would be used for any communication from the TAMILNADU E PROCUREMENT Portal.

- 4) Upon enrolment, the Bidders will be required to register their valid Digital Signature Certificate (DSC) (Class II or Class III Certificates with signing key usage) issued by any Certifying Authority recognized by CCA India (e.g.Sify / nCode /e Mudhra, etc.), with their profile.
- 5) Only one valid DSC should be registered by a Bidder. Please note that the Bidders are responsible to ensure that they do not lend their DSC's to others which may lead to misuse.
- 6) Bidder then logs in to the site through the secured log-in by entering their user ID / password and the password of the DSC /e-Token.

**B. SEARCHING FOR TENDERDOCUMENTS:**

- 1) There are various search options built-in the TAMILNADU GOVERNMENTE-PROCUREMENT Portal, to facilitate Bidders to search active tenders by several parameters. These parameters could include Tender ID, Organization Name, Location, Date, Value, etc. There is also an option of advanced search for tenders, wherein the Bidders may combine a number of search parameters such as Organization Name, Form of Contract, Location, Date, Other keywords etc. to search for a tender published on the TAMILNADU GOVERNMENT E-PROCUREMENT Portal.
- 2) Once the Bidders have selected the tenders they are interested in, they may download the required documents / tender schedules. These tenders can be moved to the respective 'My Tenders' folder. This would enable the TAMILNADU GOVERNMENT E- PROCUREMENT Portal to intimate the Bidders through SMS / e- mail in case there is any corrigendum issued to the tender document.
- 3) The Bidder should make a note of the unique Tender ID assigned to each tender, in case they want to obtain any clarification/ help from the Helpdesk.

**C. PREPARATION OF BIDS:**

- 1) Bidder should take into account any corrigendum published on the tender document before submitting their Bids.
- 2) Please go through the Bid document carefully to understand documents required to be submitted as part of the Bid. Any deviations from these may lead to

rejection of the Bid.

- 3) Bidder, in advance, should get ready the Bid documents to be submitted as indicated in the tender document / schedule and generally, they can be in PDF / XLS / RAR / DWF/JPG formats. Bid documents may be scanned with 100 dpi with Black and White option which helps in reducing size of the scanned document.
- 4) To avoid the time and effort required in uploading the same set of standard documents which are required to be submitted as a part of every Bid, a provision for uploading such standard documents (e.g. PAN card copy, Annual Reports, Auditor Certificates etc.) has been made to the Bidders. Bidders can use “My Space” or “Other Important Documents” area available to them to upload such documents. These documents may be directly submitted from the “My Space” area while submitting a Bid and need not be uploaded again and again. This will lead to a reduction in the time required for Bid submission process.

**D. ELECTRONIC SUBMISSION OF BIDS:**

**The Bidder shall submit online the requirements under qualification criteria and techno-commercial documents required and SCHEDULE OF PRICE/BOQ. All the documents are required to be signed digitally by Bidder. After electronic online Bid submission, the system generates a unique Bid reference number which is time stamped. This shall be treated as acknowledgement of Bid submission.**

**PROCEDURE FOR SUBMISSION OF BIDS:**

- 1) Bidder should log-in to the site well in advance for Bid submission so that they can upload the Bid in time i.e. on or before the Bid submission time. Bidder will be responsible for any delay due to other issues.
- 2) The Bidder has to digitally sign and upload the required Bid documents one by one as indicated in the Bid document.
- 3) Bidder has to select the payment option as “offline” to pay the EMD as applicable and enter details of the instrument.
- 4) Bidder should prepare and submit the EMD as per the instructions specified in the Bid document.
- 5) Bidders are requested to note that they should necessarily submit their price Bids in the format provided and no other format is acceptable. If the price Bid has

been given as a standard BOQ format with the tender document, then the same is to be downloaded and to be filled by the Bidder. Bidders are required to download the BOQ file, open it and complete the white coloured (unprotected) cells with their respective financial quotes and other details (such as name of the Bidder etc). No other cells should be changed. Once the details have been completed, the Bidder should save it and submit it online, without changing the filename. **If the BOQ file is found to be modified by the Bidder, the Bid will be rejected.**

- 6) The server time (which is displayed on the Bidders' dashboard) will be considered as the standard time for referencing the deadlines for submission of the Bids by the Bidders, opening of Bids etc. The Bidders should follow this time during Bid submission.
- 7) All the documents being submitted by the Bidders would be encrypted to ensure the secrecy of the data. The data entered cannot be viewed by unauthorized persons until the time of Bid opening. The confidentiality of the Bids is maintained using the secured Socket Layer 128-bit encryption technology. Data storage encryption of sensitive fields is done. Any Bid document that is uploaded to the server is subjected to symmetric encryption using a system generated symmetric key. Further, this key is subjected to asymmetric encryption using buyers/Bid openers public keys.
- 8) The uploaded Bid documents become readable only after the tender opening by the authorized Bid openers
- 9) Upon the successful and timely submission of Bid (i.e., after Clicking "Freeze Bid Submission" in the portal), the portal will give a successful Bid submission message & a Bid summary will be displayed with the Bid no. and the date & time of submission of the Bid with all other relevant details.
- 10) The Bid summary has to be printed and kept as an acknowledgement of the submission of the Bid. This acknowledgement may be used as an entry pass for any Bid opening meetings.
- 11) In all cases, Bidders should use their own ID and Password along with Digital Signature certificate at the time of submission of their Bid.
- 12) During the entire e-tender process, the Bidders will remain completely anonymous to one another and also to everybody else.

- 13) The e-tender floor shall remain open from the pre-announced date & time till the specified due date & time.
- 14) The electronic Bid submitted during the e-tender process shall be legally binding on the Bidder. Any Bid will be considered as valid only if it is submitted in the prescribed format given in the Bid document.
- 15) It is mandatory that all the Bids are submitted with digital signature certificate otherwise the same will not be accepted by the system.
- 16) TANTRANSCO reserves the right to cancel or reject or accept or withdraw or extend the due date for submission of Bid as the case may be without assigning any reason thereof.
- 17) The server time shall be treated as final and binding. Bids recorded in the server before the Bid closing time will only be treated as valid Bid. Bidders are, therefore, advised to submit their Bids well before the closing time of e-tender. If any Bid reaches the server after the Bid closing time as per server time, the same will not be recorded and no complaint in this regard shall be entertained. The Tender Inviting Authority (TIA) is not responsible for any sort of delay or the difficulties faced during the submission of Bids online by the Bidders due to local issues.
- 18) Bidders are advised to exercise caution in submitting their Bids in e-tender and e- reverse Bidding, as the case may be, to avoid any mistake. Bids once submitted can't be recalled.
- 19) Any order resulting from this Bidding process shall be governed by the terms and conditions mentioned in the Bid Documents.
- 20) No deviation to the technical and commercial terms & conditions are acceptable.
- 21) Bidders are required to sign in each page of the Bid specification.

**E. ASSISTANCE TO BIDDERS:**

- 1) Any queries relating to the Bid document and the terms and conditions contained therein should be addressed to the Inviting Authority for the Bid or the relevant contact person indicated in the Bid document.
- 2) All queries relating to the process of online Bid submission or queries relating to TAMILNADU GOVERNMENT E-PROCUREMENT Portal in general may be directed to the 24x7 TAMILNADU GOVERNMENT E-PROCUREMENT

Portal Helpdesk.

### System Configurations

The Bidder may note that the following configurations will be required to be undertaken in their Internet Explorer browsers for smooth functioning of the website and the e-Bidding portal.

The system requirements are as follows:

- 1) Windows 7 or above Operating System
- 2) IE-7 and above Internet browser.
- 3) Signing type digital signature
- 4) Latest updated JRE 8 (x86 Offline) software to be downloaded and installed in the system.

To enable ALL active X controls and disable ‘use pop up blocker’ under Tools→Internet Options→ custom level (Please run IE settings once)

*Tenderers are instructed to furnish the Hard copies of required Documents (if required) as mentioned in the tender specification. The Hard copy furnished shall be the same as available in the NIC portal and the soft copy uploaded in the Portal will alone be considered if any discrepancies arises.*

The Bidders shall also note that online submission of the Bid with supporting documents and submission of the hard copies of the documents shall be allowed only up to closing time of online Bid submission. Bidders in their own interest are advised to complete the entire process well in advance to avoid any last minute hiccup / technical problems. No complaints shall be entertained in this regard at any stage.

### Stage II : E- Reverse Bidding

Bidder has to quote the price in accordance with section-2, clause 2.5.3. Bid prices shall be evaluated on the basis of the lowest quoted total price which shall be the “Opening Price” for Reverse Bidding.

After opening of the Bid, the Bidders who shall become eligible to participate in the Reverse Bidding as per the conditions stated in this Document shall be known as the Qualified Bidders who will be intimated about their qualification

through notification on the (<https://tntenders.gov.in/nicgep/app>) website within their secured login as well as a system generated email. It shall be the sole responsibility of the Bidder to regularly check the (<https://tntenders.gov.in/nicgep/app>) website and log in to see whether it has qualified or not. TANTRANSCO will not be responsible for non-receipt of email by Bidder and its consequences.

E-Bidding is the process of inviting binding final price offers from the Qualified Bidders through internet for the purpose of determination of the Successful Bidder (i.e. the Bidder who submits the lowest price Bid in the Reverse Bidding. The Qualified Bidders shall submit their Final Offer in **INR** on the electronic bidding platform. Each reduction must be a **minimum of 0.25%** of the prevailing lowest Quoted Transmission Charges. Any reduction higher than the minimum must be in **multiples of 0.25%** (e.g., 0.50%, 0.75%, 1.00%, etc.) of the prevailing lowest Quoted Transmission Charges. Such changes can be made any number of times within the Reverse Bidding period.

The Qualified Bidder will remain anonymous to other Qualified Bidders participating in the electronic Bidding process. The Qualified Bidder will be able to see the prevailing lowest price Bid, but the name of the current L1 Bidder at any point in time will not be displayed. The Qualified Bidder shall have to put its price Bid below the displayed current L1 Bid by a decrement as above to become the L1 Bidder. After completion of the Reverse Bidding Process, the lowest rate quoted i.e. arrived shall be the Closing Price (“Closing Price”) and the Bidder quoting the same, shall be considered as the L1 Bidder (“L1 Bidder”).

The electronic Bidding process will have a scheduled start and close time which will be displayed on screen. A Qualified Bidder will be able to put its price Bid after the start of Bid time and till the close time of electronic Bidding. The current server time (IST) will also be displayed on the screen. The initial period for conducting the e-reverse bidding shall be 2 hours which will be extended by 30 minutes from the last received bid time, if the bid is received during the last 30 minutes of the scheduled or extended bid time. Subsequently, it will be extended again by 30 minutes from the latest received bid time.

During the tender process for electronic Bidding the Bidder shall be required to

sign their Bids with their respective digital signature certificate (DSC) which has been used to login. Any digital signature certificate other than the above shall not be acceptable for Bid submission by the system.

Bidders in their own interest are advised to get themselves acquainted with the electronic Reverse Bidding process of (<https://tntenders.gov.in/nicgep/app>) by getting their Authorized Representative trained before hand through some demo electronic –Reverse Bidding schedule of which will be declared later in the (<https://tntenders.gov.in/nicgep/app>) website.

#### About Digital Signature Certificate

A Bidder shall be required to possess a valid Digital Signature Certificate (DSC) of signing type to be able to submit its Bid and to participate in the electronic Reverse Bidding on (<https://tntenders.gov.in/nicgep/app>) website. For this purpose, Bidders shall be required to authorize its Authorized Signatory to procure a Class-III DSC of signing type from any Certifying Authority or their authorized agencies in India.

The Bidder may note that only one user id will be mapped with a given DSC for the Authorized Representative. DSC once mapped with a particular user id of a Bidder will normally not be changed and therefore Bidders are advised to carefully select the DSC before forwarding the same to NIC for mapping.

The Digital Signature Certificate will be used to digitally sign the Bids that the Bidder will submit online.

It will be the sole responsibility of the Bidder and its respective Authorized Representative to maintain the secrecy of the password for the Digital Signature Certificate. The Bidder and its contact person shall be solely responsible for any misuse of the DSC and no complaint / representation in this regard shall be entertained at any stage by TANTRANSCO.

#### **Terms and Conditions for E-Reverse Bidding**

- 1) After completion of the online E-Reverse Bidding, the “Closing Price (CP)” shall be available for further processing.
- 2) If no Bid or single Bid is received in the Bidding system/website within the specified

time duration of the online E-Reverse Bidding then TANTRANSCO may scrap the online Reverse Bidding process and may proceed with the lowest Price Bid received through e-tendering for further processing.

- 3) Only those Bidders whose offers are found to be Technically and Commercially Responsive, shall be eligible to participate in E-Reverse Bidding process.
- 4) Online Reverse Bidding shall be conducted by TANTRANSCO on a pre-specified date and time, while the Bidders shall be quoting from their own offices/place of their choice. Internet connectivity shall have to be ensured by Bidders themselves.
- 5) During the Reverse Bidding, time extension of additional 15 minutes may be given by TANTRANSCO at its sole discretion, if no Bid is received till that time.
- 6) To ward-off contingent situation, Bidders are requested to make all the necessary arrangements/alternatives whatever required so that they are able to circumvent such situation and still be able to participate in the Reverse Bidding successfully. Failure of power or loss of connectivity at the premises of Bidders during the Reverse Bidding cannot be the cause for not participating in the Reverse Bidding, TANTRANSCO shall not be responsible for such eventualities.
- 7) Bidders are advised to get fully trained and clear all their doubts such as refreshing of Screen, tender value being Bid, Bidding rules etc.
- 8) Upon receipt of the system report after completion of the Online Reverse Bidding Closing Price will be considered for further processing. TANTRANSCO decision on award of contract shall be final and binding on all the Bidders.
- 9) TANTRANSCO reserves the right to cancel/reschedule/extend the Reverse Bidding process/tender at any time, before ordering, without assigning any reason.
- 10) TANTRANSCO shall not have any liability to Bidders for any interruption or delay in access to the site irrespective of the cause. In such cases, the decision of TANTRANSCO shall be binding on the Bidders.
- 11) Other terms and conditions shall be as per TANTRANSCO Bidding documents and other correspondences, if any, till date.
- 12) Bidders are required to submit their acceptance to the stipulated terms and conditions before participating in the Reverse Bidding
- 13) For the Reverse Bidding technically and commercially acceptable Bidders only shall be eligible to participate.
- 14) Bidders shall ensure online submission of their 'Bid Price' within the Bidding Period.

- 15) Rules for Reverse Bidding like event date, time, Bid decrement, extension etc. shall be as per the business rules, enumerated above, for compliance.
- 16) If the Bidder or any of his representatives are found to be involved in Price manipulation/ cartel formation of any kind, directly or indirectly by communicating with other Bidders, action as per extant TANTRANSCO guidelines, shall be initiated by TANTRANSCO.
- 17) The Bidder shall not divulge either his Bids or any other exclusive details of TANTRANSCO to any other Bidder.
- 18) Period of validity of Prices received through Reverse Bidding shall be same as that of the period of validity of Bids offered.
- 19) Bidders may note that, although extension time is 10 minutes, there is a time lag between the actual placing the Bid on the local computer of the Bidder and the refreshing of the data on to the server for the visibility to the TANTRANSCO. Considering the processing time for data exchange and the possible network congestion, Bidders must avoid the last minute hosting of the Price Bid.
- 20) Participating Bidder will agree to non-disclosure of trade information regarding the purchase, identity of TANTRANSCO, Bid process, Bid technology, Bid documentation and Bid details.
- 21) It is brought to the attention of the Bidders that the Bid event will lead to the final price only.
- 22) Technical and other non-commercial queries (not impacting price) can only be routed to the TANTRANSCO contact personnel indicated in the Bidding documents.
- 23) Order finalization and post order activities would be transacted directly between Successful Bidder and TANTRANSCO.
- 24) Order shall be placed outside the e-portal & further processing of the order shall also be outside the system.
- 25) In case of any problem faced by the Bidder during Reverse Bidding and for all Bidding process related queries, Bidders are advised to contact the persons indicated in the Bid document.
- 26) TANTRANSCO will not be responsible for any PC configuration/Java related issues, software/hardware related issues, telephone line glitches and breakdown/slow speed in internet connection of PC at Bidder's end.
- 27) Bidders may note that it may not be possible to extend any help, during Reverse

Bidding, over phone or in person in relation to rectification of PC/Internet/Java related issues and Bidder may lose the chance of participation in the Bidding.

28) For access to the Bidding site, the following URL is to be used:(<https://tntenders.gov.in/nicgep/app>).

**For user guidance please follow the manual which is there in the website.**

29) No queries shall be entertained while Reverse Bidding is in progress.

In case user ID is locked, it is requested to call helpdesk at (<https://tntenders.gov.in/nicgep/app>).

## ANNEXURE B

### Technical Specifications of Transmission System

#### SPECIFIC TECHNICAL REQUIREMENTS FOR TRANSMISSION LINES

The design, routing and construction of transmission lines shall be in accordance with Chapter V, Part-A of CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations 2022, as amended from time to time. Other CEA Regulations/ guidelines as amended up to date and Ministry of Power (MoP) guidelines, as applicable, shall also be followed.

- A.1.0 Selection of tower type shall be made as per CEA Regulations, however in case lattice type towers are used, the following shall also be applicable:
- A.2.0 Steel section of grade E 250 and/or grade E 350 as per IS 2062, only are permitted for use in towers, extensions, gantry structures and stub setting templates. For towers in snowbound areas, steel sections shall conform to Grade-C of IS-2062.
- A.3.0 Towers shall be designed as per IS-802:2015, however the drag coefficient of the tower shall be as follows: -

Solidity Ratio	Drag Coefficient
Up to 0.05	3.6
0.1	3.4
0.2	2.9
0.3	2.5
0.4	2.2
0.5 and above	2.0

- A.4.0 Transmission Service Provider (TSP) shall adopt any additional loading/design criteria for ensuring reliability of the line, if so desired and /or deemed necessary.
- A.5.0 Transmission line shall be designed considering wind zones as specified in wind map given in National Building Code 2016, Vol.1. The Bidder shall also make its own assessment of local wind conditions and frequent occurrences of High Intensity Winds (HIW) due to thunderstorms, dust-storms, downburst etc. along the line route and wherever required, higher wind zone than that given in wind map shall be considered for tower design for ensuring reliability of line. Further, for transmission line sections passing within a distance of 50 km from the boundary of two wind zones, higher of the two wind zones shall be considered for design of towers located in such sections.
- A.6.0 Selection of reliability level for design of tower shall be as per CEA Regulation (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations 2022, as amended from time to time.

## A.7.0

- a) In case of construction of transmission line of Voltage level of 400 kV and above, under crossing of the existing transmission line shall not be allowed. In the case where it is inevitable to under-cross the existing transmission line then TSP shall seek prior approval from Chief Electrical Inspector, CEA with detailed study ensuring that all statutory electrical clearances and Electric Field limit of 10 kV/m at 1 m and 1.8 m from ground level is not violated.
- b) For power line crossing of 400 kV or above voltage level, large angle and dead end towers (i.e. D/DD/QD) shall be used on either side of power line crossing.
- c) For power line crossing of 132 kV and 220 kV voltage level, angle towers (B/C/D/DB/DC/DD/ QB/QC/QD) shall be used on either side of power line crossing depending upon the merit of the prevailing site condition and line deviation requirement.
- d) For power line crossing of 66 kV and below voltage level, suspension/tension towers shall be provided on either side of power line crossing depending upon the merit of the prevailing site condition and line deviation requirement.
- e) For crossing railways, national highways and state highways, the Rules/Regulations of appropriate authorities shall be followed.

**Note:** The existing drawings provided above and in subsequent amendments to the RfP are as received from the developer of existing substation and provided only for reference. Bidders shall follow the RfP for scope of work. Actual site conditions may be different due to other schemes being executed or subsequent revisions by the developer. Therefore, Bidders are advised to visit the substation sites and acquaint themselves with the actual site conditions, layout, topography, infrastructure such as the requirement of roads, cable trench, drainage, boundary etc. and also the design philosophy.

**Proposed Edayarpalayam 400 kV SS connectivity SS UTM Coordinate details**

<b>Edayarpalayam 400 KV SS</b>	<b>Kavathampalayam 765 kV SS</b>	<b>Pugalur PGCIL 400 kV SS</b>	<b>Myvadi PGCIL 400 kV SS</b>
Zone-43P 728907.151 E 1207603.453 N	Zone-43P 767496 m E 1244646 m N	Zone- 43P 819424.00 mE 1213275.00 mN	Zone- 43 P 754648.00 mE 1172282.00 mN

A.8.0 (a) The relevant conductor configuration shall be as follows: -

Type of conductor: ACSR / AAAC / AL59

Basic parameters:

<b>Transmission line</b>	<b>ACSR Conductor specified</b>	<b>Equivalent AAAC conductor based on 53.5% conductivity of Al Alloy</b>	<b>Equivalent minimum size of AL59 conductor based on 59% conductivity of AL Alloy*</b>	<b>Sub-conductor Spacing</b>
765 kV D/C (Hexa Bundle) Transmission Lines	<b>Zebra:</b> Stranding 54/3.18 mm-Al + 7/3.18 mm-Steel, 28.62 mm diameter 428 mm <sup>2</sup> , Aluminium area,  Maximum DC Resistance at 20°C (Ω/km): 0.06868  Minimum UTS: 130.32 kN	Stranding details: 61/3.19 mm,  28.71 mm diameter; 487.5 mm <sup>2</sup> Aluminium alloy area  Maximum DC Resistance at 20°C (Ω/km) : 0.06815  Minimum UTS: 135.6 kN	Stranding details: 61/3.08 mm, 27.72 mm diameter; 454 mm <sup>2</sup> Aluminium alloy area  Maximum DC Resistance at 20°C (Ω/km) : 0.0653  Minimum UTS: 108 kN	457 mm
400 kV D/C (Twin Bundle) transmission line	<b>Moose:</b> <b>Stranding</b> 54/3.53 mm-Al +7/3.53 mm-Steel, 31.77 mm diameter  528.5 mm <sup>2</sup> , Aluminum area,  Maximum DC Resistance at 20°C (Ω/km): 0.05552	<b>Stranding details:</b> 61/3.55 mm 31.95mm diameter.  604mm <sup>2</sup> Aluminum Alloy area  Maximum DC Resistance at 20°C (Ω/km):0.05506	<b>Stranding details:</b> 61/3.31 mm 29.79 mm diameter;  525mm <sup>2</sup> Aluminum Alloy area  Maximum DC Resistance at 20°C (Ω/km):0.0566	450 mm
400 kV D/C	<b>Moose:</b> <b>Stranding</b> 54/3.53mm-Al	<b>Stranding detail s:</b> 61/3.55mm 31.95mm	<b>Stranding detail s:</b> 61/3.31mm	

Transmission line	ACSR Conductor specified	Equivalent AAAC conductor based on 53.5% conductivity of Al Alloy	Equivalent minimum size of AL59 conductor based on 59% conductivity of AL Alloy*	Sub-conductor Spacing
(Quad Bundle) transmission lines	+7/3.53mm-Steel, 31.77 mm diameter  528.5 mm <sup>2</sup> , Aluminum area,  Maximum DC Resistance at 20°C (Ω/km): 0.05552	diameter;  604mm <sup>2</sup> Aluminum alloy area  Maximum DC Resistance at 20°C (Ω/km): 0.05506	29.79 mm diameter;  525mm <sup>2</sup> Aluminum alloy area  Maximum DC Resistance at 20°C (Ω/km): 0.0566	457 mm

**Note:**

1. *\*To select any size above the minimum, the sizes mentioned in the Indian standard IS-398(part-6) shall be followed.*
2. *The transmission lines shall have to be designed for a maximum operating conductor temperature of 85 ° C.*

A.9.0 The required phase to phase spacing and horizontal spacing for 765 kV and 400kV line(s) shall be governed by the tower design as well as minimum live metal clearances for 765 kV voltage level under different insulator swing angles. However, the phase to phase spacing for 765 kV and 400 kV lines shall not be less than 15 m and 8m respectively.

A.10.0 All electrical clearances including minimum live metal clearance, ground clearance and minimum mid span separation between earth wire and conductor as given below shall be considered:

**a) Minimum live metal clearances for 765 kV line:**

(i) Under stationary conditions

From tower body: For 765 kV D/C: 6.1 m

For 765 kV S/C: 5.6 m

(ii) Under swing conditions

Wind Pressure Condition	Minimum Electrical Clearance
a) Swing angle (25°)	4.4 m
b) Swing angle (55°)	1.3 m

- b) Minimum ground clearance for 765 kV line: 18 m  
c) Minimum mid span separation between earth-wire and conductor for 765 kV line: 9.0 m

**b) Minimum live metal clearances for 400 kV line:**

- (i) Under stationary conditions

From tower body: 3.05 m

- (ii) Under swing conditions

Wind Pressure Condition	Minimum Electrical Clearance
a) Swing angle (22°)	3.05 m
b) Swing angle (44°)	1.86 m

- (iii) Minimum ground clearance for 400 kV line: 8.84 m  
(iv) Minimum mid span separation between earth-wire and conductor for 400 kV line: 9.0 m

- A.11.0 Shielding angle shall not exceed 10 deg for 765 kV D/C and 20 deg for 400 kV D/C transmission line.
- A.12.0 The Fault current for design of line shall be 50 kA for 1 sec for 765 kV and 63 kA for 1 sec for 400 kV.
- A.13.0 In case of 765 kV voltage class lines, at least one out of two earth wires shall be OPGW and second earth wire, if not OPGW, shall be either of galvanized stranded steel (GSS) or Aluminum Alloy Conductor Steel Reinforced (AACSR) conductor type or any other suitable conductor type depending upon span length and other technical consideration.
- In case of 400 kV and above voltage class lines, at least one out of two earth wires shall be OPGW and second earth wire, if not OPGW, shall be either of Galvanized Stranded Steel (GSS) or Aluminum Alloy Conductor Steel Reinforced (AACSR) or any other suitable conductor type depending upon span length and other technical consideration.
- A.14.0 Each tower shall be earthed such that tower footing impedance does not exceed 10 ohms. Pipe type or Counterpoise type earthing shall be provided in accordance with relevant IS. Additional earthing shall be provided on every 7 to 8 kms distance for direct earthing of both shield wires. If site condition demands, multiple earthing or use of earthing enhancement compound shall be used.
- A.15.0 Pile type foundation shall be used for towers located in river or creek bed or on bank of river having scourable strata or in areas where river flow or change in river course is

anticipated, based on detailed soil investigation and previous years' maximum flood discharge of the river, maximum velocity of water, highest flood level, scour depth and anticipated change in course of river based on river morphology data of at least past 20 years to ensure availability and reliability of the transmission line.

- A.16.0 Transmission line route shall be finalized, in consultation with appropriate authorities so as to avoid the habitant zones of endangered species and other protected species. Bird diverters, wherever required, shall be provided on the transmission line. In order to optimize the route, use of GATISHAKTI platform shall also be made.
- A.17.0 Wherever, the transmission lines are passing through cyclone prone areas (i.e. areas up to 60 km from coast)/ creek regions/ aggressive soil areas following shall also be applicable:
- (a) The fabricated tower parts and stubs shall have a minimum overall zinc coating of  $900 \text{ g/m}^2$  of surface area except for plates and sections below 5 mm which shall have a minimum overall zinc coating of  $610 \text{ g/m}^2$  of surface area. The average zinc coating for all sections and plates 5 mm and above shall be maintained as 127 microns and that for plates and sections below 5 mm shall be maintained as 87 microns.
  - (b) Ready mix concrete of M30 Grade shall be used to avoid use of locally available saline water. However, design mix concrete of M30 Grade conforming to IS 456 with potable water can be used at locations where transportation of ready-mix concrete is not feasible. Minimum cement content in any case shall not be less than  $330 \text{ kg/m}^3$ .
  - (c) The surface of the reinforced steel shall be treated with epoxy-based coating to enhance corrosion performance of foundation. Use of epoxy coated reinforcement in foundation shall be as per IS 13620. In addition, two (2) coats of bituminous painting of minimum  $1.6 \text{ kg/m}^2$  per coat shall be applied on all exposed faces of foundation (i.e. pedestal and base slab).
  - (d) Double coat 20 mm thick cement plaster shall be provided on all exposed concrete surface as well up to 300 mm below ground level to give protection to concrete surface from environmental and saline effect.
  - (e) Before coping of chimney top portion, three coats of anti-corrosive paint of minimum 30-35 microns dry film thickness each shall be applied on the stub in the 50 mm coping portion as well as up to 350 mm above CL portion.
- A.18.0 The raised chimney foundation is to be provided in areas prone to flooding/water stagnation like paddy field /agricultural field and undulated areas to avoid direct contact of water with steel part of tower. The top of the chimney of foundation should be at least above High Flood Level (HFL) or the historical water stagnation/ logging level (based on locally available data) or above High Tide Level or 500 mm above Natural Ground level (whichever is higher).

- A.19.0 Routing of transmission line through protected areas shall be avoided to the extent possible. In case, it is not possible to avoid protected areas, the towers of the transmission line up to 400 kV level which are installed in protected areas shall be designed for Multi-circuit (4 circuits) configuration of same voltage level considering reliability level of at least two (2). The top two circuits of these multi-circuit towers shall be used for stringing of the transmission line under present scope and the bottom two circuits shall be made available for stringing of any future transmission line of any transmission service providers/ State transmission utilities/Central transmission utilities passing through the same protected area. Further, the configuration and coordinates of such transmission towers shall be submitted to CEA, TRANTRANSCO by the TSP.
- A.20.0 The TSP shall abide by the Guidelines of CEA w.r.t. shifting of transmission lines for NHAI projects and other projects.
- A.21.0 Safety precautions in regard to gas/oil pipelines in vicinity of Transmission lines shall be taken in coordination with gas/ petroleum authorities.
- A.22.0 The stringing of the transmission line in the forest area shall be carried out through drones.
- A.23.0 The tower shall be designed considering the porcelain Insulators with creepage factor of 31 mm/ kV irrespective of type of insulator used.
- A.24.0 RoW width and Span in different terrain shall be as per Schedule VII of CEA (Technical Standards for Construction of Electrical plants and Electric Lines) Regulations 2022 and RoW guidelines issued vide CEA-PS-14-86/2/2019-PSETD Division dated 24.09.2024.

## **SPECIFIC TECHNICAL REQUIREMENTS FOR SUBSTATION**

The proposed **765/400 kV** Kavathampalayam substation shall be Conventional **Air Insulated Substation (AIS) type** conforming to the requirements of CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations 2022, as amended from time to time.

The **existing 765 kV Ariyalur Substation (SS)** will be an Air Insulated Substation (AIS) type. Its design and construction will generally comply with the requirements set out in the CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022, including any subsequent amendments.

**The proposed 400 kV Edayarpalayam SS** shall be **AIS type** generally conforming to the requirements of CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations 2022, as amended from time to time.

Other CEA Regulations/guidelines as amended up to date and MoP guidelines, as applicable, shall also be followed.

### **B.1.0 Salient features of Substation Equipment and Facilities**

The design and specification of substation equipment are to be governed by the following factors:

#### **B.1.1 Insulation Coordination**

The system design parameters for substations/switchyards shall be as given below:

S. No.	Description of parameters	Proposed 765/400 kV Kavathampalayam SS		Existing 765 kV Ariyalur SS
		765 kV System	400 kV System	765 kV System
1.	System Operating Voltage	765 kV	400 kV	765 kV
2.	Maximum voltage of the system (rms)	800 kV	420 kV	800 kV
3.	Rated Frequency	50 Hz	50 Hz	50 Hz
4.	No. of Phases	3	3	3
5.	Rated Insulation Levels			
i)	Lightning Impulse withstand voltage for (1.2/50 micro sec.)			
	- for Equipment other than Transformer and Reactor	2100 kVp	1425 kVp	2100 kVp
	- for Insulator String	2100 kVp	1550 kVp	2100 kVp

S. No.	Description of parameters	Proposed 765/400 kV Kavathampalayam SS		Existing 765 kV Ariyalur SS
		765 kV System	400 kV System	765 kV System
ii)	Switching Impulse withstand voltage (250/2500 micro sec.) dry and wet	1550 kVp	1050 kVp	1550 kVp
iii)	One-minute power frequency dry withstand voltage (rms)	830 kV	630 kV	830 kV
6.	Corona Extinction Voltage	508 kV	320 kV	508 kV
7.	Max. radio interference voltage for frequency between 0.5 MHz and 2 MHz	2500 micro-volts at 508 kV rms	1000 micro-volts at 266 kV rms	2500 micro-volts at 508 kV rms
8.	Minimum creepage distance for insulator string/ long rod insulators/ outdoor bushings	24800 mm (31 mm/ kV)	13020 mm (31 mm/ kV)	24800 mm (31 mm/ kV)
9.	Minimum creepage distance for switchyard equipment	20000 mm (25 mm/ kV)	10500 mm (25 mm/ kV)	20000 mm (25 mm/ kV)
10.	Max. Fault Current	50 kA	63 kA	50 kA
11.	Duration of Fault	1 sec	1 Sec	1 sec

Sl No.	Description of parameters	400/230-110 kV Edayarpalayam AIS				
		400 kV System	230 kV System	110 kV System	33 kV System	11 kV System
1.	System Operating Voltage	400 kV	230 kV	110 kV	33 kV	110 kV
2.	Maximum voltage of the system (rms)	420 kV	245 kV	132 kV	36 kV	132 kV
3.	Rated Frequency	50 Hz	50 Hz	50 Hz	50 Hz	50 Hz
4.	No. of Phases	3	3	3	3	3
5.	Rated Insulation Levels					
i)	Lightning Impulse withstand voltage for (1.2/50 micro sec.)					

Sl No.	Description of parameters	400/230-110 kV Edayarpalayam AIS				
		400 kV System	230 kV System	110 kV System	33 kV System	11 kV System
	- for Equipment other than Transformer and Reactor -for Insulator String	1425 kVp 1550 kVp	1050 kVp 1050 kVp	550 kVp 550 kVp	170kVp	75kVp
ii)	Switching Impulse withstand voltage (250/2500 micro sec.) dry and wet	1050 kVp	NA	NA	NA	NA
iii)	One-minute power frequency dry withstand voltage (rms)	630 kV	460 kV	230 kV	70 kV	28 kV
6.	Corona Extinction Voltage	320 kV	156 kV	NA	NA	NA
7.	Max. radio interference voltage for frequency between 0.5 MHz and 2 MHz	1000 micro-volts (at 320 kV rms)	1000 micro-volts (at 156 kV rms)	NA	NA	NA
8.	Minimum creepage distance for insulator string/ long rod insulators/ outdoor bushings	13020 mm (31 mm per kV)	7595 mm (31 mm per kV)	4092 mm (31 mm per kV)	900 mm (25 mm/ kV)	300 mm (25 mm/ kV)
9.	Minimum Creepage distance for Switch yard Equipment	10500 mm (25 mm/ kV)	6125 mm (25 mm/ kV)	3300 mm (25 mm/ kV)	900 mm (25 mm/ kV)	300 mm (25 mm/ kV)
10.	Max. Fault Current	63 kA	50 kA	40 kA	25 kA	25 kA
11.	Duration of Fault	1 Sec	1 Sec	1 Sec	3 Sec	3 Sec
12.	Minimum Clearance					
a.	Phase to Phase	4000mm	3350mm	1700mm	1200mm	900mm
b.	Phase to Earth	3500mm	1700mm	1000mm	600mm	300mm
c.	Ground Clearnce	8000mm	5500mm	4600mm	3650mm	3650mm
d.	Sectional Clearance	10000mm	4270mm	3350mm	2750mm	2600mm
13.	System Neutral Earthing	Effectively Earthed	Effectively Earthed	Effectivel y Earthed	Effectivel y Earthed	Effectivel y Earthed

### B.1.2 Switching Scheme

The switching schemes, as mentioned below, shall be adopted at various voltage levels of substation/switchyard:

Substation	765 kV side	400 kV side
<b>New 765/400 kV Kavathampalayam SS (AIS)</b>	One and half breaker	One and half breaker
<b>Existing 765 kV Ariyalur SS (AIS)</b>	One and half breaker	--
<b>New 400 kV Edayarpalayam SS (AIS)</b>	--	One and half breaker

**Notes: -**

- (i) For one and half breaker switching scheme, any double circuit line consisting of two numbers of feeders and originating from the same transmission or generating switchyard shall not be terminated in one diameter applicable for 765kV SS only.
- (ii) Two transformers of same HV rating shall not be connected in the same diameter and similarly, two bus reactors of same HV rating shall also not be connected in the same diameter.
- (iii) A diameter in one and half breaker scheme is a set of 3 circuit breakers with associated isolators, earth switches, current transformers etc. for controlling 2 (two) numbers of bays.
- (iv) All 400 kV Transmission line length is within 200 KM. Hence the line reactor is not proposed. Only the 125 MVAR 3 phase bus reactors are proposed.
- (v) TSP shall plan distribution of line and transformer feeders to bus bar in such a way that all power can be evacuated successfully without crossing the thermal limit at any point of bus bar.
- (vi) Space Provision for Future Bus Sectionalizer:  
One (1) set of future bus sectionalizer for 400 kV shall comprise 2 Nos. of bus sectionalizer bays with associated Circuit Breakers, Isolators and Current Transformers for both buses.
- (vii) In one and half breaker scheme, both main bay and tie bay shall be completed for controlling a feeder. Further, all associated interconnection work shall also be in the present scope of TSP.  
a.400 kV Bay (One and half Breaker with Double bus) shall be **I** configuration and as follows:

Configuration	No of bays (1½ CB system)

ICT –Tie- Line Bay (Full Dia)	03 (Three)
400 kV Bus Reactor – Tie – Line (Full Dia)	02 (Two)
ICT – Tie – Space provision for future Line <i>complete civil works</i> (Half Dia)	02 (Two)
Space provision for Future ICT Complete Civil works – Tie – Line (Half Dia)	01 (one)
Total (Full Dia)	05 (Five)
Total (Half Dia)	03 (Three)

b. 230 kV Bay configuration (Single breaker with Double bus scheme) as follows:

<b>Configuration</b>	<b>No of bays (Double bus scheme)</b>
a. 230 kV ICT bay	02 (Two)
b. 230 kV Line Bay	05 (Five)
c. 230KV Bus coupler bay	01 (One)
d.230KV Spare Line Bay with <i>complete civil works</i>	01 (one)
e.230KV ICT IV Bay with complete civil works	01 (one)
Total	10 (Ten)

c. 110 kV Bay configuration (Single breaker with Double bus scheme) as follows:

<b>Configuration</b>	<b>No of bays (Double bus scheme)</b>
a. 110 kV ICT bay	03 (Three)
b. 110 kV Line Bay	07 (Seven)
c. 110KV Bus coupler bay	01 (One)
d. 110KV Spare Line Bay with <i>complete civil works</i>	01 (one)
Total	12 (Twelve)

(i) *Note:* However, while using single phase ICTs, and Reactor the status of equipment in idle condition shall be reviewed. (i.e., in energized or de-energized condition). If they are kept in energized condition, separate bay provision has to be made.

**(ii) Kavathampalayam Substation:**

765 kV Bay configuration at Kavathampalayam Substation shall consist of 04 Nos. of full diameter (one diameter consists of two Nos. Main and associated Tie bays) for termination of ICT /Bus Reactor/Line bays.

400 kV Bay configuration at Kavathampalayam 765/400kV Substation shall consist of 05 Nos. of full diameter (one diameter consist of two Nos. Main and associated Tie bays) for termination of ICT /Bus Reactor/Line bays.

Further, all associated interconnection work shall also be in the present scope of TSP.

The following drawings/details of proposed Kavathampalayam 765 /400 kV Substation are attached with the RfP documents for further engineering by the bidder.

Sl. No.	Drawing Title	Drawing No./Details	Rev. No.
A.	Kavathampalayam 765 /400 kV SS		
1.0	Single Line Diagram	TR-GCC-CBE-KVPLM 765-SLD101	A0
2.0	FMB Sketch	Attached	

**Note: The above list of Drawing is indicative. The same shall be used for formulation of Master Drawing List (MDL) in DREAMS System.**

- (iii) **Existing 765 kV Ariyalur SS:** “For Kavathampalayam to Ariyalur 765 kV D/C transmission line, both circuits shall be terminated in existing half diameters for which two numbers main bays (Bay Nos.704 and 707 as shown in Ariyalur765 kV SS SLD Drawing TB-0-394-510-001 REV.5A) along with Two Numbers Line Reactor Bays shall be constructed under present scope at Ariyalur SS. Further, all associated interconnection work shall also be in the present scope of TSP.”
- (iv) In one and half breaker scheme, both main bay and tie bay shall be completed for controlling a feeder. Further, all associated interconnection work shall also be in the present scope of TSP

#### B.2.0 Substation Equipment and facilities (Voltage level as applicable):

The switchgear shall be designed and specified to withstand operating conditions and duty requirements. All equipment shall be designed considering the following capacity.

Sl. No	Description of bay	765/400 kV Kavathampalayam SS		Existing 765 kV Ariyalur SS
		765 kV	400 kV	765 kV
1.	Bus Bar	4000 A	4000 A	4000 A
2.	Line bay	3150 A	3150 A	3150 A
3.	ICT bay	3150 A	3150 A	N/A
4.	Reactor Bay	3150 A	NA	NA
5.	Bus Coupler Bay	NA	2000	2000

#### B.2.1 (765/√3)/(400/√3)/33 kV, Single Phase Autotransformer

500 MVA, (765/√3)/ (400/√3)/ 33 kV, 3-phase autotransformer with Nitrogen injection Fire prevention and extinguishing scheme and online DGA and usage of 33kV Tertiary winding for auxiliary supply shall conform to CEA’s “Standard Specifications and

Technical Parameters for Transformers and Reactors (66 kV and above voltage class)” available on CEA’s website.

Spare 1-phase Transformer unit shall be placed and connected in such a way that the spare unit can be utilized to replace in case of fault in any unit of any of the transformer banks (including for future transformer banks) without physically moving it.

### **B.2.2 (765/ $\sqrt{3}$ ) kV, Single Phase Shunt Reactor**

(125MVar, 420kV, 3-Phase Reactor with Nitrogen injection Fire prevention and extinguishing scheme and online DGA shall conform to CEA’s “Standard Specifications and Technical Parameters for Transformers and Reactors (66 kV and above Voltage class)” as amended up to date available on CEA’s website.

80 MVar, 765/ $\sqrt{3}$  kV, 1-Phase Reactor (including arrangement for 3-phase bank formation of 240 MVar) shall conform to CEA’s “Standard Specifications and Technical Parameters for Transformers and Reactors (66 kV and above Voltage class)” as amended up to date available on CEA website.

Spare 1-phase Shunt Reactor unit shall be placed and connected in such a way that the spare unit can be utilized for all the bus and switchable line reactor banks (including for future reactor banks) without its physical movement.

### **Neutral Grounding Reactor and Surge Arrester for 765 kV Switchable Line Reactors (as applicable):**

The neutral of the switchable line reactors (wherever provided) shall be grounded through adequately rated Neutral Grounding Reactors (NGR) to facilitate single phase auto-reclosure, provided that the NGR shall be provided with suitable bypass arrangement so that the switchable line reactor can be used as Bus Reactor as and when required. The neutral of bus reactor shall be solidly grounded.

NGR shall be oil filled or dry type air core for outdoor application. NGR shall conform to CEA’s “Standard Specifications and Technical Parameters of Transformers and Reactors (66 kV and above Voltage Class)” as amended up to date. Technical parameters of NGR shall be as specified in Annexure-A of above-mentioned document.

The surge arresters (rated voltage of arrester in co-ordination with ohmic value of NGR shall be decided by the TSP) shall be provided and physically located between the neutral of shunt reactor (brought out at 145 kV class bushing) and neutral grounding reactor. The surge arresters shall be of heavy-duty station class gapless Metal oxide (ZnO) type conforming in general to IEC-60099-4. Surge Arresters shall be hermetically sealed units, of self-supporting construction, suitable for mounting on structures.

The Ohmic value of NGR for each circuit at Kavathampalayam SS end of 765 kV CBE-ARIYALUR 2xS/C line shall be 450 Ohm.

### B.2.3 765 kV & 400 kV AIS Substation equipment (as applicable)

#### B.2.3.1 Circuit Breakers (AIS)

The circuit breakers and accessories shall conform to IEC: 62271-100, IEC: 62271-1 and shall be of SF6 Type. The circuit breakers shall be of class C2-M2 (as per IEC) with regard to restrike probability during capacitive current breaking and mechanical endurance. The rated break time shall not exceed 40 ms for 765 kV and 400 kV circuit breakers. 765 kV and 400 kV Circuit breakers shall be provided with single phase and three phase auto reclosing. Each breaker would have two sets of trip circuits which would be connected to separate DC supplies for greater reliability. The Circuit breakers controlling 765 kV lines shall be provided either with pre-insertion closing resistor of about 450 ohms maximum with 9 ms insertion time or with Controlled Switching Device. The Circuit breakers controlling 400 kV lines shall be provided with pre insertion closing resistor of about 400 ohms with 8 ms insertion time or Controlled Switching Device (CSD) for lines longer than 200 km. The short line fault capacity shall be same as the rated capacity and this is proposed to be achieved without use of opening resistors. The controlled switching device shall be provided in Circuit breakers of switchable line reactor and in Main and Tie circuit breakers of line with non-switchable line reactors, bus reactors and Transformers of voltage class 400 kV and above.

#### TECHNICAL PARAMETERS:

##### 420 KV Circuit Breaker:

S. No	Description	Requirement
1	Rated continuous current(A)at design Ambient temperature	3150
2	Rated Short circuit current breaking Capacity at rated voltage	63 KA with percentage DC Component as per IEC-56
		Corresponding to minimum Opening time under operating Conditions specified
3	Symmetrical interrupting capability(kArms)	63
4	Rated short circuit making current (kApeak)	157.5
5	i)Short time current carrying capability for one sec.(kArms) ii)Out of phase breaking current capacity (kA rms)	63 15.75
6	Rated operating duty	0-0.3sec CO-3min CO Cycle
7	Re closing	Single Phase & three phase auto closing
8	First pole to clear factor	1.3

9	Rated line charging interrupting current at 90 deg. Leading power factor angleA (rms)	400
	(The breaker shall be able to interrupt the rated line charging current with test voltage Immediately before opening equal to the product of $U/\sqrt{3}$ &1.4 as per IEC:62271-100	
10	Temperature rise over the design ambient temperature	As per IEC:62271-100
11	Total break time as per IEC (ms)	45
12	Rated break time as per IEC (ms)	40
13	Total closing time(ms)	Not more than150.
14	Operating mechanism	spring–spring
15	Max. difference in the instants of Closing/opening of contacts Within a pole Between poles(opening) Between poles (closing)	2.5 3.3 5.0
16	The above voltage shall be at rated control voltage and rated operating and quenching Media pressures	
17	Trip coil closing Voltage	220 V DC with variation as specified
18	Noise level at base and upto 50m (distance from base of breaker)	140 dB (MAX)
19	Rated terminal load	As per IEC
20	Auxiliary contacts	Besides requirement of Specification, the bidder shall wire up 10No+10NC Contacts for future use of purchaser per phase
21	No of terminals in common control cabinet	All contacts & control circuits to be Wired out up to common control Cabinet plus 24 terminals exclusively for Purchaser's use.
22	Maximum allowable switching over voltage Under any switching condition	2.3 p.u.

#### 245 KV SF6 CIRCUIT BREAKER:

Sl. No.	ITEM	REQUIREMENTS
1	Rated voltage (KVrms) (nominal/max)	230KV
2	Highest System Voltage	245 KV
3	Frequency (Hz).	50

4	Neutral grounding	Solidly earthed
5	Continuous current rating	2000A
6	Type KV	Outdoor SF6
7	Mounting	
8	Number of Poles	3
9	Type of operation	Individually Operated single Poles
10	Height of concrete plinth	300 Mm
11	Minimum height of the lowest part of the support insulator from ground level(mm)	2550 mm
12	Operation mechanism	Spring-Spring(Motor operated spring charged)
13	Auto re closing duty	Single and three phase
14	Rated operating duty cycle	O-0.3Sec.-CO-3Min-CO as per IEC-62271-100
15	First pole to clear factor	1.3
16	Type of tripping	Tripfree
17	Maximum closing time(ms)	150 ms
18	Maximum total break time(ms) Atrated breaking capacity	Less than 60 ms
19	1.2/50 micro second impulse with stand voltage (dry)(KVp)	1050
20	1 minute power frequency with stand voltage (KVrms)(wet)	460
21	Max.radio interference voltage (microvolts) at 1.1 times maximum phase voltage	500
22	Minimum corona extinction voltage (KVrms)	176
23	Rated breaking current capacity: (i)Line charging at rated voltage at 90 degrees leading powerfactor	125 A
24	(ii)Short circuit current:  (a) AC component(KA)	50 Corresponding to minimum  Opening time as per I

	(b) %DC component	EC- 62271-100
25	Rated short circuit making current capacity (KA)	125
26	Permissible limit of temperature rise	As per IS applicable
27	Max.acceptable difference in the instants of closing/opening of contacts: (i) Within a pole(ms) (ii) Between poles(ms)	3.3 5
28	Min.creepage distance of support insulator (mm)	6125
29	Short time current carrying capability for three seconds(KA)	50
30	Rating of auxiliary contacts	10 A at 220 V DC
31	Breaking capacity of auxiliary contacts	5 A DC with the circuit time constant less than 20msat the rated voltage.
32	Noise level at base and upto 50 metres	140 dB(max.)
33	Seismic acceleration	0.3g
34	Capacitance Current Switching Line Charging Cable Charging Capacitor Banks	Conforming to Class C1as per IEC 62271-100
35	Mechanical Endurance Test	Conforming to class M1 as per IEC62271-100

### 132 KV SF6 CIRCUIT BREAKER

Sl.No.	ITEM	REQUIREMENTS
1	Rated voltage (KV rms) (nominal/max)	110 KV
2	Highest System Voltage	132 KV
3	Frequency(Hz).	50
4	Neutral grounding	Solidly earthed
5	Continuous current rating	2000A
6	Type KV	Outdoor SF6

7	Mounting	Hot dip galvanized / Epoxy painted steel support structure
8	Number of Poles	3
9	Type of operation	Gang operated poles
10	Height of concrete plinth	300 mm
11	Minimum height of the lowest part of the support insulator from ground level(mm)	2550 mm
12	Clearances (a)Centre to Centre distance between poles (b)Line to Ground	1700 mm 4572 mm
13	Operation mechanism	Spring-Spring(Motor operated spring charged)
14	Auto reclosing duty	Single and three phase
15	Rated operating duty cycle	O-0.3Sec.-CO-3Min-CO as per IEC-62271-100
16	First pole to clear factor	1.3
17	Type of tripping	Trip free
18	Maximum closing time(ms)	150 ms
19	Maximum total breaktime(ms) At rated breaking capacity	Less than 60ms
20	1.2/50 micro second impulse withstand voltage (dry)(KVp) (i) To earth (KVp) (ii) Across open contacts with impulse on one terminal and power frequency voltage on Opposite terminal (KVp/KVrms)	550 550
21	1 Minute power frequency with stand voltage (KV rms) (wet)	230
22	Rated breaking Current Capacity: (i)Line charging at rated voltage at 90 degrees leading power factor	50A

	Short circuit current: AC Component(KA) DC Component	40 Corresponding to minimum Opening time as per IEC-62271-100
24	Rated short circuit making current capacity (KA)	78.75
25	Permissible limit of temperature rise	As per IS applicable
26	Max.acceptable difference in the instants of Closing / opening of contacts: (i) Within a pole(ms) (ii) Between poles(ms)	5 10
27	Min.creepage distance of support insulator(mm)	3400
28	Short time current carrying capability for three seconds(KA)	40
29	Rating of auxiliary contacts	10 A at 220VDC
30	Breaking capacity of auxiliary contacts	5 A DC with the circuit time constant less than 20ms at the rated voltage.
31	Noise level at base and up to 50 metres	140 dB(max.)
32	Seismic acceleration	0.3g
33	Capacitance Current switching Line Charging Cable Charging Capacitor Banks	Conforming to Class C1 as per IEC62271-100
34	Mechanical Endurance Test	Conforming to class M1 as per IEC62271-100

### B.2.3.2 Isolators (AIS)

The isolators shall comply with IEC 62271-102 in general. 765 kV Isolator design shall be double break or vertical break or knee-type. 400 kV Isolators shall be double break type. All Isolators and earth switches shall be motor operated. Earth switches shall be provided at various locations to facilitate maintenance. Isolator rated for 400 kV shall be of extended mechanical endurance class - M2 as per IEC-62271-102. Main blades and earth blades shall be interlocked and interlock shall be fail safe type. 765 kV and 400 kV earth switch for line isolator shall be suitable for induced current switching duty as defined for Class-B.

#### PRINCIPAL TECHNICAL PARAMETERS OF 420 KV ISOLATORS

SNo.	TECHNICAL PARAMETERS	SPECIFICATION
1	Rated Frequency(Hz)	50
2	System Neutral Earthing	Effectively Earthed
3	No. of Phases(Poles)	3
4	Temperature Rise	As per relevant IS/IEC Publication
5	Safe Duration of overload: a)150% of ratedcurrent. b) 120%of rated current.	5 Minutes 30 minutes
6	Suitablefor:- Rated voltage (KV rms) Frequency(Hz)	420 50
7	Type of disconnect (AB)	Centre Break Horizontal
8	Rated normal current(Amp.rms)	3150
9	Rated short time withstand currentof disconnects and earthing switches for one sec.duration (KA rms)	63
10	Rated dynamic with stand current(KA)	157.5
11	Rated short circuit current of Earth Break (KA peak).	100
12 12.1	<b>Rated insulation level:</b> 1.2/50 micro second lightning impulse with stand voltage(+ve or-ve polarity) a) To earth(KVp) b) Across the open disconnect voltage appliedto. i)One terminal ,lightning impulse (KVp) ii) Opposite terminal, power frequency kVp)	1425 1425 240

12.2	250/2500 micro seconds switching impulse with stand voltage a) To earth(KVp)  b) Across terminals of open disconnect(KV rms) i) One terminal, switching impulse (kVp) ii) Opposite terminal subjected to power Frequency voltage (KVrms)	1050   900  345
12.3	Rated 1 minute power frequency with stand voltage (KVrms) a. To earth KV(rms) b. Across terminals of open disconnect	520 610
13	Minimum creepage distance of support and rotating insulator(mm)	10500
14	<b>Rated Mechanical Terminal Load:</b>	
14.1	For two column disconnect a.Straight load(N) b.Across load(N)	1600 530
14.2	For pantograph disconnect a.Straight load(N) b.Across load(N)	2000 800
15	Rated magnetizing / capacitive current make and break capacity(Amp.rms)	0.7
16	Rated contact zone for P.G.isolator when fixed contacts are supported on flexible conductors. a) Horizontal deflection(Metres)  b) Vertical deflection(Metres)  c) Total amplitude of longitudinal movement with respect to support conductor(Meters)	0.5   0.3  0.4
17	Phase to Phase spacing for installation (mm)	7000
18	Minimum clearance (mm): a)Phase to earth b)Phase to Phase	3500 4000

19	Height of centre line of terminal pad above ground level(mm)	8200
20	Maximum radio interference voltage at 1 MHz and 1.1 x rated phase to earth voltage (micro volts)	500
21	Minimum corona extinction voltage(KV rms)	320
22	Rating of auxiliary contacts.	10 A at 220V DC with breaking capacity of 2A DC with time constant not less than 20 milli second
23	Seismic level(Horizontal Acceleration)	0.3g
24	Operating time	12 sec.or less.

### 230 KV ISOLATORS

SL. NO	DESCRIPTION	230 KV,2000A Double Break Centre Rotating AB switches	
		WE	WOE
01	Manufacturer's Name & Address		
02	Manufacturer's Type and Designation	Double break,	
03	Standard to which equipment conforms	IS 9921 (Part I to V)	
04	Rated Voltage KV	230KV	
05	Maximum design voltage at which the isolator can operate KV	245 KV	
06	Derating factor, if any, for specified test conditions	Unity	
07	Current rating. Main Switch: Continuous current A Dynamic Current KA Three seconds short time Current Earth Switch: Short time current	2000A 100KA Peak  50KA rms – 3Sec  50KA rms – 3Sec	
08	Safe duration of over load a. 150% of rated current b. 120% of rated current	5 Minutes 15 Minutes	
09	Capacity to interrupt magnetizing current A	15 A	
10	Capacity to interrupt line charging Current A	5 A	

11	Maximum Temperature : a) Of current carrying parts when carrying rated continuous current Degree C b) Ambient temperature (Maximum/Average for which (a) is applicable) Degree C	Within the specified limits of value as per IS 9921 ( Part – II) of 1982  Within the specified limits of value as per IS 992 ( Part – II) of 1982
12	Number of Poles	Three
13	Operation : Main Switch  ii) Earth Switch	Motor Operating Mechanism  Bottom Operating Mechanism( Manual)  Motor Operating Mechanism  -----
14	Number of breaks per circuit per pole i) Main Switch	3 per Circuit/ 2 per Pole
	ii) Earth Switch	3 per Circuit/1 per Pole
15	Total Length of break per pole (min. air dist., across the isolating distance) mm	3200 mm
16	Insulation Level : Dry one Min. power frequency withstand voltage i) Across isolating distance : KV rms. ii) To earth & between poles : KV rms. Wet one Min. Power Frequency Withstand Voltage. i) Across isolating distance : KV rms. ii) To earth & between poles : KV rms. 1.2/50 micro second impulse withstand voltage Across isolating distance : KV peak ii) To earth & between poles : KV peak	530 KV rms 460 KV rms  530 KV rms 460 KV rms  1200 KV peak  1050 KV peak

17	<p>Switch contacts</p> <p>Type of Contacts for Main Switch/Earth Switch</p> <p>a) Type of contacts</p> <p>i) Fixed contacts</p> <p>ii) Moving contacts (Main switch) ( Earth Switch)</p> <p>b) Material</p> <p>i) Fixed contacts</p> <p>ii) Moving contacts</p> <p>c) Area of contacts: Sq.mm</p> <p>i. Main Switch:</p> <p>ii. Earth Switch:</p> <p>d) Whether contacts are silver plated</p> <p>e) Thickness of silver coating</p> <p>f) Contact pressure</p> <p>g) No. of operation isolator can make without deterioration of contacts.</p>	<p>Reverse loop Turn &amp; Twist for Main Banging type for Earth</p> <p>HDEC Flat HDEC Tube</p> <p>1150Sqmm 750Sqmm</p> <p>Yes, Silver Plated As required High pressure</p> <p>More than 1000 operations</p>
18	<p>Earthing Switch</p> <p>a. Rated Current Carrying Capacity - Amps</p> <p>Short time Current rating: 3Sec:KA</p> <p>Peak withstand: KA</p>	<p>No rated Current but earth switch capacity to carry short time current only.</p> <p>50 KA</p> <p>78.75KA</p>
19	<p>Contact support</p> <p>i) Material and size of channel</p> <p>ii) Material and size of plate Clearance</p>	<p>125x40x3 formed Channel (HDG) 10mm thick MS Plate ( HDG)</p>

20	<p>i) Between Poles</p> <p>ii) Between Live Parts and Earth</p> <p>iii) Between live parts and ground</p> <p>iv) Between live parts when Switch is open: On the same pole</p> <p>Between adjacent pole.</p> <p>Between fixed contact and Blade in open position</p>	<p>3500mm for a Phase spacing of 4000mm</p> <p>Equal to dry arcing distance of the insulator</p> <p>5775mm</p> <p>3200mm(approx) 4000mm(approx)</p> <p>3200mm(approx)</p>
21	<p>Type of operating mechanism Manual operation Isolator.</p> <p>i. Main Switch:</p> <p>ii. Earth Switch:</p> <p>i)Type (Reduction gear type1:20)</p> <p>ii) Type of the operating handle hinge pin from ground level.</p>	<p>Motor Operated Manual operated Worm and Work shaft Crank type handle 1100mm from ground level</p>
22	<p>Bearing Rotating Insulating stack &amp; Operating Guide</p> <p>(i) Location</p> <p>Type</p> <p>(iii)Qty. of bearings</p> <p>(iv)Size.</p> <p>(v)Bearing No.</p> <p>b) Material and size of housing</p> <p>c) No. of bushes, joints, location &amp; size</p> <p>d) Make of bearing</p>	<p>Below Rotating Insulator</p> <p>Tapper Roller/Ball bearing</p> <p>2Nos below rotating stack</p> <p>50mm ID</p> <p>32210</p> <p>MS Housing /Alu Gravity die cast 90mm OD</p> <p>12 Nos Tandem Pipe clamps 16 ID</p> <p>Standard make</p>

23	<p>Operating GI pipe i) Tandem Pipe : Class of G.I. Pipe No. of Pipes</p> <p>Wall thickness of G.I. Pipe</p> <p>Dia of tandem G.I. Pipe : mm Size of shackle and screw</p> <p>No. of Clamp and material and size</p> <p>ii) Down Pipe : Class of G.I. Pipe</p> <p>Wall thickness</p> <p>Dia. of down Pipe</p> <p>Type of Joint :</p> <p>Between Rotating stool bearing and down pipe Between down pipe and operating mechanism</p>	<p>B Class 32NB 3 Nos for WE &amp; 2 Nos for WOE</p> <p>3.1mm</p> <p>32 mm NB GI Pipe</p> <p>Not required</p> <p>WE - 6 Nos MS Flat      WOE - 6 Nos MS Flat</p> <p>10mm thick                      10mm thick</p> <p>B Class 50 NB GI Pipe</p> <p>3.1mm</p> <p>50 NB GI Pipe - 60.25 mm</p> <p>Universal Joint</p> <p>Vernier Flange</p>
24	Type and Material of Isolator terminals	Pad type Copper terminal
25	Type and Material of Terminal Connectors	LM 6 Alu Alloy gravity die casting clamp Al Connector
26	<p>Motor Details: Rated Voltage Rated Current</p> <p>Type of Motor Conforming to IS Other details</p>	<p>3Ph 415V</p> <p>1.2A</p> <p>Squirrel Cage Induction Motor</p> <p>IS325</p> <p>1.0HP</p>

27	Type of Interlock	Electrical interlock between Insulator and corresponding Circuit breaker. Mechanical interlock between main switch and earth switch
28	Type of Switch base	Rigid fabricated Base
29	Maximum torsional strength Kg.m	45 Kgm
30	Maximum bending strength that will be subjected on the post insulator on the opening and closing of isolator	400Kgs
31	Rated Mechanical terminal loads i) Straight Load NKg. ii) Cross Load NKg.	82Kgs 28Kgs
32	Nuts and Bolts  Size, Material and Grade in live parts.  Size, Material and Grade in other parts. Whether hot dip galvanised Conforming to IS.	M10 and less than M10 are Stainless steel of AISI 304Grade  M12 and above are HEG of grade 4.6  Yes. Hot dip galvanised/Electroplated  IS 2629, IS2623 & IS 5358
33	Insulator base plate Material and size of elevator plate below fixed insulator Material and size of stud & bolts Material & size of rotating insulator base plate	250x75x5mm thick HDG MS Plate/Formed Channel  Not applicable  10mm thick MS HDG Plates
34	Phase spacing	4000mm
35	Radio interference voltage at 1 MHz and 1.1 x rated phase to earth voltage (micro Volts)	Not less than 1000 micro volts
36	Minimum corona extinction voltage (kV RMS)	156KV rms
37	Rating of auxiliary contacts.	10A
38	Terminal Stud : a) Dimensional Drawing No. b) Whether Horizontal or Vertical c) Diameter (mm) d) Length e) TPI, if threaded.	As per Board drawing Vertical  As per Board drawing As per Board drawing Not applicable
39	Seismic Acceleration	0.3G
40	Operating time	10 to 12 sec

41	Torque required to operate the group operating switch Kg.m	45 Kgm
42	Clamp Body : a) (i) Alloy Composition (ii) Plating, if any  b) Bolts : (i) Alloy Composition (ii) Tensile Strength  c) Types of Washers used  d) Range of diameter of conductors that can be received.  e) Maximum temperature rise when carrying rated current at 45 Degree C ambient temperature. f) Weight of each type of clamp Kg.	LM 6 Alu Alloy Not applicable  MS Hot dip galvanized 300N  Spring /Flat washers  Suitable for ACSR Twin Moose conductors/3” IPS Al tube  Not more than 45Deg C  1.0Kg/4.0Kgs Approx
43	Gear Details Make Type  Rating  Quantity Other Details.	Standard reputed make  Worm/Worm shaft/Spur  80Kg.M  1 Set Double reduction
44	Indication mechanism for position of switch Control Cabinet: Materials Thickness Degree of protection Cable gland Type Size No Whether removable gland provided	M.S.Sheet 3mm thick IP 55  Double Compression type  25mm and 19mm 1 No/ 2Nos  Yes. Provided
45	Switch Design : Rotating/Tilting/Lifting Insulator Horizontal/Vertical Break	Rotating Vertical Rotating Horizontal
46	Operating mechanism Reciprocating/Torsional	Reciprocating

47	Base : Constructional feature Size of steel section used (mm) Overall size (mm) d) Total weight (Kg)	Fabricated with Steel 2Nos, 125x65x 8mm thick  125x275x3600mm(approx) 98Kgs + 5%	
48	Actual Dimensions of switch per phase	5500x3600x400mm	
49	Weight of the Isolator/Pole	202 Kgs + 5%	180 Kgs + 5%
	Weight of the Isolator (Without Insulator)  Weight of Insulator	886 Kgs + 5%  631 Kgs + 5%	732 Kgs + 5%  631 Kgs + 5%
50	Dimensions of Switch L X B X H m	8.5 x 3.8 x 5.7 m ( approx)	
51	Shipping dimensions of largest package Metres	As per drawings	
52	No. of AB Switches fabricated per shift per day  No. of Shifts.		

### B.2.3.3 Current Transformers (AIS)

Current Transformers shall comply with IEC 61869 in general. All ratios shall be obtained by secondary taps only. Generally, Current Transformers (CT) for 765 kV and 400 kV shall have six cores (four for protection and two for metering). The burden and knee point voltage shall be in accordance with the requirements of the system including possible feeds for telemetry. The accuracy class for protection core shall be PX and for the metering core it shall be 0.2S. The rated burden of cores shall be closer to the maximum burden requirement of the metering and protection system (not more than 20 VA for metering core) for better sensitivity and accuracy. The instrument security factor shall be less than 5 for CTs up to 400 kV and less than 10 for CTs of 765 kV voltage class.

### B.2.3.4 Capacitive Voltage Transformers (AIS)

Capacitive Voltage Transformers shall comply with IEC 61869 in general. These shall have three secondaries out of which two shall be used for protection and one for metering. The accuracy class for protection cores shall be 3P and for metering core shall be 0.2. The Capacitive Voltage Transformers on lines shall be suitable for Carrier Coupling. The Capacitance of CVT for 400 kV shall be of 4400/8800 pF depending on PLCC requirements whereas the Capacitance of CVT for 765 kV shall be 8800 pF. The rated burden of cores shall be closer to the maximum burden requirement of metering

and protection system (not more than 50 VA for metering core) for better sensitivity and accuracy.

### **B.2.3.5 Surge Arresters (AIS)**

624 kV, 336 kV Station High (SH) duty gapless type Surge arresters with thermal energy (Wth) of minimum 13 kJ/kV, 12 kJ/kV conforming to IEC 60099-4 in general shall be provided for 800 kV, 420 kV systems respectively. Other characteristics of Surge arrester shall be chosen in accordance with system requirements. Surge arresters shall be provided at line entrances near Transformers and Reactor so as to achieve proper insulation coordination. Surge Arresters shall be provided with porcelain/ polymer housing fitted with pressure relief devices. A leakage current monitor with surge counter shall be provided with each surge arrester.

### **B.2.4 Protection Relaying and Control System**

The protective relaying system proposed to be provided for transmission lines, auto-transformers, reactors and bus bars to minimize the damage to the equipment in the events of faults and abnormal conditions, is dealt in this section. All main protective relays shall be numerical type with IEC 61850 communication interface and should have interoperability during integration of numerical relays to communicate over IEC 61850 protocol with RTU/SAS/IEDs of different OEMs. All numerical relays shall have built in disturbance recording feature.

The protection circuits and relays of the transformer and reactor shall be electrically and physically segregated into two groups each being independent and capable of providing uninterrupted protection even in the event of one of the protection groups failing, to obtain redundancy, and to take protection systems out for maintenance while the equipment remains in service.

#### **a) Transmission Lines Protection**

765 kV & 400 kV lines shall have Main-I and Main –II and shall be Phase Segregated Line current Differential protection with built-in Distance protection function (a minimum of three forward zones and one reverse zone selectable distance protection scheme with carrier aided inter-tripping feature). Differential relay for Main I & II current differential protection with built-in Distance protection function (a minimum of three forward zones and one reverse zone selectable distance protection scheme with carrier aided inter-tripping feature) at remote end sub-station shall be provided by the TSP. The associated power and control cabling and integration with SAS at remote end sub-station shall be provided by Transmission service provider. Main II shall be also have numerical Line Current differential with in build distance protection scheme like Main-I but from different make that of Main-I. The Main-I and Main-II protection relays

of same make may be provided only if they are of different hardware and manufacturing platform or different principle of operation.

Line Current Differential relay (with in built distance protection feature) as Main-I and Main-II shall be provided at both ends for short lines (line length below 10km). Differential relay for main I & main II at remote end shall be provided by the TSP. The associated power and control cabling and integration with SAS at remote end shall be provided by Transmission service provider.

Further, all 765 kV & 400 kV lines shall be provided with single and three phase auto-reclosing facility to allow reclosing of circuit breakers in case of transient faults. These lines shall also be provided with distance to fault locators to identify the location of fault on transmission lines.

All 765 kV and 400 kV lines shall also be provided with two stages over voltage protection. The over voltage protection and distance to fault locator may be provided as in-built feature of Main-I and Main-II protection relays.

The Main-I and Main-II protection relays shall be fed from separate DC sources and shall be mounted in separate panels.

For 765 kV & 400 kV transmission lines, directional IDMT earth fault relay should be provided as standalone unit or in-built feature of Main-I and Main -II feature.

In case of loop in loop out of transmission lines, the existing protection scheme shall be studied and suitable up-gradation (if required) shall be carried out.

The Numerical relay shall be equipped with sufficient binary output contacts for the protection scheme implementation. And equipped with sufficient numbers of programmable of opto isolated input and programmable potential free outputs with wetting voltage for digital inputs for field programmable to 48V/110V/220V DC.

#### **b) Auto Transformer Protection**

Protection scheme shall be comprised of 2 Nos. numerical multifunction protection relays i.e. One for Group-A Protection and another for Group-B Protection. Group-A Numerical multifunction protection relays of different make or different hardware platform and protection algorithm with respect to Group-B numerical multifunction protection relay.

These shall have the following protections in main I & main II relays. (But from different Make).

- i) Numerical Differential Protection – Low impedance
- ii) Numerical Restricted Earth Fault Protection – Low Impedance
- iii) Numerical directional Back-up Over-current and Earth Fault Protection on High Voltage (HV) and Intermediate Voltage (IV) side
- iv) Numerical Over Fluxing Protection on HV and IV side

v) Numerical Thermal Overload Protection

Suitable monitoring, control (operation of associated circuit breaker and isolator) and protection for LT auxiliary transformer connected to tertiary winding of auto-transformer for the purpose of auxiliary supply shall be provided. The over current and other necessary protection shall be provided for the auxiliary transformer. These protection and control may be provided as built in feature either in the bay controller to be provided for the auxiliary system or in the control and protection IEDs to be provided for autotransformer.

c) **Reactor Protection**

Reactor shall be provided with the following protections:

- i) Numerical Differential Protection.
- ii) Numerical Restricted Earth Fault Protection
- iii) Numerical Back-up Impedance Protection
- iv) Neutral Displacement Protection

Protection scheme shall be comprised of 2 Nos. numerical multifunction protection relays i.e. One for Group-A Protection and another for Group-B Protection. Group-A Numerical multifunction protection relays of different make or different hardware platform and protection algorithm with respect to Group-B numerical multifunction protection relay.

Wherever CT and VT is wired to the numerical relays, the relay should be provided with built in supervision of CT and VT respectively.

For application in 400KV/765KV diameter bays, the CT inputs of main breaker and tie breaker bays shall be wired separately to protection relays and the vector sum of the CTs shall be calculated internally in the protection relays.

Reactor Bushing CTs to be used for differential and REF Protection.

For Backup impedance protection use the CTs of the main breaker and tie breaker in order to provide protection for the tee section of this diameter also.

The Main CT and Tie CT shall be wired to separate CT modules so as to arrive at the vector sum of these CTs internally in the respective numerical relays.

Besides these, reactors shall also be provided with Buchholz relay, Magnetic Oil Gauge (MOG) with low oil level alarm, protection against oil and winding temperatures and pressure relief device, etc.

d) **BusBar Protection**

The high-speed low impedance type bus bar differential protection, which is essential to minimize the damage and maintain system stability at the time of bus bar faults, shall be

provided for 765 kV & 400 kV buses. Duplicated bus bar protection is envisaged for 765 kV and 400 kV bus-bar protection. Bus bar protection scheme shall be such that it operates selectively for each bus and incorporate necessary features required for ensuring security. The scheme shall have complete bus bar protection for present as well as future bays envisaged i.e. input / output modules for future bays for the bus section under present scope shall also be provided.

Bus-bar protection scheme shall include one overall check zone protection in addition to single/multiple zones specified.

Also include provision for protection IN/OUT for each zone and check zone and be transient free in operation.

The relay shall incorporate dynamic bus replica and provide necessary end zone fault protection depending on the bus bar protection CT's location.

Separate IN/OUT switch selection for Bus-bar and LBB protection function.

Bus Bar protection system for new substation shall be de-centralized (distributed) type.

In case, the bus section is provided, then each side of bus section shall have separate set of bus bar protection schemes.

Peripheral Units (Pus) shall be provided by the respective TSP.

For existing substations, the existing bus bar protection shall be augmented as per requirement and integration of new bays to existing system shall be in the scope of TSP.

#### e) **Local Breaker Back up Protection**

This shall be provided for each 765 kV & 400 kV circuit breakers and will be connected to de-energize the affected stuck breaker from both sides.

*Notes:*

1. *LBB and REF relays shall be provided separately from transformer differential relay.*
2. *LBB relay may also be provided with retrip function as built-in protection function of distributed bus bar protection scheme; however, in such case separate LBB relay shall be provided for tie bays (in case of One and Half breaker scheme).*
3. *Over fluxing and overload protection can be provided as built-in feature of differential relay.*
4. *In 765 kV & 400 kV switchyard, if spare bay of half diameter is identified as future, Tie CB relay panel shall be with Auto-reclosure feature.*

### **B.2.5 Substation Automation System**

- (a) For all the new substations, state of art Substation Automation System (SAS) conforming to IEC-61850 shall be provided. The distributed architecture shall be used for Substation

Automation system, where the controls shall be provided through Bay Control Units. The Bay control unit is to be provided bay wise for voltage level 220 kV and above. All bay control units as well as protection units are normally connected through an Optical fibre high speed network. The control and monitoring of circuit breaker, dis-connector, re-setting of relays etc. can be done from Human Machine Interface (HMI) from the Control Room.

The functions of control, annunciation, disturbance recording, event logging and measurement of electrical parameters shall be integrated in the Substation Automation System.

At the new substations, the Substation Automation System (SAS) shall be suitable for the operation and monitoring of the complete substation including proposed future bays/elements.

In the existing substations with a Substation automation system (SAS), augmentation of existing SAS and integration to existing system shall be done for bays under the present scope.

In the existing Substations where Substation automation is not provided, control functions shall be done through control panels.

Necessary gateway and modems (as required) shall be provided to send data to RLDC/SLDC as per their requirement and shall be provisioned with 2+2 redundancy i.e. 2 channels for Main Control Centre and 2 channels for Backup Control Centre. In order to meet this requirement, suitable redundancy at port and card level need to be ensured by the TSP to avoid any single point of failure which may lead to interruption in real-time grid operation. Accordingly, all the hardware for communication services of station as stated above shall support dual redundancy for data transmission of station to respective main and backup RLDCs. Any augmentation work at RLDC/SLDC is excluded from TSP's scope. However, all the configuration work at substation end required to send data to RLDC/SLDC shall be in the scope of TSP.

**(b) Time Synchronisation Equipment**

Time Synchronization Equipment complete in all respects including antenna, cable and processing equipment required to receive time signal through GPS/NavIC or from National Physical Laboratory (NPL) through INSAT shall be provided at new substations. This equipment shall be used to synchronize SAS and IEDs etc.

**B.3.0 Substation Support Facilities**

Certain facilities required for the operation and maintenance of substations as described below shall be provided at the new substation. In existing substation, these facilities have already been provided and will be extended/ augmented as per requirement.

**B.3.1 AC and DC power supplies**

For catering the requirements of three phase and single phase AC supply and DC supply for various substation equipment (for present and future scope), the following arrangement is envisaged:-

- i) For LT Supply at each new Substation, two (2) Nos. of LT Transformers (minimum 800 kVA for substations with highest voltage rating as 765 kV) shall be provided which shall be fed from two independent sources as per the CEA (Technical Standards for Connectivity to the Grid) Regulations, 2007.

Metering arrangement with Special Energy Meters (SEMs) shall be provided by TSP at 33 kV tertiary of Transformer for drawing auxiliary supply at new substation. Such SEMs shall be provided by STU at the cost of the TSP. Accounting of such energy drawn by the TSP shall be done by RLDC/RPC as part of Regional Energy Accounting.

Additionally, Active Energy Meters may be provided at the same point in the 33 kV tertiary of Transformer by local SEB/DISCOM for energy accounting.

- ii) 2 sets of 220 V battery banks for control and protection and 2 sets of 48 V battery banks for PLCC/ communication equipment shall be provided at each new Substation. Each battery bank shall have a float-cum-boost charger.

At new substation, sizing of 220 V battery and battery charger shall be done based on the number of bays specified (including future bays) as per CEA Regulations and relevant IS. 2 sets of 48 V battery banks for PLCC and communication equipment for present and future scope shall be provided at each new Substation with at least 10-hour battery backup and extended backup, if required. 48 V DC can be achieved from 220 V DC battery bank using adapter, if so desired by TSP, without compromising backup time.

- iii) Suitable AC and DC distribution boards and associated LT Switchgear shall be provided at new substation.

For new substation, following switch boards shall be considered with duplicate supply with bus coupler/ sectionalizer and duplicate outgoing feeders except for Emergency lighting distribution board which shall have only one incoming feeder:

- a) 415 V Main Switchboard – 1 No.
- b) AC distribution board – 1 No.
- c) Main lighting distribution board – 1 No.
- d) Emergency lighting distribution board – 1 No.
- e) 220 Volt DC distribution board – 2 Nos.
- f) 48 Volt DC distribution board – 2 Nos.

Sizing of LT Switchgear shall be suitable to cater the requirement for all present and future bays. AC and DC distribution boards shall have modules for all the feeders (including future as specified).

- iv) At new Substation, one No. of DG set (minimum 500 kVA for substations with highest voltage rating as 765 kV) shall be provided for emergency applications.
- v) At new substation, sizing of battery and battery chargers shall be done based on the number of bays specified (including future bays).
- vi) For substation extensions, existing facilities shall be augmented as required.

### **B.3.2 Fire Fighting System**

Fire-fighting system for substation including Transformer and Reactor shall conform to CEA (Measures Relating to Safety and Electric Supply) Regulations, 2023 as amended from time to time.

Further, adequate water hydrants and portable fire extinguishers shall be provided in the substations. The main header of the firefighting system shall be suitable for extension to bays covered under the future scope; necessary piping interface in this regard shall be provided.

At existing substations, the fire-fighting systems as available shall be extended to meet the additional requirements.

### **B.3.3 Oil evacuating, filtering, testing and filling apparatus**

To monitor the quality of oil for satisfactory performance of Transformers, Shunt Reactors and for periodical maintenance necessary oil evacuating, filtering, testing and filling apparatus would be provided at new substations. Oil storage tanks of adequate capacities for storage of transformer oil would be provided.

Necessary equipment for monitoring bay elements of the TSP at existing ss shall be provided.

Online Transformer Oil Drying Out System shall be provided in line with the provisions of Standard Specification and Technical Parameters for Transformers and Reactors (66 kV & above Voltage Class) as amended up to date available on CEA website.

### **B.3.4 Illumination**

Normal and emergency AC and DC illumination shall be provided adequately in the control room and other buildings of the substation. The switchyard shall also be provided with adequate illumination.

The lighting of the entire control room building, fire-fighting pump house, other building (if any) and switchyard shall be done by LED based low power consumption luminaries.

### **B.3.5 Control Room**

For the new substation, substation control room shall be provided to house substation work stations for station level control (SAS) along with its peripheral and recording equipment, AC and DC distribution boards, DC batteries and associated battery chargers, Fire Protection panels, Telecommunication panels and other panels as per requirements. Air conditioning shall be provided in the building as functional requirements. Main cable trenches from the control room shall have adequate space provision for laying of cables from the control room for all the future bays.

At existing substations, the adequacy of size of control room shall be ascertained and the same shall be augmented as per requirement.

### **B.3.6 Control Concept**

All the EHV circuit breakers in substation/switching stations shall be controlled and synchronized from the switchyard control room/remote control center. All the isolators shall have control from remote/local whereas the earth switches shall have local control only.

### **B.3.7 Visual Monitoring System (VMS) for watch and ward of substation premises:**

Visual Monitoring System for effective watch and ward of substation premises shall cover all the transformers and reactors, all other major AIS Equipment (such as CB, isolators, CT, CVT, SA etc. as applicable), GIS bays, panel room, all the gates of switchyard and all entry and exit points of control room building and accordingly the location of cameras shall be decided. In addition to the gates of the switchyard, the cameras shall also be located around the boundaries at suitable locations. The camera shall be high definition color CCD camera with night vision feature. The VMS data partly/completely shall be recorded (minimum for 15 days) at least @25fps (or better) and stored on network video recorder. The system shall use video signals from various cameras installed at different locations, process them for viewing on workstations/monitors in the control room and simultaneously record all the cameras. The VMS data should go only to the intended personnel/facility and not to the remote server of the Camera (VMS supplier).

Mouse/keyboard controllers shall be used for pan, tilt, zoom and other functions of the desired camera. The Visual Monitoring System shall have provision of WAN connectivity for remote monitoring.

All camera recordings shall have Camera ID and location/area of recording as well as date/time stamp. The equipment should generally conform to Electromagnetic compatibility requirement for outdoor equipment in EHV substation.

Advisory on deployment of CCTV issued by Ministry of Electronics and Information Technology (MEITY) shall be followed.

At existing substations, the visual monitoring system if available shall be augmented as per existing or better specification as required.

#### **B.4.0 General Facilities**

- a) Line Gantry/Towers are envisaged for bays under the present scope only. However, for adjacent future line bay, gantry/tower shall be designed for extension (considering hexa conductors for 765 kV and quad conductors 400 kV future lines) wherever applicable.
- b) Bay extension works at existing substation shall be executed by TSP in accordance with the requirements/provisions mentioned above. However, interface points shall be considered keeping in view the existing design/arrangement at the substation.
- c) TSP has to arrange for construction power and water on its own.
- d) All outdoor steel structures including anchor/foundation bolts shall be fully galvanized. The weight of the zinc coating shall be at least 610 gm/m<sup>2</sup>, however, for coastal/ creek regions, it shall be at least 900 gm/m<sup>2</sup> (if applicable).
- e) In 765 kV and 400 kV switchyard, if spare bay of half diameter is identified as future, all the equipment for Tie and Future Bay shall be designed considering the current rating of line bay i.e. 3150 A.
- f) Boundary wall shall be brick masonry wall with RCC frame or Stone masonry wall or Precast RCC wall under present scope along the property line of complete substation area including future switchyard area to prevent encroachment and unauthorized access. Minimum height of the boundary wall shall be of 1.8 m from Finished Ground Level (FGL).
- g) All electrical equipment shall be installed above the Highest Flood Level (HFL) and where such equipment is not possible to be installed above HFL, it shall be ensured that there is no seepage or leakage or logging of water.

- h) As per CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations 2022/CEA Manual on Transmissions Planning criteria 2023, line approaching substation shall normally be perpendicular to the substation boundary for a stretch of 2-3 km. Accordingly, TSP shall ensure that line terminations at substations are arranged in a manner to avoid hindrance to future line terminations at the substations.

#### **B.5.0 EXISTING ARIYALUR 765 KV SUBSTATION:**

The following drawings/details of existing substation are attached with the RfP documents for further engineering by the bidder.

<b>Sl. No.</b>	<b>Drawing Title</b>	<b>Drawing No./Details</b>	<b>Rev. No.</b>
<b>A.</b>	<b>Ariyalur 765 KV SS</b>		
1.0	Single Line Diagram	TB-0-394-510-001	5A
2.0	Section Layout	TB-0-394-316-003	05
3.0	Earthmat Layout	TB-0-394-316-007	03
4.0	Substation Automation System (SAS)	KY8E-SA	D
5.0	Visual Monitoring System	TB-0-394-316-005	02

**Note:** The existing drawings provided above and in subsequent amendments to the RfP are as received from the developer of existing substation and provided only for reference. Bidders shall follow the RfP for scope of work. Actual site conditions may be different due to other schemes being executed or subsequent revisions by the developer. Therefore, Bidders are advised to visit the substation sites and acquaint themselves with the actual site conditions, layout, topography, infrastructure such as the requirement of roads, cable trench, drainage, boundary etc. and also the design philosophy

**Proposed Coimbatore 765 KV Substation Connectivity SS UTM Coordinate details**

Coimbatore 765 KV SS	Ariyalar 765 KV SS	Virudhunagar 765 KV SS	Edayarpalayam 400 KV SS	Rasipalayam 400 KV SS	Palavadi 400 KV SS
Zone – 43P 728907.151 E 1207603.453 N	Zone -44p 281597 mE 1317852mN	Zone -44p 170598 mE 1046543 mN	767496 mE 1244646 mN	772794 mE 1198975 mN	179568 mE 1346566 mN

## **SPECIFIC TECHNICAL REQUIREMENTS FOR COMMUNICATION**

### **1. KAVATHAMPALAYAM 765/400kV SS**

The communication requirement shall be in accordance to CEA (Technical Standards for Communication System in Power System Operations) Regulations, 2020, CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022, CERC (Communication System for inter-State transmission of electricity) Regulations, 2017, CEA (Cyber Security in Power Sector) Guidelines, 2021, CERC Guidelines on “Interface Requirements” 2024 and all above documents as amended from time to time.

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The communication services viz. SCADA, AGC (wherever applicable), VoIP, AMR and PMU have been identified as critical services and therefore shall be provisioned with 2+2 redundancy i.e. 2 channels for Main Control Centre and 2 channels for Backup Control Centre. In order to meet this requirement, suitable redundancy at port and card level need to be ensured by the TSP to avoid any single point of failure which may lead to interruption in real-time grid operation.

PMU to PDC communication (wherever required) shall be through 2 channels to the PDC (main) as there is no backup PDC at present.

Accordingly, all the hardware for communication services of station as stated above shall support dual redundancy for data transmission of station to respective main and backup RLDCs

The complete InSTS communication system commissioned by TSP under the RFP shall be the asset of InSTS and shall be available for usage of InSTS requirements as suggested by STU from time to time.

In order to meet the requirement for grid management and operation of substations, Transmission Service Provider (TSP) shall provide the following:

#### **C.1.0 Requirement for Kavathampalayam Substation**

- (I) TSP shall supply, install & commission FODP with minimum 240 Fiber capacity along with panel and approach Cable (48F each except LILO portion of Kavathampalayam where 24Fx2 approach cable shall be required) with all associated hardware fittings from gantry tower to Control Room for all the incoming lines envisaged under the present scope.
- (II) TSP shall supply, install & commission the following communication equipment for establishment of Kavathampalayam 765/400KV SS:

1. 2 Nos. Hybrid FOTE with uplink having 4 directions and redundant for all modules for dedicated applications of 765kV lines
2. 2 Nos. Hybrid FOTE with uplink having 4 directions and redundant for all modules for dedicated applications of 400kV lines
3. Stand alone Digital Tele Protection Coupler – 2 Nos per feeder/Line for each Substation end applicable for 765kV and 400kV lines.
4. 1 No. Hybrid EPAX with necessary interfaces, necessary cables and associated materials, VoIP phones (Minimum of 3 nos ) and necessary analog telephones to implement the voice communication requirement for Kavathampalayam SS and for its voice communication with remote end substations and communication network. Necessary point for telephone interface for VoiP and analog phones shall be provided in each kiosk/ Switch yard panel room.
5. Full fledged repeater station comprising Necessary Optical Amplifiers with necessary cables and associated materials shall be installed for optical communication links between Kavathampalayamto Ariyalur as well as forKavathampalayamto Virudhunagar 765 kV feeder / Lines. The suitable 48V DC Power Supply system complete including chargers, battery banks and DCDB with associated materials and cables shall be provided for communication equipment. The location repeater station for optical communication links shall be decided during project execution stage.
6. TSP shall supply essential spares where each set of essential spares comprising each type of hardware modules for FOTE Equipment and for repeater station OLTE Equipment separately for 400 KV lines application and for 765 KV Lines application. Quantity of number of sets spares shall be as per detailed tender specification.
7. TSP shall supply essential spares where each set of essential spares comprising each type of hardware modules for Digital Tele Protection Coupler Equipment separately for 400 KV lines application and for 765 KV Lines application. Quantity of number of sets spares shall be as per detailed tender specification.
8. TSP shall supply essential spares where each set of essential spares comprising each type of hardware modules for Hybrid EPAX and associated hardware devices. Quantity of number of sets spares shall be as per detailed tender specification.
9. TSP shall supply essential spares comprising each type of hardware modules for FOTE Equipment, Hybrid EPAX, DTPC and associated hardware devices. Quantity of spare shall be as per detailed tender specification.

Necessary direction shall also be provided in the FOTE for Greenko Generators, however required optical interfaces shall be provided by Greenko at the time of connectivity. The suitable DC Power Supply and backup to be provided for communication equipment.

Necessary optical interfaces to be provided by the TSP in the FOTE of RasipalayamSS and PalavadiSS as per link budget requirement after change of fiber length due to LILO at KavathampalayamSS.

- (III) Location of FODPs and FOTEs shall be as per engineering approval during project stage.

DTPCs housed in panels for designated lines shall be located in the respect Kiosk/ SPR.

- (IV) The new communication equipment under the present scope shall be compatible for integration with existing regional level centralized NMS. The local configuration of the new communication equipment shall be the responsibility of TSP. The configuration work in the existing centralized NMS for integration of new Communication equipment shall be done by Regional ULDC Team, however all the necessary support in this regard shall be ensured by TSP. NMS complete with life time license covering all the network elements in this project, necessary hardware, softwares, furniture etc with necessary NBI interface supporting the various features and functions as per UNMS requirements shall be provided in case there is no proper NMS with NBI in TANTRANSCO for the offered FOTEs.
- (V) TSP shall supply, install & commission Firewall in redundant mode (1+1) in line with the specification attached at **Annexure F.1**.
- (VI) The maintenance of all the communication equipment and software thereof including FOTE, FODP, PMU, approach cable, DCPS along with Battery Bank & Firewall shall be the responsibility of TSP.

### **C.1.1 FOTE Requirement for Virudhunagar Substation**

TSP shall supply, install & commission the following communication equipment for Virudhunagar 765 kV Substation end

1. 1 No. Hybrid FOTE with uplink having 4 directions and redundant for all modules for dedicated applications of 765kV lines
2. Stand alone Digital Tele Protection Coupler – 2 Nos per feeder/Line for each Substation end applicable for 765kV lines.
3. 1 No. Self sustaining VOIP gate way with necessary interfaces, necessary cables and associated materials, VoIP phones (Minimum of 2 nos) and necessary analog telephones to implement the voice communication

requirement for its voice communication with remote end substations and communication network.

4. TSP to provide necessary FODP sub rack / Splice trays/ Patch cords etc. and optical interfaces/equipment in the existing FOTE/FODP panels in control room for integration with the existing FOTE for onwards data transmission. In case spare optical direction is not available in the existing FOTE at the control room, the TSP shall coordinate with station owner to reconfigure the directions in existing FOTE at control room. Alternatively, The TSP may integrate the FOTE under the present scope with existing FOTE in the nearby Kiosk connected to the control room FOTE (if available with spare direction). For this purpose, TSP shall provide necessary FODP sub rack / Splice trays/ Patch cords etc. and suitable optical interfaces/equipment in the existing FOTE/FODP panels in another Kiosk (SPR).

### **C.2.0 FOTE requirement at Ariyalur 765 kV SS.**

TSP shall supply, install & commission the following communication equipment for **at Ariyalur 765 kV Substation end**

1. 1 No. Hybrid FOTE with uplink having 4 directions and redundant for all modules for dedicated applications of 765kV lines
2. Stand alone Digital Tele Protection Coupler – 2 Nos per feeder/Line for each Substation end applicable for 765kV lines.
3. 1 No. Self sustaining VOIP gate way with necessary interfaces, necessary cables and associated materials, VoIP phones (Minimum of 2 nos ) and necessary analog telephones to implement the voice communication requirement for its voice communication with remote end substations and communication network.
4. TSP to provide necessary FODP sub rack / Splice trays/ Patch cords etc. and optical interfaces/equipment in the existing FOTE/FODP panels in control room for integration with the existing FOTE for onwards data transmission.
  - (i) TSP shall supply, install & commission FODP with minimum 144 Fiber capacity along with panel and required Approach Cable (48F) with all associated hardware fittings from gantry tower to Bay Kiosk and from the Bay Kiosk to Control room.
  - (ii) Location of FODPs and FOTEs shall be as per engineering approval during project stage. The FOTE under present scope shall be integrated by TSP with the existing FOTE at control room of AriyalurSS which shall be communicating with respective control center. TSP to provide necessary FODP sub rack / Splice trays/ Patch cords etc. and optical interfaces/equipment in the existing FOTE/FODP panels in control room for integration with the existing FOTE for onwards data transmission.

- (iii) In case spare optical direction is not available in the existing FOTE at the control room, the TSP shall coordinate with station owner to reconfigure the directions in existing FOTE at control room. Alternatively, The TSP may integrate the FOTE under the present scope with existing FOTE in the nearby Kiosk connected to the control room FOTE (if available with spare direction). For this purpose, TSP shall provide necessary FODP sub rack / Splice trays/ Patch cords etc. and suitable optical interfaces/ equipment in the existing FOTE/FODP panels in another Kiosk (SPR).
- (iv) FOTE & FODP can be accommodated in same panel to optimize space.
- (v) The new communication equipment under the present scope shall be compatible for integration with existing regional level centralized NMS. The local configuration of the new communication equipment shall be the responsibility of TSP. The configuration work in the existing centralized NMS for integration of new Communication equipment shall be done by Regional ULDC Team, however all the necessary support in this regard shall be ensured by TSP.
- (vi) The maintenance of all the communication equipment and software thereof including FOTE, FODP, approach cable, PMU, DCPS alongwith Battery Bank shall be the responsibility of TSP.

**C.2.1 Development of Kavathampalayam 765 kV SS along with Transmission line up to Existing Ariyalur 765 kV SS:**

For Multi Circuit Tower Configuration: Two (2) No. OPGW cable each containing 48 Fibres(48F) to be installed & commissioned by the TSP on both the Earth wire peaks

For Double Circuit Tower configuration 1 No. OPGW cable each containing 48 Fibres (48F) to be installed & commissioned on one earth wire peak and conventional earth wire on other E/W peak.

The TSP shall install 48 F OPGW cables from gantry of Kavathampalayam SS to gantry of Ariyalur 765 kV SS with all associated hardware including Vibration Dampers, mid-way & gantry Joint Boxes (called OPGW Hardware hereafter) and finally terminate in Joint Boxes at Ariyalur 765 kV SS. To meet link budget requirement of Kavathampalayam 765 kV SS to Ariyalur 765 kV SS (including service loops and sag etc.). TSP shall finalize the location of repeater station depending upon the actual site conditions. Further TSP shall comply to the requirements mentioned as per Appendix-F.1 Maintenance of OPGW Cable, OPGW Hardware & repeater equipment & items associated with repeater shelter shall be the responsibility of TSP.

**C.3.0 Kavathampalayam to Edayarpalayam 400 kV D/C line**

1. On Kavathampalayam to Edayarpalayam 400 kV D/C line, TSP shall supply, install & commission One (1) no. OPGW cable containing 48 Fibres (48F) on one E/W peak and conventional earth wire on other E/W peak.
  2. The TSP shall install this OPGW from gantry of Kavathampalayam PS up to the gantry of Edayarpalayam SS with all associated hardware including Vibration Dampers, midway & gantry Joint Boxes (called OPGW Hardware hereafter) and finally terminate in Joint Boxes at end Substations. The transmission line length is \_\_\_ kms (approx.) where repeater is not required to meet link budget requirement of Kavathampalayam to Edayarpalayam link. However, after survey link length may exceed to \_\_\_ kms. To meet link budget requirement of Kavathampalayam to Edayarpalayam link (including service loops and sag etc.) 1 set of FOTE at repeater station to be provided by TSP.
  3. TSP shall finalize the location of the repeater station depending upon the actual site conditions. Further TSP shall comply to the requirements mentioned as per Appendix-F.1 IV.
  4. Maintenance of OPGW Cable, OPGW Hardware & repeater equipment & items associated with repeater shelter shall be the responsibility of TSP.
- V. TSP shall supply, install & commission the following communication equipment for at Edayarpalayam 400 kV Substation end
- 1 2 Nos. Hybrid FOTE with uplink having 4 directions and redundant for all modules for dedicated applications of 400kV lines at Edayarpalayam 400kV SS.
  - 2 Stand alone Digital Tele Protection Coupler – 2 Nos per feeder/Line for each Substation end applicable for 400 kV lines.
  - 3 1 No. Self sustaining VOIP gate way with necessary interfaces, necessary cables and associated materials, VoIP phones (Minimum of 2 nos) and necessary analog telephones to implement the voice communication requirement for its voice communication with remote end substations and communication network.
5. TSP to provide necessary FODP sub rack / Splice trays/ Patch cords etc. and optical interfaces/equipment in the existing FOTE/FODP panels in control room for integration with the existing FOTE for onwards data transmission. In case spare optical direction is not available in the existing FOTE at the control room, the TSP shall coordinate with station owner to reconfigure the directions in existing FOTE at control room. Alternatively, The TSP may integrate the FOTE under the present scope with existing FOTE in the nearby Kiosk connected to the control room FOTE (if available with spare direction). For this purpose, TSP shall provide necessary FODP sub rack / Splice trays/ Patch cords etc. and suitable optical interfaces/equipment in the existing FOTE/FODP panels in another Kiosk (SPR).

#### **C.4.0 LILO of 400 kV Rasipalayam – Palavadiline at Kavathampalayam SS**

On LILO of 400 kV Rasipalayam – PalavadiD/C line at Kavathampalayam SS, TSP shall supply, install & commission OPGW and earthwire as per Tower Configurations:

- I. For Multi Circuit Tower Configuration: Two (2) No. OPGW cable each containing 48 Fibres (48F) to be installed & commissioned by the TSP on both the Earth wire peaks
- II. For Double Circuit Tower configuration (for both 48 F Loop In and Loop Out portion): Two No. OPGW cable containing 48 Fibres (48F) on each earth wire peak for both Loop In and Loop Out Lines.

The TSP shall install 48 F OPGW cables from gantry of Kavathampalayam SS up to the LILO tower with all associated hardware including Vibration Dampers, mid-way & gantry Joint Boxes (called OPGW Hardware hereafter) and finally terminate in Joint Boxes at Kavathampalayam SS. The LILO line length is \_\_ kms (approx.) After LILO, fiber length for links Palavadi to Kavathampalayam and Kavathampalayam to Rasipalayam may exceed to \_\_kms. To meet link budget requirement of Palavadi to Kavathampalayam and Kavathampalayam to Rasipalayam link (including service loops and sag etc.) 1 set of FOTE at repeater station to be provided by TSP. TSP shall finalize the location of repeater station depending upon the actual site conditions. Further TSP shall comply to the requirements mentioned as per Appendix-F.1 Maintenance of OPGW Cable, OPGW Hardware & repeater equipment & items associated with repeater shelter shall be the responsibility of TSP.

C.4.1. TSP shall supply, install & commission the following communication equipment for at Rasipalayam 400 kV Substation end

- i. 1 No. Hybrid FOTE with uplink having 4 directions and redundant for all modules for dedicated applications of 400 kV lines
- ii. Stand alone Digital Tele Protection Coupler – 2 Nos per feeder/Line for each Substation end applicable for 400 kV lines.
- iii. 1 No. Self sustaining VOIP gate way with necessary interfaces, necessary cables and associated materials, VoIP phones (Minimum of 2 nos) and necessary analog telephones to implement the voice communication requirement for its voice communication with remote end substations and communication network.
- iv. TSP to provide necessary FODP sub rack / Splice trays/ Patch cords etc. and optical interfaces/equipment in the existing FOTE/FODP panels in control room for integration with the existing FOTE for onwards data transmission. In case spare optical direction is not available in the existing FOTE at the control room, the TSP shall coordinate with station owner to reconfigure the directions in existing FOTE at control room. Alternatively, The TSP may integrate the FOTE under the present

scope with existing FOTE in the nearby Kiosk connected to the control room FOTE (if available with spare direction). For this purpose, TSP shall provide necessary FODP sub rack / Splice trays/ Patch cords etc. and suitable optical interfaces/ equipment in the existing FOTE/FODP panels in another Kiosk (SPR).

**C.4.2 TSP shall supply, install & commission the following communication equipment for at Palavadi 400 kV Substation end**

- i. 1 No. Hybrid FOTE with uplink having 4 directions and redundant for all modules for dedicated applications of 400 kV lines
- ii. Stand alone Digital Tele Protection Coupler – 2 Nos per feeder/Line for each Substation end applicable for 400 kV lines.
- iii. 1 No. Self sustaining VOIP gate way with necessary interfaces, necessary cables and associated materials, VoIP phones (Minimum of 2 nos ) and necessary analog telephones to implement the voice communication requirement for its voice communication with remote end substations and communication network.
- iv. TSP to provide necessary FODP sub rack / Splice trays/ Patch cords etc. and optical interfaces/equipment in the existing FOTE/FODP panels in control room for integration with the existing FOTE for onwards data transmission. In case spare optical direction is not available in the existing FOTE at the control room, the TSP shall coordinate with station owner to reconfigure the directions in existing FOTE at control room. Alternatively, The TSP may integrate the FOTE under the present scope with existing FOTE in the nearby Kiosk connected to the control room FOTE (if available with spare direction). For this purpose, TSP shall provide necessary FODP sub rack / Splice trays/ Patch cords etc. and suitable optical interfaces/ equipment in the existing FOTE/FODP panels in another Kiosk (SPR).

**C.5.0 Specific Requirement for Phasor Measurement Units (PMUs)**

TSP shall supply, install & commission required No. of Phasor Measurement Units (PMUs) as per the “Guidelines on Unified Philosophy for placement of PMUs in Indian Grid” issued vide CEA letter No. CEA-PS-14-12/9/2024-PSETD Division dated 19.03.2025 for the scope of this RfP. The PMUs shall be provided with LAN switch and shall connect with LAN switch of control room of respective substations/ generating stations with Fiber Optic cable. These PMUs shall be connected with the FOTE at Substation/ generating stations for onwards data transmission to the PDC (Phasor Data Concentrator) located at respective RLDC. Configuration work in existing PDC at RLDC for new PMU integration shall be done by respective RLDC, however all the necessary support in this regard shall be ensured by TSP. The maintenance of all the PMUs and associated equipment shall be the responsibility of TSP.

Note: Existing Station owner/s to provide necessary support to integrate different equipment & applications of new extended bays with the existing substation e.g. Communication (through FOTE), Voice etc. for smooth operation and monitoring of new added grid elements.

## **Appendix-F.1**

### **Optical Repeater Requirements**

- 1.1.1 If the repeater location is finalized in the Control Room of a nearby substation, TSP shall provide OPGW to accommodate all the fibers in main transmission line on a single Earth wire peak with OPGW Hardware & mid-way Joint Boxes etc. of the line crossing the main line and required approach Cable to accommodate all the OPGW fibers with all associated hardware fittings, to establish connectivity between crossing point of main transmission line up to the repeater equipment in substation control room.

TSP shall co-ordinate for Space & DC power supply sharing for repeater equipment. TSP shall provide FODP, FOTE (with STM / MPLST-TP of suitable capacity as per engineering approval) with suitable interfaces required for link budget of respective link.

OR

- 1.1.2 If the repeater location is finalized in the nearby substation premises, the TSP shall identify the Space for repeater shelter in consultation with station owner. Further TSP shall provide OPGW to accommodate all the fibers in main transmission line on a single Earth wire peak with OPGW Hardware & mid-way Joint Boxes etc. of the line crossing the main line and required approach Cable/UGFO to accommodate all the OPGW fibers with all associated hardware fittings, to establish connectivity between crossing point of main transmission line up to the substation where the repeater shelter is to be housed.

TSP shall provide repeater shelter along with FODP, FOTE (with STM / MPLST-TP of suitable capacity as per engineering approval) with suitable interfaces require for link budget of respective link, reliable power supply provisioning for AC and DC supply, battery bank, Air Conditioner and other associated systems.

OR

- 1.1.3 If the repeater location is finalized on land near the transmission tower. TSP shall make the provisions for Land at nearby tower for repeater shelter. Further

TSP shall provide required approach Cable to accommodate all the OPGW fibers with all associated hardware fittings to establish connectivity up to the location of repeater shelter.

TSP shall provide repeater shelter along with FODP, FOTE (with STM / MPLST-TP of suitable capacity as per engineering approval) with suitable interfaces require for link budget of respective link, reliable power supply provisioning for AC and DC supply, battery bank, Air Conditioner and other associated systems.

Maintenance of OPGW Cable and **OPGW Hardware**, repeater equipment & items associated with repeater shelter shall be responsibility of TSP.

- 1.1.4 Where ever fibre optic line length exceeds the sufficient driving capacity of FOTE equipment at both ends of transmission line, necessary optical repeater station is to be provided at intermittent location ie at suitable sub-station of TANTRANSCO or other locations as mentioned above for which TSP shall provide necessary communication equipment, Auxiliary power supply system with associated materials. These material are deemed to be under the tender scope. Necessary engineering drawing approval shall be obtained from TANTRANSCO / concerned plant owners of the location for optical repeater station equipment's proposed to be located in TANTRANSCO station

## Annexure-F.1

### Next Generation Firewall (NGFW)

TSP shall provide 2 NGFW one in Main & another in Standby mode having electrical Ethernet interfaces/ports and placed between FOTE & SAS gateway/s at the substation. All Ethernet based applications shall be terminated in the firewall ports directly (e.g. PMU, AMR, VOIP, SAS/SCADA etc.). Each port of firewall shall work as a separate zone. Firewall shall be hardware based with features of Block/Allow/drop and IPSec VPN (network encryption).

The number of ports/interfaces in each firewall (i.e. Main & Standby) shall be minimum 16 Nos. TSP shall provide either single firewall or multiple firewalls to meet this interfaces requirement, each for main as well as standby firewall. Minimum throughput of firewall shall be 300 Mbps.

The Firewall shall be managed/ configured as standalone at present and shall also have compatibility to manage/configure through Centralized Management Console (CMC) remotely in future.

Firewall shall be tested and certified for ISO15408 Common Criteria for least EAL4+. Further, the OEM must certify that it conforms to Secure Product Development Life Cycle requirements as per IEC62443-4-1. The firewall shall generate reports for NERC-CIP Compliance.

The specifications for the firewalls are given at **Annexure-F.2** and schematic diagram showing firewall placement given at **Figure F.2**.

The specification of the NGFW is subject to the directives, recommendations, guidelines of concerned authorities such as CEA, CERT-TRANS etc as and when issued shall be applicable to the above NGFW specification.

## Annexure F.2

### Specifications of Next Generation Firewall (NGFW)

1. NGFW shall have following features including but not limited to:

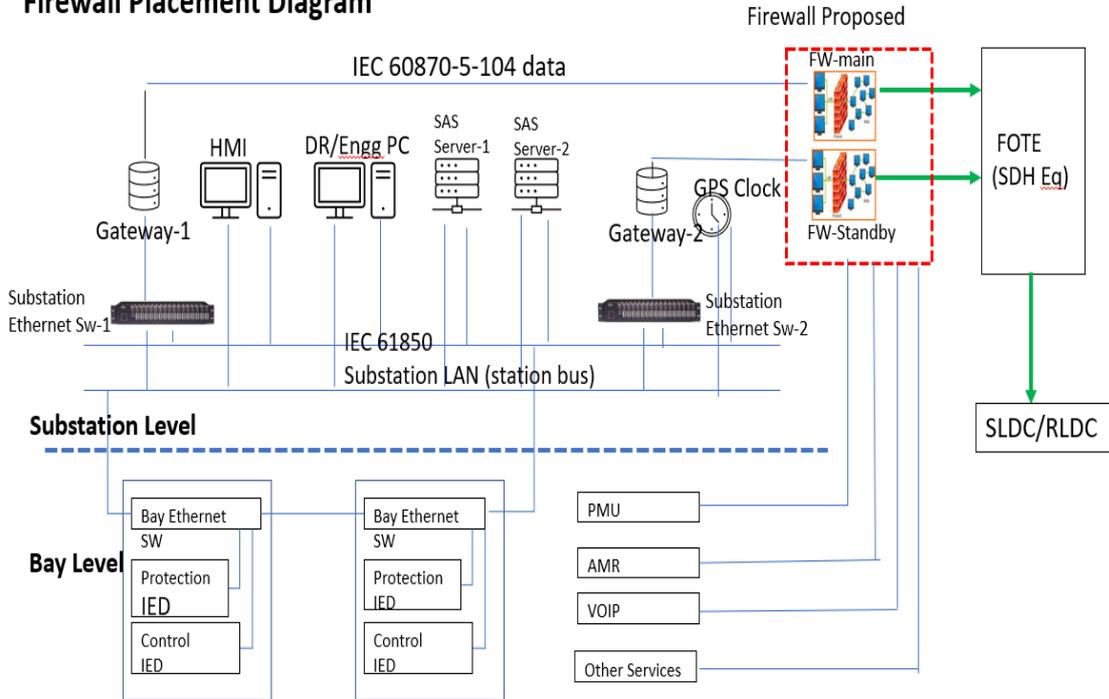
Encryption through IPSec VPN (Virtual Private Network), Deep Packet Inspection (DPI), Denial of service (DoS) & Distributed Denial of Service (DDoS) prevention, Port Block/ Allow, rules/ policies for block/allow, IP (Internet Protocol) & Media Access Control (MAC) spoofing protection, threat detection, Intrusion Prevention System (IPS), Anti-Virus, Anti-Spyware, Man InThe Middle (MITM) attack prevention.

2. The proposed firewall shall be able to handle (alert, block or allow) unknown /unidentified applications e.g. unknown TCP & UDP packets. It shall have the provision to define application control list based on application group and/or list.
3. Firewall shall have feature and also have capability to update the definition/ Signatures of Anti-Virus online as well as offline. Firewall shall also be compatible to update the definitions/signatures through CMC. There shall be a defined process for security patching and firmware up-gradation. There shall be a feature to field validate firmware checksum. The same shall also be validated before using the OEM provided file/binary in the process of firmware up-gradation and security patching
4. Firewall shall have Management Console port to configure remotely.
5. Firewall shall be EMI/EMC compliant in Substation environment as per IEC 61850-3.
6. Firewall shall be rack mounted in existing standard equipment cabinets.
7. Firewall shall have support of SCADA applications (IEC-60870-5-104), IEC-61850, PMU (IEEE C37.118), Sub-Station Automation System (IEC 61850), Ethernet and other substation environment protocols.
8. Client based Encryption/ VPN must support different Operating System platforms e.g. Windows, Linux & Mac.
9. The solution must have content and comprehensive file detection policies, blocking the files as function of their types, protocols and directions.
10. Firewall shall have logging facility as per standard logs/events format. Firewall shall have features to export the generated/stored logs/events in csv (Comma Separated Value) and also any other standard formats for offline usage, analysis and compliance.

Firewall shall have suitable memory architecture and solution to store and be enable to export all logs/events for a period of last 90 days at any given time.

11. Firewall shall have features and be compatible with local as well as central authentication system (RADIUS, LDAP, or TACACS+) for user account and access right management. It shall also have Role Based User management feature.
12. Firewall shall have the capability to configure sufficient number of VLANs.
13. Firewall shall have the capability to support sufficient number of sessions.
14. Firewall shall have provision to configure multiple IP Sec VPNs, at least 100 Nos., (one-to-many or many-to-one). Shall support redundant operation with a similar router after creation of all the IP Sec VPN. IPsec VPN shall support encryption protocols as AES128, AES256 and hashing algorithms as MD5 and SHA1. IPsec VPN throughput shall support at least 300 Mbps
15. Firewall shall be capable of SNMP v3 for monitoring from Network Management system. It shall also have SNMPv3 encrypted authentication and access security
16. Firewall shall support in Active/Passive or Active-Active mode with High Availability features like load balancing, failover for firewall and IPsec VPN without losing the session connectivity.
17. Firewall should have integrated traffic shaping (bandwidth, allocation, prioritisation, etc.) functionality
18. Shall support simultaneous operation with both IPv4 and IPv6 traffic
19. Firewall shall be compatible with SNTP/NTP or any other standards for clock synchronization
20. Firewall shall have the features of port as well as MAC based security
21. Firewall shall support exporting of logs to a centralized log management system (e.g. syslog) for security event and information management.
22. Firewall time shall be kept synchronised to official Indian Timekeeping agency, [time.nplindia.org](http://time.nplindia.org).
23. Firewall product shall be provided with all applicable updates at least until 36 months since the applicable date of product shipping to the concerned utility.

### Firewall Placement Diagram



**Figure F.2**

**Annexure – G**  
**Communication system integration in UNMS/CSMS**

TSP is to ensure integration of communication system into UNMS/CSMS as per following:

“The new communication equipment/ system under the present scope shall be compatible for integration with existing regional level NMS system/ Centralized Supervision & Monitoring System (CSMS) i.e. Regional UNMS. The local configuration of the new communication equipment/ system at the station end shall be the responsibility of TSP as per followings. The configuration work in the existing centralized NMS/ UNMS at Control center end, for integration of new Communication equipment/ system shall be done by Regional ULDC Team/ NMT, however all the necessary support in this regard shall be ensured by TSP.

**Requirement for integration of Communication Equipment/ system with Regional UNMS:**

1. TSP shall ensure that NMS/EMS/NE supplied by them is NBI compliant and all FCAPS functionality is supported in the NBI such as NE Inventory, Hardware Inventory– Shelf/Slot/Card/SFP/Port, Topology, Protections, Alarms, Performance-real time & periodic, Performance KPI parameters (E-1, STM, Ethernet), Remote Configuration, Cross Connects, Trails & Circuits, Services Provisioning (NE), E-1, STM, Ethernet, TX & RX Trace, loop back and details are published in the NBI guide for the configuration parameters.
2. TSP shall be obliged to provide/share all necessary documentations such as NBI Guide/MIB/IDL/WSDL/API files etc. for onward integration of their NMS/EMS/NE with regional UNMS.
3. The following support shall be provided by TSP for integration of their supplied equipment with regional UNMS:
  - Enabling & activating NBI license in their EMS/NMS and providing NBI login access along with User credentials
  - Assist in verifying NBI Connectivity with UNMS vendor for the successful communication and retrieval of data.
  - Assist in troubleshooting (if required) for NBI connectivity along with UNMS vendor for the communication and retrieval of data.
4. For standalone NE which is not integrated with any EMS/NMS, TSP shall provide modality of complete FCAPS data acquisition as above through industry standard programmatic methods and provide the CLI command manual.”

Please note :Where ever MPLS-TP links are implemented for subject project the suitable MPLS capacity is applicable.

## **II. EDAYARPALAYAM 400/ 230-110 kV AIS SUBSTATION**

**Preface:** Work towards an establishment of 400/230-110 kV AIS at Edayarpalayam was awarded to Turnkey contractor on 07.01.2020. In this contract, approx. 21% of civil works were completed and the electrical works were not taken up. Hence due to poor progress of work, the contract was terminated on 11.01.2024. The Balance scope of work as discussed below has to be taken up under TBCB Basis. Bidder is advised visit the Edayarpalayam SS site and ascertain the requisite details.

The proposed 400/230-110 kV Edayarpalayam substation shall be Conventional Air Insulated Substation (AIS) type conforming to the requirements of CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations 2022, as amended from time to time.

Other CEA Regulations/guidelines as amended up to date and MoP guidelines, as applicable, shall also be followed.

### **A.1.0: SALIENT FEATURES OF THE PROPOSED WORK AT EDAYARPALAYAM**

#### **Other Equipment:**

- i. Supply and installation of 400KV, 230 KV and 110 KV circuit breakers (Provision of circuit breaker with PIR for 400 kV line (for main& Tie breakers) have been considered. 400kV main and Tie breakers connected to Tr dia are with CSD without PIR), isolators, Current transformers, Capacitive voltage transformer/ Potential transformer, surge arrestors, as per OEM instructions.
- ii. Station Auxiliary supply with 2x500KVA, 11KV/0.433 KV Energy efficient Distribution transformer with structure and materials from different feeding Sources with SCADA compatible RMU.
- iii. Complete control & relay panels and protection system panels applicable for substation Automation system for Kiosk type Architecture.
- iv. Fire extinguishers and Fire Protection alarm system for Control room, cable gallery and for all the Kiosk buildings
- v. Air conditioning of the control room and Kiosk rooms, as per heat load calculation.
- vi. L.T switchgear for AC system from Tertiary winding of ICTs, Two sources from TNPDC supply and DG set.
- vii. DC system from Station Battery sets with FC+Float cum Boost Chargers.
- viii. DG Set (250 KVA) with AMF Panel and Fuel tanks.
- ix. Batteries 220V, 400AH, 220V 300AH & 48V, 600 Ampere Hour Lead Acid Tubular with transparent SAN container & Battery Chargers with Dropper diodes.
- x. 1.1 KV Grade Power & various sizes of control cables along with complete accessories.
- xi. Lattice structures (Galvanized) towers, beams and support structures, all equipment support structure as per manufacturer's design. For 400 kV yard, lattice structures beam

and support structures to be designed as per relevant latest IS with reference to the corresponding wind zone.

- xii. Solid core insulators, insulator strings and hardware clamps and connectors, Aluminium bus bar, earthing materials, bay marshalling box, spacers, cable supporting angles / channels, cable trays, junction box, buried cable trench etc.
- xiii. Design and laying of main earth grid. All the equipment, cable trays, auxiliary earth mat etc. to be earthed by connecting them to the earth grid. The designed value shall be as minimum as possible. The DSLP Protection schemes as per standard.
- xiv. Supply of 110 KV UG Cable termination Kits and accessories at take off structure and gantry Tower at Substation end for 7 Nos 110 KV Feeders with in the Substation premises along with Sheath bonding design for Substation to OHL Tower schemes.
- xv. Complete lighting and illumination for switch yard (LED lights), Control room, kiosk building and administrative building with required Lux levels as per latest BIS.
- xvi. For 400 KV Outdoor yard, there is no space for providing LCLM. Hence lighting arrangement shall not be made on 400 kV Substation tower. Alternate arrangement shall be made for lighting to obtain desired Lux levels.
- xvii. FO Cable with HDPE Pipe for connectivity of all Kiosks to the SAS LAN in the control room building.
- xviii. Complete installation of Visual Monitoring system with 25 Nos. of high resolution CCTV Camera for day and night monitoring of the entire Switch Yard area and Control room for security of premises with all accessories including CCTV Camera, Digital Video Recorder and LED TV, with work station at Control Room building.
- xix. Soil treatment of Outdoor Rocky yard as per latest standards for achieving required soil resistivity. Designing of Earthing system and measurement of soil resistivity as per standards.
- xx. Pre commissioning and Commissioning of all equipment and materials shall be made as per relevant standards and Grid codes.

**NOTE:**

1. TANTRANSCO will hand over the land for construction of 400/220-110 kV AIS at Edayarpalayam village in Coimbatore District to TSP, as is where is, basis.
2. The Bidder is advised visit the Edayarpalayam SS site and ascertain the requisite soil parameters.

**B. CIVIL WORKS:**

**a. DETAILS OF WORK COMPLETED AT EDAYARPALAYAM 400KV SS SITE:**

Sl. No.	Description of work	Progress of Civil Works Completed
1	Cutting and Filling the yard	Leveling by cutting and filling the yard 97% completed.
2	Control room	i. Parapet 50% completed ii. GF and FF Roof slab completed iii. Inner plastering 90% completed

3	Compound wall All types: (A – 448.620 mtr B – 77.800 mtr C – 100.000 mtr D – 119.700 mtr E – 181.000 mtr F – 76.070 mtr G – 40.000 mtr H – 60.000 mtr J – 327.650 mtr Total = 1430.840 mtr (A&B Type Drawing not approved)	a. Excavation - 241/904.42 m b. PCC - 241/904.42 m c. Raft Concrete - 241/904.42m d. Wall I <sup>st</sup> lift - 226/904.42m e. Wall II <sup>nd</sup> Lift - 181/904.42 m f. Wall III <sup>rd</sup> Lift - 181/904.42 m g. Wall IV <sup>th</sup> Lift - 90/904.42 m  Note: Out of 904.42 mtr (which is excluding A&B type) 241 mtr (E&H Type) is partially completed.
4	Tower foundation: 169 Nos. (400KV, 230KV and 110KV yard)	Partially completed: a. Excavation : 94/169 Nos completed b. PCC : 68/169 Nos completed c. Raft Concrete : 52/169 Nos completed d. Pedestal Concrete : 41/169 Nos completed
5	Equipment Foundations – 1662 Nos. (400 KV, 230 kV and 110 kV yard)	Partially completed: a. Excavation : 241/1662 Nos completed b. PCC : 96/1662 Nos completed c. Raft Concrete : 93/1662 Nos completed d. Pedestal Concrete : 06 Nos Completed

### **DETAILED CIVIL WORKS FOR THE EDAYARPALAYAM 400 KV SUBSTATION :**

- i. Rock cutting for 50 cm of depth in all 400 KV, 230 KV & 110 KV Yards for providing special earth mat.
- ii. Refilling with Gravel to a depth of 50 cm in all 400 KV, 230 KV & 110 KV Yards.
- iii. Design and construction of Control room cum administrative building including aluminum doors, windows, electrification, septic tank with internal water supply and sanitary arrangements for the substation based on the line sketch to be provided along with specification.
- iv. The following Kiosk building with size of 10 m x 3.3 m has been proposed to erect the Bay Protection Panels.
  - a) 400 KV Bays - 8 Nos.
  - b) 230 KV Bays - 4 Nos.
  - c) 110 KV Bays - 4 Nos.

Total 16 Nos.
- v. RCC Foundation for Auto transformers, Bus and line reactors, breakers, distribution transformer and for all equipment:
- vi. RCC foundation works for SS towers, support structures, lightning masts, lighting poles, panels and control cubicles of equipment wherever required.
- vii. Supply & erection of substation towers, support structures, lighting cum lightning mast.
- viii. Refilling of excavated earth, removal of surplus earth and leveling the yard.

- ix. Cable Trench along with covers and sump pits with appropriate slope in cable ducts to avoid water stagnation. Provision of pump to discharge rain water collected in the sump pits. Cable trench crossings with roads.
- x. Rain water harvesting system.
- xi. Stone spreading and anti weeding in switchyard.
- xii. Permanent watering arrangements for earth pits.
- xiii. Construction of compound wall, fire protection wall, retaining Wall, gates, security room.
- xiv. Construction of roads within the substation and access road if required.
- xv. Permanent water supply for control room cum administrative building.
- xvi. Foundation for DG set
- xvii. Drainage system in the sub station
- xviii. Soil investigation
- xix. Provision of basic amenities

#### **B.1.0 SALIENT FEATURES OF SUBSTATION EQUIPMENT AND FACILITIES**

The design and specification of substation equipment are to be governed by the following factors:

##### **B.1.1 Insulation Coordination**

The system design parameters for substations/switchyards shall be as given below:

Sl No.	Description of parameters	400/230-110 kV Edayarpalayam AIS				
		400 kV System	230 kV System	110 kV System	33 kV System	11 kV System
1.	System Operating Voltage	400 kV	230 kV	110 kV	33 kV	110 kV
2.	Maximum voltage of the system (rms)	420 kV	245 kV	132 kV	36 kV	132 kV
3.	Rated Frequency	50 Hz	50 Hz	50 Hz	50 Hz	50 Hz
4.	No. of Phases	3	3	3	3	3
5.	Rated Insulation Levels					
i)	Lightning Impulse withstand voltage for (1.2/50 micro sec.) - for Equipment other than Transformer and Reactor - for Insulator String	1425 kVp 1550 kVp	1050 kVp 1050 kVp	550 kVp 550 kVp	170kVp	75kVp
ii)	Switching Impulse withstand voltage (250/2500 micro sec.) dry and wet	1050 kVp	NA	NA	NA	NA

iii)	One-minute power frequency dry withstand voltage (rms)	630 kV	460 kV	230 kV	70 kV	28 kV
6.	Corona Extinction Voltage	320 kV	156 kV	NA	NA	NA
7.	Max. radio interference voltage for frequency between 0.5 MHz and 2 MHz	1000 micro-volts (at 320 kV rms)	1000 micro-volts (at 156 kV rms)	NA	NA	NA
8.	Minimum creepage distance for insulatorstring/ long rod insulators/ outdoor bushings	13020 mm (31 mm per kV)	7595 mm (31 mm per kV)	4092 mm (31 mm per kV)	900 mm (25 mm/ kV)	300 mm (25 mm/ kV)
9.	Minimum Creepage distance for Switch yard Equipment	10500 mm (25 mm/ kV)	6125 mm (25 mm/ kV)	3300 mm (25 mm/ kV)	900 mm (25 mm/ kV)	300 mm (25 mm/ kV)
10.	Max. FaultCurrent	63 kA	50 kA	40 kA	25 kA	25 kA
11.	Duration of Fault	1 Sec	1 Sec	1 Sec	3 Sec	3 Sec
12.	Minimum Clearance					
a.	Phase to Phase	4000mm	3350mm	1700mm	1200mm	900mm
b.	Phase to Earth	3500mm	1700mm	1000mm	600mm	300mm
c.	Ground Clearnce	8000mm	5500mm	4600mm	3650mm	3650mm
d.	Sectional Clearance	10000mm	4270mm	3350mm	2750mm	2600mm
13.	System Neutral Earthing	Effectively Earthed	Effectively Earthed	Effectively Earthed	Effectively Earthed	Effectively Earthed

### B.1.2 Switching Scheme

The switching schemes, as mentioned below, shall be adopted at various voltage levels of substation/switchyard: (Full dia = 2 Main + 1 Tie, Half Dia = 1 Main + 1 Tie)

Substation	400 kV side	230 kV side	110 kV side
<b>400/230-110 kV EdayarpalayamSS (AIS)</b>	One and half breaker with Double bus scheme (5 nos full dia and 3 nos half dia in I configuration)	Single breaker with Double bus	Single breaker with Double bus

**Notes: -**

- (i) For one and half breaker switching scheme, any double circuit line consisting of two numbers of feeders and originating from the same transmission or generating switchyard shall not be terminated in one diameter applicable for 765 kV SS only
- (ii) Two transformers of same HV rating shall not be connected in the same diameter and similarly, two bus reactors of same HV rating shall also not be connected in the same diameter.
- (iii) A diameter in one and half breaker scheme is a set of 3 circuit breakers with associated isolators, earth switches, current transformers etc. for controlling 2 (two) numbers of feeders.
- (iv) All 400KV Transmission Line length is within 200Km. Hence the Line Reactors are not proposed. Only the 125MVAR 3 Phase Bus Reactors is proposed.
- (v) TSP shall plan distribution of line and transformer feeders to bus bar in such a way that all power can be evacuated successfully without crossing the thermal limit at any point of bus bar.
- (vi) In one and half breaker scheme, both main bay and tie bay shall be completed for controlling a feeder. Further, all associated interconnection work shall also be in the present scope of TSP.
- a.400 kV Bay (One and half Breaker with Double bus) shall be **I** configuration and as follows:

Configuration	No of bays (1½ CB system)
ICT –Tie- Line Bay (Full Dia)	03 (Three)
400 kV Bus Reactor – Tie – Line (Full Dia)	02 (Two)
ICT – Tie – Space provision for future Line complete civil works(Half Dia)	02 (Two)
Space provision for Future ICT Complete Civil works – Tie – Line (Half Dia)	01 (one)
Total (Full Dia)	05 (Five)
Total (Half Dia)	03 (Three)

b. 230 kV Bay configuration (Single breaker with Double bus scheme) as follows:

Configuration	No of bays (Double bus scheme)
a. 230 kV ICT bay	02 (Two)
b. 230 kV Line bay	05 (Five)
c. 230kV Bus coupler bay	01 (One)
d.230kV Spare Line bay with complete civil works	01 (one)
e. 230 kV ICT IV bay with complete civil works	01 (one)
Total	10 (Ten)

c. 110 kV Bay configuration (Single breaker with Double bus scheme) as follows:

Configuration	No of bays ( <i>Double bus scheme</i> )
a. 110 kV ICT bay	03 (Three)
b. 110 kV Line bay	07 (Seven)
c. 110KV Bus coupler bay	01 (One)
d. 110KV Spare Line bay with <i>complete civil works</i>	01 (one)
Total	12 (Twelve)

(vii) *Note:* However while using single phase ICTs, and Reactor the status of equipment in idle condition shall be reviewed.(ie., in energized or de-energized condition). If they are kept in energized condition, separate bay provision has to be made.

### B.2.0 Substation Equipment and facilities (Voltage level as applicable):

The switchgear shall be designed and specified to withstand operating conditions and duty requirements. All equipment shall be designed considering the following capacity.

Sl. No	Description of bay	Edayarpalayam 400/230-110 kV AIS SS		
		400 kV	230 kV	110 kV
1.	Bus Bar	3150 A	2000 A	2000 A
2.	Line bay	3150 A	2000 A	2000 A
3.	ICT bay	3150 A	2000 A	2000 A
4.	Reactor Bay	3150 A	NA	NA
5.	Bus Coupler bay	NA	2000 A	2000 A

### B.2.1 Auto transformer

500 MVA, 400/230/33 kV, 200 MVA, 400/110/33 kV, 3-phase autotransformers with Nitrogen Injection Fire Prevention and Extinguishing scheme and on line DGA and usage of 33kV Tertiary winding for station auxiliary shall conform to CEA's "Standard Specifications and Technical Parameters for Transformers and Reactors (66 kV and above voltage class)" available on CEA's website.

## TECHNICAL REQUIREMENTS 400/ 230 / 33 KV AUTO TRANSFORMER

Sl. No	DESCRIPTION	REQUIREMENT
1.	Maximum continuous rating (MVA)	
	(a)HV	500
	(b)IV	500
	(c)LV	167 MVA(Reactive) 5 MVA(Active)
2.	Maximum continuous rating and cooling	
	(a)ONAN	60%
	(b)ONAF	80%
	(c)ODAF	100%
3.	Type of cooling	(a)ONAN/ONAF/ODAF (b)1x100%or separately2x50% coolerbank (c)2X100%coolingpumpsout whichoneisconnectedstand-by (d)2fansasstand-byoneforeach coolerbank.
4.	Max.Temperature rise over ambient temperature of 45 deg. C	
	(a)Winding	55°C
	(b)Oil	50°C
	(c)Limit of hot spot temperature with average ambient temperature of 32°C.	98°C
	(d)Maximum hot spot temperature	140°C
5.	Maximum flux density at normal voltage and frequency	1.6Tesla
6.	(i) Rated voltage(KV)	
	(a)H.V.winding	400
	(b)I.V. winding	230
(c)L.V.winding	33	
(ii) Voltage variation	·10%	
7.	Number of phases	3phase
8.	Rated frequency	50·5%
9.	Voltage Ratio(KV)	400/230/33KV
10.	(i) Type of connection	
	(a)H.V.	Star
	(b)I.V.	Star
	(c)L.V.	Delta
	(ii) Vector group	YnaOd11
(iii) Neutral	Effectivelyearthed	
11.	Type of winding	
	(a)H.V.	Continuous disc
	(b)I.V.	Continuous disc
	(c)L.V.	Continuous disc
12.	Max.currentdensityofwinding	300 A/cm <sup>2</sup>

13.	Insulation levels	HV	IV	LV	Neutral
	(1) Winding voltage KV(rms)	400	230	33	--
	(2) Highest system voltage KV(rms)	420	245	52	36
	(3) Lightning impulse with stand	1300	950	250	170
	(4) Separate source voltage (KVrms)	630	460	95	75
	(5) Switching impulse with stand voltage	1050	--	--	--
14.	Duration of short circuit with stand capacity	2 seconds			
15.	(a) Tap changer	OLTC with remote control panel			
	(b) Tapping range	On 230 KV side of series winding for HV variation of +10% to -10% in steps of 1.25%			
16.	D.C.voltage for relays etc.	220 Volts			
17.	Percentage impedance (Tolerance $\pm 10\%$ )	Principal Tap	Highest Tap	Lowest Tap	
	HV-IV	12.5			
	HV-LV	45.0			
	IV-LV	30.0			
18.	Cooling medium / insulating oil	Virgin, high grade in inhibited, confirming to latest IEC-60296 (inhibiting oil)			
19.	Maximum Losses.				
	(a) No-load loss	125KW (Max)			
	(b) Load loss	450KW (Max)			
	(c) Auxiliary loss	21 KW (Max)			
20.	Termination arrangement	Bushings type suitable for outdoor operation.			
21.	Terminal bushings	HV	IV	LV	Neutral
	System voltage	400	230	33	--
	(a) Voltage rating (KV rms)	420	245	52	36
	(b) Current rating (Amps)	1250	2000	3150	2000
	(c) Impulse with stand voltage (KV Peak)	1425	1050	250	170
	(d) One min PF with stand voltage	695K Vrms	505K Vrms	105K Vrms	77K Vrms
	(e) Max partial discharge voltage	10pc	10pc	10pc	
Bushings Current transformers:					

22.	a) C.T.Ratio	HV		IV		LV	Neutral
		Core-I	Core-II	Core-I	Core-II	Core-I	Core-I
		1000/1	1600/1	1600/1	1600/1	1837/1.5	1600/1 a
	b) Accuracy class	5P20		5P20			PS
	c) VA Burden	30		30			
23.	Tank:			PS		PS	
	(i) Type	Conventional type with bolted upper flange					
	(ii) Thickness(mm)						
	(a) Bottom	16					
(b) Sides	10						
(c) Top	12						
(iii) Pressure release device							
41. Type							
42. Number	Safety valve type spring operated						
(iv) (a) Suitable opening at top cover for Oil drain & In the bottom of the tank for Nitrogen injection fire prevention system.	2						
24.	Clearances(mm)	400KV		230KV	33KV		
	(a) Phase to Phase	4000		2300	690		
	(b) Phase to Earth	3500		2100	630		
25.	Noise level	Less than 81db					
26.	Oil preservation Main Conservator	Aircell type with 2 Nos. Silicagel breathers associated with oil seal in parallel, each one with a valve					
	OLTC Conservator	1 no. silicagel breather with oil seal.					
27.	Expected life period of the transformer	25 Years					
28.	Tan delta of windings	<0.5%					
29.	Tan delta of condenser bushing	<0.4%					

**TECHNICAL REQUIREMENTS 400 / 110 / 33 KV AUTO TRANSFORMER**

Sl. No	DESCRIPTION	REQUIREMENT
	Maximum continuous rating(MVA)	

1.	(a) HV	200
	(b) IV	200
	(c) LV	65
2.	Maximum continuous rating and cooling	
	(a)ONAN	60%
	(b)ONAF	80%
3.	(c)ODAF	100%
	(a)ONAN/ONAF/ODAF	
	(b)1x100% or separately 2x50% cooler bank	
	(c) 2X100% cooling pumps out of which one is connected stand-by	
4.	(d) 2 fans as stand-by one for each cooler bank.	
	Max.Temperature rise over ambient temperature of 45 deg.C	
	(a)Winding	55°C
	(b)Oil	50°C
5.	(c)Limit of hot spot temperature with average ambient temperature of 32° C	98°C
	(d)Maximum hot spot temperature	140 degC
	Maximum flux density at normal voltage and frequency	
	1.6 Tesla	
6.	(i) Rated voltage(KV)	
	(d) H.V. winding	400
	(e) I.V. Winding	110
	(f) L.V.Winding	33
7.	(ii) Voltage variation	·10%
	Number of phases	
8.	Threephase	
9.	Rated frequency	
10.	50·5%	
10.	Voltage Ratio (KV)	
	400/110/33KV	
	(i) Type of connection	
	(a) H.V.	Star
	(b) I.V.	Star
	(c) L.V.	Delta
(ii) Vector group	YnaOd11	
(iii) Neutral	Effectivelyearthed	
Type of winding		

11.	(a)H.V.	Continuous disc			
	(b)I.V.	Continuous disc			
	(c)L.V.	Continuous disc / helical			
12.	Max. current density of winding	300 A/cm <sup>2</sup>			
13.	Insulation levels	HV	IV	LV	Neutral
	(1) Winding voltage KV(rms)	400	110	33	--
	(2) Highest system voltage KV(rms)	420	145	52	36
	(3) Lightning impulse withstand voltage(KVp)	1300	550	250	170
	(4) Power frequency withstand Voltage (KVrms)	630	275	95	38
	(5) Switching impulse with stand voltage	1050	--	--	--
14.	Duration of short circuit withstand capacity	2 seconds			
	(a)Tap changer	OLTC with remote control panel			
	(b)Tapping range	On 110 KV side of series winding for HV variation of +10% to- 10% in steps of 1.25%			
16.	D.C. voltage for relaysetc.	220 Volts			
17.	Percentage impedance (Tolerance±10%)	Principal Tap	Highest Tap	Lowest Tap	
		HV-IV	12.5		
		HV-LV	30		
		IV -LV	16		
18.	Cooling medium / insulating oil	EHV grade transformer oil conforming to IS:335.			
19.	MaximumLosses.				
	(a)No-loadloss	66KW(Max)			
	(b)Load loss	375 KW(Max)			
	(C)Auxiliary loss	9 KW(Max)			
20.	Termination arrangement	Bushings type suitable for outdoor operation.			
21.	Terminal bushings	HV	IV	LV	Neutral
	System voltage	400	110	33	--
	(a)Voltage rating(KVrms)	420	145	52	36
	(b)Current rating(Amps)	800	800	2000	2000
	(c)Impulse with stand voltage(KVPeak)	1300	650	250	170
	Bushing Current transformers:				

22.	a) C.T.Ratio	HV		IV		LV	Neutral
		Core-I	Core-II	Core-I	Core-II	Core-I	Core-I
		400/1	1200/1	1200/1	1200/1	1837/1.5	1200/1
	b) Accuracy class	5P20	PS	PS	PS	5P20	
	c) VA Burden	30		30		30	
	<p>a) Knee point voltage shall be more than <math>s 40 * I * (R_{ct} + R_a)</math> where <math>R_{ct}</math>=Secondary resistance of the current Transformer <math>R_a</math>=lead resistance(2 ohms),<math>R_a</math>=lead resistance(2ohms)</p> <p>b) Magnetizing current shall be less than 30 milli amperes at half the knee point voltage</p>						
23.	Tank:						
	(i) Type	BELL/Conventional					
	(ii) Thickness(mm)						
	(d) Bottom						16
	(e) Sides						10
	(f) Top						12
	(iii) Pressure released device						
	43. Type						
	44. Number						
	(iv)(iv)(a) Suitable opening at top cover For Oil drain & In the bottom of the tank for Nitrogen injection fire Prevention system.	Safety valve type spring operated					2
24.	Clearances(mm)	400KV		110KV	33KV		
	(a) Phase to Phase	4000		1220	650		
	(b) Phase to Earth	3500		1080	408		
25.	Noise level	Less than 81 db					
26.	Oil preservation Main Conservator	Air cell type with 2Nos. Silicagel breathers associated with oil seal in parallel, each one with a valve					
	OLTC Conservator	1 no. silicagel breather with oil seal.					

27.	Expected life period of the transformer	25Years
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### B.2.2 Bus Reactor

125 MVAr, 420 kV, 3-Phase Reactor with Nitrogen injection Fire Prevention and Extinguishing scheme and on line DGA shall conform to CEA's "Standard Specifications and Technical Parameters for Transformers and Reactors (66 kV and above Voltage class)" as amended up to date available on CEA's website.

### B.2.3 400 kV, 230 kV and 110 kV AIS Substation equipment (as applicable)

#### B.2.3.1 Circuit Breakers (AIS)

For All Equipment the Guaranteed Particulars shall be enclosed.

The circuit breakers and accessories shall conform to IEC: 62271-100, IEC: 62271-01 and shall be of SF6Type. The circuit breakers shall be of class C2-M2 (as per IEC) with regard to restrike probability during capacitive current breaking and mechanical endurance. The rated break time shall not exceed 40 ms for 400 kV circuit breakers and 60 ms for 230 kV and 110 kV Circuit breakers.

400 kV and 230kV Circuit breakers shall be provided with Single phase and three phase auto reclosing.

Each breaker would have two sets of trip circuits which would be connected to separate DC supplies for greater reliability.

The Circuit breakers controlling 400 kV lines shall be provided with pre insertion closing resistor of about 450 ohms (max) with 8 ms minimum insertion time for lines longer than 200 km.

The short line fault capacity shall be same as the rated capacity and this is proposed to be achieved without use of opening resistors. 400 kV Circuit breakers shall be provided with Controlled switching device for controlling of ICT and Bus reactor.

The Controlled switching device shall be provided in 400 kV CBs of switchable Bus reactors and in Main and Tie circuit breakers of Bus reactors and ICTs of voltage class 400 kV and above.

### 420 KV Circuit Breaker:

Sl.No	Description	Requirement
1	Rated continuous current(A)at design Ambient temperature	3150

2	Rated Short circuit current breaking Capacity at rated voltage	64 KA with percentage DC Component as per IEC-56
		Corresponding to minimum Opening time under operating Conditions specified
3	Symmetrical interrupting capability(kArms)	63
4	Rated short circuit making current (kApeak)	157.5
5	i)Short time current carrying capability for one sec.(kArms) ii)Out of phase breaking current capacity (kA rms)	63 15.75
6	Rated operating duty	0-0.3sec CO-3min CO Cycle
7	Re closing	Single Phase & three phase auto closing
8	First pole to clear factor	1.3
9	Rated line charging interrupting current at 90 deg.Leadng power factor angleA (rms)	400
	(The breaker shall be able to interrupt the rated line charging current with test voltage Immediately before opening equal to the product of $U/\sqrt{3}$ & 1.4 as per IEC:62271-100	
10	Temperature rise over the design ambient temperature	As per IEC:62271-100
11	Total break time as per IEC(ms)	45
12	Rated break time as per IEC(ms)	40
13	Total closing time(ms)	Not more than 150.
14	Operating mechanism	spring-spring
15	Max.difference in the instants of Closing/opening of contacts Within a pole Between poles(opening) Between poles (closing)	2.5 3.3 5.0
16	The above voltage shall be at rated control voltage and rated operating and quenching Media pressures	
17	Trip coil closing Voltage	221 VDC with variation as specified
18	Noise level at base and upto 50m (distance from base of breaker)	141 dB(MAX)
19	Rated terminal load	As per IEC

20	Auxiliary contacts	Besides requirement of Specification, The bidder shall wire up 10NO+10NC Contacts for future use of purchaser per phase
21	No of terminals in common control cabinet	All contacts & control circuits to be Wired out up to common control Cabinet plus 24 terminals exclusively for Purchaser's use.
22	Maximum allowable switching over voltage Under any switching condition	2.3p.u

### B.2.3.2 Isolators (AIS)

The isolators shall comply with IEC 62271-102 in general. 420 kV Isolator design shall be Center rotating Horizontal double break and 245 kV, 145 kV Isolator shall be of Center rotating Double break type.

420 kV, 245 kV and 145 kV Bus Earth switches shall be of Vertical operated single break type. Earth switches shall be provided at required locations to facilitate maintenance.

All Isolators shall be motor operated. Isolator rated for 420 kV, 245 kV and 145 kV shall be of extended mechanical endurance class - M2 as per IEC-62271-102. Main blades and earth blades shall be interlocked and interlock shall be fail safe type. 420 kV, 245 kV and 145 kV earth switches for line isolator shall be suitable for induced current switching duty as defined for Class-B

### B.2.3.3 Current Transformers (AIS)

Current Transformers shall comply with IEC 61869 in general. All ratios shall be obtained by secondary taps only. Generally, Current Transformers (CT) for 420 kV, 245 kV and 145 kV shall have five cores (four for protection and one for metering). The burden and knee point voltage shall be in accordance with the requirements of the system including possible feeds for telemetry. The rated burden of cores shall be closer to the maximum burden requirement of the metering and protection system (not more than 20 VA for metering core) for better sensitivity and accuracy.

The accuracy class for protection core shall be PS. The accuracy class for the metering core it shall be 0.2S or shall be equal to or better than the accuracy class of the meter specified in the CEA Regulations 2006. The instrument security factor shall be less than 5 for CTs up to 400 kV.

#### B.2.3.4.1. 400 kV Capacitive Voltage Transformers (AIS)

Capacitive Voltage Transformers shall comply with IEC 61869 in general. These shall have three secondary's out of which two shall be used for protection and one for metering. The accuracy class for protection cores shall be 3P and for metering core shall be 0.2. The Capacitive Voltage Transformers on lines shall be suitable for Carrier Coupling. The Capacitance of CVT for 420 kV shall be of 4400pF depending on PLCC requirements. The rated burden of cores shall be closer to the maximum burden requirement of metering and protection system, not more than 200 VA, for metering core, for better sensitivity and accuracy.

#### **B.2.3.4.2 230 kV, 110 kV Potential Transformers.**

Potential Transformers shall comply with latest revisions and amendments thereof of the IS: 3156 and IEC standards, in general. These shall have three secondaries out of which two shall be used for protection and one for metering. The accuracy class for protection cores shall be 3P and for metering core shall be 0.2. The rated burden of cores shall be closer to the maximum burden requirement of metering and protection system, not more than 200 VA, for metering core, for better sensitivity and accuracy.

#### **B.2.3.5 Surge Arresters (AIS)**

390 kV, 216 kV, 96 kV Station High (SH) duty gapless type Surge arresters with thermal energy (Wth) of minimum 8 kJ/kV, 5 kJ/kV, 5 kJ/kV respectively, conforming to IEC 60099-4 in general shall be provided for 420 kV, 245 kV and 145 kV systems respectively. Other characteristics of Surge arrester shall be chosen in accordance with system requirements. Surge arresters shall be provided at line entrances near Transformers and Reactor so as to achieve proper insulation coordination. Surge Arresters shall be provided with porcelain/ polymer housing fitted with pressure relief devices. A leakage current monitor with surge counter shall be provided with each surge arrester.

#### **B.2.4 Protection Relaying and Control System**

The protective relaying system proposed to be provided for transmission lines, auto-transformers, reactors and bus bars to minimize the damage to the equipment in the events of faults and abnormal conditions, is dealt in this section. All main protective relays shall be numerical type with IEC 61850 communication interface and should have interoperability during integration of numerical relays to communicate over IEC 61850 protocol with RTU/SAS/IEDs of different OEMs. All numerical relays shall have built in disturbance recording feature.

The protection circuits and numerical relays of the elements shall be electrically and physically segregated into two groups with different make each being independent and capable of providing uninterrupted protection even in the event of one of the protection

groups failing, to obtain redundancy, and to take protection systems out for maintenance while the equipment remains in service.

**a) Transmission Lines Protection**

230kV voltage level Transmission lines shall have Main-I and II numerical relay with minimum three forward zone distance protection scheme and minimum one reverse zone selectable distance protection scheme with carrier aided inter-tripping feature. Main II shall be also have numerical distance protection scheme like Main-I but from different make that of Main-I. The Main-I and Main-II protection relays of same make may be provided only if they are of different hardware and manufacturing platform or different principle of operation

400 kV lines shall have Main-I and Main –II and shall be Phase Segregated Line current Differential protection with built-in Distance protection function(a minimum of three forward zones and one reverse zone selectable distance protection scheme with carrier aided inter-tripping feature). Differential relay for Main I & II current differential protection with built-in Distance protection function(a minimum of three forward zones and one reverse zone selectable distance protection scheme with carrier aided inter-tripping feature) at remote end sub-station shall be provided by the TSP. The associated power and control cabling and integration with SAS at remote end sub-station shall be provided by Transmission service provider. Main II shall be also have numerical Line Current differential with in build distance protection scheme like Main-I but from different make that of Main-I. The Main-I and Main-II protection relays of same make may be provided only if they are of different hardware and manufacturing platform or different principle of operation.

Transmission lines with distance protection shall, in general, have carrier aided or fibre optic based inter- tripping or blocking.

For short lines (less than 10km) or cable or combination of overhead and cable, Line differential protection shall be used with built-in backup distance protection. Line Differential relay with built in distance protection feature / Distance relay of different make as Main–I and Main-II shall be provided accordingly similar make shall be provided by TSP at remote end for compatibility . The associated power and control cabling and integration with SAS at remote end shall be provided by TSP

Further, all 230kV and above voltage level lines shall be provided with single and three phase auto-reclosing facility to allow reclosing of circuit breakers in case of transient faults. For 110kV and below voltage class shall be suitable for three phase auto reclosing. These lines shall also be provided with distance to fault locators to identify the location of fault on transmission lines.

The Numerical relay shall be equipped with sufficient binary output contacts for the protection scheme implementation. And equipped with sufficient numbers of

programmable of opto isolated input and programmable potential free outputs with wetting voltage for digital inputs for field programmable to 48V/110V/220V DC.

All 400 kV and above voltage level lines shall also be provided with two stages over voltage protection. The over voltage protection and distance to fault locator may be provided as in-built feature of Main-I and Main-II protection relays. Auto reclose as built-in function of Bay Control Unit (BCU) is also acceptable.

The Main-I and Main-II protection relays shall be fed from separate DC sources and shall be mounted.

For 110 kV transmission lines, directional IDMT over current and earth fault backup protection relay should be provided as standalone unit or in-built feature of Main-I and Main -II feature.

In case of loop in loop out of transmission lines, the existing protection scheme shall be studied and suitable up-gradation (if required) shall be carried out.

The earth wire used in 110kV and above voltage class lines shall be Optical Ground wire.

#### **b) Autotransformer Protection**

Protection scheme shall be comprised of 2 Nos. numerical multifunction protection relays i.e. One for Group-A Protection and another for Group-B Protection. Group-A Numerical multifunction protection relays of different make or different hardware platform and protection algorithm with respect to Group-B numerical multifunction protection relay.

These shall have the following protections:

- i) Numerical Differential Protection – Low impedance
- ii) Numerical Restricted Earth Fault Protection – Low Impedance
- iii) Numerical directional Back-up Over-current and Earth Fault Protection on High Voltage (HV) and Intermediate Voltage (IV) side
- iv) Numerical Over Fluxing Protection on HV and IV side
- v) Numerical Thermal Overload Protection
- vi) Tertiary winding protection

Further, Numerical directional Back-up Over-current and earth fault protection on HV and IV side of autotransformer shall not be combined with other protective functions in the main relays and shall be independent relays. Besides these, power transformers shall also be provided with Buchholz relay, Magnetic Oil Gauge (MOG) with low oil level alarm, protection against high oil and winding temperature and pressure relief device etc.

Suitable monitoring, control (operation of associated circuit breaker and isolator) and protection for LT auxiliary transformer connected to tertiary winding of auto-transformer for the purpose of auxiliary supply shall be provided. The over current and other necessary protection shall be provided for the auxiliary transformer. These protection and control may be provided as built in feature either in the bay controller to be provided

for the auxiliary system or in the control and protection IEDs to be provided for autotransformer.

**c) Reactor Protection**

Reactor shall be provided with the following protections:

- i) Numerical Differential Protection.
- ii) Numerical Restricted Earth Fault Protection
- iii) Numerical Back-up Impedance Protection
- iv) Neutral Displacement Protection

Protection scheme shall be comprised of 2 Nos. numerical multifunction protection relays i.e. One for Group-A Protection and another for Group-B Protection. Group-A Numerical multifunction protection relays of different make or different hardware platform and protection algorithm with respect to Group-B numerical multifunction protection relay. Wherever CT and VT is wired to the numerical relays, the relay should be provided with built in supervision of CT and VT respectively.

For application in 400KV/765KV diameter bays, the CT inputs of main breaker and tie breaker bays shall be wired separately to protection relays and the vector sum of the CTs shall be calculated internally in the protection relays.

Reactor Bushing CTs to be used for differential and REF Protection.

For Backup impedance protection use the CTs of the main breaker and tie breaker in order to provide protection for the tee section of this diameter also.

The Main CT and Tie CT shall be wired to separate CT modules so as to arrive at the vector sum of these CTs internally in the respective numerical relays.

Besides these, reactors shall also be provided with Buchholz relay, Magnetic Oil Gauge (MOG) with low oil level alarm, protection against oil and winding temperatures and pressure relief device, etc.

**d) BusBar Protection**

The high-speed low impedance type bus bar differential protection, which is essential to minimize the damage and maintain system stability at the time of bus bar faults, shall be provided for 400 kV/230kV/110 kV buses. Duplicated bus bar protection is envisaged for 400 kV bus-bar protection. Bus bar protection scheme shall be such that it operates selectively for each bus and incorporate necessary features required for ensuring security. The scheme shall have complete bus bar protection for present as well as future bays envisaged i.e. input / output modules for future bays for the bus section under present scope shall also be provided.

Bus-bar protection scheme shall include one overall check zone protection in addition to single/multiple zones specified.

Also include provision for protection IN/OUT for each zone and check zone and be transient free in operation.

The relay shall incorporate dynamic bus replica and provide necessary end zone fault protection depending on the bus bar protection CT's location.

Separate IN/OUT switch selection for Bus-bar and LBB protection function.

Bus Bar protection system for new substation shall be de-centralized (distributed) type.

In case, the bus section is provided, then each side of bus section shall have separate set of bus bar protection schemes.

Peripheral Units (Pus) shall be provided by the TSP.

For existing substations, the existing bus bar protection shall be augmented as per requirement and integration of new bays in the existing system in the scope of TSP.

#### e) Local Breaker Back up Protection

This shall be provided for each 400 kV circuit breakers and will be connected to de-energize the affected stuck breaker from both sides.

*Notes:*

1. *LBB and REF relays shall be provided separately from transformer differential relay.*
2. *LBB relay may also be provided with re-trip function as built-in protection function along with distributed bus bar protection scheme; however, in such case separate LBB relay shall be provided for tie bays (in case of One and Half breaker scheme).*
3. *Over fluxing and overload protection can be provided as built-in feature of differential relay.*
4. *In 400 kV switchyard, if spare bay of half diameter is identified as future, Tie CB relay panel shall be with Auto-reclosure feature.*

#### Common for Clause B.2.3.1 TO B 2.3.5

- For All Equipment the Guaranteed Particulars shall be enclosed.
- All the Type Test shall be made as per BIS/IEC standards and validity of Type test report shall confirm to CEA guidelines.

Sr No	Name of Equipment	Validity of Type test (in years )
1	PowerTransformer	5
2	LT Transformer	5
3	ShuntReactor	5
4	OLTC	10
5	Bushing of Power Transformers/Reactors	7

6	Fittings and accessories for ICTs& Reactors	10
7	Circuit Breaker	10
8	Isolator	10
9	Lighting Arrester	10
10	Wave Trap	10
11	Instrument transformer	7
12	GIS&Hybrid GIS	10
13	LT Switchgear	10
14	Cable and associated accessories	10
15	Relays	7
16	Capacitors	10
17	Battery & Battery Charger	7
18	Conductor & Earthwire	10
19	Insulators(Porcelain/Glass)	10
20	Composite Insulators	5
21	PLCC	5

**Note**

**For all other equipment's validity of type test shall be 10 years from date of LOA**

**B.2.6 Substation Automation System**

- (a) For all the new substations, state of art Substation Automation System (SAS) conforming to IEC-61850 shall be provided. The distributed architecture shall be used for Substation Automation system, where the controls shall be provided through Bay Control Units. The Bay control unit is to be provided bay wise for voltage level 220 kV and above. All bay control units as well as protection units are normally connected through an Optical fibre high speed network. The control and monitoring of circuit breaker, dis-connector, re-setting of relays etc. can be done from Human Machine Interface (HMI) from the Control Room.

The functions of control, annunciation, disturbance recording, event logging and measurement of electrical parameters shall be integrated in the Substation Automation System.

At the new substations, the Substation Automation System (SAS) shall be suitable for the operation and monitoring of the complete substation including proposed future bays/elements.

In the existing substations with a Substation automation system (SAS), augmentation of existing SAS shall be done for bays under the present scope.

In the existing Substations where Substation automation is not provided, control functions shall be done through control panels.

Necessary gateway and modems (as required) shall be provided to send data to RLDC/SLDC as per their requirement and shall be provisioned with 2+2 redundancy i.e. 2 channels for Main Control Centre and 2 channels for Backup Control Centre. In order to meet this requirement, suitable redundancy at port and card level need to be ensured by the TSP to avoid any single point of failure which may lead to interruption in real-time grid operation. Accordingly, all the hardware for communication services of station as stated above shall support dual redundancy for data transmission of station to respective main and backup RLDCs. Any augmentation work at RLDC/SLDC is excluded from TSP's scope. However, all the configuration work at substation end required to send data to RLDC/SLDC shall be in the scope of TSP.

#### **(b) Time Synchronisation Equipment**

Time Synchronization Equipment complete in all respects including antenna, cable and processing equipment required to receive time signal through GPS/NavIC or from National Physical Laboratory (NPL) through INSAT shall be provided at new substations. This equipment shall be used to synchronize SAS and IEDs etc.

#### **B.2.7. Scientific Instruments**

To have a reliable and efficient Power Network, it is necessary to keep the various equipment of the system in healthy working conditioning. The conditioning monitoring of the power plays a vital role in foreseeing any deterioration of performance of the system/ equipment and to facilitate corrective actions in advance to prevent partial/complete un-planned outages of the system.

Hence a need arises to have diagnostic measurements for assessing the condition of critical equipment of the system. Diagnostic measurements are necessary to identify/ foresee the possible failures and to plan maintenance & repair schedules thereby avoiding expensive repairs and forced outages.

The Testing Instruments with Latest Diagnostic Features are required to carry out routine preventive testing of substation equipment/Protection Relays which will help reducing the downtime during Power outages. This has necessitated requirement for the provision of Scientific Instruments.

#### **B.3.0 Substation Support Facilities**

Certain facilities required for the operation and maintenance of substations as described below shall be provided at the new substation. In existing substation, these facilities have already been provided and will be extended/ augmented as per requirement.

#### **B.3.1 AC and DC power supplies**

For catering the requirements of three phase and single phase AC supply and DC supply for various substation equipment (for present and future scope), the following arrangement is envisaged : -

- i) For LT Supply at each new Substation, two (2) Nos. of LT Transformers (minimum 500 kVA for substations with highest voltage rating as 400 kV) shall be provided which shall be fed from two independent sources as per the CEA (Technical Standards for Connectivity to the Grid) Regulations, 2007.

Metering arrangement with Special Energy Meters (SEMs) shall be provided by TSP at 33 kV tertiary of Transformer for drawing auxiliary supply at new substation. Such SEMs shall be provided by CTU at the cost of the TSP. Accounting of such energy drawn by the TSP shall be done by RLDC/RPC as part of Regional Energy Accounting.

Additionally, Active Energy Meters may be provided at the same point in the 33 kV tertiary of Transformer by local SEB/DISCOM for energy accounting.

- ii) 2 sets of 220 V, 400 AH and 2 sets of 220V, 300 AH battery banks for control and protection and 2 sets of 48 V, 400 AH battery banks for PLCC/ communication equipment shall be provided at each new Substation. Each battery bank shall have 3 nos of FC+float-cum-boost charger.

At new substation, sizing of 220 V battery and battery charger shall be done based on the number of bays specified (including future bays) as per CEA Regulations and relevant IS. 2 sets of 48 V battery banks for PLCC and communication equipment for present and future scope shall be provided at each new Substation with at least 10-hour battery backup and extended backup, if required. 48 V DC can be achieved from 220 V DC battery bank using adapter, if so desired by TSP, without compromising backup time.

- iii) Suitable AC and DC distribution boards and associated LT Switchgear shall be provided at new substation.

For new substation, following switch boards shall be considered with duplicate supply with bus coupler/ sectionalizer and duplicate outgoing feeders except for Emergency lighting distribution board which shall have only one incoming feeder:

- g) 415 V Main Switchboard – 1 No.
- h) AC distribution board – 3 Nos.
- i) Main lighting distribution board – 1 No.
- j) Emergency lighting distribution board – 1 No.
- k) 220 Volt DC distribution board – 4 Nos.
- l) 48 Volt DC distribution board – 2 Nos.
- m) 200A DC changeover switch with panel – 8 Nos.

n) 800A AC changeover switch – 12 Nos.

Sizing of LT Switchgear shall be suitable to cater the requirement for all present and future bays. AC and DC distribution boards shall have modules for all the feeders (including future as specified).

- iv) At new Substation, one No. 250 KVA DG set (minimum 250 kVA for substations with highest voltage rating as 400 kV) shall be provided for emergency applications.
- v) At new substation, sizing of battery and battery chargers shall be done based on the number of bays specified (including future bays) and not less than quantity specified in B.3.1 (ii)

Normal Voltage	Variation in Voltage	Frequency in Hz	Phase/ Wire	Neutral connection
415V	±10%	50±5%	3/4Wire	Solidly Earthed.
240V	±10%	50±5%	1/2Wire	Solidly Earthed.
220V	190Vto240V	DC	Isolated 2 wire System	-
110V	95Vto 120V	DC	Isolated 2 wire System	-
48V	--	DC	2 wire System (+)earthed	-

SL.N O.	DRAWINGS/DOCUMENTSTITLE
<b>1.00</b>	<b>DRAWING FOR SWITCHYARD</b>
1.01	Overall General Arrangement Drawing
1.02	Single Line Diagram
1.03	Electrical layout plan & section
1.04	Structure loading diagram cum layout arrangement
1.05	DSL P Calculation & layout
1.06	Switchyard Foundation & cable Trench Layout
1.07	Indoor Cable Trench Layout (As applicable for Control Room Building, GIS Hall ,Switchyard panel Room, FFPH Building)
1.08	Buried CableTrench layout
1.09	Erection Key Diagram (plan & section) & Erection Bill of Quantity
1.10	Earth grid layout

1.11	Indoor Illumination layout (As applicable for Control Room Building, FFPH Building, Transit Camp, Switch yard panel Room)
1.12	Outdoor illumination Layout
1.13	SLD of LTAC / DC System
1.14	Panel arrangement layout in Control Room Building
1.15	Panel arrangement layout in Switch yard panel room /LCR Room of GIS Hall
1.16	Fire detection and alarm system for control Room building, GIS Building and Switchyard panel room
1.17	Air Conditioning Layout (As applicable for Control Room Building, LCR room in GIS Hall ,Switchyard panel Room)
1.18	LT Station Layout
1.19	Power and control cable schedule
<b>2.00</b>	<b>DESIGN CALCULATION</b>
2.01	DSLIP Calculation
2.02	Lighting system design calculation ( if applicable)
2.03	Earthing system design calculation ( if applicable)
2.04	Battery sizing calculation (if applicable)
2.05	Hydrolic Calculation for Fire protection (if applicable)
2.06	AC and ventilation calculation for GIS Building(if applicable)
2.07	EOT crane sizing calculation
SL.NO	DRAWINGS/DOCUMENTSTITLE
.	
3.00	AUTO TRANSFORMER
3.01	Design Review
3.02	Guaranteed Technical Particulars
3.03	Outline General Arrangement Drawing with Bill of material (OGA parts list) & Shipping details
3.04	Foundation Plan
3.05	GA& Schemati Drawing of Cooler Control Cabinet / Marshalling Box and Write up
3.06	GA & Schematic Drawing of Common Marshalling Box and Write Up (as Applicable) )
3.07	GA & Schematic Drawing of Drive Mechanism Box and Write up
3.08	Bushing dwg and GTP (HV,IV,LVandNeutrasapplicable)
3.09	Radiator Details
3.10	Magnetising Characteristics of bushings CT
3.11	Rating and Diagram plate
3.12	Valve Schedule plate rating
3.13	Twin-Bi directional roller
3.14	TypeTest Report
3.15	InstructionManual

4.00	REACTOR
4.01	Design Review
4.02	Guaranteed Technical Particulars
4.03	Outline General Arrangement Drawing with Bill of material (OGA parts list) & Shipping details
4.04	FoundationPlan
4.05	Bushing dwg and GTP (HV and Neutral)
4.06	GA & schematic drawing of Marshalling Box and Write up
4.07	Magnetization Characteristics of Reactor Core and bushing CTs
4.08	Rating and diagram plate
4.09	Twin bi-directional roller
4.10	Radiator Details
4.11	Type test Report
4.12	Instruction Manual
5.0	NEUTRALGROUNDINGREACTOR(NGR)
A	Air Core NGR
5.01	Design Review
5.02	Guaranteed Technical Particulars
5.03	General Arrangement Drawing with pedestal details and Bill of material (OGA parts list) & Shipping details
5.04	Foundation Plan
5.05	Rating and diagram plate
B	Oil Filled Type NGR
5.06	Design Review
5.07	Guaranteed Technical Particulars
5.08	General Arrangement Drawing with Bill of material (OGA parts list)& Shipping details
5.09	Foundation Plan including Combined Foundation for NGR & LA
5.10	Rating and diagram plate
6.00	CIRCUITBREAKER
6.01	GA drg of SF6 CB
6.02	OGA drawing of control unit
6.03	OGA drawing of support insulator,interrupter insulator
6.04	Support structure & foundation plan drawing
6.05	Electrical schematic diagram
6.06	Rating and name plate drawing
6.07	Hydraulic/SF6gasconnectiondiagram
6.08	Schematic diagram of operating mechanism
6.09	Wiring diagram
6.10	Terminal connector and corona rings
6.11	Sectional view of interrupter
6.12	GTP

6.13	TypeTest Reports
6.14	Instruction Manual
7.00	ISOLATOR
7.01	GA drawing of Isolator without earth switch
7.02	Contact blade assembly (main & earth switch)
7.03	Terminal pad & hinge contacts
7.04	GA of MOM–main switch
7.05	Schematic & wiring drg. For main switch
7.06	Nameplate- details
7.07	GA of terminal connectors
7.08	GA of postinsulatorforisolator
7.09	GTP
7.10	TypeTest Report
7.11	InstructionManual
8.00	INSTRUMENTTRANSFORMER(CT/CVT/IVT)
8.01	GTP
8.02	General Arrangement
8.03	Sectional view
8.04	Sec.terminal box GA
8.05	GA of Junction box
8.06	Data sheet of junction box
8.07	Wiring drg of JB incl. interpole
8.08	Terminal connectors
8.09	Schematic & rating plate
8.10	Porcelain insulator
8.11	Corona ring
8.12	TypeTest Reports
8.13	InstructionManual
9.00	SURGEARRESTER
9.01	GA of Surge Arrester
9.02	GTP
9.03	Porcelain insulator
9.04	Cross sectional view
9.05	Arrestor and unit name plate
9.06	Grading rings
9.07	Insulating base / surge counter detail
9.08	Outline drg of surge counter
9.09	Circuit diagram of surge counter
9.10	GA of ZnO element

9.11	Line terminal bracket with corona rings
9.12	Drawing showing pressure relief arrangement.
9.13	TypeTest Report
9.14	InstructionManual
10.00	BUSPOSTINSULATOR
10.01	GA drawing & GTP
10.02	TypeTest Reports
11.00	MarshalingBox,JunctionBoxes
11.01	GA Drawings
11.02	Schematic Drawing
11.03	TypeTest reports
12.00	Conductor, Al Tube & GS Earth Switch
12.01	Type Test Reports(if applicable)
13.00	DISC INSULATOR (if applicable)
13.01	GA drawing
13.02	TypeTest Reports
14.00	LONG ROD POLYMER INSULATOR
14.01	Ga drawing
14.02	TypeTest Reports
15.00	INSULATOR STRINGS WITH HARDWARE ASSEMBLY
15.01	GADRG
15.02	Component drawings
15.03	TypeTest Reports
16.00	CLAMPS & CONNECTORS
16.01	Drawings
16.02	TypeTest Reports
17.00	HORN GAP FUSE
17.01	GA OF HG FUSE
17.02	TypeTest Reports
18.00	BATTERY AND BATTERYCHARGER
18.01	GTP
18.02	Drawings
18.03	TypeTest Reports

19.00	ILLUMINATION
19.01	GTP of all types of fittings / fixtures & Control gear
19.02	GA drg. Of lighting poles/posts
19.03	Wiring drgs. Of panel / LDBs to fixtures
19.04	GA of Junction box
19.05	GA street lighting panel / outdoor lighting panel
19.06	GA of Receptacles
20.00	LT SWITCHGEAR
20.01	GA drg of ACDB
20.02	SLD of ACDB
20.03	GA drg of 220V DCDB
20.04	SLD of 220V DCDB
20.05	GA drg of 50V DCDB
20.06	SLD of 50V DCDB
20.07	Datasheet
20.08	Sch. Of each type of module
20.09	Type Test Reports
20.10	Instruction Manual
21.00	HT Power Cable
21.01	GTP & Catalogue
21.02	Type Test Reports
22.00	POWER & CONTROL CABLE
22.01	Type Test Reports for Power Cable
22.02	Type Test Reports for Control Cable
23.00	CONTROL AND RELAY PANELS and SUBSTATION AUTOMATION SYSTEM (SAS)
23.01	GTP & detailed technical literature & O&M manuals of all types of relays, SAS Equipment
23.02	Type Test Reports of all relays & equipment
	GA and schematic drgs. for:-
a)	Relay and protection panels for all type line (s)
b)	Relay and protection panels for all type auto transformer(s) including tertiary loading
c)	Relay and protection panels for bus / line reactor(s)
d)	Relay and protection panels for tie bay(s)
e)	Relay and protection panels for TBC bay(s)
f)	Relay and protection panels for BC bay(s)
g)	Bus bar protection panel(s)
h)	Circuit Breaker relay panel(s)
23.03	Panel Construction Details
23.04	SAS Architecture

23.05	Relay Settings
24.00	Visual Monitoring System
24.01	GTP / Catalogue of VMS Equipment and Camera
24.02	VMS Architectural Drawing
25.00	PLCC EQUIPMENT
25.01	GTP & technical literature
25.02	Type Test Reports of all PLCC equipment
25.03	GA & GTPs for wave trap
25.04	GA drg of PLCC terminal
25.05	Digital / Analog Protection coupler
25.06	SNR calculation (if applicable)
25.07	Coupling device
25.08	GTP of HF cable
25.09	Testing & maintenance equipment
25.10	Frequency Planning
26.00	DG SET
26.01	GTP
26.02	Drawings / manuals
27.00	AIRCONDITIONING&VENTILATIONSYSTEM
27.01	GTP
27.02	Drawings
27.03	A/Csizing calculation
28.00	LT TRANSFORMER
28.01	GTP
28.02	Drawings
28.03	TypeTest Reports
29.00	CONTROL ROOM BUILDING / TRANSIT CAMP/ FFPH BUILDING/ SWITCH YAYD PANEL ROOM /INDOOR HT SWITCH GEAR ROOM/TOWNSHIP BUILDINGS (AS applicable)
30.01	Architectural drawing
a)	Plan,Section & elevation
b)	Doors and Window Schedule
30.02	Building design calculation (if applicable)
30.03	Civil Construction Drawings
31.0	SWITCH YARD CIVIL CONSTRUCTION DRAWING (AS APPLICABLE)
31.01	Tower Foundation
31.02	Equipment Foundation
31.03	Transformer Foundation
31.04	Reactor Foundation
31.05	Road Construction including culverts,rail cum roads
31.06	Switch yard fencing and Gate

31.07	Cable trench section
31.08	Drain Section
31.09	Rain water harvesting
31.10	Boundary wall
31.11	DG Set foundation
31.12	LT transformer foundation
31.13	Car parking Shed / Security Room
31.14	OutDoor GIB foundations
31.15	Outdoor Sf6 /Air Bushing Foundation
31.16	BMK / Lighting pole foundation
31.17	Fire wall
31.18	Contour layout
31.19	Drawing of formation level
31.20	Soil investigation Report
31.21	Any other foundation in Switchyard
32.00	DESIGN,FABRICATION & PROTO CORRECTED DRAWINGS OF ALL TYPES OF TOWERS & BEAMS
33.00	DESIGN,FABRICATION DRAWINGS FOR EQUIPMENT SUPPORT STRUCTURES
34.00	MISCELLANEOUSCIVILDRGS

**Note: The above list of Drawing is indicative. The same shall be used for formulation of Master Drawing List (MDL) in DREAMS System.**

### **B.3.2. a. Fire Fighting System**

Fire-fighting system for substation including Transformer and Reactor shall conform to CEA (Measures Relating to Safety and Electric Supply) Regulations, 2023 as amended from time to time. Further, adequate portable fire extinguishers shall be provided in the substations.

b.Fire Protection Alarm system for Main control Room building, Cable gallery, Kiosk building with smoke detector shall conform to CEA.

### **B.3.3 Illumination**

Normal and emergency AC and DC illumination shall be provided adequately in the control room and other buildings of the substation. The switchyard shall also be provided with adequate illumination.

The lighting of the entire control room building, other building (if any) and switchyard shall be done by LED based low power consumption luminaries.

#### **B.3.4 Control Room**

For the new substation, substation control room shall be provided to house substation work stations for station level control (SAS) along with its peripheral and recording equipment, AC and DC distribution boards, DC batteries and associated battery chargers, Fire Protection panels, Telecommunication panels and other panels as per requirements. Air conditioning shall be provided in the building as functional requirements. Main cable trenches from the control room shall have adequate space provision for laying of cables from the control room for all the future bays.

The civil works for Control room were completed for Ground floor and first floor roof slab.

#### **B.3.5 KIOSK Building:**

The following Kiosk building with size of 10 m x 3.3 m has been proposed to erect the Bay Protection Panels.

a)	400 KV Bays	-	8 Nos.
b)	230 KV Bays	-	4 Nos.
c)	110 KV Bays	-	<u>4 Nos.</u>
	Total		<u>16 Nos.</u>

#### **B.3.6 Control Concept**

All the EHV circuit breakers in substation/switching stations shall be controlled and synchronized from the switchyard control room/remote control center. All the isolators shall have control from remote/local whereas the earth switches shall have local control only.

#### **B.3.7 Visual Monitoring System (VMS) for watch and ward of substation premises:**

Visual Monitoring System for effective watch and ward of substation premises shall cover all the transformers and reactors, all other major AIS Equipment (such as CB, isolators, CT, CVT, SA etc. as applicable), GIS bays, panel room, all the gates of switchyard and all entry and exit points of control room building and accordingly the location of cameras shall be decided. In addition to the gates of the switchyard, the cameras shall also be located around the boundaries at suitable locations. The camera shall be high definition color CCD camera with night vision feature. The VMS data partly/completely shall be recorded (minimum for 15 days) at least @25fps (or better) and stored on network video recorder. The system shall use video signals from various cameras installed at different locations, process them for viewing on

workstations/monitors in the control room and simultaneously record all the cameras. The VMS data should go only to the intended personnel/facility and not to the remote server of the Camera (VMS supplier).

Mouse/keyboard controllers shall be used for pan, tilt, zoom and other functions of the desired camera. The Visual Monitoring System shall have provision of WAN connectivity for remote monitoring.

All camera recordings shall have Camera ID and location/area of recording as well as date/time stamp. The equipment should generally conform to Electromagnetic compatibility requirement for outdoor equipment in EHV substation.

Advisory on deployment of CCTV issued by Ministry of Electronics and Information Technology (MEITY) shall be followed.

At existing substations, the visual monitoring system if available shall be augmented as per existing or better specification as required.

#### **B.4.0 General Facilities**

- a) Line Gantry/Towers are envisaged for bays under the present scope only. However, for adjacent future line bay, gantry/tower shall be designed for extension (considering Quad Moose conductors for 400 kV future lines) wherever applicable.
- b) TSP has to arrange for construction power and water on its own.
- c) All outdoor steel structures including anchor/foundation bolts shall be fully galvanized. The weight of the zinc coating shall be at least 610 gm/m<sup>2</sup>, however, for coastal/ creek regions, it shall be at least 900 gm/m<sup>2</sup> (if applicable).
- d) In 400 kV switchyard, if spare bay of half diameter is identified as future, all the equipment for Tie and Future Bay shall be designed considering the current rating of line bay i.e. 3150 A.
- e) Boundary wall shall be brick masonry wall with RCC frame or Stone masonry wall or Precast RCC wall under present scope along the property line of complete substation area including future switchyard area to prevent encroachment and unauthorized access. Minimum height of the boundary wall shall be of 1.8 m from Finished Ground Level (FGL).
- f) All electrical equipment shall be installed above the Highest Flood Level (HFL) and where such equipment is not possible to be installed above HFL, it shall be ensured

that there is no seepage or leakage or logging of water.

- g) As per CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations 2022/CEA Manual on Transmissions Planning criteria 2023, line approaching substation shall normally be perpendicular to the substation boundary for a stretch of 2-3 km. Accordingly, TSP shall ensure that line terminations at substations are arranged in a manner to avoid hindrance to future line terminations at the substations.

**B.5.0** The following drawings/details of proposed Edayarpalayam 400kV Substation are attached with the RfP documents for further engineering by the bidder.

Sl. No.	Drawing Title	Drawing No./Details	Rev. No.
<b>A.</b>	<b>Edayarpalayam 400kV SS</b>		
1.0	Single Line Diagram	TR-GCC-CBE-EDPLM-EL-001	3
2.0	Compound wall and Overall plant layout	GID-433-CV-UAV-XE-3010	R1
3.0	SS -Contour	Attached	
4.0	Geo Technical Report	Attached	
5.0	SAS ARCHITECHTURE	Attached	

**Note: The above list of Drawing is indicative. The same shall be used for formulation of Master Drawing List (MDL) in DREAMS System.**

The existing drawings provided above and in subsequent amendments to the RfP are as received from the developer of existing substation and provided only for reference. Bidders shall follow the RfP for scope of work. Actual site conditions may be different due to other schemes being executed or subsequent revisions by the developer. Therefore, Bidders are advised to visit the substation sites and acquaint themselves with the actual site conditions, layout, topography, infrastructure such as the requirement of roads, cable trench, drainage, boundary etc. and also the design philosophy.

**Proposed Edayarpalayam 400 kV SS connectivity SS UTM Coordinate details**

Edayarpalayam 400 KV SS	Kavathampalayam765 kV SS	Pugalur PGCIL 400 kV SS	Myvadi PGCIL 400 kV SS
Zone-43P 728907.151 E 1207603.453 N	Zone-43P 767496 m E 1244646 m N	Zone- 43P 819424.00 mE 1213275.00 mN	Zone- 43 P 754648.00 mE 1172282.00 mN

## **SPECIFIC TECHNICAL REQUIREMENTS FOR COMMUNICATION**

The communication requirement shall be in accordance to CEA (Technical Standards for Communication System in Power System Operations) Regulations, 2020, CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022, CERC (Communication System for inter-State transmission of electricity) Regulations, 2017, CEA (Cyber Security in Power Sector) Guidelines, 2021, CERC Guidelines on “Interface Requirements” 2024 and all above documents as amended from time to time.

The communication services viz. SCADA, AGC (wherever applicable), VoIP, AMR and PMU have been identified as critical services and therefore shall be provisioned with 2+2 redundancy i.e. 2 channels for Main Control Centre and 2 channels for Backup Control Centre. In order to meet this requirement, suitable redundancy at port and card level need to be ensured by the TSP to avoid any single point of failure which may lead to interruption in real-time grid operation.

PMU to PDC communication (wherever required) shall be through 2 channels to the PDC (main) as there is no backup PDC at present.

Accordingly, all the hardware for communication services of station as stated above shall support dual redundancy for data transmission of station to respective main and backup RLDCs.

The complete InSTS communication system commissioned by TSP under the RFP shall be the asset of InSTS and shall be available for usage of InSTS requirements as suggested by STU from time to time.

In order to meet the requirement for grid management and operation of substations, Transmission Service Provider (TSP) shall provide the following:

### **C.1.0 Communication Equipment Requirement for Edayarpalayam Substation**

- (I) TSP shall supply, install & commission the following communication equipment for establishment of **Edayarpalayam** 400kV SS:
1. 1 No. Hybrid FOTE with uplink having 4 directions and redundant for all modules for dedicated applications of 230kV lines
  2. 2 Nos. Hybrid FOTE with uplink having 4 directions and redundant for all modules for dedicated applications of 230 kV lines
  3. Stand alone Digital Tele Protection Coupler – 2 Nos per feeder/Line for each Substation end applicable for 400kV and 230kV lines.

4. 1 No. Hybrid EPAX with necessary interfaces, necessary cables and associated materials, VoIP phones (Minimum of 3 nos ) and necessary analog telephones to implement the voice communication requirement for EdayarpalayamSS and for its voice communication with remote end substations and communication network. Necessary point for telephone interface for VoiP and analog phones shall be provided in each kiosk/ Switch yard panel room.
  5. TSP shall supply essential spares where each set of essential spares comprising each type of hardware modules for FOTE Equipment, OLTE Equipment separately for 400 KV lines application and for 230 KV Lines application. Quantity of number of sets spares shall be as per detailed tender specification.
  6. TSP shall supply essential spares where each set of essential spares comprising each type of hardware modules for Digital Tele Protection Coupler Equipment separately for 400 KV lines application and for 230 KV Lines application. Quantity of number of sets spares shall be as per detailed tender specification.
  7. TSP shall supply essential spares where each set of essential spares comprising each type of hardware modules for Hybrid EPAX and associated hardware devices. Quantity of number of sets spares shall be as per detailed tender specification.
  8. Location of equipment:
    - Location of FODPs and FOTEs shall be as per engineering approval during project stage.
    - DTPCs housed in panels for designated lines shall be located in the respect Kiosk/ SPR.
- (II) The new communication equipment under the present scope shall be compatible for integration with existing regional level centralized NMS. The local configuration of the new communication equipment shall be the responsibility of TSP. The configuration work in the existing centralized NMS for integration of new Communication equipment shall be done by Regional ULDC Team, however all the necessary support in this regard shall be ensured by TSP. NMS complete with life time license covering all the network elements in this project, necessary hardware, softwares, furniture etc with necessary NBI interface supporting the various features and functions as per UNMS requirements shall be provided in case there is no proper NMS with NBI in TANTRANSCO for the offered FOTEs.
- (III) TSP shall supply, install & commission Firewall in redundant mode (1+1) in line with the specification attached at **Annexure F.1**.
- (IV) The maintenance of all the communication equipment and software thereof including FOTE, DTPCs, FODP, PMU, approach cable, DCPS along with Battery Bank & Firewall shall be the responsibility of TSP.

### **C.2.0 Development of Edayarpalayam 400 kV SS along with Transmission line up to Myvadi 400 kV PGCIL SS/ Pugalur 400 kV HVDC Station/ Kavathampalayam 765 kV SS**

For Multi Circuit Tower Configuration: Two (2) No. OPGW cable each containing 48 Fibres (48F) to be installed & commissioned by the TSP on both the Earth wire peaks

For Double Circuit Tower configuration 1 No. OPGW cable each containing 48 Fibres (48F) to be installed & commissioned on one earth wire peak and conventional earth wire on other E/W peak.

The TSP shall install 48 F OPGW cables from gantry of **Edayarpalayam 400 kV SS** to gantry of **Myvadi 400 kV PGCIL SS/ Pugalur 400 kV HVDC Station/ Kavathampalayam 765 kV SS** with all associated hardware including Vibration Dampers, mid-way & gantry Joint Boxes (called OPGW Hardware hereafter) and finally terminate in Joint Boxes at end Substations.

TSP shall supply, install & commission FODP with minimum 240 Fiber capacity along with panel and approach Cable (48F each except LILO portion of where 24Fx2 approach cable shall be required) with all associated hardware fittings from gantry tower to Control Room for all the incoming lines envisaged under the present scope.

### **C.3.0 Communication Equipment Requirement for Kavathampalayam 765 kV/400 kV Substation**

TSP shall supply, install & commission the following communication equipment for **Kavathampalayam 765kV /400 kV Substation** end

1. 1 No. Hybrid FOTE with uplink having 4 directions and redundant for all modules for dedicated applications of 400kV lines
2. Standalone Digital Tele Protection Coupler – 2 Nos per feeder/Line for each Substation end applicable for 400kV lines.
3. 1 No. Self-sustaining VOIP gate way with necessary interfaces, necessary cables and associated materials, VoIP phones (Minimum of 2 nos ) and necessary analog telephones to implement the voice communication requirement for its voice communication with remote end substations and communication network.
4. TSP to provide necessary FODP sub rack / Splice trays/ Patch cords etc. and optical interfaces/equipment in the existing FOTE/FODP panels in control room for integration with the existing FOTE for onward data transmission. In case spare optical direction is not available in the existing FOTE at the control room, the TSP shall coordinate with station owner to reconfigure the directions in existing FOTE at control room. Alternatively, The TSP may integrate the FOTE under the present scope with existing FOTE in the nearby Kiosk connected to the control room FOTE (if available with spare direction). For this purpose, TSP shall provide necessary FODP sub rack / Splice trays/ Patch cords etc. and suitable optical interfaces/equipment in the existing FOTE/FODP panels in another Kiosk (SPR).

5. Location of FODPs and FOTEs shall be as per engineering approval during project stage.

#### **C.4.0 Communication Equipment Requirement for Pugalur 400kV Substation**

TSP shall supply, install & commission the following communication equipment for **Pugalur 400kV** Substation end

1. 1 No. Hybrid FOTE with uplink having 4 directions and redundant for all modules for dedicated applications of 400kV lines
2. Standalone Digital Tele Protection Coupler – 2 Nos per feeder/Line for each Substation end applicable for 400kV lines.
3. 1 No. Self-sustaining VOIP gate way with necessary interfaces, necessary cables and associated materials, VoIP phones (Minimum of 2 no.s) and necessary analog telephones to implement the voice communication requirement for its voice communication with remote end substations and communication network.
4. TSP to provide necessary FODP sub rack / Splice trays/ Patch cords etc. and optical interfaces/equipment in the existing FOTE/FODP panels in control room for integration with the existing FOTE for onward data transmission. In case spare optical direction is not available in the existing FOTE at the control room, the TSP shall coordinate with station owner to reconfigure the directions in existing FOTE at control room.
5. Location of FODPs and FOTEs shall be as per engineering approval during project stage

#### **C.5.0 Communication Equipment Requirement for Myvadi 400kV Substation**

TSP shall supply, install & commission the following communication equipment for **Myvadi 400kV** Substation end

1. 1 No. Hybrid FOTE with uplink having 4 directions and redundant for all modules for dedicated applications of 400kV lines
2. Standalone Digital Tele Protection Coupler – 2 Nos per feeder/Line for each Substation end applicable for 400kV lines.
3. 1 No. Self-sustaining VOIP gate way with necessary interfaces, necessary cables and associated materials, VoIP phones (Minimum of 2 no.s ) and necessary analog telephones to implement the voice communication requirement for its voice communication with remote end substations and communication network.
4. TSP to provide necessary FODP sub rack / Splice trays/ Patch cords etc. and optical interfaces/equipment in the existing FOTE/FODP panels in control room for integration with the existing FOTE for onward data transmission. In case spare optical direction is not available in the existing FOTE at the control room, the TSP

shall coordinate with station owner to reconfigure the directions in existing FOTE at control room.

5. Location of FODPs and FOTEs shall be as per engineering approval during project stage.

**C.6.0 400kV Edayarpalayam to 230 kV Othakalmandapam D/Cline , 230 kV Ponnarpuram, 230 kV Palladam, 230 kV Kalivelampatti**

For **400kV Edayarpalayam to 230 kV Othakalmandapam I&II /Ponnarpuram, Palladam, Kalivelampatti feeders in case of D/C line**, TSP shall supply, install & commission One (1) no. OPGW cable containing 48 Fibres (48F) on one E/W peak and conventional earth wire on other E/W peak.

The TSP shall install this OPGW from gantry of **400 kV Edayarpalayam PS** up to the gantry of **230 kV Othakalmandapam /Ponnarpuram, Palladam, Kalivelampatti feeder**

1. With all associated hardware including Vibration Dampers, midway & gantry Joint Boxes (called OPGW Hardware hereafter) and finally terminate in Joint Boxes at end Substations.
2. TSP shall supply, install & commission FODP with minimum 240 Fiber capacity along with panel and approach Cable (48F each except LILO Portion where 24Fx2 approach cable shall be required) with all associated hardware fittings from gantry tower to Control Room for all the incoming lines envisaged under the present scope.
3. Maintenance of OPGW Cable and associated hardware shall be the responsibility of TSP.

**C.7.0 Communication Equipment Requirement for FOTE Requirement for Palladam, Kalivelampatty, Othakkalmandapam I & II, and Ponnarpuram 230kV Substation**

TSP shall supply, install & commission the following communication equipment at each of the Palladam, **Kalivelampatty, Othakkalmandapam, Selvapuram and Ponnarpuram 230kV** Substations end

1. 1 No. Hybrid FOTE with uplink having 4 directions and redundant for all modules for dedicated applications of 230kV lines at all the above SS end.
2. Standalone Digital Tele Protection Coupler – 2 Nos per feeder/Line for each Substation end applicable for 230kV lines in all the above SS end.
3. 1 No. Self-sustaining VOIP gate way with necessary interfaces, necessary cables and associated materials, VoIP phones (Minimum of 2 no.s ) and necessary analog telephones to implement the voice communication requirement for its voice communication with remote end substations and communication network. This is applicable for all the above SS end.

4. TSP to provide necessary FODP sub rack / Splice trays/ Patch cords etc. and optical interfaces/equipment in the existing FOTE/FODP panels in control room for integration with the existing FOTE for onward data transmission. In case spare optical direction is not available in the existing FOTE at the control room, the TSP shall coordinate with station owner to reconfigure the directions in existing FOTE at control room. This is applicable for all the above SS end.
5. Location of FODPs and FOTEs shall be as per engineering approval during project stage.
6. In case spare optical direction is not available in the existing FOTE at the control room, the TSP shall coordinate with station owner to reconfigure the directions in existing FOTE at control room. Alternatively, The TSP may integrate the FOTE under the present scope with existing FOTE in the nearby Kiosk connected to the control room FOTE (if available with spare direction). For this purpose, TSP shall provide necessary FODP sub rack / Splice trays/ Patch cords etc. and suitable optical interfaces/ equipment in the existing FOTE/FODP panels in another Kiosk (SPR).
7. The new communication equipment under the present scope shall be compatible for integration with existing regional level centralized NMS. The local configuration of the new communication equipment shall be the responsibility of TSP. The configuration work in the existing centralized NMS for integration of new Communication equipment shall be done by Regional ULDC Team, however all the necessary support in this regard shall be ensured by TSP.
8. The maintenance of all the communication equipment and software thereof including FOTE, FODP, DTPC, approach cable, PMU, DCPS along with Battery Bank shall be the responsibility of TSP.

#### **C.8.0 Specific Requirement for Phasor Measurement Units (PMUs)**

TSP shall supply, install & commission required No. of Phasor Measurement Units (PMUs) as per the “Guidelines on Unified Philosophy for placement of PMUs in Indian Grid” issued vide CEA letter No. CEA-PS-14-12/9/2024-PSETD Division dated 19.03.2025 for the scope of this RfP. The PMUs shall be provided with LAN switch and shall connect with LAN switch of control room of respective substations/ generating stations with Fiber Optic cable. These PMUs shall be connected with the FOTE at Substation/ generating stations for onwards data transmission to the PDC (Phasor Data Concentrator) located at respective RLDC. Configuration work in existing PDC at RLDC for new PMU integration shall be done by respective RLDC, however all the necessary support in this regard shall be ensured by TSP. The maintenance of all the PMUs and associated equipment shall be the responsibility of TSP.

Note: Existing Station owner/s to provide necessary support to integrate different equipment & applications of new extended bays with the existing substation e.g. Communication (through FOTE), Voice etc. for smooth operation and monitoring of new added grid elements.

## Annexure-F.1

### Next Generation Firewall (NGFW)

TSP shall provide 2 NGFW one in Main & another in Standby mode having electrical Ethernet interfaces/ports and placed between FOTE & SAS gateway/s at the substation. All Ethernet based applications shall be terminated in the firewall ports directly (e.g. PMU, AMR, VOIP, SAS/SCADA etc.). Each port of firewall shall work as a separate zone. Firewall shall be hardware based with features of Block/Allow/drop and IPSec VPN (network encryption).

The number of ports/interfaces in each firewall (i.e. Main & Standby) shall be minimum 16 Nos. TSP shall provide either single firewall or multiple firewalls to meet this interfaces requirement, each for main as well as standby firewall. Minimum throughput of firewall shall be 300 Mbps.

The Firewall shall be managed/ configured as standalone at present and shall also have compatibility to manage/configure through Centralized Management Console (CMC) remotely in future.

Firewall shall be tested and certified for ISO15408 Common Criteria for least EAL4+. Further, the OEM must certify that it conforms to Secure Product Development Life Cycle requirements as per IEC62443-4-1. The firewall shall generate reports for NERC-CIP Compliance.

The specifications for the firewalls are given at **Annexure-F.2** and schematic diagram showing firewall placement given at **Figure F.2**.

## Annexure F.2

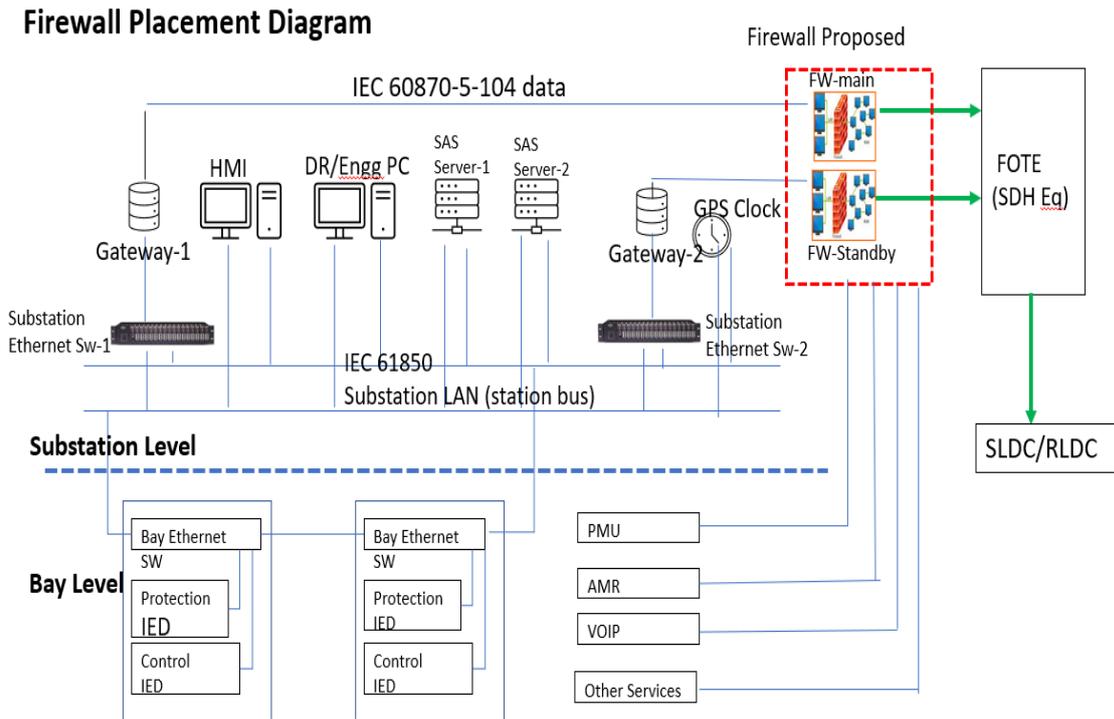
### Specifications of Next Generation Firewall (NGFW)

1. NGFW shall have following features including but not limited to:
2. Encryption through IPSec VPN (Virtual Private Network), Deep Packet Inspection (DPI), Denial of service (DoS) & Distributed Denial of Service (DDoS) prevention, Port Block/ Allow, rules/ policies for block/allow, IP (Internet Protocol) & Media Access Control (MAC) spoofing protection, threat detection, Intrusion Prevention System (IPS), Anti-Virus, Anti-Spyware, Man InThe Middle (MITM) attack prevention.
3. The proposed firewall shall be able to handle (alert, block or allow) unknown /unidentified applications e.g. unknown TCP & UDP packets. It shall have the provision to define application control list based on application group and/or list.
4. Firewall shall have feature and also have capability to update the definition/ Signatures of Anti-Virus online as well as offline. Firewall shall also be compatible to update the definitions/signatures through CMC. There shall be a defined process for security patching and firmware up-gradation. There shall be a feature to field validate firmware checksum. The same shall also be validated before using the OEM provided file/binary in the process of firmware up-gradation and security patching
5. Firewall shall have Management Console port to configure remotely.
6. Firewall shall be EMI/EMC compliant in Substation environment as per IEC 61850-3.
7. Firewall shall be rack mounted in existing standard equipment cabinets.
8. Firewall shall have support of SCADA applications (IEC-60870-5-104), IEC, PMU (IEEE C37.118), Sub-Station Automation System (IEC 61850), Ethernet and other substation environment protocols.
9. Client based Encryption/ VPN must support different Operating System platforms e.g. Windows, Linux & Mac.
10. The solution must have content and comprehensive file detection policies, blocking the files as function of their types, protocols and directions.
11. Firewall shall have logging facility as per standard logs/events format. Firewall shall have features to export the generated/stored logs/events in csv (Comma Separated Value) and also any other standard formats for offline usage, analysis and compliance.

Firewall shall have suitable memory architecture and solution to store and be enable to export all logs/events for a period of last 90 days at any given time.

12. Firewall shall have features and be compatible with local as well as central authentication system (RADIUS, LDAP, or TACACS+) for user account and access right management. It shall also have Role Based User management feature.
13. Firewall shall have the capability to configure sufficient number of VLANs.
14. Firewall shall have the capability to support sufficient number of sessions.
15. Firewall shall have provision to configure multiple IP Sec VPNs, at least 100 Nos., (one-to-many or many-to-one). Shall support redundant operation with a similar router after creation of all the IP Sec VPN. IPsec VPN shall support encryption protocols as AES128, AES256 and hashing algorithms as MD5 and SHA1. IPsec VPN throughput shall support at least 300 Mbps
16. Firewall shall be capable of SNMP v3 for monitoring from Network Management system. It shall also have SNMPv3 encrypted authentication and access security
17. Firewall shall support in Active/Passive or Active-Active mode with High Availability features like load balancing, failover for firewall and IPsec VPN without losing the session connectivity.
18. Firewall should have integrated traffic shaping (bandwidth, allocation, prioritisation, etc.) functionality
19. Shall support simultaneous operation with both IPv4 and IPv6 traffic
20. Firewall shall be compatible with SNTP/NTP or any other standards for clock synchronization
21. Firewall shall have the features of port as well as MAC based security
22. Firewall shall support exporting of logs to a centralized log management system (e.g. syslog) for security event and information management.
23. Firewall time shall be kept synchronised to official Indian Timekeeping agency, time.nplindia.org.
24. Firewall product shall be provided with all applicable updates at least until 36 months since the applicable date of product shipping to the concerned utility.

Figure F.2



## Annexure – G

### Communication system integration in UNMS/CSMS

1. TSP is to ensure integration of communication system into UNMS/CSMS as per following: “The new communication equipment/ system under the present scope shall be compatible for integration with existing regional level NMS system/ Centralized Supervision & Monitoring System (CSMS) i.e. Regional UNMS. The local configuration of the new communication equipment/ system at the station end shall be the responsibility of TSP as per followings. The configuration work in the existing centralized NMS/ UNMS at Control center end, for integration of new Communication equipment/ system shall be done by Regional ULDC Team/ NMT, however all the necessary support in this regard shall be ensured by TSP.

### Requirement for integration of Communication Equipment/ system with Regional UNMS:

2, TSP shall ensure that NMS/EMS/NE supplied by them is life time license without time period limitation, NBI compliant and all FCAPS functionality is supported in the NBI such as NE Inventory, Hardware Inventory– Shelf/Slot/Card/SFP/Port, Topology, Protections, Alarms, Performance-real time & periodic, Performance KPI parameters (E-1, STM, Ethernet), Remote Configuration, Cross Connects, Trails & Circuits, Services Provisioning (NE), E-1, STM, Ethernet, TX & RX Trace, loop back and details are published in the NBI guide for the configuration parameters. The NMS

3. TSP shall be obliged to provide/share all necessary documentations such as NBI Guide/MIB/IDL/WSDL/API files etc. for onward integration of their NMS/EMS/NE with regional UNMS.

4. The following support shall be provided by TSP for integration of their supplied equipment with regional UNMS:

- Enabling & activating NBI license in their EMS/NMS and providing NBI login access along with User credentials
- Assist in verifying NBI Connectivity with UNMS vendor for the successful communication and retrieval of data.
- Assist in troubleshooting (if required) for NBI connectivity along with UNMS vendor for the communication and retrieval of data.

5. For standalone NE which is not integrated with any EMS/NMS, TSP shall provide modality of complete FCAPS data acquisition as above through industry standard programmatic methods and provide the CLI command manual.”

Please note:

Wherever MPLS-TP links are implemented for subject project the suitable MPLS capacity is applicable.

**Frequently Asked Queries:**

Transmission Line:

- 1.1 Please clarify that whether shutdowns for crossing of existing transmission lines of POWERGRID/STUs/ Power Evacuation Lines from Generation Plants/ Any other Transmission Licensee will be given to TSP on chargeable basis or free of cost.

**Reply:** Shutdowns for crossing of existing transmission lines of POWERGRID/STUs/ Power Evacuation Lines from Generation Plants/ Any other Transmission Licensee will be given to TSP by the concerned owner of the lines as per their own terms & conditions. As far as shutdown of ISTS lines are concerned the same can be availed by approaching respective Regional Power Committee.

- 1.2 We understand that the suggested swing angle criteria are applicable for Suspension Insulator in Suspension Tower. Further, you are requested to provide similar swing angle and clearance criteria for Pilot Insulator with Jumper & Jumper.

**Reply:** It is clarified that the swing angle criteria (as mentioned in RFP) for transmission lines is applicable for Suspension Insulator in Suspension Tower. Further, as per Clause 3.0 of Specific Technical Requirements for transmission lines, Transmission service Provider (TSP) shall adopt any additional loading/design criteria for ensuring reliability of the line, if so desired and /or deemed necessary.

- 1.3 We request you to kindly allow that use of diamond configuration at Power line crossings and the existing owner of the lines may be directed to allow the same for the successful bidders.

**Reply:** Power line crossing including Diamond configuration is the responsibility of the TSP. TSP shall formally submit the profile of the crossing section to the owner of the existing line suggesting proposed crossing alternatives. The crossing will have to be carried out as per approval of owner of the existing line.

- 1.4 It is requested you to kindly provide present status of Forest Clearances if any transmission line corridor area falling in wildlife forest / reserve forest/ mangroves.

**Reply:** Based on the preliminary route survey, the process of initiation of forest clearance for the forest stretches, if any, enroute the proposed line alignment will be initiated by way of writing letters to the concerned authority (ies). However, it may be noted that it will be the responsibility of TSP for obtaining forest clearance for the forest stretches as provided in the survey report and also for any forest area

encountered during detailed survey.

- 1.5 For transmission line, no special requirement is specified for type of Insulator and creepage in RFP document. Hence it is understood that bidder can decide the type of insulator along with creepage requirement based on general CEA regulations and relevant standards. Kindly confirm.

**Reply:** The minimum specific creepage distances shall be decided for the site pollution severity in the area of installation keeping in mind further increase in pollution during life of the line. It shall be as per CEA regulations and relevant standards. However, the tower shall be designed considering the porcelain insulators with creepage factor of 31 mm/kV irrespective of type of insulator used.

**a. Substation:**

- b. We understand that space for storage of O&M spare shall be provided by existing owner within the station boundary without any cost. Kindly confirm.

**Reply:** Space for storage of O&M spares shall be arranged by TSP on its own.

- c. We presume that the O&M for the end Termination bays will be in the scope of the TSP and TSP shall not be liable for any payment towards O&M to the existing owner of the substation. Kindly confirm.

**Reply:** Operation and maintenance of the bays is solely responsibility of the TSP. TSP shall follow CEA's "Operation and Maintenance (O&M) guidelines and Standard Format for Memorandum of Understanding between New TSP and Existing TSP" issued by CEA vide its letter No. I/28514/2023 dated 22.06.2023. Copy of the guideline is available on CEA website at following link:

[https://cea.nic.in/wp-content/uploads/pse\\_\\_\\_td/2023/06/om\\_guidelines.pdf](https://cea.nic.in/wp-content/uploads/pse___td/2023/06/om_guidelines.pdf)

- d. With reference to subject scheme of existing sub-station, we assumed following scope of work:
- (a) We assumed internal road is available and need not to consider in the present scope of work.
  - (b) Drainage is available and need not to consider in the present scope of work.
  - (c) Cable trench extension in adjacent to Main cable trench only under present scope of work.
  - (d) Levelled area being provided by developer for bay extension.

**Reply:** Regarding requirement of internal road, drainage, cable trench, leveling of the bay extension area, bidder is advised to visit site and acquaint themselves with the provisions/facilities available at substation.

- e. Kindly provide the soil investigation report of soil parameters of existing substation.

**Reply:** Bidder is advised to visit the substation site and ascertain the requisite parameters. The Geo Technical Investigation report is enclosed for Edayarpalayam 400 / 230-110 KV SS.

- f. Kindly confirm, energy accounting of aux. power consumption. Whether it will be on chargeable basis or part of transmission loss.

**Reply:** It will be on chargeable basis.

- g. We understand that VMS requirement is for unmanned stations only. For Manned stations VMS is not compulsory.

**Reply:** VMS shall be provided by TSP for manned and unmanned sub-stations.

- h. It is understood that Construction water and power shall be provided free of cost to TSP by respective substation owner for construction of new bays.

**Reply:** Arrangement of construction power and water is in the scope of TSP.

- i. It is understood that existing fire hydrant system shall be extended by the TSP for bay extension.

**Reply:** Existing fire hydrant system shall be extended from existing system (if required)

- j. Please clarify that Status of land acquisition for Substations. Whether the lands have been acquired by BPC and will be transferred to TSP.

**Reply:** The acquisition of land for substation/bays as per provision of RfP.

- k. We understood that no any dedicated metering CT and CVT required for Line/feeders. Further, we understood that requisite Energy meters for various 765 kV, 400 kV and 220 kV Feeders shall be provided and installed by CTU free of cost to TSP.

**Reply:** Dedicated metering CT and CVT are not required for line/feeders. Metering core of existing CT/CVT can be used provided accuracy class is matching with metering requirement. Requisite Special Energy Meters shall

be provided and installed by CTU in C&P panel subject to space availability, else, in separate metering panel (to be provided by TSP at its cost).

- 2.11 A draft copy of the Connection Agreement may be furnished.

**Reply:** Web page link [https://www.ctuil.in/formats\\_gna\\_transition](https://www.ctuil.in/formats_gna_transition)

- 2.12 Please clarify whether the spare 765 kV single phase Reactor unit for Bus reactor shall be provided with 1ph 765 kV CB.

**Reply:** As per RfP, the spare 1-Ph reactor unit shall be utilized for all the bus and switchable line reactor banks (including for future reactor banks). Hence, 1ph 765 kV CB shall also be provided with spare 1-Ph reactor for utilizing with bus reactor as well as switchable line reactor.

- 2.13 It is understood that existing busbar protection has provision for future bays and also PUs are available for future bays. BPC to confirm availability of CU and PU for bays under present scope of work at existing substations. BPC may kindly confirm availability of communication ports for integrating new PUs with the existing CUs at existing substations.

**Reply:** Bus Bar Protection with Central Unit (CU) is required for the new bus section as specified in RfP. Peripheral Units (PUs) shall be provided by the respective bay owner. Further, augmentation/replacement of existing CU, if required, to meet the system requirement shall also be provided for proper functioning of bus bar protection by TSP.

- 2.14 For SCADA, it is understood that necessary process I/O shall be available for future bays and accordingly license for same. BPC to confirm.

**Reply:** Necessary process I/O along with license shall be in the scope of the successful bidder (TSP) considering minimum 3 future bays at each voltage level.

- 2.15 No separate FF system is envisaged under the present scope of work for existing substation. BPC to confirm.

**Reply:** Existing fire-fighting systems shall be extended to meet the additional requirements under present scope.

- 2.16 BPC is requested to confirm the availability of space in the existing control rooms at existing substation for execution of extension work under current project.

**Reply:** Switchyard Panel Rooms are generally required for AIS type substation and relay room are required for GIS type substation. Further, if needed, the control room shall be augmented as per requirement.

### 3.0 Communication:

- 3.1 PLCC for 220 kV Lines are not under the scope of TSP. BPC to Confirm. It is requested to provide Type of Coupling for 220 kV Transmission Lines under present scope.

**Reply:** Unless specified in tender scope, PLCC equipment are not envisaged in the tender scope. However, in respect of transmission lines designated for connection to M/s. PGCIL sub-stations or other transmission licensee Sub-stations where in PLCC equipment is used for backup tele-protection, SCADA, telemetry, voice communication etc purposes Complete PLCC equipment (including indoor & Outdoor) compatible to remote end substation PLCC equipment shall be provided and shall be considered under this tender scope. Essential spares for maintenance of PLCC equipment shall be provided.

Usually phase-phase coupling is preferred for PLCC applications. However, remote end compatibility shall be ensured.

- 3.2 What are the usage of OPGW, FOTE, PMU etc. under communication requirement of RFP?

**Reply:** User shall be responsible for providing compatible equipment along with appropriate interface for uninterrupted communication with the concerned control center and shall be responsible for successful integration with the TANTRANSCO communication system.

Communication systems e.g. OPGW, FOTE etc. & PMU are required speech communication, tele-protection and tele-metering and or grid monitoring from SLDC/RLDC

- 3.3 Is space for installation of communication panels are provided to TSP in existing Substations incase new bays are in the scope of TSP?

**Reply:**

TSP shall install as follows:

DTPC panels shall be installed in the respective switch yard panel room for kiosk type substation.

FOTE/FODP panels shall be installed in the new Bay Kiosk (Switchyard Panel Room (SPR)) / Bay Kisok/ Control room building/Relay Panel Room as per appropriate Engineering Design.

Further, TSP to connect and integrate the proposed FOTE with the existing

TANTRANSCO communication network. TSP shall obtain TANTRANSCO approval of engineering drawings in respect of equipment /panels placed in existing TANTRANSCO substation.

In Case 132 kV Substation TSP shall accommodate the said panels either by extension of existing control room or other arrangements.

Wherever fiber optic line length exceeds the sufficient driving capacity of FOTE equipment at both ends of transmission line, necessary optical repeater station is to be provided at intermittent location i.e. at suitable sub-station of TANTRANSCO for which TSP shall provide necessary communication equipment, Auxiliary power supply system with associated materials. And these materials are deemed to be under the tender scope. Necessary engineering drawing approval shall be obtained from TANTRANSCO for optical repeater station equipment proposed to be located in TANTRANSCO station.

3.4 How is the OPGW laying done in case of LILO lines?

**Reply:** In case LILO lines are on same towers (e.g. both Line in and Line Out portion are on same towers, generally done LILO of S/C lines). Then  $2 \times 48F$  OPGW shall be required to install by TSP on both earth wire peak on 400 kV & 765 kV lines where two E/W peaks are available. On 220 kV & 132 kV lines where only one E/W peak is available TSP to install one No. 48F OPGW.

In case LILO lines are on different towers (e.g. both Line In and Line Out portion are on different towers, generally done LILO of D/C lines). Then  $1 \times 48 F$  OPGW shall be required to install by TSP on one earth wire peak and conventional earth wire on second earth wire peak, on both Line In and Line Out portion towers of 400 kV & 765 kV lines. On 220 kV & 132 kV lines where only one E/W peak is available TSP to install one No. 48 F OPGW in place of conventional earth wire.

3.5 How is the OPGW laying done in the case of Multi circuit Towers?

**Reply:** In case two different lines are using common multi circuit portion for some distance (originating from different stations, may be terminating on same or on different stations). Two No. 48F OPGW to be installed on both E/W peaks for common M/C portion of 765 kV & 400 kV lines. In case 220/132 kV lines using multi circuit portion where single E/W peak is available one No. 96F may be installed for common multi circuit portion.

3.6 How are PMUs integrated for new bays at existing Substations?

**Reply:** PMU data of new bays to be provided in the ethernet port of switch at control room and thereafter to be connected with existing FOTE of existing

substation to send data to PDC of RLDC by TSP. These PMUs shall be provided with GPS/NavIC clock and LAN switch and shall connect with LAN switch of control room of respective substations with Fibre Optic cable. In this regard, the “Guidelines on Unified Philosophy for placement of PMUs in Indian Grid” issued vide letter No. CEA-PS-14-12/9/2024-PSETD Division dated 19.03.2025 shall be followed.

- 3.7 Is Spare direction available in existing FOTE for integration with new bay kiosk FOTE

**Reply:** The FOTE under present scope shall be integrated by TSP with the existing FOTE at control room of substation for onwards data transmission. In case spare optical direction is not available in the existing FOTE at the control room, the TSP shall coordinate with station owner to reconfigure the directions in existing FOTE at control room.

- 3.8 What is the distance from LILO point to proposed substation for feasibility of repeater station?

**Reply:** Tentative Location of LILO point shall be as per survey report of BPC however exact location to be ascertained after detailed survey by TSP.

- 3.9 What is the make and model of existing OPGW in case LILO of main line at new substation?

**Reply:** All OPGW (along with optical fibers) meet Central Electricity Authority (Technical Standards for Communication System in Power System Operations) Regulations, 2020 and bidder shall install OPGW accordingly.

- 3.10 In case of LILO of existing line at new substation who shall provide PMUs at existing substation bays?

**Reply:** TSP shall provide the PMUs for the scope under the RfP and the same shall comply with the “Guidelines on Unified Philosophy for placement of PMUs in Indian Grid” issued vide letter No. CEA-PS-14-12/9/2024-PSETD Division dated 19.03.2025.

## Annexure-C

### Right-of-Use Agreement

This Land Right to Use Agreement (Agreement) is entered into on this [\_\_] day of [\_\_], 20 at [\_\_\_\_\_, Tamil Nadu].

#### BETWEEN

TAMIL NADU TRANSMISSION CORPORATION LTD (TANTRANSCO), a Corporation incorporated under companies Act 1956, a Successor entity to the erstwhile Tamil Nadu Electricity Board (TNEB), a subsidiary of the TNEB Limited and wholly owned by the Government of Tamil Nadu (CIN: [\_\_\_\_]), having its registered office at \_\_\_\_\_ (hereinafter referred to as the "First Party" which expression shall, unless it be repugnant to the context or meaning thereof, be deemed to mean and include its nominees, successors, "representatives, administrators and assigns) acting through its duly authorized representative \_\_\_\_\_ Age: \_\_\_ years, Resident (\_\_\_\_\_) authorized vide board resolution dated \_\_\_\_\_ being party of the **FIRST PART**.

#### AND

\_\_\_\_\_ [insert the name of the TSP] (CIN: \_\_\_\_\_) Company registered under the provisions of the Companies Act, 2013 having its registered office at \_\_\_\_\_ (hereinafter referred to as the "**Second Party**" which expression shall, unless it be repugnant to the context or meaning thereof, be deemed to mean and include its nominees, successors, representatives, administrators and assigns) acting through its duly authorized representative \_\_\_\_\_ Age: \_\_\_ years, Resident (\_\_\_\_\_) authorized vide board resolution dated \_\_\_\_\_ being party of the **SECOND PART**.

The First Party and second Party are herein after collectively referred to as the "Parties" and sometimes individually a "Party".

WHEREAS the First Party is having clear, valid and marketable freehold rights and in possession of land measuring \_\_\_\_\_ hectare equivalent to \_\_\_\_\_ acre situated at \_\_\_\_\_, (hereinafter referred to as the ("Demised Property") more particularly detailed and described in the Annexure-A attached herewith this Agreement.

AND WHEREAS the First Party has acquired the freehold rights of the Demised Property whereas \_\_\_\_\_ substation is functioning and where \_\_\_\_\_ acre remains vacant. Whereas Tamil Nadu Transmission Corporation Ltd (TANTRANSCO) has declared \_\_\_\_\_ as a TSP for setting up of Transmission system for Development of (i) Kavathampalayam 765/400 kV AIS SS along with 765 kV & 400 kV Transmission Lines and (ii) Edayarpalayam

400/230-110 kV AIS Substation ("Project") and to carry out all activities and uses incidental or ancillary thereto and as per the provisions of the aforesaid lease deeds, the First Party is entitled to grant right to use the \_\_\_\_\_ acres in the Demised Property to Second Party for the Project as per the decision of TANTRANSCO.

Whereas, TANTRANSCO has identified the following locations for the Project:

S. No.	Name of the Location	Co-ordinates	Extent
1.			
2.			
3.			
	Total		

AND WHEREAS the First Party has agreed to provide the \_\_\_\_\_ acre of land owned by them and described as Demised Property as per Annexure-A, for setting up of the Project awarded to the Second Party by TANTRANSCO. The Second Party has been selected as a TSP under Section 63 of the Electricity Act through a competitive bid organized by Tamil Nadu Transmission Corporation Ltd (TANTRANSCO) vide its RfS \_\_\_\_\_ dated \_\_\_\_\_. Further, the above Project is awarded to the Second Party by TANTRANSCO vide LOA No. \_\_\_\_\_ dated \_\_\_\_\_.

AND WHEREAS in order to meet the business requirements and for fulfilment of its purpose in developing the Project, the First Party has agreed to grant the right to use the Demised Property in favour of the Second Party and the Second Party has agreed to take the right to use the Demised Property through-out the term of this agreement for the purpose of establishing, operating and maintaining the Project.

**NOW, THEREFORE, IN ORDER TO SUBSTANTIATE AND RECORD THE TERMS AND CONDITIONS OF THE AGREEMENT AND IN CONSIDERATION OF THE MUTUAL COVENANTS AND FOR OTHER GOOD VALUABLE CONSIDERATION, THE PARTIES AGREE AS FOLLOWS:**

1. **The purpose of this agreement is to let out the land owned by the first party for establishing, operating and maintaining the Project.**
2. **Extent of Land – “First Party”** hereby agrees lease of land described in the **Annexure A** to the Second Party for implementation of the Project.
3. **Lease Period** – Leasehold Right to use/Land Lease tenure shall be for 38 years from the date of signing of TSA and include:
  - i. Construction period of 3 years,
  - ii. Operation Period of 35 years
4. **Handing over of LAND – “First Party”** on execution of the agreement will deliver vacant possession of above-mentioned land free from all encumbrances to the **“Second Party”**

within 60 days from the date of signing of the agreement or upon payment of land lease charges to **“First Party” by “Second Party” whichever is later.**

5. The Second Party shall remunerate the First Party, an amount equivalent to Rs. 1 (one) per annum plus applicable taxes towards rent ("Right to Use Rent") payable by the First Party under the Right to Use agreements. Further the due date of first instalment of payment is on the anniversary of this agreement and subsequently, annual payment shall be made by the Second Party within 30 days after the submission of documentary evidence for remittance of land lease amounts.

Save and except the Right to Use Rent, no other amount shall be payable by the Second Party to First Party or to any Third party for the right to use the Demised Property granted under this Agreement.

6. That the Second Party shall have right to use the Demised Property, however, all other rights (including but not limited to leasehold/freehold rights, and sublease) shall always remain vested with the First Party.
7. That the rights of the Second Party under this Agreement shall be limited to use the Demised Property, develop the Project and to raise construction thereon in accordance with the sanctioned lay-out/approval granted by the government authority including TANTRANSCO, perform the erection, maintenance and operation as well as rights to mortgage, assign the above agreement to its lenders upon on intimation to the First Party.
8. That the First Party shall always be responsible and continue to deposit land revenue or other taxes, exposed NA charges, if any, levied on the Demised Property.
9. The Second Party acknowledges and agrees that it shall be solely responsible for obtaining all statutory or regulatory approvals, clearances, permissions, licenses, or permits ("Approvals") pertaining to this agreement or the Project. The First Party shall not, under any circumstances, be held liable for any failure by the Second Party to obtain such Approvals.

## **10. Dispute Resolution**

### **a. Amicable Settlement**

- i. Either party is entitled to raise any claim, dispute or difference of whatever nature arising under, out of or in connection with this agreement (“Dispute”) by giving a written notice (Dispute notice) to the other party, which shall contain:

1. A description of the Dispute
  2. The grounds for such dispute; and
  3. All written material in support of its claim.
- ii. The other party shall, within thirty (30) days of issue of Dispute notice under article furnish:
1. Counter-Claim and defense, if any regarding the Dispute.
  2. All written material in support of its defenses and counterclaim.
- iii. Within thirty (30) days of issue of Dispute notice by any party pursuant to Article 10(a)(i) if the other party does not furnish a counter claim or defense under article 10(a)(ii) or thirty (30) days from the date of furnishing counter claims or defense by the other party, both the parties to the dispute shall meet to resolve such dispute amicably. If the parties fail to resolve the Dispute amicably within (30) days from the later dates mentioned in 10(a)(iii), the dispute shall be referred for dispute resolution in accordance with Article 10.

**11. Dispute resolution by the Appropriate Commission/Government of Tamil Nadu –**

In the event that the parties are unable to resolve any dispute, controversy or claim relating to or arising under this Agreement, as stated above, such Dispute shall be submitted to adjudication of the Tamil Nadu Electricity Regulatory Commission (TNERC)/ Government of Tamil Nadu (GoTN).

**12. Dispute resolution through Sole Arbitrator –**

If any dispute, controversy or claim relating to or arising under this Agreement, and not covered in Article 10, such Dispute shall be referred to the Sole Arbitrator i.e., Secretary to Government (or) Principal Secretary to Government (or) Additional Chief Secretary to Government, as the case may be, of the Energy Department, Government of Tamil Nadu and the award passed shall be binding on both the parties. The place of Arbitration shall be at Chennai, Tamil Nadu and it shall be in English language.

**13. Dispute resolution by the Court of Law –**

Any legal proceedings in respect of any matters, claims or disputes under this agreement shall be under the jurisdiction of appropriate courts situated in the State of Tamil Nadu.

14. All notices, consents and approvals to be given under this Agreement shall be in writing and signed by authorised signatories of the parties, unless otherwise notified. Each such notice shall be deemed to have been duly given if delivered or served by registered mail/facsimile/speed post of Department of Posts with an acknowledgement due to the other parties to the last known place of business.
15. That it is specifically and categorically agreed between the Parties that except the Demised Property, Second Party may, for financing of the Project, create encumbrance over its Project assets and assign its rights under this agreement in favour of lenders/security trustee for the benefit of lenders without any prior approval from the First Party. However, communication needs to be submitted to the First Party within thirty (30) days, in this regard.
16. That the First Party shall not do any act or omission which may prevent the Second Party from using the Demised Property for the Project.
17. That the First Party has right to inspect the Demised Property during the tenure of the occupation by the Second party.
18. In the event when both the parties mutually agree to terminate the Agreement, on account of Force Majeure or any other reason, termination shall take effect from the date and time to be agreed upon mutually.
19. This agreement shall be governed by & construed in accordance with the laws of India. As far as possible, any dispute or difference arising out of this agreement shall be amicably settled between the parties.
20. That all costs and expenses towards the execution of this Agreement shall be borne by the Second Party.
21. Neither this Agreement nor any term, covenant, condition or other provisions hereof may be waived, amended, varied, modified, supplemented, discharged or terminated except by an instrument in writing, signed by a duly authorized officer on behalf of each of the Parties.

**IN WITNESS WHEREOF THIS AGREEMENT HAS BEEN EXECUTED BY PARTIES HERETO ON THE DATE, MONTH AND YEAR MENTIONED HEREIN ABOVE.**

FIRST PARTY	SECOND PARTY
FOR TANTRANSCO	FOR _____(TSP)
WITNESS 1	WITNESS 1
WITNESS 2	WITNESS 2

**Annexure-D**

**(Details of the Demised Property such as Land Coordinates, Area, Layout)**

**Annexure-E**

**(Govt Order/letter Details of the leased Deed)**