



Procedure to Participate in Tender

Tender Enquiry No	Work Description	EMD (Rs.) (incl. GST)*	Tender Participation Fee (Rs.) (Incl. GST)**	Last Date and Time for payment of Tender Participation Fee
TPCODL/ P&S/ 1000000537/ 23-24	Open Tender SITC for setting up APSCC in 04 Circle of TPCODL Network	50,000/-	5,000/-	17.01.2024, 15.00 Hrs.

* EMD is exempted for MSMEs registered in the State of Odisha.

** MSMEs registered in the State of Odisha shall pay tender fee of Rs. 1,000/- including GST. For details of MSME norms, pls refer "Annexure VII-a"

Please note that corresponding details mentioned in this document will supersede any other details mentioned anywhere else in the Tender Document.

Procedure to Participate in Tender.

Following steps to be done before "Last date and time for Payment of Tender Participation Fee" as mentioned above

1. Eligible and Interested Bidders to submit duly signed and stamped letter on Bidder's letter head indicating
 - a. Tender Enquiry number
 - b. Name of authorized person
 - c. Contact number of authorized person
 - d. e-mail id of authorized person / Ariba online portal ID if any.
 - e. Name of Firm
 - f. Address of Firm
 - g. GST Registration Number
 - h. Details of submission of Tender Participation Fee
 - i. MSME Certificate, wherever applicable
 - j. Details of Bank Account for refund of EMD
 - k. Postal Address for refund of EMD
2. Non-Refundable Tender Participation Fee, as indicated in table above, to be submitted in the form of Direct deposit in the following bank account and submit the receipt along with a covering letter clearly indicating the Tender Reference/ Enquiry Number –

Beneficiary Name – TP Central Odisha Distribution Ltd.

Bank Name – STATE BANK OF INDIA

Branch Name – IDCO Towers, Bhubaneswar

Address – PO- Sahidnagar, Janapath, Bhubaneswar.



Branch Code – 7891

Account No – 10835304915

IFSC Code – SBIN0007891

E-mail with necessary attachment of 1 and 2 above to be sent to **Malaya.roul@tpcentralodisha.com** with copy to **sudhakar.behera@tpcentralodisha.com** before last date and time for payment of Tender Participation Fee.

Interested bidders to submit Tender Participation Fee and Authorization Letter before Last date and time as indicated above after which link from TPCODL E-Tender system (Ariba) will be shared for further communication and bid submission.

Please note all future correspondence regarding the tender, bid submission, bid submission date extension, Pre-bid query etc. will happen only through TPCODL E-Tender system (Ariba). User manual to guide the bidders to submit the bid through E-Tender system (Ariba) is also enclosed.

All communication will be done strictly with the bidders who have done the above step to participate in the Tender.

Also it may be strictly noted that once date of “Last date and time for Payment of Tender Participation Fee” is lapsed no Bidder will be sent link from TPCODL E-Tender System (Ariba). Without this link vendor will not be able to participate in the tender. Any last moment request to participate in tender will not be entertained.

Also all future corrigendum's to the said tender will be informed on Tender section on website <https://www.tpcentralodisha.com>.

OPEN TENDER NOTIFICATION

FOR

**SITC FOR SETTING UP AREA POWER SYSTEM CONTROL
CENTRE IN 04 CIRCLE OF TPCODL NETWORK**

Tender Enquiry No.: TPCODL/P&S/1000000537/23-24

Due Date for Bid Submission: 25.01.2024 [17:00 Hrs.]

**The TP Central Odisha Distribution Limited
1st Floor, Anuj Building, 19, Satya Nagar, Bhubaneswar-751007.**

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1.0 Event Information

1.1 Scope of work

Open Tenders are invited through Ariba online portal e-tender process from interested Bidders for SITC of following scope of work as defined below:

S. No.	Description	EMD Amount (Rs.)	Tender Fee Inclusive of GST (Rs.)
1	<p>SITC for setting up APSCC in 04 Circle of TPCODL Network (BBSR-II , CUTTACK, PARADEEP & DHENKANAL) as per Annexure-I (schedule of Items) Location Details :</p> <ol style="list-style-type: none"> 1. BBSR2 – Area Power System Control Centre at Talabania, Puri 2. Cuttack – Area Power System Control Centre at Kalinga, Biju Patnaik Chowk 3. Dhenkanal – Area Power System Control Centre at Sector-1/Sector-2 4. Paradeep – Area Power System Control Centre at Paradeep 	50000/-	5000/-

Note:-

1) EMD is exempted for MSME Firms registered in the State of Odisha.

2) MSMEs registered in the State of Odisha shall pay tender fee of Rs. 1,000/- including GST.

1.2 Availability of Tender Documents

Please Refer “Procedure to participate in the e-Tender”.

1.3 Calendar of Events

(a)	Date of sale/ availability of tender documents from TPCODL Website	From 10.01.2024 onwards
(b)	Date by which Interested and Eligible Bidder to pay Tender Fee and confirm participation as mentioned in “Procedure to Participate in Tender”	17.01.2024 , 15:00 Hrs
(c)	Date & Time of Pre-Bid Meeting (If any)	18.01.2024 , 15.00 Hrs.
(d)	Last Date and time of receipt of pre-bid queries, if any	20.01.2024 up to 15:00 Hours
(e)	Last Date of Posting Consolidated replies to all the pre-bid queries as received	20.01.2024
(f)	Last date and time of receipt of Bids	25.01.2024 up to 15:00 Hours
(g)	Date & Time of opening technical bids & EMD (Envelope-1 & 2)	Participating Bidders will get mail intimation from TPCODL E-Tender system (Ariba) when their Technical Bids are opened. Refer Section 4.2 for details
(h)	Date & Time of opening of Price of qualified bids	Bidders will get mail intimation from TPCODL E-Tender system (Ariba) when their Price Bids are opened (Refer Section 4.5)

Note :- In the event of last date specified for submission of bids and date of opening of bids is declared as a closed holiday for TPCODL Bhubaneswar office, the last date of submission of bids and date of opening of bids will be the following working day at appointed times.

1.4 Mandatory documents required along with the Bid

Following documents are to be furnished along with the bid to the address as mentioned at clause 3.1.

- 1.4.1 EMD of requisite value and validity
- 1.4.2 Tender Fee in case the tender is downloaded from website
- 1.4.3 Requisite Documents for compliance to Qualification Criteria mentioned in Clause 1.7.
- 1.4.4 Drawing, Type Test details along with a sample of each item as specified at Annexure I (as applicable)
- 1.4.5 Duly signed and stamped 'Schedule of Deviations' as per Annexure III on bidder's letter head.
- 1.4.6 Duly signed and stamped 'Schedule of Commercial Specifications' as per Annexure IV on bidder's letter head.
- 1.4.7 Proper authorization letter/ Power of Attorney to sign the tender on the behalf of bidder.
- 1.4.8 Copy of PAN, GST, PF and ESI Registration (In case any of these documents is not available with the bidder, same to be explicitly mentioned in the 'Schedule of Deviations')

Please note that in absence of any of the above documents, the bid submitted by a bidder shall be liable for rejection.

1.5 Deviation from Tender

Normally, the deviations to tender terms are not admissible and the bids with deviation are liable for rejection. Hence, the bidders are advised to refrain from taking any deviations on this Tender. Still in case of any deviations, all such deviations shall be set out by the Bidders, clause by clause in the 'Annexure III - Schedule of Deviations' and same shall be submitted as a part of the Technical Bid.

1.6 Right of Acceptance/Rejection

Bids are liable for rejection in absence of following documents:-

- 1.6.1 EMD of requisite value and validity
- 1.6.2 Tender fee of requisite value
- 1.6.3 Price Bid as per the Price Schedule mentioned in Annexure-I
- 1.6.4 Necessary documents against compliance to Qualification Requirements mentioned at Clause 1.7 of this Tender Document.
- 1.6.5 Filled in Schedule of Deviations as per Annexure III
- 1.6.6 Filled in Schedule of Commercial Specifications as per Annexure IV
- 1.6.7 Receipt of Bid within the due date and time

TPCODL reserves the right to accept/reject any or all the bids without assigning any reason thereof.

1.7 Qualification Criteria

- a) The average annual turnover of the bidder shall be a minimum of Rs.2.0 Cr. for last three financial years. (FY 20-21, FY 21-22, FY 22-23) Copy of audited Balance Sheet and P&L Account to be submitted in this regard. (As per the last published audited balance sheet / CA certified provisional Balance Sheet)
- b) The Bidder or Its OEM incorporated, or any OEM Product manufactured in a country sharing a land boundary with India cannot participate in this Bid.

Declaration by the Bidder / OEM on their Letter Head in this regard should submit along with the Bid.

c) Bidder can be either OEM of Proposed System or a System Integrator (SI). The Overall liability of execution of the contract shall lie with OEM/SI

In the case of OEM, the bidder shall submit the Self-Certification.

In case of System Integrator participates, then the Authorization undertaking on OEM's Letter Head shall be submitted by SI for the respective System

(d) The Bidder must demonstrate prior experience in successfully deploying the same system solution for minimum of two Projects or more. The bidder shall be required to submit an experience certificate duly issued by the Client.

(e) The bidder must possess a valid ISO 9001, ISO20000, ISO 27000 Certification or Higher. Copies of the valid Certificates required.

(f) The Bidder (SI) must share the Manufactures Authorization Certificate specific to this tender and back-to-back support letter from OEMs for providing Comprehensive support and services of the OEM's product covered under the RFP for a period of Design, Engineering, Commissioning, Standard & Extended Warranty , bidder submit OEM MAF.

(G) Bidder must have all statutory compliance like valid PAN, ESI registration, EPF registration and GSTN registration.

- **For more detail of qualifying requirement : Plz refer to Section –A (Project Specifications) (clause-8-Bidder's Qualification Requirement, Experience and Bid Evaluation Criteria.)**

1.8 Marketing Integrity

We have a fair and competitive marketplace. The rules for bidders are outlined in the General Condition of Contracts. Bidders must agree to these rules prior to participating. In addition to other remedies available, TPCODL reserves the right to exclude a bidder from participating in future markets due to the bidder's violation of any of the rules or obligations contained in the General Condition of Contracts. A bidder who violates the market place rules or engages in behaviour that disrupts the fair execution of the marketplace, may result in restriction of a bidder from further participation in the marketplace for a length of time, depending upon the seriousness of the violation. Examples of violations include, but are not limited to:

- Failure to honor prices submitted to the marketplace
- Breach of terms as published in TENDER/NIT

1.9 Supplier Confidentiality

All information contained in this tender is confidential and shall not be disclosed, published or advertised in any manner without written authorization from TPCODL. This includes all bidding information submitted to TPCODL. All tender documents remain the property of TPCODL and all suppliers are required to return these documents to TPCODL upon request. Suppliers who do not honor these confidentiality provisions will be excluded from participating in future bidding events.

2.0 Evaluation Criteria

- ☑ The bids will be evaluated technically on the compliance to tender terms and conditions.

- ☑ The bids will be evaluated commercially on overall lowest cost in BOQ Basis as calculated in Schedule of Items [Annexure I] .TPCODL reserves the right to split the order quantity wise, among maximum Two Nos. Bidders. Hence all bidders are advised to quote their most competitive rates.
- ☑ In case of Reverse Auction, if any change arises in overall BOQ price, it shall be applicable proportionately in each line item in the complete tender BOQ.
- ☑ Bidder has to mandatorily quote as per schedule of item [Annexure-I]. Failing to do so TPCODL may reject the bid.

NOTE:

In case of a new bidder not registered, inspection of Testing house and evaluation shall be carried out to ascertain bidder's capability and quality procedures. However TPCODL reserves the right to carry out inspection and evaluation for any bidder prior to technical qualification. In case a bidder is found as Disqualified in the evaluation, their bid shall not be evaluated any further and shall be summarily rejected. The decision of TPCODL shall be final and binding on the bidder in this regard.

2.1

Price Variation Clause: The prices shall remain **FIRM** during the entire contract period.

3.0 Submission of Bid Documents

3.1 Bid Submission

Bidders are requested to submit their offer in line with this Tender document through e-tendering process.

Please note all future correspondence regarding the tender, bid submission, bid submission date extension, Pre-bid query etc will happen only through TPCODL E-Tender system (Ariba).

No verbal correspondence will be responded. All communication will be done strictly with the bidder who have done the above step to participate in the Tender.

Bids shall be submitted in 3 (Three) parts:

FIRST PART: "EMD" as applicable shall be submitted. The EMD shall be valid for 210 days from the due date of bid submission in the form of Bank Guarantee / Bank Draft / Bankers Pay Order (issued from a Scheduled Bank) favoring 'TP Central Odisha Distribution Limited" payable at Bhubaneswar. The EMD (BG) has to be strictly in the format as mentioned in General Condition of Contract, failing which it shall not be accepted and the bid as submitted shall be liable for rejection. A separate non refundable tender fee of stipulated amount also needs to be transferred online through NEFT/ RTGS in case the tender document is downloaded from our website.

TPCODL/ TPCODL Bank Details for transferring Tender Fee and EMD is as below:

Account Name: TP Central Odisha Distribution Limited

Bank Name: SBI, IDCO Towers, Bhubaneswar

Bank Account No. : 10835304915

IFSC Code : SBIN0007891

EMD is strictly preferred in form of Bank Guarantee and to be delivered at the following address. However in view of present situation if Bidder is finding it difficult to make and submit BG for EMD amount, they can do online transfer of EMD amount in the above mentioned Account and submit proof of the same as part of Bid Submission.

Please note that in such case, Tender Fee and EMD should be strictly 2 separate transactions.

Please note as return of EMD from Bank Account is non standard practice the same may take more time than return of EMD BG.

EMD Original Hard Copy shall be delivered at the following address in Envelope clearly indicating Tender Reference/ Enquiry Number, Name of Tender and Bidder Name

Chief (Procurement & Stores)

TP CENTRAL ODISHA DISTRIBUTION LIMITED

1st floor, Anuj building, Plot No. 29, Satya Nagar, Bhubaneswar, Odisha – 751007

SECOND PART: “TECHNICAL BID” shall contain the following documents:

- a) Documentary evidence in support of qualifying criteria
- b) Technical literature/GTP/Type test report etc. *(if applicable)*
- c) Qualified manpower (if available)
- d) Testing facilities *(if applicable)*
- e) No Deviation Certificate as per the Annexure III – Schedule of Deviations
- f) Acceptance to Commercial Terms and Conditions viz Delivery schedule/period, payment terms etc. as per the Annexure IV – Schedule of Commercial Specifications.
- g) Quality Assurance Plan/Inspection Test Plan for supply items *(if applicable)*

The technical bid shall be properly indexed and is to be submitted through TPCODL E-tender System (Ariba) only. Hard Copy of Technical Bids need not be submitted.

The Bid prepared by the Bidder, and all correspondence and documents relating to the Bid exchanged by the Bidder and the TPCODL, shall be written in the English Language. Any printed literature furnished by the Bidder may be written in another Language, provided that this literature is accompanied by an English translation, in which case, for purposes of interpretation of the Bid, the English translation shall govern

THIRD PART: “PRICE BID” shall contain only the price details and strictly in format as mentioned in Annexure I (separate Price Bid for Lot-A & Lot-B shall be submitted) with explicit break up of basic prices, Taxes & duties, Freight etc. In case any discrepancy is observed between the item description stated in Schedule of Items mentioned in the tender and the price bid submitted by the bidder, the item description as mentioned in the tender document (to the extent modified through Corrigendum issued if any) shall prevail. Price Bid is to be submitted in soft copy through TPCODL E-Tendering system (Ariba) only. **Hard copy of Price Bid not be submitted.**

SIGNING OF BID DOCUMENTS:

The bid must contain the name, residence and place of business of the person or persons making the bid and must be signed and sealed by the Bidder with his usual signature. The names of all persons signing should also be typed or printed below the signature.

The Bid being submitted must be signed by a person holding a Power of Attorney authorizing him to do so, certified copies of which shall be enclosed.

The Bid submitted on behalf of companies registered with the Indian Companies Act, for the time being in force, shall be signed by persons duly authorized to submit the Bid on behalf of the Company and shall be accompanied by certified true copies of the resolutions, extracts of Articles of Association, special or general Power of Attorney etc. to show clearly the title, authority and designation of persons signing the Bid on behalf of the Company. Satisfactory evidence of authority of the person signing on behalf of the Bidder shall be furnished with the bid.

A bid by a person who affixes to his signature the word ‘President’, ‘Managing Director’, ‘Secretary’, ‘Agent’ or other designation without disclosing his principal will be rejected.

The Bidder's name stated on the Proposal shall be the exact legal name of the firm.

3.2 Contact Information

Please note all correspondence regarding the tender, bid submission, bid submission date extension, Pre-bid query etc will happen only through TPCODL E-Tender system (Ariba).

No verbal correspondence will be responded. All communication will be done strictly with the bidder who have done the above step to participate in the Tender. **Communication Details:**

Handling Executive :

Name: Mr. Malaya Ranjan Roul

Contact No.: 8763216613

E-Mail ID: Malaya.roul@tpcentralodisha.com

Sr. General Manager (Purchase & Stores)

Name: Sri Sudhakar Behera

Contact No.: 9437282663

E-Mail ID: Sudhakar.behera@tpcentralodisha.com

Head : Automation

Name: Amok Agrawal

Contact No: 9223220845

Email: amok.agarwala@tpcentralodisha.com

Team Lead : Automation

Name: soumendra sahuo

contact: 9836839957

mail: soumendra.sahoo@tpcentralodisha.com

Bidders are strictly advised to communicate with Package Owner through TPCODL E-tender System (Ariba) only. They need to pay Tender Participation Fee and receive the Ariba log-in. Above escalation details are for reference purpose only.

3.3 Bid Prices

Bidders shall quote for the entire Scope of Supply/ work with a break up of prices for individual items and Taxes & duties. The bidder shall complete the appropriate Price Schedules included herein, stating the Unit Price for each item & total price with taxes, duties & freight up to destination at various sites of TPCODL. The all-inclusive prices offered shall be inclusive of all costs as well as Duties, Taxes and Levies paid or payable during the execution of the supply work, breakup of price constituents.

Applicable GST to be specified clearly.

The quantity break up shown else-where other than Price Schedule is tentative. The bidder shall ascertain himself regarding material required for completeness of the entire work. Any items not indicated in the price schedule but which are required to complete the job as per the Technical Specifications/ Scope of Work/ SLA mentioned in the tender, shall be deemed to be included in prices quoted.

3.4 Bid Currencies

Prices shall be quoted in Indian Rupees Only.

3.5 Period of Validity of Bids

Bids shall remain valid for 180 days from the due date of submission of the bid.

Notwithstanding clause above, the TPCODL may solicit the Bidder's consent to an extension of the Period of Bid Validity. The request and responses thereto shall be made in writing.

3.6 Alternative Bids

Bidders shall submit Bids, which comply with the Bidding documents. Alternative bids will not be considered. The attention of Bidders is drawn to the provisions regarding the rejection of Bids in the terms and conditions, which are not substantially responsive to the requirements of the bidding documents.

3.7 Modifications and Withdrawal of Bids

The bidder is not allowed to modify or withdraw its bid after the Bid's submission. The EMD as submitted along with the bid shall be liable for forfeiture in such event.

3.8 Earnest Money Deposit (EMD))-

The bidder shall furnish, as part of its bid, an EMD amounting as specified in the tender. The EMD is required to protect the TPCODL against the risk of bidder's conduct which would warrant forfeiture. The EMD shall be denominated in any of the following form:

- Banker's Cheque/ Demand Draft/ Pay order drawn in favour of TPCODL, payable at Bhubaneswar.
- Online transfer of requisite amount through NEFT/ RTGS.
- Bank Guarantee valid for 210 days after due date of submission.

The EMD shall be forfeited in case of:

- a) The bidder withdraws its bid during the period of specified bid validity.

Or

- b) The case of a successful bidder, if the Bidder does not
- i) accept the purchase order, or
 - ii) furnish the required performance security BG

3.9 Type Tests (if applicable)

The type tests specified in TPCODL specifications should have been carried out within five years prior to the date of opening of technical bids and test reports are to be submitted along with the bids. If type tests carried out are not within the five years prior to the date of bidding, the bidder will arrange to carry out type tests specified, at his cost. The decision to accept/ reject such bids rests with TPCODL.

4.0 Bid Opening & Evaluation process

4.1 Process to be confidential

Information relating to the examination, clarification, evaluation and comparison of Bids and recommendations for the award of a contract shall not be disclosed to Bidders or any other persons not officially concerned with such process. Any effort by a Bidder to influence the TPCODL's processing of Bids or award decisions may result in the rejection of the Bidder's Bid.

4.2 Technical Bid Opening

The bids shall be opened at TPCODL office in front of participated bidders either physically or in virtual mode. A link shall be provided to the participated bidders to view the tender opening process online. Also Participating Bidders shall get mail intimation from TPCODL E-Tender system (Ariba) when their Technical Bids are opened.

First the envelope marked "EMD" will be opened. Bids without EMD/ cost of tender (if applicable) of required amount/ validity in prescribed format, shall be rejected.

4.3 Preliminary Examination of Bids/Responsiveness

TPCODL will examine the Bids to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed, and whether the Bids are generally in order. TPCODL may ask for submission of original documents in order to verify the documents submitted in support of qualification criteria.

Arithmetical errors will be rectified on the following basis: If there is a discrepancy between the unit price and the total price per item that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price per item will be corrected. If there is a discrepancy between the Total Amount and the sum of the total price per item, the sum of the total price per item shall prevail and the Total Amount will be corrected.

Prior to the detailed evaluation, TPCODL will determine the substantial responsiveness of each Bid to the Bidding Documents including production capability and acceptable quality of the Goods offered. A substantially responsive Bid is one, which conforms to all the terms and conditions of the Bidding Documents without material deviation.

Bid determined as not substantially responsive will be rejected by the TPCODL and may not subsequently be made responsive by the Bidder by correction of the non-conformity.

4.4 Techno Commercial Clarifications

Bidders need to ensure that the bids submitted by them are complete in all respects. To assist in the examination, evaluation and comparison of Bids, TPCODL may, at its discretion, ask the Bidder for a clarification on its Bid for any deviations with respect to the TPCODL specifications and attempt will be made to bring all bids on a common footing. All responses to requests for clarification shall be in writing and no change in the price or substance of the Bid shall be sought, offered or permitted owing to any clarifications sought by TPCODL.

4.5 Price Bid Opening

Price bid of only Techno-commercially and / or safety qualified Bidders shall be opened internally. Bidders shall get mail intimation from TPCODL E-Tender system (Ariba) when their Price Bids are opened.

The EMD of the bidder withdrawing or substantially altering his offer at any stage after the technical bid opening will be forfeited at the sole discretion of TPCODL without any further correspondence in this regard.

4.7 Reverse Auctions

TPCODL shall conduct the reverse auction for the products/ services being asked for in this tender. The terms and conditions for such reverse auction events shall be as per the Acceptance Form attached as Annexure VI of this document. The bidders along with the tender document shall mandatorily submit a duly signed copy of the Acceptance Form attached as Annexure VI as a token of acceptance for the same.

Reverse Auction shall be as per the below approach:

No of bidders to be allowed in RA process shall be : Total No of bidders on whom tender would be split PLUS 2 more bidders .

Illustrative example: Total no of qualified bidders is 10 & tender needs to split amongst 4 bidders.

PLUS 2 means (04 + 02 = 06) means lowest 6 bidders i.e., L1 to L6 bidders would be allowed in the RA process. Balance, H1 to H4 bidders would not be allowed in the RA process.

In case – Total no of qualified bidders is equal to or less than the PLUS 2 number, all qualified bidders shall be allowed in the RA process.

Illustrative example: Total no of qualified bidders is 4 & tender needs to split amongst 2 bidders. PLUS 2 means (02 + 02 = 04), so all 4 qualified bidders would be allowed in the RA process .

Illustrative example: Total no of qualified bidders is 3 & tender would be awarded to single party only. PLUS 2 means (01 + 02 = 03), so all 3 qualified bidders would be allowed in the RA process

5.0 Award Decision

TPCODL will award the contract to the successful bidder whose bid has been determined to be the lowest-evaluated responsive bid as per the Evaluation Criterion mentioned at Clause 2.0. The Cost for the said calculation shall be taken as the all-inclusive cost quoted by bidder in Annexure I (Schedule of Items) subject to any corrections required in line with Clause 4.3 above. The decision to place purchase order/LOI solely depends on TPCODL on the cost competitiveness across multiple lots, quality, delivery and bidder's capacity, in addition to other factors that TPCODL may deem relevant.

TPCODL reserves all the rights to award the contract to one or more bidders so as to meet the delivery requirement or nullify the award decision without assigning any reason thereof.

In case any supplier is found unsatisfactory during the delivery process, the award will be cancelled and TPCODL reserves the right to award other suppliers who are found fit.

6.0 Order of Preference/Contradiction:

In case of contradiction in any part of various documents in tender, following shall prevail in order of preference:

1. Schedule of Items (Annexure I)
2. Post Award Contract Administration (Clause 7.0)
3. Submission of Bid Documents (Clause 3.0)
4. Scope of Work and SLA (if any)
5. Technical Specifications (Annexure II)
6. Inspection Test Plan (if any)
7. Acceptance Form for Participation in Reverse Auction (Annexure VI)
8. General Conditions of Contract (Annexure VII)

7.0 Post Award Contract Administration

7.1 Special Conditions of Contract

- The Purchase order shall initially be placed for a validity period of Six month. Based on the performance, TPCODL reserves the right to extend the Contract on the basis of performance or in-completed work due to some unavoidable circumstances for a further period of 06 months as per the agreed rates..
- Business Associate (BA) shall submit applicable Performance Bank Guarantee as per GCC within 30 days of issuance of PO. The PBG applicable shall 10% of the PO Value. PBG submitted, shall be released after completion of applicable guarantee period plus three months..
- TPCODL appreciates and welcomes the engagement/employment of persons from SC/ ST community or any other deprived section of society by their BAs.
- Any change in statutory taxes, duties and levies during the contract period shall be borne by TPCODL. However in case of delay in work execution owing to reasons not attributable to TPCODL any increase in total liability shall be passed on the Bidder, whereas any benefits arising owing to such statutory variation in taxes and duties shall be passed on to TPCODL.
- All the terms and conditions of TPCODL GCC shall be applicable.

7.2 Drawing Submission & Approval

The relevant Survey , drawings and GTPs need to be submitted within two weeks of receipt of rate contract by the successful bidder to TPCODL for approval. In case, re-submission of drawings is

required on request of TPCODL, same needs to be submitted back to TPCODL within 5 days of such request.

7.3 Delivery Terms

The delivery schedule shall be 60 days from the date of issuing of PO..

7.4 Guarantee/Warranty Period

Warranty Services for the Bidder's owned & Sub-Vendors supplied Hardware, Software, Up-gradation & Patch Management of Software during the Standard warranty period of 5 Years from the date of system handover after SAT, resolution of all punch point of SAT and trouble-free operation of the entire system for a period of one month.

7.5 Payment Terms

On successful completion of SITC work in good condition and certification of acceptance by certified official, Associate shall submit the Bills/ Invoices in original in the name of TP Central Odisha Distribution Limited to Invoice Desk. 100 payment shall be released within 30 days from the date of submission of certified bills/ invoices.

7.6 Climate Change

Significant quantities of waste are generated during the execution of project and an integrated approach for effective handling, storage, transportation and disposal of the same shall be adopted. This would ensure the minimization of environmental and social impact in order to combat the climate change.

7.7 Ethics

TPCODL is an ethical organization and as a policy TPCODL lays emphasis on ethical practices across its entire domain. Bidder should ensure that they should abide by all the ethical norms and in no form either directly or indirectly be involved in unethical practice.

TPCODL work practices are governed by the Tata Code of Conduct which emphasizes on the following:

- We shall select our suppliers and service providers fairly and transparently.
- We seek to work with suppliers and service providers who can demonstrate that they share similar values. We expect them to adopt ethical standards comparable to our own.
- Our suppliers and service providers shall represent our company only with duly authorized written permission from our company. They are expected to abide by the Code in their interactions with, and on behalf of us, including respecting the confidentiality of information shared with them.
- We shall ensure that any gifts or hospitality received from, or given to, our suppliers or service providers comply with our company's gifts and hospitality policy.
- We respect our obligations on the use of third party intellectual property and data.

Bidder is advised to refer GCC attached at Annexure VII for more information.

Any ethical concerns with respect to this tender can be reported to the following e-mail ID: ethics@tpcentralodisha.com

8.0 Specification and standards

Attached separately with the tender As per Annexure II.

9.0 General Condition of Contract

Any condition not mentioned above shall be applicable as per GCC for Supply attached along with this tender at Annexure VII.

10.0 Safety

Safety related requirements as mentioned in our safety Manual put in the Company's website which can be accessed by: <http://www.tpcentralodisha.com>. All Associates shall strictly abide by the guidelines provided in the safety manual at all relevant stages during the contract period.

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ANNEXURE I Schedule for Items

Sl. No.	Item Description	Qty.	UoM.	Unit Price (Rs.)	GST (Rs.)	All incl. Unit Price (Rs.)	All incl. BOQ Price (Rs.)
1	LARGE VIDEO WALL SYSTEM WITH CONTROLLER (i) LED Display Unit - 86" with Wall Mounting Arrangement -4 EA (ii) Controller with Display Management Software and other Accessories-4 EA	4	SET				
2	HDMI CABLE (10 MTR LENGTH) (i) HDMI / DVI Cable 10 Mtrs -8 EA (ii) HDMI / DVI Cable 04 Mtrs - 8 EA	16	EA				
3	NETWORK COMMUNICATION SERVER RACK 6U 19 " 6 U Rack (Wall Mountable) for Controller, Power Supply Distribution and other Accessories for successful installation of LED Display - 4 EA	4	EA				
4	COMPUTER, MONITOR & OTHER ACCESSORIE (GIS Workstation with 27" Single Monitor, keyboard & Mouse, with Micrsoft Windows & Office (Licsenced)- 04 Set)	4	EA				
5	UPS 6KVA ONLINE TYPE (6 KVA UPS System with Battery Bank for 4 Hours backup with Controller - 04 Set)	4	EA				
6	6 SOCKET PDU 5 AMP (PDU with MCB (5/15 A, 6 O/p Sockets with ON/OFF Switch)	37	EA				
7	NETWORK COMUNICATION SERVER RACK 42U/36U (42 U Network Panel with PDU)	4	EA				
8	WAN ROUTER- 6 GE PORT	4	EA				
9	NEXT GEN. HIGH AVAILABILITY FIREWALL	4	EA				
10	NETWORK SWITCH 24 PORT (24 port Ethernet switch)	8	EA				
11	CAT6 UTP UN-ARMORED CABLE	1220	Mtr.				
12	ITCI Services for APSCC System						

RFx No.: NA

NIT No.: TPCODL/P&S/100000537/2023-24

i	I&C of APSCC system (Supply, Installation, Testing & Commissioning for the above mentioned systems as per the attached System Layouts of all APSCC at BBSR2, Cuttack, Dhenkanal & Paradeep)	4	EA				
ii	<p>Network Accessories & services</p> <p>(I-IO Boxes and other Networking Accessories required for Structured Cabling</p> <p>II-Metal Clad PVC Conduit for Laying UTP Cable</p> <p>III- Casing / Capping</p> <p>IV- Tagging / Ferruling</p>	4	EA				
iii	Power Accessories & services	4	EA				
13	PRINTER CUM PHOTOCOPIER CUM SCANNER (Black & White Network PRINTER CUM PHOTOCOPIER CUM SCANNER (A4 Size)	4	EA				
14	LV AC DISTRIBUTION BOARD (AC Distribution Board with MCBs (2 Input Source, 15 Nos. Output)	4	EA				
15	CONTROL CABLE COPPER PVC. 1.1 KV. - 3C (Control Cable for Power Supply 3 C X 2.5 sqmm (FRLS)	1000	Mtr				
SAC/ HSN Code:				All incl. BOQ Value (Rs.)			

NOTE:

- The quantity mentioned above is for evaluation purpose only and may vary during the execution. Release Orders against this Rate Contract shall be issued by TPCODL as per actual requirement.
- The bidders are advised to quote prices strictly in the above format and for all the line items as mentioned above. Failing to do so, bids are liable for rejection.
- The bidder must fill each and every column of the above format. **Mentioning "extra/inclusive" in any of the column may lead for rejection of the price bid.**
- No cutting/ overwriting in the prices is permissible.
- The unit price to be indicated in col. No. 5 should be exclusive of taxes & duties which are to be indicated in separate columns meant for the purpose.

Annexure II
Technical Specifications

**SECTION – A - SITC FOR SETTING UP APSCC CONTROL CENTRES IN
TPCODL NETWORK -PROJECT SPECIFICATIONS**

SECTION – B- DETAILED TECHNICAL SPECIFICATIONS

SECTION -- C - SCHEDULES

SECTION – D - DRAWINGs & DOCUMENTs

SECTION – E – ANNEXURES.

Attached separately

ANNEXURE III

Schedule of Deviations

Bidders are advised to refrain from taking any deviations on this TENDER. Still in case of any deviations, all such deviations from this tender document shall be set out by the Bidders, Clause by Clause in this schedule and submit the same as a part of the **Technical Bid**.

Unless specifically mentioned in this schedule, the tender shall be deemed to confirm the TPCODL's specifications:

S. No.	Clause No.	Tender Clause Details	Details of deviation with justifications

By signing this document we hereby withdraw all the deviations whatsoever taken anywhere in this bid document and comply to all the terms and conditions, technical specifications, scope of work etc. as mentioned in the standard document except those as mentioned above.

Seal of the Bidder:

Signature:

Name:

ANNEXURE IV

Schedule of Commercial Specifications

(The bidders shall mandatorily fill in this schedule and enclose it with the offer Part I: Technical Bid. In the absence of all these details, the offer may not be acceptable.)

S. No.	Particulars	Remarks
1.	Prices firm or subject to variation (If variable indicate the price variation clause with the ceiling if applicable)	Firm / Variable
1a.	If variable price variation on clause given	Yes / No
1b.	Ceiling	----- %
1c.	Inclusive of Excise Duty	Yes / No (If Yes, indicate % rate)
1d.	Sales tax applicable at concessional rate	Yes / No (If Yes, indicate % rate)
1e.	Octroi payable extra	Yes / No (If Yes, indicate % rate)
1f.	Inclusive of transit insurance	Yes / No
2.	Delivery	Weeks / months
3.	Guarantee clause acceptable	Yes / No
4.	Terms of payment acceptable	Yes / No
5.	Performance Bank Guarantee acceptable	Yes / No
6.	Liquidated damages clause acceptable	Yes / No
7.	Validity (90 days) (From the date of opening of technical bid)	Yes / No
8.	Inspection during stage of manufacture	Yes / No
9.	Rebate for increased quantity	Yes / No (If Yes, indicate value)
10.	Change in price for reduced quantity	Yes / No (If Yes, indicate value)
11.	Covered under Small Scale and Ancillary Industrial Undertaking Act 1992	Yes / No (If Yes, indicate, SSI Reg'n No.)

ANNEXURE V

Checklist of all the documents to be submitted with the Bid

Bidder has to mandatorily fill in the checklist mentioned below:-

S. No.	Documents attached	Yes / No / Not Applicable
1	EMD of required value	
2	Tender Fee as mentioned in this RFQ	
3	Company profile/organ gram	
4	Signed copy of this RFQ as an unconditional acceptance	
5	Duly filled schedule of commercial specifications (Annexure IV)	
6	Sheet of commercial/technical deviation if any (Annexure III)	
7	Balance sheet for the last completed three financial years; mandatorily enclosing Profit & loss account statement	
8	Acknowledgement for Testing facilities if available (duly mentioned on bidder letter head)	
9	List of Machine/tools with updated calibration certificates if applicable	
10	Details of order copy (duly mentioned on bidder letter head)	
11	Order copies as a proof of quantity executed	
12	Details of Type Tests if applicable (duly mentioned on bidder letter head)	
13	All the relevant Type test certificates as per relevant IS/IEC (CPRI/ERDA/other certified agency) if applicable	
14	Project/supply Completion certificates	
15	Performance certificates	
16	Client Testimonial/Performance Certificates	
17	Credit rating/solvency certificate	
18	Undertaking regarding non blacklisting (On company letter head)	
19	List of trained/untrained Manpower	

Annexure VI

Acceptance Form for Participation In Reverse Auction Event

(To be signed and stamped by the bidder)

In a bid to make our entire procurement process more fair and transparent, TPCODL intends to use the reverse auctions through SAP-SRM tool as an integral part of the entire tendering process. All the bidders who are found as technically qualified based on the tender requirements shall be eligible to participate in the reverse auction event.

The following terms and conditions are deemed as accepted by the bidder on participation in the bid event:

1. TPCODL shall provide the user id and password to the authorized representative of the bidder. *(Authorization Letter in lieu of the same shall be submitted along with the signed and stamped Acceptance Form).*
2. TPCODL will make every effort to make the bid process transparent. However, the award decision by TPCODL would be final and binding on the supplier.
3. The bidder agrees to non-disclosure of trade information regarding the purchase, identity of TPCODL, bid process, bid technology, bid documentation and bid details.
4. The bidder is advised to understand the auto bid process to safeguard themselves against any possibility of non-participation in the auction event.
5. In case of bidding through Internet medium, bidders are further advised to ensure availability of the entire infrastructure as required at their end to participate in the auction event. Inability to bid due to telephone line glitch, internet response issues, software or hardware hangs, power failure or any other reason shall not be the responsibility of TPCODL.
6. In case of intranet medium, TPCODL shall provide the infrastructure to bidders. Further, TPCODL has sole discretion to extend or restart the auction event in case of any glitches in infrastructure observed which has restricted the bidders to submit the bids to ensure fair & transparent competitive bidding. In case of an auction event is restarted, the best bid as already available in the system shall become the start price for the new auction.
7. In case the bidder fails to participate in the auction event due any reason whatsoever, it shall be presumed that the bidder has no further discounts to offer and the initial bid as submitted by the bidder as a part of the tender shall be considered as the bidder's final no regret offer. Any offline price bids received from a bidder in lieu of non-participation in the auction event shall be out-rightly rejected by TPCODL.
8. The bidder shall be prepared with competitive price quotes on the day of the bidding event.
9. The prices as quoted by the bidder during the auction event shall be inclusive of all the applicable taxes, duties and levies and shall be FOR at TPCODL site.
10. The prices submitted by a bidder during the auction event shall be binding on the bidder.
11. No requests for time extension of the auction event shall be considered by TPCODL.
12. The original price bids of the bidders shall be reduced on pro-rata basis against each line item based on the final all inclusive prices offered during conclusion of the auction event for arriving at Contract amount.

Signature & Seal of the Bidder

Annexure VII

**General Conditions of Contract –
Attached separately with the tender**

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Annexure VII (a)

Preferential norms for procurement from Local MSMEs

1) Tender Fees

To participate in the tender, MSMEs registered in the State of Odisha shall pay Rs.1,000/- including GST towards cost of tender paper. In Limited Tender no EMD shall applicable.

2) Earnest Money Deposit (EMD)

EMD shall be exempted for MSME registered in the State of Odisha. However, Bidder shall be barred to participate in the tendering process for a period of 2 years in case it backs out post award of the contract.

3) Qualification Requirement for Open Tenders

Qualification Requirement of Financial Turnover for MSME registered in the State of Odisha shall be reduced to 20% of the existing criteria.

For past experience, instead of relying on the volumes / value of earlier Supplies / Projects, assessment of the Bidder shall be done on the basis of feedback from Customers. Past performance experience at Tata Power and its Group Companies shall supersede feedback from other Customers.

4) Reservation for MSME

It shall be mandatory to procure at least 20% of the total volume of the procurement from MSME registered in the State of Odisha (however, it shall not apply where goods/services are not available with the MSME), subject to matching L1 discovered prices and meeting technical specifications including quality requirements.

5) Performance Bank Guarantees

Performance Bank Guarantee for MSME registered in the State of Odisha shall be 25% of the value normally prescribed.

Annexure VIII

**Safety Policy and Safety Terms and Conditions –
Attached separately with the tender.**

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Annexure IX

**Tata Code of Conduct (TCoC) –
Attached separately with the tender.**

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Annexure X

**Environment & Sustainability –
Attached separately with the tender.**

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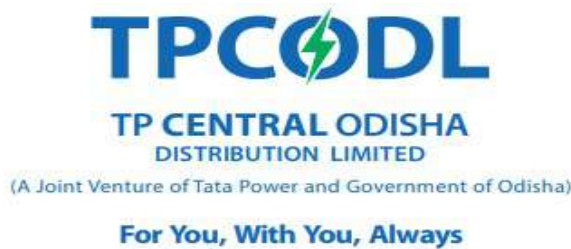
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Document Title: **SITC FOR SETTING UP APSCC CONTROL CENTRES IN TPCODL NETWORK**

Document No: **A&T/APSCC-SPEC/01/2024**

SECTION – A

PROJECT SPECIFICATIONS



TP CENTRAL ODISHA DISTRIBUTION LIMITED
(A Tata Power & Odisha Govt. Joint Venture)
2nd Floor, IDCO Tower, Janpath, Bhubaneswar, Odisha 751022

Revision	Date	Description	Approvals		
			Prepared By	Checked By	Approved By
R0	02 nd Jan 2024	Issued for Procurement	SS	DRS	AKA

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Section – A

Project Specification

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1.0 Intent of Specification

It is Purchaser's intent to set-up the Area Power System Control Centre for Monitoring and Control of distribution network efficiently for Operational Excellence and enhanced Customer Satisfaction. Purchaser intending to set up four numbers Area Power System Control Centre at the following Locations

1. BBSR2 – Area Power System Control Centre at Talabania, Puri
2. Cuttack – Area Power System Control Centre at Kalinga, Biju Patnaik Chowk
3. Dhenkanal – Area Power System Control Centre at Setor1/Sector2
4. Paradeep – Area Power System Control Centre at Paradeep

Purchaser intent to setup the above Control Centers by March 2023 as per the scope of work.

The Real-Time system requires robust Cyber Security implementation; the Cyber Security risks, which are compounded due to, distributed architecture at multiple interfaces/systems at MCC, BCC, APSCC and Primary & Secondary Distribution Network, it is proposed to install High Availability Firewall to protect the critical infrastructure of TPCODL. TPCODL Centralized Cyber Security & Communication Network Management System, will be monitoring, controlling and analyzing the network traffic flow in real-time.

This specification describes the technical requirements of the systems to be procured and commissioned at above-mentioned Area Power System Control Centre.

1.1 Introduction to Tata Power Central Odisha Distribution Limited

TP Central Odisha Distribution Limited (TPCODL) is incorporated as a joint venture of Tata Power (51%) and Govt of Odisha (49%) on the Public-Private Partnership (PPP) model. Govt. of Odisha (GoO)'s share is held by it through its 100% owned company GRIDCO. TPCODL took over the license of distribute electricity in the central part of Odisha, which was earlier served by erstwhile CESU. TPCODL's utility business is governed by the provisions of license issued by Hon'ble OERC for distribution and retail supply of electricity in Central Odisha.

TPCODL licensed area is spread over a geography of 29354 Sq. Km and serve the registered consumer base of 2.6 million with a peak load of around 1580 MW. It receives electrical power at a sub transmission voltage of 33 kV from Odisha Power Transmission Corporation Limited (OPTCL) 220 / 132 / 33 kV Grid Substations and then distributes the power at 33 kV / 11 kV / 440 V / 230 V depending on the demand of the consumers. For effective operations,

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the license area is divided into 5 circles which is further sub divided into 20 Divisions and 64 Sub-divisions which manage the commercial and O&M activities in order to serve its consumers.

To ensure integrity in system operation of Distribution network, it is proposed to operate the entire TPCODL network from Central Power System Control Centre (MCC, BCC), Bhubaneswar and Area Power System Control Center (APSCC) at each circles of Bhubaneswar-I, Bhubaneswar-II, Cuttack, Dhenkanal and Paradeep. This will ensure efficient operation & monitoring under Steady State, Dynamic & Transient condition of the system.

1.2 General Information about Tata Power Central Odisha Dist. Ltd. Operations

Description	UoM	Quantity
Distribution Network	Sq. Km.	29354
Number of Circles	Nos.	5
Number of Divisions	Nos.	20
No. of Sub-divisions	Nos.	64
Consumer base	Million	2.6
AT & C loss (as on 31st Mar 2020)	%	30.44
Primary Substations	Nos.	371
33 kV Feeders	Nos.	190
11 kV Outgoing Feeders	Nos.	1019
Total Circuit length 33 KV Feeders	Kms	3911.58
Total Circuit length of LT Network	Kms	55359
Power Transformers (33/11 kV)	Nos.	666
Distribution Transformers	Nos.	71889
Total Installed Capacity of Primary S/s	MVA	4475
Peak Demand	MW	1603
Annual Consumption	MUs	8600

1.3 Proposed Systems and Applications at APSCC

SCADA/ADMS system LAN will be extended to all the four APSCC for real-time monitoring and Control of Distribution Network. It is also proposed to monitor distribution network on Large Display Unit for immediate visualization and corrective actions.

In addition to Remote Monitoring and Control of Distribution network, following activities are also proposed

- a) Sustenance of GIS database, by provisioning of GIS workstation at APSCC

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- b) To attend circle wise operational variances of GSAS and SCADA/ADMS, one number SCADA/ADMS workstation is also proposed to cater resolution of OVs efficiently of the respective circles.
- c) IT workstations are planned to access IT applications such as Suraksha Kavach, SAP-PM, Email, Monitoring of OVs and circulation of Daily MIS report to senior management and other stakeholders.
- d) Cyber Security management by installing High Availability Firewalls for protection of critical infrastructure of APSCC.

For detailed scope of work, please refer Item3.0 of Section-A of the RFP. For technical details and requirement of each system hardware and software please refer Section-B of the RFP.

1.4 Operational Philosophy

MCC, BCC and APSCC systems shall be operational during normal operation as independent sites. Thus, the primary source of data for MCC, BCC and APSCC shall be local endpoint source (i.e. DCUs, RTUs, FRTUs, FPIs etc. or ICCP).

Monitoring and Control of Stations/DCUs/RTUs/ FRTUs or ICCP shall be based on AORs and shall transferred to either control center (MCC & BCC) as per operational needs or communication link failure to either site. The APSCC workstations will communicate with both MCC and BCC, with a seamless changeover to either of the systems.

However, proposed system shall support the scenario of operation i.e. operators logged into MCC can control entire 33 kV Power network, whereas operators logged into APSCC can operate 11 kV Power Network of respective circle. Controls for a particular AOR shall be active only at one site at any given time. However; each workstations will be configured for Remote Monitoring and Control of entire Distribution Network in Real-time.

For control of 33 kV and 11 kV network of each circle at APSCC should be enabled at MCC and BCC. Monitoring of the respective 33 & 11 kV network will be available as per the AOR defined for the Control Room Engineers.

2.0 Project Information

- 1.0 Owner
 - TP Central Odisha Distribution Limited
 (A Tata Power & Odisha Govt. Joint Venture)
 2nd Floor, IDCO Tower, Janpath, Bhubaneswar,
 Odisha 751022

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2.0	Consultant	Not Applicable
3.0	Location of the plant	APSCC – BBSR2, Cuttack, Dhenkanal & Paradeep within TPCODL Distribution Network
4.0	Nearest Rail head	APSCC Sites are connected by Rail and Road
5.0	Transport	Access roads are available for movement of materials to site. Movement of heavy materials would be through roads/rail up to TPCODL Premises, within Guidelines of State Govt.
6.0	Plant Elevation	About 6 m above mean sea level
7.0	Climatic conditions	
7.1	Temperatures	
	(a) Maximum dry bulb temperature	45 Degree C
	(b) Minimum dry bulb temperature	10 Degree C
	(c) Design temperature for electrical equipment / devices	75 Degree C
	(d) Design humidity	95%
7.2	Relative humidity	
	(a) Maximum during monsoon	100%
	(b) Minimum during December to January	22%
8.0	Rainfall	Annual average rainfall is about 2099 mm (most of which occurs during the monsoon season from June to September)

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9.0 Wind data

Calculations for wind effect shall be in accordance with IS: 875-1987(Part-3) taking into account the following:

- (i) Basic wind speed = 44 m/sec
- (ii) Factor K1, K2, K3 = as per IS 875 Part-3
- (iii) Category of terrain = as per IS 875

10.0 Seismic conditions

The proposed site is located in seismic zone III as per the Indian Standard IS 1893 and importance factor of 1.75

11.0 Air Quality

Atmosphere polluted with industrial gases and wastes because of proximity to petroleum refineries and fertilizer complex.

12.0 Sea water temperature

- (a) Maximum 40 Degree C
- (b) Minimum 22.8 Degree C
- (c) Average 29.8 Degree C

14.0 Auxiliary Power Supply:

Auxiliary electrical equipment to be supplied against this specification shall be suitable for operation on the following system:

- (a) AC control & protective devices 230V, 1 phase, 2 wire, 50 Hz AC supply with one lead earthed.
- (b) Uninterrupted power supply 230 V, 1-phase, 50 Hz, 2-wire, AC supply from UPS System for Automation
- (c) Lighting fixtures and space heaters 240V, 1 phase, 2 wire, 50Hz AC supply with neutral lead earthed.
- (d) Construction supply 415V, 3 phase, 3 wire, 50Hz AC supply with resistance earthed.
24 V / 48 V DC
- (j) The above voltages may vary as follows:

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All devices shall be suitable for continuous operation over the entire range of voltage and frequency indicated below without any change in their performance.

AC supply

Voltage variation $\pm 10\%$

Frequency variation $\pm 5\%$

Combined voltage & frequency variation 10%

3.0 Scope of Work

The specification provides for Design, Engineering, Supply, Insurance, Transportation, Delivery at site, Installation, Testing and Commissioning of proposed system as per the attached Indicative BOM and Control Centre Layout, at Area Power System Control Centers, Warranty and Post Warranty support as per the detailed specifications. Any item though not specifically mentioned but is required to complete the project shall be considered and the same shall be supplied and installed by the bidder.

The indicative Bill of Material is as per the attached document (**Refer Annexure- 1 & 4 of Section-E, Layout of Control Centre and Indicative Bill of Material for Proposed System**). Attached BOM is indicative; Bidder shall submit the detailed BOM along with the offer, as per the System/Architecture offered to meet the specified requirements.

Bidder to note that the proposed system architecture shall give more emphasis on the following aspects

- a. Reliability
- b. High Availability
- c. Cyber Security Resilience

Purchaser intent to commission the proposed system in parallel at all the four locations of APSCC.

3.1 APSCC Scope of Work

a. Purchaser’s Scope of Work

- i. Readiness of APSCC Control Centre with all complied environmental requirement
- ii. SCADA/ADMS Workstation Hardware will be provided by TPCODL Automation Team
- iii. IT workstations Hardware will be provided by TPCODL ICT Team

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- iv. Control Room Engineer, GIS Engineer and SCADA engineer, Network Printer desk will be provided by TPCODL Civil Team.
- v. Formulation of HA Firewall policies as per the requirement
- vi. Communication link from MCC, BCC to each APSCC. Bidder to note that, the communication backbone for the entire system is on MPLS/VPN cloud, currently there is no secondary communication link available. However, the proposed system shall be capable of redundant communication architecture.
- vii. Provision of 3 Ph AC Supply for UPS at each APSCC at existing ACDB of the Substation/Identified Room.

3.2 Bidder's Scope of Work

a. Auxiliary Power Supply Arrangement

- i. Installation, Commissioning and Testing of 6 KVA UPS with ACDB
- ii. Extension and Distribution of the UPS power Supply to respective systems
- iii. Adequately rated MCBs within ACDB and at respective system points.
- iv. Proper Earthing of UPS

b. Communication Networking

- i. Installation, Commissioning and Testing of Pre-Wired 42 U Network Panel
- ii. Establishing Communication LAN in each APSCC from respective System to Network panel
- iii. Installation and Configuration of Ethernet Switches, Router and HA Firewall with approved policies by TPCODL IT & OT department.
- iv. Bidder to consider adequately rated MCBs within ACDB and at respective system points.
- v. All communication cable shall be Emanated and Terminated with proper Patch Panel and I/O Boxes.
- vi. Proper Earthing of Network Panel
- vii. Designed and implemented system Network and Equipment should be duly certified by appropriate certifying agency for critical utility infrastructure compliance

c. GIS/SCADA Workstations (As per the proposed Layout)

- i. Supply, Installation, Commissioning and Testing of GIS Workstations

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- ii. Power Supply from proposed ACDB
- iii. LAN Connectivity in each APSCC from Network panel
- d. **86" LED Display Panel (As per the proposed Layout)**
 - i. Supply, Installation, Commissioning and Testing of 86" LED Display Panel
 - ii. Installation of Pre-wired Wall Mounted 6U Rack with proper Earthing
 - iii. Power Supply from proposed ACDB to 6U Rack and Display Panel
 - iv. LAN Connectivity in each APSCC from Network panel
 - v. Configuration of Controller as per the required functionality specified in the RFP
- e. **All-In-One Network Printer (As per the proposed Layout)**
 - i. Supply, Installation, Commissioning and Testing of All-In-One Network Printer
 - ii. Power Supply from proposed ACDB to Network Printer
 - iii. LAN Connectivity in each APSCC from Network panel
 - iv. Configuration of All-In-One Printer as per the required functionality specified in the RFP
- f. **General Requirement (As per the proposed Layout)**
 - i. Structured Communication Cabling with proper tagging and ferruling
 - ii. Power Supply Distribution with proper tagging and ferruling
 - iii. All the cables shall be laid through casing and capping arrangement
 - iv. Other components, Accessories, Hardware, Software and Firmware, to interconnect and integrate the proposed system into a fully functional system as per required functionality stated in this document.
 - v. Centralized Time Synchronization with GPS at MCC and BCC.
 - vi. Demonstration / Testing of the fully configured system at Bidder's works before dispatch of the system at site (FAT). The factory inspection shall be integrated system at a common work place. FAT will be conducted as per the FAT procedure document to be submitted by the Bidder during detailed engineering and approved by Purchaser after review.
 - vii. Installation, testing & commissioning of the above systems including integration with Purchaser's existing systems, sub-vendors' systems & systems of others and performance of Site Acceptance Test (SAT).

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- viii. Site Acceptance Test (SAT) to the Purchaser's satisfaction as per the SAT document submitted by the Bidder during detailed engineering and approved by the Purchaser
- ix. Providing necessary tools and software licenses for all the Software (OS, Application) and Hardware including of sub-vendor's offered solutions.
- x. Maintenance services for the supplied Hardware, Software package, Software up-gradation, Patch Management services including sub-vendor products support during the Standard warranty period and Extended Warranty Period i.e. 5 Years.
- xi. All software supplied shall be licensed and shall be in the name of the Purchaser. Bidder should offer the latest software & Firmware of the proposed products which is tested and proven. Bidder shall provide all documentation in soft / hard form about licensing information for each software supplied (OS, application software, configuration, diagnostics, simulation & testing tools).
- xii. The offered system shall store the copy of the system configuration, user configurable database, tools and relevant software as a backup.
- xiii. The Documents shall be submitted as proposed. Master Document List (MDL) shall be prepared by Bidder and submitted for Purchaser's approval.
- xiv. The bidder shall provide complete engineering data, drawings, reports, manuals and services offered etc. i.e. complete set of documentation / drawings / architectures/ Inter-Operability Tables (IOTs) submission of Test Reports, job progress reports etc.
- xv. The drawings will be approved in four categories as follows:
- Code I: Approved
 - Code II: Approved subject to incorporation of comments as marked. Resubmit for formal approval
 - Code III: Not Approved. Incorporate comments as marked. Resubmit for review / approval.
 - Code IVa: Retain for Information.
 - Code IVb: Resubmit after incorporation of comments.
- xvi. It is the responsibility of the Bidder to handover all project related drawings in AutoCAD formats only. The pdf version of above drawings / documents shall also be submitted for formal approval process.

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xvii. Submission of technical documentation related to design, installation, testing, operation & maintenance of the equipment and submission of Test Reports, job progress reports etc. in hard copies 2 sets) and soft copies (2sets, preferably in PDF).

xviii. Training of Purchaser's Personnel at site with all required training setup.

Bidder shall refer the entire project specifications of the RFP to understand the execution methodology, supply, services and interface requirement for complete Scope of work of this project.

It is not the intent of this specification to specify completely herein, all details of design & construction of proposed System. However, the bidder is encouraged to provide latest hardware and software technology used worldwide to meet the specified requirement and at the same time system shall conform in all respects to high standards of engineering, design & workmanship.

4.0 Terminal Points

4.1 Bidder

4.1.1 Installation of other offered systems.

4.1.2 Integration with existing system, Supply of the required material including cables, erection, installation, cable laying & termination, database and logic development, FAT, pre-SAT testing, SAT and demonstration of the required performance is the sole responsibility of the bidder.

4.1.3 Provision of the required power supply from ACDB. It is the bidder's responsibility to lay the required cable upto the equipment supplied by bidder and further make the provision to distribute for the systems supplied under this contract.

4.1.4 Suitable Earthing system for offered system

4.1.5 Integration with other systems as specified in this document

4.1.6 Bidder shall depute adequate manpower, resources and material to complete the project as per the schedule mentioned in the RFP. If Purchaser feels that the adequate resources and material are not provided, reserves the right to ask the bidder to supply the required material and depute additional resources to complete the project in time.

4.1.7 There shall be only one point of contact for Purchaser, i.e. the bidder who will be awarded the contract will be responsible for delivering the project solely. Any Sub-Contracting of any part of the work will be the responsibility of the Bidder as specified by Purchaser.

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- 4.1.8 All application software, hardware, data, plans, drawings, specifications, designs, reports and other documents procured or developed by the selected Bidder in the execution of the contract shall remain the property of the Purchaser, right from the beginning of the contract, during the whole duration of the project and after the expiry or termination of the contract. Purchaser shall also remain the sole owner of the property (Hardware/software) in case the contract is terminated for any other reason. The Application of the customized part of the application software will remain as exclusive property of Purchaser, even after the termination or expiry of the contract. The ownership shall also remain with Purchaser in case the selected Bidder fails to execute tasks to the satisfaction of the Purchaser.
- 4.1.9 Any deviation from this RFP / Technical Specification or as per the requirement of Purchaser, if noticed, may be brought forth in the Bid offer / pre-bid meeting / meeting before award of contract. Any such deviation, if informed thereafter bidder will supply Hardware and Software as per the site and functional requirement free of cost to the Purchaser. The decision of Purchaser will be final.
- 4.1.10 The selected bidder, after award of contract, will finalize the actual quantities to be deployed after approval from Purchaser, before initiating the purchase process of such items. All the hardware and software shall be procured and delivered after taking prior approval of Purchaser for each consignment.
- 4.1.11 Engineering and technical assistance during the contract and extended warranty and maintenance period.
- 4.1.12 Provide calculation for power requirement for each cabinet and equipment
- 4.1.13 Full system backup of all installed software for all machines.
- 4.1.14 Provide a Quality Assurance Plan and access to the manufacturing process.
- 4.1.15 The bidder shall provide all additional equipment and services required to ensure compatibility with Purchaser’s systems.
- 4.1.16 The bidder shall demonstrate a specified level of performance of the offered system during FAT and SAT.
- 4.1.17 Bidder shall submit the project plan with major mile stone prior to the start of the execution of the project
- 4.2 **Purchaser**
- 4.2.1 Will assist the bidder to provide the necessary work permits for working in operational area

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- 4.2.2 Providing all the necessary data regarding the electrical network
- 4.2.3 Providing details of the existing systems for specified integration
- 4.2.4 Providing communication backbone for interconnection with existing systems
- 4.2.5 Review and approval of the Bidder's designs, drawings, and recommendations
- 4.2.6 Review and approval of test procedures
- 4.2.7 Participation in and approval of "Type", factory and site acceptance tests
- 4.2.8 Coordination of the Bidder's activities with the Purchaser's concerned departments

5.0 Exclusions

The Bidder shall be responsible for providing all the hardware and software, development of database and services required for commissioning of project except mentioned below

- 5.1 Buildings
- 5.2 Air Conditioning
- 5.3 Fire Fighting system
- 5.4 Civil job of any type except for earthing system is not in the scope of the bidder
- 5.5 Special electronic earthing for server, communication and other systems
- 5.6 SCADA/ADMS & IT Workstations

Bidder must indicate the space requirements, special earthing requirement (if any) etc. for systems/panels/equipment being supplied under this project, so that TPCODL can provide the same as per bidder's requirement.

6.0 Instruction to Bidders

6.1 Bidder Confidentiality

All information contained in this specification is confidential and shall not be disclosed, published or advertised in any manner without written authorization from Purchaser, includes all bidding information submitted. All specification, data and documents submitted by bidder remain the property of Purchaser and all bidders are required to return these documents to Purchaser upon request. Bidders who do not honor these confidentiality provisions will be excluded from participating in future bidding events.

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- 6.1.1 Information relating to the examination, clarification, evaluation and comparison of Bids and recommendations for the award of a contract shall not be disclosed to Bidders or any other persons not officially concerned with such process. Any effort by a Bidder to influence the Purchaser's processing of Bids or award decisions may result in the rejection of the Bidder's Bid.
- 6.1.2 Prior to the detailed evaluation, Purchaser will determine the substantial responsiveness of each Bid to the Bidding Documents including production capability and acceptable quality of the Goods offered. A substantially responsive Bid is one, which conforms to all the terms and conditions of the Bidding Documents without material deviation.
- 6.1.3 Bid determined as not substantially responsive will be rejected by the Purchaser and/or the Purchaser and may not subsequently be made responsive by the Bidder by correction of the non-conformity.
- 6.1.4 The Bid prepared by the Bidder, and all correspondence and documents relating to the Bid exchanged by the Bidder and the Purchaser, shall be written in the English Language. Any printed literature furnished by the Bidder may be written in another Language, provided that this literature is accompanied by an English translation, in which case, for purposes of interpretation of the Bid, the English translation shall govern.
- 6.1.5 Bidders shall quote for the entire Scope of Supply / work with a break up of prices for individual items and Taxes & duties. The total bid price shall also cover all the Bidder's mentioned in or obligations mentioned in or reasonably to be inferred from the bidding documents in respect of Design, Supply, Transportation to site, all in accordance with the requirement of bidding documents. The bidder shall complete the appropriate Price Schedules included herein, stating the Unit Price for each item & total price with taxes, duties & freight up to destination at various sites of Purchaser. The prices offered shall be inclusive of all costs as well as Duties, Taxes and Levies paid or payable during the execution of the supply work, breakup of price constituents.
- 6.1.6 The quantity break up shown else-where in Price Schedule is tentative. The bidder shall ascertain himself regarding material required for completeness of the entire work. Any items not indicated but are required to complete the job, shall be deemed to be included in prices quoted.
- 6.1.7 The bidder is not allowed to modify or withdraw its bid after the Bid's submission.

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6.1.8 The OEM and SI shall be responsible jointly and severally for the design, supply, erection, commissioning & satisfactory performance of the supplied system and specified Post Warranty Maintenance and activities. The SI shall have full facilities for design, Supply, erection, commissioning, system integration, factory and site acceptance test, satisfactory performance of supplied system and specified post warranty maintenance.

6.1.9 In case of agreement dishonored by any party (Bidder/ OEM), during life of the delivered system, OEM shall be responsible for providing the services to the Purchaser. Bidder / OEM shall submit the address and contact details of the OEM’s Purchaser account holder.

6.1.10 The Bidder (including OEM) shall give an undertaking to provide full range of services (including hardware and software maintenance, modifications and upgrade support) for the life of the delivered system including Communication interfaces.

6.2 Type Tests Reports

The type tests specified in Purchaser specifications should have been carried out within five years prior to the date of opening of technical bids and test reports are to be submitted along with the bids. If type tests carried out are not within the five years prior to the date of bidding, the bidder will arrange to carry out type tests specified, at his cost. The decision to accept/ reject such bids rests with Purchaser.

6.3 Technical / Commercial Clarifications

After scrutiny of qualifying criteria, techno commercial criteria offered by the bidder, clarifications will be sought from the bidders for any deviations with respect to the Purchaser specifications and attempt will be made to bring all bids on a common platform. After all techno commercial issues are clarified, bidder may be asked to re-submit the commercial proposal, which shall include all Hardware, Software and Service requirement as discussed during technical evaluation process, the same will be intimated to the technically accepted bidders by Purchaser’s corporate contract team.

6.4 Bid Evaluation Criteria / Bid Selection / Bid Award Decision

6.4.1 The decision to place purchase order/LOI solely depends on Purchaser on the cost competitiveness across multiple lots, quality, delivery and bidder’s capacity. In addition to other factors that Purchaser may deem relevant.

6.4.2 Purchaser reserves all the rights to award the contract to one or more bidders so as to meet the delivery requirement or nullify the award decision without any reason.

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6.4.3 In case any Bidder is found unsatisfactory during the delivery process, the award will be cancelled, and Purchaser reserves the right to award other Bidders who are found fit.

6.5 Climate Change and Waste Management

Significant quantities of waste are generated during the execution of project and an integrated approach for effective handling, storage, transportation and disposal of the same shall be adopted. This would ensure the minimization of environmental and social impact in order to combat the climate change.

6.6 Ethics Policies, Mandates and Considerations

Purchaser is an ethical organization and as a policy Purchaser lays emphasis on ethical practices across its entire domain. Bidder should ensure that they should abide by all the ethical norms and in no form either directly or indirectly be involved in unethical practice. Bidder is advised to refer GCC attached for more information.

6.7 Safety Considerations

Safety related requirements as mentioned in our safety Manual. All Associates shall strictly abide by the guidelines provided in the safety manual at all relevant stages during the contract period. Bidder is advised to refer GCC attached for more information.

- a. All the equipment shall be as per IEC / IS standards.
- b. As the work has to be carried out in operational area, necessary work permit shall be prepared and approved from authorized persons.
- c. While working on site, use of PPE (personal protective equipment) is mandatory.
- d. Installation and commissioning of equipment, laying of cables activities shall be done by adequate trained persons with proper procedure including required outages of equipment/system.
- e. Bidder shall furnish operating and maintenance manuals clearly bringing out safety aspects of equipment.
- f. Bidder’s all site persons have to go through Training at Purchaser’s site
- g. Bidder to ensure the activities at site during installation and commissioning of the system as per Purchaser’s safety policy and procedures.
- h. The Bidder’s Project Manager shall work along with Purchaser’s Safety officer as per the policies and requirement stated in the Safety document.

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6.8 Bidder’s Technical and Commercial Proposal

6.8.1 General Guideline

- a. Purchaser will select the ‘bidder’ in accordance with the eligibility criteria specified in this document.
- b. The bidders are invited to submit a Technical Proposal and a Commercial Proposal for goods and related services required for the project as defined in RFP. This proposal will be the basis for finalization of the contract with the successful bidder.
- c. The bidders must familiarize themselves with local conditions and take these into account while preparing their proposals. To facilitate the bidders in making the Proposal, the Purchaser shall have a ‘Pre-Bid Discussion/meeting as per the schedule mentioned in RFP.
- d. Please note that costs involved in preparation of the proposal and of negotiating the contract, including a visit to the Purchaser, are not reimbursable.
- e. Bid prices shall be quoted in Indian Rupees only.

6.9 Risk & Mitigation Planning

Bidder shall assess underlying risks in implementation of the Project and detail out the methodology to mitigate them. It may include development of a risk assessment matrix indicating severity of the risk, chance of its occurrence and its mitigation approach.

7.0 Codes and Standards Applicable

The design, manufacture and performance of the SCADA and ADMS System shall comply with all the requirements of the latest editions of international codes and standards applicable. Nothing in this specification shall be construed to relieve the Bidder of this responsibility.

Emissions Standards		
1	EN55011 (CISPR 11)	ISM RF Equipment – Electromagnetic Disturbance Characteristics
2	60255-25	Electromagnetic emission tests for measuring relays and protection equipment
3	61000-3-2:2000	EMC-Limits for harmonic current Emissions.

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4	61000-3-3:1994+2001	EMC Limits-Limitations in voltage changes, voltage fluctuations and flicker in public low-voltage supply systems.
Immunity Standards		
1	61000-4-2 1995-01 60255-22-2 IEEE C37.90.3	Electrostatic discharge (ESD) immunity test
2	61000-4-3 1998-11 60255-22-3 IEEE C37.90.2 (10V/m)	Radiated, radio-frequency electromagnetic field immunity test
3	61000-4-4 1995-01 60255-22-4 IEEE C37.90.1	Electrical fast transient/burst immunity test
4	61000-4-5 1995-02	Surge immunity test
5	61000-4-6 1996-03	Immunity to conducted disturbances, induced by radio-frequency fields
6	60255-22-6	Electrical fast transient/burst immunity test
7	61000-4-8:1993-06	Immunity to power frequency magnetic fields
8	61000-4-12 1995-05	Oscillatory waves immunity test (Damped Oscillatory and Ring wave)
9	60255-22-1 IEEE C37.90.1	
Safety		
1	61010-1	Harmonized Safety Standard
2	60255-5 2000-12	Insulation coordination for measuring relays and protection equipment- Requirements and tests

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Power Supply Standards		
1	61000-4-11 1994-06	AC Power supply interruptions
2	61000-4-16 1998-01	Immunity to conducted, common mode disturbances.
3	61000-4-17	Ripple on D.C. power supply
4	61000-4-29+ 2000-08 60255-11	Voltage dips, short interruptions & voltage variations on D.C. input power port immunity test
Environmental Standards		
1	60068-2-1 1994-05	Environmental Testing Cold
2	60068-2-2 1974	Environmental Testing Dry Heat
3	60068-2-6 1995-03 60255-21-1	Environmental Testing Vibration tests (sinusoidal)
4	60068-2-27 1987	Environmental Testing Shock
5	60068-2-29 1987	Environmental Testing Bump
6	60068-2-30 1980	Environmental Damp Heat cyclic (12+12 hour cycle)
7	60068-2-31 1969	Environmental Testing Drop and Topple
8	60255-21-2	Shock and bump tests
Communication Standards		
1	61850-3 IEEE 802.3 CSMA/CD	Substation Comm. Standard access method and physical layer specifications

Wherever, new standards and revisions are issued during the period of the contract, the Bidder shall attempt to comply with such standards, provided there is no additional financial implication to Purchaser.

In the event of the bidder offers to supply material and/or equipment in compliance to any standard other than those listed herein, the bidder shall include with their proposal, full salient characteristics of the new standard for comparison.

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8.0 Bidder’s Qualification Requirement, Experience and Bid Evaluation Criteria

8.1 Bidder’s Qualification Requirement

Sl. No.	Criteria	Description of the Criteria	Documents to be Submitted by Bidder / Bidder Response
1	General	The Bidder or Its OEM incorporated, or any OEM Product manufactured in a country sharing a land boundary with India cannot participate in this Bid.	Declaration by the Bidder / OEM on their Letter Head in this regard should submit along with the Bid.
2	Technical Experience	Bidder can be either OEM of proposed System or a System Integrator (SI). The Overall liability of execution of the contract shall lie with OEM/SI	In the case of OEM, the bidder shall submit the Self-Certification. In case of System Integrator participates, then the Authorization undertaking on OEM's Letter Head shall be submitted by SI for the respective System
3		The Bidder must demonstrate prior experience in successfully deploying the same system solution for minimum of two Projects or more.	The bidder shall be required to submit an experience certificate duly issued by the Client.
4		The bidder must possess a valid ISO 9001, ISO20000, ISO 27000 Certification or Higher	Copies of the valid Certificates
5		The Bidder (SI) must share the Manufactures Authorization Certificate specific to this tender and back-to-back support letter from OEMs for providing Comprehensive support and services of the OEM's product covered under the RFP for a period of Design, Engineering, Commissioning, Standard & Extended Warranty	OEM MAF
6		Turnover	The Annual turnover of the bidder / Consortium together during the last financial year ending with 31st March 2023 should be INR 2 Crs. (As per the last published audited balance sheet / CA certified provisional Balance Sheet)

8.2 Bidder’s Project Experience

8.2.1 Bidder shall provide details of projects with application modules and other requirements Eligibility Criteria which have been successfully completed during the last 5 financial years. Please do not supply the names of clients who are no longer using your product/system.

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Bidders need to submit the details as per the format in the table provided and necessary supporting documents should be attached with RFP:

Sl. No.	Name of the Project	Client Name	Whether the Project was successfully commissioned	Date and Year of Commissioning	Value of the Project

Table: Details of Project Experience

Note: Kindly provide Client Performance Certificates for the completed projects provided for establishing/confirming the requisite details for project experience as mentioned above Or Copy of LoA/ Work Order along with proof of release of final payment.

- 8.2.2 The Bidder should have atleast 5 personnel on its rolls with a minimum experience of 5 years on Communication System/Cyber Security and Communication Network Management system. Signed resume of employees authenticated & signed by the bidder needs to be submitted. Scanned signatures of the employees shall be accepted.
- 8.2.3 Product shall confirm to Cyber Security norms from product development, design and engineering for Power Utility, compliance to industry standard NERC-CIP, IEC62443, NIST and IEC62351.
- 8.2.4 Bidder shall agree to comply with minimum quality requirements and Contractor Safety Code of Conduct, defined in bid documents.
- 8.2.5 Bidder must agree for handing over, to Purchaser, all project related drawings in AutoCAD format only. The pdf versions of above drawings shall be submitted for formal approval process.
- 8.2.6 Bidder shall submit the acceptance of TPCODL's preferred list of vendor / sub vendor / OEM, which is shared as part of Technical Specifications and the same shall be acceptable to the bidder. ***(Refer Annexure-3 of Section-E, Preferred/Approved make of Equipment/System).***
- 8.2.7 Bidder shall confirm the equipment and Spare Support and Availability for the period of 10 years. Bidder shall submit each equipment product life cycle details.

The bidder may avail credentials of its OEM for fulfillment of eligibility criteria as mentioned above.

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8.3 Bid Evaluation Criteria

8.3.1 The Bids will be evaluated technically (in terms of quality, technical merit, functional characteristics, schedule, after-sales service, local support in India and technical back-up). The technical merits and quality and functional characteristics of the offered equipment and work will be evaluated in terms of its ability to meet specific technical requirements included in the Contract Documents. The Bidder shall therefore be prepared to submit at the request of Purchaser adequate information or conduct system demonstration to substantiate that the offered equipment or Work meets the intent of the technical requirements.

8.3.2 Purchaser shall be fully entitled to adopt whatever means it deem fit to evaluate the bids at its sole discretion, which shall not be questioned by the bidder under any circumstances whatsoever.

8.3.3 The evaluation team will thoroughly review the proposals submitted by various bidders. The broad technical evaluation will be based as below

a. Technical Proposal: 100% Weight

Minimum qualification mark for technical score as mentioned in the RFP shall be 90 out of 100.

8.3.4 Technical Evaluation

The technical bid has a weightage of 100%. Technical evaluation will be carried out on the basis of technical requirement mentioned in the RFP and meeting all the functional requirement directly or through alternate solution proposed.

a. Stage-1: Preliminary Evaluation

In stage-1, the following shall be confirmed: Deviations, Acceptance of terms and conditions, Acceptance to scope of work and compliance to technical specification (**Scope of work as mentioned in Section A and technical details in section B**). In case the bid doesn't meet all the mandatory requirements, the bid shall be termed as non-responsive and will not be evaluated further

b. Stage-2: Technical evaluation will be carried out on the basis of technical requirement mentioned in the RFP and meeting all the functional requirement directly or through alternate solution proposed. In addition technical bid will also be evaluated on the following criteria:

- Project Experience of the Control Centre Setup

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- Presence in Bhubaneswar
- Team Details (CV) for critical system – LED Display Panel, HA Firewall, Ethernet Switch etc.

8.3.5 The bids will be evaluated technically on the compliance to specification terms and conditions as detailed in the various sections of the document.

8.3.6 Bidder must mandatorily quote against each item as per the functional requirement and of indicative bill of material.

8.3.7 Bidder must comply with Qualification requirement and compliance sheet.

8.3.8 Bidder must submit the list of sites and contact details in which similar solution have been developed and successfully running its operation. Purchaser team reserves the right to visit those sites and bidder shall facilitate such visit.

NOTE: In case of a new bidder not registered with Purchaser, facility inspection and evaluation shall be carried out to ascertain bidder’s manufacturing capability and quality procedures. However, Purchaser reserves the right to carry out facility inspection and evaluation for any bidder prior to technical qualification.

8.3.9 Bidders shall quote for all items specified and all the sub items in the specified format. Bids not complying with this requirement shall be liable for rejection. All bids and combination of bids shall be opened and evaluated simultaneously so as to determine the bid combination offering the most advantageous solution for the Purchaser.

8.3.10 The evaluation shall be made primarily on technical parameters and also the overall cost of the items and quantities mentioned in the schedule of quantities. However, while placing the order, or during the execution, the Purchaser reserves the right to modify the quantities of individual items.

9.0 Project Schedule / Calendar of Events / Milestones

- a. The Bidder shall provide a detailed Implementation Schedule indicating major Bidder and Purchaser activities, major completion milestone events, and interdependencies between events. Required Purchaser activities and associated dates must be clearly shown and include interdependencies to the Bidder’s scheduled activities. The schedule shall be in terms of absolute dates after Receipt of Order (ARO).
- b. Following is the expected delivery schedule. Bidders may propose separate delivery schedule; however, the total time for project completion shall not exceed 580 days from the date of placement of firm purchase order by Purchaser.

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9.1 Delivery Schedule

Sr. No.	Milestone	Target
1	PO Placement	Zero Day
2	MDL & Project Detailed, Project Execution Schedule submission & approval	Within 3 days from Sr. No. 1
3	Architecture and other Drawings, Bill of Material finalization, Functional and Design Specifications submission & approval	Within 7 days from Sr. No. 1
4	Procurement of Hardware and Software	Within 20 days from Sr. No. 3
5	Submittal of Acceptance Test Plans and Test Procedures	Within 15 days from Sr. No. 3
6	Inspection of equipment (FAT)	Within 7 days from Sr. No. 4
7	Delivery of equipment	Within 5 days from Sr. No. 7
8	Completion of installation at all four locations	Within 20 days from Sr. No. 8
9	PG Test, Handover to Purchaser	Within 1 days from Sr. No. 9
10	Overall project schedule	60 Days

9.2 Calendar of Events

Sr. No.	Events	Target
1	Detailed bid documents / hosting of detailed bid documents in Purchaser’s ARIBA website	Zero Date
3	Pre-Bid Meeting & Receipt of pre-bid queries, if any	Within 5 days from Sr. No. 1
4	Posting of Consolidated replies for the pre-bid queries to all bidders	Within 1 days from Sr. No. 3
5	Receipt of Bids	Within 5 days from Sr. No. 4
6	Opening of technical bids	Next working day from Sr. No. 5
7	Date & Time of opening of Price of qualified bids	Will be notified to the successful bidders through our website / mail.

9.3 Mile Stones

Payment shall be made as per the finalized payment terms with Purchaser’s procurement team as per the milestones mentioned below:

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Sl. No.	Milestone Number	Milestone Description	Special Comments / Remarks
1	MS-01	Prebid meeting	-
2	MS-02	Bid Submission	-
3	MS-03	Bid Discussion	-
4	MS-04	PO Placement	-
5	MS-05	PO Acceptance	-
6	MS-06	Submission and Approval of: <ul style="list-style-type: none"> • List of Deliverables • Configuration drawings • Detailed Project Schedule • Database Design Documentation • Design Documentation for Hardware & Software System • Application Overview Document • Software requirements specifications for Custom Designs • Any Other Documentation related to Design Engineering • Successful completion of FAT and resolution of all variances to Purchaser’s satisfaction 	25% of Total Contract Price
7	MS-07	<ul style="list-style-type: none"> • Shipment of the System, its complete installation at Purchaser’s site, and successful completion of system startup activities. • Site acceptance test 	45% of Total Contract Price
8	MS-08	Operational Acceptance and submission As-built drawings: <ul style="list-style-type: none"> • Successful completion of System Availability and Performance Guarantee tests), • Submission of Operator’s User’s Manual, Modification if any to the Operator’s User’s manual and submission of approved manual • Submission of Backup of entire system on secondary media • Delivery of all As-built drawings, database and logic files, source code and final documents Delivery of spares, maintenance & testing equipment’s etc. 	30% of Total Contract Price

10.0 Submissions by Bidders

10.1 Mandatory Documents required along with the Bid

Bidders are requested to submit their offer in line with this bid document. Purchaser shall respond to the clarification raised by various bidders and the replies will be sent to all participating bidders through ARIBA.

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Bidder shall submit the document as specified in Section-D and as described in various section of this document.

The technical bid shall be properly indexed and is to be submitted in Soft Copy and two nos. Hard Copy.

10.2 Departure from Specifications

Bidder shall necessarily submit a signed and stamped copy of this BID (in original) as a token of acceptance of all the terms and conditions of this BID. Replication of this BID on bidders' document shall not be acceptable. Normally no deviation is accepted to BID document supplied with the bid & bid with deviation is liable to be rejected. However, in case of any deviations to this BID, all such deviations shall be furnished by the bidders in the Schedule of Deviations attached as Section-C, Item-C3, and submit the same as a part of the Technical Bid.

10.3 Right of Acceptance / Rejection of Technical Proposal

Bids would be rejected in absence of following documents:

- a. Details required for PQR not submitted
- b. Complete technical details are not enclosed
- c. Proposed Architecture not submitted
- d. The offer does not contain un-priced detailed Bill of Material as per the proposed architecture
- e. Bid is received after due date and time
- f. False Information / Details

Purchaser reserves the right to accept/reject any or all the bids without assigning any reason thereof.

10.4 Documentation & Licenses

Bidder shall submit the documents as per Section D for bid submission and Post Award. Bidder to ensure that all software procured shall be perpetual license in the name of the Purchaser.

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11.0 Layout Requirements

- 11.1 All systems shall be installed based on the approved equipment layout and plot plan.
- 11.2 The Switches, Firewalls and other communication accessories shall be mounted in the network panels.

12.0 Project Management

12.1 Project Implementation

This section specifies project implementation requirements, including Purchaser and the Bidder responsibilities, project management procedures, project documents, the activities leading up to shipment of the proposed system, and the installation, commissioning, and site test activities.

12.2 Project Management

The Bidder and Purchaser shall assign a project manager with the authority to make commitments and decisions that are binding on the either side with the following responsibilities:

12.2.1 Purchaser's Project Manager

Purchaser’s project manager shall be responsible for representing Purchaser’s interests throughout the project. Purchaser’s project manager will, from time to time, authorize other staff to act in this regard for specific tasks. The project manager will also change such assignments from time to time. Such actions shall be submitted to the Bidder in writing.

All correspondence with Purchaser shall be addressed to Purchaser's project manager.

12.2.2 The Bidder's Project Manager and Project Personnel

The Bidder shall designate a project manager who shall be responsible for the co-ordination of all project work and for the communications between the Bidder and Purchaser. Except for conditions outside the control of the Bidder, the Bidder's project manager shall not be removed or replaced without the approval of Purchaser.

Bidder shall submit the manpower deployment plan along with the bids, describing the key roles of each person. The project shall be staffed with a core project team. Additional personnel shall be assigned to work under the direction of the core team as required to effectively implement the SCADA/ADMS and Other Systems. Core project team members shall have experience as stated elsewhere in this document.

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The Bidder shall inform Purchaser of any pending or possible changes in the use or status of all Bidder project personnel. Any changes to Bidder staff, including work assignments and participation level, shall be announced as soon as practical and shall be subject to Purchaser’s approval. Purchaser shall have the right to have any Bidder staff removed from the project for cause.

12.3 Project Management Practices

Bidder shall provide high-level details of the project management practices that will be followed to manage the project. The project management practices would include (but not be limited to) details of:

- a. Bidder must provide details of how they envisage the contract being managed and control mechanisms; regular and active review meetings; Project management of individual work streams and overall program management of the entire service; Performance reporting
- b. Bidder should outline their proposed governance structure and designate a Service Manager to co- ordinate their activities and provide a focal point of contact to which Purchaser can refer on any matter concerning the service.
- c. Reporting lines and decision-making powers within the bidder’s organization must be submitted
- d. Reporting formats and templates that would be followed by the bidders
- e. Outline the proposed escalation procedures if issues arise.

12.4 Project Schedule

The project implementation schedule shall be not exceeding 3 months from the date of award. Based upon this schedule the bidder shall submit a preliminary implementation plan along with the bid. The detail project implementation schedule shall be submitted by the bidder after award for Purchaser’s approval, which shall include at least the following activities:

- a. Site Survey
- b. Documents submission and approval schedule
- c. Factory & Site Testing Schedule
- d. Database development schedule
- e. Hardware purchase & Manufacturing, Software development & integration schedule

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- f. Dispatch Schedule
- g. Installation / commissioning schedule

The project schedule shall include the estimated period for completion of and its linkage with other activities.

12.5 Progress report

A progress report shall be prepared by the Bidder each month against the activities listed in the project schedule. The report shall be made available to Purchaser on a monthly basis, e.g., the 10th of each month. The progress report shall include all the completed, ongoing and scheduled activities.

12.6 Transmittals

Every document, mail, letter, progress report, change order, and any other written transmissions exchanged between the Bidder and Purchaser shall be assigned a unique transmittal number. The Bidder shall maintain a correspondence index and assign transmittal numbers consecutively for all Bidder documents. Purchaser will maintain a similar correspondence numbering scheme identifying documents and correspondence that Purchaser initiates.

13.0 Quality Requirements, Inspection, Installation, Commissioning and Testing

13.1 Quality Assurance

Quality of service - Bidder must provide details of their proposed approach to quality assurance to ensure the quality of services in accordance with RFP Document. This should include:

- a. Responsibility of quality of service;
- b. How the bidder will ensure quality service is provided;
- c. How quality will be measured
- d. Bidder shall submit their quality certification / Assessment document. Bidder shall provide the following information along with the documents.

Description	Bidder's Response
Certification / Assessment Name	
Who issued the Certification / Assessment?	

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When was the Certification / Assessment obtained?	
Does this Certification / Assessment process involve periodic reviews and observations / remarks after such review? If so, please provide details and specify when your company is due for its next quality review?	

Table: Details of Certification

All materials and parts of the Bidder’s own and Sub-Vendors System / Sub-System to be supplied under this project shall be current, in line with industry standard.

13.1.1 Quality Assurance and Testing

To ensure that the Bidder produces a well-engineered and contractually compliant Systems, a quality assurance program shall be followed and both structured and unstructured tests shall be performed.

13.1.2 Quality Assurance Program

The Bidder must employ documented Quality Assurance (QA) techniques and practices throughout this project. This QA program shall be adhered to for the preparation of all Contract deliverables, including documentation, hardware, firmware and software. The program shall provide for the minimization of defects, the early detection of actual or potential deficiencies, timely and effective corrective action, and a method to track all such deficiencies.

13.2 Inspection

Purchaser shall be allowed to inspect the Bidder’s hardware and software quality assurance standards, procedures, and records. Documents identified in the approved software quality assurance plan will be inspected to verify that the Bidder has performed the required quality assurance activities.

The inspection rights described above shall not apply to sub-bidders supplying standard computer or peripheral equipment and third-party software products. However, inspection rights shall apply to Sub-Vendors that are developing new software, offering solutions for inclusion proposed Systems.

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13.3 Commissioning

13.3.1 Receipt at site, Handling, Storage & Insurance

Bidder shall make his own necessary arrangements for storage space for the proposed system on receipt at Site.

Delivery and movement of material to site from stores shall be the responsibility of Bidder.

All Insurance including but not restricted to transit, storage, and installation and commissioning till the acceptance of the complete system shall be the responsibility of the Bidder.

13.3.2 Installation

Installation of the complete system is under Bidder's scope. Installation work shall be scheduled and carried out in coordination with Purchaser's representatives. All related drawings, installation manuals and recommended practices shall be submitted in advance for Purchaser's approval. Installation shall be certified by the OEM's representative of the respective system.

13.3.3 Cabling Scope (Supply & Installation)

The following shall be in the bidder's scope

- a. All cables to and from any equipment supplied by Bidder
- b. All cables between Purchaser's Power Supply Distribution Board to any equipment supplied by the Bidder.
- c. Earthing interface to Purchaser's earth grid based on the earthing scheme provided by the Bidder (It shall be completely Bidder's responsibility to ensure proper earthing).
- d. The above includes all electrical and communication cables (if any) and all associated terminals, Connectors, tools, distribution board, MCBs and other accessories.
- e. UTP structure cabling for APSCC is in the scope of the bidder.

13.3.4 Commissioning Activities

- a. The commissioning of the system (hardware and software) including SAT and one Month Trouble free operation shall be the responsibility of Bidder.
- b. Development and customization of all software components shall be in Bidder's scope.

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- c. Adequate number of qualified engineers (Hardware & Software) as approved by Purchaser shall be posted at site during the entire period of installation & commissioning. In addition, Network & Cyber Security specialists shall be deputed to site for configuration of Ethernet Switches, Router and HA Firewall. The personnel shall be qualified engineers with at least five years’ experience respectively in Networking and Security.
- d. Daily site work shall be planned and executed as per due approvals from Purchaser’s representative.
- e. Bidder shall submit detailed site organization chart of Personnel for Purchaser’s approval. Purchaser reserve the right to review the same. Bidder’s commissioning engineers shall also train purchaser’s engineers during commissioning apart from scheduled Training.
- f. The responsibility for Installation, Commissioning, Performance guarantee and warranty shall remain with the Bidder.
- g. The Bidder shall furnish procedures, protocols and time schedules for commissioning and acceptance test activities.
- h. All tools (both hardware and software), test instruments, simulation jigs, documents, programming equipment etc. required for Installation, Testing & Commissioning are in the scope of bidder.
- i. All passwords, access keys etc. are the property of the Purchaser and shall be handed over to the Purchaser.
- j. All interoperability tables for interfacing to other systems shall be supplied.
- k. Principal’s qualified representatives including specialists shall participate at site for supervision, & certification of commissioning and Acceptance tests.

The Bidder shall comply and adhere to the safety policy of the Purchaser. Hence necessary safety apparels shall be borne and used by Bidder for their personnel at their cost. Also it is the responsibility of the Bidder to ensure their compliance to statutory requirements of their workmen. All the workmen engaged at the TPCODL site should have necessary ESIC and PF registration.

13.4 **Testing**

13.4.1 **Test Responsibilities**

Both Purchaser and the Bidder shall designate, in writing and prior to the start of the factory test, a test coordinator. Each coordinator shall be responsible for insuring that the tests are

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conducted in accordance with the requirements of this Contract. The coordinators shall each have the authority to make binding commitments for their Purchaser such as approvals of test results and scheduling for variance corrections or, as a minimum, to cause such commitments to be expeditiously made.

Unless otherwise stated in this Specification, the Bidder shall be responsible for all factory tests. This responsibility shall include the conduct of the tests and all record keeping and document production. Bidder will support the factory testing by supplying staff to execute the test procedures under the Purchaser's supervision.

13.4.2 Test Documents

Test plans, procedures, and records shall be provided by the Bidder for all tests to ensure that each test is comprehensive and verifies the proper performance of the proposed Systems under test. During the development of test plans and test procedures, emphasis shall be placed on testing each conditional logic statement, checking error conditions, and documenting the simulation techniques used. The test plans and test procedures shall be modular to allow individual test segments to be repeated as necessary.

All test plans and test procedures (standard, modified standard, and custom functions) shall be submitted to Purchaser for approval and shall be subject to the approval process as defined in **Section-D, Item 2.5** Document Review and Approval.

13.4.3 Test Plans

The test plans shall describe the overall test process, including the responsibilities of individuals and the documentation of the test results. The following shall be included in the test plans:

- a. The schedule for the test
- b. The responsibilities of Bidder and Purchaser personnel, including record-keeping assignments
- c. Any forms to be completed as part of the tests and the instructions for completing the forms
- d. Procedures for monitoring, correcting, and testing variances
- e. Procedures for controlling and documenting all changes made to the hardware and software after the start of testing

Test plans shall be provided for the Factory Acceptance Test, Site Acceptance Test, and Availability Test.

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13.4.4 Test Procedures

The test procedures shall describe the methods and processes to be followed in testing the proposed Systems. The test procedures shall be modularized, such that individual functions of the Systems can be independently tested and so that the testing proceeds in a logical manner. This section uses the term segment to refer to a higher-level part of a test procedure and the term step to refer to the most detailed level of test instruction.

The test procedures shall include the following items:

- a. The name of the function to be tested
- b. References to the functional, design, user, and any other documents describing the function
- c. A list of test segments to be performed and a description of the purpose of each test segment
- d. The set-up and conditions for each segment, including descriptions of the test equipment and data to be supplied by the Bidder and by Purchaser.
- e. Descriptions, listings, and instructions for all test software tools
- f. Step-by-step descriptions of each test segment, including the inputs and user actions for each test step
- g. Forms for the recording of test results
- h. The expected results for each segment, including pass/fail criteria
- i. Copies of any certified test data to be used in lieu of testing, if approved by TPCODL.

The Bidder shall note that Purchaser will not accept any certified test data in lieu of testing except where specifically stated in the Contract.

13.4.5 Test Records

Complete records of all tests result shall be maintained. The records shall be keyed to the test procedures. The following items shall be included in the test records:

- a. Reference to the appropriate test procedure
- b. Date of the test
- c. Description of any test conditions, input date, or user actions differing from that described in the test procedure

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- d. Test results for each test segment including a passed/failed indication. All information recorded during the test such as measurements, calculations, or times shall be included in the results.
- e. Identification of the Bidder’s and Purchaser’s representatives performing and witnessing the test
- f. Provision for comments by Purchaser’s representatives
- g. References to all variance reports generated
- h. Copies of reports, display copies, and any other hardcopy generated as part of the test.

13.4.6 Variance Recording and Resolution

A variance tracking system shall be placed in service no later than one week before the start of Pre-FAT and shall remain in use through the completion of the warranty. Both the Bidder and Purchaser may initiate variances at any time. Variances may be used to record system deficiencies at any time, even if the system is not undergoing testing. This variance tracking system shall record and track variances for:

- a. Documentation deficiencies
- b. Functional deficiencies
- c. Performance deficiencies
- d. Procedural deficiencies (as when deviations from contractually required QA procedures are observed)
- e. Test deficiencies (as when the system cannot satisfactorily complete a test procedure due to a problem with the test).

The variance recording, and tracking system shall produce reports of all variance information and shall produce subsets of the variances based on searches of the variance parameters singly and in combination. Variance reports shall be available to Purchaser at all times. The Bidder shall periodically distribute a variance summary that lists for each variance the report number, a brief overview of the variance, its category, and its priority.

13.4.7 Variance Records

The record of each variance shall include the following information:

- a. The date of the initial discovery of the variance

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- b. A variance number – a sequential number assigned when the variance is entered into the tracking system
- c. An identification of the person submitting the variance and the names of any other witnesses or knowledgeable Purchaser or Bidder staff
- d. An identification of the Systems component, such as a hardware item or software function, against which the variance is being written
- e. An identification of the test plan or procedure, if applicable. The stage or step of the plan or procedure shall be identified
- f. An overview of the variance suitable for use in keyword searches
- g. A detailed description of the variance
- h. A variance category:
 - i. Open (recorded but not scheduled for further action)
 - ii. Assigned (scheduled for further action)
 - iii. Pending (the variance has been resolved but not tested)
 - iv. Closed (Purchaser has accepted the resolution)
- i. The date of assignment into each category
- j. A variance priority:
 - Critical** – To be used only if the Systems are in commercial use, this priority identifies a problem that prevents the use of an system features that is essential to Purchaser’s operation of the power system
 - High** – Denotes the failure of the Systems to perform a required feature in a manner that significantly reduces the utility of the systems or feature or which delays further testing of the systems or features
 - Normal** – Denotes the failure of the Systems to perform a required feature in a manner that reduces the utility of the systems or features. Normal priority variances shall not delay any testing
 - Low** – Denotes the failure of the Systems to perform a required feature in a manner that reduces the utility of the systems only slightly. Low priority variances shall not delay any testing. Variances that record transient

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failures, which cannot be readily reproduced, shall be initially assigned to this priority. Subsequent occurrences of the transient failure shall result in raising the priority of the variance.

- k. A description of the resolution, including identification of all hardware, software, and documents modified or otherwise changed and the names of the Bidder or Purchaser staff involved with the resolution
- l. A record of all testing performed
- m. Identification of Purchaser staff accepting the resolution and the date of acceptance.

13.4.8 Schedule for Variance Correction

The Bidder and Purchaser shall meet periodically to review the variance list. Each new variance opened since the previous meeting shall be scheduled for correction at the meeting. Purchaser and Bidder shall follow these guidelines for scheduling corrections:

- a. A schedule for the correction of critical and high priority variances shall be set within one working day of their discovery. The schedule for correction of all other variances shall be set within two days of their addition.
- b. Purchaser and the Bidder shall assign resources for the correction of critical variances with the intent of correcting the variance within two working days of their opening.
- c. Purchaser and the Bidder shall establish a mutually agreeable date for the correction of high priority variances, with the overall objective of:
 - i. If the Systems are in productive use, correcting the variances within one calendar week of their discovery
 - ii. Prior to the commencement of productive use, maintaining the overall project schedule
- d. Purchaser and the Bidder shall establish a mutually agreeable date for the correction of normal priority variances, with the overall objective of:
 - i. If the Systems are in productive use, correcting the variances within 10 days of their discovery
 - ii. Prior to the commencement of productive use, maintaining the overall project schedule
- e. Low priority variances may be scheduled for correction at any time and shall not exceed 15 days after identification.

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13.4.9 Variance Resolution

A variance shall be deemed resolved only upon written acceptance of the correction by Purchaser. Prior to submitting the corrected variance for acceptance by Purchaser, the Bidder shall take all reasonable steps to verify that the correction has resolved the variance and the Bidder shall update the variance record to reflect the corrective action taken. Purchaser shall then schedule any testing to be performed in conjunction with the Bidder.

A variance shall be deemed accepted and the variance record shall be completed only after Purchaser has tested the corrected variance to its satisfaction. The Bidder shall support all testing deemed necessary by Purchaser to verify the corrections.

13.4.10 Test Schedule

The sequence of tests to be performed and their scheduling with respect to other activities shall be mutually decided.

13.4.11 Test Initiation

The following conditions must be satisfied before starting any test:

- a. Purchaser has approved all plans and procedures for the test
- b. Purchaser has reviewed or approved all relevant documentation
- c. A copy of all relevant documentation including design and maintenance documents, user manuals, test plans, and test procedures has been placed on the test floor
- d. A complete regeneration of the software under test has been performed immediately prior to the start of testing
- e. All operating system parameters, files, and configuration information has been saved to archive media so that the Systems operating environment can be recreated
- f. All Configuration and setup parameters and error logging and reporting definitions have been saved to archive media so that the same can be recreated if necessary
- g. All source code libraries have been saved to archive media so that Systems software can be regenerated if necessary
- h. For the factory test, preliminary testing, as described in **Item-13.4.15 Preliminary Factory Testing** has been completed and the Bidder has submitted written certification that the preliminary testing has been successfully completed.

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For the availability test, all critical, high, and normal variances have been corrected and verified to the satisfaction of Purchaser

13.4.12 Test Completion

A test shall be deemed to be successfully completed only when:

- a. All variances have been resolved to the satisfaction of Purchaser
- b. All test records have been transmitted to Purchaser
- c. Purchaser acknowledges, in writing, successful completion of the test.

13.4.13 Test Suspension

If Purchaser believes, at any time, that the quantity or severity of Systems variances warrants suspension of any or all testing, the test shall be halted, remedial work shall be performed, and the test shall be repeated. The repeat of the test shall be scheduled for a date and time agreed upon by both the Bidder and Purchaser.

13.4.14 Modifications to the SCADA/ADMS and Other Systems during Testing

No changes shall be made to the proposed Systems after factory testing has started without the express authorization of Purchaser. It will be Purchaser’s intent to carefully control the test environment so that all changes can be readily identified and so that any changes installed for any purpose can be removed and the previous test environment restored. Purchaser shall have the right to suspend testing, to revert to a previous version of any software or hardware, and to restart any testing previously performed if, in its opinion, changes have been made to the system under test without authorization.

13.4.15 Preliminary Factory Testing

The Pre-FAT shall be a complete dry run of the FAT, following the test plans and procedures. The intent is for the Bidder to detect and correct most design, integration, database, display, and performance problems prior to the FAT. The Bidder's project manager shall sign off each test. The completed test results shall be sent to Purchaser for inspection before Purchaser’s personnel travel to the Bidder's facilities for the FAT.

13.4.16 Factory Acceptance Test (FAT)

Factory tests shall include:

- a. Equipment test
- b. Functional test

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- c. Performance test
- d. Stability test
- e. Unstructured test
- a. **Equipment Test**

The equipment test shall verify that the proposed Systems includes all required equipment, that the equipment is properly configured, and that the equipment can successfully execute the diagnostic programs provided.

The equipment tests shall include a visual inspection for proper workmanship, including cables, connectors, and labeling. The assembly drawings and configuration drawings shall also be verified at this time. These tests shall also verify that the required Systems capacity performance and expansion requirements as specified in this specification have been satisfied.

- b. **Functional Test**

The functional test shall use an equipment configuration that may include an extension of the Bidder’s deliverables as required to prove the correct functionality of the respective Systems. The test procedures shall consider all additional test equipment and shall ensure that the additional equipment does not create false test results. The functional tests shall rigorously exercise all functions and devices, both individually and collectively, and shall verify the correct functional operation of all hardware and software. These tests shall include the following, as may be applicable to the system under test:

- a. Verification of all required functionality of the system, such as applications, data exchange, and information storage and retrieval. Verification shall include all standard and custom functions as well as purchased options.
- b. Verification that all software has been correctly sized and meets Purchaser’s capacity requirements
- c. Verification of all user interface functions
- d. Verification of the proper operation of local and wide area network devices, including routers, firewalls, Cyber Security measures, access control and the network as a whole by monitoring network traffic using diagnostic procedures and reconfiguration tests
- e. Verification of the application program and system development capabilities including, software configuration management, source code development, documentation

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management, user interface development, real-time data set development, test environments, and other utility functions

- f. Verification of communications maintenance capabilities including diagnostics, communications maintenance.
- g. Verification of all hardware maintenance capabilities.
- h. Verification of the proper response of the system to at least the following abnormal situations:
 - i. Loss and restoration of processors and desktop, including auxiliary memory
 - ii. Loss and restoration of user interface equipment
 - iii. Loss and restoration of archive storage devices
 - iv. Loss and restoration of external subsystems
 - v. Loss and restoration of input power (UPS failure)
 - vi. Loss and restoration of communication network processors
 - vii. Loss and restoration of any other peripheral devices
 - viii. Loss and restoration of local and wide area network elements
 - ix. Detection of and recovery from communication errors (simulated by Bidder).
- i. Demonstration of the security of the system from unauthorized access
- j. Verification of the redundancy and failure recovery schemes of the system
- k. Verification that changes of system time will not prevent the system from operating properly and that the system can correctly handle the beginning of a new day, month and year; leap years and the change in century and decade.
- l. Documentation verification that will verify that all documentation to be delivered with the system is present and meets requirements.

c. **Performance Test**

The performance test shall verify that the specified performance requirements are met. Simulation shall be provided by the Bidder, where necessary, to create the conditions for the specified performance scenarios. The simulations shall be tested first to verify that the desired activity is being simulated. Execution of the performance tests shall be automated as much as possible so that test runs can be reproduced.

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d. Stability Test

A 48-hour continuous run of the system shall be performed after successful completion of the functional and performance tests. The stability test will be considered successful if no critical function is lost, no major hardware failure occurs, no failover occurs, and no restarts occur within the test period.

Major hardware failure is defined for the purpose of this test as the loss of hardware such as a processor, disk, user console, etc. Non-repetitive mechanical failures of printers, is not considered major failures.

During this test, the system shall be exercised (with simulated inputs, events, and conditions) in a manner that approximates an operational environment. Purchaser will simulate unstructured user activity during this test. Purchaser will not purposely cause any hardware or software failure, that is, failover and restart testing is not a goal of this test.

The Bidder shall assist Purchaser in this test as required by Purchaser; this assistance will be primarily in the form of helping the set-up of the test, explaining the best procedures to run the test, and explaining all unexpected results.

e. Unstructured Test

The test schedule shall allow time throughout the functional testing for unstructured testing by Purchaser. Time for unstructured testing shall be reserved at the rate of at least two hours of unstructured testing for each eight hours of structured testing, This time will be used by Purchaser to perform additional tests, the need for which may be recovered during the formal testing, and to investigate any potential problems detected. The unstructured tests will be performed during the functional and performance test period and during the stability test at the discretion of Purchaser.

The Bidder shall assist Purchaser in this test as required by Purchaser; this assistance will be primarily in the form of helping the set-up of the test, explaining the best procedures to run the test, and explaining all unexpected results.

13.4.17 Site Acceptance Test (SAT)

The site test includes the installation test, the functional test, and the performance test as specified in the factory test that will be conducted at Purchaser’s site after shipment and installation of the Systems.

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13.4.18 Installation Test

The installation tests shall be conducted by the Bidder and include:

- a. A repetition of the equipment test
- b. Loading of the Systems software and starting the system. At the option of Purchaser, all software shall be recompiled from the source or distribution media
- c. In cooperation with Purchaser, attachment of the Systems to communications facilities for all data sources and other systems that interface with the Systems
- d. Initialization and preliminary tuning of application software as needed.

13.4.19 Functional and Performance Tests

The site functional and performance tests shall be comprised of a subset of the functional and performance tests of **Section 14**, The tests to be performed shall be proposed by the Bidder and approved by Purchaser. These tests shall be extended as necessary to test functions simulated during the FAT. The extended tests shall be performed to a test procedure prepared by the Bidder and approved by Purchaser. Unstructured tests shall also be employed, as necessary, to verify overall operation of the systems under actual field conditions.

13.4.20 Availability Test

Systems and device availability in accordance with the criteria specified in the specification, System Availability shall be demonstrated by the availability test.

13.4.21 Test Activity

The test activity shall consist of normal Systems operations with the system in commercial use. Purchaser will modify the databases, displays, reports, and application software during the availability test. Such modifications will be described to the Bidder at least 12 hours in advance of implementation to allow assessment of impact on the availability test, except where such changes are necessary to maintain control of the power system.

13.4.22 Test Definitions

The definitions of the time periods used in determining the duration of the test and the success of the test shall be as follows:

- Downtime** – Downtime occurs whenever the criteria for successful operation defined in specification, Availability

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Requirements – Core Systems, are not satisfied. Downtime shall be measured from the start of diagnostic procedures until full service is restored. In the event of multiple failures, the total elapsed time for repair of all problems (regardless of the number of maintenance personnel available) shall be counted as downtime.

Hold time

- Certain periods of time during which the System/s is down may be due to circumstances that are beyond the control of either party. These contingencies may prevent successful operation of the systems but are not valid for the purpose of measuring systems availability. Such periods of unsuccessful operation may be declared hold time by mutual agreement of Purchaser and the Bidder. Specific instances of hold time are:

Scheduled shutdown

- During scheduled shutdowns or if an equipment failure occurs while its backup device is scheduled out-of-service, the resulting system outage shall be hold time, provided that service can be restored according to the Bidder-specified procedures within 30 minutes.

Power Interruption & environmental excursion – Loss of power or manual shutdown of the Systems in the event of power excursion or the loss of environmental control shall be considered hold time. If the systems are operated during periods of power or environmental conditions beyond those specified, any resultant downtime shall be considered hold time.

Intermittent failure

- Periods during which an intermittent, recurring failure is experienced will be considered hold time, provided that the Bidder is engaged in remedial action and normal operation of the Systems can be restored within 30 minutes by Bidder-defined procedures whenever the failure occurs. Instead of accounting for the actual intermittent downtime, one hour of downtime shall be

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counted for each 120 hours of otherwise successful operation while the problem persists.

- Failure of Purchaser software** – Time during which the Systems are down due to failure of software written or provided by Purchaser shall be considered hold time. (Programs developed by Purchaser under Bidder supervision are specifically excluded from this provision.) If a failure in such software cannot be overcome by Bidder- defined procedures, execution of the failed program shall be suspended.
- Corrected design defect** – Hold time may be declared by mutual agreement to ensure against similar future occurrences if a failure occurs due to a defect in design for which the Bidder defines and implements corrective measures. In such a case, sufficient hold time shall be allocated to allow verification of the corrective action.
- Logistics delays** – If repairs are delayed due to previous use of spare parts or because of Purchaser’s failure to purchase recommended spare parts, hold time will be declared after diagnosis of the failure and while the Bidder is pursuing replacement parts in an expeditious fashion. A maximum of 48 hours of hold time will be allowed for each occurrence of logistics delay.
- Service response time** – Hold time shall be declared from the time that a failure is detected until diagnostic procedures are begun. A maximum 24 hours of hold time will be allowed for each failure.
- Total time** – The time elapsed from the start of the availability test until the end of the availability test
- Test time** – The time elapsed from the start of the availability test until the end of the availability test, excluding hold time.

That is,

$$\text{Test_time} = \text{Total Time} - \text{Hold_time}$$

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13.4.23 Duration and Criteria for Passing

In order to establish that all failures have been satisfactorily repaired prior to the end of the availability test, no downtime, intermittent (hold time) failures, or more than one uncommanded failover shall have occurred within 72 hours of the test's conclusion. The test shall be extended, if necessary, to satisfy this requirement.

After successful completion of site acceptance test and 72 hours have passed, system availability shall be computed using the following formula:

$$\text{System_Availability} = [(\text{Test_time} - \text{Down Time}) / \text{Test_time}] \times 100\%$$

If the system availability requirements presented in the specification, System Availability, have not been met, the test shall continue until the specified availability is achieved. Alternatively, and at Purchaser’s discretion, the test may be restarted.

When it has been determined that the system availability requirement has been met, the availability of each System device shall be calculated and compared against the device availability requirements as specified. If one or more devices do not meet the requirements, the test shall be extended until Purchaser and the Bidder mutually agree that corrective action has been completed for those devices. Corrective action shall include all necessary procedures to test and verify proper operation to Purchaser’s satisfaction.

14.0 System Capacity, Performance and Demonstration

Proposed System shall meet performance standards required to maintain real-time monitoring and control of the network. Performance shall be evaluated according to the amount of time and computer resources required for accomplishing a variety of tasks. The tasks are grouped into the following major function areas:

- a. Data Acquisition and processing
- b. Man-Machine Interface interaction
- c. Support functions

14.1 System Capacity

The system functions and associated databases shall be capable of accommodating at least a 100% increase in the delivered capacity without requiring regeneration, recompilation, or any other processing other than definition of the database by Purchaser.

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- a. The system functions and their associated databases shall be dimensioned as per the functional requirement of the Purchaser, specified in this document.
- b. The main memory of each processor and console shall be expandable to twice the delivered capacity within the delivered enclosures by Purchaser.
- c. Fifty percent of the auxiliary memory capacity of each processor, console, or storage unit shall be completely available for future use by Purchaser. The auxiliary memory of each processor, console, and storage unit shall be expandable to twice the delivered capacity within the delivered enclosures by Purchaser.

14.2 System Response

Satisfaction of the performance requirements will be verified during factory test and the site test for each of the system and applications and the other functional requirement mentioned in the specification. It is Purchaser’s intent that the System exhibits consistent performance even when operating in a degraded configuration. The System shall satisfy the performance and capacity requirement of this specification under the following configurations:

- a. The “Normal” configuration with all System components operating
- b. A degraded configuration where system is running on above 50% of each processing and memory capacity.

The following sections specify the performance required for the user interface during average and peak loading conditions. Averaged or other statistically processed response and update times will not be accepted as a measure of contractual compliance.

The technical proposal shall include a performance analysis for each proposed computer system to indicate compliance with the requirements herein. In addition, on completion of the detailed system design during project implementation, the Bidder shall submit an updated performance analysis to reconfirm the ability of each system to meet Purchaser's performance requirements.

Failure to meet the performance criteria shall require the Bidder to provide all necessary hardware and software modifications and additions until the performance criteria are satisfied.

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14.2.1 **Display Requirements**

The following requirements shall be met for all displays provided on each of the computer systems.

a. **Display Response Time**

When any real time display and application display (except displays which involve extensive RDBMS access) is requested at a workstation console, the display complete with data values shall appear on the screen within 1 seconds for 84% of the time, 2 seconds for 95% of the time, and 2.5 seconds for 100% of the time.

Requests for displays shall be acknowledged within 1 seconds at any console with an indication that the request is being processed. At no time shall the system delay the acceptance of a display request or "lock out" console operations due to the processing of application functions.

When data entry is performed on a display, the data entry operation shall be completed and the newly-entered values displayed within 2 seconds.

b. **Display Update Rate**

Once a display containing data that changes appears on the workstation screen, the display shall be periodically updated (unless defined as non-updatable by the system maintenance engineer) every 2 seconds. This update ability shall apply to all such displays appearing on the screen together. The update shall be completed within 0.5 seconds. The data update rate for each display shall be adjustable by the system maintenance engineer or be defined as not updating

c. **Pan and Zoom response time**

A world display on a display screen shall be capable of being panned in a continuous manner from one screen border to the opposite screen border within 2 seconds. A user request to jump to a different window of the world display shall cause the display to be presented within specified time.

Zooming between the maximum and minimum scale factors shall be accomplished in a continuous manner in steps defined by the system maintenance engineer. The system maintenance engineer shall be able to specify the change in magnification associated with the movement among steps.

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14.2.2 Projection System Update Rate

The values displayed on the projection system shall be updated every 2 seconds.

14.2.3 Display Hardcopy Response Time

A request for display hardcopies shall be acknowledged within 2 seconds at any console with an indication the request is being processed. Each copy shall take no more than 1 minute from the time the queued copy request is processed until the copied image is complete on the printer.

14.2.4 Resource Monitoring

Resource utilization shall be measured, calculated and displayed for the System processors, devices, and networks. The minimum set of parameters to be presented include:

- a. Time utilization (percent processor utilization) of each function per processor
- b. Time utilization (percent disk utilization) of each function per disk
- c. Disk data transfers per disk
- d. Performance of LANs, bridges, routers, switches, firewalls and other network devices.
- e. Single click retrieval of Communication/system performance logs between master and gateway, master and client from any operator workstation

Statistical sampling and accumulation techniques shall be used to collect these parameters over a user- selected time period. The user shall be able to specify the study period over which samples are collected and the sampling frequency. Typical study periods shall be ten seconds to sixty minutes, and typical sampling frequencies shall be once per two milliseconds to once per fifty milliseconds.

14.2.5 System Utilization

Name	Utilization	Comments
Main Memory	10% 30%	Normal Peak
Processor Utilization Application processor Communication processor	<30% <40% <30% <50%	Normal Peak Normal Peak
Workstation (average utilization of the processing capacity)	<30%	Normal

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Name	Utilization	Comments
	<40%	Peak
Local Area Networks		
Uncontrolled Access	15%	Normal
(e.g. Ethernet)	20%	Peak
Controlled Access	20%	Normal
	30%	Peak
Auxiliary Memory		
Allocated capacity	50%	
Access and transfer capacity	30%	Normal
	50%	Peak
Hardcopy		
Print time	60 seconds	
Transfer capacity of each storage system		
	<30%	Normal
	<40%	Peak

14.2.6 **System Administrative Function**

Failure / Failover	Performance	Comments
Detection of device failure and initiation of failover process	<10 Sec	
Recovery from communication failure	<10 Sec	WS
Complete system startup from power failure	100 sec	
Main to backup failover	<10 sec	Bumpless
Complete System build	<3 hours	Including operating system, applications and databases

The bidder shall factor in system sizing the loading of the individual system due to routine/emergency Antivirus updates, Antivirus Scans and Cyber Security Management updates/scans.

15.0 Warranty, Maintenance, Upgrades, Patch Management & Support Requirements

This Section specifies the requirements for Warranty, hardware and software maintenance for the System, Post Warranty maintenance and support, system upgrades, patch management etc. Section covers the responsibility for the maintenance of the System hardware and software over the term of this Contract.

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15.1 Definitions

The responsibility for maintenance of hardware and software will vary depending on the time during the Contract. So that the times for changes in responsibility can be determined, the following definitions shall be used:

Delivery – Delivery of any item shall be interpreted as receipt of the item at Purchaser's facility.

Commissioning – Commissioning of any item shall be interpreted as receipt of the item at Purchaser's facility, installation on-site, successful completion of the site tests, and correction of all variances from the tests.

15.2 Deliverable Hardware and Software Version

The delivered hardware shall be the latest version being delivered by the manufacturer of the hardware six months prior to its delivery to Purchaser's facility. Similarly, the delivered software shall be the latest version being delivered by the Bidder six months prior to its delivery to Purchaser's facility.

All hardware and software shall be of compatible versions. That is, the Bidder shall be responsible to ensure that all delivered hardware and software versions will inter-operate successfully. If it becomes necessary to upgrade some hardware or software to meet this requirement, the cost and time shall be borne by the Bidder. If it is necessary to revert to a previous version of any hardware or software to overcome incompatibilities among the hardware or software, the Bidder shall bear the cost and time of the "downgrade" and shall present a plan to correct the problems with the newer release. Such corrections shall also be at the Bidder's sole expense.

15.3 Warranty and Post Warranty support

- a. Maintenance services for the supplied Hardware, Software package, Software up-gradation, Patch Management services including sub-vendor products during the Warranty period of 5 Years from the date of system handover after SAT, resolution of all punch point of SAT and trouble-free operation of the entire system for a period of one month.
- b. Bidder shall provide maintenance services for the supplied Hardware, Software package, Software up-gradation, Patch Management services including sub-vendor products at site for 5 years.

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15.4 Hardware Maintenance

The project schedule shall include an allowance for hardware maintenance prior to the availability test. The Bidder will not be granted any relief for project delays caused by maintenance problems prior to the availability test.

15.4.1 Pre-Delivery Maintenance

The Bidder shall have the responsibility for maintenance of all hardware prior to delivery to Purchaser’s site. This maintenance may be performed by a maintenance contract with Original Equipment Manufacturers (OEMs) or other parties or by the Bidder.

15.4.2 Maintenance During Commissioning

The Bidder shall have the responsibility for maintenance of all hardware after delivery and prior to commencement of the Warranty. This maintenance may be performed by a maintenance contract with OEMs or other parties or by Bidder staff.

Failed equipment shall be replaced or repaired throughout the period of commissioning. Any parts found to be defective during initial delivery inspection or during this period shall be replaced within one week after notification. There shall be no charges to Purchaser for these replacement parts, including delivery charges. All parts replaced under maintenance shall be new parts unless otherwise accepted by Purchaser.

15.4.3 Maintenance Under Warranty

Maintenance during the warranty shall be in conformance with the terms of the warranty sections of this RFP (*Item 15.3*).

During the warranty period, Purchaser’s hardware maintenance responsibilities will include the following:

- a. Provision of trained staff, responsible for call-out when problems occur
- b. Providing local assistance to the Purchaser during problem resolutions
- c. Providing maintenance of all equipment, including spare parts (if any)
- d. Providing materials and instruction for appropriate engineering changes for equipment
- e. Provision of technical guidance towards the resolution of all hardware problems for equipment.

When needed, the Bidder shall respond to requests for technical support within Two Hours, 24 hours a day, seven days a week.

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Failed equipment shall be replaced or repaired, and spares (if any) inventories replenished to their delivered level throughout this period. Any spare parts (if any) found to be defective during initial delivery inspection or during the Warranty period shall be replaced within one week after notification. There shall be no charges to Purchaser for these replacement parts, including delivery charges. All spare parts replaced under maintenance shall be new parts unless otherwise accepted by Purchaser.

The Bidder's technical support staff shall work with Purchaser's technical staff to establish a strategy to efficiently resolve each identified problem. If at any time, Purchaser believes that the Bidder's technical support is not effectively resolving a problem, Purchaser may request that the Bidder's system expert or staff from the equipment's manufacturer be dispatched to Purchaser's facility. The Bidder's technical team shall be at Purchaser's facility within 24 hours of that request to provide hands-on support towards the problem resolution. Purchaser will not be responsible for any expenses connected to the technical support, including travel expenses.

The Resolution time for different complaints shall be as per the below matrix:

Category	Definition	Maximum Resolution Time
Severity 1 Urgent	Complete system failure, severe system instability, loss or failure of any major subsystem or system component such as to cause a significant adverse impact to system availability, performance, or operational capability	0-2 hrs
Severity 2 Serious	Degradation of services or critical functions such as to negatively impact system operation. Failure of any redundant system component (if any) such that the normal redundancy is lost Non-availability of Man-power at control center during working hours	0-4 hrs
Severity 3 Minor	Any other system defect, failure, or unexpected operation. Request for information, technical configuration assistance, "how to" guidance, and enhancement requests.	0-24 hrs

Failure by the Bidder to comply with the above-mentioned timelines, shall attract a penalty @ Rs. 1000 per hour. Penalty amounts shall be recovered from the amounts due to Bidder or by invoking the Contract Performance Bank Guarantee submitted by Bidder against this Contract.

15.4.4 Post Warranty Maintenance Support

The following post-warranty maintenance services shall be provided as options for all hardware:

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Contract maintenance, eight hours per day, seven days per week, two-hour response. The Bidder's technical support staff shall work with Purchaser's technical staff to establish a strategy to efficiently resolve each identified problem. If at any time, Purchaser believes that the Bidder's technical support is not effectively resolving a problem, Purchaser may request that the Bidder's system expert or staff from the equipment's manufacturer be dispatched to Purchaser's facility. The Bidder's technical team shall be at Purchaser's facility within 24 hours of that request to provide hands-on support towards the problem resolution. Purchaser will not be responsible for any expenses connected to the technical support, including travel expenses.

The maintenance contracts shall cover preventative and remedial maintenance, spare parts, and installation of all engineering, equipment. Purchaser agrees to notify the Bidder of their intent to install any changes or upgrades so that their compatibility with the other elements of the System may be determined.

The SLAs for support including response time, resolution time, applicable penalties for non-compliance etc. shall remain same as per the terms and conditions prevailing during the warranty period.

15.4.5 Hardware Minimum Support Period

The Bidder shall guarantee the availability of spare parts and hardware maintenance support services for all System equipment for a minimum period of 10 years. Subsequent to this minimum support period, the Bidder shall provide to Purchaser a minimum of two year's advance notice of their intent to terminate such services.

15.5 Software Maintenance

The term "software" shall include all firmware and software delivered under this Contract, as well as the associated configuration files, installation kits, release media, documentation, and support media such as on-line help facilities and maintenance tools.

15.5.1 Software Categories

Software shall be divided into two categories:

- a. Category 1 – All software, whether supplied by the Bidder or a Subcontractor, exclusive of that software defined as Category 2.
- b. Category 2 – General-purpose software to be executed on Microsoft Windows. This software specifically includes:

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- i. Operating systems from vendors such as Microsoft Corporation’s Windows operating system
- ii. Productivity software from Microsoft Corporation, such as versions of the Office productivity suite
- iii. World Wide Web browsers from Microsoft Corporation (Internet Explorer)
- iv. Communications Corporation (Communicator)
- v. Web enabled browser for remote client

15.5.2 Right to Change Software

Purchaser must have the right to alter, modify, edit, and add to all software provided with the System. This right shall begin with the delivery of the system and the Bidder’s baseline software. This requirement is necessary to facilitate development of Purchaser-supplied software and the interfaces to the other Purchaser’s computer systems.

15.5.3 Pre-Delivery Maintenance

The Bidder shall have the responsibility for maintenance for all software prior to delivery. This maintenance may be affected by a maintenance contract with OEMs or other parties or by Bidder staff.

15.5.4 Maintenance During Commissioning

The Bidder shall have the responsibility for maintenance of all (Category 1 and 2) software after delivery and prior to commencement of the availability test. This maintenance may be performed by a maintenance contract with OEMs or other parties or by Bidder staff.

15.5.5 Maintenance during the Availability Test

The Bidder shall have the responsibility for maintenance of all (Category 1 and 2) software after delivery and prior to commencement of the Warranty. This maintenance may be performed by a maintenance contract with OEMs or other parties or by Bidder staff.

15.5.6 Maintenance Under Warranty

Maintenance during the warranty shall be in conformance with the terms of the warranty sections of this Contract (**Item 15.3**). The Bidder shall have the responsibility for maintenance for all Category 1 & 2 software during the warranty period. This maintenance shall be performed by Bidder system expert. Bidder is responsible to provide

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maintenance support for the system supplied by its sub-contractor. Bidder must have maintenance support contract with their sub-contractors.

The System software will likely be composed of Bidder's standard system elements, customized or specially developed elements, and several third-party products. In order to facilitate the efficient maintenance of the System software, the Bidder shall follow the general principle that software that is specific to Purchaser shall be implemented in specific libraries that are properly identified. This principle shall ensure that changes and upgrades to the Bidder's standard system software, applications, or third-party products can be implemented without affecting or interfering with the software specific to Purchaser.

During the Warranty period, Purchaser may make changes in software as necessary to meet Purchaser's operational needs. Purchaser shall be under no obligation to inform the Bidder of such changes.

The Bidder's software maintenance responsibilities shall include - Provision of technical support towards the resolution of all software problems for equipment. When needed, the Bidder shall respond to requests for technical support within Two Hours, 24 hours a day, seven days a week. The Bidder's technical support staff shall work with Purchaser's technical staff to establish a strategy to efficiently resolve each identified problem. If at any time, Purchaser believes that the Bidder's technical support is not effectively resolving a problem, Purchaser may request that the Bidder's system matter expert or staff from the equipment/software's manufacturer be dispatched to Purchaser's facility. The Bidder's technical team shall be at Purchaser's facility within 24 hours of that request to provide hands-on support towards the problem resolution. Purchaser will not be responsible for any expenses connected to the technical support, including travel expenses.

The Resolution time for different complaints shall be as per the below matrix:

Category	Definition	Maximum Resolution
Severity 1 Urgent	Complete system failure, severe system instability, loss or failure of any major subsystem or system component such as to cause a significant adverse impact to system availability, performance, or operational capability	0-2 hrs
Severity 2 Serious	Degradation of services or critical functions such as to negatively impact system operation. Failure of any redundant system component (if any) such that the normal redundancy is lost Non-availability of Man-power at Control Centre during working hours	0-4 hrs

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Severity 3 Minor	Any other system defect, failure, or unexpected operation. Request for information, technical configuration assistance, “how to” guidance, and enhancement requests.	0-24 hrs
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Failure by the Bidder to comply with the above-mentioned timelines, shall attract a penalty @ Rs. 1000 per hour. Penalty amounts shall be recovered from the amounts due to Bidder or by invoking the Contract Performance Bank Guarantee submitted by Bidder against this Contract.

15.5.7 End-of-Warranty Upgrade (Option)

An option to upgrade the System software to the latest release at the end of the warranty period shall be quoted. This option shall remain open throughout the project, up to six months into the warranty period. That is, Purchaser shall be able to elect the option at any time up to six months into the warranty period at the cost originally quoted.

If this option is purchased, the Bidder shall upgrade the software to the latest release prior to the end of the warranty period. Purchaser staff will be available to work with the Bidder to affect this upgrade. However, the Bidder shall remain responsible for the successful completion of the upgrade.

15.5.8 Post Warranty Maintenance Support

The following post-warranty maintenance services shall be provided as options for all software:

A subscription to change notification services of the software Bidders. The service shall include transmission of service bulletins and notices of the availability of corrections, modifications, upgrades, revisions, patch and new releases. The service for each software Bidder shall be quoted separately. These bulletins and notices shall describe:

- a. The release or version of the previous software to which the upgrade may be applied
- b. Prerequisites for the upgrades, including a complete list of the minimum release or version of all other software necessary to support the new software
- c. Problems with the previous releases corrected by the upgrade
- d. New features available with the upgrade.

As part of this service, the Bidder shall maintain and periodically publish a list of the current release of their standard products and the compatible releases of all software supplied by Sub-vendors.

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Subscriptions to the software upgrade services of the Bidder’s software. The service shall include the change notification service as described above, as well as a copy of the new software, appropriate licenses for the new software, installation instructions, and a reasonable amount of support for the installation of the upgrade. The service for each software Bidder shall be quoted separately.

A contract for upgrades to be performed by the software Bidder. This contract shall include the software upgrade service described above, plus on-site installation service to be provided by the software Bidder.

The SLAs for support including response time, resolution time, applicable penalties for non-compliance etc. shall remain same as per the terms and conditions prevailing during the warranty period.

15.5.9 Software Minimum Support Period

The Bidder shall guarantee the availability of upgrades, technical support for all System software, and announcements of software and hardware releases applicable to the system for a period of ten years. Subsequent to this minimum support period, the Bidder and the System Software Bidders shall provide to Purchaser a minimum of two year's advance notice of their intent to terminate such support and mitigation plan.

15.6 Upgrades, Patch Management & Modifications

- a. Bidder shall continuously keep the Purchaser informed of all Software and Hardware upgrades as & when these are released.
- b. Bidder shall supply upgrades and patches of all installed software (both own and third party) for a period of five years from the date of system acceptance without commercial implication.
- c. Bidder shall rectify all design defects and software bugs at no extra cost for a period of 10 years from the date of system acceptance.
- d. Bidder shall support the system totally for ten (10) years, even if no upgrades are implemented.
- e. Bidder shall provide lifetime support (10 years) for the system. To meet this requirement, Bidder shall refer with OEMs on the product’s life cycle management and obsolescence. Bidder shall attaché the product life cycle matrix for hardware and software offered under this RFP.

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f. The system referred to above includes Bidder’s own as well as third party components.

16.0 Tools Tackles for Erection & Commissioning

Bidder to consider and supply special tools and tackles (Hardware and Software) required for erection, commissioning and maintenance of the offered system. After commissioning of the system all tools and tackles shall be handed over to Purchaser's Project/Maintenance team.

All tools (both hardware and software), test instruments, simulation jigs, documents, programming equipment etc. required for Installation, Testing & Commissioning are in the scope of the bidder.

All configuration cables and other specialized testing passive devices to be provided with the supply of material.

End of Section-A

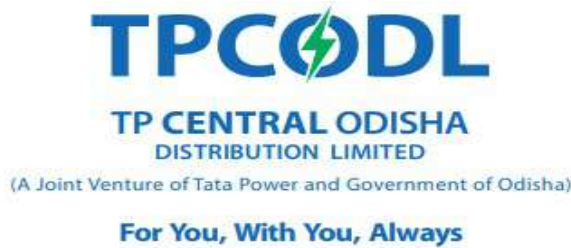
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Document No: A&T/APSCC-SPEC/01/2024

SECTION – B

DETAILED TECHNICAL SPECIFICATIONS



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Revision	Date	Description	Approvals		
			Prepared By	Checked By	Approved By
R0	02 nd Jan 2024	Issued for Procurement	SS	DRS	AKA

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Hardware & Software Technical Specification

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1.0 Hardware Specification

1.1 System Hardware Requirements

This section articulates the hardware requirements for setting up the Area Power System Control Center at four locations in TPCODL Distribution business area. The conceptual APSCC requirement has been indicated in **Section- E Annexures 1**. The bidders are encouraged to optimize the requirement of hardware with adequate redundancy without affecting the performance of the system. All hardware shall be manufactured, fabricated, assembled, finished, and documented with workmanship of the highest production quality and shall conform to all applicable quality control standards of the original manufacturer and the Bidder. All hardware components shall be new and suitable for the purposes specified.

Bidder shall assess the adequacy of hardware specified in the Indicative BOM (**Section- E Annexures 4**) and if any additional hardware is required to meet all the requirements of the technical specifications, the same shall be included in the offer. The Bidder shall offer the minimum hardware configuration as specified herein for various equipment, however if required, higher end hardware configurations shall be offered to meet all the requirements of the technical specification. It is necessary to ensure that the functional requirements, availability & performance aspects are met as per system specification (**Refer Section-A Item 14.0, System Capacity, Performance and Demonstration**).

The bidder shall ensure that functionally equivalent hardware is available which is compatible with software delivered with the system. If purchaser chooses to purchase said functionally equivalent hardware proposed by the bidder, any software modifications necessary to maintain complete functional compatibility with all software delivered by bidder shall be made at no cost to purchaser. In the event the modified software is not found compatible with functional equivalent hardware, the bidder shall make suitable corrections to this modified software and install this corrected software at no cost to Purchaser.

1.1.1 Hardware Characteristics

This section describes the hardware characteristics for APSCC to be supplied for Purchaser. In addition, specific hardware quantities and associated characteristics for each individual system are described in this document.

The Bidder's proposal shall clearly show how the proposed hardware characteristics compare with the characteristics specified by the Purchaser. In this regard, the Bidder may

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propose alternative hardware better suited to the characteristics of the Bidder's standard products/solution if it represents a superior performance and cost optimization. Purchase of alternative hardware by Purchaser, however, shall not release the Bidder from the contractual obligation to satisfy the functional, availability, capacity, expandability, performance, and other requirements of the Specification.

1.1.2 General Requirements for Hardware

Functions, hardware requirement in this section is applicable for APSCC. Bidder shall propose the hardware architecture accordingly.

The hardware shall include all engineering changes and updates announced by the equipment manufacturer since it was produced. As part of the field performance test, the Bidder shall have all hardware inspected and certified by the equipment manufacturers as acceptable for service under a manufacturer's maintenance contract.

All hardware shall be manufactured, fabricated, assembled, finished, and documented with workmanship of the highest production quality and shall conform to all applicable quality control standards of the original manufacturer. All hardware components shall be new and suitable for the purposes specified. All hardware shall conform to EMI and EMC requirements for immunity as per IEC-870-2-1 Level 1, emission as per IEC 870-2-1 Class B and Cyber Security compliance of IEC62443 & IEC62351.

Display Controller and Workstations shall include self-diagnostic features. On interruption of power they shall resume operation when power is restored without corruption of any applications. The hardware shall be CE/FCC or equivalent international standard compliance. The specification contains minimum hardware requirement. However, the Bidder shall provide hardware with configuration equal or above to meet the technical functional & performance requirement. Any hardware / software that is required to meet functional, performance & availability requirement shall be provided by Bidder & the same shall be mentioned in the BOQ at the time of bid submission. If not mentioned at the time of bid, bidder shall provide the same without any additional cost to the Purchaser.

The proposed system shall be designed for an open & scalable configuration, to ensure the inter-compatibility with other systems of the Purchaser, the future smooth expansion as well as the easy maintainability. The proposed hardware configuration should be extended by adding CPU processors / memory boards / disks etc. in delivered units or additional units for capacity extension. The configuration of the proposed system shall comprise a centralized computing environment with open systems architecture. The system architecture shall be

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open internally and externally to hardware or application software additions, whether supplied by the original supplier or obtained from third party Bidders, both for capacity expansion and for upgrading functionality, without affecting existing system components or operation. To be recognized as a true open computer system, all internal communications among the systems and all external communications between the systems and other computer systems shall be based on widely accepted and published international or industry standards which are appropriate and relevant to the open systems concept or should have a field proven acceptance among utilities. This applies to the operating system, Database/Configuration management system, and display management system. The bidder should ensure that at the time of final approval of hardware configuration/BOQ, all the above hardware are current industry standard models and that the equipment manufacturer has not established a date for termination of its production for said products. Any hardware changes proposed after contract agreement shall be subject to the following: -

- a) Such changes/updates shall be proposed, and approval obtained from Purchaser along with the approval of Drawings/documents.
- b) The proposed equipment shall be equivalent or with better features than the equipment offered in the Contract.
- c) Complete justification along with a comparative statement showing the original and the proposed hardware features/parameters including technical brochures shall be submitted to the Purchaser for review and approval.
- d) Changes/updates proposed will be at no additional cost to the Purchaser.

1.1.3 Hardware configuration

In this technical specification all hardware has been broadly classified as 86" Display Panel with Controller, Workstations, Networking equipment with High Availability Firewall, UPS with Battery pack, and other Peripheral device. The term "Controller" is defined as any general-purpose computing facility used for hosting application for displaying the SCADA/ADMS Workstations display on Large video panel. The term "Peripheral Device" is used for all equipment other than controller. Peripheral device includes Workstations, Router, Ethernet Switch, LAN, Network Printer etc.

All hardware shall have MIB compliant with secure SNMP (SNMP V3) for monitoring of resource usage. For Controller & Workstations the minimum shall include at least RAM utilization, CPU utilization, Disk I/O utilization. For Network equipment it shall include at least the Ethernet port utilization and Bandwidth utilization. The utilization of the resources

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shall be as per the Section A (***Refer Section-A Item 14.0, System Capacity, Performance and Demonstration***).

Controller and workstations shall include facilities to detect the loss of input power, execute an orderly shutdown upon loss of input power, and automatically resume operation when power is restored. All controller and workstations shall be equipped with ports as per function requirements specified in the specification.

All Controller/Workstations shall be high performance current model processors with modular architecture, suitable for intended applications of the Purchaser. The Controller / Workstations shall be replaceable or upgradeable with future processor to obtain system expansion with no required system or application software changes.

The number of application, general purpose registers, hardware instructions repertoire, memory capacity and cycle time, internal and external interrupt system and the architecture shall be designed to provide enhanced process-oriented real time capabilities. High inherent reliability, self-checking, error recovery and trouble isolating features are vital aspects of the system and shall be proved for.

Additional features that processor shall include as a minimum are:

- a) The hardware interrupt structure (CPU) shall support multi-programming and suitable memory protection (hardware) shall be provided for the system security.
- b) Power failure fail-safe mode shall be provided for the CPU. This feature shall permit orderly shutdown and resumption of CPU operation, after required time delay, on resumption of power supply.
- c) Procedure for loading complete software from auxiliary storage shall be easy and can be done by control Centre engineer. (i.e. no need to have the special training by the operator). Loading shall be supervised by CPU and system re-initialization done automatically.
- d) The CPU shall have integrity features such as memory protection, memory error correction code scheme, arithmetic exception, privilege violation trap and non-present memory detection.
- e) The CPU shall have instruction look-ahead feature for fast instruction execution.
- f) The CPU shall have capability to handle data sizes of bit, byte, half word, word and double word.

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- g) The CPU shall be capable of modular hardware enhancements with other hardware units that result in increased system level throughput.
- h) The system shall provide on-line backup facility. The procedure for taking backup shall be single click operation.
- i) A real-time clock, the CPU shall have real time clock capability to accept a time synchronization pulse and on SNTP (using both network protocol (SNTP), hardware pulse from the clock) and adjust its internal clock with the pulse. And shall be capable of synchronizing the other subsystems.
- j) An internal interrupt (trap) system for hardware and/or software errors associated with processor operation
- k) A memory error correcting module that detects all double-bit errors and corrects all single-bit errors; parity checking on data, addresses, and commands (an indication and count of these errors shall be maintained)
- l) The ability to perform I/O operations without Central Processing Unit (CPU) intervention.
- m) An I/O capability that services all units in the auxiliary memory and display subsystems at their maximum transfer rates.
- n) Hardware bootstrap features that will support rapid system reload from disk or other storage devices.

1.1.3.1 Processor Utilization

The Controller/Workstations systems shall support all functions described in this Specification utilizing no more than 30% of the processing capability of each processor under the normal loading conditions. The corresponding factor for peak loading conditions shall be 40% for Application Processors and 40% for Communication Processors. Processor time waiting for I/O transfers (including auxiliary memory transfers) may be included as idle time, except that only one-half of the processor time waiting for I/O transfers may be included as idle time up to a maximum of 10%.

1.1.3.2 Processor and Device States

Processor and device states identify the operating condition of each processor and peripheral device of the proposed system and shall be used to determine the system's reaction when restart and failover operations take place. The definition of states will depend

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on the Bidder's system design. However, the following states, or their equivalent, shall be supported:

- Primary – A primary processor or device performs any or all the intended functions.
- Backup – A backup processor or device replaces a primary processor or device in the event of primary failure
- Down – A down processor or device is not communicating with other elements of the system and is not capable of participating in any system activity.

1.1.3.3 Main Memory

The main memory of each Controller/Workstations processor shall be available for data storage, program execution, and all input/output operations without restriction. The main memory of each Controller and workstation shall be delivered such that 60% of the delivered memory is spare. The total delivered memory shall be expandable in the field solely by card or circuit module additions. To meet this requirement, the addition of enclosures, cables, chassis, or power supplies or the substitution of higher density memory modules for delivered memory modules shall not be necessary. Delivered memory shall include all memory supplied with the processor or workstation, whether or not this memory is needed to meet the requirements of this Specification.

- a) The main memory shall be made of state-of-the-art technology with minimum cycle time and access time and the minimum word size shall be 64 bits wide with extra error correction code bits.
- b) The main memory of each processor shall be modular and expandable solely by card or circuit module additions within the delivered enclosures.
- c) The memory assembly shall have high performance memory system including memory bus controllers, refresh controllers and error corrections circuits.
- d) Interleaving and overlapping of memory operation shall be possible by memory bus controller for enhanced throughput.
- e) The memory management system shall provide memory write protect facility.

1.1.3.4 Auxiliary Memory

The auxiliary memory supplied with each Controller and workstation, shall have sufficient storage capacity to satisfy the requirements of respective computer system's functions under the normal and peak loading conditions, to take care of all the requirements up to

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completion of project. Fifty percent (50%) of each delivered auxiliary memory shall be spare capacity completely free and available for Purchaser's use. Each auxiliary memory shall also be expandable in the field within the delivered enclosures to at least with same capacity of the delivered system, where the delivered capacity includes the 50% spare capacity provided in accordance with this Specification and spare capacity in excess of specified requirements.

Auxiliary memory access and transfer times must be sufficiently low to serve the specified present and future needs of each system. No more than 30% of the available access and transfer capacity shall be utilized under the normal loading conditions. No more than 50% of the available access and transfer capacity shall be utilized under the peak loading conditions.

Storage devices shall be provided to meet the total storage requirements and performance requirements of the proposed applicable system. The minimum capabilities shall be as follows:

- a) Read/write capability.
- b) Ability to format blank disks in the background.
- c) Standard, non-proprietary, data transfer methodology in alignment with ISO 9660.
- d) Data transfer rate capable of meeting performance requirements.
- e) Messages shall be output to announce when a disk is filled to a configurable percentage of capacity.
- f) No restrictions shall be placed on the allocation of processor main or auxiliary (disk) memory to be used to any specific purpose.

1.1.3.5 Centralized Time Synchronization

The proposed system will be time synchronized with the Purchaser’s Centralized Time Synchronization facility installed at both MCC & BCC. The Proposed system shall support SNTP protocol to achieve the same with real-time response.

2.0 Large Display Panel (LDP)

TPCODL proposes to install LED based 86” Large Display Panel in all Area Power System Control Centre with connectivity to all the Workstations for displaying graphics, tables such as GIS Map, network diagram, Power Flow diagram, trends, alarms, parameter etc.

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The Bidder shall supply all necessary hardware and software, including mounting arrangement, Controller, multi-screen drivers, adapters and memory to seamlessly integrate the Large Display Panel with the user interface requirements described in the specification.

2.1 Proposed System

Large Display Panel shall be modular system with slim form factor DLP (Digital Light Processing) based high resolution LED rear projection technology. The LDP will be used to project displays of SCADA/ADMS system independently of workstation console monitors.

The scope shall include all the control and networking components required for complete integration of LDP with proposed Workstations (i.e. SCADA/ADMS, IT, GIS). The offered LDP system shall include all the necessary frames / structures for proper mounting. The projection system shall be capable of supporting entire display area for one display or multiple display. The projection screen images shall be clearly visible from all the operator stations. Bidder shall confirm offered resolution is appropriate with respect to distance between Operator Console and LDP.

Bidder shall guarantee the performance of LDP for a distortion-free and sharp image. LDP system shall be equipped with necessary filters to enable dust free environment for the system. Bidder shall clearly indicate the temperature & humidity requirements and gaps for LDP. Bidder shall indicate performance of LDP in the case of Air-conditioning failure.

Bidder shall furnish his recommendations on Control Centre Equipment Layout, HVAC and Lighting with regard to installation of LDP to attain good aesthetics and performance.

All the hardware and software being offered shall be recent in Technology and Bidder shall guarantee the support for hardware & software for next 10 years (Maintenance & Spare support).

The LDP shall consist of the Visual display unit, Control ware and the wall management software, which shall be supplied from a single manufacturer.

The LDP Controller shall have the upgradeability and scalability for future expansion.

The LDP components/system shall be rugged and of industrial grade and shall be able to work in 24/7 environments. The LDP enclosure must be over-pressure designed to prevent dust penetration.

2.1.1 Features

- a) All the operations envisaged from Operator Work Station shall be possible from the LDP also.

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- b) LDP shall support Picture in Picture, resize, zoom and pan, anti-aliasing, freeze and screen capture.
- c) The LDP shall be a seamless rectangular wall with aspect ratio of 16:9. The screens shall have a 0 mm (typical) border.
- d) The LDP system shall have a minimum resolution of 3840 X 2160, 4K Ultra High Definition or higher and should offer minimum 1.07 billion (10-bit) display color. The screens shall be capable of displaying full resolution of the source.
- e) The LDP shall have a horizontal & vertical viewing angle of approximately 178/178 degrees.
- f) The overall brightness of LDP shall be at least 350 nits.
- g) The LDP shall have LED based light source consisting of Red, Green and Blue LEDs or Laser. The median LED/Laser life should be at least 50,000 hrs. The latency for picture projection shall be less than 8 msec i.e. the delay between receiving the content and displaying it shall not exceed 20 milliseconds.
- h) The Centre to Corner brightness of the wall shall be generally uniform and better than 99%. The brightness shall be adjustable through software to achieve uniform brightness.
- i) LDP shall generate high contrast image even in ambient lighting conditions. The contrast ratios shall be 5000:1. Screens should be high contrast and non-reflective.
- j) System being offered shall be compatible with Linux / Windows workstations.
- k) Brightness adjustment shall be provided for LDP in order to achieve suitable brightness to suit Control Centre environment, efficiency in power consumption.
- l) The LDP shall offer an automatic colour calibration & brightness adjustment mechanism without the intervention of a specialized technician and without additional external device.
- m) The LDP controller shall have SNTP clients for synchronizing its time with the SCADA/ADMS System.
- n) 6U RACK shall be supplied for installation of LDP Controller.
- o) LDP offered shall be flicker-free and shall not produce glare.
- p) Bidder shall indicate the remote-control facility and available functions for the LDP system.
- q) Controller shall have the functionality to pre-configure and save various display layouts to be accessed at any given point of time with a simple mouse click.

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- r) LDP shall provide real time clear luminous view to share information between operators and decision makers.
- s) The LDP shall enable users to display inputs from multiple sources/applications simultaneously in freely resizable and repositionable windows on entire display area to enable effective collaboration and faster decision making.

2.1.2 Communication Network

- a) LDP shall be integrated with Control Centre SCADA/ADMS LAN, so that the Control Room Engineer shall be able to work on the large screen sitting at their own PC's / WS's keyboard & mouse.
- b) Bidder to ensure that the Communication network of LDP shall be independent of Control Centre network and shall be appropriately protected through Firewall from other systems.
- c) Each component of the LDP system shall provide a network interface for management of the entire system, including processing and display shall be centralized and accessible through a network connection.

2.1.3 Interfaces

- a) The LDP shall also be able to display Video signals (CCTV/DTH) and other Laptop Computer Feeds.
- b) The bidder shall consider TCP/IP and hardwired HDMI connectivity with SCADA/ADMS System. For HDMI connection, projection connectivity shall be provided for all the workstations. HDMI and TCP/IP connectivity shall be independent.
- c) LDP shall be compatible with architecture using high bandwidth image Controller for displaying Purchaser's dual headed workstations working on Latest windows platform, CCTV, Video cameras. LAN image shall be displayed through Controller.
- d) Control of LDPI shall be through wall management software using TCP/IP port / IR Remotes for calibration & control.

2.1.4 Large Display Panel Module

The requirements for each modular LDP are as follows:

- a) The LDP shall be a seamless rectangular wall
- b) The screens shall be capable of displaying full resolution of the source

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- c) The height of LDP above the ground level shall be decided during detailed engineering based on the layout of the control Centre and available clear height.
- d) Necessary cooling arrangement shall be provided with the LDP. The air-conditioned environment in the Control Centre shall be provided by the Purchaser. However, Bidder to specify the specific requirement if any with respect to temperature, humidity, lighting arrangement, Control Centre Layout etc.
- e) The LDP shall be designed to prevent dust ingress using methods such as high internal pressure
- f) The LDP should be rugged and industrial grade in nature and shall be designed for 24X7 operational environments.

2.2 Controller Hardware & Software (Large Display Panel)

Controller shall have Non-Redundant AC power supply. The Controller shall have the provision for expansion of the processor, auxiliary memory and main memory, communication interfaces by 100% of the delivered capacity. The expandability shall be possible at site with addition of plug in modules. Initially, USB ports of Controller shall be disabled. The Controller shall be off-the shelf hardware, which can be replaced by Purchaser of any OEM product or directly procure from the open market.

Controller shall be mounted in the 6U rack and shall have a facility to connect any monitor, Keyboard and mouse of the delivered workstations.

Minimum configuration details of the Controller are tabulated in the details along with 86" Display Panel.

- a) I9 Processor or better
- b) 8 GB or Higher DDR4
- c) Hard Disk: SSD harddisk of minimum 1 TB or higher
- d) Mounting Kit (Controller is planned to be installed in the Wall Mounted 6U rack considered for the purpose, near to 86" LED Display Unit.
- e) Communication/Display Ports: Ethernet Ports – 2 Nos. 100/1000 MBPS, HDMI Port – 5 Nos.
- f) Display Output for 86" LED Display Panel : 1 No.
- g) DVD-R/W drive
- h) Non-Redundant Power Supply (230 V AC)

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- i) Operating System: Latest Windows 11 2023

The above configuration is only indicative, Bidder shall consider the configuration higher than this for the proposed solution. The above-mentioned disk size is only for servers other than Time-series historian. Bidder shall size the disk as per the data storage mentioned in the specification for history.

2.2.1 Graphic Controller

- a) Network and application data relates to network information or customer applications (SCADA, GIS, etc.) that would be displayed on the LDP through a Controller. The solution must be fully digital.
- b) Controller shall be used for displaying Windows, Linux applications directly onto the LDP. Graphic Controller applications can be installed directly on the Controller or hosted on SCADA/ADMS workstations connected to the LAN. Display of LAN based applications shall be ensured by wall management software. The processing of the network data shall be independent from the processing of the video media.
- c) The controller shall be provided by a single manufacturer that delivers LDP, all required processing equipment and management software.
- d) LDP Controller Interface Ports, Connectors shall be as per the technical details mentioned in the RFP.
- e) LDP controller shall be able to use the applications designed for Latest Windows OS 64 Bit or the latest operating system supported by the SCADA/ADMS system client. The Workstation client application of SCADA system shall be provided on the LDP system controller.

2.2.2 RGB & Video Insertion

- a) The solution must be fully Digital and require a minimal use of analogue signals.
- b) The system shall be designed to accept HDMI signals with native resolution of 3840 x 2160.

2.2.3 Wall Management Software

- a) The software shall be able to configure various window layouts and access them at any time with a simple mouse click.
- b) The software shall enable the users to see the desktop of the LDP remotely on any Operator Work Station connected with the Display Controller over the Ethernet and change the size and position of the various windows being shown.

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- c) The software shall enable users to access the LDP from the local keyboard and mouse of their Work Stations connected with the Display Controller on the Ethernet, the work stations screen content shall be available on the Display wall in scalable and moveable windows in real time environment.
- d) The software shall provide information on life cycle of the LEDs in form of running hours, Temperature of CPU, LDP temperature, and relevant frequencies.
- e) The management software shall be able to pre configure various display layouts (arrangement of different windows) and access them at any time with a simple mouse click. The window can be of different size and could contain display from different applications/sources.
- f) The management software shall be able to push the screen content of a Windows PC / Workstation to be shown on the LDP in scalable and moveable windows in real time environment. The Windows PC/workstation shall be connected to the local Display Controller over LAN.
- g) The LDP management software shall allow scrolling ticker messages to be sent to a LDP which is either located in the same Control Centre or is located in other Control Centre connected through WAN. The ticker messages shall be easily modifiable and enterable through the SCADA system as well as manually. While entering manually, any text file shall be dropped on the “ticker message input area” and the application shall begin to scroll the text. The ticker message shall be placed at the bottom of the screen or floating anywhere on the desktop. The ticker message text string shall be at least 256 characters.

2.2.4 19” 6U Enclosure

Each APSCC Control Centre will have 19” 6U Enclosure wall mounted for mounting the Large Display Panel Controller Enclosures shall meet the following requirements:

- Rack Type : Wall Closet
- External Dimension : 368 (H) X 600 (W) X 600 (D) mm
- Storage Capacity : Upto 6U Rack of 19"
- Degree of Protection : IP20
- Power Supply : Power Distribution Unit with 5A/15A sockets 4 nos., MCB 16A, Cable manager,
- Shelf : 1U shelf, installed in the 6U Enclosure

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Rack Opening	:	Front lockable toughened Glass Door
Top and Bottom Cover	:	Welded to frame, Vented and Field Cable Entry/Exit Cutouts
Earthing Strip	:	Copper Strip Grounding
Panel Colour (Internal & External)	:	Black (Powder Coated)
Mounting Accessories	:	All accessories required for mounting the Enclosure on Wall near the Large Display Panel

2.3 LDP diagnostics and maintenance

The Diagnostic software shall perform health monitoring that allows timely detection of faults and provide at least the following:

- a) LDP health, LDP IP Address
- b) LED age, expected life left
- c) Monitoring of critical Cooling and cooling components
- d) Selected inputs and presence of sources on either input
- e) The LDP maintenance Software shall allow commands on wall for at least the following:
 - i. Switching the PDU ON or OFF
 - ii. The auto adjusting of color brightness shall not require downtime or image loss at any time.
 - iii. Changing the active input
 - iv. Fine tune color
 - v. The LDP must allow easy removal of the components for maintenance.
 - vi. System shall incorporate user friendly set up and maintenance tools for image alignment to reduce downtime and ease in maintenance.

2.4 LDP Mounting and General Arrangement

- a) LDP Panel is planned to be mounted on the Control Centre Wall along with Controller installed in Wall mounted 6U rack adjacent to the LDP.
- b) The height of the LDP shall be such that operator's vision of video wall shall not be obstructed due to 24" Monitor kept on the control desk. The same shall be approved by Purchaser during detail engineering.

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- c) Any other requirement for proper video wall mounting & functioning & viewing shall also be specifically brought out by the Bidder in his offer, along with all relevant details.

3.0 SCADA/ADMS, GIS Workstations

3.1 SCADA/ADMS Operator Workstations

TPCODL Automation Team will provide SCADA/ADMS Operator Workstations for all the four Area Power System Control Centre. However, provisioning of Power Supply and LAN for establishing communication between APSCC and MCC and BCC through Ethernet Switch/Firewall is in the scope of the bidder.

3.2 GIS Workstations

The GIS Workstation shall have 27" LED Single monitor with Wireless keyboard mouse. GIS workstations shall support full graphics displays.

The minimum hardware configuration shall be:

3.2.1 GIS Workstations

- a) Processor: 13th Generation Intel Core i7 Processor, 64 Bit or better
- b) Main Memory : 32 GB DDR5
- c) Hard Disk : Minimum 1TB 7200 rpm SATA 3.5" HDD and SSD of 1 TB
- d) Graphic Card : 16 GB NVIDIA Quadro, DVI+VGA or better
- e) DVD-RW drive
- f) 27" LED monitor
- g) Aspect Ration 16:9
- h) Wireless Keyboard & Mouse
- i) Power Supply: Power Supply (230 V AC) with 80 Plus Platinum certification
- j) Ports & Connectors: Ethernet Ports (1000 MBPS) - 2 Nos. (RJ45) (Rear), USB - 4 Nos., Type-A 5 Gbps signaling rate (1- Front, 3 Rear), HDMI - 2 Nos., Headphone/Microphone combo: 1 No. (Front), Line-in : 1 (Rear), Line-Out : 1 (Rear), VGA: 1 (Rear), Power Connector : 1 (Rear)
- k) Other I/O Interface : Realtek ALC3867 Codec, Universal Audio Jack with CTIA Headset Support, Audio Line-Out Rear Ports (3.5 mm), Multi-Streaming Capable
- l) Video Interface : 2 (1 – 27" Monitor, 1 – Display Panel)

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- m) Condition Monitoring: Hardware shall be MIB compliant with secure SNMP Ver3.0. The system shall be able to display /provide Sync Status- Main/Backup , Heartbeat of the Processor, LPMT, SPMT etc.
- n) OS & Other Software: Latest Windows 11 2023 Operating system, Latest Version of MS Office (OS & MS Office with License in the name of TPCODL)

The above configuration for GIS Workstations are only indicative; Bidder may consider the configuration higher than this for the proposed solution.

4.0 Network Panel

Each APSCC Control Centre will have Network Panel for mounting the networking equipment proposed under this project. It is proposed to install PoE, Router, 24 Port Ethernet Switches and HA Firewall. Enclosures shall meet the following requirements:

- a) Panel shall be free-standing; floor mounted and single panel dimension shall not exceed 2200 (h) X 800 (w) X 1000 (d) mm.
- b) Panel shall be front fixed and rear double door with front & rear access to the hardware with proper locking arrangement on the both sides. The Panel shall have levelling leg.
- c) Panel shall have Universal type Component shelf (2 Nos.), 19" (w) / 575 mm (D), Load CC 50 kg.
- d) Cable entry shall be through the bottom with suitable cable trough for routing the internal & external cables. No cables shall be visible, all cables shall be properly clamped, and all entries shall be properly sealed to prevent access of rodents.
- e) The safety ground shall be isolated from the signal ground and shall be connected to the ground network, each ground shall be a copper bus bar. The grounding of the panels to the Purchaser's grounding network shall be done by the bidder.
- f) Panel shall have suitable Power Distribution Units (PDUs) with indication of the socket healthiness with proper electrical rating, number of sockets (with 20% spares) and other accessories which are required to connect the equipment. The PDUs shall be designed with proper rated voltage, load current and power based on the proposed solution by the bidder.
- g) Bidder shall also provide additional 230 VAC 15/5A duplex type power socket & switch for maintenance purpose.
- h) Panel shall be provided with an internal maintenance lamp and thermostat, space heaters with proper isolations, gaskets.

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- i) Panel shall be indoor, dust-proof with rodent protection, and meet IP41 class of protection.
- j) There shall be no sharp corners or edges. All edges shall be rounded to prevent injury.
- k) Document Holder shall be provided inside the cabinet to keep test report, drawing, maintenance register etc.
- l) Cooling air shall be drawn from the available air within the Centre. Panel shall be designed with suitable inlet & exhaust FAN with Louvers at both the sides (top & bottom) shall be provided in ventilation.
- m) All materials used in the enclosures including cable insulation or sheathing, wire troughs, terminal blocks, and enclosure trim shall be made of flame-retardant material and shall not produce toxic gasses under fire conditions.
- n) All equipment shall have individual AC/DC power supply isolation through MCB for each source. The terminal blocks for AC/DC source shall be droppable type links (CBT4U or equivalent).
- o) Suitable sized terminal blocks shall be provided for all external cabling.
- p) All wiring shall use copper conductors. Conductors in multi core cables shall be individually color coded.
- q) The finish colors of the panel shall be Powder Coated Black.
- r) Panel shall have pre-installed casters that allow maneuver it over a level, smooth, stable surface and through a standard doorway into position, where it can be stabilized by adjusting the levelers (adjustable Bolt down kit).
- s) Panel Grounding-
- t) A safety ground in accordance with the National Electrical code shall be provided in the panel and shall connect to the ground (green) wire of the ac power input. Panel grounding shall be subject to Purchaser approval.

4.1 **Networking Accessories**

a) **Patch Panel**

All structured Ethernet copper cabling shall be terminated on of Cat 6 E type patch panels on L2 switch side.

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b) **I/O Box**

All the structured CAT6 cabling on the device side shall be terminated on I/O boxes.

c) **Ethernet Patch cords**

All the terminations on the switches / devices shall be done using factory crimped, flexible Cat 6 E UTP Patch cords of suitable length.

5.0 Fully Managed Layer 2 Ethernet Switch

Technical specifications for the Fully Managed Layer 2 Ethernet switch is given below:

- a) The switch shall be designed for continuous operation
- b) Switch shall have minimum 24 Ethernet Ports – RJ45 (100/1000 Mbps)
 - o No. of CU Ports : 24 CU Ports
 - o Future Support for Upgradation to 2 uplinks of 1 Gbps
 - o USB Compatible Console Cable
- c) Switch shall be 19-inch rack mountable with Power Socket and Ports at rear side
- d) LED indicators for link establishment and data transfer for each port
- e) Should support remote Configuration
- f) It should own separate USB Port for maintenance
- g) Latency shall not be more than 10 μ s.
- h) Should be Certified from Accredited LAB, bidder to submit the certificate
- i) All the cards/modules of the Switch must have conformal coating for protection against harsh environments.
- j) Switch shall have design for minimum Heat generation and high MTBF (minimum time between failure)
- k) Switch shall Support Simple plug and play operation - automatic learning, negotiation, and crossover detection
- l) Switch shall Support SNTP time synchronization (client and server) for synchronization of networks
- m) Switch shall Support Management Tools like:

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- i. Web-based, Telnet & Command Line Interface (CLI) for quickly configuring major managed functions
- ii. SNMP v1/v2c/v3 for different levels of network management
- iii. Remote Monitoring (RMON)
- iv. Rich set of diagnostics with logging and alarms
- v. Bidder shall supply Console Cable along with each switch

5.1 **LAYER 2 features**

- a) The Switch should support Layer 2 switch ports with Secure VTP or similar protocols to reduce administrative burden of configuring VLANs on multiple switches in turn eliminating the configuration errors & troubleshooting in secure manner.
- b) The Switch should support Rapid Spanning Tree Protocol & Multiple Spanning Tree Protocol.
- c) The Switch shall have IEEE compliance for 802.1Q VLAN, 801.2p, 802.1d STP, 802.3ad (Port aggregation), 802.1w RSTP, 802.1s MSTP, 802.3ad LACP, IEEE 802.1ab Link Layer Discovery Protocol.
- d) The switch should have support for Port mirroring
- e) The Switch should be able to discover the neighboring device of the same vendor giving the details about the platform, IP Address, Link connected through etc, thus helping in troubleshooting connectivity problems or equivalent
- f) The Switch should support a mechanism to prevent edge devices not in the network administrator's control from becoming Spanning Tree Protocol root nodes

5.2 **Virtual Switching Support**

- a) Shall support combining of two separate physical switches in a single logical unit
- b) Virtual switch system shall be responsible for the control plane of both the switches
- c) Virtual switch data planes of both the physical switches shall be active
- d) Virtual switching links between the 2 High Available switches shall be min of 10 Gbps bandwidth with no single point of failure, all the required modules / other related cards should be proposed from day one
- e) Shall support In-Service OS upgrade mechanism with a minimal disruption of traffic through upgrade process

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- f) Failover shall be transparent to other networking devices
- g) Shall support configuration roll back for quick correction of wrong configuration

5.3 Management features

- a) Switch Latency period: 7 Microsecond or better
- b) Transfer Rate of the Switch: 50.4 Gbit/sec
- c) The Switch should support SNMP V1, V2C, V3
- d) The Switch should support Configurable SNMP traps
- e) The Switch should support Logging to syslog with time stamp
- f) Java Run time version - Latest
- g) The Switch should support SNTP support.
- h) Full environmental monitoring of PSUs, Fans, temperature and internal voltages, with SNMP traps to alert network managers in case of any failure
- i) IPV4/6 : The switch should support IPV4/6 in hardware without the addition of special modules to achieve that forwarding & the Switch PPS performance should not degrade for IPv4/6 packets
- j) Shall support Active-Active Clustering, VSS or equivalent technology for high availability and quick resiliency
- k) Shall support Resilient Link Feature
- l) Interface for Centralized Network Management System through Industry Standard Interface

5.4 Quality of Services

- a) Shall support Per-port -per-VLAN policies, Distributed policing (up to 4 K polices), Egress/Ingress policing, Diff Serv QoS on all ports, minimum four queues per port in hardware
- b) Shall support Congestion Avoidance: WTD or WRED, multiple Queue Thresholds or equivalent technology
- c) Shall support Strict-Priority Queue (protects mission-critical, delay-sensitive traffic), Weighted Round Robin (WRR), Priority queuing, Weighted Random Early Detection (WRED), Tail-drop thresholds or equivalent technology.

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- d) Shall support Traffic policing, Traffic shaping, Traffic marking and classification
- e) Shall support IEEE802.1p CoS and DSCP based traffic marking
- f) Shall support Cross stack QoS

5.5 **Security Features**

- a) Shall support IEEE 802.1x
- b) Shall support at least 500 ACL
- c) Shall support VLAN ACLs, Router ACLs, port-based ACLs
- d) Shall support TACACS+/RADIUS
- e) Shall support Shall have SSHv1, SSHv2, SNMPv1, SNMPv2, SNMPv3, Web Based GUI, Telnet and NTP support
- f) Shall support Management Access Filter (Access Policies) & Port level access-lists
- g) Shall support Dynamic ARP inspection
- h) Shall support IP Source guard
- i) Shall support MAC binding
- j) Shall support Per-port storm control
- k) Shall support Secure admin access over SSH
- l) Shall support IEEE 802.1x
- m) Shall support Security encryptions
- n) Shall support Private VLANs
- o) Shall support a mechanism to prevent a malicious user from spoofing or taking over another user's IP address by creating a binding table between client's IP and MAC address, port, and VLAN

5.6 **Power supply**

- a) Power Supply Module - 230 V AC +/- 20%, 50 Hz
- b) Separate MCB with appropriate rating shall be used to power up the Switch
- c) Provision for connecting redundant power supply option should be available.

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5.7 Environmental

- a) The switches should have IEEE 802.3az Energy efficient Ethernet and ROHS compliance
- b) Switch should be capable of operating under normal room temperature without the requirement of Air conditioning.
- c) Conformal Coating: Required
- d) Operating Temperature: -5° to +85°C.

- IEC60068-2-1 - Cold Temperature
- IEC60068-2-2 - Dry Heat
- IEC60068-2-30 - Humidity (Damp Heat, Cyclic)
- IEC60068-21-1 - Vibration
- IEC60068-21-2 - Shock, IEC61850-3- Environmental

5.8 Product Conformity

Product Conformity	Purchaser Requirement
IEEE 802.3-10BaseT	Yes
IEEE 802.3u-100BaseTX	Yes
IEEE 802.3u-100BaseFX	Yes
IEEE 802.3ab-1000BaseT	Yes
IEEE 802.3ad-Link Aggregation	Yes
IEEE 802.3x-Flow Control	Yes
IEEE 802.1d-MAC Bridges	Yes
IEEE 802.1d-STP	Yes
IEEE 802.1p-class of service	Yes
IEEE 802.1Q-VLAN tagging	Yes
IEEE 802.1Q-2005 (formerly IEEE 802.1s) MSTP	Yes
IEEE 802.1w-RRST	Yes
IEEE 802.1x-port based Network Access Control	Yes

6.0 Network Printer All-In-One (Printer, Copier & Scanner)

Bidder shall consider Black/White All-In-One A4 Size Network Laser Printer at all APSCC with advance function & features. There shall be no limitations on the use of printer to perform the functions from any of the Workstations (IT/GIS/SCADA). Printer shall be interfaced with Ethernet LAN either directly or through individual print server.

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6.1 Laser Printer

Each Laser printer shall be capable of producing, an exact copy of any display window upon request from any Workstation on A4 size paper. Copy resolution shall be at least 600 X 600, 1200 X 1200 dots per inch. Copy time shall be << 6 sec (Ready), << 10 Sec (Sleep) or less measured from the initiation of the copy request by the user from any Workstation.

- a) The system shall support printer for screen hardcopy requests.
- b) The Printer shall have tray for A4 printing
- c) Automatic 2-sided Print / Scan / Copy
- d) Printer shall be connected to the LAN directly. Printer shall be accessible from any Workstations.
- e) The Printer shall also have Scanners & Copy (Photocopy) with advance function & features.
- f) The following general features shall be provided:
 - i. Design for continuous trouble-free operation, with a minimum of maintenance.
 - ii. User configurable for new/edit Users with password protected and Full admin rights to manage the Users.
 - iii. Quiet operation suitable for location in control Centre.
 - iv. Character form and spacing to present a pleasing and easily readable output.
 - v. Easy maintainability, with provision for ease of execution of routine tasks such as cartridge changing, paper insertion etc.
 - vi. Control unit with all error detection, error reporting and fail-safe facilities. Printers shall have the facility to provide the following information to the Workstations for alarm generation:
 - vii. Paper Out, Off-line status etc.
 - viii. Printer shall be intelligent to display in case of trouble e.g., Paper struck etc., and highlight in the screen for the user understanding.
 - ix. The Printer shall have touch screen display for selection for major functions viz. copy/printing/scan etc.,
 - x. Printing history details /credential logins log shall be available
 - xi. Off-line mode selectors switch to enable safe maintenance

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- xii. Necessary local memory for required data buffer
- xiii. No Manual interventions after power restart

7.0 High Availability Firewall

The existing Operational Technology systems requires robust cyber security implementation; therefore, it is intended to provide relevant cyber protection for field and control Centre devices.

The cyber security risks which are compounded due to the distributed architecture at multiple interfaces/systems at MCC, BCC, APSCC and Sub-Station, it is proposed to protect the Assets of APSCC by installing High Availability Firewall, which shall also include the appropriate measures for individual devices at MCC, BCC, APSCC and Primary & Secondary Distribution Automation System.

Regular review of vulnerabilities and risks, as well as administration practices, is absolutely necessary to identify new risks and reduce them to acceptable levels. In addition, regular assessment helps to measure progress toward the organization’s security management goals.

The proposed HA Firewall will be integrated to the Organization Centralized Cyber Security Management System to facilitate purchaser for Firewall Management, Security Patching, IDS, IPS, Network Port Management, System Hardening, Remote Access Control and Monitoring, Customized Source Code Review and Revision, AAA, Patch Management, Anti-Virus Management, Anti-APT Management, Anti-Bot Management, Network Partitioning and Security Zones, Network Intrusion Detection etc.

- 7.1 Bidders scope shall include designing of Cyber Security Architecture at APSCC to protect the Purchaser’s Critical Infrastructure and operation plans as per Critical Infrastructure Protection (CIP) guidelines of NERC (North American Electric Reliability Corporation) which shall be certified/reviewed by a third-party Audit agency (approved by CERT-in, NCIIPC).
- 7.2 This solution proposed should be designed to protect critical infrastructure, control systems and operational technology (OT) assets. It should monitor and block malicious activity and misconfiguration, providing easy-to-apply controls for network segmentation and improved visualization of the Electronic Security Perimeter.
- 7.3 The Industrial Cyber security solution shall adhere and comply to IEC 62443 cyber security standards.

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- 7.4 Product manufacturing and development shall adhere and comply to IEC62443-4-2. The product Bidder/OEM is responsible for the development and testing of the security system products comprising of the application (antivirus, whitelisting etc.), embedded device (RTU, IEDs, SCADA/ADMS etc.), network device (firewalls, routers, switches etc.), host devices (operator stations, IT & GIS workstations etc.) working together as system or a subsystem defined in IEC 62443 3-3, IEC 62443 4-1, IEC 62443 4-2
- 7.5 The system integrator is responsible for the integration and commissioning of HA Firewall using a process compliant with IEC 62443 2-4, IEC 62443 3- 2, IEC 62443 3-3.
- 7.6 The bidder shall configure the firewall with the help of the policies and procedures defined in IEC 62443 2-1, IEC 62443 2-3 and IEC 62443 2-4
- 7.7 This solution shall provide multiple capabilities to support cyber security best practices. Functionality includes centralized patch management, anti-virus/host intrusion detection updates, centralized account management, logging and event management, intrusion detection, whitelisting, and automated backup.
- 7.8 The Bidder shall verify that the addition of security features does not adversely affect connectivity, latency, bandwidth, response time and throughput including during the Site Acceptance Testing (SAT) when connected to existing equipment.
- 7.9 Security Solution that will be implemented should be have capability of all four Security Levels on the basis IEC 62443 3-3 and IEC 624434-2, description of which is given below for bidder’s reference: -
- 7.10 The security levels defined for components are based on the four types of device categories defines in the standard i.e. embedded device, host devices, network devices and application software, which are also depicted in the following table

Security Levels	Description
SL1	Capability to protect against casual or coincidental violation
SL2	Capability to protect against intentional violation using simple means with low resources, generic skills and low motivation
SL3	Capability to protect against intentional violations using sophisticated means with moderate resources, IACS specific skills and moderate motivation
SL4	Capability to protect against intentional violations using sophisticated means with extended resources, IACS specific skills and high motivation

Table A: Security Levels Categorization

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7.10.1 Solution Hardening

Solution Hardening relates to reducing automation solution attack surface, including risk assessments, detection of threats and vulnerabilities, and management of USB and Ethernet ports. Bidder shall consider the following aspects for Solution Hardening

- 7.10.1.1 Security-segmented reference architecture and hardening measures designed to reduce exposure to security threats.
- 7.10.1.2 System hardening evaluations specific to the security environment and policies of each site locations.
- 7.10.1.3 Firewall placement and their rules are specified as part of the architecture. Switches can be locked down.
- 7.10.1.4 Unnecessary ports, services, and programs are removed or disabled from workstations, and controllers, thus eliminating them as an avenue of attack.
- 7.10.1.5 Workstations employ session locking for protection while unoccupied.
- 7.10.1.6 Identification of missing security patches is automated.
- 7.10.1.7 Workstations employ anti-virus software and capabilities for validating and installing the latest virus definition files.
- 7.10.1.8 TPCODL procedures ensure that portable media used during integration and maintenance are authorized, virus-free, and not used for other purposes
- 7.10.1.9 All system constituents shall be hardened, i.e. all external access shall be controlled and set to deny/disable all by default. This shall involve closing/disabling network accessible ports/protocols and services, and implementation of proper authentication and encryption schemes of all external communication. Unnecessary ports and services shall be disabled. Documentation shall be provided describing the required service so that system firewall can be appropriately configured. Also, scripts shall be provided to help harden the operating system. Network devices must also be configured to match the requirements of the Real-Time SCADA system. All the unused ports on the Switches and Routers shall be disabled. Similarly, all USB ports in the computers shall be disabled.
- 7.10.1.10 Network security and robustness testing should be conducted on products used in solutions to ensure reliability and integrity

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7.10.2 Network Security

Network security Capabilities relate to supporting the segmentation and administration of networks.

7.10.2.1 Network security architecture should segment the WAN networks from the control system by firewall configured with recommended rules

7.10.2.2 Network security architecture should protect internal interfaces with managed switches that can be locked down.

7.10.2.3 The solution provided should follow defense in depth security mechanism, full segregation on network wherever there is communication with external world.

7.10.2.4 Solution shall gather asset inventory and threat data to improve the safety and availability of OT environment. It shall happen by analyzing network traffic and conducting protocol deconstruction to inventory assets, create network topology, and more.

7.10.2.5 Solution shall analyze network communication by listening through mirror or SPAN port of Industrial switches, interpreting and dissecting protocols without disrupting normal operations.

7.10.2.6 Solution shall provide SCADA/ADMS operators with holistic visibility into the devices and activity on their network. It should detect controller configuration and mode changes, with event logging capabilities for trending/dashboards, and performs threat modeling to help keep the most sensitive assets out of intruders' reach. This solution shall protect the core integrity and cyber resilience of our OT environment, using sophisticated monitoring and detection to keep us operating at peak availability and uptime.

7.10.2.7 Secure remote access connectivity should have customized upon request, typically through a combination of RDP firewalls and access controls. The solution should support administration of network devices and enforces multi-factor authentication and encryption of network administration traffic.

7.10.2.8 A user authentication scheme consisting at least of a user identification and password shall be required for the user to request a connection to any network node.

7.10.3 Security services

Followings are the functional requirement from the security system:

7.10.3.1 System shall have Multilayer (at least network, application layer) firewall which shall protect the complete system network from unwanted users. Further, preferably a separate firewall

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of different OEMs shall be provided to take care the security of all the OT System & shall have High Availability architecture with No Single Point of Failure.

7.10.3.2 Gateway Firewall should be capable of load balancing multiple links from different service providers.

7.10.3.3 LAN Firewall shall provide isolation/security services between the subsystems

7.10.3.4 Firewalls deployed should not become a bottleneck. It shall be Robust, Secure, Scalable and future-proof with a provision to be integrated with Centralized Management System.

7.10.3.5 Shall have strong authentication containing user name and passwords which shall be very difficult to compromise.

7.10.4 **HA Firewall for OT systems**

7.10.4.1 **Introduction**

This specification has been prepared for Bidder to assist Purchaser for supply and commissioning of HA Firewall integrated with Purchaser's Central Cyber Security / Threat management systems along with all security systems and accessories at 4 nos. APSCC.

- a) Next Generation High Availability Firewall placed between the APSCC Control Centre LAN & and external Corporate/ IT WAN network (IT & OT) and NBSP Network connecting Centralised IT Infra and Real-time SCADA/ADMS System of MCC and BCC Control Centre of TPCODL

The proposed solution architecture should be robust enough to protect the infrastructure from unknown threats arising in the Network. The Proposed firewall will be centrally monitored by Centralized threat management system, which shall be capable of displaying real time & historical information of the connected Firewall systems and the threats encountered / logged / quarantined.

Following are the key requirements for next generation Firewalls:

- a) Solution should be Next-Generation Aware with Application & User Visibility.
- b) Solution should detect and prevent both known and unknown threats at the Network level.
- c) Should provide detailed Logging & advance reporting with forensic Analysis
- d) Should provide ability to integrate with 3rd Party Intelligence
- e) Should integrate & share threat intelligence with existing point solution.

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f) Central Management

The document covers the specific requirements for complete design, detailed engineering, manufacture, supply, inspection & testing at Bidder's work, packing, transportation, loading and unloading, delivery to site, storage at site, handling at site, erection, testing, commissioning, integrating with existing network system, performance testing and handing over of Communication – HA Firewall System at site

All equipment, system and services covered under this specification shall comply with all current applicable statutory regulations and safety codes in the locality where the equipment is proposed to be installed. The equipment and systems shall also conform to the latest version of applicable codes, standards and software versions on the date of offer made by the Bidder unless otherwise indicated. Nothing in this specification shall be construed to relieve the Bidder of this responsibility

7.10.4.2 **Technical Parameters of Equipment Including Data Sheet**

Indicative Technical Specification for Industrial Firewall (Next Generation Firewall) is described in data sheet as part of this specification.

7.10.4.3 **General Requirements**

- a) The proposed security solution must be in the Leader's quadrant in the Gartner "Magic Quadrant for Enterprise Network Firewalls" for atleast 2 years (within recent period of 5 years)
- b) Proposed solution should have Multi-Layer Threat Prevention suits with controls embedded like IPS, Anti-malware, Anti-bot, application-visibility, Anti-APT etc. Bidder to confirm individually all the functional requirements
- c) The proposed solution should have a Multi-tier engine to i.e. detect & Prevent Command and Control IP/URL and DNS
- d) Network security appliance should support "Stateful" policy inspection technology. It should also have application intelligence for commonly used TCP/IP protocols like telnet, ftp etc.
- e) Solution Architecture should be distributed deployment - NGFW firewall with threat Prevention features enabled & centralized Management for Policy management, advance Logging, Reporting features.
- f) The security Bidder/OEM should have a local TAC support in India with 24x7 coverage.

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- g) Proposed solution shall not have been reported for any backdoor vulnerability in their operating system of NGFW in past 3 years. Bidder shall submit an undertaking in this regard along with its bid document
- h) The proposed solution or hardware model should be at least 1 year old and deployed in the field.

7.10.4.4 Performance and Availability

- a) Minimum 1 Gbps of enterprise mix Threat Prevention throughput (includes Firewall, Application Visibility Web Filtering, IPS, AV, Anti-spyware, anti-APT etc enabled). The Bidder must produce datasheet as publicly available document.
- b) Min 150000 concurrent sessions shall be supported by the offered system
- c) Min. 10,000 new sessions per second
- d) Appliance should have 16 Gb RAM which can be expandable upto 32 Gb in future.
- e) The proposed solution should have an integrated solution for IPSEC, site to site, Client to site, and SSL VPN. Should support Perfect Forward Secrecy (PFS, ECDHE cipher suites) etc.

7.10.4.5 Hardware & Interface requirements

- a) The platform must be supplied with minimum 8 x 10/100/1000 GE RJ45 inbuilt interfaces Fiber ports 2 numbers (Loaded with 40 Kms Single mode SFP). Firewall supplied should be in HA configuration at each location.
- b) Port density w.r.t number and type of Ethernet / FO ports required at each site location shall be designed with 10% spare. Minimum 8 nos. Copper and 2 nos. Fibre ports should be considered at present.
- c) Firewall should have separate console port, HA Port, Mgmt and USB Ports. No Traffic ports will be used for HA or Management.
- d) Firewall Appliance should have a feature of holding multiple OS images to support resilience & easy rollbacks during the version upgrades. On-board storage for minimum period of one month and shall push the logs & other data to the central system before clearing these logs

7.10.4.6 Routing Protocols

- a) Solution should support Dual Stack with IPv4 and IPv6 functionality & should support IPv6 NAT functionality NAT66 and NAT64. should support creating rules with IPv4 & IPv6 objects simultaneously

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- b) Solution should be supplied with High Availability with Active/Passive or Active/Active LS functionality

7.10.4.7 Firewall Features

- a) Firewall should provide application inspection for LDAP, SIP, H.323, SNMP, FTP, SMTP, HTTP, DNS, ICMP, DHCP, SNMP, etc.
- b) Firewalls should seamlessly have integrated for reporting to any third-party systems or SOC solution
- c) The firewall should support transparent (Layer 2) firewall or routed (Layer 3) firewall Operation
- d) Firewall should support 802.3ad link aggregation functionality to group multiple ports as single port
- e) Firewall should support static NAT, Dynamic NAT and PAT
- f) Firewall should support IPSec data encryption
- g) It should support the IPSec VPN for both site-site and remote access VPN
- h) Control SNMP access through the use of SNMP and MD5 authentication.
- i) Firewall must support unlimited policy option.
- j) The firewall must support more than 1000 Addresses/host objects by per address/object group
- k) Firewall must have support of at least 500-time based policies
- l) Solution must support access control for at least 150 predefined services/protocols
- m) Solution must support data integrity with AES-XCBC
- n) It should support authentication protocols RADIUS, LDAP, TACACS, and PKI-x.509 methods

7.10.4.8 Integrated IPS Features

- a) IPS Engine should protect from at least but not limited to Vulnerability and Exploit signatures, Protocol validation, Anomaly detection, Behaviour-based detection, Multi-element correlation.
- b) IPS should activate protection for both Client Protection and Server Protections. IPS Profile should allow tuning of IPS signatures that can be activated/de-activated as per Purchaser's environment

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- c) IPS should provide Protection against Injection Vulnerabilities SQL Injection, Command Injection, LDAP Injection, HTTP Command Injection, plus Application layer protections for Cross site scripting, Directory traversal etc. IPS should support customized blocking SQL and Command Injection by Keywords traced in form field GET, POST etc
- d) IPS should provide detailed information on each protection, including: Vulnerability and threat descriptions, Threat severity, Release date, Industry Reference etc.
- e) Protection against Malicious code for Buffer Overflow, Heap overflow and other malicious executable code attacks that target Web servers and other applications without the need of signature
- f) Should be able to identify attacks based on Geolocation and define policy to block on the basis of Geo-location
- g) Signature based detection using real time routine updated database & should have threat signatures to cover at least 6000+ CVE from day one, also Bidder must supply evidence of leadership in protecting Microsoft vulnerabilities
- h) IPS must have one-click single option to predefine action such as detect and prevent for newly signature downloaded in signature updates.
- i) The administrator must be able to automatically activate new protections, based on configurable parameters (performance impact, threat severity, confidence level, client protections, server protections)
- j) IPS must support exceptions based on source, destination, service or a combination of the three.
- k) IPS must have protections related to SCADA/ICS protocols and vulnerabilities
- l) IPS events/protection exclusion rules can be created and view packet data directly from log entries with RAW Packets and if required can be sent to Wireshark for the analysis.
- m) IPS must have a software based fail-open mechanism, configurable based on thresholds of security gateways CPU and memory usage
- n) IPS must have protections for known ICS/SCADA Bidders such as Siemens, Schneider, GE, HEIL etc.

7.10.4.9 **Antivirus & Antitbot**

- a) The proposed solution should be able to block traffic between infected bot Host & Remote C&C Operator and should allow the traffic to legitimate destinations

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- b) The proposed should inspect HTTP, HTTPS, DNS & SMTP traffic for the detection and prevention of the Bot related activities and Malware activities.
- c) The proposed solution should have an option of configuring file type recognition along with following actions i.e. Scan, Block, pass on detecting the Known Malware. Should allow blocking of known malware file-types directly from firewall.
- d) The known Malware scanning should not be restricted by the any specific limit on the size of the of the file(s) & should support achieve scanning to detect threat hidden in achieve
- e) The proposed solution should be able to detect & prevent the malware by scanning at least 20 different file types with configurable option to inspect, bypass or blocked various file-types as per organization need.
- f) Reverse engineer malware in order to uncover their DGA (Domain Name Generation)
- g) The proposed solution should prevent the users to access the malware hosting websites and/or web resources.
- h) The solution should have the intelligence to analyse & detect known threats as well as the unknown threats which are commonly known as zero-day threats by integrating with the threat protection solution which should be an appliance and implemented on-premise as sandbox solution.
- i) The solution should detect C&C traffic according to dynamic ip/url reputation

7.10.4.10 **Application awareness, Web-filtering & User visibility**

- a) Firewall should support Identity based controls for Granular user, group-based visibility and policy enforcement using Identity Awareness functionality.
- b) Solution should support Upload / Download bandwidth control feature per User, Group or Application regardless of port, protocol etc.
- c) The proposed solution must delineate different parts of the application such as allowing Facebook chat but blocking its Facebook-post / file-upload capability etc.
- d) In addition to afore mentioned protocols, solution must be able to understand any other protocol such as CIP-Ethernet-IP, Profinet, Cygnet-SCADA, IEC-60870-5-104, V-net, VL-net, V-net IP etc.
- e) Solution must have more then 500+ SCADA related application signatures

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- f) Identity Awareness should support integration with multiple identity sources like AD, LDAP, Radius & 3rd Party customized identity sources such as NAC, WLC etc.
- g) Should support customized Application Signature for Home-Grown applications.

7.10.4.11 Management & Reporting functionality

- a) Entire solution should be managed from appliance based centralized management solution. The communication between all the components should be encrypted with SSL or PKI.
- b) Management should support automation & integration Open REST API Support.
- c) Solution should be able provide auditing view / report for changes, Rule addition/Deletion & other network changes
- d) Firewall Management system should also provide the real time health status of all the firewall modules on the dashboard for CPU & memory utilization, state table, total # of concurrent connections and the connections/second counter.
- e) Role based administration with administrators & Separation of duties should be supported. Role based administration shall be configurable for system administration. Multiple administrators need not login at the same instance
- f) Advance logging feature should have log indexing capability for faster log search & log optimization.
- g) Security management should provide Compliance monitoring framework so that it can monitor compliance status of these devices in the real time. It is expected, the network solution to provide real-time and continuous assessment of all major regulations related to Power sector & others such as ISO27001, COBIT, NIST, FIPS 200, GLBA, ISO27002, HIPAA security, PCI DSS, SOX etc. For compliance feature 3rd party solution can be quoted
- h) Bidder must have an option to Check compliance with every policy change for all Network Security controls and must recommend Security Best Practices
- i) Centralized management should have capabilities to manage Firewall, APT and Endpoint anti-apt solution from single management and should have consolidated logging, reporting for both network, and endpoint solution. The centralised system must be able to auto restore firewalls at remote locations in case of failure of device and replacement of firewall. This restoration should eliminate the need of any skilled technical person for restoration of device in case of device failures.

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- j) Solution must be able to segment the rule base in a sub-policy structure in which only relevant traffic is being forwarded to relevant policy segment for an autonomous system
- k) Solution must have the granularity of administrators that works on parallel on same policy without interfering each other
- l) Solution must include customizable threshold setting to take actions when a certain threshold is reached on a gateway. Actions must include: Log, alert, send an SNMP trap, send an email and execute a user defined alert
- m) Solution must have consolidated Threat Prevention dashboard for full threat visibility across networks and endpoints.
- n) Detailed Event analysis for Threat Prevention Controls Anti-Malware, Anti-Bot, IPS, Application Control etc. need to be provided with Real-Time and Historical reporting all the components.

7.10.4.12 **Licensing**

- a) Solution should have enterprise license without any restrictions.
- b) Any third-party product required to achieve the functionality should be provided with the necessary enterprise version license of software/appliance and necessary hardware, database and other relevant software or hardware etc. should be provided

7.10.4.13 **Anti-APT Solution**

- a) The Anti-APT solution should be hardware appliance, integration with firewall & should be designed to detect and prevent data breaches initiated from highly targeted/tailored Zero-days-Unknown attacks
- b) The solution shall perform analysis on-premise and no files shall be sent outside the Purchaser network. All necessary additional devices, licenses required for such configuration should be quoted as part of the solution.
- c) Solution should perform inspection in real time, including advance malware that uses evasion techniques and/or only executes with specific software versions.
- d) Solution should provide comprehensive activity views into a wide range of network, system and file activity, categorized by risk, to help speed incident response.
- e) Should inspect & record network behaviour of suspicious file for requests to visit malicious URL, establish communications with C&C servers and other activity indicative of a compromise.

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- f) Should allow security administrators to manually upload malware samples to perform analysing of suspicious files for forensics.
- g) The solution should support at least but not limited to File types:
 - i. Archived: .tar, .gz, .tgz, .zip, .bz2, .cab, .rar,.7z, .tbz
 - ii. Executable files (eg: .exe), PDF,.swf, Windows Office Document and JavaScript
- h) Should support protocols like HTTP, SMTP, HTTPS, SMB, CIFS, and FTP etc.
- i) Solution would enable emulation of file sizes larger than 50 Mb in all types it supports & the file size limit for processing should be configurable.
- j) Solution should detect botnets and Command & Control (C&C/2C) channels or activities during emulation.
- k) Solution should be resilient to cases where the shell-code or malware would not execute if they detect the existence of virtual environment.
- l) The Solution should support Call Back Detection to identify the ultimate aim, call back and exfiltration
- m) Should support summary reports with captured packets, original file, tracer log and screenshot to provide rich threat intelligence and actionable insight after files are examined.
- n) Solution should support report generation for malicious files like detailed reports on file characteristics and behaviours – File Modification, Process Behaviours, Registry Behaviours, Network Behaviours, VM snapshot
- o) Should support Event dashboard like critical malicious events, malware name, rating, type, source, destination, detection time.
- p) Should support WebUI and CLI configurations as well as should be integrated with centralized management.
- q) Should support multiple administrator account creation
- r) The solution should auto-update signatures/VM OS, detection engines frequently & send notification email when new updates are available.
- s) The solution should detect the attack at the exploitation stage – i.e. before the shell-code is executed and before the malware is downloaded/executed.

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- t) The solution should be able to detect ROP and other exploitation techniques (e.g. privilege escalation) by monitoring the CPU flow
- u) The Solution should have file sanitization capability or document scrubbing for Web download & Email Attachments for Microsoft office (Word, Excel, PowerPoint) & PDF format.
- v) Real-Time Prevention-unknown malware patient-0 in web browsing
- w) Real-Time Prevention-unknown malware patient-0 in email
- x) The solution should support deployment in MTA (Mail Transfer Agent) mode
- y) The solution should be able to emulate executable, archive files, documents, JAVA and flash specifically within CIFS (SMB) protocol
- z) Average Emulation time of a suspected malware verdict as benign should be no more than 2 minutes
- aa) The solution should be able to emulate, and extract files embedded in documents
- bb) The solution should monitor for suspicious activity in Kernel code injection.
- cc) The solution should monitor for suspicious activity in Kernel modifications (memory changes performed by kernel code)
- dd) The solution should monitor for suspicious activity in Kernel code behaviour (monitor activity of non-user-mode code)
- ee) Solution should be resilient to cases where the shell-code or malware would execute only upon a restart or a shutdown of the end point.
- ff) The solution should Eliminate threats and remove exploitable content, including active content and embedded objects
- gg) The solution should be able to Reconstruct files with known safe elements
- hh) The solution should Maintain flexibility with options to maintain the original file format and specify the type of content to be removed
- ii) The APT appliance should support at least min 8 simultaneously running images for inspection/sandboxing of files

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7.10.4.14 SCADA Threats Visibility

- a) Proposed solution must be capable of understanding ICS protocols: Modbus, CIP,DNP3, BACNet, IEC-60870-5-104, IEC-60870-5-103, IEC-60870-5-101,Modbus RTU/TCP-IP, IEC 60870-6 (Secured ICCP), IEC 61850, MMS,OPC DA,OPC UA, Ethernet Protocols, S7 (Siemens) and others
- b) Proposed solution must have Deep Packet Inspection capability w.r.t to IEC- 104 protocol
- c) Proposed appliance must support ACL (Access control list) based on IEC-104,ACL flow based limiting
- d) Proposed solution must support stateful inspection capability
- e) Proposed firewall must support Firewall rules (incoming/outgoing),
- f) management), IP masquerading, 1:1 NAT, Double-NAT, Masquerading NAT,
- g) Destination NAT, Hairpin NAT, DoS Protection, Access Control Lists (ACLs), Improper commands
- h) Proposed appliance must have the ability to log all traffic of above-mentioned protocols and investigate commands down to the parameter level
- i) Proposed Solution must have intrusion prevention capabilities for SCADA protocols
- j) Proposed next generation firewall must support SCADA Apps/Commands and SCADA protocols
- k) Proposed solution should have an automated discovery function to identify network devices and capture information such as IP address, OS, services provided, other connected hosts.

8.0 6 KVA UPS with Battery

This specification covers engineering, design, manufacture, testing at works, supply, transport to site, installation, testing at site and commissioning of Uninterruptible Power Supply (UPS) system with Servo / Static Control Voltage Stabilizer static bypass switch, DSP based controls and associated ACDBs and accessories according to the standard engineering practices, IS or IEC standards.

- a) 4 Nos. 6 KVA, 230 V AC Single Phase Uninterruptible Power Supply system for Area Power System Control Centre
- b) All the above UPS systems are to be supplied with battery bank.

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The bidder shall submit the type test report for technical specifications through the government approved agencies like ETDC, ERTL, CPRI etc. and type test reports not more than five years old shall be available.

8.1 System Description and Scope

- 8.1.1 Engineering, design, manufacture, testing at works, supply, transport to site, installation, testing at site and commissioning of the 6 KVA UPS system with Isolation Transformer.
- 8.1.2 Uninterruptible power supply system is required to supply power to SCADA/ADMS Workstations, IT & GIS Workstations, Large Display Panel and Networking Equipment at Area Power System Control Centre.
- 8.1.3 The bidder shall furnish the block diagram and circuit diagram of the system along with the Technical Bid document.
- 8.1.4 The Bidder shall design and furnish all materials and equipment to be fully compatible with electrical, environmental, and space conditions at the site. It shall include all equipment to properly interface the AC power source to the intended load and be designed for unattended operation.
- 8.1.5 Demonstration / testing of the system at Bidder's works before dispatch of the system at site (FAT).
- 8.1.6 Installation, testing & commissioning of the system including integration with Owners systems, sub-vendors' systems & other systems and performance.
- 8.1.7 Site Acceptance Test to the Purchaser's satisfaction.
- 8.1.8 Submission of technical documentation related to design, installation, testing, operation & maintenance of the equipment and submission of Test Reports, job progress reports etc.
- 8.1.9 Submission of type test report which is not more than 5 years old.
- 8.1.10 It is not the intent of this specification to specify completely herein, all details of design & construction UPS system. However, the equipment shall conform in all respects to high standards of engineering, design & workmanship.
- 8.1.11 Bidder must agree for handing over, to Owner, all project related drawings in AutoCAD format only. The pdf versions of above drawings shall be submitted through Wrench for formal approval process.

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8.2 Codes and Standards

The design, manufacture, performance testing and inspection of equipment shall comply with all currently applicable statutory regulations and safety codes in the locality, where the equipment will be installed. Nothing in this specification shall be construed to relieve the vendor of this responsibility.

- 8.2.1 IS 16242 Parts 1-3 / IEC 62040: Uninterruptible Power Systems
- 8.2.2 IS 1652 - Stationary cells and batteries, lead-acid type with Plante positive plates
- 8.2.3 IS 3895 Mono crystalline semiconductor rectifier cells and stacks.
- 8.2.4 IS 4540 Mono crystalline semiconductor rectifier assemblies and equipment.
- 8.2.5 IS-4570 Specification for measurement on semiconductor rectifier assembly and equipment
- 8.2.6 IS 4400 Methods of measurements on semiconductor devices: voltage regulator & voltage reference diodes
- 8.2.7 IEC 146 Semiconductor Converters (Part-I)
- 8.2.8 IS 5051 Relays for electronic components
- 8.2.9 IS 7405 Printed circuit board
- 8.2.10 IS 3700 Essential rating and characteristics of semiconductor devices IEEE-944 Application and testing of an uninterruptible power supply
- 8.2.11 IS 6619 Safety code for semiconductor rectifier equipment.
- 8.2.12 IS 6297 Transformer and inductors for electronic equipment
- 8.2.13 IS 13947 LV switchgear and control gear
- 8.2.14 IS 6553 Environmental requirements for semi-conductor devices and integrated circuits
- 8.2.15 IS 9000 Basic Environmental Testing Procedures for Electronic and Electrical Items
- 8.2.16 Indian Electricity Act and rules framed there-under.
- 8.2.17 Fire Insurance Regulations
- 8.2.18 Regulations laid by the office of the Chief Electrical Inspector to Government

8.3 Design Requirements

The UPS system shall be of the static type, basically composed of static rectifier chargers, static inverters, static switches, for added protection and transfer of loads with no break

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during under voltage condition to the healthy inverter or to standby Servo / Static regulated supply. The components of UPS shall isolate power line voltage transients, frequency variations and high/low voltage conditions from the critical load and act as a line filter and voltage regulator, apart from providing no break power at constant frequency during normal power outages.

Offers UPS shall have features not limited to the following (Bidder to Refer Technical Requirement attached with this RFP):

- 8.3.1 Digital Technology
- 8.3.2 True online double conversion
- 8.3.3 High Frequency PWM design
- 8.3.4 Programmable power walk-in
- 8.3.5 High efficiency
- 8.3.6 High input power factor
- 8.3.7 Constant Voltage & Frequency
- 8.3.8 Pure sine wave out power with no break output during normal to battery operation.
- 8.3.9 Wide frequency synchronizing range
- 8.3.10 Wide input range
- 8.3.11 Soft start capability
- 8.3.12 100% nonlinear load handling capability
- 8.3.13 LED mimic
- 8.3.14 Advanced Management Facility
- 8.3.15 Communication interface with controller for integration with Purchaser's SCADA System along with communication software
- 8.3.16 Permissible harmonics at rated continuous load +/- 2% for linear loads & 3 % for nonlinear loads.
- 8.3.17 UPS system should be able to start when only DC supply is available as well as when only AC supply is available.

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- 8.4 UPS shall be suitable for connecting 415V, 3 Phase 3 Wire / 4 wire 50 Hz system with Nominal output voltage is 230 V / 110 V 50 Hz single phase +/- 1% resolution.
- 8.4.1 UPS shall be with SMF VRLA type battery bank with minimum 4 hours Backup, Servo/static controlled voltage stabilizer, static and Maintenance bypass, UPS DB, MCCB Box for battery, interconnecting cables and battery cables.
- 8.4.2 The rectifier charger shall be equipped with a blocking diode to restrict the charging of battery source from UPS rectifier.
- 8.4.3 The modularity of the UPS must allow to increase the backup-time on site, simply adding battery system. The upgrade shall not require any additional factory modifications and shall not need dedicate special tools.
- 8.5 **The logic of operation of the UPS system is as follows**
- Normal Mode**
- 8.5.1 During the normal operation, the UPS shall be used to provide power to the critical loads. Under normal conditions, the loads shall be supplied by the inverters. The Rectifier shall derive power from normal/primary AC source and supply DC Power to the inverters.
- Emergency Mode**
- 8.5.2 Upon failure of the normal AC source, the loads shall continue to be supplied by inverters which, without any switching shall obtain their power from storage battery. In case of failure of the main supply, battery shall supply back up DC power to UPS system for duration of number of minutes as specified for of individual locations.
- 8.5.3 Upon restoration of the normal AC source, the rectifier/battery chargers shall power the inverters and simultaneously recharge the battery. This shall be automatic causing no interruption to critical loads.
- 8.5.4 In case of maintenance requirement, it shall be possible to isolate inverters and static bypass switches from load and connect alternate AC source to the load through manually operated, make before-break manual transfer switch.
- 8.5.5 Bypass switches shall be so interlocked that there is:
- 8.5.5.1 No interruption in output to load
- 8.5.5.2 No paralleling of raw supply and inverter output.
- 8.5.6 All the automatic transfer of the load should be bump less.

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- 8.5.7 All UPS components, that is, rectifier, inverter, static switch, bypass switch, AC switchgear and associated control and annunciation system shall be mounted in floor mounted, sheet steel panel. The panels shall be designed for continuous operation for the ambient conditions.
- 8.5.8 Regulation at the output should be within + 1% in case of voltage and +0.01 Hz in case of frequency for supply and load variation.
- 8.5.9 The UPS shall be provided with automatic sequence and power walk in circuits with adjustable time delay such that the rectifiers and inverters can start operating automatically when incoming AC power is restored allowing the UPS to be loaded automatically.
- 8.6 **Rectifier**
- 8.6.1 Charger shall have following features:
- 8.6.1.1 Switch mode rectifier/Phase controlled rectifier
- 8.6.1.2 DC constant voltage, Constant current
- 8.6.1.3 IGBT/SCR power device
- 8.6.1.4 Advanced electronic protection device backed-up with MCCBs and fast acting fuses
- 8.6.1.5 Soft start
- 8.6.1.6 Built in Harmonic suppression
- 8.6.1.7 Active power factor correction
- 8.6.2 These chargers shall be of static type and shall be provided with suitable full wave thyristor-based rectifiers, transformers, filter circuits, DC & AC Switchgear.
- 8.6.3 The rectifiers / chargers shall be designed to completely charge the battery in a maximum time of 4 hours, after complete discharge. Facilities shall be provided to initiate battery rapid charge operation by Manual & Automatic means. An auto charging sequence should be provided for the boost and float charging based on current sensing. In addition to above, the charging shall be transferred from boost to float mode after preset time adjustable through 0-24 hour's timer. Rectifier shall have protection & interlocking against single phase input & reverse phase sequencing. In manual charging mode, the Boost charging current should be adjustable by the operator as required by the battery.

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- 8.6.4 Facility shall be provided to enable testing of rectifier independently without disconnection of inverter.
- 8.6.5 Facility for initial charging of batteries shall also be provided. The inverters shall be disconnected during initial charging of the battery.
- 8.6.6 The rectifiers shall be sized based on the maximum inverter input load when inverter is delivering its rated output at 0.98 pf lagging and recharge the battery to nominal rated capacity of the battery.
- 8.6.7 The DC rectifiers shall sense the battery charging current and adjust the DC bus voltage to maintain the charging current to preset level. A separate current limit circuit shall also be provided for adjustment of battery current. The rectifiers shall be protected against reverse battery connection at DC link voltage bus. Subsequent to a discharge cycle when battery is connected to rectifier, the battery current shall be monitored, controlled and limited to set value automatically irrespective of the inverter input current.
- 8.6.8 The UPS battery charger should operate in Constant Current (CC) mode during boost charging.
- 8.6.9 The battery may be taken out of service for maintenance, during which period it shall be possible for the inverter to continue operation by drawing power from the rectifier. Ripple content shall not exceed 1.5%. Ripple current relay shall be provided to indicate the charger capacity failure.
- 8.6.10 Battery shall be provided with a sensitive earth leakage protection.
- 8.6.11 Suitable ripple filtering circuits shall be provided to give a smooth DC output.
- 8.6.12 The rectifier charger shall have float and boost charging facility as well as furnish the inverter input current. During float charging, the chargers shall furnish the continuous DC load as well as float charge its associated batteries and shall maintain a DC voltage that shall pass the minimum current through the cells to keep them charged with out overcharging. In order to change their current output, the chargers shall sense a DC voltage drop or rise at their output and charging mode shall change from float to boost as required. Inverters shall be designed to accept the full range of charging voltage including the highest boost charge voltage of the complete battery while maintaining the specified output characteristics. No blocking diode or intermediate battery tapping shall be used. In the 'Boost' mode, the 'boost' chargers shall recharge the completely discharged battery to full capacity in eight (8) hours.

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- 8.6.13 The chargers shall be current limiting and shall be provided with surge suppression networks for both float and boost charging. All equipment and devices required to protect the chargers from short circuits e.g. fast acting semiconductor fuses, trip fuses and micro switch with alarm contacts etc., shall be provided. Rectifier shall have protection & interlocking against single phase input & reverse phase sequencing.
- 8.6.14 The charger section shall be complete with the AC input Switchgear and DC Switchgear wherein the outputs from the batteries and the battery chargers shall be interconnected forming the common DC bus through necessary isolating switches. The DC bus shall be designed to withstand any short circuit discharge current of the battery.
- 8.6.15 The rectifier shall operate according to the constant voltage current limiting principle and shall incorporate a “Soft Start” feature to gradually accept load on initial energizing. Suitable protection shall be provided in the control circuits to guard against instability of rectifiers due to electrical oscillations, which may be present in the input supply as caused by emergency DG set. The UPS system including the stabilized bypass shall be galvanically isolated from input power supply system by providing double wound Isolation transformers. A rectifier shall have a double wound transformer at its input. Transient / surge protection circuit shall be provided in the input circuit to rectifiers to protect the UPS from surge & voltage spikes.
- 8.7 Inverter**
- 8.7.1 Inverters shall have following features:
- 8.7.1.1 Digital PWM IGBT design
- 8.7.1.2 Advanced electronic protection device backed-up with MCCBs and fast acting fuses.
- 8.7.1.3 High speed pulse balancing electronic over voltage/under voltage protection
- 8.7.1.4 Electronic overcurrent trip with reset.
- 8.7.2 Inverters shall be PWM controlled IGBT (Insulated Gate Bipolar Transistor), static filters, necessary oscillators, voltage regulators, current limiting and surge suppression networks. In addition, the inverters shall have features of soft start, wave shaping, transient recovery etc. Any other equipment required for normal operation of the inverter shall be included irrespective of whether specified or not.
- 8.7.3 The inverter input voltage shall match with the battery and rectifier charger output voltages and shall be designed to operate over the entire range of variation of input DC voltage to

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accommodate decrease in battery voltage during discharge and to accept voltage increase under battery boost charge or equalizing charge conditions. The output from the inverter shall be 230V AC, sine wave 1 phase.

- 8.7.4 The inverters shall always work on their internal oscillators or frequency variations with Control Centre AC electrical system. The Control Centre AC electrical system shall provide a signal to each inverter to control the frequency and phase relationship of its output during normal operations. When this signal to an inverter deviates more than one hertz from the desired 50 Hz frequency, the inverter shall transfer automatically to its internal oscillator which shall maintain inverter frequency at 50 Hz. Within 0.5%. During operation on its internal frequency signal source, an inverter shall continuously monitor the frequency of the Control Centre auxiliary AC electrical system.
- 8.7.5 Upon restoration of the Control Centre auxiliary AC electrical system to 50 Hz. operations, inverter shall automatically adjust the phase relationship between its output and the Control Centre auxiliary AC electrical system and return to the Control Centre auxiliary AC electrical system as its output frequency and phase relationship signal source. During operation on its internal oscillator an inverter shall inhibit transfer of the static transfer switch to the alternate source. The automatic adjustment of the phase relationship between the inverter output and Control Centre auxiliary AC system shall be accomplished at a controlled rate which shall not exceed one hertz per second. The inverters shall include a separate voltage distribution and voltage monitoring system for all command and interlock logic.
- 8.7.6 All the fuses used in inverter power and control circuits shall be fast acting semiconductor type, operating in less than 5 ms. Indications and alarms shall be provided to enable fault to be located and rectified at the earliest. Lamps to indicate fault / trouble / failure of each subgroup shall be provided on the cubicle front and lamps for each logic card shall be provided on the card itself. Each logic card shall be provided with all monitoring and testing terminals, brought out on the front of the card, for quick monitoring / testing / trouble shooting. Test points shall be made available inside cubicle for the following measurements but not necessarily limited to these.
- 8.7.6.1 Output voltage of each charger.
- 8.7.6.2 Input voltage of each inverter.
- 8.7.6.3 Pre filter output voltage of each inverter.
- 8.7.6.4 Post filter output voltage of each inverter.

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- 8.7.6.5 Output voltage of standby transformer.
- 8.7.7 The inverters shall operate satisfactorily for variation of DC bus voltage from fully discharged condition of the battery to rapid charge voltage of the battery and inverter output load current waveform having a relative harmonic.
- 8.7.8 It shall be possible to vary the inverter output voltage stepless within +/-5% of the specified output voltage. This adjustment shall be possible to be made when the inverter is in operation.
- 8.7.9 UPS shall be provided with current limit circuit to avoid excessive loading beyond its permissible overload withstand capability. The UPS shall be designed to permit ready access to power switching and control modules and PCBs. The locations of components, test points and terminals shall be such that they are accessible for circuit checking adjustment, trouble shooting, and maintenance from the UPS without removal of any adjacent module or assembly.
- 8.7.10 The inverters shall be phase locked to the stabilized bypass power supply as long as stabilized bypass supply frequency remain within + 3 % to – 5% of nominal. When bypass supply frequency variation exceeds the above limits, the inverters shall be delinked from mains. Free running frequency tolerance limit shall not exceed +/-1%. Facility shall also be provided for adjustment of synchronizing frequency from 1% to 5% in the steps of 0.5%.
- 8.8 **Static Transfer Switch / static switch**
- 8.8.1 The static transfer switches shall use SCRs and other static devices, for automatic transfer of load from the Normal source to the Alternate source. The transition shall be “make before break” in both directions. The continuous capacity of each static switch shall be equal to the full load capacity of one inverter. Maximum transfer time including sensing shall not be more than ¼ cycle. The voltage failure shall be sensed at the output of the static switch. Failure shall cause the static switch to transfer. The load from the working inverter shall be transferred to the alternate source, i.e. second inverter or auxiliary power supply source by static switches, whenever the output voltage of the inverter deviates more than +10% from nominal. However, transfer shall not be made to the alternate source on over current conditions. Transfer shall be permitted only if voltage of the alternate source is within ±2% of nominal. Contacts shall be provided to alarm deviation of the alternate source voltage beyond these limits.

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- 8.8.2 Before transfer takes place, from any inverter to alternate source, whether initiated manually or automatically, synchronism of the output of the inverter with the alternate source should have been automatically accomplished.
- 8.8.3 Return to normal shall be automatic for all externally caused transfer such as overload or clearing of a branch circuit fuse but shall be manual for all internally caused transfers such as inverters, filter or normal path failure. The inverter can be started manually for testing purpose even when the output static switch isolator is off. This shall be initiated with a button / switch mounted inside the panel.
- 8.8.4 The static switch shall be provided with fuses in both 'normal' and 'alternate' power source. Provision for annunciation of failure of fuse or failure of alternate source shall be made. The switch shall be provided with surge suppression networks and shall also be rated to withstand transient voltages up to 150% of rated voltage. The short time rating of the switch shall be 150% of the rated full load current for two (2) minutes.
- 8.8.5 Each inverter output shall be connected to the AC bus through Output Isolation Transformer and a static switch and fast acting fuses. The static switch comprises an interrupter and transfer switch, enabling loads on each branch circuit to be connected to the inverter of the other branch circuit or to the standby regulated AC supply.
- 8.8.6 The current rating of the static switch shall be not less than the continuous full load rating of the branch circuit and short time rating of 150% for 10 second.
- 8.8.7 The static switch shall have make before break feature ensuring the bump less transfer of the load.
- 8.8.8 Suitable number & configuration of adequately rated static switches must be provided in the inverters output and stabilized bypass supply to ensure positive isolation of faulty inverter section such that the other inverter and bypass circuits do not feed into the fault leading to under voltage / trip. The short time rating of all the static switches shall be at least 10 times the rated output for the duration
- 8.8.9 Facility shall be provided to manually and automatically initiate transfer of the load from inverters to the stabilized bypass supply and manually from stabilized bypass supply to the inverters. Under voltage and over voltage sensing levels to initiate transfer shall be adjustable. The maximum transfer time between inverters and bypass supply shall not exceed 5m.sec and 20 msec in synchronous and asynchronous mode respectively.

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- 8.8.10 All breakers shall be adequately rated for continuous rating as well as breaking capacity as applicable. Paralleling of breaker / switch / contactor poles to achieve the required current rating is not acceptable. All output isolating device shall be double pole type.
- 8.8.11 The static transfer switch shall operate in conjunction with a static switch control circuit which senses the healthiness of the UPS, overload, low AC input and low voltage on the output side of the UPS.
- 8.8.12 The static transfer switch shall offer means of transfer of critical load from the UPS to the alternate source, i.e. to the other healthy branch UPS or standby regulated AC supply.
- 8.8.13 Automatic initiation of the transfer from a faulty branch circuit to either a healthy branch circuit or the standby regulated source shall be accomplished during following conditions:
- 8.8.13.1 Loss of square wave to inverter / rectifier.
- 8.8.13.2 Loss of inverter AC output.
- 8.8.13.3 Loss of AC input to rectifier.
- 8.8.13.4 Load over current.
- 8.8.13.5 Loss of both AC & DC to UPS system.
- 8.8.14 Manual initiation of a transfer from a branch inverter to standby AC regulated supply shall be through auto / manual switch load to bypass with no break transfer. Retransfer shall be possible only manually in this mode of operation through an auto / manual switch.
- 8.8.15 Automatic transfer to healthy branch circuit or to the standby regulated source shall be inhibited if the source is not available.
- 8.9 **Regulated Standby AC Supply**
- Regulated standby AC supply shall be derived from standby supply through a static voltage regulator and isolation transformer at 120% of UPS capacity.
- 8.10 **Circuit Protection**
- The following devices shall be provided to protect the UPS system
- 8.10.1 The UPS shall have built-in protection against: surges, sags, and over-current from the AC source, over-voltage and voltage surges from output terminals of paralleled sources, and load switching and circuit breaker operation in the distribution system. The UPS shall be protected against sudden changes in output load and short circuits at the output terminals. The UPS shall have built-in protection against permanent damage to itself and the connected

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load for all predictable types of malfunctions. Fast-acting current limiting devices shall be used to protect against cascading failure of solid-state devices. Internal UPS malfunctions shall cause the module to trip off-line with minimum damage to the module and provide maximum information to maintenance personnel regarding the reason for tripping off line. The load shall be automatically transferred to the bypass line uninterrupted, should the connected critical load exceed the capacity of the available on-line modules. The status of protective devices shall be indicated on a display screen on the front of the unit.

8.10.2 AC input circuit breaker to supply Input Isolation Transformer of Rectifier charger

8.10.3 AC input circuit breaker to supply standby transformer/voltage stabilizer.

8.10.4 DC circuit breaker for battery input & output.

8.10.5 Fast acting semiconductor fuses for power bridges (charger and inverter)

8.10.6 Inverter output fuses at static switch input.

Each branch circuit of the UPS system shall be connected to a section of the AC switchgear through suitable output breaker. Two sections of the AC bus are interconnected through a MCB.

8.10.7 All electronic power devices including thyristors, transistors, diodes etc., shall be rated under operating conditions for approximately 200% of the maximum current carried by the device. All other electrical components such as transformers, reactors, breakers, contactors, switches, bus bars etc., shall be rated for at least 125% of the maximum required rating. No electronic device shall be subjected to PIV greater than 50% of the rated value.

8.10.8 All the thyristors, diodes and other electronic devices of UPS shall be protected with high speed semiconductor fuses. It's co-ordination characteristics between fuse and semiconducting power devices shall be furnished.

8.10.9 All the PCBs provided in the panel shall have self-diagnostic features and the faulty PCB shall be indicated by LED mounted on individual PCBs. All the test points are to be brought out in front of PCBs for easy accessibility.

8.10.10 Radio Frequency Filters shall be provided at the input and output of UPS to reduce radio frequency interference.

8.10.11 All PCBs shall be provided with a transparent epoxy coating for environmental protection and topicalization. They shall be suitably located away from heat sources.

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- 8.10.12 All electronic control and monitoring printed circuit cards shall be suitable for easy replacement. Monitoring points shall be provided in each of the PCBs and the PCB shall be firmly clamped in position so that vibration or long usages do not result in loose contacts. All PCBs shall be placed in a manner to avoid replacement of a PCB by a wrong spare PCB. Failure of each PCB shall be indicated by visual alarms. Visual fault diagnostics shall preferably identify faults up to various sections in the card. All PCBs shall be mechanically keyed to preventive boards being plugged into wrong slots.
- 8.10.13 Maximum noise level from UPS system at 1 meter distance, under rated load with all normal cooling fans shall not exceed 65 dBA.
- 8.10.14 MCCB shall be TPN type for incoming supply to Rectifier circuit & Standby source, DP type for battery & ACDB incomer/outgoing. It shall be quick make, quick break, and independent manual type with trip free feature. All MCCB shall have the following:
- 8.10.14.1 Short circuit release
 - 8.10.14.2 ON/OFF Trip position indicators
 - 8.10.14.3 Test trip push button
- 8.10.15 Copper cable shall be used for interconnection among UPS and servo-controlled voltage stabilizer.
- 8.10.16 The UPS system shall be provided with necessary meters or LCD displays, mimic diagram, local indication/ alarm conditions and protection.
- 8.10.17 The UPS system components and assemblies shall be provided with the necessary protection in addition to the protection required for the complete system. Apart from the protections for the circuits broadly enumerated above, the following protections shall be provided:
- 8.10.17.1 Filter at input
 - 8.10.17.2 Surge suppressor across transformer secondary
 - 8.10.17.3 Semiconductor fuses for IGBT bridges for rectifier, inverter and filter traps.
 - 8.10.17.4 HRC fuses for filter capacitors.
 - 8.10.17.5 DC over voltage & under voltage
 - 8.10.17.6 Battery current limit
 - 8.10.17.7 Under voltage and over voltage on input side

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- 8.10.17.8 Overload in inverter
- 8.10.17.9 HRC fuses in control circuit
- 8.10.17.10 Snubber circuit and soft / cold start of UPS

Under voltage setting shall be settable (at end cell voltage X no of cells) at site.

Any other protection required for safe operation of the UPS depending on the components used and the circuit design. Since Battery which is an ungrounded DC system will be used as DC source, the DC circuit inside the UPS shall not have any internal grounding.

8.11 **Meters / indication / annunciation and Protection**

Metering & Protection

- 8.11.1 The following parameters shall be measured either through LCD display or separate meters in UPS panel front.
 - 8.11.1.1 Each Input voltage
 - 8.11.1.2 Each input current
 - 8.11.1.3 Each Charger Voltage
 - 8.11.1.4 Each Charger current
 - 8.11.1.5 Each Inverter output voltage
 - 8.11.1.6 Each Inverter output Current
 - 8.11.1.7 Each Inverter output frequency
 - 8.11.1.8 Each stabiliser Voltage
 - 8.11.1.9 Each stabiliser current
 - 8.11.1.10 Battery voltage
 - 8.11.1.11 Battery current
- 8.11.2 For remote metering of the following parameters, 4-20 mA transducer outputs shall be provided.
 - 8.11.2.1 Each Inverter output voltage
 - 8.11.2.2 Each Inverter output Current
 - 8.11.2.3 Each Inverter output frequency

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8.11.3 For SCADA integration, microcontroller shall be provided for the following minimum information with appropriate communication interface (RS485 port / IP Port) and on Open protocol (Modbus RTU / IEC61850 / IEC60870-5-104) shall be provided.

8.11.3.1 Mains voltage fail

8.11.3.2 Rectifier fail

8.11.3.3 Battery breaker off

8.11.3.4 Inverter fail

8.11.3.5 Load on bypass

8.11.3.6 Overload

8.11.3.7 Over temperature

8.11.3.8 Manual bypass ON

8.11.3.9 Static bypass switch off

8.11.3.10 Output switch open

8.11.3.11 Inverter ON/OFF

8.11.3.12 Asynchronous condition

8.11.3.13 DC ground fault

8.11.3.14 Synchro inhibited

8.11.4 The following LED alarm indications shall be provided on the mimic on the panel.

8.11.4.1 System fault

8.11.4.2 Rectifier charger failure

8.11.4.3 Inverter failure

8.11.4.4 Battery under voltage

8.11.4.5 Thyristor over temperature

8.11.4.6 Fuse failure

8.11.4.7 Overload

8.11.4.8 Static transfer to standby

8.11.4.9 Transfer inhibited

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- 8.11.4.10 Overload shutdown
- 8.11.4.11 Emergency shutdown
- 8.11.4.12 Battery circuit open
- 8.11.4.13 AC mains failure
- 8.11.4.14 AC standby source mains failure
- 8.11.4.15 Manual bypass ON
- 8.11.4.16 Fan failure
- 8.11.4.17 Asynchronous condition
- 8.11.4.18 DC ground fault
- 8.11.4.19 Low DC
- 8.11.5 The following LED status indications shall be provided on the panel.
 - 8.11.5.1 Mains ON
 - 8.11.5.2 Charger ON
 - 8.11.5.3 Battery on load
 - 8.11.5.4 Inverter ON
 - 8.11.5.5 AC standby source ON
 - 8.11.5.6 Inverter on load
 - 8.11.5.7 Manual bypass ON
 - 8.11.5.8 Load on static bypass
- 8.11.6 The following protections shall be provided as a minimum.
 - 8.11.6.1 MCCB at each input supply
 - 8.11.6.2 DC MCCB at Battery supply
 - 8.11.6.3 Filter at input
 - 8.11.6.4 Surge suppressor across transformer secondary
 - 8.11.6.5 Semiconductor fuses for SCR bridges
 - 8.11.6.6 HRC fuses for filter capacitors

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- 8.11.6.7 DC over voltage protection
- 8.11.6.8 Charger input current limit
- 8.11.6.9 Battery current limit
- 8.11.6.10 Under voltage on input side
- 8.11.6.11 Negative sequence current protection on input side
- 8.11.6.12 Overload on inverter
- 8.11.6.13 DC ground fault protection
- 8.11.6.14 HRC fuses in control circuit
- 8.11.6.15 Under voltage / Over voltage protection
- 8.11.6.16 Any other protection required for safe operation of the UPS.

8.11.7 **Battery- SMF VRLA Type**

A Separate SMF VRLA type battery bank shall be used to meet the requirement. Bidder to consider Battery rating for feeding the load of full capacity for four hours during the power failure.

Battery shall be sized to cater 100 % UPS load plus 10 % design margin. The aging factor shall be considered as 1.25. Suitable correction factors shall be considered for the site ambient temperature.

8.11.8 **Cables**

- 8.11.8.1 Control cables shall be 1100 V grade single / multi core stranded copper conductor, PVC insulated, aluminum wire armored (for single core) and galvanized steel strip/ wire armored (for multi core) cables with extruded inner and outer sheath made of specially formulated fire retardant low smoke (FRLS) PVC compound. The minimum size of stranded copper conductor shall be 0.65 sq.mm for all circuits. The minimum strands per conductor shall be three. The cables shall conform to IS: 1554 Part 1 in all other respect. For DC system only, single core cables shall be used.
- 8.11.8.2 Power cables for interconnecting AC output from inverters and voltage stabilizer (standby AC supply) with system output assembly and from system output assembly with AC Distribution Boards are included in the scope of supply.
- 8.11.8.3 All the cables shall be FRLS & XLPE insulated.

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8.12 SCADA Interface

- 8.12.1 UPS system alarms & Event shall report to SCADA System Modbus TCP/IP / IEC 60870-5-104 communication protocol.
- 8.12.2 Vendor shall consider necessary Hardware viz. Cables, connectors, converters & Software for SCADA integration.
- 8.12.3 The separate Microcontroller shall be used for integration with SCADA System. Microcontroller shall provide all information on soft to SCADA System. The I/O list will be finalized during detailed engineering. Microcontroller shall be capable of exchanging all Analog/Digital Input/Digital Output.
- 8.12.4 Vendor shall consider all required transducer and other interfaces for data exchange with SCADA System

8.13 Panel Wiring and Other Accessory Equipment

- 8.13.1 Panels shall be completely wired internally to equipment and terminal blocks including all inter panel wiring. Flexible wires shall be used for wiring of devices mounted on the moving parts such as swinging panels/panel doors.
- 8.13.2 Auxiliary bus bars for AC and DC circuits, synchronizing circuits, annunciator circuits and other common services shall be run at the top of panels, running throughout the length of panels and shall be of copper of adequate section, suitably insulated all along their run.
- 8.13.3 Wire terminations shall be made with solder less crimping type tinned round copper lugs, with insulated sleeves provided at the wire terminations. Engraved, tight fit ferrules shall be provided at both ends of wires for identification.
- 8.13.4 Wiring shall run in longitudinal troughs inside the panel and interconnection to adjacent panels brought out to separate terminal blocks located near the slots or holes meant for inter panel wiring. Inter panel wiring shall be in Vendor's scope.

8.14 Terminal blocks

- 8.14.1 Terminal blocks shall be 1100V grade, 10A rated, one piece moulded, complete with insulated barriers, stud/screwed clamp type terminals, washers, nuts, lock nuts and identification strips.
- 8.14.2 Voltage Transformer terminal blocks shall be provided with links and isolating facilities. CT secondary leads shall be provided with shorting and earthing facilities.

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- 8.14.3 A minimum of 10% spare terminal blocks shall be provided uniformly distributed in a group of terminal blocks.
- 8.14.4 Clearance between two rows of terminal blocks shall be 150 mm and between a row of terminal blocks and its associated glands shall be 250 mm.
- 8.14.5 Whenever termination of purchaser's external cable is required, the necessary undrilled, removable bolted gland plates, supporting clamps for cables and wiring troughs shall be provided.
- 8.14.6 Ammeter selector switches, if provided, shall be of the stay put type with make before break type contacts.
- 8.15 **Selector Switch**
- 8.15.1 Selector switch shall be of rotary stay put type with required number of positions.
- 8.15.2 The switch shall be current rated at 125% of the UPS rating at its designed output voltage. The auxiliary contacts of the switch shall be rated at 5A.
- 8.15.3 The switch shall have make before break contact arrangement.
- 8.16 **Displays**
- 8.16.1 For main circuit indications like circuit breaker ON/OFF panel mounting type indicating lamps with series connected resistors, preferably built-in in the lamp assembly, fitted with translucent colored lamp covers shall be provided.
- 8.16.2 LED indications shall be provided for status indication/continuous monitoring of the UPS system.
- 8.16.3 Bidder can supply the LCD display for replacing the LEDs mentioned above. In this case, bidder shall submit details of LCD controller.
- 8.17 **Layout Requirements for the Equipment / System**
- 8.17.1 Bidder to provide UPS panels as per space available at site. Standard panel size shall be considered as 800 X 800 X 2200 mm, Panel enclosure shall be of IP42 class.
- 8.17.2 Battery stand shall be provided for housing the batteries
- 8.17.3 ACDB for UPS shall be floor mounted
- 8.18 **Safety Requirements**
- 8.18.1 Emergency Shutdown Switch shall be provided with protective cover.

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8.18.2 All the power terminals are to be insulated.

8.18.3 No direct access to any live terminals.

8.18.4 All the operating handles of isolators and MCBs shall be insulated.

8.18.5 All the electronic PCBs shall have protective coating to avoid tracking due to dust and moisture.

8.18.6 All the cables used are FRLS and heat resistant

8.19 **Operational and Maintenance Requirement**

8.19.1 **Operational Requirement**

8.19.1.1 On-off" indicating lamps shall be provided on the front side of UPS. Indication lamps shall be clearly visible. Colour of the Indicating lamps should be as below

8.19.1.2 UPS On: Green

8.19.1.3 UPS Off: Red

8.19.2 LED indicators / LCD display provided on the panel for continuous monitoring of the UPS operation should highlight at least following conditions

8.19.2.1 System fault

8.19.2.2 Rectifier failure

8.19.2.3 Inverter failure – over voltage / under voltage

8.19.2.4 Battery under voltage

8.19.2.5 UPS over temperature

8.19.2.6 Overload

8.19.2.7 Transfer inhibited

8.19.2.8 Emergency shutdown

8.19.2.9 Battery circuit breaker/switch open

8.19.2.10 AC mains failure

8.19.2.11 AC standby source mains failure

8.19.2.12 Fan failure

8.19.2.13 Asynchronous condition

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- 8.19.2.14 Control power failure
- 8.19.2.15 DC ground fault
- 8.19.2.16 Mains over/under voltage
- 8.19.3 Mimic should be provided on the panel to indicate the operation of the UPS. Status Indication on Mimic for following conditions:
- 8.19.3.1 Battery on load
- 8.19.3.2 Inverter ON
- 8.19.3.3 AC standby source ON
- 8.19.3.4 Manual bypass ON
- 8.19.3.5 Load on static bypass
- 8.19.3.6 Load on battery
- 8.19.4 Bidder can supply digital LCD display in lieu of the analog meters and local indications & alarms specified above. In this case bidder to submit details of LCD controller. A pushbutton should be provided to take the LCD display into service as & when required.
- 8.19.5 **Maintenance Requirement**
- 8.19.5.1 The UPS system shall be so designed such that minimal or zero maintenance is required
- 8.19.5.2 All materials of the UPS shall be new, of current manufacture, high grade and shall not have been in prior service except as required during factory testing. All active electronic devices shall be solid state. All power semi-conductors shall be hermetically sealed. Control logic and fuses shall be physically isolated from power train components to ensure operator safety and protection from heat. All electronic components shall be accessible from the front without removing sub-assemblies for service access
- 8.19.5.3 Necessary Maintenance procedures if any shall be clearly indicated in the manufacturer's O&M manual
- 8.19.5.4 The design shall provide for high availability of equipment by ensuring high mean- time between failures (MTBF) and low mean-time-to-repair (MTTR).
- 8.19.6 **Factory Acceptance Test (FAT)**
- 8.19.6.1 The Bidder shall adhere to the Standard Quality Plan of Tata Power attached with this specification. The purpose is to ensure that the Bidder has interpreted the specified

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requirements correctly and that the FAT includes checking to the degree required by the user. The general philosophy shall be to deliver a system to site only after it has been thoroughly tested and its specified performance has been verified, as far as site conditions can be simulated in a test lab.

- 8.19.6.2 The purpose of Factory Acceptance Testing is to ensure trouble free installation at site. Prior to release for shipment of the equipment the Purchaser or his representative will witness Factory Acceptance Test (FAT) in which the system is checked against the specifications.
- 8.19.6.3 Type and routine tests certificates for all components made use in the UPS system shall be furnished as per the list below. Tests for components shall be as per relevant standard specifications:
- 8.19.6.4 Temperature rise test at maximum rated continuous current in float/boost mode
- 8.19.6.5 Equipment reactance, voltage regulation, efficiency, power factor, IR, Open circuit, short circuit and full load test
- 8.19.6.6 Cell type test (forward reverse characteristic curve, forward reverse volt drop, IR, load test, power loss, temperature rise test
- 8.19.6.7 IP degree protection
- 8.19.6.8 Noise level
- 8.19.6.9 EMC test
- 8.19.6.10 All test routine test, performance test, special tests, type tests and acceptance test as per the relevant standards and approved MQP shall be carried out on UPS, Batteries and Distribution Boards. Minimum shop testing requirements are specified in the attached Standard Quality Plans. All applicable Type test report shall be submitted with the bid and shall not be older than 5 years.
- 8.19.6.11 Endurance test on static switches shall be performed for not less than 10 transfer/ retransfer cycles at full load.
- 8.19.6.12 The complete assembled UPS system shall be operated at rated load under relevant ambient conditions for not less than 96 hours continuously prior to release for shipment.
- 8.19.6.13 Bidder shall incorporate all FAT comments prior to despatch. After Bidder confirms that all changes have been incorporated, Purchaser's Office will issue Despatch Clearance.

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8.19.6.14 The Test Reports as well as Test Certificates of OEM, third party, Bidder shall be submitted for approval / verification. Type test reports shall not be more than 5 years old.

8.19.6.15 FAT and Despatch Clearance by the Purchaser shall not relieve the Bidder from complete responsibility for the total system and its performance subsequently.

8.19.7 **Commissioning Check List**

Bidder shall furnish the Commissioning check list for TPCODL approval before commissioning the UPS at Site. As such checklist shall cover site-specific tests including interconnections with field equipment and other systems. Apart from testing and commissioning, unstructured tests shall be employed as necessary, to verify overall system operation under field conditions.

8.20 **Performance Requirements**

Following parameters should be guaranteed by the bidder.

Sr. No.	PARAMETER	GUARANTEED VALUE
1	Voltage regulation <ul style="list-style-type: none"> • Steady state • 100% Step Load 	± 1% ± 5%
2	Total Harmonic Distortion	< 3%
3	Bypass Synchronization	± 1% to 6 % Field
4	Voltage Waveform	Sinusoidal
5	Fault Level Protection	25 KA for 3 Sec
6	Overload Capacity	i) 125% for 10 Min ii) 150% for 1 Min
7	The maximum working voltage, current, and di/dt of all solid-state power components and electronic devices	shall not exceed 75% of the ratings established by their manufacturer
8	The operating temperature of solid-state component sub-assembly	shall not be greater than 75% of their ratings.
9	Electrolytic capacitors shall be computer grade and be operated	No more than 95% of their voltage rating at the maximum rectifier charging voltage

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9.0 AC Distribution Boards

AC distribution boards shall be provided for UPS input and output power distribution. The distribution boards shall distribute power and provide protection against failures on feeder circuits, to the equipment. The bidder shall be responsible for design, engineering, manufacturing, supply, storage, installation, cabling, testing & commissioning of AC distribution boards required for distribution of power. The nominal input frequency is 50 Hz, which may vary from 47.5-52.5 Hz. The phase to neutral input voltage shall be (Nominal 240 V) varying from 190 V to 265 V. The Input ACDB will cater for the load requirements of UPS system load. The Output ACDB shall cater for only critical loads in the Control Centre. The number of feeders and their ratings in the output ACDB shall be decided as per the requirement of the proposed systems. At least 30% spare feeders in the output panel shall be provided. All MCCBs shall conform to IEC-60947-2 & IS 13947-2/IEC 947-2, IEC-60898 and IS 8828 and shall be of Four (4) Pole type of requisite rating. MCBs used for load feeders in output ACDB shall be of minimum curve B characteristics. The load feeders shall be coordinated with requirement of loads of computers and other loads.

9.1 Enclosures/Panels

The equipment of ACDBs shall be physically mounted in freestanding enclosures/panels. MCCBs and sub-assemblies shall be easily replaceable and maintainable. Cable entry shall be from the bottom/top of the enclosures (to be finalized during detailed engineering). The Bidder shall state the type, size and weight of all enclosures and indicate the proposed manner of installation. The applicable degree of protection of enclosures shall be at least IP21. The thickness of the structural frames and load bearing members shall be minimum 2.0 mm and for front & rear, sides and top covers shall be minimum 1.6 mm. For wall mounted type of output ACDB the above requirements shall not be applicable.

9.2 Equipment/Panel Earthing & Surge Protection

Each enclosure shall include suitable safety earth networks. Surge protection devices shall be installed in the input ACDB to provide adequate protection against current and voltage transients introduced on input AC due to load switching surges. These protection devices shall be in compliance with IEC- 61312, IEC- 61024 and VDE 0100-534 for following surges:

- a) Low Voltage Surges (Class C)

Between	Requirement
R, Y, B & N	$I_n \geq 10 \text{ kA}, 8/20 \mu\text{S}$ for each phase

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N & PE

 $I_n \geq 20 \text{ kA}, 8/20 \mu\text{S}$

In= Value of Nominal Discharge Current.

9.3 **Cabling Requirements**

The Bidder shall supply, install and commission all power cables, control cables, network interface cables and associated hardware (lugs, glands, cable termination boxes etc.) as required for all equipment. The Bidder shall be responsible for cable laying and termination at both ends of the cable. The Bidder shall also be responsible for termination of owner supplied cables if any at Bidder's equipment end including supply of suitable lugs, glands, terminal blocks & if necessary cable termination boxes etc. All cabling, wiring and shall be installed in accordance with the following requirements.

9.4 **Power Cables**

All external power cables shall be stranded Aluminum/Copper conductor, armoured XLPE/PVC insulated and sheathed; 1100 V grade as per IS 1554 Part-I. The conductor for the Neutral connection from UPS to Output ACDB shall be sized 1.8 times the size of the Phase conductors to take care of the non-linear loads. However, the cable between UPS & Battery bank shall be of copper conductor (armoured type).

9.5 **Cable Identification**

Each cable shall be identified at both ends, which indicates the cable number, and the near-end and far-end destination. All power cables shall have appropriate colour for identification of each phase / neutral / ground. Cable marking, and labelling shall comply with the requirements of the applicable standards.

9.6 **Cable and Hardware Installation**

The Bidder shall be responsible for supplying, installing, and terminating all cables and associated hardware (lugs, glands, etc.), required to mechanically and electrically complete the installation of facilities for the project.

9.7 **Enclosures/Panels design**

Enclosures/panel shall be of freestanding type of design. Cable entry shall be from the bottom/top of the enclosures (to be finalized during detailed engineering). The enclosures shall not have doors that are wider than 80 cm and doors shall be hinged with locking as per standard design of the manufacturer. Keyed locking is required with identical keys for all enclosures. The enclosures shall not exceed 220 cm in height. The thickness of the structural

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frames and load bearing members shall be minimum 2.0 mm and for others shall be minimum 1.5 mm. The panels/boards shall be equipped with necessary cable gland plates. The Bidder shall state the type, size and weight of all enclosures and indicate the proposed manner of installation.

Wiring within panel shall be neatly arranged and securely fastened to the enclosure by non-conductive fasteners. Wiring between all stationary and moveable components, such as wiring across hinges or to components mounted on extension slides, shall allow for full movement of the component without binding or chafing of the wire. Conductors in multi-conductor cables shall be individually colour coded and numbered at both ends within enclosures.

The enclosures shall be painted inside and outside. The finish colour of all enclosures shall be aesthetically pleasing and shall be approved by the Purchaser. Further, finish colour of external surfaces shall be preferably of same colour for all enclosures/panels. Maintenance access to the hardware and wiring shall be through full height lockable doors. Each panel shall be supplied with 240 VAC, 50Hz single-phase sockets with switch. Each ACDB and equipment within ACDB enclosures shall be clearly labelled to identify the enclosure/equipment. All labelling shall be consistent with Bidder-supplied drawings.

9.8 Enclosure/Panel Earthing

Each enclosure shall include suitable earth networks within the enclosure. Earth network shall be a copper bus bar, braid or cable inside enclosures.

The safety earth network shall terminate at two/more studs for connecting with the earthing grid. Safety earthing cables between equipment and enclosure grounding bus bars shall be of minimum size of 6 mm², stranded copper conductors, rated at 300 volts. All hinged doors shall be earthed through flexible earthing braid.

For all enclosures requiring AC input power, the green earthing wire from the AC input shall be wired to the safety-earthing stud. The Bidder shall provide all required cabling between enclosures for earthing. The Bidder shall connect safety and signal earths (as applicable) of each enclosure to the nearest earth grid/earth riser through suitable 50 X 6 sq. mm. GI / 25 x 3 Cu strips. The Bidder may use the existing grid wherever available. In case the suitable earthing grid is not available the same shall be made by the Bidder.

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The signal earthing network shall terminate at a separate stud connection, isolated from safety ground. The stud connection shall be sized for an external earthing cable equipped with a suitable lug.

All earthing connections to equipment shall be made directly to each equipment chassis via earthing lug and star washer. Use of the enclosure frame, skins, or chassis mounting hardware for the earthing network is not acceptable.

10.0 Operating and Construction Requirements

10.1 Power Distribution and Protection

For Powering on the equipment redundant single-phase 230 V AC power supply will be drawn from the proposed 6 KVA UPS.

Each circuit shall include a PDU with circuit breaker typed and sized in accordance with the requirement in the Network Panel/ 6U Rack / IT, GIS and SCADA/ADMS, IT & GIS workstations. Further, the Bidder shall distribute power within the system enclosures, consoles, peripherals, and other components of the system. The Bidder shall supply all fusing, circuit breakers, switches, and surge protection necessary to protect the hardware.

10.2 Environment Conditions

Equipment located in the APSCC building shall operate over an ambient temperature range of 16°C to 50°C, with a maximum rate of change of 5°C per hour. Relative humidity will be around 95% non-condensing.

10.3 Acoustic Noise Level

The noise generated by the equipment in any enclosure, including desktop equipment, located in the Control Centre shall not exceed 60 dBA 1 meter (3 feet) from the enclosure. The noise generated by the equipment in any enclosure, including desktop equipment, located outside the Control Centre shall not exceed 50 dbA 1 meter (3 feet) from the enclosure. Sound-deadening enclosures shall be provided where necessary to meet these requirements.

10.4 Assembly and Component Identification

Each assembly in the system, to the level of printed circuit cards, shall be clearly marked with the manufacturer's part number, serial number, and the revision level. Changes to assemblies shall be indicated by an unambiguous change to the marked revision level. All

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printed circuit card cages and all slots within the cages shall be clearly labelled. Printed circuit cards shall be keyed for proper insertion orientation.

10.5 **Interconnections**

All signal cabling between component units of the computer systems shall be supplied by the Bidder. Plug-type connectors shall be used for all signal interconnections. The connectors shall be polarized to prevent improper assembly. Each end of each interconnection cable shall be marked with the cable number and the identifying number and location of each of the cable's terminations. Each cable shall be continuous between components; no intermediate splices or connectors shall be used. Terminations shall be entirely within the enclosures.

10.6 **Seismic Standards**

All equipment must conform to the latest uniform building code earthquake design standard. The design shall be for the current zone rating or zone four (4) as a minimum. No testing is required.

10.7 **Consumables**

The Bidder shall supply, at its own expense, all consumables required for use during project execution through completion of the system availability test. The consumable items shall include as minimum:

- a. Printer paper
- b. Printer Accessories
- c. Special cleaning materials
- d. CDs/DVDs
- e. Cable and Networking Accessories

10.8 **Other Peripheral Devices**

The Bidder shall supply any other peripheral devices or equipment normally provided for operation, software support, and maintenance for the proposed system as per the specification.

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11.0 Detail Technical Specification

a) 86" LED Display Panel at APSCC - BBSR2, Cuttack, Dhenkanal, Paradeep

1	2	3	4
Sl. No.	Technical Particulars	TPCODL Requirement	Bidder's Response
1	Make		
2	Model		
3	Panel Size	86"	
4	Technology Type	Backlit D-LED	
5	Tampered Glass, Hardness	4 mm, 7H	
6	Brightness	350 nits	
7	Contrast Ratio	5000:1	
8	Native Resolution	4K Ultra-HD (3840 x 2160)	
9	Viewing Angle (H/V)	178°/178°	
10	Aspect Ratio	16:09	
11	Refresh Rate (Hz)	>> 60 Hz	
12	Operating Hours	24 X 7 X 365	
13	Estimated Life Time	50,000 Hours (Typical)	
14	Display Color (BIT)	1.07 Billion (10-bit)	
15	Installation Orientation	Landscape	
16	Response Time	8 msec	

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Sl. No.	Technical Particulars	TPCODL Requirement	Bidder's Response
17	Anti-Glare	Anti Glare Coating	
18	Eye Care Solution	Eye-Care	
19	Blue Light Filter	Auto Brightness Control	
20	Bonding	Zero Optical Bonding	
21	Browser	Yes	
22	Office	Yes	
23	CPU	Quad-Core, Latest CPU Version meeting Purchaser's requirement of GIS map projection	
24	Internal Storage	>> 32 GB (minimum)	
25	Ram	>> 8 GB	
26	Inputs	Side/Rear Panel : 1 X VGA, 1 x Mini AV (3.5 mm mini jack, 2 x HDMI 2.0 (60 Hz /4K)	
		Front Panel : 1 x HDMI 2.0 (60 Hz /4K), 1 x USB-C	
27	Outputs	1 x COAX (Multi Channel Audio), 1 x Mini AV (3.5 mm mini jack), 1 x Earphone Out (Stereo Audio), 1 X HDMI 2.0	
28	USB	Side/Rear Panel : 1 x USB-A 2.0, 1 x USB-A 3.0	
		Front Panel : 3 x USB-A 3.0	
29	Ethernet	1 x RJ45 Inputs	
30	Control	1 x RS232C Control Signal Interface	
31	TF Card Slot	128 GB	
32	IR Receiver	Yes	
33	Speakers	15W x 2 (Stereo)	
34	Software	Interoperable	

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Sl. No.	Technical Particulars	TPCODL Requirement	Bidder's Response
35	OTA Firmware upgradation	Yes	
36	Power Supply (Internal)	100 -240V Single Phase AC Supply, 50Hz	
37	Consumption	≤ 450W	
38	Standby Mode	< 0.5w (Standby)	
39	Auto Power On/Off Setting	Yes	
40	Wakeup	VGA / HDMI / LAN	
41	Dimension (l x H x D) mm	<< 1960 x 1160 x 100	
42	Wall Mounting	Bidder shall consider accessories for mounting on wall	
43	Standard	AC Power Cord (5 m), Remote Control (W/o Batteries), HDMI Cable (5m), Mounting Kit	
44	Storage Temperature	-20° - 60° c	
45	Working Temperature	0° - 55° c	
46	Storage Humidity	10% – 95% RH	
47	Standard + Extended Warranty	5 Years OEM Warranty, Including Controller, Display Management Software	

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Data Sheet : 86" LED Display Panel Controller

1	2	3	4
Sl. No.	Technical Particulars	TPCODL Requirement	Bidder's Response
The Controller should be able to make 86" display behave as one logical area. It should be possible to display any or all the inputs on the Display Unit.			
1	Make		
2	Model		
3	Architecture	Bidder may Consider Separate Controller or Display Management Software Can be installed in any of the Operator Workstation of Purchaser	
4	Operating System	Latest Windows 11 2023 Operating system	
5	RAM	8 GB or higher	
6	HDD	SSD Harddisk of minimum 1TB	
8	Chip	i9 or better	
9	Power Supply	Non-Redundant Power Supply	
10	Outputs	To Connect with 86" Display Panel	
11	Inputs	6 HDMI & Dual LAN	
12	Chassis	19" rack mount industrial chassis	
13	Controller certification	Controller should have Certification from National / International accredited Lab	
14	Mounting Arrangement	Controller shall be mounted in 6U Rack considered under this project along with Other Networking Accessories	

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Data Sheet : Display Management Software

1	2	3	4
Sl. No.	Technical Particulars	TPCODL Requirement	Bidder's Response
Display Management Software shall be installed in the Proposed Controller, If the Controller is not offered than the same shall be installed in Purchaser's Operator Workstation			
1	Make		
2	Scaling and display	Software to enable the user to display multiple sources on the Display Panel.	
3	Auto Source Detection	Software should support for Auto Source Detection	
4	Layout Management	Software should able to Save and Load desktop layouts from Local or remote machines	
5		Should support for Video, HDMI, Internet Explorer, Desktop Application and Remote Desktop Monitoring Layouts	
6	Scenarios	All the Layouts can be scheduled as per user convenience	
7	Layout Scheduler	Software should support auto launch of Layouts according to specified time or event by user	
8	Layout Pre view	Software should support layout preview option	
9	Launch Application	Software should Launch Application received from Multiple Input Sources	
10	Work space allocation	System should provide functionality to the administrator to define and allocate work space for a particular operator or a group of operators when working on a Display Unit	
11	Offline Layouts	It should be possible to create offline layouts	
12	User friendly	Software should be user friendly	
13	Ticker	Ticker message can be positioned anywhere on the display wall. Inside the ticker window, font size, colour and background can be set	
14	Ticker Type	Software should able to prepare various kinds of tickers: text ticker, RSS ticker, transparent and time ticker	

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15	SNTP and SNMP	System should support SNTP and SNMP function	
16	Source Carousel	User can set multiple sources that can change sequence after some time interval without changing the layout.	
17	Snap sensitivity	Enables the magnetic behaviour to fit the sources automatically for easy alignment on the Display Unit	
18	Scalable GUI	Scalable GUI to scale to any size of Display Screen.	
19	Scheduler	User can schedule the layout on specific date & time, weekday, weekend, start & end date	
20	Source Positioning	User can position the source input on Display Unit with single click	
21	Auto Source Detection	Software to enable user to display multiple sources in any size & anywhere on Display Unit	
22		Software should support for Auto Source Detection	
23		Should support for Video, HDMI, Internet Explorer, Desktop Application and Remote Desktop Monitoring Layouts	
24	Cyber Management Security	System should have Hardware License key to protect the software from unauthorized access.	
25		Software should offer minimum 4 levels of Authentication (User Accounts, Permissions for Functionality & Roles etc.	
26		Display Unit communication network shall be independent of SCADA LAN/WAN. Appropriate Firewall shall be used for external communication	

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b) GIS Workstation at APSCC - BBSR2, Cuttack, Dhenkanal, Paradeep

1	2	3	4
Sl. No.	Technical Particulars	Purchaser's Requirement	Bidder's Response
1	Make		
2	Model		
3	Operating System	Latest Windows 11 2023 Operating system	
	MS Office	Latest Version with License	
4	Processor	13th Generation Intel Core i7 processor or better	
5	Memory	RAM/Memory of 32 GB DDR5	
6	Hard Disk	Harddisk of minimum 1TB 7200rpm SATA 3.5" HDD along with SSD of 1TB is preferred.	
7	Optical Drive	DVD-RW drive	
8	Ports & Connectors	Ethernet Ports - 2 Nos. (RJ45) (Rear) USB - 4 Nos., Type-A 5 Gbps signaling rate (1- Front, 3 Rear) HDMI - 2 Nos. (1 – 24" Monitor, 1 – Large Video Wall) (Rear) Headphone/Microphone combo: 1 No. (Front) Line-in : 1 (Rear) Line-Out : 1 (Rear) Power Connector : 1 (Rear)	
11	Input Power Supply	Power Supply (230 V AC) with 80 Plus Platinum certification	
12	Size	Desktop/Rack mounted	
13	Monitor Size & Type	27", LED	
14	Aspect Ratio	16:9	
15	Number of Monitor	One	
16	Peripherals	Wireless Keyboard & Mouse	

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1	2	3	4
Sl. No.	Technical Particulars	Purchaser's Requirement	Bidder's Response
17	Graphic card	16 GB NVIDIA Quadro, DVI+VGA	
13	Video Interface	2 (1 – 27" Monitor, 1 – Display Panel)	
18	Other I/O interface	Sound Card and Speakers for audible alarms, Stereo line-in, Microphone-in, front headphone/speaker out	
19	Condition Monitoring	Hardware shall be MIB compliant with secure SNMP Ver3.0. The system shall able to display /provide Sync Status- Main/Backup , Heartbeat of the Processor, LPMT, SPMT etc.	
20	Heat Load (in watts)	<< 250 w	
21	Environment & Temperature	Ambient temperature range of 0 - 65 Degree C, Relative Humidity 95% non condensing	
22	Mounting Arrangement	DESK Mountable CPU	
23	Storage Temperature	-20°- 60° c	
24	Standard + Extended Warranty	5 Years OEM Warranty	

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c) Wall Mounted 6U Rack at APSCC - BBSR2, Cuttack, Dhenkanal, Paradeep

1	2	3	4
Sl. No.	Technical Particulars	Purchaser's Requirement	Bidder's Response
1	Make		
2	Model		
3	Rack Type	Wall Closet	
4	External Dimension	368 (H) X 600 (W) X 600 (D) mm	
5	Storage Capacity	Upto 6U Rack of 19"	
6	Degree of Protection	IP20	
7	Standard Accessories	Power Distribution Unit with 5A/15A sockets 4 nos., MCB 16A, Cable manager, 1U shelf	
8	Rack Opening	Front lockable toughened Glass Door	
11	Top and Bottom Cover	Welded to frame, Vented and Field Cable Entry/Exit Cutouts	
12	Earthing Strip	Copper Strip Grounding	
13	Panel Colour (Internal & External)	Black (Powder Coated)	

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d) Network Laser Printer Cum Scanner Cum Copier at APSCC - BBSR2, Cuttack, Dhenkanal, Paradeep

1	2	3	4
Sl. No.	Technical Particulars	Purchaser's Requirement	Bidder's Response
Bidder shall include B/W Laser Network Printer (A4 size Printing), Scanners & Copy (Photo Copy) with Advance Function & Features. There shall be no limitations on the use of printer to perform the functions from any of the Purchaser's Workstations. Printer shall be interfaced with Ethernet LAN either directly or through Print Server.			
1.0	Make		
2.0	Model		
3.0	Printer Type	Laser Network Printer/Copier/Scanner	
4.0	Double-Sided Feature	Automatic 2-Sided Print / Scan / Copy	
5.0	Quiet Mode	Yes	
6.0	Print/SCAN/Copier Memory	>> 512 MB	
7.0	Printer Specification		
7.1	Print Speed	Up to 40 PPM (Normal), Upto 34 IPM (Duplex)	
7.2	First Print Time	<< 6 Sec (Ready), << 10 Sec (Sleep)	
7.3	Print Resolution	600 X 600 DPI, 1200 X 1200 DPI	
7.4	Print Mode	Poster, Watermark, Page Composer, Tone Saver	
7.5	Print Size	A4, Letter (upto 8.5" X 14")	
7.6	Fonts and Typefaces	84 Scalable True Type Fonts	
7.7	Duplex Printing	Automatic	
8.0	Copier Specification		
8.1	Copy Type	Monochrome Laser	
8.2	Copy Speed	Upto 40 CPM	
8.3	Copy Resolution	600 X 600 DPI, 1200 X 1200 DPI	

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1	2	3	4
Sl. No.	Technical Particulars	Purchaser's Requirement	Bidder's Response
8.4	Warm-up Time	<< 10 Sec from Power ON	
8.5	First Copy Time	<< 12 Secs	
8.6	Reduction / Enlargement Ratio	25 - 400% in 1% Increments	
8.7	Copy Size	A4, Letter (upto 8.5" X 14")	
8.8	Multi Copy / Stack	Upto 99 Copies	
8.9	Copy Features	ID Copy; Number of Copies; Resize (including 2-Up); Lighter/Darker; Enhancements; Original Size; Binding Margin; Collation; Two-Sided; Quality (Draft/Normal/Best); Save Current Settings; Restore Factory Defaults; Maximum Number of copies: Up to 9999 copies ; Reduce/Enlarge: 25 to 400%	
9.0	Scanner Specification		
9.1	Scan Speed	Normal: Up to 29 PPM/46 IPM (B&W), Duplex: Up to 46 IPM (B&W)	
9.2	Scan Type	Flatbed, ADF	
9.3	Dual Scanner Method	Yes	
9.4	Bit Depth / Grey Scale Levels	24 Bit / 256	
9.5	Scan Technology	Contact Image Sensor (CIS)	
9.6	Scan Input Modes	Front-Panel SCAN, Email, File Buttons	
9.7	Scan Resolution (Optical / Enhanced)	Upto 1200 X 1200 DPI (Optical), 19,200 X 19,200 DPI (Interpolated)	
9.8	Document Size	A4, Letter (upto 8.5" X 14")	
9.9	Compatibility	TWAIN, WIA (Latest Version)	
9.10	Output File Formats	Hi-Compression PDF, Searchable PDF, PDF, JPEG, TIFF, BMP, PNG	
9.11	Scanner Features	Single-pass 2-sided scanning ADF, Scan to Cloud, Scan to email with LDAP Email Address Lookup, Scan to Network Folder, Scan to USB, Quick Sets	

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1	2	3	4
Sl. No.	Technical Particulars	Purchaser's Requirement	Bidder's Response
10.0	Paper Handling Specification		
10.1	Standard Paper Source	200 Sheet Cassette	
10.2	Paper Output	100 sheets face down	
10.3	Media Size	Letter, Legal, A4, A5, A6, B5, Statement, Executive	
10.4	Media Types	Paper (Plain, EcoEFFICIENT, Light, Heavy, Bond, Colored, Letterhead, Preprinted, Prepunched, Recycled, Rough), Envelopes, Labels, Small Documents	
10.5	Envelop Capacity	10-12 Envelops	
10.6	Envelop Types	Com 10, Monarch, DL, ISO-C5, ISO-B5	
11.0	Connectivity & Software Specifications		
11.1	Standard Interfaces	1 Hi-Speed USB 4.0; 1 Rear Host USB; 1 Front USB port; Gigabit Ethernet 10/100/1000BASE-T Network; 802.3az(EEE); 802.11b/g/n/2.4/5 GHZ Wi Fi radio + BLE	
11.2	Network Capabilities	Yes, via built-in 10/100/1000Base-TX Ethernet, Gigabit; Auto-crossover Ethernet; Authentication via 802.1X	
11.3	USB/Ethernet Functions	Print, Scan	
11.4	Compatible Operating System	Latest Windows 11 2023 Operating system, Windows 10; Windows Client OS, MAC OS, Linux (Print Only); Android; iOS; Mobile OS; Chrome OS	
11.5	Supported Protocols	TCP/IP, IPv4, IPv6; Print: TCP-IP port 9100 Direct Mode, LPD (Raw Queue Support), Mopria, IPP Print; Discovery: SLP, Bonjour, Web Services Discovery; IP Config: IPv4 (BootP, DHCP, AutoIP, Manual), IPv6 (Stateless Link-Local and via Router, Statefull via DHCPv6), SSL Security and Certificate management; Management: SNMPv1, SNMPv2, SNMPv3, HTTP/HTTPS, Syslog, FTP FW Download	
11.6	Bundled Software	Printer, Scanner, Copier Driver, Auto Duplex, Booklet Printing, Collation, Watermarks, Economy mode, Document Management, & OCR Software, Universal Printer Driver	
12.0	General Specifications		
12.1	Built-In Input Power Supply	180-260 V AC, 50 HZ, +/- 10 %	

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1	2	3	4
Sl. No.	Technical Particulars	Purchaser's Requirement	Bidder's Response
12.2	Dimensions	Compact	
12.3	On-Site OEM Warranty	5 Years	
12.4	Cartridge Type	Single Cartridge System	
12.5	Control Panel	Touch Screen	
12.6	Power Consumption	<< 500 W (Active Printing); 7.5 W (Ready), 0.9 W (Sleep), 0.9 W (Auto Off/Wake on LAN), 0.06 W (Auto off/Manual-on), 0.06 W (Manual Off)	
12.7	Energy Saving Features	Auto-On / Auto-Off Technology; Instant-on Technology	
12.8	Duty Cycle	Upto 10000 Pages per Month	
12.9	Operating Environment	Temperature: 10 to 65°C; Humidity: 10 to 95% RH	
13.0	Required Features		
13.1	Required Features	Laser printer shall be capable of producing, an exact copy of any display window upon request from any local console on A4 size paper.	
13.2		Printer shall support printing of Screen Hardcopy Requests	
13.3		Printing Tray as per the paper size (Letter, Legal, A4, A5, B5, Statement, Executive), Envelope (Com 10, Monarch, DL, ISO-C5, ISO-B5)	
13.4		Printer shall be connected to the LAN directly. Printer shall be accessible from any Workstations	
13.5		Design for continuous trouble-free operation, with a minimum of maintenance.	
13.6		User configurable for new/edit Users with password protected and Full admin rights to manage the B/W printing of Users	
13.7		Quiet operation suitable for Installation in Area Power System Control Centre	
13.8		Character form and spacing to present a pleasing and easily readable output.	
13.9		Easy maintainability, with provision for ease of execution of routine tasks such as Cartridge changing, paper insertion etc.	

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1	2	3	4
Sl. No.	Technical Particulars	Purchaser's Requirement	Bidder's Response
13.10		Control unit with all error detection, error reporting and fail-safe facilities. Printers shall have the facility to provide the following information to the Workstations for alarm generation: Paper Out, Off-line status etc.	
13.11		Printer shall be intelligent to display in case of trouble e.g., Paper struck etc., and highlight in the screen for the user understanding.	
13.12		The Printer shall have touch screen display for selection for major functions viz. copy/printing/scan etc.,	
13.13		Printing history details /credential logins log shall be available	
13.14		Off-line mode selectors switch to enable safe maintenance	
13.15		No Manual interventions after power restart	
14	Standard + Extended Warranty	5 Years OEM Warranty	

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e) 42U Network Rack at APSCC - BBSR2, Cuttack, Dhenkanal, Paradeep

1	2	3	4
Sl. No.	Technical Particulars	Purchaser's Requirement	Bidder's Response
1	Make	Rittal / Valrack	
2	Size	19" / 42U	
3	Dimension (H X W X D mm)	2300 X 800 X 1000 mm	
4	Colour	Powder Coated Black	
5	Captive front panel hardware, Pkt of 20, Castors with Brake		
6	Provision for mounting free floor standing with 100 mm plinth		
7	Panels with ingress protection degree IP41		
8	Internal Lighting Lamp - Yes with door interlock		
9	Front fixed, and Rear double door with proper locking arrangement on both sides		
10	Consist high quality extruded Aluminium vertical profiles, Top and bottom steel end frames with bottom panel having gland plate (4 parts) for cable entry, Top cover with FHU provision, side panels with latches and venting slot at bottom and top. 19" mounting angles		
11	Front CRCA steel single door with hexagonal venting pattern		
12	Rear CRCA steel single door with hexagonal venting pattern		
13	Component shelf, Universal, 19" W / 575 mm D, Load cc 50 Kg		
14	Top mounting, Fan Housing unit with adequate fans with 230V		
15	Thinned copper earth bar		
16	Cable Entry - Bottom with temporary sealed holes of different sizes for cable entry, with adequate number of Cable trays		

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1	2	3	4
Sl. No.	Technical Particulars	Purchaser's Requirement	Bidder's Response
17	PDUs: Intelligent PDUs, with SNMP communication Adequate provision of 5A and 15A Indian compliance power sockets Provision of redundant Input supply with MCB		
18	All the material used in the panel shall be fire retardant		
19	Louvers with suitable wire mesh		
20	Temperature Controller		
21	1U Vented Shelves - 2 Nos.		
22	Environment & Temperature	Ambient temperature range of 0 - 65 Degree C, Relative Humidity 95% non condensing	
23	Storage Temperature	-20°- 60° c	

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f) Fully Managed Layer 2 Ethernet Switch at APSCC - BBSR2, Cuttack, Dhenkanal, Paradeep

1	2	3	4
Sl. No.	Technical Particulars	Purchaser's Requirement	Bidder's Response
1	Make		
2	Model		
3	Type of Switch	19" Rack Mountable Layer2 Fully Managed Ethernet Switch	
4	Compliance	All the Cards/Modules of the Switch must have Conformal Coating for Protection against Harsh Environments	
		Shall support 802.1Q VLAN, 801.2p, 802.1d STP, 802.3ad (Port aggregation), 802.1w RSTP, 802.1s MSTP, 802.3ad LACP, IEEE 802.1ab Link Layer Discovery Protocol	
		IEEE 1613 Compliance	
		QAS (802.1p)	
5	Time Synchronization	SNTP	
6	Ports	24 Port	
		Each port of 100/1000 MBPS	
		Future support for upgradation to 2 uplinks of 1 Gbps	
		USB Compatible Console Cable	
		Shall support Port Mirroring	
7	Layer # 2 Features	Shall support Layer 2 switch ports with Secure VTP or similar protocols to reduce administrative burden of configuring VLANs on multiple switches	
		Shall support Rapid Spanning Tree Protocol & Multiple Spanning Tree Protocol	
		Shall have IEEE compliance for 802.1Q VLAN, 801.2p, 802.1d STP, 802.3ad (Port aggregation), 802.1w RSTP, 802.1s MSTP, 802.3ad LACP, IEEE 802.1ab Link Layer Discovery Protocol	
		Shall be able to discover the neighbouring device of the same/different Bidder's, giving the details about the	

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1	2	3	4
Sl. No.	Technical Particulars	Purchaser's Requirement	Bidder's Response
		platform, IP Address, Link connected through etc.	
		Shall support a mechanism to prevent edge devices not in the network administrator's control from becoming Spanning Tree Protocol root nodes	
8	Virtual Switching Support	Shall support combining of two separate physical switches in a single logical unit	
		Virtual switch system shall be responsible for the control plane of both the switches	
		Virtual switch data planes of both the physical switches shall be active	
		Virtual switching links between the 2 High Available switches shall be min of 10 Gbps bandwidth with no single point of failure, all the required modules / other related cards should be proposed from day one	
		Shall support In-Service OS upgrade mechanism with a minimal disruption of traffic through upgrade process	
		Failover shall be transparent to other networking devices	
		Shall support configuration roll back for quick correction of wrong configurations	
9	Other Features	IPV4/6 : The switch should support IPV4/6 in hardware without the addition of special modules to achieve that forwarding & the Switch PPS performance should not degrade for IPv4/6 packets	
		Latency shall be << 10 μs	
		Shall support Active-Active Clustering, VSS or equivalent technology for high availability and quick resiliency	
		Shall support Resilient Link Feature	
10	Interface for Centralized Network Management System	Mandatory, through industry standard interface	
11	Quality of Services	Shall support Per-port -per-VLAN policies, Distributed policing (up to 4 K polices), Egress/Ingress policing, Diff Serv QoS on all ports, minimum four queues per port in hardware	
		Shall support Congestion Avoidance: WTD or WRED, multiple Queue Thresholds or equivalent technology	
		Shall support Strict-Priority Queue (protects mission-critical, delay-sensitive traffic), Weighted Round Robin (WRR), Priority queuing, Weighted Random Early Detection (WRED), Tail-drop thresholds or equivalent	

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1	2	3	4
Sl. No.	Technical Particulars	Purchaser's Requirement	Bidder's Response
		technology.	
		Shall support Traffic policing, Traffic shaping, Traffic marking and classification	
		Shall support IEEE802.1p CoS and DSCP based traffic marking	
		Shall support Cross stack QoS	
12	Security features	Shall support IEEE 802.1x	
		Shall support at least 500 ACL	
		Shall support VLAN ACLs, Router ACLs, port-based ACLs	
		Shall support TACACS+/RADIUS	
		Shall support Shall have SSHv1, SSHv2, SNMPv1, SNMPv2, SNMPv3, Web Based GUI, Telnet and NTP support	
		Shall support Management Access Filter (Access Policies) & Port level access-lists	
		Shall support Dynamic ARP inspection	
		Shall support IP Source guard	
		Shall support MAC binding	
		Shall support Per-port storm control	
		Shall support Secure admin access over SSH	
		Shall support IEEE 802.1x	
		Shall support Security encryptions	
		Shall support Private VLANs	
		Shall support a mechanism to prevent a malicious user from spoofing or taking over another user's IP address by creating a binding table between client's IP and MAC address, port, and VLAN	
13	Management Features	Shall support SNMP v2c, V3	

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1	2	3	4
Sl. No.	Technical Particulars	Purchaser's Requirement	Bidder's Response
		Shall support Configurable SNMP traps	
		Shall support Logging to syslog with time stamp	
		Shall support NTP	
14	Management Tools support	Web-based, Telnet & Command Line Interface (CLI) for quickly configuring major managed functions	
		SNMPv1/v2c/v3 for different levels of network management	
		Remote Monitoring (RMON) and Configuration	
		Rich set of diagnostics with logging and alarms	
15	Power Supply	Power Supply Module - 230 V AC +/- 20%, 50 Hz	
		MCBs for AC Voltage Input Source, 1 No. 230V AC with appropriate current rating	
		Provision for connecting redundant power supply option should be available	
16	Mounting Arrangement	Rack mountable with Power Socket and Ports at Rear Side	
		LED indicators for link establishment and data transfer for each port at Front Side	
		To be Mounted in Network Panel	
		Accessory kit & Rack mounting kit	
17	Health Monitoring	Logging of all the activities such as operator controls, error messages, warning messages, event messages and low-level tracing	
		Integration of all health monitoring signals of L2 Switches, Convertors, power supply with Purchaser's SCADA system	
		Full environmental monitoring of PSUs, fans, temperature and internal voltages, with SNMP traps to alert network managers in case of any failure	
18	Environmental	The switches should have IEEE 802.3az Energy efficient Ethernet and ROHS compliance Switch should be capable of operating under normal room temperature without the requirement of Air conditioning	

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1	2	3	4
Sl. No.	Technical Particulars	Purchaser's Requirement	Bidder's Response
19	Environment & Temperature	Ambient temperature range of 0 - 65 Degree C, Relative Humidity 95% non condensing	
	Storage Temperature	-20° - 60° c	
20	Mounting Arrangement	Shall be mounted in the Network Rack	
21	Standard + Extended Warranty	5 Years OEM Warranty	

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g) HA Firewall at APSCC - BBSR2, Cuttack, Dhenkanal, Paradeep

1	2	3	4
Sl. No.	Technical Particulars	Purchaser's Requirement	Bidder's Response
1	Make		
2	Model		
3	General Requirements	Proposed Security Solution must be in the Leader's Quadrant in the Gartner "Magic Quadrant for Enterprise Network Firewalls" for atleast 2 Years (within recent period of 5 Years)	
		Solution should not be Proprietary ASIC based in Nature & should be Open Architecture based on Multi-Core CPU's to Protect & Scale against	
		Dynamic Latest Security Threats	
		Solution should have Multi Layer Threat Prevention suits with controls embedded like IPS, Anti-Malware, Anti-Bot, Application-Visibility, Anti-APT etc.	
		Solution should have an Multi-tier Engine to Detect & Prevent Command and Control IP/URL and DNS	
		Should support "Stateful" Policy Inspection Technology. It should also have application intelligence for commonly used TCP/IP protocols like Telnet, ftp etc.	
		Solution Architecture should be distributed deployment - NGFW firewall with Threat Prevention features enabled & Centralized Management for Policy Management, Advance Logging, Reporting features	
		Solution Provider / OEM should have a local TAC support in India with 24x7 coverage	
		Proposed solution shall not have been reported for any backdoor vulnerability in their operating system of NGFW in past 3 years. Bidder shall submit an undertaking in this regard along with bid	
		Offered products should be of latest hardware / software versions and not obsolete for minimum of 5 years along with support for spares updates and services	
	Proposed solution or hardware model should be latest and already deployed in the field in last one year.		

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Sl. No.	Technical Particulars	Purchaser's Requirement	Bidder's Response
4	Performance and Availability	Minimum 1 Gbps of enterprise mix Threat Prevention throughput (includes Firewall, Application Visibility Web Filtering, IPS, AV, Anti-spyware, anti-APT etc. enabled). The vendor must produce datasheet as publicly available document.	
		Min 150000 concurrent sessions scalable up to 6 million	
		10000 New Sessions per Second	
		The proposed solution should have an integrated solution for IPSEC, site to site, Client to site, and SSL VPN. Should support Perfect Forward Secrecy (PFS , ECDHE cipher suites) etc.	
5	Hardware & Interface requirements	The platform must be supplied with minimum 8 x 100/1000 GE RJ45 inbuilt interfaces. Fibre ports 2 Numbers (Loaded with 40 Kms Single mode SFP). Firewall supplied should be in HA configuration at each location.	
		Port density w.r.t number and type of Ethernet / FO ports required at each site locations shall be designed with 10% spare. Minimum 8 Nos. copper and 2 Fibre ports should be considered at present	
		Appliance should have 16 Gb RAM, expandable up to 32 Gb in future	
		Firewall Appliance should have separate Console Port, HA Port, Mgmt. and USB Ports. No Traffic ports will be used for HA or Management.	
		Firewall Appliance should have a feature of holding multiple OS images to support resilience & easy rollbacks during the version upgrades & should have at least on board storage for minimum period of one month and shall push the logs and other data to the central system before clearing these logs	
6	Routing Protocols	Solution should support Dual Stack with IPv4 and IPv6 functionality & should support IPv6 NAT functionality NAT66 and NAT64. should support creating rules with IPv4 & IPv6 objects simultaneously	
		Solution should be supplied with High Availability with Active/Passive or Active/Active LS functionality	
7	Firewall Features	Firewall should provide application inspection for LDAP, SIP, H.323, SNMP, FTP, SMTP, HTTP, DNS, ICMP, DHCP, SNMP, etc.	
		Firewalls should be seamlessly integrated for reporting to any third party systems or SOC solution	
		The firewall should support Transparent (Layer 2) Firewall or Routed (Layer 3) firewall Operation	

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Sl. No.	Technical Particulars	Purchaser's Requirement	Bidder's Response
		Firewall should support 802.3ad link aggregation functionality to group multiple ports as single port	
		Firewall should support static NAT, Dynamic NAT and PAT	
		Firewall should support IPSec Data Encryption	
		It should support the IPSec VPN for both site-site and remote access VPN	
		Control SNMP access through the use of SNMP and MD5 authentication	
		Firewall must support unlimited policy option	
		The firewall must support more than 1000 Addresses/Host Objects by per Address/Object Group	
		Firewall must have support of at least 500 time based Policies	
		Solution must support Access Control for at least 150 predefined services/protocols	
		Solution must support data integrity with AES-XCBC	
		It should support the authentication protocols RADIUS, LDAP, TACACS, and PKI-x.509 methods	
8	Integrated IPS Features	IPS Engine should protect from at least but not limited to Vulnerability and Exploit signatures, Protocol validation, Anomaly detection, Behaviour-based detection, Multi-element correlation.	
		IPS should activate protection for both Client Protection and Server Protections. IPS Profile should allow tuning of IPS signatures that can be activated/de-activated as per TPCODL's environment	
		IPS should provide Protection against Injection Vulnerabilities SQL Injection, Command Injection, LDAP Injection, HTTP Command Injection, plus Application layer protections for Cross site scripting, Directory traversal etc. IPS should support customized blocking SQL and Command Injection by Keywords traced in form field GET, POST etc.	
		IPS should provide detailed information on each protection, including: Vulnerability and threat descriptions, Threat severity, Release date, Industry Reference etc.	
		Protection against Malicious code for Buffer Overflow, Heap overflow and other malicious executable code attacks that target Web servers and other applications without the need of signature	
		Should be able to identify attacks based on Geolocation and define policy to block on the basis of Geo-location	

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Sl. No.	Technical Particulars	Purchaser's Requirement	Bidder's Response
		Signature based detection using real time routine updated database & should have threat signatures to cover atleast 6000+ CVE from day one, also Vendor must supply evidence of leadership in protecting Microsoft vulnerabilities	
		IPS must have one-click single option to predefine action such as detect and prevent for newly signature downloaded in signature updates.	
		The administrator must be able to automatically activate new protections, based on configurable parameters (performance impact, threat severity, confidence level, client protections, server protections)	
		IPS must support exceptions based on source, destination, service or a combination of the three.	
		IPS must have protections related to SCADA/ICS protocols and vulnerabilities	
		IPS events/protection exclusion rules can be created and view packet data directly from log entries with RAW Packets and if required can be sent to Wireshark for the analysis.	
		IPS must have a software based fail-open mechanism, configurable based on thresholds of security gateways CPU and memory usage	
		IPS must have protections for known ICS/SCADA vendors such as Siemens, Schneider, GE, HEIL etc.	
9	Antivirus & AntiBot	The proposed solution should be able to block traffic between infected bot Host & Remote C&C Operator and should allow the traffic to legitimate destinations	
		The proposed should inspect HTTP, HTTPS, DNS & SMTP traffic for the detection and prevention of the Bot related activities and Malware activities.	
		The proposed solution should have an option of configuring file type recognition along with following actions i.e. Scan, Block, Pass on detecting the Known Malware. Should allow blocking of known malware file-types directly from firewall.	
		The known Malware scanning should not be restricted by the any specific limit on the size of the of the file(s) & should support archive scanning to detect threat hidden in archive	
		The proposed solution should be able to detect & prevent the malware by scanning at least 20 different file types with configurable option to inspect, bypass or blocked various file-types as per organization need.	
		Reverse engineer malware in order to uncover their DGA (Domain Name Generation)	

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Sl. No.	Technical Particulars	Purchaser's Requirement	Bidder's Response
		The proposed solution should prevent the users to access the malware hosting websites and/or web resources.	
		The solution should have the intelligence to analyze & detect known threats as well as the unknown threats which are commonly known as zero day threats by integrating with the threat protection solution which should be an appliance and implemented on-premise as sandbox solution.	
		The solution should detect C&C traffic according to dynamic ip/url reputation	
10	Application awareness, Web-filtering & User visibility	Firewall Should support Identity based controls for Granular user, group based visibility and policy enforcement using Identity Awareness functionality.	
		Solution should support Upload / Download bandwidth control feature per User, Group or Application regardless of port, protocol etc.	
		Should have Categories like Business Applications, IM, File Storage and Sharing, Mobile Software, Remote Administration, SMS Tools, Search Engine, Virtual Worlds, Webmail etc.	
		The proposed solution must delineate different parts of the application such as allowing Facebook chat but blocking its Facebook-post / file-upload capability etc.	
		Solution should be able to natively understand & should have ability to control ICS applications like Modbus, OPC (OLE for Process Control), TCP /IP.	
		In addition to aforementioned protocols, solution must be able to understand any other protocol such as CIP-Ethernet-IP, Profinet, Cygnet-SCADA, IEC-60870-5-104, V-net, VL-net, V-net IP etc.	
		Solution must have more then 500+ scads related application signatures	
		Identity Awareness should support integration with multiple identity sources like AD, LDAP, Radius & 3rd Party customized identity sources such as NAC, WLC etc.	
		Should support customized Application signature for Home-grown applications.	

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Sl. No.	Technical Particulars	Purchaser's Requirement	Bidder's Response
11	Management & Reporting functionality	Entire solution should be managed from appliance based centralized management solution. The communication between all the components should be encrypted with SSL or PKI.	
		Centralized Management should have centralized advance logging & reporting feature with atleast 1 TB storage. In-case if inbuilt feature is not available. Vendor should provide additional external logging & reporting device.	
		Management Should support automation & integration Open REST API Support.	
		Solution should be able provide auditing view / report for changes, Rule addition/Deletion & other network changes	
		Firewall Management system should also provide the real time health status of all the firewall modules on the dashboard for CPU & memory utilization, state table, total # of concurrent connections and the connections/second counter.	
		Role based administration with multiple administrators & Separation of duties should be supported. Config conflict should be avoided automatically when multiple administrators works together.	
		Advance logging feature should have log indexing capability for faster log search & log optimization.	
		Security management should provide Compliance monitoring framework so that it can monitor compliance status of these devices in the real time. It is expected, the network solution to provide real-time and continuous assessment of all major regulations related to Power sector & others such as ISO27001, COBIT,NIST, FIPS 200, GLBA, ISO27002, HIPAA security, PCI DSS, SOX etc. For compliance feature 3rd party solution can be quoted	
		Vendor must have an option to Check compliance with every policy change for all Network Security controls and must recommend Security Best Practices	
		Centralized management should have capabilities to manage Firewall, APT and Endpoint anti-apt solution from single management and should have consolidated logging and reporting for both network and endpoint solution. The centralized system must be able to auto restore firewalls at remote locations in case of failure of device and replacement of firewall. This restoration should eliminate the need of any skilled technical person for restoration of device in case of device failures.	
Solution must be able to segment the rule base in a sub-policy structure in which only relevant traffic is being forwarded to relevant policy segment for an autonomous system			

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Sl. No.	Technical Particulars	Purchaser's Requirement	Bidder's Response
		Solution must have the granularity of administrators that works on parallel on same policy without interfering each other	
		Solution must include customizable threshold setting to take actions when a certain threshold is reached on a gateway. Actions must include: Log, alert, send an SNMP trap, send an email and execute a user defined alert	
		Solution must have consolidated Threat Prevention dashboard for full threat visibility across networks and endpoints.	
		Detailed Event analysis for Threat Prevention Controls Anti-Malware, Anti-Bot, IPS, Application Control etc. need to be provided with Real-Time and Historical reporting all the components.	
12	Licensing	Solution should have enterprise license without any restrictions.	
		Any third party product required to achieve the functionality should be provided with the necessary enterprise version license of software/appliance and necessary hardware, database and other relevant software or hardware etc. should be provided	
13	Anti-APT Solution	The Anti-APT solution should be hardware appliance , integration with firewall & should be designed to detect and prevent data breaches initiated from highly targeted/tailored Zero-days-Unknown attacks	
		The solution shall perform analysis on premise and no files shall be sent outside the TATA Power network. All necessary additional devices, licenses required for such configuration should be quoted as part of the solution.	
		Solution should perform inspection in real time, including advance malware that uses evasion techniques and/or only executes with specific software versions.	
		It should provide a contained virtual runtime Windows 32/64 bit virtualized environment such as WinXP,Win7, Win8.1, Win10 etc. to analyze threat & suspicious code and explore the full threat life cycle concurrently	
		Solution should provide comprehensive activity views into a wide range of network, system and file activity, categorized by risk, to help speed incident response.	
		Should inspect & record network behaviour of suspicious file for requests to visit malicious URL, establish communications with C&C servers and other activity indicative of a compromise.	

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Sl. No.	Technical Particulars	Purchaser's Requirement	Bidder's Response
		Should allow security administrators to manually upload malware samples to perform analysing of suspicious files for forensics.	
		The solution should support atleast but not limited to File types :	
		- Archived: .tar, .gz, .tgz, .zip, .bz2, .cab, .rar,.7z,.tbz	
		- Executable files (eg: .exe), PDF,.swf, Windows Office Document and JavaScript	
		Should support protocols like HTTP, SMTP, HTTPS, SMB, CIFS, FTP etc.	
		Solution would enable emulation of file sizes larger than 50 Mb in all types it supports & The file size limit for processing should be configurable.	
		Solution should detect botnets and Command & Control (C&C/2C) channels or activities during emulation.	
		Solution should be resilient to cases where the shell-code or malware would not execute if they detect the existence of virtual environment.	
		The Solution should support Call Back Detection to identify the ultimate aim, call back and exfiltration	
		Should support summary reports with captured packets, original file, tracer log and screenshot to provide rich threat intelligence and actionable insight after files are examined.	
		Solution should support report generation for malicious files like detailed reports on file characteristics and behaviours – File Modification, Process Behaviours, Registry Behaviours, Network Behaviours, VM snapshot	
		Should support Event dashboard like critical malicious events, malware name, rating, type, source, destination, detection time.	
		Should support WebUI and CLI configurations as well as should be integrated with centralized management.	
		Should support multiple administrator account creation	
		The solution should auto-update signatures/VM OS, detection engines frequently & send notification email when new updates are available.	

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Sl. No.	Technical Particulars	Purchaser's Requirement	Bidder's Response
		The solution should detect the attack at the exploitation stage – i.e. before the shell-code is executed and before the malware is downloaded/executed.	
		The solution should be able to detect ROP and other exploitation techniques (e.g. privilege escalation) by monitoring the CPU flow	
		The Solution should have file sanitization capability or document scrubbing for Web download & Email Attachments for Microsoft office (Word, Excel, Power Point) & PDF format.	
		Real-Time Prevention-unknown malware patient-0 in web browsing	
		Real-Time Prevention-unknown malware patient-0 in email	
		The solution should support deployment in MTA (Mail Transfer Agent) mode	
		The solution should be able to emulate executable, archive files ,documents, JAVA and flash specifically within CIFS (SMB) protocol	
		Average Emulation time of a suspected malware verdict as benign should be no more than 2 minute	
		The solution should be able to emulate and extract files embedded in documents	
		The solution should monitor for suspicious activity in Kernel code injection.	
		Solution should monitor for suspicious activity in Kernel modifications (memory changes performed by kernel code)	
		Solution should monitor for suspicious activity in Kernel code behaviour (monitor activity of non user-mode code)	
		Solution should be resilient to cases where the shell-code or malware would execute only upon a restart or a shutdown of the end point.	
		Solution should Eliminate threats and remove exploitable content, including active content and embedded objects	
		Solution should be able to Reconstruct files with known safe elements	
		Solution should Maintain flexibility with options to maintain the original file format and specify the type of content to be removed	
		The APT appliance should support at least min 8 simultaneously running images for inspection/sandboxing of files	

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Sl. No.	Technical Particulars	Purchaser's Requirement	Bidder's Response		
14	SCADA Threats Visibility	Proposed solution must be capable of understanding ICS protocols: Modbus, CIP, DNP3, BACNet, IEC-60870-5-104, IEC 60870-6 (ICCP), IEC 61850, MMS, OPC, S7 (Siemens) and others			
		Proposed solution must have Deep Packet Inspection capability w.r.t to IEC- 104 protocol			
		Proposed appliance must support ACL (Access control list) based on IEC-104, ACL flow based limiting			
		Proposed solution must support stateful inspection capability			
		Proposed firewall must support Firewall rules (incoming/outgoing), IP masquerading, 1:1 NAT, Double-NAT, Masquerading NAT, Destination NAT, Hairpin NAT, DoS Protection, Access Control Lists (ACLs),Improper commands			
		Proposed appliance must have the ability to log all traffic of above mentioned protocols and investigate commands down to the parameter level			
		Proposed Solution must have intrusion prevention capabilities for scads protocols			
		Proposed next generation firewall must support SCADA Apps/Commands and SCADA protocols			
		Proposed solution should have an automated discovery function to identify network devices and capture information such as IP address, OS, services provided, other connected hosts.			
		15	Power Supply of HA Firewall	Input Power Supply : 230 V AC, 50 Hz, +/- 20%	
		16	Environment & Temperature	Ambient temperature range of 0 - 65 Degree C, Relative Humidity 95% non condensing	
Storage Temperature	-20°- 60° C				
17	Mounting Arrangement	Shall be mounted in the Network Rack			
18	Standard + Extended Warranty	5 Years OEM Warranty			

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h) 6 KVA UPS with Battery Bank at APSCC - BBSR2, Cuttack, Dhenkanal, Paradeep

1	2	3	4
Sl. No.	Technical Particulars	Purchaser's Requirement	Bidder's Response
1	Make		
2	Model		
3	Application	To feed the Load of Operational Technology Equipment at Control Centre	
		Uptime (24 X 7 X 365)	
		Facility with Graceful Shutdown of OT Systems	
4	Capacity	6 KVA UPS System with Isolation Transformer	
5	Technology	Microprocessor based Digital Control, IGBT based, True on-line Double Conversion, AC to DC and then DC to AC conversion	
6	Efficiency	>> 99%	
7.0	AC Input		
i)	Nominal Input Voltage	440 V Three Phase, 4 Wire	
ii)	Input Voltage range at Full Load (40% load)	360 - 480 V AC	
iii)	Input Frequency	50Hz + / - 3Hz	
8.0	AC Output		
i)	Voltage	220 V AC / 230V AC / 240V AC / 250 V AC, Single Phase (User Selectable), Pure Sine Wave	
ii)	Frequency	50 Hz +/- 3 Hz (Autosense, Sync Mode), 50Hz ± 0.5Hz Free Running	
iii)	Power Factor	0.98 Pf, Power factor correction preventing Noise, Harmonics and Distortion from being transferred to connected Load or fed back to the grid	
iv)	Regulation	±1% (Typical)	
v)	Transient Response	Less than ±5% for 100% Load Variation, correction in less than 20 m sec	
vi)	Distortion	< 2% (linear Load)	
vii)	Short Term Overload	110% for 30 min, 150% for 1 Minute, 200% for 5 Cycles	

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Sl. No.	Technical Particulars	Purchaser's Requirement	Bidder's Response
ix)	Current THD at Full Linear Load	< 3 %	
x)	Overload Capacity	110% - 30 minute 150% - 1 minute 200% - for 5 Cycles	
xi)	Crest Factor	03:01	
9	Bypass Type	Static Bypass, Automatic (with necessary Alarms)	
10	Protection & Control	A. Rectifier 1. DC Under / Over Voltage Protection 2. Input Under / Over Voltage Protection	
		B. Inverter 1. High Speed DC Over Current 2. Output Under / Over Voltage 3. Output Overload 4. Output Short Circuit	
		C. Robust Power Protection 1. Lightning & Surge Protection 2. Dust Resistant 3. Moisture Resistant 4. High Temperature 5. High Durability 6. Seismic Certified 7. RoHS Certified 8. Energy Star Certified 9. Channelized Airflow Design 10. Equipment protection when Power Returns after a Complete Discharge of the Battery	
11	Alarms	With Reset Push Button for : Main Failure, Battery Low, UPS Trip, Inverter Over Loaded	

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Sl. No.	Technical Particulars	Purchaser's Requirement	Bidder's Response
12	Advanced Management Facility	Graphical LCD Display with Multicolour Backlight High Resolution Intuitive interface provides detailed and accurate information with ability to configure locally. Shall Provide Displaying Input Voltage, Output Voltage, Load (Numeric and Percentage), Output Frequency, Battery Health, Runtime, Built-In Energy Tracking, and Display UPS Efficiency in Various Modes Control : UPS and Output Group Settings, Bypass Control Configuration : Output Voltage, Frequency, Language, Brightness, Contrast, Alarm Volume, IP Address General Information: UPS Serial Number, Battery Part Number, Battery Install Date & Time and suggested replacement dates Battery Management Features : Temperature-Compensated Charging, Recommend replacement date, Which batteries need to be replaced, Auto Detection of Additional Battery Packs	
13	LED Indicators	Mains ON, Inverter ON, Battery On Charge, Mains abnormal, Low Battery Imminent, DC Over/Under Voltage, Inverter Over/Under Voltage, Inverter Overload, Overheat, Optional: Load On Inverter, Load On Aux. Supply, Manual Bypass On	
14	Switch / Control	UPS Start - Stop, Force Stop	
15	Protection Class	IP - 30	
16	Isolation	UPS Output is Isolated from Mains Input	
17	Cooling	Forced Air Cooling	
18	Audible Alarm	Built-in Buzzer Operates on Fault Conditions	
19	Battery	SMF-VRLA type Battery Bank with minimum 4 Hrs backup Enable Configuration with Redundant Battery Packs to meet aggressive Run-time demands	

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Sl. No.	Technical Particulars	Purchaser's Requirement	Bidder's Response
		AH Capacity of the Battery : No. of Cells : Cell Voltage : Max DC Current : Nominal DC Voltage : A suitable Battery Cabinet matching the UPS enclosure	
20	System Management with Environmental Monitoring	Remote monitoring & control of the UPS and the environment via Communication Interface. SNMP Interface for web enabled monitoring for Health of UPS, Status of Battery Charge, Time Left etc.	
21	Mode of Operation	Designed for Continuous Operation and shall manage all power problems including sagging, spikes and fluctuations	
22	Emergency Power Off	Remote UPS shutoff in the event of a fire or other emergency. The UPS shall accept Normally Open (NO) or Normally Closed (NC) potential free contacts.	
23.0	Environment		
i)	Temperature	Operating : 0 deg. C - 55 deg. C (55 deg. C Peak) , Storage : 20 deg. C to 70 deg. C	
ii)	Noise Level	<50 dB at full Load from 1 mtr	
iii)	Humidity	5 - 95% (Non Condensing)	
24	Certification	1. ISO 9001 2. GB4931, IEC/EN 62040-1, IEC62040-2 3. EN 5022,IEC 61000 4. CE, Tuv GS, CB Reports, UL1778 (FCC Part 15 Class A), Cul CSA22	
25	Mounting Arrangement	1. Tower Chassis 2. Support Base, Convenient and stable to place on Floor	
26	OEM Warranty	5 Years OEM Warranty for Complete System including Batteries	

End of Section-B

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	SCHEDULES	

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SECTION – C

SCHEDULES



**TP CENTRAL ODISHA
DISTRIBUTION LIMITED**

(A Joint Venture of Tata Power and Government of Odisha)

For You, With You, Always

TP CENTRAL ODISHA DISTRIBUTION LIMITED
(A Tata Power & Odisha Govt. Joint Venture)
 2nd Floor, IDCO Tower, Janpath, Bhubaneswar, Odisha 751022

Revision	Date	Description	Approvals		
			Prepared By	Checked By	Approved By
R0	02 nd Jan 2024	Issued for Procurement	SS	DRS	AKA

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SCHEDULES

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C1 - SCHEDULE OF QUANTITIES AND PRICES

SUPPLY:

Sr. No	Description	Qty. Set / Nos.	Unit Price (Rs.)	Item Price (Rs.)

SERVICES:

Seal of the Company

Signature

Designation

Note: Please Refer Indicative Bill of Material for Schedule of Quantities and Prices attached in Excel Format with this Specification. However, bidder shall derive the detailed BOM based on the proposed solution in the same Excel format and submit along with the proposal.

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C2- PROJECT TIME SCHEDULE

Seal of the Company

Signature

Designation

Note: The bidder shall indicate schedule of milestones and attach/furnish a detailed bar chart identifying customer inputs.

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C3- SCHEDULE OF DRAWINGS & DOCUMENT SUBMISSION

As part of the proposal, the BIDDER shall furnish the schedule of drawing/document submission

Sr. No.	Title of Drawing/Document	Target Date of submission	For Information/Review/Approval	Remarks
1.0				
1.1				
1.2				
2.0				
2.1				
2.2				
3.0				
3.1				
3.2				
4.0				
4.1				
4.2				
5.0				
5.1				
5.2				

Seal of the Company

Signature

Designation

Note: The bidder shall list out all relevant drawings / documents as mentioned in Section-D.

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C4- SCHEDULE OF MANDATORY SPARES

As part of the proposal, the BIDDER shall indicate below the list of recommended spares for Seven years of trouble free operation of the equipment/system offered by him.

Sr. No.	Equipment tag no.	Description of spare	Material of construction	Part no	Quantity recommended per unit of equipment	Unit price	Total price	Delivery period from date of LOI	Remarks

Seal of the Company

Signature

Designation

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C5 - SCHEDULE OF SPECIAL ERECTION/MAINTENANCE TOOLS & TACKLES

As part of the proposal, the BIDDER shall indicate below, the list of erection/maintenance tools & tackles offered by him.

Sr. No.	Description of spare	Quantity recommended per unit of equipment	Unit price	Total price	Delivery period from date of LOI	Remarks

Seal of the Company

Signature

Designation

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C6 - SCHEDULE OF PLACES OF MANUFACTURE, TESTS AND INSPECTION

For major equipment / systems, the Bidder shall indicate the name of the Manufacturer / SUBCONTRACTOR and place of test and inspection.

ITEM OF EQUIPMENT	Manufacturer / SUBCONTRACTOR	PLACE OF TESTING & INSPECTION

Seal of the Company

Signature

Designation

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C7- SCHEDULE OF RECOMMENDED SPARES

As part of the proposal, the BIDDER shall indicate below the list of recommended spares for three years of trouble free operation of the equipment/system offered by him.

Sr. No.	Equipment tag no.	Description of spare	Material of construction	Part no	Quantity recommended per unit of equipment	Unit price	Total price	Delivery period from date of LOI	Remarks

Seal of the Company

Signature

Designation

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C8 – Manufacturer’s Authorization

(To be obtained from all OEMs)

Date: _____

Bid Reference No.: _____

To: _____

WHEREAS _____ who are official manufacturers of _____ having factories at _____ do hereby authorize _____ to submit a Bid in relation to the invitation for Bids indicated above, the purpose of which is to provide the following Goods, manufactured by us _____ and to subsequently negotiate and sign the Contract.

We hereby extend our full Guarantee and Warranty in accordance with relevant Clauses mentioned in the Bid document (GCC, Section-A of Technical Specification), with respect to the Goods offered by the above firm in reply to this invitation for Bids.

Name: _____

In the Capacity of: _____

Signed: _____

Duly Authorized to sign the Authorization for and behalf of _____

Date: _____

Note: The bidder shall submit duly filled Manufacturer’s Authorization letter from the respective OEMs for the Supply and Services rendered to meet the required functionalities mentioned in the RFP.

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C9 – Undertaking for Presence in India

I hereby declare that <Name of the Bidder>, has Design/Engineering/Testing/Support and Service facility in India as on _____ (i.e., release date of Bid).

The address of the facilities is provided hereunder

Signature of Authorized Signatory :
 Full Name :
 Address :
 Phone Number :
 Email Id :

Note: Necessary proof of incorporation/registration shall be submitted along with the Bid.

End of Section-C

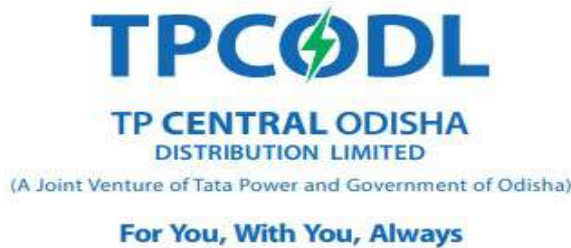
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Document Title: SITC FOR SETTING UP APSCC CONTROL CENTRES IN TPCODL NETWORK

Document No: A&T/APSCC-SPEC/01/2024

SECTION – D

DRAWINGS & DOCUMENTS



TP CENTRAL ODISHA DISTRIBUTION LIMITED
(A Tata Power & Odisha Govt. Joint Venture)
2nd Floor, IDCO Tower, Janpath, Bhubaneswar, Odisha 751022

Revision	Date	Description	Approvals		
			Prepared By	Checked By	Approved By
R0	02 nd Jan 2024	Issued for Procurement	SS	DRS	AKA

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Drawings & Documents

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1.0 Tender Purpose

1.1 Mandatory documents required along with the Bid

1.1.1 Duly signed copy of TENDER as an acceptance to all terms and conditions as mentioned in this tender.

1.1.2 Bidder and Sub-Vendors - Company Statistics

Details	Bidder Response
Bidder’s Name	
Address	
Contact (s), Title (s), Telephone (s), E-mail id (s)	
Name of the Chairman/ MD/ CEO/ Partners	
Nature of Ownership	
Date of Incorporation of Company/Entity	
Headquarter Location	
Other Office Locations, Functions and Personnel Strength	
1) Number of Employees by Function 2) Implementation 3) Sales 4) Support 5) Quality Assurance 6) Administrative 7) Management	
Size of Team for the Proposed Solution	
Location of Support Centers for Proposed Solution	
Other Businesses	

Table # 1: Bidder & Sub-Vendors – Company Statistics

Similarly, Bidder to submit the above details of all sub-vendors.

1.1.3 Bidder should depict complete understanding of the as-is system of the Utility based on the information provided in the Bid Document. It should also require listing down all the deliverables that has been planned as a part of the overall project with timelines.

1.1.4 Submission of documents as mentioned in Pre-Qualification Requirement

1.1.5 Technical Literature / GTP / Type Test Reports etc.

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- 1.1.6 GTP to be furnished about computing, network and integration interface infra structure.
- 1.1.7 Submit details of methodology followed by the bidder and its sub-vendors in successfully implementing similar projects.
- 1.1.8 Schedule of Deviations if any from specification strictly following the prescribed format.
- 1.1.9 Commercial specification details as per attached sheet.
- 1.1.10 Proper authorization letter to sign the tender on behalf of bidder shall accompany the bid.
- 1.1.11 Compliance to the approved vendor list.
- 1.1.12 List of major relevant experiences of the Principal, Bidder, Sub-Vendors and the Product respectively.
- 1.1.13 Technical support facilities including qualified man-power, testing tools & instruments and integration facilities available within India.
- 1.1.14 Technical data sheet of all equipment including Sub-vendors systems, product brochure, white papers and case studies.
- 1.1.15 System Architecture drawings.
- 1.1.16 Detailed Bill of Material, covering all aspects of proposed System Architecture and functionality required by Purchaser as per the RFP.
- 1.1.17 Compliance to data sheets covered in the specification. ***(Refer Annexure E2 - Technical Requirement for SITC of System at APSCC)***
- 1.1.18 Product life cycle document of all equipment of Bidder’s own and of Sub-Vendors.
- 1.1.19 Quality Assurance Plan (QAP), Manufacturing Quality Plan (MQP), Field Quality Plan (FQP).
- 1.1.20 Testing facilities in India
- 1.1.21 Confirmation on lifetime, spares, manufacturing, onsite & Offsite technical support of the supplied equipment for the period of 10 years.
- 1.1.22 **Project Team Structure**

Furnish the detail of the team that would be deployed by bidder to execute the project. Please provide details of the team structure in the following format:

Name of Staff	Position Assigned	International or Domestic	Firm	Employment status with the firm (Full time/ Associate)	Education (Degree, Year, Institution)	Area of Expertise and no. of years of relevant experience	Task Assigned
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A. Professional Staff							
B. Support Staff							

Table # 2: Proposed Project Team Structure

Similarly, bidder shall arrange the team details of the Sub-vendors, that would be deployed to execute the project

1.1.23 Team details (CVs)

Use the following format for key personnel who would be involved in the project. Please include details of team members proposed to implement the project, install or manage hardware, install and manage Display, Workstations, Networking equipment, LAN/WAN, UPS etc., please ensure that the CV covers all the required field and details.

1.	Proposed Position			
2.	Name of Firm and Role			
3.	Name of Staff			
4.	Date of Birth		Nationality	
5.	Education			
	Year	Degree/Examination	Institute/Board	
6.	Membership of Professional Associations			
7.	Other Training			
8.	Countries of Work Experience			
9.	Languages			
	Language	Speaking	Reading	Writing
10.	Employment Record			
	From	To	Employer	Positions Held
11.	Detailed Tasks Assigned		12.	Work Undertaken that best illustrates capability to handle the tasks assigned:
13.	Certification			
	I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes myself, my qualifications, and my experience. I understand that any willful misstatement described herein may lead to my disqualification or dismissal, if engaged.			
	Signature of authorized representative of the staff		Date:	

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	Full name of authorized representative:
--	---

Table # 3 : Format for CV Submission

Similarly, Bidder to submit the key personnel details of the Sub-Vendors, who would be involved in the project. Please include details of team members proposed to implement the project, install or manage hardware, install or manage hardware, install and manage Display, Workstations, Networking equipment, LAN/WAN, UPS etc.

2.0 After Award of Contract

Documentation shall be provided by the bidder for all equipment and functions offered as part of this procurement including Sub-vendors equipment/systems and functions. All documentation shall be in English. The documentation shall cover all systems required by Purchaser, including all its hardware, software, and interfaces and shall cover functionality, testing, installation, system startup, operations, and maintenance.

2.1 General Requirement

- a. The Bidder shall furnish the following drawings/documents during detailed engineering as per schedule mentioned in Section-A from the date of PO Placement. Bidder to submit all datasheets, detailed GTP of the proposed BOM items during detailed engineering for the approval and finalization by Purchaser.
- b. System Architecture Drawing and design documentation. This drawing should show in detail of the following:
 - i. Network connections
 - ii. Protocol used
 - iii. Type of interconnecting cable
 - iv. All equipment, systems, workstations, firewall, network switches etc. which are part of the complete proposed solution.
- c. Panel GA and Complete wiring diagram
- d. Functional Design Specification document
- e. Step by Step test procedures for Factory Acceptance Test (FAT) and Site Acceptance Test (SAT)
- f. Interconnection Schedule (ICS) for Automation, detailed drawing indicating interconnections between various components.

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- g. Hardware, Software and Application manuals for all the equipment supplied including that of Third parties.
- h. All Software Licenses (both own & third party), key for Hardware Locks
- i. Software matrix indicating the details regarding versions, current license, expandability, tags/license limitations (if any) etc. along with the offer.
- j. Guaranteed technical parameters & Guaranteed availability and reliability
- k. Calculation for power supply dimensioning
- l. Bill of Material listing equipment designation, make, type ratings, etc. of all the equipment's supplied
- m. Interface and data exchange details of Third-Party Integration
- n. Submit the details of all databases proposed and its relationship with application. Data flow diagram with entity relationship shall be submitted for key applications.
- o. Operator's Manual
- p. IP addressing chart for all the systems, Workstations, Network Switches, Firewall and other components/equipment which are connected to the network
- q. Detailed network layout in overlay pattern containing layered network layout showing all network components, Link capacities, Communication medium used with details of link/Service provider.
- r. Password management policy document to be provided with mechanism for storage and changing of password at specified interval clearly defined.
- s. Credentials created for all OEM systems for support to be provided as consolidated document stating clearly the SLA timelines agreed with each of the OEM.
- t. SLA signed document for system support and restoration in case of breakdown to be clearly document and provided as submission document.
- u. Details of software (Operating systems, application software, engineering tools, communication systems management software, license details, etc. for all computer systems and loadable in CD/DVD ROM
- v. Final as built drawings of all automation and communication system as final documents in AutoCAD & PDF format
- w. Other documents as may be required / applicable during detailed engineering

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- x. All drawings and data shall be annotated in English.
- y. Bidder shall furnish Four (2) hardcopies and 3 soft copies on reliable media of all drawings, manuals (Administration, Operation & Maintenance, Configuration, Troubleshooting and Installation), Technical catalogues, Test Certificates and Acceptance Test Reports.
- z. Two copies of the internal test report, FAT and SAT documents with test protocol formats shall be submitted for approval before Factory Acceptance Test. Two copies of SAT protocol shall be submitted for approval before Site Acceptance Test.
- aa. Bidder shall also furnish Original plus one copy of all System Software (OS, Application and tools) along with delivery. Bidder shall submit two copies of all the configuration, application, display, database backup of all equipment on reliable secondary media.

2.2 Definitions

For the purposes of this project, the following definitions shall be used:

- a. **Documents or Documentation** – Textural and graphical information describing the proposed system or equipment, and other items peripheral, whether embodied in hardcopy or electronic form such as common word processor files. Documents may also be referred to as manuals, guides, books, drawings, transmittals, and specifications. Documents are further divided into standard, OEM, and custom documents.
- b. **Standard documents** – Documents produced by the Bidder and used prior to the award of this contract that are applicable to all users of the equipment and software, including Purchaser. It is expected that the Bidder will use a formal revision control scheme to maintain its standard documents. Documents not maintained under such a scheme shall be considered custom documents.
- c. **OEM documents** – OEM (Original Equipment Manufacturer) documents are those standard documents produced by Sub-vendors. Documents produced by Sub-vendors for customized elements of the System shall be deemed custom documents.
- d. **Custom documents** – All documents not categorized as standard or OEM documents including the Bidder’s standard documents that are modified to meet Purchaser’s specific requirements.
- e. **Project Documents** – Project documents are those documents produced for the conduct of the project. Examples of project documents include meeting minutes, action item lists, test plans and procedures, and transmittal and document lists.

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2.3 Project Planning Documentation

2.3.1 Documentation Plan

Bidder to note that after the order acceptance, the project kick off meeting will be arranged by the Purchaser, in which MDL will also be finalized, Bidder shall furnish the schedule for submission of documents for the documents mentioned in the MDL and accordingly arrange submit the documents for Purchaser’s Review and Approval.

It is expected that certain major documents, such as the detailed hardware and software design documentation, will consist of a series of submittals made over a period of time. The documentation plan shall address this by including a detailed list of all individual documentation submittals for the project.

Documents shall be submitted in a sequence as per the MDL, that allows PURCHASER to have all of the information necessary for reviewing or approving a particular document at the time of its submittal. The documentation plan shall be subject to PURCHASER approval.

2.3.2 Project Progress Reports

A project progress report shall be prepared by the Bidder and sent to PURCHASER every week through the start of the warranty period. The report shall be submitted to PURCHASER’s project manager no later than the 2nd calendar day of each week. The report shall cover the project from the start of the contract through the last commissioning date.

The progress report shall include a general assessment of the progress on the project. This assessment shall reference the latest implementation schedule, which shall be included in the report. The schedule shall show the baseline and the current schedule, progress on individual tasks, and the forecasted completion dates for upcoming tasks and the entire project. Updated training (if any) and documentation plans shall be included.

The report shall include an explanation of existing and forecast schedule variances, the cause or source of the variance, alternatives considered, solutions adopted or recommended, and the outcome achieved or anticipated. In particular, the report shall note the needed delivery date of PURCHASER-furnished information. The Bidder shall be responsible for any schedule delays due to insufficient notification to PURCHASER of the need for such information.

The report shall identify unresolved contract issues. This shall include a description of the item and the current due date, the consequences of any delay in resolution, and any recommendations pertinent to the decision process. The report shall also include the following items:

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- a. A list of action items, including the following information:
 - i. The action item number
 - ii. The date the item was opened
 - iii. References to the originating transmittal and any reference documents
 - iv. Action item status (open, closed)
 - v. Resolution due date
 - vi. The responsible organization or person
 - vii. A description of the action required
 - viii. The date of action completion (when each item is closed)
 - ix. References to transmittals or other documents recording the resolution.
- b. Correspondence logs, one for transmittals to PURCHASER from the Bidder and one for transmittals to the Bidder from PURCHASER. Each log shall have the following information for each transmittal:
 - i. The transmittal number
 - ii. The date of transmission (not the date written)
 - iii. The date received
 - iv. The subject of the transmittal
 - v. Identification of any action items addressed by the transmittal
 - vi. A list of any documents attached to the transmittal.

2.3.3 Project Meetings, Agendas, and Minutes

Project meetings shall be held to review project progress, to ensure correct interpretation of the contract, to review technical and commercial issues, and to maintain co-ordination between PURCHASER and Bidder. Meetings shall be scheduled at appropriate times. Purchaser prefer to schedule meeting every week on average. The meetings shall be divided between PURCHASER’s and Bidder’s offices. The Bidder's project manager shall prepare a meeting agenda in time for review by PURCHASER before the meeting.

The Bidder shall prepare minutes of each meeting. Both PURCHASER and the Bidder shall review and approve the minutes. The approved minutes shall be considered binding agreements, subject to concordance with the contract. Where the approved minutes conflict

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with the contract, either the minutes shall be revised. Where the minutes of a meeting conflict with the approved minutes of a previous meeting, the conflict shall be documented in the later minutes and those approved minutes shall have precedence.

2.3.4 **Project Correspondence**

All requests and transfers of information between the parties shall be made in writing and shall be documented with letters of transmittal. All correspondence from each party shall be dated (with the date of transmittal, not the date of writing) and uniquely numbered. With the exception of the meeting minutes, each letter or other project correspondence shall be limited to a single topic to simplify correspondence management. Correspondence transmitted via mail shall be considered as binding if a printed copy of the correspondence is delivered within a week of the mail transmission.

Correspondence may be exchanged by electronic mail. Such correspondence shall not be considered a substitute for formal correspondence, however. Agreements established through e-mail transmittals must be recorded as formal correspondence before they become binding. A printed copy of e-mail attached to a transmittal cover sheet shall be considered a formal transmittal.

All project management documentation, such as, correspondence, memos, meeting minutes, and monthly progress reports, shall be maintained. A mutually agreeable file numbering scheme shall be developed and used to minimize file storage and retrieval efforts.

2.3.5 **Detailed Implementation Schedule**

The Bidder shall submit for PURCHASER's approval a detailed implementation schedule. This shall describe all the project activities of both the Bidder and PURCHASER. As a minimum, this schedule shall include the following:

- a. Kickoff Meeting
- b. Preparation and finalization of MDL document
- c. Hardware procurement, integration, and testing
- d. Delivery dates for PURCHASER-furnished data, interface equipment, and software
- e. Software development on a per-function or per-interface basis
- f. Software unit testing
- g. Subsystem integration and testing

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- h. Preparation of test plans and procedures
- i. Factory and site tests
- j. Variance correction and retest
- k. System disassembly, delivery, and installation
- l. Final system and user documentation
- m. Submittal dates, review cycles, and acceptance dates for the hardware, software, and interface requirements documents.

The documentation schedules may be maintained outside the implementation schedule. However, the implementation schedule shall include all of the dependencies of tasks contingent on documentation tasks.

The Bidder shall use a commercially available project management application (for example, Microsoft Project) to maintain the project schedule. This project management application shall be used to track the progress of the project from start through completion. Schedule monitoring shall be based on a comparison of completed tasks versus scheduled tasks and estimation of the required effort to complete the remaining tasks. The schedule presented to PURCHASER shall be that used by the Bidder to manage their internal resources.

2.4 Document Format

Documents shall be delivered in two phases:

- a. Approval documents, submitted for Purchaser’s review and approval
- b. Final documents

PURCHASER prefers that documents be delivered in both hard and soft form. Softcopy shall be delivered on magnetic media. Final documents shall be delivered on hardcopy, on-line on the PDS, and on softcopy on CD-ROM. Any user shall be able to access on-line documentation including functional design documents, user guides, maintenance manuals, on-line help, and operating procedures via a simple procedure involving a one-click operation.

Documents shall be supplied in a format that can be edited by Purchaser. Handwritten texts are not acceptable. Purchaser’s standard word processing software is Microsoft Office. The Bidder is encouraged to use this software for documents. If the Bidder uses other word processing or document production software, two licensed copies of the software, suitable

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for installation on a personal computer using the Windows11 operating system or newer versions, shall be provided.

Drawings and diagrams may be supplied embedded in the document files or may be supplied as separate files. Purchaser’s standard drawing software is AutoCAD. If the Bidder uses other drawing software, two licensed copies of the software, suitable for installation on a personal computer using the Windows11 operating system or newer versions, shall be provided.

Documents delivered as hardcopy shall be printed on both sides of 8½” x 11” paper and bound in three-ring binders. Divider pages with appropriately labeled tabs shall separate chapters. The spine of each volume shall be labeled with the document title and volume number so it may be easily identified when shelved.

Documents delivered on softcopy media shall be formatted for printing on A4 size paper.

Each document shall include a title or information page showing the document number, title, and revision record. The document number shall be a unique number assigned in accordance with the Bidder's standard practice. The title page shall include a space into which Purchaser may enter a document number assigned from Purchaser’s document management system. The revision record shall describe each new version of the document since its original production. The revision record shall include:

- i. The date of the change
- ii. A brief description of the change
- iii. An indication that the change has been reviewed and approved in accordance with the Bidder's quality assurance procedure
- iv. The version or release of the hardware or software to which the document applies.

Each document shall include a table of contents. If a document is divided into several physical volumes, each volume shall contain the complete table of contents of the whole document. Furthermore, each document shall have a cross-reference table, listing all topics of significance covered by the document, and giving the page or section references of all pages or sections with discussions of the topic.

Documents that describe generic elements will not be acceptable to Purchaser unless the specific material applicable to this project can be readily identified and materiel not applicable to this project can be similarly identified. Custom documents shall not contain any material that is not pertinent to this project.

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Where the phrase "on-line documentation" is used in these Specifications, it shall be interpreted to mean the ability to view the document from any workstations. The Bidder shall provide all software necessary to provide this capability. For non-OEM documentation (documentation produced by the Bidder), the Bidder shall also provide the capability to edit and annotate the document.

2.5 Document Review and Approval

All standard and OEM documents provided pursuant to this contract shall be subject to review by Purchaser. Custom documents provided pursuant to this contract shall be subject to approval by Purchaser.

2.5.1 Document Review

Purchaser's review of documents shall be limited to determining that:

- a. The documents have been produced in accordance with the documentation standards of the Bidder or Sub-vendors
- b. All hardware and software is in full conformance with the contract
- c. For software, that the software has been produced in accordance with the coding and display standards of the Bidder or Sub-vendors
- d. The documents clearly and accurately describe the features and options of the hardware and software that pertain to the proposed system and other applications
- e. The documents are written in English, and hard copies are printed legibly, and well bound.

Purchaser will review documents as per the schedule mentioned in the MDL. If Purchaser does not transmit comments on the documents within the review period, the Bidder shall discuss with the Purchaser.

If Purchaser transmits comments on any documents, the Bidder shall respond to the comments within two working days or as per the MDL after receipt of the comments. If the comments address OEM documents, the Bidder shall act as an advocate of Purchaser to initiate and facilitate resolution of the comments with the Sub-vendor.

2.5.2 Document Approval

All custom documents shall be subject to a formal approval process. The review for approval performed by Purchaser will be similar to that for document review process but will more closely examine the functionality and design aspects of the hardware or software. Clarity

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and completeness of the presentation of the material within the documents will be a key element of the review for approval.

The approval process shall proceed as follows:

a. The Bidder shall transmit documents subject to the approval process to Purchaser as per MDL. This MDL time may be adjusted by mutual agreement to accommodate the other activities of Purchaser and the Bidder. Requests by either party to change the time shall be made within two working days of receipt of the documents by Purchaser.

b. Purchaser shall return comments to the Bidder within the agreed time. The transmittal cover for the comments shall clearly indicate that the document is either:

Approved – If approved, the Bidder may proceed with the work covered by the document. No further approval action is required.

Approved with Comments – If approved with comments, the Bidder may proceed with the work covered by the document and the comments.

Not Approved – If not approved, the Bidder may proceed with the work covered by the document and the comments only at their risk. No schedule or cost relief will be granted for any work undertaken prior to approval of the appropriate documents.

c. If desired by any party, the comments may be discussed to clarify Purchaser's intent.

d. The Bidder shall then revise and resubmit the documents within next working day after receipt of the comments from Purchaser. This time may be adjusted by mutual agreement to accommodate the other activities of Purchaser and the Bidder. Requests by either party to change the time shall be made within one working day of receipt of the comments by the Bidder.

All changes made to documents to reflect approval comments shall be clearly highlighted and the revision record shall be updated to reflect the changes. Purchaser prefers the use of the change-tracking feature of the word processor used to produce the documents.

e. The review and comment process shall be repeated until the document is accepted. After the document is accepted, Bidder shall deliver the required number of final copies free of highlighting due to tracking of changes.

All changes made to documents to reflect approval comments shall be clearly highlighted and the revision record shall be updated to reflect the changes. Purchaser prefers the use of the change-tracking feature of the word processor used to produce the documents.

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2.5.3 Scope of Reviews and Approvals

The acceptance or approval of any documents by Purchaser shall not relieve the Bidder of the responsibility to meet all of the requirements of the contract or of the responsibility for the correction of the documents. The Bidder shall have no claim for additional costs or extension of time on account of delays due to revisions of the documents that may be necessary for ensuring compliance with the contract.

All deliverable documentation shall be revised by the Bidder to reflect the delivered System. Any modifications to any of the system resulting from the factory and site acceptance tests shall be incorporated in this documentation. All previously submitted documents that have been changed because of engineering changes, contract changes, or errors or omissions shall be resubmitted for review or approval as appropriate.

2.6 Deliverable Documentation

Two soft copy and two hard copies shall be provided for review and approval. Two soft copy and three hard copies shall be provided for all the final documentation.

Document	Deliver Schedule
Basic hardware documents i. List of deliverables, configuration diagram ii. Network configuration, interconnection lists iii. Site installation drawings and procedures	Per the project schedule
Equipment manuals	With each hardware delivery
Hardware maintenance manual	With each hardware delivery
Software list of deliverables	1 Week after Award of Contract
Software development standards	2 Weeks after Award of Contract
Interface Requirements Document	With the software functional description
Software functional description	Per the project schedule
Installation images and policies	With the System delivery
Detailed design document	Per the project schedule
System maintenance manual	With the System delivery

2.7 Document Standards

The Bidder shall provide a document defining the standards used to create and maintain all documentation supplied by the Bidder. The standards shall define:

- a. The word processing or document production software used to create the documents

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- b. Templates for each document type
- c. Definitions of the contents for each document type
- d. Drawing standards to be followed
- e. The approval process to be followed for document releases.

2.8 Hardware Documentation

The following documentation shall be provided for all hardware provided pursuant to this contract:

- a. List of deliverable hardware
- b. Equipment configuration diagram
- c. Network configuration diagram
- d. Interconnection list
- e. Site installation drawings and procedures.

The other hardware documentation to be supplied shall be commensurate with the hardware maintenance philosophy to be employed by Purchaser.

Equipment manuals shall be provided for all hardware to be maintained by the Bidder or a third-party maintenance Bidder. Equipment manuals and hardware maintenance manuals shall be provided for all hardware to be maintained by Purchaser.

2.8.1 List of Deliverable Hardware

The list shall itemize each hardware item and include equipment configuration information. The configuration information shall be sufficient so that PURCHASER can procure an identical item from the manufacturer. The list shall also include network names and addresses (or these shall be included in the network configuration diagram) and shall include a space for PURCHASER to enter equipment identification for their own purpose.

2.8.2 Equipment Configuration Diagram

The equipment configuration diagram shall depict the logical interconnection of all of the Bidder- supplied equipment and its connection to PURCHASER-supplied equipment. The configuration diagram shall use the same terminology as the list of deliverable hardware so that the correspondence between the two can be readily determined.

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2.8.3 Network Configuration Diagram

This document shall show the design of the local and wide area networks supplied by the Bidder as well as the communications network supplied by PURCHASER. Both logical and physical depictions shall be provided for the network supplied by the Bidder. Only a logical depiction is required for the network supplied by PURCHASER.

2.8.4 Interconnection List

The physical interconnections among the components, other than those shown on the network configuration diagram, shall be depicted. Each cable shall be identified, along with its terminations.

2.8.5 Site Installation Drawings and Procedures

The site drawings shall depict the physical arrangement of the components. References to the appropriate equipment manuals are acceptable. The drawings and procedures shall include:

- a. Equipment physical drawings showing dimensions, cabinet internal arrangements, and the size and weight of each enclosure
- b. Unpacking, moving, handling, and other installation details
- c. The location of external connections including types and sizes of connectors
- d. Input power and grounding requirements
- e. Environmental requirements

2.8.6 Equipment Manuals

Equipment manuals shall contain the following:

- a. A description of the function of the equipment
- b. Installation, setup, and operating instructions
- c. A block diagram showing the logical and physical interconnections among the major components
- d. Expansion and upgrade capabilities and instructions
- e. Preventative maintenance instructions
- f. Detailed functional, logical, electrical, and mechanical characteristics of all interfaces to the device, including protocol descriptions

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- g. Troubleshooting and repair guides including a description and instructions for the diagnostics furnished.

2.8.7 Hardware Maintenance Manuals

The hardware maintenance manual shall describe the preventive maintenance and restorative procedures required to maintain the equipment in good operating condition. The information in the manuals shall include:

- a. Operating details – This information shall include a detailed description of how the equipment operates and a block diagram illustrating each major assembly in the equipment. Descriptions of external data transfers with other equipment, including data patterns, security check-codes, and transfer sequences shall be included. The operational sequence of major assemblies within the equipment shall be described and illustrated by functional block diagrams and timing diagrams. Detailed logic diagrams shall also be provided as necessary for troubleshooting analysis and field repair actions.
- b. Preventive maintenance instructions – These instructions shall include all applicable visual examinations, hardware testing and diagnostic routines, and the adjustments necessary for periodic preventive maintenance of the equipment. Instructions on how to load and use any test and diagnostic program and any special or standard test equipment shall be an integral part of these procedures.
- c. Corrective maintenance instructions – These instructions shall include procedures for locating malfunctions down to the field-replaceable module level. These guides shall include adequate details for quickly and efficiently locating the source of an equipment malfunction. The instructions shall also include explanations for the adjustment or replacement of all items, including printed circuit cards. Schematic diagrams of electrical, mechanical, and electronic circuits, parts-location illustrations, photographs, cable routing diagrams, and sectional views giving details of mechanical assemblies shall be provided as necessary to replace faulty equipment. For mechanical items requiring field repair, information on tolerances, clearances, wear limits, and maximum bolt-down torque shall be supplied. Information on the loading and use of special off-line diagnostic programs, tools, and test equipment, as well as any cautions or warnings that must be observed to protect personnel and equipment shall be included.
- d. Parts information – This information shall include the identification of each replaceable or field-repairable module. All other parts shall also be identified. The identification shall be of

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a level of detail sufficient for procuring any repairable or replaceable part. Cross-references between the Bidder's part numbers and the manufacturer's part numbers shall be provided.

2.8.8 Bidder shall submit equipment warranty details of all the supplied system/equipment with detailed inventory list with make, model, Serial number, Software versions.

2.9 Software Documentation

The following documents shall be provided for all software:

- a. List of Deliverable Software
- b. Software development standards

The Bidder or Sub-vendors shall provide the following documents for all software that has been produced for the offered solution. This shall include all the required OS and application software for the systems mentioned in the specification:

- a. Interface Requirements Document
- b. Software functional description
- c. Installation images
- d. Software release / Patch details as consolidated document to be submitted by Bidder.
- e. Recommended update frequency of all the software should be submitted as consolidated document by bidder.

The following documents shall be produced for all software produced specifically for this contract:

- a. Software Requirements Matrix
- b. Detailed design documents

2.9.1 List of Deliverable Software

The list shall itemize each software item and include version and license information. The distribution media for each software item shall be identified.

2.9.2 Software Development Standards

The Bidder shall document the development standards used to develop the systems software. Purchaser reserves the right to reject software that does not conform to the development standards and Cyber Security requirement. The standards shall define:

- a. Program design disciplines

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- b. Cyber Security measures
- c. Resources under which the program must operate
- d. Basic services
- e. Interface definitions
- f. Linkage conventions
- g. Input and output specifications
- h. Database naming and access conventions
- i. Storage rules
- j. Quality assurance procedures
- k. Configuration design review methods
- l. Software configuration control schemes.

2.9.3 **Database Definition**

The database definition shall identify the characteristics of all systems databases. It shall include, but shall not be limited to, the following:

- a. The name or identification of the database
- b. A description of the intended use of the database. If the database is specific to a single application, the application shall be identified
- c. A description of the organization of the database (the database schema or model)
- d. A description of each field of each data item
- e. Instructions for generating and populating the database
- f. Details of programming interfaces. This shall encompass access methods, address schemes, and read, write, and modify actions
- g. Initialization description – How or by what software is the data initialized and to what value(s)
- h. Details of maintenance actions.

PURCHASER encourages the use of "self-documenting" database technology, where the database definition is developed and stored with the data. The resulting documentation should be printable.

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2.9.4 Interface Requirements Document

The Interface Requirements Document shall describe in detail the interfaces between the offered systems and PURCHASER provided/existing systems and networks. The Interface Requirements Document will be used by both the Bidder and PURCHASER as the definition of the interface between the systems, so that each system can be designed or modified to meet its requirements. PURCHASER will provide all required information to the Bidder so that it can prepare the document accordingly.

As a minimum, the Interface Requirements Document shall cover the following aspects:

- a. Description of the hardware interface
- b. Description of the communication protocols, including the lower level network protocols, the upper level session, presentation, and application protocols, and the options and parameters selected
- c. Description of the database access methods and capabilities, including specific functionality, access and authorization requirements
- d. Description of relevant database models, structures, and contents for these databases
- e. Data exchange requirements including timing, priority, volume, and security requirements. A specific list of data to be exchanged during factory and site testing shall also be included.
- f. Description of the performance requirements
- g. Exception (for example, error) processing
- h. Failover/Backup processing
- i. Alarm conditions
- j. Archiving requirements.

2.9.5 Software Functional Description

The intent of the software functional description shall be to describe the functions to be performed by each software module from the standpoint of a user. (Software functional descriptions are also referred to as user guides.) The functional operation of the proposed systems shall be clearly described so that it can be understood without understanding the detailed operation of each software module.

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Software functional descriptions shall also be used as the first step in the design of a custom (for example, new functionality). Thus, it shall have sufficient information for PURCHASER to determine that the new functionality will meet the requirements of the contract.

The software functional description shall include the following minimum content:

- a. Functional description – A narrative description of each program. Where appropriate, solution algorithms shall be described
- b. Performance requirements – The execution periodicity, processing capacity, and tuning and execution parameters that control or limit the capabilities of the software
- c. Resource requirement – The expected minimum requirements for main memory, auxiliary memory, processor capacity, and other resources required by the software
- d. User interface – A description of the interface used to control the software, including all user inputs and program responses
- e. Software interface requirements – A description of the logic interfaces with other programs
- f. Data requirements – A description of all data and databases accessed by the software, including execution parameters
- g. Error messages – A concise description of all error messages and possible corrective actions
- h. Diagnostic messages – Where the software generates a record of its internal operations, the messages shall be described
- i. Maintenance and expansion procedures – A description of either maintenance procedures or expansion procedures that is relevant to maintenance of the program or expansion of the program.

It is PURCHASER's strong preference that software functional descriptions are provided as on-line documentation.

2.9.6 Installation Images

All software shall be delivered in three forms:

- a. As a fully operational system installed on auxiliary memory
- b. As distribution images suitable for installation on the system

The distribution images shall include all operating system, platform software, application software, and the code management library of modifications incorporated into the delivered software. All standard software shall be supplied on the original installation media used by

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the Bidder to build the system. PURCHASER prefers CD-ROM as this media. All customized software shall be supplied as part of the code management library along with the source code or other distribution image against which the code changes are to be applied.

It shall be possible for PURCHASER to completely generate, build, install, and configure the entire System from the distribution images, source code, and software utilities provided with the System. To this end, "make files" or other compilation, generation, and installation tools, scripts, and directives shall be delivered.

For the purposes of this requirement, "software" shall specifically include the databases supplied with the System. That is, sufficient definition and content images shall be supplied such that the System databases can be created and installed on offered systems.

2.9.7 **Software Requirements Matrix**

The Bidder shall provide a list of all software requirements, cross-referenced to show where each requirement is discussed in the relevant software document.

The Software Requirements Matrix shall list each of the requirements for the offered systems stated in this specification, in numerical order, referenced by chapter, section, and paragraph number. This list of specified requirements shall be supplemented by a list of all functions provided by the Bidder's software system that go beyond the specified requirements.

For each requirement on the list, a reference shall be given to the chapter and section where the requirement is described or covered in each of the following of the Bidder's documents:

- a. Item on the List of Software Deliverables
- b. Software Functional Description
- c. Operations Manual
- d. Factory Acceptance Tests
- e. Site Acceptance Tests

2.9.8 **Detailed Design Document**

The detailed design documents are intended as a second level of detail to the software functional descriptions. In general, a detailed design document shall relate to a single software functional description. It is expected that, for customized software, the Bidder will first deliver a software functional description for approval by PURCHASER. After approval, the Bidder will then produce a detailed design document for approval.

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Production/Configuration/Generation of the software will proceed after approval of the detailed design document.

The detailed software design documentation shall include, but shall not be limited to, the precise design information needed for planning, analysis, and implementation of the software. It shall include a show the divisions of the software design entities; a dependency description specifying the dependent entities, their coupling, and required resources, an interface description providing details of external and internal interfaces not provided in the software functional description; and a detailed design description containing the internal details of each design entity.

The detailed software design documentation shall provide a detailed description of how the software will support the functions described in the software functional description. Detailed software design documentation shall include a diagram of the software indicating major modules and an overview of the operation of each module. It shall describe data structures and flow, and a diagram or description of the manner in which the modules interfaces with other modules.

For each software module, the detailed software design documentation shall include, but shall not be limited to, the following items:

- a. Program abstract
- b. General technical description of the module
- c. The module logic (the use of pseudo code or structured English is preferred)
- d. External interfaces to the program including applicable calling sequences
- e. Initialization considerations
- f. Identification of any databases referenced or modified
- g. A high-level flowchart or program design language to enhance the technical description of the module
- h. Error codes and error handling processes.

Each program module, including subroutines, shall be sufficiently documented to allow an experienced programmer (with supervision of the designer) to perform the coding of the module, as well as allow PURCHASER personnel to maintain such software in the future. All job control files (batch or make files) required for compilation, assembly, and linking of each

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program shall be documented in detail as part of the detailed software design documentation.

2.9.9 System Maintenance Manual

The System Maintenance Manual shall describe all user procedures necessary to build and maintain the software system of the supplied systems. It shall include complete instructions on performing a system generation from sources for all processors. It shall provide information on optimizing system performance. It shall describe the hierarchy of disk directories used by the equipment software system, and the location of all categories of files: including executable programs, displays, databases, sources, build files, etc. It shall also describe the procedures to configure the main and backup systems.

The System Maintenance Manual shall also include documentation of the distributed system software supporting the configuration control function, data integrity, startup, restart, and the network management subsystem.

The manual shall provide a list of the Internet Protocol (IP) addresses of all devices in a manner compatible with PURCHASER’s security standards. The System Maintenance Manual shall provide detailed information on troubleshooting all processors of the supplied systems. It shall describe the use of error logs, the meaning of all program-generated error or informational messages, and the recommended response to these messages. It shall explain what the user should do to save information after a processor failure and shall describe the procedures to gather this information to allow the user to communicate in an informed manner with maintenance personnel. It shall include a description of the procedures to restore normal operation after a failure of the offered systems.

2.10 Operating Manual

The Bidder shall submit, for review and approval, operating manuals for all functions. The operating instructions associated with all features shall be incorporated into these manuals. Context sensitivity shall be used to go directly to the appropriate place in the manual.

The manuals shall be organized for quick access to each detailed description of the user procedures that are used to interact with the required functions. The manuals shall present in a clear and concise manner all information that a user needs to know to understand and operate the system satisfactorily. The manuals shall make abundant use of screen snapshots to illustrate the various procedures.

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2.11 System Administration Documentation

The Bidder shall submit, for review and approval, the all system administration manuals. The system administration instructions associated with all features shall be incorporated into these manuals. Context sensitivity shall be used to go directly to the appropriate place in the manual.

2.12 Operator’s Manual

The Operator’s Manual shall be custom documentation written specifically for PURCHASER’s delivered systems. All snapshots used as illustrations shall be of genuine displays on PURCHASER’s actual delivered systems.

The Operator’s Manual shall be written for system operators as the audience. It shall be organized in a logical sequence and shall fully describe the user interface of all operational functions of the systems. Each step of a multi-step procedure shall be described, with a clear indication of which menu items are selected to proceed to the next step.

The manual shall describe the required functionality in a manner and at a level of detail that allows the user to detect and isolate problems in the systems. All program-generated messages (such as, alarms, prompt messages, and error messages) shall be listed along with easily understood meanings and recommended remedial actions, where appropriate.

The Operator’s Manual shall be provided on-line. The system operator shall be capable of accessing the Operator’s Manual from the operator console via a one-click approach.

2.13 Acceptance Test Procedures

Acceptance test procedures (FAT & SAT) designed to test the specified requirements shall be provided. The procedures will comprise step-by-step instructions to verify that:

- a. The system hardware and software is fully present and fully integrated, and its documentation is complete.
- b. All the functional and performance requirements of the contract are met.

The test procedures shall be organized in the order that they are to be performed. Tests that require collection of data under controlled conditions shall be carefully planned with data collection procedures scheduled, as needed, before the tests themselves.

The test procedure shall be prepared in the format of step-by-step guides. Test descriptions, initial conditions, functions to be tested, expected responses, and recording areas are contained in the acceptance test procedures. The steps to achieve these functions may be

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provided as references to the user manuals or maintenance manuals. An attempt shall be made to cover all normal and abnormal circumstances in the procedures. The goal is to be able to rigorously test the system by strictly following carefully pre-planned procedures with minimum reliance on unstructured testing.

End of Section-D

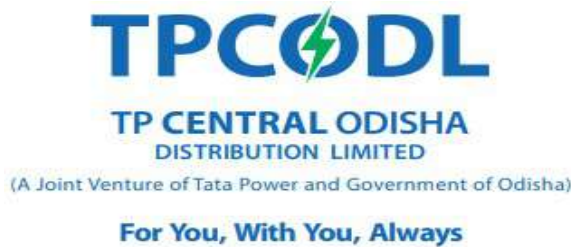
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Document No: A&T/APSCC-SPEC/01/2024

SECTION – E

Annexures



TP CENTRAL ODISHA DISTRIBUTION LIMITED
(A Tata Power & Odisha Govt. Joint Venture)
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Revision	Date	Description	Approvals		
			Prepared By	Checked By	Approved By
R0	02 nd Jan 2024	Issued for Procurement	SS	DRS	AKA

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The schematics, layouts, drawings in this section are indicative, bidder shall submit their best architecture, layout, drawings proposed as per specifications.

Bidder shall propose the architecture having different zones for various cluster of System such as SCADA/ADMS, IT Application, GIS for inter application traffic and Cyber Security Management.

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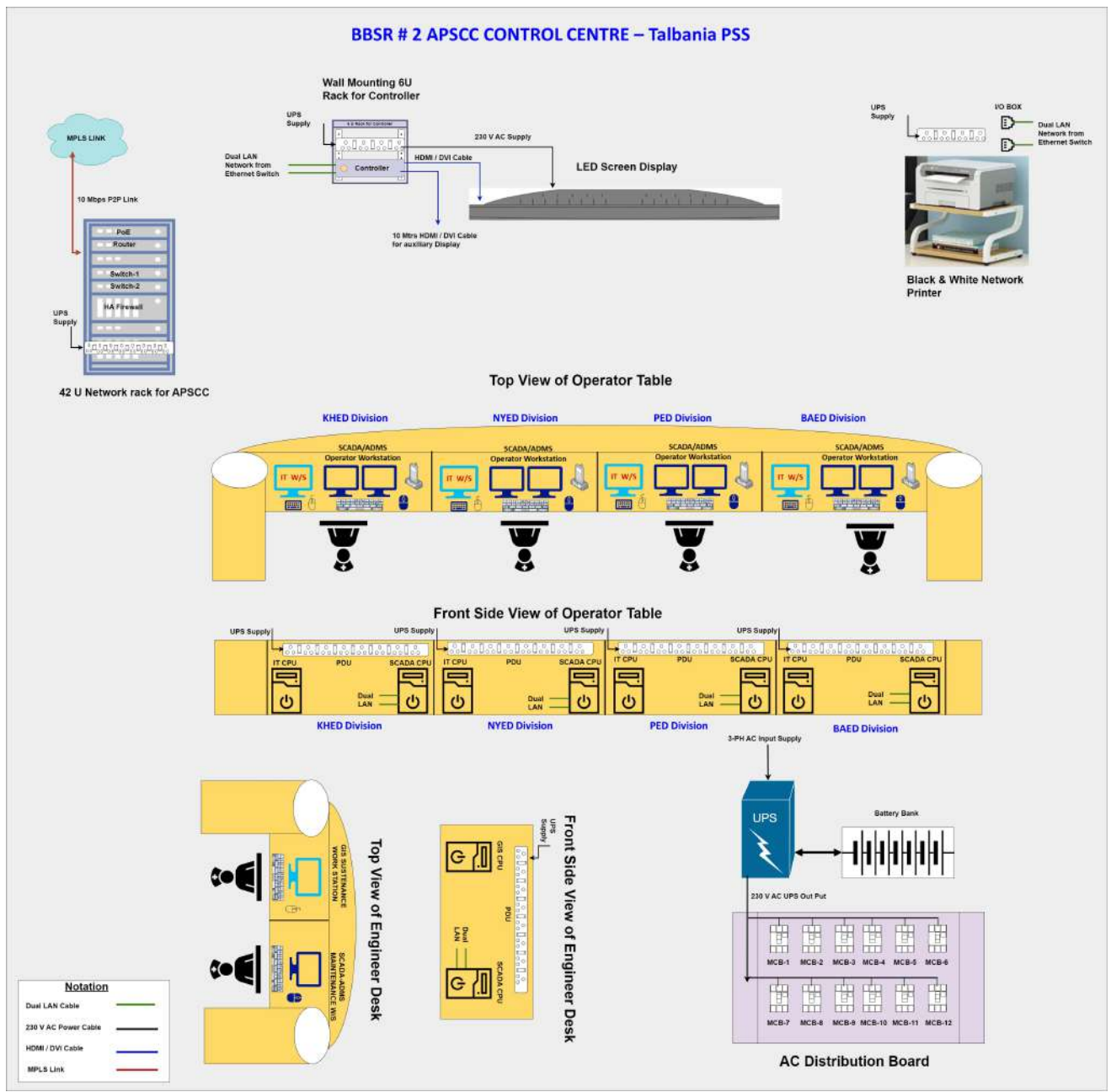
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Annexure – 1

Indicative Proposed APSCC System and Room Layout at BBSR2, Cuttack, Dhenkanal, Paradeep

BBSR2 System and Room Layout



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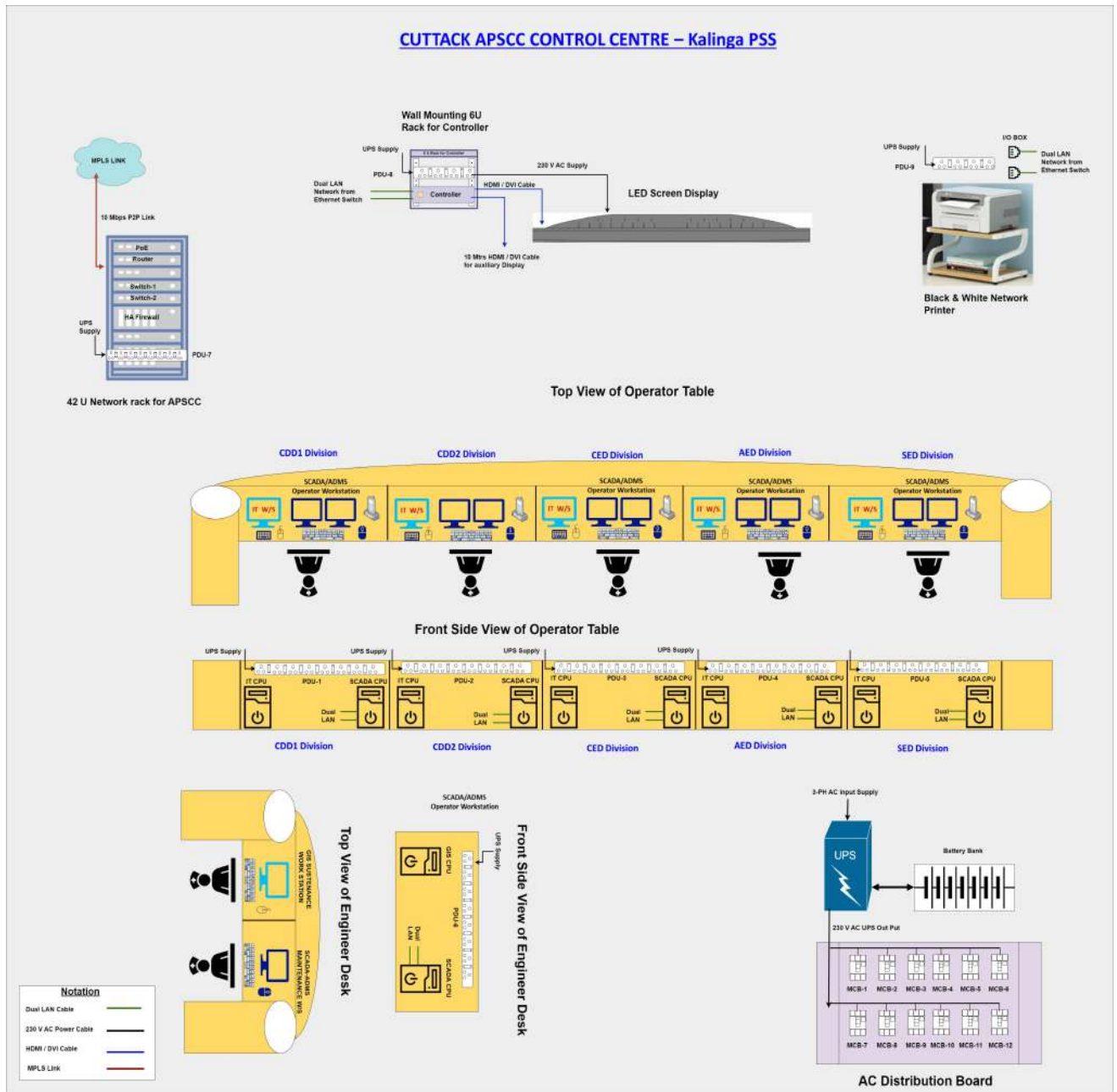
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Cuttack System and Room Layout



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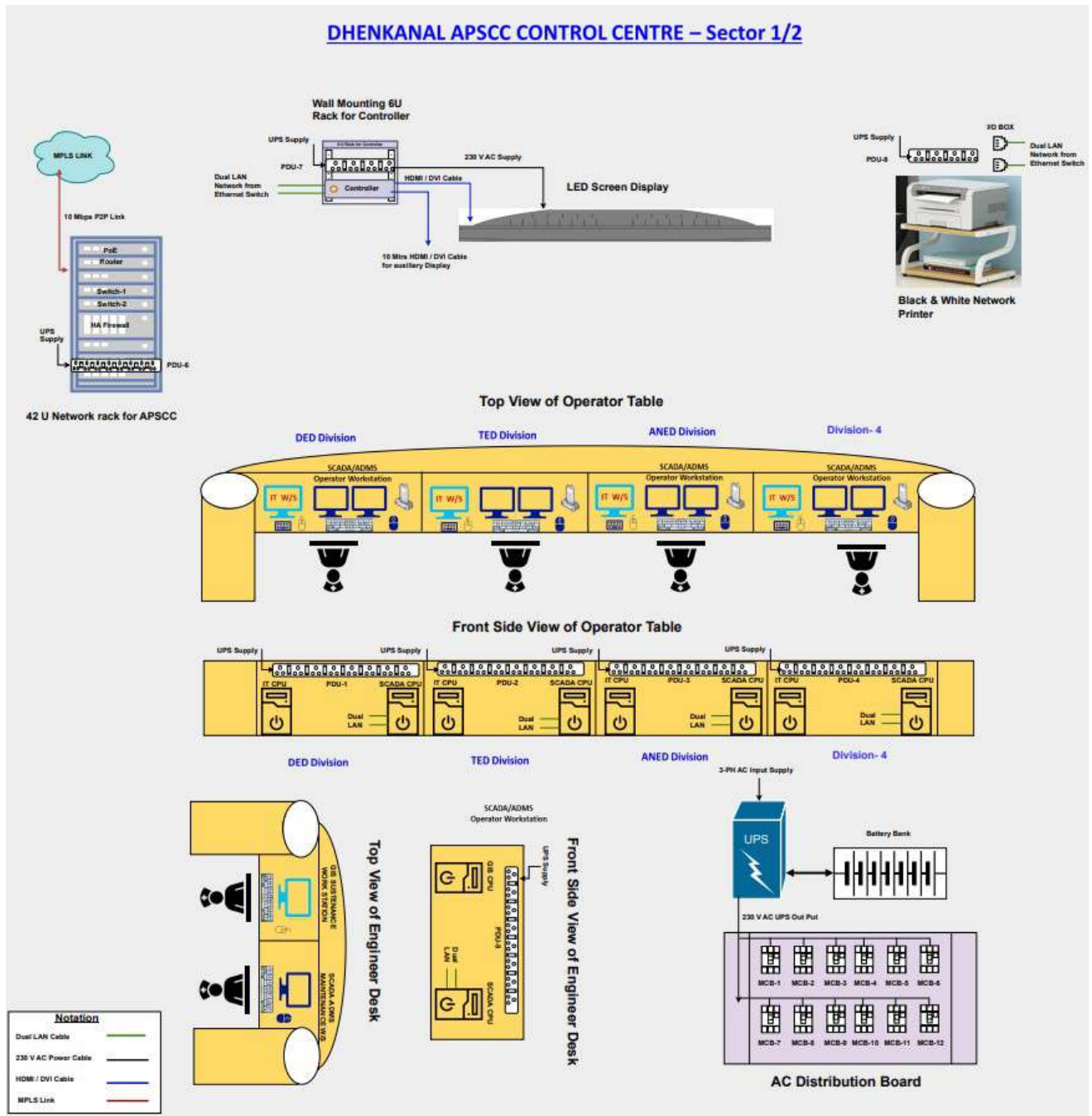
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Dhenkanal System and Room Layout



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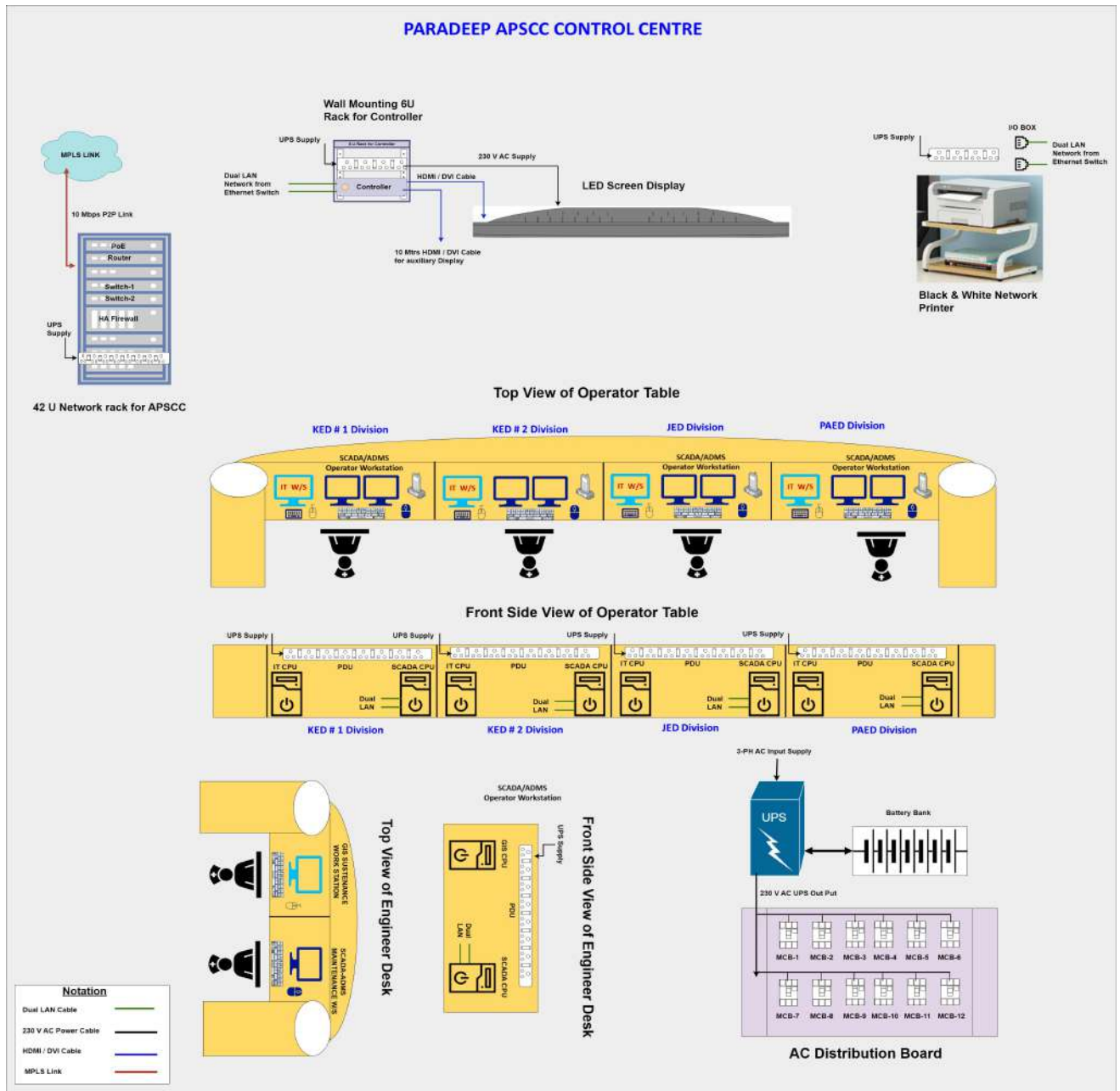
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Paradeep System and Room Layout



Note for Bidder:

Bidder shall give more emphasis on the following aspects in the proposed architecture

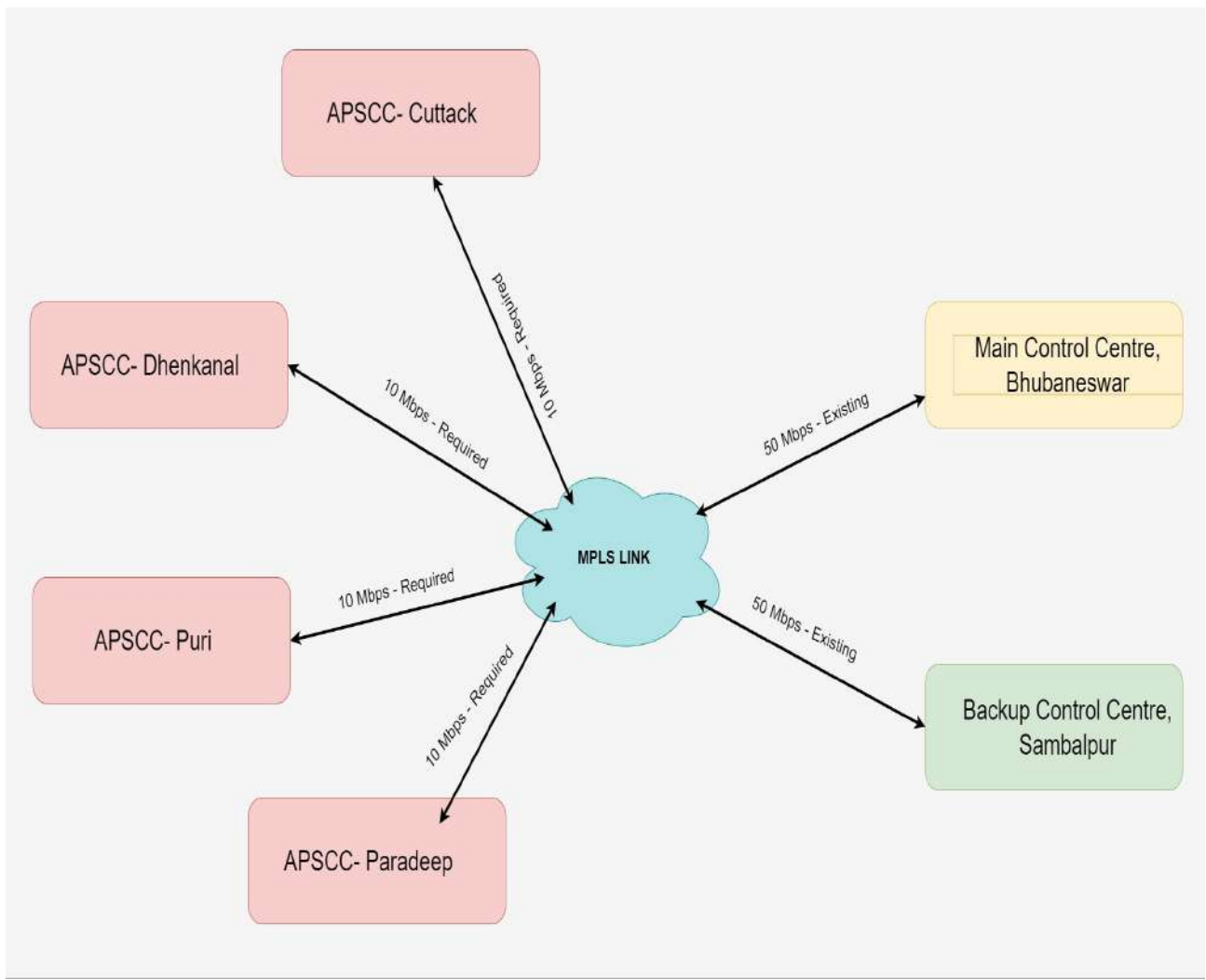
- Reliability Centric
- High Availability
- Cyber Security Resilience

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Annexure – 2

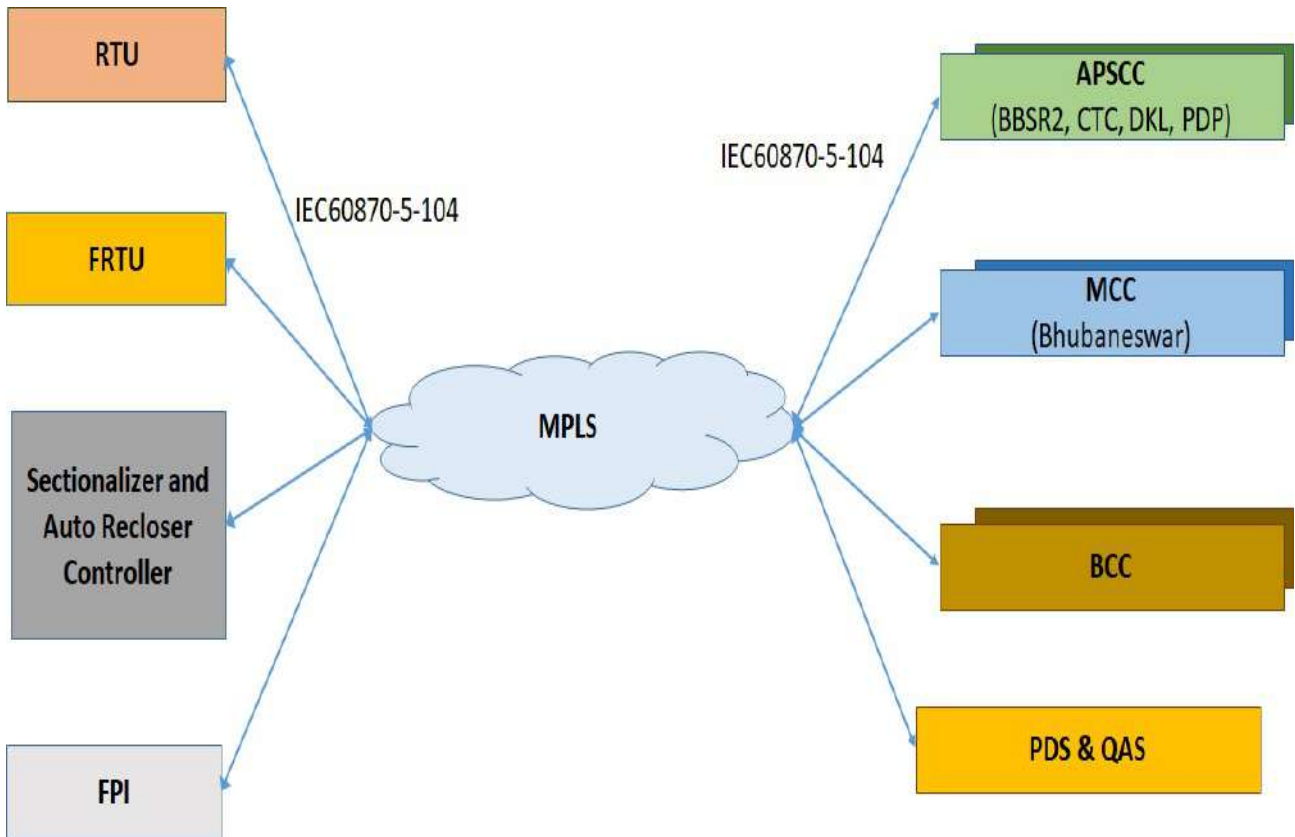
Communication Architecture for Integration of APSCC Operator Workstation

with MCC & BCC SCADA/ADMS System



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Communication Architecture with Field Devices



Note for Bidder:

Bidder shall give more emphasis on the following aspects in the proposed architecture

- Reliability Centric
- High Availability
- Cyber Security Resilience

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Annexure – 3: Preferred/Approved Make of Equipment/System

Sl. No.	Item Description	Preferred Make / Model
1	LED Display Panel (86”) with Controller	SAMSUNG/LG/SONY/Pyrotech/Delta
2	GIS Workstations	Dell / HP / Lenovo / IBM
3	Printers, Scanner, Copier	Ricoh / Cannon / HP / Equivalent
4	Next Generation HA Firewall	Checkpoint / Fortinet / Palo Alto / Cisco / SOPHOS
5	Industrial Grade Network Panels (42U)	Valrack / Rittal / President
6	6U Rack	Reputed Make
7	Layer 2 Ethernet Switch	Ruggedcom / Hirschman / MOXA / CISCO
8	I/O Boxes	Systemax / Tyco / CommScope
9	Armored UTP CAT6 Cable	Systemax / Tyco / CommScope
10	Unarmored UTP Cable	Systemax / Tyco / CommScope
11	Patch Panel (RJ45) with Connectors, I/O boxes	Systemax / Tyco / CommScope
12	CAT6 UTP Patch Chords	Systemax / Tyco / CommScope

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Annexure – 4: Indicative Bill of Material for Setting Up Area Power System Control Centers

Information to Bidder:

1	2
Sl. No.	Information to Bidder
1	Bidder to Note that SCADA/ADMS Operator Workstations will be free-issue to the Successful Bidder
2	Bill of Quantity mentioned in the tables are indicative, this may vary to meet the functional or site requirement. It is the responsibility of the Bidder to include all Hardware, Software, Accessories and Services as per functional requirement specified in the RFP.
3	Bidder to refer Approved make and model of the equipment to be considered for this project. All bidder's own and bought out items shall be subject to Purchaser's prior approval. Bidder to submit all the Purchase orders released to Sub-vendors for TPCODL Review and Records.
4	The bidder shall propose and design the solution considering all the functional requirement stated in the RFP and shall submit the overall System Architecture for setting up the Area Power System Control Centers
5	Bidder shall supply mandatorily license of Microsoft Windows, Office & Applications as applicable.
6	All the offered system will be with Operating System and shall be of latest version at the time of delivery.
7	Hardware Configuration of all the proposed system shall be identical except IP Schema and if any specific requirement of the site.
8	The Display Controller, Networking equipment should be modular to enhance the capacity and expected communication response and functionality
9	The offered solution shall meet all the Cyber Security Requirement as per the standards such as IEC62443, NERC_CIP, NISTR, ISO 27001 and NCIIPC guidelines. All the Cyber Security measures shall address Operational Technology requirement. Bidder shall ensure the proposed architecture at APSCC are certified by Cyber Security Auditor for the compliance as per Industry standards. Bidder to demonstrate all the cyber security measures considered and implemented before handing over the System for Commercial Use. Bidder to ensure that all the product own and sub-vendor product offered are tested at National/International Accredited LAB

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1	2
Sl. No.	Information to Bidder
10	The proposed system will be integrated with other external systems and the required interfaces shall be considered accordingly.
11	Bidder to indicate clearly the no. of Software licenses (proprietary & third party) included taking into account no. of Display, Communication Equipment, Controller, etc. Bidder shall also indicate the (slab-wise) incremental price for each of the licenses as applicable. It will be deemed to be nil if not indicated separately.
12	Each selected application shall include prerequisites, if any.
13	All cabling (Communication, Power Supply, Interfaces) is in Bidder's scope. This includes Supply, Laying, Termination and Connection to equipment.
14	The bidder shall consider all Networking accessories and all types of Cables required for integration of other systems.
15	Necessary Communication equipment such as Layer2 Switches, Router, HA Firewall, Networking cables, patch cords etc. for integrating the APSCC System with Purchaser's SCADA System through NBSP Communication network shall be in the scope of the Bidder. All structure cabling at APSCC is in the Bidder scope. All the Communication equipment shall be AC Powered.
16	Bidder to ensure the deployment of the resources and service requirement during Warranty Support for all the supplied equipment (Bidder's Own and Sub Vendor's items). SLA will be prepared with the successful bidder to achieve the 24X7 availability and reliability of the installed system.
17	It is the responsibility of the bidder to provide Patch Management, Software upgradation, Firmware Upgradation for Bidder's Owned items, Sub-vendor items, and Networking items during Warranty period as per the SLA.
18	Purchaser may procure any item from elsewhere. Integration of those with supplied system is in Bidder's scope.
19	<i>All annual maintenance charges of supplied Hardware, OS & Software are inclusive in the Warranty of Bidder's Owned items, Sub-vendor items, Communication and Networking items, software licenses their renewal, upgrades etc. Please note standard 5 Years warranty shall be included with the offered price of the solution and there will be no separate item for standard warranty.</i>
20	All the materials to be delivered should be F.O.R at TPCODL sites.
21	The bidders are advised to quote prices strictly in the format attached.

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1	2
Sl. No.	Information to Bidder
22	The bidder must fill each column of the format attached. Mentioning “extra/inclusive” in any of the column may lead for rejection of the price bid.
23	No cutting / overwriting in the prices is permissible.
24	The unit price to be indicated in col. No. 11 should be exclusive of taxes & duties, which are to be indicated in separate columns meant for the purpose.
25	The bids will be evaluated commercially on the overall all-inclusive lowest cost lowest for the individual LOT as defined in the tender BOQ as calculated in Schedule of Items TPCODL however, reserves right to split the order line item wise and/or quantity wise among more than one Bidder. Hence, all bidders are advised to quote their most competitive rates against each line item.
26	In case of increase in quantity for any item, the unit rate mentioned above shall be considered for the same.
27	HSN/SAC codes for respective line item must be mandatorily provided wherever applicable.
28	TPCODL reserve the right to split the order quantity to any extent amongst the bidders.

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Breakup of Total Lump Sum Contract Price for SITC to set up APSCC Control Centers

	Supply (INR)	Services (INR)	Total (INR)	Cost per APSCC (INR)
	All Inclusive	All Inclusive	All Inclusive	All Inclusive
SITC for Setting up Area Power System Control Centre (APSCC) at BBSR#2, CUTTACK, DHENKANAL, PARADEEP				
Grand Total (INR) (With Taxes and Duties)				

Note:

- 1 Bidder to note that Scope can be divided in two or three Partners to meet the stringent timelines of project.
- 2 All Required Systems Hardware, Software, Cables shall be considered for seamless set up of Control Centre.
- 3 Bidders are requested to quote their most competitive prices for each items as per the table.

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Indicative BOM for SITC for setting up APSCC Control Centers

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Sl. No.	Item	Item Description	UoM	HSN/SAC Code	BBSR-2	Cuttack	Dhenkanal	Paradeep	Total Requirement (A)	Unit Rate (B)	GST (%)	GST (INR) (C)	Gross Unit Rate (D=B+C)	Gross Price (E=A*D)
A	LED Display System (86") for APSCC - BBSR2, CTC, DKL, PDP													
1	LED Display System (86") with Controller and Mounting Accessories	LED Display Unit - 86" with Wall Mounting Arrangement	EA		1	1	1	1	4					
		Controller with Display Management Software and other Accessories	EA		1	1	1	1	4					
		HDMI / DVI Cable 10 Mtrs	EA		2	2	2	2	8					
		HDMI / DVI Cable 4 Mtrs	EA		2	2	2	2	8					
2	19" 6U Rack	19 " 6 U Rack (Wall Mountable) for Controller, Power Supply Distribution and other Accessories for successful installation of LED Display	EA		1	1	1	1	4					
Sub Total of LED Display System (Item A)														
B	GIS Workstations with all Accessories													
3	GIS Workstations with all Accessories	GIS Workstation with 27" Single Monitor, keyboard & Mouse, with Microsoft Windows & Office (Licensed)	Set		1	1	1	1	4					

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Annexure – 5: Indicative Load Calculation for selection of UPS Capacity

Indicative Load Calculation for Selection of UPS Capacity at Area Power System Control Centre (APSCC)											
Item	Item Description	UoM	Unit Power (in Wt)	BBSR-2		Cuttack		Dhenkanal		Paradeep	
				Qty	Load (Wt)	Qty	Load (Wt)	Qty	Load (Wt)	Qty	Load (Wt)
LED Display System with Controller	LED Display Unit	EA	450	1	450	1	450	1	450	1	450
	Controller	EA	125	1	125	1	125	1	125	1	125
GIS & IT Workstation, Printer	SCADA/ADMS Operator Workstation with 24" Dual Monitor	EA	175	5	875	6	1050	5	875	5	875
	GIS Workstation with 27" Single Monitor	Set	150	1	150	1	150	1	150	1	150
	IT Workstation with 24" Single Monitor	Set	150	4	600	5	750	4	600	4	600
	Black & White Network PRINTER CUM PHOTOCOPIER CUM SCANNER (A4 Size)	EA	440	1	440	1	440	1	440	1	440
Network Device & Accessories	Router	EA	100	1	100	1	100	1	100	1	100
	HA Firewall	Set	250	1	250	1	250	1	250	1	250
	24 Port Ethernet Switch	EA	200	2	400	2	400	2	400	2	400
Total indicative Load in Watt (Estimated)				BBSR-2	3390	Cuttack	3715	DKL	3390	PDP	3390

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UPS Rating Calculation

Continuous load : 3500 Watt

Momentary load : 500 Watt

Total load in watt : 4000 Watt

Total load in KVA = $4000/0.85 = 4706$ KVA

Minimum rating of UPS = $4706 \times 1.25 = 5883$ KVA

6 KVA UPS is Proposed to cater the load as calculated above

Battery Bank Rating Calculation

Battery Bank Output Voltage- 72 VDC Or 144 V DC

Unit Cell Voltage- 12V DC

Total Cell -6 Nos. or 12 Nos.


Unit Cell AH :

$5885/72 = 82$ A X 4 Hour = 327 AH

$5885/144 = 41$ A X 4 Hour = 165 AH

End of Section-E

ANNEXURE-VII- GCC

	TP CENTRAL ODISHA DISTRIBUTION LIMITED	
	WORK INSTRUCTION /OPERATING GUIDELINES	
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2.0	ETHICS
3.0	CONTRACT PARAMETERS
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3.2	Contract Commencement Date
3.3	Contract Completion Date
3.4	Contract Period/Time
3.5	Contract Execution Completion Date
3.6	Contract Execution Period/Time
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3.8	Contract Document
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3.10	Reverse Auction
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10.1	Knowledge of Requirements
10.2	Adherence to Rules & Regulations
10.3	Specifications and Standards
11.0	SAFETY
12.0	GUARANTEE
12.1	Guarantee of Performance
12.2	Guarantee period
12.3	Failure in Guarantee period(GP)
12.4	Cost of repairs on failure in GP
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22.2	Termination for convenience of associate
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23.0	Dispute resolution and arbitration
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1.0 ORGANIZATIONAL VALUES

The Tata Group has always been a value driven organization. These values continue to direct the Group's growth and businesses. The six core Tata Values underpinning the way we do business are:

Integrity - We must conduct our business fairly, with honesty and transparency. Everything we do must stand the test of public scrutiny.

Understanding - We must be caring, respectful, compassionate and humanitarian towards our colleagues and customers around the world and always work for the benefit of India.

Excellence - We must constantly strive to achieve the highest possible standards in our day to day work and in the quality of goods and services we provide.

Unity - We must work cohesively with our colleagues across the group and with our customers and partners around the world to build strong relationships based on tolerance, understanding and mutual co-operation.

Responsibility - We must continue to be responsible and sensitive to the countries, communities and environments in which we work, always ensuring that what comes from the people goes back to the people many times over.

Agility - We must work in a speedy and responsive manner and be proactive and innovative in our approach.

2.0 ETHICS

In our effort towards Excellence and in Management of Business Ethics at TPCODL, an Ethics Management Team is constituted.

The main objective of the Ethics Management Team is to:

1. Record, address and allay the issues and concerns on ethics raised by different stakeholders like employees, consumers, vendors, Associates etc. by initiating immediate corrective actions.
2. Ensure proper communication of the ethics policies and guidelines through prominent displays at all offices of TPCODL and through printed declarations in all concerned documents where external stakeholders are involved.
3. Ensure proper framework of policies as preventive measures against any ethics violation recorded by them.
4. Prepare and submit MIS of all issues and concerns, corrective and preventive actions on monthly basis to the top management for their information.

All members of Team TPCODL, Associates and Stakeholders are requested to register any grievance on ethics violation to Mr. Rajeev Kharyal, Chief Ethics Counselor.

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3.0 CONTRACT PARAMETERS

3.1 Issue/ Award of Contract

TPCODL awards the contract to the Associate in writing in the form of Purchase order (PO) or a Rate Contract (RC), hereafter referred as Contract, through in any or all of following modes- physical handover / post / e-mail / web document / fax with all the attachments/enclosures which shall be part of the contract document

On receipt of the contract, the associate shall return to TPCODL copy of the contract document duly signed by legally authorized representative of associate, within two days of Effective Date of Contract for contracts having contract execution time less than 30 days and within five days for all other contracts.

3.2 Contract Commencement Date

The date of issue/ award of contract shall be the Effective Date of Contract or Contract Commencement date.

3.3 Contract Completion Date

The date of expiry of Guarantee Period shall be deemed as the Contract Completion Date.

3.4 Contract Period/Time

The period from Contract Commencement Date to Contract Completion Date shall be deemed as the Contract Period/Time.

3.5 Contract Execution Completion Date

The stipulated date for completing the execution of all items in the schedule of quantities (Supply, Service and or both as applicable) shall be deemed as the Contract Execution Completion Date.

3.6 Contract Execution Period/Time

The Period from Contract Commencement Date to Contract Execution Completion Date shall be the Contract Execution Period/Time. Timely Completion of Works/Timely Delivery of Materials is the essence of the contract. The period from effective date of contract to the date stipulated for completion of delivery of all items/completion of all the works/services, as per schedule of quantities of the contract is defined as contract execution completion time. The Delivery of Materials /The Completion of Works, as applicable, should be achieved in all respects as per schedules of quantities and all the terms and conditions of the contract, in the contract execution time.

Any revision/amendment in the originally stipulated contract execution time has to be approved by authorized representative of TPCODL.

3.7 Contract Price /Value

The total all inclusive price/value mentioned in the PO/RC of the contract document is the Contract Price/Value and is based on the quantity, unit rates and prices quoted and awarded and shall be subject to adjustment based on actual quantities supplied/actual measurement of

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work done and accepted and certified by the authorised representative of the company unless otherwise specified in schedule of quantities or in contract documents.

3.8 Contract Document

The Contract Document shall mean and include but not limited to the following:

- NIT/Tender Enquiry, QR, Instruction to Bidders, Special Condition of Contract (SCC) of tender, GCC, Technical & Commercial Specifications including relevant annexure and attachments).
- Bids & Proposals Received from Associate including relevant annexure/attachments.
- Letter of Intent (LOI/RC/PO) with agreed deviations from the tender/bid documents.
- All the Inspection and Test reports, Detailed Engineering Drawings.
- Material Dispatch Clearance Certificate (MDCC).
- Minutes of Meeting (MoM)

3.9 Contract Language

All documents, instructions, catalogues, brochures, pamphlets, design data, norms and calculations, drawings, operation, maintenance and safety manuals, reports, labels, on deliveries and any other data shall be in English Language.

The Contract documents and all correspondence between the TPCODL, Third Parties associated with the contract, and the Associate shall be in English language.

However, all signboards required indicating "Danger" and/or security at site and otherwise statutory required shall be in English, Hindi, and local languages.

3.10 Reverse Auction

TPCODL reserves the right to conduct the reverse auction (instead of public opening of price bids) for the products / services being asked for in the tender. The terms and conditions for such reverse auction events shall be as per the Acceptance Form attached in Annexure I. The bidders along with the tender document shall mandatorily submit a duly signed copy of the Acceptance Form as mentioned in the Annexure I as a token of acceptance for the same.

4.0 SCOPE OF WORK

All the activities that are to be undertaken by the Associate to realize the contractual deliverables in completeness form Scope of Work. Following clauses list, but not limited to, major requirements of the scope of work.

The associate shall satisfy himself fully with the details and undertake fully the works as listed in schedule of quantities and conditions, under which the same to be performed. Associate may visit site to equip themselves with all the information required for the execution of work. Unless otherwise stated in the contract, the scope of work shall also include, but not limited to, the following.

The associate shall deliver equipment/material at site/stores, carry out erection, testing and commissioning and put into satisfactory operation as defined in contract. Unloading at site,

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storage, preservation, security and handling of the items at work places till completion of contract is also in scope of work.

The associate shall obtain statutory clearances for the works executed by him.

The associate shall provide comprehensive insurance for entire works for contract value and third party liability insurance to cover all risks till completion of contract.

All transport / lifting/ unloading/ storage/preservation of items at site shall be arranged by the Associate at no extra cost to TPCODL. All these activities shall be performed in line with original equipment manufacturers' recommendations and/or as per best engineering practices, with due consent of TPCODL Engineer-in-charge.

Completeness: Any supplies and services which might have not been specifically mentioned in the Contract but are necessary for the scope mentioned in Special Terms & Conditions and/or completeness of the works at the highest possible level, including any royalties, licence fees & compensation to be paid, whether incurred by the associates or by a third party for the work covered in the scope, regardless of when incurred, shall be supplied/provided by the associate without any extra cost and within the time schedule for efficient , smooth and satisfactory operation and maintenance of the works at the highest possible level under Indian conditions (but according to international standards for facility of this type), unless expressly excluded from the scope of supplies and services in this Contract.

TPCODL have the right, during the performance of the Contract, to change the scope and/or technical character of the Project and/or of the supplies and services stipulated in the Contract by submitting a request in writing to the Associate. The Associate shall, within fifteen days of receipt of such request from the TPCODL, provide Purchaser with a reasonably detailed estimate of the cost of the change outlined in the request.

In the event, TPCODL requests a change, the Contract price and time shall be adjusted upwards or downwards, as the case may be and shall be mutually agreed to. The associate shall not be entitled to any extension of time unless such changes adversely affect the time schedule.

The Associate shall not proceed with the changes as requested till adjustment of contract price and time schedule where so applicable in terms of or otherwise directed by the TPCODL.

4.1 Indemnity

Associates shall undertake to fully indemnify TPCODL (also referred to as the Company in the GCC) against all kinds of liabilities or damages, of whatsoever nature, including compensation arising from any accident to the person or property of those in Associate's employment or to any other person or properties including those of TPCODL, arising due to reasons attributable to any, act, omission of the Associate the Associates, for the entire period of contract including period of guarantee.

Within 7 days of award of work, the Associates shall submit Indemnity Bond in the format as per Annexure-D to Order Issuing Authority.

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In case of Labour /Erection/ Services Contracts having value more than Rs 2 Cr per Annum, Associates shall submit Indemnity Bond on Rs 100/- Non Judicial Stamp Paper in the format as per Annexure- D to Order Issuing Authority.

4.2 Display of Notice Boards at Work Sites

The Associate shall put up display notice board at each project site where the works are in progress indicating the information given below:

- Name of the Project.
- Estimated Cost of Project.
- Date of Commencement.
- Expected date of completion.
- Name of Associate and his telephone number.
- Name of Engineer-in-Charge and his telephone number.

4.3 Disposal of Waste at Site

Significant quantities of waste are generated during the execution of project and an integrated approach for effective handling, storage, transportation and disposal of the same shall be adopted. This would ensure the minimization of environmental and social impact in order to combat the climate change.

The associates shall follow the below criteria for disposal of waste at site during the execution of project.

- Associate shall ensure that the detailed project plan include the waste management, segregation of all designated waste material (Recyclable/Non-Recyclable), collecting, storing, disposing and transferring the same to pre-arranged facility/destination in timely and safe manner as per environmental legislations during the execution of project. The project plan shall also include the innovative construction practice to eliminate or minimize waste, protect surface/ground water, control dust and other emissions to air and control noise during the execution of project. The copy of same shall be given to EIC before the commencement of project.
- The purchase policy of BA shall encourage the procurement of material with recycled and minimum packaging of goods during delivery. Associate shall provide the appropriate means for site to site transportation of materials to avoid damage and litter generation.
- Associate shall educate and inform to its project team about the requirement and responsibilities for waste minimization and disposal in general and provide training of practices that support this. Waste management should be treated like a safety program.
- In the event that area of contaminated or biological hazard is identified, Associate shall ensure that plant, equipment, personnel and any activity associated with the work is carried out in consultation with EIC of TPCODL.
- Associate shall ensure that the residents living near the site are kept informed about proposed working schedule and shall informed timings and duration of any abnormal noise full activity that is likely to happen.

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- Associate shall ensure the regular maintenance and monitoring of vehicles and equipment for efficient fuel use so that emissions and noise are within acceptable limits to avoid air pollution.

4.4 Deployment of Work Force

Associate shall deploy adequate labour, as considered necessary by TPCODL for execution of the contract including Sundays and Holidays whenever required to do so with no extra cost to TPCODL. However, prior permission shall be taken from the site Engineer to carry out the work beyond normal working hours or on Sundays and Holidays. Female employees shall not be deployed beyond normal working hours/days and no child labour shall ever be deployed. Associate shall depute full time qualified and experienced engineers to supervise the work at site. All such staff shall be maintained from commencement to completion of all works to the entire satisfaction of the Engineer-in-Charge. Associate's employees deployed for the works under this contract will not be considered in Company's employment at any time. Associate shall continue to be responsible for all such employees, their safety, all types of statutory compliances related thereto and in any other manner whatsoever. The company will stand indemnified by the Associate in respect of all the above. At the same time Company upon noticing any breach or default on any statutory compliances, may at their sole discretion, decide to act in a manner as deemed fit at the risks and costs of the Associate.

TPCODL shall have the right to instruct the Associate to change the Sub- Associates or skilled /unskilled workers in case the conduct, the workmanship or speed of the work is not satisfactory.

Associates shall submit duly signed undertaking regarding engagement of competent staff / employee commensurate to the nature of job to Engineer-in-charge in the format attached as Annexure – G.

4.5 Damages of Properties

The Associates shall take necessary steps to ensure that the equipment and installations of the Company, Third parties, including other utility services like water supply pipelines; open drains telephone cables etc. are not damaged during execution of the works. The Associates shall be responsible for all such damages and shall have to repair/ replace and/or compensate for the entire claims in respect of such damages at its own cost.

4.6 Issuance of Materials

The material issued to the Associate shall be in the custody of the Associates who shall be fully responsible for the same. After completion of the works, the Associates will reconcile the material. Any cost of material which is short or damaged/lost will be deducted from Associate bill/ deposits.

4.7 Company's Right To Use Works

If Taking Over Certificate is delayed for any reason, for which TPCODL's decision shall be final and binding upon the Associate, the Company shall be entitled to use the works or portion thereof without affecting Associate's responsibility and liability to complete the balance works as

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per company's directives from time to time, though Associate shall be afforded reasonable opportunity by the company to enable Associates to complete all balance works required for issuance of 'Taking Over Certificate' by the company.

4.8 Rights of TPCODL to vary the scope work

TPCODL shall have the right, during the performance of the Contract, to change the scope and/or technical character of the Project and/or of the supplies and services stipulated in the Contract by communicating the intent to do so in writing to the Associate. On receipt of such communication the Associate shall, within the time frame specified in the contract shall provide TPCODL with a reasonably detailed estimate of the cost of the change in scope outlined in the TPCODL communication. The change in the Contract price and time shall be revised upwards or downwards, as the case may be, and shall be mutually agreed to. The Associate shall not be entitled to any extension of time unless such changes adversely affect the time schedule.

The Associate shall not proceed with the changes in the scope of work till such time revision of Contract price and time schedule are approved and communicated to the associate by TPCODL.

Any change in the Scope of Work and/or Terms & Conditions of the order shall be intimated by TPCODL through an amendment to the contract. The amendment shall be treated valid only if signed by the authorized signatory of the original contract.

4.9 Technical Evaluation

TPCODL reserves the right to assign scores to different parameters including but not limited to the following while evaluating the bids. TPCODL reserves the right to change the parameters and score without prior information to the associates:

S. No.	Evaluation Parameter	Max. Score
A	For bidders already Registered with TPCODL	100
A.1.	No violation of statutory compliances in last 1 year. Deduction of 2 marks for each instance of violation in last 1 year.	20
	Safety Deduction of 2 marks for each instance of safety violation in last 1 year. Deduction of 5 marks for each reported Non-Fatal Accident in last 1 year In case of any reported fatal accident: <i>ZERO MARKS</i>	20
A.2.	Timely Execution of Contracts Total Achieved Score = {30 – 3 x (Avg. percentage LD deductions in last 2 years)}	30
A.3.	Legal Issues with TPCODL Zero instances of Arbitration procedures / Court Cases / PBG forfeitures in last 2 years: 30 marks else 'Zero' marks	30
B	Bidders new to TPCODL	100
B.1.	Visits Client Site Visit where the bidder is providing similar services.	30
	The visits as above shall be arranged by the bidder. However all costs towards conveyance, lodging, boarding etc. shall be borne by TPCODL. The	

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S. No.	Evaluation Parameter	Max. Score
	score assigned by TPCODL based on the above visits shall be final and binding on the bidder (Vendor Evaluation form attached as annex L). Safety Score achieved against BA Safety Management System Questionnaire	20
B.2.	Client Referrals At least 3 nos. Customer References for similar services in last 3 years. All customer references shall be either of the following: <ul style="list-style-type: none"> ▪ Govt. Organizations/ PSUs/ Power Distribution Utilities. ▪ Private Organizations with an annual turnover of >= 500 cr. PO copies or Completion Certificates will be admissible. Each reference: 10 marks	30
B.3.	Blacklisting Information Not blacklisted by any reputed organization/utility in last 2 years: 20 marks else 'Zero' marks	20

- Bidder shall be considered as technically qualified if they are able to achieve a technical score of >70 marks on the above parameters. 'A' or 'B'.
- The bidder must have the PF and ESI registration. In case it is not there (provided the bidder is not exempted from the PF and ESI), bidder shall not be evaluated on the above parameters and will be considered as disqualified.

5.0 PRICES/RATES/TAXES

The Prices and Rates are inclusive of cost of materials supplied as per contract terms and for which MDCC is issued by TPCODL and to the extent required for completion of works, cost of service executed as per schedule of quantities, cost of testing as per contract terms, cost of documentations including all relevant test certificates and other supportive documents to be furnished as per contract terms. The rates shall remain firm till actual completion of contract.

The Prices/Rates are inclusive of all taxes, levies, cesses and duties, particularly Goods and Services Tax as applicable. All government levy / taxes shall be paid only when the invoice is submitted according to the relevant act.

The prices shall remain unchanged irrespective of TPCODL making changes in quantum in all or any of the schedules of items of contract.

5.1 Changes in Statutory Tax Structure

If rate of any or all of the statutory taxes and duties applicable to the contract changes, such changes shall be incorporated by default if the changes occur within the contract execution time and shall be applicable if the contract is executed by the Associate within the Contract Execution Time.

For execution of contracts beyond contract execution time, where the delay is not attributable to TPCODL no upward revision in tax /duties shall be considered irrespective of changes in the statutory tax structure either within the contract execution time or beyond. However, in such cases, benefits due to any downward revisions in statutory tax rates shall be passed on to TPCODL.

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6.0 TERMS OF PAYMENT

6.1 Pre-Requisites for Payment

- Associate should have completed execution of that part of contract, for which payment is sought, to the satisfaction of TPCODL's Engineer-in-Charge responsible for the contract and obtained certification for execution of the work.
- Associate has taken C-3 Form
- Associate has undertaken joint measurement of the work executed along with TPCODL's Engineer-in-charge.
- Associate's bills/invoices submitted have been certified by Engineer-In-Charge.

6.2 Bills & Invoices

Unless specified otherwise in the special conditions of contract, Associate shall raise not more than one invoice/contract per month for the services rendered in the prescribed Tax Format and the invoice shall be submitted within 15 days of the following month at Invoice Desk, TPCODL Bhubaneswar.

All Bills shall be supported by joint measurement of work done, quality test report and a copy of wage sheet, if applicable (showing proof of having disbursed wages as per applicable law) and a copy of statement substantiating that statutory payments having been affected.

Bills/ invoices shall mention Associate's 'Sales, Service, WCT Tax Registration Number, PAN number as applicable.

Final bill submission after completion of project or execution of job must be within 30 days from the actual date of completion/execution of work awarded.

6.3 Payment & Statutory Deductions

Payment shall be released within 30 days from the submission of the bills. The associate shall submit "No Demand Certificate" in the format as per Annexure-D at the time of receipt of full and final payment. In case any non-compliance to contract conditions comes to TPCODL's notice, TPCODL will be entitled to deduct 30% of estimated wages plus 20% of wages as TPCODL's overheads. Associates would be obliged to provide the copy of monthly wage sheet in any case, failing which no payment shall be made. TPCODL at their sole discretion may deposit the PF etc. with statutory authorities. TPCODL will deduct the amounts of TDS as per statutory requirement under the income tax act and the DVAT Act and certificates (wherever applicable) will be issued to associate accordingly

In case of non-submission of PAN No TDS @ 20% shall be deducted from all payable amounts for which no TDS certificate shall be issued. TDS once deducted as above shall not be revised in any condition.

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6.3.1 Statutory Deductions

TPCODL will deduct the amounts of TDS, TCS as per statutory requirement under the income tax act, the Goods and Services tax act, BOCW Act, or any other applicable tax act and certificates (wherever applicable) will be issued to associate accordingly.

For consumption of TPCODL's Water and Electricity by Associate for execution of Contract, Associate shall pay 0.5% & 1.0% respectively of contract value and it shall be deducted from the running bills.

The Engineer-in-Charge as stated in the Order shall be responsible for certification of the work executed and the bills. Bills (including original) shall be submitted in triplicate at Bill Inward Receipt Desk (BIRD) located at Third Floor, IDCO Towers, Janpath, Bhubaneswar..

6.4 Guidelines for Raising Running/ Final Bills

Contract Value Up to 5 Lakhs	One Final Bill
Contract Value More than 5 lakhs	Monthly Running Bill & One Final Bill

All Bills shall be processed only when all bank Guarantees are in place and before payments of Final Bill Associate have to furnish No Demand Certificate, as applicable.

6.5 Quantity Variation

Payment will be made on the basis of actual quantity of supplies/actual measurement of works accepted by TPCODL and not on the basis of contract quantity.

6.6 Full and Final Payment

Full & Final Payment in all contracts shall be made subject to the associate submitting "No Demand Certificate", in the format as per Annexure-C.

7.0 MODE OF PAYMENT

Payment shall be made through Cheque or RTGS whichever of the two modes chosen by the Associate, in favour of Associate's Bank Account on TPCODL records, on whose name Contract has been issued. Those Associates opting for the RTGS mode shall submit the details of Bank Account and other details as per annexure J. Further, for any payments made, TPCODL is not responsible for any consequences/disputes Associate have among the owners channel partners, sub-Associates and all such dispute/concerns shall be settled solely by the Associate.

In case of service contracts, mostly the quantities of items indicated are estimated and preliminary. However, payments shall be made on the basis of actual quantity of work carried out and measured jointly by the Company and the Associate. Associates shall be responsible to organize joint measurements of works with TPCODL Engineer-in-Charge before raising any bill of work done. In the event Associate fails to do so, TPCODL at their sole discretion, may take measurements of work done and proceed as deemed fit and in such an event Associate's right to lodge any subsequent claim shall stand forfeited.

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8.0 SECURITY CUM PERFORMANCE DEPOSIT

Associates shall submit within 15 days from the effective date of issue of PO/RC, Security cum Performance Bank Guarantee (SPBG) in the format as per Annexure B of this document from banks acceptable to TPCODL for:

(a) 5% of the PO value if purchase order value is more than Rs 5 Crores.

(b) 10% of the PO value if purchase order value is less than Rs 5 Crores.

This shall remain valid till the end of the Guarantee Period of contract, plus one month.

(c) 5% of the RC value in case of Rate Contract. This shall remain valid till the Guarantee period plus one month.

- For PO/RC values less than Rs. 5 lacs, Associate may request for deduction of amount equivalent to SPBG value from their first invoice. Such amount shall be withheld by TPCODL while processing the invoice and shall be released after completion of Guarantee Period plus one month.
- For PO/RC values less than Rs. 3 lacs, the clause (8.0) for Security cum Performance Bank Guarantee (SPBG) shall not be applicable.
- In case of RC (Rate Contract) after the expiry of RC validity, Associate shall have to submit SPBG. However, the Associate has the option to re-submit the SPBG as per actual RO (Release Order) value issued against the RC, valid for Guarantee Period plus one month. The Guarantee Period shall be considered as per the last RO issued against the said RC. The original SPBG as submitted against the RC shall be released on submission of the new SPBG to TPCODL. Alternatively, Associate may extend the validity of original SPBG only till the requisite period, i.e. guarantee period plus one month.

9.0 STATUTORY COMPLIANCE

9.1 Compliance to Various Acts

Associate should ensure adherence to the Anti-Lobbying, Debarment, Drug-Free, Child Labour, Factories Act and Shop and Establishment Workplace Certification, Registration details under GST, Sales Tax and Works Contract Tax Act.

Associate shall bear the entire responsibility, liability and risk relating to coverage of its workforce under different statutory regulations including Workman's Compensation Act, ESI Act, Factories Act, 1948, the Contract Labour (Regulation and abolition) Act 1970, and any other relevant regulations as the case may be. Associate shall also be solely responsible for the payment of all benefits such as Provident Fund, ESI, Bonus, Leave compensation and other benefits as may be applicable under applicable labour laws, etc. as per the various statutory regulations and shall keep TPCODL indemnified in this regard against any such claim and provide documentary evidences of the same to TPCODL. TPCODL shall be entitled to, if necessary, make such payment and recover the amount from Associate.

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Associate should ensure adherence to all applicable laws, rules and regulation applicable under this contract from time to time. In case of violation any risk, costs etc. shall be in associates account and keep TPCODL indemnified always till completion of contracts.

9.2 SA 8000

TPCODL expects its Associates to follow guidelines of SA 8000:2014 on the following aspects

1. Child Labour
2. Forced or Compulsory Labour
3. Health & Safety
4. Freedom of Association & Right to Collective Bargaining
5. Discrimination
6. Disciplinary Practices
7. Working Hours
8. Remuneration
9. Management System

9.3 Affirmative Action

TPCODL appreciate and welcome the engagement/employment of persons from SC/ST community or any other deprived section of society by their business associates.

Relaxation in Contract Clauses under Affirmative Action for SC/ ST Business Associates**

TPCODL believes that inclusive growth is the key to sustainable development, and to promote the same Policy on Affirmative Action for Scheduled Caste & Scheduled Tribe Communities has been adopted across the company.

Under the same pre-text, and to promote entrepreneurship among SC/ST community TPCODL has taken initiative by proposing relaxations in contract clauses as per below:

S.No.	Initiative	for SC/ ST BA's	Guideline Document
1	Tender Fees	100% waiver for SC/ST community	All Open Tenders
2	Earnest Money Deposit	50 % relaxation of estimated EMD value	All limited and Open Tenders
3	Performance Bank Guarantee	50% relaxation in PBG for order value above 50 lacs else 25% relaxation	All limited and Open tenders
4	Turnover	25% relaxation in company turnover under qualifying requirement criteria	All Open Tenders

****Classification of BA s under SC/ST shall be governed under following guidelines:**

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- Proprietorship/ Single Ownership Firm: Proprietor of the firm should be from SC/ST community. Governing document shall be duly audited latest balance sheet bearing name of all the partners.
- Partnership Firm: Only such firms shall qualify which have SC/ST partners holding equal to or more than 50% of the total ownership pattern of the firm. Governing document shall be Partnership Deed and duly audited latest balance sheet bearing name of all the partners.
- Private limited company: Only such firms shall qualify which have SC/ST directors holding equal to or more than 50% of the total ownership pattern of the firm. Governing document shall be Memorandum of Understanding (MoU) and/or Article of Association (AoA).

Certification from SC/ST commission shall be required for deciding upon SC/ST status of a person.

9.4 Compliance to Labour Laws

Bidder needs to ensure compliance to applicable labour laws including timely disbursement of wages. In case wages are not disbursed as per the stipulated timelines, then TPCODL shall pay the wages to BA employees on behalf of BA. Apart from deducting the amount of wages paid, TPCODL shall deduct an additional service charge equivalent to 25% of the wages paid from the payment due to BA.

9.5 Compliance to Construction and Demolition Waste Management Rules & Environment (Protection) Amendment Rules

BA is liable to follow the Construction and Demolition Waste Management Rules- 2016, Environment (Protection) Amendment Rules- 2018 and Guidelines on dust mitigation measures in handling construction material and C&D wastes issued by CPCB.

Following are some main points of above Rules/Guidelines for Construction work, cable laying jobs etc.

1. Barricading to be provided at site to cover complete area.
2. Construction material and waste should be inside the closed area made by using barricading.
3. Water sprinkling/fine spray from nozzles to be done to suppress the dust.
4. The board of Dust mitigation measures shall be displayed at site for public viewing with required details.
5. Loose sand or soil and construction material that causes dust shall be covered.
6. Transport material that are easily wind borne need to be covered by a sheet made of either jute, tarpaulin, plastic or any other effective material.
7. All areas for storing C&D waste/construction material to be demarcated and preferably barricaded particularly those materials that have potential to be dust borne.
8. Grinding and cutting of building materials in open area shall be prohibited.
9. Construction material and waste should be stored only within earmarked area and road side storage of construction material and waste shall be prohibited.
10. No uncovered vehicles carrying construction material and waste shall be permitted.
11. Construction and demolition waste processing and disposal site shall be identified and required dust mitigation measures to be notified at the site.

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10.0 QUALITY

10.1 Knowledge of Requirements

The Associate shall be deemed to have carefully examined and to have knowledge of the equipment, the general and other conditions, specifications, schedules, drawings, etc. forming part of the Contract and also to have satisfied himself as to the nature and character of the work to be executed and the type of the equipment and duties required including wherever necessary of the site conditions and relevant matters and details. Any information thus procured or otherwise obtained from TPCODL/Consultants shall not in any way relieve the Associate from his responsibility and executing the works in accordance with the terms of contract.

10.2 Adherence to Rules & Regulations

The Associate shall procure and/or fabricate/erect all materials and equipment in accordance with all requirements of Central and State enactment, rules and regulations governing such work in India and at site. This shall not be construed as relieving the Associate from complying with any requirement of TPCODL as enumerated in the Contract which may be more rigid than and not contrary to the above mentioned rules, nor providing such construction as may be required by the above mentioned rules and regulations. In case of variance of the Technical Specification from the laws, ordinance, rules and regulations governing the work, the Associate shall immediately notify the same to the TPCODL. It is the sole responsibility of the Associate, however, to determine that such variance exists. Wherever required by rules and regulations, the Associate shall also obtain the statutory authorities' approval for the plant, machinery and equipment to be supplied by the Associate.

10.3 Specifications and Standards

The Associate shall follow all codes and standards referred in the Contract Document. Codes and standards of other may be followed by the Associate with the prior written approval of TPCODL, provided materials, supplies and equipment according to the standard are equal to or better than the corresponding standards specified in the Contract.

Brand names mentioned in the Contract documents are for the purpose of establishing the type and quality of products to be used. The Associate shall not change the brand name and qualities of the bought out items without the prior written approval of the TPCODL. All such products and equipment shall be used or installed in strict accordance with original manufacturer's recommendations, unless otherwise directed by the TPCODL. In any circumstances the codes, specimen and standards prescribed by any government agency should not be violated.

11.0 SAFETY

All Associates shall strictly abide by the guidelines provided in TPCODL's Contractor Safety Management System (CSMS) as applicable at all stages during the contract period. Associate shall execute the contracts ensuring the following in and as order of priority:

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- Safety of Human Beings.
- Safety of Equipment/Assets.
- Timely Completion of Contract.

Safety related requirements as mentioned in our Contractor Safety Management System is attached as annexure K and is an integral part of this GCC. TPCODL may revise this CSMS document as a when required and the revised version shall be applicable on all contracts – current or future.

12.0 GUARANTEE

12.1 Guarantee of Performance

Associates shall stand guarantee that the equipment and material supplied/service or work rendered under the contract is free from design, manufacturing, material, construction, erection & installation and workmanship & quality defects and is capable of its due, rated and intended quality performance, as an integrated product delivered under the contract or a specific period termed as Guarantee Period(as elaborated elsewhere in this clause) The Associate should also guarantee that the equipment/material is new and unused except for the usage required for the tests and checks required as part of quality assurance.

12.2 Guarantee Period

The Guarantee Period will be equipment/service/work specific and shall be as specified in the Standard Specifications of TPCODL for the equipment/material/service/work and where standard specifications are not part of contract documents or guarantee period is not specified in the standard specifications,, the guarantee period shall be as per the Special Terms and Conditions of the Contract. In case of no mention of the guarantee period in standard specifications or SCC Guarantee Period will be 12 Months from the Date of Commissioning or 24 months from the date of delivery of final lot of supplies made, whichever is earlier.

12.3 Failure in Guarantee Period (GP)

If the equipment and material supplied/service or work rendered under the contract fails to perform its due, rated & intended quality performance, during the Guarantee period, the associate is liable to undertake repair/rectify/replace the equipment and material supplied/service or work rendered under the contract within time frame specified in the SCC or elsewhere in the contract documents at associate's cost to make the equipment and material supplied/service or work rendered under the contract of performing its due, rated and intended quality performance. If Associate fails to repair/rectify/replace the equipment or material supplied/service or work rendered under the contract, failed in Guarantee Period, TPCODL will be at liberty to get the same done at Associate's risks and costs and recover all such expenses plus the TPCODL's own charges (@ 20% of expenses incurred), from the Associate or from the "Security cum Performance Deposit" as the case may be.

If during the Warranty/ Guarantee period some parts of the supplies are replaced owing to the defects/ damages under the Warranty, the Warranty period for such replaced parts shall be until the expiry of twelve months from the date of such replacement or renewal or until the end of original Guarantee period, whichever is later.

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Any repairs during the Guarantee Period shall be carried out by the Associate within 30 days of reporting the issue to Associate by TPCODL. However, if replacement of the Equipment is required, Associate shall notify the same to TPCODL within 7 days of reporting the issue by TPCODL. Thereafter, the total time for supply of new equipment/ material shall be equal to the original delivery period of that equipment/ material as specified in the Contract. In case the Associate is not able to rectify/ replace the faulty equipment/ material within the stipulated timelines as mentioned above, penalty shall be levied as per the Liquidated Damages clause mentioned in this document. The penalty amount shall be recovered from the payment due to the vendor or by encashment of the SPBG as the case may be.

12.4 Cost of repairs on failure in GP

The cost of repairs/rectification /replacement, apart from the actual cost of repairs/rectification/replacement is also inclusive of all associate costs of required transportation, site inspection /mobilization/dismantling and re-installation costs as applicable. The Associate has to ensure that the interruption in the usage of intended purpose of the equipment is minimized to the maximum extent In lieu of the time taken for repairs/rectification/replacement.

12.5 Guarantee period for Goods Outsourced

If the Associate outsources partly equipment/materials/services from third party as mutually agreed upon at the pre award stage of contract, TPCODL shall have the benefit of any additional guarantee period if provided by the third party for the part supplied/executed by them.

12.6 Latent Defect

Hidden defects in manufacturing or design of the product supplied and which could not be identified by the tests conducted but later manifested during operation of the equipment are termed as latent defects. Associates shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by the Company.

13.0 LIQUIDATED DAMAGES

- a) For Services which are of standalone use, multiple in quantities and having a single final completion schedule, Liquidated damages shall be levied without prejudice to any of the other contractual rights of TPCODL, as described below:

For delay of each week and part thereof from the completion schedule specified in the contract, 1% of contract value corresponding to unexecuted work, provided full execution is done within 130% of the original contract time. If full contractual service/work rendered is not completed within 130% of contract time for execution, TPCODL has the right to levy LD on the entire contract value, subject to a maximum of 10% of the total contract value.

- b) For services having phased completion schedule(milestone) as per contract terms, standalone use and multiple in quantities, Liquidated damages shall be levied without prejudice to any of the other contractual rights of TPCODL, as described below:

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For the purpose of calculating and applying LD, each milestone shall be considered separately. For delay of each week and part thereof, from the execution of work schedule specified in the milestone, 1% of the contract value corresponding to the unexecuted work of the milestone, subject to a maximum of 10% of the total contract value of that milestone shall be levied. However, if full contractual service/work rendered is not completed within 130% of contract time for execution, TPCODL has the right to levy LD on the entire contract value, subject to a maximum of 10% of the total contract value. Deduction of LD shall be on landed cost i.e contract value inclusive of taxes and in pursuant statutory compliance GST would be applicable at the stipulated rate and the same shall be borne by Business Associate. In case of LD deduction, a GST invoice shall be issued by TPCODL as a proof of deduction/ recovery.

13.1 LD Waiver Request

Any request of LD waiver shall be submitted within thirty (30) days of deducting LD. Request submitted beyond the timeline shall not be entertained.

13.2 Material Recovery

In case of any recoveries for materials or services (for material free issued by TPCODL and not reconciled by BA or for services claimed and paid in excess at the time of running bills), the total cost which shall be recovered from the BA, shall be the gross amount of material or services (i.e. including taxes) plus applicable taxes as prevailing at the time of such recoveries.

14.0 ASSIGNMENT OR SUBCONTRACTING

Associates shall not assign/subcontract/outsource the schedule of activities of contract TPCODL enters with the associate, in part or full, without TPCODL's prior written approval. However outsourcing of materials/equipment/services by Associate to make the integrated product for which TPCODL's has placed the contract with the associate from suppliers, makes and agencies which have been mutually agreed upon during contract pre-award stage is permitted subject to following conditions.

In such cases where outsourcing is done by the Associate

- Shall ensure that outsourced suppliers comply with the technical and financial qualification requirements specified by TPCODL in the contract document
- Shall furnish all particulars about the proposed outsourcing agencies and the details of the goods/services/work outsourced to the Associate while seeking approval of TPCODL for inclusion for outsourcing. The Associate shall give approval or shall refuse approval in writing within thirty (30) days of receipt of such request. However the Associate shall not be entitled for any additional contract execution time whatsoever in lieu of the process for approval for outsourcing agencies, and shall be held responsible for any delay in the project execution time.
- Shall remain jointly and severally liable for any action, deficiency, and/or negligence on the part of his outsourcing agencies. The approval extended by the Associate to outsourcing agencies recommended by the Associate shall not discharge the later from his Contract obligations.

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Shall submit to the Associate unpriced copies of purchase orders with technical specifications included in the orders, placed on outsourcing agencies as soon as the respective orders have been placed by the Associate.

15.0 UNLAWFUL ACTIVITIES

The Associate shall have to ensure that none of its employees are engaged in any unlawful activities (whether covered under the scope of the present GCC or not) subversive of the TPCODL's interest failing which appropriate action (legal or otherwise) may be taken against the Associate by the TPCODL, in accordance with the terms of the present GCC.

16.0 CONFIDENTIALITY

Associate and its employees or representatives thereof shall strictly maintain the confidentiality of various information they come across while executing the contract as detailed below.

16.1 Documents

All maps, plans, drawings, specifications, schemes and other documents or information related to the Contract/Project and the subject matter contained therein and all other information given to the Associate by the TPCODL in connection with the performance of the contract shall be held confidential by the Associate and shall remain the property of the TPCODL and shall not be used or disclosed to third parties by the Associate for any purpose other than for which they have been supplied or prepared. The Associate may disclose to third parties, upon execution of confidentiality agreements, such part of the drawings, specifications or information if such disclosure is necessary for the performance of the Work provided such third parties agree in writing to keep such information confidential to the same extent and degree as provided herein, for the benefit of the TPCODL.

16.2 Geographical Data

Maps, layouts and photographs of the unit/plant including its surrounding regions showing vital installation for national security of country or those of TPCODL shall not be published or disclosed to the third parties or taken out of the country without prior written approval of the TPCODL and upon execution of confidentiality agreements satisfactory to the TPCODL with such third parties prior to disclosure.

16.3 Associate's Processes

Title to secret processes if any developed by the Associate on an exclusive basis and employed in the design of the equipment shall remain with the Associate. TPCODL shall hold in confidence such processes and shall not disclose such processes to the third parties without prior approval of the Associate and execution by such third parties of secrecy agreements satisfactory to the Associate prior to disclosure. Upon completion of contract, such processes shall become the property of the TPCODL. Title to technical specifications, drawings, flow sheets, norms, calculations, diagrams, interpretations of test results, schematics, layouts and such other information, which the Associate has supplied to the TPCODL under the Contract shall be passed on to the TPCODL. The TPCODL shall have the right to use these for

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construction, erection, start-up, Trial Run, operation, maintenance, modifications and/or expansion of the works including for the manufacture of spare parts.

16.4 Exclusions

The provision of Clauses 16.1 to 16.3 shall not apply to information:

- Which at the time of disclosure are in the public domain which later on become part of public domain through no fault of the party concerned, or
- Which were in the possession of the party concerned prior to disclosure to him by the other party, or
- Which were received by the party concerned after the time of disclosure without restriction on disclosure or use, from a third party who did not acquire such information directly or indirectly from the other party or has no obligation of confidentiality for such information.

16.5 Violation

In case of violation of this clause, the Associate is liable to pay compensation and damages as may be determined by the competent authority of TPCODL.

17.0 INTELLECTUAL PROPERTY RIGHTS

If, in the course of performance of its functions and duties as envisaged by the scope of the present GCC, the Associate acquires or develops, any unique knowledge or information which would be covered, or, is likely to be covered within the definition of a trademark, copyright, patent, business secret, geographical indication or any other form of intellectual property right, it shall be obliged, under the terms of this present GCC, to share such knowledge or information with the TPCODL. All rights, with respect to, or arising from such intellectual property, as aforementioned, shall solely vest in TPCODL.

Moreover, the Associate undertakes not to breach any intellectual property right vesting in a third party/parties, whether by breach of statutory provision, passing off, or otherwise. In the event of any such breach, the Associate shall be wholly liable to compensate, indemnify or make good any loss suffered by such third party/parties, or any compensation/damages arising from any legal proceeding/s, or otherwise. No liability of TPCODL shall arise in this respect, and any costs, damages, expenses, compensation payable by TPCODL in this regard to a third party/parties, arising from a legal proceeding/s or otherwise, shall be recoverable from the Associate.

18.0 INDEMNITY

The Associate shall at all times indemnify, keep indemnified and hold harmless the TPCODL and its officers, directors, employees, affiliates, agents, successors and assigns against all actions, claims, demands, costs, charges and expenses arising from or incurred by reason of any infringement of patent, trade mark, registered design, copy rights and/or industrial property rights by manufacture, sale or use of the equipment supplied by the Associate whether or not the TPCODL is held liable for by any court judgement. In this connection, the TPCODL shall pass on all claims made against him to the Associate for settlement.

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The Associate assumes responsibility for and shall indemnify and save harmless the TPCODL from all liability, claims, costs, expenses, taxes and assessments including penalties, punitive damages, attorney's fees and court costs which are or may be required to be paid by the TPCODL and its officers, directors, employees, affiliates, agents, successors and assigns arising from any breach of the Associate's obligations under the Contract or for which the Associate has assumed responsibilities under the Contract including those imposed under any local or national law or laws, or in respect to all salaries, wages or other compensation for all persons employed by the Associate or his Sub-Associates or suppliers in connection with the performance of any work covered by the Contract. The Associate shall execute, deliver and shall cause his Sub-Associate and suppliers to execute and deliver, such other further instruments and to comply with all the requirements of such laws and regulation as may be necessary there under to conform and effectuate the Contract and to protect the TPCODL.

The TPCODL shall not be held responsible for any accident or damages incurred or claims arising, due to the Associate's error there from prior to completion of work. The Associate shall be liable for such accidents and after completion of work for such accidents as the case may be due to negligence on his part to carry out Work in accordance with Indian laws and regulations and the specifications set forth herein.

19.0 LIABILITY & LIMITATIONS

19.1 Liability

Except for any specific liability which may be identified in the Contract and which may be payable hereunder, Associate shall not be liable for any special, incidental, indirect, or consequential Damages or any loss of business Contracts, revenues or other financial loss (or equivalents thereof no matter how claimed, computed or characterized) arising out of or in connection with the Performance of the Work or supply of Goods ***unless caused by Associate's negligence, willful misconduct or breach of contract.***

If the Associate is a joint venture or consortium, all concerned parties shall be jointly and severally bound to the TPCODL for the fulfillment of the provisions of the Contract. The consortium or the joint venture shall designate one party as their leader, who will be the coordinator between the parties and TPCODL. The constituents & leader of the consortium or joint venture shall not be changed without the prior consent of TPCODL.

TPCODL shall have no liability or any special, incidental, indirect or consequential Damages for any loss of Business Contracts, revenues or other financial loss arising out of this Contract.

19.2 Limitation of Liability

The total liability of Associate against any contract shall be limited to the Total All Inclusive Contract Value.

20.0 FORCE MAJEURE

Force Majeure applies if the performance by either Party ("the Affected Party") of its obligations under Contract is materially and adversely affected.

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“Force Majeure” shall mean any event or circumstance or combination of events or circumstances referred below and their consequences that wholly or partly prevents or unavoidably delays any Party in the performance of its obligations under this Agreement, but only and to the extent that such events and circumstances are not within the reasonable control, directly or indirectly, of the Affected Party and could not have been avoided even if the Affected Party had taken reasonable care:

- Act of war (whether declared or undeclared), invasion, armed conflict or act of foreign enemy, embargo, blockade, revolution, riot, bombs, religious strife or civil commotion, etc.
- Politically motivated sabotage, or terrorism, etc.
- Action or Act of Government or Governmental agency for which remedy is beyond the control of the affected parties.
- Any act of God.

Note: Causes like power breakdown/ shortages/fire/strikes, accidents etc. do not fall under Force Majeure.

Time being the essence of the Contract, if either party is prevented from the performance of its obligations in whole or in part due to an event of Force Majeure, then provided Notice of happening of any event by the Affected Party is given to the other party within seven (7) days from the date of occurrence of such event, which DIRECTLY has impact on works and submitted details and quantum of resulting effect, but at the same time had made all possible efforts to mitigate and overcome effects thereof, the Affected Party's performance under this Contract shall be suspended until such event ceases and the Scheduled Completion shall be delayed accordingly.

If Force Majeure event(s) continue for a period of more than three months, the parties shall hold consultation to discuss the further course of action.

Neither party shall be considered to be in default or in breach of its obligation under the Contract to the extent that performance of such obligation by either party is prevented by any circumstances of Force Majeure which arise after effective date of Contract.

Neither party can claim any compensation from the other party on account of Force Majeure.

21.0 SUSPENSION OF CONTRACT

21.1 Suspension for Convenience

TPCODL may, at any time and at its sole option, suspend execution of all or any portions of the schedule of items of contract to be supplied/work to be executed by Associate under the contract by providing to the Associate at least two business days written notice for contracts having contract completion period less than sixty days and at least seven business day notice for all other contracts.

Upon receipt of any such notice, the Associate shall respond as follows as applicable as per contract construction.

- Immediately discontinue further supply of material/goods specified in the suspension notice for supply contracts

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- Immediately discontinue further service/work and supply of materials of those services/materials/work specified in the suspension notice for service /composite contract
- Promptly make every reasonable effort to obtain suspension, upon terms satisfactory to TPCODL, of all orders, outsourcing arrangements, and rental Contracts to the extent that they relate to performance of the portion of Work suspended by the notice.
- Protect and maintain the portion of the service/Work already completed, including the portion of the Work suspended hereunder, unless otherwise specifically stated in the notice.
- Continue delivering/carrying out the supply/service/work items as per contract conditions, which do not fall under purview of the suspension notice.

On receipt of resumption notice from TPCODL, the Associate shall resume execution of contract as specified in the resumption notice, within the time frame specified in the resumption notice.

21.2 Suspension for Breach of Contract conditions

TPCODL shall suspend execution of whole/or part thereof the contract till such time Associate complies with the conditions stipulated under section clause 22 for breach/default of contract conditions.

21.3 Compensation in lieu of Suspension

If the suspension of the contract in whole or in part is for convenience of TPCODL and not due to any breach of contract conditions by the associate, TPCODL at its discretion shall consider compensating all reasonable additional costs incurred by Associate in lieu of suspension of whole or part of contract, on representation of the Associate providing justified estimates of such additional costs and such estimates are found acceptable and approved by competent authority of TPCODL.

If the suspension of contract in whole or part thereof is due to breach of contract conditions (refer clause 24.3) by the Associate, Associate shall not be entitled for any compensation for any cost incurred in lieu of suspension of whole or part of contract and also shall be liable for compensating all the losses arising to TPCODL in lieu of suspension of contract. Resumption notice shall be subject to the Associate taking corrective action for the breach of contract conditions within the time frame and as per the terms specified in the suspension notice.

22.0 TERMINATION OF CONTRACTS

22.1 Termination for Default/Breach of Contract

The contract / PO shall be subject to termination by TPCODL in case of breach of the contract by the Associate which shall include but not be limited to the following:

- a. Withdrawal or intimation by the Associate of its intent to withdraw or surrender the execution / completion of the contracted work /PO or failure in ensuring adherence to any delivery schedules, in deviation of the contract/PO
- b. Refusal or neglect on the part of the Associate to supply material/equipment of quantity or quality as specified by TPCODL and within the timeframe as specified in the contract

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document or refusal or neglect to execute the services/work in terms of the agreed standards of quantity or quality and/or within the timeframe specified in the contract/PO.

- c. Failure in any respect to perform any portion of the Work contracted with promptness, diligence, or in accordance with the terms of the contract.
- d. Failure to furnish guarantees as specified and /or failure to comply with the terms thereof.
- e. Failure to furnish such relevant documents or information within the time specified which may be necessary for due execution / completion of the works and documentation.
- f. Liquidation, bankruptcy either voluntary or involuntary OR entering into any composition or compromise with its creditors, or Insolvency.
- g. In case any reasonable information has been received by TPCODL that Associate has adopted/ or attempted to adopt any unethical conduct, action in award of the contract /PO or at any time thereafter.
- h. Failure to comply with applicable statutory provisions as contained in the contract or failure to comply with the applicable laws.
- i. Failure to comply with safety regulations/clauses stipulated in the contract or as may be generally instructed by TPCODL.

If the default or breach as specified under clause 22 (except sub clause g thereof) be committed by the Associate for the first time, TPCODL shall issue, along with notice of default or breach, a warning notice instructing the associate to take remedial/corrective action within the time frame stipulated in the warning notice and not to repeat the same in future. The timeframe for corrective action by the associate shall be specific to the nature of breach of contract and the same shall not be objected to by the Associate. If the Associate fails to comply with the instructions in the warning notice or in taking corrective action to the satisfaction of TPCODL then TPCODL may terminate the entire or part of contract at its discretion by issuing termination notice without incurring any liability on this ground.

In case the contract is terminated for any breach of the nature specified in clause 24 g stated above, TPCODL shall have the right to terminate all the contracts TPCODL is having with the Associate by issuing termination notice which shall be without prejudice to the other rights of TPCODL available to it under law.

Without prejudice to its right to terminate for breach of contract, TPCODL may, without assigning any reason, terminate the Contract in whole or in part at any time at its discretion while the contract is in force by serving a written notice of two weeks to the Associate.

In the event of TPCODL having proceeded with termination of the contract the associate shall comply and proceed further in the following manner:

- a. Associate shall discontinue the supply, on the expiry of the said period of two weeks.
- b. Associate shall ensure that no further steps are being taken towards discharge of the obligations, terms and conditions as contained in the contract/PO. This shall include initiation of actions not limited to discontinuation of other allied and associated

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arrangements which the associate might have entered into with third parties for due discharge of its obligations under the contract with TPCODL.

- c. The Associate shall perform thereafter such tasks as may be necessary to preserve and protect the terminated portion of the material/service/work in progress and the materials and equipment at TPCODL sites or in transit thereto. However the associate shall continue to fulfill its contractual obligations with regard to the part of contract not terminated.
- d. It shall be open for TPCODL to conduct a joint assessment with the associate of the material ,supplies, equipment ,works or in general as to the subject matter of the contract in regard to which the associate claims having completed its obligations before or during such termination.
- e. It shall be open to TPCODL to seek invocation of the performance bank guarantee or any other guarantee or other security deposit by whatever name called submitted by the associate, which shall not be objected to or protested against by the associate.

In case of termination of the contract the parties agree to be governed inter alia by the following:

- a. In case TPCODL exercises its right of termination as stated above the associate shall not dispute or object to the same.
- b. The Associate shall be entitled to receive and claim only such payments OR sums of money from TPCODL as may be found payable to it in regard to works executed by it under the terms of the contract and no other claim of any nature whatsoever shall be made by the Associate.
- c. All such provisions which the parties have agreed to survive and prevail even after termination of the contract shall remain effective despite the termination.

In the event of such termination, TPCODL may finish the Work by whatever method it may deem expedient, including the hiring of services and /or purchase of material equipment from such third parties as TPCODL may deem fit or may itself provide any labor or materials and perform any part of the Work. The associate undertakes to bear the incremental costs if any paid by TPCODL in such a case attributable to failure on the part of the associate. The Associate in such a case shall not be entitled to receive any further payments and any sums found payable to it may be adjusted by TPCODL against the amount recoverable from him on this ground. The same shall be without prejudice to other rights available to TPCODL under law against the associate.

Upon the termination of any of the contract due to occurrence of any circumstances provided in clauses stated above and constituting repeated breach or misconduct, TPCODL shall be entitled to bar the associates its agents, affiliates from undertaking any negotiation / tendering, bidding, participation activities concerning TPCODL for a period of two years from date of such termination. The same shall be without prejudice to other rights available to TPCODL.

22.2 Termination for convenience of Associate

Associate at its convenience may request for termination of contract, clearly assigning the reason for such request. TPCODL has full right to accept, reject or partially accept such request.

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This convenience will be available to associate only after one year from the contract effective date. For this purpose, associate will provide a notice period of 90 days to TPCODL, Associate will have to pay TPCODL a 'termination convenience fee' equivalent to 5% of unexecuted contract value.

22.3 Termination for Convenience of TPCODL

TPCODL at its sole discretion may terminate the contract by giving 30 days prior notice in writing or through email to the Associate. TPCODL shall pay the Associate for all the supplies/ services rendered till the actual date of contract termination against submission of invoice by the Associate to that effect.

23.0 DISPUTE RESOLUTION & ARBITRATION

In case of any dispute or difference the parties shall endeavour to resolve the same through conciliatory and amicable measures within 15 Days failing which the matter may be referred by either party for resolution by the sole arbitrator to be appointed mutually by both the parties. The arbitral proceedings shall be conducted in accordance with Arbitration and Conciliation Act 1996 and the place of arbitration shall be Bhubaneswar. The language to be used at proceedings shall be English and the award of the arbitrator shall be final and binding on the parties. The parties shall bear their respective costs of arbitration. The associate shall continue to discharge its obligations towards due performance of the works as per the terms of the contract during the arbitration proceedings unless otherwise directed in writing by TPCODL or suspended by the arbitrator. Further, TPCODL shall continue making such payments as may be found due and payable to the associate for such works.

24.0 Governing laws and jurisdiction

The parties shall be subject to the jurisdiction of the courts of law in Bhubaneswar and any matter arising here from shall be subject to applicable law in force in India.

25.0 ATTRIBUTES OF GCC

25.1 Cancellation

The Company reserves the right to cancel, add, delete at its sole discretion, all or any terms of this GCC or any contract, order or terms agreed between the parties in pursuance without assigning any reasons and without any compensation to the Associates.

25.2 Severability

If any portion of this GCC is held to be void, invalid, or otherwise unenforceable, in whole or part, the remaining portions of this GCC shall remain in effect.

25.3 Order of Priority

In case of any discrepancies between the stipulations in General Conditions of the Contract (GCC) and Special Conditions of Contract (SCC), the GCC shall stand superseded by the SCC to the extent stipulated hereinabove while balance portion of respective clauses of GCC shall continue to be applicable.

26.0 INSURANCE

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The Associate shall arrange accident insurance policy for his foreign experts/specialists/personnel deputed to Site and Associate's/his sub-Associates' manufacturing works as well as for his Indian engineers and supervisory staff. The Associate shall also take out for his Indian workmen, where applicable, a separate policy as required under Workmen's Compensation Act.

Associates shall be responsible to suitably insure their entire work-force (to the extent of at least meeting requirements under Workmen Compensation Act) Tools, Plant, Third party liability at the project site, All Risk comprehensive insurance for the entire works (insurance for free issue items will be in TPCODL scope) for total contract value or any other such risks during execution of works, till the works are handed over to the company, in consultation with TPCODL and shall submit copies of such insurances to the Engineer-in-Charge for review / acceptance before commencing the work. Engineer-in-charge must ensure compliance to insurance requirement by Associate before commencement of works. TPCODL shall stand fully indemnified in this respect.

27.0 ERRORS AND OMISSIONS

The Associate shall be responsible for all discrepancies, errors and omissions in the drawings, documents or other information submitted by him, irrespective of whether these have been approved, reviewed or otherwise accepted by the TPCODL or not. However any error in design/drawing arising out of any incorrect data/written information from TPCODL will not be considered as error and omissions on part of the Associate.

28.0 TRANSFER OF TITLES

The title of ownership and property to all equipment, installations, erections, constructions materials, drawings & documents shall pass to the TPCODL is after commissioning and complete handing over-taking over.

However, such passing of title of ownership and property to the TPCODL shall not in any way absolve, dilute or diminish the responsibility and obligations of the Associate under this Contract including loss or damages and all risks, which shall vest with the Associate.

The Associate shall take all corrective measures arising out of discrepancies, errors and omissions in drawings and other information within the time schedule and without extra cost to the TPCODL.

The Associate shall also be responsible for any delay and/or extra cost if any, in carrying out engineering, and site works by other agencies arising out of discrepancies, errors and omissions stated in as well as of any late revision/s of drawings and information submitted by the Associate.

29.0 SUGGESTIONS & FEEDBACK

We welcome all our Business Associates to write to us about their experience with TPCODL; be it our Company, our services or our people. Each and every concern, issue, query and suggestion from you will help us to become a better company to work with and shall help us develop a strong bonding of trust and a long term relationship with you.

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You may send your feedback by filling up our Business Associate Feedback Form enclosed herewith as *Annexure-I*. You can also log on to our website www.tpcentralodisha.com to provide your feedback according to the guidelines mentioned below:

30.0 CONTACT POINTS

In case Business Associate needs information with respect to payments or has any grievances, same may be lodged by log on to our website www.tpcentralodisha.com.

31.0 LIST OF ANNEXURES

S. No.	Subject	Annexure
1.	Performa for Bid Security Bank Guarantee	A
3.	Performa for Performance Bank Guarantee (CP cum EP)	B
4.	Performa for No Demand Certificate by Associate	C
5.	Performa for Indemnification on Statutory Compliance	D
6.	Performa For Application For Issuance of Consolidated TDS Certificate	E
7.	HR Service Level Agreement	F
8.	Under taking for competence of workmen	G
9.	Business Associate Feedback Form	H
10.	Acceptance Form For Participation In Reverse Auction Event	I
11.	Form for RTGS Payment	J
12.	Contractor Safety Management System	K
13.	Vendor Appraisal Form	L

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ANNEXURE-A

PROFORMA FOR BID SECURITY BANK GUARANTEE

TP Central Odisha Distribution Limited

Bhubaneswar

HEREAS, (Name of the Bidder) (hereinafter called "the BIDDER") has submitted his bid dated for the (Name of Contract) (hereinafter called "the BID").

KNOW ALL men by these presents we (Name of the Bank) of (Name of the Country) having our registered office at (hereinafter called "the BANK) are bound unto TP Central Odisha Distribution Limited (TPCODL) in the sum of for which payment well and truly to be made to the TPCODL the Bank binds himself, his successors and assigns by these presents.

SEALED with the Common Seal of the said Bank this day of 20

The CONDITIONS of this obligation are:

- i) If the Bidder withdraws his Bid during the period of bid validity specified in the Proforma of Bid

or

- ii) If the Bidder having been notified of the acceptance of his Bid by the TPCODL during the period of bid validity fails or refuses to furnish the Contract Performance Bank Guarantee, in accordance with the Instructions to Bidders.

We undertake to pay the TPCODL upto the above amount upon receipt of its first written demand, provided that in its demand the TPCODL will note that amount claimed by it is due to it owing to the occurrence of one or both conditions, specifying the occurred condition or conditions.

This Guarantee will remain in force upto and including the date (No of days as mentioned in tender enquiry) days after the closing date of submission of bids as stated in the Invitation to Bid or as extended by you at any time prior to this date, notice of which extension to the Bank being hereby waived, and any demand in respect thereof should reach the Bank not later than the above date.

DATE.....

SIGNATURE OF THE BANK.....

WITNESS.....

SEAL.....

(Signature, Name & Address)

(At least 2 witnesses)

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ANNEXURE- B

PROFORMA FOR PERFORMANCE BANK GUARANTEE (CP cum EP)

(On Rs.100/- Stamp Paper)

Note:

- (a) Format shall be followed in toto
- (b) Claim period of one month must be kept up
- (c) The guarantee to be accompanied by the covering letter from the bank confirming the signature to the guarantee

TP Central Odisha Distribution Limited

Bhubaneswar

CP cum EP BG No.....

Order/Contract No.....dated.....

1. You have entered into a Contract No _____ with M/s. _____ (hereinafter referred to as "the Vendor") for the supply cum erection / civil work of _____ (hereinafter referred to as" the said Equipment") for the price and on the terms and conditions contained in the said contract.
2. In accordance with the terms of the said contract, "the Vendor" agreed to furnish you with an irrevocable, unconditional and acceptable bank guarantee for 10% of the value of contract and to be valid till the end of Guarantee period plus one month towards "Contract cum Equipment performance". For this purpose you have agreed to accept the guarantee.
3. In consideration thereof, we, _____ hereby irrevocably and unconditionally guarantee to pay to you on demand but in any case before the end of five working days from the date of the claim and without demur and without reference to "the Vendor" such amount or amounts not exceeding the sum of Rs. _____ (Rupees _____ only) being _____% (_____ percent) of the total value of the contract on receipt of your intimating that "the Vendor" has not fulfilled his contractual obligations. You shall be the sole judge for such non-fulfilment and "the Vendor" shall have no right to question such judgment.
4. You shall have the right to file / make your claim on us under the guarantee for a **further period of one month** from the date of expiry.
5. This guarantee shall not be revoked without express consent and shall not be affected by your granting time or any other indulgence to "the Vendor", which shall include but not be limited to, postponement from time to time of the exercise the same in you or any right which you may have against "the Vendor" and to exercise the same in any covenant contained or implied in the said contract or any other course or remedy or security available to you, and our Bank shall not be released from its obligations under this guarantee by your exercising

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any of your rights with reference to matters aforesaid or any of them or by reasons of any other act or forbearance or other acts of omission or commission on your part or any other indulgence shown by you or by any other matter or thing whatsoever which under the law would, but for this provision have the effect of relieving our bank from its obligation under this guarantee.

6. We also agree that you shall be entitled at your option to enforce this guarantee against our bank as a principal debtor, in the first instance, notwithstanding any other security or guarantee that you may have in relation to "the Vendor's" liabilities in respect of the premises
7. This guarantee shall not be affected by any change in the constitution of our Bank or "the Vendor" or for any other reason whatsoever.
8. Any claim / extension under the guarantee can be lodge-able at outstation banks or at Bhubaneswar branch and claim will also be payable at Bhubaneswar Branch (to be confirmed by Bhubaneswar Branch by a letter to that effect in case BG is from the branch outside Bhubaneswar)
9. Notwithstanding anything herein contained, our liability under this guarantee is limited to Rs. _____ (Rupees _____) only and the guarantee will remain in force upto and including _____ (Date) and shall be extended from time to time for such period or period as may be desired by "the Vendor".
10. Unless a demand or claim under this guarantee is received by us in writing within one months from _____ (expiry date) i.e. on or before _____ (claim period end date), we shall be discharged from all liabilities under this guarantee thereafter.

Dated at _____ this _____ day of _____ 200__

Witness

- | | |
|----------|--|
| 1. _____ | Bank's rubber stamp
Banks full address |
| 2. _____ | Designation of Signatory
Bank official number |

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ANNEXURE-C

PROFORMA FOR “NO DEMAND CERTIFICATE” BY ASSOCIATE

(On Company’s Letter head or with Company Seal)

(To be submitted by the Associate to TPCODL Accounts Department at the time of receipt of full and final payment)

(Certificate No. CCP/002)

Name of the Project

Order/ Contract No.

Dated

Name of the Associate

Scheme No. / Job No.

We, M/s. _____ (Associate) do hereby acknowledge and confirm that we have received the full and final payment due and payable to us from TPCODL, in respect of our aforesaid Order No _____ dated _____ including amendments, if any, issued by TPCODL to our entire satisfaction and we further confirm that we have no claim whatsoever pending with TPCODL under the said contract / W.O.

Notwithstanding any protest recorded by us in any correspondence, documents, measurement books and / or final bills etc., we waive all our rights to lodge any claim or protest in future under this contract.

We are issuing this “NO DEMAND CERTIFICATE” in favour of TPCODL, with full knowledge and with our free consent without any undue influence, misrepresentation, coercion etc.

Dated

Signature

Place

Name

Designation

(Company Seal)

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ANNEXURE – D

PROFORMA FOR “INDEMNIFICATION ON STATUTORY COMPLIANCES”

(To be submitted by the successful Bidder within seven days of award of work)

(Certificate No. CCP/001)

Name of the Project

Letter of Award / Contract No.

Dated

Name of the Associate

Scheme No. / Job No.

By this confirmation we, _____
 (Associate) are formally bound to M/s. TPCODL towards any sum which may be imposed, levied or hereinafter recovered by the Provident Fund Organization under the provisions of the Employees of the Provident Fund and Miscellaneous Provisions Act 1952 in respect of employees employed by us.

We well and truly bind ourselves and our heirs executors administrators and representatives jointly severally and respectively for the above payment only to be paid to M/s. TPCODL.

AND WHEREAS we, _____ (Associate) is making compliance of the Employees Provident Fund and Miscellaneous Provisions Act 1952, have entered into the above written bond for the indemnity to M/s. TPCODL against all losses from the acts or default of the said Associate in respect of compliance of the Provident Fund Act.

Similarly we hereby confirm that we have complied with all statutory and local laws and nothing is outstanding with regard to Local Sales Tax, Labour Laws, Local Municipal dues, Electricity dues etc. We have entered into the above written bond for the indemnity to M/s. TPCODL against all losses from the acts or default of the said Associate in respect of compliance of the Local Sales Tax Laws, Local Laws, Labour Laws, Local Municipal Dues, Electricity dues etc.

NOW THE CONDITION, of the above written bond is as such that if the Associate during the period of this contract commits any default or fails to make payment of Contributions in respect of his employees to the Employees Provident Fund Organization, he shall indemnify the Principal Employer M/s. TPCODL from all and every loss and damage caused to them from any act, omissions or negligence of the said Associate in respect of compliances under the Employees Provident Fund and Miscellaneous Provisions Act, 1952.

IN WITNESS to the above written bond we have here to set our hands, with our free consent.

Dated

Signature

Place

Name Designation

(Company Seal)

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ANNEXURE-E

PROFORMA FOR APPLICATION FOR ISSUANCE OF CONSOLIDATED TDS CERTIFICATE

To be printed on the letterhead

To,

TP Central Odisha Distribution Limited,

Bhubaneswar

Sub: Application for issuance of Consolidated TDS Certificate for the FY _____

Dear Sir,

I / we hereby request / authorize you to issue me / us a consolidate TDS Certificate for the financial year _____ against tax deducted at source by you from my / our payments / bills during the said year from time to time under Chapter XVII – B of the Income Tax Act, 1961.

For and on behalf of

Signature

Name

Address

Contact No. (Land Line)

(Mobile)

PAN #

Assessing authority

ATTACH THE COPY OF PAN CARD

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ANNEXURE - F

SERVICE LEVEL AGREEMENT

(To be adhered to by Business Associates (BAs) in TPCODL on Human Resource Issues)

1.0 The following shall be adhered to by the Business Associates during his / its association with TPCODL:

Shall Abide by TPCODL Core Values:

- a) **Integrity** – We must conduct our business fairly, with honesty and transparency. Everything we do must stand the test of public scrutiny.
- b) **Understanding** – We must be caring, show respect, compassion and humanity to our colleagues and customers and always work for the benefit of the communities we serve.
- c) **Excellence** – We must constantly strive to achieve the highest possible standards in our day to day work and in the quality of services we provide.
- d) **Unity** – We must work cohesively with our colleagues across the group and with our customers and partners to build strong relationships based on tolerance, understanding and mutual co-operation.
- e) **Responsibility** – We must continue to be responsible and sensitive to the communities and environments in which we work and always ensuring that what comes from the people; goes back to the people many times over.
- f) **Agility-** We must work in a speedy and responsive manner and be proactive and innovative in our approach.

2.0 The Business Associate / his manager / supervisor who is responsible for managing the project site / performance contract etc. in TPCODL would also ensure adherence of these values by his employees / persons deployed by him in connection with his works undertaken in TPCODL.

3.0 TPCODL is a signatory to the United Nation Global Compact as an integral part of its Governance principles / business. The Business Associates are required to:

- a) Support and respect the protection of human rights and make sure that they are not complicit in human right abuses.
- b) Respect freedom of association and effective recognition of the right to collective bargaining.
- c) Not to resort to any form of forced and compulsory labour.
- d) Shall ensure abolition of child labour in his area of work.
- e) There is no discrimination in respect of employment and occupation in respect of his employees.
- f) Support precautionary approach to environmental challenges.
- g) Promote greater environmental responsibility by himself and his employees in his areas of work.
- h) Deploy and defuse environmental friendly technologies while carrying out the works.
- i) Work against corruptions in all its form including extortion and bribery by himself and his employees.

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4.0 The Business Associates are required to adhere to all applicable Labour Laws with special reference to the following:

- a) No person below the age of 18 years and no child labour will be engaged directly or indirectly for executing the work connected with the business of TPCODL.
- b) Minimum wages along with other statutory dues like PF, ESI, etc. as applicable to the workers shall be made within the prescribed period of 7th / 10th day of the following month.
- c) Deduction / deposit / record keeping and all other requirements under Employees PF Act 1952, Employees State Insurance Act 1948 and other applicable acts (if any) shall be adhered to.
- d) Only statutorily authorized deductions (if any) shall be made in accordance with the relevant statutes.
- e) All the provisions of Contract Labour (R&A) Act 1970 shall be complied with in respect of the workers engaged for TPCODL work. The work will be commenced only after completing necessary formalities for obtaining Labour License (if applicable).
- f) Necessary registers / records, filing of returns etc. shall be maintained for verification by Statutory / TPCODL authorities.
- g) Payment of wages shall be made only in presence of and with certification of authorized representative of TPCODL or shall be made in the form of cheque / bank transfer to the employee.
- h) During the period of contract, the Business Associate will arrange for deployment of his supervisor / manager for total supervision and control of the work and their manpower. All the activities related to their manpower e.g. attendance, leave, wage disbursement etc. will be done under the supervision & control of Business Associates, While adhering to the prescribed standard / norms of production / productivity & quality. During execution of the work, Business Associate shall engage only such qualified / skilled manpower as may be envisaged / required for ensuring level of production / service into the contract / work order.
- i) Clearances as follows shall be obtained from IR & Welfare Group:
 - a. Clearance for commencement (before start of the work).
 - b. No Objection Certificate (after completion / before final settlement).
 - c. Copies of PF / ESI Challans shall be deposited with IR & Welfare Group every month
- j) The Business Associate shall indemnify TPCODL from any liabilities under applicable Labour Statutes.
- k) The Business Associate shall ensure safety and health of his employees and shall also maintain hygienic working environment / condition in his area of work.

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- l) The Business Associate and his employee shall abide by Laws of Land and shall not violate any applicable provisions.
- m) The Business Associate appreciates with and acquiesces to the right of TPCODL as principal employer to fulfil any of his legal obligations, if he fails to do so under applicable labour laws and deduct the same from his running bills / final payments / encharging security deposit / Bank Guarantee as the case may be. If there is any further shortfall TPCODL has the right to recover the same from the Business Associate.
- n) The Business Associate ensures that person employed by him adhere to the moral and legal conduct and shall not violate any standard conduct envisaged in the premise of TPCODL by all such as, Transparency, Safety, Discipline, Integrity etc. The Business Associate or his employees should refrain from corrupt practices, giving or taking bribe in connection with any TPCODL business.

5.0 The 'Statutory Compliance Enforcement System' in TPCODL is detailed below for adherence by all concerned. Corporate IR & Welfare Group will be the process owner for implementation of the system with the help of concerned Engineer I/c or Officer I/c.

- a) Statutory Compliance being a professed value in TPCODL Code of Conduct, the concerned Engineer / Officer in charges are requested to adhere to the provisions and advise respective Business Associates in their domain to comply in letter and spirit.
- b) Immediately after issuance of letter of intent, the authorized representative of the Business Associate will report to Corporate IR & Welfare group for completion of statutory requirements.
- c) Normally, the work will be started only after 'Clearance for Commencement of Work (CCW)' is issued by IR & W group to the Business associate. However in exceptional exigencies in engineer I/c / Officer I/c may direct the Business Associate to start the work and inform IR & W group about the same. Statutory requirements in this case may be completed parallelly.
- d) First monthly bill will be released only after producing CCW to the finance department. Similarly closure of work and final settlement will be affected after issuance of no objection certificate from IR & W group.

6.0 Requirements for 'Clearance for Commencement of Work' (CCW):

- a) Submission of filled up Form 'A' for database (Annexure-1).
- b) Copy of PF Code allocation letter.
- c) Copy of ESI Code allocation letter.
- d) Submission of duly filled up Form IV CL(R&A) act (In case more than or equals to 20 workers during the period of contract).
- e) Submission of duly filled up Form VI A (Notice of Commencement).
- f) Copy of insurance cover note under WC Act 1923 (if applicable).
- g) Copy of Contract Agreement.
- h) Copy of indemnity bond (if applicable).

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- i) Affidavit with regard to payment of wages through cheque / bank transfer only.

7.0 Requirements during execution of work:

- a) Copy of receipt of application for license / license (if applicable).
- b) Copy of PF Challan (latest by 26th day of every Month).
- c) Copy of ESI Challan (latest by 26th day of every Month).
- d) Copy of Wage disbursement sheet / Bank statement.
- e) Filing / Maintenance of all statutory registers / reports / returns for inspection by Statutory/ TPCODL authorities.
- f) Certification of wage disbursement by authorized representative of TPCODL.
- g) Copy of 'Labour Welfare Fund' deposit certificate / Challan.
- h) Insuring safe working practices at the work place.

8.0 Requirements for 'No Objection Certificate' (NOC) for closure of work:

- a) Submission of duly filled up Form VI A (Notice of Completion).
- b) Copy of Half yearly / Annual return for ESI / PF / CL(R&A).
- c) Consolidated copy of wage sheet of last month indicating full & final settlement of all dues like retrenchment benefit, bonus, leave encashment etc. Copy of individual declaration by employees in Form X regarding termination of employment.
- d) Confirmation certificate regarding filling up of form for transfer / withdrawal of PF by the concerned workers.

In case any of the above are deviated / not complied with the Letter of Award/Order shall be liable to be withdrawn / cancelled.

Enclosure:

- 1) Form A
- 2) Form X
- 3) Form XI
- 4) Form VI A
- 5) Form XXIV

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FORM (A)

[To be submitted by the Business Associate to the Principal Employer within a week from LoA issuance]

A. Details of the Agency

1. Name of Agency :
2. Nature of work :
3. Local Address with Ph. No. :
(With Father's name) :
4. Permanent Address (Full) :
5. PF code no. & Place :
6. ESI Code no. & Place :
7. Name and address of :
Sub-contractor (if any)

B. Details of Work

8. Name of work (as specified in LOI/LOA) :
9. LOI/LOA Nos. & Dates :
10. Period of contract (Specify Dates) :
[Including Extension period, if any] :
11. Work Area [Department / Location] :
12. Name / Cell no. of Officer I/c :
13. Maximum No. of workers and staff to be engaged on any day during the year.
- Supervisory Staff :
- Workers :
14. Do you have any other contract in TPCODL : Yes/No

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If yes, furnish details:

15. Details of Workmen's compensation Policy, if applicable

Name _____ of _____ Insurance _____ Company _____

.....

.....Policy No Number of persons covered Period of coverage: From To

If no, I hereby undertake the liability arising out of Workmen's Compensation Act and Rules made there under.

C. Details of workers to be engaged

No. of Workers

S. No.	Unskilled*	Semi-skilled*	Skilled*	Clerical / Supervisory

*** Number to be indicated**

I/We shall fulfil all obligations arising from and under all relevant law in force from time to time. I/We undertake to keep the TPCODL indemnified against any loss or liability arising out of failure of my / our abiding the relevant laws.

The name of my / our representatives is to enter the TPCODL Premises on my behalf.

Date:

**(Signature of the Business Associate
or his Authorized Representative)**

This Business Associate is / will be engaged in TPCODL.

**(Signature and seal of
Officer I/c of the Work)**

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Form X

Undertaking

I _____ hereby undertake that all the dues in respect of my employment with M/s _____ for the period of _____ to _____ have been settled and final payments including retrenchment benefit have been made to me in full.

(_____)

Date:

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Form XI

Undertaking

With reference to the contract job awarded by M/s TP Central Odisha Distribution Limited to M/s _____ vide work order No. _____ dated _____

I _____ on behalf of

M/s _____ hereby undertake:

1. that the dues in respect of the workmen/ employee(s) engaged by us for the said contract, payable as per the provisions of relevant statute pertaining to
 - i. wages/ salary
 - ii. PF & ESI, Bhubaneswar Labour Fund
 - iii. All other statutory obligation
 has been paid /settled in full and no amount/ compliance is due/ pending.

2. That in case any dispute / claim is raised by the concerned workers i.r.o. any dues / payments, M/s _____ will settle the same on its own and such liability will be borne by M/s _____

3. That M/s _____ hereby indemnify M/s TPCODL from any future liability i.r.o. any statutory obligation in respect of said contract.

Date:

(_____)
Authorized Signatory

For M/s _____

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FORM- VI A

Notice for Commencement /Completion of contract work

I/We, Sh. / M/s _____ (Name and Address of the Contractor) hereby intimate that the contract work _____ (name of work) in establishment of the _____ (name and address of the Principal Employer) for _____ which License No. _____ dated _____ has been issued to me/us by the Licensing Officer _____ (name of the Headquarters), has been commenced / completed with effect from _____ date / on date.

Signature of Contractor

With Office Seal

The Inspector

FORM XXIV

[See Rule 82(1)]

Return to be sent by the Contractor to the licensing Officer (in duplicate)

Half -Yearly Ending _____

1. Name and address of the Contractor
2. Name and address of the Establishment
3. Name and address of the Principal Employer
4. Duration of Contract: From _____ to _____
5. No. of days during the half year on which
 - (a) the establishment of the principal employer had worked
 - (b) the contractor's establishment had worked
6. Maximum No. of contract labour employed on any day during the half –year:

Men	Women	Children	Total

7.
 - (i) Daily hours of work and spread over
 - (ii) (a) whether weekly holiday observed and on what day
 - (b) if so, whether it was paid for
 - (iii) No. of man – hours of overtime worked
8. No. of man days worked by

Men	Women	Children	Total

9. Amount of wages paid

Men	Women	Children	Total

10. Amount of deductions from wages, if any

Men	Women	Children	Total

Whether the following have been provided –

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- (i) Canteen : _____
- (ii) Rest rooms : _____
- (iii) Drinking water : _____
- (iv) Crèches : _____
- (v) First Aid : _____

Signature of contractor

Place _____

Date _____

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ANNEXURE – G

UNDERTAKING FOR COMPETENCE OF WORKMEN

Name of Associate :

Tender No. :

Item :

With reference to the tender mentioned above, I/We _____,
hereby undertake that the workmen/ employee(s) engaged by M/s
_____ for the job against said tender shall be competent in all
respect, commensurate to the nature of job.

Date:

()

Authorized Signatory

For M/s

Seal

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ANNEXURE-H

BUSINESS ASSOCIATE FEEDBACK FORM

With an objective to improve our internal processes and systems, and serve you better, we solicit your valuable feedback & suggestions. It is estimated that it will take about 10 minutes to complete this survey. We assure you that your feedback shall be kept confidential. Please send the duly filled feedback form in the "TPCODL addressed - attached envelop"

You are associated with us as

- OEMs Service Contractor Material Suppliers Material & Manpower Supplier

You are associated with us for

- Less than 1 year More than 1 year but less than 3 years More than 3 years

Your office is located at

- Bhubaneswar Within 200 kms from Bhubaneswar More than 200 kms from Bhubaneswar

Your nearly turnover with TPCODL

- Less than 25 Lacs 25 Lacs to 1 Crore More than 1 Cr.

Additional information

Your Name	
Your Designation	
Your Organization	
Contact Nos.	
Email	

We once again thank you for your participation in this survey. Please spare 10 minutes to give your feedback on following pages (Section A to E)

SECTION - A

(Please ✓ mark in the relevant box and give your remarks / suggestions / information for our improvement.).

S. No.	Parameters	1	2	3	4	5	Remarks/ Suggestion
		Do Not Agree	Slightly in Agreement	In Fair Agreement	Mostly in Agreement	Fully Agree	
1	You receive all relevant queries / tenders from us in timely manner.						
2	We provide you enough lead time to respond to our queries / tenders.						
3	We provide you adequate support (drawings, documents, clarifications, briefing etc.) to enable you meet our requirements.						
4	All following elements of our contract / purchase order are rational :						
4.1	Scope of Work						
4.2	Delivery / Execution Schedule						
4.3	Payment Terms						
4.4	Liquidated Damages						
4.5	Performance Guarantee						
5	Our purchase orders / contracts are simple, specific & easy to understand						
6	TPCODL demonstrate willingness to be flexible in administration of Contract / Purchase Order						
7	We provide timely responses / clarifications to your queries						
8	TPCODL representative you interact / coordinate with is adequately empowered to support you in meeting contractual obligations						
9	TPCODL provide you all necessary infrastructure support for timely and quality completion of work (including AMC)						

S. No.	Parameters	1	2	3	4	5	Remarks/ Suggestion
		Do Not Agree	Slightly in Agreement	In Fair Agreement	Mostly in Agreement	Fully Agree	
10	TPCODL Engineer-in-Charge timely certifies the jobs executed/ material supplied						
11	TPCODL Engineer-in-Charge efficiently supervises the job execution for timely completion of job						
12	BIRD (Bill Inward Receipt Desk) initiative has improved payment disbursement process						
13	Our approach for Inspection and Quality Assurance effective to expedite project completion?						
14	TPCODL never defaults on contractual terms						
15	In TPCODL Contracts closure is done within set time limit						
16	Our material receiving procedures are well defined and efficiently deployed to reduce mutual inconvenience						
17	Bank Guarantees are released in time bound manner						
18	Our processes related to payment / account settlement are effective.						
19	You get payments on time						
20	TPCODL Employees follow Ethical behavior						

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SECTION - B

SECTION – B (Please rate the following parameters on a scale of 1 to 5, where 1 - Minimum; 5 - Maximum)

SN	Parameters	1	2	3	4	5	Remarks/ Suggestion
1	How do you rate courtesy/ empathy/ attitude level and warmth of TPCODL employees you interact with from following team?						
1.1	Project Engineering						
1.2	District / Zones						
1.3	Projects/HOG (TS &P)						
1.4	Inspection & Quality Assurance						
1.5	Stores						
1.6	Metering & Billing						
1.7	Accounts / Finance						
1.8	Administration						
1.9	IT & Automation						
2	How would you rate TPCODL in comparison to your other clients in terms of fairness of treatment and transparency with its Business Associates?						
3	How would you rate TPCODL in comparison to your other clients in terms of processes and systems to manage partnership with its Business Associates						
4	How would you rate TPCODL in comparison to your other clients in terms of building long term & mutually relationship with its Business Associates						

SECTION - C

Please ✓ mark in the relevant box and give your remarks / suggestions / information for our improvement.

S. No.	Parameters	Certainly NO	Probably NO	Probably YES	Certainly YES	Remarks/ Suggestion
1	Based on your experience with TPCODL, would you like to continue your relationship with TPCODL?					
2	If someone asks you about TPCODL, would you talk "positively" about TPCODL?					
3	Would you refer TPCODL name to others in your community, fraternity and society as a professional & dynamic organization?					

SECTION - D

If we ask you to rate us on a scale of 1 to 10, how will you rate TPCODL, that truly represents your overall satisfaction with us (please tick appropriate box) –

1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----

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SECTION – E

Please ✓ mark in the relevant box and give your remarks / suggestions / information for our improvement.

Please spare your thoughts for TPCODL's improvement in particular areas of weaknesses, particularly relating to some great practices, attitudes that you have seen elsewhere in Indian and International Organizations, which you recommend TPCODL to adopt. Please give your valuable salient recommendations.

Please spare your thoughts for TPCODL's improvement in particular areas of major concerns for you. We also welcome your suggestions to adopt any best practices, attitudes that you have observed / experienced elsewhere in Indian/ International organization.

Recommendation	<i>Please tick (✓) your top 5 expectations out of the following 10 points listed below -</i>	
(Please list down improvement you expect from TPCODL)	<i>Timely payment</i>	
1	<i>Flexibility in Contracts/PO</i>	
	<i>Clarity in PO,s & Contracts</i>	
2	<i>Timely response to quarries</i>	
	<i>Timely certification of works executed</i>	
3	<i>Clarity in Specs, drawings, other docs etc.</i>	
	<i>Adequate information provided on website for tender notification, parties qualified etc.</i>	
4	<i>Timely receipt of material at site for execution</i>	
	<i>Performance Guarantee/EMD released in time</i>	
5	<i>Inspection & quality assurance support for timely job completion</i>	

We thank you for your time and courtesy!!

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ANNEXURE - I

ACCEPTANCE FORM FOR PARTICIPATION IN REVERSE AUCTION EVENT

(To be signed and stamped by the bidder prior to participation in the auction event)

In a bid to make our entire procurement process more fair and transparent, TPCODL intends to use the reverse auctions through SAP-SRM tool as an integral part of the entire tendering process. All the bidders who are found as technically qualified based on the tender requirements shall be eligible to participate in the reverse auction event.

The following terms and conditions are deemed as accepted by the bidder on participation in the bid event:

1. TPCODL shall provide the user id and password to the authorized representative of the bidder. *(Authorization Letter in lieu of the same shall be submitted along with the signed and stamped Acceptance Form).*
2. TPCODL will make every effort to make the bid process transparent. However, the award decision by TPCODL would be final and binding on the supplier.
3. The bidder agrees to non-disclosure of trade information regarding the purchase, identity of TPCODL, bid process, bid technology, bid documentation and bid details.
4. The bidder is advised to understand the auto bid process to safeguard themselves against any possibility of non-participation in the auction event.
5. In case of bidding through Internet medium, bidders are further advised to ensure availability of the entire infrastructure as required at their end to participate in the auction event. Inability to bid due to telephone line glitch, internet response issues, software or hardware hangs, power failure or any other reason shall not be the responsibility of TPCODL.
6. In case of intranet medium, TPCODL shall provide the infrastructure to bidders. Further, TPCODL has sole discretion to extend or restart the auction event in case of any glitches in infrastructure observed which has restricted the bidders to submit the bids to ensure fair & transparent competitive bidding. In case an auction event is restarted, the best bid as already available in the system shall become the start price for the new auction.
7. In case the bidder fails to participate in the auction event due any reason whatsoever, it shall be presumed that the bidder has no further discounts to offer and the initial bid as submitted by the bidder as a part of the tender shall be considered as the bidder's final no regret offer. Any offline price bids received from a bidder in lieu of non-participation in the auction event shall be outrightly rejected by TPCODL.
8. The bidder shall be prepared with competitive price quotes on the day of the bidding event.
9. The prices as quoted by the bidder during the auction event shall be inclusive of all the applicable taxes, duties and levies and shall be FOR at TPCODL site.
10. The prices submitted by a bidder during the auction event shall be binding on the bidder.
11. No requests for time extension of the auction event shall be considered by TPCODL.
12. The original price bids of the bidders shall be reduced on pro-rata basis against each line item based on the final all inclusive prices offered during conclusion of the auction event for arriving at Contract amount.

Signature & Seal of the Bidder

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ANNEXURE - J

To,
DGM (Finance)
TP Central Odisha Distribution Limited
Bhubaneswar

Sub: e-Payments through National Electronic Fund Transfer (NEFT) OR Real Time Gross Settlement System (RTGS)

Dear Sir,

We request and authorize you to affect e-payment through NEFT/RTGS to our Bank Account as per the details given below:-

Vendor Code :

Title of Account in the Bank :

Account Type :

(Please mention here whether account is Savings/Current/Cash Credit)

Bank Account Number :

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Name & Address of Bank :

Bank Contact Person's Names :

Bank Tele Numbers with STD Code :

Bank Branch MICR Code :

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

(Please enclose a Xerox a copy of a cheque. This cheque should not be a payable at par cheque)

Bank Branch IFSC Code :

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

(You can obtain this from branch where you have your account)

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:

Email Address of accounts person (to send payment information)

Name of the Authorized Signatory :

Contact Person's Name :

Official Correspondence Address :

We confirm that we will bear the charges, if any, levied by our bank for the credit of NEFT/RTGS amounts in our account. Any change in above furnished information shall be informed to TPCODL well in time at our own. Further, we kept TPCODL indemnified for any loss incurred due to wrong furnishing of above information.

Thanking you,

For _____

(Authorised Signatory)

(Signature with Rubber Stamp)

Certification from Bank:

We confirm that we are enabled for receiving NEFT/RTGS credits and we further confirm that the account number (specify Bank a/c no.) of (Please mention here name of the account holder), the signature of the authorised signatory and the MICR and IFSC Code of our branch mentioned above are correct.

This also is certified that the above information is correct as per Bank record

(Manager's/ Officers Signature under Bank Stamp)

ANNEXURE - K

CONTRACTOR SAFETY MANAGEMENT SYSTEM

1. OBJECTIVE

The objective of the Contractor Safety Management System is to lay down clear guidelines for all Business Associates (including their associates, staff and agents) which would facilitate them to observe all statutory rules and regulations, comply with applicable standards of Central Electricity Authority (Measures relating to safety and electric supply) Regulations, 2010 & (safety requirements for construction, operation and maintenance of electrical plants and electric lines) Regulations, 2011, TPCODL Safety Manual and Guidelines and thus, ensure creation of safe working environment for all stakeholders of our network.

2. SCOPE

All contracts (minor and major) will be subject to the provisions of this document.

Minor Contracts: Contracts which satisfy all the criteria listed under the head “Minor Contracts”.

Major Contracts: Contracts which satisfy any two or more criteria listed under the head “Major Contracts”

Criteria	Minor Contracts	Major Contracts
Value of Contract	< Rs. 1500000/- (less than Rs. Fifteen Lac)	>= Rs. 1500000/- (Equal or more than Rs. Fifteen Lac)
Period	Period less than 1 year	Any period
Working on energized electrical equipment	No	Yes
Working on height (above 1.8 Mtrs from ground)	No	Yes
Work involving construction activity	No	Yes
Working with hazardous goods or chemicals	No	Yes
Work involving danger to general public	No	Yes

Note: Exceptions for major and minor contract are – in house software development, supply of material or equipment but no direct or indirect installation of the same material, administration contracts (courier, water supply, printing, security, transport, etc.), minor civil work like plastering at ground level or flooring, etc. The facility management (housekeeping) contract will always be treated as a minor contract.

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3. INFORMATION REQUIRED AT TIME OF VENDOR REGISTRATION OR BEFORE COMMENCEMENT OF CONTRACT

- 3.1 Business Associate is required to fill the Safety Management System Questionnaire as per *annexure 1* and submit along with the vendor registration process / bid / tender document. The filled questionnaire will be scrutinized by Engineer In-charge / indenting group and recommend suitability of the BA with respect to safety requirements. The fulfilment of statutory requirements for vendor registration pertaining to labour laws etc. shall be done by BA Cell on being referred to it.
- 3.2 Business Associate is required to take suitable risk control measures mentioned against the identified Hazards and Risk document provided for all contracts as per *annexure 2*. The primary objective of this is to evaluate the understanding of the BA towards risk mitigation and employment of safe work procedures. BA is required to conduct the Hazard identification and Risk Assessment study as per the procedure and deploy more or other measures if deemed necessary.
- 3.3 Business Associate shall comply with **Statutory Requirements related to Safety and Occupational Health** and submit the "Safety Undertaking" as per *annexure 4*.

4. GENERAL SAFETY CONDITIONS REQUIRED TO BE FULFILLED BY BUSINESS ASSOCIATES

The requirements of the contractor safety management system applicable to the minor or major contracts related to various groups are as following –

- 4.1 Maintenance of Distribution Network – *Annexure 3.1*
 - 4.2 Distribution Projects – *Annexure 3.2*
 - 4.3 EHV Projects – *Annexure 3.3*
 - 4.4 Maintenance of Sub transmission network – *Annexure 3.4*
 - 4.5 Civil / Generation Projects – *Annexure 3.5*
 - 4.6 Meter Management Group (MMG), Revenue Recovery Group (RRG), Energy Auditing Group, AMI, MRG, etc. – *Annexure 3.6*
 - 4.7 Maintenance and Operation of Street Light. – *Annexure 3.7*
1. *Please note that hydra cranes used by any dept should be ACE Model No. FX 150 ACE SX 150, Escorts Model No. TRX 1550 or contemporary. Use of old generation hydra cranes like ACE 14XW or ACE 12 XW, etc are prohibited.*

(Details as per Annexure attached)

Note: For minor contracts, the BA shall assign the duties of Safety Representative to the Work Supervisor. Work Supervisor will deliver all duties and responsibilities of Safety Supervisor as detailed in this document.

The Business Associate (BA) having major contract will appointing Safety supervisor, engineer / manager for the TPCODL work. The BA shall make all necessary arrangements for getting their workforce safety trained and competency checked from the DOSEC of TPCODL before deployment in the field. BA Cell shall recommend the suitability after competency checked by Engineer In-charge and SAFETY group (or his representative) of TPCODL. After getting the clearance from DOSEC, BA cell and receiving temporary I-card issued by TPCODL, Business Associate shall commence the working.

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Safety Representative of Business Associates will formally become the nodal point for safety concerns for TPCODL. **BA shall not frequently transfer or terminate the services of any of the safety representatives appointed for TPCODL work site. BA needs to ensure that Safety representative is available at all points of time; failing which the work being carried out in the interim (period when Safety representative is not available) shall be treated as working under improper supervision and due penal provisions shall be initiated against the BA.** BA will be required to provide all applicable infrastructure and power to ensure smooth working of the safety representative to maintain a sound safety management system. **In all contracts safety representative will not be assigned any other activity at site apart from the works related to safety management. The duties are detailed in clause 5.5 of this document.** TPCODL will be auditing the facilities provided to the BA's safety team time to time.

The Safety Representative of the BA shall be required to meet and follow the instructions of the Engineer In-charge and SAFETY Group of TPCODL. He shall be responsible for providing the MIS and/or any other relevant information, as and when desired, within the stipulated time frame as per the requirements of TPCODL. Any non-conformance to safety will lead to the negative marking or issue of safety violation challan/ tokens which shall affect the monthly evaluation and performance of BA.

All contracts where BA has to depute vehicle for their staff and equipment to move from one location to other, the BA shall ensure that vehicle complies all required statutory clearances and requirement as per The Motor Vehicle Act, 1988 as well as TPCODL Road Safety Policy and are in good & safe state of working.

5. QUALIFICATION AND EXPERIENCE OF THE SAFETY AND SITE PERSONNEL

Qualification and experience required for the safety and site personnel are as following:

5.1 Safety Supervisor: It is mandatory that educational qualification of safety supervisor be ITI (of relevant trade) / Diploma (Any branch of engineering) and he has a working experience on electrical system / relevant field of work at least 5 yrs for ITI and 3 years for Diploma holder. Having formal experience of the safety systems will be an added advantage

5.2 Safety Engineer: It is mandatory that educational qualification of safety engineer be at least Diploma (relevant branch) and he has working experience on electrical system of at least 3 yrs. Having the formal experience of the safety systems will be an added advantage.

5.3 Safety Manager: The educational qualification of safety manager should be graduate engineer with working experience on electrical system / network of at least 3 yrs. OR Diploma in Industrial Safety with working experience of 05 years including at least 02 years on electrical network.

However, clause 5.1, 5.2 and 5.3 are not applicable for minor contracts. In such cases, BA shall assign the duties of Safety Representative to the Work Supervisor. Work Supervisor will deliver required duties of Safety Representative (as per clause 5.5) in addition to other duties without diluting the importance of safety.

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5.4 Site Skilled Personnel: For all responsibility related to site activities and operations, the BA shall employ only qualified and skilled persons and shall comply the provisions of section 19 & 29 of Central Electricity Authority (Measures relating to safety and electric supply) Regulations, 2010. Persons holding valid approvals only by any Government approved agency or a competency assessment panel or a team set up by TPCODL shall be allowed to perform the High Risk / High Hazard activities (refer page 1). The skill / qualification required for the electrician and electrical supervisor are given in *annexure 5*. The contracts related to maintenance of Distribution Network, Distribution Projects, Extra High Voltage Projects, maintenance of Sub-Transmission Network, Meter Management Group & Energy Audit Group, maintenance and operation of street lights, shall preferably have at least 20 per cent of ITI qualified electricians in the first year of the contract. This figure shall preferably be incremented by 15 per cent every subsequent year.

Note: For the competency assessment may please refer the work instructions. An employee shall have to necessarily undergo the competency assessment check once in every eighteen months.

5.5 Requirements from the Safety Representative(s) of the Business Associate:

- 5.5.1 Safety training of 2 hrs/employee/month and one day of safety induction training to all new employees joining the BA will be conducted by the BA as per Safety training modules of TPCODL.
- 5.5.2 Safety Talk / tool box talk before start of shift to BA employees.
- 5.5.3 Ensuring the availability & proper usage of the standard safety equipment (PPE)
- 5.5.4 Periodic inspection of PPE to ensure their serviceability and maintaining the 10% buffer stock of standard PPEs.
- 5.5.5 Ensuring the adherence to standard operating procedures of TPCODL as mentioned in TPCODL Safety standard and O & M and concerned function's manual.
- 5.5.6 Safety inspections / audits as per the process of TPCODL
- 5.5.7 Working in close coordination Safety Group of TPCODL.
- 5.5.8 Reporting of unsafe acts, unsafe conditions, near miss, incident or accident to Engineer In-Charge and Safety Group of TPCODL immediately after its occurrence.
- 5.5.9 Regular HIRA at site and comply the control measures as stated in the detailed HIRA as per the *annexure 2*. Also deployment of JSA based checklist shall be ensured.
- 5.5.10 Ensuring compliance with safety and other laws as may be applicable and providing for safety assurance.

5.6 Training and Syllabus: The BA shall not deploy any person at work place / site or send newly recruited personnel directly to DOSEC for competency assessment without Safety Induction Training.

- 5.6.1 All new BA employees have to necessarily undergo one and half days Safety training and Competency assessment at training centre of BA cell. This training will be conducted once in a week. After the completion of Safety training & Competency assessment I-card will be issued to all competent BA employees

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5.6.2 BA is expected to initially train and judge the capability of the workman at his own end before further recommending the workmen for Competency assessment. If any BA workman sent for competency assessment. In case any BA workman fails in the Competency test at DOSEC, it will be deemed that BA has not imparted sufficient training at his end and actual cost of training ₹ 7500/ BA employee/ failed attempt will be recovered.

5.6.3 The workers who have imparted Safety Training and issued I-Cards of TPCODL, are not deployed at TPCODL worksites/ voluntarily left the job by workers/ used somewhere else other than TPCODL by the BA, in that case Management reserves the rights to intervene and recover the actual cost of training i.e. ₹ 7500/BA employee. (Exempted for attrition rate of BA workers less than or equal to 10% of total workforce deployed at TPCODL)

5.7 It is desired that Safety representative of the BA to impart the general safety training to each employee of duration 2 hrs per month. The training will be organized at BA level and the record to be sent to engineer in-charge and SAFETY group of TPCODL every month. Please refer schedule and syllabus in *annexure 6*.

List of Personal Protective Equipment (PPE) and Maintenance schedule: BA shall commence the project or any work only when the required PPE are made available to the team of employees involved in the work. Each PPE of BA shall be checked / inspected by the safety representative / supervisor at zone before the work start or as prescribed in the list. Safety representative shall regularly check the healthiness of each PPE allocated to lineman. Suitable record shall be maintained at zone. Defective PPE shall be immediately replaced or within 24 hours by the BA. In no case linemen or any other official of BA may be allowed to work with defective PPE. It is preferred that BA ensures minimum stock of each PPE at zone for immediate replacement with defective one. The PPE shall be IS / BS / CE marked and exactly as per the standard or specification mentioned in the *annexure 7*. Working without PPE / non-standard PPE shall be treated as safety violation and penalty as stated in section 6.0 of this document. If TPCODL finds that BA has not provided the adequate / appropriate PPE to their staff, TPCODL reserves the rights to stop the work and call the BA to provide appropriate PPEs at the risk. If the BA fails to provide the required PPEs at the risk then the same shall be provided by TPCODL at the actual cost of the PPE. The amount shall be charged to BA and same shall be first recovered from the current bill of BA or any future payment to be made to BA. In the event of any balance amount still left for recovery, the same shall be adjusted against retention amount or by invoking bank guarantee submitted by BA.

5.8 Safety Audit / Inspection & HIRA: The BA shall get the required safety inspection / audit conducted by his technical team comprising of safety representative as per the *annexure 8*. The safety representative will be required to conduct the HIRA (Hazard Identification and Risk Assessment) *as per annexure 2* of the process and work undertaken at least two times in a year or every time if a new process / activity / machine is introduced or whenever an accident take place. The risk identified to be addressed suitably with –

- Engineering Control
- Management Control, and
- Personal Protective Equipment.

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The safety representative of BA shall inform and educate for the identified risk and hazard control methods to employees, supervisor and engineer as well as the engineer in-charge and SAFETY group of TPCODL.

5.9 Safety Performance and Safety MIS: The BA shall maintain good practice of safety all through the contract duration. Safety shall always be of paramount importance during the contract period. Safety performance will be monitored on yearly basis throughout the period and no relaxation will be given for bad performance. BA with good track record and excellent performance will be rewarded suitably as per clause 6.0 of this document. The BA has to provide monthly "Performance Report – Safety" to engineer in-charge and SAFETY group TPCODL this shall be part of monthly bill along with training details. Performa of the report is enclosed as *annexure 9*.

5.10 Pre – Employment Medical Check-up and Fitness of employees engaged for the critical works: The BA shall submit the health fitness certificate for all those workers involved in climbing the pole or working at height for following diseases:

- 5.10.2 Epilepsy
- 5.10.3 Colour blindness
- 5.10.4 Deafness
- 5.10.5 Vertigo & height phobia

Every year BA will give an undertaking stating that all the employees are fit to work and have not developed aforesaid diseases. The Record of such medical check-ups shall be submitted to BA Cell before issue of temporary identity card. The records shall be maintained at BA Cell. All such medical check-ups shall be repeated once in a year for all workers involved in climbing the pole or working on electrical network.

6. REWARD AND PUNITIVE MEASURES

6.1 To support the enforcement of good SHE & DM practices by the Business Associate and to eliminate repeated or continuing safety violations, use of appropriate reward and punitive measures shall be made. Each unsafe act or violation of the safety guidelines as described in the Safety Manual of the TPCODL will be audit criteria of this system. Broadly the measures identified are following:

- 6.1.1 Working without PPE/ Safety Gadgets
- 6.1.2 Working without proper tools and tackles, barricading, Poor condition of Crane / Hydra / Vehicle, using without certification / Licence, Incompetent driver/ Helper
- 6.1.3 Working without creation of effective safety zone
- 6.1.4 Improper Supervision at worksite, Lineman/ Supervisor working without competency
- 6.1.5 Working without adherence to PTW process or authorization/ not adherence to SOPs / W.I. of TPCODL.
- 6.1.6 Improper Working at height equal to or above 1.8 mtrs without taking proper fall protection measures/ Poor condition of Ladder

6.2 Measures of Reward and Punitive Measures

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The Engineer In-Charge, NSO, SC, ASOs, CSI / SIs and SHE &DM group will conduct the surprise audits of the work / project and if any non-conformance is found the same will be booked and entered in the format "Safety Violation Record" *annexure 10*. The flow of the information is given below:

Safety Violation Escalation & Monitoring process	
Action	Responsibility
Safety Violation form has been filled and counter foil sent to SAFETY team for information. The main form is to be given to BA supervisor / Engineer in-charge. <i>(Automatically generated if Site audit done through Mobile App.)</i>	Engineer In-charge/ NSO / SC / SAFETY Group /CSI/ ASO/ Any authorised TPCODL official.
↓	
Entry of the violation in the master record and sending the information to concerned Manager, HoG, HoD, Head and Chief (O &S). <i>(Automatically generated if Site audit done through Mobile App.)</i>	SAFETY Group
↓	
Forwarding the information Centralized Account Payable (CAPS) for amount deduction from the current bill of the BA, <i>if any</i> .	Engineer In-charge
↓	
HoG (Safety – II) & HoG (Safety & Quality – Commercial) and CAPS to generate the MIS of the violations and the amount deducted.	SAFETY Group
↓	
The pool of the amount generated after the deduction to be utilized in safety welfare of BA employees.	SAFETY Group with approval of CFO/Chief (O & S) /CEO&MD

The safety violations have been rated from 1 to 5 (figure 6.3) as per the gravity of the violation. If the same violation is repeated it may escalate into a higher penalty. If a particular Business Associate employee violates safety norms three times, he shall not be allowed to work in TPCODL for a period of one year from the date of the 3rd violation.

6.3 Safety Violation Escalation Matrix

6.3.1

Consequence of Safety Violation Observed (Not related to Incident/ Accident)		Violation				Subsequent Violations
S.No.	Safety Violation	1st	2nd	3rd	4th	
1	Working without PPE (Helmet/Gloves/Safety Harness/ Safety Shoes etc.)	A	B	C	D	Will attract the same penalty as applicable in the 4th violation.
2	Improper Working at Height	A	B	C	D	
3	Working without proper tools and tackles	A	B	C	D	
4	Poor condition of Crane/Hydra/ Vehicle/Incompetent driver/ Helper	A	B	C	D	
5	Violation of SOP/ WI	B	C	D	E	
6	Working without adherence to PTW process or authorization/ Safety Zone	C	D	E		
Legend	Action to be taken	Responsibility	Penalty Amount (in Rs.)	The number of violations are to be calculated cumulatively over the contract period and not on monthly basis.		
A	Warning letter	Engineer Incharge	Nil			
B	Levy of Penalty	Engineer Incharge	2,000			
C	Memo to BA & Levy of Penalty	Head of Group	4,000			
D	Memo to BA & Levy of Penalty	Head of Department	10,000			
E	Memo to BA, Levy of Penalty and termination of Contract	Head of Department	1,00,000			

Figure 6.3 (1a)-Penalty Matrix for Safety violation (Applicable for Minor Contracts)

Consequence of Safety Violation Observed (Not related to Incident/ Accident)		Violation				
S.No.	Safety Violation	1st	2nd	3rd	4th	Subsequent Violations
1	Working without PPE (Helmet/Gloves/Safety Harness/ Safety Shoes etc.)	B	C	D	D	Will attract the same penalty as applicable in the 4th violation.
2	Improper Working at Height	B	C	D	D	
3	Working without proper tools and tackles	A	B	C	D	
4	Poor condition of Crane/Hydra/ Vehicle/Incompetent driver/ Helper	B	C	D	E	
5	Violation of SOP/ WI	C	D	E		
6	Working without adherence to PTW process or authorization/ Safety Zone	C	D	E		
Legend	Action to be taken	Responsibility	Penalty Amount (in Rs.)	The number of violations are to be calculated cumulatively over the contract period and not on monthly basis.		
A	Levy of Penalty	Engineer Incharge	5,000			
B	Memo to BA & Levy of Penalty	Engineer Incharge	10,000			
C	Memo to BA & Levy of Penalty	Head of Group	25,000			
D	Memo to BA & Levy of Penalty	Head of Department	50,000			
E	Memo to BA, Levy of Penalty and termination of Contract	Head of Department	1,00,000			

Figure 6.3 (1b)-Penalty Matrix for Safety violation (Applicable for Major Contracts)

Once the BA reaches the “BLACK” (color – “5”) category, i.e. highest level of safety violation, “Termination” notice to BA will be issued from the office of the Head of Department (equivalent to Addl GM/ GM/ Sr. GM level) and further, *if required*, continuation / extension of contract will only be initiated by Functional Head of the department (equivalent to Sr. GM / VP level) and approved by CEO & MD. Till the extension, the contract will remain suspended.

TPCODL encourages the reportage of the safety violation during the contract work by BA. Any TPCODL employee can register a safety violation against the BA in the “Safety Violation Form” *annexure 10*. Initially the observer has to fill the form and handover the counterfoil (lower portion) of the document to the supervisor of the BA, inform the site engineer of TPCODL and send the top portion of the Safety Violation Form to SAFETY group for the further necessary action against the BA. **The cumulative nos. of Safety Violations pertaining to any particular BA shall be calculated on yearly basis.**

Safety violations resulting in incident / accident will be treated as per gravity of the injury / fatality and its impact as well as type i.e. minor or Major. Consequences of incident / accident are shown in the matrix (figure 6.3(2) for major and 6.3(3) for minor) below. In case of any accident, findings and recommendations of Accident Enquiry Committee will be final and binding and will supersede the arbitration clause of GCC.

Consequence Of an Incident / Accident (In case of MAJOR contract)		Incident / Accident				Action Required
Sl. No	Type of the injury	1st	2nd	3rd	4th	
1	Slight injury (First Aid Case)	F (Strengthening of process through continuous improvement in the work procedure)				Take risk reduction measures
2	Minor injury (No or Hospitalization less than 48 Hrs)	F	G	G	H	
3	Major injury (Bone injury or burn or Hospitalization more than 48 Hrs)	G	G	H	I	
4	Single fatality	J	K			Intolerable
5	Multiple fatalities (Two or more fatalities during one event)	K				
Legend	Action to be taken	Responsibility		Penalty (in Rs.)		<i>The number of violations are to be calculated cumulatively over the contract period and not on monthly basis.</i>
F	Memo to BA and levy of penalty	Engineer Incharge		5,000/-		
G	Memo to BA and levy of penalty	Head of Group		20,000/-		
H	Memo to BA and levy of penalty	Head of Group		50,000/-		
I	Memo to BA and levy of penalty	Head of Department		2,00,000/-		
J	Memo to BA and levy of penalty	Head of Department		5,00,000/-		
K	Memo to BA, levy of penalty, termination of contract and black listing of BA	Functional Head		10,00,000/-		

Figure 6.3 (2) - Penalty Matrix for Incident / Accident in Major Contracts

(For example: In major contracts, if there is first incidence of major injury say bone injury (Cat. 3) where worker was hospitalized for more than 48 hrs then a penalty of amount Rs.20000/- will be deducted from the current bill produced for the payment. This penalty will be similar for first two incidents. However, it will increment to next higher category i.e. Rs. 50,000/- on subsequent incidents as per the above matrix)

Consequence Of an Incident / Accident (In case of MINOR contract)		Incident / Accident				Action Required
Sl. No	Type of the injury	1st	2nd	3rd	4th	
1	Slight injury (First Aid Case)	L (Strengthening of process through continuous improvement in the work procedure)				Take risk reduction measures
2	Minor injury (No or Hospitalization less than 48 Hrs)	L	M	M	N	
3	Major injury (Bone injury or burn or Hospitalization more than 48 Hrs)	M	M	N	O	
4	Single fatality	P	Q			Intolerable
5	Multiple fatalities (Two or more fatalities during one event)	Q				
Legend	Action to be taken	Responsibility		Penalty (in Rs.)		<i>The number of violations are to be calculated cumulatively over the contract period and not on monthly basis.</i>
L	Memo to BA and levy of penalty	Engineer Incharge		5,000/-		
M	Memo to BA and levy of penalty	Engineer Incharge		10,000/-		
N	Memo to BA and levy of penalty	Head of Group		25,000/-		
O	Memo to BA and levy of penalty	Head of Department		1,00,000/-		
P	Memo to BA and levy of penalty	Head of Department		3,00,000/-		
Q	Memo to BA, levy of penalty, termination of contract and black listing of the BA	Functional Head		5,00,000/-		

Figure 6.3 (3) - Penalty Matrix for Incident / Accident in Minor Contracts

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(For example: In minor contracts, if a worker meets with a non-fatal accident say bone injury (Cat. 3) where he was hospitalized for more than 48 hrs then a penalty of amount Rs. 10,000/-, will be charged from the current bill produced for the payment. This penalty will be similar for first two incidents. However, it will increment to next higher category i.e. Rs. 25,000/- on subsequent incidents as per the above matrix.)

In case of single or multiple fatalities described under legends J&K of 6.3(2) and P&Q of 6.3(3), the concerned BA may be debarred from extension of contract or participate in new contract. In such event the approval of Chief (O & S) will be necessary for extension or award of new contract to concerned BA.

6.3.2 COMPENSATION FOR BA PERSONNEL

In the event of any untoward incident/ accident, the Business Associate shall ensure prompt medical assistance such as treatment, sickness benefit, etc. is provided to the victim(s) as per the Employees' Compensation Act, 1923 or Employees' State Insurance Act, 1948, as applicable. Also, the BA will be required to take adequate measures for compensating the victim(s) or his/her/their kin as follows:

I. For Death or Permanent / Total Disablement

The BA shall take an insurance coverage of at least Rs. 15 lakhs for each engaged employee, to cover any incidence of Death or Permanent / Total Disablement (Permanent/Total Disability shall be considered as defined under Employees' Compensation Act, 1923). In the event of any such unfortunate incident, the BA would ensure that adequate compensation is paid immediately to the family of the victim(s) from his own resources. This compensation shall be covered under the insurance policy subscribed by the BA mentioned earlier and the arrangement should be such that it would get reimbursed to the BA by the insurance agency subsequently.

II. For Permanent Partial Disablement and Temporary Total Disablement

The compensation in this case will be as per provisions of the Employees' Compensation Act, 1923 or Employees' State Insurance Act, 1948, as applicable.

Accordingly, the BA shall obtain a suitable Insurance Policy on award of Contract and submit documentary evidence of the policy to the BA Cell before commencement of work. The BA shall ensure that the Insurance policy is active at all times and all employees are covered in all respects till the conclusion of contract period or till working with TPCODL. The BA shall submit a copy of the policy after periodic renewals to the BA Cell.

However, on occurrence of such unfortunate incident, if it is found that the victim(s) is/are not covered under any insurance policy, the BA shall be liable to pay the entire sum of Rs. 10 lakhs from his own resources.

Further, in case of an accident resulting in Death or Permanent / Total Disablement while on duty, the appointed BA Nodal Officer will ensure that the BA complies with all statutory

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provisions and benefits i.e. PF, Compensation, Gratuity etc., and that all these are made available to the employees' nominee(s) as per the stipulated timelines.

6.3.3 TPCODL rewards the BA with good track record of safety management. It is proposed that BA complying with Contractors Safety Management, Safety Manual and Safety process will be rewarded suitably as per the procedure, rule and regulations of the TPCODL. In any case major accident is reported during an assessment period BA will not be eligible for this reward scheme. Assessment of contracts will be once in year. Generally the assessment cycle is calendar year and guidelines will be declared time to time.

Abbreviations Used in the Document

TPCODL	TP Central Odisha Distribution Limited
BA	Business Associate
HIRA	Hazard Identification & Risk Assessment
JSA	Job Safety Analysis
EHV	Extra High Voltage
SAFETY	Safety, Occupation Health, Environment & Disaster Management
MMG	Meter Management Group
EAG	Energy Audit Group
PPE	Personal Protective Equipment
SOP	Standard Operating Procedures
CSI/SI	Circle Safety In-charge / Safety In-charge
ASO	Area Safety Officer
NSO	Nodal Safety Officer
SC	Safety Coordinator
HoG / HoD	Head of Group / Head of Department
AGM / GM / VP	Assistant General Manager / General Manager / Vice President
CFO / Chief (O & S)/ CEO & MD	Chief Finance Officer / Chief (Operating & Safety) / Chief Executive Officer & Managing Director
COS	Corporate Operation Services
CAP	Centralized Account Payable System
PTW	Permit To Work
GCC	General Conditions of Contract.

- END -

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Annexure 1 (Refer Para 3.1)

Business Associate Safety Management System Questionnaire

Certification							
The information provided in this questionnaire is a summary of the company's occupational health and safety management system.							
Company Name:							
Turnover and experience:		Name of top officer:					
Date:		Position					
Contract Details							
Contract Name		Contract Number:					
Business Associates Safety Management System Questionnaire				Marks	Yes	No	Score achieved
<i>Safety Policy and Management</i>							
- Is there a written company Safety policy?				1			
- If yes provide a copy of the policy, if No please refer Note 1.							
- Does the company have an Safety Management system				1			
- If yes provide details, if No please refer Note 1.							
- Is there a company Safety Management System manual or plan?				2			
- If yes provide a copy of the content page(s), if No please refer Note 1.							
- Are Safety and occupational health responsibilities clearly identified for all levels of Management and staff?				2			
- If yes provide details, if No please refer Note 1.							
<i>Safe Work Practices and Procedures</i>							
- Has the company prepared safe operating procedures or specific safety instructions relevant to				1			

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Certification				
its operations and relevant work as per contract? - If yes provide a summary listing of procedures or instructions, if No please refer Note 2. - Comments				
- Is there a register of injury or accident? - If yes provide a copy (format)	1			
- Is there a documented incident or accident investigation procedure? - If yes provide a copy of a standard incident report form, if No please refer Note 2. - Comments	1			
<i>Safety Training</i>				
- Describe how occupational health and safety training is conducted in your company If No please refer Note 1.	2			
- Is a record maintained of all training and induction programs undertaken for employees in your company? - If yes provide examples of safety training records, if No please refer Note 2.	1			
- Are regular safety inspections / audits are undertaken at worksites? -If yes provide details (formats), if No please refer Note 3.	1			

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Certification				
<ul style="list-style-type: none"> - Is there a procedure by which employees can report hazards at workplaces? - If yes provide details if No please refer Note 1. 	1			
<i>Safety Monitoring</i>				
<ul style="list-style-type: none"> - Is there an officer / supervisor responsible for monitoring workplace / worksite safety? - If yes provide details 	1			
<i>Safety Performance Monitoring</i>				
<ul style="list-style-type: none"> - Are employees regularly provided with information on company health and safety performance? - If yes provide details 	1			
<ul style="list-style-type: none"> - Has the company ever been convicted of an occupational health and safety offence? - If yes provide details 	NO Marks (Negative mark ONE for each case)			
<ul style="list-style-type: none"> - Has there been any major accident of employee at TPCODL site in past 	NO Marks (Negative mark ONE for each case)			
<ul style="list-style-type: none"> - Has there been any fatal accident of employee at TPCODL site in past. - (Note: Bid evaluation committee has to take cognizance of the incident and shall evaluate the bid only after formal approval of competent authority i.e. CTO. - In case of yes please refer Note 4. 	NO Mark (Negative mark FIVE for each case)			

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Certification			
Minimum of 75% marks is required for qualification.		Total Marks achieved	
Company Reference			
1. Name of company 2. Name of company			

Note

1: If company does not have formal procedure on Safety Management System than vendor may submit proposed Safety road map along with safety action plan and brief safety policy on his letter head signed by head of the organization.

2: The vendor may submit the same in the Safety Action Plan.

3: The vendor may utilize the same format of TPCODL or on request SAFETY group will assist the vendor in developing the audit system. For other points also vendor may take the assistance of SAFETY group for development of Safety management system.

4: The vendor may submit the Safety Improvement Plan and Safety Action Plan for his employees based on following points.

- i. Action plan for enhancing safety awareness
- ii. Action plan for safety training of employee
- iii. Action plan for increasing safety audit in field
- iv. Action plan for provision and utilization of safety PPE.
- v. Action plan for fatality reduction.
- vi. Action plan for enhanced supervision at site
- vii. Action plan for making employee more responsible and accountable for safety.
- viii. Action plan for availability and utilization of all required tool and equipment.
- ix. Safety Improvement done in last two years, specially highlighting those which have been taken after the fatal accident along with results.
- x. Safety initiatives planed or started recently.
- xi. Any other point.

Based on above points and documentary evidences vendor will be required to submit a detailed report in support of his bid. The bid evaluation committee and competent authority will scrutinize the facts and the evidence submitted. If found satisfactory competent authority i.e. CTO may accord his approval for bid opening otherwise his tender shall be disqualified.

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Annexure 2 (Refer Para 3.2 and 5.8)

Risk Assessment Form

Business Associate:
Scope of the work:
BA's Representative:
Telephone:
Signature:
Date:

Specific Task/Activity	Potential Hazards/Consequences	Class of Risk	Control Measures
Working at Height	Fall from height	2	<ol style="list-style-type: none"> 1. Mandatory usage of JSA checklist prior to start of work 2. Use appropriate ladder 3. Use full body safety harness having double lanyard. 4. Use Electrical Safety Shoes if working on electrical network otherwise use safety shoes. 5. Use Safety helmet. 6. Use PPE as per the annexure 7 of this CSM document 7. Refer Work instruction related to Working at Height for other details 8. Use of metal scaffold to be ensured in height work (cup lock type) 9. Deploy competent workforce who are medically fit
Working on electrical equipment / network	Electric flash / electrocution	3	<ol style="list-style-type: none"> 1. Mandatory usage of JSA checklist prior to start of work 2. Use Electrical Safety Shoes while working on electrical network. 3. Use Electrical Safety gloves of appropriate voltage rating. 4. Use face shield / visor attached with helmet. 5. Use Safety helmet. 6. Use PPE as per the annexure 7 of this CSM document 7. Mandatory usage of Insulated tools & tackles on electrical system 8. Mandatory compliance for Lock Out & Tag out system. Refer Work instruction related to Working on electrical equipment / network for other details

Specific Task/Activity	Potential Hazards/Consequences	Class of Risk	Control Measures
Excavation / Civil work	Collapse of soil, Fall in excavated pit leading to Injury	2	<ol style="list-style-type: none"> 1. Use safety shoes. 2. Use Safety helmet. 3. Use PPE as per the annexure 7 of this CSM document 4. Hard Barricading of the worksite. 5. Refer Work instruction related to excavation / civil work for other details
Material lifting & Mechanical Erection work	Fall of material/object, Topple of crane,	2	<ol style="list-style-type: none"> 1. Mandatory compliance of crane checklist 2. Visual condition check of lifting tools and tackles such as wire rope sling, belt sling, chain, pulley block, D-shackles, etc. shall be ensured. 3. The operator's physical fitness and alertness should be judged by sup. / EIC. 4. Use PPE as per the annexure 7 of this CSM document 5. Refer Work instruction related to Material lifting & Mechanical Erection work
Road Safety	Road Accidents	3	<ol style="list-style-type: none"> 1. Mandatory compliance of TPCODL Road Safety policy W07(COR-P-12)

Note: This information for the general indication purpose. The detailed risk assessment shall be conducted before start of the work by the authorized representative of the BA. The report of same shall be submitted to engineer in-charge along with annexure 4 of the CSM document.

Guidelines for filling the Risk Assessment Form

- **Specific Task/Activity** - The documentation of each major task associated with the contract.
- **Potential Hazards** - The identification of hazards associated with each activity or task to be carried out.
- **Class of Risk** - Each hazard should be evaluated as a level of risk, described as Risk Class 1, 2 or 3 defined above.
- **Control Measure** - The identification and documentation of actions required to eliminate or reduce the hazards that could lead to accident or injury.

Hazard / Risks shall be classified according to the following schedule:

- Class 1: Potential to cause injury treatable with first aid
- Class 2: Potential to cause death or permanent injury
- Class 3: Potential to cause more than one or more lost time injuries.

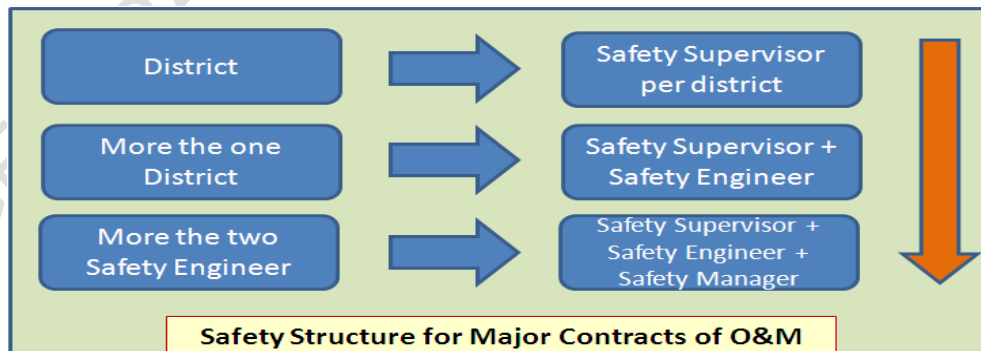
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Annexure 3.1 (Refer Para 4.0)

General Safety Conditions for the Maintenance of Distribution Network Contracts:

A BA awarded a contract (O&M) work of maintenance of distribution network will be required to fulfil the following conditions:

- BA shall provide Safety Policy and safety objectives of their company.
- BA shall comply with all statutory requirements like: applicable acts, regulations, codes of practice, OHSAS Standards, etc.
- BA shall provide the filled safety management questionnaire as per Annexure 1
- BA shall conduct a job risk assessment and provide information as per Annexure 2
- BA shall abide by Safety manuals, guidelines of TPCODL.
- BA shall provide its organisation structure & responsibilities in terms of Safety Management to TPCODL.
- BA shall document the work practices and procedures in terms of Safety Management.
- BA shall ensure safety training and induction program for the employees
- BA shall conduct safety audits & inspections as per TPCODL procedures provided by SAFETY group.
- BA shall provide and ensure the proper usage of the safety equipment (PPE) as per the TPCODL approved list in *annexure 7*.
- BA shall ensure periodic inspection of PPE to ensure its serviceability as per the specification given by TPCODL.
- BA shall ensure the adherence to standard operating procedures or guidelines laid down by TPCODL.
- BA shall ensure reporting of any unsafe act, unsafe conditions, near miss, incident or accident to engineer in-charge and SAFETY team of TPCODL.
- BA shall provide safety performance and Safety MIS (*annexure 9*) to engineer in-charge and SAFETY group periodically. Based on any non-confirmation to the safety procedures and guidelines, BA is liable to be negatively marked for his performance and suitable penalty will be imposed.
- BA shall ensure to depute a Safety Supervisor for managing a complete safety management system in a district. In case the BA has been awarded work in more than one district, then the following safety structure will be adopted.



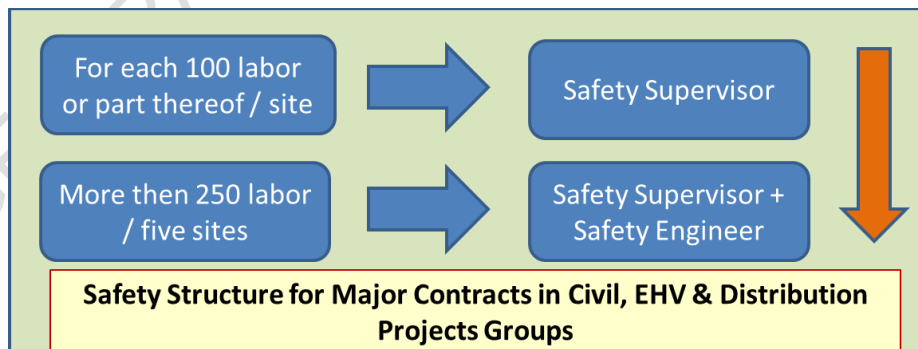
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Annexure 3.2 (Refer Para 4.0)

General Safety Conditions for the Distribution Projects Major Contracts:

A BA awarded a major contract work of TS&P in area of a circle will be required to fulfil the following conditions:

- BA shall provide Safety Policy and safety objectives of their company.
- BA shall comply with all statutory requirements like: applicable acts, regulations, codes of practice, OHSAS Standards, etc.
- BA shall provide the filled safety management questionnaire as per Annexure 1.
- BA shall conduct a job risk assessment and provide information as per Annexure 2
- BA shall abide by Safety manuals, guidelines of TPCODL.
- BA shall provide its organisation structure & responsibilities in terms of Safety Management to TPCODL.
- BA shall document the work practices and procedures in terms of Safety Management.
- BA shall ensure safety training and induction program for the employees
- BA shall conduct safety audits & inspections as per TPCODL procedures provided by SAFETY group.
- BA shall provide and ensure the proper usage of the safety equipment (PPE) as per the TPCODL approved list in annexure 7.
- BA shall ensure periodic inspection of PPE to ensure its serviceability as per the specification given by TPCODL.
- BA shall ensure the adherence to standard operating procedures or guidelines laid down by TPCODL.
- BA shall ensure reporting of any unsafe act, unsafe conditions, near miss, incident or accident to engineer in-charge and SAFETY team of TPCODL.
- BA shall provide safety performance and Safety MIS (*annexure 9*) to engineer in-charge and SAFETY group periodically. Based on any non-confirmation to the safety procedures and guidelines, BA is liable to be negatively marked for his performance and suitable penalty will be imposed.
- BA shall ensure to depute a Safety Supervisor for managing a complete safety management system in the area. In case the BA has been awarded work in more than one circle, then the following safety structure will be adopted.



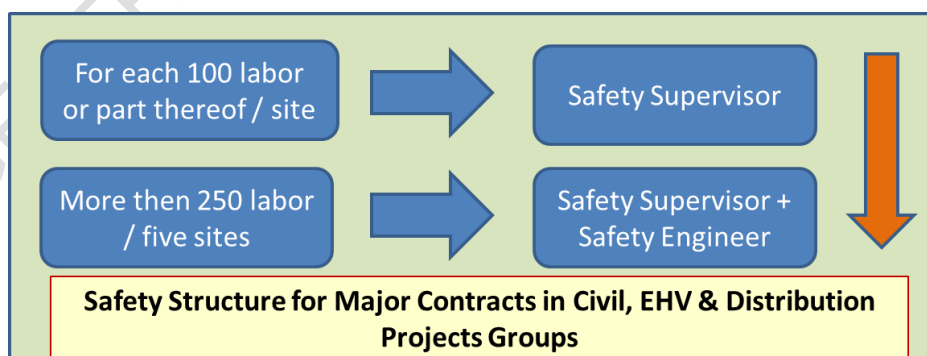
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Annexure 3.3 (Refer Para 4.0)

General Safety Conditions for the major EHV Projects Contracts:

A BA awarded a major contract work of EHV projects will be required to fulfil the following conditions:

- BA shall provide Safety Policy and safety objectives of their company.
- BA shall comply with all statutory requirements like: applicable acts, regulations, codes of practice, OHSAS Standards, etc.
- BA shall provide the filled safety management questionnaire as per Annexure 1
- BA shall conduct a job risk assessment and provide information as per Annexure 2
- BA shall abide by Safety manuals, guidelines of TPCODL.
- BA shall provide its organisation structure & responsibilities in terms of Safety Management to TPCODL.
- BA shall document the work practices and procedures in terms of Safety Management.
- BA shall ensure safety training and induction program for the employees
- BA shall conduct safety audits & inspections as per TPCODL procedures provided by SAFETY group.
- BA shall provide and ensure the proper usage of the safety equipment (PPE) as per the TPCODL approved list in annexure 7.
- BA shall ensure periodic inspection of PPE to ensure its serviceability as per the specification given by TPCODL.
- BA shall ensure the adherence to standard operating procedures or guidelines laid down by TPCODL.
- BA shall ensure reporting of any unsafe act, unsafe conditions, near miss, incident or accident to engineer in-charge and SAFETY team of TPCODL.
- BA shall provide safety performance and Safety MIS (*annexure 9*) to engineer in-charge and SAFETY group periodically. Based on any non-confirmation to the safety procedures and guidelines, BA is liable to be negatively marked for his performance and suitable penalty will be imposed.
- BA shall ensure to depute a Safety Supervisor for managing a complete safety management system in the area. In case the BA has been awarded work in more than one circle, then the following safety structure will be adopted.
- BA shall refer Construction Safety Manual in TPCODL Safety Manual for details.



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Annexure 3.4 (Refer Para 4.0)

General Safety Conditions for the Maintenance of Sub – Transmission Network Contracts:

A BA awarded a major contract work of maintenance of sub – transmission network in area of a power system will be required to fulfil the following conditions:

- BA shall provide Safety Policy and safety objectives of their company.
- BA shall comply with all statutory requirements like: applicable acts, regulations, codes of practice, OHSAS Standards, etc.
- BA shall provide the filled safety management questionnaire as per Annexure 1
- BA shall conduct a job risk assessment and provide information as per Annexure 2
- BA shall abide by Safety manuals, guidelines of TPCODL.
- BA shall provide its organisation structure & responsibilities in terms of Safety Management to TPCODL.
- BA shall document the work practices and procedures in terms of Safety Management.
- BA shall ensure safety training and induction program for the employees
- BA shall conduct safety audits & inspections as per TPCODL procedures provided by SAFETY group.
- BA shall provide and ensure the proper usage of the safety equipment (PPE) as per the TPCODL approved list in annexure 7.
- BA shall ensure periodic inspection of PPE to ensure its serviceability as per the specification given by TPCODL.
- BA shall ensure the adherence to standard operating procedures or guidelines laid down by TPCODL.
- BA shall ensure reporting of any unsafe act, unsafe conditions, near miss, incident or accident to engineer in-charge and SAFETY team of TPCODL.
- BA shall provide safety performance and Safety MIS (*annexure 9*) to engineer in-charge and SAFETY group periodically. Based on any non-confirmation to the safety procedures and guidelines, BA is liable to be negatively marked for his performance and suitable penalty will be imposed.
- BA shall ensure to depute a Safety Coordinator for managing a complete safety management system in the area. In case the BA has been awarded work in more than one area power system, then the following safety structure will be adopted.



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Annexure 3.5 (Refer Para 4.0)

General Safety Conditions for the major contract work in Civil / Generation Projects:

A BA awarded a major contract work of / in civil or Generation project will be required to fulfil the following safety conditions:

- BA shall provide Safety Policy and safety objectives of their company.
- BA shall comply with all statutory requirements like: applicable acts, regulations, codes of practice, OHSAS Standards, etc.
- BA shall provide the filled safety management questionnaire as per Annexure 1
- BA shall conduct a job risk assessment and provide information as per Annexure 2
- BA shall abide by Safety manuals, guidelines of TPCODL.
- BA shall provide its organisation structure & responsibilities in terms of Safety Management to TPCODL.
- BA shall document the work practices and procedures in terms of Safety Management.
- BA shall ensure safety training and induction program for the employees
- BA shall conduct safety audits & inspections as per TPCODL procedures provided by SAFETY group.
- BA shall provide and ensure the proper usage of the safety equipment (PPE) as per the TPCODL approved list in annexure 7.
- BA shall ensure periodic inspection of PPE to ensure its serviceability as per the specification given by TPCODL.
- BA shall ensure the adherence to standard operating procedures or guidelines laid down by TPCODL.
- BA shall ensure reporting of any unsafe act, unsafe conditions, near miss, incident or accident to engineer in-charge and SAFETY team of TPCODL.
- BA shall provide safety performance and Safety MIS (*annexure 9*) to engineer in-charge and SAFETY group periodically. Based on any non-confirmation to the safety procedures and guidelines, BA is liable to be negatively marked for his performance and suitable penalty will be imposed.
- BA shall ensure to depute a Safety Supervisor (for workforce upto 100 at site) / a safety engineer (for workforce upto 250 at site) / safety manager (for more than two safety engineers) for managing a complete safety management system at the project site. In case the BA has been awarded more than one major contracts, then the following safety structure will be adopted.
- BA shall refer Construction Safety Manual in TPCODL Safety Manual for details.



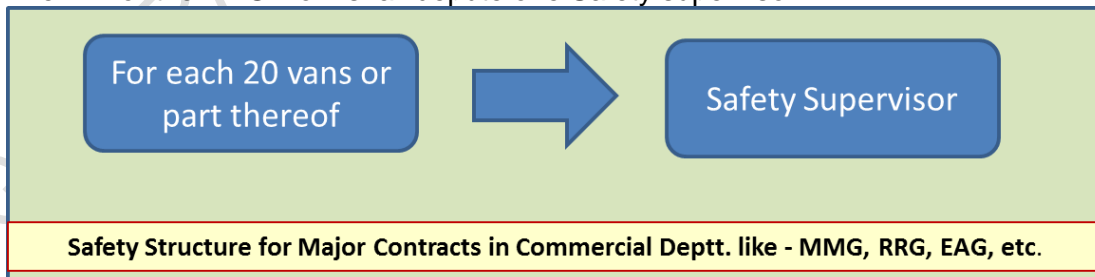
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Annexure 3.6 (Refer Para 4.0)

General Safety Conditions for the major contract work in Commercial Department like - MMG, RRG, EAG, etc.:

A BA awarded a major contract work in meter management group & energy auditing group will be required to fulfil the following safety conditions:

- BA shall provide Safety Policy and safety objectives of their company.
- BA shall comply with all statutory requirements like: applicable acts, regulations, codes of practice, OHSAS Standards, etc.
- BA shall provide the filled safety management questionnaire as per Annexure 1
- BA shall conduct a job risk assessment and provide information as per Annexure 2
- BA shall abide by Safety manuals, guidelines of TPCODL.
- BA shall provide its organisation structure & responsibilities in terms of Safety Management to TPCODL.
- BA shall document the work practices and procedures in terms of Safety Management.
- BA shall ensure safety training and induction program for the employees
- BA shall conduct safety audits & inspections as per TPCODL procedures provided by SAFETY group.
- BA shall provide and ensure the proper usage of the safety equipment (PPE) as per the TPCODL approved list in annexure 7.
- BA shall ensure periodic inspection of PPE to ensure its serviceability as per the specification given by TPCODL.
- BA shall ensure the adherence to standard operating procedures or guidelines laid down by TPCODL.
- BA shall ensure reporting of any unsafe act, unsafe conditions, near miss, incident or accident to engineer in-charge and SAFETY team of TPCODL.
- BA shall provide safety performance and Safety MIS (*annexure 9*) to engineer in-charge and SAFETY group periodically. Based on any non-confirmation to the safety procedures and guidelines, BA is liable to be negatively marked for his performance and suitable penalty will be imposed.
- BA shall ensure to depute a Safety Supervisor for managing a complete safety management system for the work as per the following safety structure.
- The BA for the RRG work shall depute one Safety supervisor.



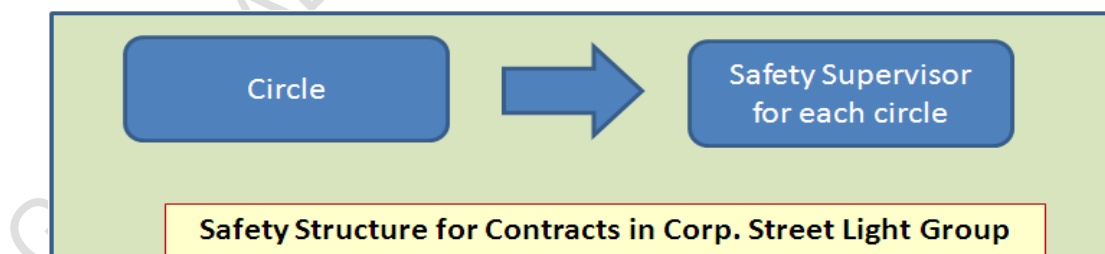
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Annexure 3.7 (Refer Para 4.0)

General Safety Conditions for the major contract work in O&M of street light group:

A BA awarded a major contract work in operation and maintenance of street light group will be required to fulfil the following safety conditions:

- BA shall provide Safety Policy and safety objectives of their company.
- BA shall comply with all statutory requirements like: applicable acts, regulations, codes of practice, OHSAS Standards, etc.
- BA shall provide the filled safety management questionnaire as per Annexure 1
- BA shall conduct a job risk assessment and provide information as per Annexure 2
- BA shall abide by Safety manuals, guidelines of TPCODL.
- BA shall provide its organisation structure & responsibilities in terms of Safety Management to TPCODL.
- BA shall document the work practices and procedures in terms of Safety Management.
- BA shall ensure safety training and induction program for the employees
- BA shall conduct safety audits & inspections as per TPCODL procedures provided by SAFETY group.
- BA shall provide and ensure the proper usage of the safety equipment PPE as per the TPCODL approved list in annexure 7.
- BA shall ensure periodic inspection of PPE to ensure its serviceability as per the specification given by TPCODL.
- BA shall ensure the adherence to standard operating procedures or guidelines laid down by TPCODL.
- BA shall ensure reporting of any unsafe act, unsafe conditions, near miss, incident or accident to engineer in-charge and SAFETY team of TPCODL.
- BA shall provide safety performance and Safety MIS (*annexure 9*) to engineer in-charge and SAFETY group periodically. Based on any non-confirmation to the safety procedures and guidelines, BA is liable to be negatively marked for his performance and suitable penalty will be imposed.
- Each BA shall ensure to depute a Safety Supervisor for managing a complete safety management system for the work awarded as per the below structure.



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Annexure 4 (Refer Para 3.3)

Safety Undertaking by way of Affidavit

I _____ s/o _____ R/o _____ (AUTHORIZED REPRESENTATIVE/PARTNER/DIRECTOR/PROPRIETOR) of M/S _____ (name of company/firm) having its office at (Complete address of Company), authorized vide power of attorney dated -----/Board resolution dated----/letter of authority dated----, hereinafter referred to as **Contractor [or Business Associate (BA)]** which expression shall, unless it be repugnant to or inconsistent with the meaning or context thereof, be deemed to include its heirs, executors, administrators, and assigns do hereby affirm and undertake as under :

1. The present undertaking shall remain in force from the date of execution of contract awarded by TPCODL and shall be valid till the date of termination of the said contract by either parties. The undertaking is binding on me (contractor) as well as my sub-contractor and its employees, representatives etc.
2. That I(the contractor) will be responsible and liable to comply and abide by all the safety rules, instructions and regulations as may be specified and laid down by TP Central Odisha Distribution Limited (TPCODL) so as enable TPCODL to achieve its goal of Zero On site incidences.
3. That the Contractor shall be fully responsible for ensuring occupational health and safety of its employees, representatives, agents as well as of its subcontractor's employees, at all times during the discharge of their respective obligations under the contract including any methods adopted for performance of their tasks / work.
4. That Contractor shall ensure ,at its own expense to arrange for and procure, implement all requisite accident prevention tools, first aid boxes, personal protective equipment, fire extinguisher, safety training, Material Safety Data Sheet, pre-employment medical test, etc. for operations & activities including as & when so specified by TPCODL specifically. , failing which TPCODL shall be entitled, but not obliged, to provide the same and recover the actual cost thereof from the Contractor's payments.
5. That the Contractor shall engage adequate and competent Safety – Supervisor / Engineer / Manager / Skilled persons at site as per the Para 5 (Qualification and experience of safety personnel) and Annexure 3 of Contract Safety Management.

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6. That the Contractor shall engage the competent Site – Supervisor with each group of workers for safe and correct workmanship, proper co-ordination of material and site work as per contract.
7. That the Contractor shall immediately replace supervisor in case it is found to be not up to the level of skill and experience required as in skill and experience required in *annexure 5* of this document, but any such replacement shall be only with the prior concurrence of TPCODL .
8. That the Contractor and its subcontractors shall abide by all the safety guidelines as per Safety Manual, Contract Safety Management and other guidelines issued from time to time by TPCODL during the contract period.
9. That in case the Contractor and/or any of its Subcontractor fail to ensure the compliance as required in terms of this undertaking the Contractor shall keep and hold TPCODL / its directors / officers / employees indemnified against any / all losses / damage / expense / liability / fines / compensation / claims / action / prosecutions or the like which might be suffered by TPCODL or to which TPCODL might get exposed to as a result of any breach /wilful negligence /deliberate default on the part of the Contractor /Subcontractor in complying with the same. Contractor shall also furnish any press release, clarification etc. if sought by TPCODL for any near miss or safety violations, accidents, which are attributable to fault of Contractor.

DEPONENT

VERIFICATION

Verified at Bhubaneswar on this _Day of _____20__ that the contents of the above affidavit are true and correct and nothing material has been concealed therefrom

DEPONENT

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Annexure 5 (Refer Para 5.4)

SKILL / QUALIFICATION REQUIRED FOR ELECTRICIAN AND ELECTRICAL SUPERVISOR

Skill / Qualifications Required for Electrician (*Certificate of Competency Class-II*):

1. Formal education in ITI – Wireman/ Electrician trade.

OR

2. Working experience of minimum three years of practical wiring.

OR

3. Have completed three years apprenticeship course through Apprenticeship Advisor, Govt. of NCT of Odisha / other state Govt. in the trade of Lineman / Wireman / Electrician.

4. A candidate must have attained the age of Eighteen years.

Skill / Qualifications Required for Electrical Supervisor (*Certificate of Competency Class-I*):

1. Have at least five years' experience of practical wiring after passing the certificate of competency class-II i.e. electrician.

OR

2. Recognized Degree or Diploma or equivalent qualification in Electrical Engineering from any Technical institute / College or University recognized by the Board.

AND

Must have completed the training/job in rectifying the common defects in electrical line and power installation for a period of one and three years after passing Degree or Diploma respectively

OR

3. Possessing the valid certificate of certificate of competency class – 1 (Electrical Supervisor)

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Annexure 6 (Refer Para 5.6)

Training Module for BAs Worker & Supervisor

Training for BA Supervisor

Duration – 02 Hrs / Month

Methodology: Lecture and Practical Demonstration of Safety Zone Creation

Session: 1

Topic: Electrical Safety Aspects

Sub Topics:

1. Learning specifics of HT & LT Network of zone
2. Major type of HT / LT / service lines / street light maintenance works
3. Understanding the need of Safety
4. Understanding the safe process of maintenance :
 - Planning of the maintenance job
 - Availability of men, material & machine, PPEs, Safety gear and approved PTW
 - Briefing of the job by the supervisor of the TPCODL
 - Identification of Risks associated with the maintenance work and planning for controlling measures by TPCODL supervisor
 - Creation of safety zone by TPCODL supervisor and satisfying that the network is dead – Use of Neon Tester, Shorting Chain and Safety Tagging
 - Start of the work – Right person for the right job
 - Alert supervision
 - Completion of the job – Check points
 - Energization of network
 - Actions to be taken in case of some accident

Session: 2

Topic: Use of Electrical Testing Equipment

Methodology: Lecture and Practical Demonstration

Sub Topics:

1. Meggar, Hi Pot, Clamp On Meter, Neon Tester, Discharge Rod, Line tester etc.

Session: 3

Topic: Awareness of Electrical Safety Aspects

- A. Understanding the need of this Training and Safety
- B. Learning specifics of HT & LT Network
- C. Major type of work to be carried out in zones
- D. Switching Operations (Do's & Don'ts) including Street Light Switching
- E. Working on Height (*practical demo also*)
- F. Understanding the Safe Process of Maintenance / Working:
 - Planning of the job
 - Availability of men, material & machine, PPEs, Safety gear and approved PTW
 - Briefing of the job by the supervisor

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- Permit to Work
- Safety Tagging and Lock Out Tag out
- Identification of Risks associated with the work to be carried out and planning for controlling measures by proper supervision
- Concept of "**Safety Zone**"
- Identification and use of Neon Tester, Shorting Chain, Clamp On Meter, Hi Pot, Meggar etc.
- Completion of the job – Check points
- Accident Theory & Incident Reporting
- Actions to be taken in case of some accident

Session: 4

Topic: Identification, Demonstration and Usages of Tools, PPEs and other Safety Gears and demonstration of working on HT pole

Session: 5

Topic: Practical demonstration of Safety Zone creation

FREQUENCY

Regular Safety Training Program

- It will be conducted for all field & supervisor staff of BA in such a manner that all BA Personnel attend at least two hours safety training during every month.

One Day Induction Safety Training Programs:

- This training will be for the new BA's personnel, who have been cleared by the Cross Functional Panel to undergo Safety training and who are likely to be deployed at various work sites of TPCODL by the BA, as a part of AMC / Work Contract.

Duration / Periodicity:

- Duration and periodicity has been defined above. However, this is subject to change at the discretion of TPCODL.

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Annexure 7 (Refer Para 5.7)

LIST OF PERSONAL PROTECTIVE EQUIPMENT AND TESTING FREQUENCY




Sl. No.	Name of PPE	IS / EN Standard	Testing Frequency	Remarks	Ref Brand & Model
01	Leather Safety Shoes (Color – Black) with PU toe cap.	IS:15298 (Part-2)	Monthly and visual check every day for any crack or damage in the leather or sole.		BATA (Model No.- Endura L/C) Liberty (Model No. – 7198-01 HT Barton Black – Warrior)
02	HDPE Safety helmet with chin strap and ratchet type for adjustment.	IS:2925-1984	Monthly and visual check every day for any crack in shell.		Karam (PN Safetech) Joseph Leslie Accent Industries Honeywell
03	Full body harness (Safety belt)	EN 361	Monthly and visual check every day of the bends and the harness.		Karam (PN Safetech) Joseph Leslie Accent Industries
04	Electrical Safety Gloves	EN: 60903 CE marked	Weekly and visual check for any crack and blow test before every work.	Manufactured not beyond 12 months.	Make Sparian / Sumitech / CATU supplied with inner cotton glove with over glove of split leather.
05	Full face visor with safety helmet	EN: 166 CE marked (Visor)	Monthly and visual check every day for any crack in shell.	Clear acrylic visor attached with safety helmet.	Karam (PN Safetech) Joseph Leslie Accent Industries Honeywell
06	Fire Proof jacket for chest protection		Monthly and visual check every day.		
07	Safety Chain for shorting cum earthing.	As per TPCODL standard	Weekly and visual check before every work.	Made of brass, Total length – 5.5 meters and made of 12 SWG.	

Note:

1. Any other Personal Protection Equipment required beyond above list will be according to BIS or EN Standards.

2. All Personal Protection Equipment will be checked by the engineer in-charge or SAFETY group of TPCODL.
3. Safety Representative of the BA has to maintain the record of the availability, condition and checking of the PPEs.
4. All tools required as per the contract must be according to respective IS / EN standards.
5. TPCODL may revise or add the above list of PPE and their specifications as and when feel necessary. The information about new specifications /models will be circulated by the Engineer In-charge (EIC), which shall adhere by the business associated in the shortest possible time. The EIC shall issue a memo / instruction to BA with timeline for implementation. Any delay will be treated as non- compliance / safety violations. Refer picture of each PPE given in next page.

Pictures of PPE for reference purpose.

Sl. No.	Name of PPE	IS / EN Standard	Picture
01	Leather Safety Shoes (Color – Black) with PU toe cap.	IS:15298(Part-2) and with test report of electrical resistance.	
02	HDPE Safety helmet with chin strap and ratchet type for adjustment.	IS:2925-1984	
03	Full body harness (Safety belt) The straps at shoulder and thigh shall have full pad for comfort. The back shall be so designed that harness straps do not tangle with each other.	EN 361:2002 EN 358 : 2000 IS: 3521:1991/2002	

04	Electrical Safety Gloves – Composite type Soft electrical gloves as per size of individual.	EN: 60903 CE marked	
05	Full face visor with safety helmet	EN: 166 CE marked (Visor)	
06	Fire Proof jacket for chest protection		
07	Safety Chain for shorting cum earthing.	As per TPCODL standard	
08	Reflective jacket to each workmen	As per TPCODL standard	

Note : Picture shown are for indicative purpose only. Actual product may differ.

Annexure 8 (Refer Para 5.8) LIST OF AUDITS TO BE CONDUCTED

Audits	Responsibility	Freq.	Ref. Doc.
Permit to Work & Field Audit	BA Safety Representative	Weekly	F04 (COR P - 12)
Tool Bag & PPE's Audit		Weekly	F06 (COR P - 12)
First Aid Box Maintenance Record		Fortnightly	F08 (COR P - 12)
Fire Extinguisher Record <i>(Applicable for the BA involved in major construction works and have storage of flammable material at worksite)</i>		Monthly	F09 (COR P - 12)
Safety Talk Register		Weekly	F18 (COR P - 12)
Site Safety Audit		Daily	F29A (COR P - 12)

Note:

1. (BA Safety Representative has to use the formats as per Safety process COR – P – 12 of TPCODL)

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Annexure 9 (Refer Para 5.9)

PERFORMANCE REPORT – SAFETY

FOR THE MONTH OF.....

Name of BA :

Name of the Project and Purchase order No:

Date of commencement of work:

Man Hour Worked in this month (No. of employees X 8 Hrs + Overtime):

Cumulative Man Hour worked:

Total Number of

Minor Injury (this month): Minor Injury (Total)

Major Injury (this month): Major Injury (Total):

Detail of the Incident / Sub Standard Acts and Condition

Activity	This Month	Cumulative (Total)	Day Lost (this month)	Days Lost (Cumulative)
No. of the Incident				
No. of lost time injuries				
No. of dangerous occurrences				
No. of near miss reported				
Substandard Act/Conditions observed			Attach details of observation of this month	
Safety Violation Notice received (from TPCODL) (both in numbers and in Rs.)	No.	No.	No. of violation letter received and compliance report for the TPCODL.	
	Rs.	Rs.		

Note: Cumulative means total from date of commencement of work according to the contract.

Detail of the Accident / Near Miss Incidents:

Date and Time	Type of the incident	Name of Employee	Brief Description	Corrective and Preventive actions recommended

Details of the Safety Violations:

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Date and Location	Brief Description	Name of employee involved	Action Taken

Detail of the Safety Talk / Tool Box Talk / Safety Training

Date and Location	Topic (s)	Total Number of employees (Worker / Supervisor)	Number of participants (Worker / Supervisor)

Detail of the Safety Meeting

Date and Location	Number of participants	Topics discussed	Major Observations / Innovation

Detail of the Safety Inspection /Audit: (as per TPCODL site audit checklist F29A(COR-P-12))

Date	Area / Location	Major Observations	Recommendations	Action Taken

Any other Safety, Occupational Health, Environment & Disaster Management Promotional Activity (During this month):

Date	Location	Activity	Level of Participation	Number of participation

Signature of the BA Safety Representative
HoG

Signature of ZM /

Name, E. No. and Date

Name, E. No. Date.

Note: The original form to be deposited with Engineer in-charge and a copy to SAFETY group on or before 5th of every month along with bill. List of training of the current month and status of PPE to be also mentioned individual wise.

BA may include additional lines if required. The TPPDL may revise the format as and when deemed required.

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ANNEXURE-L
VENDOR APPRAISAL FORM

TO BE SUBMITTED BY VENDOR (To be filled as applicable)		
VENDOR:		
1.0	DETAILS OF THE FIRM	
	1.1	NAME (IN CAPITAL LETTERS) :
	1.2	TYPE OF CONCERN (PROPRIETARY) Partnership, Pvt. Ltd., Public Ltd. etc. :
	1.3	YEAR OF ESTABLISHMENT :
	1.4	LOCATION OF OFFICE POSTAL ADDRESS TELEGRAPHIC ADDRESSES, TELEX NO. FAX NO. :
	1.5	LOCATION OF MANUFACTURING UNITS :
		i) UNITS 1 :
		ii) OTHER UNITS :
2.0	PRODUCTS MANUFACTURED :	
3.0	TURNOVER DURING THE LAST 3 YEARS (TO BE VERIFIED WITH THE LATEST PROFIT & LOSS STATEMENT). :	
4.0	VALUE OF FIXED ASSETS :	
5.0	NAME & ADDRESS OF THE BANKERS :	
6.0	BANK GUARANTEE LIMIT :	
7.0	CREDIT LIMIT :	
8.0	TECHNICAL	
	8.1	NO. OF DESIGN ENGINEERS (INDICATE NO. OF YEARS EXPERIENCE IN RELATED FIELDS) :
	8.2	NO. OF DRAUGHTSMAN :
	8.3	COLLABORATION DETAILS (IF ANY) :
		8.3.1 DATE OF COLLABORATION :

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		8.3.2 NAME OF COLLABORATOR	:
		8.3.3 RBI APPROVAL DETAILS	:
		8.3.4 EXPERIENCE LIST OF COLLABORATOR	:
		8.3.5 DURATION OF AGREEMENT	:
	8.4	AVAILABILITY OF STANDARDS / DESIGN PROCEDURES / COLLABORATOR'S / DOCUMENTS (CHECK WHETHER THESE ARE LATEST/CURRENT	:
	8.5	TECHNICAL SUPPORT, BACK-UP GUARANTEE, SUPERVISION, QUALITY CONTROL BY COLLABORATOR (WHEREVER ESSENTIAL). (THIS CLAUSE IS RELEVANT WHEN VENDOR'S EXPERIENCE IS INADEQUATE)	:
	8.6	QUALITY OF DRAWINGS	:
9.0	MANUFACTURE		
	9.1	SHOP SPACE, LAYOUT LIGHTING, VENTILATION, ETC.	:
	9.2	POWER (KVA)	:
		MAINS INSTALLED	:
		UTILIZED	:
		STANDBY POWER SOURCE	:
	9.3	MANUFACTURING FACILITIES (ATTACH LIST OF EQUIPMENT AS APPLICABLE)	:
		9.3.1 MATERIAL HANDLING	:
		9.3.2 MACHINING	:
		9.3.3 FABRICATION	:
		9.3.4 HEAT TREATMENT	:
		9.3.5 BALANCING FACILITY	:
		9.3.6 SURFACE TREATMENT PRIOR TO PAINTING/ COATING, POLISHING, PICKLING, PASSIVATION, PAINTING, ETC.	:
	9.4	SUPERVISORY STAFF	:
	9.5	ADEQUACY OF SKILLED LABOURS (MACHINISTS, WELDERS, ETC.)	:

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	9.6	NO. OF SHIFTS	:
	9.7	TYPE OF MATERIAL HANDLED (SUCH AS CS, SS, ETC.)	:
	9.8	WORKMANSHIP	:
	9.9	MATERIAL IN STOCK AND VALUE	:
	9.10	TRANSPORT FACILITIES	:
	9.11	CARE IN HANDLING	:
10.0	INSPECTION / QC / QA / TESTING		
	10.1	NUMBER OF PERSONNEL (INDICATE NO. OF YEARS OF EXPERIENCE)	:
	10.2	INDEPENDENCE FROM PRODUCTION	:
	10.3	AVAILABILITY OF PROCEDURAL WRITE UP/QUALITY PLAN	:
	10.4	INCOMING MATERIAL CONTROL AND DOCUMENTATION	:
	10.5	RELIABILITY/REPUTATION OF SUPPLY SOURCES	:
	10.6	STAGE INSPECTION AND DOCUMENTATION	:
	10.7	SUB-ASSEMBLY & DOCUMENTATION	:
	10.8	FINAL INSPECTION AND DOCUMENTATION	:
	10.9	PREPARATION OF FINAL DOCUMENTATION PACKAGE	:
	10.10	TYPE TEST FACILITIES	:
	10.11	ACCEPTANCE TEST FACILITIES	:
	10.12	CALIBRATION OF INSTRUMENTS AND GAUGES (WITH TRACEABILITY TO NATIONAL STANDARDS) (ATTACH LIST)	:
	10.13	STATUTORY APPROVALS LIKE BIS, IBR, ETC.(AS APPLICABLE)	:
	10.14	SUB-VENDOR APPROVAL SYSTEM AND QUALITY CONTROL	:
	10.15	DETAILS OF TESTS CARRIED OUT AT INDEPENDENT RECOGNIZED LABORATORIES	:
		i) FURNISH LIST OF TESTS CARRIED OUT AND THE NAME OF THE LABORATORY WHERE THE TESTS WERE CONDUCTED	:

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	ii) CHECK AVAILABILITY OF CERTIFICATES AND REVIEW THESE WHEREVER POSSIBLE	:
11.0	EXPERIENCE (INCLUDING CONSTRUCTION / ERECTION / COMMISSIONING) TO BE FURNISHED IN THE FORMAT INDICATED IN APPENDIX)	:
12.0	SALES, SERVICE AND SITE ORGANIZATIONAL DETAILS	:
13.0	CERTIFICATE FROM CUSTOMERS (ATTACH COPIES OF DOCUMENTS)	:
14.0	POWER SITUATION	:
15.0	LABOUR SITUATION	:
16.0 *	APPLICABILITY OF SC/ST RELAXATION (Y/N) IF YES, SUPPORTING DOCUMENTS TO BE ATTACHED	:
17.0	ORGANIZATIONAL DETAILS 1. PF NO 2. ESI NO 3. INSURANCE FOR WORK MAN COMPENSATION ACT NO 4. ELECTRICAL CONTRACT LIC NO 5. ITCC / PAN NO 6. SALES TAX NO 7. WC TAX REG. NO	:
18.0	DOCUMENTS TO BE ENCLOSED: 1. FACTORY LICENCE 2. ANNUAL REPORT FOR LAST THREE YEARS 3. TYPE TEST REPORT FOR THE ITEM 4. PAST EXPERIENCE REPORTS 5. ISO CERTIFICATE –QMS, EMS, OHAS, SA 6. REGISTRATION OF SALES TAX 7. COPY OF TIN NO. 8. COPY OF SERVICE TAX NO. 9. REGISTRATION OF CENTRAL EXCISE 10. COPY OF INCOME TAX CLEARANCE. 11. COPY OF PF REGISTRATION 12. COPY OF ESI REGISTRATION 13. COPY OF INSURANCE FOR WORK MAN COMPENSATION ACT NO 14. COPY OF ELECTRICAL CONTRACT LIC NO 15. COPY OF PAN NO 16. COPY OF WC TAX REGISTRATION 17. DOCUMENTS IN SUPPORT OF SC/ST RELAXATION AT S.NO.16.0 18. GSTN CERTIFICATE	:

* Classification of BA s under SC/ST shall be governed under following guidelines:

- **Proprietorship/ Single Ownership Firm:** Proprietor of the firm should be from SC/ST community. Governing document shall be Proprietorship Deed.

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- **Partnership Firm:** Only such firms shall qualify which have SC/ST partners holding equal to or more than 50% of the total ownership pattern of the firm. Governing document shall be Partnership Deed.
- **Private Limited Company:** Only such firms shall qualify which have SC/ST directors holding equal to or more than 50% of the total ownership pattern of the firm. Governing document shall be Memorandum of Understanding (MoU) and/or Article of Association (AoA).

NOTE: Certification from SC/ST Commission shall be required for deciding upon SC/ST status of a person.

GENERAL CONDITIONS OF CONTRACT

Annexure VIII

Safety Policy and Safety Terms and Conditions

The Tata Power Company Ltd	     	<i>Contractor's Safety Code of Conduct</i>
<i>Document no TPSMS/GSP/CSM/015/REV 07</i>		<i>Date of Issue: 01/08/2023</i>

Contractor's Safety Code of Conduct

Reason for Change	Date of Last Revision	Prepared By	Reviewed By	Approved by
Inclusion of Odisha Discom and periodic Revision	<u>11-May-2015-</u> <u>R1</u> <u>15 August-2021-</u> <u>R6</u>	All Discom and CFT members from all cluster	Debi Prasad Acharya (Head-Safety-Odisha Discom)	Suresh H Khetwani <i>(Chief safety and Environment)</i>

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CONFIDENTIAL

The Tata Power Company Ltd		Contractor's Safety Code of Conduct
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1.0 Objective

- The Tata Power engages contractor workforce to execute, run and maintain various operating sites and facilities across locations for various business verticals including Generation, Transmission, Distribution and Renewable. The activities range from project execution, operation, maintenance to facilities management.
- The management of contractor safety represents a significant challenge for management. Tata Power has a responsibility to ensure that contractors are provided with enough information and support to enable them to conduct their roles safely and without endangering health and safety of their own workforce or that of our staff.

2.0 Scope:

- This procedure applies to all operating and project sites of The Tata Power Company Ltd and Group companies including new businesses like Electric Vehicle charging, Home Automation, Microgrid, Roof top solar etc. This Code of Conduct also applies to all operating and project sites of four Odisha Discoms and New business based on mutually agreed timeline for implementation. R7
- This document is applicable to Odisha Discoms also. Odisha Discoms are a joint venture between Tata Power and the Government of Odisha with the majority stake being held by Tata Power Company (51%). ODISHA DISCOMS is a state electricity distribution utility with sole rights to distribution of electricity in the Odisha covering the distribution companies such as TPNODL, TPCODL, TPSODL and TPWODL. In accordance with the Electricity Act. ODISHA DISCOMS engages contractor workforce to execute, run and maintain various operating sites and facilities across locations The activities range from project execution, operation & maintenance of facilities. (R7)

3.0 Definitions

- 3.1. Order Manager/Engineer in charge:** Order Manager/Engineer in charge is the Tata Power-Division /DISCOM representative, who has the ownership of the given job.
- 3.2. Site Safety Management Plan:** It is the safety plan agreed between Contractor and Tata Power-Division/DISCOM. It will contain the entire job specific safety requirement and will be signed by the contractor.
- 3.3. Contractor/Business Associate/Vendor (BA):** An individual or a company that provides services to Tata Power-Division/DISCOM under a signed contract.
- 3.4. Emergency:** It is a serious, unexpected, or dangerous situation requiring immediate action, which may result in loss of life, loss of revenue/property, business discontinuity. In case of Emergency, services may be procured by selecting the qualified vendor based on the vendor category without the safety bid evaluation and approved by adequate authority of MB level or above.
- 3.5. Expert Service jobs:** Jobs which needs expert services of contractor which does not involve direct exposure to the potential risk or work which involves only

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supervisory work such as expert for AI-ML, expert for transmission and distribution network, expert for civil works, expert on transformers, expert for PSSC, expert for equipment overhaul etc.

- 3.6. **CEO/Chief/Head of division/Unit/Utility:** Business in charge who is overall custodian of the Tata Power-Division/DISCOM.
- 3.7. **Category A Vendor:** Vendor eligible to carry out Very High & High risk (as per Tata Power-Division Hazard Identification and Risk Analysis Procedure) and /or Long-Term Contract related to operation and maintenance (O&M) of plant. Vendors must fulfil the requirement specified for Category A in Appendix 4-CSMF-4 of this document.
- 3.8. **Category B Vendor:** Vendors eligible to carry out technical jobs, that are classified under Medium / low risk. Vendors must fulfil the requirement specified for Category B in Appendix 4-CSMF-4 of this document.
- 3.9. **Category C Vendor:** Vendors eligible for to carry out low or very low risk administrative and office jobs. For this he must fulfil the requirement specified for Category C in Appendix 4-CSMF-4 of this document.
- 3.10. **Category D Vendor:** All Consultants, Medical Practitioners or vendors taking job from Tata Power and working from their own premises (e.g., motor rewinding at vendor's shop floor, equipment sent for repair to vendor's works etc.) are classified as Category D Vendor.
- 3.11. **High Risk Jobs:** A Job or its activities are considered as Very High or High Risk when Order manager apply the "Tata Power Hazard Identification and Risk Analysis" procedure and found safety risk associated with are under Very High or High category. Indicative lists of jobs are given in appendix 14 of this document.
- 3.12. **Medium Risk Jobs:** Jobs or its activities are considered as medium risk when Order manager apply "Tata Power Hazard Identification and Risk Analysis" procedure and found the same as Medium Risk.
- 3.13. **Low Risk Jobs:** Any job or its activities are considered as Low or Very low risk while Order manager calculated it by applying "Tata Power Hazard Identification and Risk Analysis" procedure and found it under Low or Very Low category.
- 3.14. **Long Duration Jobs:** *When the duration of job is more than 12 months, it is considered as long duration job. R7*
- 3.15. **High Value Jobs:** When the value of the job contract is Rs. One Crore or more, it is considered as High value job.
- 3.16. **Strategic Business Unit-SBU/Division/Discom:** *A strategic business unit is a fully functional, independently operational setup of a particular business and an important part of the Tata power company. R7*

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4.0 Responsibilities

4.1 Order Manager/Engineer in Charge: Order Manager is Tata Power-Division /DISCOM representative, who is responsible for:

- 4.1.1 Finalizing the Site Safety Management Plan along with Contractor, Safety Concurrences Group, Divisional Safety Head and Expert (External or Internal) if required.
- 4.1.2 Ensure 100% safety capability building L1, L2, L3 for contractor work force and supervisor before start of Job
- 4.1.3 Ensure Contractor safety revalidation test for all work force quarterly or Half yearly for new business such as Odisha Discom (R7).
- 4.1.4 Conduct competency assessment of all critical work force working on High-Risk Jobs based on Experience, Technical skill and Safety capability through contractor representative along with division/Discom safety representative. R7
- 4.1.5 Supervise and ensure work is carried out as per the Site Safety Management Plan including agreed Risk Assessment (HIRA/JSA) and Method Statement.
- 4.1.6 Conduct audit and evaluate Safety Performance of contractor.
- 4.1.7 Ensure contractors adhere to all statutory provisions.
- 4.1.8 In case any Exception needed in agreed safety management plan or in CSCC process for execution of job, document control procedure- TPSMS/GSP/DC/014 Clouse 6.3 will be applicable, and approval may be obtained by the Order Manager from adequate authority of Chief of Division/CEO of Discom. (R7)

4.2 Contractor/Business Associate/Vendor (BA): The person, entity or organisation who is executing the job for Tata Power-Division /Odisha Discoms under a contractual agreement and will be responsible for the following

- 4.2.1 To follow all Tata Power-Division /DISCOM Critical Safety Procedure, Rules and guidelines given in **CSM F3 Safety Terms and Conditions.**
- 4.2.2 Undertake job as per **CSM F9 Site Safety Management Plan** and method statements agreed with the Tata Power-Division /DISCOM.
- 4.2.3 Ensure 100% safety capability building L1, L2, L3 for contractor work force and supervisor before start of Job
- 4.2.4 Ensure Contractor safety revalidation test for all workforce quarterly or Half yearly for new business such as Odisha Discom up to three years. R7.
- 4.2.5 Ensure competency assessment of all critical work force working on High-Risk Jobs based on Experience, Technical skill and Safety capability through Order manager or Engineer in charge representative along with division/Discom safety representative. R7
- 4.2.6 Raise any concerns about their work and its safety with the Order Manager.

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- 4.2.7 Report all injuries, near misses, unsafe acts/conditions, and occurrences to the Order Manager immediately.
- 4.2.8 Ensure that all sub-contractors follow the Tata Power Safety Procedure and agreed **CSM F9 Site Safety Management Plan**. If subcontractor detail is not available at stage of Bid evaluation, then this can be agreed with Order manager or Engineer in charge before deployment. Ensure that all sub-contractors follow the Tata Power Safety Procedure and agreed CSM F9 Site Safety Management Plan.**R7**
- 4.2.9 To follow all statutory requirements as per the laws of the land.
- 4.2.10 All vendors applying for category "A" jobs or submitting quote for high-risk jobs shall obtain certificates of ISO:9001, ISO:14001 and ISO:45001 before submitting quote for high-risk Jobs or otherwise mention plan to get the certification. **R7**
- 4.3 Safety Concurrence Group (SCG):** It is Cross Functional Team constituted by Contract department with active support from Safety Team of the Tata Power Division/Discom safety team having representatives from Execution Department, Operation Department, Contract Department, and any other department as deemed fit. SCG will be responsible for the following:
- 4.3.1 Assessment of Safety Potential of new vendor before registration using **CSM F1 Process Flowchart for Vendor Registration** and **CSM F2 Safety Category Qualification Form**.
- 4.3.2 Safety Evaluation of the bids as per evaluation format **CSM F7 Safety Bid Evaluation Criteria**
- 4.3.3 Finalization of the **CSM F9 Site Safety Management Plan** submitted by the contractor.
- 4.3.4 During Safety Bid Evaluation for following types of jobs are evaluated: R7
- 4.3.4.1 High-Risk jobs, Medium Risk job, Major Shutdowns and Outages.
- 4.3.4.2 Capex jobs of High-Risk Category

5.0 Procedure

5.1 Registration of Business Associates (Vendors)

For Vendor Registration, Contract Department will issue following documents for evaluation of contractor's safety capability

- 1) **CSM F2 Safety Category Qualification Form**
- 2) **CSM F3 Safety Terms and Conditions**

The document **CSM F3 Safety Terms and Conditions** provides the information about Tata Power-Division /Odisha Discom safety System to the contractor. Contractor will submit the **CSM F2 Safety Category Qualification Form** with all relevant details and documents to Vendor Registration Initiator, which will in turn forward it to Safety Concurrence Group (SCG) for evaluation. The SCG will evaluate the details submitted by the contractor based

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on a predetermined criteria **CSM F4 Safety Potential Evaluation Criteria** for Vendor Registration and will determine the category (Category A/B/C/D) for which the contractor will be registered. As mentioned in the above criteria, a site visit may also be organized by SCG prior to registration under Category A and B. In case, the contractor does not qualify the safety criteria, the contractor will not be registered. However, he may apply afresh for registration after 6 months. Please refer **Appendix 1: CSM F1 Process Flow Chart for Vendor Registration.**

5.2 Bid evaluation

At the time of placing the Purchase Requisition (PR), Order Manager is required to declare the risk involved in the of the job (i.e., High Risk / Medium Risk / Low Risk jobs, based on the RPN in HIRA). If the Job is "High /Medium Risk" then RFQ will be attached with following documents:

- 1) **CSM F3 Safety Terms and Conditions**
- 2) **CSM F6 Safety Competency Assessment Form**
- 3) **CSM F8 PPE requirements**
- 4) **CSM F9 Site Safety Management Plan Job Specific Safety Requirement (Educational and Professional Qualification, Skill & Experience Manpower, Tools, and Tackles, e.g., man lifter, use of drone, use & availability of rescue kit, Work Methodology etc.)**

Otherwise the RFQ will be attached only with **CSM F3 Safety Terms and Conditions.** Contracts department will collect duly filled **CSM F6 Safety Competency Form** along with the bid. All other stakeholders will also put their efforts to get all relevant safety data during meeting / discussions with the vendor. SCG will evaluate the document as per the **CSM F7 Safety bid evaluation criteria.** If any specific condition related to Contract is required to be conveyed to the contractor, Site safety team will attach the same as Annexure for specific conditions of job and submit it to contract team along with safety bid evaluation form. Commercial bid of contractor will be considered for evaluation by contract team only if contractor is qualified in safety bid. Site Safety Management Plan, defining the complete procedure of executing the job at site will be signed by the contractor and SCG after mutual agreement. Contract will attach a copy of Site Safety Management Plan along with PO to the successful bidder. Please refer **CSM F5 Process Flow Chart for issuing RFQ and PO significant health and safety risk associated with it.**

5.3 Capability Building:

Before issuing gate pass:

For Odisha Discom: All Tata Power contractor and subcontractor workforce is required to

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attend Site Safety Orientation Training to receive a Safety Training Card, which is required to obtain a Gate Pass to the site, prior to entry. This Safety Orientation Course will be for duration of minimum half day. The information provided during the orientation will include, but is not limited to Job rules, personal safety, and conduct, Hazard's reporting, reporting of injuries, Emergency procedures, Safety Activities and Program including disciplinary measure and incentives, Critical safety procedure relevant to the job

For Tata Power Divisions: All Tata Power contractor and subcontractor workforce is required to attend L1 Training to receive a Safety Training Card, which is required to obtain a Gate Pass to the site, prior to entry.

For TataPower and Discom: Appropriate practical training such as SHE L1, L2& L3 is given to ensure that a jobholder, either supervisor or worker, is competent to do his/her job safely. The skill training is provided through TPSDI, and other agencies authorized by Tata Power on the list of 15 critical Safety procedures mentioned under safety procedures. Duration of course is as specified by Division/Discom. Contractor shall ensure that concerned workmen are provided with adequate training before he/she is allowed to execute the work. An evaluation test will be conducted after the completion of the training. Those BA employees, who meet the minimum required competency, will be provided with Certificate or Training /Competency Card, which is valid for 3 years, post which the employee must reappear for the assessment. If the workman is not able to qualify the assessment, he/she will be given 3 additional attempts to clear in 3-month time frame failing which he/she will not be allowed to work on Division/Discom any jobs. After expiry of Certificate or Training /Competency Card again one day recertification of L1, L2 and L3 skill training will be provided. R7.

The Contactor shall bear the conveyance and food expenses of his staff for attending training sessions and capability building sessions in new business-like Odisha Discom.

The Contactor shall bear the entire cost of L1/L2/L3, the costs towards training, salaries/wages, boarding and lodging of his staff for attending training sessions and capability building sessions. These trainings are offered on nominal chargeable basis payable by Contractor and rates shall be decided by TPSDI from time to time in case of training trough TPSDI. Generally, L0 is of one day, L1 is for 2 days for each critical procedure and L3 is for one day. Around Rs 700+GST is approx. cost /Day/Candidate. - R7

All contractors' workmen and Business Associate must attend Safety foundation course Training, all workmen engaged in critical jobs must clear and get certified for critical procedures applicable on his work like Work at Height and Electrical safety-LT & HT/LOTO&LC separately and all supervisors must complete supervisor certification in safety.

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Competency assessment of all critical workforce to be carried out for all who has taken L2 training. R7

5.4 Recognition to the Prior Learning in Safety-R7

If "Order Manager" recommends and "Head of the Safety Department of Discom" is satisfied with the safety knowledge and competency of the employee of contractor, a test may be conducted by Tata power Skill development Institute/ other recognized institute to assess the prior learning in safety. If employees of the contractors pass in such test, he will be exempted from appearing in SHE L1 training. This assessment is on nominal chargeable basis and rates are decided by TPSDI from time to time.

5.5 Safety performance retention(R7): A certain percentage of the bill value will be retained against every running bill as safety performance retention. The amount will be released with the last invoice or every six-month based on Safety Performance Score of contractors. The retention amount will be calculated based on contract value as below. (R7)

Risk Category-(R7)	Contract Value	Retention Amount (%)
<u>Very high/High risk job/ Medium Risk jobs</u>	Up to 10 Lakhs	2.5
<u>Very high/High risk job/ Medium Risk jobs</u>	10 – 50 Lakhs	2
<u>Low/Very Low Risk jobs</u>	10 – 50 Lakhs	1
<u>Very high/High risk job</u>	0.5 to 10 Cr	2
<u>Medium Risk jobs</u>	0.5 to 10 Cr	1.5
<u>Low/Very Low Risk jobs</u>	0.5 to 10 Cr	1
<u>Very high/High risk job</u>	>10 Cr	1.5
<u>Medium Risk jobs</u>	>10 Cr	1

- The safety retention amount will not be applicable if there is clause of Contract Performance Bank Guarantee (CPBG) and safety performance of contractor is as per desired criteria.
- If safety performance of contractor is not as per desired criteria (as per Appendix 10 – CSM F10 – Process Flow Chart for Safety Performance Evaluation and Appendix 11: CSM F11 - Safety Performance Evaluation Criteria- R7.) then safety retention percentage as mentioned in table above will be deducted from running bill.
- Bidder to give understanding that if there are any deductions required to be made for safety non-performance as per the Safety Performance Score, then Tata Power shall recover any such deductions against safety non-performance directly from the monthly bills / final settlement or it shall be within its right to recover such sum from accounts payable or the CPBG or the retention of the Contractor available with Tata Power for the said contract between the Contractor and Tata Power. R7

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For all other contracts retention amount is applicable as per table given above.

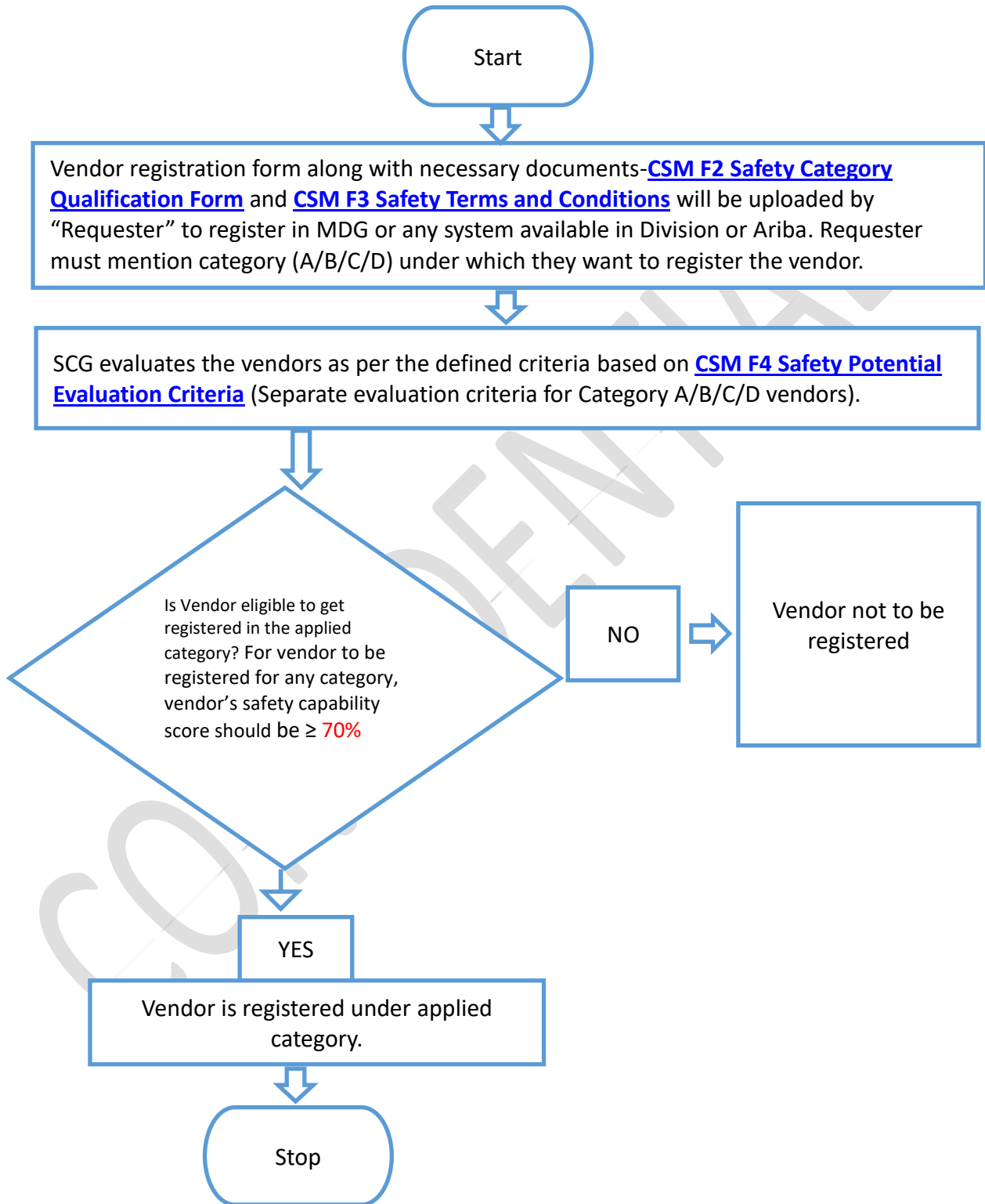
4. The retention amount against non-safety performance saved and Penalty will go to a separate Safety Improvement Fund.R7
5. For the contract value of more than Rs 1 Cr or contract duration more than 12 months, the retention amount shall be released half yearly based on safety performance. For all remaining contracts, the retention amount will be released with the final bill.
6. Safety performance bonus 1% (limiting to 50 lakhs) of the invoice value will be considered at the end of the job if the contractual safety performance score is 100%.

5.6 Safety Performance Evaluation:

During the time of job execution, regular site inspection will be carried out by the Tata Power-Division /DISCOM officials to evaluate monthly safety performance of the contractor as per **CSM F11 Safety Performance Evaluation Report** and monthly score will be maintained by the Order Manager. Violations will be dealt as per **CSM F12 Safety Violation Penalty Criteria**. Please refer **CSM F10 Process Flow Chart for Safety Performance Evaluation**. Percentage of retention amount is usually mentioned in safety terms and conditions.

1. During the progress of the work, concerned site Supervisor/Engineer/Safety representative will visit and inspect the work site regularly and evaluate the safety performance of the contractor based on matrix **Appendix 13** and apply the Consequence management policy/Penalty criteria as applicable.
2. The evaluation criteria include Lead Indicators such as percentage of workers trained in TPSDI, inspection of critical equipment. Lag indicators such as Fatalities, LWDC and man-days lost.
3. In case of job stoppage due to safety violations / unsafe observations at the site, no time extension from PO completion date shall be given to the contractor, if such delays are attributable to contractor.
4. In case of fatality, limb loss or loss of property, vendor must pay for liability, legal, statutory, and additional mutually agreed settlement charges imposed by the appointed committee by Division Chief/CEO. This charge is over and above the retention amount. The committee will finalize penalty amount based on factors such as advice by statutory authorities, contract value and impact of accident etc.
5. Order Manager, Head of Business and functional Chief have the authority to terminate the contract as per **CSM F12 Safety Violation Penalty Criteria** Through contract department.

Appendix 1: CSM F1 - Process Flow Chart for Vendor Registration



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Appendix 2: CSM F2 - Safety Category Qualification form

1. "Safety Category Qualification Form" is part of vendor registration form. It needs to be filled by the contractor at the time of Registration and should be submitted to Requester / Order Manager with all relevant documents.
2. The same will be evaluated by Safety Concurrence Group of the Division (SCG).
3. Information provided by contractor will be verified during site visit.

Safety Category Qualification Form

Please consider my application for

Category A Vendor: Vendor eligible to carry out Very High- and High-risk O&M/Project jobs

Category B Vendor: Vendors eligible to carry out technical jobs, classified as Medium / low risk

Category C Vendor: Vendors eligible for to carry out low or very low risk administrative and office job

Category D vendor: All Consultants, Medical Practitioners or vendors taking job from Tata Power and working from their own premises.

Name of the Vendor:							
Sr. No	Safety Information	Yes / No	Remarks				
1	Certified for i. ISO 45001, ii. ISO: 14001 iii. ISO: 9001 (ISO certificates to be issued from reputed accreditation agencies specified by Tata Power)	i. Y/ N ii. Y/ N iii. Y/ N	If Yes, Attach copy of the certification. If No, mention plan to get the certification.				
2	Safety Statistics for current and Last Three (3) Years - LTIFR - LTISR	Yes/No		Current Year	Year 1(Last FY)	Year 2	Year 3
			LTIFR				
			LTISR				

Name of the Vendor:

		Name of the Vendor:			
3	Any Compensation paid due to accidents during current and last three years?	Yes/No		Amount (INR)	Manhour
			Current Year		
			Y1 (Last FY)		
			Y2		
			Y3		
4	Any prosecution against you by statutory bodies/clients during last three years due to statutory violations, criminal negligence towards safety and dereliction of duty of care towards your employees? Is any case still pending against you?	Yes/No	If yes, give details. If no, give an undertaking that no case is pending against you and you have not been prosecuted by statutory bodies or clients.		
5	Do you have Safety Policy? Safety Principles? And Lifesaving Rules?	Yes/No	If yes, attach copy of the documents available.		
6	Do you have Safety training process?	Yes/No	If yes, attach safety training process and average training manhour of your employees for the last three years.		
7	Do you have a system for recording, reporting, and investigating all incidents or near misses?	Yes / No	If yes, show the incident statistics of last three years and implementation of CAPA.		
8	Do you have a disciplinary action program against your employees for violation towards safety rules and procedures?	Yes/No	If yes, show the records of disciplinary action taken the last three years.		

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Name of the Vendor:			
9	Do you have a reward and recognition scheme for your employees who show exemplary safe behavior and contribute to overall safety improvement at site?	Yes/No	If yes, show the records of Reward and Recognition given during the last three years.
10	Do you engage in safety promotional activities?	Yes/No	If Yes, Show the proof of engagement in safety promotional activities.
11	Have you been recognized or awarded or rewarded by government bodies of clients for showing excellence in safety management in your jobs during last three years?	Yes / No	If Yes, Show proof.
12	Do you provide adequate quality of PPEs to your workmen?	Yes/No	If yes, please provide details of PPE Matrix and if required, samples for inspection.
13	Do you have Safety organization structure e.g., Safety Officers and Safety Committees?	Yes/No	If yes, attach copy of the safety organization structure, details of safety committees and safety professionals.
14	Name and address of sites where work is in progress or worked earlier	Yes/No	Site details to be attached for inspection by Tata Power-Division /DISCOM Officials.

Note: If you respond NO to any of the above questions, you can mention your plan to get the required documents.

I hereby confirm that the information provided above are true. I give my consent to be penalized as deemed fit in case any information given above are found to be false.

I will abide the general safety guidelines mentioned in the purchase order / work order and will ensure to prepare and follow site specific safe operating practices in consultation with the site-in-charge and safety professional. I will abide by penalty scheme in case of non-compliance.

Signature :

Name and Designation:

Stamp of Organization :

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Appendix 3: CSM F3 - Safety Terms and Conditions

(Attached as a separate document under the title CSM F3 – Safety Terms and Conditions)

Appendix 4: CSM F4 - Safety Potential Evaluation Criteria for Vendor Registration

At the time of vendor registration, vendor will be registered under 4 categories

- 1) **Category A-** Vendors eligible to carry out High risk Jobs
- 2) **Category B-** Vendors eligible to carry out technical jobs that are Medium/low risk
- 3) **Category C-** Vendors eligible to carry out administrative and office jobs
- 4) **Category D-** Outsourced Jobs / Consultants /Medical Practitioners / Suppliers etc

For vendors to be registered under **Category A/B**, a safety potential evaluation will be carried out based on following parameters. (Actual score is safety capability score)

Sr No	Description	Weight age (%)	Actual Score
1	Does the service provider have a valid 45001 Certification?	10	
2	During site visit check for safety adequacy at site	20	
3	Check the Safety statistics of Service provider (If available than 10 otherwise Zero)	10	
4	Check the trend LTIFR/LTISR for last 3 years (If less than 0.2 than give 10 Marks if between 0.2 to 0.3 than give 5 marks and otherwise Zero	10	
5	Has there been any prosecution / conviction for any Contravention regarding safety and Health provision under the factories Act/Electricity Act / BOCW Act and Rules framed there under? If yes Give Zero otherwise 10 Marks.	10	
6	Check the Safety orientation & training process of Service provider- Records of Safety training provided to safety officer/supervisor /workmen during last 1 year as percentage (%) of total employed by service provider ✓ Safety Officer: >80% of employees: 5 Marks, 50 to 79% of employee: 2.5 Marks and <50%: Zero. ✓ Safety supervisor: >80% of employees: 5 Marks, 50 to 79% of employee: 2.5 Marks and <50%: Zero. ✓ Workmen: >80% of employees: 10 Marks, 50 to 79% of employee: 5 Marks and <50%: Zero	20	
7	Check the organizational structure for safety professionals & engineers / supervisors. ✓ Check Availability of number of Safety Officers from government recognized institute as per workforce strength. 1 in 50 employees than 10 Marks, if 1 in 100 than 5 Marks otherwise Zero.	15	

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	✓ Check Availability of Qualified workforce from government recognised institute/TPSDI. 100% of safety officers qualified than 5 Marks, 50% TO 99% Than 2.5 Marks and if less than 50% than Zero Marks.		
8	Certified/skilled workers as a percentage of overall workforce	5	
	Total	100	

Evaluation Criteria for Category C

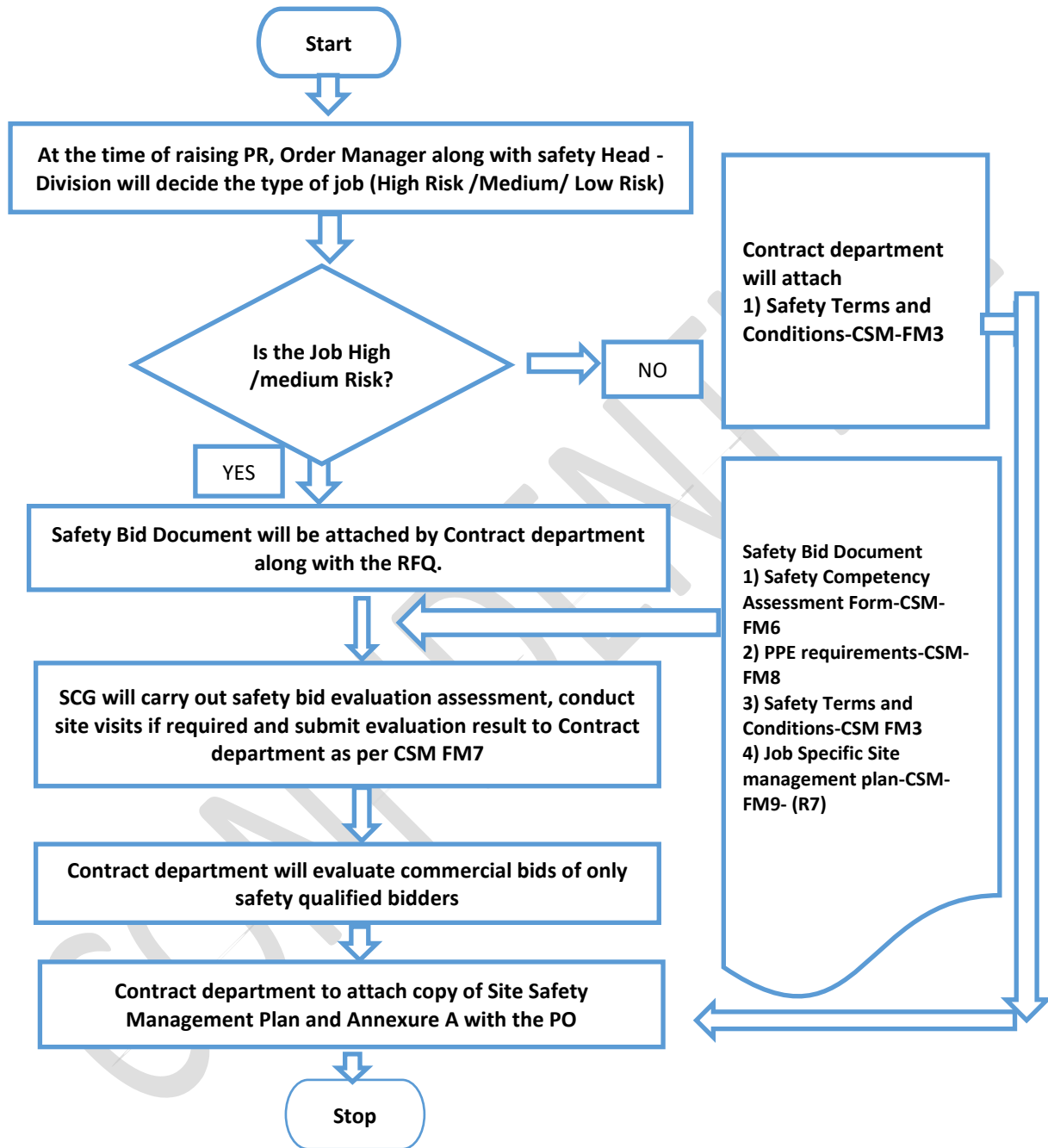
Sr no	Description	Weight age (%)	Actual Score
1	Does the contractor have a valid ISO 9001 certification?	40	
2	Check the Safety statistics of Service provider (If available than 10 otherwise Zero)	10	
3	Check the trend LTIFR/LTISR for last 3 years (If less than 0.2 than give 20 Marks if between 0.2 to 0.3 than give 10 marks and otherwise Zero)	20	
4	Has there been any prosecution / conviction for any Contravention regarding safety and Health provision under the factories Act/Electricity Act / BOCW Act and Rules framed there under? If yes Give Zero otherwise 10 Marks.	10	
5	Check the Safety orientation & training process of Service provider- Records of Safety training provided to safety officer/supervisor /workmen during last 1 year as percentage (%) of total employed by service provider ✓ Safety Officer: >80% of employees: 5 Marks, 50 to 79% of employee: 2.5 Marks and <50%: Zero. ✓ Safety supervisor: >80% of employees: 5 Marks, 50 to 79% of employee: 2.5 Marks and <50%: Zero. Workmen: >80% of employees: 10 Marks, 50 to 79% of employee: 5 Marks and <50%: Zero	20	
	Total	100	

Evaluation Criteria for Category D

Category D does not require any evaluation as it is for outsourced job outside the Tata Power company premise.

For vendor to be registered for any category, vendor's safety capability score should be $\geq 70\%$.

Appendix 5: CSM F5 - Flow Chart for Issuing RFQ and PO



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Appendix 6: CSM F6 - Safety Competency Assessment Form (Template)

Name of the Vendor/Bidder:
Name of the Sub Vendor (If job is given to Sub Vendor):
Description of the Job:
Request for Quotation (RFQ) No.:

Vendor/Bidder to mandatorily provide the below safety competency related information:

1. Proposed Manpower Deployment Schedule :-

Type of manpower	Qualification	Experience	Month 1	Month 2	Month 3
<u>Project /AMC Manager(R7)</u>						
Site In Charge						
Safety Manager						
Safety Officer						
Supervisors						
Technicians						
High Skilled workmen						
Skilled workmen						
Semiskilled workmen						
Lineman						
Helpers						
Drivers						
Unskilled						
<u>Others(R7)</u>						

Instruction to Bidders:

- i. Indicate the overall site manpower deployment schedule as above
- ii. Indicate direct or subcontracted employees by using color code given below:

Direct Bidder Employee – Green

Partly Direct / partly Subcontracted – Yellow

4.3.5 **Subcontracted – Red** *If subcontractor detail is not available at stage of Bid evaluation, then this can be agreed with Order manager or Engineer in charge before deployment Ensure that all sub-contractors follow the Tata Power Safety Procedure and agreed CSM F9 Site Safety Management Plan.R7*

- iii. Against each category, indicate minimum educational qualification and work experience

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- iv. Add rows to include other specialized manpower, if any.
- v. Extend columns to cover the entire duration of the proposed contract.
- vi. If the operation is in shifts, then indicate shift in charge and / or safety officers required for each shift operation.

2. List of Tools, Tackles, Machines and Equipment: -

Bidder/ Vendor to provide the list of tools, tackles, equipment **to be used during the job / project execution**. Bidder/Vendor to ensure that all the lifting tools and tackles, pressure vessels are duly certified by the competent person authorised by the Chief Inspector of Factories of the respective state prior to start of the job

Sr. No	Description of Tools / Tackles	Capacity / Rating	Quantity	Make	Year of manufacture	Remarks
1						
2						
3						
4						
5						
.....						

3. Safety Records:

Bidder to provide the details of fatalities and lost workday cases (LWDC), occurred in last three years (data to be provided for the last completed FY and preceding 2 years).

Description	Safety Data for current and Last 3 Years			
	Current Year	Year 1 (Last FY)	Year 2	Year 3
		20__ - __	20__ - __	20__ - __
Fatalities (Nos.)				
Lost Workday Cases (Nos.)				

In case of no fatalities, LWDC during any year, the form may be filled stating NIL against the respective year. Bidders are encouraged to also submit the RCA / incident investigation reports and the learning's implemented out of the above reported incidents

4. Job Safety Plan/ Method Statement:

Bidder to provide / enclose a detailed Site/Job Safety Plan along with a Method statement detailing the execution philosophy (how the bidder intends to execute the Job/Project), identifying all key activities which are required to be performed by the contractor at Site.

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Bidder to also list down all high-risk activities and provide the Hazard Identification and Risk Assessment (HIRA) for all such high-risk activities involved in the site work.

(Use Method Statement template attached as Appendix 9)

5. PPE Requirement -R7

Division/DISCOM Requirement	Bidders Response
The Bidder/Vendor shall ensure that all PPE of Approved standards as per CSM F8 – PPE Requirements shall be always available and shall be used by his employees with no exception whatsoever. Bidders to also ensure Standard PPE matrix of Tata Power to be followed for all activities.	
10% Buffer stock of PPEs to be provided by bidders at each circle to meet any contingency	
Bidder will ensure that sample PPEs to be submitted/approved by Safety Department along with EIC at the time of submission of Safety bids for evaluation In case bidder manpower found using substandard or any PPEs which are not approved by the Tata Power-Division /DISCOM representative, then Tata Power-Division /DISCOM will provide the same to manpower deployed at the cost of bidders.	

6. Vehicle Deployment: Bidders to provide details of all vehicles deployed during execution of work-(R7)

S. No.	Vehicle No.	Vehicle Type	Location	EV/CNG/Diesel/Petrol	Year	Whether CNG endorsed on RC

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7. Crane Deployment-(R7): Bidders to provide details of crane to be deployed during the execution of work as and when required. Bidders to provide approved new gen crane ACE Model SX150, ACE FX150 and Escorts Model TRX 1550.

SI No	Crane No	Location	Year

8. Training Records-(R7): Bidders to provide training records of employees deployed for the execution of work during last one year. These training includes OHS (Occupational Health and Safety) Training, Training on SOP/Work Procedures and Medical Emergency trainings imparted at their own facility, cost, and expenses. Bidders to provide the following details:

Tata Power-Division /DISCOM Requirement	Bidders Response
Training records of employees at their own facility, cost, and expenses for last one year	
Training facility available with Bidders	
Future road map for enhancing the competency of workforce	

9. Rewards and Recognition-(R7): Bidders to provide the details of process deployed in their organization for sharing and resolution of safety concerns raised by their employees. Also, bidders to provide the details of Rewards and Recognition process in their organization for safety to encourage the morale of their workforce.

10. Management System Certification: -

Sr.No	Certification	Yes / No	If Yes, Year of Certification	If No, Target date for Certification
1	ISO 9001			
2	ISO 14001			
3	ISO 45001			
4	Any other (Specify....)			

Note: Please attach certificates to support above. In case not accredited for above but applied for, application letters may be attached.

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Appendix 7: CSM F7 - Safety Bid Evaluation Criteria

The User must select whether the job is high /Medium Risk and long duration at time of raising the PR.

- 1) The decision whether job is "is high /Medium Risk "or not has to be made by order manager based on Risk involved (Risk Priority Number in HIRA) of the Jobs. An indicative list of high-risk jobs is attached as Appendix 14. The risk assessment will be done along with Division safety Head. R7
- 2) If a technical job is of low risk with estimated duration of the contract more than one year, the job should be treated as "long duration". R7
- 3) All Safety bids will be evaluated by Safety Concurrence Group. Structure of SCG will be declared by contract department with the assistance of Division / Discom safety. Safety team will audit bid evaluation process of a few selected jobs and Quality of evaluated safety Bids.
- 4) Records of jobs sent by for Safety Bid evaluation shall be maintained by Contract team in existing tracing sheet along with other jobs.
- 5) Safety bid evolution will be done by SCG within one working week. R7
- 6) Contracts / Division shall provide a list of regular Contractors participating in multiple tenders during the year for a one-time umbrella Safety Evaluation of Bidder (as against the specific Bid evaluation) by indicating the nature of the type of jobs / works which the BA usually participates in bidding. SCG shall evaluate such bidders for the requested works and on satisfying the evaluation criteria may be granted a Safety Pre-Approved status for the specific types of work (e.g., O&M of Boiler, Turbine, CHP, AHP, Turnkey EPC, Switchyard, Distribution Electrical Contract etc.) which shall be initially valid for a period of 1-year and shall thereon be extended further against revalidation / re-evaluation as required. R7
- 7) Business Associates having such Safety Pre-Approved status for the type / category of jobs shall be exempted from submission of Safety Evaluation Bid against each tender provided that their Safety Pre-Approved status is valid for the subject work / tender. R7
- 8) A suitable system shall be developed by Contracts to track the validity of such Safety Pre-Approved status of Bidder for timely renewal failing which the Safety Pre-Approved status shall cease and Bidder will thereon have to provide Safety Bids with each tender until such one-time approval is renewed. R7

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Safety Bid Evaluation will be based on following parameters.

Evaluation Criteria-(R7)

S. No.	Description	Max Marks	Criteria for evaluation
1.	Qualification and Experience of manpower	15	As per Clause No. 1
2.	Tools and Tackles to be provided by bidder	15	To be evaluated as per approved tool list of concerned departments.
3	PPE Requirements	5	To be evaluated as per approved PPEs standard and PPE Matrix specified in CSM
4	Job Safety Plan/ Method	15	To be evaluated as per as per SOP/WI/HIRA
5	Vehicle Deployment	5	Weightage will be given for CNG Vehicles with endorsement of CNG kit on RC/Electrical Vehicle
6	Crane and Mechanized heavy equipment Deployment	15	Date of manufacturing or running hours
7	Training Records	5	Training records to be evaluated with evidence and scoring to be done as per availability of records
8	Certificate Accreditation	5	ISO 9001-2.5 Marks ISO 45001- 2.5 Marks ISO14001- 2.5 Marks. Total Max 5 Marks for all Three
9	Safety Initiative for learnings implemented in accidents in organization and work force (Fatal / Non-Fatal)	15	Maximum 15 marks will be awarded for visible evidence in terms of safety initiative deployed based on learning of accident in organization and workforce in case of accident
10	Rewards and Recognition Process	5	Maximum 5 marks will be awarded for R&R process evidence
Total		100	

Safety Records (Lag Parameter)-(R7)

1.	Fatal Accident	(-) 10 Marks for each case with max of 15 marks	<p>For any fatality in Tata power /Other company in Current and last three years 10 marks will be deducted with maximum up to 15 marks.</p> <p>For new entrant BA, these marks will be deducted for Past safety records.</p> <p>If and BA found hiding such facts, then contract will be terminated immediately during the execution stage.</p>
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2	LWDC (Non-fatal)	(-) 5 Marks for each case with max of 10 marks	<p>For each LWDC (Non-Fatal) case in Tata power /Other company in Current and last years, 5 marks will be deducted with maximum up to 10 marks.</p> <p>For new entrant BA, these marks will be deducted for past safety records.</p> <p>If and BA found hiding such facts, then contract will be terminated immediately during the execution stage.</p>
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Final Qualifying Criteria

S. No.	Description	Max Marks	Criteria for evaluation
1.	Qualified Bidders	More than 70 marks	Marks Obtained. 60 Marks for New business-like Odisha Discom for one year from CSCC implementation date.

		Minimum Requirement	Weight age (%)	Score Obtained
Manpower	Safety Officer (1 per 500 workers) or as per requirement	<p>Qualification - Safety Officer shall possess recognized degree in any branch of engineering with practical experience in similar industries of Min 2 years and Advance Diploma In Industrial Safety by State technical board. (Each state government prescribes the qualification of safety officer.). Require knowledge of Local language.</p> <p>Experience- Minimum 2-year experience in relevant field as mentioned in the job in PR.</p>	5	
	Safety Supervisor (1 per work site up to max. 50 workers)	<p>Qualification- Supervisor shall possess ITI/ Diploma in relevant field. PDIS is desirable, but not mandatory. Require knowledge of Local language.</p> <p>Experience- Minimum 5-year experience in relevant field as mentioned in the job in PR.</p>	5	

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		<p>Training – Trained and certified by Tata power Skill development Institute or equivalent institute in relevant safety procedures.</p> <p>Note: On request of the contractor/Users - TPDSI should vet & certify the skilled & experienced Technician if Technical Qualification is not adequate.</p>		
	<p>Qualified Technician (Skilled workers as electrician, rigger, fitter, welder, cable jointer, line men etc.)</p>	<p>Experience- Minimum 2-year experience (or experience prescribed by state government) in relevant field as mentioned in the job in PR.</p> <p>Training – Trained and certified by TPDSI or equivalent institute in relevant safety procedures.</p>	5	
<p>Tools & Tackles</p>	<p>Equipment / Machines/ Tools & Tackles (lifting and shifting tools)</p>	<p>The list of Equipment /Machines / Tools and tackles to be used for job to be submitted by the contractor.</p> <p>Evaluation of the list will be carried out based on</p> <ol style="list-style-type: none"> 1) Suitability as per the relevant job 2) Make and age of the tools from authorized agencies defined by the user. 3) Certification by the competent authority of respective state. 	15	

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Appendix 8: CSM F8 - PPE requirements-(R7)

The Contractor shall ensure that the following PPE of Approved standards shall be always available and shall be used by his employees with no exception whatsoever. • PPE shall be conforming to BIS/DGMS/DIN specifications, in good condition and shall be comfortable to his employees, when used. This is indicative. For better clarification refer PPE procedure-TPSMS/GSP/PPE/023. as per safety terms and condition Appendix 3 CFM 3 in detail. R7

PPE Requirement

1	All contractor's employees at site	Safety Florescent Jacket (orange color), Safety helmet & safety shoes with composite or steel toe cap
2	Workers mixing asphalt, cement, lime / concrete	Safety goggle & protective Hand gloves and footwear, Nose mask.
3	Welders / Grinders/Gas cutters	Welding screen/goggles, safety shoes, leather hand gloves, aprons, leg guard
4	Stone breaker	Protective goggle, hearing protection, anti-vibration hand gloves and Protective clothing.
5	Electricians / Linemen	Rubber hand gloves <i>with correct voltage rating and expiry date normally one year from Manufacturing date-(R7)</i> & Electrical resistant shoes, Safety helmet with induction strip to alert about presence of voltage for those linemen who climb the poles or work on electrical equipment
6	Workers working at a height of 1.8 Meter or above.	Double lanyard full body harness, fall arrestor and safety net made of reinforced nylon fiber ropes firmly supported with steel structures, Work positioning attachment


PPE Type and Testing Frequency






Sl. No.	Name of PPE	IS / EN Standard	Testing Frequency	Remarks
01	Leather Safety Shoes (Color – Black) with PU toe cap.	IS:15298 (Part-2)	Monthly and visual check every day for any crack or damage in the leather or sole.	

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02	HDPE Safety helmet with chin strap and ratchet type for adjustment for non-Electrical work	IS:2925-1984	Monthly and visual check every day for any crack in shell.	
03	Full body harness (Safety belt)	EN 361	Monthly and visual check every day of the bends and the harness.	
04	Electrical Safety Gloves	EN: 60903 CE marked	Weekly and visual check for any crack and blow test before every work.	Manufactured not beyond 12 months.
05	Full face visor with safety helmet	EN: 166 CE marked (Visor)	Monthly and visual check every day for any crack in shell.	Clear acrylic visor attached with safety helmet.
06	Fireproof jacket for chest protection		Monthly and visual check every day.	
07	Safety helmet with induction Strip for linemen and working for electrical work-Class E	EN 397/2012	Monthly and visual check everyday	Induction Strip alerts presence of voltage
08	Shorting clamps, crocodile clamps, Discharge Rod and Neon tester		Monthly and visual check everyday	For discharging the residual voltage and test before touch

Pictorial View of PPEs for reference purpose

Sl. No.	Name of PPE	IS / EN Standard	Picture
01	Leather Safety Shoes (Color – Black) with PU toe cap.	IS:15298(Part-2) and with test report of electrical resistance.	

02	<p>HDPE Safety helmet with chin strap and ratchet type for adjustment for Nonelectrical work and electrical work</p>	<p>IS:2925-1984/ EN 397/2012</p>	
03	<p>Full body harness (Safety belt) The straps at shoulder and thigh shall have full pad for comfort. The back shall be so designed that harness straps do not tangle with each other.</p>	<p>EN 361:2002 EN 358 : 2000 IS: 3521:1991/2002</p>	
04	<p>Electrical Safety Gloves – Composite type Soft electrical gloves as per size of individual.</p>	<p>EN: 60903 CE marked</p>	
05	<p>Full face visor with safety helmet</p>	<p>EN: 166 CE marked (Visor)</p>	
06	<p>Fireproof jacket for chest protection</p>		
08	<p>Reflective jacket to each workman</p>	<p>As per Tata Power standard</p>	

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These pictures are indicative. Actual product may vary.

Note:

1. Any other Personal Protection Equipment required beyond above list will be according to BIS or EN Standards.
2. All Personal Protection Equipment will be checked by the engineer in-charge or SAFETY group of company.
3. Safety Representative of the BA must maintain the record of the availability, condition and checking of the PPEs.
4. All tools required as per the contract must be according to respective IS / EN standards.
5. Company may revise or add the above list of PPE and their specifications as and when feel necessary. The information about new specifications /models will be circulated by the Engineer In-charge (EIC), which shall adhere by the business associated in the shortest possible time. The EIC shall issue a memo / instruction to BA with timeline for implementation. Any delay will be treated as non- compliance / safety violations.

Appendix 9: CSM F9 - Site Safety Management Plan / Method Statement

Site Safety Plan / Method Statement (Template)

This Method Statement describes the specific safe working methods which will be used to carry out the described work. It gives details of work procedure with control measures to counter health and safety issues related to this work. The listed content of this Method Statement can be changed/modified subjected to job scope / specifications, but task specific method statement once finalized & approved, that should not be modified during work execution without permission from the approving authority.

Project/Job Name		
Scope of work: -		
Drawing References: -		
Detail of Sub contractors involved: -		
Method Statement Prepared By: - Designation: - (e.g., Site Manager)	<u>Signature</u>	<u>Date</u>

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1.0 Introduction (*Describe purpose of the work, give details of type and scope of work being carried out*)

2.0 Location of Work (*Give site address and precise location on site where work is to be carried out*)

3.0 Safety Document /Specific Approval Required (*Details of any safety documents or specific approval i.e., Client specific approval required to undertake the work*)

5.0 Role & Responsibilities of Personnel/Parties Involved in activities: *Clearly define roles and responsibilities of all personnel involved in activity i.e., Site management staff including subcontractors' staff, Project Manager/Site Manager of principal contractor, Sub Contractor Site Manager, Project Engineer, Safety officer, Competent Supervisory Staff etc.)*

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6.0 Working/Activity Description: - *It is important that all operatives should have clear idea of those operational sequences and responsible supervisor must verify their competency prior to their engagement in operation.*

6.1 Pre-Working Checks

6.2 Resources (Equipment, tools including manpower) Details *i.e., Equipment and Tools, specific operational equipment, test kits, lifting resources, Details of materials to be used in operation, including any reference to COSHH assessments in case of use of any chemicals, Details of the manpower allocated to the task, e.g., titles, qualifications, competences, direct manpower, contractors. Details of plant, tools, and equipment to be used for the work, including the availability of relevant statutory documents, checks or inspections etc. Details of fencing, barriers, cones, chains, dangers notices, warning signs etc.*

Tools required for work:

Sr.No	Tools /Equipment /Machine	UOM	Required Qty.	Remark
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

6.4 Operational Sequence of work: - *Full description of the work, setting out the methodology in a sequential manner, including any reference to any identified operational restraints. Also refer here sec. 5.0 responsibilities part for every step of work sequence).*

S. No	Activity	Details of job sequence	Risk Involved	Control Checks
1.				
2.				
3				
4				
5.				

6.7 Final Checks & restoration of work area after completion of work: *Those checks to be carried out by responsible supervisor in witness of his line hierarchy by use of specific checklist of certain operational checks and once those completed satisfactory, PTW (if applicable) to be closed and isolation arrangements to be restored by removing barricades/cautionary tags.*

7.0 Task Specific Hazards: - *Refer to Task Specific Risk Assessment and attach in appendix*








Attachment: - Specific Risk Assessment

In addition, please provide below control measures in risk assessment *(as applicable)*.

Fall Protection Measures: (Where Work at height cannot be avoided)	
Control Measures for Electrical Hazards	
Others Hazard if any (please provide details)	

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Hazardous Substances to be used in job:
(Attach MSDS if required)

 Acute Toxic	 Health Hazard	 Corrosive	 Dangerous For the environment	 Oxidising	 Highly flammable	 Explosives
Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/ N

7.0 Emergency Provisions: *Relevant operational possibility of a programme in the case of emergency situation i.e. electrical supply restoration. In addition, emergency response provisions i.e., first aiders, firefighting, and first aid arrangements, nearest onsite/offsite emergency response also to be considered during emergency planning.*

8.0 "5S issues" / Waste Disposal/ Housekeeping and Environmental issues: *Details waste disposal processes and or housekeeping activities, Details of environmental impacts and control measures.*

9.0 Personal Protective Equipment (PPE): *Tick on PPE requirements for the task/Job*

Safety Helmet / Hard Hats		Safety Shoe / Safety Boots	
Gum Boot		Double Lanyard Safety Harness with work positioning attachment	
Electrical Hand gloves		Other hand gloves	
Eye protection		Respiratory protection	
Ear Protection		Electrical Arc flash suit	
Chemical resistant suit		Reflective Jackets	
Any Other		Any Other	

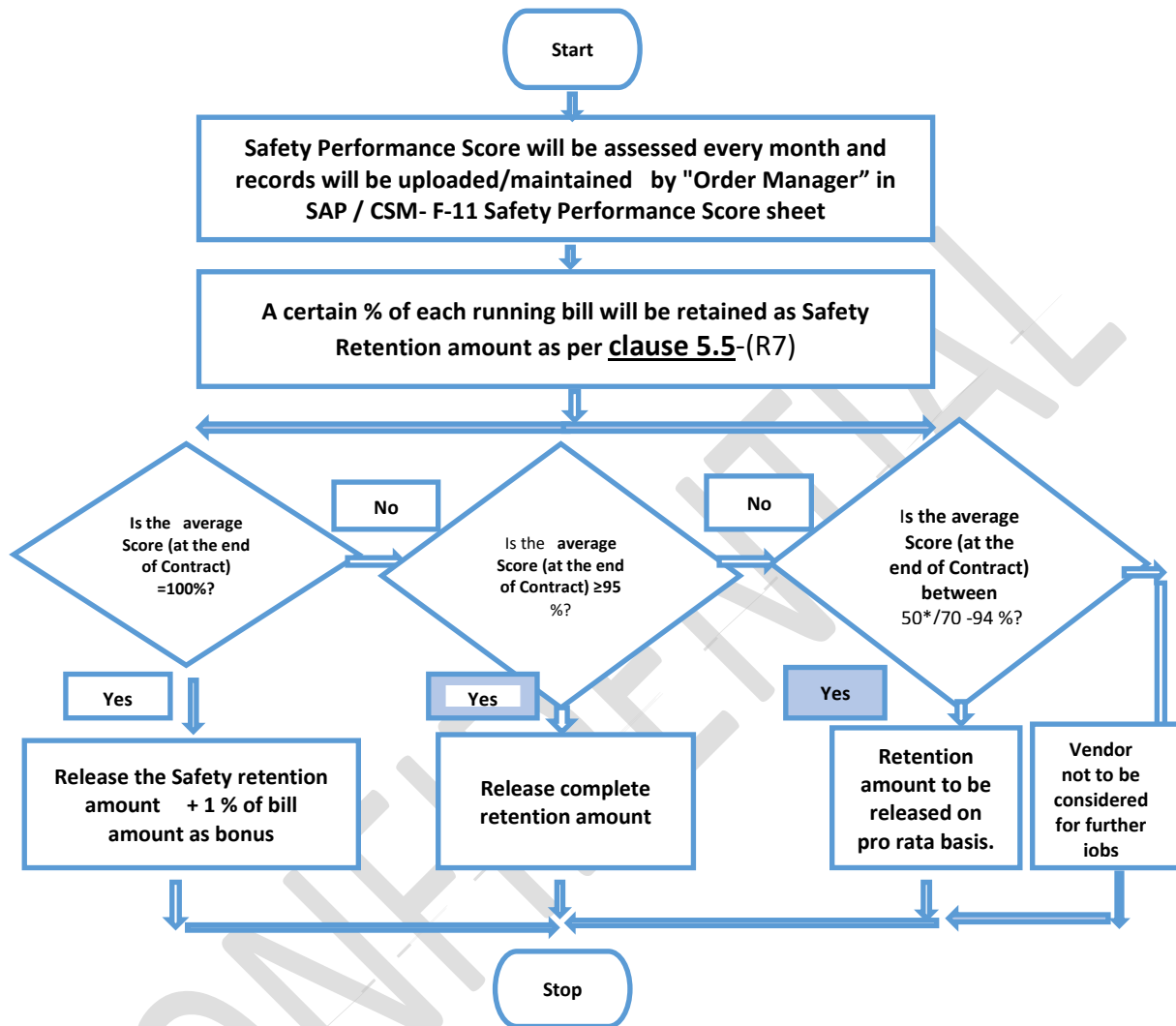
10.0 First Aid facilities and Nearby Hospitals Details

- Name of On Site First Aider
- First Aid Box Location
- Location of nearest hospital

11.0 Occupational Health, Fitness and COVID-19 related Preparedness:

- Please give a brief writeup / methodology of your organization's plan to avoid impact of the COVID-19 pandemic at Tata Power working site.
 - Please give brief details of occupational health and hygiene related interventions planned by your organisation to ensure good health and fitness of workforce at Tata Power site.

Appendix 10 – CSM F10 – Process Flow Chart for Safety Performance Evaluation



* For New Business such as Odisha Discoms-(R7)

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Appendix 11: CSM F11 - Safety Performance Evaluation Criteria
Safety Performance Evaluation Report- CSM F11

Sr. No	Parameter	Unit of Measurement	Target	Weight age	Actual Performance	Actual Score
Lead Indicator						
1	% of Employee certified in TPSDI/Authorized agency	%	100%	20		
2	Monthly inspection and replacement of damaged Personal Protective equipment -PPE by_contractor	%	100	10		
2	Monthly inspection and replacement of damaged Critical Equipment, lifting Tools & Tackles and hand tools used at site by_contractor	%	100%	15		
3	Condition of critical tools, tackles, and equipment to be checked by order manager or Engineer in Charge.	%	100%	10		
4	Safe Disposal of Waste generated (Designated way) Records of Waste generation (Hazardous waste, oily cotton waste, E Waste) No effluent to drain or discharge to ground	Yes / No	Yes	10		
Lag Indicator						
1	Number of Fatalities	No	0	15 / 20*		
2	Number of Lost workday case (LWDC) (reportable)	No	0	10 / 15*		
3	No of Recordable Cases (Exclude Fatalities and LWDC)	No	0	5 / 0*		
4	Man-days Lost	Man-days	0	5 / 0*		
					Final Score	
					Invoice Value	
					Amount to be released	

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Safety Performance Evaluation Criteria

Lead Indicators

		Target			
1	% of employees certified in TPSDI/Authorized agency	100%	51% to 99%	50%	<50%
	Score	20	Pro-rata	10	0
2	Monthly inspection and replacement of damaged Personal Protective equipment - PPE by contractor	100%	99% to 50%	<50%	
		10	5	0	
2	Monthly inspection and replacement of damaged Critical Equipment, lifting Tools & Tackles and hand tools used at site by contractor	100%	99% to 50%	<50%	
	Score	15	7	0	
3	Condition of critical tools, tackles and equipment <u>to be checked by order manager</u>	100%	<100%		
	Score	10	0		
4	Safe (designated way) Disposal of Waste generated, Records of waste (Hazardous Waste – Oily cotton waste – E- waste etc.) generation No effluents to drain/discharges to ground	YES	NO		
	Score	10	0		

Lag Indicators

		Target			
1	Number of Fatalities	0	>0		
	Score	Score	15 / 20*	0	
2	No of LWDC - Reportable	0	>0		
	Score	Score	10 / 15*	0	
3	No of Recordable Cases (Exclude Fatalities and LWDC)	0	1	>1	
	Score	Score	5 / 0*	5	0
4	Man-days Lost	0	1-5	>5	
	Score	Score	5 / 0*	5	0

* For New Business such as Odisha Discoms-(R7)

Appendix 12: CSM F12 - Safety Violation Penalty Criteria

Major Violations and Escalation matrix--(R7)

Consequence of safety violation observed not related to incidents or accidents		Violations				
Sl. No.	<u>Safety Violation</u>	1st	2nd	3rd	4th	<u>Subsequent violation</u>
1	Working without required PPE such as Helmet/gloves/safety shoes/Safety harness etc.	A	B	C	D	Will Attract the same penalty as 4th violation
2	Working without proper tools and tackles	A	B	C	D	
3	Poor or bad condition of Crane/Hydra/Vehicle and/or Incompetent driver and/or helper).	B	C	D	E	Termination of Contract and blacklisting after repetition of violations (3 to 4 times as the case may be)
4	Improper Working at Height	B	C	D	E	
5	Untrained /unauthorized workman engaged in high-risk jobs	B	C	D	E	
6	Violation of SOP or WI or LOTO	C	D	E		
7	Working without PTW or LC / Without authorization / Without creating Safe Zone	C	D	E		

Legend	Action to be Taken	Responsibility	Penalty (INR)	Repeat Violations
A	Levy of Penalty	Order manager / EIC	5000	The no. of repeat violations shall be calculated cumulative during the contract period, not on a monthly basis
B	Memo to BA and Levy of Penalty	Order manager / EIC	10000	
C	Memo to BA and Levy of Penalty	Order manager / EIC	25000	
D	Memo to BA and Levy of Penalty	Order Manager / EIC	50000	
E	Memo to BA, Levy of Penalty, Termination of Contract, Blacklist	Order Manager / EIC	100000	

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Other Violations and Penalty

Penalty shall be imposed on the contractors under the following circumstances for breaching the contractual agreements. The list is not exhaustive, but indicative.

Sl. No	Description of Violation	Severity	Penalty (INR)
1.	Unhygienic/Bad condition of PPE	2	500
2.	Unsafe Act/Condition of Severity 4	4	4000
3.	Unsafe Act/Condition of Severity 5	5	5000
4.	No Earthing of Electrical equipment	5	5000
5.	Working without efficient supervision	4	4000
6.	Non-reporting of incidents	3	3000
7.	Starting the job without Toolbox Talk	4	4000
8.	Electric cable tied with metal wire / Use of damaged electrical cable / Use of two core cable	3	3000
9.	Rubber mat not available in front of electrical panels.	3	3000
10.	Inserting naked wire into the socket instead of a plug	5	5000
11	Inflammable materials stored inside PSS/FCC/Distribution Room	5	5000
12	Water accumulation found near electrical panels / equipment	5	5000
13	Grinding wheel/ Coupling/ Piling winch/other rotating parts without guard	4	4000
14	Inadequate illumination of working area	3	3000
15	Bringing inside PSS/FCC or any other work area any chemicals without approval.	5	5000
16	Loose materials in work area which can fall down or fly during a storm	5	5000
17	Misusing emergency facilities like fire hydrant line/ hose box/ spray system/ eye wash etc.	3	3000
18	Entering restricted areas like switch yard, hazardous material storage room etc. without authorization	3	3000
19	Not using 24 V lamp inside confined spaces	3	3000
20	Bypassing/overriding safety interlocks	5	5000
21	Working besides road without proper barricading and monitoring of traffic	5	5000

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22	Smoking in prohibited area (Closed Go-downs, Storage of flammable material, Storage of Gas cylinders, PSS , Offices etc.)	3	3000
23	Improper stacking of materials in Storage Yard	4	4000
24	Sleeping at workplace	3	3000
25	First aid box not available / in locked condition	2	2000
26	Appointment of subcontractor without his Safety Bid Evaluation and/or without the permission of engineer in charge or Order manager.	5	5% of order value
27	Bad Housekeeping with respect to TPSMS/GSP/GHK/022 <ul style="list-style-type: none"> • 1st Instant • 2nd instant • 3rd instant • 4th instant • Subsequent instants 	2	<ul style="list-style-type: none"> • 1000 • 2000 • 5000 • 10000 • 10000
28	Violations related to vehicles with respect to TPSMS/CSP/RSP/015. <ul style="list-style-type: none"> • Parking without wheel choke • Parking in undesignated area • Heavy vehicle without helper or co-driver • Seat belt not available / not used • Driver without license • Heavy vehicles without reverse horn • Using mobile phone while driving • Lights/mirrors not working /broken 	3	1000 per each violation
28	Violation in Gas cutting and Gas cylinder handling <ul style="list-style-type: none"> • Cylinder valve without guard • No flashback arrester • Leaky DA/Oxygen hose • Cylinders not kept in secured manner • Cylinder trolley not available • Cylinders are transported by manual rolling 	5	2000 per each violation
29	Violations in Lifting Operations w.r.t. to TPSMS/CSP/HEMS/005 <ul style="list-style-type: none"> • Hook latch missing • Load raised or swung over people or occupied areas of building • Persons standing within the swing area of the crane • No barricading of crane working area • Use of damaged lifting tools and tackles 	5	2000 per each violation

	<ul style="list-style-type: none"> Lifting tools and tackles not tested / Test certificate expired Crane operator without proper license Angular loading Lifting / shifting heavy material without guide rope Using mobile phone during loading and unloading jobs 		
30	Violation in Scaffolding work w.r.t. to TPSMS/CSP/SCAF/007 <ul style="list-style-type: none"> Unstable scaffolding/nonstandard Scaffolding in use Handrails/mid rails/toe guards missing Safety harness not anchored on fixed structure Opening found in working platform 	5	2000 per violation
31	Violation in Excavation Work w.r.t. to TPSMS/CSP/EXS/002 <ul style="list-style-type: none"> Loose material falling into excavated pit Water logging in excavated pits / trenches Inadequate or no barricading Undercut / cave in found on sides of excavated pits 	4	2000 per violation
32	Caution boards, danger signs (luminescent /red) along with emergency contact number are not found displayed.	3	3000
34	Spillage of hazardous material/chemicals during transportation	4	4000

Penalty for Incidents / Accidents-(R7)

Consequence of incident / Accident		Incident / Accident				Action Required
Sr.No.	Type of Injury	1st	2nd	3rd	4th	
1	Major Injury (Bone injury or burn or hospitalization >48 hrs.) Non-fatal	F	F	G	G	Action Required
2	Major Injury (Bone injury or burn or hospitalization >48 hrs.) Non-Fatal (Two or more non-Fatal in one event)	G	G	H		Intolerable
3	Single fatality	G	H			
4	Multiple fatalities (Two or more fatalities in one event). Anywhere in Tata power.	H				

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Legend	Action to be taken	Responsibility	Penalty (INR)	The no. of violations shall be calculated cumulative during the contract period for all contracts in SBU, not on a monthly basis
F	Memo to BA and Levy of Penalty	Order Manager/Engineer in charge	200000	
G	Memo to BA and Levy of Penalty	Order Manager/Engineer in charge	500000	
H	Memo to BA, Levy of Penalty, Termination of Contract and Blacklisting the BA	Order Manager/Engineer in charge	1000000	

Appendix -13: CHECKLIST TO BE USED DURING SITE VISIT

Checklist to be used: During site visit to check the adequacy Safety systems.			
		Observation	Score* (1-5)
1	Check the adequacy of safety policy and Safety Management system of the contractor.		
2	Does the contractor have written down safety procedures?		
3	Check the records of Near miss, unsafe act, unsafe conditions, and incidents.		
4	Check the organization setup to implement the safety systems at site (safety officer, safety supervisor)		
5	Check whether safety meeting and toolbox talk carried out regularly and records maintained or not.		
6	Is the process of incident investigation adequate or not?		
7	Verify incident reporting and recording system		
8	Check the usage of equipment/tools and tackles.		
9	Check for housekeeping at site		
10	Check the use of PPEs and general behavior of workforce towards safety		
	Total Score		
	Site Visit Score		

Score*- rating on the scale of 1-5 to be given based on the observations on site. Score of 1 is the lowest and core of 5 is the highest.

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Appendix 14: Indicative List of High-Risk Jobs

Indicative high-risk jobs are given below. This is not an exhaustive list. This is only indicative.

Sl. No.	Jobs
1	Transmission Line Tower Erection on columns, near live lines, In congested areas, In creeks, In the Sea.
2	Conductor Stringing on Tower Using Tensioner & Puller in the area such as Line Crossing, Near Live lines, Congested Areas, Road Crossing, Bridge Crossing, Railway line Crossing, In creeks, In the Sea
3	Cable Pulling by Using winch Machine in City and Rural Areas
4	Hot Washing of HT and Extra HT lines, Towers and switchyards equipment
5	Maintenance / Testing and Replacement of High Voltage (33 KV etc.) Switchyard equipment
6	Installation of Lifts
7	Installation of EOT Cranes
8	Tower Dismantling
9	Working on H Frame /Pole mounted Transformers
10	Excavation in operational Area having power cables in receiving station
11	Identification and spiking of cable / disconnection of cables from poles
12	Working on Electrical Panels
13	Working on live electrical switch yard, Material handling and equipment repair/installation.
14	All activities that require climbing on a pole/structures/Towers/Transformers
15	Cable laying and termination jobs
16	Excavation beyond 5 feet near existing building and structures
17	Working in confined Spaces
18	Stringing of new conductors over poles

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		TATA POWER		

Appendix 3: Safety Terms and Conditions

Reason for Change	Date of Last Revision	Prepared By	Reviewed By	Approved by
Inclusion of Odisha Discom and periodic Revision	<u>10-Jan-2021-R4</u>	All Discom and CFT members	Debi Prasad Acharya (Head-Safety-Odisha Discom)	Suresh H Khetwani (Chief safety and Environment)

Clause	Sub-clause	Description	Page No
1.0		Objectives	3
2.0		Scope	3
3.0		Safety Organization & Responsibilities	3
	3.1	Contractor Site Management and Supervision	3
	3.2	Contractor Supervisors and General Staff	4
	3.3	Contractor Workforce	4
	3.4	Vendor/Contractor/sub-contractor	5
4.0		<u>Tools and Tackles(R5)</u>	6
5.0		Site Safety Rules and Procedures	6
6.0		Critical safety Rules and Procedures	6
7.0		<u>General Safety Rules and Procedure(R5)</u>	8
8.0		Training and Capability Building	10
9.0		Pre-Employment and Periodic Medical check-up	12
10.0		Safety performance retention(R5) and Safety Performance Evaluation	12
11.0		<u>Recognition to the Prior Learning in Safety-R5</u>	12
12.0		Other Conditions	13
<u>General Safety Conditions for various contracts Specific to Discom(R5)</u>			
13.0		<u>Safety Conditions for maintenance of STS (Sub Transmission System) Network for Discom(R5)</u>	14
14.0		<u>Safety Conditions for maintenance of 11 KV and LT Network for Discom(R5).</u>	15
15.0		<u>Safety Conditions for the major contract work in Civil Projects for Odisha Discom(R5)</u>	16
16.0		<u>Safety Conditions for the major contract work in Commercial Department like - MMG, RRG, EAG, etc(R5)</u>	17
17.0		<u>Safety Conditions for Major Projects in Distribution Network(R5)</u>	18
18.0		<u>Schedule of Safety Audits by BA Safety Staff(R5)</u>	19

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1.0 Objective:

The Objective of Safety Terms and Conditions is to apprise the Business Associates about various critical procedures of the Tata power Division/Discoms and the expectations from the BA to implement such procedures without fail. Certain terms and conditions are also mentioned to ensure a safe work atmosphere round the year. Refer Contractor's Safety Code of Conduct- Document no TPSMS/GSP/ CSM/015

2.0 Scope:

This procedure applies to all operating and project sites of The Tata Power Company Ltd and Group companies including new businesses like Electric Vehicle charging, Home Automation, Microgrid, Roof top solar etc. This Code of Conduct also applies to all operating and project sites of four Odisha Discoms and New business based on mutually agreed timeline for implementation. R5

3.0 Safety Organization & Responsibilities

3.1 Contractor Site Management and Supervision

Each Contractor will be responsible for fulfilling all statutory and safety requirements as per the laws of the land and not limited to Factory Act, Electricity Act, Electricity Rules and Regulations, Shop and Establishment Act etc.

Each Contractor shall provide at least one competent full-time safety supervisor for workforce of every 50 workers or less than that. When workforce ranges to 500, the contractor must provide at least one qualified safety officer (This may be subjected to change as per applicable act). Thus, for work force of 500 workers there will be one qualified safety officer and 10 safety supervisors. For every 500 additions in workforce, the contractor must add 1 safety officer and 10 safety supervisors. The Order Manager or Safety Department of the Tata Power Division /Discoms will review and approve the appointment of all safety officers and supervisors. The safety supervisors/officers will work with the guidance from Tata Power Division /Discoms Safety Department and align themselves with Tata power Division/Discom safety requirements.

For O&M related AMC activities, minimum one qualified safety officer to be deployed for each Division of the Discoms.

Qualified safety officer means he or she has completed PDIS or ADIS from a recognized institute.

Site Safety Officer/Safety Supervisor / Safety Coordinator shall be interviewed by the Order Manager/ Safety head of the Tata Power Division/Discom and then gate passes shall be issued if the interview is successful.

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Site Manager of Contractor/Subcontractor is responsible, and will be held accountable, for the safety of their own workforce as well as that of sub-contractors. He should also ensure that all equipment, materials, tools, and procedures remain in safety compliance at job site.

Responsibility of Site manager includes, but not limited to:

- 3.1.1 Holding officer/supervisors accountable for safety and actively promote safe work performance.
- 3.1.2 Participate in and cooperate with all safety program requirements to be implemented to meet Tata Power Division /Discoms safety objectives
- 3.1.3 Ensure timely reporting of safety incidents, near misses, unsafe acts, and conditions.
- 3.1.4 Identify the training needs of BA employees and maintain all safety training documents.
- 3.1.5 Provide Safety Performance Report at an agreed frequency.
- 3.1.6 Stopping of unsafe work (Acts and/or Conditions) immediately. Work to start only after corrective actions are implemented.
- 3.1.7 Ensure and participate in daily toolbox talk for all the jobs.
- 3.1.8 Ensure that only tested and certified tools and equipment are issued to the workers and being used at the site.

3.2 Contractor Supervisors and General Staff.

Contractors' site supervisors and general staff members in charge of job site functions such as field engineering, warehousing, purchasing, costing, and scheduling etc. are responsible for the safe performance of the work of those they supervise. They must set an example for their fellow employees by being familiar with applicable sections of the Site Safety program and ensuring that all site activities are performed with SAFETY as the primary objective.

Each site supervisor is responsible and will be held accountable for identifying, analyzing, and eliminating or controlling all hazards through implementation of an aggressive, pro-active Health, Safety and Environmental Program. Each supervisor will proactively participate in the Safety program by observing, correcting, and recording unsafe acts and conditions at plant / sites.

3.3 Contractor Workforce

- 3.3.1 Contractors shall provide adequate quality and quantity of manpower as mutually agreed. (R5)
- 3.3.2 All the contractor employees shall attend "SHE L0(Other than new business and Odisha Discom)/L1 Foundation Course in Safety". Depending on the critical procedure in job employees shall also be required to attend "SHE L2 course of critical/high risk operations". All Supervisors shall be required to attend "SHE L3 Supervisory Training". All the above trainings will be conducted by TPSDI/Skill development institute of Disco, or other equivalent institute approved by Tata Power.

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- 3.3.3 Contractor employees shall be required to attend any other additional training if suggested by Order manager or Site Safety Head. The cost of such additional training shall be borne by the Vendor.
- 3.3.4 Contractor / Vendor shall mobilize their manpower well in advance to complete the training through TPSDI/Sill development Institute.
- 3.3.5 The Vendor / BA shall arrange or bear the conveyance and food expenses incurred during training of BA employees in Odisha Discom. (R5)
- 3.3.6 The validity of the training L1, L2 and L3 is 3 years. There will be competency assessment as Revalidation test in every three months for Tata Power Division and six months for Odisha Discom till one year from implementation of CSCC.(R5) Those who fail in the competency assessment shall undergo training again.
- 3.3.7 Supervisors/Welder/Electricians/Line man /Fitters /Radiographers/Riggers engaged by the contractor shall have valid competency certificates issued by authorized agency/Institute.
- 3.3.8 Contractor workforce must make safety a part of their job by following safety rules and regulations and by using all safeguards and safety equipment. They must take an active part in the Safety programs for the Site.
- 3.3.9 Every member of the workforce is expected to report for work without influence of any Drug/Alcohol. Failure to comply with this requirement shall result in immediate termination of employees under the influence of drug and alcohol plus show cause notice/penalty to the vendor.
- 3.3.10 All employees shall report hazardous conditions, practices and behaviours in their work areas and correct wherever possible.
- 3.3.11 Workforce is responsible for active participation in safety and health programs, suggestion systems, trainings and reporting of unsafe act/practices, Unsafe conditions incidents and injuries to their supervisors.

3.4 Vendor/Contractor/sub-contractor

- 3.4.1 Vendors/Contractor shall always comply with and ensure that their workforce comply with all site safety rules and regulations. Specifically, with applicable provisions of the Site Safety Management Plan and all statutory safety rules and regulations.
- 3.4.2 After receiving the work order/ purchase order vendor/contractor/bidder shall not appoint Sub-contractor without safety assessment of the sub-contractor through safety concurrence group Under Contractor Safety Code of Conduct. Penalty of 5% of contract value will be applicable to the contractor if subcontractor is appointed without the permission of SCG and without evaluation through CSCC process.

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4.0 Tools and Tackles(R5)

- 4.1 Tools & Tackles used to carry out the job shall be checked and inspected by Order Manager and safety Officer.
- 4.2 Vendor must submit a valid Certificate from Competent person under the Factories Act 1948 and State Factories Rule for all Lifting Tools and Tackles (like Hoist, D Shackles, chain Block, wire ropes etc.).
- 4.3 All Electrical Hand Tools must be tested for leakage of current by a person /agency authorized by Tata Power Division /Discoms. Electrical power must be taken though RCCB of 30mA. Electrical hand tools should not have cord more than 3 meters in length. If power source is at > 3 meters, extension boards with RCCB of 30 mA and ON/OFF switch, shall be used.
- 4.4 Removal or inclusion of tools any new tool /tackles / machinery / equipment at site should only be done with concurrence of the order Manager / Head Safety.

5.0 Site Safety Rules and Procedures:

The work in the safest possible manner can only happen when it has been carefully planned and all applicable procedures are followed. The Tata Power Safety Procedures are derived from Tata Power best practices and the applicable Government acts regulations. In each case, the most stringent regulation is used. All safety rules and procedures developed from time to time shall be mandatorily followed by the vendor and his employees while working at Site.

6.0 Critical safety Rules and Procedures: Following is the list of Tata Power's critical Safety Rules and Procedures. Contractor shall refer to approved Rules and Procedures for detailed requirements and ensure conformance

6.1 Lock Out and Tag Out Procedure.

This procedure is intended to be used for the protection of Personnel while servicing or performing maintenance on distribution network/ equipment / pipeline / vessel / process systems. This is a general procedure that shall be used as the minimum requirements for isolation of equipment, pipelines, machines, system from all possible sources of hazardous energy and / or material such as Steam, Hot Water, Compressed Air, any other process fluid / chemical energy /Mechanical energy or Electrical energy. For complete procedure kindly refer Procedure Document No. **TPSMS/CSP/LOTO/001**

6.2 Excavation Safety (Shoring and Sloping) Procedure

This procedure is developed to cover the safe practices required for shoring and sloping in excavation and trenching jobs. This procedure is developed to establish mandatory requirements for practices to protect personnel, property and equipment from hazards associated with above activities. For complete procedure kindly refer Procedure Document No **TPSMS/CSP/EXS/002**

6.3 Confined Space Entry Procedure:

This procedure outlines the steps required to perform the confined space entry and to protect personnel from the hazards of entering and conducting operations in confined spaces. For complete procedure kindly refer Procedure Document No – **TPSMS/CSP/CSE/003**.

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6.4 Working at Height Procedure:

This procedure describes the rules and procedures to protect employees from the hazards of working at heights. This procedure is developed to cover the safe practices required for Working at Heights. This procedure is developed to establish mandatory requirements for practices to protect personnel from hazards associated in this area. For complete procedure kindly refer Procedure Document No – TPSMS/CSP/WAH/004.

6.5 Heavy Equipment Movement Safety Procedure.

Heavy equipment lifting and movement is an activity involving loading, unloading, storage and movement from one place to another including lifting and erection or repairing of equipment with cranes or hoists. Material, machinery and equipment handling operations are being carried out by large capacity cranes and hoists, which make the job safer and faster. This procedure addresses the hazards and precautions associated with such equipment and their use. For complete procedure kindly refer Procedure Document No – TPSMS/CSP/HEMS/005.

6.6 Mobile Crane Safety Procedure.

Mobile cranes are responsible for many incidents, injuries. Falling loads from mobile cranes pose a severe hazard to operators and nearby workers and property. Many types of cranes, hoists, and rigging devices are used for lifting and moving materials. To maintain safe, appropriate standards must be adhered to and only qualified and licensed individuals shall operate these devices. For complete procedure kindly refer Procedure Document No – TPSMS/CSP/MCS/006.

6.7 Scaffold Safety Procedure.

This procedure is developed to provide information on the safe erection, use, dismantling and maintenance of access scaffolding in the workplace. It is developed to establish mandatory requirements for practices to protect personnel from hazards associated with erection, use and dismantling of scaffolds. For complete procedure kindly refer Procedure Document No – TPSMS/CSP/SCAF/007.

6.8 Permit to Work Procedure.

Given the inherent hazards of the power generation and distribution industry, a significant number of TATA POWER operations and installations are critical. Work Permit (WP) System is an essential element in controlling the workplace risks in an effective manner. For complete procedure kindly refer Procedure Document No – TPSMS/CSP/PTW/008.

6.9 Job Safety Analysis (JSA) Procedure.

This objective of this procedure is to have a task-based risk assessment process in place that identifies, evaluates and controls the risks associated with work activities, and as a result, prevents those involved in the task or those potentially affected by the task, from being harmed. For complete procedure kindly refer Procedure Document No- TPSMS/CSP/JSA/009 REV 01.

6.10 Electrical Safety Procedure.

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The objective of these standards is to specify minimum mandatory requirements and advisory guidance for identifying and controlling hazards to ensure 'Zero Harm' regarding operation maintenance and testing of electrical equipment. For complete procedure kindly refer Procedure Document No- TPSMS/CSP/ELEC/010

6.11 Fire Safety Management Procedure.

Objective of This standard is to specify the minimum mandatory requirements and advisory guidelines to ensure prevention of fire related incidents and managing / controlling their impacts if they do occur. For complete procedure kindly refer Procedure Document No - TPSMS/CSP/ELEC/011

6.12 Hazard Identification & Risk Assessment (HIRA) Procedure(R5):

Objective of this procedure is to define guidelines for Hazard identification, Risk assessment and determination of controls. For complete procedure kindly refer Procedure Document No - TPSMS/CSP/HIRA/012.

6.13 Management Of Change (MOC) Procedure(R5):

The objective of this document is to establish the procedures necessary to ensure that HSE risks are managed to an acceptable level in Tata Power Management of Change (MOC) process. For complete procedure kindly refer Procedure Document No - TPSMS/CSP/MOC/013.

6.14 Pre-Start-up Safety Review (PSSR) Procedure(R5).

Objective of this procedure is to provide guidelines for safe initial startup of a new facility or restart of a modified facility. The PSSR process verifies that the new/modified facility meets the original design and operating parameters. The intent is to prevent incidents caused by inadequate, incomplete, unauthorized design, construction, installation, and/or commissioning. For complete procedure kindly refer Procedure Document No - TPSMS/CSP/MOC/014.

6.15 Road Safety procedure(R5):

To provide Safety Rules for road travel management and safe usage of all types of vehicles viz. passenger/ commercial, owned/ hired by company, driven by employees or contractors. For complete procedure kindly refer Procedure Document No - TPSMS/CSP/RSP/015.

7.0 General safety Rules and Procedure:

7.1 Lift (Elevator) Safety Procedure:

To provide safe operating procedure for taking control of lift car before entering and existing the pit of OTIS make elevators. For complete procedure kindly refer Procedure Document No – TPSMS/GSP/LIFT/001,

7.2 Working on conveyor belt Procedure:

This procedure is developed to cover the safe practices required for Working on live equipment and to protect personnel from hazards associated with it. For complete procedure kindly refer Procedure Document No – TPSMS/GSP/CONV/003

7.3 Batteries Handling & Disposal(R5)

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To provide procedure for recycling and / or safe disposal of used / waste batteries in compliance with all legislation. For complete procedure kindly refer Procedure Document No – **TPSMS/GSP/HAZM/003**

7.4 Material Handling and Storage Procedure:

The purpose of this document is to provide procedures to assist the safe handling of materials (manual handling and mechanical handling). For complete procedure kindly refer Procedure Document No – **TPSMS/GSP/MATL/004**.

7.5 Office Safety Procedure(R5):

The objective is to provide a safe working environment to those working in office premise, who may be exposed to emergency situations and other chronic / cumulative risks that may arise due to various reasons of unsafe act, unsafe condition, fire and or pandemic crisis like COVID-19 etc. For complete procedure kindly refer Procedure Document No - **TPSMS/GSP/OFS/006**

7.6 Earth Leakage Circuit Breaker (ELCB) Testing Procedure(R5):

The objective of this procedure is to define the minimum requirements for testing of Earth Leakage Circuit Breaker (ELCB). For complete procedure kindly refer Procedure Document No - **TPSMS/GSP/ELCB/008**.

7.7 Occupational Health & Safety Legal Compliance Procedure(R5):

Objective of this procedure is provide guidelines for compliance of Occupational Health & Safety (OH&S) legal requirements and all ratified protocols and agreements are incorporated in Tata Power Safety Management System (SMS). For complete procedure kindly refer Procedure Document No - **TPSMS/GSP/LEGL/009**.

7.8 Incident Reporting & Investigation Procedure(R5):

Objective of this procedure is to outline the process for reporting, recording and investigating an incident, recommending corrective and preventive actions and to communicate the lessons learned to prevent recurrence of similar incidents. For complete procedure kindly refer Procedure Document No - **TPSMS/GSP/IRI/011**.

7.9 Contractor Safety Management Procedure.

The purpose of this document is to engage with contractors in a way to create safe work environment for everyone working for Tata Power. For complete procedure kindly refer Procedure Document No – **TPSMS/GSP/CSM/015**.

7.10 Tree Trimming Procedure(R5):

The objective of this procedure is to define guidelines and minimum requirements for Tree trimming. For complete procedure kindly refer Procedure Document No – **TPSMS/GSP/TTRM/017**

7.11 Safe Lone Working Procedure(R5):

Objective of this procedure is to lay down guidelines for reduction and safe managing of any additional risk arising from lone working. For complete procedure kindly refer Procedure Document No – **TPSMS/GSP/LONE/019**.

7.12 Good Housekeeping(5S) Procedure(R5):

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Objective of this procedure is to explain the meaning, importance and provide guidelines for implementation of Good Housekeeping(5S) at workplaces across organization. For complete procedure kindly refer Procedure Document No – **TPSMS/GSP/GHK/022**.

7.13 Personal Protective Equipment(R5):

This procedure describes the basic requirements, applicability, minimum specifications of Personal Protective Equipment (PPE). For complete procedure kindly refer Procedure Document No – **TPSMS/GSP/PPE/023**.

7.14 Process Safety Management Procedure(R5):

The objective of this document is to provide a standardized & uniform guideline to implement Process Safety Management in Tata Power, its JVs, and subsidiaries to prevent or minimize the consequences of releases of toxic, flammable, pressurized or uncontrolled chemicals/Steam/Water or any other material which may result in toxic, fire, explosion, burn or flood like situation. For complete procedure kindly refer Procedure Document No – **TPSMS/GSP/PSM/024**

The above procedures will be updated time to time and the updated version of the procedures as well as any additional critical procedure will be available on official website of Tata Power (www.tatapower.com) for your reference.

8.0 Training and Capability Building.

Safety Training and capability building of workforce is a major component of safety management program. All training required must be provided and documented as specified by Tata Power and Indian Regulations. Tata Power Division /Discoms Safety department will audit contractors training and related documentation to assure its adequacy.

8.1 Tata power Odisha Discom Site Safety Orientation.R5

All Tata Power contractor and subcontractor workforce is required to attend Site Safety Orientation Training to receive a Safety Training Card, which is required to obtain a Gate Pass to the site, prior to entry. This Safety Orientation Course will be for duration of minimum half day. The information provided during the orientation will include, but is not limited to following:

- 8.1.1 Job rules, personal safety, and conduct
- 8.1.2 Hazard's reporting
- 8.1.3 Reporting of injuries
- 8.1.4 Emergency procedures
- 8.1.5 Safety Activities and Program including disciplinary measure and incentives.
- 8.1.6 Critical safety procedure relevant to the job

8.2 Capability Building:

- 8.2.1 All Tata Power contractor and subcontractor workforce is required to attend L1 Training to receive a Safety Training Card, which is required to obtain a Gate Pass to the site, prior to entry.
- 8.2.2 Appropriate practical training such as SHE L1, L2& L3 is given to ensure that a jobholder, either supervisor or worker, is competent to do his/her job safely. The skill training is provided through TPSDI, and other agencies authorized

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by Tata Power on the list of 15 critical Safety procedures mentioned under safety procedures. Duration of course is as specified by Division/Discom

- 8.2.3** Contractor shall ensure that concerned workmen are provided with adequate training before he/she is allowed to execute the work. An evaluation test will be conducted after the completion of the training. Those employees who meet the minimum required competency will be provided with Certificate (Card), which will be valid for 3 years, post which the workmen have to reappear for assessment.
- 8.2.4** If the workman is not able to qualify the assessment, he/she will be given 3 additional attempts to clear in 3-month time failing which he/she will not be allowed to work in the Division /Discoms.
- 8.2.5** After expiry of Certificate or Training /Competency Card again one day recertification of L1, L2 and L3 skill training will be provided. R7.
- 8.2.6** Quarterly /Half yearly(For Odisha and New business) Revalidation Test - "SHE L1 Revalidation test" will be conducted for the contractor's employees to revalidate their safety awareness and knowledge.
- 8.2.7** Order Manager and Safety In charge of the Division/Site /Plant will conduct a Competency Assessment of all workforces, going to be deployed at site / plant for high-Risk job.
- 8.2.8** The Contactor shall bear the conveyance and food expenses of his staff for attending training sessions and capability building sessions in new business-like Odisha Discom.
- 8.2.9** The Contactor shall bear the entire cost of L1/L2/L3, the costs towards training, salaries/wages, boarding and lodging of his staff for attending training sessions and capability building sessions. These trainings are offered on nominal chargeable basis payable by Contractor and rates shall be decided by TPSDI from time to time in case of training through TPSDI. Generally, L0 is of one day, L1 is for 2 days for each critical procedure and L3 is for one day. Around Rs 700+GST is approx. cost /Day/Candidate. -R5
- 8.2.10** Competency assessment of all critical workforce to be carried out for all who has taken L2 training. R5

9.0 Recognition to the Prior Learning in Safety-R5

If "Order Manager" recommends and "Head of the Safety Department of Discom" is satisfied with the safety knowledge and competency of the employee of contractor, a test may be conducted by Tata power Skill development Institute/ other recognized institute to assess the prior learning in safety. If employees of the contractors pass in such test, he will be exempted from appearing in SHE L1 training. This assessment is on nominal chargeable basis and rates are decided by TPSDI from time to time.

10.0 Safety performance retention(R5) and Safety Performance Evaluation: A certain percentage of the bill value will be retained against every running bill as safety performance retention. The amount will be released with the last invoice or every six-month based on Safety Performance Score of contractors. This is as per CSCC Document no TPSMS/GSP/ CSM/015

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This safety retention shall be waived for Contractors who have either submitted a Contract Performance Bank Guarantee or have a retention from each running bill for an amount not less than 10% of each bill subject to the express undertaking / understanding that if there are any deductions required to be made for safety non-performance as per the Safety Performance Score, then Tata Power shall recover any such deductions against safety non-performance directly from the monthly bills / final settlement as the case may be failing which it shall be within its right to recover such sum from accounts payable or the CPBG or the retention of the Contractor available with Tata Power for the said contract or any other contract between the Contractor and Tata Power.

11.0 Pre-Employment and Periodic Medical check-up:

Contractor shall arrange to conduct a pre-employment and periodic medical check-up for its entire workforce by Tata Power medical officer or Tata Power authorized medical officer. The contractor shall be able to produce the certificate prior to the employment. The contractor shall also organize to conduct periodical medical checkup (six monthly) for the following category of employees:

- Drivers (Check for Vision & Hearing)
- HEM Equipment Operators (Check for Vision & Hearing)
- Workforce working at Height (Check for Vision, Hearing, Vertigo & Height Phobia)
- Workforce Handling the hazardous substances - Coal, ash and chemicals (Chest X-ray and Lung Function T)
- Workforce in high Noise area (> 90 Decibel), Check for Hearing
- Workforce handling radiography equipment for conducting NDT.
- Workforce, working in specific areas requiring specific medical attention should conduct the medical tests test as laid down in the respective Site Safety Management Plan.

12.0 Other Conditions:

- 12.1. The manpower/vehicles/Tools & Tackles/Equipment provided shall be as per mutually agreed SLA.
- 12.2. No Supervision No work policy should strictly be followed.
- 12.3. Test Before Touch must be ensured every time a job is being carried out in electrical network.
- 12.4. HIRA /JSA as per the job scope must be prepared in detail and submitted along with Site Safety Plan by the successful bidder.
- 12.5. Personal protective equipment (PPE) must always be checked before use to ensure that they are in good condition and clean. Replace them if necessary.
- 12.6. All relevant PPE shall be provided by the vendor while working at the site.
- 12.7. Housekeeping shall be maintained all the time while execution of work. All the unwanted material shall be removed from the site at the end of the day's work. Old/damaged parts if taken out of the system shall be kept at

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identified placed and it shall be shifted to scrap yard or disposed of as per instruction of order manager.

- 12.8. Site Safety Plan shall be prepared by successful bidder along with order manger. Appendix 1 to be filled by successful bidder and submitted to Tata Power safety in-charge, before mobilization of team at site and start of the work.
- 12.9. The Owner or Proprietor of BA must visit worksite at least once in a month and meet Order Manager every month. In case of incidents, the Owner or Proprietor of BA is required to attend Time Out Meetings to understand the gaps that contributed to the incident.

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General Safety Conditions for various contracts Specific to Odisha Discom(R5)

13.0. Safety Conditions for maintenance of STS (Sub Transmission System) Network.

A BA awarded a major contract work of maintenance of sub – transmission network in area of a power system will be required to fulfil the following conditions:

- Availability of Discharge Rods - Minimum 6 Nos. in each maintenance vehicle, fit for purpose and in good conditions and defective rods are removed from service.
- Availability of Neon tester - Minimum one Neon Tester in each Maintenance Vehicle, in good and working condition and defective or non-standard neon testers are removed from service.
- Electrical hand Gloves - Minimum two sets of 33 KV and two sets of 11 KV in maintenance vehicles.
- The BA linemen must be having required ELBO certification for the voltage level involved.
- BA shall provide Safety Policy, Safety Objectives, Organogram showing structure and responsibility of Safety management of his company and shall document the work practices and procedures in terms of Safety Management.
- BA shall comply with all statutory requirements like applicable acts, regulations, codes of practice, OHSAS Standards, Labour laws, etc.
- The BA shall participate in Safety promotional activities like celebration of Lineman day on 4th March, National Fire Service Day on 14th April and Theme based safety campaigns undertaken by the Discoms every month.
- BA shall abide by Safety manuals and guidelines of Discom issued from time to time.
- BA shall ensure safety training and induction program for the employees. The BA employees must carry safety training card / competency card to the worksite and produce the card on demand.
- All BA employees must be given valid ID card issued by BA cell of Discom who will check statutory compliances before issuing ID cards.
- BA shall not employ a new workman without training and issue of ID card.
- BA shall conduct safety audits & inspections as per Discom procedures.
- BA shall provide proper PPEs as per CSM F-8 ensure periodic inspection of PPE, Tools and tackles to ensure their serviceability.
- BA shall ensure the adherence to standard operating procedures or guidelines laid down by the Discoms.
- BA shall ensure that no job shall be carried out without efficient supervision.
- BA shall ensure reporting of any unsafe act, unsafe conditions, near miss, incident, or accident to engineer in-charge and SAFETY team of the Discom.
- BA shall provide safety performance and Safety MIS to engineer in-charge and Discom SAFETY group periodically. Based on any non-confirmation to the safety procedures and guidelines, BA is liable to be negatively marked for his performance and suitable penalty will be imposed.
- BA safety staff shall work as per the guidance of the Discom safety department and functionally report Safety Head of Discom. Any leaves by safety staff of the BA shall have to approved by Discom Safety Department.
- BA shall ensure to depute Safety Staff for managing safety in worksites. In case the BA has been awarded work in more than one area power system, then the following safety structure will be adopted.
- Safety manager and Safety engineer must be having PDIS or ADIS.



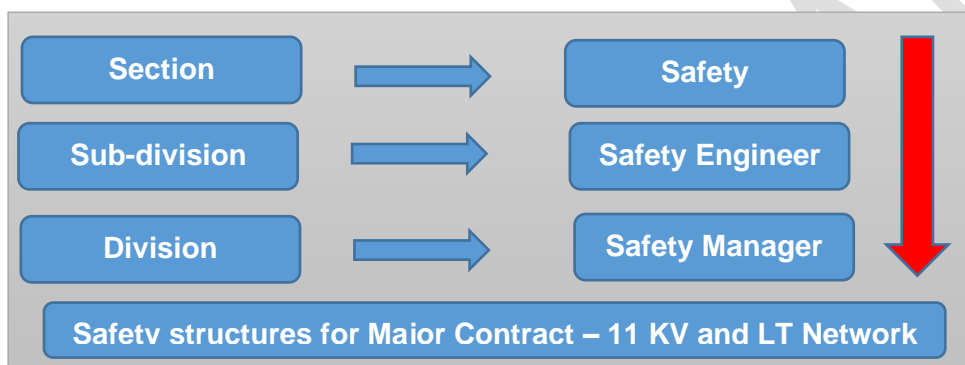
14.0 Safety Conditions for maintenance of 11 KV and LT Network.

A BA awarded a major contract work of maintenance of 11 KV and LT Network in area of a power system will be required to fulfil the following conditions:

- Availability of Discharge Rods - Minimum 6 Nos. in each PSS/FCC and maintenance vehicle, fit for purpose and in good conditions and defective rods are removed from service.
- Availability of Neon tester - Minimum one Neon Tester in each PSS/FCC/ Maintenance Vehicle, in good and working condition and defective or non-standard neon testers are removed from service.
- Electrical hand Gloves - Minimum two sets of 33 KV and two sets of 11 KV in each PSS/Maintenance vehicles and two sets of LT hand gloves at each FCC.
- The BA linemen must be having required ELBO certification for the voltage level involved.
- BA shall provide Safety Policy, Safety Objectives, Organogram showing structure and responsibility of Safety management of his company and shall document the work practices and procedures in terms of Safety Management.
- BA shall comply with all statutory requirements like applicable acts, regulations, codes of practice, OHSAS Standards, Labour laws, etc.
- BA shall abide by Safety manuals and guidelines of Discom issued from time to time.
- BA shall ensure safety training and induction program for the employees. The BA employees must carry safety training card / competency card to the worksite and produce the card on demand.
- All BA employees must be given valid ID card issued by BA cell of Discom who will check statutory compliances before issuing ID cards.
- BA shall not engage new workman without training and issue of ID card.
- PSS operator shall not be involved in maintenance activities.
- BA shall conduct safety audits & inspections as per Discom procedures.
- BA shall provide proper PPEs as per CSM F-8 ensure periodic inspection of PPE, Tools and tackles to ensure their serviceability.
- The BA shall participate in Safety promotional activities like celebration of Lineman day on 4th March, National Fire Service Day on 14th April and Theme based safety campaigns undertaken by the Discoms every month.
- BA to ensure that all LT complaints are routed through Call Centre and recorded in FCC. Rectification of fault shall be done only after call centre logging and with the knowledge of BA supervisor.
- No one will work alone or unsafely under public pressure or otherwise.
- BA shall ensure the adherence to standard operating procedures or guidelines laid down by the Discoms.
- BA shall ensure that no job shall be carried out without efficient supervision.

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- BA shall ensure reporting of any unsafe act, unsafe conditions, near miss, incident, or accident to engineer in-charge and SAFETY team of the Discom.
- BA shall provide safety performance and Safety MIS to engineer in-charge and Discom SAFETY group periodically. Based on any non-confirmation to the safety procedures and guidelines, BA is liable to be negatively marked for his performance and suitable penalty will be imposed.
- BA safety staff shall work as per the guidance of the Discom safety department and functionally report Safety Head of Discom. Any leaves by safety staff of the BA shall have to approved by Discom Safety Department.
- BA shall ensure to depute Safety Staff - One safety supervisor per section, One safety engineer per sub-division and one safety manager per Division Safety manager and Safety engineer must be having PDIS or ADIS.



15.0 Safety Conditions for the major contract work in Civil Projects:

A BA awarded a major contract work of / in civil project will be required to fulfil the following safety conditions:

- BA shall provide Safety Policy, Safety Objectives, Organogram showing structure and responsibility of Safety management of his company and shall document the work practices and procedures in terms of Safety Management.
- BA shall comply with all statutory requirements like applicable acts, regulations, codes of practice, OHSAS Standards, Labour laws, etc.
- BA shall abide by Safety manuals and guidelines of Discom issued from time to time.
- BA shall ensure safety training and induction program for the employees. The BA employees must carry safety training card / competency card to the worksite and produce the card on demand.
- All BA employees must be given valid ID card issued by BA cell of Discom who will check statutory compliances before issuing ID cards.
- BA shall not employ a new workman without training and issue of ID card.
- BA shall conduct safety audits & inspections as per Discom procedures.
- BA shall provide proper PPEs as per CSM F-8 ensure periodic inspection of PPE, Tools and tackles to ensure their serviceability.
- BA shall ensure the adherence to standard operating procedures or guidelines laid down by the Discoms.
- BA shall ensure that no job shall be carried out without efficient supervision.
- BA shall ensure reporting of any unsafe act, unsafe conditions, near miss, incident, or accident to engineer in-charge and SAFETY team of the Discom.

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- The BA shall participate in Safety promotional activities like celebration of Lineman day on 4th March, National Fire Service Day on 14th April and Theme based safety campaigns undertaken by the Discoms every month.
- BA shall provide safety performance and Safety MIS to engineer in-charge and Discom SAFETY group periodically. Based on any non-confirmation to the safety procedures and guidelines, BA is liable to be negatively marked for his performance and suitable penalty will be imposed.
- BA safety staff shall work as per the guidance of the Discom safety department and functionally report Safety Head of Discom. Any leaves by safety staff of the BA shall have to approved by Discom Safety Department.
- BA shall refer Construction Safety Manual of the Discom for details.
- BA shall ensure to depute a Safety Supervisor (for workforce up to 100 at site) / a safety engineer (for workforce up to 250 at site) / safety manager (for more than two safety engineers) for managing safety at the project site. In case the BA has been awarded more than one major contracts, then the following safety structure will be adopted.
- Safety Engineers and Safety Managers must be having PDIS or ADIS.



16.0 Safety Conditions for the major contract work in Commercial Department like - MMG, RRG, EAG, etc.:

A BA awarded a major contract work in meter management group & energy auditing group will be required to fulfil the following safety conditions:

- BA shall provide Safety Policy, Safety Objectives, Organogram showing structure and responsibility of Safety management of his company and shall document the work practices and procedures in terms of Safety Management.
- BA shall comply with all statutory requirements like applicable acts, regulations, codes of practice, OHSAS Standards, Labour laws, etc.
- BA shall abide by Safety manuals and guidelines of Discom issued from time to time.
- BA shall ensure safety training and induction program for the employees. The BA employees must carry safety training card / competency card to the worksite and produce the card on demand.
- All BA employees must be given valid ID card issued by BA cell of Discom who will check statutory compliances before issuing ID cards.
- BA shall not employ a new workman without training and issue of ID card.
- BA shall conduct safety audits & inspections as per Discom procedures.
- The BA shall participate in Safety promotional activities like celebration of Lineman day on 4th March, National Fire Service Day on 14th April and Theme based safety campaigns undertaken by the Discoms every month.
- BA shall provide proper PPEs as per CSM F-8 ensure periodic inspection of PPE, Tools and tackles to ensure their serviceability.

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- BA shall ensure the adherence to standard operating procedures or guidelines laid down by the Discoms.
- BA shall ensure that no job shall be carried out without efficient supervision.
- BA shall ensure reporting of any unsafe act, unsafe conditions, near miss, incident, or accident to engineer in-charge and SAFETY team of the Discom.
- BA shall provide safety performance and Safety MIS to engineer in-charge and Discom SAFETY group periodically. Based on any non-confirmation to the safety procedures and guidelines, BA is liable to be negatively marked for his performance and suitable penalty will be imposed.
- BA safety staff shall work as per the guidance of the Discom safety department and functionally report Safety Head of Discom. Any leaves by safety staff of the BA shall have to be approved by Discom Safety Department.
- BA shall ensure to depute a Safety Supervisor for managing safety at worksite.
- The BA for the RRG work shall depute one Safety supervisor.



17.0 Safety Conditions for Major Projects in Distribution Network

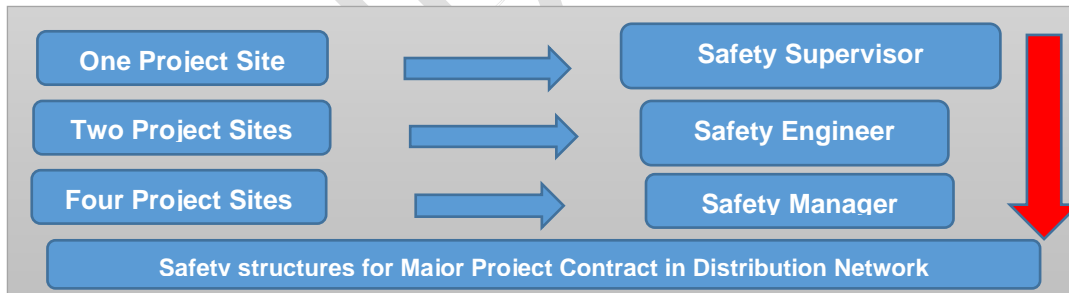
A BA awarded a major Projects in Distribution Network shall be required to fulfil the following conditions:

- Availability of Discharge Rods - Minimum 6 Nos. for each project site, fit for purpose and in good conditions and defective rods are removed from service.
- Availability of Neon tester - Minimum one Neon Tester in each project site, in good and working condition and defective or non-standard neon testers are removed from service.
- Electrical hand Gloves - Minimum one sets of 33 KV, 11 KV and LT in each project site.
- The BA linemen must be having required ELBO certification for the voltage level involved.
- BA shall provide Safety Policy, Safety Objectives, Organogram showing structure and responsibility of Safety management of his company and shall document the work practices and procedures in terms of Safety Management.
- BA shall comply with all statutory requirements like applicable acts, regulations, codes of practice, OHSAS Standards, Labour laws, etc.
- BA shall abide by Safety manuals and guidelines of Discom issued from time to time.
- BA shall ensure safety training and induction program for the employees. The BA employees must carry safety training card / competency card to the worksite and produce the card on demand.
- The BA shall participate in Safety promotional activities like celebration of Lineman day on 4th March, National Fire Service Day on 14th April and Theme based safety campaigns undertaken by the Discoms every month.
- All BA employees must be given valid ID card issued by BA cell of Discom who will check statutory compliances before issuing ID cards.
- BA shall not employ a new workman without training and issue of ID card.
- BA shall conduct safety audits & inspections as per Discom procedures.
- BA shall provide proper PPEs as per CSM F-8 ensure periodic inspection of PPE, Tools and tackles to ensure their serviceability.

- BA shall ensure the adherence to standard operating procedures or guidelines laid down by the Discoms.
- BA shall ensure that no job shall be carried out without efficient supervision.

Sr. No	Type of Audit	Frequency
1	Tool Bag and PPE audit	Weekly
2	First Aid Box Maintenance Record	Fortnightly
3	Fire Extinguisher Record (Applicable for the BA involved in major construction works and have storage of flammable material at worksite)	Monthly
4	Safety Talk Register	Weekly
5	Site Safety Audit	Daily

- BA shall ensure reporting of any unsafe act, unsafe conditions, near miss, incident, or accident to engineer in-charge and SAFETY team of the Discom.
- BA shall provide safety performance and Safety MIS to engineer in-charge and Discom SAFETY group periodically. Based on any non-confirmation to the safety procedures and guidelines, BA is liable to be negatively marked for his performance and suitable penalty will be imposed.
- The BA shall participate in Safety promotional activities like celebration of Lineman day on 4th March, National Fire Service Day on 14th April and Theme based safety campaigns undertaken by the Discoms every month.
- BA safety staff shall work as per the guidance of the Discom safety department and functionally report Safety Head of Discom. Any leaves by safety staff of the BA shall have to approved by Discom Safety Department.
- BA shall ensure to depute Safety Staff for managing safety in worksites. One safety supervisor per project site or 100 persons, one safety engineer for 2 project sites of 250 persons, and one safety manager for four project sites or 500 persons.
- Safety manager and Safety engineer must be having PDIS or ADIS.



18.0 Schedule of Safety Audits by BA Safety Staff

Safety Undertaking of BA by way of Affidavit

I _____ s/o _____ R/o _____ (AUTHORIZED REPRESENTATIVE/PARTNER/DIRECTOR/PROPRIETOR) of M/S _____ (name of company/firm) having its office at (Complete address of Company), authorized vide power

The Tata Power Company Ltd	TPCODL TPSODL		TPNODL TPWODL	Appendix 3 to CSCC Safety Terms and Conditions
Document No. TPSMS/GSR/STC/009 REV 05				Date of Issue: 01/08/2023

of attorney dated -----/Board resolution dated----/letter of authority dated----, hereinafter referred to as **Contractor [or Business Associate (BA)]** which expression shall, unless it be repugnant to or inconsistent with the meaning or context thereof, be deemed to include its heirs, executors, administrators, and assigns do hereby affirm and undertake as under :

1. The present undertaking shall remain in force from the date of execution of contract and shall be valid till the date of termination of the said contract by either party. The undertaking is binding on me (contractor) as well as my sub-contractor and its employees, representatives etc.
2. That I (the contractor) will be responsible and liable to comply and abide by all the safety rules, instructions and regulations as may be specified and laid down by the Discom to achieve its goal of Zero for on-site incidences.
3. That the Contractor shall be fully responsible for ensuring occupational health and safety of its employees, representatives, agents as well as of its subcontractor's employees, at all times during the discharge of their respective obligations under the contract including any methods adopted for performance of their tasks / work.
4. That Contractor shall ensure ,at its own expense to arrange for and procure, implement all requisite accident prevention tools, first aid boxes, personal protective equipment, fire extinguisher, safety training, Material Safety Data Sheet, pre-employment medical test, etc. for operations & activities including as & when so specified by Discom specifically. , failing which Discom shall be entitled, but not obliged, to provide the same and recover the actual cost thereof from the Contractor's payments.
5. That the Contractor shall engage adequate and competent Safety – Supervisor / Engineer / Manager / Skilled persons at site as per the Para 5 (Qualification and experience of safety personnel) and Annexure 3 of Contract Safety Management.
6. That the Contractor shall engage the competent Site – Supervisor with each group of workers for safe and correct workmanship, proper co-ordination of material and site work as per contract.
7. That the Contractor shall immediately replace supervisor in case it is found to be not up to the level of skill and experience required, but any such replacement shall be only with the prior concurrence of the Discom representative.

The Tata Power Company Ltd	TPCODL	 TATA	TPNODL	Appendix 3 to CSCC Safety Terms and Conditions
Document No. TPSMS/GSR/STC/009 REV 05	TPSODL	 TATA POWER	TPWODL	Date of Issue: 01/08/2023

8. That the Contractor and its subcontractors shall abide by all the safety guidelines as per Safety Manual, Contract Safety Management and other guidelines issued from time to time by Discom during the contract period.
9. That in case the Contractor and/or any of its Subcontractor fail to ensure the compliance as required in terms of this undertaking the Contractor shall keep and hold Discom / its directors / officers / employees indemnified against any / all losses / damage / expense / liability / fines / compensation / claims / action / prosecutions or the like which might be suffered by Discom or to which Discom might get exposed to as a result of any breach /wilful negligence /deliberate default on the part of the Contractor /Subcontractor in complying with the same. Contractor shall also furnish any press release, clarification etc. if sought by Discom for any near miss or safety violations, accidents, which are attributable to fault of Contractor.

DEPONENT

VERIFICATION

Verified aton this _Day of _____ 20__ that the contents of the above affidavit are true and correct and nothing material has been concealed therefrom

CONFIDENTIAL

Annexure IX

Tata Code of Conduct (TCoC)

TATA CODE OF CONDUCT

The Owner abides by the Tata Code of Conduct in all its dealing with stake holders and the same shall be binding on the Owner and the Contractor for dealings under this Order/ Contract. A copy of the Tata Code of Conduct is available a tour website:

<https://www.tatapower.com/pdf/aboutus/Tata-Code-of-Conduct.pdf>

The Contractor is requested to bring any concerns regarding this to the notice of our Chief Procurement & Stores e-mailID: pravin.jain@tpcentralodisha.com.

Annexure X

Environment & Sustainability Policy

ENVIRONMENT & SUSTAINABILITY POLICY



CORPORATE ENVIRONMENT POLICY

Tata Power is committed to a clean, safe and healthy environment, and we shall operate our facilities in an environmentally sensitive and responsible manner. Our commitment to environmental protection and stewardship will be achieved by:

- Complying with the requirements and spirit of applicable environmental laws and striving to exceed required levels of compliance wherever feasible
- Ensuring that our employees are trained to acquire the necessary skills to meet environmental standards
- Conserving natural resources by improving efficiency and reducing wastage
- Making business decisions that aim towards sustainable development
- Engaging with stakeholders to create awareness on sustainability

A handwritten signature in blue ink, appearing to read 'Praveer Sinha', with a horizontal line underneath.

(Praveer Sinha)
CEO & Managing Director

Date: 15th June, 2018

TATA POWER
Lighting up Lives!





CORPORATE SUSTAINABILITY POLICY

At Tata Power, our Sustainability Policy integrates economic progress, social responsibility and environmental concerns with the objective of improving quality of life. We believe in integrating our business values and operations to meet the expectations of our customers, employees, partners, investors, communities and public at large

- We will uphold the values of honesty, partnership and fairness in our relationship with stakeholders
- We shall provide and maintain a clean, healthy and safe working environment for employees, customers, partners and the community
- We will strive to consistently enhance our value proposition to the customers and adhere to our promised standards of service delivery
- We will respect the universal declaration of human rights, International Labour Organization's fundamental conventions on core labour standards and operate as an equal opportunities employer
- We shall encourage and support our partners to adopt responsible business policies, Business Ethics and our Code of Conduct Standards
- We will continue to serve our communities:
 - By implementing sustainable Community Development Programmes including through public/private partnerships in and around our area of operations
 - By constantly protecting ecology, maintaining and renewing bio-diversity and wherever necessary conserving and protecting wild life, particularly endangered species
 - By encouraging our employees to serve communities by volunteering and by sharing their skills and expertise
 - By striving to deploy sustainable technologies and processes in all our operations and use scarce natural resources efficiently in our facilities
 - We will also help communities that are affected by natural calamities or untoward incidence, or that are physically challenged in line with the Tata Group's efforts

The management will commit all the necessary resources required to meet the goals of Corporate Sustainability.

(Praveer Sinha)
CEO & Managing Director

Date: 15th June, 2018

TATA POWER
Lighting up Lives!





**SUPPLIER MANUAL ANSWERING
TO
E-BIDDING & E-AUCTION**

CELEBRATING 100 YEARS OF INVISIBLE GOODNESS

TATA POWER

Company Confidential	Version 1.1 DEC - 2016
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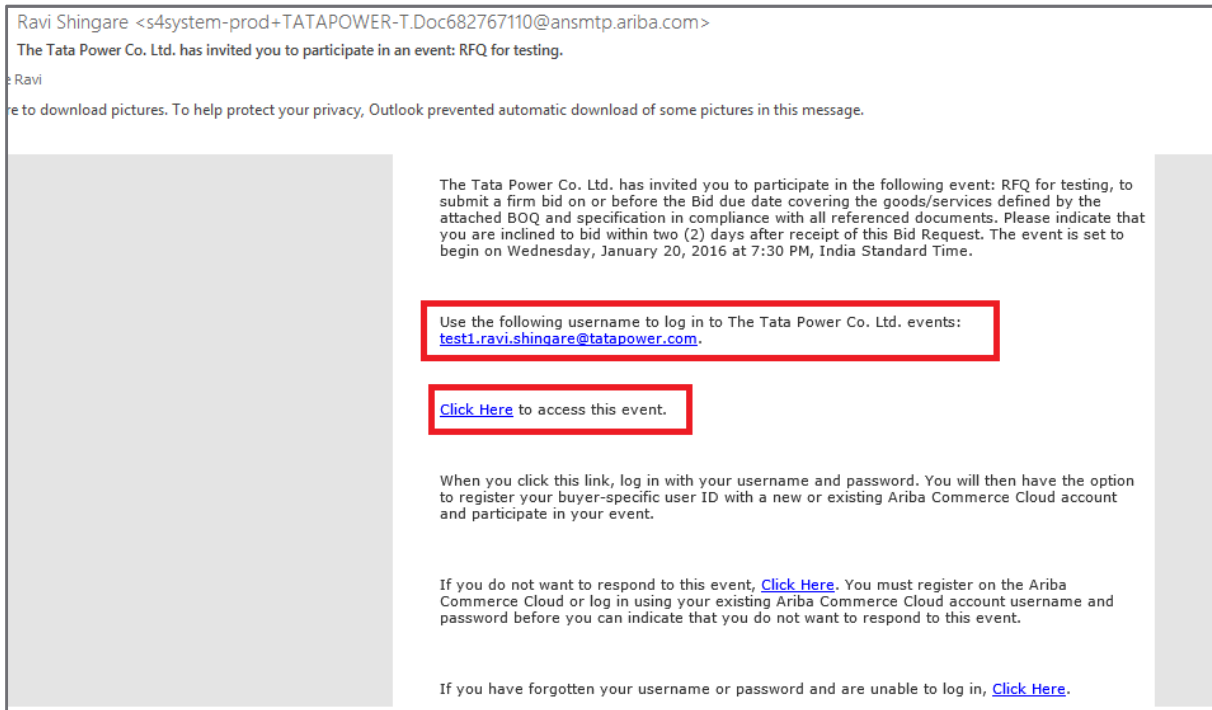
INDEX

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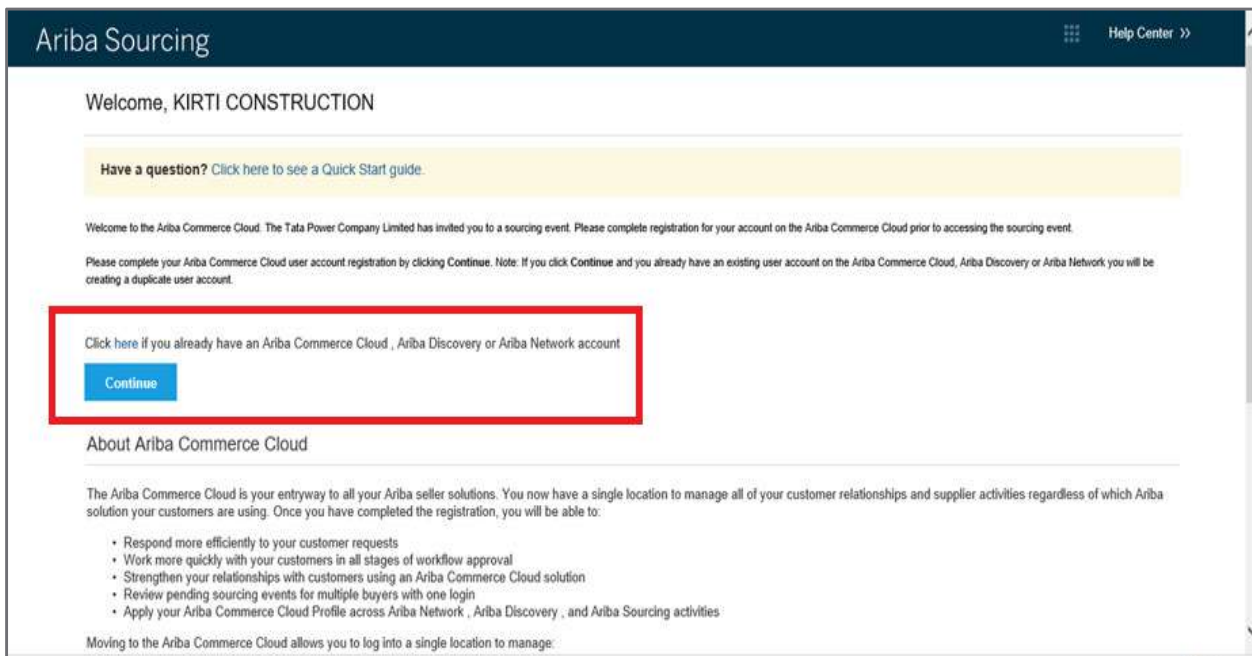
1- Accessing Ariba Sourcing

Step 1: You will get an invitation to your email from Ariba System. Keep this email, it contains your login Information and a direct link to Ariba.

Step 2: Click "Click Here" to access the Ariba Web Site.



Step 3: Supplier has to click on "Continue"



Step 4: The registration process only takes a few moments, with a simple one-page registration Define your password and secret question. Click “OK”

* Indicates a required field

Company Name*

Country* If your company has more than one office, enter the main office address. You can enter more addresses such as your shipping address, billing address or other addresses later in your company profile.

Address*

City*

State

Postal Code*

Product and Service Categories* -or-

Ship-to or Service Locations* -or-

Tax ID: Enter your Company Tax ID number.

DUNS Number: Enter the nine-digit number issued by Dun & Bradstreet. ⓘ

Supplier has to fill the form

 **ARIBA*** SPEND MANAGEMENT Help | Logout

Welcome USER_TEST2 - UPM-Kymmene Corporation

Expired Password

Your password has expired. Follow these instructions to complete this step: Create a new password and confirm. Select a secret question and answer it so ...

Passwords are case-sensitive, and must be between 8 and 16 characters long. They can include any Latin characters and punctuation marks, and must include at least one numeral between the first and last character. They must also include at least one letter. For example, goZenba.

The current secret answer that you have entered is different from the one that has been recorded for this user.

New Password*

New Password (confirm)*

Secret Question* ⓘ

Secret Answer*

(* indicates a required field)

You expressly agree and understand that your data entered into this system may be transferred outside of the European Union or other jurisdiction where you are located, as further described in the Ariba Data Policy [Data Policy](#)

Step 5: If it's the first time you are invited to use UPM Ariba, you'll need to accept the “Participant Terms”. Select “I accept the terms of this agreement”. Click “Submit”.

Secret Question*
 The answer to your secret question must be atleast 5 characters.

Language: The language used when Ariba sends you configurable notifications. This is different than your web b...

Ariba will make your company profile, which includes the basic company information, available for new business opportunities to other companies. If you want to hide your company profile, you can do so anytime by editing the profile visibility settings on the Company Profile page after you have finished your registration. By clicking the Submit button, you expressly acknowledge and give consent to Ariba for your data entered into this system to be transferred outside the European Union, Russian Federation or other jurisdiction where you are located to Ariba and the computer systems on which the Ariba services are hosted (located in various data centers globally), in accordance with the Ariba Privacy Statement, the Terms of Use, and applicable law.

You have the right to access and modify your personal data from within the application, by contacting the Ariba administrator within your organization or Ariba, Inc. This consent shall be in effect from the moment it has been granted and may be revoked by prior written notice to Ariba. If you are a Russian citizen residing within the Russian Federation, You also expressly confirm that any of your personal data entered or modified in the system has previously been captured by your organization in a separate data repository residing within the Russian federation.

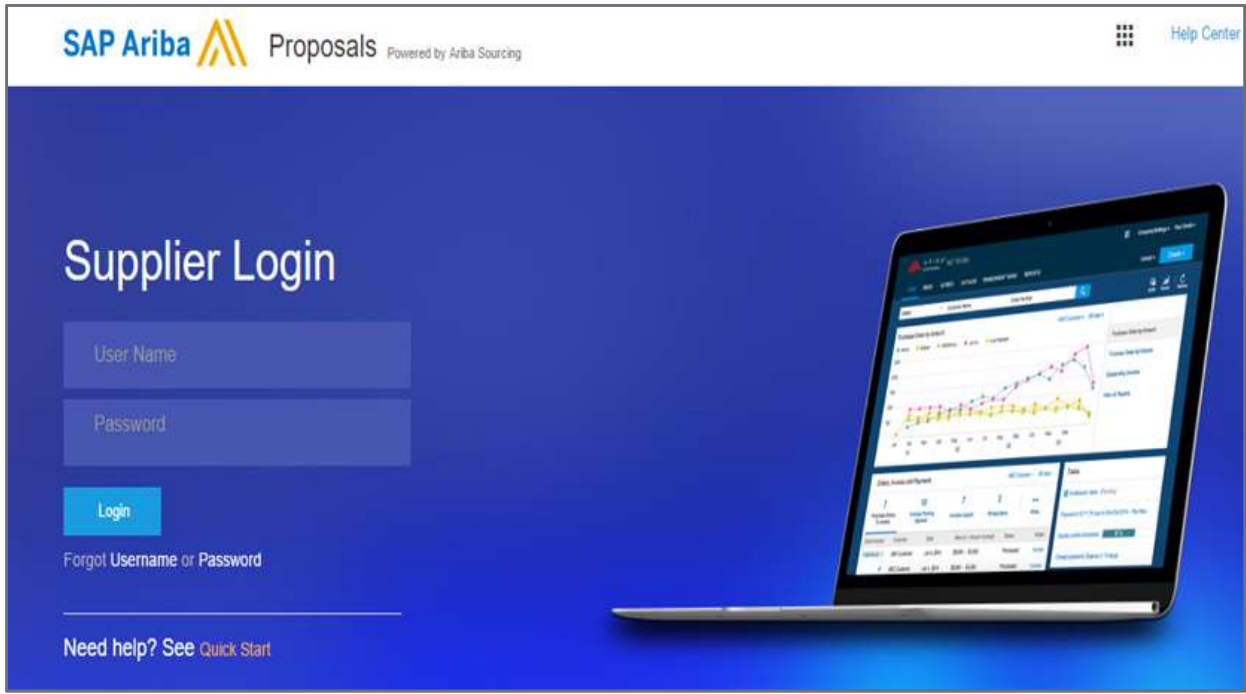
I have read and agree to the Terms of Use and the Ariba Privacy Statement

2 Vendor Screen

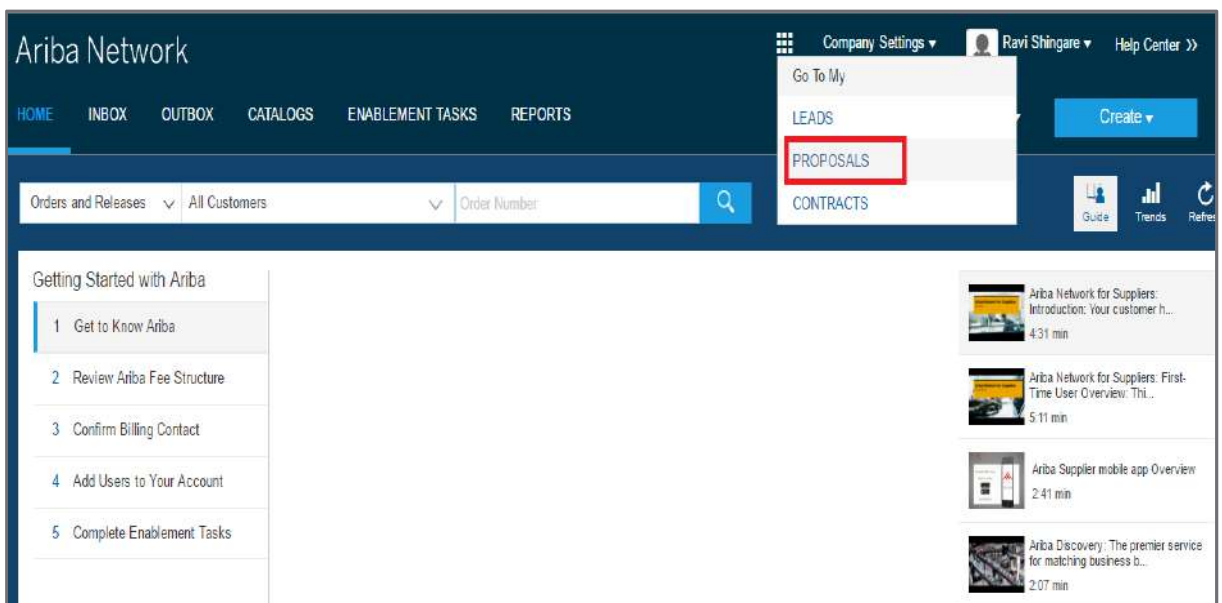
2.1.1 If vendor goes through mail invitation then directly Screen 3.1.1 will appear, but if you have used Ariba before and have already accessed an event for the buyer-specific account with your current log in ID, click the **Login** button to continue. Log in with your Ariba username and password in order to participate in the event OR you have to follow the following steps.

Step 1 - Log on supplier.ariba.com

Step 2 - Put your USER ID and Password in following screen



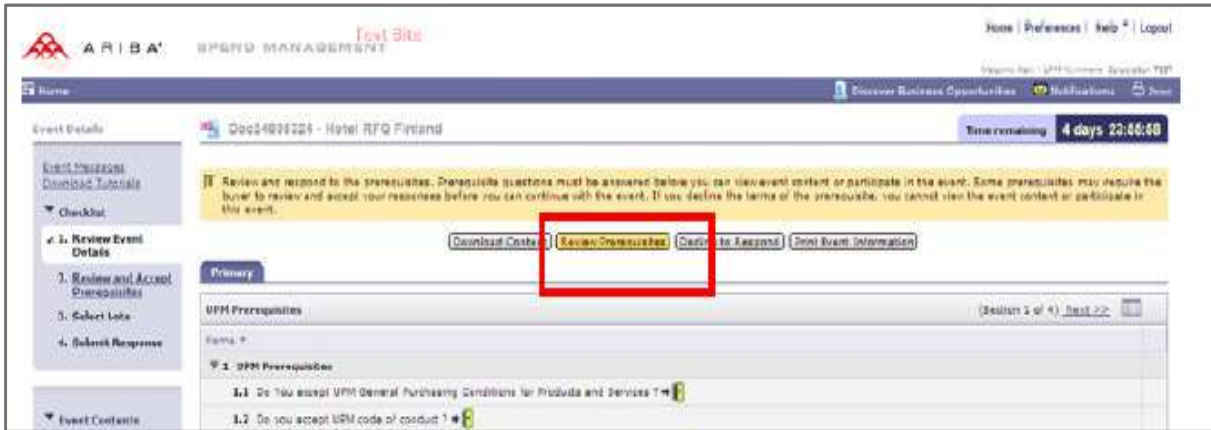
Step 3 - Go to ARIBA APPS  and click on Proposals.



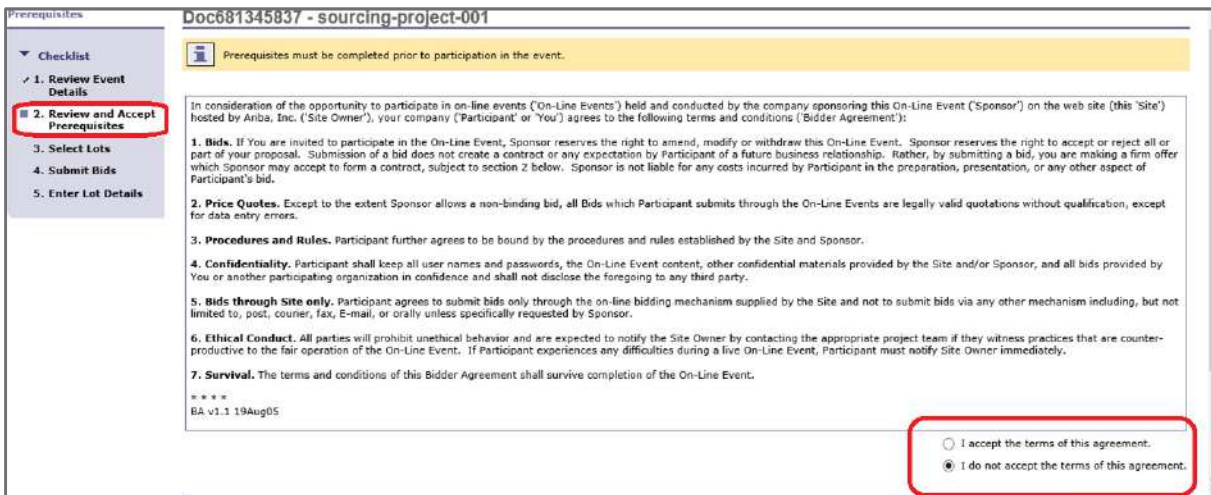
3 Submitting Your Answers / Proposal

3.1.1 Review and Approve “Prerequisites”

Step 1: Review and download all documents & then Click on “Review Prerequisites”



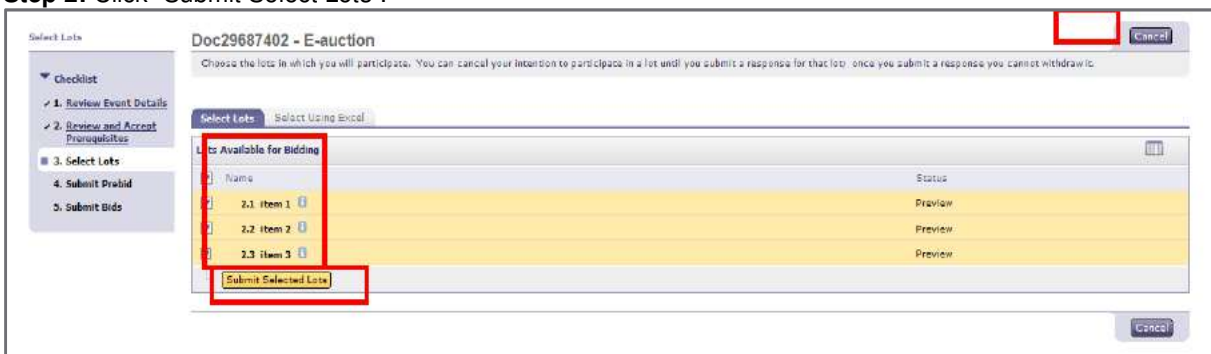
Step 2: Review and accept “Bidder Agreement”.



3.1.2 Select Items or Lots

Step 1: Select Items. - If you do not want to quote for any items/lots then you do not select that lot / items and then go ahead for select and submit lot.

Step 2: Click “Submit Select Lots”.



3.1.3 Entering your offer for RFQ

Step 1: as per following screen Vendor Dashboard will appear where RFQ from TATA Power will be visible.

The screenshot shows the Ariba Sourcing interface. At the top, the header includes 'Ariba Sourcing', 'Test Mode', 'Company Settings', and a user profile for 'Ravi Shrin'. A red box highlights the customer name 'THE TATA POWER COMPANY LIMITED-TEST'. On the left, there's a 'Requested Profile' section with a 38% completion bar and a note: 'Your customer has requested that you complete 21 additional profile fields. Enter Now >'. Below this is a 'Public Profile Completeness' section with a 38% bar and a note: 'Enter a short description to reach 45% >'. A red box at the bottom left contains the text: 'Vendor has to complete the vendor registration FORM'. The main area shows 'Events' and 'Tasks'. The 'Events' table has columns for Title, ID, and End Time. One event is highlighted: 'RFQ-Test 11th Aug 2016' with ID 'Doc905524000' and End Time '12/16/2015 6:35 PM'. The 'Tasks' table has columns for Name, Status, Due Date, and Completion Date.

Step 2 - Follow all the steps of 3.1.1 to 3.1.3

Step 3 - Vendor has to submit their techno commercial offer in 2.1. In this field Do No attach any price content. For Price Bid put all the unit price and taxes and duties in provided field. Put "0" (ZERO) in not applicable field.

This screenshot shows the '2. Review and Accept Prerequisites' section. On the left, there's a navigation menu with steps: '2. Review and Accept Prerequisites', '3. Select Lots', and '4. Submit Response'. The main area lists prerequisites: '1.4.1 Contract Safety Manual' (with an 'Annexure I (Contract Safety M' link), '1.4.2 TATA Code of Conduct' (with an 'Annexure III (TCOC).pdf' link), and '1.5 Technical Specification'. Under '1.5', there's '1.5.1 Technical Specification Details' with an 'Attach a file' link. A red box highlights '2 Techno Commercial bid' and its sub-item '2.1 Please attach the Techno-Commercial Bid' with an 'Attach a file' link. Below this is '3 Price Bid'.

This screenshot shows the '3 Price Bid' section. It contains a red instruction: '3.1 Bidder to specify the prices either in terms of percentage (%) or Value where the options are available for both. In case price is specified in percentage (%) , please Specify Zero (0) in the amount field and vice-versa.' Below this is a table of items:

Item ID	Description	More...	Amount	Unit	Quantity
3.2	Bearingfor motor 1.90991	More... +	15,000.00	INR	30 each
3.3	AMC 20,000 IS-U/CCS CONTRACTS	More... +	35,000.00	INR	35 month
3.4	ANALYSIS TAILRACE WTR SAMPLE	More... +	35,000.00	INR	45 each

Step 4 - After successfully putting Techno commercial offer and price part then click on "Submit Entire Response"

This screenshot shows the bottom of the form with a navigation bar. It includes a 'Requested Delivery Date: Sat, 24 Sep, 2016' and a note: '(*) indicates a required field'. The navigation bar contains four buttons: 'Submit Entire Response' (highlighted with a red box), 'Update Totals', 'Save', and 'Compose Message'.

3.1.4 Entering Your Prebid for e-auction

Before participation to the e-auction you must place a pre-bid. If you haven't placed a Prebid in the Prebid time you won't be able to participate to the auction itself.

Step 1: Populate Your Answers.

Step 2: Click "Submit Entire Response".

The screenshot shows the 'Tata Power Company Limited-TEST Dashboard' for document Doc681345837 - sourcing-project-001. A yellow banner at the top right indicates 'Time remaining in preview 1 day 04:05:05'. A message states: 'The event owner has requested that you submit a prebid before the end of the preview period. You have not yet submitted a prebid.' The left sidebar contains a checklist with '4. Submit Bids' highlighted in red. The main content area shows a table with columns 'Name' and 'Extended Price'. The table includes sections for '1 Introduction', '2 Commercial Terms' (with a sub-item '2.1 lot-1' for '4 core cable' at a price of 5000 INR), and '3 Pricing' (with a sub-item '3.1 FOR SITE DELIVERY P&F INCLUSIVE' and an attached file 'COMP-1.xlsx'). At the bottom, the 'Submit Entire Response' button is highlighted in red.

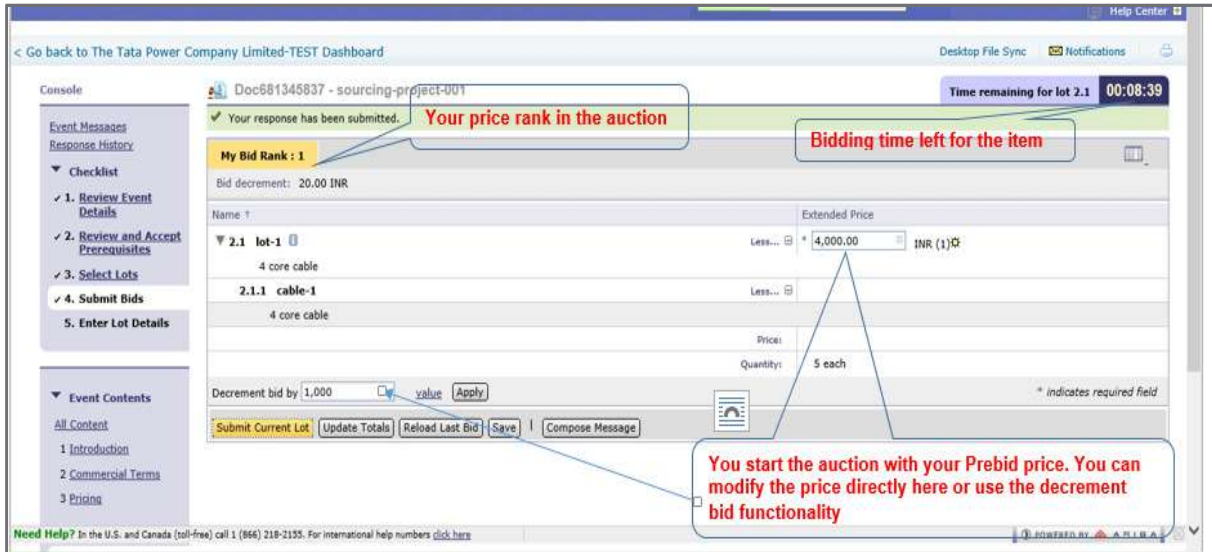
When the Prebid time is still open you can still modify your Prebid:

Click on "revise Prebid" and repeat in step 1 and step 2.

The screenshot shows the same dashboard after a prebid has been submitted. A green banner at the top right indicates 'Time remaining in preview 1 day 04:02:39'. A message states: 'Your prebid has been submitted. You will be notified when the event is open for bidding.' The left sidebar checklist now has '4. Submit Bids' highlighted in red. The main content area table is updated with the 'Extended Price' for '2.1 lot-1' as '5,000.00 INR' and for '3.1 FOR SITE DELIVERY P&F INCLUSIVE' as '5,000.00 INR'. The 'Revise Prebid' button is highlighted in red.

3.1.5 Participate to the e-auction

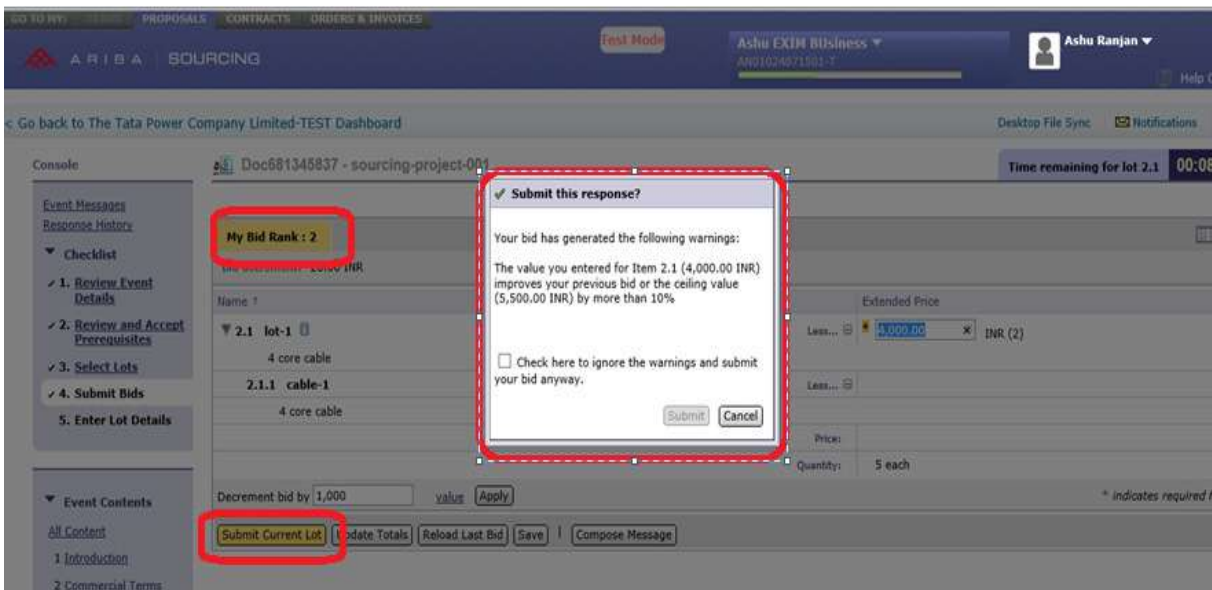
If you have placed a bid in the Prebid time you will be able to participate to the e-action. E-auctions are rather sort in time (usually less than 20 min per item). Once the time is closed you won't be able to bid anymore.



When you want to submit your price presses "submit current lot"

In case the new price you submit is lower by 10% of the starting price (Prebid Price) the following warning Message will be displayed.

To submit the new price, check the box and press submit. If you made a mistake press cancel so that you Mistake would not be submitted.



3.1.5.2 What to do if you have a problem during the e-auction?

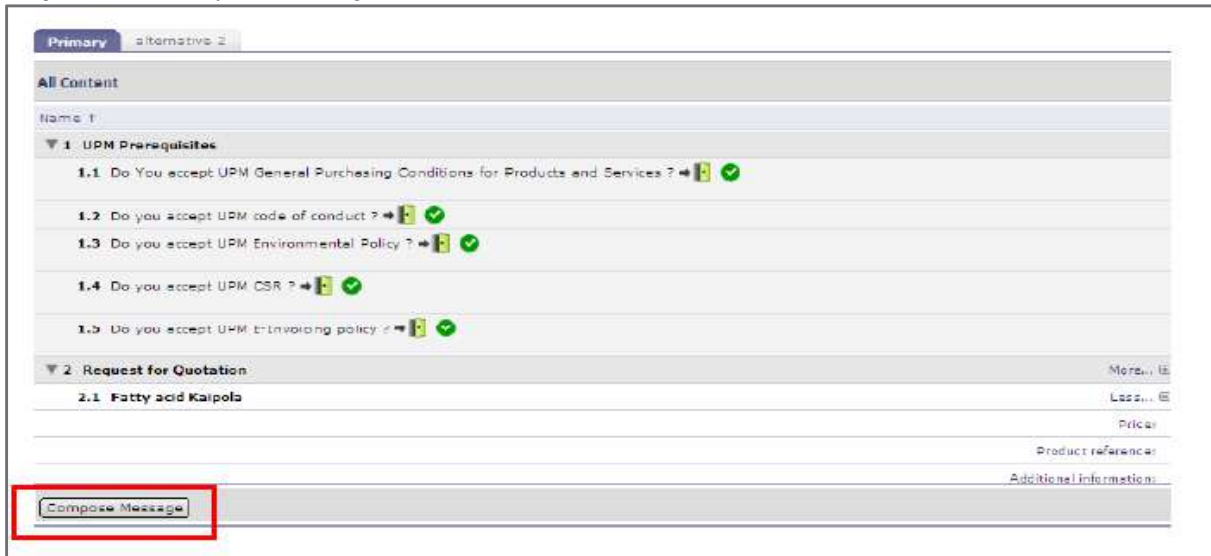
If you have any problem related the system: - **Call first Tata Power e- Bidding / Auction Cell**

➤ **e- Bidding /Auction Cell details:-**

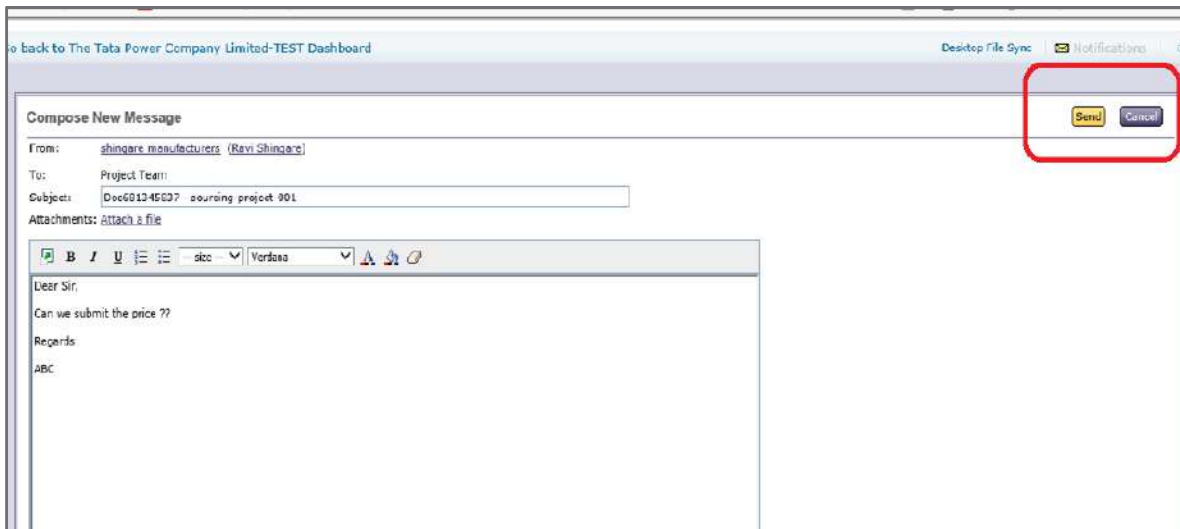
<u>Core team</u>		
<u>Contact Person</u>	<u>E-Mail Id</u>	<u>Contact Details</u>
Ravi Shingare	ravi.shingare@tatapower.com	9029004168
Himanshu Ranjan	himanshur@tatapower.com	9820339961
<u>Escalation Matrix</u>		
Paresh Bhatt	pareshbhatt@tatapower.com	
C T Prakash	ctprakash@tatapower.com	9223545185

4 Communicating with Tata Power Buyer & Auction team during auction / e- bidding

Step 1: Click "Compose Message".



Step 2: Compose Your Message and click "Send".



SUPPLIER FREQUENTLY ASKED QUESTIONS

If I registered on my buyer's Ariba Sourcing site in the past, do I need to register again?

Answer- Yes. Although you have registered on your buyer's Ariba Sourcing site in the past, registering on the Ariba Commerce Cloud is required. The registration process only takes a few moments, with a simple one-page registration. Registering on the Ariba Commerce Cloud gives you access to all your buyer relationships with one username and password.

What is the Ariba Commerce Cloud?

Answer: - The Ariba Commerce Cloud is your entry point to all of your seller solutions. Rather than managing log in information for multiple buyers' sites, you will have one log in and one account. This means fewer passwords to remember, easier user maintenance for your company, and a unified profile for your organization.

Do I need to add Product and Service Categories during registration?

Answer:-Yes; this is a required field. Product and Service Categories classify what your company sells, and the system uses this information to match potential business opportunities with your products and services.

Click **Add Product and Service Categories** to select one or more categories from the list of options. During registration, you only need to choose one category, preferably related to the event you are joining. You can add, refine, or remove categories any time after the registration process.

Do I need to add ship-to or service locations during registration?

Answer: - Yes; this is a required field. Ship-to or Service locations inform buyers where your company sells its products or provides its services, and the system uses this information to match potential business opportunities with your products and services.

Click **Add Ship-to or Service Locations** to select one or more sales territories from a list. You can add, refine, or remove ship-to or service locations any time after the registration process.

Do I need to enter a D-U-N-S number when I register?

Answer: - No; this is an optional field. You are only required to complete the fields marked with an asterisk (*). If you enter a D-U-N-S number, and you get a message that the value is already in use, leave the field blank, as D-U-N-S numbers must be unique within the Ariba Commerce Cloud. Your company can have multiple Ariba accounts, but only one account can use the D-U-N-S number.

Additional Information: - D-U-N-S is a registered trademark of Dun & Bradstreet or its subsidiaries in the United States and other countries.

Do I need to enter a Tax ID when I register?

Answer: - No, the Tax ID is an optional field. You are only required to fill in the fields marked with an asterisk (*).

What is the difference between the Email and Username fields in my profile?

Answer: - The Email field represents the email address where you wish to receive email notifications. The Username field is the identifier that you use to access your account. The Username field must be in email format, but you do not have to use a valid email address.

Note: Leave the **This is my username** box checked if you want your email address to be the same as your username.

How do I participate in my buyer's event using an email invitation?

Answer: - Use the **Click here** link in the email notification to access the sourcing event.

While buyers might customize the email content you receive, all email invitations contain a link to access the event.

Depending on your previous experience with Ariba solutions, do one of the following to access the event after you click the link:

- If you are new user, click **Continue** on the welcome page. You continue to register an Ariba account to link with your buyer and participate in the event.
- If you have used Ariba before and have already accessed an event for the buyer-specific account with your current log in ID, click the **Login** button to continue. Log in with your Ariba username and password in order to participate in the event.
- If you already have an existing Ariba Network, Ariba Discovery, or Ariba Sourcing supplier account, but you have not accessed any events for the inviting buyer's site, use the **Click here if you already have an Ariba Commerce Cloud, Ariba Discovery or Ariba Network account** link. After clicking the link, log in with your existing account to move your information to your buyer's site.

Additional Information :- Registering an Ariba account provides you with a consolidated view of all your customer relationships. With this one profile, you can view business opportunities, participate in sourcing events, participate in contract negotiations, and manage orders, catalogs, and invoices.

Why doesn't the link in the email invitation to participate in a sourcing event work?

Answer:-If you cannot click the link, or the link does not open the log in page, highlight and copy the Uniform Resource Locator (URL), and then paste the URL into your web browser.

Can my company have multiple accounts?

Answer:-Your Company can have multiple Ariba accounts, depending on your business needs. For example, if your company has several locations around the world, you might want a separate account for each region.

Most companies choose to have one account with multiple customer relationships, which provides a centralized location to maintain their company profile information and all of their customer relationships.

Additional Information

Consider the following items when deciding whether to have more than one account:

- **Administrators:** For each account, you can have only one account administrator, but the account administrator can provide access to multiple users. All users from your company have their own **Username** and **Password** to access the account.
- **DUNS** (data universal numbering system) **numbers:** You can add your company's DUNS number to only one account. If you plan to have multiple accounts, leave the DUNS number blank during registration.

How do I complete registration if my username already exists?

Answer: - This message means that you already have an Ariba Network, Ariba Discovery, or Ariba Sourcing supplier account registered under username you entered. You can either register a new account by creating a new username, or access one of the following sites to request a password reset for the registered username:

- [Ariba Network](#) (This login page is used for all Ariba Network, Ariba Sourcing, or Ariba Contracts suppliers).
- [Ariba Discovery login page](#)

To reset your password, click the **Having trouble logging in?** Link on the Login page.

Nothing happens when I click Forgot Username and enter my email address

Issue: - Nothing happens when I click the **Forgot Username** link and enter my email address.

Cause: - After you submit your request to retrieve your username, the Ariba Network sends an email notification with usernames that match the email address you submitted.

Some possible reasons why you may not receive this username retrieval email notification:

- The email address on your account does not match the email address you entered when submitting the request.
- Your buyer-specific account was deactivated before you could move it to the Ariba Commerce Cloud. Generally, that means you probably have not participated in an event with that buyer for a while.

Solution: -

- To ensure you receive this email notification:
- Make sure you type the email address configured within your account.

If your buyer-specific account has been deactivated, contact your buyer to determine how to proceed.

Where is my password reset email?

Answer: - After you submit your request for a password reset, Ariba sends instructions to the email address associated with your account. If you didn't receive a password reset email, check the following scenarios to troubleshoot.

The username you entered is in the wrong format, or it isn't associated with the email address you are checking.

- Keep in mind, your username is in the format of a full email address, but it can be associated with any email address you entered previously.
 - Your username is also case-sensitive.
 - To confirm that you are using the correct username and format, return to the Ariba login page, and click the **Having trouble logging in?** link (**Forgot Username** if you're working in Ariba Discovery).
 - Choose **I forgot my username**, and click **Continue**.
 - Enter the email address associated with your account, and click **Submit**.
 - You will receive an email that lists the exact format of the username associated with the email you entered.
-

You entered the correct username, but you still didn't receive the password reset email notification.

- This can occur if the configured email address is different from the account you are checking.
- You might have multiple accounts for your company, so make sure you are attempting to access the correct account.

Your email configuration or company's security settings might also prevent you from receiving the password reset email. To find out, check your junk mail folder or email filter settings to verify that automated emails from Ariba are not blocked from your email account.

 **Why do I get this message on the SAP Ariba Login page: "The username and password pair you entered was not found"?**

Answer: - You entered an incorrect **Username** or **Password**. You might receive this message if you entered a previous **Username** or **Password**. Remember that your **Username** has the format of an email address, and both the **Username** and **Password** are case sensitive.

Click the **Having trouble logging in?** Link on the Login page if you don't remember your log in information.

-: Steps for tender submission:-

Step 1: Vendor will get an **invitation email** from Ariba System. Keep this email, it contains your login Information and a direct link to Ariba.

URL for Supplier Users: <http://tatapower.supplier.ariba.com>

Step 2: Click **"Click Here" to access this event.**

Step 3: If you are first time vendor you will get the **"Sign UP" window.** Click on the same. If this screen is not appearing then close the window and follow the steps.

If the vendor has already created User id and password then after step 2 he will directly get the login screen. After credentials → click on ARIBA APPS and click on Proposals.

Step 4: After Continue simple one-page registration screen will open. Define your password and secret question. Click "OK"

Step 5: You will be able to see the RFQ

Step 6: After review and downloading of all documents click on **"Review Prerequisites"**

Step 7: Review and accept **"Bidder Agreement"**.

Step 8: Select Items or Lots → **Click "Submit Select Lots"**

Step 9: Vendor has to submit their **techno commercial offer in 2.1." Pls Attach Techno commercial Bid "**In this field Do No attach any price content.

For Price Bid put all the unit price and taxes and duties in provided field. Put "0" (ZERO) in not applicable field.

Step 10: After successfully putting Techno commercial offer and price part then click on **"Submit Entire Response"**