

**STATE LOAD DESPATCH CENTRE**  
**MADHYA PRADESH POWER TRANSMISSION CO. LTD.**  
NAYAGAON, RAMPUR, JABALPUR - 482008



**TENDER SPECIFICATION NUMBER**  
**LDET-03/2023-24**

**FOR**

**Supply ,Installation & commissioning of Phasor  
measurement Units (PMUs) Based Jabalpur Islanding  
Scheme Along with Annual Maintenance  
COST OF TENDER DOCUMENT**

**Rs. 10000.00+ Rs.1800.00 (GST @18%)**

**CHIEF ENGINEER (SLDC MP JABALPUR)**

# **VOLUME-I**

**TENDER SPECIFICATION  
NO. LDET-03/2023-24**

# **VOLUME-I**

## **Summary Description**

### **PART-I : BIDDING PROCEDURES**

#### **Section-I Instructions to Bidders (ITB)**

This Section provides information to help Bidders prepare their Bids, Information is also provided on the submission, opening, and evaluation of Bids and on the award of Contract. **Section I contains provisions that are to be used without modification.**

#### **Section-II Bid Data Sheet (BDS)**

This Section includes provisions that are specific to each procurement and that supplement Section I, Instructions to Bidders.

#### **Section-III Evaluation and Qualification Criteria**

This Section specifies the criteria to be used *for Bid evaluation* and the qualifications of the Bidder to perform the contract.

#### **Section-IV Bidding Forms**

This Section includes the forms which are to be completed by the Bidder and submitted as part of its Bid.

### **PART-II : SUPPLY REQUIREMENTS**

#### **Section V Schedule of Requirements**

This Section contains the Delivery Schedule for Supply and Installation of PMU Based Jabalpur Islanding Scheme Along with Annual Maintenance.

### **PART-III : CONDITIONS OF CONTRACT AND CONTRACT FORMS**

#### **Section VI General Conditions (GC)**

This Section includes the general clauses to be applied in all contracts. **The text of the clauses in this Section shall not be modified.**

#### **Section VII Particular Conditions (PC)**

This Section contains clauses specific to each contract which modify or supplement the General Conditions and which shall be prepared by the Purchaser.

#### **Section VIII Contract Forms**

This Section contains forms which, once completed, will form part of the contract. The form for **Performance Security** shall only be completed by the successful Bidder after contract award.

# Table of Contents

Invitation for Bids.....	1
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## **Bidding Procedures**

Section I	Instructions to Bidders
Section II	Bid Data Sheet
Section III	Evaluation and Qualification Criteria
Section IV	Bidding Forms

## **Supply Requirements**

Section V	Schedule of Requirements (SR)
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## **Conditions of Contract and Contract Forms**

Section VI	General Conditions (GC)
Section VII	Particular Conditions (PC)
Section VIII	Contract Forms (CF)

# **PART-I Bidding Procedures**

## **Section I. Instructions to Bidders**

### **Notes on Instructions to Bidders**

Section I, Instructions to Bidders, provides the information necessary for Bidders to prepare responsive Bids in accordance with the requirements of the Purchaser. It also gives information on Bid submission, opening, and evaluation, and on the award of the Contract.

# Table of Contents

<b>A. General</b>	<b>1</b>
1. Scope of Bid	1
2. Source of Funds	1
3. Corrupt and Fraudulent Practices	1
4. Eligible Bidders	2
5. Eligible Goods and Related Services	5
<b>B. Contents of Bidding Documents</b>	<b>6</b>
6. Sections of Bidding Documents	6
7. Clarification of Bidding Documents	6
8. Amendment of Bidding Documents	6
<b>C. Preparation of Bids</b>	<b>7</b>
9. Cost of Bidding	7
10. Language of Bid	7
11. Documents Comprising the Bid	7
12. Price Schedules	7
13. Alternative Bids	8
14. Bid Prices and Discounts	8
15. Currencies of Bid and Payment	9
16. Documents Establishing the Eligibility of the Bidder	10
17. Documents Establishing the Eligibility of the Goods and Related Services	10
18. Documents Establishing the Conformity of the Goods and Related Services	10
19. Documents Establishing the Qualifications of the Bidder	10
20. Period of Validity of Bids	11
21. Bid Security	11
22. Format and Signing of Bid	14

<b>D. Submission and Opening of Bids</b>	<b>14</b>
23. Submission, Sealing and Marking of Bids	14
24. Deadline for Submission of Bids	24
25. Late Bids	24
26. Withdrawal, Substitution, and Modification of Bids	25
27. Bid Opening	25
<b>E. Evaluation and Comparison of Bids</b>	<b>26</b>
28. Confidentiality	26
29. Clarification of Bids	26
30. Deviations, Reservations, and Omissions	26
31. Preliminary Examination of Bids	27
32. Qualification of the Bidder	27
33. Determination of Responsiveness	27
34. Nonmaterial Nonconformities	29
35. Correction of Arithmetical Errors	29
36. Conversion to Single Currency	29
37. Evaluation of Bids	30
38. Comparison of Bids	30
39. Purchaser's Right to Accept Any Bid, and to Reject Any or All Bids	30
<b>F. Award of Contract</b>	<b>30</b>
40. Award Criteria	30
41. Purchaser's Right to Vary Quantities at Time of Award	31
42. Letter of Intent	31
43. Performance Security	31

STATE LOAD DESPATCH CENTRE  
MADHYA PRADESH POWER TRANSMISSION CO. LTD.  
NAYAGAON, RAMPUR, JABALPUR - 482008

**TENDER FORM**

The undersigned hereby tenders and offers (subject to **Company's** conditions of tendering) the **M.P. POWER TRANSMISSION COMPANY LIMITED, (hereinafter referred to as 'Company')** to test and supply the plant, machinery and materials, deliver and execute and do the several works and things which are described or referred to in the enclosures and schedules to the Tender Specification No. LDET-03/2023-24 copies of which are annexed hereto and which under the terms thereof are to be supplied, executed and done by the contractor in a thoroughly good and workman like manner, and to perform and observe the provisions and agreements or the part of the contract contained in or reasonably to be inferred from the said tender documents for the sums and at the rates set out in schedules annexed hereto.

It is confirmed that all (i) Questionnaire for Commercial terms and conditions (ii) Questionnaire for technical specification of equipment/ materials and (iii) All other conditions-where ever described in the tender document have been replied in full giving clear details. It has been noted that in case any reply is not given or any reply is incomplete/ ambiguous, the Company will have the right to take the same in such a way that may be advantageous for the Company. Company's decision in this regard will be final. The tenderer will have no right to furnish any technical or commercial clarifications after opening of the bid which may in any way alter the offered prices.

System generated receipt dated ----- for online payment towards cost of tender specification no. LDET-03/2023-24 is enclosed along-with documents submitted in hard copy.

Dated this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_.

(Bidder's Signature)

Name

\_\_\_\_\_

Address

\_\_\_\_\_

Seal:

## A. General

**1. Scope of Bid** 1.1 In connection with the Invitation for Bids specified in Section II, Bid Data Sheet (BDS), the MPPTCL, as specified in the BDS, issues these Bidding Documents (hereinafter referred to as “Bidding Documents”) for the supply of Goods and Related Services incidental thereto as specified in Section V, Schedule of Requirements. The name, identification, and number of lot(s) (contract(s)) comprising this **Domestic** Competitive Bidding process are **specified in the BDS**.

1.2 Throughout these Bidding Documents:  
 (a) the term “in writing” means communicated in written form and delivered against receipt;  
 (b) except where the context requires otherwise, words indicating the singular also include the plural and words indicating the plural also include the singular; and  
 (c) “day” means calendar day.

**2. Source of Funds** 2.1 All payments will be released by MPPTCL directly within time bound schedule from the fund available with MPPTCL **unless otherwise specified in BDS**.

## **3. Corrupt and Fraudulent Practices**

3.1 In this ITB 3.1, “Contractors” is used as a synonym of “Suppliers.”  
 It is MPPTCL’s policy to require that Bidders and Contractors observe the highest standard of ethics during the procurement process and execution of such contracts. In pursuance of this policy;

The MPPTCL:

- (a) will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question; and
- (b) will recognize a Bidder or Contractor as ineligible, for a period determined by MPPTCL, to be awarded a contract if it, at any time, determines that the Bidder or the Contractor has engaged in corrupt or fraudulent practices in competing for, or in executing another contract awarded by MPPTCL;

- 3.2 Furthermore, Bidders shall be aware of the provision stated in Sub-Clause 31.1 (a) of Section VI, the General Conditions.

#### 4. Eligible Bidders

4.1 This Invitation for Bids, issued by the Employer is open to all entities registered or incorporated under the companies Act of India, firms, consultants, except those with whom business is banned by successor companies of MPSEB will be eligible to participate in the Tenders.

Besides above, Further to meeting above, it may please be noted that any bidder from such countries sharing a land border with India will be eligible to bid if the bidder is registered with the Competent Authority, under the provisions of Order no. F.No.6/18/2019-PPD (Order Public Procurement no.1) dated 23/07/2020 & order No. F.No.7/10/2021-PPD(1) dated 23.02.2023 (Order Public Procurement no.4) regarding "Restriction under Rule 144(xi) of General Financial Rules" and F.No.6/18/2019-PPD (Order Public Procurement no.2) dated 23/07/2020 regarding "Exclusion from Restrictions under Rule 144(xi) of the General Financial Rules" issued by Public Procurement Division, Department of Expenditure, Ministry of Finance, Government of India [hereinafter collectively referred as "**DoE Order**"] and any subsequent modifications/Amendments, if any. **The competent authority for registration will be the registration committee constituted by Govt. of India, Department for Promotion of Industry and Internal Trade (DPIIT).**

Accordingly, the Bidder, must go through the contents of aforesaid Order regarding restrictions on procurement from a 'Bidder of a country which shares a land border with India' and on sub-contracting to contractors from such countries and furnish self-certification in prescribed format enclosed in Section-IV of Bidding Document.

- 4.2 This bidding is open for Manufacturers/ Authorized dealer or supplier having authorization from manufacturer as detailed in bidding document.
- 4.3 A Bidder shall not have a conflict of interest. A Bidder shall not be employed under any of the circumstances set forth below where it is determined to have a conflict of interest throughout the bidding/selection process and/or the execution of the contract unless the conflict has been resolved in a manner acceptable to the MPPTCL.
- (a) A firm that has a close business relationship with the MPPTCL's professional personnel, who are directly or indirectly involved in any part of:
    - (i) the preparation of the prequalification and Bidding Documents for the contract,

- (ii) the prequalification and Bid evaluation, or
    - (iii) the supervision of such contract, shall be disqualified.
  - (b) Based on the “One Bid Per Bidder” principle, which is to ensure fair competition, a firm shall not be allowed to submit more than one Bid;
  - (c) A firm having any other form of conflict of interest other than (a) & (b) above shall be disqualified.
- 4.4 A Bidder that has been determined to be ineligible by MPPTCL in accordance with ITB 3.1 shall not be eligible to be awarded a contract.
- 4.5 A Bidder shall provide such evidence of their continued eligibility satisfactory to the MPPTCL, as the MPPTCL shall reasonably request.
- 4.6 Preference to Local Content :-**
- The Govt. of India, Department for Promotion of Industry and Internal Trade (DPIIT) has issued Public Procurement (Preference to make in India) order No. P-45021/2/2017-PP (BE-II) dated 4th June, 2020 to encourage “Make in India” initiative and to promote manufacturing and production of Goods and Services in India with a view to enhancing income and employment. The order is applicable for procurement under all Central Schemes / Central Sector Schemes, where the scheme is fully or partially funded by Government of India and also in respect of funding of capital equipment by PFC /REC. The important provisions of this order are as under :-
- i. **Definitions:**
- ‘**Local content**’ means the amount of value added in India which shall, unless otherwise prescribed by the Nodal Ministry, be the total value of the item procured (Excluding net domestic indirect taxes) minus the value of the imported content in the item (including all customs duties) as a proportion of the total value in percent.
- ‘**Class-I local supplier**’ means a supplier or service provider whose goods, services or works offered for procurement, has local content equal to or more than 50%, as defined under this Order.
- ‘**Class-II local supplier**’ means a supplier or service provider whose goods, services or works offered for procurement, has local content more than 20% but less than 50% as defined under this Order.
- ‘**Non-local suppliers**’ means a supplier or service provider whose goods, services or works offered for procurement, has local content less than or equal to 20% as defined under this Order.
- ‘**L1**’ means the lowest tender or lowest bid or the lowest quotation

received in a tender, bidder process or other procurement solicitation as adjudged in the evaluation process as per the tender or other procurement solicitation.

**‘Margin of purchase preference’** means the maximum extent to which the price quoted by a “Class-I local supplier” may be above the L1 for the purpose of purchase preference.

**‘Procuring entity’** means a Ministry or department or attached or subordinate office of, or autonomous body controlled by, the Government of India and includes Government companies as defined in the Companies Act.

**‘Works’** means all works as per Rule 130 of GFR-2017 and will also include turnkey works.

i. **Eligibility of ‘Class-I local supplier’/ ‘class-II local supplier’/ ‘Non-local suppliers’ for different types of procurement**

(a) In procurement of all goods, services or works in respect of which the Nodal Ministry / Department has communicated that there is sufficient local capacity and local competition as per Annexure-I of order No. 11/05/2018-Coord of Govt. of India, Ministry of Power, only ‘Class-I Local Supplier’ shall be eligible to bid irrespective of purchase value.

(b) In Procurement of all goods, services or works, not covered by 2 (a) above and with estimate value of purchases less than Rs. 200 Crore, as per Annexure-I of order No. 11/05/2018-Coord of Govt. of India, Ministry of Power, only ‘Class-I local supplier’ and ‘Class-II local supplier’ shall be eligible to bid except when Global Tender Enquiry has been issued. In Global Tender Enquiries, ‘Non-local supplier’ shall also be eligible to bid along with ‘Class-I local supplier’ and ‘Class-II local supplier’.

(c) For the purpose of this order works includes Engineering, Procurement and Construction (EPC) contracts and services include System Integrator (SI) contract.

(d) On the above basis, the eligibility of Class – II Local Suppliers / Non Local Suppliers to participate in the Bid is **specified in BDS**.

ii. **Exemption of Small Purchase:** Procurements where the estimated value to be procured is less than Rs. 5 Lakh shall be exempt from this order. However it shall be ensured by procuring entities that Procurement is not split for the purpose of avoiding the provision of the Order.

iii. **Margin of purchase preference:** The margin of purchase preference shall be 20%.

iv. **Verification of local content :**

a. The ‘Class-I local supplier’/ ‘Class-II local supplier’ at the time of tender, bidding or solicitation shall be required to indicate percentage of local content and provide self-certification as per prescribed format enclosed in

Section – IV of Bidding Document that the item offered meets the local content requirement for ‘Class-I local supplier’/ ‘Class-II local supplier’, as the case may be. They shall also give details of the location(s) at which the local value addition is made.

b. In case of procurement for a value in excess of Rs.10 Crores, the ‘Class-I local supplier’/ ‘Class-II local supplier’ shall be required to provide a certificate as per prescribed format enclosed in Section – IV of Bidding Document from the statutory auditor or cost auditor of the company (in the case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content.

- 5. Eligible Goods and Related Services**
- 5.1 All plant and equipment to be supplied and installed and services carried out under the contract shall have their origin in any country barring those countries against whom sanction for conducting business is imposed by Government of India and barring those firms with whom business is banned by the Employer.
- 5.2 For purposes of this Clause, the term “goods” includes commodities, raw material, machinery, equipment, and industrial plants; and “related services”, which includes services such as insurance, installation, training, initial maintenance etc.
- 5.3 The term “origin” means the place where the goods have been mined, grown, cultivated, produced, manufactured or processed; or, through manufacture, processing, or assembly, another commercially recognized article results that differs substantially in its basic characteristics from its components.
- 5.4 In case the bidder is not a manufacturer, but only a duly authorized representative of the manufacturer, the experience criteria must be complied with by the manufacturer. Otherwise, the bid will be rejected. The manufacturer authorizing the bidder as its representative shall submit a “Manufacturer’s Authorization” fully committing itself to the responsibilities required by the bidding documents in case of award of contract.
- 5.5 Supply of imported equipment or equipment having component/parts from “Prior Reference” Countries as specified by Govt. of India or by persons owned by, controlled by or subject to the jurisdiction or the directions of these “Prior Reference” countries shall not be allowed. Further, bidders are required to furnish self-certification in prescribed formats in Section-IV of Bidding Documents that the equipment or its component or parts being supplied shall be free from any kind of embedded malware/ trojans / cyber threat.

## B. Contents of Bidding Documents

- 6. Section of Bidding Documents**
- 6.1(a) The *Volume I* of Bidding Documents consists of Parts 1, 2, and 3, which includes all the Sections indicated below, and should be read in conjunction with any Addenda issued in accordance with ITB 8.
- PART 1      Bidding Procedures**
- Section I. Instructions to Bidders (ITB)
  - Section II. Bid Data Sheet (BDS)
  - Section III. Evaluation and Qualification Criteria (EQC)
  - Section IV. Bidding Forms
- PART 2      Supply Requirements**
- Section V. Schedule of Requirements
- PART 3      Conditions of Contract and Contract Forms**
- Section VI. General Conditions (GC)
  - Section VII. Particular Conditions (PC)
  - Section VIII. Contract Forms (CF)
- (b) The *Volume II* of Bidding Documents contains Technical Specification for Goods - the details are **specified in BDS**
- 6.2 The Invitation for Bids issued by the MPPTCL is not part of the Bidding Documents.
- 6.3 The Bidder is expected to examine all instructions, forms, terms, and specifications in the Bidding Documents, and to furnish with its Bid all information and documentation as is required by the Bidding Documents.
- 7. Clarification of Bidding Documents**
- 7.1 A Bidder requiring any clarification of the Bidding Documents shall contact the MPPTCL in writing at the MPPTCL's address **specified in the BDS**. The MPPTCL will respond in writing to any request for clarification, provided that such request is received no later than fourteen (14) days prior to the deadline for submission of Bids. The MPPTCL shall promptly publish its response on its website. Should the clarification result in changes to the essential elements of the Bidding Documents, the MPPTCL shall amend the Bidding Documents following the procedure under ITB 8 and ITB 24.2.
- 8. Amendment of Bidding**
- 8.1 At any time prior to the deadline for submission of Bids, the MPPTCL may amend the Bidding Documents by issuing

**Documents**

addenda.

- 8.2 Any addendum issued shall be part of the Bidding Documents and shall be communicated on the website of MPPTCL / e-procurement portal. If so **specified in the BDS**, the MPPTCL shall also promptly publish the addendum on the MPPTCL's web page in accordance with ITB 7.1.
- 8.3 To give Bidders reasonable time in which to take an addendum into account in preparing their Bids, the MPPTCL may extend the deadline for the submission of Bids, pursuant to ITB 24.2. However in case of urgency, MPPTCL may not extend due date of opening.

**C. Preparation of Bids**

- 9. Cost of Bidding** 9.1 The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the MPPTCL shall not be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.
- 10. Language of Bid** 10.1 The Bid, as well as all correspondence and documents relating to the Bid exchanged by the Bidder and the MPPTCL, shall be written only in **English**.
- 11. Documents Comprising the Bid** 11.1 The Bid Shall comprise the following :
- a) System Generated Receipt for payment of tender cost ;
  - b) Completed Price Schedules, in accordance with ITB 12 and 14;
  - c) Bid Security, in accordance with ITB 21;
  - d) written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 22;
  - e) documentary evidence in accordance with ITB 16 establishing the Bidder's eligibility to bid;
  - f) documentary evidence in accordance with ITB 17, that the Goods and Related Services to be supplied by the Bidder are of eligible origin;
  - g) documentary evidence in accordance with ITB 18 establishing that the Goods and Related Services conform to the Bidding Documents;
  - h) documentary evidence in accordance with ITB 19 establishing the Bidder's qualifications to perform the Contract ;
  - (i) any other document **required in the BDS**.
- 12 Price Schedules** 12.1 The Price Schedules shall be prepared using the relevant forms furnished in Section IV, Bidding Forms. The forms must be completed without any alterations to the text, and no substitutes

shall be accepted. All blank spaces shall be filled in with the information requested.

**13. Alternative Bids**

13.1 Alternative Bids shall be rejected.

**14. Bid Prices and Discounts**

14.1 The prices and discounts (including any price reduction) quoted by the Bidder in the Price Schedules shall conform to the requirements specified below.

14.2 All items must be listed and priced separately in the Price Schedule.

14.3 In case any discount is offered the same should be indicated clearly and the application methodology should be mentioned specifically, to avoid any ambiguity, as specified in BDS. Bidders may note that no discount will be accepted once the Bid is submitted.

Bidders may note that conditional discounts may or may not be accepted or considered for evaluation depending upon acceptability of quoted condition to the MPPTCL.

14.4 Prices quoted by the Bidder shall be fixed during the Bidder's performance of the Contract and not subject to variation on any account, **unless otherwise specified in the BDS**. A Bid submitted with an adjustable price quotation shall be treated as non-responsive and shall be rejected, pursuant to ITB 33. However, **if it is specified in the BDS** that adjustable prices are to be quoted, a Bid submitted with a fixed price quotation shall not be rejected, but the prices shall be adjusted if found to be on negative side during the performance of the Contract, **as specified in BDS**.

14.5 Prices shall be quoted as specified in Price Schedule included in Section IV, Bidding Forms. The disaggregation of price components is required solely for the purpose of facilitating the comparison of Bids by the MPPTCL. This shall not in any way limit the MPPTCL's right to contract on any of the terms offered.

14.6 Freight charges should be offered for the equipment/ material on average basis. In this connection, it may be noted that the equipments will have to be delivered only by road transport from works to final destination site anywhere in MP as indicated by MPPTCL i.e. at the concerned EHV substations/ Store. Due to additional operations of loading/ unloading and problem in arrangement of crane for unloading, MPPTCL will not accept delivery of equipments/material by rail transport and accordingly offered inland freight charges should also take into account the facilities and cost required for unloading of consignment in

transmission stores/ project sites. Thus in regard to offering of freight charges, Bidders may note carefully that average freight charges for delivery on FIRM basis including unloading at site only be offered for each equipment/ material. The offered freight charges shall be on lump sum basis. The final destination (Project sites) are shown in Section V, Schedule of Requirement or **specified in BDS**

- 14.7 Bidders are not required to offer for transit insurance charges since transit insurance will be excluded from the scope of this tender and will also be excluded from the scope of Contracts which would be placed against this tender. Although transit insurance has been excluded from the scope of supply, responsibility for safe delivery of the equipment/ material and its accessories up to the destination anywhere in MP shall rest on the successful Bidder, and therefore for this purpose necessary arrangement may be made by the Bidder at its cost.
- 14.8 It is also desired that immediately after movement of consignment intimation should be given to the MPPTCL indicating date of movement, expected period of transportation, size of packages/consignment and transport weight, so that after delivery/unloading at stores/site, the MPPTCL may organize inspection and issue Material Receipt Certificate promptly. In this regard, all details furnished in Section V - Schedule of Requirements, may be noted for strict compliance.
- 14.9 The bidders shall quote for the entire scheme on a “single responsibility” basis such that the total bid price covers all the Contractor’s obligations mentioned in or to be reasonably inferred from the Bidding Documents in respect of the design, manufacture, including procurement and subcontracting (if any), delivery, construction, installation and completion of the scheme as per Employer’s requirement including supply of mandatory spares (if any). This includes all requirements under the Contractor’s responsibilities for testing, Pre-commissioning and commissioning of the scheme and, where so required by the Bidding Documents, the acquisition of all permits, approvals and licenses, etc.; the operation, maintenance and training services and such other items and services as may be specified in the Bidding Documents, all in accordance with the requirements of the General Conditions of Contract.

## 15. Currencies of Bid & Payment

The currency of the Bid shall be Indian Rupees

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|---|---|
| <b>16. Documents Establishing the Eligibility of the Bidder</b>                     | Bidders shall provide the details to establish their eligibility in accordance with ITB 4 <b>as specified in BDS.</b>   |
| <b>17. Documents Establishing the Eligibility of the Goods and Related Services</b> | 17.1 To establish the eligibility of the Goods and Related Services in accordance with ITB 5, Bidders shall provide the details <b>as specified in BDS.</b>   |
| <b>18. Documents Establishing the Conformity of the Goods and Related Services</b>  | 18.1 To establish the conformity of the Goods and Related Services to the Bidding Documents, the Bidder shall furnish as part of its Bid the documentary evidence that the Goods conform to the technical specifications and standards specified in Volume-II of Bidding Document.<br><br>18.2 The documentary evidence may be in the form of literature, drawings or data, and shall consist of a detailed item by item description of the essential technical and performance characteristics of the Goods and Related Services, demonstrating substantial responsiveness of the Goods and Related Services to the technical specification, and if applicable, a statement of deviations and exceptions to the provisions of Volume-II of Bidding Document.<br><br>18.3 Standards for workmanship, process, material, and equipment, as well as references to brand names or catalogue numbers specified by the MPPTCL in Volume-II of Bidding Document, are intended to be descriptive only and not restrictive.<br><br>18.4 The Bidder may offer other standards of quality, brand names, and/or catalogue numbers, provided that it demonstrates, to the MPPTCL's satisfaction, that the substitutions ensure substantial equivalence or are superior to those specified in Volume-II of Bidding Document. |
| <b>19. Documents Establishing the Qualifications of the Bidder</b>                  | 19.1 The documentary evidence of the Bidder's qualifications to perform the contract if its Bid is accepted shall establish to the MPPTCL's satisfaction:<br>that, if required in the BDS, a Bidder that does not manufacture or produce the Goods it offers to supply shall submit the Manufacturer's Authorization using the form included in Section IV, Bidding Forms to demonstrate that it has been duly authorized by the manufacturer or producer of the Goods to supply these Goods.<br>(a) or produce the Goods it offers to supply shall submit the Manufacturer's Authorization using the form included in Section IV, Bidding Forms to demonstrate that it has been duly authorized by the manufacturer or producer of the Goods to supply these Goods.<br>(b) that the Bidder meets each of the qualification criteria specified in Section III, Evaluation and Qualification Criteria.   |

- 20. Period of Validity of Bid**
- 20.1 Bids shall remain valid for the period **specified in the BDS** after the Bid opening date prescribed by the MPPTCL under BDS ITB 20.1. A Bid valid for a shorter period shall be rejected by the MPPTCL as non-responsive.
- 20.2 In exceptional circumstances, prior to the expiration of the Bid validity period, the MPPTCL may request Bidders to extend the period of validity of their Bids. The request and the responses shall be made in writing. A Bidder may refuse the request without forfeiting its Bid Security. A Bidder granting the request shall not be required or permitted to modify its Bid.
- 21. Bid Security**
- 21.1 The Bidder shall furnish, as part of its Bid, a Bid Security in the amount **specified in the BDS**.
- 21.2 The Bid Security shall be a demand guarantee in any of the following forms at the Bidder's option:
- An unconditional guarantee issued by a Reputed Bank in India.
  - Demand Draft or Banker's Cheque.
  - Any other security **specified in the BDS** from a reputable source.
- In the case of a bank guarantee, the Bid Security shall be submitted using the Bid Security Form included in Section IV, Bidding Forms. The form must include the complete name & address of the Bidder. The Bid Security shall be valid for Six Months beyond the original validity period of the Bid, or beyond any period of extension if requested under ITB 20.2.
- 21.3 Any Bid not accompanied by a Bid Security shall be rejected by the MPPTCL as non-responsive.
- 21.4 **Submission of Bid Security (EMD):**
- The Bid Security (EMD) of relevant amount, as specified in the BDS, is to be submitted by Bidder, only in the form of Bank Draft in favour of RAO MPPTCL Collection Account SLDC or by submitting Bank Guarantee from scheduled bank as per format prescribed for BG with validity of one year from the date of opening of tender. The DD/ BG shall be physically submitted in a sealed envelope super scribing "Bid Security (EMD) of Rs \_\_\_\_ in the form of DD/BG against tender no. \_\_\_\_ / \_\_\_\_" within the date and time **as specified in BDS**.
  - No offer will be accepted without valid Bid Security unless exempted as detailed in ITB 21. The copy of the documentary evidence shall be physically submitted in a

sealed envelope super scribing “Exemption of Bid Security against Tender No. \_\_\_/\_\_\_” being SSI/ NSIC registered unit or State / Central Govt. Undertaking.

- iii. Bidders shall also upload duly notarized scanned copies of requisite Bid Security documents on the e-procurement portal along with Bid.
- iv. For on-line submission of bid security (EMD), bidder shall be enquired whether they are exempted from payment of EMD. The Bidder shall furnish as part of its tender, Earnest Money along with their offer. Accordingly, bidders may note that for submission of EMD, “Yes” or “No” option is provided on the portal. For submission of EMD in cash, the bidder will have to select “No” option and make online payment of EMD through RTGS/ NEFT. For submission of EMD in the form of Demand draft/ Bank Guarantee or in case bidder is covered under categories exempted from EMD as mentioned below, the bidder will have to select “Yes” option, enter “100”(%) in the percentage tab and upload the scanned copy of EMD exemption document i.e. DD/BG or SSI/NSIC certificate etc., whichever is applicable, details are given below :-

SNo.	Value of Material	Form of Bid Security
1	Up to ₹. 1 Crore	Cash/ DD/ Bank Guarantee.
2	Above ₹. 1 Crore	Bank Guarantee

- v. Bid Security shall be furnished in the following manner:-
  - a. By Bank Draft in favour of RAO MPPTCL Collection Account SLDC. Scanned copy of Demand Draft should be uploaded and original Demand Draft should be submitted by the Bidder within stipulated period in accordance with the procedure laid down above.
  - or
  - b. By Bank Guarantee as per Proforma enclosed with the Bidding Document. Scanned copy of Bank Guarantee should be uploaded and original Bank Guarantee should be submitted by the Bidder within stipulated period in accordance with the procedure the laid down above.
- (vi) The following are exempted from payment of Bid Security

(EMD):-

- a. Registered Small Scale Industries / MSME of Madhya Pradesh. The registration should be permanent and for the items quoted in the Bid.
- b. Ancillary units of Madhya Pradesh State Electricity Board.
- c. MP State/ Central Government undertakings or fully owned State Govt. Manufacturing units with 100% Govt. shares.
- d. Small Scale Units enlisted with the National Small Scale Industries Corporation for Central Govt. Stores Purchase Programme.

(vii) SSI/ NSIC certificate should clearly indicate validity period of the registration. In case this is not specifically indicated, the registration will be treated as invalid and Bid will be ignored. Validity of certificates should be available minimum up to the Bid validity period.

(viii) The Bidders covered under category ITB 21.4 (vi) are required to upload scanned copy of relevant documents duly notarized for claiming exemption in furnishing Bid Security. Further, Registration Certificate should clearly certify that the Supplier is registered for the manufacture of the item offered. If this is not complied with, the Bid will be rejected. Bidders are also requested to furnish the hard copies of all relevant documents within stipulated period in accordance with procedure laid down above.

(ix) If the Bid Security is not submitted, the offers shall be summarily rejected and shall not be opened subject to the condition indicated in ITB 21.4 (vi) above.

(x) The Bid Security of participating Bidders shall be released only after completion of all contractual formalities including submission of Security Deposit towards Performance Guarantee by the successful Bidder and its acceptance.

21.5 The Bid Security may be forfeited:

- (a) if a Bidder withdraws its Bid during the period of Bid validity specified by the Bidder or any extension thereto provided by the Bidder; or

- (b) in case of Bidder being successful Bidder, if it fails to accept the LOI or fails to sign the agreements ( if any) or fails to furnish a Performance Security in accordance with ITB 43.

## 22. Format and Signing of Bid

- 22.1 The uploaded documents comprising the Bid shall be signed by a person duly authorized to sign on behalf of the Bidder. This authorization shall consist of a written confirmation **as specified in the BDS** and shall be attached to the Bid. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the Bid where entries or amendments have been made shall be signed or initialed by the authorised person signing the Bid.
- 22.2 Any inter-lineation, erasures, or overwriting shall be valid only if they are signed or initialed by the authorised person signing the Bid.

### D. Submission and Opening of Bids:

## 23. Submission, 23.1 Sealing and Marking of Bids

Bidders are requested to submit their offer as per conditions of this bidding document. In case of any deviation from conditions as specified herein, the offer will not be accepted.

- 23.2 The bidders are required to submit soft copies of their bids electronically on the MP TENDERS Portal, using valid Digital Signature Certificates. The instructions given below are meant to assist the bidders in registering on the MP TENDERS Portal, prepare their bids in accordance with the requirements and submitting their bids online on the MP TENDERS Portal. More information useful for submitting online bids on the MP TENDERS Portal may be obtained at <https://mptenders.gov.in/nicgep/app> wherein the details and relevant links are available in the Bidders Manual Kit on the right pane of website which is also given as under:

### Bidders Manual Kit - Open Source Software Link

S. No	Particulars	Downloads
1	Notice to Bidders	notice_to_bidders_v906.pdf
2	Registration of Bidders	Bidder_Registration_Manual_Updated_v906.pdf
3	Uploading of My Documents	MyDocument_Updated_v906.pdf
4	Online e-Bid Submission	Three_Cover_Bid_Submission_New_v906.pdf
		Two_cover_bid_submission_new_v906.pdf
		Four_cover_bid_submission_new_v906.pdf
		Single_Cover_bid_submission_New_v906.pdf
5	Online Bid Withdrawal	bid_withdrawal_updated_v906.pdf
6	Online Bid Re-submission	Bid_Resubmission_Updated_v906.pdf
7	Clarifications (Tender Status, My Archive...)	Enquiry_Updated_v906.pdf
8	Trouble Shooting	troubleshoot_document_v906.pdf
9	BoQ Preparation Guidelines	ItemWise_BOQ_New_v906.pdf
		Percentage_BOQ_Updated_v906.pdf
		ItemRate_BOQ_Updated_v906.pdf

#### 23.3 Registration with e-procurement website:

(1) Bidders are required to enroll on the e-Procurement module of the Central Public Procurement Portal (URL: <https://mptenders.gov.in/nicgep/app>) by clicking on the link “Online bidder Enrolment” on the MP TENDERS Portal.

(2) As part of the enrolment process, the bidders will be required to choose a unique username and assign a password for their accounts.

(3) Bidders are advised to register their valid email address and mobile numbers as part of the registration process. These would be used for any communication from the MP TENDERS Portal.

(4) Upon enrolment, the bidders will be required to register their valid Digital Signature Certificate (Class III Certificates with signing key usage) issued by any Certifying Authority recognized by CCA India, with their profile.

(5) Only one valid DSC should be registered by a bidder. Please note that the bidders are responsible to ensure that they do not lend their DSC's to others which may lead to misuse.

(6) Bidder then logs in to the site through the secured log-in by entering their user ID / password and the password of the DSC / e-Token

#### **23.4 Searching for tender documents:**

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

#### **23.5 Preparation of bids:**

- (1) Bidder should take into account any corrigendum published on the tender document before submitting their bids.
- (2) Bidders should go through the invitation for Bids and the Bidding/ tender document carefully to understand the documents required to be submitted as part of the bid. Please note the number of covers in which the bid documents have to be submitted, the number of documents - including the names and content of each of the document that need to be submitted. Any deviations from these may lead to rejection of the bid.
- (3) Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document / schedule and generally, they can be in PDF / XLS / RAR / DWF/JPG formats. Bid documents may be scanned with 100 dpi with black and white option which helps in reducing size of the scanned document.

- (4) To avoid the time and effort required in uploading the same set of standard documents which are required to be submitted as a part of every bid, a provision of uploading such standard documents (e.g. PAN card copy, annual reports, auditor certificates etc.) has been provided to the bidders. Bidders can use “My Space” or “Other Important Documents” area available to them to upload such documents. These documents may be directly submitted from the “My Space” area while submitting a bid, and need not be uploaded again and again.  
This will lead to a reduction in the time required for bid submission process.

### **23.6 Submission of bids:**

- (1) Bidder should log into the site well in advance for bid submission so that they can upload the bid in time i.e. on or before the bid submission end date. Bidder will be responsible for any delay due to other issues.
- (2) Bidder has to upload scanned self certified copies of credential/PQR documents against respective tender as specified in NIT.
- (3) Bidder has to digitally sign and upload the required bid documents one by one as indicated in the tender document.
- (4) Bidder has to select the payment option as “online” to pay the tender fee / EMD as applicable.
- (5) If bidder is opting for submission of Bank Guarantee/DD towards EMD then bidder has to opt for “exemption” option on the website and upload the scanned self certified copy of EMD document as per NIT towards exemption from e-submission of EMD amount. The original should be posted/couriered/given in person to the concerned official, latest by the last date of bid submission or as specified in the tender documents. The details of the Bank Guarantee, physically sent, should tally with the details available in the scanned copy and the data entered at the time of bid submission.
- (6) Bidders are requested to note that they should necessarily submit their financial bids in the format provided and no other format is acceptable. If the price bid has been given

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

- (7) The server time (which is displayed on the bidders' dashboard) will be considered as the standard time for referencing the deadlines for submission of the bids by the bidders, opening of bids etc. The bidders should follow this time during bid submission.
- (8) All the documents being submitted by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered cannot be viewed by unauthorized persons until the time of bid opening. The confidentiality of the bids is maintained using the secured Socket Layer 128 bit encryption technology. Data storage encryption of sensitive fields is done. Any bid document that is uploaded to the server is subjected to symmetric encryption using a system generated symmetric key. Further this key is subjected to asymmetric encryption using buyers/bid openers' public keys.
- (9) The uploaded tender documents become readable only after the tender opening by the authorized bid openers.
- (10) Upon the successful and timely submission of bids (i.e. after Clicking "Freeze Bid Submission" in the portal), the portal will give a successful bid submission message & a bid summary will be displayed with the bid no. and the date & time of submission of the bid with all other relevant details.
- (11) The bid summary has to be printed and kept as an acknowledgement of the submission of the bid. This acknowledgement may be used as an entry pass for any bid opening meetings.

**23.7 Assistance to bidders:**

- 1) Any queries relating to the tender document and the terms and conditions contained therein should be addressed to the Tender Inviting Authority for a tender or the relevant contact person indicated in the tender.
- 2) Any queries relating to the process of online bid submission or queries relating to MP TENDERS Portal in general may be directed to the 24x7 MP TENDERS Portal Helpdesk telephone No. 0120-4001002.

**23.8 Digital Certificate Authentication:**

1. The Bids submitted online should be signed electronically with a Class III Digital Certificate to establish the identity of the Bidder submitting the Bid online. The Bidders may obtain Class III Digital Certificates issued by an approved Certifying Authority authorized by the Controller of Certifying Authorities, Government of India.
2. A Class-III Digital Certificate is issued upon receipt of mandatory identity proofs along with an Application Form. Only upon the receipt of the required documents, a Digital Certificate can be issued.
3. Note:- It may take up to 7 to 10 working days for issuance of Class III Digital Certificate, hence the Bidders are advised to obtain them at the earliest.
4. Important Note: Bid for a particular tender can be submitted during the ONLINE BID SUBMISSION stage only using the Digital Certificate that is used to encrypt the data.
5. In case, during the process of a particular tender, the Bidder loses his Digital Certificate because of any problem (such as misplacement, virus attack, hardware problem, operating system problem, etc.); he may not be able to submit his Bid online.
6. Hence, the Bidders are advised to keep their Digital Certificates in a safe place under proper security to be used whenever required.
7. The digital certificate issued to the Authorized User of a Partnership Firm / Private Limited Company / Public Limited Company / Joint Venture and used for online bidding will be considered as equivalent to a no-objection certificate / power of attorney to that user.

8. In case of Partnership Firm, majority of the partners have to authorize a specific individual through Authority Letter signed by majority of the partners of the firm.
9. In case of Private Limited Company or Public Limited Company, the Managing Director / any other person (having designated authority to authorize a specific individual) has to authorize a specific individual through Authority Letter.
10. Unless the certificate is revoked, it will be assumed to represent adequate authority of the specific individual to Bid on behalf of the Organization for online tenders as per Information Technology Act 2000. This Authorized User will be required to obtain a Digital Certificate. The Digital Signature executed through the use of Digital Certificate of this Authorized User will be binding on the firm. It shall be the responsibility of Management / Partners of the concerned firm to inform the Certifying Authority, if the Authorized User changes, and apply for a fresh digital certificate for the new Authorized User.

#### **23.9 Bid submission :**

Bidders should duly upload the documents and fill the tender. The online tender should be submitted before Tender Submission End date.

- i. Bidder shall have to submit the price bid downloaded from website and uploaded as per instructions therein. Physical submission of price bid will not be considered. The price bid of techno-commercially qualified bidder shall be opened online at the notified date. Bidders can view information of date of price bid opening by logging in to website.
- ii. During the online Techno Commercial offer opening, the Bid Security/ tender cost part of all the bidders will be opened first and after the verification of the uploaded as well as physical copy of Bid Security/ tender cost, the offers will be short listed for Techno-Commercial opening. Subject to fulfillment of conditions related to tender cost/ earnest money deposit, the techno-commercial offers shall be opened and after evaluation of the same, the decision will be taken for selection of offers for the purpose of opening of price bid.

### 23.10 Submission/Uploading of Bid Security :

- i. The prospective bidders, who are submitting Bid Security envelope in physical form for respective tender, will upload scanned self certified copies of requisite Bid Security documents on the website along with tender offer.
- ii. Any mismatch, if found in the documents submitted in physical form and that uploaded on line, the documents submitted online shall be considered final and no justification in this regard shall be entertained by MPPTCL.

### 23.11 Techno Commercial Bid :

Tenderers must positively complete on line e-tendering procedure at <https://mptenders.gov.in/nicgep/app>. They shall have to submit the following documents online in the website.

- i. Their complete techno-commercial offer containing detailed material description, specification and all commercial terms and conditions. This document should not contain any price part.
- ii. Techno-commercial information in the form of questionnaire and Bidding Forms as indicated in tender document.
- iii. Hard copies of above techno-commercial offer, questionnaire and Bidding Forms (uploaded in the website) must be submitted in a separate sealed envelope super scribing “Techno-commercial bid for Tender Specification No - \_\_/\_\_\_\_”.

### 23.12 Price Offer :

Bidder shall have to submit the price offer documents downloaded from website and uploaded as per instructions therein. **Physical submission of price bid will not be considered.** The price offer of techno-commercially qualified bidder shall be opened online on <https://mptenders.gov.in/nicgep/app> at the notified date by MPPTCL. Bidders can view information of date of price offer opening by logging in to website.

### 23.13 Hard Copies:-

All the Bidders shall invariably upload the scanned copies of DD/ BG or certificate of SSI/ NSIC registration or Central / State Govt. Undertaking, as the case may be, towards Bid Security (EMD) and system generated money receipt for online payment of tender cost in e-procurement system and this will be the primary requirement to consider the tender/Bid responsive.

- i. The techno-commercial Bid evaluation shall be carried out only on submission and uploading of the certificates, documents, DD/ BG or certificate of SSI/ NSIC registration or Central / State Govt. Undertaking, towards Bid Security and system generated receipt for tender cost in the e-procurement system.
- ii. The Bidders shall invariably furnish the original DD/BG or certificate of SSI/ NSIC registration or Central / State Govt. Undertaking, towards Bid Security, system generated receipt for tender cost, hard copies of certificates/ documents including various Forms (except Price Schedule) to the Tender Inviting Authority within the date and time specified in the tender, either personally or through courier or post and the receipt of the same within the stipulated date shall be the responsibility of the Bidder. The department will not take any responsibility for any delay in receipt/ non-receipt of DD/BG or certificate of SSI/ NSIC registration or Central / State Govt. Undertaking, towards Bid Security/ tender cost, Certificates/ Documents from the Bidders before the stipulated time. On receipt of documents, the department shall ensure the genuineness of the DD/BG or certificate of SSI/ NSIC registration or Central / State Govt. Undertaking, towards Bid Security(EMD)/tender cost and all other Certificates/ Documents uploaded by the Bidder in e-procurement system in support of the qualification criteria before opening of Price Offer.
- iii. If any Bidder fails to submit the original hard copies of certificate / documents, DD/BG or certificate of SSI/ NSIC registration or Central/ State Govt. Undertaking, towards Bid Security (EMD)/ tender cost within stipulated time or if any variation is noticed between the uploaded documents toward Bid Security/ tender cost and the hard copies submitted by the Bidder, its Bid shall not be considered for opening.
- iv. **Compliance with other conditions :-**  
Although all other conditions have clearly been spelt out in the tender document, it is once again brought to the notice of Bidder that they should go through the tender document carefully and comply all other conditions also like furnishing of type test reports, furnishing of list of past supplies, Income Tax Clearance Certificate, Profit & Loss Account and Balance Sheet for last five years, valid factory license, details of Litigation history, drawings and write-up for the manufacturing process.

In case of Bidders covered under MSMED Act 2006, certification/ requisite document / registration certificate indicating category i.e. micro unit, small unit or medium enterprise and Entrepreneurship Memorandum Number is required to be furnished.

The Bidders are required to furnish the latest certificate of all type tests conducted at any independent recognized institute on material/ equipment of the offered type / rating as per our specification. These type tests should have been conducted within last five years. In case the type test was carried out earlier than five years, the manufacturer will have to conduct these tests before commencement of supply. In both the above cases type test certificate must be submitted with the offer. In the absence of this, no query shall be made and MPPTCL will be at liberty to reject any such offer, which is not satisfactorily supported with requisite test certificates. A list of past supplies made by the Bidders for the equipment offered and also related performance certificate from such buyers should also be furnished along with the offer.

For verifying reasonability of prices by the MPPTCL, the Bidders are required to enclose copies of orders under execution/ executed recently for other Utilities along with Bid for the offered equipment. It may be noted that the order copy must contain full scope of supply including price schedule etc. without omission/deletion/hiding of any information.

In nutshell, the Bid at the time of submission of technical and commercial Bids itself should be complete in all respect. It should not be expected that in case of lack of any information, the MPPTCL will make any correspondence with the Bidder. The documents and details as called for in the tender specification must be submitted without making any reference to submission of such certificate against past order, tender specification or past experience of supplies with MPPTCL etc. All tenders wherein these conditions are not complied with may run the risk of rejection without any correspondence from MPPTCL's side.

- v. Details of documents to be submitted / uploaded online are **as specified in BDS.**

**23.14** The Bidder has to keep track of any changes by viewing the addendum/ corrigendum issued by the Tender Inviting Authority on time-to-time basis on e-procurement platform. The department calling for tender shall not be responsible for any claims/ problems arising out of this.

**23.15** Correction in the Bid document after submission: The bidder may please note that any online correction in the bid document after its submission (uploading) is permissible. To avail this facility Bidders are required to withdraw their bids first from online portal and after correction resubmit the bid online. Bidder may please note that without withdrawing the bid no correction in the bid is permissible. The details are given in clause 23.0 “Bidders manual kit” at S.No. 5 & 6 and may also consult help desk Telephone No.0120-4001002/ 4000462/ 4001005/6277787.

**24. Deadline for submission of Bids**

Bids must be received by the MPPTCL at the defined portal and address and submitted no later than the date and time as specified in the BDS.

**24.2** The MPPTCL may, at its discretion, extend the deadline for the submission of Bids by amending the Bidding Documents in accordance with ITB 8, in which case all rights and obligations of the MPPTCL and Bidders previously subject to the deadline shall thereafter be subject to the deadline as extended.

**24.3** Key Dates for e-tendering: The Bidders are strictly advised to follow the time schedule (Key Dates) as specified in BDS of the tender for their side of tasks and responsibilities to participate in the tender, as all the stages of each tender are locked before the start time and date and after the end time and date for the relevant stage of the tender as set by the concerned department official. Hence, once the time schedule for a particular stage is lapsed then that task will be locked and the Bidders who have not completed the task in time may not be able to participate in the tender. It should be appreciated that sufficient time duration is given for each stage and therefore, it is the responsibility of Bidders to complete the process well within time rather than waiting for the last day of submission. MPPTCL holds no responsibility for the non-submission of Bids due to such delay/ negligence of the Bidders.

**25. Late Bids**

**25.1** The MPPTCL shall not consider any Bid that arrives after the deadline for submission of Bids, in accordance with ITB 24. Any Bid received by the MPPTCL after the deadline for submission of Bids shall be declared late, rejected, and returned unopened to the Bidder

- 26. Withdrawal, Substitution & Modification of Bids**
- 26.1** A Bidder may withdraw, substitute, or modify its Bid on the e-procurement portal on or before the deadline of Bid submission.
- 26.2** No Bid may be withdrawn, substituted, or modified in the interval between the deadline for submission of Bids and the expiration of the period of Bid validity specified by the Bidder in its Bid or any extension thereof.
- 27. Bid Opening**
- 27.1** Except in the cases specified in ITB 25 and ITB 26, the MPPTCL shall publicly open and read out all Bids received by the deadline, at the date, time and place specified in the BDS, in the presence of Bidders' designated representatives and anyone who chooses to attend.
- 27.2** During the online Techno Commercial Bid opening, the Envelope A will be opened first. The Bid Security and receipt of payment of cost of Bid Document will be checked and after the verification of the uploaded as well as physical copy of Bid Security, the offers will be short listed for techno-commercial Bid opening. The details will be read out for the information of authorised representatives of Bidders. Subject to fulfilment of conditions related to tender cost /Bid Security, the Techno-Commercial Bids submitted online and in hard copies shall be opened and after evaluation of the same, the decision will be taken for selection of offers for the purpose of opening of price Bid.
- 27.3** The MPPTCL shall prepare a record of the Bid opening that shall include, as a minimum: the name of the Bidder and the presence or absence of a Bid Security. The Bidders' representatives who are present shall be requested to sign the record. The omission of a Bidder's signature on the record shall not invalidate the contents and effect of the record.
- 27.4** **Change in date & time of opening of Bids:**  
 Bid shall be opened on the due date and time as notified in the presence of the Bidder or their authorized representative who may be present. If the due date of opening / submission of Bids is declared a holiday by the Central/ State Govt. or Local administration, it will automatically get shifted to the next working day, for which no prior intimation shall be given. The Bid opening shall be continued on subsequent dates in case opening of all the Bids is not completed on the date of opening. In the event of any issue, the Bid data in question shall be liable for a due process of verification by the authorized officer of e-procurement system of Madhya Pradesh Power Transmission Co. Ltd., Jabalpur. It may please be noted that the due date/ time of opening can be altered or extended, if desired by the

MPPTCL without assigning any reason thereof. However, due intimation shall be uploaded on e-procurement portal.

### **E. Evaluation and Comparison of Bids**

- |   |  |
|---|--|
| <b>28. Confidentiality</b>                          | <p>28.1 Information relating to the evaluation of Bids, and recommendation of Contract award, shall not be disclosed to Bidders or any other persons not officially concerned with such process.</p> <p>28.2 Any attempt by a Bidder to influence the MPPTCL in the evaluation of the Bids or Contract award decisions may result in the rejection of its Bid.</p> <p>28.3 Notwithstanding ITB 28.2, from the time of Bid opening to the time of Contract award, if any Bidder wishes to contact the MPPTCL on any matter related to the bidding process, it shall do so in writing.</p>   |
| <b>29. Clarification of Bid</b>                     | <p>29.1 To assist in the examination, evaluation and comparison of the Bids, and qualification of the Bidders, the MPPTCL may, at its discretion, ask any Bidder for a clarification of its Bid, giving a reasonable time for a response. Any clarification submitted by a Bidder in respect to its Bid and that is not in response to a request by the MPPTCL shall not be considered. The MPPTCL's request for clarification and the response shall be in writing. No change, including any voluntary increase or decrease, in the prices or substance of the Bid shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the MPPTCL in the Evaluation of the Bids, in accordance with ITB 35.</p> <p>29.2 If a Bidder does not provide clarifications of its Bid by the date and time set in the MPPTCL's request for clarification, its Bid may be rejected.</p> |
| <b>30. Deviations, Reservations &amp; Omissions</b> | <p>30.1 During the evaluation of Bids, the following definitions apply:</p> <ul style="list-style-type: none"> <li>(a) "Deviation" is a departure from the requirements specified in the Bidding Documents;</li> <li>(b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Bidding Documents; and</li> <li>(c) "Omission" is the failure to submit part or all of the information or documentation required in the Bidding Documents.</li> </ul>  |

- 30.2 Bidders are requested to go through various commercial and technical conditions stipulated in the tender document. Bidders may note that acceptance of all techno-commercial terms & conditions are to be confirmed by them. However, in case of any deviation the same may be indicated as specified in BDS.
- 30.3 Should the Bidder desire to depart from these conditions and/ or related specifications in any respect, he shall draw attention to such departures stating fully the reasons thereof. Unless this is done, these conditions and concerned specifications will hold good.
- 30.4 The MPPTCL reserves the right to waive minor deviations if they do not materially affect the capability of the Bidder to perform the order.

**31. Preliminary Examination of Bids**

- 31.1 The MPPTCL shall examine Bids to confirm that all documents and information requested in ITB 11.1 have been provided, and to determine the completeness of each document submitted.
- 31.2 The MPPTCL shall confirm that the following documents and information have been provided in the Bid. If any of these documents or information is missing, the Bid shall be rejected.
  - (a) Written confirmation of authorization to commit the Bidder;
  - (b) Bid Security; and
  - (c) Points specified in ITB 33.4

**32. Qualification of the Bidder**

- 32.1 The MPPTCL shall determine to its satisfaction whether Bidders meet the qualifying criteria specified in Section III, Evaluation and Qualification Criteria, during the evaluation of Bids.
- 32.2 The determination shall be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant ITB 19.
- 32.3 An affirmative determination shall be a prerequisite for award of the Contract to the Bidder. A negative determination shall result in disqualification of the Bid

**33. Determination of Responsiveness**

- 33.1 The MPPTCL's determination of a Bid's responsiveness is to be based on the contents of the Bid itself, as defined in ITB 11.
- 33.2 A substantially responsive Bid is one that meets the requirements of the Bidding Documents without material deviation, reservation or omission. A material deviation, reservation, or omission is one that:

- a. if accepted, would
    - i affect in any substantial way the scope, quality, or performance of the Goods and Related Services specified in the Contract; or
    - ii limit in any substantial way, inconsistent with the Bidding Documents, the MPPTCL's rights or the Bidder's obligations under the Contract; or
  - b. if rectified would unfairly affect the competitive position of other Bidders presenting substantially responsive Bids.
- 33.3 The MPPTCL shall examine the technical aspects of the Bid submitted in accordance with ITB 17 and 18, in particular, to confirm that all requirements of Volume-II of Bidding document have been met without any material deviation, reservation or omission.
- 33.4 The Bids received shall be considered non-responsive and rejected summarily on the following grounds:-
- i. The Bid Security as per Bidding Document not uploaded/ submitted.
  - ii. The Bidder not fulfilling the financial/ experience/ supply capacity criteria.
  - iii. The Bidder not submitting the required documents in support of financial/ experience / supply capacity criteria in hard copies.
  - iv. The Bidder not having adequate financial and/or technical resources to execute the contract.
  - v. If Schedule of 'Check List' as per Bidding Document is not uploaded/ submitted in the required format.
  - vi. If the self declaration regarding history of Litigation is not submitted.
  - vii. If the uploaded documents (except Price Schedule) are not self attested.
  - viii. Original DD/BG or certificate of SSI/ NSIC registration or Central / State Govt. Undertaking, towards Bid Security and hard copies of all the required documents (including the uploaded documents except price bid) are not furnished within stipulated time.
  - ix. If Bid received for any item or lot / package included in scope of tender, does not cover the full quantity of that item or items in the lot / package.
  - x. The Bidder not complying with the other terms and conditions as stipulated in Bidding Document.

**34. Nonmaterial Nonconformities**

- 34.1 Provided that a Bid is substantially responsive, the MPPTCL may waive any non conformity in the Bid that does not constitute a material deviation, reservation, or omission.
- 34.2 Provided that a Bid is substantially responsive, the MPPTCL may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities or omissions in the Bid related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any aspect of the price of the Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.
- 34.3 Provided that a Bid is substantially responsive, the MPPTCL shall rectify quantifiable nonmaterial nonconformities related to the Bid Price. To this effect, the Bid Price shall be adjusted, for comparison purposes only, to reflect the price of a missing or non-conforming item or component. The adjustment shall be made based on the maximum price quoted for the same item by the other Bidders.

**35. Correction of Arithmetical Errors**

- 35.1 Provided that the Bid is substantially responsive, the MPPTCL shall correct arithmetical errors on the following basis:
- a) if there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price by the quantity, the unit price shall prevail and the total price shall be corrected.
  - b) if there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and
  - c) if there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a) and (b) above.
- 35.2 Bidders shall be requested to accept correction of arithmetical errors. Failure to accept the correction in accordance with ITB 35.1 shall result in the rejection of the Bid.

**36. Conversion to Single Currency**

- 36.1 For evaluation and comparison purposes, the currency (ies) of the Bid shall be converted into Indian Rupees.

- 
- 37. Evaluation of Bids**
- 37.1 The MPPTCL shall use the criteria and methodologies listed in this Clause. No other criteria or methodology shall be permitted.
- 37.2 To evaluate a Bid, the MPPTCL shall consider the following:
- a) the Bid Price as quoted in accordance with ITB 14;
  - b) price adjustment for correction of arithmetic errors in accordance with ITB 35.1;
  - c) price adjustment due to discounts offered in accordance with ITB 14.3;
  - d) price adjustment due to quantifiable nonmaterial nonconformities in accordance with ITB 34.3;
  - e) additional evaluation factors specified in Section III, Evaluation and Qualification Criteria.
- 37.3 The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in Bid evaluation.
- 37.4 The MPPTCL's evaluation of a Bid will
- a) include taxes, which will be payable on the Goods if a Contract is awarded to the Bidder;
  - b) exclude any allowance for price adjustment during the period of execution of the Contract, if provided in the Bid.
- 38 Comparison of Bids**
- 38.1 The MPPTCL shall compare the evaluated prices of all substantially responsive Bids established in accordance with ITB 37.2 to determine the lowest-evaluated Bid
- 39. MPPTCL's Right to Accept any bid and to Reject any or all Bids**
- 39.1 The MPPTCL reserves the right to accept or reject any Bid, and to annul the bidding process and reject all Bids at any time prior to Contract award, without thereby incurring any liability to Bidders. In case of annulment, all Bids submitted and specifically Bid Securities shall be promptly returned to the Bidders.
- F. Award of Contract**
- 40. Award Criteria**
- 40.1 Subject to ITB 39.1, the MPPTCL shall award the Contract in totality to the Bidder whose offer has been determined to be the lowest evaluated Bid and is substantially responsive to the Bidding Documents, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily.

<b>41. MPPTCL's Right to vary quantities at time of award</b>	41.1	At the time the Contract is awarded, the MPPTCL reserves the right to increase or decrease the quantity of Goods and Related Services originally specified in Section V, Schedule of Requirements, provided this does not exceed the percentages <b>specified in the BDS</b> , and without any change in the unit prices or other terms and conditions of the Bid and the Bidding Documents.
	41.2	In case price received against the tender specification is not found reasonable in comparison to that received against previous tender specification, the quantity of Goods and Related Services originally specified in Section V, Schedule of Requirements may be reduced by the MPPTCL to any extent. The successful bidder will have to supply the entire quantity on same rates and terms & conditions.
<b>42. Letter of Intent</b>	42.1	Prior to the expiration of the period of Bid validity, the MPPTCL shall notify the successful Bidder, in writing by Letter of Intent, that its Bid has been accepted. The Letter of Intent shall specify the sum that the MPPTCL will pay the Supplier in consideration of the supply of the Goods and Related Services (hereinafter and in the Conditions of Contract and Contract Forms called "the Contract Price").
<b>43. Performance Security</b>	43.1	Within twenty eight (28) days of the placement of detailed order by the MPPTCL, the successful Bidder, shall furnish the Performance Security in accordance with the General Conditions of Contract, using for that purpose the Performance Security Form included in Section VIII Contract Forms.
	43.2	Failure of the successful Bidder to submit the above-mentioned Performance Security shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security. In that event, the MPPTCL shall take action against the Bidder as per terms of order which may include risk purchase.
<b>44. Purchase Preference to Class – I Local Supplier</b>		(a) Subject to the provision of Order No. P-45021/2/2017-PP (BE-II) dated 4th June, 2020 of Govt. of India, Department for Promotion of Industry and Internal Trade (DPIIT) and to any specific instructions issued by the

Nodal Ministry or in pursuance of this order, purchase preference shall be given to 'Class-I local supplier' in procurements undertaken by procuring entities in the manner specified here under.

(b) In the procurements of goods or works which are covered under para 2(b) of ITB 4.6 and which are divisible in nature the 'Class-I local supplier' shall get purchase preference over 'class-II local supplier' as well as 'Non-local suppliers', as per following procedure:

i. Among all qualified bids, the lowest bid will be termed as L1. If L1 is 'Class-I local supplier', the contract for full quantity will be awarded to L1.

ii. If L1 bid is not a 'Class-I local supplier', 50% of the order quantity shall be awarded to L1. Thereafter, the lowest bidder among the 'Class-I local supplier' will be invited to match the L1 price for the remaining 50% quantity subject to the Class-I local supplier's quoted price falling within the margin of purchase preference and contract for that quantity shall be awarded to such 'Class-I local supplier' subject to matching the L1 price. In case such lowest eligible 'Class-I local supplier' fails to match the L1 price or accepts less than the offered quantity, the next higher 'Class-I local supplier' within the margin of purchase preference shall be invited to match the L1 price for remaining quantity and so on and contract shall be awarded accordingly. In case some quantity is still left uncovered on Class-I local suppliers then such balance quantity may also be ordered on the L1 bidder.

(c) In the procurements of goods or works which are covered under para 2(b) of ITB 4.6 and which are not divisible in nature and in procurement of services where the bid is evaluated on price alone the 'Class-I local supplier' shall get purchase preference over 'Class-II local supplier' as well as 'Non-local supplier', as per following procedure:

i. Among all qualified bids, the lowest bid will be termed as L1. If L1 is 'Class-I local supplier', the contract will be awarded to L1.

ii. If L1 is not 'Class-I local supplier' the lowest bidder among the 'Class-I local supplier' will be invited to match the L1 price subject to Class-I local supplier's

quoted price falling within the margin of purchase preference and the contract shall be awarded to such 'Class-I local supplier' subject to matching the L1 price.

iii. In case such lowest eligible 'Class-I local supplier' fails to match the L1 price the 'Class-I local supplier' with the next higher bid within the margin of purchase preference shall be invited to match the L1 price and so on and contract shall be awarded accordingly. In case none of the 'Class-I local supplier' within the margin of purchase preference matched the L1 price; the contract may be awarded to the L1 bidder.

(d) Class-II local supplier will not get purchase preference in any procurement.

## Section II Bid Data Sheet

### Notes on Bid Data Sheet

Section – II, Bid Data Sheet, shall be filled in by the Purchaser before issuance of the Bidding Documents.

The Bid Data Sheet (BDS) contains information and provisions that are specific to a particular bidding process. The Purchaser must specify in the BDS only the information that the ITB request be specified in the BDS. All information shall be provided; **no clause shall be left blank.**

To facilitate the preparation of the BDS, its clauses are numbered with the same numbers as those of the corresponding ITB clauses.

## Section II. Bid Data Sheet

ITB Clause Reference	This Section includes provisions that are specific to each activity and that supplement Section I, Instructions to Bidders. Whenever there is conflict, the provisions herein shall prevail over those in Section I.																																
A. General																																	
ITB 1.1	The number of the Invitation for Bids is: LDET-03/2023-24																																
ITB 1.1	The Purchaser is: <b>State Load Despatch Centre, Madhya Pradesh Power Transmission Company Limited</b> , Jabalpur – 482 008 (Madhya Pradesh) India.																																
ITB 1.1	The name, identification number and quantity of items comprising this tender are as under and the destination sites are as specified in Annexure1 separately.																																
	<table><tr><th>Name of Tender</th><th>Tender Specification No.</th><th>Name of Items</th><th>Qty.</th></tr><tr><td rowspan="12">Supply ,Installation &amp; commissioning of Phasor measurement Units (PMUs) Based Jabalpur Islanding Scheme Along with Annual Maintenance</td><td rowspan="12">LDET-03/2023-24</td><td>Phasor Measurement unit (including panels*)</td><td><b>21 Nos</b></td></tr><tr><td>PDC hardware &amp; software</td><td><b>1 Set</b></td></tr><tr><td>GPS</td><td><b>6 Nos</b></td></tr><tr><td>3 Layer switches</td><td><b>6 Nos</b></td></tr><tr><td>High burden tripping relays</td><td><b>78 Nos</b></td></tr><tr><td>NMS hardware including workstation</td><td><b>1 Set</b></td></tr><tr><td>NMS software including workstation functionalities</td><td><b>1 Set</b></td></tr><tr><td>Next Generation firewall</td><td><b>1 No.</b></td></tr><tr><td>Optical fibre patch cords (10 mts) &amp; 10 Nos. in one set</td><td><b>10 Set</b></td></tr><tr><td>CAT 6 UTP ethernet cable (300 m)</td><td><b>10 No.</b></td></tr><tr><td>Erection, Commissioning, Installation &amp; testing of items</td><td><b>01 No.</b></td></tr><tr><td>Spare</td><td><b>01 No.</b></td></tr></table>	Name of Tender	Tender Specification No.	Name of Items	Qty.	Supply ,Installation & commissioning of Phasor measurement Units (PMUs) Based Jabalpur Islanding Scheme Along with Annual Maintenance	LDET-03/2023-24	Phasor Measurement unit (including panels*)	<b>21 Nos</b>	PDC hardware & software	<b>1 Set</b>	GPS	<b>6 Nos</b>	3 Layer switches	<b>6 Nos</b>	High burden tripping relays	<b>78 Nos</b>	NMS hardware including workstation	<b>1 Set</b>	NMS software including workstation functionalities	<b>1 Set</b>	Next Generation firewall	<b>1 No.</b>	Optical fibre patch cords (10 mts) & 10 Nos. in one set	<b>10 Set</b>	CAT 6 UTP ethernet cable (300 m)	<b>10 No.</b>	Erection, Commissioning, Installation & testing of items	<b>01 No.</b>	Spare	<b>01 No.</b>		
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		Spare	<b>01 No.</b>																														

			Annual maintenance Contract (AMC) for five years	05 No.						
<p>The above items are referred in the price schedule Form-II of Section-IV.</p> <p>It is obligatory on the part of the Bidders to bid for complete scope of the tender. Bids which do not cover complete scope of tender will not be accepted.</p> <p><i>* Minimum 1 No. of panels shall be considered for SLDC &amp; each substations covered in the scheme. If required, depending upon the no. of PMUs, the no. of panels may be considered for substations.</i></p> <p><i>* Any other type of cable required for meeting the requirements shall be worked out by the bidder during the site survey &amp; shall be in the scope of bidder.</i></p> <p><b>Spare:-</b></p> <table><tr><th>S. No.</th><th>Particulars</th><th>Qty.</th></tr><tr><td>1</td><td>Phasor Measurement Unit (PMU) with programmable logic controller (PLC) (for 5 bays in single PMU)</td><td>1</td></tr></table> <p><b>Note:- The quantity of equipments mentioned in the BoQ is tentative and shall be finalized only after the survey to be conducted by the bidder.</b></p>					S. No.	Particulars	Qty.	1	Phasor Measurement Unit (PMU) with programmable logic controller (PLC) (for 5 bays in single PMU)	1
S. No.	Particulars	Qty.								
1	Phasor Measurement Unit (PMU) with programmable logic controller (PLC) (for 5 bays in single PMU)	1								
ITB 2.1	The payments will be arranged from PSDF & SLDC,MPPTCL funds.									
ITB 4.2	<p>This bidding is open for Manufacturers/supplier of PMU &amp; PDC only who provide satisfactory evidence:-</p> <p>(a) That the manufacturer/supplier is a qualified firm who regularly manufactures/supplies the material / equipments of the type specified and have adequate technical knowledge and practical experience.</p> <p>(b) That the manufacturer/supplier does not anticipate change in the ownership during the proposed period of contract (if such a change is anticipated, the scope and effect thereof shall be defined).</p> <p>(c) That the manufacturer/supplier has adequate financial stability and status to meet the financial obligations pursuant to the scope of the assignments.</p>									

<b>ITB 4.6</b>	<b>Only “Class-I Local Supplier” is eligible to participate in the bid. Further, as per Ministry of Power order dated 16.11.21, minimum local content for Class-I supplier shall be 60% for EPC contracts.</b>
<b>B. Contents of Bidding Documents</b>	
<b>ITB 6.1(b)</b>	<p>The contents of Volume – II of Bidding Document are as under :-</p> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 80%;"> <p>Technical Specifications of Phasor measurement Units (PMUs) Based Jabalpur Islanding Scheme Along with Annual Maintenance</p> </div>
<b>ITB 7.1</b>	<p>For <b>clarification purposes</b> only, the Purchaser’s address is:  <b>Attention: Superintending Engineer (SLDC)</b>  <b>Address: Chief Engineer ,SLDC</b>  <b>M.P. Power Transmission Company Limited.</b>  <b>Nayagaon , Rampur</b>  <b>City: Jabalpur.</b>  <b>ZIP Code: 482 008</b>  <b>Country: India</b>  <b>Telephone: : 91-761-2702744 ,9425805182,9425805232,9425806913</b>  <b>Facsimile number: 91-761-2664343</b>  <b>Electronic mail address:- sldc.scada@<a href="http://mptransco.nic.in">mptransco.nic.in</a>,seldentmp@gmail.com</b></p>
<b>ITB 8.2</b>	<p>The addendum will be published on Purchaser’s website: <a href="http://sldcmpindia.com">http://sldcmpindia.com</a> and e-procurement portal: <a href="https://mptenders.gov.in/nicgep/app">https://mptenders.gov.in/nicgep/app</a></p>
<b>C. Preparation of Bids</b>	
<b>ITB 9.1</b>	<p>The Bidders are required to purchase the Bidding documents online from e-procurement portal <a href="https://mptenders.gov.in/nicgep/app">https://mptenders.gov.in/nicgep/app</a> ) by making online payment for the Bidding document fees of <b>₹11,800/- (inclusive of GST)</b> using the service of the secure electronic payments gateway and should print out the system generated receipt for their reference which can be produced whenever required. Service and gateways charges shall be borne by the Bidders. Only in case if the tender is dropped without opening, the tender fees shall be refunded after deduction of necessary portal charges &amp; taxes. Manual purchase of Bidding document is not allowed.</p>

<b>ITB 10.1</b>	The language of the Bid is: <b>English</b>
<b>ITB 11.1</b>	<p>The Bidder shall upload on e-procurement portal (through digital signature of authorized person) the following :-</p> <p><b>A Following Standard online formats are required to be filled in:</b></p> <p>i. Form-II: Prices and Quantity (in Envelope C).</p> <p><b>B. Following documents are required to be uploaded in Standard format as attached with this tender/bid document to participate in the bidding process:-</b></p> <p>i. Bid Security (EMD) Bank Guarantee as per Form-I (in Envelope A).</p> <p>ii. System generated receipt for online payment made towards Tender Cost (in Envelope A).</p> <p>iii. Documentary evidence regarding Exemption for SSI/NSIC units, if applicable (in Envelope A).</p> <p>iv. FORM- IX : Commercial Questionnaire (in Envelope B)</p> <p>v. FORM-X : Guaranteed Technical Particulars (in Envelope B)</p> <p>vi. FORM- XI : Technical Questionnaire (in Envelope B).</p> <p>vii. FORM- XX : Check List (in Envelope B)</p> <p>viii. FORM-III : Financial details (in Envelope B).</p> <p>ix. FORM-IV : Bank Certificate (in Envelope B).</p> <p>x. FORM-V : Past supplies (in Envelope B).</p> <p>xi. FORM-VI : Confirmation of “No Commercial Deviations” (in Envelope B).</p> <p>xii. FORM-VII: Confirmation of “No Technical Deviations” (in Envelope B)</p> <p>xiii. FORM- VIII: Litigation history (in Envelope B).</p> <p>xiv. FORM – XII : Details of Bid &amp; Contract Drawings (in Envelope B).</p> <p>xv. FORM – XIII: List of Plant and Machinery &amp; Testing Facilities (in Envelope B).</p> <p>xvi. FORM – XIV: List of Type Test Reports (in Envelope B).</p> <p>xvii. FORM –XV: Quality Assurance Programme Chart (in Envelope B).</p> <p>xviii. FORM-XVI: Undertaking regarding sharing of land border with India (in Envelope B).</p> <p>xix. FORM-XVII: Undertaking for local content (in Envelope B).</p> <p>xx. FORM-XVIII: Undertaking for equipment/material manufactured in India (in Envelope B)</p> <p>xxi. FORM-XIX: Undertaking for imported parts/equipment/material (in Envelope B)</p> <p>xxii. FORM- XX: Check List (in Envelope B)</p> <p>xxiii. Copies of last orders received/ executed indicating details of</p>

	<p>Prices and Quantity for the tendered item (in Envelope B).</p> <p>xxiv. Orders under execution/executed recently for other Utilities along-with bid for the offered item containing full scope of supply indicating price and quantity schedule. (in Envelope B).</p> <p>xxv. Performance Certificate from the user departments. (in Envelope B).</p> <p>xxvi. GST registration details. (in Envelope B).</p> <p>xxvii. Valid Factory license. (in Envelope B).</p> <p>xxviii. Power of Attorney. (in Envelope B).</p> <p>xxix. Letter of Authorization. (in Envelope B).</p> <p>xxx. Certification/requisite document /registration certificate indicating category under MSMED Act 2006 as per clause 45 (in Envelope B).</p> <p>Bidders intending to participate in the tender are required to get themselves trained on the e-procurement system. The bidders are required to contact the Service Provider to confirm about their session in advance to facilitate smooth tender/bid submission as detailed out in Volume – I &amp; II of Bidding documents.</p>												
<b>ITB 14.3</b>	The application methodology for Discount shall be mentioned in Schedule of Commercial Questionnaire in Volume I, Section IV of Bidding Document.												
<b>ITB 14.4</b>	<p>The tenderers may kindly note that the offered prices for PMU and Other equipments should be on FIRM basis only..</p> <p>The Bidders should indicate Unit Ex-works price, freight charges &amp; applicable rate of GST as per Price Schedule in Section-IV, Volume I.</p>												
<b>ITB 14.6</b>	Final destination (Project site): Details of project sites shall be intimated in Dispatch Instruction to be issued separately.												
<b>ITB 16.1</b>	The details to establish eligibility of Bidder shall be provided in Schedule of List of Past Supplies in Volume I Section-IV of Bidding document.												
<b>ITB 17.1</b>	The details to establish eligibility of Goods & Related Services shall be provided in Schedule of Technical Questionnaire in Volume I, Section-IV of Bidding document												
<b>ITB 20.1</b>	The Bid validity period shall be Six months from the date of opening of tender.												
<b>ITB 21.1</b>	<p>Important Tender details &amp; Bid Security amount required to be furnished is indicated hereunder :</p> <table><tr><td>1</td><td>Department Name</td><td>S.LD.C. M.P.P.T.C.L</td></tr><tr><td>2</td><td>Name of Purchaser</td><td>C.E. (SLDC)</td></tr><tr><td>3</td><td>Tender Number</td><td>LDET-03/2023-24</td></tr><tr><td>4</td><td>Name of the Tender</td><td>Supply ,Installation &amp;</td></tr></table>	1	Department Name	S.LD.C. M.P.P.T.C.L	2	Name of Purchaser	C.E. (SLDC)	3	Tender Number	LDET-03/2023-24	4	Name of the Tender	Supply ,Installation &
1	Department Name	S.LD.C. M.P.P.T.C.L											
2	Name of Purchaser	C.E. (SLDC)											
3	Tender Number	LDET-03/2023-24											
4	Name of the Tender	Supply ,Installation &											

		commissioning of Phasor measurement Units (PMUs) Based Jabalpur Islanding Scheme Along with Annual Maintenance
5	Tender Type	Three Part Tender
6	Tender Cost	Rs. 10,000/- + Rs. 1800 (GST@18%)
7	Tender Cost payable	On line payment
8	Bid submission	Online
9	Place of Tender opening	Jabalpur
10	Officer Inviting Bids	Chief Engineer (SLDC)
11	Contact Person	SE(LD E&T)
12	Address/ E-mail id	seldentmp@gmail.com
14	Contact Details: Tel. No./Fax	91-761-2702744 ,9425805182,9425805232
15.	Bid Security (EMD)	Rs 13,00,000/-

#### **Submission of Bid Security (EMD) :**

If a Bid Security(EMD) is specified pursuant to ITB 21, the Bid Security shall be furnished in any of the following forms at the Bidder's option:

- (a) an unconditional guarantee issued by a Reputed Indian Bank;
- (b) Banker's Cheque / Demand Draft;

Scanned copy of Bank Guarantee/ Banker's Cheque / Demand Draft or certificate of SSI/ NSIC registration or Central / State Govt. Undertaking towards Bid Security is to be uploaded in Envelope A in e-procurement portal and original is required to be submitted in hard copy at Purchaser's office.

- i) The Bid security in the form of BG shall be executed on Non-Judicial Stamp paper of appropriate legal value as per Stamp Duty Act of the State and shall be signed by two signatories of issuing bank with complete details of signatory including name, capacity, code no. and name of bank. The Bid security shall be underwritten from any scheduled Indian bank.

The Bid Security (EMD) of respective amount may also be furnished by Bidder, in the form of Demand Draft/ Banker's Cheque drawn in favour of RAO MPPTCL Collection Account SLDC.

	<p>ii) The Bid Security (EMD) shall be physically submitted in a sealed envelope super scribing “Bid Security of <b>Rs 13.00 Lakh</b> in the form of BG/DD against tender No. LDET-03/2023-24.”</p> <p>iii) Banker’s details of Purchaser for issuance of BG for Bid Security is: NAME: RAO MPPTCL COLLECTION ACCOUNT SLDC ACCOUNT NO. : 571701010050209 IFS CODE: UBIN0557170 BRANCH: UNION BANK OF INDIA, SHAKTI BHAWAN ROAD JABALPUR</p>																																								
<b>ITB 22.1</b>	In addition to the “Original” Bid, the number of copies to be submitted is: <b>One.</b>																																								
<b>ITB 22.2</b>	The Bidder shall furnish duly notarized Power of Attorney regarding authorization to sign on behalf of Bidder.																																								
<b>D. Submission and Opening of Bids</b>																																									
<b>ITB 24.1</b>	<p>Bidders shall be required to submit their Bids on e-procurement portal of Purchaser and hard copy is required to be submitted in the office of Purchaser. The Important Key Dates are as under:-</p> <table><tr><th>S.N</th><th>Tender Stage</th><th>Particulars</th><th>Date &amp; Time</th></tr><tr><td>1</td><td>Publishing of tender date</td><td>Tender Purchase-online</td><td>18.12.2023 17:00 Hrs</td></tr><tr><td>2</td><td>Document download start date</td><td></td><td>18.12.2023 17:30 Hrs</td></tr><tr><td>3</td><td>Seek clarification Start Date</td><td></td><td>-</td></tr><tr><td>4</td><td>Seek clarification End Date</td><td></td><td>-</td></tr><tr><td>5</td><td>Pre-Bid Meeting</td><td></td><td><b>03.01.2024</b></td></tr><tr><td>6</td><td>Bid Submission Start Date</td><td>Envelope C, Envelope A &amp; Envelope B</td><td><b>08.01.2024</b> 10:30 Hrs</td></tr><tr><td>7</td><td>Bid Submission End Date (Online Submission)</td><td>Envelope C, Envelope A &amp; Envelope B</td><td><b>22.01.2024</b> 15.30 Hrs</td></tr><tr><td>8</td><td>Bid Opening Date</td><td>Envelope A &amp; Envelope B</td><td><b>24.01.2024</b> 12:30 Hrs</td></tr><tr><td>9</td><td>Financial Bid (Envelope-C) Open Date</td><td>Envelope-C (Price Bid)</td><td>Will be informed later</td></tr></table> <p><b>Note:-</b></p> <p>(1) The bidder has to quote their rates online only in Price Schedule (as per Form-II) and to be kept in Envelope-C and uploaded online as per key dates. Please note that, the Schedules of Price</p>	S.N	Tender Stage	Particulars	Date & Time	1	Publishing of tender date	Tender Purchase-online	18.12.2023 17:00 Hrs	2	Document download start date		18.12.2023 17:30 Hrs	3	Seek clarification Start Date		-	4	Seek clarification End Date		-	5	Pre-Bid Meeting		<b>03.01.2024</b>	6	Bid Submission Start Date	Envelope C, Envelope A & Envelope B	<b>08.01.2024</b> 10:30 Hrs	7	Bid Submission End Date (Online Submission)	Envelope C, Envelope A & Envelope B	<b>22.01.2024</b> 15.30 Hrs	8	Bid Opening Date	Envelope A & Envelope B	<b>24.01.2024</b> 12:30 Hrs	9	Financial Bid (Envelope-C) Open Date	Envelope-C (Price Bid)	Will be informed later
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	<p>(FORM-II) i.e. Financial bid/ Price offer (Envelope-C) will not be accepted physically. In case Envelope-C is submitted physically the offer/bid will be rejected. The offer of the eligible bidders for the respective item shall be opened online as per key dates.</p> <p>(2) The bidders have to submit EMD in Envelope-A in physical form &amp; upload scanned copy of the same online as per key dates.</p> <p>(3) The bidders have to submit documents in Envelope-B as detailed in clause 27.2.</p> <p>(4) The date of opening of financial bid/ price offer may vary depending upon time taken in techno-commercial evaluation. The bidders may please keep themselves updated of price offer opening date from the E-portal.</p>
<b>ITB 24.1</b>	<p>The Bidding process is : <b>‘Single-Stage : Two -Envelope’</b></p> <p>Name of Tender Specification : <b>Supply ,Installation &amp; commissioning of Phasor measurement Units (PMUs) Based Jabalpur Islanding Scheme Along with Annual Maintenance</b></p> <p>Bid Identification number shall be mentioned by the Bidder prominently on the top of envelope for the Bid in the following manner:</p> <p>a. Bidding process for the Bid is – <b>“Single-Stage : Two-Envelope”</b>.</p> <p>b. Tender Specification No. <b>LDET-03/2023-24</b></p>
<b>ITB 24.1</b>	<p>For <b><u>Bid submission purposes</u></b> only, the Purchaser’s address is: Attention: <b>Superintending Engineer (SLDC)</b></p> <p>Address: <b>Chief Engineer (SLDC)</b> <b>M.P. Power Transmission Company Limited.</b> <b>NayaGaon Rampur</b></p> <p>City : <b>Jabalpur.</b> PIN Code: <b>482 008</b></p> <p>Country : <b>India</b></p>

	<p><b>The deadline for Bid opening (i.e. date &amp; time as per key dates): is clearly indicated in the Bid notice for information and strict compliance.</b> Bidders shall submit their bids electronically. The electronic bidding submission procedures shall be as per <b>ITB 23 read with Bid Data Sheet and important key dates indicated in ITB 24.1</b>. The Bidder shall, on or before the date and time given in the key dates, upload its Bid on e-procurement portal <a href="https://mptenders.gov.in/nicgep/app">https://mptenders.gov.in/nicgep/app</a> and submit hard copy to the Purchaser.</p> <p>In case difficulty is encountered during online Bid submission and support or help is required, the Bidders may contact the Service Provider as given in the tender document.</p> <p><b>Note:- Bids received after due date and time of submission shall not be accepted. Purchaser will not be responsible for any delay, internet connection failure or any error in uploading of the Bids. The Bidders are advised to upload their Bids well before the due date and time of Bid submission to avoid any problems and last minute rush.</b></p>
<b>ITB 26.1</b>	<p>Add following sub clause Withdrawal / substitution / modification received after deadline prescribed for submission of the Bid shall be rejected forthwith.</p>
<b>ITB 27.1</b>	<p>The Techno-commercial Bid opening shall take place at:</p> <p>Attention/ Office of: <b>Superintending Engineer (SLDC)</b></p> <p>Street Address: Chief <b>Engineer (SLDC)</b></p> <p><b>M.P. Power Transmission Company Limited.</b></p> <p><b>NayaGaon Rampur</b></p> <p>City: <b>Jabalpur-482008 (India)</b></p> <p><b>The deadline for Bid opening is clearly indicated in the key dates for information and strict compliance.</b></p> <p><b><u>Part-I Techno - Commercial Bid</u></b></p> <p>Bidders must positively complete the on line e-tendering procedure at <a href="https://mptenders.gov.in/nicgep/app">https://mptenders.gov.in/nicgep/app</a>. They shall have to submit the documents as mentioned in ITB 11.1 on-line in the e-procurement portal.</p>

	<p><b><u>Part-II Price Bid</u></b></p> <p>Bidder shall have to submit the price bid on e-procurement portal (in Envelope-C) as per instructions therein. Physical submission of price Bid will not be considered. The price Bid of techno-commercially qualified Bidder shall be opened online at the notified date at <a href="https://mptenders.gov.in/nicgep/app">https://mptenders.gov.in/nicgep/app</a> . Bidders can view information of date of price bid opening by logging in to e-procurement portal.</p>
<b>ITB 27.1</b>	<p><b>Instructions to Bidders :</b></p> <p>(a) In Form-XI (Technical Questionnaire) and Form IX (Commercial Questionnaire), various important technical and commercial terms and conditions are given. It is necessary to furnish all the information as per Questionnaire in <b>standard format without making any reference to any clause in the tender</b>. The Questionnaire duly filled in and signed has to be uploaded/ submitted along with the offer.</p> <p>(b) The price offer shall include submission of details of prices strictly as per <b>Form-II</b> (Schedule of prices and quantity) and Form-II continued. (for price schedule contnd.) in standard online format. It may be mentioned that no such information should be furnished in the price offer which may not <b>be in conformity with details furnished in techno-commercial offer/bid</b>. In case of any discrepancy, suitable loading on prices will be considered for which responsibility will rest on the bidders. <b>The Bidder will be solely responsible for correctness of their quoted prices.</b></p> <p>(c) Further submission of any additional information or document after opening of techno-commercial part of tender, which may affect the financial commitment, will not be allowed.</p> <p>(d) It is obligatory on the part of the bidder to comply with all our commercial terms &amp; conditions.</p>
<b>E. Evaluation and Comparison of Bids</b>	
<b>ITB 30.1 (d)</b>	The deviations if any are to be indicated in the format given in 'Bidding Forms'.
<b>F. Award of Contract</b>	
<b>ITB 41.1</b>	Quantity to be procured may be increased/ decreased up to maximum of 15% of the contract amount.

### **Section III. Evaluation and Qualification Criteria**

#### **Notes on Evaluation and Qualification Criteria**

This Section contains all the criteria that the Purchaser shall use to evaluate Bids and qualify Bidders. In accordance with ITB 32 and ITB 37, no other factors, methods or criteria shall be used. The Bidder shall provide all the information requested in the forms included in Section IV, Bidding Forms.

## **Contents**

1. Scope
2. Bid Evaluation Procedure
3. Evaluation and Qualification Criteria
4. Litigation history

**1.0 SCOPE:**

The detailed scope of work/project is as per the schedules of BOQ enclosed and as per the technical specifications of this tender document. The scope of the bid covers design of islanding scheme as per the detailed given in technical specifications, site survey, detailed engineering, supply, Installation & commissioning, integration of equipment's, development of logics required for islanding scheme, testing of scheme, maintenance of scheme during Guarantee & AMC period. The bidder are required to carry out survey, planning, design, engineering, manufacturing, testing, supply, transportation, insurance, delivery at site/EHV S/s, unloading, handling, storage, Supervision of erection/installation, splicing, termination, testing at each S/s site, training, and demonstration for acceptance, commissioning and documentation for:

- (i) PMU, Switch, GPS, Relays at Substations.
- (ii) PDC, NMS, Workstation, GPS, Firewall etc at SLDC.
- (iii) Islanding Logics, Reporting & Visualization tools.
- (iv) All cabling, wiring, termination & process connections for PMUs at substations & power stations and interconnections to the supplied equipment at the defined interfaces.
- (v) System integration of the supplied subsystems and also integration with existing communication equipment such as SDH, PDH
- (vi) Configuration of PMU & PDC for various protocols for data acquisition and controls as well as integration of Islanding Scheme system with SCADA/EMS system, All cables, Connectors /wires / Converter required for integration shall be bidder's scope.
- (vii) All other associated works/items described in the technical specifications for a viable and fully functional Islanding Scheme.
- (viii) Replacement, Repair & Maintenance of the supplied & Commissioned systems during 1 year defect liability period/ Guarantee Period & 5 Year AMC Period.
- (ix) Ensuring the cyber security of entire Islanding Scheme in accordance with the guidelines of CEA/CERT-In.
- (x) OPGW communication network shall be made available by MPPTCL. However the termination upto the communication equipment including any types of cables/wires/connectors including the integration work shall be in the scope of bidder.

Bidders have to ensure before submission of their Bid its completeness with regard to all qualifying requirements. The Bidders have to ensure that required certificates of experience, performance, etc., as required elsewhere in this

document are necessarily attached with the Bid. It needs to be appreciated that sufficient time is being allowed between invitation of Bid and its opening. Bidders in case of doubt may feel free to seek clarifications required by them before uploading/submitting their Bid. The Purchaser may or may not seek any clarification on the details furnished in the offer of individual Bidder. Non-uploading/submission of any details or document required may render the Bid liable for rejection.

#### 1.1 . Contractor's Responsibilities

1.1.1 The Contractor shall design, manufacture including associated purchases and/or subcontracting install and complete the Facilities in accordance with the Contract. When completed, the Facilities should be fit for the purposes for which they are intended as defined in the Contract.

1.1.2 The Contractor confirms that it has entered into this Contract on the basis of a proper examination of the data relating to the facilities including any data as to boring tests provided by the employer, and on the basis of information that the Contractor could have obtained from a visual inspection of the Site if access there to was available and of other data readily available to it relating to the facilities as of the Base Date. The Contractor acknowledges that any failure to acquaint itself with all such data and information shall not relieve its responsibility for properly estimating the difficulty or cost of successfully performing the facilities.

1.1.3 The Contractor shall acquire and pay for all permits, approvals and/or licenses from all local, state or national government authorities or public service under takings which such authorities or undertakings require the Contractor to obtain in its name and which are necessary for the performance of the Contract, including, without limitation, visas for the Contractor's and Subcontractor's personnel and entry permits for all imported Contractor's equipment. The Contractor shall acquire all other permits, approval sand/or licenses that are not the responsibility of the employer and that are necessary for the performance of the Contract.

1.1.4 The Contractor shall comply with all laws in force in India. The laws will include all local, state, national or other laws that affect the performance of the Contract and bind upon the Contractor. The Contractor shall indemnify and hold harmless the employer from and against any and all liabilities, damages, claims, fines, penalties and expenses of whatever nature arising or resulting from the violation of such laws by the Contractor or its personnel, including the Subcontractors and their personnel.

1.1.5 All plant and installation services that will be incorporated in or be required for the facilities and other supplies shall have their origin as specified under GC Clause Country of Origin.

## 1.2. Employer's Responsibilities

1.2.1 The Employer shall ensure the accuracy of all information and/or data to be supplied by the Employer as described in the appendix to the Contract agreement titled Scope of Works and Supply by the employer, to the Contract, except when otherwise expressly stated in the Contract.

1.2.2 The Employer shall be responsible for acquiring and providing legal and physical possession of the Site and access there to, and for providing possession of and access to all other areas reasonably required for the proper execution of the contract, including all requisite rights of way, as specified in the appendix to the contract agreement titled Scope of works and Supply by the Employer. The Employer shall give full possession of and accord all rights of access thereto on or before the date (s) specified in that Appendix.

1.2.3 The Employer shall acquire and pay for all permits, approvals and/or licenses from all local, state or national government authorities or public service undertakings in India which (a) such authorities or undertakings require the Employer to obtain in the Employer's name, (b) are necessary for the execution of the contract, including those required for the performance by both the Contractor and the Employer of the irrespective obligations under the Contract, and (c) are specified in the appendix (scope of works and supply of the employer)

1.2.4 If requested by the Contractor, the Employer shall use its best endeavors to assist the contractor in obtaining in a timely and expeditious manner all permits, approvals and/or licenses necessary for the execution of the Contract from all local, state or national government authorities or public service undertakings that such authorities or under takings require the Contractor or Subcontractors or the personnel of the Contractor or Subcontractors, as the case maybe, to obtain.

1.2.5 Unless otherwise specified in the contractor agreed upon by the Employer and the Contractor, the Employer shall provide sufficient, properly qualified operating and maintenance personnel to properly carry out pre-commissioning, Commissioning and Guarantee tests, all in accordance with the provisions of the appendix to the contract agreement titled scope of works and supply by the employer, at or before the time specified in the program furnished by the contractor in the manner there upon specified or as otherwise agreed upon by the Employer and the Contractor.

## 2.0 BID EVALUATION PROCEDURE:

- 2.1 For each Bid, cost would be computed by considering the Ex-works price, freight charges and GST etc and based on the **lowest computed cost of complete scope of work including AMC charges**, the contract would be awarded to the lowest substantially responsive bidder subject to fulfillment of Qualifying Criteria (Financial, Experience and Supply Capacity Criteria) &

other criteria mentioned in the tender document. In case the prices received are found to be much higher than the updated price of the last order placed by MPPTCL or order placed by other utility for the similar material, the Purchaser reserves the right to negotiate the prices for such equipments/material.

- 2.2** The Purchaser shall evaluate the bids in respect to the substantive responsiveness of the bid or otherwise. The Purchaser shall carry out detailed evaluation of the substantially responsive bids. The Purchaser shall check the bid to determine whether they are complete, whether any computational errors have been made or required sureties have been furnished. Arithmetical error shall be rectified on the following basis:-

- a) *If there is a discrepancy between the unit price and total price that is obtained multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected by the Purchaser.*
- b) *In case of discrepancy between words and figures, the amount in words shall prevail.*

- 2.3** **It may please be noted that the services of e-portal have been availed by MPPTCL for the purpose of inviting the tenders. The portal itself works out the prices & indicates name of the L1 bidder, However MPPTCL will carry out detailed evaluation of prices as per the criteria stipulated in the tender document and determine the lowest substantially responsive bidder. The lowest substantially responsive bidder determined by MPPTCL will be considered for award of order/contract.**

**The bidders may please also note that MPPTCL reserves the right**

- (i) to reject any or all tenders or to accept any tender considered advantageous to MPPTCL whether it is the lowest offer/ bid or not.

**2.4 SNAP BIDDING:-**

In case the prices received are found to be much higher than the cost estimated by the Purchaser or order placed by other utility for similar material, the Purchaser reserves the right to opt for Snap Bidding, in which case following conditions shall be applicable:-

- i. In case the Purchaser opts for snap bidding, all the initial Price Bids shall be discarded and all the responsive Bidders, whose Price Bids were earlier opened, shall be invited to submit the new Price Bids as per terms and conditions of the bidding document. The timeline for submission and Price Bid opening of such Price Bids shall be intimated separately to all such Bidders by the Purchaser. Bidders submitting new Price Bids electronically shall follow the electronic Bid submission procedures specified for resubmission of Price Bids.

The lowest evaluated price shall be communicated to the responsive Bidders and they shall not be allowed to quote above the lowest evaluated price, in the new Price Bid. If any Bidder's new price is found to be higher than the lowest evaluated price during the initial bidding, its Bid shall be treated as non-responsive and the Bidder shall not be considered for award.

- ii. In case any of the invited Bidders do not submit new Price Bid during the snap bidding then the Bidder shall not be considered for any further evaluation by the Purchaser.
- iii. Re-submitted new Price bids shall be again evaluated by the Purchaser as per terms and conditions of the Bidding document. The Purchaser shall evaluate the Price Bids and derive the lowest evaluated Bid (L1). However, even after submission of new Price Bids by the Bidders, the Purchaser reserves the right to reject the lowest evaluated Bid Price. If the Bid is rejected by the Purchaser then the entire Bidding process shall be annulled.

**In case snap bidding is not possible due to limitation of e-portal, negotiation of the prices shall be done as per clause no. 2.1 above.**

**3.0 EVALUATION AND QUALIFICATION CRITERIA:** The Financial Status, Experience, and Supply Capacity Criteria which will be taken into account to qualify the lowest-evaluated bidder are specified below. All these criteria shall be evaluated on a pass-fail basis only.

**3.1 FINANCIAL CRITERIA:** The Purchaser will take account of the following financial criteria to verify the qualifications of the bidder. **The audited standalone financial statements of accounts** for the last five (5) years (i.e. 2018-19 2019-20 2020-21,2021-22& 2022-23) submitted by bidder shall be evaluated. These criteria shall be evaluated on a pass-fail basis only.

**i. Financial Status:**

**(a)** The bidder's balance sheet statement for last year of the audited accounts should show that it has positive NET WORTH i.e. total assets less outside liabilities shall be positive.

**(b) Minimum Average Annual Turnover (MAAT):**

The Bidder's income sheet should show Minimum Average Annual Turnover (MAAT) of Rs. **13.00 Crore** for the best three years in last 5 years.

**ii. Financial Resources :**

Bidder shall have **minimum Working Capital** or / and evidence of access to or availability of fund based bank line of credit facilities as under:

Working Capital + fund based unutilized bank line of credit  
= 60% of Estimated cost/completion time in years.

The documents submitted by the bidder including the standalone audited financial accounts, must demonstrate that the bidder has adequate working capital available to undertake this contract. If the bidder's working capital is inadequate, the bidder should supplement the same with a reputable bank's letter confirming the availability of a line of credit such that bidder's available working capital plus line of credit put together are adequate to undertake the contract for the package for which the bidder submits his offer which will be equal to at least **Rs. 5.2 Crore**. Supplementing working capital by any other mode will not be accepted. The tenderer will have to furnish his "Banks Certificate" in this regard along with other in prescribed Schedule enclosed.

The details in prescribed format as per enclosed Schedules in Section-IV "Bidding Forms" shall also be submitted in addition to Balance Sheet and Profit & Loss Account. This is a mandatory requirement.

### **3.2 EXPERIENCE CRITERIA :**

For the purpose of meeting technical and qualification requirements, the Bidder will have to meet requirement as brought out hereunder. The Bidders are requested to please carefully note the qualification requirement as mentioned hereunder in regard to technical and experience capability. They have to submit documentary proof in support of their stipulations while meeting these qualification requirements

- (i) The Bidder must have successfully implemented at least one number similar type of IT/OT project (like SCADA/EMS/ADMS/SAS/PMU based Systems/ABT System etc) in Indian Power Utility in the last 5 Years (i.e. FY 2018-23 to till the date of opening of this tender).
- (ii) The Bidder shall have minimum 2 years' experience in operation & maintenance of similar type of IT & OT system like SCADA/EMS systems/ADMS/ Substation Automation System/ABT System/ RTU or PMU based systems etc in Indian Power Utility.
- (iii) The bidder shall have well established Testing & Service Facility in India for equipment's utilised in proposed islanding scheme. Service Facility in India shall have included, but not limited to, well trained India Resident service Engineers with command over Hindi & English.

- (iv) The bidder may be a manufacturer or authorised representative of manufacturer of PMU and PDC. The bidder will have to substantiate that the manufacturer of offered PMUs & PDC is having minimum experience of three years for design, manufacture and supply of PMU and PDC (which must have been type tested). In case bidder is authorized representative of manufacturer, then such authorization should be at least of one year on date of tendering. Further, bidder has to submit the proof that at least 10 No. of offered PMU and one offered PDC should be in satisfactorily operation for at least two years from date of commissioning, for which performance report is required to be submitted. Performance certificate should be issued by order placing authority and should not be more than five years older from the date of bid opening. In case if certificate is issued by executing authority then same shall be counter signed by order placing authority also.
- (v) It is desired that the successful bidder selects a manufacturer for supply of equipment like Computer Hardware (Layer three switch, NMS/Workstation, Firewall) Relays, GPS, Panels, etc. The manufacturer for supply of equipment should have a minimum experience of three years for supply of respective item (which must have been type tested) and must be an approved vendor of Electricity Boards/ Power Grid/ Transmission utility or a regular supplier of Employer. The equipment/ material manufactured and supplied should be in operation for a period of two years as on the date of submission of request for which performance report is required to be submitted.
- (vi) The bidder (Manufacturer/Installation Agency) should have executed at least 1 contract of value not less than Rs. 1 crore (One Crore) during last ten years.

### **3.3 SUPPLY CAPACITY CRITERIA:**

The Bidders will have to substantiate that they have capacity to design, manufacture or supply the quantity of Phasor measurement Unit covered in the tender within specified delivery schedule. For this purpose, the following details along-with documentary proof will have to be furnished by the bidder:

Confirmation & documentary proof that they have manufactured or supplied a following minimum quantity of Phasor Measurement Unit/Phasor Data Concentrator during any one financial year during the past five (5) years.

<b>S. No.</b>	<b>Particulars</b>	<b>Total qty. covered in the tender (Nos.)</b>	<b>Minimum qty. which should have been manufactured or supplied in any one years during past Five years (Nos.) in India</b>
1	Phasor Measurement Unit	21	10
2	Phasor Data Concentrator	1	1

While indicating above details, total quantity of Phasor measurement unit & Phasor data concentrator supplied during past five financial years from year 2018-19 to 2022-23 and current financial year may also be furnished in Schedule-VII attached with the tender document.

- 3.4 It may be explicitly noted by the bidders that evaluation of various qualification criteria shall be done on the basis of certificates submitted by the bidder for which responsibility to furnish necessary documentary proof rests on participating bidder. It may also be noted that it is not obligatory on the part of Employer to seek any clarification or ask for submission of any certificate towards experience incase required documents are not enclosed with the bids. Employer will not be responsible if the bid is considered non-responsive and rejected in the absence of such certificates.
- 3.5 Notwithstanding the experience and supply capacity criteria as mentioned above, which have to be necessarily complied with for the purpose of qualifying against the tender, it may be noted that the MPPTCL also reserves the right to take into account past performance of the bidder in regard to quality of supply of main equipment as well as its accessories, performance in regard to timely supplies and also performance in regard to making available supervisory services as well as after sales services. Past performance in MPPTCL will therefore be taken in to account while evaluating the offer.
- 3.6 The Purchaser reserves the right to waive minor deviations if they do not materially affect the capability of the bidder to perform the contract.
- 3.7 It has been noticed in the past Bids that some of the information furnished in the schedule of technical particulars and technical questionnaire does not match with each other. In order to avoid any discrepancy, it may be noted carefully that for the purpose of price evaluation, the details brought out by the Bidders in “Schedule of Technical Questionnaire” and “Schedule of Commercial Questionnaire” will be treated as final and evaluation will be done based on the information which will be given in these schedules. In case of any discrepancy in regard to information given in any other table, responsibility will rest on the Bidders. While this condition shall be applicable for the purpose of price evaluation, at the time of acceptance of offer, the Purchaser will have the right to take such of the values which are advantageous to the Purchaser

**3.8 Bidders may note that even on fulfillment of all the qualifying criteria:-**

- i. Offers of those Bidders who have been either debarred/ black listed for future business with Purchaser / MPSEB and its successor companies or their Contract has been terminated due to Contractor's default may be summarily rejected.
- ii. The Bidders, whose past performance has not been found to be satisfactory against previous Bids of MPSEB / Companies formed on restructuring of MPSEB, may not be considered for placement of order. Some of the factors which contribute to poor performance of a Bidder are as follows:-
  - Non-execution of previous order(s) or inordinate delay in supply of material.
  - Failure of material in testing & non-replacement of the same timely by the supplier.
  - Failure of material as reported by the field officers.
  - Non replacement of material which has failed / become defective within guarantee period.
  - Poor past record of after sales services.
- iii. It may be noted that participation on Joint Venture/ Consortium/ Association basis to meet the experience or supply capacity criteria or otherwise is not acceptable. The tender not complying with this requirement shall be rejected.

**4.0 LITIGATION HISTORY:**

Bidders are requested to submit details of all litigation, arbitration and other claims whether pending, threatened or resolved in the last five years, with the exception of immaterial claims with cumulative possible impact of not more than 10% of the Bidder's total assets. The Purchaser may disqualify Bidders in the event that the total amount of pending or threatened litigation, arbitration or other claims represents hundred percent (100%) of the Bidder's net worth. Furnishing of this information by the Bidder, as per prescribed format given in Section IV "Bidding Forms", is a mandatory requirement.

## **Section IV. Bidding Forms**

### **Notes on Bidding Forms**

The Purchaser shall include in the Bidding Documents all Bidding Forms that the Bidder shall fill out and include in its Bid. As specified in this Section, these forms are the Bid Security, Price Schedules, Qualifying Requirement and other Forms.

## Table of Forms

1. FORM-I : FORMAT FOR BID SECURITY BANK GUARANTEE.
2. FORM-II & CONTD : FORMAT FOR PRICE SCHEDULE
3. FORM-III : FORMAT FOR SUBMISSION OF FINANICAL DETAILS
4. FORM-IV : FORMAT FOR BANK CERTIFICATE
5. FORM-V: FORMAT FOR YEAR WISE DETAILS OF QUANTITY SUPPLIED
6. FORM-VI: FORMAT FOR COMMERCIAL DEVIATIONS
7. FORM-VII: FORMAT FOR TECHNICAL DEVIATIONS
8. FORM-VIII: FORMAT FOR LITIGATION HISTORY
9. FORM-IX: FORMAT FOR COMMERCIAL QUESTIONNAIRE
10. FORM-X: FORMAT FOR GUARANTEED TECHNICAL PARTICULARS
11. FORM-XI: FORMAT FOR TECHNICAL QUESTIONNAIRE
12. FORM-XII: FORMAT FOR BID & CONTRACT DRAWINGS
13. FORM-XIII: LIST OF PLANT & MACHINERY AND TESTING FACILITIES
14. FORM-XIV: LIST OF TYPE TEST REPORTS
15. FORM-XV: QUALITY ASSURANCE PROGRAMME CHART
16. FORM-XVI: UNDERTAKING REGARDING SHARING OF LAND BORDER WITH INDIA
17. FORM-XVII: UNDERTAKING FOR LOCAL CONTENT
18. FORM-XVIII: UNDERTAKING FOR EQUIPMENT/MATERIAL MANUFACTURED IN INDIA
19. FORM-XIX: UNDERTAKING FOR IMPORTED PARTS/EQUIPMENT/MATERIAL
20. FORM-XX: FORMAT FOR CHECK LIST

**FORM-I****FORMAT FOR BID SECURITY BANK GUARANTEE**

(To be executed on Non-Judicial Stamp Paper as per prevailing rules)

**Bank's Name and complete address with PIN code of Issuing Branch or Office.....**.....  
.....**FAX No.:** ..... **e-mail:**.....**Beneficiary:** Chief Engineer (SLDC), M.P. Power Transmission Company Limited,  
Nayagaon, Rampur, Jabalpur – 482008, Madhya Pradeshe-mail: [sldc.scada@mptransco.nic.in](mailto:sldc.scada@mptransco.nic.in)**Bank Guarantee No.:**

.....

**Date:**.....  
...

We have been informed that . . . . . **name of the Bidder**. . . . . (hereinafter called "the Bidder") is participating in bidding process through its offer dated. . . . . (hereinafter called "the offer") for the execution of . . . . . **name of contract** . . . . . under Tender Specification No. TR-\_\_\_\_\_

Furthermore, we understand that, according to your conditions, offers must be supported by a Bid Security. Therefore, at the request of the Bidder for bid security, we . . . . . **name of Bank**. . . . . hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of . . . . . **amount in figures** . . . . . ( . . . . . **amount in words** . . . . . ) upon receipt by us of your first demand in writing accompanied by a written statement stating that the Bidder is in breach of its obligation (s) under the bid conditions, because the Bidder:

- (a) has withdrawn its offer during the period of validity specified by the Bidder in his offer; or
- (b) does not accept the correction of errors in accordance with the Instructions to Bidders; or
- (c) having been notified of the acceptance of its offer by the MPPTCL during the period of validity, (i) fails or refuses to execute the Contract Agreement, or (ii) fails or refuses to furnish the Bank Guarantee for Contract Performance, in accordance with the Tender Specification.

This guarantee will expire: (a) if the Bidder is the successful Bidder, upon our receipt of copies of the Contract Agreement signed by the Bidder and the Bank Guarantee for Contract Performance issued to you upon the instruction of the Bidder; and (b) if the Bidder is not the successful Bidder, upon the earlier of (i) our receipt of a copy your notification to the Bidder of the name of the successful Bidder; or (ii) twenty-eight days after the expiration of the validity of Bidder's offer.

This guarantee will remain valid (in force) upto dd/mm/yyyy or in case of subsequent validity extension upto such extended validity period.

In the event of any claim under this guarantee, payment shall be immediately effected to beneficiary Bank through RTGS in the following account:

NAME: RAO MPPTCL COLLECTION ACCOUNT SLDC  
ACCOUNT NO. : 571701010050209  
IFS CODE: UBIN0557170  
BRANCH: UNION BANK OF INDIA, SHAKTI BHAWAN ROAD  
JABALPUR

In case of failure of RTGS, the payment shall be made through Demand Draft immediately.

Consequently, any demand for payment under this guarantee must be received by us at the office on or before that date. The courts of Jabalpur shall have exclusive jurisdiction in all matters of disputes in respect of above Bank Guarantee.

.....***Bank's seal and authorized signature(s)***.....

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Note: All italicized text is for use in preparing this form and shall be deleted from the final document

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**FORM-II**

**(This Form should be submitted on-line.)**  
**PRICE AND QUANTITY**  
**(Schedule – I)**

Name of Bidder: M/s \_\_\_\_\_

Tender Specification No. LDET-03/2023-24

Name of Tenderer : _____															
Tender Specification No. : LDET-03/2023-24															
Sl. No.	Item Description	Item Code / Make	Quantity	Units	Unit Ex-Works Price In Figures Rs. P	HSN/SAC Code	% GST on EXW	Amount of GST on Unit EXW in Rs. P	Unit Freight Including Unloading at Site in Rs. P	% GST on Freight Charges	Amount of GST on Unit Freight Charges in Rs. P	Any Other Tax/ Levies in Rs. P	Unit FORD price Including GST in Rs. P	TOTAL AMOUNT With Taxes in Rs. P	TOTAL AMOUNT In Words
1	2	3	4	5	6	7	8	9	10	11	12	13	col (14) = sum (6+9+10+12+13)	col (15) = (14)* (4)	16
1	Supply ,Installation & commissioning of Phasor measurement Units (PMUs) Based Jabalpur Islanding Scheme Along with Annual Maintenance														
A	Phasor Measurement unit (including panels) as per annexure-I	item 1	21	No.											
B	PDC hardware & software	item 2	1	Set											
C	GPS	Item 3	6	No.											
D	3 Layer switches	Item 4	6	No.											
E	High burden tripping relays	Item 5	78	No.											
F	NMS hardware including Workstation	Item 6	1	Set											
G	NMS software including workstation functionalities	Item 7	1	Set											
H	Next Generation firewall	Item 8	1	No.											
I	Optical fibre patch cords (10 mts) & 10 Nos. in one set	Item 9	10	Set											
J	CAT 6 UTP ethernet cable (300m)	Item 10	10	No.											

<b>Name of Tenderer :</b> _____															
<b>Tender Specification No. : LDET-03/2023-24</b>															
Sl. No.	Item Description	Item Code / Make	Quantity	Units	Unit Ex-Works Price In Figures Rs. P	HSN/SAC Code	% GST on EXW	Amount of GST on Unit EXW in Rs. P	Unit Freight Including Unloading at Site in Rs. P	% GST on Freight Charges	Amount of GST on Unit Freight Charges in Rs. P	Any Other Tax/ Levies in Rs. P	Unit FORD price Including GST in Rs. P	TOTAL AMOUNT With Taxes in Rs. P	TOTAL AMOUNT In Words
1	2	3	4	5	6	7	8	9	10	11	12	13	col (14) = sum (6+9+10+12+13)	col (15) = (14)* (4)	16
K	Erection, Commissioning, Installation & testing of items	Item 11	1	No.											
L	Spare	Item 12	1	No.											
M	Annual maintenance Contract (AMC) for five years	Item 13	5	No.											
<b>Grand Total</b>															

**FORM-III**  
**FORMAT FOR SUBMISSION OF FINANCIAL DETAILS**

Bidder's Legal Name \_\_\_\_\_ Date \_\_\_\_\_

SNo.	Particulars	(Notes number of balance sheet considered)	Financial Year 2022-23
	<b>Part - A</b>		
1	Total Assets		
2	Total outside Liabilities		
3	Net Worth (1-2)		
	<b>Part - B</b>		
4	Current Assets		
5	Current Liabilities		
6	Working Capital (4-5)		

Note : Working capital has been computed as per accounting standard.

Information from Profit & Loss Statement for previous Three (3) years as per the Tender Document

	Part - C	Year 1 (2020-21)	Year 2 (2021-22)	Year 3 (2022-23)	Item No. of profit & loss account considered for calculating figures
7	Total Turnover (excluding non operating income)				
8	Average Turnover				

☐ Attached are copies of financial statements (balance sheets including all related notes, and income statements) for the years required above complying with the following conditions :

- a. reflect the financial situation of the Bidder and not an affiliated entity (such as parent company or group member)
- b. be independently audited or certified in accordance with local legislation.
- c. be complete, including all notes to the financial statements.
- d. correspond to accounting periods already completed and audited.
- e. provisional / Unaudited financial statements shall not be considered for evaluation in any case.
- f. **UDIN No. & copy of document details may be provided / attached**

Certificate by Statutory Auditor  
OR  
Chartered Accountant

Date :            Name of Audit Firm  
                         & Mob.No.

Firm Reg. No. \_\_\_\_\_  
UDIN No.

*Note : In case the bidder does not have a statutory auditor, then above is to be certified by the chartered accountant firm who has done the audit.*

**FORM-IV****FORMAT FOR BANK CERTIFICATE**

*(Bank Certificate should be issued showing position of Fund based unutilized bank line of credit not before 30 days from the date of original bid opening date. Bank certificate issued after actual bid opening date will not be accepted)*

\_\_\_\_\_ Date : \_ / \_ / \_

This is to certify that M/s \_\_\_\_\_ having its registered office at \_\_\_\_\_ (full address) and Branch office at \_\_\_\_\_ (full address) who have submitted their Bid to Madhya Pradesh Power Transmission Co. Ltd., Jabalpur against their tender specification vide reference number Tender No. \_\_\_\_\_ (\_\_\_\_\_) is our customer for the past \_\_\_\_\_ years.

Their financial transactions with our Bank have been satisfactory. They enjoy the following FUND BASED limits with us against which the extent of utilization as on date is also indicated below :-

SNo.	Type of facility	Sanctioned limit as on date	Utilization as on date
1	Cash credit		
2	Overdraft		
3	Working Capital Loan		
	Total :		

This is to certify that such loans, which has been sanctioned for the purpose other than working capital, has not been considered above.

This letter is issued at the request of M/s \_\_\_\_\_

Name of Bank \_\_\_\_\_

Name of Authorized Signatory \_\_\_\_\_

Designation \_\_\_\_\_

Phone/Mob. No. \_\_\_\_\_

Address: \_\_\_\_\_

Seal of the Bank \_\_\_\_\_

**FORM-V**  
**YEAR WISE DETAILS OF QUANTITY SUPPLIED**

**(a) As per section III**

<b>S. No.</b>	<b>Year</b>	<b>Quantity of Phasor Measurement Unit supplied (Nos.)</b>	<b>Quantity of Phasor Data Concentrator supplied (Nos.)</b>
1	Year-I (2018-19)		
2	Year-II (2019-20)		
3	Year-III (2020-21)		
4	Year-IV (2021-22)		
5	Year-V (2022-23)		

**Date:**

**Place:**

**(SIGNATURE OF BIDDER)**

**NAME**

**DESIGNATION**

**Note:**

- i. For the above purpose, “year” means Financial year from April to March
- ii. Submission of information in above format is a mandatory requirement.
- iii. A list of orders executed along with name of customers should be submitted in hard copy for verification of quantity of equipments/material mentioned in this schedule.

**FORM-VI****FORMAT FOR COMMERCIAL DEVIATIONS**

We/I have carefully gone through the Commercial requirements of specification and the General Conditions of Contract and We/I have satisfied ourselves/myself and hereby confirm that our/my offer strictly conforms to the requirements of specification and General Conditions of Contract except for the deviations, which are given below :-

<b>Sr. No.</b>	<b>Description &amp; Clause No. of the specification &amp; page No.</b>	<b>Stipulation in specification</b>	<b>Deviation Offered</b>	<b>Remarks regarding justification of the deviation.</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

Except for aforesaid deviations, the entire order, if placed on us, shall be executed in accordance with your specification and any other conditions, variation/deviation etc. if found elsewhere in our offer should not be given any consideration while finalizing the tender.

Date :

Place :

**SIGNATURE  
WITH SEAL OF BIDDER**

# FORM-VII

## FORMAT FOR TECHNICAL DEVIATIONS

We/I have carefully gone through the Technical Specification and the General Conditions of Contract and we/I have satisfied ourselves/ myself and hereby confirm that our/my offer strictly conforms to the requirements of technical specification except for the deviations, which are given below :

S. No.	Description & Clause No. of the specification & page No.	Stipulation in specification	Deviation offered	Remarks regarding justification of the deviation
1	2	3	4	5

Except for aforesaid deviations, the entire order, if placed on us, shall be executed in accordance with your specification and any other conditions, variation/deviation etc. if found elsewhere in our offer should not be given any consideration while finalizing the tender.

DATE-----

PLACE-----

**SIGNATURE  
WITH SEAL OF BIDDER**

**FORM-VIII****FORMAT FOR LITIGATION HISTORY****Pending Litigation**

- ☐ No pending litigation in accordance with Clause 4.0 of Vol. I, Section - III
- ☐ Pending litigation in accordance with Clause 4.0 of Vol. I, Section - III

Year	Outcome as Percent of Total Assets	Order Details	Total order amount (Order value Rs in Lac)
		Order No. & Dt.:	
		Name of Purchaser:	
		Address of Purchaser:	
		Matter in Dispute:	

**FORM-IX****FORMAT FOR COMMERCIAL QUESTIONNAIRE**

The bidder may please note that submission of this questionnaire duly and properly filled in is essential. While filling in entries against the questions given below, no reference should be made to comments entered elsewhere in the bid. All queries should be answered and these answers should be complete in themselves. Please note that none of the column should be left blank and clear reply against all columns should be given. In case this is not done, the bids will be liable for rejection.

S. No.	Particulars	Bidder's Reply
1	Name and Complete Postal Address of Bidder/Manufacturers.	
	Phone No	
	e-mail address of Bidder	
	Place of manufacture and address	
	Year of manufacturing of offered material	
2	Date and year of establishment of factory for manufacture of the offered (a) Phasor Measurement Units (b) Phasor Data Concentrator (c) Next Generation Firewall (d) NMS Including Workstation (e) GPS	
3	Please confirm that for PMU, PDC & all Accessories mentioned in the BoQ are to be supplied on Firm basis.	
4	i) Please confirm that you have submitted your offer taking into account GST and indicate applicable rates of GST for supply of material as per Schedule-I.  Percentage Rate of GST Chapter/Heading/Sub-heading/Tariff Number of offered material GST Registration No.	Applicable Rate  %
	ii) At present there is no Govt. notification regarding exemption of GST. In case at a later date any exemption of GST becomes applicable in your case, please confirm whether the benefit of exemption will be passed on to MPPTCL or not?	
	iii) Please confirm whether GST is applicable on Freight Charges or Not? If yes please indicate applicable Percentage Rate of GST on this segment.	
5	Please confirm that for the offered prices of equipment/ PMU and its accessories are on <b>Firm</b> basis as per clause ITB 14.4 Section-II	

S. No.	Particulars	Bidder's Reply
	BDS..	
6	Please confirm that bidder is a manufacturer or supplier of PMU.	
7	Please confirm that the prices quoted are FOR Destination only and the material shall be supplied freight paid and duly insured and will be delivered at project site as per Annexure 1 or depending upon our requirement anywhere in state of MP.	
8	Please confirm validity of your offer is 6 months from the date of opening of bid, otherwise your offer will be treated as non responsive.	
9	Please confirm that security deposit shall be furnished in form of demand draft/Cash or Bank Guarantee towards performance guarantee of the material and faithful performance of contract during the guarantee period?	
10	Please confirm that payment terms as per clause 13 of Section-VI is acceptable to you.	
11	Please confirm your acceptance to clause 23 (Penalty) of Section-VI GCC.	
12	(a) Please confirm that performance guarantee period as stipulated under clause 24 of Sec.-VI, acceptable to you.	
	(B) Please refer clause 24.3 of Sec VI and confirm that <i>In case after commissioning of equipment any operation problem is observed due to manufacturing defects and rectification or replacement is done, then the guarantee period of 12 months for such equipments shall commenced from the date of completion of rectification or replacement</i>	
13	Whether the firm is prepared to make good any loss or damage in transit, immediately and free of all charges and prefer the claim for such loss/damage from the Insurance Co. separately?	
14	(a) Please confirm that details of order No. and date, name of purchaser and quantity with Phasor measurement Unit supplied during past five years and current financial year has been certified by CA and enclosed with the offer as per clause No. 3.3 Section-III	
15	Whether the supporting documents as a proof of placement of above orders are enclosed?	
16	Whether details of departures/ deviations from specification have been furnished as per Form-VI & VII of Sec IV.	
17	Whether registered for MP SSI/NSIC Unit? If so, quote registration No. & mention items for which registered with capacity (Enclose attested photo state/ certified copy of registration letter in support of above, failing which your claim as MP SSI/NSIC unit shall be ignored).	

S. No.	Particulars	Bidder's Reply
(i)	Whether you are State or Central Govt. undertaking/ unit with 100% Govt. shares?	
(ii)	If yes, whether documentary evidences in support of the above has been enclosed (In absence of documentary evidence your claim to be State/Central Govt. undertaking shall be ignored)?	
18	(A) Please confirm that you agreeable for proto inspection of panels by MPPTCL's representative prior to mass production and ready for necessary modification in the panels as per purchaser's requirement as per clause No. 1.0 Section-V of the specification.	
	(B) Whether you agree for inspection by MPPTCL's representative prior to dispatch and bear the testing charges for all tests as per IS to be conducted on samples, drawn by MPPTCL's representative?	
	If so, please furnish the list of testing machines and relevant details.	
	If the testing facility is not available with the firm, from which recognized testing laboratories, the firm will get testing, if required so.	
19	Please refer clause 3.2 of Section-III and confirm that you have minimum Three (3) years' experience of design, manufacture or supply for Phasor Measurement unit, PDC & all other items mentioned in BoQ and necessary proof to this effect has been enclosed.	
20	Please confirm you have furnished performance report for Phasor Measurement unit & PDC as per clause no. 3.2 of Section-III from user agency which should not more than five years old from the date of tender opening.	
21	Please confirm that necessary documents to establish delivery of equipments/material for supply capacity and supply details certified by Chartered Accountant as per clause No. 3.3 of Section-III has been enclosed.	
22	Please confirm that offer in hard copies have been submitted in duplicate (original + one copy).	
23	Please confirm that you have noted the stipulation regarding discrepancies in technical tender as per Vol – II and that the details as furnished in Form XI of technical questionnaire shall form the basis for evaluation of tender.	
24	Whether testing facilities for carrying out the type, acceptance and routine tests as per relevant IS/IEC specification, on the materials offered are available with the manufacturer? If so, please furnish the list of testing machines and relevant details.	
25	Please confirm you have submitted Earnest money as per clause no. ITB21 Section-I.	
(i)	In which form?	
(ii)	Amount & details of earnest money furnished.	

S. No.	Particulars	Bidder's Reply
(iii)	Whether details of EMD filled in prescribed online format and scanned copy of EMD uploaded during online bid submission?	
26	Whether the required Tender Cost paid has been furnished by you?	
(i)	Details of tender cost	
(ii)	Scanned copy of Tender Cost D.D/Bank Guarantee Submitted/ uploaded	
27	If the material supplied fails within guarantee period, please confirm that the material will be replaced within one month and charges occurred shall be borne by you.	
28	Please confirm that you have enclosed audited financial statements of accounts for the last three (3) years i.e. 2020-21, 2021-22 & 2022-23 and financial details, as per form –III of Section IV, with seal and sign of Statutory Auditor or Chartered Accountant.	
29	Please confirm your acceptance for extension order for additional of equipments of value up-to 15% of the ordered value, as per clause 35.0 of Section-VI.	
30	Have you furnished routine and type test reports with your offer?	
31	Please confirm that training facility for one batch consisting of eight engineers for three days duration as per clause no. 36 of Section-VI shall be provided by you.	
32	Please confirm that you have noted stipulation under clause no. 22.14 & 22.15 of Sec VI "Fake inspection call".	
33	Have you furnished the technical questionnaires enclosed with this Bid specification duly filled and signed?	
34	Have you furnished the Guaranteed Technical particulars for the offered material?	
35	Please confirm that you have quoted for the complete islanding scheme including software logics.	
36	(a) Please confirm whether Delivery Clause no.1 of Section-V of the Tender specification is acceptable to you.	
	(b) Please confirm that the delivery of equipments covered under this tender may be regulated as per the progress of work and availability of funds.	
37	Please confirm whether tax Clearance Certificate from the competent authority has been enclosed.	
38	Please confirm whether you have submitted the hard copies of valid factory license with your offer.	
39	Have you furnished the Power of Attorney in respect of the person signing the Bid on behalf of the Bidder?	
40	Have you furnished self declaration regarding history of litigation and same has been furnished?	
41	Have you uploaded/submitted the Tender Form?	
42	Have you furnished the hardcopies (duly signed by the bidder) of	

S. No.	Particulars	Bidder's Reply
	all relevant certificates, documents etc in support of Techno-Commercial bid/ eligibility criteria and other requisite certificate/ documents on the e-procurement website	
43	Have you authenticated the bid with your Digital certificates (Class-III) for submitting the bid electronically on e-procurement website?	
44	Please confirm whether you are covered under the MSMED Act 2006. If covered, indicate category (i.e. micro unit, small unit or medium enterprise) and enclose certification/ requisite document/ registration certificate.	
45	Please confirm Whether you are covered under RCM (Reserve Charge Mechanism) of service tax. Whether you are a company registered under the Company Act 1956.	
46	Please confirm that you have noted the clause of AMC carefully and agreed to place and dedicated engineer at SLDC against this project.	
47	Please confirm that you have agreed to claim payment of Bought out item on actually consumed quantity at site.	
48	Please confirm that you have noted that manufacturer should have minimum experience as per clause 3.2 of section –III for bought out items.	
49	Please confirm that you have agreed the clause No. 37 of Sec. VI Special requirement for Replacement, Repair & Maintenance of the supplied & commissioned systems during guarantee period.	
50	Please confirm that you have agreed to all terms & conditions of AMC including payment of maintenance charges, penalty/deduction for less availability mentioned in the technical specifications.	
51	Please confirm that you shall carry out cyber security audit of entire Jabalpur Islanding Scheme through CERT-In empaneled auditor & close all the vulnerabilities found (if any) before initiation of Guarantee Period/before system acceptance.	
52	Please confirm that security deposit shall be furnished in form of demand draft/Cash or Bank Guarantee towards performance guarantee of the material and faithful performance of contract during the AMC Period ?	
53	Please confirm that all the software and hardware provided by you for Jabalpur Islanding Scheme shall be loaded with valid license with a validity until the expiration of AMC of Jabalpur Islanding Scheme. In case of end of life support or expiration of license of any of the software/hardware, you shall ensure upgradation of license/replacement of software or hardware free of cost so as to meet the functionalities of Jabalpur Islanding Scheme.	
54	Please confirm your acceptance to Clause 15 of Section-VI, GC of	

<b>S. No.</b>	<b>Particulars</b>	<b>Bidder's Reply</b>
	the tender document.	
55.	Please confirm your acceptance to Clause 24 & 25 of Section-VI, GC of the tender document.	
56.	The quantity of equipments mentioned in the BoQ is tentative and shall be finalized only after the survey to be conducted by the bidder. Please confirm the same.	
57.	Please confirm that FAT & SAT of the entire scheme shall be conducted as per the technical specifications.	
58.	Please confirm that skilled site engineer/manpower shall be deputed as mentioned in contract terms & conditions & technical specifications.	

**FORM-X****FORMAT FOR GUARANTEED TECHNICAL PARTICULARS**

This schedule of guaranteed technical particulars for each offered relays is to be submitted by the Tenderer. It may be carefully noted that filling / reply of each and every clause described below is a must. Evasive replies shall amount to disqualification.

**Phasor Data Concentrator (PDC) :-**

S.No.	Description of the Features	Minimum Configuration	Offered by the bidder
1	Manufacturer		
2	Model No		
3	Country of Origin		
4	Operating System	Windows 2019 or above or Embedded RTOS VxWorks or Linux	
5	RAM requirement	16 GB or above	
6	Hard Disk Storage	2 TB or above	
7	No. of Cores	8 or above	
8	Processor Speed	2.8 GHz or above	
9	I/O Ports	1 Gbps dual Ethernet ports (Minimum)	
10	Power Supply	Dual AC Power Supply	
11	User Interface	Through a 55" Monitor	
12	Mounting	Rack mountable	
13	Communication Protocols	<ul style="list-style-type: none"> <li>• C37.118 Sychrophasor</li> <li>• IEC 60870-5-104 Server/Client</li> </ul>	
14	PDC Sizing	<ul style="list-style-type: none"> <li>• 65000 Data Points</li> <li>• 100 PMUs/1200 Phasors @50 fps and 4x outputs @ 50 fps</li> <li>• 50 PMUs/700 Phasors @100 fps max and 4x outputs @100fps</li> </ul>	

## Phasor Measurement Unit (PMU)

S.No	Description of the Features	Minimum Quantity of the features	Offer by the Bidder
1.	Device	Phasor Measurement Unit (PMU)	
2.	Manufacturer		
3.	Model No.		
4.	Country of origin		
	<b>Inputs</b>		
5.	Minimum Analog Channel	PMU shall be able to measure parameters for minimum 5 bays in single PMU	
6.	Minimum Digital Input	16	
	Minimum Digital Output	8	
7.	CT core	Capable for Metering & Protection Core	
8.	Auxiliary Power Supply Source	220 V DC or 110V DC or 48V DC (+10%, -15%) power supply source	
9.	Communication ports	One Ethernet port of 10/100 Base Tx and one optical fiber port of 100 Mbps	
10.	Interface ports for Time synchronization	IRIG-B interface port for either a standard or high-accuracy demodulated IRIG-B time-synchronization input signal or Ethernet port on IEEE 1588v2.0 (PTP)	
11.	Communication Protocols	<ul style="list-style-type: none"> <li>• UDP/IP multicast/unicast &amp; TCP/IP</li> <li>• DNP 3.0 (serial &amp; TCP/IP)</li> <li>• IEC 60870-5-104</li> <li>• IEEE 1588 PTP and IRIG-B for time synchronization</li> </ul> <p>PMU supporting below protocol shall be preferred: -</p> <ul style="list-style-type: none"> <li>• IEC 61850 Ed. 1 and Ed. 2</li> <li>• IEC 61850-90-5 PMU over GOOSE support</li> </ul>	
	<b>Measurement Output</b>		
12.	Performance Class	M class & P Class	

		It should be user selectable.	
13.	Test Compliance as per IEEE 37.118 or IEC/IEEE 60255-118-1:2018 Standard	Bidder to fill the values as per test conducted in the lab for each individual values both in steady state and Dynamic State as per IEEE C37.118 Standard OR IEC/IEEE 60255-118-1:2018 Standard	
14.	Environmental Condition During testing	Bidder to fill the environmental condition during testing for each test.	
15.	Reporting rates (Frame per second)	25, 50 or above frames per seconds for 50 Hz System. The actual rate to be used shall be user selectable. All the PMU hardware and software shall be sized considering 50 frames per second. If the PMU is capable for higher reporting rate, then the PMU hardware and software shall be sized considering the highest reporting rate.	
16	Configuration Frame	PMU shall support Configuration Frame -2 & Configuration Frame-3	
17	Minimum reporting clients	Minimum 2 clients over TCP and/or 2 UDP clients	
18	Active & Reactive Power	3 Phase active and reactive power measurement/computation for a feeder should be possible in PMU.	
19	Total Vector Error	Less than 1 %	
<b>Other features</b>			
21.	HMI facility	Yes with display in PMU showing real time measured values & configuration changes possible through HMI.	
22.	Remote configuration Change	The supplied software shall have the capability to provide remote configuration of PMUs, through same data channel through which the PMUS are reporting to PDC.	
23	Configuration tool	Yes	
24	Station Name, Phasor Name, Analog name, Digital Name	These should be user configurable in PMU.	
25	Disturbance Recorder	Disturbance Recorder with disturbance report feature that record upto 8 analog channels & 16 digital	

		channels.	
26	Event Recorder	Upto 512 event records	
27	Test reports for measurement compliance	The Bidder shall submit the test reports for measurement compliance for both class of measurements along with the Bid.	
28	Cyber Security	<ul style="list-style-type: none"> <li>The Access of PMU must be through password and with log of same shall be maintained.</li> <li>The system shall not be affected by any outside programs like spam, malware etc.</li> <li>The system must be designed on standard IEEE C37.118.2011-1, C37.118.1a-2014, C37.118.2011-2 with all amendments &amp; IEEE Guide line of PMU.</li> <li>Any configuration change must be through access right and log of the same must be maintained, all logs of event shall report to existing PDC installed at SLDC.</li> </ul>	
29	Protection Features	<ul style="list-style-type: none"> <li>Synchrocheck (25)</li> <li>Overfrequency (81O)</li> <li>Rate of change of frequency (81R)</li> <li>Underfrequency (81U)</li> </ul> <p>If PMU does not support these features, the bidders shall provide separate relays for meeting this requirement.</p>	
30	Self-monitoring, diagnostic feature and alarm to PDC.	The PMUs shall have continuous self-monitoring ,diagnostic feature and capable to identify & communicate problems and shall generate alarm in case of any abnormality which shall be displayed locally as well as shall be transferred to the PDC. The	

		indication shall be available for each module on the front panel of the PMU.	
31	Multiple data streams configurable independently.	<p>PMU shall support multiple data stream i.e. a PMU shall be capable to transmit its data in separate data streams (more than one). Each stream shall be configurable independently based on the following:-</p> <ul style="list-style-type: none"> <li>• Contents</li> <li>• Sampling rate</li> <li>• Class of service (P or M)</li> <li>• Communication mode (TCP/UDP)</li> <li>• Different destinations with separate IDCODE.</li> </ul>	
	<b>Environmental condition</b>		
1	Temperature	-10 to 50 degree Celsius	
2.	Humidity	10% to 95%	

## GPS

S.No	Description of the Features	Minimum Quantity of the features	Offered by the Bidder
1.	Manufacturer		
2.	Model No.		
3.	Country of origin		
4.	Time stability of internal time base	Minimum 1 ppm	
5.	Propagation delay compensation	Yes	
6.	Include an offset to permit correction to local time	Yes	

7.	Reverting to internal time base upon loss of signal from UTC source	Yes	
8.	Resynchronization Delay	Not more than 5 minutes.	
9.	Accuracy of resynchronization	< 1.5 Micro Sec	
10.	Interfaces	<b>Minimum one Ethernet port and One IRIG-B port &amp; 1PPS port.</b>	
11.	Loss of signal alarm	The PMU shall have internal clock, which shall be synchronized with GPS clock. Upon loss of signal from the GPS source, the PMU shall detect a loss-of-signal and generate an alarm which will be transferred to PDC. Upon loss of signal, the PMU time facility shall revert to an internal time base.	
12	IEEE1588v2.0 (PTP) compliant	Yes	
13	Time Synchronization	The signal sent to PMU from the GPS receiver shall be UTC or provide information to the PMU to correct the time to UTC by using the IRIG-B time profile given in IEEE Standard C37.118.1-2011 & C37.118.1a.-2014 with all amendments & synchronization guideline of IEEE C37.242-2013 or IEC/IEEE 60255-118-1:2018 Standard.	

## Layer-3 Switch

S.No	Description of the Features	Minimum Quantity of the features required	Offered by the Bidder
1.	Manufacturer		
2.	Model No.		
3.	Country of origin		

4.	Performance	Minimum 5 Gbps Switching Capacity	
5.	Functions	Data Exchange between PMU and PDC	
6.	Layer-2 & Layer-3 features required	Static Routing for IPv4 and IPv6	
		RIP for IPv4 (RIPv1/v2) and IPv6 (RIPng)	
		OSPF for IPv4 (OSPFv2) and IPv6 (OSPFv3)	
		Border Gateway Protocol 4 with support for IPv6 addressing wherever applicable.	
		Policy-based routing	
		IPv6 tunneling to allow IPv6 packets to traverse IPv4-only networks by encapsulating the IPv6 packet into a standard IPv4 packet.	
		Dynamic Host Configuration Protocol (DHCP) client, Relay and server.	
		Support for Multicast VLAN	
		Support for Jumbo frames	
		Should provide for 32K MAC Address Table	
		Should have facilities such as IPv6 to IPv4 tunneling, DHCPv6, ICMPv6	
7.	Features to support	Support IEEE 802.3u: Auto-negotiation on TP, IEEE 802.3x, 802.1p: flow control and prioritization, IEEE 802.1Q: VLANs, maximum 32 VLANs, IEEE 802.1d, 802.1w: Spanning Tree, Rapid Spanning Tree including RSTP 2004 extensions providing sub-second hop on rings, IEEE 802.1p: DiffServ, traffic prioritization for routed IP flows/ports Shall support Multicast and Unicast. Shall be PTP enabled as per IEEE1588v2.0 (Power Profile)	
8.	Network management	<ul style="list-style-type: none"> <li>• Console port for configuration of software features</li> <li>• Shall able to manage the switch through Command-line interface; Web browser; SNMPetc.,</li> </ul>	
		a. Access Control Lists for both IPv4 and IPv6 for	

9.	Security	filtering traffic to prevent unauthorized users from accessing the network	
		b. Port-based rate limiting and access control list (ACL) based rate limiting	
		c. IEEE 802.1x to provide port-based user authentication with multiple 802.1x authentication sessions per port	
		d. Media access control (MAC) authentication to provide simple authentication based on a user's MAC address	
		e. Dynamic Host Configuration Protocol (DHCP) snooping to prevent unauthorized DHCP servers	
		f. Port security and port isolation	
10.	Speed configurability at each port	WAN ports optional 64kbps to 2Mbps	
11.	Interface ports	As per the PMUs to be integrated in the substation. Additional 50% expansion ports shall also be provided in the LAN switch.	
12.	Mounting	Rack mountable	
13.	Environmental Compliance	IEC61850-3 and IEEE1613 (Electric Utility Substation), EMS-IEC61000, EMI: FCC part15 A	
14.	Operating temp	- 10 to 75°C, no fans	
15	Power Supply	The LAN switch shall operate on 220V DC or 110 V DC or 48V (+10%, -15%) DC supply voltage of station.	

## HMI/EWS PC

S.No.	Description of the Features	Minimum Quantity of the features	Offer by the Bidder
1	Processor	64-bit 8 core 16 thread with minimum frequency 2 GHz, 8MB cache or more	
2	Memory	32GB DDR4 RAM	
3	Graphic Processor	Required	
4	Hard disk drive	2TB/4 x 512 GB SATA SSD	
5	Display & User access tools	Minimum 24" display with HDMI connection. Standard USB keyboard and mouse.	
6	USB Connector	4 x USB 2.0 or above	

7	Mounting	Rack mounted CPU. Monitor, Keyboard & Mouse on the operator table	
8	Operating system	Pre-installed Ms Windows 2010 Pro or Ms Windows Os compatible to the HMI/EWS software tools Pre-installed Ms-office and anti-virus subscription for 3 years	
9	Power Input	220 V AC @ 50 Hz	
10	Network interface	Ethernet ports-4 numbers 10/100/1000 Mbps	

## Next-Generation Firewall

S.No.	Description of the Features	Minimum Quantity of the features	Offer by the Bidder
1	Make		
2	Model No.		
3	Country of origin		
4	GbE RJ45 WAN Ports	2	
5	GbE RJ45 DMZ Ports	1	
6	GbE RJ45 Internal Ports	5	
7	USB Ports	1	
8	Console Ports	1 x RJ45	
9	Mounting	19" Rack or DIN Rail Mount	
10	Certifications	CB, CE, UL, FCC, VCCI, ICES, BSMI, &RCM	
11	Power Input	12 VDC (Powered by external AC 100-240 converter)	
12	Operating Temperature	0°C to 40°C (operating) -20°C to +70°C (storage)	
13	Humidity	10% to 90%, non-condensing	
14	Log Storage duration	Minimum 180 days	

**Heavy Duty Relays(HDR)**

S.No.	Description of the Features	Minimum Quantity of the features	Offer by the Bidder
1	Make		
2	Model No.		
3	Country of origin		
4	Standard Coil Rating	110/125 VDC or 220/250 VDC. The HDR shall operate between 75%- 120% of rated volts.	
5	No. of output contacts	6 NO contacts	
6	Operating time	Typically 25 ms	
7	Insulation	The HDR shall meet the requirements of IS 3231 1965/EC 255-5 series C-2 kV for 1 minute.	
8	Contact Rating	Current: – DC Make & Carry continuously:-1250 W with maxima of 10 A and 660 V Make & Carry for 3 Secs: -1250 W with maxima of 30 A and 660 V Break: – 100 W (resistive) ,50 W (inductive) with maxima of 5 A and 660 V	
9	Flag	With Flag	
10	Contact Reset	Self Reset	

## **Network Management System (NMS)**

<b>S.No.</b>	<b>Description of the Features</b>	<b>Minimum Quantity of the features</b>	<b>Offer by the Bidder</b>
1	Make		
2	Model No.		
3	Country of origin		
4	Mounting	Xeon Grade Hardware Rack Mounted	
5	RAM	16 Gb or above	
6	OS	Windows Server	
7	Monitor	24" Monitor with Keyboard and Mouse	

**(Signature of the Bidder)**

**Name**

**Designation**

**Seal of the company**

**FORM-XI****FORMAT FOR TECHNICAL QUESTIONNAIRE**

All points mentioned below should be replied in these sheets only, without making any reference to any clause in the Bid. If replies are incomplete or reply to any clause is not furnished, bids may be treated as incomplete and non-responsive from technical angle.

<b>S. No.</b>	<b>Particular</b>	<b>To be filled by Bidder</b>
1	Name of Tenderer.	
2	Name of manufacturer.	
3	Country of origin	
4	Address of manufacturing works. Year of establishment of factory for manufacture of the PMU & PDC.	
	<b>Tenderers may confirm if</b>	
5	Panels for PMUs & PDC are considered & are ergonomically & efficiently designed	
6	Offered PMU, PDC & all other items in BoQ are complete with all gadgets and other items envisaged by us.	
7	Offered PMU, PDC & all other items in BoQ, and associated accessories shall be suitable for climatic conditions	
8	Offered PMU, PDC & all other items in BoQ shall conform to the relevant IS / IEC/IEEE standards as elaborated in clause no.3.1	
9	Offered PMU, PDC & all other items in BoQ, and accessories have been type tested at approved national and international laboratory Govt. approved test houses.	
10	Has it been noted that non submission of type test reports shall be treated as dis-qualification.	
11	Offered panels shall be made of sheet steel of 2.5 mm thickness on all sides	
12	Stipulation about auxiliary supplies, namely, AC & DC supply mentioned in clause no.2.1.4 have been noted.	
13	Bidder may confirm that PMU has been offered in line with Cl.No.2.1 of technical specification	
14	The PMU shall be compatible with IEC 60870-5-104 or IEC 61850 Protocol & shall also be compatible to receive islanding command from PDC.	
15	The PMU shall support all the protocols mentioned in Clause 2.1.6 of technical specifications.	
16	The PMU shall support synchro check, overfrequency, ROCOF, Underfrequency functions. In case these functionalities are not available in the PMU, arrangement for providing separate relays for meeting these functionalities has been made.	
17	The PDC supports for formation of all kind of logics for successful implementation of Islanding Scheme.	
18	Bidder may confirm that PDC has been offered in line with Cl.No.2.2 of technical specification	

S. No.	Particular	To be filled by Bidder
19	The PDC/CCU shall be compatible to send the data to SLDC SCADA/EMS system on IEC 60870-5-104 protocol.	
20	The PDC/CCU supports IEC 60870-5-104 or IEC 61850 GOOSE/R-GOOSE protocols to exchange the control operation data with the PMUs installed in the field for protection and control of power system & generating islanding command/load shedding command to the PMU	
21	The required software tools are provided along with PDC for the display, report generation, alarm and storage of data for off line analysis.	
22	The PDC supports the sizing parameters as mentioned in the Technical Specifications	
23	Bidder may confirm that the offered PDC is fulfilling the protocol requirement for data acquisition as well as controls.	
24	The system offered is capable of storing islanding data for 1 year.	
25	Bidder may confirm that GPS has been offered in line with Cl.No.2.4 of technical specification	
26	A single unit of GPS shall support for time synchronizing all the PMUs installed on that substation as per the BoQ.	
27	Bidder may confirm that Layer-3 LAN switch has been offered in line with Cl.No.2.5 of technical specification	
28	Bidder may confirm that no. of ports in a Layer 3 LAN Switch shall be according to the no. of PMUs to be integrated in the substation.	
29	Bidder may confirm that Firewall has been offered in line with Cl.No.2.6 of technical specification	
30	Bidder may confirm that Heavy Duty Relay has been offered in line with Cl.No.2.7 of technical specification	
31	Bidder may confirm that Panels for mounting of PMU & PDC has been offered in line with Cl.No.2.8 of technical specification	
32	Bidder may confirm that the offered system is capable of implementing the logics necessary for successful operation of Islanding Scheme.	
33	Bidder may confirm that Cabling & Interconnections are in line with Cl.No.2.10 of technical specification	
34	Bidder may confirm that earthing work of PMU, Panels etc are in line with Cl.No.2.9 of technical specification	
35	Bidder may confirm that foundation work and other civil work for installation of Panel to be done by you.	
36	Bidder may confirm that NMS including workstation has been offered in line with Cl.No.2.3 of technical specification	
37	Bidder may confirm that complete installation work of PMU,PDC & all other items in BoQ and associated accessories to be done by you.	

S. No.	Particular	To be filled by Bidder
38	Bidder may confirm that the requirement of optical fibre patch cord/CAT 6 Ethernet cable/any other cable required at SLDC & Substations will be worked out during the survey and accordingly supply the cable for successful implementation of the scheme.	
39	Bidder may confirm that as per technical specification AMC after the expiry of the performance guarantee period of 1 Year, Contractor Maintenance Responsibility, Payment of maintenance charges and Contractor's maintenance responsibility after the Guaranteed availability period is acceptable to you.	
40	Tenderers may confirm if every page of the document has been numbered and signed. This is mandatory	
41	Please confirm that you have agreed to the Security Related Aspects for Service Level Agreement given in the Technical Specifications.	
42	Signature updation throughout the contract period including AMC of various software licenses supplied under this project shall be in scope of the contractor.	
43	Please confirm that Security and Testing of Cyber Assets of Islanding Scheme shall be carried out as per the Article 13 of CEA (Cyber Security in Power Sector) Guidelines, 2021.	
44	Bidder may please confirm to arrange for conducting the cyber security audit of entire Islanding scheme system (free of cost) through CERT-In empaneled auditor before operational acceptance of the system. The contractor shall submit the signed report of the cyber security audit. Further please confirm to ensure for closing all the vulnerabilities (if any) found in the cyber security audit before initiation of guarantee period.	
45	Please confirm that all the software and hardware provided by you for Jabalpur Islanding Scheme shall be loaded with valid license with a validity until the expiration of AMC of Jabalpur Islanding Scheme. In case of end of life support or expiration of license of any of the software/hardware, you shall ensure upgradation of license/replacement of software or hardware free of cost so as to meet the functionalities of Jabalpur Islanding Scheme.	
46	Please confirm that all the equipments supplied meet the specifications as mentioned in DRS in technical specifications.	
47	Please confirm that minimum 1 year data of all the PMUs shall be stored at the CCU. The storage shall be sized accordingly. All the necessary software/UI to extract & visualize the data shall be provided by you.	

**FORM-XII****FORMAT FOR DETAILS OF BID &  
CONTRACT DRAWINGS SUBMITTED WITH BID**

<b>SNo.</b>	<b>Drawing No.</b>	<b>Particulars</b>

**SEAL & SIGNATURE OF BIDDER**

**FORM – XIII**

**FORMAT FOR LIST OF PLANT &  
MACHINERY AND TESTING FACILITIES**

The Bidder shall submit here complete and detailed list of plant & machinery, testing facilities, designing facilities including CAD / CAM at their works.

**SEAL & SIGNATURE OF BIDDER**

**FORM - XIV****LIST OF TYPE TEST REPORTS FOR  
PMU and Associated Accessories**

<b>S No.</b>	<b>Reference No. &amp; date of test report with no. of sheets of report</b>	<b>Descrip- tion of equipment, rating and Serial No.</b>	<b>Descrip- tion of type test</b>	<b>Method of applica- tion when applied, duration of test</b>	<b>Date of test</b>	<b>Name of testing Labora- tory</b>	<b>Test Result</b>	<b>Remarks if any</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>

**SEAL & SIGNATURE OF BIDDER**

**FORM - XV**

**QUALITY ASSURANCE PROGRAMME  
AND PROGRAMME CHART**

The bidder shall submit here complete details of quality assurance programme / programme chart.

**SEAL & SIGNATURE OF BIDDER**

**FORM-XVI**

Tender No. \_\_\_\_\_

**CERTIFICATION BY THE BIDDER TO BE SUBMITTED ON  
COMPANY'S LETTER HEAD  
(REGARDING SHARING OF LAND BORDER WITH INDIA)**

I \_\_\_\_\_, Son/Daughter of \_\_\_\_\_, do  
solemnly affirm and state as under:

1. That I am the \_\_\_\_\_ <<Designation of the authorized signatory>> of \_\_\_\_\_ and I am duly authorized to furnish this undertaking declaration on behalf of.
2. That \_\_\_\_\_ has submitted its bid No. \_\_\_\_\_ dated \_\_\_\_\_ against bidding document No. \_\_\_\_\_ dated \_\_\_\_\_ for \_\_\_\_\_ item/ works for \_\_\_\_\_ the project.
3. We have read and understood the provision of order no. F.No. 6/18/2019-PPD (Order Public Procurement No.1) dtd. 23.07.2020 regarding "Restriction under Rule 144 (xi) of General Financial Rules" and F.No. 6/18/18/2019-PPD (Order Public Procurement No.2) dtd. 23.07.2020 regarding "Exclusion from Restriction under Rule 144 (xi) of the General Financial Rules" issued by Public Procurement Division, Department of Expenditure, Ministry of Finance, Government of India, [hereinafter collectively referred as "DoE Order"] and any subsequent modifications/Amendments, if any.
4. Particularly, we, the bidder, have read the clause regarding restriction on procurement from a 'bidder of a country which shares a land border with India' and on sub-contracting to contractors from such countries.

☐ We certify that we, the bidder [and/or our proposed Associates] is/are not from such a country and will not subcontract any work to a subcontractor/ sub vendor from such countries and is eligible to be considered.

OR

☐ We certify that we, the bidder [ and our proposed Associates] and/or our subcontractor/ sub vendor is/are from such country which share a land border with India' as brought out in the aforementioned orders. Accordingly, certificate of registration by DPIIT is enclosed.

Tick (✓) in the box ( ☐ ) as applicable.

5. We further declare that any misrepresentation or submission of false/forged document/ information in this regard shall be dealt with as per the provisions of Integrity Pact and / or bidding Documents and/or MPPTCL's policy and procedures.

**(Authorized signatory of Supplier)**

Note: This undertaking shall be certified by the authorized signatory of the bidder, signing the bid.

**FORM-XVII (A)**

**Tender No.**

**UNDERTAKING FOR LOCAL CONTENT  
(to be submitted on Company's Letter Head)  
(Where the total quoted value is less than INR 10 Crore)**

I \_\_\_\_\_, Son/Daughter of \_\_\_\_\_, do solemnly affirm and state asunder:

1. That I am the \_\_\_\_\_ <<Designation of the authorized signatory>> of \_\_\_\_\_ and I am duly authorized to furnish this undertaking declaration on behalf of \_\_\_\_\_.

2. That \_\_\_\_\_ has submitted its bid no \_\_\_\_\_ dated \_\_\_\_\_ against bidding document no \_\_\_\_\_ dated \_\_\_\_\_ for \_\_\_\_\_ item/ works for \_\_\_\_\_ the project.

3. That the Company is fully aware of the provisions of Purchase Preference (as per DPIIT order no. P-45021/2/2017-PP (BE-II) dated 04/06/2020, enclosed in the above bidding document.

4. We hereby confirm that our offer is achieving the minimum local content target of \_\_\_\_\_ % as per of PP-LC Policy.

5. I confirm that I am aware of the implication of the above undertaking and our liability on account of wrong declaration.

**(Authorized signatory of Supplier)**

Note: This undertaking shall be certified by the authorized signatory of the bidder, signing the bid.

**FORM-XVII (B)**

**Tender No.**

**Undertaking (to be submitted on Company's Letter Head)**

(Where the total quoted value is INR 10 Crore or above)

Certification by the bidder

I \_\_\_\_\_, Son/Daughter of \_\_\_\_\_, do solemnly affirm and state asunder:

1. I am the \_<<Designation of the authorized signatory>>of \_\_\_\_\_ and I am duly authorized to furnish this undertaking declaration on behalf of\_.
2. That \_\_\_\_\_ has submitted its bid no \_\_\_\_\_ dated \_\_\_\_\_ against bidding document no \_\_\_\_\_ dated \_\_\_\_\_ for \_\_\_\_\_ item /works for \_\_\_\_\_ Project.
3. That the Company is fully aware of the provisions of Purchase Preference (as per DPIIT order no. P-45021/2/2017-PP (BE-II) dated 04/06/2020 (read in conjunction with 'Public procurement (Preference of Make in India' order 2017-Notification of Telecom products, Services of works' issued by Department of Telecommunications (DoT), vide notification dtd. 29.08.2018 (DoT Order) and subsequent modifications/amendments if any.), enclosed in the above bidding document.
4. We hereby confirm that our offer is achieving the minimum local content target of \_\_\_\_\_ % as per of PP-LC Policy and the break-up of the same is provided in the Price bid.

I confirm that I am aware of the implication of the above undertaking and our liability on account of wrong declaration.

(Authorized signatory of Supplier)

Certification by the statutory auditor / Chartered Accountant/ Cost Auditor of the bidder

We, \_\_\_\_\_, a CA firm having our registered office address

\_\_\_\_\_ And certificate number-----certify that we are statutory auditor of the Company M/s....., having its registered office at \_\_\_\_\_.

OR

We, \_\_\_\_\_, a CA/CMA firm having our registered office address

\_\_\_\_\_And certificate number.....certify that statutory auditor is not mandatory for the company M/s....., having its registered office at \_\_\_\_\_ as per prevailing law and we are practicing Chartered Accountant/ Cost Accountant, not being an employee / Director and not having any interest in the company. We have understood the provisions of Purchase Preference (as per DPIIT order no. P-45021/2/2017-PP (BE-II) dated 04/06/2020, enclosed in the above bidding document.

5. We hereby certify that offer is achieving the minimum local content of \_\_\_\_\_%as per of PP-LC Policy.

(Statutory auditor /Cost Auditor/ Practicing Chartered Account or Cost Accountant)

Note: This undertaking shall be certified by:

- i. The Proprietor and a practicing Chartered Accountant/ Cost Accountant, not being an employee of the firm, in case of a proprietorship firm.
- ii. Any one of the partners and a practicing Chartered Accountant/ Cost Accountant, not being an employee of the firm, in case of a partnership firm.
- iii. Statutory auditors/Cost Auditor in case of a company (as stated in Clause ..... of the said Policy in this Tender Document.)

**FORM-XVIII**

**Tender No.** \_\_\_\_\_

**UNDERTAKING  
(TO BE SUBMITTED ON COMPANY'S LETTER HEAD)  
(FOR EQUIPMENT/MATERIAL MANUFACTURED IN INDIA)**

I \_\_\_\_\_, Son/Daughter of \_\_\_\_\_, do solemnly affirm and state as under:

1. That I am the\_\_\_\_<<Designation of the authorized signatory>>of \_\_\_\_\_ and I am duly authorized to furnish this undertaking declaration on behalf of\_\_\_\_\_.
2. That \_\_\_\_\_ has submitted its bid No. \_\_\_\_\_ dated \_\_\_\_\_ against bidding document No. \_\_\_\_\_ dated \_\_\_\_\_ for \_\_\_\_\_ item/ works for \_\_\_\_\_ the project.
3. That the Company is fully aware of the provisions in order no. 25-11/6/2018-PG dtd. 02.07.2020 of Ministry of Power, Govt. of India regarding vulnerabilities in power supply system & network due to cyber attacks through malware/Trojans etc.
4. We hereby declare that no imported component/parts shall be used in manufacturing of equipment/ material and equipment/material being supplied shall be free from any kind of embedded malware/Trojans /cyber threat.
5. I confirm that I am aware of the implication of the above undertaking and our liability on account of wrong declaration.

**(Authorized signatory of Supplier)**

Note: This undertaking shall be certified by the authorized signatory of the bidder, signing the bid.

**FORM-XIX**

Tender No. \_\_\_\_\_

**UNDERTAKING  
(TO BE SUBMITTED ON COMPANY'S LETTER HEAD)  
(FOR IMPORTED PARTS/EQUIPMENT/MATERIAL)**

I \_\_\_\_\_, Son/Daughter of \_\_\_\_\_, do solemnly affirm and state asunder:

1. That I am the \_\_\_\_\_ <<Designation of the authorized signatory>> of \_\_\_\_\_ and I am duly authorized to furnish this undertaking declaration on behalf of \_\_\_\_\_.
2. That \_\_\_\_\_ has submitted its bid No. \_\_\_\_\_ dated \_\_\_\_\_ against bidding document No. \_\_\_\_\_ dated \_\_\_\_\_ for \_\_\_\_\_ item/ works for \_\_\_\_\_ the project.
3. That the Company is fully aware of the provisions in order no. 25-11/6/2018-PG dtd. 02.07.2020 of Ministry of Power, Govt. of India regarding vulnerabilities in power supply system & network due to cyber attacks through malware/Trojans etc. embedded in imported equipment.
4. We hereby confirm that parts/material used in equipment or finished equipment/material if imported from country (other than prior reference countries as import from these countries is not allowed), these shall be tested on arrival in the country to check for any kind of embedded malware/Trojans/cyber threat and for adherence to Indian Standards. The testing shall be done in certified and designated laboratories approved by Ministry of Power (MoP)
5. I confirm that I am aware of the implication of the above undertaking and our liability on account of wrong declaration.

**(Authorized signatory of Supplier)**

Note: This undertaking shall be certified by the authorized signatory of the bidder, signing the bid.

**FORM-XVI****CHECK LIST**

**(TO BE KEPT IN THE ENVELOPE PART-B,  
“COMMERCIAL/TECHNICAL BID”  
& ALSO UPLOADED ONLINE)**

<b>SNo.</b>	<b>Check List Item</b>	<b>Options</b>	<b>Answer</b>
1.	Whether “Earnest Money Deposit” of specified amount is submitted physically & scanned copy of Money Receipt / Demand Draft / Bank Guarantee is uploaded online in Envelope-A?	Yes/No	
2.	Whether NSIC/SSI/DIC Registration Certificate is attached?	Yes/No	
3.	Whether necessary documents to substantiate that bidder is a Manufacturer or Supplier are enclosed?	Yes/No	
4.	Whether Statutory Auditor/ CA certified financial FORMAT (FORM-III) with UDIN mentioned is enclosed?	Yes/No	
5.	Whether complete standalone audited Profit & Loss Accounts (including all notes) of last 5 years (2018-19, 2019-20, 2020-21, 2021-22 & 2022-23) are enclosed?	Yes/No	
6.	Whether all Forms except FORM-II (Price bid) duly filled & signed with supporting documents are uploaded?	Yes/No	
7.	Whether certificates and documents as per qualifying requirement of tender specification are uploaded?	Yes/No	
8.	Whether Form II Price bid is duly filled in and digitally signed by the signatory authority & uploaded online in Envelope-C?	Yes/No	
9.	Whether details of List of Past Supplies uploaded	Yes/No	
10.	Whether Technical & Commercial Questionnaire duly filled-in is uploaded?	Yes/No	
11.	Whether Schedule of Guaranteed Technical Particulars duly filled-in is uploaded?	Yes/No	
12.	Whether Schedule for confirmation of No Commercial/ Technical Deviation from specification is uploaded?	Yes/No	
13.	Whether FORM-XVI to XIX (undertaking regarding sharing of Land border with India, Local content, Equip./material Manufacturing in India, Imported parts etc) duly filled & signed with supporting documents are uploaded?	Yes/No	
14.	Whether the Check List is uploaded online in Envelope-B?	Yes/No	

**(SIGNATURE OF BIDDER)**

**NAME**

**DESIGNATION**

**SEAL OF COMPANY**

## **PART-II**

### **Supply Requirements**

## **Section V. Schedule of Requirements**

### **Contents**

1.	Delivery Schedule .....	2
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**1.0 DELIVERY SCHEDULE:**

The delivery period shall be counted from the date of placement of order.

- (i) After issue of order, the bidder shall arrange for site survey and detailed engineering for finalizing the detailed scheme and logics within 30 days of receipt of order.
- (ii) The entire material shall be offered for inspection by firm within 120 days from the date of issue of order after which inspection shall be arranged by MPPTCL at the premises of supplier/manufacturer and subject to satisfactory inspection report, DI shall be issued by MPPTCL.
- (iii) The equipment / material and all associated accessories shall be received within 30 days from the date of issue of dispatch instruction. As such within a period of 30 days the bidders should organize dispatch, transport & physical unloading from the date of issue of dispatch instruction. In case these activities put together are delayed by more than 30 days, the MPPTCL will reserve the right to regulate penalty for delay .
- (iv) The installation & commissioning of all the hardware & software at SLDC Jabalpur shall be completed within 9 months from the date of order.

The Completion Period for the scheme is 9 months; however, priority and commencement of the work shall be finalized at the time of award of Contract. For this purpose the Contractor shall submit a detailed month wise programme of supply of various items of plant and completion of various activities of each Installation work in the form of “BAR CHART” within 14 days after the Effective Date, It should be ensured that the works shall be carried out strictly as per the bar chart.

- (v) Tenderers may please note that above period of delivery includes the period required for approval of drawings etc. Accordingly advance preparation for submission of these details/ documents within one month shall be made.
- (vi) The period of delivery includes the period which will be required for prototype and stage inspection & therefore for this purpose any additional period shall not be allowed.

## **PART III**

### **Conditions of Contract**

**&**

### **Contract Forms**

## Section VI. General Conditions (GC)

### Notes on General Conditions

The Conditions of Contract comprise two parts:

- (a) **Standard General Conditions** – GC (Section VI of the Bidding Documents); and
- (b) **Particular Conditions** – PC (Section VII of the Bidding Documents).

The General Conditions set forth in Section VI of these Standard Bidding Documents for Procurement of Goods and Related Services (hereinafter referred to as “Standard GC”) contain general Clauses to be applied to all Contracts.

The use of these Standard GC, in all Bidding Documents/Contracts for procurement of Goods is **required**, and they shall be used without any modification.

The GC in this Section, read in conjunction with the Particular Conditions in Section VII and other documents listed therein, should be a complete document expressing all the rights and obligations of the contracting parties.

Any amendments and additions to the General Conditions, specific to the Contract in hand, should be introduced in the Particular Conditions. A number of such Particular Conditions, applicable to the above Conditions of Contract, are included in Section VII.

The Particular Conditions (PC) takes precedence over the General Conditions

Clause numbers in the PC correspond to those in the GC.

## Table of Contents

1.	Definitions .....	1
2.	Contract Documents .....	1
3.	Corrupt or Fraudulent Practices .....	2
4.	Interpretation .....	2
5.	Language .....	3
6.	Notices .....	3
7.	Governing Law .....	3
8.	Settlement of Disputes .....	3
9.	Scope of Contract .....	4
10.	Delivery and Documents .....	4
11.	Supplier's Responsibilities .....	5
12.	Contract Price .....	5
13.	Terms of Payment .....	6
14.	Taxes and Duties .....	6
15.	Performance Security .....	6
16.	Copyright .....	8
17.	Confidential Information .....	8
18.	Specifications and Standards .....	8
19.	Packing and Documents .....	9
20.	Insurance .....	10
21.	Transportation .....	13

22.	Inspections and Tests .....	15
23.	Penalty.....	17
24.	Guarantee .....	19
25.	Patent Indemnity .....	21
26.	Limitation of Liability.....	22
27.	Force Majeure .....	23
28.	Change Orders and Contract Amendments.....	23
29.	Extensions of Time .....	24
30.	Termination.....	24
31.	Assignment.....	26
32.	Testing of Equipment/ Material at independent laboratory .....	27
33.	Recovery against other contracts. ....	27
34.	Extension Order .....	27
35.	Training .....	27
36.	Special requirement for Replacement, Repair & Maintenance .....	28

**1. Definitions**

1.1 The following words and expressions shall have the meanings hereby assigned to them:

- (a) “Completion” means the Goods or any portion thereof, including the Related Services, if applicable, have been delivered by the Supplier in accordance with the terms and conditions set forth in the Contract.
- (b) “Contract” means the, detailed order issued by the Purchaser for procurement of goods & related services if applicable, including all attachments, appendices, and all documents incorporated by reference therein.
- (c) “Contract Price” means the price payable to the Supplier as specified in the Contract Agreement, subject to such additions and adjustments thereto or deductions there from, as may be made pursuant to the Contract.
- (d) “day” means calendar day.
- (e) “GC” means the General Conditions.
- (f) “Goods” means all of the commodities, raw material, machinery and equipment, and/or other materials that the Supplier is required to supply to the Purchaser under the Contract.
- (g) “PC” means the Particular Conditions.
- (h) “Project Site” means the place of the final destination as **named in the PC**.
- (i) “Purchaser” means the entity purchasing the Goods and Related Services, as **specified in the PC**.
- (j) “Purchaser’s Country” is India.
- (k) “Related Services” means the services incidental to the supply of the Goods, such as insurance, installation, training and initial maintenance and other such obligations of the Supplier under the Contract, excluding inland transportation and other services required to convey the Goods to their final destination.
- (l) “Supplier” means the person(s) whose Bid to perform the Contract has been accepted by the Purchaser and the legal successors in title to this person(s).

**2. Contract Documents**

2.1 All documents forming the Contract (and all parts thereof) are intended to be correlative, complementary, and mutually explanatory. The contract shall be read as a whole.

**3. Corrupt or Fraudulent Practices**

- 3.1 If the Purchaser determines, based on reasonable evidence, that the Supplier has engaged in corrupt, fraudulent, collusive, coercive or obstructive practices, in competing for or in executing the Contract, then the Purchaser may, after giving fourteen (14) days notice to the Supplier, terminate the Supplier's employment under the Contract and cancel the Contract, and the provisions of GC Clause 31 shall apply as if such expulsion had been made under GC Sub-Clause 31.1.
- 3.2 Should any employee of the Supplier be determined, based on reasonable evidence, to have engaged in corrupt, fraudulent, collusive, coercive, or obstructive practice during the execution of the Contract, then that employee shall be removed.

**4. Interpretation**

- 4.1 In the Contract, except where the context requires otherwise:
- (a) words indicating one gender include all genders;
  - (b) words indicating the singular also include the plural and words indicating the plural also include the singular;
  - (c) The word "Tender" is synonymous with "Bid," "Tenderer," with "Bidder," and "Tender Documents" with "Bidding Documents;" and
  - (d) "written" or "in writing" means hand-written, type-written, printed or electronically made, and resulting in a permanent record.

The marginal words and other headings shall not be taken into consideration in the interpretation of these Conditions.

- 4.2 **Amendment**  
No amendment or other variation of the Contract shall be valid unless it is in writing, is dated and expressly refers to the Contract.
- 4.3 **Non-Waiver**  
(a) Subject to GC Sub-Clause 4.3(b) below, no relaxation, forbearance, delay, or indulgence by either party in enforcing any of the terms and conditions of the Contract or the granting of time by either party to the other shall prejudice, affect, or restrict the rights of that party under the Contract, neither shall any waiver by either party of any breach of Contract operate as waiver of any subsequent or continuing breach of Contract.

- (b) Any waiver of a party's rights, powers, or remedies under the Contract must be in writing, dated, and signed by an authorized representative of the party granting such waiver, and must specify the right and the extent to which it is being waived.

**4.4 Severability**

If any provision or condition of the Contract is prohibited or rendered invalid or unenforceable, such prohibition, invalidity or unenforceability shall not affect the validity or enforceability of any other provisions and conditions of the Contract.

**4.5 Country of Origin**

"Origin" means the place where the Goods have been grown, mined, cultivated, produced, manufactured, and for which services are provided; or through manufacture, processing, or assembly, another commercially recognized article results that differs substantially in its basic characteristics from its components.

**5. Language**

- 5.1 The Contract as well as all correspondence and documents relating to the Contract exchanged by the Supplier and the Purchaser, shall be written in the language **specified in the PC**.

**6. Notices**

- 6.1 Any notice given by one party to the other pursuant to the Contract shall be in writing and delivered against receipt.
- 6.2 A notice shall be effective when delivered or on the notice's effective date, whichever is later.

**7. Governing Laws**

- 7.1 The Contract shall be governed by and interpreted in accordance with the laws of India.

**8. Settlement of Disputes**

- 8.1 The Purchaser and the Supplier shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the Contract.
- 8.2 If, after twenty-eight (28) days, the parties have failed to resolve their dispute or difference by such mutual consultation, then either the Purchaser or the Supplier may give notice to the other party of its intention to commence arbitration, as hereinafter provided, as to the matter in dispute, and no arbitration in respect of this matter may be commenced unless such notice is given. Any dispute or difference in respect of which a notice of intention to commence arbitration has been given in accordance with this Clause shall be finally settled by arbitration. Arbitration may be commenced prior to or after delivery of the Goods under the Contract. Arbitration shall be conducted in accordance

with the laws of India.

The place of arbitration shall be Jabalpur (MP) and the arbitration shall be conducted in the language for communications defined in GC Sub-Clause 5.1

- 8.3 Notwithstanding any reference to arbitration herein,
- (a) the parties shall continue to perform their respective obligations under the Contract unless they otherwise agree; and
  - (b) the Purchaser shall pay the Supplier any monies due to the Supplier.

**9. Scope of Contract**

- 9.1 Unless otherwise expressly limited in the Technical Specifications, the Contractor's obligations cover the provision of all Plant and the performance of all Installation Services required for the design, and the manufacture (including procurement, quality assurance, construction, installation, Pre-commissioning and delivery) of the Plant, and the installation, completion and commissioning of the Facilities in accordance with the plans, procedures, specifications, drawings, codes and any other documents as specified in Technical Specifications. Such specifications include the provision of supervision and engineering services; the supply of labor, materials, equipment, spare parts and accessories; Contractor's Equipment; construction utilities and supplies; temporary materials, structures and facilities; transportation (including, without limitation, unloading and hauling to, from and at the Site); and storage, except for those supplies, works and services that will be provided or performed by the Employer, as set forth in the Appendix to the Contract Agreement titled Scope of Works and Supply by the Employer, or any other requirements specified in the Contract.

The Contractor shall, unless specifically excluded in the Contract, perform all such work and/or supply all such items and materials not specifically mentioned in the Contract but that can be reasonably inferred from the Contract as being required for attaining Completion of the Facilities as if such work and/or items and materials were expressly mentioned in the Contract.

In addition to the supply of Mandatory Spare parts included in the Contract, the Contractor agrees to supply spare parts required for the operation and maintenance of the facilities for a minimum period of 15 years from Completion of the Facilities. The Contractor shall carry sufficient inventories to ensure an ex-stock supply of consumable spares for the plant

and equipment. If so desired by the Employer, the Contractor shall submit the specifications, price and the terms and conditions relating to the supply thereof for such spares identified by the Employer with validity period of 6 months within 30 days of receipt of request from Employer for its consideration and placement of order.

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|---|------|---|
| <b>10. Time for Commencement and Completion</b> | 10.1 | The Contractor shall commence work on the Facilities immediately after award of contract as per clause Work Program of GCC. The Contractor shall there after proceed with the facilities in accordance with the time schedule/bar chart detailed in GCC & agreed by the contractor and shall attain Completion of the Facilities within 9 months of placement of contract .   |
| <b>11. Contactor's responsibilities</b>         | 11.1 | The Contractor shall design, manufacture including associated purchases and/or subcontracting, install, supply and complete the Facilities in accordance with the Contract. When completed, the Facilities should be fit for the purposes for which they are intended as defined in the Contract. The Supplier shall supply all the Goods and Related Services included in the Scope of Supply in accordance with GC Clause 9, and the Delivery Schedules, as per GC Clause 10. |
|   | 11.2 | The equipment shall be complete in every respect with all minor fittings and accessories even though those may not be specifically mentioned in the Purchaser's specification or the Bidder's offer. The Supplier shall not be eligible for any extra price in respect of such minor fittings and accessories which can be considered as an essential part of the basic equipment even though not specifically mentioned in the specification or the offer.                     |
|   |      | If any minor accessory has not been stipulated but is essentially required for satisfactory operation of the equipment, the same shall be deemed to have been included in the prices and shall be supplied by the successful Bidder without any extra cost. An undertaking will also be required to be given as specified in PC.  |
| <b>12. Contract Price</b>                       | 12.1 | Prices charged by the Supplier for Goods supplied and the Related Services performed under the Contract shall not vary from the prices quoted by the Supplier in its Bid / accepted by the Supplier, with the exception of any price adjustments authorized <b>in the PC.</b>   |

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|---------------------------------|--|
| <b>13. Terms of Payment</b>     | 13.1 The Contract Price, shall be paid as <b>specified in the PC</b> .   |
|                                 | 13.2 The Supplier's request for payment shall be made to the Purchaser in writing, accompanied by invoices describing, as appropriate, the Goods and Related Services delivered, and by the documents submitted pursuant to GC Clause 11 and upon fulfilment of all other obligations stipulated in the Contract.  |
|                                 | 13.3 Payments shall be made promptly by the Purchaser, after submission of an invoice or request for payment by the Supplier, and after the Purchaser has accepted it.   |
|                                 | 13.4 The currency in which payments shall be made to the Supplier under this Contract shall be Indian Rupees.  |
| <b>14. Taxes and Duties</b>     | 14.1 The Supplier shall be entirely responsible for all taxes, duties, license fees, etc., incurred until delivery of the contracted Goods to the Purchaser.   |
|                                 | 14.2 If any tax exemptions, reductions, allowances or privileges may be available to the Supplier the Purchaser shall use its best efforts to enable the Supplier to benefit from any such tax savings to the maximum allowable extent.  |
| <b>15. Performance Security</b> | 15.1 The Contractor shall, within twenty-eight (28) days of the notification of award, provide a performance security for the due performance of the Contract in the amount equivalent to Ten percent (10%) of the Contract Price, with a validity upto ninety (90) days beyond the Defect Liability Period. The same shall be extended by the Contractor time to time till ninety (90) days beyond the actual Defect Liability Period, as may be required under the Contract. |
|                                 | The contractor shall also, within twenty-eight (28) days of commencement of AMC, provide a performance security for the due performance of the contract in the amount equivalent to Ten percent (10%) of the AMC Contract Price, with a validity upto ninety (90) days beyond the AMC Period   |
|                                 | The performance security shall be in the Form of unconditional Bank Guarantee attached in Section-VIII of Volume-I (Part-I) of the Bidding documents.  |
|                                 | 15.2 Failure to submit the Performance Security shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security.   |
|                                 | If the performance security is not submitted within twenty-eight (28) days of the notification of award, MPPTCL may at   |

its discretion may recover an amount equal to 0.25% of the amount of performance security per week of delay or part thereof. The delay period shall be counted excluding initial submission time of 28 days. However, if the performance security is not submitted one week prior to expiry of bid security, the bid security shall be encashed. The NSIC/ SSI certificate of such Bidder may not be considered for exemption from Bid Security against future tenders

- 15.3 The performance security shall be retained till the expiry of guarantee period/ AMC period of equipment/ material or settlement of liabilities, whichever is later.
- 15.4 Bidders may please note that the successful Bidder, after completing supply against the order, shall furnish a statement in duplicate to the Purchaser showing the details of dispatches made (such as DI No. & date, consignee, equipment and quantity dispatched).
- 15.5 At the time of returning of performance security, information regarding outstanding liabilities is required from various consignees to whom dispatches have been made. A copy of intimation of dispatches and liabilities is endorsed to the Supplier by the consignee. While submitting requisition for return of performance security, photocopy of statement of liabilities issued by all consignees should be submitted by the Supplier, so as to avoid delay in return of performance security.
- 15.6 The proceeds of the Performance Security shall be payable to the Purchaser as compensation for any loss resulting from the Supplier's failure to complete its obligations under the Contract.
- 15.7 The Performance Security shall be denominated in Indian Rupees, and shall be in the format stipulated by the Purchaser in Section VIII, Contract Forms.
- 15.8 The Bank Guarantee for Performance Security is to be provided by the Contractor, which should be issued either:
  - (a) by a Public Sector Bank located in India, or
  - (b) a scheduled Indian Bank having paid up capital (net of any accumulated losses) of Rs. 1,000 Million or above (the latest annual report of the Bank should support compliance of capital adequacy ratio requirement), or

- (c) by a foreign bank or a subsidiary of a foreign bank, located in India.

**16. Copyright** 16.1 The copyright in all drawings, documents, and other material containing data and information furnished to the Purchaser by the Supplier herein shall remain vested in the Supplier, or, if they are furnished to the Purchaser directly or through the Supplier by any third party, including suppliers of materials, the copyright in such materials shall remain vested in such third party.

**17. Confidential Information** 17.1 The Purchaser and the Supplier shall keep information confidential and shall not, without the written consent of the other party hereto, divulge to any third party any documents, data, or other information furnished directly or indirectly by the other party hereto in connection with the Contract, whether such information has been furnished prior to, during or following completion or termination of the Contract.

17.2 The Purchaser shall not use such documents, data, and other information received from the Supplier for any purposes unrelated to the Contract. Similarly, the Supplier shall not use such documents, data, and other information received from the Purchaser for any purpose other than the performance of the Contract.

17.3 The obligation of a party under GC Sub-Clauses 17.1 and 17.2 above, however, shall not apply to information that:

- a) now or hereafter enters the public domain through no fault of that party;
- b) can be proven to have been possessed by that party at the time of disclosure and which was not previously obtained, directly or indirectly, from the other party; or
- c) otherwise lawfully becomes available to that party from a third party that has no obligation of confidentiality.

17.4 The above provisions of GC Clause 17 shall not in any way modify any undertaking of confidentiality given by either of the parties hereto prior to the date of the Contract in respect of the supply or any part thereof.

17.5 The provisions of GC Clause 17 shall survive completion or termination, for whatever reason, of the Contract.

**18. Specifications and** 18.1 Technical Specifications and Drawings

- (a) The Goods and Related Services supplied under

**Standards**

this Contract shall conform to the technical specifications and standards mentioned in ***Volume-II of Bidding Document*** and, when no applicable standard is mentioned, the standard shall be equivalent or superior to the official standards whose application is appropriate to the Goods' country of origin.

- (b) The Supplier shall be entitled to disclaim responsibility for any design, data, drawing, specification or other document, or any modification thereof provided or designed by or on behalf of the Purchaser, by giving a notice of such disclaimer to the Purchaser.
- (c) Wherever references are made in the Contract to codes and standards in accordance with which it shall be executed, the edition or the revised version of such codes and standards shall be those specified in ***Volume-II of Bidding Document***. During Contract execution, any changes in any such codes and standards shall be applied only after approval by the Purchaser and shall be treated in accordance with GC Clause 29.

**19. Packing & Documents**

- 19.1 The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in the Contract / Dispatch Instruction to be issued separately. During transit, the packing shall be sufficient to withstand, without limitation, rough handling and exposure to extreme temperatures, salt and precipitation, and open storage. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the Goods' final destination and the absence of heavy handling facilities at all points in transit.
- 19.2 The packing, marking, and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the Contract, including additional requirements, if any, **specified in the PC**, and in any other instructions ordered by the Purchaser.

**20. Insurance**    20.1    **Unless otherwise specified in the PC**, the Goods supplied under the Contract shall be fully insured against loss or damage incidental to manufacture or acquisition, transportation, storage, and delivery, in the manner **specified in the PC**

20.2    While transit insurance is not covered under the scope of supply, it shall be the responsibility of the Supplier to arrange transport through a duly registered Transport Agency and ensure proper packing so that there is no damage to the equipments and its accessories during transportation. Any loss or damage caused to the material during transit due to negligence on the part of Supplier shall be made good by the Supplier free of all charges within one month from the date of intimation by Purchaser's consignee to this effect. The intimation will be sent within thirty days of receipt of equipments and its accessories at site.

20.3    In case of any loss /damage, it may be explicitly noted by the Supplier that responsibility of lodging of claim and its settlement with the Insurance company will rest on the Supplier, as all such losses shall be exclusively borne by the Supplier only.

20.4    To the extent specified in the Appendix to the Contract Agreement titled Insurance Requirements, the Contractor shall at its expense take out and maintain in effect, or cause to be taken out and maintained in effect, during the performance of the Contract, the insurances set forth below in the sums and with the deductibles and other conditions specified in the said Appendix.

The identity of the insurers and the form of the policies shall be subject to the approval of the Employer, who should not unreasonably withhold such approval.

(a)    Cargo Insurance During Transport

Covering loss or damage occurring while in transit from the Contractor's or Subcontractor's works or stores until arrival at the Site, to the Plant (including spare parts there for) and to the Contractor's Equipment.

(b)    Installation All Risks Insurance

Covering physical loss or damage to the Facilities at the Site, occurring prior to Operational Acceptance of the Facilities, with extended maintenance coverage for the Contractor's liability in respect of any loss or damage occurring during the Defect Liability Period while the Contractor is on the Site for the purpose of performing its obligations during the Defect Liability Period.

(c) Third Party Liability Insurance

Covering bodily injury or death suffered by third Parties including the Employer's Personnel, and loss of or damage to property occurring in connection with the supply and installation of the Facilities.

(d) Automobile Liability Insurance

Covering use of all vehicles used by the Contractor or its Subcontractors, whether or not owned by them, in connection with the execution of the Contract.

(e) Workers' Compensation

In accordance with the statutory requirements applicable in any country where the Contract or any part thereof is executed.

(f) Employer's Liability

In accordance with the statutory requirements applicable.

(g) Other Insurances

Such other insurances as may be specifically agreed upon by the parties hereto as listed in the appendix to the contract agreement titled Insurance requirements.

The Employer shall be named as co-insured under all insurance policies taken out by the Contractor pursuant to GCC Sub-Clause 20.4, except for the Workers' Compensation and Employer's Liability Insurances, and the Contractor's Subcontractors shall be named as co-insured under all insurance policies taken out by the Contractor pursuant to GCC Sub-Clause 20.4 except for the Cargo Insurance During Transport, Workers' Compensation and Employer's Liability

Insurances. All insurer's rights of subrogation against such co-insured for losses or claims arising out of the performance of the Contract shall be waived under such policies.

20.5

The Contractor shall, in accordance with the provisions of the Appendix to the Contract Agreement titled Insurance Requirements, deliver to the Employer certificates of insurance or copies of the insurance policies as evidence that the required policies are in full force and effect. The certificates shall provide that no less than twenty-one (21) days' notice shall be given to the Employer by insurers prior to cancellation or material modification of a policy.

20.6

The Contractor shall ensure that, where applicable, its Subcontractor(s) shall take out and maintain in effect adequate insurance policies for their personnel and vehicles and for work executed by them under the Contract, unless such Subcontractors are covered by the policies taken out by the Contractor.

20.7

The Employer shall at its expense take out and maintain in effect during the performance of the Contract those insurances specified in the Appendix to the Contract Agreement titled Insurance Requirements, in the sums and with the deductibles and other conditions specified in the said Appendix. The Contractor and the Contractor's Subcontractors shall be named as co-insured under all such policies. All insurers' rights of subrogation against such co-insured for losses or claims arising out of the performance of the Contract shall be waived under such policies. The Employer shall deliver to the Contractor satisfactory evidence that the required insurances are in full force and effect. The policies shall provide that not less than twenty-one (21) days' notice shall be given to the Contractor by all insurers prior to any cancellation or material modification of the policies. If so requested by the Contractor, the Employer shall provide copies of the policies taken out by the Employer under this GCC Sub-Clause 20.7

20.8

If the Contractor fails to take out and/or maintain in effect the insurances referred to in GCC Sub-Clause 20.4, the Employer may take out and maintain in effect any such insurances and may from time to time deduct from any amount due the Contractor under the Contract any premium that the Employer shall have paid to the insurer, or may otherwise recover such amount as a debt due from the Contractor. If the Employer

fails to take out and/or maintain in effect the insurances referred to in GCC Sub-Clause 20.7, the Contractor may take out and maintain in effect any such insurances and may from time to time deduct from any amount due the Employer under the Contract any premium that the Contractor shall have paid to the insurer, or may otherwise recover such amount as a debt due from the Employer. If the Contractor fails to or is unable to take out and maintain in effect any such insurances, the Contractor shall nevertheless have no liability or responsibility towards the Employer, and the Contractor shall have full recourse against the Employer for any and all liabilities of the Employer herein.

- 20.9 Unless otherwise provided in the Contract, the Contractor shall prepare and conduct all and any claims made under the policies affected by it pursuant to this GCC Clause 20, and all monies payable by any insurers shall be paid to the Contractor. The Employer shall give to the Contractor all such reasonable assistance as may be required by the Contractor. With respect to insurance claims in which the Employer's interest is involved, the Contractor shall not give any release or make any compromise with the insurer without the prior written consent of the Employer. With respect to insurance claims in which the Contractor's interest is involved, the Employer shall not give any release or make any compromise with the insurer without the prior written consent of the Contractor.

**21.  
Transportation**

- 21.1 The material shall be despatched by ROAD TRANSPORT through Registered Transport Agency on door delivery freight paid basis to the respective destinations in Madhya Pradesh. It is the responsibility of the Supplier to ensure safe delivery of material at site store/ Transmission store of the Purchaser anywhere in the state of M.P. as per dispatch instructions to be issued separately. The transportation includes material loading at Supplier's works, transportation, and safe delivery of material including unloading at Purchaser's site store / Trans. Store (as the case may be)
- 21.2 Bidders are advised to intimate well in advance to Purchaser's consignee regarding dispatch of material on his contact no./ Mobile no., followed by written confirmation, on receipt of dispatch instructions so that necessary arrangements could be made by him to take delivery of material at store/ site. Supplier shall depute its representative immediately on arrival of material at the destination to

arrange proper stacking and conducting physical verification to establish shortages / damages, if any, which should be replenished in shortest possible time say, within two / three weeks. On account of the above, if any delay occurs in issuance of MRC, the same shall be to the Supplier's account.

If the Supplier fails to make good the loss or damage caused to the material, the consignee(s) shall be free to repair the damages / replace the shortages / losses from other sources and they shall be free to recover the cost of such material / expenses of repairs either from the Supplier's balance bills or from the performance security as deemed fit.

- (a) The Contractor shall at its own risk and expense transport all the materials and the Contractor's Equipment to the Site.
- (b) Unless otherwise provided in the Contract, the Contractor shall be entitled to select any safe mode of transport operated by any person to carry the materials and the Contractor's Equipment.
- (c) Upon dispatch of each shipment of materials and the Contractor's Equipment, the Contractor shall notify the Employer by email, of the description of the materials and of the Contractor's Equipment, the point and means of dispatch, and the estimated time and point of arrival at the Site. The Contractor shall furnish the Employer with relevant shipping documents to be agreed upon between the Parties.
- (d) The Contractor shall be responsible for obtaining, if necessary, approvals from the authorities for transportation of the materials and the Contractor's Equipment to the Site. The Employer shall use its best endeavors in a timely and expeditious manner to assist the Contractor in obtaining such approvals, if requested by the Contractor. The Contractor shall indemnify and hold harmless the Employer from and against any claim for damage to roads, bridges or any other traffic facilities that may be caused by the transport of the materials and the Contractor's Equipment to the Site

## **22. Inspections and Tests**

- 22.1 The Supplier shall at its own expense and at no cost to the Purchaser carry out all such tests and/or inspections of the Goods and Related Services as are **specified in the PC**.
- 22.2 The inspections and tests may be conducted on the premises of the Supplier at point of delivery, and/or at the Goods' final destination, or in another place in the Purchaser's

Country as **specified in the PC**. Subject to GC Sub-Clause 22.3, if conducted on the premises of the Supplier all reasonable facilities and assistance, including access to drawings and production data, shall be furnished to the inspectors at no charge to the Purchaser.

- 22.3 The Purchaser or its designated representative shall be entitled to attend the tests and/ or inspections referred to in GC Sub-Clause 22.2, provided that the Purchaser bears all of its own costs and expenses incurred in connection with such attendance including, but not limited to, all travelling and board and lodging expenses.
- 22.4 Whenever the Supplier is ready to carry out any such test and inspection, it shall give a reasonable advance notice (atleast 15 days in advance), including the place and time, to the Purchaser. The Supplier shall obtain from any relevant third party or manufacturer any necessary permission or consent to enable the Purchaser or its designated representative to attend the test and/or inspection.
- 22.5 The Purchaser may require the Supplier to carry out any test and/or inspection not required by the Contract but deemed necessary to verify that the characteristics and performance of the Goods comply with the technical specifications, codes and standards under the Contract, provided that the Supplier's reasonable costs and expenses incurred in the carrying out of such test and/or inspection shall be added to the Contract Price. Further, if such tests and/or inspections impede the progress of manufacturing and/or the Supplier's performance of its other obligations under the Contract, due allowance will be made in respect of the delivery dates and completion dates and the other obligations so affected.
- 22.6 The Supplier shall provide the Purchaser with a report of the results of any such test and/or inspection.
- 22.7 The Purchaser may reject any Goods or any part thereof that fail to pass any test and/or inspection or do not conform to the specifications. The Supplier shall either rectify or replace such rejected Goods or parts thereof or make alterations necessary to meet the specifications at no cost to the Purchaser, and shall repeat the test and/or inspection, at no cost to the Purchaser, upon giving a notice pursuant to GC Sub-Clause 22.4.

- 22.8 The Supplier agrees that neither the execution of a test and/or inspection of the Goods or any part thereof, nor the attendance by the Purchaser or its representative, nor the issue of any report pursuant to GC Sub-Clause 22.6, shall release the Supplier from any guarantee or other obligations under the Contract.
- 22.9 All machinery, apparatus or material supplied will be subject to inspection and approval by the Purchaser's representative before dispatch if possible otherwise on arrival at the destination. Inspection before dispatch will not however relieve the Supplier of his responsibility to supply strictly in accordance with the specifications.
- 22.10 All machinery, apparatus and material shall conform to provisions of any Statutory Acts such as the Indian Electricity Act, Indian Factory Act, the Indian Boiler Act, etc and corresponding rules and regulations as may be applicable.
- 22.11 The Purchaser's representatives shall be entitled at all reasonable times during manufacture to inspect, examine and test at the contractor's premises the material and workmanship of the material to be supplied under this contract.
- 22.12 Stage inspection:- Wherever specified in the contract, the successful Bidder shall ensure making offers at required stages of manufacture. They shall also ensure that manufacturing activities beyond specified stages is undertaken only after satisfactory stage inspection of that stage.
- 22.13 For inspection / testing, the Supplier shall intimate the Purchaser 15 days in advance about readiness of material as per the scheduled delivery so that action may be taken for getting the material inspected. The material shall not be dispatched unless waiver of inspection is obtained or the material is inspected by the Purchaser's authorized representative. When the material has passed the specified tests, the Purchaser's representative shall furnish a certificate jointly signed by him and contractor's representative to this effect in writing to the contractor in any case. While notifying the readiness of the equipment, the routine test certificates shall invariably be sent. The final inspection of material shall be organized by the Purchaser only after receipt of routine test report for offered material. The material shall not be dispatched, unless the test certificates are approved. These test certificates should be in accordance with the latest issue of the relevant Indian Standards or as approved by the order placing authority

- 22.14 For the purpose of inspection, it will be duty of the Supplier to provide, to the inspecting officer, the detailed order, approved drawings, comments, if any, on the drawings and amendments (if any) made in any term/ condition/specification/ GTP of the order and all relevant IS, IEC, standards. Failure to provide documents demanded by the inspector shall render the inspection as “Fake Inspection Call” and relevant penalty may be imposed on the Supplier on this account.
- 22.15 All such Suppliers who after giving inspection call do not offer material to inspecting officer for inspection due to one or the other reason, shall be required to remit all expenses incurred in organizing inspection including travel expenses plus a sum of Rs 10,000/- per officer per inspection call or as specified in PC.
- 22.16 The procedure for testing of Jabalpur Islanding Scheme (including the implementation of logics) shall be decided during the engineering stage. Testing shall be done for individual items as well as for entire Scheme. The tentative test procedure may please be referred in the Technical Specifications.

### 23. Penalty

- 23.1 Except as provided under GC Clause 28, if the Supplier fails to deliver any or all of the Goods or Related Services by the Completion date specified in the Contract, the Purchaser may without prejudice to all its other remedies under the Contract, deduct from the Contract Price, as penalty, a sum equivalent to the percentage **specified in the PC** of the delivered price of the delayed Goods or Related Services for each week or part thereof of delay until actual delivery, up to a maximum deduction of the percentage **specified in the PC**. Once the maximum is reached, the Purchaser may terminate the Contract pursuant to GC Clause 31.
- 23.2 In case of delayed delivery of material, the Purchaser may at its option impose a penalty calculated at the above rate for such portion of equipment delivered, which cannot be put to use for which it was meant, as a consequence of such delay. If supply of accessories is delayed, penalty on FOR Destination price of complete equipment shall be applicable.
- 23.3 In case of delay in execution of order, the penalty shall be levied in parts as per following:-

- a. Date of Offer (material readiness date) shall be compared with Contractual Delivery Date. If the Date of Offer (material readiness date) exceeds Contractual Delivery Date, then penalty shall be levied for such excess period as per specified rate for the specified period.
  - b. The actual date of receipt of material shall be compared with date of dispatch instruction plus specified number of days mentioned therein for delivery. If the actual date of receipt of material exceeds the date so arrived by adding the specified number of days mentioned to the date of dispatch instruction, then penalty shall be levied for such excess period as per specified rate for the specified period.
  - c. Both the penalty shall be computed separately and independently of each other.
  - d. If the contractual delivery date/ period is still pending and there is a delay in the receipt of material, then in such case, period of delay will be calculated by counting the number of days from the date so arrived at by adding the specified number of days specified to the date of dispatch instruction up to the actual date of receipt of material. The penalty will be levied for such period of delay as per specified rate for the specified period.
- 23.4 In case any of the equipment/ accessories is found to be defective in material or workmanship or develops defects during service, same shall be replaced/ repaired by the Supplier free of all charges within 30 days or within a reasonable period, as per specific agreement with order placing authority, from the date of receipt of intimation. In case of delay in replacement/ repair of equipment/ accessories, the Purchaser may at its option recover penalty @ 0.5% of FOR Destination (Landed cost without taxes) price for each week or part thereof, subject to a maximum of 10%.
- 23.5 In case of delay in delivery, in addition to penalty amount the GST on penalty shall also be deducted as per prevailing rate in accordance with GST Act.
- 23.6 If the Contractor fails to attain Completion of the Facilities or any part thereof within the Time for Completion or any extension thereof under GCC Clause 30, the Contractor shall pay to the Employer liquidated damages @ 0.5% of the total contract price of work per week or part thereof subject to maximum of 10% of the contract price of that particular work which shall be deducted from the contractor's R.A. bills of that work. Once the "Maximum" i.e. 10% is reached, the

Employer may consider termination of the Contract.

- 23.7 It may be noted that if the sum of applicable Liquidated Damages or any other liabilities exceeds the balance amount due for payment to the contractor for the work, then in such case, the same shall be recovered from the pending bills of the other works and in case, if some amount still remains to be recovered, the same shall be recovered from the Bank Guarantee available with Employer towards Advance Payment Guarantee/ Retention Money Guarantee/ Performance Guarantee

**24. Guarantee**

- 24.1 The Supplier shall guarantee that all the Goods are new, unused, and of the most recent or current models, and that they incorporate all recent improvements in design and material, unless provided otherwise in the Contract.
- 24.2 Subject to GC Sub-Clause 18 the Supplier further shall guarantee that the Goods shall be free from defects arising from any act or omission of the Supplier or arising from design, materials, and workmanship, under normal use in the conditions prevailing in the Purchaser's Country where the Project Site is located.
- 24.3 The guarantee shall remain valid for the period as specified in PC.
- 24.4 The Purchaser shall give notice to the Supplier stating the nature of any such defects together with all available evidence thereof promptly following the discovery thereof. The Purchaser shall afford all reasonable opportunity for the Supplier to inspect such defects.
- 24.5 The following conditions shall also be applicable for the contract, to be placed against the tender:-
- a. In case any defect in the equipment/ material is found within guarantee period/defect liability period(DLP) , the same will be replaced/ repaired by the supplier on free of cost basis. The replacement/ repairing will have to be organized by supplier expeditiously and preferably within one month's time. Bidders may note that if repair/ replacement of equipment/ material is not organized within 3 months of notice of defects/ failure being sent, Purchaser shall recover the cost of such equipment/ material from available payments/ performance security

as the case may be without further notice and with such penalty as it may deem appropriate for non-compliance of contractual obligations.

- b. If for the purpose of replacement/ repairs, the equipment/ material is required to be dispatched to Supplier's works, all charges towards transportation/ insurance/ packing and forwarding will have to be borne by the Supplier for to and fro dispatches.
- c. If the equipment/ material develops defect within guarantee period/DLP after installation at site, for the purpose of replacement/ repairs, the same will have to be dismantled and taken out by Purchaser. In such cases, actual cost of dismantling, any other incidental cost and cost of re-erection/ re-assembly and replacement of the equipment/ material will also be recoverable from the Supplier.
- d. In case it is observed that replacement/ repairs of equipment/ material is not being provided to us within reasonable period and proper response is not received from the supplier, then apart from operating Clause of penalty (which provides for imposition of penalty, risk purchase at supplier's cost and cancellation of contract) the Purchaser may also take suitable penal action against the supplier which may include debarring from all future business with the Purchaser for a period which will be at the discretion of the Purchaser.
- e. In case after commissioning of equipment, any operational problem is observed within guarantee period of equipment due to manufacturing defects and rectification or replacement is done, then the guarantee period for such equipment may be extended as specified in PC.
- f. Additional applicable Clauses if any for the contract are specified in the PC.

## **25. Defect Liability**

- (a) The contractor warrants that the Islanding Scheme or any part thereof shall be free from defects in the design, engineering, materials and workmanship of the equipment supplied and of the work executed.
- (b) The Defect Liability Period (DLP) of the Islanding Scheme shall commence from the date of Operational Acceptance and expire Twelve (12) months thereafter.
- (c) If during the Defect Liability Period any defect

should be found in the design, engineering, materials and workmanship of the Scheme supplied or of the work executed by the Contractor, the Contractor shall promptly, in consultation and agreement with the Employer regarding appropriate remedying of the defects, and at its cost, repair, replace or otherwise make good as the Contractor shall determine at its discretion, such defect as well as any damage to the Facilities caused by such defect.

**26. Patent  
Indemnity**

26.1 The Supplier shall, subject to the Purchaser's compliance with GC Sub-Clause 26.2 indemnify and hold harmless the Purchaser and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of any nature, including attorney's fees and expenses, which the Purchaser may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright, or other intellectual property right registered or otherwise existing at the date of the Contract by reason of:

(a) the installation of the Goods by the Supplier or the use of the Goods in the Purchaser's Country where the Project Site is located; and

(b) the sale in any country of the products produced by the Goods.

Such indemnity shall not cover any use of the Goods or any part thereof other than for the purpose indicated by or to be reasonably inferred from the Contract, neither any infringement resulting from the use of the Goods or any part thereof, or any products produced thereby in association or combination with any other equipment, plant, or materials not supplied by the Supplier, pursuant to the Contract.

26.2 If any proceedings are brought or any claim is made against the Purchaser arising out of the matters referred to in GC Sub-Clause 26.1 the Purchaser shall promptly give the Supplier a notice thereof, and the Supplier may at its own expense and in the Purchaser's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim.

26.3 If the Supplier fails to notify the Purchaser within twenty-

eight(28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Purchaser shall be free to conduct the same on its own behalf.

26.4 The Purchaser shall, at the Supplier's request, afford all available assistance to the Supplier in conducting such proceedings or claim, and shall be reimbursed by the Supplier for all reasonable expenses incurred in so doing.

26.5 The Purchaser shall indemnify and hold harmless the Supplier and its employees, officers, and Subcontractors from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of any nature, including attorney's fees and expenses, which the Supplier may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright, or other intellectual property right registered or otherwise existing at the date of the Contract arising out of or in connection with any design, data, drawing, specification, or other documents or materials provided or designed by or on behalf of the Purchaser.

**27. Limitation  
of Liability**

27.1 Except in cases of criminal negligence or wilful misconduct,

- (a) the Supplier shall not be liable to the Purchaser, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the Supplier to pay penalty to the Purchaser and
- (b) the aggregate liability of the Supplier to the Purchaser, whether under the Contract, in tort or otherwise, shall not exceed the total Contract Price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment, or to any obligation of the Supplier to indemnify the Purchaser with respect to patent infringement.

**28. Force  
Majeure**

28.1 The Supplier shall not be liable for forfeiture of its Performance Security, penalty, or termination for default if and to the extents that delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.

28.2 For purposes of this Clause, "Force Majeure" means an event or situation beyond the control of the Supplier that is

not foreseeable, is unavoidable, and its origin is not due to negligence or lack of care on the part of the Supplier. Such events may include, but not be limited to, acts of the Purchaser in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes, strikes, go slow, lock-outs, earthquakes, floods, national calamity, riots and civic commotion.

- 28.3 If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser in writing of such condition and the cause thereof. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.
- 28.4 Prevalence of Force Majeure will have to be got certified by appropriate Governmental agency. The cause of Force Majeure condition will be taken into consideration only if the supplier within 15 days from the occurrence of such delay notifies the Purchaser. The Purchaser shall verify the facts and grant such extension as the facts justify, for which the Supplier shall submit its representation with documentary evidence.

**29. Change  
Orders  
and Contract  
Amendments**

- 29.1 The Purchaser may at any time order the Supplier through notice in accordance GC Clause- 6 to make changes within the general scope of the Contract in any one or more of the following:
- (a) drawings, designs, or specifications, where Goods to be furnished under the Contract are to be specifically manufactured for the Purchaser;
  - (b) the method of shipment or packing;
  - (c) the place of delivery; and
  - (d) the Related Services to be provided by the Supplier.
- 29.2 Prices to be charged by the Supplier for any Related Services that might be needed but which were not included in the Contract shall be agreed upon in advance by the parties and shall not exceed the prevailing rates charged to other parties by the Supplier for similar services.
- 29.3 Subject to the above, no variation in or modification of the terms of the Contract shall be made except by written amendment.

**30. Extensions of Time**

- 30.1 If at any time during performance of the Contract, the Supplier should encounter conditions impeding timely delivery of the Goods or Related Services pursuant to GC Clause 10 the Supplier shall promptly notify the Purchaser in writing of the delay, its likely duration and its cause. As soon as practicable after receipt of the Supplier's notice, the Purchaser shall evaluate the situation and may at its discretion extend the Supplier's time for performance, in which case the extension shall be ratified by the parties by amendment of the Contract.
- 30.2 Except in case of Force Majeure, as provided under GC Clause 28, a delay by the Supplier in the performance of its delivery obligations shall render the Supplier liable to the imposition of penalty pursuant to GC Clause 23 unless an extension of time is agreed upon, pursuant to GC Sub-Clause 30.1.

**31. Termination**

- 31.1 Termination for Default
- (a) The Purchaser, without prejudice to any other remedy for breach of Contract, by written notice of default sent to the Supplier, may terminate the Contract in whole or in part, if the Supplier, in the judgment of the Purchaser has engaged in fraud and corruption, as defined in GC Clause 3, in competing for or in executing the Contract.
  - (b) The Purchaser may, upon written notice of default, terminate the contract under the circumstances detailed hereunder:-
    - (i) If in the opinion of the Purchaser, the Supplier fails to deliver the material within the time specified or during the period for which extension has been granted by the Purchaser.
    - (ii) If in the opinion of the Purchaser, the Supplier fails to comply with any of the other provisions of the contract or material is found not in accordance with prescribed specifications and/ or the approved samples.
    - (iii) If as a result of stage inspection, it is revealed that material and/ or workmanship is substandard which is likely to affect the performance of the finished product, a notice would be served by the Purchaser to the Supplier to suspend further activities and to take urgent steps towards

corrective measures failing which the entire order would be cancelled.

- (c) In the event of such termination, the Purchaser shall exercise its discretionary power such as:-
  - (i) To recover from the Supplier the agreed penalty as per GC Clause 23.  
AND/ OR
  - (ii) To purchase from elsewhere after giving due notice to the Supplier on account and at the risk of the Supplier such stores/ material not delivered or others of similar description in respect of consignment not yet delivered.  
AND/ OR
  - (iii) To cancel the contract reserving Purchaser's right to recover damages.
- (d) In pursuance of GC Clause 31.1(a) & 31.1 (b) above, Purchaser shall exercise its discretionary power to black-list/debar the Supplier for further business with Purchaser for a declared period on breach of the contract.
- (e) The powers under GC Clause 31.1 (c) referred to above are in addition to the rights and remedies available to the Purchaser under the general laws relating to Contract.
- (f) In the event of risk purchase of stores of similar description, the opinion of the Purchaser shall be final. In the event of action taken under GC Clause 31.1 (c) above, the Supplier shall be liable to pay for any loss, which the Purchaser may sustain on that account but the Supplier shall not be entitled to any saving on such purchases made against the default.
- (g) The decision of the Purchaser regarding the acceptability of the stores supplied by Supplier shall be final and the Purchaser shall not be required to give any reason in writing or otherwise at any time for the rejection of the stores/ material.
- (h) In the event, Purchaser does not terminate the order as provided in GC Clause 31.1(b) & 31.1(c) above, the Supplier shall continue execution of the order, in which case he shall be liable to the Purchaser for penalty for the delay as per GC Clause 23 until supplies are accepted.

**31.2 Termination for Insolvency**

The Purchaser may at any time terminate the Contract by giving notice to the Supplier if the Supplier becomes bankrupt or otherwise insolvent. In such event, termination will be without compensation to the Supplier, provided that such termination will not prejudice or affect any right of action or remedy that has accrued or will accrue thereafter to the Purchaser.

**31.3 Termination for Convenience**

- (a) The Purchaser, by notice sent to the Supplier, may terminate the Contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for the Purchaser's convenience, the extent to which performance of the Supplier under the Contract is terminated, and the date upon which such termination becomes effective.
- (b) The Goods that are complete and ready for shipment within twenty-eight (28) days after the Supplier's receipt of notice of termination shall be accepted by the Purchaser at the Contract terms and prices. For the remaining Goods, the Purchaser may elect to have any portion completed and delivered at the Contract terms and prices.

**32. Assignment**

- 32.1 Neither the Purchaser nor the Supplier shall assign, in whole or in part, their obligations under this Contract, except with prior written consent of the other party.

**33. Testing of Equipment/ Material at independent laboratory**

- 33.1 The Purchaser reserves the right to conduct Routine Tests /Type Tests/ Acceptance Tests at CPRI / ERDA / Third party NABL accredited lab, on randomly selected sample from the supplied / offered lot before its acceptance. The said tests shall be conducted on any one unit of supplied / offered lot in each or any rating, as may be decided. The Purchaser reserves the right to waive off the testing of the lot, in case of urgency.
- 33.2 The sample Unit shall be selected for conducting Routine Tests /Type Tests/ Acceptance Tests by a committee as specified in PC. The samples so selected shall be sealed by at least 2-3 seals by the committee members. The selected samples shall be sent with complete details for testing as per specification at any independent NABL accredited Laboratory like ERDA, CPRI etc. In case the sample unit fails in any of the Routine Tests /Type Tests/ Acceptance Tests, the entire lot shall be rejected.

The testing charges for Type test/Routine tests/Acceptance Tests shall be borne by Purchaser. In case the sample unit fails in any of the Routine/Type/Acceptance tests, then the charges, including transportation & establishment expenses shall be recovered from the supplier or shall be deducted from their bills / performance security.

- 33.3 It shall be responsibility of Supplier to obtain the date of testing of such randomly selected equipment / material for Routine Tests /Type Tests/ Acceptance Tests from CPRI / ERDA / NABL accredited lab. Further the testing of sample shall be carried out in presence of representative of Purchaser and Supplier. In case Supplier does not depute their representative on the schedule date of testing, then testing will be carried out in absence of Supplier's representative and the finding of tests shall be binding on the Supplier for further necessary action.

- 33.4 Other conditions shall be as specified in PC.

**34. Recovery against other contracts.**

- 34.1 Any amount recoverable from the successful Bidder against other contracts with the Purchaser will be adjusted from payment due and/or performance security furnished against the Contract that may be awarded under the specification.

**35. Extension Order**

- 35.1 The Purchaser reserves the right to place extension order for additional quantities up to 15% of the value of main order on same rates and terms & conditions within twelve months from the date of placement of main order.

**36. Training**

Training of one batch consisting of Eight (8) persons of MPPTCL on installation, erection, commissioning, testing of Jabalpur Islanding Scheme shall be arranged by bidder on free of cost at suitable place. Duration of the complete training shall be of minimum 3 working days, covering all aspects.

**37. Special requirement for Replacement, Repair & Maintenance of the supplied & commissioned systems during defect liability & AMC period**

**GENERAL**

The Contractor shall be responsible for comprehensive maintenance of the PMU, PDC and all other hardware & software supplied & Installed under this Contract. The maintenance activities shall commence after completion of the project i.e. after Operational Acceptance within guarantee period of 12 months . There may be some variation during detailed engineering. Contractor will have to make their own assessment of the network and deploy manpower accordingly. However, it is to be ensured that specified manpower of requisite qualification are deployed.

Contractor's maintenance engineer/service engineer shall have minimum qualification of graduate in Computer or IT or Electronics & Telecommunication with minimum one year experience or Diploma with three years maintenance/testing & commissioning experience on the equipment proposed to be supplied & installed. The Degree/Diploma must be recognized Indian professional qualification. This staff shall be supported by head office technical staff for restorative problem or other assistance as may be required. Maintenance engineer shall have technical background and trained in first & second level maintenance on the supplied PMU and accessories of their own without technical assistance from Head Office.

Contractor will arrange for adequate transportation for their staff as per the work demand. Contractor's staff (at all locations) should be equipped with necessary tool kits. Mobile phones, vehicles etc.

The Replacement, Repair & Maintenance of the system supplied & installed by the Contractor during defect liability period shall be comprehensive and all the spares required during the period shall be provided by the Contractor at no additional cost to the Employer.

The contractor shall be responsible for Replacement, Repair & Maintenance of the System comprising of PMU, PDC, GPS etc and all accessories supplied under this package.

## **RESOURCE DEPLOYMENT**

In order to cover the entire network, it is imperative that Contractor's maintenance engineers are strategically located. Thus one engineer will be deployed at SLDC, this however, does not relieve contractor from its obligation to maintain required system availability of 99.0% for PMU.

## **MONITORING**

Network will be monitored through SLDC to be located at Jabalpur. Network Monitoring Team (NMT), whenever, notices any fault/abnormality in the system shall notify to the Contractor's maintenance Co-ordinator at location, over phone with an event no. An event report shall be generated as per the enclosed formats. During guarantee period all clauses mentioned in the AMC clause of Volume II shall be applicable.

**Penalty during Guarantee Period :**

If availability of the system falls below 99 % then penalty shall be deducted from the retention money/security deposit as per available clause of volume II

**38. Execution  
of the Facilities**

**Representatives**

**a. Project Manager**

If the Project Manager is not named in the contract, then within fourteen (14) days of the effective date, the employer shall appoint and notify the contractor in writing of the name of the Project Manager. The employer may from time to time appoint some other person as the Project Manager in place of the person previously so appointed, and shall give a notice of the name of such other person to the contractor without delay. No such appointment shall be made at such a time or in such a manner as to impede the progress of work on the facilities. Such appointment shall only take effect upon receipt of such notice by the contractor. The Project Manager shall represent and act for the employer at all times during the performance of the contract.

All notices, instructions, information and other communications given by the contractor to the employer under the contract shall be given to the Project Manager, except as herein otherwise provided.

**b. Contractor's Representative**

If the contractor's representative is not named in the contract, then within fourteen (14) days of the effective Date, the Contractor shall appoint the contractor's Representative and shall request the employer in writing to approve the person so appointed. If the employer makes no objection to the appointment within fourteen (14) days, the contractor's Representative shall be deemed to have been approved. If the employer objects to the appointment within fourteen (14) days giving the reason there for, then the contractor shall appoint a replacement within fourteen (14) days of such objection, and the foregoing provisions of this GCC Clause 38 shall apply thereto.

The contractor's Representative shall represent and act for the contractor at all times during the performance of the contract and shall give to the project Manager all the contractor's notices, instructions, information and all other communications under the contract.

All notices, instructions, information and all other communications given by the employer or the Project Manager to the contractor under the contract shall be given to the contractor's Representative or, in its absence, its deputy, except as here in otherwise provided.

The contractor shall not revoke the appointment of the contractor's Representative without the employer's prior written consent, which shall not be unreasonably withheld. If the employer consents thereto, the contractor shall appoint some other person as the contractor's Representative, pursuant to the procedure set out in GCC Clause 38.

The contractor's Representative may, subject to the approval of the employer which shall not be unreasonably withheld, at any time delegate to any person any of the powers, functions and authorities vested in him or her. Any such delegation may be revoked at any time. Any such delegation or revocation shall be subject to a prior notice signed by the contractor's Representative, and shall specify the powers, functions and authorities there by delegated or revoked. No such delegation or revocation shall take effect unless and until a copy thereof has been delivered to the employer and the Project Manager.

Any act or exercise by any person of powers, functions and authorities so delegated to him or her in accordance with this GCC Clause 38 shall be deemed to be an act or exercise by the contractor's Representative.

From the commencement of installation of the facilities at the site until completion, the contractor's representative shall appoint a suitable person as the construction Manager. The construction Manager shall supervise all work done at the site by the contractor. From the commencement of installation of the facilities at the site until completion, the contractor's representative shall appoint a suitable person as the construction Manager. The construction Manager shall supervise all work done at the site by the contractor and shall be present at the site throughout normal working hours except when on leave, sick or absent for reasons connected with the proper performance of the Contract. Whenever the

Construction Manager is absent from the site, a suitable person shall be appointed to act as the construction Manager's deputy.

The employer may by notice to the contractor object to any representative or person employed by the contractor in the execution of the contract who, in the reasonable opinion of the employer, may behave inappropriately, may be incompetent or negligent, or may commit a serious breach of the site regulations. The Employer shall provide evidence of the same, where upon the contractor shall remove such person from the facilities.

If any representative or person employed by the contractor is removed in accordance with GCC clause 38, the contractor shall, where required, promptly appoint a replacement.

### **39. Work Program**

#### Contractor's Organization

The contractor shall supply to the employer and the Project Manager a chart showing the proposed organization to be established by the contractor for carrying out work on the facilities within Fourteen (14) days of the effective date. The chart shall include the identities of the key personnel and the curricula vitae of such key personnel to be employed shall be supplied together with the chart. The contractor shall promptly in form the employer and the Project Manager in writing of any revision or alteration of such an organization chart.

#### Program of Performance

Within Fourteen (14) days after the effective date, the contractor shall submit to the Project Manager a detailed month wise programme of supply of various items of plant and completion of various activities of Installation work in the form of "BAR CHART" and "SUB BAR CHARTS". This 'BAR CHART' will, for all purposes, form a part of the contract. The BAR CHARTS will be made in a form acceptable to the Project Manager and showing the sequence in which it proposes to design, manufacture, transport, assemble, install and pre-commission the facilities, as well as the date by which the contractor reasonably requires that the employer shall have fulfilled its obligations under the contract so as to enable the contractor to execute the contract in accordance with the program and to achieve completion, commissioning and acceptance of the facilities in accordance with the contract. The program so submitted

by the contractor shall accord with the time schedule included in the appendix to the contract agreement titled time schedule, and any other dates and periods specified in the contract. The contractor shall update and revise the program as and when appropriate or when required by the Project Manager, but without modification in the times for completion specified in the Time for completion and any extension granted in accordance with GCC Clause 30, and shall submit all such revisions to the Project Manager.

#### Progress Report

The contractor shall monitor progress of all the activities specified in the program referred above, and supply a progress report to the Project Manager every fortnight.

The progress report shall be in a form acceptable to the Project Manager and shall indicate: (a) percentage completion achieved compared with the planned percentage completion for each activity; and (b) where any activity is behind the program, giving comments and likely consequences and stating the corrective action being taken.

#### Progress of Performance

- (a) If at any time the contractor's actual progress falls behind the program referred above or it becomes apparent that it will so fall behind, the contractor shall, at the request of the employer or the Project Manager, prepare and submit to the If at any time the contractor's actual progress falls behind the program referred above, or it becomes apparent that it will so fall behind, the contractor shall, at the request of the employer or the Project Manager, prepare and submit to the Project Manager a revised program, taking into account the prevailing circumstances, and shall notify the Project Manager of the steps being taken to expedite progress so as to attain completion of the facilities within the time for Completion, any extension thereof entitled under GCC Clause 30, or any extended period as may otherwise be agreed upon between the employer and the Contractor.
- (b) Besides above, a periodical review meeting between Contractor and Employer shall be held quarterly to analyze the scheduled and actual progress, targets for

the next quarter and to sort out bottlenecks, if any, to ensure completion of work within the Time schedule specified in the contract. The Contractor will attend the above meetings along with necessary information in respect of supply and installation activities.

#### **40. Installation**

Bench Mark: The Contractor shall be responsible for the true and proper setting-out of the Facilities in relation to bench marks, reference marks and lines provided to it in writing by or on behalf of the Employer.

If, at any time during the progress of installation of the Facilities, any error shall appear in the implementation of the Islanding Scheme, the Contractor shall forthwith notify the Project Manager of such error and, at its own expense, immediately rectify such error to the reasonable satisfaction of the Project Manager.

The Contractor shall obtain necessary vendor, drawing, Guaranteed technical particulars and Type test approvals as per specification and IS for equipments/materials

If at a later date, it is found that the works carried out by the Contractor are not according to the approved design, drawing & specifications and are without specific approval, the entire payments made to the Contractor for carrying out such works shall be withheld from subsequent bills and the Contractor will have to rectify the same without extension of time. If the payment against such work is due, the same or a reasonable amount towards cost of such work/equipment/material will be withheld by the Employer and the same will be released after rectification of defects.

#### **41.Subcontracting**

The Appendix to the contract agreement titled list of preferred experienced manufacturers for Plant/Equipments specifies major items of supply and a list of approved manufacturers. In case no manufacturer is listed against any such item, the contractor shall prepare a list of manufacturer for such item for inclusion in such list. The contractor may from time to time propose any addition to or deletion from any such list. The contractor shall submit any such list or any modification thereto to the employer for its

approval in sufficient time so as not to impede the progress of work on the facilities. Such approval by the employer for any of the Sub contractors shall not relieve the contractor from any of its obligations, duties or responsibilities under the contract.

The contractor shall select and employ its Sub vendor for such major items from those listed in the lists referred to in this clause.

For items or parts of the facilities not specified in the list of preferred experienced manufacturers for Plant/Equipments, the contractor may specify such Sub vendors at its discretion for supply of Plant/Equipments.

## **Section VII. Particular Conditions (PC)**

### **Notes on Particular Conditions**

The Particular Conditions (PC) complement the General Conditions (GC) to specify data and contractual requirements linked to the special circumstances of the country, the Purchaser, or the overall project. Whenever there is a conflict, the provisions herein shall prevail over those in the GC.

Clause numbers in the PC correspond to those in the GC.

**Particular Conditions (PC)**

<b>GC 1.1(h)</b>	The Project Site(s)/ Final Destination(s) : shall be indicated in Dispatch Instruction to be issued separately.
<b>GC 1.1(j)</b>	The Purchaser is: <b>State Load Despatch Centre (SLDC), Madhya Pradesh Power Transmission Company Limited</b> , Jabalpur - 482 008 (M.P) India.
<b>GC 5.1</b>	The language shall be English
<b>GC 7.1</b>	The Governing law shall be the laws of India
<b>GC 8.2</b>	<p>The Courts at Jabalpur shall have exclusive jurisdiction over all disputes arising under, pursuant to and/ or in connection with execution of the Contract.</p> <p>The rules of procedure for arbitration proceedings pursuant to GC Clause 8.2 shall be as follows:</p> <p>In the case of a dispute between the Purchaser and the Supplier, the dispute shall be referred to adjudication or arbitration in accordance with the laws of India (Indian Arbitration and Conciliation Act of 1996). The place for arbitration shall be Jabalpur.</p>
<b>GC 10.1</b>	<p>Upon delivery of the Goods, the Supplier shall notify the Purchaser and send the following documents to the Purchaser;</p> <p>(A) <u>For Supply of Goods:-</u></p> <ol style="list-style-type: none"> <li>Invoice in quadruplicate duly inscribed with Goods Receipt Number (GRN) number along with documentary evidence and name of consignee/destination.</li> <li>The invoice should be prepared strictly using the description given in Contract, otherwise any deviation may result into rejection of invoice because the Finance Department may consider that either technical specification of equipment supplied is different or some of the accessories have not been supplied.</li> <li>A clear certificate, if applicable, mentioning invoice number, GRN details and name of consignee as per specified pro-forma (which will be made available along with purchase order) should be submitted to certify that there is no negative price variation on the date of inspection call of the equipment/material covered under the invoice claiming payment as per format specified in Section VIII "Contract Forms".</li> <li>In case there is any negative price variation, if applicable, detailed calculation should be submitted along with invoice duly supported with certified IEEMA circulars and basic price may be reduced to the extent of negative price variation.</li> <li>Certificate for completeness of equipment as per specified schedule enclosed with the detailed purchase order as per format specified in</li> </ol>

	<p>Section – VIII “Contract Forms”.</p> <p>f. Copy of Lorry Receipt/ MTR.</p> <p>g. Packing list and bill of material duly certified by the Supplier, which should be prepared package-wise indicating package number to facilitate identification of content of various packages.</p>
<b>GC 11.2</b>	The undertaking for “Completeness of Equipment” shall be as per pro-forma specified in Section – VIII “Contract Forms”.
<b>GC 12.1</b>	The prices charged for all the items covered under the scheme shall be fixed . The prices charged for the Related Services (Freight Charges) performed shall be FIXED in all respect..
<b>GC 13.1</b>	<p><b>Payment of the Contract Price shall be made in the following manner:</b></p> <p><b>(I) Supply Portion: -</b></p> <p><b>(A) 50% Payment towards supply of material:</b> 50% payment of accepted Ex-works cost with 100% freight &amp; GST shall be released after delivery of material at site on submission of invoices to order placing authority along with Goods Receipt Number (GRN) issued by the consignee, on completion of 30 days period from the date of submission of invoices complete in all respect along with <b>Proforma I/ II/ III as specified in Form-VIII “Contract Forms”</b>. The price variation calculation, with relevant documents shall also be submitted along with the main invoices.</p> <p><b>(B) Balance 20% payment after Installation, Testing, of equipment:</b></p> <p>20% payment shall be released after submission of invoice along-with certificate towards successful Installation, Testing, of equipment, in Proforma II on completion of 30 days from the date of submission of invoices along-with all documents.</p> <p><b>(C) Balance 30% payment after successful commissioning &amp; operational acceptance of complete islanding Scheme :</b></p> <p>Balance 30% payment shall be released after submission of invoice along-with certificate towards successful commissioning &amp; operational acceptance of complete islanding Scheme in Proforma III on completion of 30 days from the date of submission of invoices along-with all documents</p> <p><b>(II) Services Portion</b></p> <p>100% Installation &amp; Commissioning Charges shall be paid on</p>

	<p>operational acceptance of the Islanding Scheme on completion of 30 days from the date of submission of invoices along-with all documents..</p> <p><b>(III) Payment of Annual Maintenance Charges:</b></p> <p>The 100 % payment towards AMC charges including GST shall be released on quarterly basis after submission of invoices on completion of 30 days from the date of submission of invoices.</p> <p><b>Specific points to be noted by the Supplier for claiming Payment:</b></p> <ol style="list-style-type: none"> <li>The Supplier will have to prepare GRN-wise invoice for full quantity and full value of the equipment covered under the GRN, which is to be claimed by him as per terms of the contract. This is necessary, since in case partial payment is claimed by the Supplier, then at the time of claiming balance payment, original document of GRN will not be available, which will result in delay in payment of subsequent invoice.</li> <li>For claiming all type of payments, the documents complete in all respect should be submitted.</li> <li>. Raising of proper claim complete in all respect is the responsibility of the Supplier.</li> <li>The Supplier shall ensure that only valid and proper claims are made for payment for Goods supplied. In the event of payment of any amount, not due as per contract, such payments shall be refunded back to Purchaser within three working days on receipt of notice of the Purchaser in this regard. This is without prejudice to Purchaser's right to initiate such other legal remedies as may be appropriate.</li> </ol>
<b>GC 14.1</b>	<p><b>GOODS AND SERVICES TAX (GST):</b></p> <ol style="list-style-type: none"> <li>The GST shall be payable as per actual, subject to submission of documentary evidence.</li> <li>GST on raw material/ semi finished product shall not be payable extra and is treated as included in the quoted F.O.R. prices. Also variation in GST on raw material/ semi-finished product, if any, during the pendency of order, shall be borne by the Suppliers.</li> <li>Any variation in GST shall be payable subject to submission of documentary evidence within the contractual delivery period of the contract only. The GST on finished equipment will be paid by the Purchaser as per the rates in force at the time of despatch, provided the actual delivery is in conformity with the contractual delivery schedule. If there has been delay in delivery and extension in time has been granted by the Purchaser covering such delay, then the GST will be paid as per rates in force at the time of despatch. If however, there is delay and</li> </ol>

	extension in time is not granted, payment of GST on finished equipment shall be limited to the rates applicable to the contractual delivery period or the actual delivery date whichever is less.
<b>GC 19.2</b>	The packing, marking and documentation shall be as specified in Volume II of Bidding Document.
<b>GC 22.2</b>	The Inspections and tests shall be conducted as per Volume II of Bidding Document.
<b>GC 23.1</b>	<p>If the Contractor fails to attain Completion of the Facilities or any part thereof within the Time for Completion or any extension, the Contractor shall pay to the Employer liquidated damages @ 0.5% of the total contract price of work per week or part thereof subject to maximum of 10% of the contract price of that particular work which shall be deducted from the contractor's R.A. bills of that work. Once the "Maximum" i.e. 10% is reached, the Employer may consider termination of the Contract.</p> <p>Further, during AMC period, deduction of 2% of the quarterly AMC charges for every 1% or part thereof decrease in availability of 99% subject to maximum 15 % of the AMC charges shall be applicable</p>
<b>GC 24.3</b>	The complete scheme shall be guaranteed for satisfactory performance and quality for a period of one year from the date of acceptance of the system by SLDC.
<b>GC 33.4</b>	Purchaser may direct to conduct Routine Tests/ Type Tests/ Acceptance Tests at an independent NABL accredited laboratory.
-	Volume – II of the Tender Specifications should also be referred.

## Annexure – I

## SLDC &amp; Sub Station wise BoQ

Particulars	220 KV Jabalpur	220 KV Gorabazar	ATPS	132 KV Vinoba Bhave	132 KV VFJ	SLDC	Spare
Phasor Measurement Unit (PMU) with programmable logic controller (PLC) including Panels (for 5 bays in single PMU) including panels	9	3	3	3	3		1
High Burden Tripping relays with electrical reset minimum 10 NO contacts	38	15	5	10	10		
Time Synchronisation Equipment complete with GPS clock and all hardware	1	1	1	1	1	1	
Gigabet Ethernet Switch (3 layer)	1	1	1	1	1	1	
Phasor Data Concentrator (PDC) Software for control/monitoring of PMU Data at control center						1	
Phasor Data Concentrator (PDC) Hardware for control/monitoring of						1	

PMU Data consisting of gateways, Server, Monitoring PC, etc at control center							
Network Management Software for management & maintenance from central location including workstation functionalities						1	
Network Management Hardware consisting of windows based Server including workstation						1	
Next Generation Firewall for control center						1	
Optical Fibre Patch cords (10 Mts) and 10 nos. in one set	2	2	1	2	2	1	
CAT 6 UTP ethernet cable (300 mtr)	2	2	1	2	2	1	
Erection, Commissioning, Installation & testing of items	1	1	1	1	1	1	
Annual maintenance for five years	5						

**Note:- The quantity of equipments mentioned in the BoQ is tentative and shall be finalized only after the survey to be conducted by the bidder.**

## **Section VIII. Contract Forms**

### **Notes on Contract Forms**

This Section contains the Proforma for claiming payment and the Performance Security.

Bidders shall not submit these forms with their Bids. After notification of award, the successful Bidder shall furnish the Performance Security using the respective form provided in Section VIII.

## **CONTENTS**

1. **PRO-FORMA-I:** UNDERTAKING FOR COMPLETENESS OF EQUIPMENT.
2. **PRO-FORMA-II** CERTIFICATION FOR PRICE VARIATION  
(For No Negative Price Variation)
- 3, **PRO-FORMA-III** CERTIFICATION FOR PRICE VARIATION  
(For Negative Price Variation)
4. **PRO-FORMA-IV** UNDERTAKING
5. **PRO-FORMA-V:** FOR BANK GUARANTEE TOWARDS PERFORMANCE  
SECURITY AGAINST SUPPLY CONTRACTS

**PROFORMA-I**

**UNDERTAKING FOR COMPLETENESS OF MATERIAL**

We hereby undertake to confirm that PMU, PDC & all other items as mentioned in BoQ have been supplied by us complete with all accessories as specified in Schedule \_\_\_\_ attached with order no. \_\_\_\_ \_ \_ \_ \_ dated \_\_\_\_\_ received by us.

While all the accessories associated with the equipment have been supplied, we undertake to supply any minor item which might not have been mentioned in the subject schedule but may be necessary for satisfactory operation of the equipment.

**Signature of Authorized  
Signatory with seal  
of the Company**

Place:-

Date:-

**Proforma-‘II’****CERTIFICATE FOR COMMISSIONING OF PMUs****Certificate for Commissioning of PMUs at Sub-stations**

Against Contract No. \_\_\_\_\_ dated. \_\_\_\_\_ M/s \_\_\_\_\_

\_\_\_\_\_ have supplied the complete PMU Type \_\_\_\_\_

Sl. No. \_\_\_\_\_ with associated accessories i.e. PMU with panel, GPS, layer switches, cables etc as per bill of quantity. The same have been successfully commissioned at \_\_\_\_\_ **Name of EHV Sub-station.** It is confirmed that the PMU is Operational and Integrated with Phasor Data Concentrator at SLDC.

It is also confirmed that M/s \_\_\_\_\_ have provided all services towards Installation, Erection, Testing including Commissioning of PMUs and integration with PDC at SLDC as stipulated in the Contract.

**Place:** \_\_\_\_\_ **Executive Engineer (Testing)**

**Date:** \_\_\_\_\_ **MPPTCL** \_\_\_\_\_

**Signature of Authorised  
Signatory with seal  
of the Company**

Place :-

Date :-

**Proforma-‘III’****CERTIFICATE FOR COMMISSIONING OF PDC, INTEGRATION OF PMUs  
WITH PDC, IMPLEMENTATION OF JABALPUR ISLANDING SCHEME**

Against Contract No. \_\_\_\_\_ dated. \_\_\_\_\_ M/s  
\_\_\_\_\_ have supplied the complete PDC ..... Sl.  
No. .... with associated accessories as per bill of quantity. The PDC has been  
successfully commissioned & installed at SLDC. All the logics of Jabalpur Islanding  
Scheme has been successfully deployed & tested. It is confirmed that the Jabalpur  
Islanding Scheme has been successfully commissioned.

It is also confirmed that M/s \_\_\_\_\_ have provided all  
services towards Installation, Erection, Testing including Commissioning of PDC &  
PMUs and integration with LD as stipulated in the Contract.

**Place:** **Superintending Engineer O/o CE (SLDC)**

**Date:** **MPPTCL -----**

**Signature of Authorised  
Signatory with seal  
of the Company**

Place :-

Date :-

## **PROFORMA-V**

### **BANK GUARANTEE FOR PERFORMANCE SECURITY** (To be executed on Non-Judicial Stamp Paper of Appropriate legal value)

**Bank Guarantee No.** ..... **Date** .....

**Address of Guarantor Bank:** .....

(e\_mail) ..... (Fax No.) .....

(any change in above details, should be informed to Beneficiary immediately)

**Address of beneficiary ("Contracting Agency"):**

Chief Engineer, SLDC,  
State Load Despatch Centre,  
M.P. Power Transmission Company Limited.  
Nayagaon, Rampur,  
Jabalpur — 482008, Madhya Pradesh  
e-mail : **sldc.scada@mptransco.nic.in**

Dear Ladies and/or Gentlemen,

Vide Notification of Award issued No... ..... Dated  
..... and Order No. .... dated  
....., having its Principal place of business at  
..... and Registered Office at .....("the  
Contractor") concerning ..... (Name & Scope of Contract) against  
Tender Specification No. LDET-03/2023-24.

2. By this letter we, the undersigned, .....(insert name & address of the issuing bank)  
....., a Bank (which expression shall include its successors, administrators, executors and  
assigns) organized under the laws of ..... and having its Registered/Head  
Office at .....(insert address of registered office of the bank)..... do hereby  
irrevocably guarantee payment to you up to ..... i.e., ten percent (10%)  
of the Contract Price.
3. We, the undersigned (BANK) ("Guarantor"), waiving all objections and defenses under the  
aforementioned contract, hereby irrevocably and independently guarantee to pay on your  
Notice of Demand any amount up to a total of Rs. XX YY (words:  
.....)
4. We undertake to pay to the "M. P. POWER TRANSMISSION COMPANY LTD" any  
money so demanded notwithstanding any dispute or disputes raised by the —"Contractor" or  
their subsidiary companies, in any suit or proceedings pending before any court or tribunal  
relating thereto, our liability under this present being absolute and unequivocal. The payment  
so made by us under this Guarantee shall be a valid discharge of our liability for payment  
there under and the "Contractor" shall have no claim against us for making such payment.
5. Notwithstanding anything to the contrary, "Contracting Agency's" decision as to whether the  
"Contractor" had made any default or defaults or failed to duly perform any of the terms &  
conditions of the aforementioned contract/ order and the amount to which "Contracting

Agency” is entitled by reasons thereof, will be binding on us and we shall not be entitled to ask “Contracting Agency” to establish its claims under this guarantee but, we shall pay the sum demanded to the extent of guaranteed amount, without any objection or query and without cavil or argument. The decision of “Contracting Agency” that any sum has become payable shall be final and binding on us.

6. We hereby agree to extend the period of this Bank Guarantee by executing a supplementary deed as may reasonably be necessary to discharge the Contractor’s obligation under this Guarantee.
7. We hereby also agree that during currency of the Guarantee herein given, or during the period of extension, this Guarantee shall not be revoked even with a notice by us.
8. This guarantee shall not be affected by any change in the constitution of our Bank or of the contractor or for any other reason whatsoever.
9. In the event of any claim under this guarantee, payment shall be immediately effected **On Same Day** to your Bank through RTGS in the following account;

NAME: RAO MPPTCL COLLECTION ACCOUNT SLDC

ACCOUNT NO. : 571701010050209

IFS CODE: UBIN0557170

BRANCH: UNION BANK OF INDIA, SHAKTI BHAWAN ROAD  
JABALPUR

In case of failure of RTGS or change in above details, the payment shall be made through Demand Draft immediately. Any change in the Bank account shall be informed to us.

10. It is understood that you will return this Bank Guarantee to us on expiry or after payment of the total amount to be claimed hereunder.
11. Except for the Notice for Demand, no other document or other action shall be required, notwithstanding any applicable Law or Regulation.
12. The Court of Jabalpur shall have exclusive Jurisdiction in all matters of all disputes in respect of above Bank Guarantee.

This guarantee shall expire no later than DD/MM/YYYY or upto extended period. By this date we must have received any claims for payment by Notice for Demand letter sent to us through email or through Fax or in person.

This guarantee is governed by the laws of INDIA.

**Encl:** Annexure - 1

Place,  
Date

.....  
Guarantor Seal & Signature

**Note :**

1. For the purpose of executing the Bank Guarantee, the non-judicial stamp papers of appropriate value shall be purchased in the name of Bank who issues the “Bank Guarantee”.

2. The Bank Guarantee shall be signed on all the pages by the Bank Authorities indicating their POA nos. and should invariably be witnessed.

2. The Bank Guarantee should be in accordance with the proforma as provided. However, in case the issuing bank insists for additional paragraph for limitation of liability, the following may be added at the end of the proforma of the Bank Guarantee [*i.e., end paragraph of the Bank Guarantee preceding the signature(s) of the issuing authority(ies) of the Bank Guarantee*]:

Quote —Notwithstanding anything contained herein:

1. Our liability under this Bank Guarantee shall not exceed \_\_\_\_\_ (*value in figures*) \_\_\_\_\_ [*value in words*] \_\_\_\_\_.
2. This Bank Guarantee shall be valid upto \_\_\_\_\_ (*validity date*) \_\_\_\_\_.
3. We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only & only if we receive a written claim or demand on or before \_\_\_\_\_ (*validity date*) \_\_\_\_\_.

**Annexure-I (For encashment of BG)****Notice of Demand****To,****The Manager,****(Name & Address of Branch)**

.....

**Fax No.** .....**e-mail:** .....**Sub:**Encashment of Bank Guarantee

**Ref:** i. Our Tender Specification No.....  
 ii. Our Notification of Award /Order No.& Date .....  
 iii. Bank Guarantee No..... dated..... issued by your branch.

Dear Sirs,

M/s..... (*Contractor*) has furnished the above Bank Guarantee (Reference iii) issued by your Bank for ₹..... (amount in words ₹ ..... ) towards ..... security against above Tender Specification (Reference - i) / NoA/order (Reference ii).

Since the Contractor is in breach of its obligation under the contract / have not submitted validity extension deed of the BG despite our request, hence, we hereby demand for encashment of aforesaid Bank guarantee for it's full amount. It is requested to remit the full amount immediately through RTGS as per details given in B.G. In case of failure of RTGS, the payment be made through Demand Draft immediately and handover the same to the bearer of this Notice.

Please acknowledge the receipt of this "Notice of Demand".

Yours sincerely,

**Chief Engineer (SLDC)**

Copy to: -

1. The Reserve Bank of India, .....

**STATE LOAD DESPATCH CENTRE**  
**MADHYA PRADESH POWER TRANSMISSION CO. LTD.**



**TENDER SPECIFICATION NUMBER**  
**LDET-03/2023-24**

**VOLUME – II**

**TECHNICAL SPECIFICATIONS**

**CHIEF ENGINEER (SLDC)**

## Contents

1.0	Introduction: - .....	2
2.0	Proposed System Architecture.....	7
2.0	Technical Specifications of various components utilized in Islanding Scheme:- .....	8
2.1	Phasor Measurement Unit :- .....	8
2.2	Central Control Unit (CCU)/Phasor Data Concentrator (Including HMI): - .....	12
2.3	Network Management System (NMS) including workstation:- .....	19
	Workstation (HMI/EWS System):-.....	21
2.4	GPS .....	22
2.5	Giga bit Ethernet Switch (Layer-3).....	23
2.6	Next Generation firewall .....	23
2.7	Heavy Duty Relay (HDR) .....	25
2.8	Panel.....	25
2.9	Earthing .....	26
2.10	Cabling & Interconnections.....	26
2.11	Wiring/Cabling requirements.....	27
3.0	INSPECTION AND TESTING .....	28
3.1	Type Tests.....	28
3.2	Routine Test/Factory Acceptance Test (FAT) .....	29
3.3	Site Acceptance Test (SAT) .....	30
4	Data Requirement Sheets (DRS) .....	31
	Phasor Data Concentrator (PDC) :- .....	31
	Phasor Measurement Unit (PMU).....	32
	GPS.....	35
	Layer-3 Switch .....	36
	HMI/EWS PC.....	38
	Next-Generation Firewall .....	39
	Network Management System (NMS) .....	40
4.0	Annual Maintenance Contract (AMC):- .....	40
5.0	Security Related Aspects for Service Level Agreement.....	49

## **Technical Specification of Jabalpur Islanding Scheme**

### **1.0 Introduction: -**

The Jabalpur islanding scheme is proposed as per Clause-10 of Central Electricity Authority (Grid Standards) regulations, 2010 and as per Standard Operating Procedure for islanding scheme issued by CEA. The scheme is proposed using latest State of the Art technology and faster communication capabilities. The Scheme shall have independent Data Acquisition and Remote Control facility having provisions for future expandability to incorporate Islanding Scheme for other cities.

The Objectives of Jabalpur Islanding scheme are as follows:-

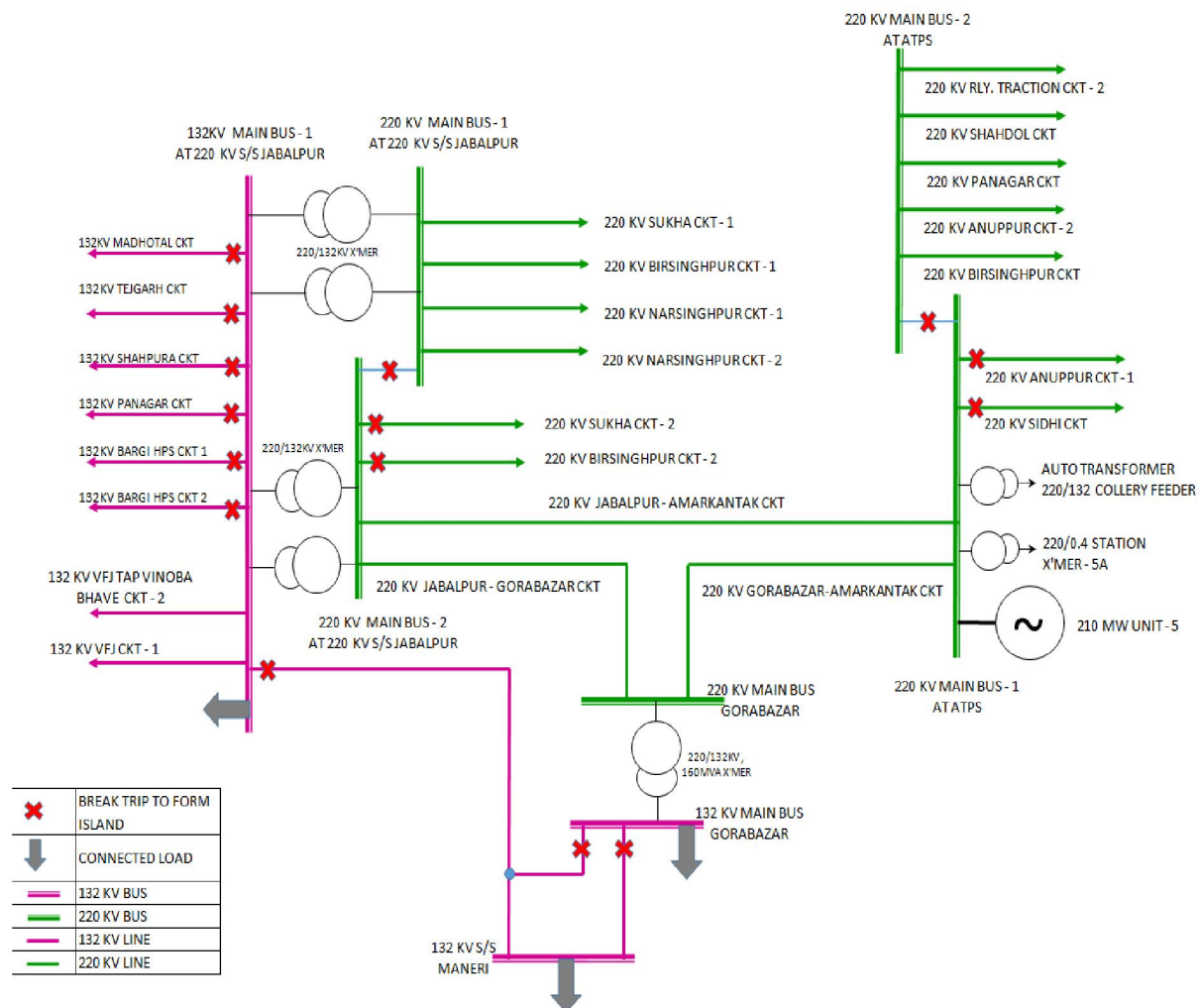
1. Monitoring of frequency, power flow on feeders at 220KV Jabalpur S/s , 220KV Gorabazar Sub-Station, 132KV VFJ S/s, 132 KV Vinova Bhawe Sub-Stations and generation at Amarkantak Thermal Power Station.
2. Continuous monitoring of pre-defined grid disturbance conditions using the data at Centralized Control Unit at SLDC and generating control signal for sub-stations and power stations.
3. Isolate a part of Jabalpur area which is rich with defence establishment from the Grid during major grid disturbance and Amarkantak Thermal Power Station to feed this islanded area.
4. Continue to supply the power in the island and maintain load generation balance in the island by monitoring and control of the island based on PMU based monitoring and control system.
5. Avoid tripping of generator in the island during major system disturbance.
6. Quick restoration of remaining system by facilitating start-up supply during black out in the remaining system.

The proposed Jabalpur Islanding Schemes would ensure early restoration of the grid/system on one hand and on the other hand, the Jabalpur cities would survive and keep feeding the important loads during the blackouts. Jabalpur Islanding scheme is proposed to isolate Jabalpur City Load from rest of the grid at predefined Islanding frequency say 48 Hz and 210 MW ATPS generation will feed the entire load of Jabalpur City. Jabalpur is one of the major cities of MP as a major part of defense load is connected with 220 KV Jabalpur/Gorabazar. It is proposed that during the sinking system the major loads of Jabalpur could be fed through Amarkantak TPS by creating the island. In the islanding scheme 33 KV loads of 220 KV S/s Jabalpur, 132 KV S/s VFJ, 132 KV S/s Vinoba Bhawe & 220 KV S/s Gorabazar is proposed to be fed through the Amarkantak TPS Generation of 210MW.

The details of Bus bar arrangement at Jabalpur and Amarkantak Thermal Power Station is detailed hereunder:-

- 220 KV S/s Jabalpur consists of Double Main Transfer Bus Scheme at 220 KV and Single Main Transfer Bus Scheme at 132 KV.
- 220 KV S/s Jabalpur is connected with 220 KV S/s Sukha through 2 no. 220 KV circuits, with 220 KV S/s Narsinghpur through 2 no. 220 KV circuits, with 220 KV S/s Birsinghpur through 2 no. 220 KV circuits, with 220 KV S/s Gorabazar through 1 no. 220 KV circuits, with 220 KV ATPS through 1 no. 220 KV circuits and consists of 4 no. 220/132 KV X'mers.
- At 220 KV S/s Jabalpur is connected through 132 KV S/s Tejgarh, Shahpura, Madhotal, Panagar, Maneri, VFJ & Vinoba bhawe, Bargi HPS , Bargi S/s 132 KV Circuits through 1 no. 132 KV circuits.
- 132 KV Bus Section breaker is also available at 220 KV S/s Jabalpur

#### **SINGLE LINE DIAGRAM OF ISLANDING SCHEME OF JABALPUR AREA**



The 220 KV feeder arrangement at 220 KV S/s Jabalpur is as follows:-

<b>220 KV MAIN BUS - 1</b>	<b>220 KV MAIN BUS – 2</b>
220 KV JABALPUR – SUKHA CKT - 1	220 KV JABALPUR – SUKHA CKT - 2
220 KV JABALPUR – BIRSINGHPUR CKT - 1	220 KV JABALPUR – BIRSINGHPUR CKT - 2
220 KV JABALPUR – NARSINGHPUR CKT – 1	220 KV JABALPUR – AMARKANTAK CKT
220 KV JABALPUR – NARSINGHPUR CKT - 2	220 KV JABALPUR – GORABAZAR CKT
220/132 160 MVA (GEC) X'MER - 1	220/132 160 MVA (BBL) X'MER - 3
220/132 120 MVA (MTSB) X'MER - 2	220/132 160 MVA (BHEL) X'MER - 4

#### **ARRANGEMENT AT 220 KV AMARKANTAK TPS:-**

220 KV Amarkantak is a coal based Thermal Power Plant with the installed capacity of 210MW. Double Main transfer bus scheme exists at ATPS with 600/1 Amp Bus Coupler CT & the feeder arrangement is as detailed below :-

<b>220 KV MAIN BUS - 1</b>	<b>220 KV MAIN BUS – 2</b>
Unit No # 5 ( 210 MW )	220 KV AMARKANTAK – RLY. TRACTION CKT - 2
220 KV AMARKANTAK – ANUPPUR CKT - 1	220 KV AMARKANTAK – SHAHDOL CKT
220 KV AMARKANTAK – SIDHI CKT - 1	220 KV AMARKANTAK – PANAGAR CKT
220 KV AMARKANTAK – JABALPUR CKT - 1	220 KV AMARKANTAK – BIRSINGHPUR CKT
220 KV AMARKANTAK – GORABAZAR CKT	220 KV AMARKANTAK – ANUPPUR CKT - 2
AUTO TRANSFORMER	STATION X'MER – 5B
STATION X'MER – 5A	

It may be seen that at Jabalpur s/s 220kv Bus no II and at Amarkatank PH Bus no I shall be utilized for forming islanding scheme. Following shall be features of islanding scheme:-

- Islanding scheme shall be initiated below 48.0Hz (selectable) using Under Frequency Relay (UFR).
- At Jabalpur s/s , after initiation of formation of islanding scheme, 220 kv Sukha ckt no 2, 220kv Birsingpur ckt no 2 and bus tie shall trip from Bus no II . It is mentioned here that there is only one 132 kv Bus at 220 KV Jabalpur with sectionalizing breaker.
- In islanding scheme, at Jabalpur on 132 KV Bus, breaker of 2 no 160 MVA Transformer, 132 KV VFJ Ckt no I and II shall on bar , other ckt shall be tripped. Load of 132 KV Maneri shall be disconnected through Islanding Scheme.
- At Amarkantak PH after initiation of formation of islanding scheme, 220kv Sidhi , 220 KV Annuppur circuit 1 and Bus tie shall be tripped as shown in diagram.
- The above arrangement shall facilitate uninterrupted supply arrangement to important load of Jabalpur including defense load during total blackout.
- The Ex-Bus Generation of Unit#5 of ATPS is 191MW and under and over frequency setting of Unit#5 is 47.4 & 54.2 Hz respectively along with time delay of 2 Sec in each and RGMO of Unit #5 is in service with gradient of +/- 2 MW per minute.
- The over voltage settings on 220KV Jabalpur- Amarkantak and 220KV Amarkantak-Gora Bazaar circuit with time discrimination will be implemented so that Amarkantak- 220KV Gora Bazar circuit shall trip first.
- The above arrangement shall facilitate uninterrupted supply arrangement to important load of Jabalpur including defense load during the total blackout.
- After formation of Island, the load generation balance in the island is required to be maintained for which the breaker status, the flow on the isolation point feeders (being EHV feeders) is required at SLDC Control room screen on 24x7 Hrs. To facilitate this, a system is required which would continuously monitor the Embedded Generation (in MW), the sum of flows at isolation point (in MW) of Island and the quantum of load (in MW) in the Island to be shed if such Island situation arises. For successful Islanding, an automatic load supervision and control in the Island at distribution level (33/22/11 kV) is essential. By using PMUS based SCADA, the load in the Island could be shed through automatic control action. Even Priority wise load shedding as per critical/non critical criteria could also be identified in Island and enabled through PMUS based system with fast response
- The load details of 33 KV Feeders in all the substations is given below. The frequency information & details for designing of logics shall be provided to the bidder during the engineering stage.

<b>Priority wise Tripping of 33KV feeder in various substation to obtained desired load relief.</b>		
<b>Name of s/s</b>	<b>Name of feeder</b>	<b>Load (MW)</b>
<b>Tripping Priority- I(Rural/ un important City area)</b>		
220 KV S/S Jabalpur	J-1	17
	J-2	17.9
	J-6	14.3
	J-7	8.8
	Rampur-1	11.6
	Rampur-2	11.5
132 KV s/s Vinova Bhawe	Ukhari-1	12.8
	Ukhari-2	15.6
	Bhan Talaiya	12.6
132 KV VFJ	33KV Sihora	10.1
	33KV Gokulpur	15.6
	33KV Adhartal	19
	33KV GB-3	9.2
	33KV GB-5	11.5
Total relief (A)		187.5
<b>Tripping Priority -II (Industrial area)</b>		
220 KV Jabalpur	33KV NTPC-1	1
	33KV NTPC-2	12.1
	33KV IT Park	1
132 KV VFJ	33KV Richhai	10.9
132KV Vinova Bhawe	33KV Ghanta Ghar	11.2
Total relief (B)		36.2
<b>Tripping Priority -III (VIP area)</b>		
220 KV Jabalpur	Complex-1	4.1
	Complex-2	10.2
	33KV Vinova Bhawe	6.9
132KV Vinova Bhawe	Load Relief	21.2
132 KV VFJ	33KV GCF	11.4
132KV Vinova Bhawe	33KV OFK	4.7
	5 MVA X-merl	2.3
	5 MVA X-merl	2.4
	33KV Satpula	7.4
	33KV Ridge Town	8.4
Gora Bazar	33KV HR Town	11.9
Total relief (C)		48.5

There are three stages during islanding: separation, survival and resynchronisation/restoration. The isolation of the identified Island will be achieved with operation of built-in UFR protection feature in the proposed PMUs on other lines required to be disconnected at the boundary of control area.

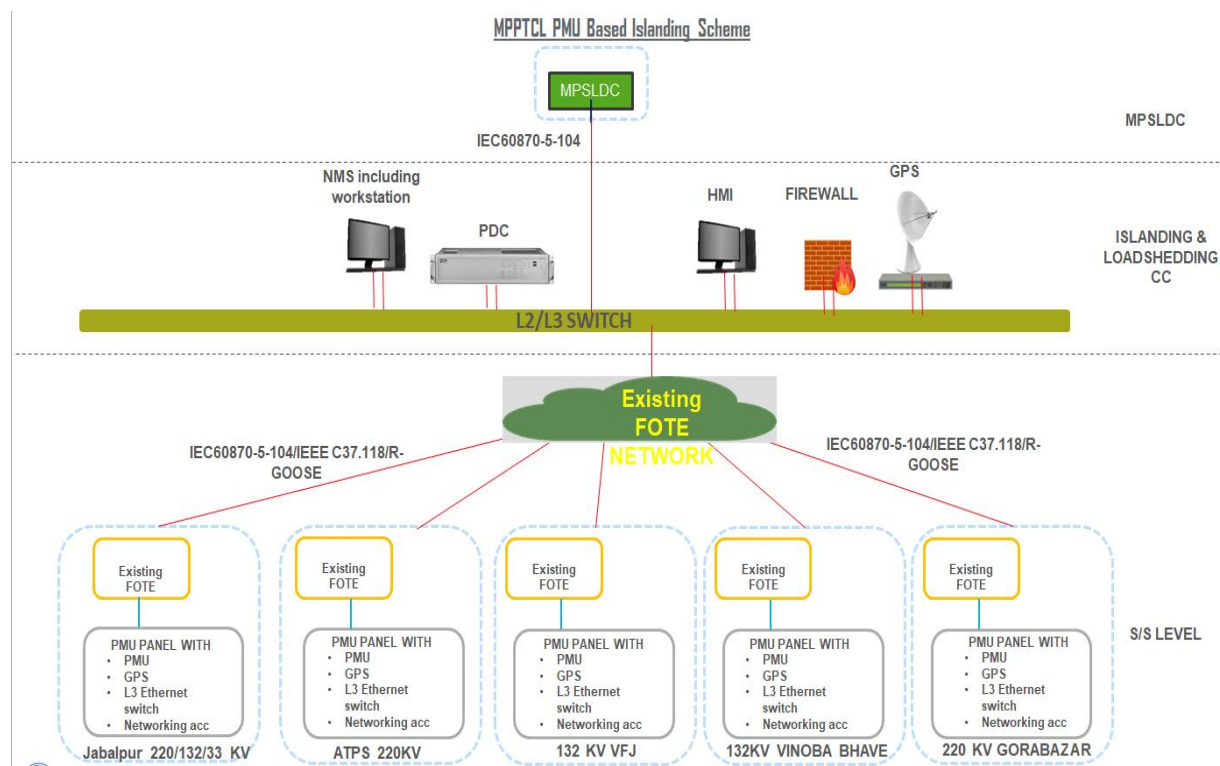
The survival after isolation requires dynamic control of load to meet the available generation in the Island. For achieving this, smooth load control by using PMUs based SCADA load monitoring (upto 33KV level also) & control is proposed to be implemented. In islanding scheme a very minor difference in load generation variation would cause huge change in frequency, hence smooth control is required. Accordingly, PMUs based system having high data acquisition rate is proposed.

The restoration process will involves restoration of the loads within the island if the frequency improves within the limits and resynchronization with the grid once the stability is restored in the grid.

Accordingly, a PMU based system as detailed below is proposed.

## 2.0 Proposed System Architecture

As per the requirement of the Islanding & Load Shedding System, the following System Architecture is proposed :-



As shown in the system architecture, an islanding central controller unit (CCU)/Phasor Data Concentrator (PDC) and WS system will be provided in at the SLDC level to execute the islanding and loadshedding logics from the central level.

An islanding panel with PMU, and Ethernet Switch will be installed at different substations/generating stations which will be participating in the scheme and all these participating stations will be integrated with the gateway system at SLDC through the fiber optical network of MPPTCL.

The PMUs will be exchanging the islanding & load shedding I/O data points with the CCU/PDC installed at the SLDC through IEEE C37.118 protocol however shall also support IEC 61850 or IEC 60870-5-104 protocols.

Using the data collected from the load shedding I/Os and combination of the advanced automation applications in CCU, the CCU shall send trigger bits through R-GOOSE or IEC 104 to the PMUs in the field for the operations of the feeders at the participating substations to achieve the desired islanding and load shedding scheme.

Further, all necessary measures to ensure cyber security of Sub Station, Power Station as well as Control Centre equipment shall be taken. The PMUs based scheme is proposed in view of fast response time of PMUs as well as its capability to implement logical functions.

**The contractor shall arrange for conducting the cyber security audit of entire Islanding scheme system (free of cost) through CERT-In empaneled auditor before operational acceptance of the system. The contractor shall submit the signed report of the cyber security audit. Further the contractor shall ensure to close all the vulnerabilities (if any) found in the cyber security audit before initiation of guarantee period.**

**The contractor shall ensure that Security and Testing of Cyber Assets of Islanding Scheme shall be carried out as per the Article 13 of CEA (Cyber Security in Power Sector) Guidelines, 2021.**

**All the software and hardware provided by the bidder for Jabalpur Islanding Scheme shall be loaded with valid license with a validity until the expiration of AMC of Jabalpur Islanding Scheme. In case of end of life support or expiration of license of any of the software/hardware, the bidder shall ensure upgradation of license/replacement of software or hardware free of cost so as to meet the functionalities of Jabalpur Islanding Scheme.**

## **2.0 Technical Specifications of various components utilized in Islanding Scheme:-**

### **2.1 Phasor Measurement Unit :-**

The substations /Generating stations normally are provided with CTs on each bay of the switchyard and CVTs/PTs in each transmission line bay and on each bus. Generally, CTs have one metering core and four protection cores. The CVTs are provided with three cores for metering/protection. The offered PMUs shall be connected to either of these CT and CVT cores. PMUs shall be suitable for measurement on both the cores (Meter & Protection). Exact core to be connected shall be decided during engineering stage.

The PMUs to be supplied under this specification shall be installed at the Substations / Power stations, shall communicate to the Phasor Data Concentrator (PDC) to be supplied by the bidder & to be installed at SLDC as per IEEE C37.118.1-2011, IEEE C37.118.2-2011 & C37.118.1a-2014 standard or IEC/IEEE 60255-118-1:2018 Standard with all amendments. PMU complying IEC/IEEE 60255-118-1:2018 Standard shall be preferred. The supplied PMUs shall be mounted in the panels being supplied by the bidder. All the required hardware and cabling to be provided by the bidder.

The PMU shall be compatible with IEC 60870-5-104 Or IEC 61850 Protocol. The CCU/PDC shall be sending the islanding command to the PMU through IEC 61850 R-GOOSE or IEC 60870-5-104 and shall report data points to the SLDC SCADA on IEC 60870-5-104. This feature shall be successfully demonstrated by the bidder during FAT & SAT.

The following points covers the technical specifications expected from the PMUs however the bidder shall comply the Data Requirement Sheets (DRS) of PMUs and associated items as mentioned at Annexure-I :-

2.1.1 The offered PMUs shall be complete in all respect so that they can be installed at the substation/power plant and can communicate with CCU to be installed at SLDC. The necessary cable, connector and installation hardware, as required, shall be supplied by the bidder. Normally PMUs shall be installed near to the control & relay panels and CT/CVT connections to the PMU shall be extended from the control & relay panels.

2.1.2 For integration with CCU, PMU shall be provided with minimum One Ethernet port of 10/100 Base Tx and minimum one optical fiber port of 100 Mbps for streaming the data in UDP/IP multicast/unicast or TCP/IP in IEEE C37.118 format. The Ethernet port can be used to connect the PMU directly to the communication equipment in the substation. PMU shall also be capable of reporting data on TCP/IP.

2.1.3 The PMU shall be able to perform synchro-phasor reporting for minimum 2 clients over TCP and/or 2 UDP clients for multicast or unicast. PMU shall be capable of sending data in Multi-cast as well as Uni-cast.

2.1.4 The supplied PMUs shall be suitable to operate on unearthed 220 V DC or 110V DC or 48V DC (+10%, -15%) power supply as available in the substation.

2.1.5 The PMU shall support data 'Reporting Rates' of 25, 50 or above frames per seconds for 50 Hz System. The PMUs with higher reporting rates shall be preferred. The actual rate to be used shall be user selectable. All the PMU hardware and software shall be sized considering 50 frames per second. If the PMU is capable for higher reporting rate, then the PMU hardware and software shall be sized considering the highest reporting rate.

2.1.6 The PMU shall support following protocols for the integration with CCU & SCADA systems;

- IEC 61850 Ed. 1 and Ed. 2
- DNP 3.0 (serial & TCP/IP)
- IEC 60870-5-104
- IEEE 1588 PTP or IRIG-B for time synchronization
- PMU having Routable GOOSE (R-GOOSE) or IEC 61850-90-5 PMU over GOOSE support shall be preferred.

2.1.7 PMUs shall be provided to measure Voltage and Current Phasors of feeders and transformers specified in the BoQ. PMU shall also measure status of master protection and circuit breakers for feeders and transformers as per SLD. The PMUs shall be able to measure/calculate following:

- 3-phase voltage Phasors (Magnitude and angle),
- 3-phase current Phasors,(Magnitude and angle),
- Positive sequence voltage,(Magnitude and angle),
- Positive sequence current,(Magnitude and angle),

- Breaker Status
- Main Protection Status
- Frequency,
- Rate of Change of Frequency (ROCOF) -df/dt
- Analog Values (MW & MVAR)

Provision shall be made for user selection of measured value.

2.1.8 A time synchronization system (GPS receiver) shall be provided with PMU. The PMU shall have internal clock, which shall be synchronized with GPS clock. Upon loss of signal from the GPS source, the PMU shall detect a loss-of-signal and generate an alarm which will be transferred to PDC. Upon loss of signal, the PMU time facility shall revert to an internal time base. The internal clock shall have minimum stability of 1 ppm.

The PMU with supplied GPS shall keep the total vector error (TVE), the frequency error (FE), and the Rate of Change of Frequency (ROCOF) within the limits specified as per IEEE C37.118 standard & further amendments.

2.1.9 Each PMU shall minimum support Synchrocheck (25), Overfrequency (81O), Rate of change of frequency (81R), and Underfrequency (81U) functions. In case these functionalities are not available in the PMU, the bidder has to arrange separate relays for meeting these functionalities.

2.1.10 The PMUs shall have continuous self-monitoring ,diagnostic feature and capable to identify & communicate problems and shall generate alarm in case of any abnormality which shall be displayed locally as well as shall be transferred to the PDC. The indication shall be available for each module on the front panel of the PMU.

2.1.11 The PMU shall support Configuration frame 2 & Configuration frame 3.

2.1.12 PMU shall meet all requirements as specified for both P and M Class of Performance as per IEEE C37.118.1-2011, C37.118.1a-2014 standard or IEC/IEEE 60255-118-1:2018 Standard. The class of reporting shall be user selectable. The Bidder shall submit the test reports for measurement compliance for both class of measurements along with the Bid.

2.1.13 The PMU must be cyber secure and capable to withstand any cyber indiscipline and shall be protected from anti-threat from outside world. Bidder must specify the features of their solution in this respect in detail technical response. General security criteria mainly as following must be maintained.

- The Access of PMU must be through password and with log of same shall be maintained.
- The system shall not be affected by any outside programs like spam, malware etc.
- Any configuration change must be through access right and log of the same must be maintained, all logs of event shall report to CCU to be installed at SLDC.

2.1.14 There shall be provision for HMI (Human Machine Interface) in PMU for configuration. Provision should also be available to check the status, software version of PMU etc. The Operation indications and time tagged events shall be available by the Local HMI.

The local HMI on the PMU shall also display the real time measured values. The PMU shall be able to display the following quantities on the HMI:-

- Measured voltages, currents, frequency, active, reactive and apparent power and power factor.
- Primary/Secondary phasors
- Positive, negative and zero sequence currents and voltages.
- Digital status of breaker and protections.

Alternatively Portable configuration device for PMUs can be provided for configuring the PMUs. Testing & configuration accessories such as test switch, connector, software, hardware etc., which are required for testing and configuration changes locally, shall be supplied. However the virtual display on the PMU is mandatory.

2.1.15 Remote configuration facility shall be provided in PMU and the supplier shall supply the necessary hardware/software required for remote configuration of PMU in the CCU to be supplied by the bidder. The supplied software shall have the capacity to provide remote configuration of PMUs, through same data channel through which the PMUs will be reporting to CCU.

2.1.16 PMU shall support multiple data stream i.e. a PMU shall be capable to transmit its data in separate data streams (more than one). Each stream shall be configurable independently based on the following:-

- Contents
- Sampling rate
- Class of service (P or M)
- Communication mode (TCP/UDP)
- Different destinations with separate IDCODE.

2.1.17 All the features mentioned in this technical specification shall be demonstrated during testing at factory and at site.

2.1.18 The station name, phasor name, analog name, digital name should be user configurable in PMU.

2.1.19 The PMUs shall measure the electrical parameters in the power system frequency band of 48-52 Hz with the accuracy as per standard IEEE C37.118.1-2011, C37.118.1a-2014 with all amendments; however, data from PMU shall be available below 48 Hz frequency and above 52 Hz bidder has to assure this feature. The PMU design shall ensure that the impact of frequency fluctuation on accuracy is within permissible limit as per prevailing standards, the bidder shall explain in their offer this aspect of PMU design.

2.1.20 Documentation shall be provided by bidder claiming compliance with IEEE standard that shall include the following information:

- Performance class
- Measurements that meet this class of performance
- Test results demonstrating performance
- Equipment settings that were used in testing

- Environmental conditions during the testing

2.1.21 PMU should be embedded with Power Quality Analyzer , Class A Ed.3 according to IEC 61000-4-30. Be able to produce Power Quality Statistical Reports as per EN 50160.

Ability to record, store and alarm on following Events as per EN 50160 :

- Power Frequency
- Voltage Dips
- Voltage Interruptions
- Temporary Overvoltages
- Transient Overvoltages
- Voltage Unbalance
- Voltage harmonics
- Interharmonic THD
- Interharmonic Voltage

2.1.22 PMU shall be able to measure parameters mentioned in 2.1.7 for minimum 5 bays in single PMU.

## **2.2 Central Control Unit (CCU)/Phasor Data Concentrator (Including HMI): -**

The PDCs shall be designed to work so as to ensure uninterrupted availability of data to the users. These PDCs shall be used for wide area monitoring of the power system, the PDC shall be designed with due consideration to these aspects of power system. The supplied CCU shall support IEC 60870-5-104 or IEC 61850 GOOSE/R-GOOSE protocols to exchange the control operation data with the PMUs installed in the field for protection and control of power system. The required software tools shall be provided along with PDC for the display, report generation, alarm and storage of data for off line analysis.

2.2.1 The PDC/CCU shall have the following characteristics:-

- a) Shall have available up-to-date configuration information for all input and output streams. It is required to request appropriate configuration files (data) from PMUs or PDCs whenever it has been off-line for some time, e.g. for more than one minute as specified by IEEE Std C37.118. PMUs are required to indicate in their data frames that their configuration has changed, so that the PDC can request a new configuration file (data). The same mechanism also applies when a PDC sends synchrophasor data to another PDC.
- b) Shall have the ability to retrieve the data stream configuration from a data source (PMU or PDC) after an incoming data stream interruption and restoration. It shall also send the corresponding information to its data destinations.

- c) Shall have the ability to request a device capability file (a list of all available signals) from data sources (PMUs, PDCs), combine them and send the combined list to its data destinations as defined in IEEE C37.118 Standard.
- d) The PDC shall perform a sanity check on the received configuration. This may include checks on the CRC, the number of bytes expected and the actual number of bytes received, etc.
- e) The PDC shall determine if the configuration has changed, by comparing the newly received configuration with the previously stored configuration. If the configuration has changed, the PDC should take appropriate action based on user defined rules to reconfigure its outputs and communicate the change to all affected output destinations and applications, In addition to the above, it shall be possible to configure the PMU or another PDC remotely from PDC. The remote configuration utility shall support proper authorization & authentication in order to verify the configuring authority.
- (f) The PDC is in line with the latest version of IEEE C37.244-2013
- (g) GUI based capabilities for configurations, monitoring and system administration
- (h) Extensive diagnostic features to detect data format, data quality and communication errors including checking the received configurations, CRC checksum errors, and number of bytes expected vs received etc.
- (i) Auto configuration of inputs, auto adaptation to input changes and automatic reconnection in case of lost connections.
- (j) Configurable data sampling rates from 1 to 100 samples/second.
- (k) Extremely low application processing latency of  $\leq 2$ ms for 100 PMUs and  $\leq 5$ ms for 500 PMUs
- (l) Highly configurable data output streams including configuring data format, data rate, PMU/Channel name, data wait times etc. for individual output.
- (m) IEC 60870-5-104 support for data distribution to SCADA/EMS
- (n) Supports phasor data scaling, conversions and ID code changes.
- (o) Data archiving in relational database and COMTRADE files.
- (p) Provision of forming logics in PDC for islanding. The PDC shall support for formation of all kind of logics for successful implementation of Islanding Scheme.
- (q) Generating islanding command/load shedding command to the PMU/field devices through IEC 104 Protocol.
- (r) The PDC shall be able to provide the islanding command to the PMU through same channel in which it is receiving the data through PMU.
- (s) It shall be possible to change the islanding logics in the PDC during the DLP & AMC period. The arrangement of changing the logics shall be in the scope of bidder.

2.2.2 The PDCs shall perform the following functions:

❖ Data Acquisition

The PDCs shall perform the following data acquisition functions.

- (a) The PDCs shall collect and aggregate the data received directly from the PMUs located at various substations and power plants in compliance to the IEEE C37.118 standard at user selected phasor data reporting rates.
- (b) The PDCs shall conform to IEEE C37.118 standard streaming protocol standards for both the phasor data inputs and the combined data output stream.
- (c) The phasor data shall include 3-phase voltage phasors, 3-phase current phasors, four digital inputs, positive sequence voltage and current and analog values (MW & MVAR) from every feeder and frequency and Rate of Change of Frequency (ROCOF) in every Substation/Power plant.
- (e) The PDC shall be able to collect the active and reactive power, if measured by PMU, otherwise it shall calculate the same within PDC as required

❖ Data Exchange with other PDCs

The PDCs shall be capable of receiving real-time synchrophasor data streams from PMUs and other PDCs. The PDC shall support parsing, interpreting and sending data in compliance with synchrophasor data transfer through IEEE C37.118 protocol. The PDCs shall be able to re-send the data to other higher level PDCs. The data exchange between any of PDCs shall be bi-directional

❖ Data Exchange with existing SCADA/EMS System

The PDCs shall support to exchange the data with existing SCADA/EMS systems installed at the respective Control Centers on either IEC 60870-5-104 or IEC 61850 Protocols.

### 2.2.3 Communication Protocols

The CCU shall support the UDP/TCP operating modes for communicating with PMUs and CCU. CCU shall be capable of supporting the communications needs using both TCP and UDP protocols. CCU shall be configurable to use either TCP or UDP for its messaging communications with each PMU or CCU.

CCU shall support the following communication protocols.

➤ IEEE C37.118 Communication Protocol

- a) CCU shall, as a minimum fully support IEEE C37.118 standard communication protocol between CCU and PMU for data receiving and messaging related communications.
- b) CCU shall as a minimum fully support IEEE C37.118 standard communication protocol for CCU to other CCU data receiving and messaging related communications.

- c) CCU shall as a minimum support extend messaging communication protocol based on IEEE C37.118 standard messaging communication protocol for additional CCU-CCU messaging related communications.

- IEC 60870-5-104

The CCU shall support IEC 60870-5-104 Client & Server protocols to collect the data from the slave devices and report the data to the host respectively.

- IEC61850 Client & Server Ed1 & Ed2

- a. The CCU shall support IEC61850 Server including GOOSE communication and Ed1 & Ed2 support.

- b. The CCU shall support IEC61850 Client Ed1 & Ed2.

- IP Multicast

The CCU shall be capable of supporting IP multicast when using UDP/IP for streaming data communications. The CCU shall support receiving UDP/IP multicast input data from multiple data sources. The CCU shall support sending output data as UDP/IP multicast and or TCP/IP Unicast output data stream. The destination multicast IP address shall be user configurable

- Configuration characteristic

The PDC's administrator shall be provided with tools to configure the system, such as:

- Connection of PMUs
- Data output streams
- User profiles
- Alarm thresholds

#### 2.2.4 PLC Logic

The CCU shall support IEC 61131-1 compliant logic feature which shall allow to build custom logics. The logic feature shall support all five programming languages in the IEC 61131-3 standard:

- a) Sequential Function Chart (SFC)
- b) Function Block Diagram (FBD)
- c) Ladder Diagram (LD)
- d) Structured text (ST)
- e) Instruction List (IL)

It shall support powerful tools for online debugging and simulation of IEC 61131-3 applications, all within CCU.

It shall be possible to build a list of variables that will support data-type variables, as well as arrays, data structures, etc.

#### 2.2.5 Redundant Data Handling

The PDC shall be able to handle redundant data sent by alternate devices, either in aggregated or time aligned PMU streams. The PDC shall allow the user to designate a preferred source for data to be included in an output stream. The PDC shall also permit the user to designate alternate source(s) for the output stream if the preferred data fails to arrive. PDC shall indicate in the output stream that the alternate data source is used.

#### 2.2.6 Duplicate Data Handling

The PDC shall be able to handle duplicate data. The PDC shall receive data sent by alternate communication paths or data sent in both aggregated and time aligned data streams. The PDC shall use the data that arrives first, and discard the data that arrives later than the waiting period. The PDC shall also be capable of choosing data without errors for use and discarding all other data.

#### 2.2.7 Data Processing

PDC shall provide, as a minimum of the following data processing capabilities.

- (a) Data quality check and flagging,
- (b) Data format conversion
- (c) Data scaling
- (d) Re-sampling of a received data stream. (The re-sampling is defined as changing the data rate of a PMU data stream from one rate to another rate)
- (e) The PDC shall provide a reporting rate conversion function. The data reporting rate conversion function shall include both down-conversion and up-conversion functions. Reporting rate conversion should be user- configurable to accommodate the compatibility needs of all the devices and applications in the synchrophasor system, as well as all the applications that might be using the data from the PDC.
- (f) The PDC shall support input rate conversion, which shall be user selectable, from all rates specified in IEEE C37.118 standard to output streams having any rate specified in IEEE C37.118 standard.
- (g) The PDCs shall align the data received from the PMUs by time tag to create a system wide measurement set and feed it as a single stream as input to the other PDCs/ applications.
- (h) A PDC shall support basic data validation and checking as accommodated in the communication protocol used. It shall check the status of the time quality of all PMUs, and perform data integrity check on all received data. Any errors detected and suspected corrupt data shall be flagged in output data stream.
- (i) The PDC shall support synchrophasor data latency calculation. To perform this function a GPS clock shall be provided with PDC, the GPS clock shall also be used for synchronisation of other devices/servers of WAMS system at the control centre. The calculated latency values shall be stored for statistical analysis

and reports to the user. Statistics shall include functions such as minimum, maximum, average, mean, deviation etc. over a specified period.

(j) Synchrophasor data may be available in rectangular or polar coordinates and may be in fixed integer or floating point formats. The PDC shall have functions to process and convert data between these common coordinates.

(k) PDC shall have the capability to scale synchrophasors or magnitudes by user configurable scaling factors to account for transformer ratios. A PDC shall also have the capability to shift synchrophasor data phase.

(l) PDC shall check the disturbance flags and trigger recording of the disturbance, monitor the overall measurement set and provide a display and record files of data for analysis.

(m) PDC shall be able to generate alarm based on the limit violation.

(n) PDC shall have buffer input data streams to accommodate the different times of delivery from individual PMUs.

(o) PDCs shall be able to forward the data with or without modification as well as selectively.

The data processing requirements shall apply to data collected from all specified sources. All time stamp used for data shall be in Indian Standard Time (IST). Wherever source data reported in any other time format it shall be converted to IST. All input data and parameters, whether collected automatically or entered by a user, shall be checked for reasonability and shall be rejected if they are unreasonable. All intermediate and final results shall be checked to prevent unreasonable data from being propagated or displayed to the user. When unreasonable input data or results are detected, diagnostic messages, clearly describing the problem, shall be generated. All programs and all computer systems shall continue to operate with the old data or manually replaced data in the presence of unreasonable data

### 2.2.8 PDC Performance Monitoring

The PDC shall monitor the performance of the data to check the error which may be in the source of data or due to communication and shall be able to monitor the overall measurement system. PDC Monitoring shall include the following features

(a) Both real-time reporting and recorded data for historical assessment. The real-time monitor shall demonstrate that the PDC is currently operating and what the state of operation is. State of operation includes the status of each input and output and recent operating history.

(b) Recorded data shall include errors, events, and overall system operation. The first category of errors is those reported by the data source, which can be a PMU or another PDC. These errors shall include loss of time sync, computation errors (PMU error), data invalid, or data sets matched with local time (sort by arrival). In some cases the source will have additional reporting assignments, and these can be included.

(c) The second category is communication related issues such as a lost TCP connection, buffer overflow, and related issues detectable by the receiving PDC.

(d) The third category is internal PDC problems such as system reset, program error, memory overflow, etc. All errors shall be recorded with a timestamp.

(e) The PDC shall have overflow blocking to prevent repeated errors from overfilling the buffer or causing other problems.

(f) The PDCs shall monitor the events that affect the status and operation of the phasor measurement system. These include loss and restart of the PDC, power loss to a system component, configuration change, and similar type events. These are things that are not a failure or error condition, but do impact the measurement system operation.

(g) The PDCs shall log the number of data measurements received vs. those expected, packet errors, missing data, and similar information including computed statistics in order to assess the overall system operation

#### 2.2.9 PDC Data Validation

The PDCs shall perform basic data validation and checking for the data arriving at the PDC. More advanced data validation techniques such as data sanity checks, etc shall also be provided. As per the requirement of cyber security standards, data validation function shall be regarded as the first activity towards their fulfillment.

The PDC shall perform various quality checks on the phasor data and should insert the appropriate flags or quality codes into the correlated data stream. Quality codes indicate the presence of one or more factors that affect the validity of a data value. All quality codes that apply to a data value shall be maintained in the database for that data value. For the data acquired from PMUs, the PDCs shall be able to receive the time and message time quality codes as per IEEE C37.118 Standard.

#### 2.2.10 PDC Scalability

The delivered PDCs shall be completely equipped and activated with hardware and software for the integration of PMUs as per the sizing requirements mentioned in DRS. The PDC sizing details, given at DRS, is as per the present requirement. In addition to the capacity given in the appendix, the PDCs shall be capable to accommodate an expansion requirement of 50% more. The spare capacity may also be used for integration of PMUs of different make conforming to the IEEE C37.118 standard, with all necessary protocol emulations.

#### 2.2.11 Visualization

Applications shall be present for data analytics and visualization. The key features of the visualization tool are as given below:-

- Geo Spatial map
- Bar chart
- Bar Gauge
- Histogram
- Stats
- Time Series Chart
- Tables
- Annotation Lists
- Diagrams

The time series database for analytics and visualization shall have following key features:-

- Storing data at the input frame rate or at a user defined down-sampled rate.
- Storing data in a continuous rolling archive, where the oldest data is automatically overwritten when the archive becomes full.
- Ability to retrieve the stored data for further processing that includes post-event / disturbance analysis, trend analysis and reporting etc.

#### 2.2.12 DESIGN and SIZING PARAMETERS FOR CCU

a)The CCU shall support minimum 65,000 Data Points capacity.

b)The CCU shall be configurable to integrate 100 number of PMUs at 50 frames per second (fps) or 50 number of PMUs at 100 fps using IEEE C37.118 protocol.

c)The CCU shall also support four numbers synchro-phasor data outputs configurable up to 120 fps using IEEE C37.118 protocol to report data to another CCU system.

#### 2.2.13 PERFORMANCE REQUIREMENTS FOR PDCs

##### 2.2.13.1PDC Latency Requirement

The PDC latency is determined by the data aggregation mode and the output processing time of the PDC. For the time alignment modes, the latency is determined by the user set wait time and the output processing time. Wait time for absolute time alignment has to be long enough to get the data as this time interval includes the PMU and communication delays. Relative time alignment can be shorter as it only includes the difference in delays from various sources. In both cases the measured PDC latency is from the receipt of the first sample of data until the entire package is sent.

2.2.13.2PDC processing time: The time interval a phasor data concentrator (PDC) uses to complete the production of an output stream. It starts when all data to be processed is received or wait times were reached, and ends at the data egress time from the PDC.

The maximum processing time per PDC shall be less than 5 ms and average processing time per PDC shall be 2 ms in all conditions using a single input and forwarding mode or relative time alignment with 0 wait time. The PDC Latency at each Control Center under the following operating conditions shall be a maximum of 2 milliseconds, excluding the PMU measurement latency as specified in IEEE C37.118 standard, Communication Network latency and network elements' (routes/switches) latency and PDC wait time. The above latency requirement shall be applicable for one output data stream from the PDC. For PDCs with more than one output data stream, the PDC latency requirement for each output data stream shall be a maximum of 5 milliseconds

### 2.3 Network Management System (NMS) including workstation:-

The Network Management System (NMS) shall be provided with the below mentioned features:-

Identify all devices on Network including Routers, Switches, Firewalls, Servers, Access Points, etc.

- Automatically discover all devices by learning the Network Topology.
- Discover the network using an IP Range scan, from a Start and End IP Address and discover all port-to-port connectivity and network dependencies.
- Automatically generate Layer 3 Network Maps of core infrastructure, cloud resources and more.
- Display all devices such as Access Points, Servers, PMUs, GPS, Storage Devices, Printers, and more on an interactive Network Map which should display:
  - i) Status of Each Device (including the status of equipments installed at substations i.e. PMU, GPS, Switches etc)
  - ii) End to End Network health
  - iii) Display of Device Properties
  - iv) Display of Detailed Performance Data
  - v) Communication link status
- Continuously monitor the availability and performance of your infrastructure from routers, switches, and firewalls through to servers and storage devices.
- Access and Monitor all devices using protocols: ICMP, SNMP, WMI, SSH.
- Provide Real time Alerts via email, text, Slack, and Logging.
- Alerts should be issued in the following cases:
  - i) Change of state of Device or Monitor
  - ii) When a performance threshold is exceeded
- The System should automatically identify network dependencies and quickly identify the root cause of Network Problems.
- The System should take automatic self healing actions such as restarting an application service.
- The system should have a customisable reporting environment. Dashboards for reporting should be easy to create using drag and drop.
- Reports should be added to the Dashboard and configured to display real time statistics for any performance monitor. Reports should be exported.
- The system should provide an inventory system which provides:
  - i) Hardware Inventory
  - ii) Reports on installed Software and Updates
  - iii) Warranty Reports

The hardware features of the NMS have been mentioned in the DRS.

### **Workstation (HMI/EWS System):-**

The islanding system shall be provided with a HMI for the monitoring and control of the overall islanding operations from the central location. This HMI shall be interfaced with the CCU to which the PMUs installed at all the participating substations are integrated.

One HMI/EWS PC shall be installed along with the NMS at the central location to achieve the following functions. This PC shall meet the specifications mentioned in the Data Requirements Sheets (DRS) section of this document.

- a) The HMI/WS system shall comprise of
  - An integrated operator human-machine interface (HMI),
  - Engineering Workstation to edit and view the configurations of the CCU, HMI, PMU, Ethernet Switches, GPS & Firewall.
  - Necessary software license for the HMI and other required applications.
  - DR storage for the COMTRADE files auto archive from the PMUs in the islanding system network.
  - User interface to view, edit, compose the islanding logics.
  - User interface/browser to view the real time data of PMUs of Substations in Single Line Diagram(SLD).
- b) The HMI displays should show following minimum parameters:
  - Real-time acquisition and display of synchrophasors, analog data, digital data, alarms and events.
  - Display of status of major equipment in Single Line Diagram (SLD) format.
  - Control of the CBs which are wired to the PMUs at the different substations.
  - Display and storage of measured values.
  - Display and storage of derived/calculated/integrated values.
  - Display and Storage of Alarm, and Events.
  - Generate, store and retrieve user configurable Sequence of Event (SOE) Report.
  - Communication status of the PMUs and Ethernet Switches.
- c) Minimum 3 licenses shall be made available for web remote monitoring.
- d) The HMI shall be provided with RBAC feature with user management configuration feature.
- e) Care shall be taken so that any fault in field does not affect the SCADA system.

- f) The HMI PC shall be installed on the space provided by the SLDC team in the SLDC control room.
- g) Source of power for SCADA system and all related hardware shall be from the existing SLDC system power supply.

The CCU shall auto archive the DR files from PMUs in IEEE COMTRADE format. These files will be stored at full fidelity and at the full sampling rate reported by each PMU and shall be auto-archived in the HMI PC storage.

Minimum 1 year data of all the PMUs shall be stored at the CCU. The storage shall be sized accordingly. All the necessary software/UI to extract & visualize the data shall be provided by the bidder.

The islanding & restoration events in case of occurrence shall be recorded at CCU. There shall be provision to generate user customizable event reports. The report shall include minimum of following:-

- Time of Event
- Triggering frequency at the time of event
- Generation during/before the time of triggering of event
- Total load of island during/before the time of triggering of event
- Line & other CB tripping time
- Load shed (total & substation feeder wise) after island formation
- Priority wise substation feeders data
- Voltage & Frequency of each substation bus
- Any other data

## **2.4 GPS**

The PMU requires time reference to UTC. A GPS based time facility to synchronize PMU clock with Coordinated Universal Time (UTC), shall be provided. The GPS receivers to be offered shall meet the supplied PMUs interface, accuracy requirements & provide sufficient time accuracy to keep the TVE within the required limits as per standards and provide indication of loss of synchronization.

The time receiver shall include propagation delay compensation and shall also include an offset to permit correction to local time to achieve time accuracy of at least  $\pm 0.2$  microseconds ( $\mu$ s). Within one minutes of reacquisition of signal, the time shall return to within 0.2 micro-second of UTC. Proper correction of leap second shall be provided. The PMU requires time reference to UTC. The signal sent to PMU from the GPS receiver shall be UTC or provide information to the PMU to correct the time to UTC by using the IRIG-B time profile given in IEEE Standard C37.118.1-2011 & C37.118.1a.-2014 with all amendments & synchronisation guideline of IEEE C37.242-2013 or IEC/IEEE 60255-118-1:2018 Standard. The supplied GPS shall be IEEE1588v2.0 (PTP) compliant.

The supplied GPS shall have “one IRIG-port plus 1 PPS port” and one Ethernet port as minimum. All the required additional hardware, software & cables to be provided by the bidder. **A single unit of GPS shall support for time synchronizing all the PMUs installed on that substation as per the BoQ.**

## **2.5 Giga bit Ethernet Switch (Layer-3)**

In case of multiple PMUs at a substation/power plants all the PMUs shall be connected to the communication equipment through an industrial grade Layer-3 LAN switch. The industrial grade LAN switch shall interface PMUs on one side and communication equipment on the other side. The LAN switch shall operate on 220V DC or 110 V DC or 48V (+10%, -15%) DC supply voltage of station.

The no. of ports required in the switch shall be worked out by the bidder looking into the requirement of PMUs to be integrated in that substation. The no of ports required in each Router/LAN switch shall also include 50% spare ports. All the required additional hardware/software & cables to be provided by the bidder.

## **2.6 Next Generation firewall**

The bidder shall be responsible for maintaining the cyber security posture of the supplied system. It shall be the responsibility of the bidder to update patches for all the software supplied in the system during AMC/Guarantee Period without any extra cost to the owner. All the software shall be provided with valid license having validity till the expiration of AMC period. In case of any outdated software, it shall be responsibility of the bidder to replace/upgrade the software free of cost during the AMC period.

As depicted in the network architecture, the system shall be deployed with a firewall with the following technical specifications.

- a) Encryption through IPSec VPN (Virtual Private Network), Deep Packet Inspection (DPI), Denial of service (DoS)&Distributed Denial of Service (DDoS) prevention, Port Block/ Allow, rules/ policies for block/allow, IP (Internet Protocol) & Media Access Control (MAC) spoofing protection, threat detection, Intrusion Prevention System (IPS), Anti-Virus, Anti-Spyware, Man In The Middle (MITM) attack prevention.
- b) The proposed firewall shall be able to handle (alert, block or allow) unknown /unidentified applications e.g.unknown TCP & UDP packets. It shall have the provision to define application control list based on application group and/or list.
- c) Firewall shall have feature and also have capability to update the definition/ Signatures of AntiVirus online as well as offline. Firewall shall also be compatible to update the definitions/signatures through CMC. There shall be a defined process for security patching and firmware up-gradation. There shall be a feature to field validate firmware checksum. The same shall also be validated before using the OEM provided file/binary in the process of firmware up-gradation and security patching
- d) Firewall shall have Management Console port to configure remotely.
- e) Firewall shall be EMI/EMC compliant in Substation environment as per IEC 61850-3.
- f) Firewall shall be rack mounted in existing standard equipment cabinets.

- g) Firewall shall have support of SCADA applications (IEC-60870-5-104), ICCP, PMU (IEEE C37.118), Sub-Station Automation System (IEC 61850), Ethernet and other substation environment protocols.
- h) Client based Encryption/ VPN must support different Operating System platforms e.g. Windows, Linux & Mac.
- i) The solution must have content and comprehensive file detection policies, blocking the files as function of their types, protocols and directions.
- j) Firewall shall have logging facility as per standard logs/events format. Firewall shall have features to export the generated/stored logs/events in csv (Comma Separated Value) and also any other standard formats for offline usage, analysis and compliance. Firewall shall have suitable memory architecture and solution to store and be enable to export all logs/events for a period of last 180 days at any given time.
- k) Firewall shall have features and be compatible with local as well as central authentication system (RADIUS, LDAP, or TACACS+) for user account and access right management. It shall also have Role Based User management feature.
- l) Firewall shall have the capability to configure sufficient number of VLANs.
- m) Firewall shall have the capability to support sufficient number of sessions.
- n) Firewall shall have provision to configure multiple IP Sec VPNs, at least 100 nos., (one-to-many or many-to-one). Shall support redundant operation with a similar router after creation of all the IP Sec VPN. IPSec VPN shall be with encryption protocols as AES128, AES256 and hashing algorithms as MD5 and SHA1. IPSec VPN throughput shall be at least 300 Mbps.
- o) Firewall shall be capable of SNMP v3 for monitoring from Network Management system. It shall also have SNMPv3 encrypted authentication and access security.
- p) Firewall shall operate in Active/Passive or Active-Active mode with High Availability features like load balancing, failover for firewall and IPsec VPN without losing the session connectivity.
- q) Firewall should have integrated traffic shaping (bandwidth, allocation, prioritisation, etc.) functionality.
- r) Shall support simultaneous operation with both IPv4 and IPv6 traffic.
- s) Firewall shall be compatible with SNTP/NTP or any other standards for clock synchronization.
- t) Firewall shall have the features of port as well as MAC based security.
- u) Firewall shall support exporting of logs to a centralized log management system (e.g. syslog) for security event and information management.
- v) Firewall time shall be kept synchronised to official Indian Timekeeping agency, time.nplindia.org.
- w) Firewall product shall be provided with all applicable updates at least until 36 months since the applicable date of product shipping to the concerned utility.

## 2.7 Heavy Duty Relay (HDR)

The bidder need to supply Heavy Duty Relays(HDR( for the operation of the circuit breakers at the participating substations. The HDRs shall meet the following specifications;

Standard Coil Rating	110/125 VDC or 220/250 VDC. The HDR shall operate between 75%- 120% of rated volts.
No. of output contacts	6 NO contacts
Operating time	Typically 25 ms
Insulation	The HDR shall meet the requirements of IS 3231 1965/EC 255-5 series C-2 kV for 1 minute.
Contact Rating	Current: – DC Make & Carry continuously:-1250 W with maxima of 10 A and 660 V Make & Carry for 3 Secs: -1250 W with maxima of 30 A and 660 V Break: – 100 W (resistive) ,50 W (inductive) with maxima of 5 A and 660 V
Flag	With Flag
Contact Reset	Self Reset

## 2.8 Panel

***Minimum 1 No. of panels shall be considered for SLDC & each substations covered in the scheme. If required, depending upon the no. of PMUs, the no. of panels may be considered for substations.***

The bidder shall provide panels for in housing PMUs & GPS. The panels shall meet the following requirements:-

- (a) Shall be free-standing, floor mounted and height shall not exceed 2100 mm.
- (b) Shall have maintenance access to the hardware and wiring through lockable full height doors.
- (c) Shall have the provisions for bottom cable entry.
- (d) The safety ground shall be isolated from the signal ground and shall be connected to the ground network. Safety ground shall be a copper bus bar. The bidder shall connect the panel's safety ground to the grounding network of substation. Signal ground shall be connected to the communication equipment signal ground.
- (e) All panels shall be supplied with 230 Vac, 50 Hz, single-phase switch and 15/5A duplex socket arrangement for panel lighting & maintenance.
- (f) All panels shall be provided with an internal maintenance lamp, space heaters with thermostat and gaskets.
- (g) All panels shall be indoor, dust-proof with rodent protection, and meet IP41 class of protection.
- (h) There shall be no sharp corners or edges. All edges shall be rounded to prevent injury.

- (i) Document Holder shall be provided inside the cabinet to keep test report, drawing, maintenance register etc.
- (j) 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.
- (k) The structural frame of the panels shall be of cold rolled sheet steel of thickness not less than 3 mm for the weight bearing members of the panels such as base frame, front sheet & door frames and 2mm for sides, door, top and bottom portions.
- (l) All sheet steel work shall be degreased, pickled, phosphated in accordance with IS6005. The phosphate coating shall be sealed with application of two coats of ready mixed, stoving type zinc chromate primer. Two coats of synthetic enamel paint (RAL7032 shade) shall be applied both in the exterior and the interior of the panel.

## **2.9 Earthing**

- (a) All panels shall be equipped with an earth bus securely fixed. Location of earth bus shall ensure no radiation interference for earth systems under various switching conditions of isolators and breakers. The material and the sizes of the bus bar shall be at least 25 X 6 sq.mm perforated copper with threaded holes at a gap of 50mm with a provision of bolts and nuts for connection with cable armors and mounted equipment etc for effective Earthing provision shall be made for extending the earth bus bars to adjoining panels on either side.
- (b) Provision shall be made on each bus bar of the panels for connecting substation earthing grid. Necessary terminal clamps and connectors for this purpose shall be supplied by the bidder.
- (c) Panels shall be connected to the substation control room earth system at least at two places separately i.e., the each panel shall be connected to a single earth flat running in the station from at least two points on the panel body.
- (d) All metallic cases of PMUs shall be connected to the earth bus by copper wires of size not less than 2X2.5 sq. mm. The Colour code of earthing wires shall be green.
- (e) Looping of earth connections which would result in loss of earth connection to other devices when the loop is broken, shall not be permitted. However, looping of earth connections between equipment to provide alternative paths to earth bus shall be provided.

## **2.10 Cabling & Interconnections**

All cabling between component units of the PMU, PMU to GPS along with antenna, PMU to layer 3 Switch, PMU to the Sub Station/Power Station control and relay panels (located in the substation/power Station control room), Layer-3 Switch to Wide Band Communication Equipment shall be supplied and installed by the bidder and shall be shown on bidder supplied drawings. Further any equipment/hardware/software additionally required for the integration shall be provided by the bidder. The exact requirements shall be worked out during the field survey.

Plug-type connectors with captive fasteners or compression type connectors shall be used for all internal interconnections. The connectors shall be polarized to prevent improper assembly. Each end of interconnection cables shall be identified by a marker which includes the cable number and the identifying number and location of each of the cable's terminations. This information shall match with the bidder's drawings.

Adequate space and hardware shall be provided for routing of the field wiring within the enclosures. Bidder wiring within enclosures shall be neatly arranged and shall not be directly fastened to the enclosure frame. All internal interconnection wiring and cables shall be routed separately from field wiring to the PMU terminals & power wiring. All wiring shall use copper conductors and have flame retardant insulation. Conductors in multi-conductor cables shall be individually colour coded.

The use of non-flammable, self-extinguishing, plastic wire troughs is permissible. Metal clamps must have insulating inserts between the clamps and the wiring. Wiring between stationary and movable components, such as wiring across door hinges or to components mounted on extension slides, shall allow for full movement of the component without binding or chafing of the wiring.

The bidder shall be responsible for laying and termination of all cables required under the project which includes interconnections among bidder supplied equipment and their interconnection with employer's panels. Testing and commissioning of these interconnections shall also be done by the bidder.

***Any other type of cable required for meeting the requirements shall be worked out by the bidder during the site survey & shall be in the scope of bidder.***

## **2.11 Wiring/Cabling requirements**

Shielded (screened) cables shall be used for external Cabling from the PMU/ SIC panels. These external cables (except communication cables) shall have the following characteristics:

- a) All cables shall have stranded copper conductor.
- b) Minimum core cross-section of 2.5 sq.mm for PT cables, 4 sq.mm for CT cables and 2.5 sq.mm for Power & Control outputs and 1.5 sq.mm for Digital Status inputs, transducer mA current output
- c) Rated voltage  $U_o/U$  of 0.6/1.1KV
- d) External sheathing of cable shall have oxygen index not less than 29 & temperature index not less than 250. Cable sheath shall meet fire resistance test as per IS 1554 Part- I.
- e) Shielding, longitudinally laid with overlap.
- f) Dielectric withstand 2.5 kV at 50 Hz for 5 minutes
- g) External marking with manufacture's name, type, core quantity, cross-section, and year of manufacture.

The Communication cable shall be of shielded, twisted pairs and of minimum 0.22sq mm size Copper cable or Fibre optic cable.

## **3.0 INSPECTION AND TESTING**

### **3.1 Type Tests**

Type test report for PMU, CCU, Ethernet switches, GPS, NMS & firewall covered under this specification shall be submitted for PURCHASER's approval and it shall also include tabulation detailing various type test reports along with applicable type test certificates number, details of equipment subjected to type test, place of testing and final results.

#### **3.1.1. Electromagnetic compatibility tests(EMC) tests**

EMC means the ability of an equipment or system to function satisfactorily in its electromagnetic environment without introducing intolerable electromagnetic disturbances to anything in that environment. EMC qualification requires qualification of equipment/system for noise emission within acceptable limits and immunity to specified noise.

#### **3.1.2. Immunity & Emission tests**

The PMU/CCU/Ethernet Switches shall comply the following tests as per standard IEC 61000-4/C37.90/ CISPR22.

- a) Radiated & Conducted Emissions
- b) Radiated radio frequency electromagnetic field compatibility test
- c) Conducted disturbance induced by radio frequency fields
- d) Fast transients
- e) 1 MHz oscillatory wave test
- f) Surge immunity test
- g) Power frequency immunity test
- h) Power frequency magnetic field immunity test
- i) Electrostatic discharge test
- j) DC voltage dips, short interruptions, and variations
- k) AC ripple on DC supply

#### **3.1.3. Environmental tests**

The PMU/CCU/Ethernet Switches shall comply the following environment tests as per standard IEC60068-2/IEC 60255-21/ IEC 61850-3/ IEC 60068-2.

- l) Dry heat test

- m) Cold test
- n) Cyclic temperature with humidity
- o) Vibration
- p) Shock& Bump
- q) Seismic

#### 3.1.4. Safety related tests

The PMU/CCU/Ethernet Switches shall comply the following safety related tests as per standard IEEE1613 / C37.90.

- a) Impulse voltage test
- b) AC or DC dielectric voltage test
- c) Insulation resistance test

### **3.2 Routine Test/Factory Acceptance Test (FAT)**

All routine tests shall be carried out on all equipment as per latest relevant standards in presence of PURCHASER/ PURCHASER's representatives.

The SUPPLIER shall draft a detail program to test each equipment individually and then the integrated system. The program must permit the verification of different characteristics of the equipment.

The Routine tests to be carried out by CONTRACTOR shall include but not limited to the tests listed below:

- a) Verification of completeness of wiring and connection as per approved drawing.
- b) Continuity checks for all circuits.
- c) Measurement of IR and HV withstand test.
- d) Check for proper functioning of PMU, CCU, GPS, Firewall, HMI Hardware & software, etc.
- e) Check for transfer of data between PMU, CCU and HMI PC.
- f) Integration of the PMUs with CCU.
- g) Demonstration of the tripping commands from CCU to PMUs.
- h) Demonstration of the HMI screens, events and alarms.
- i) Check for proper time synchronization.
- j) Functional testing of GPS receiver system for following cases

- With antenna input.
  - Without any external synchronizing input (free running mode).
  - Without antenna input and with external time synchronizing input.
- (k) Check for operation of Islanding Scheme as per the logics implemented.

### **3.3 Site Acceptance Test (SAT)**

Successful bidder shall submit equipment installation and commissioning procedure for purchaser's approval.

Commissioning checks indicated below are indicative only. However, the contractor shall carry out actual commissioning checks on all the equipment covered in this specification as per manufacturer's recommendation and Purchaser's instructions. The Original Equipment Manufacturer's engineer shall be present during performance of tests at site and manufacturer's concurrence taken before completion.

#### **3.3.1. Preliminary Checks**

- a) Check nameplate details of every associated equipment according to specification.
- b) Check for physical damage.
- c) Check tightness of all bolts, clamps and connecting terminals.
- d) Check cleanliness
- e) Check earthing
- f) Check panel heaters.
- g) Check Bill of Materials in each panel

#### **3.3.2. Commissioning checks**

- a) Each wire shall be traced by continuity tests and it should be made sure that the wiring is as per relevant drawings. All interconnections between panels / equipment shall be similarly checked.
- b) Measurement of insulation resistance of all wires and modules
- c) Check for communication status of the of the important system components up to the CCU/PDC & HMI.

- d) Check for the proper values of electrical parameters, DI, & DO at the local PMU level
- e) Check for transfer of synchro phasors, analogue, digital, and DR file data from PMUs to ICCU.
- f) Check for control from PDC/HMI OWS to PMU
- g) Check the data communication from CCU/PDC to SLDC SCADA on IEC60870-5-104
- h) GPS Receiver
  - Check for proper time synchronization between GPS, Data Acquisition and Control units, numerical relays and DR units
  - Functional checking of GPS receiver system to synchronize all numerical relays, DR units for following cases
    - i) With antenna input.
    - Without any external synchronizing input (free running mode).
    - Without antenna input and with external time synchronizing input.
  - Integrated functional testing to verify time synchronization and cross triggering of all DRs and GPS receiver system interconnected, with the simulated input signals
- i) Check for operation of Islanding Scheme as per the logics implemented
- j) Check for firewall policies
- (k) Check for changes in the Islanding Logics and its testing.
- (l) Validating the PMU signals/values from the field.
- (m) Check for equipments/communication link status in NMS.

The above checks shall form the guarantee tests for acceptance of the equipment.

## 4 Data Requirement Sheets (DRS)

### Phasor Data Concentrator (PDC) :-

S.No.	Description of the Features	Minimum Configuration	Offered by the bidder
1	Manufacturer		
2	Model No		
3	Country of Origin		
4	Operating System	Windows 2019 or above or Embedded RTOS VxWorks or Linux	
5	RAM requirement	16 GB or above	
6	Hard Disk Storage	2 TB or above	
7	No. of Cores	8 or above	
8	Processor Speed	2.8 GHz or above	
9	I/O Ports	1 Gbps dual Ethernet ports (Minimum)	
10	Power Supply	Dual AC Power Supply	

11	User Interface	Through a 55" Monitor	
12	Mounting	Rack mountable	
13	Communication Protocols	<ul style="list-style-type: none"> <li>• C37.118 Sychrophasor</li> <li>• IEC 60870-5-104 Server/Client</li> </ul>	
14	PDC Sizing	<ul style="list-style-type: none"> <li>• 65000 Data Points</li> <li>• 100 PMUs/1200 Phasors @50 fps and 4x outputs @ 50 fps</li> <li>• 50 PMUs/700 Phasors @100 fps max and 4x outputs @100fps</li> </ul>	

### Phasor Measurement Unit (PMU)

S.No	Description of the Features	Minimum Quantity of the features	Offer by the Bidder
1.	Device	Phasor Measurement Unit (PMU)	
2.	Manufacturer		
3.	Model No.		
4.	Country of origin		
	<b>Inputs</b>		
5.	Minimum Analog Channel	PMU shall be able to measure parameters for minimum 5 bays in single PMU	
6.	Minimum Digital Input	16	
	Minimum Digital Output	8	
7.	CT core	Capable for Metering & Protection Core	
8.	Auxiliary Power Supply Source	220 V DC or 110V DC or 48V DC (+10%, - 15%) power supply source	
9.	Communication ports	One Ethernet port of 10/100 Base Tx and one optical fiber port of 100 Mbps	
10.	Interface ports for Time synchronization	IRIG-B interface port for either a standard or high-accuracy demodulated IRIG-B time- synchronization input signal or Ethernet port on IEEE 1588v2.0 (PTP)	

11.	Communication Protocols	<ul style="list-style-type: none"> <li>• UDP/IP multicast/unicast &amp; TCP/IP</li> <li>• DNP 3.0 (serial &amp; TCP/IP)</li> <li>• IEC 60870-5-104</li> <li>• IEEE 1588 PTP and IRIG-B for time synchronization</li> </ul> <p>PMU supporting below protocol shall be preferred: -</p> <ul style="list-style-type: none"> <li>• IEC 61850 Ed. 1 and Ed. 2</li> <li>• IEC 61850-90-5 PMU over GOOSE support</li> </ul>	
	<b>Measurement Output</b>		
12.	Performance Class	M class & P Class It should be user selectable.	
13.	Test Compliance as per IEEE 37.118 or IEC/IEEE 60255-118-1:2018 Standard	Bidder to fill the values as per test conducted in the lab for each individual values both in steady state and Dynamic State as per IEEE C37.118 Standard OR IEC/IEEE 60255-118-1:2018 Standard	
14.	Environmental Condition During testing	Bidder to fill the environmental condition during testing for each test.	
15.	Reporting rates (Frame per second)	25, 50 or above frames per seconds for 50 Hz System. The actual rate to be used shall be user selectable. All the PMU hardware and software shall be sized considering 50 frames per second. If the PMU is capable for higher reporting rate, then the PMU hardware and software shall be sized considering the highest reporting rate.	
16.	Configuration Frame	PMU shall support Configuration Frame - 2 & Configuration Frame-3	
17.	Minimum reporting clients	Minimum 2 clients over TCP and/or 2 UDP clients	
18.	Active & Reactive Power	3 Phase active and reactive power measurement/computation for a feeder should be possible in PMU.	
19.	Total Vector Error	Less than 1 %	
	<b>Other features</b>		
21.	HMI facility	Yes with display in PMU showing real time measured values & configuration changes possible through HMI.	

22.	Remote configuration Change	The supplied software shall have the capability to provide remote configuration of PMUs, through same data channel through which the PMUS are reporting to PDC.	
23	Configuration tool	Yes	
24	Station Name, Phasor Name, Analog name, Digital Name	These should be user configurable in PMU.	
25	Disturbance Recorder	Disturbance Recorder with disturbance report feature that record upto 8 analog channels & 16 digital channels.	
26	Event Recorder	Upto 512 event records	
27	Test reports for measurement compliance	The Bidder shall submit the test reports for measurement compliance for both class of measurements along with the Bid.	
28	Cyber Security	<ul style="list-style-type: none"> <li>• The Access of PMU must be through password and with log of same shall be maintained.</li> <li>• The system shall not be affected by any outside programs like spam, malware etc.</li> <li>• The system must be designed on standard IEEE C37.118.2011-1, C37.118.1a-2014, C37.118.2011-2 with all amendments &amp; IEEE Guide line of PMU.</li> <li>• Any configuration change must be through access right and log of the same must be maintained, all logs of event shall report to existing PDC installed at SLDC.</li> </ul>	
29	Protection Features	<ul style="list-style-type: none"> <li>• Synchrocheck (25)</li> <li>• Overfrequency (81O)</li> <li>• Rate of change of frequency (81R)</li> <li>• Underfrequency (81U)</li> </ul> <p>If PMU does not support these features, the bidders shall provide separate relays for meeting this requirement.</p>	

30	Self-monitoring, diagnostic feature and alarm to PDC.	The PMUs shall have continuous self-monitoring ,diagnostic feature and capable to identify & communicate problems and shall generate alarm in case of any abnormality which shall be displayed locally as well as shall be transferred to the PDC. The indication shall be available for each module on the front panel of the PMU.	
31	Multiple data streams configurable independently.	PMU shall support multiple data stream i.e. a PMU shall be capable to transmit its data in separate data streams (more than one). Each stream shall be configurable independently based on the following:- <ul style="list-style-type: none"> <li>• Contents</li> <li>• Sampling rate</li> <li>• Class of service (P or M)</li> <li>• Communication mode (TCP/UDP)</li> <li>• Different destinations with separate IDCODE.</li> </ul>	
	<b>Environmental condition</b>		
1	Temperature	-10 to 50 degree Celsius	
2.	Humidity	10% to 95%	

### GPS

S.No	Description of the Features	Minimum Quantity of the features	Offered by the Bidder
1.	Manufacturer		
2.	Model No.		
3.	Country of origin		
4.	Time stability of internal time base	Minimum 1 ppm	
5.	Propagation delay compensation	Yes	
6.	Include an offset to permit correction to local time	Yes	
7.	Reverting to internal time base upon loss of signal from UTC	Yes	

	source		
8.	Resynchronization Delay	Not more than 5 minutes.	
9.	Accuracy of resynchronization	< 1.5 Micro Sec	
10.	Interfaces	<b>Minimum one Ethernet port and One IRIG-B port &amp; 1PPS port.</b>	
11.	Loss of signal alarm	The PMU shall have internal clock, which shall be synchronized with GPS clock. Upon loss of signal from the GPS source, the PMU shall detect a loss-of-signal and generate an alarm which will be transferred to PDC. Upon loss of signal, the PMU time facility shall revert to an internal time base.	
12.	IEEE1588v2.0 (PTP) compliant	Yes	
13.	Time Synchronization	The signal sent to PMU from the GPS receiver shall be UTC or provide information to the PMU to correct the time to UTC by using the IRIG-B time profile given in IEEE Standard C37.118.1-2011 & C37.118.1a.-2014 with all amendments & synchronization guideline of IEEE C37.242-2013 or IEC/IEEE 60255-118-1:2018 Standard.	

### Layer-3 Switch

S.No	Description of the Features	Minimum Quantity of the features required	Offered by the Bidder
1.	Manufacturer		
2.	Model No.		
3.	Country of origin		
4.	Performance	Minimum 5 Gbps Switching Capacity	
5.	Functions	Data Exchange between PMU and PDC	
6.	Layer-2 & Layer-3 features required	Static Routing for IPv4 and IPv6	
		RIP for IPv4 (RIPv1/v2) and IPv6 (RIPng)	

		OSPF for IPv4 (OSPFv2) and IPv6 (OSPFv3)	
		Border Gateway Protocol 4 with support for IPv6 addressing wherever applicable.	
		Policy-based routing	
		IPv6 tunneling to allow IPv6 packets to traverse IPv4-only networks by encapsulating the IPv6 packet into a standard IPv4 packet.	
		Dynamic Host Configuration Protocol (DHCP) client, Relay and server.	
		Support for Multicast VLAN	
		Support for Jumbo frames	
		Should provide for 32K MAC Address Table	
		Should have facilities such as IPv6 to IPv4 tunneling, DHCPv6, ICMPv6	
7.	Features to support	Support IEEE 802.3u: Auto-negotiation on TP, IEEE 802.3x, 802.1p: flow control and prioritization, IEEE 802.1Q: VLANs, maximum 32 VLANs, IEEE 802.1d, 802.1w: Spanning Tree, Rapid Spanning Tree including RSTP 2004 extensions providing sub-second hop on rings, IEEE 802.1p: DiffServ, traffic prioritization for routed IP flows/ports Shall support Multicast and Unicast. Shall be PTP enabled as per IEEE1588v2.0 (Power Profile)	
8.	Network management	<ul style="list-style-type: none"> <li>• Console port for configuration of software features</li> <li>• Shall able to manage the switch through Command-line interface; Web browser; SNMPetc.,</li> </ul>	
9.	Security	a. Access Control Lists for both IPv4 and IPv6 for filtering traffic to prevent unauthorized users from accessing the network	
		b. Port-based rate limiting and access control list (ACL) based rate limiting	
		c. IEEE 802.1x to provide port-based user authentication with multiple 802.1x authentication sessions per port	
		d. Media access control (MAC) authentication to provide simple authentication based on a user's MAC address	

		e. Dynamic Host Configuration Protocol (DHCP) snooping to prevent unauthorized DHCP servers	
		f. Port security and port isolation	
10.	Speed configurability at each port	WAN ports optional 64kbps to 2Mbps	
11.	Interface ports	As per the PMUs to be integrated in the substation.  Additional 50% expansion ports shall also be provided in the LAN switch.	
12.	Mounting	Rack mountable	
13.	Environmental Compliance	IEC61850-3 and IEEE1613 (Electric Utility Substation), EMS-IEC61000, EMI: FCC part15 A	
14.	Operating temp	- 10 to 75°C, no fans	
15	Power Supply	The LAN switch shall operate on 220V DC or 110 V DC or 48V (+10%, -15%) DC supply voltage of station.	

## HMI/EWS PC

S.No.	Description of the Features	Minimum Quantity of the features	Offer by the Bidder
1	Processor	64-bit 8 core 16 thread with minimum frequency 2 GHz, 8MB cache or more	
2	Memory	32GB DDR4 RAM	
3	Graphic Processor	Required	
4	Hard disk drive	2TB/4 x 512 GB SATA SSD	
5	Display & User access tools	Minimum 24" display with HDMI connection. Standard USB keyboard and mouse.	
6	USB Connector	4 x USB 2.0 or above	
7	Mounting	Rack mounted CPU. Monitor, Keyboard & Mouse on the operator table	
8	Operating system	Pre-installed Ms Windows 2010 Pro or Ms Windows Os compatible to the HMI/EWS software tools Pre-installed Ms-office and anti-virus subscription for 3 years	
9	Power Input	220 V AC @ 50 Hz	
10	Network interface	Ethernet ports-4 numbers 10/100/1000 Mbps	

### Next-Generation Firewall

S.No.	Description of the Features	Minimum Quantity of the features	Offer by the Bidder
1	Make		
2	Model No.		
3	Country of origin		
4	GbE RJ45 WAN Ports	2	
5	GbE RJ45 DMZ Ports	1	
6	GbE RJ45 Internal Ports	5	
7	USB Ports	1	
8	Console Ports	1 x RJ45	
9	Mounting	19" Rack or DIN Rail Mount	
10	Certifications	CB, CE, UL, FCC, VCCI, ICES, BSMI, &RCM	
11	Power Input	12 VDC (Powered by external AC 100-240 converter)	
12	Operating Temperature	0°C to 40°C (operating) -20°C to +70°C (storage)	
13	Humidity	10% to 90%, non-condensing	
14	Log Storage duration	Minimum 180 days	

### Heavy Duty Relays(HDR)

S.No.	Description of the Features	Minimum Quantity of the features	Offer by the Bidder
1	Make		
2	Model No.		
3	Country of origin		
4	Standard Coil Rating	110/125 VDC or 220/250 VDC. The HDR shall operate between 75%- 120% of rated volts.	
5	No. of output contacts	6 NO contacts	
6	Operating time	Typically 25 ms	
7	Insulation	The HDR shall meet the requirements of IS 3231 1965/EC 255-5 series C-2 kV for 1 minute.	
8	Contact Rating	Current: – DC Make & Carry continuously:-1250 W with	

		maxima of 10 A and 660 V Make & Carry for 3 Secs: -1250 W with maxima of 30 A and 660 V Break: – 100 W (resistive) ,50 W (inductive) with maxima of 5 A and 660 V	
9	Flag	With Flag	
10	Contact Reset	Self Reset	

### Network Management System (NMS)

S.No.	Description of the Features	Minimum Quantity of the features	Offer by the Bidder
1	Make		
2	Model No.		
3	Country of origin		
4	Mounting	Xeon Grade Hardware Rack Mounted	
5	RAM	16 Gb or above	
6	OS	Windows Server	
7	Monitor	24" Monitor with Keyboard and Mouse	

### 4.0 Annual Maintenance Contract (AMC):-

The scope of work under maintenance & support services shall include maintenance of all the software, hardware and services of supplied System along with the future integration and support services for meeting the future requirement envisaged under this project on single responsibility basis. The maintenance practices to be followed shall be as per ISO 20000 Standard. The essence of the maintenance and support services is to provide maintenance support for the entire system (hardware and software) supplied by the Contractor, with the goal of meeting the availability as set forth herein.

The availability of all the equipment/items supplied under the contract is the essence of the contract. Contractor shall maintain required availability of the system during entire contract period (including extension of contract, if any) as per the terms and conditions and requirements mentioned in document. The maintenance of all the supplied system comprises of all activities required to keep the systems up and running all the time at an optimum level by proactive monitoring, diagnosis and rectification of any failure of all the hardware(s) and software(s). The 24x7x365 support shall be provided by Contractor.

The period of maintenance support shall consist of one-year Warranty (Defect Liability extendable, if defects found) period commencing from Operational Acceptance and four years Maintenance period thereafter. Payment will not be released during defect liability period. The Owner at their own discretion may extend the duration of maintenance period for up to 2 years based on the same rates in the contract and at the same terms and conditions. For any addition during the maintenance period, Contractor shall provide services for maintenance of those systems also without any additional cost.

The contractor shall guarantee continuous availability of the system at 99.0% for a period of four years commencing after completion of the warranty period. The availability figures of 99.0% will be measured and verified for each PMU at SLDC where all data of PMU shall be transmitted for reports. Further the availability of 99.0% of Islanding System at SLDC including PDC, NMS, Firewall etc. shall also be ensured by the contractor. During this period, the contractor shall take continual actions to ensure the guaranteed availability and shall make available all the necessary resources such as specialist personnel, tools, test devices etc for replacement or repair of all defective parts and shall have prime responsibility for keeping the system operational. For this period, commencing immediately after Operational Acceptance, the actual availability achieved would be calculated jointly by the contractor's representative and MPPTCL. In case the actual achieved availability falls short of the guaranteed availability, it would be considered as contractor's default. However, before declaring the contractor's default the MPPTCL shall negotiate for reaching a mutually acceptable agreement.

The contractor shall ensure 99.0% availability of entire system including PMU, PDC & all other items in the BoQ. For all third-party equipment (Hardware & Software), Contractor shall have back-to-back support & warranty with appropriate response time from OEM and these Back-to-Back contracts will be shared with owner before start of defect liability period. Contractor shall be responsible for coordination with the OEM for all matter related to that equipment and for meeting the overall response times and availability requirements specified in the Specification.

The spares as mentioned in the Annexure-1 of Particular Conditions shall be provided by SLDC. The system availability shall be computed after ensuring the availability of spares.

Contractor shall also be responsible for hardware/software replacement/upgradation without any additional cost in case OEM declares end of life/end of support/ obsolescence for the product.

The maintenance of the System shall comprise of the following category of works which is further elaborated for each of the different subsystems:

- (a) Preventive Maintenance of Substation PMU/GPS/Router/Switch & Control Centre(SLDC) equipments like PDC, NMS, Firewall, Router etc.
- (b) Preventive Maintenance Activity (performance monitoring, system backup, patch management, updates, emergency response and troubleshooting.
- (c) Integration of new equipment (PMU, Workstations, Printers, Switch, Router etc.)
- (d) Changes in the logics of operation of islanding scheme during the AMC period.

(e) OEM Back-to-back Support:

- i. All the supplied system shall be under OEM (Hardware and Software) warranty & support till the completion of entire AMC period (including extension of contract, if any).
- ii. During entire contract period (including extension of contract, if any), if OEM discontinues / declared ends support to any item supplied (software/hardware/security solution/OS) under the contract, contractor has to replace such hardware, software (or both, depending on software or hardware dependencies on each-other) without any additional cost to Owner. Replacement shall be of either same or higher configuration keeping required performance specified under the contract and it shall be from the same OEMs. OEM can be changed only after the receipt of letter from OEM regarding non-availability of similar or higher configuration of non-supported item(s).

If any development, customizations, testing, etc. needs to be done for the compatibility of Islanding Scheme and other applications , then the same shall be done by the contractor at its own cost.

**Quarterly payment shall be released after the submission of valid OEM support for all the supplied system.**

(f) Contractor shall ensure that the supplied system is cyber secure & all kinds of cyber security measures needs to be adopted by the contractor during AMC period as per directions of SLDC MP. Any kind of upgradation in the system for enhancing the cyber security of the system and to comply with the guidelines, shall be done by the contractor free of cost during entire AMC period.

(g) Signature updation through out the contract period including AMC of various software licenses supplied under this project shall be in scope of the contractor.

(i) In case of end-of-life, obsolescence and end-of-support of the operating system, Anti-Virus or any other software delivered in the project, the contractor should provide latest version and license of operating system, Anti-Virus or any other software delivered in the project at its own cost. If changes of software and operating system require replacement of hardware's, then, hardware shall also be replaced by the contractor without any cost implication to owner. Replacement shall be of either same or higher configuration keeping required performance specified under the contract and from same OEMs.

(j) If any development, customizations, testing, etc. needs to be done for the compatibility of Islanding Scheme and other applications on the new OS platform, Anti-virus and any other software delivered in the project upgradation, then the same shall be done by the contractor at its own cost.

**Deployment of Site Engineer**

The Contractor shall provide engineer who has an experience and skill to maintain the PMU & Islanding System including PDC & all other items mentioned in the BoQ to achieve the desired level of availability. The site engineer shall be readily available to move to the substation site for

attending any kind of issues occurring in PMU, GPS, Switches etc. Further the maintenance of Islanding System at control centre including PDC, NMS, Firewall etc (Hardware & Software) shall also be responsibility of the site engineer. The timings for Emergency Support would be 24 hours a day, 7 days a week throughout the year.

The onsite support staff should possess capability for supporting the equipment and components proposed, but not limited to undertaking preventive and break-fix maintenance, troubleshooting, resolving problems, tuning etc. The Contractor shall also provision for necessary offsite support to ensure continuity of operations.

### **Payment of maintenance charges:**

In the event of availability below a certain level, the maintenance charges would be proportionately reduced as follows:

<b>Sr. No.</b>	<b>Availability</b>	<b>Deduction as % of the apportioned price of total AMC applicable for that site</b>
1	>99%	Nil
2	Less than >99%	Deduction of 2% of the quarterly AMC charges for every 1% or part there of accordingly decrease in availability of 99% subject to maximum 15 % of the AMC charges of the affected site.

The computation of availability/Non availability would be rounded up to 2 decimal prices and any deduction in the maintenance charges thereof would be calculated as stated above on pro rata basis.

### **(A) Terms and Condition of Annual maintenance contact (AMC):-**

#### **i. Application software maintenance:-**

<b>Activity</b>	<b>Scope Description</b>
Corrective Maintenance	<ul style="list-style-type: none"> <li>Rectify bugs that prevent the software from being available/reported by the utility during the usage of the system with respect to each software/deliverables under normal use of the hardware for which it was designed.</li> <li>Trouble shooting of failure of implemented functionality.</li> </ul>
Preventive Maintenance	<ul style="list-style-type: none"> <li>Minimize and eliminate defects that may prevent the deployed software from being available.</li> </ul>

#### **ii. Hardware Maintenance:-** (Application for all the supply items by the bidders i.e. PMU with GPS, 3 Layer switches, copper control cable, FO

Cable,PDC, NMS, Firewall etc).

Activity	Scope Description
Corrective Maintenance	<ul style="list-style-type: none"><li>• Rectify hardware defects that prevent the supported hardware function from being available.</li><li>• Trouble shooting of failure of implemented functionality.</li></ul>

**(B)** The bidders may please note that AMC charges on lump-sum basis shall include charges towards deputation of service Engineer for proper functioning of complete scheme, replacement of defective equipment if any at substation site or SLDC and also it will be binding on bidders to make the scheme functioning within the shortest possible period mutually agreed on the basis of problem noticed.

### **Preventive Maintenance Activity**

The preventive maintenance activity comprises of the activities to be performed by the Contractor to keep the system running at optimum level by diagnosis and rectification of all hardware and software failures and would broadly include:-

- a) Repair / replacement of defective equipment. The Contractor shall be responsible for repair/replacement of all the hardware including consumables required for various systems.
- (b) Configuration of the replaced hardware and software, periodic routine checking as part of a preventive maintenance program which would include checking of functionality of hardware and software.
- (c) Monitoring of the performance of the PMU & system and doing necessary tuning for optimum performance to accommodate any changes such as addition of new components.
- (d) Auto Backup of the system at regular interval and Monitoring of all auto backup scheduled.
- (e) Restoration of the PMU and control centre systems upon its failure and to restore the functioning of the various systems at the respective Control Centers
- (f) The contractor shall undertake physical maintenance of all equipment/modules under the scope of this contract. The physical maintenance shall include cleaning, dusting, inspection of equipment for loose connections, damage to insulation, damage due to rodents etc. followed by submission of quarterly report.

### **Availability and Maintenance Charges Payment Calculation: -**

The islanding system availability and maintenance charges payment calculation shall comprise of the average of the availability of:-

- (a) Availability of Field devices (PMU/GPS/Switch/Router etc)
- (b) Availability of Control Centre (PDC/NMS/Firewall etc)

**(a) Availability and Maintenance Charges Payment Calculation for field devices:-**

**Service response requirements:**

The severity levels and requirement of response time for various severity levels are define below:

-

Three Types of severity level i.e. Severity level-1, Severity Level-2, Severity Level-3

The problems shall be reported telephonically/mail and a call tracking system shall be provided by the bidder at no extra cost. The key objective is to restore the availability of PMU to an operational state as quickly as possible.

Following outages/disruptions will be considered provided Communication link, SDH connectivity and Control Centre hardware are healthy.:-

Category	Definition
Severity-1	Outage of PMU data due to any kind of issue in PMU/GPS/Switch etc, Wrong PMU data
Severity-2	Outage of GPS/Switch/Router, Delay in PMU data, poor GPS lock, latency, non-availability of designated manpower, Change in the logics of Islanding Scheme etc.
Severity-3	Problem in cabling, panel etc not affecting PMU data availability

Initially, the MPPTCL Engineers shall attempt to restore the system. In case the system does not come up and/ or the problem is not resolved then the MPPTCL Engineer shall intimate the problem to the bidder. Upon receiving intimation, the representative of the bidder would immediately attend to the problem. The problem shall be attended by the bidder at the earliest, and it shall arrange all resources and take all steps to restore the data availability and functionality at the earliest.

The non-availability hours for availability calculation will be counted from the end of the allowed Action Resolution time. It is the endeavour of both the bidder and MPPTCL to maximize system availability to the extent possible.

Duration of outages over and above the action resolution time, as defined in below mentioned Table, in each of the Severity levels will be counted for the non- availability computation. The resolution may be accomplished by a work around, and such solution will mark the end of non-availability.

In the event of multiple failures at a site, due to a common cause, the first FPR (Field Problem, Report) logged will be used for availability calculation. However, simultaneous multiple

outages due to unrelated cause would be counted separately and such multiple outages under each category of Severity level will be counted for availability computation of the system as given in the section below.

Availability computation shall be done on per quarter yearly basis per site. The formula to be used for availability computation shall be as under:

**Availability per quarter of field devices**

$$(Af) = [THQ - (S1 \times 1 + S2 \times 0.8 + S3 \times 0.5)] / THQ \times 100\%$$

Where THQ is Total Hours in the Quarter

S1 is the total non-available hours in Severity Level-1 in the Quarter

S2 is the total non-available hours in Severity Level-2 in the Quarter

S3 is the total non-available hours in Severity Level -3 in the Quarter

Note:- The above calculation methodology for computation of PMU availability is tentative & may be revised during Order Placement period.

**Response and Resolution Time for field devices:**

This section describes the target times within which the bidder should respond to support requests. The Initial Response Time is defined as the period from the initial receipt of the support request (through approved communications channels) and the acknowledgment of the bidder subject to the Maximum time defined in table below. The Action Resolution Time is the period from the acknowledgement of support request to the bidder delivering a solution subject to the Maximum time defined in table below. This period includes investigation time and consideration of alternative courses of action to remedy the situation. The Action is defined as a direct solution or a workaround.

Severity	Initial Response Time	Action Resolution Time
1	30minutes	24hours
2	2Hours	48Hours
3	1 Day	2 Days

**(b) Availability and Maintenance Charges Payment Calculation for control centre:-**

Category	Definition
Severity-1	Complete system failure, failure of servers, 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
Severity-2	Degradation of services or expiry of software licenses or critical functions such as to negatively impact system operation. Failure of any redundant system component such that the normal redundancy is lost (as described below) Non-availability of Manpower at Control Centre, cyber security compliance, patch Management, Non-availability of Back-to-Back OEM warranty contract for third party hardware/software/solutions along-with its subscription.
Severity-3	Any other system defect, failure, or unexpected operation (as described below), patch application as recommended by Owner.
Severity-4	Request for information, technical configuration assistance, “how to” guidance, and enhancement requests. (As described below)

**Severity-1**

This support is required when there is a complete system failure, failure of servers, severe system instability, the loss/ failure of any major sub-system / system or its components, which may significantly impact the system availability, performance, or operational capability at Control Centre.

Following critical functionality will be considered under Severity-1:

- a) Loss of Critical functionality that causes outage of Software/Hardware-related functionality in Islanding System
- b) Outage of hardware, networking, software etc including PDC/Firewall/NMS etc
- c) Outage of any Critical Functions as envisaged in Specifications.
- d) Loss of data exchange with PMU/other systems

**Severity-2**

The support services not defined under Severity-1 are included under this category as mentioned below-

- a) Inability of user to create/edit logics, display, database and calculations.

- b) Cyber Security remedial actions/compliance suggested by owner within a time-frame & Timely Patch Management.
- c) Stoppage of data collections for archiving (provided data storing going on in pre- specified buffer)
- d) Outage of other applications not covered under severity-1 are included in this category.
- e) Non-availability of OEM back-to-back warranty for supplied systems (hardware and software) during AMC period.
- f) Non-availability of designated contractor's Man-power at Control Centre. However maximum travel time of 24 hours shall be provided in case of manpower replacement.
- g) Non-compliance of Monitoring functions

### **Severity-3**

The support services included under this category are when the outage or loss of functionality is neither of an emergency nor priority functionalities as indicated in severity level 1 or 2 above. Problems like Support at Control center for the integration of new equipment (PMU/GPS/Switch/Workstation/Printers), failure of workstation, would be covered under this Severity.

### **Severity-4**

Request for information, technical configuration assistance, "how to" guidance, and enhancement requests are included under this category.

### **Response and Resolution Time for control centre:**

This section describes the target times within which the contractor should respond to support requests for each category of severity. The Initial Response Time is defined as the period from the initial receipt of the support request (through approved communications channels) and the acknowledgment of the contractor subject to the Maximum time defined in Table. The Action Resolution Time is the period from the acknowledgement of support request to the contractor delivering a solution subject to the Maximum time defined in Table. This period includes investigation time and consideration of alternative courses of action to remedy the situation. The Action is defined as a direct solution or a workaround.

Severity	Initial response time	Action resolution time
1	30 Min	1 Hour
2	1 Hour	6 Hours
3	12 Hours	1 Day
4	1 Day	5 Days

#### **Availability per quarter of control centre**

$$(Ac) = [THQ - (S1 \times 1 + S2 \times 0.8 + S3 \times 0.5)] / THQ \times 100\%$$

Where THQ is Total Hours in the Quarter

S1 is the total non-available hours in Severity Level-1 in the Quarter

S2 is the total non-available hours in Severity Level-2 in the Quarter

S3 is the total non-available hours in Severity Level -3 in the Quarter

$$\text{Total Availability per quarter} = (Af + Ac) / 2$$

### **5.0 Security Related Aspects for Service Level Agreement**

1. The contractor shall ensure that the procured product is aligned to current good practices for cyber security of industrial systems.
2. The Contractor shall provide documentation of software/firmware that supports the procured product, including scripts and/or macros, run time configuration files and interpreters, databases and tables, and all other included software (identifying versions, revisions, and/or patch levels, as delivered). The listing shall include all ports and authorized services required for normal operation, emergency operation, or troubleshooting. The Contractor shall also provide documentation of disabled ports, connectors, and interfaces. The Contractor shall configure the procured product to allow the owner the ability to re-enable ports and/or services if they are disabled by software.
3. The contractor shall have the responsibility to manage any identified vulnerabilities prior to delivery of the procured product and inform the owner of any remaining in the procured product at the time of delivery. In addition, the contractor shall have the responsibility to provide product vulnerability notifications related to the procured product during their life in accordance with agreed support contracts. The contractor shall also provide summary documentation of uncorrected security vulnerabilities or any identified security breaches involving the procured product. The summary documentation shall also include a description of each vulnerability or breach, its potential security impact, root cause, and

recommended corrective actions (compensating security controls, mitigations, and/or procedural workarounds) involving the procured product.

4. The contractor to notify the owner of potential security incidents or relevant risk, such as breaches affecting agreed data connections, personnel issues or compromise of information (physical or electronic) in their organisation and identified vulnerabilities that may affect the owner's systems whether considered a cybersecurity risk by the contractor or not.
5. The contractor shall have the accountability for the cyber security of their supply chain, this includes but is not limited to sub-contractors or sub-suppliers contracted in the supply of the procured product to the owner. The equipment/ devices included in the scope of the procured product are subject to the same security requirements as mentioned in case of procured product.
6. The contractor shall meet any agreed product assurance, monitoring, vulnerability testing, audits or other supply chain security requirements appropriate to the procured product. Security assurance measures for the procured product may include penetration testing against non-operational environments or testing of individual components in a test environment.
7. The contractor shall provide summary documentation of its secure product development life cycle including the standards, practices (including continuous improvement), and development environment (including the use of secure coding practices) used to create or modify company-provided energy delivery system hardware, software, and firmware.
8. The contractor shall have the responsibility to provide an inventory of all assets included in the delivery of procured products. The inventory contains appropriate information for asset management and identifies critical or operationally important assets where possible. The contractor shall identify and document system interfaces and dependencies for the procured product. The contractor shall ensure any changes to the Energy Delivery System are updated in inventory or a record is provided to the owner.
9. The contractor shall have the responsibility to comply with the owner's security policies and procedures relating to the information or connections to the owner's systems.
10. The contractor shall ensure that procured product has appropriate security, network and segregation provisions to support and enable a 'defence-in-depth' approach. The

contractor shall recommend guidance on the design and configuration of network security zones within the procured product. The contractor shall provide information on all communications (e.g., protocols) required between network security zones, whether inbound or outbound, and identify each network component of the procured product initiating communication. The contractor shall verify and document that disconnection points are established between the network security zones and provide the methods to isolate the zones to continue limited operations.

11. The Contractor shall verify and provide documentation for the procured product, attesting that unauthorized logging devices are not installed (e.g., key loggers, cameras, and microphones), as specified by the owner.
12. The Contractor shall document all accounts (including, but not limited to, generic and/or default) that need to be active for proper operation of the procured product.
13. The Contractor shall change default account settings to Owner-specific settings (e.g., length, complexity, history, and configurations) or support the Owner in these changes. The Contractor shall not publish changed account information. The Contractor shall provide new account information to the Owner via a protected mechanism.
14. Prior to delivery of the procured product to the Owner, the Contractor shall remove or disable any accounts that are not needed for normal or maintenance operations of the energy delivery system.
15. As specified by the Owner, accounts for emergency operations shall be placed in a highly secure configuration and documentation on their configuration shall be provided to the Owner.
16. The Contractor shall provide a configurable account password management system that allows for, but is not limited to, the following:
  - Changes to passwords (including default passwords)
  - Selection of password length
  - Frequency of change
  - Setting of required password complexity
  - Number of login attempts prior to lockout
  - Inactive session logout
  - Screen lock by application

- Comparison to a library of forbidden strings
- Derivative use of the user name
- Denial of repeated or recycled use of the same password

17. The Contractor shall protect passwords, including not storing passwords in clear text and not hardcoding passwords into software or scripts.