

TENDER DOCUMENT

FOR

**SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF
HARDWARE AND SOFTWARE FOR RT-DAS FOR SAIFI/ SAIDI
IN ALL 21 TOWNS OF RAPDRP AND IPDS**

INTEGRATED POWER DEVELOPMENT SCHEME (IPDS)

Tender Notice No. T.14010/4/2017/EC(P)/T&R/15 Dt. 23rd May, 2019



Power & Electricity Department

Government of Mizoram

Aizawl

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1. NOTICE INVITING TENDER

Sl. No.	Description	
1.1	Department Name	Power and Electricity Department, Mizoram (Herein referred to as PED)
1.2	Tender Subject	Supply, Installation, Testing & Commission of Hardware and Software for RT-DAS for SAIFI/ SAIDI in all RAPDRP and IPDS towns
1.3	Estimate Contract value	2.46 Crores (INR)
1.4	Type of Quotation	Item wise Rates (Bidder has to quote in Item-wise rates in Financial bid duly assigned)
1.5	Period of Work	12 months after award of contract
1.6	Tender Type	Open
1.7	Earnest Money Deposit (INR)	4.92 lakh Rupees
1.8	Earnest Money Deposit payable to	Engineer-In-Chief, P&E Dept., Aizawl
1.9	Schedule Sale opening date	24 th May , 2019 from 13:00 hours onwards
1.10	Pre-Bid Meeting Date	14 th June , 2019; 14:00 Hours (5 days prior to bid submission date)
1.11	Schedule Sale closing Date	16 th June , 2019; 11:00 Hours (till, 16:00 3 days prior to Opening date)
1.12	Bid Submission closing Date & Time	19 th June , 2019; Up to 11:00 Hours
1.13	Bid opening Date & Time	19 th June, 2019; at 13:00 Hours
1.14	Place of Tender Opening	Office of the Engineer-in-chief Power & Electricity Department Khatla, Aizawl Mizoram- 796001
1.15	Officer Inviting Bids/ Contact Person	Superintending Engineer, Works- II Branch, Office of Engineer in Chief Power & Electricity Department Khatla, Aizawl Mizoram- 796001
1.16	Address	Kawlphetha Building, Office of the Engineer-in-chief Power & Electricity Department Khatla, Aizawl Mizoram- 796001

1.17	Procedure	<ol style="list-style-type: none"> 1. Bid shall be submitted in sealed envelopes. 2. The Bid documents should be submitted in an envelope by the Bidder to the Engineer-In-Chief, Kawlphetha so as to reach 2 hours before the date and time of opening of the Technical Bid. 3. Required documents and certificates should be enclosed in the bid envelopes, failure to furnish any of the required documents, Certificates within the Bid envelope will entail rejection of the bid. 4. The PED shall not hold any risk on account of postal delay. Similarly, if any of the certificates, documents, etc., furnished by the bidder are found to be false/ fabricated/ bogus/ expired the bidder may be disqualified, blacklisted, action will be initiated as deemed fit and will be forfeited from taking part in the Bidding.
1.18	Rights reserved	P&E Dept., reserves the right to accept or reject any or all of the tenders received without assigning any reasons thereof.
1.19	General Terms and Conditions	As per tender Documents

2. SCOPE OF WORK

The Scope of work includes Supply, Installation, Testing & Commissioning of Hardware and Software for Real Time- Data Acquisition System (RT-DAS) in all 22 Sub-Stations of RAPDRP towns and all 13 Sub-Stations of IPDS Towns.

The scope of work shall include:

1. Supply, installation, testing and commissioning (SITC) of required monitoring hardware (FRTUs or equivalent Hardware) at each substation to acquire specified electrical parameters through DI, MFTs or equivalent hardware on each feeder at the sub-station.
2. If existing MFM's are not suitable for RS485 comms, suitable MFT shall be provided and in parallel to existing MFM.
3. SITC of suitable communication hardware and software for establishing redundant remote communication networks minimum two communication Interfaces for acquiring data from Substations (Leased lines, Broadband, GPRS) to cloud.
4. Secure Enterprise Cloud (VM/Dedicated) with installed RT-DAS Central Server (SW) along with all required Database, and other required software.
5. Customization of reports, Analysis, Dashboard, and Alerts for different stockholders, management, regulatory etc.
6. Integration and Commissioning of RT-DAS and demonstrate continuous availability of data from all the substations at the Cloud.
7. Provide Technical Support Including Repair and Replacements for a period of 3 years from the date of final acceptance.

Detailed Scope of Work: -

S. No	Description	Scope		Terms & Conditions
		PED	Bidder	
I	Establishment			
1	Accommodation		√	Bidder has to make his own facilities of accommodation for their workers/supervisors/Site In charges
2	Food, Power and Water		√	Bidder has to make his own arrangements for Food water for their Workers/Supervisors/Site In charges
3	Travel/Transportation		√	Bidder has to make his own arrangements for Travelling Charges for
4	Site Office/Site Infrastructure		√	Site Office/Site Infrastructure at Site would be in Bidders scope.
5	Storage for Supplied Equipment as per BOQ at different substations in Mizoram State	√		Storage, Watch and Ward for Supplied equipment would be in PED scope. Bidder should deliver the material to PED store.
II	Design Engineering & Approvals			
6	Design Engineering for System integration of Complete project		√	Design Engineering, Submission of all required reports, data sheets including drawings for necessary approvals and Participation in technical discussions with PED during approvals would be in Bidder's scope
7	Preparation of Exact/Detailed Bill of Quantities		√	Preparation of Detailed BOQs with all technical details after approvals would be in Bidder's scope.

III	Field Equipment			
8	Arranging Inspection at Manufacturer facility		√	Arranging Inspection at manufacturing premises for required equipment would be in Bidder Scope.
9	Supply of Field Equipment (FRTU, Cables, earthing and other equipment as per		√	Supply of field equipment as per BOQ including freight, Transit insurance would be in Bidder scope.
10	Loading, Unloading and transportation of Field Equipment		√	Loading, transportation, unloading with all lifting equipment would be under Bidder Scope
11	Installation/Erection of Panel		√	Installation of equipment and its mechanical works with all required MS pipes/bars angles, frames, nuts, bolts etc complete required would be under Bidder scope.
12	Civil works necessary for Erection of Panels		√	Minor civil works like Drilling, Chipping or grouting for insertion of bolts or necessary arrangement into the concrete surface required for Erection of equipment would be under Bidder scope.
13	Control Room/Switch gear room for mounting RTU panel and other equipment as per BOQ	√		Control Room/Switch gear room for mounting RTU panel and other equipment as per BOQ would be under PED scope.
14	Testing and Commissioning		√	Testing and commissioning of panels would be under Bidder Scope.
15	110V/220V DC power supply for FRTU	√		DC Power from Existing battery DCDB would be provided by PED at one point in the substation.
16	Cable for power supply to FRTU		√	Required Cables supply, installation from DC DD to FRTU and commissioning would be under Bidder scope.
17	Earth work Excavation for Earth Pits		√	Earth work excavation including back filling for Earth pits as per site condition would be under Bidder's Scope
18	Char Coal/Salt/Bentonite powder		√	Char Coal, Bentonite powder or Salt and other required earthing Material if any including cost and conveyance would be under Bidder's Scope
19	Supply of Cables, Glands, Termination kits and their associated accessories		√	Supply of Cables and their Glands, termination kits, and their associated accessories if any including freight, transit insurance would be under Bidder's scope

20	Supply, installation/fixing of Tray/ Conduits		√	Supplying, laying and Fixing of Tray / Conduits for Cables as per requirement would be under Bidder's scope.
21	Laying of Cables		√	Laying of Cables in cable trenches/ Cable trays/Ducts /conduits would be under Bidder's scope
IV	Training			
22	Training for PED		√	Training for the PED employees for 5days on Operation and OPEX of the RT-DAS system would be under Bidder scope
V	Internet			
23	Charges for Remote Communication network	√		2G/3G/4G SIM or Broad band would be arranged by PED at substations for FRTU and the monthly charges would be paid by PED

3. INSTRUCTIONS TO BIDDERS

3.1 ELIGIBLE BIDDERS

The bidder shall provide sufficient documentary evidences to satisfy the following conditions that the bidder:

- a. Is an Indian Company, registered in India and not a subsidiary of International Companies. This is to enable make/made in India concept. Bidder need to submit the required documents like company registration etc., along with tender.
- b. Will supply equipment as listed in Clause 10 of Technical Specifications.
- c. Has adequate capacity to perform the works properly and expeditiously within the time frame specified in the tender document.
- d. Has adequate financial stability and status to meet the financial obligations pursuant to the scope of work.

In addition, the following eligibility criteria must be met: -

Financial	Minimum Average Annual Turnover (MAAT) for best three years out of last five financial years of the bidder should not be less than 74 Lakh Rupees	(Proof: Annual Audited Financial Statements for last three FY. To be submitted/ attached in Financial bid)
	Net Worth for the each of the last three Financial Years should be positive. (Definition of net worth to be considered as per latest RBI guidelines)	(Proof: Annual Audited Financial Statements for last three FY. To be submitted/ attached in Financial Bid)
Technical	The bidder must have implemented and completed at least one SCADA or DAS project, costing not less than the amount equal to 196 lakhs, or two SCADA or DAS projects, costing not less than the amount equal to 123 lakhs, covering RTUs and/or FRTUs during the last seven financial years.	(Proof: (Experience certificates and/or Acceptance reports) and (Work Order and/or LoA from the owners/client for completion of work done), in support of the qualifying requirements, clearly establishing – the start and end date of the project, scope of work and worth of project, on client letterhead.)

The following information must also be provided by the bidder. Appropriate proof of their data must be attached (Proof: Bidder should provide authentic data on this data)

Engineering and Core Strength	Electrical engineering experts with combined experience of minimum 40 person years
	IT, Cloud, Communication, Analytics experts with combined experience of minimum 40 person years
	SCADA, field installation experts with combined experience of minimum 40 person years
	Bidder should have similar central systems operational at minimum 30 Utility / Power Plant substations for a period not less than 1 year and need to submit the proof for the same along with tender
	Central Monitoring Software Experience in deploying centralized data acquisition over reliable and unreliable Communication networks and analytics system with proof of working at least for the last 1 year
	Bidder need to ensure the data acquisition with 15minutes integration and need to submit the required documents to prove the same. Also need to submit existing project reference along with tender
	At the time of evaluation bidder need to demonstrate the working system that are in the field for the last 1 year

3.2 TENDER DOCUMENT

- a. Bid Document shall be obtained from the Kawlphetha building, Office of the Engineer-in-chief, Power & Electricity Office, new capital complex, by payment of Rs 1500/- in the form of Demand Draft drawn in favor of the Engineer-In-Chief, P&E Dept., Aizawl.
- b. The bidder is expected to examine all the instructions, terms and conditions, specifications, etc as mentioned in the tender document. Failure to furnish all information required in the tender document or submission of a tender not substantially responsive to the tender document in every respect will be at the bidder risk and is likely to result in out-right rejection of the tender.
- c. The bidder must clearly indicate the name of the manufacturer, types & model of each principal item of equipment proposed to be supplied. The tender may also contain details of specifications and other comprehensive descriptive materials in support of technical specifications. The above information may be provided by the bidder in the form of separate sheets, specifications, catalogues etc. or in accordance with General Technical Particulars. Any tender not containing sufficient descriptive material to describe the proposed equipment may be treated as incomplete and hence may be rejected. Such descriptive materials and specifications submitted by the bidder will be retained by Power & Electricity Department. Any deviations from these will not be permitted during the execution of contract, without specific written permission from the Department.
- d. At any time prior to the due date for submission of the tender or even prior to the opening of the financial bid, the Department may, whether at its own initiative or as a result of a request for clarification/suggestion by a prospective bidder may amend the tender document by issuing a notice.
- e. The bidder shall furnish the Earnest Money Deposit (EMD) in the form of Demand Draft/ Banker's Cheque from any scheduled bank pledged in favor of 'Engineer-In-Chief, P&E Dept., Aizawl' as the part of this tender.
- f. Tenders without EMD shall be rejected by the Department as being non-responsive. No interest shall be paid by the Department on the amount of Earnest Money Deposit (EMD).
- g. The bidder shall submit all the rates in Indian Rupees only, on the format for Financial Bid of the tender document.
- h. The bidders are suggested to collect all relevant data regarding the proposed place of work/ site, actual prevailing working conditions, availability of required materials and labor and all other information/ data required for proper completion of the proposed work. If required, the tenderer may pre-visit the site before submitting the tender. Power & Electricity Department shall not entertain any request of bidder for clarifications related to the local conditions and shall bear no responsibility in this regard.

3.2.1 CONTENTS OF BIDDING DOCUMENT

- a. The Materials/ equipment required, bidding procedures and contract terms are prescribed in the bidding documents as listed below:
 - 1 Notice Inviting Bids
 - 2 Scope Of Work
 - 3 Instruction to Bidders
 - 4 General Conditions of Contract
 - 5 Technical Specifications
 - 6 Bid Forms
- b. The Bidder is expected to examine all instructions, forms, terms and Technical specifications in the bidding documents. Failure to furnish all information required by the bidding documents or to submit a bid not responsive to the bidding documents in every respect will be at Bidder's risk and may result in the rejection of its bid

3.2.2 CLARIFICATION OF BIDDING DOCUMENTS

- a. If the prospective Bidder finds discrepancies or omissions, in specifications and document or is in doubt as to the true meaning of any part, he shall at once make a request, in writing, for an interpretation/clarification, to PED at his mailing address indicated in Bidding Documents or in the form of a letter. Similarly, if a Bidder feels that any important provisions in the documents, such as Governing laws, Taxes and Duties, Defect Liability, Limitation of Liability, Settlement of Disputes, Arbitration, Form of Contact Agreement, Price Adjustment, Bid Guarantees, Contract Performance Guarantee, Compensation for Delay, Payments Terms, Schedule of Execution/Completion of works, will be unacceptable, such an issue should be raised as above. PED, then, will issue interpretation(s) and clarification(s) as he may think fit in writing or modification of the Bidding Documents that it receives no later than five (5) days prior to original deadlines prescribed for submission of bids by Employer. The PED shall not be obliged to respond to any request for clarification received later than the above period. Further, mere request for clarification received from the Bidder shall not be a ground for seeking extension in the deadline for submission of bids. Written copies of PED's response (including an explanation of the query but not identification of its source) will be sent to all prospective bidders that have received the Bidding Documents.
- b. *LOCAL CONDITIONS*: It will be imperative on each Bidder to fully inform himself of all local conditions and factors, which may have any effect on the execution of the Contract covered under these documents and specifications. Employer shall not entertain any request for clarifications from the Bidders, regarding such local conditions. It must be understood and agreed that such factors have properly been investigated and considered while submitting the Proposals. No claim for financial adjustment to the Contract, awarded under these specifications and documents, will be entertained by Employer. Neither any change in the time schedule of the Contract nor any financial adjustments arising thereof shall be permitted by the Employer, which are based on the lack of such clear information or its effect on the cost of the Works to the Bidder.

3.2.3 PRE-BID MEETING

- a. The bidder's designated representative(s) is/are invited to attend a pre-bid meeting, which, if convened, will take place at the venue and time specified in the Bidding Documents. The purpose of the meeting shall be to clarify any issue regarding the Bidding Documents in general and the Technical Specifications in particular. The Bidder is requested, as far as possible to submit any question in writing, to reach the PED not later than one week before the meeting. Minutes of the Meeting, including the text of the questions raised (without identifying the name of the bidders) and the responses given, together with any responses prepared after the meeting, will be transmitted without any delay to all the purchasers of the Bidding Documents.
- b. Non-attendance at the pre-bid meeting will not be a cause for disqualification of a bidder.

3.2.4 AMENDMENT TO BIDDING DOCUMENTS

- a. Any time, prior to the deadline for submission of bids, the PED, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, may modify the bidding documents by amendment.
- b. The amendment will be notified in writing or e-mail to all prospective Bidders, which have received the Bidding Document from the Office of The-Engineer-In-Chief, Power & Electricity Department, Mizoram. Bidders are required to immediately acknowledge receipt of any such amendments, and it will be assumed that the information contained therein will have been taken in to account by the Bidder in its bid. The PED will bear no responsibility or liability arising out of non-receipt of the same in time or otherwise.
- c. In order to allow prospective Bidders reasonable time in which to take the amendment into account in preparing their bids, the PED, at its discretion, may extend deadline for the submission of bids.

3.3 SUBMISSION OF TENDER DOCUMENT

- a. **The first envelope** should be superscribed as **'Technical Bid'** at top of the envelope and name and address of the bidder should be given at the left hand side bottom of the envelope. The first envelope should be addressed to **'Engineer-in-Chief, Power & Electricity Department'** shall contain the following:
 - (a) Demand draft ___ of - as EMD
 - (b) Declaration By The Bidder
 - (c) Form Of Certificate Of Origin And Eligibility
 - (d) Manufacturer's Authorization Form
 - (e) Work Completion Schedule
 - (f) Information Regarding Human Resource
 - (g) Details Of Experience
 - (h) General Technical Parameters which shall contain full technical particulars and Commercial terms and conditions without prices. This should not contain any cost information whatsoever.
 - (i) All other documents except the Financial Bid
- b. **The second envelope** should be superscribed as **'Financial Bid'** at the top of the envelope and name and address of the bidder should be given at the left hand side bottom of the envelope. The second envelope should be addressed to **'Engineer-in-Chief, Power & Electricity Department'** shall contain the Financial Bid only in the prescribed format. This should contain the technical bid information with prices and shall include the following:
 - (a) Earnest Money Deposit
 - (b) Price Bid
 - (c) Attachments: Annual Audited Financial Statements for last three FY. Annual Audited Financial Statements for last three FY. To be submitted/ attached in Financial Bid)
- c. The **third envelope** should be superscribed as **'Submission of Bid for supply, installation, testing and commissioning Hardware and Software for Real-Time Data Acquisition System (RT-DAS) in all 22 sub-Stations of RAPDRP and all 13 Sub-Stations of IPDS Towns'** at the top of the envelope and name and address of the bidder should be given at the left hand side bottom of the envelope. The third envelope should be addressed **'Engineer-in-Chief, Power & Electricity Department, Aizawl'** shall contain the first and second envelopes only.
- d. The Price Bids will be opened after the technical are examined.
- e. Bids must be received by the PED at the address specified under NIT no later than the time and date stated in the NIT. In the event of the specified date for the submission of bids being declared a holiday for the PED, the bids will be received up to the appointed time on the next working day. Bids once received by the PED shall not be returned except otherwise provided in the Bidding Documents.
- f. The PED may, at its discretion, extend this deadline for submission of bids by amending the Bidding Documents in which case all rights and obligations of Employer and bidders will thereafter be subject to the deadline as extended.
- g. Bids received after **due date and time** will not be considered. Bids should be submitted personally and bids submitted by courier/postal will not be considered.

- h. The Bidder may modify or withdraw its bid after submission, provided that modification or written notice of withdrawal is received by the PED prior to the deadline prescribed for bid submission.
- i. No Bid may be modified after the deadline for submission of bids.
- j. No bid may be withdrawn in the interval between the bid submission deadline and the expiration of the bid validity period of bid validity specified. Withdrawal of a bid during this interval may result in the forfeiture of its Earnest Money Deposit.
- k. All pages of the bid documents must be signed and sealed by the authorized person on behalf of the bidders.

3.4 PREPARATION OF BID

3.4.1 Language: The bid prepared by the Bidder including all correspondence and documents relating to the bid exchanged by the Bidder and the PED, will be in English.

3.4.2 Document Comprising the Bid

The Bid prepared by the Bidder will comprise the following components: -

1. Earnest Money Deposit.
2. Documentary evidence (Technical and Qualification Requirements) establishing that the Bidder is eligible to bid and is qualified to perform the contract if its bid is accepted as per clause 3.1 of Instruction To Bidders.
3. Documentary evidence establishing that the Materials/ Equipment and ancillary services to be supplied by the Bidder are as per the Technical specification of the bidding documents as per clause 5.5.4 and clause 5.6 of Technical Specifications.
4. Bill Of Material as per Clause 5.7 of Technical Specifications.

3.4.3 BID FORM The Bidder will complete the Bid form and the appropriate Price Schedule furnished in the bidding documents, indicating the Materials/ equipment to be supplied, a brief description of the Materials/ equipment, quantity and prices

3.4.4 COST ASSOCIATED WITH BIDDING

The Bidder will bear all costs associated with the preparation and submission of its bid, and the PED, will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

3.4.5 BID CURRENCY Prices shall be quoted in Indian Rupees and will be paid in Indian Rupees Only.

3.4.6 DUTIES AND TAXES All Taxes and duties as prescribed both under Central and State Government sales tax rules would be applicable. The rates/prices mentioned in the technical bid, all applicable taxes, duties & surcharges have to be mentioned separately.

3.5 BID OPENING AND EVALUATION

The procedure of opening of the bid shall be as under

3.5.1 BID OPENING BY PED

1. The PED will open all bids meeting the requisite criteria, at the time, on the date, and at the place specified in NIT ___.
2. The bidder's name, Bid modifications or withdrawals, the presence or absence of requisite Bid Security and such other details as the PED, at its discretion, may consider appropriate, will be announced at the opening. Bids that are not opened and read out at bid opening will not be considered further for evaluation, irrespective of the circumstances.

3.5.2 CLARIFICATION OF BIDS: During bid evaluation, the PED may, at its discretion, ask the Bidder for a clarification of its bid. The request for clarification and the response shall be in writing, and no change in the price or substance of the bid shall be sought, offered or permitted. Any clarification required by the Bidder on the technical specification and commercial terms and conditions may be raised prior to submission of the tender document.

3.5.3 PRELIMINARY EXAMINATION:

- a. The PED will examine the bids to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed, and whether the bids are generally in order.
- b. Arithmetical errors will be rectified on the following basis. If there is discrepancy between the unit price and the total price that is obtained by multiplying the unit price and the quantity; the unit price will prevail, and the total price will be corrected. If the Supplier does not accept the correction of the errors, its bid will be rejected, and its Earnest Money Deposit may be forfeited. If the supplier does not accept the correction if errors, its bid will be rejected and its Earnest Money Deposit may be forfeited.
- c. Prior to the detailed evaluation, the PED will determine the substantial responsiveness of each bid to the Bidding Documents. For purposes of these Clauses, a substantially responsive bid is one that conforms to all the terms, conditions and specifications of the Bidding Documents without material deviations. Deviations from, or objections or reservations to critical provisions, such as those concerning the Earnest Money Deposit, and taxes and Duties will be deemed to be a material deviation. The PED's determination of a bid's responsiveness is to be based on the contents of the bid itself without recourse to extrinsic evidence.
- d. If a bid is not substantially responsive, it will be rejected by the PED, and may not subsequently be made responsive by the Bidder by correction of the nonconformity.

3.5.4 EVALUATION AND COMPARISON OF BIDS

- a. The PED will evaluate and compare the bids, which have determined to be substantially responsive. The PED's evaluation of a bid will take into consideration one or more of the following factors: -

All the bids, which are opened, read out, and considered to evaluation will be checked for qualification requirements in respect of technical and commercial aspects. The bid is to be checked for its conformity to the technical specifications. If in the opinion of the PED, the bidder has offered equipment/materials better than the technical specification the same may be considered. The bid may be rejected for the following reasons: -

- i. Not on prescribed form.
 - ii. Insufficient EMD or bid not accompanied by the required EMD.
 - iii. Bids not properly signed.
 - iv. The bidder is a vendor banned tom further business transactions and the period of ban is still in force.
 - v. Bid received after due date and time.
 - vi. The bid is through telegram or fax.
 - vii. Delivery schedule offered in the bid
 - viii. Deviations in payment schedule from that specified in the general terms and conditions of the contract and technical deviations.
 - ix. The availability of spare parts, warranties and after-sales services for the equipment offered in the Bid.
 - x. The projected operating and maintenance costs during the life of the equipment.
 - xi. The performance and productivity of the equipment offered
- c. In addition, the PED's evaluation of a bid will take into account the net landed cost of the material at the final destination. For the purpose of evaluation net landed cost Is arrived at by adding all elements of the basic price, allowable discount, excise duty, any other levies, packing & forwarding, freight charges, insurance (transit & storage) as quoted by the bidder, interest on advance if any, erection, servicing and other charges, Inclusive of GST as called for.
- d. All the bidders shall essentially indicate the break-up of prices as shown in financial bid.
- e. A Contract agreement shall be signed between the PED and the successful bidder after acceptance of LOA.
- f. Power & Electricity Department reserves all the rights to reject any or all the tenders, accept any tender in total or in part.

3.6 AWARD OF CONTRACT

3.6.1 AWARD CRITERIA: The PED will award the contract to the successful bidder whose bid has been determined to be substantially responsive. However, it is not binding on PED to accept the lowest or any other bid. It reserves the right to place orders on different Bidders.

3.6.2 EMPLOYER'S RIGHT TO ACCEPT ANY BID AND TO REJECT ANY OR ALL BIDS: The PED reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to award of contract, without thereby incurring any liability to the affected Bidder or bidders or any obligation to inform the affected Bidder or Bidders.

3.6.3 SIGNING THE CONTRACT AGREEMENT

- a. At the same time as the PED notifies the successful Bidder that its bid has been accepted through Letter of Award, the PED will prepare the Contract Agreement provided in the Bidding Documents, incorporating all agreements between the parties.
- b. On unconditional acceptance of Letter of Award, contract agreement shall be signed on submission and acceptance of contract performance security within 2 weeks from date of issue of Letter of Award.
- c. Time schedule for the contract work will also be submitted to the PED upon the signing of the contract agreement.

3.6.4 PERFORMANCE SECURITY

- a. Within 14 days of receipt of the Letter of Award, the successful bidder will furnish to the PED the performance security for an amount 10% of the contract value for proper fulfillment of the contract, which will include the warranty period, and completion of performance obligations including warranty obligations.
- b. The performance security will cover 60 days beyond the date of completion of performance obligations including Warranty obligations.
- c. In the event of any correction of defects or replacement of defective material during the warranty period, the warranty for the corrected/ replaced material will be extended to a further period of 12 months and the Performance Bank Guarantee for proportionate value will be extended 60days over and above the extended warranty period.
- d. The proceeds of the performance security will be payable to the PED as compensation for any loss resulting from the supplier's failure to complete its obligations under the Contract.
- e. The performance security will be a bank guarantee issued by a nationalized/ scheduled bank acceptable to the Purchaser, in the form provided in the bidding documents.
- f. The performance security will be discharged by the PED and returned to the Bidder/Supplier not later than sixty (60) days after the expiry date.
- g. Failure of the successful Bidder to comply with the above requirement will entail cancellation of the award and forfeiture of the Earnest Money Deposit and the balance to make up the performance security deposit will be deducted from pending payments if any due to the tenderer from PED on other orders in addition the company will also become liable for being blacklisted by PED.

3.6.5 CORRUPT PRACTICE

It is essential that the PED as well as the Bidder/ supplier/ contractor for the purposes of this provision, the terms set forth below as follows: -

- i. "Corrupt practice" means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution, and
- ii. "Fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the purchaser and includes collusive practice among bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the purchaser of the benefits of free and open competition.
- iii. 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.
- iv. Will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a contract if at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a contract.

4. GENERAL CONDITIONS OF CONTRACT

DEFINITIONS

In the deed of contract unless the context otherwise requires: -

- d. **"The Department" and "PED"** shall mean 'The Engineer-in-Chief' or his representative of 'Power & Electricity Department' and shall also include its successors in interest and assignees. The **'Contractor'** shall mean the **Firm/Bidder/Person (whose tender has been accepted by 'The Department')** and shall include his legal representatives, successor in interest and assignees.
- e. The contract shall be for Supply, Installation, Testing & Commissioning RT-DAS In all 22 sub-Stations of RAPDRP Towns and all 13 substations of IPDS Towns, including 3 Years warrantee, operation & maintenance and shall be valid till the completion of all the related works.
- f. "The Contract" means the agreement entered into between the Purchaser and the Supplier, as recorded in the contract form signed by the Parties, including all attachments and appendices thereto and all documents incorporated by reference therein.

4.1 SUBJECT MATTER OF CONTRACT

4.1.1 SCOPE OF FACILITIES

- a. Unless otherwise expressly limited in the Technical Specifications, the Contractor's obligation shall include the provision of all Equipments and the performance of all Installation Services required for the design, the manufacture (including procurement, quality assurance, construction, installation, associated civil works, Pre-commissioning and delivery) of the RT-DAS and the installation, completion, commissioning and performance testing of the facilities in accordance with the plans, procedures, specifications, drawings, codes and any other documents as specified in the Technical specifications. Such specifications include, but are not limited to, the provision of supervision and engineering services; the supply of labour, materials, equipment, spare parts and accessories; Contractor's Equipment; construction utilities and supplies; temporary materials, structures and facilities; transportation (including without limitation, custom clearance, port handling, unloading and hauling to, from and at the Site); storage and training except for those supplies, works and services that will be provided or performed by the Employer.
- b. 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.
- c. The Contractor shall ensure the availability of spare parts required for the operation and maintenance of the Facilities to the PED for a minimum period of 3 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 PED, the Contractor shall submit the specifications, price and the terms and conditions relating to the supply thereof for such spares identified by the PED with validity period of 6 months within 30 days of receipt of request from PED for its consideration and placement of order.

4.1.2 TIME FOR COMMENCEMENT AND COMPLETION

- a. The Contractor shall commence work on the Facilities from the Effective Date of Contract i.e. date of signing of the contract agreement. The Contractor shall thereafter proceed with the Facilities in accordance with the time schedule submitted by the contractor as per format specified in specified in the corresponding Appendix – 4 (Time Schedule).
- b. The Contractor shall attain Completion of the Facilities (or of a part where a separate time for Completion of such part is specified in the Contract) within the time stated under Time for Completion or within such extended time to which the Contractor shall be entitled, the extended time for completion of work if required, is at the sole discretion of the PED.
- c. The work assigned to the contractor shall have to be completed within twelve (12) months from the date of signing the agreement. The work shall have to be completed within the specified time period and shall be binding on the contractor.

- d. In case the contractor fails to execute the said work or related obligations within the stipulated time, the Department will be at liberty to get the work executed from the open market at the risk and cost of the contractor, without calling any tender and without serving any notice to the contractor. Any 'additional cost' incurred by the Department during such execution of the work shall be recovered from the contractor.
- e. The calculation of aforesaid 'additional cost' will be finalized by the Department at its sole discretion. The contractor shall have no right to challenge the mode or amount relating to calculation at any forum. For completion of the work through any other agency, in case some changes are required in terms and conditions of the contract; the contractor shall not have any right to challenge the decision of the Department.

4.2 PAYMENT

4.2.1 PAYMENT TERMS

The indicative Payment terms are:

- a. 10% interest bearing advance on the start of project i.e on signing of contract agreement.
- b. 40 % on Substation wise supply of material after Factory Acceptance test i.e. FRTU and associated system substation and data center software and hardware.
- c. 20% Erection/test/commissioning: end to end test (Town wise).
- d. 20% to be paid on Go Live of Town of work (town wise).
- e. 10% to be paid (on town wise) on operational acceptance.

4.2.2 PRICES

Prices charged by the Supplier for Materials/ equipment delivered and services performed under the Contract will not vary from the prices quoted by the supplier in its bid, with the exception of any price adjustment authorized in the contract.

4.2.3 TAXES AND DUTIES

- a. The Contractor shall be entirely responsible for payment of all taxes, duties, license fees and other such levies legally payable/incurred until delivery of the contracted supplies to the Employer.
- b. If it is statutory requirement to make deductions towards such taxes and duties or any other applicable taxes and duties, the same shall be made by the PED and a certificate for the same shall be issued to the Contractor.
- c. The Contractor shall be solely responsible for the taxes that may be levied on the Contractor's persons or on earnings of any of his employees and shall hold the PED indemnified and harmless against any claims that may be made against the PED. The Employer does not take any responsibility whatsoever regarding taxes under Indian Income Tax Act, for the Contractor or his personnel. If it is obligatory under the provisions of the Indian Income Tax Act, deduction of Income Tax at source shall be made by the PED.

- d. If any rates of Tax are increased or decreased, a new Tax is introduced, an existing Tax is abolished, or any change in interpretation or application of any Tax occurs in the course of the performance of the Contract, which was or will be assessed on the Contractor in connection with performance of the Contract, an equitable adjustment of the Contract price shall be made to fully take into account any such change.
- e. In case the above situation (clause d) arises and it causes the payable amount to be more than the original LOA amount, the unit prices of materials should be adjusted so that the original LOA is not exceeded.

4.3 WARRANTY

- a. The contractor shall warrant the RT-DAS as per applicable standards of quality for a minimum of 3 years from the date of receipt and commissioning of the material/equipment in good condition. Anything to be furnished shall be new, free from all defects and faults in material and workmanship. The contractor shall be in accordance with the specified technical parameters and should be of the highest grade and consistent with established and generally accepted standards for material. It shall be in full conformity with the drawing or samples if any, and shall operate properly, if operable.
- b. The PED will promptly notify the supplier/ contractor in writing of any claims arising under this warranty. Upon receipt of such notice, the Supplier will within 30 days, repair or replace the defective Materials/ equipment or parts thereof, free of cost at the ultimate destination. The supplier will take the replaced parts/ Material/ equipment at the time of their replacement. No claim whatsoever will lie on the PED for the replaced parts/ Material/ equipment thereafter. In the event of any correction of defects or corrected/ replaced material during the warranty period, the warranty for the corrected/ replaced material will be extended to a further 12 months if the repair/ replacement is made within 2 years of the original 3-year warranty or otherwise the original 3 years' warranty will be applicable to the replaced/ repaired part/ Material/ equipment.
- c. If the Supplier, having been notified. Fails to remedy the defect(s) within the above period, the PED may proceed to take such remedial action as may be necessary, at the supplier's risk and expense duly deducting the expenditure from subsequent bills/ bank guarantee and without prejudice to any other rights which the PED may have against the Supplier under the contract.

4.3.1 PERFORMANCE SECURITY

- a. Within 15 days of receipt of the Letter of Award, the contractor will furnish to the PED the performance security for an amount 10% of the contract value for proper fulfillment of the contract, which will include the warranty period, and completion of performance obligations including warranty obligations. The performance security will cover 60 days beyond the date of completion of performance obligations including Warranty obligations.
- b. In the event of any correction of defects or replacement of defective material during the warranty period, the warranty for the corrected/ replaced material will be extended to a further period of 12 months and the Performance Bank Guarantee for proportionate value will be extended 60days over and above the extended warranty period.

- c. The proceeds of the performance security will be payable to the PED as compensation for any loss resulting from the supplier's failure to complete its obligations under the Contract.
- d. The performance security will be a bank guarantee issued by a nationalized/scheduled bank acceptable to the Purchaser, in the form provided in the bidding documents.
- e. The performance security will be discharged by the PED and returned to the Bidder/Supplier not later than sixty (60) days after the expiry date.
- f. Failure of the contractor to comply with the above requirement will entail cancellation of the award and forfeiture of the Bid Security and the balance to make up the performance security deposit will be deducted from pending payments if any due to the tenderer from PED on other orders in addition the company will also become liable for being blacklisted by PED.

4.3.2 COMPLETION PERIOD

- a. The work assigned to the contractor shall have to be completed within twelve (12) months from the date of signing the agreement. The work shall have to be completed within the specified time period and shall be binding on the contractor.
- b. In case the contractor fails to execute the said work or related obligations within the stipulated time, the PED will be at liberty to get the work executed from the open market at the risk and cost of the contractor, without calling any tender and without serving any notice to the contractor. Any 'additional cost' incurred by the PED during such execution of the work shall be recovered from the contractor.
- c. The calculation of aforesaid 'additional cost' will be finalized by the PED at its sole discretion. The contractor shall have no right to challenge the mode or amount relating to calculation at any forum. For completion of the work through any other agency, in case some changes are required in terms and conditions of the contract; the contractor shall not have any right to challenge the decision of the Department.

4.3.3 LIQUIDATED DAMAGES

If the contractor fails to perform the work within the time periods specified in the work order or within the extended time period if any, the Department shall without prejudice to its other remedies under the contract, deduct from the contract price as liquidated damage, a sum equivalent to 1% of the price of the un-performed work / services for each week of delay until actual completion of work, up to a maximum deduction of 10%. Once the maximum is reached, the Department may consider termination of the contract.

4.3.4 WARRANTEE, OPERATION AND MAINTENANCE

The contractor shall warrant the RT-DAS as per applicable standards of quality. Anything to be furnished shall be new, free from all defects and faults in material and workmanship. The contractor shall be in accordance with the specified technical parameters and should be of the highest grade and consistent with established and generally accepted standards for material. It shall be in full conformity with the drawing or samples if any, and shall operate properly, if operable.

4.4 INTELLECTUAL PROPERTY

4.4.1 COPY RIGHT

- a. The copyright in all drawings, documents and other materials containing data and information furnished to the PED by the Contractor herein shall remain vested in the Contractor or, if they are furnished to the PED directly or through the Contractor by any third party, including supplies of materials, the copyright in such materials shall remain vested in such third party.
- b. The PED shall however be free to reproduce all drawings, documents and other material furnished to the Employer for the purpose of the Contract including, if required, for operation and maintenance.
- c. The copyright in all drawings, documents and other materials containing data and information furnished to the Contractor by the PED herein shall remain vested in the PED.

4.4.2 CONFIDENTIAL INFORMATION

- a. The PED and the Contractor shall keep 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 termination of the Contract.
- b. The PED shall not use such documents, data and other information received from the Contractor for any purpose other than the operation and maintenance of the Facilities. Similarly, the Contractor shall not use such documents, data and other information received from the PED for any purpose other than the design, procurement of Plant and Equipment, construction or such other work and services as are required for the performance of the Contract.
- c. The obligation of a party under Clauses above, however, shall not apply to that information which
 - i. now or hereafter enters the public domain through no fault of that party.
 - ii. 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 hereto.
 - iii. otherwise lawfully becomes available to that party from a third party that has no obligation of confidentiality.

4.5 RISK DISTRIBUTION

4.5.1 DELAY IN SUPPLIER'S PERFORMANCE

- a. If at any time during the performance of the contract, the supplier should encounter conditions impeding timely delivery of the Materials/ equipment, the Supplier will promptly notify the PED in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the Supplier's notice, the PED will evaluate the situation and may at its discretion extend the Supplier's time for performance with or without liquidated damages, in which case the extension will be ratified by the parties by amendment of the Contract.

4.5.2 LOSS OF OR DAMAGE TO PROPERTY; ACCIDENT OR INJURY TO WORKERS; INDEMNIFICATION

- a. The Contractor shall indemnify and hold harmless the PED and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, in respect of the death or injury of any person or loss of or damage to any property (other than the Facilities whether accepted or not), arising in connection with the supply and installation of the Facilities and by reason of the negligence of the Contractor or its Subcontractors, or their employees, officers or agents, except any injury, death or property damage caused by the negligence of the PED, its contractors, employees, officers or agents.
- b. If any proceedings are brought or any claim is made against the PED that might subject the Contractor to liability under the above Clause, the PED shall promptly give the Contractor a notice thereof and the Contractor may at its own expense and in the PED's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim.
- c. If the Contractor fails to notify the PED within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the PED shall be free to conduct the same on its own behalf. Unless the Contractor has so failed to notify the PED within the twenty-eight (28) day period, the PED shall make no admission that may be prejudicial to the defense of any such proceedings or claim.
- d. The PED shall, at the Contractor's request, afford all available assistance to the Contractor in conducting such proceedings or claim, and shall be reimbursed by the Contractor for all reasonable expenses incurred in so doing.
- e. Notwithstanding anything in this Contract to the contrary, it is agreed that neither the Contractor nor the PED shall be liable to the other party for loss of production, loss of profit, loss of use or any other indirect or consequential damages.

4.5.3 SPARE PARTS

The contractor shall make arrangement to maintain a sufficient stock of essential spares and consumable spare parts to ensure proper maintenance of the system promptly.

4.5.4 LIABILITY FOR ACCIDENTS AND DAMAGES

During the installation, commissioning, warrantee, operation & maintenance period, the contractor shall assume all responsibilities for direct damages covering all type of accident, injury or property damage caused by manufacturing defects or faulty erection on the systems.

4.5.5 TOOLS & TACKLES

The contractor shall provide all necessary tools & tackles for proper execution of work and operation/maintenance of systems after erection. The Department shall in no way, responsible for supply of any tools & tackles.

4.5.6 RISK PURCHASE

In case of supplier who has not adhered to the delivery schedule, the PED reserves the right to purchase the balance quantity from the open market/ floating another tender and recover the extra expenditure thus incurred from the supplier.

4.5.7 TERMINATION FOR DEFAULT

The Purchaser, without prejudice to any other remedy for breach of Contract, by written notice of default sent to the Supplier/ contractor, may terminate this Contract in whole or in part

- i. If the Supplier/ contractor fails to deliver any or all of the Materials/ equipment within the period (s) specified in the Contract, or within any extension thereof granted by the Purchaser
- ii. If the Supplier fails to perform any other obligation(s) under the Contract.
- iii. If the Supplier, in the judgement of the PED has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.

In the event the Purchaser terminates the Contract in whole or in part, the Purchaser may procure, upon such terms and in such manners, as it deems appropriate, Materials/ equipment or services similar to those undelivered, and the Supplier will be liable to the Purchaser for any excess for such similar Materials/ equipment or Services. However, the Supplier will continue performance of the Contract to the extent not terminated.

4.5.8 TERMINATION FOR INSOLVENCY

The PED may at any time terminate the Contract by giving written notice to the Supplier/ Contractor. If the Supplier becomes bankrupt or otherwise insolvent. In this event, termination will be compensation to the supplier, provided that such termination will not prejudice or not affect any right of action or remedy, which has accrued or will accrue thereafter to the PED.

4.5.9 FORCE MAJEURE

- a. The supplier will not be liable for forfeiture of its performance security, penalty for late delivery, or termination for default if and to the extent that its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.
- b. For the purpose of this clause, "Force Majeure" means an event beyond the control of Supplier/ contractor and not involving the Supplier's fault or negligence and not foreseeable. Such events may include, but are not restricted to, wars, fires, floods, epidemics, quarantine restrictions, and freight embargoes.
- c. If a Force Majeure situation arises, the supplier will promptly notify the PED in writing of such condition and the cause thereof. Unless otherwise directed by the PED in writing, the Supplier will continue to perform its obligations under the Contract as far as is reasonably practice, and will seek all reasonable alternative means or performance not prevented by the Force Majeure event.

4.5.10 OTHER CONDITIONS

- a. The contractor shall not transfer, assign or sublet the work under this contract or any substantial part thereof to any other party without the prior consent of the PED in writing.
- b. The offer should indicate the total cost of the system, (Supply, Installation, Commissioning and Operation and Maintenance charges) and taxes & duties separately. The total project cost must be inclusive of packing, forwarding, loading & unloading charges, cost of insurance and transportation FOR destination where the system will be installed as per the work order.
- c. Fulfillment of various requirements, not particularly mentioned in the specifications or drawings but necessary for satisfactory and proper completion of the work shall be the contractor's responsibility within the prices offered by him.
- d. The contractor shall not display the photographs of the work and not take advantage through publicity of the work without written permission of the Department. The contractor shall not make any other use of any of the documents or information of this contract, except for the purposes of performing the contract.

4.6 RESOLUTION OF DISPUTES

4.6.1 SETTLEMENT OF DISPUTES

- a. If any dispute of any kind whatsoever shall arise between the Employer and the Contractor in connection with or arising out of the Contract, the parties shall seek to resolve any such dispute or difference, to the extent possible, amicably by mutual consultation.
- b. If, after thirty (30) days the parties have failed to resolve their dispute or difference by such mutual consultation, then either the PED or the Supplier/ Contractor may give notice to the other party of its intention to commence arbitration, as herein provided, as to the matter in dispute, and no arbitration in respect of this matter may be commenced unless such notice is given.

- c. Any dispute of difference in respect of which a notice of intention to commence arbitration has been given in accordance with this Clause will be finally settled by arbitration. Arbitration may be commenced prior to or after delivery of the Materials/ equipment under the contract.

4.6.2 ARBITRATION

All disputes or differences in respect of which a mutual consensus for amicable resolution cannot be arrived upon, the decision shall be settled by arbitration in the manner provided herein below:

- i. The arbitration shall be conducted by three arbitrators, one each to be nominated by the Contractor and the Employer and the third to be appointed by both the arbitrators in accordance with the Indian Arbitration Act. If either of the parties fails to appoint its arbitrator within fifteen (15) days after receipt of a notice from the other party invoking the Arbitration clause, the arbitrator appointed by the party invoking the arbitration clause shall become the sole arbitrator to conduct the arbitration.
- ii. The language of the arbitration proceedings and that of the documents and communications between the parties shall be English. The arbitration shall be conducted in accordance with the provisions of the Indian Arbitration and Conciliation Act, 1996 or any statutory modification thereof. The venue of arbitration shall be the Office of the Engineer-In-Chief, Kawlphetha Building, Power and Electricity Department, Khatla, Aizawl, Mizoram.
- iii. The decision of the majority of the arbitrators shall be final and binding upon the parties. In the event of any of the aforesaid arbitrators dying, neglecting, resigning or being unable to act for any reason, it will be lawful for the party concerned to nominate another arbitrator in place of the outgoing arbitrator.

During settlement of disputes and arbitration proceedings, both parties shall be obliged to carry out their respective obligations under the Contract.

4.6.3 JURISDICTION

All and any disputes or difference arising out of or touching this contract will be decided by the courts or Tribunals situated in Purchaser's Headquarters only. No Suit or other legal proceedings will be instituted elsewhere.

5. TECHNICAL SPECIFICATIONS

5.1 INTRODUCTION

This document describes detailed technical specifications for the design, supply, erection and commissioning of cloud-based RT-DAS central server (SW) for to monitor the AT&C losses, SAIFI and SAIDI. As India is entering Smart Grid environment, the proposed system should be flexible and adaptable to present “integration” requirements with proposed Existing ERP which was established at Guwahati data center and future consumer smart meters at HT< distribution.

The major RT-DAS features to be incorporated in to the Monitoring system are listed below.

- a. **Web enabled Operator Dashboards:** Showing key information on customized dashboard like Real time and aggregate AT&C losses, SAIFI, SAIDI reports, Feeder Status, Feeder Healthiness, Feeder Energy Meter data of substation / town / circle/ state.
- b. **Data Logging with Integrated Analytics & Reporting:** Logging of all parameters including Status change, Equipment Status and Alarms. Easy interface to operators for Report Generation and Graphical Analysis.
- c. **Fault and System Diagnostics with timestamped event logging.**

The proposed solution should work in wide range of plant conditions in India, and work reliably with unreliable Remote Networks available with poor bandwidth. The proposed solution should maintain “vendor neutrality” – supporting different field equipment in the substation comprehensively and working seamlessly with field equipment supplied by different companies. The RT-DAS system should be able to send Substation data reliably to cloud on any kind of remote network including low bandwidth and wireless links such as 2G/3G/4G with poor signal reception at the plant.

Also, the FRTU Gateway at each substation should have capability to cache (Store Locally) the Feeder status, Alarms, Energy meter data for a required period of in case of network failure and push the cached data to cloud when the network becomes available.

In order to make the required AT&C Calculations effectively, consumer meter data is also required. Presently smart consumer meters and smart grid applications are not yet present hence, all the consumer meter reading manually loading in to the existing or New MDMS and SAP systems on monthly basis. Proposed RT-DAS central server (SW) should access the same data for AT&C losses calculation. In future RT-DAS central server (SW) should have capability to collect consumer smart meters’ data automatically and calculate AT&C loss and send the required data to SAP for bill generation.

5.2 ELECTRICAL GRID NETWORK

Towns	21
Substations	35
Feeders	170
Location	Mizoram State

5.2.1 Equipment Details:(To be provided by EPC/Bidder as per the site condition)

@ Each feeder at Substation:

#	Equipment	Qty (A)	Communication Interface	No. of Parameters /Equipment (B) (Tentative)	Total Parameter Count (A*B)
1	Breaker Status	--	ON / OFF Digital Input		
2	Feeder Condition	--	Trip / Healthy Digital Input		
3	Energy Meter Data	--	Modbus/DLMS over RS485		

Note: Need to consider required contact multiplier relays and MFT as per site condition.

@ Each Substation

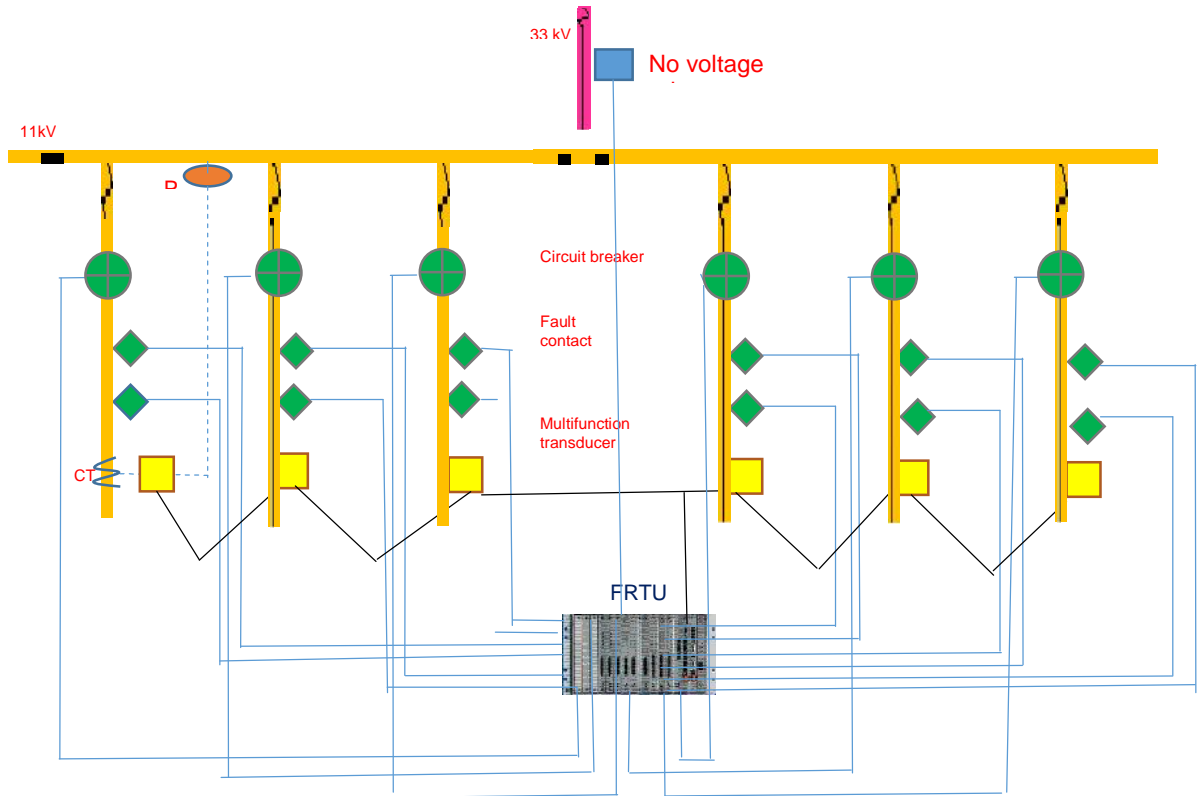
#	Equipment	Qty (A)	Communication Interface	No. of Parameters /Equipment (B) (Tentative)	Total Parameter Count (A*B)
1	All Breaker Status	--	Digital Inputs		--
2	All Feeder Condition	--	Digital Inputs		--
3	All Feeder Energy Meter Data	--	RS485		--

5.3 ARCHITECTURE

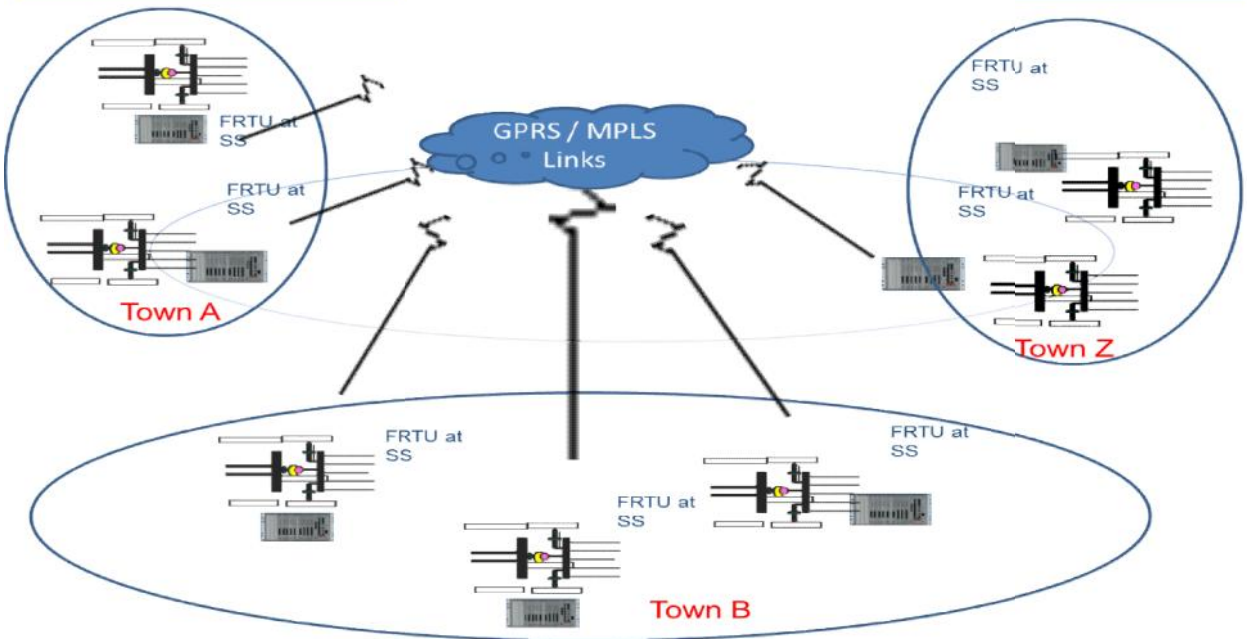
System shall employ latest technologies in distributed processing with integrated Analytics, secure web access, enterprise software and Cloud. Data acquisition shall be distributed across all substations in the Mizoram state and data aggregation shall be done in cloud servers.

Preliminary Architecture

Real Time Feeder DAS at Substation Level



R-APDRP RT-DAS
Real Time DAS – Data Flow



5.4 KEY COMPONENTS

System shall be based on latest in s/w, communications and data processing technologies and future proof considering rapid change in grid evolution. Following sections elaborate on key components of the system and their requirements.

1. *FRTU Gateway using Industrial IoT*: the system at each substation should have capability to cache (Store locally) Feeder status, Alarms, Energy meter data for required period in case of network failure and push the cached data to cloud when network available.
2. *IO Modules*: Digital hardwired IO with integrated CPU for IO processing and control.
3. *Cloud*: Suitable Enterprise Scale Cloud System (VM/Dedicated) running RT-DAS Central Server (SW) to:
 - i. Receive Electrical Parameter Data from each Sub-station under monitoring.
 - ii. Calculation of real time and aggregate AT&C losses, SAIFI and SAIDI.
 - iii. Store parameter data in a suitable enterprise scale database for long term storage.
 - iv. Provide secure web-based access to the parameter data with restricted access through login & password.
 - v. Display of parameter data in the form of graphs & tables.
 - vi. Provide access to current and historical data for selected period.
 - vii. Provide configurable reports (on any parameter, feeder or sub-station for selectable period) in Excel or PDF formats.
 - viii. Send data to the existing systems as required such as ERP.
4. The Architecture should support any 2 communication Interfaces for acquiring data from Substations such as Leased lines, Broadband, GPRS. If only GPRS is available, then two GPRS connections (Data SIM) from two different network providers (Example BSNL, Airtel) should be used.

5.5 TECHNICAL & FUNCTIONAL REQUIREMENTS

5.5.1 Following are the mandatory requirements for the RT-DAS.

1. Shall consists of IIoT Based FRTU at each substation to monitor instantaneous and cumulative electrical parameters from all Substation Equipment.
2. Shall provide configurable alerts on any parameter crossing settable thresholds.
3. Shall integrate with other existing systems.
4. User-friendly browser-based UI for Anywhere Access securely, for minimum 10 number of concurrent connections, for monitoring, O&M, daily reporting, and analysis.
5. Extensions for O&M schedules and activities – which can be assigned to a qualified O&M team in the Circle, to support and follow the operators at the location.
 1. Dashboard: Dashboard with real time and aggregate AT&C losses, SAIFI and SAIDI etc as per the user requirement.
 2. Data Collection & Storage: Shall collect entire data from different substations on real time basis and stored in cloud with DR.

3. Alerts: Shall generate email/SMS alerts on equipment faults and other conditions that have adverse effect on production, to registered users at plant, and O&M team.
4. Events & Alarms: All field events, issues and notifications are stored with time stamp, and available for review through the browser UI.
5. Metering: KW, KVA, KVAR, 3ph V, 3ph I, Power factor, KWH and KVAH.
6. Browser-based User Interface: Shall provide web-based graphical user interface with the following main screens:
 - a. *Dashboard*: A dashboard providing summary details of state/Circle/ energy as per client requirement.
 - b. *Details*: One or more monitoring screens for showing detailed parameter data from each of the feeder, Sub Station etc, SLD for complete State with TOPO Map, SLD of different Circles, SLD of Sub Station etc.
 - c. *Historical Trends, Reports, Analysis*: One or more screens for report generation, historical views and trend graphs for analysis. Downloadable reports in Excel/CSV format shall be generated from the system as per utility specified formats.
 - d. *Alarms*: An Alarms screen showing all the captured alarms and their resolution in chronological order.

5.5.2 Following are the mandatory requirements for the FRTU.

- FRTU may use one or more IIoT Controllers (RTU) at each Substation for the purpose of data acquisition and data forwarding to the cloud Servers.
- FRTU shall have sufficient internal cache to store instantaneous and cumulative electrical parameters from all Equipment including, MFMs for at least 1 week in the event of network failure.
- FRTU software upgradeable to support different communication protocols with the existing or future equipment and other systems.
- FRTU shall be Linux based system and remotely configurable.
- FRTU panel should be compact, wall mounted type with IP4x class.
- FRTU shall support communication with multiple servers in future.

5.5.3 Following are the mandatory requirements for the Cloud.

- Independently developed systems without depending on external cloud services (like AWS, Azure).
- Shall provide Alarms and Alerts on Equipment Faults and Failure within a few seconds (< 5) of occurrence. Contractor need to include multiplication relays for status, trips, wherever required in the scope.
- Mobile User Interface: Monitoring through mobile shall be possible through web browser.
- RBAC: Shall provide Role based access to data with different permission/access levels for normal user, operator & admin
- Integration: The software should be ready to integrate with any other upstream or down systems such as existing SAP and future systems.
- Linux based system with hardened configuration for security.

5.5.4 Specifications

Sl. No	Description	Requirement
FRTU requirements		
1	Supported communication protocols for Field equipment	Modbus over RS485/Ethernet, DLMS
2	Internal Data storage capacity	1GB or Higher
3	RAM Size	512 MB or Higher
4	Configuration facility	Remote interface
5	Software for communication with field equipment	Preloaded at factory
6	Quantity of different communication Ports	Minimum 6Nos RS485 ports, 2Nos Ethernet ports and 2Nos USB ports
7	Type of RS 485 Ports	Should be detachable
8	Auxiliary Supply	110V DC (Substation Battery System)
9	IO Module	Modular with integrated CPU and Serial/Network communication ports
10	Panel Size	L-500mm, H-400mm, D-200mm
11	Data acquisition	15/30/60minutes integration
Network and security requirements		
1	Remote Communication network	Any 2 communication Interfaces from a. Leased line b. Broadband c. 2G/3G/4G
2	Firewall	Required (Separated or integrated in network modem)
3	Static IP	Not required System shall work without static IP for FRTU when 2G/3G/4G is used for Remote communication.

RT-DAS Central Server (SW) requirements	
ARCHITECTURE	
System Specifications	Robust and Hardened Linux Cent OS 7.x with highly scalable database MySQL 5.7x and above, with software system built using enterprise Java SE8 (1.8) and above.
Distributed data acquisition and Control with Central Data +Aggregation.	Receive data from remote substations in near real time (with high performance Head End System), across the entire utility, with a database and browser UI.
System Integration	RT-DAS is a highly integrated system that integrates with other Utility systems – both import and export interfaces – to help track grid health, and energy loss.
PROCESS MONITORING & CONTROL	
Monitoring parameters	Monitoring Feeder status, different alarms and MFMs – from each remote substation FRTU
Monitoring interval	15 minutes upwards -configurable
Control	Supervisory Control through Centralized / Distributed IO.
USER ACCESS	
Easy to use browser interface	Access from anywhere anytime securely
Secure user login	Login control using login/password (default), expand further with additional security
Access Controls	Role-based Access Control (RBAC), can integrate with any LDAP or other corporate mechanism
USER DASHBOARDS	
Easy to understand dashboard	Key status, alarm and health parameters across the entire grid, with historical comparison and predictable analytics for different stakeholders.
PROCESS REPORTS – GRAPHS and HMI	
Reports & Graphs	Hourly/Daily/Weekly/Monthly Graphs; Configurable graphs for any parameter
Downloadable	As PDF/Excel

ALERTS & ALARMS			
Alarms	From Equipment & Hardwired IO on Alarms screen with downloadable Reports		
SMS/Email Alerts	Based on thresholds on critical parameters		
Cloud Specifications with DR for Production Server			
SKU	Description	Proposal	Qty
Network			
Data transfer Bandwidth	1 GB Bandwidth Transfer per month on 100 mbps link speed -Premium Bandwidth -BGP v4 5 telecom providers (Usage Above the mentioned quantity will be charged additional rate of INR 5 per GB Data Transferred	Quantity in GB Transferred	100
IP		Quantity in	

Addresses	Pool of IPv4 Addresses	number of IP	1
With Local Failover - Synchronous Replication and Hot Disaster Recovery + Cold Near Disaster Recovery in India			
Instance	1 Instance with Below Mentioned Resources - With Local Failover - Synchronous Replication and Hot Disaster Recovery + Cold Near Disaster Recovery	Quantity in Instanceswq	1
vCore	1 vCPU - With Local Failover - Synchronous Replication and Hot Disaster Recovery + Cold Near Disaster Recovery	Quantity in vCores	8
vRAM	1 vRAM - With Local Failover - Synchronous Replication and Hot Disaster Recovery + Cold Near Disaster Recovery	Quantity in vRAM (GB)	16
vHDD	1 vHDD - With Local Failover - Synchronous Replication and Hot Disaster Recovery + Cold Near Disaster Recovery	Quantity in vHDD (GB)	2000
Licenses			
License - OS	Cent OS	Quantity in Cores	1
License - DB	MY SQL	Quantity in Units	1
License- Cpanel	Cpanel	Quantity in Units	1
Backup - Agents	Agent based - Automatic, Encrypted, Compressed Disk-to-Disk (SAN) Based Backup - Daily Incremental, Weekly Full – available via a web- based portal for restoration outside the Primary Facility – Instant Restoration at the Primary Facility.	Quantity per OS	1
Backup - Storage	1 GB Disk-to-Disk Storage - Only for Archival and Backup Purposes - Daily Incremental, Weekly Full Backups.	Quantity in GB Storage	200

Cloud Specifications Testing & Implementation Server			
SKU	Description	Proposal	Qty
Network			
Data transfer Bandwidth	1 GB Bandwidth Transfer per month on 100 mbps link speed - Premium Bandwidth - BGP v4 5 telecom providers (Usage Above the mentioned quantity will be charged additional rate of INR 5 per GB Data Transferred)	Quantity in GB Transferred	100
Live Server - with Local HA and No-DR			
IP Addresses	Pool of IPv4 Addresses	Quantity in number of IP	1
Instance	1 Instance with Below Mentioned Resources - Host HA, Network HA, (Storage HA)	Quantity in Instances	1
vCore	1 vCPU - Host HA, Network HA, (Storage HA)	Quantity in vCores	4
vRAM	1 vRAM - Host HA, Network HA, (Storage HA)	Quantity in vRAM (GB)	8
vHDD	1 vHDD - Host HA, Network HA, (Storage HA)	Quantity in vHDD (GB)	2000
Licenses			
License - OS	Centos OS	Quantity in Cores	1
License - DB	MY SQL	Quantity in Units	1
License-Cpanel	Cpanel	Quantity in Units	1
Backup - Agents	Agent based - Automatic, Encrypted, Compressed Disk-to-Disk (SAN) Based Backup - Daily Incremental, Weekly Full – available via a web based portal for restoration outside the Primary Facility – Instant Restoration at the Primary Facility.	Quantity per OS	1
Backup - Storage	1 GB Disk-to-Disk Storage - Only For Archival and Backup Purposes - Daily Incremental, Weekly Full Backups.	Quantity in GB Storage	200

5.6 OTHER REQUIREMENTS

5.6.1 Cable Specifications:

Following is the recommended specifications for RS485 & IO Cables

For RS485: 0.5sq.mm ATC multi-strand (class-5), insulated core, two twisted pair, overall screened with ATC drain wire, GI wire Armored, PVC sheathed, DIN47100 color standard, FRSL, 1.1KV grade

For IO cabling (between HT panels and FRTU panel) – 1.0 sq.mm multi-strand, 4/8/12 core screen, armored, FRSL cable, 1.1KV grade.

5.6.2 Electronic Earthing:

Proper electronic earthing, isolated from electrical/grid earth is extremely important to avoid damage to sensitive electronics including controllers, inverter, WMS & SMB communication boards. The following recommendations shall be followed without fail:

Two isolated electronic earth pits near to FRTU panel at every substation. One earth pit shall be used for protective/body earth and the other to be used for Signal Earth.

Apart from providing separate earth pits, manufacturer may specify earthing recommendations and shall be followed without fail for all communicating equipment connected to FRTU.

5.6.3 Communication Cable Laying:

All electronics circuits are extremely sensitive to induced electrical noise on signal lines. Due to presence of HT power across the substation it is very important to take proper care in laying data and communication cables for FRTU, Switchgear and any other communicating devices connected to FRTU. The following recommendations shall be followed without fail: Required necessary actions to be taken by contractor for communication cable laying at existing equipment at substations.

5.7 BILL OF MATERIALS

Sl. No.	Equipment	Unit	Quantity
Hard ware requirement			
1.	FRTU comprising panels, racks, sub-racks, Power Supply modules, CPU, distributed digital input module with RS 485 as per specification interfacing equipment, required converters & all other required items/accessories including complete wiring for all modules for locations mentioned below with 10% Spare IO (1 each ss)	No.	35
2.	MFTs (1 for each outgoing feeder)	No.	125
3.	CMRs (2 or 3 max for every outgoing as well as incoming feeder)	No.	400
4.	2G/3G/4G Router With firewall (Suitable for backup WAN Connection) ss	No	35
5.	Cables (1 lot for each SS)	Lot	1
6.	Earthing (1 lot for Each SS)	Lot	35
7.	Any other hardware to meet functional /performance requirement and networking.	Lot	A/R
8.	Cloud requirements for 3 year	Lot	1
Software requirement			
1.	RT-DAS Central Server software	Lot	1
3.	Any other item to meet specification requirements	Lot	1
4.	Web based User license for Utility	Nos	100
5.	LT Consumers	Nos	Mizoram state

Make List

Bidder need to Purchase the material from the following vendors only

S. No	Equipment	Specified Makes
1	RTU / Gateway	NeoSilica/ABB/Siemens/Schneider
2	Digital Input Modules	Advantech/ABB/Siemens/Emerson/Schneider
3	2G/3G/4G Modem, Router	D Link, TP Link, Teltonika,
4	MFM/MFT	Minilec/Rishab/Secure/AE /Schneider
5	Cables	Polycab/KEI/KEC/Finolex/RRKable/Gloster
6	Auxiliary Relays	PLA/Omron/Siemens/L&T
7	RT-DAS Central Server software	NeoSilica/ABB/Siemens/Schneider
8	Cloud Provider	

Anything not covered in the above specifications will be governed by PED

6. BID FORMS

6.1 TECHNICAL BID FORMS

a. DECLARATION BY THE BIDDER

I/We (hereinafter referred to as Bidder)
being desirous of tendering for the work, under this tender and having fully understood the nature of the work and having carefully noted all the terms and conditions, specifications etc. as mentioned in the tender document do hereby declare that-

- [1] The bidder is fully aware of all the requirements of the tender document and agrees with all provisions of the tender document and accepts all risks, responsibilities and obligations directly or indirectly connected with the performance of the tender.
- [2] The bidder is fully aware of all the relevant information for proper execution of the proposed work, with respect to the proposed place of works/site, its local environment, and is well acquainted with actual and other prevailing working conditions, availability of required materials and labor etc. at site.
- [3] The bidder is capable of executing and completing the work as required in the tender and is financially capable to execute the tendered work. The bidder is sufficiently experienced and competent to perform the contract to the satisfaction of the Department. The bidder gives the assurance to execute the tendered work as per specifications, terms and conditions of the tender on award of the work.
- [4] The bidder has no collusion with other bidder or with any other person or firm in the preparation of the tender. The bidder has not been influenced by any statement or promises by the Department or any of its employees but only by the tender document.
- [5] The bidder is familiar with all general and special laws, acts, ordinances, rules and regulations of the Government and the Department that may affect the work, its performance or personnel employed therein.
- [6] The bidder has never been debarred from similar type of work by any Government Undertaking /Department.
- [7] The bidder accepts that the earnest money deposit (EMD) may be absolutely forfeited by the Department if the bidder fails to sign the contract or to undertake the work within stipulated time. EMD would be refunded to the unsuccessful bidders after finalization of the bid without any interest.
- [8] This offer shall remain valid for acceptance for 3 months from the proposed date of opening of the Technical Bid. In exceptional circumstances, the Department may solicit the consent of the bidder to an extension of the period of validity of the offer.
- [9] All the information and the statements submitted with the tender are true.

Place:
Date:

(Signature of Bidder)
Seal

b. **FORM OF CERTIFICATE OF ORIGIN AND ELIGIBILITY**

Bidder's Name and Address:

To: XXXXX (*Name and Address of Employer*)

We hereby certify that equipment and materials to be supplied are produced in
....., an eligible source country.

We hereby certify that our company is incorporated and registered in
....., an eligible source country.

Date:.....

(Signature).....

Place:.....

(Printed Name).....

(Designation).....

(Common Seal).....

c. **MANUFACTURER'S AUTHORIZATION FORM**

(On Manufacturer's Letterhead)

To: [Insert: name of Employer]

Dear Ladies and/or Gentlemen,

WE [insert: **name of Manufacturer**] who are established and reputable manufacturers of [insert: **name and/or description of the plant & equipment**] having production facilities at [insert: **address of factory**] do hereby authorize [insert: **name & address of Bidder**] (hereinafter, the "Bidder") to submit a bid, and subsequently negotiate and sign the Contract with you against IFB [insert: **title and reference number of Invitation for Bids**] including the above plant & equipment or other goods produced by us.

We hereby extend our full guarantee and warranty for the above specified plant & equipment materials or other goods offered supporting the supply, installation and achieving of Operational Acceptance of the system by the Bidder against these Bidding Documents, and duly authorize said Bidder to act on our behalf in fulfilling these guarantee and warranty obligations. We also hereby declare that we and, [insert: **name of the Bidder**] have entered into a formal relationship in which, during the duration of the Contract (including warranty / defects liability) we, the Manufacturer or Producer, will make our technical and engineering staff fully available to the technical and engineering staff of the successful Bidder to assist that Bidder, on a reasonable and best effort basis, in the performance of all its obligations to the Purchaser under the Contract.

For and on behalf of the Manufacturer

Signed: _____

Date: _____

In the capacity of [insert: **title of position or other appropriate designation**] and this should be signed by a person having the power of attorney to legal bind the manufacturer.

Date:.....

Place:.....

(Signature).....

(Printed Name).....

(Designation).....

(Common Seal).....

Note 1. The letter of Undertaking should be on the letterhead of the Manufacturer and should be signed by a person competent and having Power of Attorney to legally bind the Manufacturer. It shall be included by the bidder in its bid.

2. Above undertaking shall be registered or notarized so as to be legally enforceable.

3. This letter of Undertaking must be supported by Guaranteed Technical Particulars (GTP).

d. WORK COMPLETION SCHEDULE

Bidder's Name and Address:

To: XXXXX (Name and Address of Employer)

Dear Sir,

We hereby declare that the following Work Completion Schedule shall be followed by us in furnishing and installation of the subject Project for the period commencing from the effective date of Contract to us:

	1 st Month				2 nd Month				3 rd Month			
Supply	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4
Installation	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4
Testing	Week 1	Week 3	Week 3	Week 4	Week 1	Week 3	Week 3	Week 4	Week 1	Week 3	Week 3	Week 4
Commission	Week 1	Week 4	Week 3	Week 4	Week 1	Week 4	Week 3	Week 4	Week 1	Week 4	Week 3	Week 4

	4 th Month				5 th Month				6 th Month			
Supply	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4
Installation	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4
Testing	Week 1	Week 3	Week 3	Week 4	Week 1	Week 3	Week 3	Week 4	Week 1	Week 3	Week 3	Week 4
Commission	Week 1	Week 4	Week 3	Week 4	Week 1	Week 4	Week 3	Week 4	Week 1	Week 4	Week 3	Week 4

	7 th Month				8 th Month				9 th Month			
Supply	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4
Installation	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4
Testing	Week 1	Week 3	Week 3	Week 4	Week 1	Week 3	Week 3	Week 4	Week 1	Week 3	Week 3	Week 4
Commission	Week 1	Week 4	Week 3	Week 4	Week 1	Week 4	Week 3	Week 4	Week 1	Week 4	Week 3	Week 4

	10 th Month				11 th Month				12 th Month			
Supply	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4
Installation	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4	Week 1	Week 2	Week 3	Week 4
Testing	Week 1	Week 3	Week 3	Week 4	Week 1	Week 3	Week 3	Week 4	Week 1	Week 3	Week 3	Week 4
Commission	Week 1	Week 4	Week 3	Week 4	Week 1	Week 4	Week 3	Week 4	Week 1	Week 4	Week 3	Week 4

Date:

(Signature).....

Place:

(Printed Name)

(Designation).....

(Common Seal).....

Note: Bidders to enclose the above Work Completion Schedule, color-coding/ shading the weeks for each work.

e. INFORMATION REGARDING HUMAN RESOURCE

Information regarding Employees of XXXXX (Name of Employer) in our Organization

Bidder's Name and Address:

To: XXXXX (Name and Address of Employer)

Dear Sir,

We hereby furnish the details of our employees of XXXXX (Name of Employer) who are qualified for execution of the project_____

Sl. No.	Name of the person with designation in XXXXX (Name of Employer)	Qualification / Experience XXXXX (Name of Employer)	Date of joining
---------	---	---	-----------------

- | | | | |
|----|-------|-------|-------|
| 1. | ..... | ..... | ..... |
| 2. | ..... | ..... | ..... |
| 3. | ..... | ..... | ..... |
| 4. | ..... | ..... | ..... |
| 5. | ..... | ..... | ..... |

Date:.....

(Signature).....

Place:.....

(Printed Name).....

(Designation).....

(Common Seal).....

Note: This information should be supported by suitable documents of each employee.

f. DETAILS OF EXPERIENCE

Please fill in information about Real Time- Data Acquisition Systems installed.

City, State, Country of installation	Year	Total Project Amount

Note: to be attached (Experience certificates and/or Acceptance reports) and (Work Order and/or LoA from the owners/client for completion of work done), in support of the qualifying requirements, clearly establishing – the start and end date of the project, scope of work and worth of project, on client letterhead.

g. GENERAL TECHNICAL PARAMETERS

Sl. No.	Equipment	Minimum Requirement	Bidder Proposal		
			Make	Model	Quantity
1.	FRTU comprising panels, racks, sub-racks, Power Supply modules, CPU, distributed digital input module with RS 485 as per specification interfacing equipment, required converters & all other required items/accessories including complete wiring for all modules for locations mentioned below with 10% Spare IO	35			
1.1	Supported communication protocols for Field equipment (specify the communication protocol)	Modbus over RS485/Ethernet, DLMS			
1.2	Internal Data storage capacity (in GB)	1			
1.3	RAM Size (in MB)	512			
1.4	Configuration facility	Remote interface			
1.5	Software for communication with field equipment	Preloaded at factory			
1.6	Quantity of different communication Ports	Minimum 6 Nos RS485 ports, 2Nos Ethernet ports and 2Nos USB ports	Type and No. of Ports		
1.7	Type of RS485 Ports	Should be detachable			
1.8	Auxiliary Supply (DC supply)	110V DC (Substation Battery System)	Quantity		
1.9	IO Module	Modular with integrated CPU and Serial/Network communication ports			
1.10	Panel Size	W-400mm, H-500mm, D-200mm	Quantity		
1.11	Data acquisition frequency	15/30/60minutes integration			
1.13	Remote Communication network	Any 2 communication Interfaces from a. Leased line b. Broadband 2G/3G/4G			
1.14	Firewall	Required (Separated or integrated in network modem)			
1.15	Static IP requirement	Not required			
1.16	Whether Data Sheet of the FRTU is attached with GTP or not? (Y/N)				

Sl. No.	Equipment	Unit	Minimum Requirement	Bidder Proposal		
2.	Other equipment			Make	Model	Quantity
2.1	Multi-Functional Transducers (MFT/MFMs)	Lot	As per site requirement			
2.2	Supported communication protocol for MFT/MFMs	RS485 MODBUS				
2.3	Whether data sheet of the MFT is attached with GTP or not? (Y/N)					
2.4	CMR-Contact Multiplying Relays (Auxiliary Relays)	Lot	As per site requirement	Make	Model	Quantity
2.5	Whether datasheet for CMR is attached with GTP? (Y/N)					
2.6	2G/3G/4Grouter with firewall (Suitable for backup WAN Connection)	No.	35	Make	Model	Quantity
2.7	Whether datasheet/ Operation Manual is attached for Router with GTP? (Y/N)					
2.8	Cables					
2.9	For RS485	Lot	As per site requirement			
2.10	For IO Device	Lot	As per site requirement			
2.11	Earthing	Lot	As per site requirement			

Sl. No.	Equipment	Unit	Minimum Requirement	Bidder Proposal		
3	Cloud Requirement	Years	3			
3.1	Data transfer Bandwidth	GB	100			
3.2	Static IP Addresses	No	1			
3.3	Synchronous Replication and Hot Disaster Recovery + Cold Near Disaster Recovery	No	1			
3.4	vHDD	TB	2			
3.5	vCPU	Cores	8			
3.6	vRAM	GB	16			
3.7	License – OS	No	1			
3.8	License – DB	No	1			
3.9	License	No	1			
3.10	Agent based Backup- Automatic, Encrypted, Compressed Disk-to-Disk (SAN) Based Backup - Daily Incremental, Weekly Full	No	1			
3.11	Backup – Storage	GB	200			
3.12	Testing Server (as required)	No	1			

Sl. No.	Equipment	Minimum Requirement	Bidder Proposal
4	RT-DAS Central Server software		
4.1	Software Provider	Enterprise Application built using Java (1.8 and above)	
4.2	Database	MySQL Database Server (5.7 and above)	
4.3	Other Specifications	SMS integration for alerts	
4.4	Operating System	Linux (Cent OS 7 and above)	
4.5	List the various technologies for the front-end user interface application	Spring framework	
4.6	Type of front-end user interface (web-browser based or separate software package to be installed in computers)	Web Browser-based User Interface	
4.7	Analytics	Failure pattern Analysis	
4.8	List the various data that will be monitored by/ through the RT-DAS software (eg: Watt, V, I etc)	V, I, PF, kVA, kW, kWh, kVAh, Feeder Status and alarms. Any other parameters as per user requirement.	
4.9	Type of Reports and downloadable format	SAIFI, SAIDI, Daily, Weekly, Monthly Reports in Excel/PDF format. Also additional custom reports as per user requirement.	
4.10	Monitoring interval	15/30/60 minutes – configurable duration	
4.11	Different Screens	Hourly/Daily/Weekly/Monthly Graphs; Configurable graphs for any parameter	
4.12	Web based User license for Utility	100 Nos	
4.13	LT Consumer meter integration	Mizoram state	

6.2 FINANCIAL BID FORMS

a. EARNEST MONEY FORM

(To be stamped in accordance with Stamp Act, the Non-Judicial Stamp Paper should be in the name of the issuing Bank)

Bank Guarantee No.:

Date:

To: *(insert Name and Address of Employer)*

WHEREAS M/s. *(insert name of Bidder)* having its Registered/Head Office at *(insert address of the Bidder)* (hereinafter called "the Bidder") has submitted its Bid for the performance of the Contract for *(insert name of the Project/Work)* under *(insert Specification No.)* (hereinafter called "the Bid") KNOW ALL PERSONS by these present that WE *(insert name & address of the issuing bank)* having its Registered/Head Office at *(insert address of registered office of the bank)* *(hereinafter called "the Bank")*, are bound unto *(insert name of Employer)* *(hereinafter called "the Employer")* in the sum of *(insert amount of Earnest money in figures & words)* for which payment well and truly to be made to the said Employer, the Bank binds itself, its successors and assigns by these presents.

Sealed with the Common Seal of the said Bank this day of 20....

THE CONDITIONS of this obligation are:

- (2) If the Bidder withdraws its bid during the period of bid validity specified by the Bidder in the Bid Form; or
 - (3) In case the Bidder does not withdraw the deviations proposed by him, if any, at the cost of withdrawal stated by him in the bid and/or accept the withdrawals/rectifications pursuant to the declaration/confirmation made by him in Attachment – Declaration of the Bid; or
 - (4) If the Bidder does not accept the corrections to arithmetical errors identified during preliminary evaluation of his bid pursuant to ITB Clause 27.2; or
 - (5) If, as per the requirement of Qualification Requirements the Bidder is required to submit a Deed of Joint Undertaking and he fails to submit the same, duly attested by Notary Public of the place(s) of the respective executant(s) or registered with the Indian Embassy/High Commission in that Country, within ten days from the date of intimation of post – bid discussion; or
- (5) in the case of a successful Bidder, if the Bidder fails within the specified time limit
- (i) to sign the Contract Agreement, in accordance with ITB Clause 33, or
 - (ii) to furnish the required performance security, in accordance with ITB Clause 34.

Or

- (6) In any other case specifically provided for in ITB.

WE undertake to pay to the Employer up to the above amount upon receipt of its first written demand, without the Employer having to substantiate its demand, provided that in its demand the Employer will note that the amount claimed by it is due to it, owing to the occurrence of any of the above-named CONDITIONS or their combination, and specifying the occurred condition or conditions.

This guarantee will remain in full force up to and including (insert date, which shall be the date 30 days after the period of bid validity)....., and any demand in respect thereof must reach the Bank not later than the above date.

For and on behalf of the Bank
[Signature of the authorised signatory(ies)]

Signature_____

Name_____

Designation_____

POA Number_____

Contact Number(s): Tel._____ Mobile_____

Fax Number_____

email_____

Common Seal of the Bank_____

Witness:

Signature_____

Name_____

Address_____

Contact Number(s): Tel._____ Mobile_____

email_____

Note:

1. In case the bid is submitted by a Joint Venture, the Earnest money shall be in the name of the Joint Venture and not in the name of the Lead Partner or any other Partner(s) of the Joint Venture.
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]:

“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)_____.”*

b. PERFORMANCE SECURITY FORM

Bank Guarantee No.

Date.....

Contract No.....

..... [Name of Contract].....

To: [Name and address of Employer]

Dear Ladies and/or Gentlemen,

We refer to the Letter of Award ("LOA") signed on(insert date of the LOA) between M/s. XXXXX (Name of Employer), having its Registered Office at XXXXX (Registered Address of employer) (-the Employer//|| XXXXX (Name of Employer)) on behalf of XXXX (Name of owner) (hereinafter referred to as 'XXXX (Short Name of Owner)' / 'Owner'), and M/s (Name of Contractor), having its Principal place of business at (Address of Contractor) and Registered Office at (Registered address of Contractor) ("the Contractor") concerning (Indicate brief scope of work) for the complete execution of the (insert name of name of the Project) [Applicable for Bank Guarantees issued by Contractor/Associate for those Contracts awarded to them]

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 the Employer up to i.e., Ten percent (10%) of the Contract Price until ninety (90) days beyond the Defect Liability Period i.e., upto and inclusive of (dd/mm/yy).

We undertake to make payment under this Letter of Guarantee upon receipt by us of your first written demand signed by the Employer duly authorized officer or the authorized officer of Owner declaring the Contractor to be in default under the Contract and without cavil or argument any sum or sums within the above named limits, without your need to prove or show grounds or reasons for your demand and without the right of the Contractor to dispute or question such demand.

Our liability under this Letter of Guarantee shall be to pay to the Employer whichever is the lesser of the sum so requested or the amount then guaranteed hereunder in respect of any demand duly made hereunder prior to expiry of the Letter of Guarantee, without being entitled to inquire whether or not this payment is lawfully demanded.

This letter of Guarantee shall remain in full force and shall be valid from the date of issue until ninety (90) days beyond the Defect Liability Period of the Facilities i.e. upto and inclusive of (dd/mm/yy) and shall be extended from time to time for such period (not exceeding one year), as may be desired by M/s. on whose behalf this Letter of Guarantee has been given.

Except for the documents herein specified, no other documents or other action shall be required, notwithstanding any applicable law or regulation.

Our liability under this Letter of Guarantee shall become null and void immediately upon its expiry, whether it is returned or not, and no claim may be made hereunder after such expiry or after the aggregate of the sums paid by us to the Employer shall equal the sums guaranteed hereunder, whichever is the earlier.

All notices to be given under shall be given by registered (airmail) posts to the addressee at the address herein set out or as otherwise advised by and between the parties hereto.

We hereby agree that any part of the Contract may be amended, renewed, extended, modified, compromised, released or discharged by mutual agreement between you and the Contractor, and this security may be exchanged or surrendered without in any way impairing or affecting our liabilities hereunder without

notices to us and without the necessity for any additional endorsement, consent or guarantee by us, provided, however, that the sum guaranteed shall not be increased or decreased.

No action, event or condition which by any applicable law should operate to discharge us from liability hereunder shall have any effect and we hereby waive any right we may have to apply such law so that in all respects our liability hereunder shall be irrevocable and, except as stated herein, unconditional in all respects.

For and on behalf of the Bank
[Signature of the authorized signatory(ies)]
Signature _____
Name _____
Designation _____
POA Number _____
Contact Number(s): Tel. _____ Mobile _____
Fax Number _____
email _____
Common Seal of the Bank _____
Witness:
Signature _____
Name _____
Address _____
Contact Number(s): Tel. _____ Mobile _____
email _____

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.
3. 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*]:

“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 up to _____ (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) _____.

c. PRICE BID

Sl. No.	Equipment	Unit	Unit Price	Quantity	GST (%)	Freight Charge	Total Price
1.	FRTU comprising panels, racks, sub-racks, Power Supply modules, CPU, distributed digital input module with RS 485 as per specification interfacing equipment, required converters & all other required items/accessories including complete wiring for all modules for locations mentioned below with 10% Spare IO	Nos.		35			
1.8	Auxiliary Supply (DC supply)	Nos.		35			
1.9	IO Module	Nos.		170			
1.13	Remote Communication network	Nos.		35			
1.14	Firewall (if it is hardware)	Nos.		35			

Sl. No.	Equipment	Unit	Unit Price	Quantity	GST (%)	Freight Charge	Total Price
2.	Other equipment						
2.1	Multi-Functional Transducers (MFT/MFMs)	Nos.		130			
2.4	CMR-Contact Multiplying Relays (Auxiliary Relays)	Nos.		510			
2.6	2G/3G/4G router with firewall (Suitable for backup WAN Connection)	Nos		35			
2.8	Cables						
2.9	For RS485	Lot		35			
2.10	For IO Device	Lot		35			
2.11	Earthing	Lot		35			

Sl. No.	Equipment	Unit	Quantity	Total Price for One year/ or one month whichever is applicable
1	Cloud Requirement	GB		
2	RT-DAS Central Server software	No. (Web Application)	1	
		No. (Mobile Application)	1	