ASSAM POWER GENERATION CORPORATION LIMITED

Registered Office: Bijulee Bhawan, Paltanbazar, Guwahati-781 001, Assam
CIN:U40101AS2003SGC007239
Tel.No.: 0361-2739502, Fax No. 03612739546/22
e-mail: akshay.talukdar@apgcl.org , Website: www.apgcl.org

No: APGCL/LKHEP/PROJ/ABT METER/2025-26/Part-1/ 15 Dated:02.08.2025

REQUEST FOR QUOTATION

The Chief General Manager (PP&I), APGCL Bijulee Bhawan, Paltan Bazar, Guwahati-1 invites seal quotation from APDCL's approved vendor for the work of **"Supply, installation, Testing & Commissioning of SAMAST compliant 0.2 S CLASS ABT energy Meters, the supplied meters are to be integrated with the local PC at the control of the generating station through network switch and Automated Meter Reading (AMR) solution of the generating station** and data should be available at Meter Data Management Module of SLDC for data validation, energy accounting & auditing etc. **for 120 MW Lower Kopili Hydro Electric Project of APGCL."**

The specification of the offered SAMAST ABT meter and its accessories can be obtained from APGCL's website.

The seal quotations shall be submitted at the **Office of the Chief General Manager (PP&I), APGCL, Third Floor, Bijulee Bhawan, Paltan Bazar, Guwahati-781001 on or before 12.08.2025 up to 15:00 hrs. The received sealed quotations shall be opened on the same date i.e. 12.08.2025 at 16:00 Hrs** at Office of the Chief General Manager (PP&I), APGCL. The participating suppliers/bidders/firm or their authorized representatives may be present at the time of opening of the sealed quotations.

Chief General Manager (PP&I)
APGCL, Bijulee Bhawan

Memo No: APGCL/LKHEP/PROJ/ABT METER/2025-26/Part-1/15(a) Dated:02.08.2025

Copy to:

1. The OSD to Chairman, APGCL, for favour of kind information to the Hon'ble Chairman, APGCL, Bijulee Bhawan.
2. The OSD to MD, APGCL, for kind information to the MD, APGCL, Bijulee Bhawan.
3. The Chief General Manager, (F&A), APGCL, for kind information.
4. The Project Manager, LKHEP, APGCL, Longku for information.
5. Notice Board
6. Relevant File.

Chief General Manager (PP&I)
APGCL, Bijulee Bhawan

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No: APGCL/LKHEP/PROJ/ABT METER/2025-26/Part-1/ 16 Dated:02.8.2025

REQUEST FOR QUOTATION

The Chief General Manager (PP&I), APGCL Bijulee Bhawan, Paltan Bazar, Guwahati-1 invites seal quotation from APDCL's approved vendor for the work of **"Supply, installation, Testing & Commissioning of SAMAST compliant 0.2 S CLASS ABT energy Meters, the supplied meters are to be integrated with the local PC at the control of the generating station through network switch and Automated Meter Reading (AMR) solution of the generating station** and data should be available at Meter Data Management Module of SLDC for data validation, energy accounting & auditing etc. **for 120 MW Lower Kopili Hydro Electric Project of APGCL."**

The specification of the offered SAMAST ABT meter and its accessories shall adhere to the specification as mentioned **Annexure-A**

The seal quotations shall be submitted at the Office of the Chief General Manager (PP&I), APGCL, Third Floor, Bijulee Bhawan, Paltan Bazar, Guwahati-781001 on or before 12.08.2025 up to 15:00 hrs. The received sealed quotations shall be opened on the same date i.e. 12.08.2025 at 16:00 Hrs at Office of the Chief General Manager (PP&I), APGCL. The participating suppliers/bidders/firm or their authorized representatives may be present at the time of opening of the sealed quotations.

Note:

a) The sealed quotations shall be submitted in the tender box in the O/o the Chief General Manager (PP&I), APGCL on or before 12.08.2025 up to 15:00 Hrs.
b) The participating bidder shall superscribe the envelope with the following information:

1. Quotation Title/Name of the Work.
2. Enquiry Notice Number
3. Due Date
4. Name and address of the bidder
5. Copy of PAN/GST/TIN card

Terms and conditions:

Price: FOR Office of the Project Manager, 120 MW LKHEP, APGCL, Longku, Dima Hasao. Bidder shall submit their price as per the Price Format given in **Annexure D**

1.0 General Terms and Conditions:

1.1. The base prices should be exclusive of GST.
1.2. Corresponding GST should be shown separately.
1.3. Price proposal should be inclusive of packaging and F&I.
1.4. Authentic proof of experience of similar nature of work done earlier must be submitted.
1.5. The prescribed design and layout are to be done by the Participant at his own cost.
1.6. APGCL reserves the right to cancel or reject/ accept any NIQ without assigning any reason

thereof.

1.7. No OEM/ Manufacturer shall submit more than one NIQ.

1.8. Notwithstanding anything to the contrary contained in this bid document, the detailed terms specified in the Work order/ Contract Agreement shall have overriding effect provided that any conditions or obligations imposed on the Participant hereunder shall continue to have effect in addition to its obligations under the Contract Agreement.

1.9. The RFQ and all communications in relation to or concerning the bid documents and the preparation of RFQ shall be solely in English language.

1.10. The bid document and all attached documents, provided by the Authority are and shall remain the property of the Authority and are transparent to the Participants solely for the purpose of preparation and the submission of their respective quotations in accordance herewith. Participants are to treat all information as strictly confidential and shall not use it for any purpose other than for preparation and submission of their proposals.

1.11. Consignee and Place of Delivery & work: The Project Manager, 120 MW LKHEP, APGCL, Longku, Dima Hasao

1.12. This RFQ document is non-transferable.

1.13. APGCL shall not be responsible for any costs or expenses incurred on the preparation and submission of the RFQ (s).

1.14. **APGCL also reserves the right to reject the RFQ proposals of Participant(s) whose offered price to APGCL is not satisfactory.**

1.15. All the corrigendum/addendums will only be informed to the Participants directly through electronic means.

1.16. In the General Terms and Conditions of Supply and erection, APGCL, the supply here means supply of equipment and erection means installation and commissioning of equipment. All other terms and conditions as mentioned in the bid document and general conditions of APGCL shall be followed accordingly.

2.0 Knowing the RFQ document:

Every intending Participant is to examine and understand all instructions, forms, terms & conditions and specifications in the bid document and fully make himself known to all the conditions and contents therein, which may in any manner, affect the scope & content of the work and the costs thereof. Submission of a proposal not substantially responsive to the bid document in all respects and/or failure to furnish all information required by the bid document may entail rejection of the proposal at the Participant's risk.

3.0 Clarifications on bid document:

A prospective Participant requiring any clarification of the RFQ document may notify APGCL in writing/ email at the address indicated in the bid document. APGCL will address those queries in writing through emails **CGM (PP&I), APGCL, 3rd Floor Bijulee Bhawan Paltan Bazar, Guwahati-1, email id: akshay.talukdar@apgcl.org**) and subsequently will issue explanations, interpretations and clarifications as deemed fit in writing as a response to this request. ***(2 days prior to query meeting)***

The query meeting (if any) will be informed accordingly.

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4.0 RFQ Validity

The validity of price shall be for **180 (One Hundred Eighty) days** from the date of NIQ submission end date.

In exceptional circumstances, APGCL may request the Participants for a specified extension of the period of validity of the price and/or the Performance Bank Guarantee (PBG). The Participants shall comply with such requests.

5.0 Withdrawal of price proposal:

No withdrawal of price shall be allowed.

6.0 Local Conditions

It will be imperative on each Participant to be fully informed himself of all local conditions and factors which may have any effect on the execution of the Contract covered under this document and specifications. APGCL shall not entertain any request for clarifications from the Participants, regarding such local conditions.

6.1 It must be understood and agreed that all such factors have properly been investigated and considered while submitting the quotation. No claim for financial adjustment to the Contract awarded under these specifications and documents will be entertained by APGCL. Neither any change in the time schedule of the Contract nor any financial adjustments arising thereof shall be permitted by APGCL, which are based on the lack of such clear information or its effect on the cost of the Works to the Participant.

7.0 Documents comprising the sealed quotation:

7.1 The Participant shall complete the Schedules under Annexure-A, & B as furnished in this document.

7.2 All Documents/ formats are to be returned completed and filled in all respects and signed by the Company Authorized Signatory wherever specified for Bidding document.

8.0 Details Scope of Work:

The scope of work is as follows:

Detailed Survey, preparation of drawings for installation of Energy Meters at Metering Panels, find out the installation location (as applicable) of the Generating Substation along with assessment of the actual requirement of Networking H/W for TCP/IP, including and find out the requirement of Cable & it's laying out.

8.1 Supply, installation, Testing & Commissioning of SAMAST compliant 0.2 S CLASS ABT energy Meters, the supplied meters are to be integrated with the local PC at the control room of the generating station through network switch for local view & data down loading at SLDC Assam for energy accounting and Automated Meter Reading (AMR)

solution for Lower Kopili Hydro Electric Project of APGCL. **The meter vendor is bound to provide the High-level security (HLS) & Low-Level Security (LLS) password to the authorized person of the APGCL & SLDC.**

8.2 The Participant shall design the network architecture keeping in view the existing and planned infrastructure of the utility. **Entire project has to be based on Optic Fibre/GSM/4G/3G. Participant should quote considering availability of Optic Fibre/PLCC/4G/3G/2G.** and ensure that data from all IEMs of the stations are available at State Load Despatch Centre by the scheduled time. Bidder may adopt existing Optical Fibre/GSM/3G/4G communication technology or a combination of these technologies as per the site requirement adopting best available technology in the proposed area of implementation.

8.3 DLMS **Communication Credentials and Configuration Files for ABT Energy Meters**

To enable reliable meter data extraction, monitoring, and seamless SCADA integration, the following DLMS/COSEM communication credentials and configuration files, the meter vendor must provide the followings to the authorized person of APGCL/SLDC after completion of the work for future requirements.

1. DLMS Security Keys

- Authentication Key (AK)
- Encryption Key (EK)
- Global Key (if applicable)
- DLMS Security Suite in use (Suite 0 / 1 / 2)

2. Password for Low-Level Access

- Access password and the associated access level (Low / Public / High)

3. OBIS Code List

- Complete OBIS code mapping for all relevant meter parameters including:
  - Energy (Active/Reactive)
  - Voltage, Current
  - Frequency, Power factor
  - Status/Event logs etc....

4. DLMS Client IDs

- DLMS Client ID(s) and Logical Device ID(s)
- Associated access levels for each client

5. Meter Configuration File

- Preferably in XML or HEX format

Including logical structure, interface classes, object list, referencing method (LN/SN), and association parameters

Any other work which is not identified in Cl 13 or in the specification but is required for completion of the project within the intent of this specification shall also be in the scope of the bidder without any extra cost whenever required.

9.0 Scope of Activities

Considering the above-mentioned requirements, following activities are envisaged by APGCL against the scope of work:

9.1. Supply, testing, installation and commissioning of meters along with its cubicle as per the specification attached in the tender. **(Annexure-A)**

9.2. Supply, installation and commissioning of network **switches** and other network devices wherever required for fulfilment LKHEP, APGCL architecture.

9.3. Meter to switch Communication Cabling, Auxiliary Wiring, terminations and interconnections of the equipment.

9.4. Supply, installation and commissioning of hardware and software for BCS.

9.5. Integration with Local Metering PC at Generating Station Control room for locally viewing and data downloading of energy meter data.

9.6. Integration of ABT meter installed at LKHEP must be reported at SLDC Assam as per the work architecture given below.

Note: - Power cable for CTPT to IEM meters, local OFC terminations from Generating S/s to Switchyard S/s, SIMs, OPGW and Auxiliary power source (48V- 276 V AC /DC) will be under APGCL (if required).

10.0 Deployment of architecture

10.1. The architecture will be deployed will be as per the AEGCL (SLDC) requirements: -

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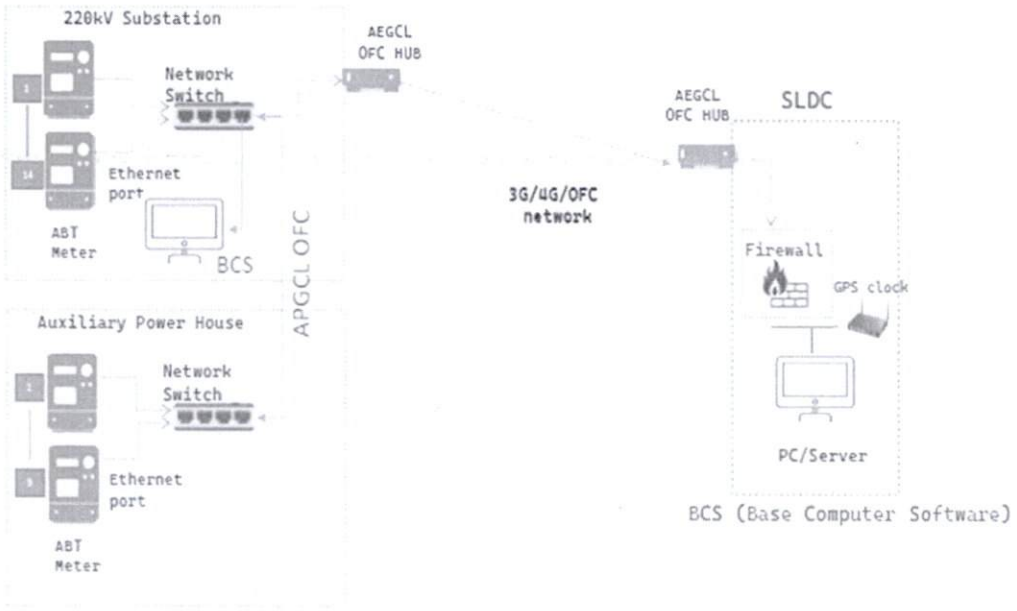

Fig: Architecture/Scheme

11.0 Supply, installation, and commissioning of the BCS system for meter data collection

11.1. The intent of the meter data collection scheme proposed in this document is to automate the task of data collection from each meter/location to the local PC through BCS for log book automation/ local view and Meter data must also be available at SLDC though OPGW or GPRS for Energy accounting.

11.2. **Energy Meters**: Energy Meters to be covered under proposed system are manufactured as per Technical Specification attached within **Annexure A**

12.0 Delivery plan:

12.1. Project execution duration should be **6 months** from the date of LOA till the handover and training activities.

13.0 Go-Live

13.1. Utility will consider Go-live of the project after completing the following activities for LKHEP of APGCL.:

- Supply, installation and commissioning of meters along with accessories as per BOQ scope.
- Participant may take 1 months or as mutually agreed with the utility for stabilization of the project before Go-Live.

13.2. Go-live/commissioning certificate will be issued to Participant for acceptance of the deployed system by utility.

13.3. System handover after training to utility team for further execution and maintenance.

14.0 Dependencies

14.1. The end user does not change /alter any hardware and software provided by Participant in the field at its own.

14.2. Site readiness with proper information in a form of checklist (submitted by bidder) for installation & commissioning go ahead.

14.3. Dependency for Shutdown shall be on Utility.

14.4. To provide base data like Filed or System CT/PT ratio, transformer capacity, Generating Station/Substation details etc. shall be provided by utility at the time of technical evaluation after LOA awarded.

15.0 Evaluation of Eligibility Criteria / Qualification Requirement:

15.1. The Participant should be a company registered under Company Act 1956 (amended in 2013) and in operation for at least 10 (ten) years as on the date of NIQ opening and shall have their registered offices in India.
Certificate of Incorporation needs to be submitted in this regard.

15.2. The Participant must have valid PAN No and GSTIN No.
Copy of PAN card and GSTIN Registration is required to be submitted with the quotation.

15.3. The Participant must have P.F/ESI Registration according to the Acts of Government /Labor Laws.
Necessary documentary proof in this respect should be attached with the quotation.

15.4. The Participant must not be banned or debarred or blacklisted by any State Govt. / Central Govt. / Central or State Govt. Undertakings / Utilities / Private Organizations etc. in the past.
Declaration in this regard by the authorized signatory of the Participant needs to be submitted.

15.5. The Participant shall give the certification that the equipment/System Software supplied under this project shall not be obsolete till warranty period i.e. minimum 5 years.

15.6. No Consortium/JV shall be allowed.

15.7. Bidder must be Meter manufacturer OEM and approved vendor of APDCL.

15.8. The above stated requirements are a minimum and Utility reserves the right to request for any additional information and also reserves the right to reject the Proposal of any Participant, if in the opinion of utility, the qualification data is incomplete or the Participant is found not qualified to satisfactorily perform the Contract.

The Participant is required to furnish the following information/enclose self-attested photocopies of the following required documents along with the BID, failing which their BIDs shall be rejected and will not be considered any further.

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16.0 Table 1: Mandatory Eligibility Criteria

The following mentioned eligibility criteria are mandatory for the submission and the Participant is expected to submit the mentioned supporting documents.

Deliverable Compliance and Quality		
Qualification	**Criteria**	**Supporting Documents**
Company Registration	The Participant should be a company registered under Company Act 1956 (amended in 2013) and in operation for at least 10 (ten) years as on the date of BID opening and shall have their registered offices in India	Copy of certificate of incorporation, GST registration and Permanent Account Number (PAN) to be enclosed with Technical BID.
ISO 9001	The Participant must possess valid ISO 9001 certification for meter manufacturing	Authorized certification in this regard must be submitted
ISO/IEC27001	The Participant must possess valid ISO /IEC27001 certification	Authorized certification in this regard must be submitted
ISO 14001 and ISO 45001	The Participant must possess valid ISO 14001 for environmental and ISO 45001 certification for occupational Health & Safety Management (H&S).	Authorized certification in this regard must be submitted
CMMI level 3 or higher certificate	The Participant must possess valid CMMI level 3 or Higher Certificate	Authorized certification in this regard must be submitted

16.1. Table 3A: Technical Qualification Criteria for Participant

The following mentioned technical qualification criteria is mandatory for the submission and the Participant is expected to submit the mentioned supporting documents.

S. N	Eligibility criteria	Document evidence to be submitted
1	The Participant must have experience in supply, of 0.2s Class ABT energy meters of at least 100 numbers in the last six (6) years ending on the original date of BID opening.	Work Order / Purchase Order / Contract Agreement and Go-live / Completion Certificate from the client
2	The Participant must have at least one NABL accredited Laboratory. They should have to upload notarized copy of NABL Accreditation Certificate	Documentary evidence should be provided along with the BID
3	The Participant must possess bureau of Indian Standard Certification (ISI mark) for meter manufactured in India.	Documentary evidence should be provided along with the BID

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17.0 Table 3B: Technical Qualification Criteria for Participant: AMR

The following technical qualification criteria are mandatory for the submission and the Participant is expected to submit the mentioned supporting documents.

S. N	Eligibility criteria	Document evidence to be submitted
1	The Participant must have an AMR project experience of more than 100 ABT Energy Meters in the last 5 years.	Work Order / Purchase Order / Contract Agreement and Go-live / Completion Certificate from the client

18.0 Financial Evaluation Criteria

18.1 The price evaluation will be based on the net lump-sum charges exclusive of any taxes, duties, fees, levies and other charges quoted by Participants in the price proposals.

18.2 All applicable taxes, duties, fees, levies, and other charges shall be paid to the successful Participant on an actual basis.

18.3 Price Negotiation with Bidder: After evaluation, if at all deemed necessary, the Evaluation committee constituted by APGCL may engage in price Negotiation with the successful bidder if required.

19.0 Award of Contract:

19.1 The contract shall be awarded to the Successful Participant whose proposal has been determined to be substantially responsive and subject to meeting all the conditions complying to the bid document.

20.0 Notification of Award and Signing of Contract

20.1 APGCL will notify in writing to the Successful Participant through a Notification of Award, and this Notification of Award shall have to be accepted within 7 (seven) days from the date of issue of the same.

21.0 Payment Schedule: The payment shall be made as below:

21.1 70% of supply value along with 100% GST on receipt and acceptance of materials in full and good condition, and same will pay within 30 days through e-Banking after submission of invoices along with necessary supporting documents.

21.2 Installation charges will be paid **on Pro rata basis** after successful installation and commissioning.

21.3 Remaining 30% of supply value shall be paid after successful installation and commissioning of all meter with accessories.

22.0 ADVANCE PAYMENT

No advance payment is applicable for this contract.

23.0 PERFORMANCE SECURITY DEPOSIT

23.1 The Supplier shall have to deposit to the extent of 10% (ten percent) of the total value of the order as performance security (Bank Guarantee), within Fifteen 15 days of receipt of notification of award, duly pledged in favor of the Purchaser and such security deposits shall be valid up to 66 months from the date of LOA.

23.2If required, the supplier on his own has to renew the BG at least 1(one) month before the date of expiry of the BG; failing which the BG shall be revoked by APGCL within the claim period without any prior intimation to the contractor.

23.3If the Supplier fails or neglects to observe, perform any of his obligations under the contract, it will be lawful for the "Purchaser" to forfeit either in full or in part at his absolute discretion, the security deposit furnished by the supplier.

23.4No interest shall be payable on such deposits.

24.0 WARRANTY

24.1 The Supplier/Manufacturer warrants that all the Goods are new, unused, and of the most recent or current models, and that they incorporate all recent improvements in design and materials, unless provided Otherwise in the Contract

24.2 The Supplier/Manufacturer further warrants that the Goods along with the associated software shall be free from defects arising from any act or omission of the Supplier or arising from design, materials, and workmanship, under normal use in the conditions prevailing in the country of the final destination

24.3The warranty shall remain valid for **One Twenty *(120) months for meters ,Sixty six (66) months for Metering Panel as well as BCS*** *and* ***rest items will be Twelve(12) month*** *from the date of supply* (the Goods having been delivered to and accepted at the final destination indicated in the Purchaser's Requirement) If during the Period of Warranty, any defect should be found, the Purchaser shall give Notice to the Supplier/Manufacturer stating the nature of any such defects together with all available evidence thereof, promptly following the discovery thereof. The Purchaser shall afford all reasonable opportunity for the Supplier/Manufacturer to inspect such defects.

24.4 If having been notified, the Supplier/Manufacturer fails to remedy the defect within a period of 45 (Forty-five) working days, the Purchaser may, following notice to the Supplier/Manufacturer, proceed to do such work, and the reasonable costs incurred by the Purchaser in connection therewith shall be paid to the Purchaser by the Supplier or may be deducted by the Purchaser from any money due the Supplier or claimed under the Performance Security.

24.5 The warranty shall cover Goods along with the associated software.

25.0 COMPLETION:

The entire supply and erection works shall be completed within **6 months** from the Contract commencement Date. Necessary Road Permit for transportation shall be arranged by supplier. However, APGCL shall extend possible assistance for the same.

26.0 COPY RIGHT ETC

26.1The Supplier shall indemnify the purchaser against all claim's actions, suits and proceedings for the infringement or alleged infringement of any patent, design or copyright protected either in the country of origin or in India by the use of any equipment supplied by the Supplier but such indemnity shall not cost any use of the equipment other than for the purposes indicated by or reasonably to be inferred from the specification.

27.0 QUANTITY VARIATION

"Purchaser" shall have the right to increase/decrease the ordered quantity by 20% within 45 days of the period of completion and the same shall be carried out at the same rates /prices and terms and conditions stipulated in the order except regarding completion schedule, which shall be mutually agreed upon in case of enhancement of the ordered quantity.

28.0 INSPECTION AND TESTING

28.1 The Supplier shall at its own expense and at no cost to the Purchaser carry out all such tests and/or inspections of the Goods and Related Services.

28.2 The inspections and tests may generally be conducted on the premises of the Supplier/Manufacturer, at the point of delivery. The Supplier shall furnish all reasonable facilities and assistance, including access to drawings and production data, to the inspectors at no charge to the Purchaser.

28.3 Whenever the Supplier is ready to carry out any such test and/or inspection, the Supplier shall give a reasonable advance notice (not less than 30 days) of such test and/or inspection and of the place and time thereof to the Purchaser. The Supplier shall obtain from any relevant third party or manufacturer any necessary permission or consent to enable the Purchaser or its designated representative to attend the test and/or inspection.

28.4 The Supplier/manufacturer shall provide the Purchaser with a certified report of the results of any such test and/or inspection.

28.5 The Purchaser may reject any Goods or any part thereof that fail to pass any test and/or inspection or do not conform to the specifications. The Supplier shall either rectify or replace such rejected Goods or parts thereof or make alterations necessary to meet the specifications at no cost to the Purchaser, and shall repeat the test and/or inspection, at no cost to the Purchaser, upon giving a notice under sub-clause 34.4.

28.6 If it is agreed between the Purchaser and the Supplier that the Purchaser shall not attend the test and/or inspection, then the Supplier may proceed with the test and/or inspection, and should provide the Purchaser with a certified report of the results thereof.

29.0 INSURANCE

29.1 The "Supplier" shall, have, unless, otherwise specified by the Purchaser, ensure the materials through their underwrites at their cost and shall keep it insured against any loss/ damaged/ pilferage in transit, destruction or damage by fire/ flood, without exposure to vagaries of weather or through riot, civil commotion, war or rebellion, for the full value of the materials until the materials are received at the purchaser's destination store.

29.2 The "Supplier" shall be responsible for safe arrival at the destination, unloading, and receipt of the materials by the consignee. The Purchaser will discharge the consignee's responsibilities only and shall not be responsible for any damage/ loss/ pilferage/ non-delivery by the carriers.

29.3 In case of any loss/ damage/ pilferage/ non-delivery/ short delivery by carriers etc.; the Supplier shall replace free of cost missing/damaged/lost materials within 30(thirty) days from the receipt of report thereof from the consignee(s) without waiting for settlement of their claims with their carriers / under-writers. Normally, such reports from the consignee(s) to the supplier shall be initiated within 30(thirty) days from the date of receipt of each consignment by/them.

29.4 If it is considered necessary that the damage equipment either in part or in full to be sent back to the manufacturer's works for repair, the manufacturers/ suppliers will furnish the Bank Guarantee for the full value of equipment needing repairs and such Bank Guarantee shall remain valid till such time, the equipment are repaired and returned to the consignee in good condition. The to-and-fro freight, handling, and insurance charges in such cases will be borne by the Supplier.

29.5 Unless, otherwise mutually agreed upon, in case of failure by the Supplier to replenish /make good of the loss /damage /short supplied quantities, within the stipulated period, the Purchaser reserves the right to forfeit the security deposit and/ or adjust any outstanding payment to the "Supplier" with the Purchaser or take any other appropriate action.

30.0 FORCE MAJEURE

30.1 "Force Majeure" shall mean any event beyond the reasonable control of the Purchaser or of the Supplier, as the case may be, and which is unavoidable notwithstanding the reasonable care of the party affected, and shall include, without limitation, the following:

(a) War, hostilities or warlike operations, whether a state of war be declared or not, invasion, act of a foreign enemy, and civil war

(b) Rebellion, revolution, insurrection, mutiny, usurpation of civil or military government, conspiracy, riot, civil commotion, and terrorist acts

(c) confiscation, nationalization, mobilization, commandeering or requisition by or under the order of any government or de jure or de facto authority or ruler or any other act or failure to act of any local state or national government authority

(d) strike, sabotage, lockout, embargo, import restriction, port congestion, lack of usual means of public transportation and communication, industrial dispute, shipwreck, shortage or restriction of power supply, epidemics, quarantine, and plague

(e) earthquake, landslide, volcanic activity, fire, flood or inundation, tidal wave, typhoon or cyclone, hurricane, storm, lightning, or other inclement weather condition, nuclear and pressure waves or other natural or physical disaster

(f) shortage of labor, materials, or utilities were caused by circumstances that are themselves Force Majeure.

30.2 If either party is prevented, hindered or delayed from or in performing any of its obligations under the Contract by an event of Force Majeure, then it shall notify the other in writing of the occurrence of such event and the circumstances thereof within fourteen (14) days after the occurrence of such event.

30.3 The party who has given such notice shall be excused from the performance or punctual performance of its obligations under the Contract for so long as the relevant event of Force Majeure continues and to the extent that such party's performance is prevented, hindered or delayed. The Time for Completion shall be extended in accordance with the relevant Clause.

40.0 EXTENSION OF TIME FOR COMPLETION

40.1 The Time(s) for Completion shall be extended if the Supplier is delayed or impeded in the performance of any of its obligations under the Contract because of any of the following:

(a) Any change in the scope of works by the Purchaser, which justifies extension of completion time.

(b) Delay in any document's approval from purchaser.

(b) any occurrence of Force Majeure as provided in ***Clause 38***.

40.2 Except where otherwise specifically provided in the Contract, the Supplier shall submit to the Purchaser's Representative a notice of a claim for an extension of the Time for Completion, together with particulars of the event or circumstance justifying such extension as soon as reasonably practicable after the commencement of such event or circumstance. As soon as reasonably practicable after receipt of such notice and supporting particulars of the claim, the Purchaser and the Supplier shall agree upon the period of such extension. If the Supplier does not accept the Purchaser's estimate of a fair and reasonable time extension, the Supplier shall be entitled to refer the matter to a Dispute Board.

41.0 LIQUIDATED DAMAGES

41.1 The Supplier guarantees that it shall attain Completion of the Works within the Time for Completion specified in the Contract Agreement, or within such extended time to which the Supplier shall be entitled under ***General Conditions of Supply & Erection of APGCL*** hereof.

41.2 If the Supplier fails to attain Completion of the Works within the Time for Completion or any extension thereof, the Supplier shall pay to the Purchaser liquidated damages at the rate of ***1 % (One percent)*** of the total Contract Price per week or part thereof delay. The aggregate amount of such liquidated damages shall in no event exceed ***10% (ten percent)*** of the total contract price.

However, the payment of liquidated damages shall not in any way relieve the Supplier from any of its obligations to complete the Works or from any other obligations and liabilities of the Supplier under the Contract.

41.3 Once the aggregated "Liquidated damage" reaches 10% of the total contract price, the Purchaser may consider the following actions:

(a) Procure the undelivered material/ equipment and/or complete the balance works from elsewhere, giving notice to the supplier and to recover any extra expenditure incurred thereby for having to procure these materials and works at a higher price, at the risk and responsibility of the Supplier; or

(b) Cancel the contract wholly or in part and complete the works at the full risk and cost of the Supplier and forfeit the security deposit.

(c) Declare it as a "Contractual Failure" and act in accordance with ***Clause 41.0***.

42.0 CONTRACTUAL FAILURE

In the event of contractual failure of any respect on the part of the Supplier, the Purchaser shall be entitled to operate a security deposit or any deposit or any payment due to supplier irrespective of whether his default relates to the particular orders or not towards the Purchaser's claim for damages arising out of the failure. In addition, the Purchaser may black-list or ban the "Supplier" or, pending enquiry, suspend him or take any other steps considered suitable.

43 ARBITRATION

43.1 If at any time, any question, disputes or differences whatsoever shall rise between the Purchaser and the Supplier, upon or in relation to or in connection with the contract, either party may forthwith give notice to the other in writing of the existence of such question of dispute or difference and the same shall be referred to the adjudication of three Arbitrators, one to be nominated by the Purchaser the other by the Supplier and the third by the President of the Institution of Engineers, India/ Retired or Sitting Judge not below the status of a retired Judge of High Court of India. If either of the parties fail to appoint its arbitrators within 60 (sixty) days after receipt of notice of the appointment of arbitrators then the President of the Institution of Engineers /retired or sitting Judge of India, as the case may be, shall have the power at request of either of the parties, to appoint an Arbitrator. A

certified copy of the "President" making such an appointment shall be furnished to both parties

43.2 The arbitration shall be conducted as per the provisions of the Indian Arbitration Act, and shall be held at Guwahati or any other place as may be decided by the Purchaser. The decision of the majority of Arbitrators shall be final & binding upon the parties, and the expenses of the arbitration shall be paid as may be determined by the Arbitrator. However, any dispute arising out of this contract will first be discussed and settled bilaterally between the Purchaser and the Supplier.

44.0 SYSTEM SECURITY & CYBER SECURITY:

The contractor shall document and implement a Cyber Security Policy in line with CERT-In's latest guidelines (http://www.cert-in.org.in).

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Contract Forms

(This Section contains the Letter of Acceptance, the Contract Agreement, and Appendices to the Contract Agreement, which, once completed, will form the Contract along with Sections 4 and 5. The Participant should note that this Section shall be completed fully at the time of Contract signing.

Notification of Award

[APGCL letterhead]

Letter of Acceptance

Supply of Goods and Related Services

Date:

To: [Name and address of the Supplier]

This is to notify you that your price quotation dated [date] for execution of the [name of the Contract and identification number, as given in the Contract Data] for the Contract Price in the aggregate of [amounts in numbers and words] [name of currency] (as per Price Schedule-1), as corrected and modified in accordance with the Instructions to Participants is hereby accepted, and it is decided to award on you the 'Supply and Delivery Contract' covering inter-alia Ex-works supply and Delivery of all Goods including Related Services.

You are requested to furnish the Performance Security within fifteen (15) days in accordance with the Conditions of Contract, using for that purpose one of the Performance Security Forms included in Section 8 (Contract Forms) of the Bidding document

[Authorized Signature]

[Name and Title of Signatory]

Assam Power Generating Company Limited

ASSAM POWER GENERATION CORPORATION LIMITED

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Form of Performance Security

Bank Guarantee

(To be stamped in accordance with the Stamp Act)

To: _____ *[name of Purchaser]*

_____ *[address of Purchaser]*

*WHEREAS*_____ *[name and address of Supplier/Manufacturer]* has undertaken, in pursuance of Contract No. _____ dated _____ to execute _____ *[name of Supplier/Manufacturer and brief description of Scope]* (hereinafter called "the Contract");

AND WHEREAS it has been stipulated by you in the said Contract that the Supplier/Manufacturer shall furnish you with a Bank Guarantee by a recognized/scheduled bank for the sum specified therein as security for compliance with its obligations in accordance with the Contract;

AND WHEREAS we have agreed to give the Supplier/Manufacturer such a Bank Guarantee;

NOW THEREFORE we hereby affirm that we are the Guarantor and are responsible *to* you, on behalf of the Supplier/Manufacturer, up to a total of _____ *[amount of Guarantee]*[1] _____ *[in words],* such sum being payable in the currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of _____ *[amount of Guarantee]* as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Supplier/Manufacturer before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract or of the scope to be performed thereunder or of any of the Contract documents which may be made between you and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

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1 An amount is to be inserted by the Guarantor, representing the percentage of the Contract Price specified in the Contract.

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This guarantee shall be valid until the date, 30 days beyond the Warranty Period as per the Contract.

Signature and Seal of the Guarantor _____

Name of Bank _____

Address _____

Date _____

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Annexure A

TECHNICAL SPECIFICATIONS of IEM, Cubicle, etc....

A. Specification for SAMAST Compliant Interface Energy Meter (IEM)

1. Interface Energy Meters Technical Specification

The specification covers the design, engineering, manufacturing, assembly, and testing of static/electronic Interface Energy Meters. compliant Tri-vector type, Four Quadrant, Bi-Directional Energy Meter, suitable for 3-phase 4-wire connections, solidly earthed system with balanced and unbalanced loads for a power factor range from zero to unity (lagging & leading), with initial and sustained accuracy of class 0.2s. The energy metering system specified herein shall be used for tariff metering for bulk, inter-utility power flows. Projection mounted type, static composite meter shall be installed for EHV/HV circuit, as a self-contained device for measurement of active energy transmittals in each successive 15-minute or 5-minute block, etc., meeting the ABT requirements. These meters shall be integrated with the SAMAST framework as soon as it goes live, so the meter shall comply with SAMAST guidelines. The meter shall also be compatible for integration with SAS system. Necessary isolation and /or suppression shall also be built-in for protecting the meter from surges, voltage spikes, fault-current etc. that occurs in VT and CT circuits of extra high voltage switchyards as per IS 14697 with its latest amendments.

2. Basic Features of Interface Energy Meters

a) The energy metering system specified herein shall be used for tariff metering for bulk, inter-utility power flows, in different States of India. Static composite meter shall be installed at interface points as a self-contained device for measurement of Voltage (V), Frequency (f), Active (Wh) and Reactive (VArh) energy exchanged in each successive 5 min time block. All meters shall be compliant to IS 15959 and its latest amendments.

b) Each meter shall have a unique identification code, which shall be marked permanently on its front, as well as in its memory. All meters supplied to as per this specification shall have their identification code starting with "IEM", which shall not be used for any other supplies. "IEM" shall be an eight-digit running serial number, further followed by "A" and "B" for the use with CT secondary of 1A and 5A respectively. This shall be mutually agreed between the buyer and the vendor.

c) The meters shall be DLMS protocol compliant and shall be suitable for communication with external device like modem, DCU, etc. which shall be able to communicate with CDCS for local/remote data transfer. The meter shall compulsorily have at least 1 optical port for taking reading through Hand Held Unit (HHU).

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d) Auxiliary Supply to IEM- The meters shall normally operate with the power drawn from DC auxiliary power supply (Range 60-240V AC/DC (±20%), burden:<10VA) to reduce the Voltage Transformer (VT) burden. In addition, there shall be provision to operate the meter from the Voltage Transformer (VT) secondary circuit having a rated secondary line-to-line voltage of 110V, and current transformers (CTs) having a rated secondary current of 1 A or 5A. Any further transformers/ transactions/ transducers required for their functioning shall be in-built in the meters. Necessary isolation and/or suppression shall also be built-in, for protecting the meters from surges and voltage spikes that occur in the VT and CT circuits of extra high voltage switchyards as per IS 14697 with latest amendments. The reference frequency shall be 50Hz. Also, the meter shall have suitable tolerance (up to 15% either side) for DC supply.

e) The meters shall safely withstand the usual fluctuations arising during faults etc. In particular, VT secondary voltages 115% of rated applied continuously and 190% of rated for 3.0 seconds, and CT secondary current 150% of Iref applied continuously and 20 times of Iref applied for 0.5 seconds shall not cause any damage to or maloperation of the meters.

f) The meters shall continue to function for the remaining healthy phase(s), in case one or two phases of VT supply fails. In case of a complete VT supply failure, the computation of average frequency shall be done only for the period during which the VT supply was available in the 5-minute block. Any time block contraction or elongation for clock correction shall also be duly accounted for.

g) The total burden imposed by a meter for measurement and operation shall be defined as per IS 14697. An automatic backup for continued operation of the meter's calendar-clock, and for retaining all data stored in its memory, shall be provided through a long-life battery, which shall be capable of supplying the required power for at least 2 years. The meters shall be supplied duly fitted with the batteries, which shall not require to be changed for at least 10 years, as long as total VT supply interruption does not exceed two years. The battery mounting shall be designed to facilitate easy battery replacement without affecting PCB of the meter.

h) The meters shall fully comply with all stipulations in IS 14697 except those specifically modified by this specification. The reference ambient temperature shall be 27°C.

i) Each meter shall have a test output device (visual), as per clause 6.11 of IS 14697.1999, for checking the accuracy of active energy (Wh) measurement. The preferred pulsing rate is twenty (20) per Wh for CT sec-1A and four (4) per Wh for CT sec –5A. It shall be possible to couple this device to suitable testing equipment also.

j) Exception Management- The three line-to-neutral voltage shall be continuously monitored and in case any of these falls below defined threshold (70% of Vref), meter shall have suitable indication on LED/ LCD. The meter shall also have provision for low voltage event

logging in meter memory in case of any phase voltage going below a defined threshold. The time blocks in which such a voltage failure occurs/persists shall also be recorded in the meter's memory with a symbol "*" if 3 Phase RMS voltage applied to the IEM is in between 25% to 80% of Vref and if Voltage is less than 25% of Vref, meter should record Zero voltage symbol "Z" in line with SAMAST guideline.

k) Time Accuracy - Each meter shall have a built-in calendar and clock, having an accuracy of 10 seconds per month or better. The calendar and clock shall be correctly set at the manufacturer's works. The date (day-month-year) and time (hour-min.-sec.) shall be displayed on the meter front on demand. Meter shall have the intelligence to synchronize the time with GPS (Local GPS/CDCS GPS/ NAVIC) signal and from PC using software. Limited time synchronization through meter communication port shall be possible at site. When an advance or retard command is given, twelve subsequent time blocks shall be contracted or elongated by five seconds each. All clock corrections shall be registered in the meter's memory and suitably shown on print out of collected data.

l) A touch key or push button shall be provided on the meter front for switching on the display and for changing from one indication to the next. The display shall switch off automatically about one minute after the last operation of touch key/push button. When the display is switched on, the parameter last displayed shall be displayed again, duly updated.

m) The whole system shall be such as to provide a print out (both from the local PC, and from remote central computer) of the following format:

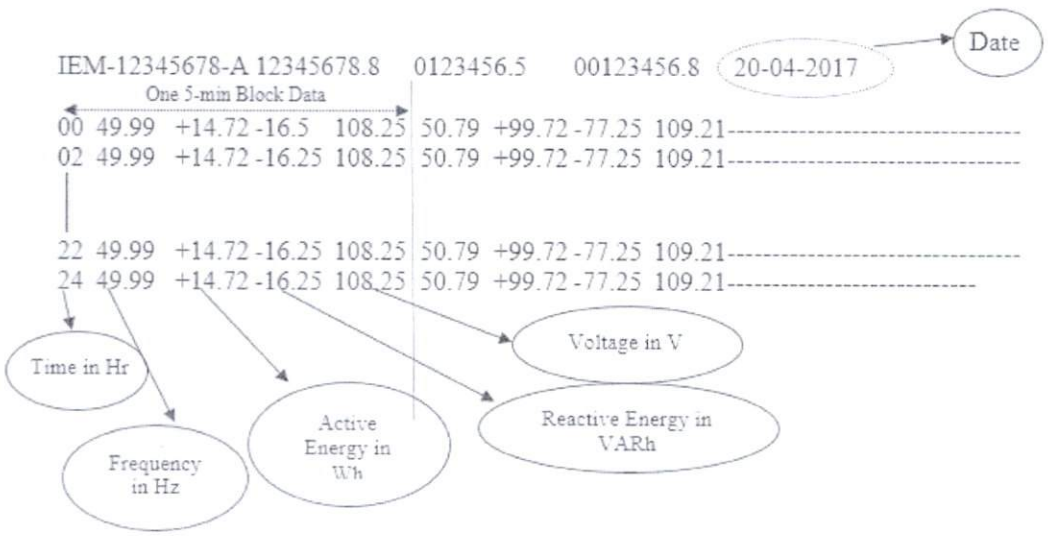

Figure 1: Standard Raw Data Format for IEM

There are 4 values in one 5 min time block. The first row shall contain the meter data for 2 hours, i.e., 24-time blocks, 00 hrs to 02:00 hrs. Similarly, the 2nd row shall contain the data for the next 2 hours and henceforth.

The above data shall be available in text file format (file extension as per IEEE standard/.txt) exportable to Excel. Indication of time retard or advance to be provided without disturbing the proposed format. Each 5-min block data consists of Frequency (in HZ), Active energy (in Wh), Reactive energy (in VARh) and Voltage (in V). All 5-minute Wh and VARh figures in. NPC/output report shall be rounded off upto third decimal.

n) The portable Hand-Held unit (HHU)/ Common meter reading instrument (CMRI)/ Data Collecting Device (DCD) shall be having IS-15959:2011 compatibility for standardized parameters.

o) **Constructional Features**

- The meters shall be supplied housed in compact and sturdy, metallic or moulded cases of non-rusting construction and/or finish. The cases shall be designed for simple mounting on a plane, vertical surface such as a control/relay panel front. All terminals for CT and VT connections shall be arranged in a row along the meter's lower side. Terminals shall have a suitable construction with barriers and cover, to provide a secure and safe connection of CTs and VTs leads through stranded copper conductors of 2.5 sq. mm. size.
- All meters of the same model shall be totally identical in all respects except for their unique identification codes. They shall also be properly sealed and tamper evident, with no possibility of any adjustment at site, except for transactions allowed in IS 15959.
- The meters shall safely withstand, without any damage or mal operation, reasonable mechanical shocks, earthquake forces, ambient temperature variations, relative humidity etc. in accordance with IS-14697. They shall have an IP-51 category dust-tight construction, and shall be capable of satisfactory operation in an indoor, non-air-conditioned installation.
- Either the meters shall have built-in facility (e.g., test links in their terminals) for in-situ testing, or a separate test block shall be provided for each meter.

3. Measurement

a) The active energy (Wh) measurement shall be carried out on 3-phase, 4-wire principle, with an accuracy as per class **0.2S** (IS 14697).

b) The meter shall compute the net active energy (Wh) sent out from the substation bus bars during each successive 5 min block, and store it in its memory up to fourth

decimal with plus sign if there is net Wh export and with a minus sign if there is net Wh import. Further Wh data in NPC/output report shall be rounded upto third decimal.

c) The meter shall count the number of cycles in VT output during each successive 5 min block, and divide the same by 300 (60 sec/min x 5min) to arrive at the average frequency. The frequency data shall be stored in the meter's memory in Hertz up to third decimal. Further Frequency data in NPC/output report shall be rounded off upto second decimal.

d) The meter shall continuously compute the average of the RMS values of the three line-to-neutral VT secondary voltages as a percentage of 63.51 V, and display the same on demand. The accuracy of the voltage measurement/computation shall be at least 0.5%, a better accuracy such as 0.2% in the 95-105% range being desirable. The voltage data shall be stored in the meter's memory in volts up to third decimal. Further voltage data in NPC/output report shall be rounded off upto second decimal.

e) The Reactive energy (VARh) measurement shall be carried out on 3-phase, 4-wire principle, with an accuracy of 0.5S as specified in IS 14697. The meter shall compute the net Reactive energy (VARh) sent out from the substation bus bars during each successive 5 min block, and store it in its memory up to fourth decimal with plus sign if there is net VARh export and with a minus sign if there is net VARh import. It shall also display on demand the net VARh sent out during the previous 5 min block. Further VARh data in NPC/output report shall be rounded off upto third decimal.

f) The meter shall also integrate the reactive energy (VARh) algebraically into two separate registers, one for the period for which the average RMS voltage is above 103.0%, and the other for the period for which the average RMS voltage is below 97.0 %. The current reactive power (VAR), with a minus sign if negative, and cumulative reactive energy (VARh) readings of the two registers (>103% and <97%) shall be displayed on demand. The readings of the two registers at each midnight shall also be stored in the meter's memory. When reactive power is being sent out from substation bus bars, VAR display shall have a plus sign or no sign and VARh registers shall move forward. When reactive power flow is in the reverse direction, VAR display shall have negative sign and VARh registers shall move backwards.

g) Generally, meter will be supplied in standard PT & CT ratios **(-/110V/√3 or -/1 or 5A)** which will be installed at 220 kV/400 kV/33 kV/66.5kV**/√3/**110V**/√3** with different Field CT Ratios. **However, at the time of installation and commissioning of ABT meters, Utility (APGCL) may confirm the same at site and OEM need to configure the meter accordingly at site to ensure correct recording of active reactive & apparent energy.**

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h) Further, the meter shall continuously integrate and display on demand the net cumulative active energy sent out from the substation bus bars up to that time. The cumulative Wh reading at each midnight shall be stored in the meter's memory. The register shall move backwards when active power flows back to substation bus bars.

i) Errors for different power factors shall be as defined in IS14697.

j) For reactive power (VAR) and reactive energy (VARh) measurements, IS14697 shall be complied with. The accuracy of measurement of reactive energy shall be as per class 0.5S.

k) The harmonics shall be filtered out while measuring Wh, V and VARh, and only fundamental frequency quantities shall be measured/computed.

l) Data security shall be ensured as per IS 15959 (three layers of security).

m) Cyber Security guidelines issued by MoP, GoI, CEA & CERC time to time &

n) The technical standards for the communication system in Power Sector laid down by the Authority (CEA).

4. Memory/ Storage

Each meter shall have a non-volatile memory in which the following shall be automatically stored:

i. Average frequency for each successive 5 min block, in Hertz up to third decimals.

ii. Net Wh/KWh/MWh transmittal during each successive 5 min block, up to fourth decimal, with plus sign if there is net Wh export and with a minus sign if there is net Wh import.

iii. Net VARh/KVARh/MVARh transmittal during each successive 5 min block, up to fourth decimal, with plus sign if there is net VARh export and with a minus sign if there is net MVARh import.

iv. Cumulative Wh/KWh/MWh transmittal at each midnight, in eight digits including one decimal.

v. Cumulative VARh/KVARh/MVARh transmittal for voltage high condition, at each midnight in eight digits including one decimal.

vi. Cumulative VARh/KVARh/MVARh transmittal for voltage low condition, at each midnight, in eight digits including one decimal.

vii. Average RMS voltage for each successive 5min block.

viii. Date and time blocks of failure of VT supply on any phase, as a star (*)/ (Z) mark.

ix. The meters shall store all the above listed data in their memories for a period of fifteen (15) days. The data older than fifteen (15) days shall be erased automatically

Note: Display resolution will be depended on CT & PT commissioning.

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5. Display

Each meter shall have digital display for indication of the following (one at a time), on demand:

i. Meter serial no. and model: IEM12345678A or IEM12345678B
ii. Date (day month year/dd mm yyyy): 11032016 d
iii. Time (hour min sec /hh mm ss): 195527 t
iv. Cumulative Wh reading: 1234567.8 C
v. Average frequency of the previous block: 49.89 F
vi. Net Wh transmittal during the previous block: - 28.75 E
vii. Net VARh transmittal during the previous block: - 18.75 R
viii. Average % Voltage: 99.2 U
ix. Reactive power (VAR): 106.5 r
x. Voltage - high VARh register reading: 1234567.5 H
xi. Voltage - low VARh register reading: 1234567.4 L
xii. Low battery indication
xiii. The three line-to-neutral voltages shall be continuously monitored and in case any of these falls below 70 %, a preferably flashing three LEDs (one LED/phase) provided on meter's front shall become steady. They shall go off if all three voltages fall below 70 %. The LED shall automatically resume flashing when all VT secondary voltages are healthy again.
xiv. The two VARh registers (xv and xvi) shall remain stay-put while VT supply is unhealthy.

Any other better or more informative mechanism to display the above shall be preferred. The above shall be mutually agreed between the meter buyer and vendor.

Navigation keys to be provided at the meter front plate to navigate the display menu.

6. Communication

a) All the meters must have at least four different communication ports.

i. One of these ports shall be compatible for Ethernet traffic through which all the data stored in the meter's memory shall be transferred to DCU. The data between Meter and DCU is exchanged using Ethernet standard frame structures defined in IS15959.

ii. The second port shall be front Optical port suitable for admin access / meter configuration/ local data downloading. The admin port is password protected for access and the meter configuration is to be done through admin port using Laptop and

optical to USB convertor. Optical to USB convertor cable of suitable length to be supplied at every location.

iii. Third port shall be Rs485 as spare and shall be used for meter data access with local SCADA/RTU.

iv. Fourth must have RS232 port which is kept as standby for upcoming requirement/redundancy basis.

v. All the four ports shall be able to transmit data simultaneously.

b) All communication ports must be hot-swappable module types so that if any communication port defects, then there is no need to uninstalled the meter from the operational systems.

c) The galvanic isolation of these ports is such that no external electrical induction on cable degrades the performance of the meter. Meter data shall be tamper-proof.

d) Data collection on any local laptop/PC shall be possible by installing data collection software. It shall be ensured that data transfer through Optical to USB interface shall be unidirectional only i.e. from Meter to external storage device in an authentication process.

e) The Participant shall adhere to the appropriate security algorithm for encryption and decryption

f) The Participant shall provide the necessary software which would enable a local PC to:
   i. Accept the data from the Optical/Ethernet/WAN and store it in its memory in user-defined formats (text, csv, xls, etc.) in a user-defined file name (file name format must be ddmmyy substation name-utility name).
   ii. Polling feature along with a task scheduler to run the data downloading software at a pre-designated date and time repeatedly, or by manually selecting a meter. File naming for such downloaded data should also be in a user-defined format. A detailed activity log shall also be available for each downloading operation.
   iii. Upload/Import meter data (binary files) in the software for further processing. While uploading, there shall be a provision to upload all selected files with a single keystroke.
   iv. Convert the binary file(s) to text file(s). There should be a provision to select multiple files based on filename, convert all selected files with a single keystroke and store the text files in the same location where binary files are stored.
   v. Display the collected data on the PC's screen in text format, with forward/backward rolling
   vi. Print out in text format the data collected from one or more meters, starting from a certain date and time, as per the operator's instructions.

vii. Transmit the collected data, in binary format, through an appropriate communication link to the central computer, starting from a certain date and time, as per the operator's instructions.

viii. Store the collected data in binary format, on a CD/Pen Drive. In addition to the above, in general, the software shall be able to convert IEMs data to existing formats as well as in tabular (.csv) format as applicable.

g) The above software shall further ensure that absolutely no tampering (except erasing of complete data with password protection) of the collected metering data is possible during its handling by the PC. The software shall be suitable for the commonly available PCs (Windows) and shall be supplied to the Owner in a compatible form to enable its easy loading into the PCs available (or to be installed by the Owner/others) at the various substations.

h) The quality of installation of the various equipment & power supply wiring to all field equipment shall be as per standards/ regulations/prevailing practices of the utility. The supply of electricity needed for the operation and maintenance of the entire Metering system shall be provided free of cost by the respective owners of the premises.

7. Climatic Condition

The meters to be supplied against this specification shall be required to operate satisfactorily and continuously under the following tropical conditions of hot, humid, dusty, rust and fungus-prone environment.

Maximum ambient air temperature (°C)	55
Minimum ambient air temperature (°C)	(-) 5
Average Daily ambient air temperature (°C)	32
Maximum Relative Humidity (%)	95
Minimum Relative Humidity (%)	10
Maximum altitude above sea level (m)	1000
Average Annual Rainfall (mm)	1200
Maximum Wind Pressure (Kg/sq.m)	195
Isoceraunic Level (days per year)	50
Seismic Level (Horizontal Accn. In g)	0.3

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8. Quality Assurance

The quality control procedure to be adopted during manufacturing of the specified equipment shall be mutually discussed and finalized in due course, generally based on the established and proven practices of the manufacturer. The software shall be user friendly which can be easily installed in any PC/Laptop irrespective of operating system of the PC/Laptop, and shall be certified for ensuring data handling capabilities. The same shall be demonstrated by the party during technical evaluation. During demonstration party shall bring standard meter. Thereafter software shall be offered for technical compatibility before taking up further necessary action in the procurement process.

9. Testing

a) All equipment, after final assembly and before dispatch from manufacturer's works, shall be duly tested to verify that is suitable for supply to the Owner. Routine and acceptance tests shall be carried out on the meters in line with IS 14697.
b) Any meter which fails to fully comply with the specification requirements shall be liable to be rejected by the Owner. However, the Owner may purchase such meters at a reduced price in case of marginal non-compliance, at his sole discretion.
c) Acceptance Tests for PC Software and data down loading using meter communication ports- All IEMs after final assembly and before dispatch from Participant's/Manufacturer's works shall be duly tested to verify that they are suitable for downloading data using meter communication ports shall be subjected to the following acceptance test.
    i. Downloading Meter Data from the Meter(s) to PC via optical port.
    ii. Meter must have a data downloading features through RS 232/RS485/TCPIP.
    iii. Compatibility with PC Software.
    iv. Functioning of Time synchronization, advance and retard time commands.
    v. Per meter downloading time verification.

d) Copy of Certificate shall be submitted to SLDC

Type Tests : Supplier has to produce type test reports with the techno-commercial bid.

10. ANOMALY DETECTION FEATURES

The meter shall have features to detect and log the occurrence and restoration of following anomalies, along with date and time of event: 6.1.1. Phase wise Missing Potential – The meter shall detect missing potential (1 or 2 phases) provided the line current is above a specified threshold. The voltage at that stage would be below a specified threshold.

- Phase wise Current Circuit Reversal – The meter shall detect reversal of polarity provided the current terminals are reversed. This shall be recorded for 1 or 2 phase CT reversal.

- Voltage Unbalance – The meter shall detect voltage unbalance if there is unbalance in voltages.
- Current Unbalance – The meter shall detect current unbalance if there is unbalance in load conditions. Meter should ensure true system conditions before going for current unbalance checks.
- CT Miss – The meter shall detect current miss if the current is below a defined threshold, provided the phase voltage is above a specified threshold. Snapshots of phase wise voltage, phase wise active current and phase wise power factor shall be provided with above specified anomaly events. Further, each meter module shall record the following events along with total duration:
    - Power On/Off – The meter shall detect power off if both the auxiliary supplies fail. The event shall be recorded on the next power up. At the same time power on event shall be recorded. No snapshot shall be logged with this event.
    - Feeder Supply Fail -This event shall be logged when feeder supply, i.e., all the voltages go below certain threshold. No snapshot shall be logged with this event.
- Last three hundred & fifty (400) events (occurrence + restoration), in total, shall be stored in the meter memory on first in first out basis.
- The no. of tamper information/events for each type of tamper will be recorded as per IS: 15959 with up to the amendments:-

Compartment No. 1	100 events of voltage related
Compartment No. 2	100 events of current related
Compartment No. 3	100 events of Power failure related
Compartment No. 4	100 events of transaction related changes as per ICS Category B

Once one or more compartments have become full, the last anomaly event pertaining to the same compartment shall be entered and the earliest (first one) anomaly event should disappear. Thus, in this manner each succeeding anomaly event shall replace the earliest recorded event, compartment wise. Events of one compartment/ category should overwrite the events of their own compartment/ category only. In general persistence time of ~~5 min~~ 1 minute for occurrence and restoration respectively need to be supported in meter.

- Anomaly count should increase as per occurrence (not restoration) of anomaly events. Total no. of counts shall be provided on BCS.

11. Installation and Commissioning

The static energy meters specified above shall be installed at various EHV substations owned by the Owner. The tentative list of substations along with the existing number of meters shall be as per site survey. The exact location for installation shall be provided by the Owner.

a) The Participant shall be responsible for total installation and commissioning of the meters (along with test blocks, if supplied separately) as per Owner's advice, including unpacking and inspection on receipt at site, mounting the meters on existing control and relay panels at an appropriate viewing height, connection of CT and VT circuits including any required

rewiring, functional testing, commissioning and handing over. The Participant's personnel shall procure/carry the necessary tools, equipment, materials and consumables (including insulated wires, lugs, ferrules, hardware etc.)

b) As part of commissioning of DCDs the Participant shall load the software specified in clause 5(d) into the PCs at the respective substations, and fully commission the total meter reading scheme. He shall also impart the necessary instructions to substation engineers. At least 2-hour training session shall be arranged for substation staff and SLDCs. Also, an operating manual (pdf as well as hard copy) of the meter containing all details of the meter, various data downloading features, etc. shall be made available at site and SLDC.

c) Participants to check the dimensions of the existing SEM's. IEMs shall fit in the same location in the panel.

d) Following technical information shall be furnished by the Participants in their offers:
   - Foreseen dimensions of proposed meter
   - Expected weight of proposed meter
   - Dimensions and weight of the test block, if supplied separately.

e) At the time of commissioning, the meters lying in stores shall be time synchronized through GPS signal before installation in the panel to avoid the large time mismatch.

12. General

a) The meter shall be supplied with latest/compatible software (shall be compatible with old & new meters data download handling). Any new software as required to be installed within warranty period are to be done by party or through remote support to client.

b) The total arrangement shall be such that one (1) operation (click on "data down load from meter" button on software) can carry out the whole operation in about five (5) minutes per meter or preferably faster.

c) The layout of software front end/user interface has to be approved by RLDC during technical evaluation/demonstration. However, a standard template sheet will be provided along with BID for reference.

d) Software for windows/office/antivirus to be supplied. Antivirus should not slow down processes and same will be demonstrated during technical demonstration.

e) Above specification is minimum only, any higher standard required for the purpose intended (meter data handling) would be assessed by vendor and would be supplied accordingly. The detailed architecture shall be approved during drawing approval stage.

f) Meter shall be accommodated in existing C&R panel of standard size (Alstom/ ER/ABB/Siemens) in kiosk or C&R panel with door closed. If required before Bidding document, Participant may collect necessary data or else the scope is deemed to be included. Bidder must utilize for accommodating new IEMs up to extent possible.

However, new metering panel to be provided by Utility for mount the meter if space/feasibility is not available in existing panel.

g) Step by Step procedure (on screen shot type and desktop video capture) shall be provided for

i. Installation/Re-installation of Database handling software in to Laptop / PC

ii. Meter maintenance/site-testing procedure as per relevant IS/IEC standard

iii. Procedure for data downloading from Meter by HHU/Laptop/Desktop PC.

h) As on date of delivery, the supplied meters shall comply with all statutory regulation as required under CERC/CEA/IEGC as applicable and the same should be declared by the vendor during delivery along with warranty certificate.

13. **Guarantee**

- The IEM shall be guaranteed for 10 years (120 months) from the date of supply.
- The guarantee would include repair, replacement, part material replacement cost, and both way transportation cost (including insurance of transit).
- All India service centre details, along with contact number and mail ID of each center, shall be provided during bidding.
- Meter software, if upgraded by OEM should be supplied free of cost. Also, patch updates or software updating, software problem etc. should be addressed free of cost.
- Meters which are found defective/inoperative at the time of installation or become inoperative/defective within the guarantee period, the same shall be attended by service engineer from bidder's regional service center within one week of receipt of report (from Generation/Transmission licensee in whose premises the meters are installed). Service engineer shall repair the defective meter, upon unable to rectify, the same shall be replaced with spare meter borrowing from Owner. The spare meter shall be replenished with new meter by OEM in another one-week time without any cost implication.
- Copy of warranty certificate shall be submitted to employer by OEM.

STANDARDS TO BE COMPLIED for IEM Meters:-

S.No	Reference Detail	Reference Title
1	IS-15959:2011	Data Exchange for Electricity Meter Reading Tariff &
		Load Control – Companion Specification
2	IS-14697:1999	Specifications for AC Static Transformer operated Watt

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		Hour & VAR-Hour meters, class of 0.2S and 0.5S

14. Delivery:

100% Supply shall be completed within 6 months from the date of receipt of Purchase order.

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GUARANTEED TECHNICAL PARTICULARS FOR 3 PHASE 4 WIRE ABT ENERGY METER FOR FORWARDED METERING

S.No.	Item	Participant's data
1.	Type	
2.	Application	
3.	Rated Voltage	
4.	Rated Current	
5.	Frequency	
6.	Minimum starting current in % of base current	
7.	Power loss in potential circuit	
8.	Power loss in current circuit	
9.	Change in error due to	
	i. Variation in frequency	
	ii. Variation in voltage	
10.	Accuracy Class	
11.	Total Weight of meter	
12.	Details of case	
13.	Standard to which the meter confirms	
14.	Type of Energy Registration Mechanism.	
15.	MD Reset Mechanism	
16.	MD reset button with sealing provision	
17.	Two LEDs for accuracy measurement	
	Working range	
18.	Voltage	
19.	Current	
20.	**Display details**	
	i. Display Cycle (page mode display)	
	ii. Period of display of each parameter	
	iii. Display scroll-lock facility	
	iv. Relevant OBIS codes for parameter	
	v. Legend for Cover open detection	
	vi. Legend for Magnet event	
21.	Power on in absence of mains	
	i. Internal / External Battery	
	ii. Display access	
	iii. Reading (Data downloading)	
22.	Total Events (400 nos.)	

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23.	Load Survey	
24.	Parameter Logged	
25.	Logging interval	
26.	No. of days of Load Survey	
27.	Capability for fraud Prevention & detection	
28.	Sealing and Locking Arrangement	
29.	Number of Communication ports	
30.	Local- Optical port IEC 1107	
31.	Hot-Swappable communication module types i. RS232 (DLMS) ii. RS485 (DLMS/MODBUS) iii. TCPIP Port (DLMS/MODBUS)	
32.	Warranty 10 years (120 months) from the date of Supply.	

Base Computer Software (BCS)

- For efficient and speedy recovery of data downloaded through CMRI on base computer, licensed copies of base computer software shall have to be supplied minimum (66 months) Five and the half years validity from date of installation. This software will be used Generating station/ control room or Substation levels.
- The meter shall be capable to communicate directly with laptop computer. Base Computer Software shall be suitable for all types of printers such as dot matrix, inkjet, desk jet and laser printers.
- The Base Computer Software shall be "Windows" based & user friendly. The data transfer shall be highly reliable and fraud proof (No editing shall be possible on base computer as well as CMRI by any means). The software shall have capability to convert all the data into ASCII format/ XML format as per MIOS. The BCS shall function properly and support Windows 10 new version.
- The Base Computer Software should be password protected.
- The total time taken for downloading Billing, Tamper and Load Survey Data for 60 days shall be less than or equal to 15 minutes.
- Downloading time of only Billing data shall be less than or equal to 60 secs.
- The BCS software shall create one single file for the uploaded data, e.g. if CMRI contains the meter readings of, say, 2,000 consumer meters including with meter reading of boundary energy meters and the said data is uploaded to BCS, then the BCS shall create a

single file containing separate records for each consumer meter reading and boundary energy meter reading in ASCII format or XML file as per MIOS for individual meter reading.

- Meter manufacturers should also need to submit Convert API (API3) as per MIOS universal standard along with Base Computer System free of cost. This API should capable of converting both data i.e. AMR data collected from Read API (API1) and MRI data collected from CMRI.
- Also, there shall be a provision to give filenames while creating the file. Alternatively, the file to be downloaded shall be automatically saved with a file number comprising of Meter Serial number or Real date, time & downloading activity for respective date. For ex., 170817120501 were, 170817 will denote the date, 1205 will denote the time & 01 will indicate the first downloading activity on that date. this will completely overrule the possibility of file to be overwritten.
- As and when the meter manufacturer releases new or latest or advanced versions of meter hardware/ firmware / software (such as Base Computer System, API3 etc), the same shall be made available to purchaser immediately on the release date free of cost. The latest version shall support all existing hardware/ meters in the field. The meter manufacturer should also provide support for changes and integration of Base Computer System and API3.
- The meter samples shall be tested by our IT Department for the time required for downloading the data as per specifications and as confirmed by the Participant.
- Downloading software shall also be provided so as to install on our Laptop for downloading data directly on Laptop from meter without the use of CMRI.
- The software provided on laptop or PC shall be compatible to read the data from USB drive and for that purpose a sample cable (1 No.) shall be provided with USB termination. USB being the de- facto standard, this is the requirement.
- The BCS software should be able to generate alarms in the time drift in meters.

Software based on Windows-10 & its higher version Operating System for Local communication with meters shall be supplied for viewing/ downloading the meter data, status, alarms etc. without any extra cost and shall be considered as integral part of the metering equipment. The software shall be capable to do the following tasks primarily-
Downloading of 15/5 min load survey data in case failure of data reading through AMR Clock adjustment of meters

Installation agency of meter as per CERC/CEA metering regulation shall facilitate/install the meter reading software at substation PC for viewing/downloading the meter data at the time of meter installation in existing station PC or laptop.

Meter reading software of related make meters shall be made available by the OEM with installation manual. (Any updates, patch updating or software updating etc. shall be properly covered/addressed under the warranty for removal of difficulties faced by the users.)

Encryption key for conversion of encrypted raw data into readable format from the meter vendors would be provided to implementing agency and SLDC.

- **Metering Panel for ABT Meters housing**

1. Metering panels will be suitable for indoor application of vertical construction, free-standing type, and will have access to the inside from the rear. Panel would have provision to mount min 8 or max 9 Nos. energy meters.

2. The panel will be fabricated from sheet steel not less than 1.6mm (16 SWG) thick. Gland Plate and base frame will be made of 3.0 ± 0.2 mm sheet.

3. Hinged door will be provided at the rear for access to inside of the panel. Two nos. hinged door will be providing on front side of panel, upper one would have glass window to view the meters without opening the door of panel and lower door will be opaque to access the test terminal block. Each door will be provided with a handle lock and sealing arrangement.

4. All doors will be gasket all around, material selection and workmanship will be such as to result in neat appearance both inside and outside, with no weld, rivets or bolt heads apparent from outside and with all exterior surfaces true and smooth.

5. No equipment will be mounted less than 300mm above the floor.

6. All metal surfaces would be painted with powder coating of 50-60 micron with structure finish, the colour of panel will be grey as per IS5 – 631. Base frame will be of black color.

7. Proper arrangement would be made for panel lighting. A door-operated switch will be provided with rear door. A three pin, single phase, 230V AC, 3-Pin, 5A, socket with switch will be provide in each panel.

8. Lifting hooks & canopy must be provided.

9. **For grounding:** A ground bus of galvanized iron bar not less than 25x5mm will be provided, the ground bus will be bolted to the frame of panel in such a way as to make good electrical contact with the panel. Hinge doors and all equipment on metering cubicle will be connected to the frame with minimum 2.5 Sq. mm copper wire.

10. **Test terminal blocks:** Each metering panel will have 9 Nos. Screw type test terminal blocks one for each meter's CT & PT connection. The test block will be back connected type, sealing provision will be available at front side.

11. **Terminal blocks and terminals:** Terminal blocks will be adequate rating of current rating requirements; all terminals would be suitable to mount 2.5 Sq. mm control wire.

12. Terminal blocks will be arranged with sufficient space for connection of each incoming wire.

13. **Component wiring:** All internal wiring will be made with copper wire. Wires of current transformer circuit and potential transformer circuit will be of 2.5 Sq.mm. with proper phase identification.

14. Wiring between terminals of various devices will be point to point. All internal wiring will be neatly placed. Sufficient slack will be left at component terminals to permit rearrangement of connection between the terminals of any particular component,
15. All wires will be identified at both ends using ferrules. Colour of wires will have phase identification red / yellow / Blue etc.
16. Suitable gland plate along with knockout holes will be provide for CT/PT connections will be suitable for 7 Core / 4 Core & 2 core armored cable CT, PT & Aux. Circuit.
17. Panel will be suitable to install on the floor / over the trench within the control room adjoining the excising panels.
18. IP Class of Panel: IP 54,

- **C. Industrial Ethernet Switch Requirement**

16 & 24 ports Industrial grade layer 2 Ethernet Switch, 12 number 10/100/1000 MBPS RJ 45 ports & 4 numbers 1/10G FO Port at Substation Control room.

Industrial grade layer 2 Ethernet Switch with required RJ 45 ports and FO ports at Switchyard location to convert electrical data to optical.

Dual inbuilt AC (240V) and DC (110V/220V) power supply with rack or DIN or panel mountable hardware

Minimum 2 no spare ports in each switch shall be ensured during implementation.

Note- Number of ethernet switch at each station shall be as per requirement during detailed engineering.

SI	Description	Requirement	Compliance
1	Standards	Layer-2 IEEE 802.3 for 10BaseT	

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		IEEE 802.3u for 100BaseT(X) IEEE 802.3ab for 1000BaseT(X) IEEE 802.3z for 1000BaseX IEEE 802.3x for flow control IEEE 802.1p for Class of Service	
2	Communication Protocol	IEC 61850	
3	Communication Interface	Ethernet RJ45	
4	Communication Port	Min 16 nos. RJ45 Ports-Auto MDI/MDI-X connection Full/Half duplex mode Auto negotiation speed Min 2 nos. SFP Ports with SFP modules	
5	Management	Unmanaged	
6	Led Indication	Alarm, Healthy	
7	Alarm Contact	Yes	
8	Power Supply	To Be mentioned (Preferred AC 220V/DC 110V) Input Current @ 0.277 A @ 24 VDC, Input Voltage @ 12/24/48 VDC Redundant dual inputs	
9	Overload Current Protection	Supported	
10	KEMA Certified	Yes	
11	Installation	DIN-rail mounting Wall mounting (with optional kit)	
12	IP Rating	IP30	
13	Type Tested	Yes	
14	Warranty	Minimum 3 (Three) year warranty should be provided for this unit from the date of successful commissioning.	

- **D. Armoured CAT 6 cable Requirement**

SI	Description	Requirement	Compliance
1	Conductor Size	23 AWG	
2	Conductor Stranding	Solid	
3	Conductor Material	BC Bare Copper	
4	Number of Pairs	4	
5	Insulation Material	PO-Polyolefin	

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6	Inner Jacket Material	LSZH-Low Smoke Zero Halogen (Flame Retardant)	
7	Inner Jacket Diameter	6.2 mm (0.24 in)	
8	Inner Jacket Ripcord	Yes	
9	Armor Type & Material	CAT-Corrugated Aluminum Tape	
10	Armor Coverage	100%	
11	Outer Jacket Material	LSZH-Low Smoke Zero Halogen (Flame Retardant)	
12	Outer Jacket Diameter	9.5 mm (0.37 in)	
13	Outer Jacket Ripcord	Yes	
14	Max. Conductor DCR	93.8 Ohm/km (28.6 Ohm/1000ft)	
15	Max. Mutual Capacitance	56 pF/m (17 pF/ft)	
16	Max. Capacitance Unbalance	330 pF/100m	
17	Nom. Characteristic Impedance	100 Ohm	
18	UL Voltage Rating	72 V DC	
19	Operating Temperature	-20 Degree Celsius to +75 C Degree Celsius	
20	Installation Min. Bend Radius	72 mm (2.8 in)	
21	Max. Pull Tension	110 N (25 lbf)	
22	Environmental Suitability	Indoor, Outdoor, Sunlight Resistance, Oil Resistance	
23	Flammability/Reaction to Fire	IEC 60332-3-24	
24	TIA/EIA Compliance	TIA-568.2-D	
25	ISO/IEC Compliance	IEC 61156-5, ISO/IEC 11801, IEC 61034-2-Smoke Density Min Transmittance = 60%	
26	European Halogen Free Standards	IEC 60754-1, IEC 60754-2,	
27	Jacket Marking	Sequentially marked	

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Annexure B

Bill of Quantities (BOQ):

The schedules of requirements in respect of 'Major Goods and Services' are listed below:
SUPPLY PART

Field Level Infrastructure at Substation Switchyard

SN	Description	UOM	Total Qty
1	0.2s Class ABT Meter (Annexure-I)	No	23
2	Metering Panel (Min 8 or 9 ABT Meters capacity)	set	3
3	Industrial Grade Network Switch, L2,16 port+2SFP Port +SFP Module, managed/unmanaged	No	1
4	Industrial Grade Network Switch, L2,24 port+2SFP Port +SFP Module, managed/unmanaged	No	1
5	Industrial Grade Armored CAT6 cable @305 Meters.	No	2
6	Client PC: Client PC, i-5 processor, 16GB RAM, 1TB SSD (Preferred Commercial Model) with keyboard and optical mouse **with Original professional OS,** MS office, **Antivirus for a year** along with **600VA UPS.**	set	1
7	9 U Network Rack with accessories.	No.	2
8	BCS (2 licenses copy) for 5years contain in CD or Electronics.	No.	1
9	2 core 2.5Sqmm copper cable for Aux input to all devices @100 meter	No.	3

Bidders may assess the quantities required for the same before quotation submission.

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Annexure C

Sample format for submission of PRICE-QUOTE:

1	Name of the Agency
2	Profile of the Agency (in brief)
3	Name of the Proprietor/Owner/ Managing Director of the Agency
4	Full Address of Registered Office
	a. Telephone No. b. Fax No.
5	Full Address of Local Office (NER)
	a. Telephone No. b. Fax No.

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Annexure D

PRICE SCHEDULE ***(To be submitted in the 'Price quote' in sealed envelope in one copy)***

Sl No	Particulars	Qnty & unit	Unit Price	Unit F&I	Unit Total	Total Price	HSN code
1.	**Supply of 0.2s class ABT energy meter SAMAST Compliance as per TS**	**23 no.**					
2.	**Metering Panel (Min 8 or 9 ABT Meters capacity) as per TS**	**3 Set**					
3.	**Industrial Ethernet Switch (16 Port) as per TS**	**1 no.**					
4.	**Industrial Ethernet Switch (24 Port) as per TS**	**1 no.**					
5.	**Armoured Cat-6 cables of 305 meters roll**	**2 nos.**					
6.	Client PC: Client PC, i-5 processor, 8GB RAM, 1TB SSD (Preferred Commercial Model) with keyboard and optical mouse **with Original professional OS,** MS office, **Antivirus for a year** along with **600VA UPS.**	**1 no.**					
7.	**BCS** (2 licenses copy) for 5 years contain in CD or Electronics.	**1 no.**					
8.	**9U Network Rack for Switch**	**2 no.**					
9.	2 core 2.5Sqmm copper cable for Aux input to all devices @100 meter	**3 no.**					
10.	**Installation, Testing & Commissioning of 0.2s class ABT meters with metering panel along with Auxiliary connections.**						
11.	**Installation and commission of Industrial Ethernet switch**	**23 Nos.**					

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	including network rack along with Auxiliary connections.						
12.	**Networking from meter to meter & Integration of 23 nos. of ABT energy meters to network switch, Installation of BCS software at Generating station PC etc and data should be available at Local PC for viewing & data downloading through BCS.**						
13.	**Integration of ABT meter data at SLDC BCS for raw files and SAMAST Module in .xls format.**						
15	**BCS Software and ABT meter reading & data training**						

Chief General Manager (PP&I)
APGCL, Bijulee Bhawan

Memo No: APGCL/LKHEP/PROJ/ABT METER/2025-26/Part-1/16(a) Dated:02.08.2025

Copy to:

1. The OSD to Chairman, APGCL, for favour of kind information to the Hon'ble Chairman, APGCL, Bijulee Bhawan.
2. The OSD to MD, APGCL, for kind information to the MD, APGCL, Bijulee Bhawan.
3. The Chief General Manager, (F&A), APGCL, for kind information.
4. The Project Manager, LKHEP, APGCL, Longku for information.
5. Notice Board
6. Relevant File.

Chief General Manager (PP&I)
APGCL, Bijulee Bhawan