

PART-C: SPECIAL CONDITIONS OF CONTRACT

1. SECURITY DEPOSIT / CONTRACT PERFORMANCE GUARANTEE

Within Thirty (30) days of the receipt of notification of award from EESL, the successful bidder shall furnish the CPG in the form of Demand Draft/ Pay Order or Bank Guarantee for 3 % of contract value (exclusive of GST). **The Bank Guarantee must be valid to cover Delivery Duration (06 Months) + Warranty Duration (5.5 Years) + Three Months Claim Period.** Any delay in submission of SD/CPG shall be deemed as accruing of financial benefit to the supplier and EESL may take necessary interest penalty recovery action (interest @ SBI's MCLR + 2 %) from the payments due to the supplier for the period of delay. However, this provision does not bind EESL in any way from proceeding against the supplier (including action as per BID SECURITY DECLARATION, cancellation of the empanelment/LOA, etc.) for non-compliance towards non-submission of the SD/CPG.

In case Bidder provides CPG for shorter duration, it shall be for a minimum period of 3.5 years and EESL reserves right to invoke CPG in case extended CPG/fresh CPG is not furnished at least 90 days prior to expiry of original CPG.

Bank guarantee shall be from any Nationalized Banks/other scheduled private banks as per list given in Section 6. EESL shall at his discretion have recourse to the said Bank Guarantee for the recovery of any or all amount due from the bidder in connection with the contract including of guarantee obligations.

Failure of the Successful Bidder to comply with the requirements of IFB/RfP shall constitute sufficient grounds for the annulment of the award and forfeiture of the Contract Performance Guarantee.

This Bank Guarantee shall be effective only when BG issuance message is transmitted by issuing bank through SFMS to ICICI bank include unique identifier EESL543840944 in field 7037 of the SFMS cover messages with IFSC Code ICIC0000007.

BG advising message-IFN760COV?IFN767COV via SFMS	
Field Number	Particulars(to be mentioned in row 1)
7037	EESL54384944

2. TERMS OF PAYMENT

- The payments for different cost heads/components shall be released to the bidder(s) as tabulated below, within 30 days of receipt of the bidder's Tax invoice at EESL office with all the requisite respective documents signed and stamped by EESL's EIC/authorized representative at designated delivery location. Each invoice shall have the Tax, etc. registration document's photocopy annexed to it.
- Implementation partner(s) needs to ensure completion of all works as per project plan before submitting the invoice. This includes supply of required Hardware and acceptance from the concern officer.
- In case of delay in project, the entire cost and/or time over-run shall be the responsibility of the bidder(s) and shall be borne by him only.
- Power to withhold: Notwithstanding anything contained in the payment schedule mentioned above, if in the opinion of the EESL, any work done or supply made or service rendered by bidder(s) is deficient in any manner in comparison to the prescribed standards, EESL shall be at liberty to withhold a reasonable portion of the payments due to the bidder(s), till such work/ supply/ service is made conforming to the prescribed standards. These powers to withhold payments shall be without prejudice to any other power/ right of the EESL under this contract.
- Implementation partner(s) should obtain completion certificate for each milestone from the EESL and raise an invoice against the same.
- All payments shall be made by EESL, no later than thirty (30) days after submission of an invoice and acceptance from the EESL.
- The release of payments shall be progressive and performance/ output-based as per the given Payment Schedule, where the payments shall be made for measured deliverables and outputs on acceptance by EESL.
- If any excess payment has been made by EESL due to difference in quoted price in proposal and Contractor's invoice, EESL may without prejudice to its rights recover such amounts by other means after notifying the bidder(s) or deduct such excess payment from any payment subsequently falling due to the bidder(s).

- ix) The payment shall be processed only upon receipt of (i) Acceptance of LoA and signing of contract agreement; (ii) submission of CPG as per tender documents in addition to deliverable documents

At the time of payment of bills, the income tax, if any, shall be deducted at source as per Government rules and guidelines as may be prevailing at the time of payment.

The payment schedule for this project is mentioned in Table 6.

Table 6 - Payment Schedule

The bidder(s) shall note the following:

1. The bidder(s) shall provide the following documents at the time of invoicing:
 - i. Delivery Challan.
 - ii. Goods Receipt Note (GRN).
 - iii. Octroi Duty/Entry Tax paid receipt.
 - iv. Batch Inspection Report.
 - v. Copy of AMC Agreement Copy between the Bidder(s) and End User.
2. All documents to be duly certified by the EIC/representative, and by the End User/Customer Representative.
3. The payment shall be processed only after receipt of following: -
 - i. Acceptance of LOA and signing of Contract Agreement.
 - ii. Submission of Contract Performance Guarantee (CPG).
4. Interest shall not be paid on the bank guarantee submitted by bidder(s).
5. The payment shall be paid to lead bidder only.

3. LIQUIDATED DAMAGES

For Delay in Supplies: In case of any delay by the bidder(s) beyond the stipulated schedule given at Delivery and Completion Schedule including any extension permitted in writing, EESL reserves the right to recover from the bidder(s) a sum equivalent to 0.5 % of the value of the delayed supplies for delay per week or part thereof, subject to a maximum of 5 % of the total value of the contract.

Notwithstanding the above, in case of regular and repeated complaints against the bidder(s) and the bidder's failure in providing satisfactory after-sales replacement warranty and maintenance services, EESL reserves the right to forfeit the SD/CPG submitted against the LOA towards non-performance of the contract.

Alternatively, EESL reserves the right to purchase and distribute material from elsewhere at the sole risk at the cost of bidder(s) and to recover all such extra costs incurred by EESL in procuring the material from resources available including EMD/BID SECURITY DECLARATION/Bid Security/encashment of Bank Guarantee or any other sources, etc. Further, if any extra cost is incurred by EESL due to delay in work completion by the bidder(s) beyond the completion time as per PO, the same shall also be recovered from bidder's invoice/BGs, etc.

Alternatively, EESL may cancel the order completely or partly without prejudice to its right under the alternatives mentioned above.

4. PRICE BASIS

The prices/rates are inclusive of cost of finished product which includes the following:

- a) Packaging and forwarding charges
- b) Freight and transit insurance charges covering transportation upto EESL designated warehouse
- c) Unloading at EESL designated warehouse
- d) All applicable duties and taxes except GST (ISGT, CGST, SGST and UGST)

Prices once quoted shall remain firm, and shall not be subject to any escalation, till completion/execution of the contractual assignments/work and till the contract's validity extension, if any

5. Warranty:

The smart meters and meter box shall have the replacement warranty duration of 5.5 years (five years and six months) from the date of receipt or five (5) years from the date of installation & commissioning, whichever is later, along with operational support post completion of the warranty period for the project duration of up to 13 years."

6. Taxes, Duties and Levies:

The above prices are inclusive of all cess and duties, transfer to site, insurance, other costs incidental to repair & maintenance and excluding GST (IGST, SGST, CGST, UTGST). You should mandatorily register yourself under GST act of the particular State. Any other charges/cost/TA/DA/ is also included in the above contract price.

A. If there is increase or decrease in the taxes and duties, subsequent to supplier's offer within the contract delivery schedule of supply due to change in rate or introduction of new tax or deletion of existing tax or interpretation/application of tax etc., EESL will reimburse the actual tax.

B. In case of failure to achieve completion as per contract delivery schedule of supply, EESL will not be liable to compensate for any increase in taxes and duties due to change in rate or introduction of new tax or deletion of existing tax or interpretation/application of tax etc. Whereas taxes at actual rate shall be paid in case of decrease in taxes and duties due to change in rate or deletion of existing tax or interpretation/application of tax etc., in the event of late delivery after the contract delivery period.

7. EVALUATION CRITERION

- Tender will be evaluated on L1 basis package wise.
- EESL intends to split the total order quantity amongst bidders. The allocation of quantity among bidders in case of order to be split other than L-1 (who matches the L-1 price) shall be split based on the price bid hierarchy, i.e. L2, subject to matching the L-1 price for complete scope of work for each package. The award to L2 shall be subject to their acceptance of L1 rates with all other terms and conditions as per tender will be as follows: -

In case of Distribution between	Ratio in percentage
Two Parties (L1 : L2)	60% : 40%
Three Parties (L1 : L2 : L3)	50% : 40% : 30%

- Further, in case a party is not able to supply quantity allocated to them as per scheduled timelines, EESL reserves the right to shift the part/full quantity to other bidder who has matched the price on the risk and cost of such non-performing bidder.
- In the event of tie in prices between two or more bidders, the bidder with higher turnover will be given preference in ranking & award. Avg. of last two financial years shall be considered for arriving at turnover for comparison in such cases to break the tie.
- The offers/bids received against the Tender shall be first evaluated as per the techno-commercial Qualifying Requirements listed elsewhere in the Tender, and in accordance with the extant Procurement Policy of EESL. Price bids of only those bidder(s) shall be opened who qualify against these techno- commercial requirements.
- It is mandatory to quote for all the items/services requisitioned in the Price Bid Sheet format. Non- compliant bids shall be liable for outright rejection.

- The price bids shall be evaluated as per the grand-total price of all BOQ items, i.e., the price at “Total of the Price Bid Sheet format given at **Table -A**. The techno-commercially suitable bidder(s) having the lowest total price, of the price bid shall be lowest evaluated bidder(s) (i.e., L-1).
- In case of single vendor situation, award may be given for the 60% quantity after establishing rate reasonability by EESL. However, EESL reserves the right to award more quantity award more quantity in proportion to the experience & qualification requirement (ATO), after obtaining consent from the bidder.
- The illustrative format & notes for price bid shall be referred at **Table -A**.
- If a bidder(s) has quoted for full quantity, it shall mean that the bidder(s) is obligated to deliver the entire quantity as per the delivery schedule and agreed terms and conditions.
- If price matching is not achieved, then EESL reserves the right to terminate the contract at the risk and cost of L-1 bidder(s). Further, this right is without prejudice to the other available rights of EESL under the law.
- Minimum Quantity to be quoted against each item mentioned in Price bid Table in Section-4 is 50% of the Maximum Quantity
- Bidder has to indicate the quoted quantity in the separate price bid declaration format.
- **In addition to above mentioned points, the evaluation shall be carried out in accordance with evaluation methodology stipulated in Order No: P-45021/2/2017-PP (BE-II) dated: 16-Sept-2020 of Department of Promotion of Industry and Internal Trade**
- The terms and conditions pertaining to MSEs shall be referred at clause 2.4 of section II of this tender and shall be applied accordingly [Refer to Important Note Given below].
- If any other unforeseen situation/s arise apart from those mentioned above, decision of EESL should be binding on the Bidders.

IMPORTANT NOTE:

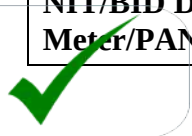
The benefits to MSEs as mentioned in Section 2, shall be available only for Goods/Services produced & provided by MSEs.

Bidder shall carefully go through the revised criteria for classification of MSEs as per Gazette ID Number CG-DL-E-01062020-219680 dated: 01-06-2020 and notifications/orders issued by Ministry of MSME from time to time.

As per answer to FAQ no. 18 circulated vide Office Memorandum F. No. 22(1)/2012-MA dated 24.10.2016 “Policy is meant for procurement of goods produced and services rendered by MSEs. However, traders are excluded from the purview of Public Procurement Policy.”

MSEs seeking exemption and benefits should enclose an attested/self-certified copy of registration certificate as a part of their bid in Envelope-I, giving details such as stores/services, validity (if applicable) etc. failing which they run the risk of their bid being passed over as ineligible for the benefits applicable to MSEs.

Bidder may refer to Notes Point (c) and (g) at Page 16 of Section-2 and shall carefully go through all the guidelines mentioned in Section-2 and ensure fulfilment of all the requirements for seeking exemptions and benefits applicable to MSEs.



In case of submission of Udyog Aadhar Memorandum/Udyam Registration to claim benefits applicable to MSEs, NIC (National Industrial Classification) code mentioned below shall be acceptable as a proof of the fact that the bidder is registered as MSE for the tendered item.

Sr. No	5 Digit NIC Code	Description
1	26513	Manufacture of consumption meters for electricity, water or gas, flow meters and counting meter

Note: If NIC codes as mentioned above are not found in the submitted Udyog Aadhar Memorandum/Udyam Registration, then in such a case the benefits applicable to MSEs shall NOT be given to the bidder.

8. Action by EESL if L1 backs out:

After opening of price bid, if L1 bidder backs out, the bidder will be put on holiday list of EESL for a period of one year. During this tenure, the bidder will be barred from participation in EESL tendering process. However, bidder has to continue the unexecuted work of the other prevailing work if any under the current running contracts. If there is no running contract of the bidder/ no payment dues of the bidder, then EESL reserves the right to take any legal remedy as deemed fit to recover the penalty if any through legal means.

9. ADJUDICATOR

Adjudicator under the contract shall be appointed by the Appointing Authority i.e. MD (EESL). If the bidder(s) does not accept the Adjudicator proposed by EESL, it should so state in its bid form and make a counter proposal of an adjudicator. If on the day the contract agreement is signed, the EESL and contractor have not agreed on the appointment of adjudicator, the adjudicator shall be appointed, at the request of either party, by the appointing authority specified.

10. ARBITRATION

Arbitration shall be carried out as per Arbitration Act 1996 and its subsequent amendment. The Contract shall be governed by and interpreted in accordance with the laws in force in India. The courts of DELHI shall have exclusive jurisdiction in all matters arising under the contract.

11. COMPLETION TIME

Entire material to be delivered and jobs to be completed as per the delivery schedule from the date of issue of Purchase Order/Letter of Award.

Delivery and Completion Schedule

Total Quantity	Type	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
16,45,000	Single Phase		0	50,000	1,00,000	1,25,000	1,75,000	1,75,000	1,75,000	2,00,000	2,15,000	2,15,000	2,15,000
6,81,500	Three Phase			15,000	50,000	60,000	76,500	80,000	80,000	80,000	80,000	80,000	80,000
23500	Three Phase LTCT					2,500	2,500	3,000	3,000	3,000	3,000	3,000	3,500

Entire material to be delivered and jobs to be completed as per the delivery schedule from the date of issue of Purchase Order/Letter of Award

Table -2
Delivery and Completion Schedule

Item Name	Total meters to be supplied in 09 Months	Delivery Location
Single Phase Whole Current Smart Meters (including communications module) as per IS 16444 Part 1 with accuracy class 1 and current rating of 10-60 A	16,45,000	Bidder shall be fully liable to execute the supply at Locations across various states of India
Meter Box for Single Whole Phase Smart Meters (Inclusive of All Necessary Accessories)	16,45,000	
Three Phase Whole Current Smart Meters (including communications module) as per IS 16444 Part 1 with accuracy class 1 and current rating of 10-60A	6,81,500	
Meter Box for Three Phase whole current Smart Meters (Inclusive of All Necessary Accessories)	6,81,500	
LT-CT Operated Three Phase Smart Meters (including communications module) as per IS 16444 Part 2 with accuracy class 0.5S and current rating of -/5A	23,500	
Meter Box for LT-CT operated Three Phase Smart Meters (Inclusive of All Necessary Accessories)	23,500	
Grand Total	23,50,000	

Please note that:

- Delivery needs to be uniformly done throughout the 06 Months on monthly pro-rata basis.
- The above delivery schedule is indicative. EESL will provide the final delivery schedule at the time of award of contract.

C. The Bidder(s) shall be deemed to have examined the Bid document, to have obtained its own information in all matters whatsoever that might affect carrying out the Works in line with the Technical specifications and Scope of Work specified in the document at the offered rates and to have satisfied himself to the sufficiency of its Bid. The bidder(s) shall be deemed to know the scope, nature and magnitude of the work and requirement of materials, equipment, tools and labor involved, wage structures and as to what all works he has to complete in accordance with the Bid documents irrespective of any defects, omissions or errors that may be found in the Bid documents.

11. Action by EESL if L1 backs out:

After opening of price bid, if L1 bidder backs out, the bidder will be put on holiday list of EESL for a period of one year. During this tenure, the bidder will be barred from participation in EESL tendering process. However, bidder has to continue the unexecuted work of the other prevailing work if any under the current running contracts. Simultaneously, the EMD submitted by such bidder against the subject tender will be forfeited.

12. QUANTITY VARIATION

EESL reserves the right for quantity variation up to +/-20%. Further, EESL reserves the right to place a repeat order in case of urgency for part quantity in the Letter of Award for similar work on same prices, terms and conditions. Also, EESL reserve the right to ask the implementation partner(s) to deliver the part quantity placed on them anywhere in territory of India on same prices, terms and conditions. However, any such quantity variation/placement of Repeat Order shall need to be authorized through prior amendment of the LOA/issuance of fresh LOA to that effect.

13. INSURANCE

The Goods supplied under the Contract shall be fully insured in Indian Rupees against loss or damage incidental to manufacture or acquisition, transportation, storage and delivery. For delivery of goods at site, the insurance shall be obtained by the Contractor, for an amount not less than the Contract Price of the goods from “warehouse to warehouse” (final destinations) on “All Risks” basis including War risks and strikes.



14. TRANSPORTATION, DEMURRAGE WHARFAGE, ETC.

Implementation partner(s) is required under the Contract to transport the Goods to place of destination defined as Site. Transport to such place of destination in India including insurance, as shall be specified in the Contract, shall be arranged by the implementation partner(s), and the related cost shall be included in the Contract Price.

Implementation partner(s), on whom letter of award is placed, is to ensure all safety guidelines, rules and regulations, labour laws etc. Implementation partner(s) indemnify EESL for any accident, injury met by its labour, employee or any other person working for him. Any compensation sought by its labour, employee or any other person working for him shall be paid by implementation partner(s) as per settlement solely. EESL has no role to play in this matter.

15. INTERCHANGEABILITY OF PRODUCT

Implementation partner(s) is to submit interchangeability certificate for its product/components supplied for replacement during warranty and maintenance period and even when it is purchased from open market. In case due to change in technology, the supplied product is not available during warranty/ maintenance period, then the improved version of product can be used in warranty/maintenance period with same or improved technical parameters or the combination thereof after written communication of Engineer in Charge at same cost & terms and conditions.

16. ADHERENCE TO SPECIFICATIONS

Subsequent to an order being placed against your quotation, received in response to this 'enquiry', if it is found that the materials supplied are not of the right quality or not in accordance with our specifications (required by us) or received in damaged or broken conditions, not satisfactory owing to any reason of which we shall be the sole judge, we shall be entitled to reject the materials, cancel the contract and buy our requirement from the open market / other sources and recover the loss, if any, from the bidder(s) reserving to ourselves the right to forfeit the security

deposit, furnished by the bidder(s) against the contract. The bidder(s) shall make its own arrangements to remove the rejected material within a fortnight of instruction to do so.

Thereafter material shall lie entirely at the bidder's risk and responsibility and storage charges, along with any other charges applicable, shall be recoverable from the bidder(s).

17. We reserve the right to accept or reject any quotation in full or in part without assigning any reason thereof. We also reserve the right to split and place order on more than one bidder.

18. The bidder(s) should not have been black-listed by Central/ State Government or Public Sector Undertakings. If at any stage of tendering process or during the currency of the contract, any suppression / falsification of such information is brought to the knowledge, EESL shall have the right to reject the proposal or terminate the contract, as the case may be, without any compensation to the tenderer & forfeiture of bid security/EMD/BID SECURITY DECLARATION/CPG.

19. BID SECURITY DECLARATION

Bid Security declaration : **As mentioned in Section-1.**

The Bid Security declaration has to be submitted in the requisite format as stated in Annexure-2 . Tenders without Bid Security declaration is liable to be rejected.

In case the bid is withdrawn or modified during the period of its validity or if successful bidder fail to sign the contract in case the work is awarded to successful bidder or fail to submit a performance security before the deadline defined in the tender document/letter of award, then successful bidder shall be suspended for participating in the tendering process of EESL, for a period of one (01) year from bid due date of above referred tender.

It is pertinent here to mention that this Bid Securing Declaration shall cease to be valid if the firm is not the successful Bidder, upon the earlier of

- (a) the receipt of your notification of the name of the successful Bidder; or
- (b) thirty days after the expiration of the validity of firm's Bid.

19. **SAFETY COMPLIANCE**

- a. Successful bidder, on whom letter of award is placed, is to ensure all safety guidelines, rules and regulations, labour laws etc.
- b. Successful bidder(s) to indemnify EESL for any accident, injury met by its labour, employee or any other person working for him. Any compensation sought by its labour, employee or successful bidder as per settlement shall pay any other person working for him solely. *EESL has no role to play in this matter.*
- c. The Bidder is advised to take out insurance for the period of the Contract, on the terms specified in the Special Conditions, including, but not limited to, the following:
 - Professional liability insurance;
 - Personal liability insurance;
 - Equipment insurance covering loss of or physical damage to all equipment acquired, used, provided or paid for by the Employer within the context of this Contract; and
- d. EESL will not be responsible in case any accident/ mis-happenings with consultant employee or contract person and for any equipment damage or theft occurs and in no case EESL shall pay for it.

20. **Labour Laws to be adhered by Successful Bidder**

LOA to the contractors clearly specify that they shall ensure compliance of Labour Laws and shall indemnify EESL against the liability arising out of any injury to their workers deployed.

Advise the contractors, at various sites, to ensure compliance under the following basic Labour Acts and provisions there under on a priority basis:

- Employees Provident Fund and Miscellaneous Provisions Act, 1952 (providing for PF contributions, Employee pension and Deposit Link Insurance)
- Employees State Insurance Act, 1948 (providing for medical, disablement, dependent benefits)
- Employees Compensation Act, 1923 (providing for Compensation against injury due to and during the course of employment)
- Minimum wages Act, 1948 (providing for minimum wages for various employments)

Further, other social security provisions have also to be complied with.

Note: The norms and measures mentioned are indicative and any other law/safety norms related to safety of the labour may also be adhered to.

21. **Purchase Preference as per "Public Procurement (Preference to Make in India), order 2017" last amendment dated 04-June-2020**

Revised order No: P-45021/2/2017-PP (BE-II) dated: 16-Sept-2020 of Department of Promotion of Industry and Internal Trade dated 16 Sept. 2020 Shall be applicable.

1. Only Local Suppliers in confirmation to above orders are eligible to bid in this tender subject to fulfillment of 'Local Content Requirement' clause as mentioned above.
2. Margin of purchase preference applicable to 'Class I Local Supplier' is 20%.

Bidder shall submit a self-declaration certificate stating the minimum percentage of local content as per the format given in Attachment-11 of Section-6 of Tender Document.

NOTE:

- Bidder shall carefully go through the above mentioned order in order to understand the whole process and definition of various terms (e.g. Class-I Local supplier, Local content etc.) pertaining to the said order.
- False declarations will be in breach of the code of integrity under Rule 175(1)(i)(h) of the General Financial rules for which a bidder or its successors can be debarred for up to 2 years as per Rule 151(iii) of the General Financial rules along with such other actions as may be permissible under law.



Eligibility & Qualifying Requirements

In addition to the satisfactory fulfillment of requirements stipulated under section ITB, the following shall also apply:

Note: Apart from the criteria given below, past performance of bidder with EESL, i.e., related to quality, supply, performance, commissioning etc. shall be taken into consideration by EESL during bid evaluation.

Sr No. (A)	Criteria (B)	Documents to be submitted (C)	Particulars in brief of the Documents submitted by Bidder on Covering Letter (D)
1	Bidder should be a Single Entity means a limited company (as defined in the Companies Act, 1956 or further amendments thereof) OR A limited liability partnership (under the Limited Liability Partnership Act, 2002 or further amendments thereof)	Copy of certificate of incorporation/ Memorandum of Association/Article of Association OR LLP registration certificate issued by Registrar of Companies	1) Nature of firm: under Companies Act 2) Company Incorporation Certificate No._____ Date: _____,
2	Bidder should be a manufacturer of AC Static Wattmeter, Energy Meter for at least 3 years (as on the date of publication of the tender).	The Bidder should submit an GST to support that they are Manufacturers of AC Static Wattmeter and Energy Meter and valid factory license under Indian Factories Act, 1948 or any amendment thereof. Or MSME registration certificate (issued as Manufacturer) with supporting document for being a manufacturer of tendered item.	1. ECC/GST No. and date 2.Factory License No. and date.....
3	Bidder should have successfully supplied AC Static Wattmeter and Energy Meter the last 3 years in any Government Dept./ PSU/ ULB/ DISCOMS/ Private Limited Companies (as on the date of publication of the tender).	Documentary evidence shall be furnished along with the bid. Documentary evidence should be submitted in the form of copies of relevant purchase orders along with copies of any document in respect of satisfactory execution of each of those purchase orders such as i) Satisfactory inspection report (OR) ii) Satisfactory supply completion (OR) iii)	Tabular details comprising of Order No.; Order Date; Client's Name; Supply/Completion Period (.....)

Signature :-
Subject : CN=NIKHIL BHANDARI, ST=DELHI, OID.2.5.4.17=110003, OU=SUPPLY CHAIN MANAGEMENT, O=ENERGY EFFICIENCY SERVICES LIMITED, C=IN
User ID : nikhil.bhandari
Serial No : 131B3FB

**NIT/BID Document no.:- EESL/06/SCM/2020-21/Smart
Meter/PAN India/202102045**

SECTION-4
(Technical & SCC)

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		consignee receipted delivery challan (OR) (iv) any other documentary evidences that can substantiate the satisfactory execution of each of the purchase order submitted. Work orders along with its evidence for successful completion shall be from any Government Dept./ PSU/ ULB/ DISCOMS /Private Limited which will only will be considered for evaluation. In addition to above, in case of private limited companies copy of e-way bill/ challan/ GST return may be sought for the proof of evidence.	
4	Bidders should have Average Annual Turnover (ATO) of at least Rs. for immediately preceding last three financial years Rs 206.1 Cr 2017-18, 2018-19 and 2019-20.	Duly authorized copy of audited annual report is to be submitted by respondent along with CA certificate. The bidder shall submit last 3 years' audited financial statements i.e. FY 2017-18, FY2018-19 and FY 2019-20. Turnover means revenue from operations (excluding other income)	1. M/s _____ 2017-18 _____ 2018-19 _____ 2019-20 _____ Refer Format -
5	The bidder should be profitable in any two out of preceding 3 financial year i.e. 2017-18, 2018-19 and 2019-2020.	Duly authorized copy of audited annual report is to be submitted by respondent along with CA certificate. The bidder shall submit last 3 years' audited financial statements i.e. FY 2017-18, FY2018-19 and FY 2019-20 Profitability means: Profit after tax	M/s_____ 2017-18 _____ 2018-19 _____ 2019-20 _____
6	The net worth of the bidder in immediate last financial year should not be less than 100% of paid up share capital. <i>Net worth of Proprietor/ partnership Net Worth may be considered negative in case closing capital of immediately preceding year is less than average closing capital of previous 3 financial years.</i>	Duly authorized copy of audited balance sheet for preceding last three Financial Year is to be submitted by bidder.	M/s_____ 2017-18 _____ 2018-19 _____ 2019-20 _____

Signature :-
Subject : CN=NIKHIL BHANDARI, ST=DELHI, OID.2.5.4.17=110003, OU=SUPPLY CHAIN MANAGEMENT, O=ENERGY EFFICIENCY SERVICES LIMITED, C=IN
User ID : nikhil.bhandari
Serial No : 131B3FB



7	PPP MII guidelines issued by Govt. of India shall be applicable for this tender. Local Suppliers are eligible to bid in this tender in conformance with the order for “<i>Public procurement (Preference to make in India) to provide for Purchase preference (linked with local content in respect of Power sector)</i>” issued vide ref no. 11/05/2018-Coord. Dated 28.07.2020 NOTE: - “Non-Local Suppliers” as defined in the above tender are not eligible to take part in this bidding process.	Applicant to Submit declaration of local content in form of a certificate stating the percentage of local content as per the format given in Section-6 of Tender Document. The Certificate shall be from the statutory auditor or cost auditor of the company (in case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of supplies other than companies) giving the percentage of local content. It is mandatory to mention UDIN No in the certificate.	
8	Pursuant to Order No. F. No 6/18/2019-PPD dated-23-July-2020 from Department of Expenditure, Ministry of Finance, the applicant should be either of the following: - Not from a country which shares a land border with India OR - Applicant from a country which shares a land border with India and registered with Competent Authority in accordance with order mentioned above. The definition of “Bidder” from a country which shares a land border with India shall be as in paragraph 8 of the above mentioned order. Further, all the guidelines mentioned to this above order shall be applicable to this Tender. Bidder shall carefully go through the same and ensure its eligibility as per the said order.	Applicant to submit a Declaration as per the format given in Attachment-15 of Section-6 of this Document.	
9	Not to be blacklisted by Central/State/UT Government or any Public sector entities duly signed and stamped at company’s Letter Head.	To submit Self Declaration	

Notes:

- (1) EESL reserves the right not to seek any deficient /Clarifications from the bidders after opening of Techno-Commercial bid. If any bid is found to be in non-conformance to the tender conditions or deviating from the tender, EESL reserves the right to outrightly reject such bid without seeking any clarification. Bidder to take cognizance of the same and submit their bid accordingly.
- (2) EESL reserves the right to use the in-house available data, if required, to evaluate the tender including the data/documents submitted by the vendor in their previous tender(s). However, this should not be understood that relevant documents/certificates or any other requirement as required in the instant RfP is not to be provided by any vendor participating in the tender who has earlier participated in any of the earlier tenders by EESL.

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User ID : nikhil.bhandari
Serial No : 131B3FB

(3) **Conflict of Interest:** “the bidder submits more than one bid in a bidding process, either individually or as a partner in a joint venture, except for permitted alternative bids. This will result in the disqualification of all bids in which the Bidder is involved. However, this does not limit the inclusion of an agency as a subcontractor in one bid and the participation of the agency as a main contractor in another bid in certain types of procurement, if permitted by the EESL’s Bidding Documents for goods, works or services under a project”;

In addition to, if the bidder submits more than one bid having same group of companies/ affiliate/associate companies. This will result in the disqualification of all bids in which the Bidder is involved.

(4) **Consortium is allowed in this Tender.**

(5) For Start-up firms as per Gazette Notifications dated: 17-Feb-2016, G.S.R. 180 (E) and MSEs relaxation will be given in this tender as per Clause No. 2.4 of Section-2 of this tender.

In case of holding company:-

“In case bidder is not able to furnish its audited financial statements on standalone entity basis, the unaudited unconsolidated financial statements of the bidder can be considered acceptable provided the bidder furnishes the following further documents on substantiation of its qualification:

- Copies of the unaudited unconsolidated financial statements of the Bidder along with copies of the audited consolidated financial statements of the Holding Company with a letter of undertaking from holding company supported by Board pledging unconditional and financial support. Irrevocable in the format enclosed in Attachemnt-9 of Section-6, Forms & Procedures.
- A Certificate from the CEO/CFO of the Holding Company, stating that the unaudited unconsolidated financial statements form part of the Consolidated Annual Report of the Company.
- In case a bidder does not satisfy the financial criteria, the holding company would be required to meet the stipulated turn over requirements, provided that the net worth of such holding company as on the last day of the preceding financial year is at least equal to or more than the paid-up share capital of the holding company. In such an event, the bidder would be required to furnish along with its bid, a letter of Undertaking from the holding company, supported by the Board Resolution, as per the format enclosed in the bid documents (Attachemnt-9 of Section-6, Forms & Procedures), pledging unconditional and irrevocable financial support for the execution of the Contract by the bidders in case of award.
- In case the Bidder meets the requirement of Net worth based on the strength of its Subsidiary(ies) and/or Holding Company and/or Subsidiaries of its Holding Companies wherever applicable, the Net worth of the Bidder and its Subsidiary(ies) and/or Holding Company and/or Subsidiary(ies) of the Holding Company, in combined manner should not be less than 100% of their total paid up share capital. However individually, their Net worth should not be less than 75% of their respective paid up share capitals.”
- The supporting documents in support of above Qualification Requirement should be submitted along with tender document, otherwise Techno-commercial offer submitted by the bidder is liable to be considered as non-responsive.
- All the required documents must be properly annexed and submitted as mentioned above with necessary details in brief.

Action by EESL if L1 backs out:

After opening of price bid, if L1 bidder backs out, the bidder will be put on holiday list of EESL for a period of one year. During this tenure, the bidder will be barred from participation in EESL tendering process. However, bidder has to continue the unexecuted work of the other prevailing work if any under the current running contracts. Simultaneously, the EMD submitted by such bidder against the subject tender will be forfeited. If bidder is exempted from submission of EMD, then the EMD

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User ID : nikhil.bhandari
Serial No : 131B3FB

**NIT/BID Document no.:- EESL/06/SCM/2020-21/Smart
Meter/PAN India/202102045**

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amount will be adjusted from the payments due to the contractor against other running contracts. If there is no running contract of the bidder/ no payment dues of the bidder then EESL reserves the right to take any legal remedy as deemed fit to recover the penalty equivalent to EMD amount through legal means.

Consortium conditions :

Conditions for Consortium: In case Bidder wishes to participate in Consortium following conditions are additionally applicable: -

1. The term Bidder used hereinafter would therefore apply to both a single entity and a Consortium/ JV.
2. A consortium of maximum two (02) members is allowed in this RfP including one as lead bidder. In case of NSIC consortium of maximum 3 members is allowed in the tender including the lead bidder as NSIC.
3. In case of Consortium/ JV, either one may act as a lead member(except in case of NSIC wherein as the lead bidder is allowed).
4. In case of consortium all the members should mandatorily be from the business as defined in the QR.
5. Lead Bidder accepts primary responsibility for providing a robust and quality product meeting technical specifications of tender.
6. Member of any Consortium/Joint Venture Firm shall not be permitted to participate either in individual capacity or as a member of any other Consortium/Joint Venture Firm in the same tender. Submission or participation in more than one bid will cause disqualification of all the proposals submitted by the bidder.
7. All formalities in respect of submission of tender shall be done only in the name of 'Lead Member' and not in the name of Consortium/Joint Venture Firm. However, name & other details of both the members of Consortium/ Joint Venture Firm should be clearly mentioned in the Bid/Response.
8. A copy of Memorandum of Understanding (MOU) executed between the members of Consortium/JV shall be submitted along with the tender. The complete details of the members of the Consortium/ Joint Venture Firm, their share and responsibility in the Consortium/JV etc. particularly with reference to financial, technical and other obligations shall be furnished in the MOU.
9. Once the offer/ bid is submitted, the MOU shall not be modified / altered/ terminated during the period of execution including any extension thereafter by EESL or validity of any letter of award awarded to the said Consortium/Joint Venture Firm. In case, the tenderer fails to observe/comply with this stipulation, the full Security Deposit/ Earnest Money Deposit (EMD)/Performance Bank Guarantee (PBG) shall be liable to be forfeited.
10. A duly notarized agreement of Consortium/Joint Venture Firm shall be executed between the 'Lead Member' and Consortium/JV Partner. This Agreement should be submitted in original with your offer/ bid.
11. Authorized Member of Consortium/Joint Venture Firm: 'Lead Member' shall be authorized on behalf of Consortium/Joint Venture Firm to deal with the tender/EESL, sign the agreement or enter into contract in respect of the said tender, to receive payment and such activities in respect of the said tender/ contract. All notices/ correspondences with respect to the contract would be sent only to this 'Lead Member' of Consortium/Joint Venture Firm.
12. Required processing fee shall be submitted by the 'Lead Member'. Submission of processing fee by the 'Lead Member' it should be deemed as processing fee submitted by the Consortium/Joint Venture Firm.
13. Duration of MOU and Consortium/JV Agreement shall be valid during the entire execute in period/ validity of letter of award and any extension thereafter /currency of the contract including the period of extension, if any
14. Any change in constitution of Consortium/Joint Venture Firm shall not be allowed.
15. On award of any contract to the Consortium/ Joint Venture Firm, a single Performa i.e Bank Guarantee shall be submitted by the lead bidder as per tender conditions. All the Guarantees like Security Deposit, Earnest money Deposit, Performance Guarantee, and Bank Guarantee for Mobilization Advance etc. shall be accepted only in the name of 'Lead Member' and splitting of guarantees among the members of Consortium/JV shall not be permitted.
16. Members of the Consortium/Joint Venture Firm shall be jointly and severally liable to the EESL for execution of the project/ Work/ Assignment etc. The Consortium/JV members shall also be liable jointly and severally for the loss, damages caused to the EESL during the course of execution of any awarded contract or due to non-execution of the contract or part thereof. Governing Laws for Consortium/ Joint Venture Firm: The Consortium/JV Agreement in all respect be governed by and interpreted in accordance with Indian Laws.

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17. In case a group of MSMEs registered with NSIC (under single point registration scheme) form a consortium under NSIC, the Consortium needs to provide an authorization letter from NSIC accepting the terms and conditions of tender (except for those terms and conditions in which NSIC consortia are given special status as per Government of India Policy for the Government Purchase Programme) and also provide details of Consortium members, their manufacturing capacities, the share-out of quantities with schedule of supplies as per EESL tender schedule. Further, NSIC consortium mandatorily submit their service tax, pan card and other relevant documents.
18. Further, MSMEs are also eligible to participate in tender directly provided they meet all QRs in their individual capacities and are not part of NSIC Consortium or any other Consortium.
19. In case of Consortium of NSIC, the lead members/ partners in the consortium shall not separately participate as independent bidder or as members of any other consortium in this bidding process. All bids in contravention of this shall be rejected.
20. In case of participation as NSIC, it is clarified as consortium of maximum three member are allowed including NSIC as lead member.
21. NSIC consortium members *should be* from industries as mentioned in Qualifying Requirement (QR).
22. In one tender, only bid from one NSIC Consortium will be accepted.
23. All correspondence by EESL will be done with 'Lead member' only.

Sr No. (A)	Criteria (B)	Documents to be submitted (C)	General Consortium	NSIC Consortium
	Consortium Allowed	As stated in above points of consortium	Consortium of two members is allowed including Lead member.	Consortium of Maximum Three members is allowed including NSIC as Lead member only
1	Bidder should be a Single Entity means a limited company (as defined in the Companies Act, 1956 or further amendments thereof) OR A limited liability partnership (under the Limited Liability Partnership Act, 2002 or further amendments thereof)	Copy of certificate of incorporation/ Memorandum of Association/Article of Association OR LLP registration certificate issued by Registrar of Companies	Must be met by members of consortium individually	--must be met by members of consortium individually
2	Bidder should be a manufacturer of AC Static Wattmeter, Energy Meter for at least 3 years (as on the date of publication of the tender).	The Bidder should submit an GST to support that they are Manufacturers of Static Wattmeter and Energy Metter valid factory license under Indian Factories Act, 1948 or any amendment thereof. Or	Must be met by members of consortium individually	Must be met by members of consortium individually

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		MSME registration certificate (issued as Manufacturer) with supporting document for being a manufacturer of tendered item.		
3	Bidder should have successfully supplied 56,400 nos. of Static Wattmeter, Energy Meter the last 3 years in any Government Dept./ PSU/ ULB/ DISCOMS/ Private Limited Companies (as on the date of publication of the tender).	Documentary evidence shall be furnished along with the bid. Documentary evidence should be submitted in the form of copies of relevant purchase orders along with copies of any document in respect of satisfactory execution of each of those purchase orders such as i) Satisfactory inspection report (OR) ii) Satisfactory supply completion (OR) iii) consignee receipted delivery challan (OR) (iv) any other documentary evidences that can substantiate the satisfactory execution of each of the purchase order submitted. Work orders along with its evidence for successful completion shall be from any Government Dept./ PSU/ ULB/ DISCOMS /Private Limited which will only will be considered for evaluation. In addition to above, in case of private limited companies copy of e-way bill/ challan/ GST return may be sought for the proof of evidence.	Must be met by members of consortium Collectively	Must be met by members of consortium Collectively
4	Bidders should have Average Annual Turnover (ATO) of at least Rs. 206.1 Cr for immediately preceding last three financial years 2017-18, 2018-19 and 2019-20.	Duly authorized copy of audited annual report is to be submitted by respondent along with CA certificate. The bidder shall submit last 3 years' audited financial statements i.e. FY 2017-18, FY2018-19 and FY 2019-20. Turnover means revenue from operations (excluding other income)	Must be met by members of consortium individually Lead member:- minimum 75% of ATO required in General. Consortium member: Minimum 25% of ATO required in General	Lead Member (NSIC must meet the ATO on Standalone basis)

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5	The bidder should be profitable in any two out of preceding 3 financial year i.e. 2017-18, 2018-19 and 2019-2020.	Duly authorized copy of audited annual report is to be submitted by respondent along with CA certificate. The bidder shall submit last 3 years' audited financial statements i.e. FY 2017-18, FY2018-19 and FY 2019-20 Profitability means: Profit after tax	Lead member and consortium member must be profitable in any 2 of the preceding 3 Financial year individually	Each member of consortium must meet the condition of Profitability individually.
6	The net worth of the bidder in immediate last financial year should not be less than 100% of paid up share capital. <i>Net worth of Proprietor/ partnership Net Worth may be considered negative in case closing capital of immediately preceding year is less than average closing capital of previous 3 financial years.</i>	Duly authorized copy of audited balance sheet for preceding last three Financial Year is to be submitted by bidder.	Each member of consortium must meet the condition of net worth individually	Each member of consortium must meet the condition of net worth individually.
7	PPP MII guidelines issued by Govt. of India shall be applicable for this tender. Local Suppliers are eligible to bid in this tender in conformance with the order for “Public procurement (Preference to make in India) to provide for Purchase preference (linked with local content in respect of Power sector” issued vide ref no. 11/05/2018-Coord. Dated 28.07.2020 NOTE: - “Non-Local Suppliers” as defined in the above tender are not eligible to take part in this bidding process.	Applicant to Submit declaration of local content in form of a certificate stating the percentage of local content as per the format given in Section-6 of Tender Document. The Certificate shall be from the statutory auditor or cost auditor of the company (in case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of supplies other than companies) giving the percentage of local content. It is mandatory to mention UDIN No in the certificate.	To be met by members of consortium individually	To be met by associate members only.

Signature :-
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Serial No : 131B3FB

8	Pursuant to Order No. F. No 6/18/2019-PPD dated-23-July-2020 from Department of Expenditure, Ministry of Finance, the applicant should be either of the following: - Not from a country which shares a land border with India - OR - Applicant from a country which shares a land border with India and registered with Competent Authority in accordance with order mentioned above. The definition of “Bidder” from a country which shares a land border with India shall be as in paragraph 8 of the above mentioned order. Further, all the guidelines mentioned to this above order shall be applicable to this Tender. Bidder shall carefully go through the same and ensure its eligibility as per the said order.	Applicant to submit a Declaration as per the format given in Attachment-15 of Section-6 of this Document.	To be met by members of consortium individually	To be met by associate members only.
9	Not to be blacklisted by Central/State/UT Government or any Public sector entities duly signed and stamped at company’s Letter Head.	To submit Self Declaration	To be met by each member of Consortium individually	To be met by each member of Consortium individually

Notes:

- (1) EESL reserves the right not to seek any deficient /Clarifications from the bidders after opening of Techno-Commercial bid. If any bid is found to be in non-conformance to the tender conditions or deviating from the tender, EESL reserves the right to outright reject such bid without seeking any clarification. Bidder to take cognizance of the same and submit their bid accordingly.
- (2) EESL reserves the right to use the in-house available data, if required, to evaluate the tender including the data/documents submitted by the vendor in their previous tender(s). However, this should not be understood that relevant documents/certificates or any other requirement as required in the instant RfP is not to be provided by any vendor participating in the tender who has earlier participated in any of the earlier tenders by EESL
- (3) In case, the bidder is unable to produce the audited financial statement for FY 2019-20, then, for evaluation purpose only, preceding 3 FY year would be 2016-17, 2017-18 and 2018-19.
- (4) **As per EESL Policy Clause in Conflict of Interest: Clause A 4.1 (b) “the bidder submits more than one bid in a bidding process, either individually or as a partner in a joint venture, except for permitted alternative bids. This will result in the disqualification of all bids in which the Bidder is involved. However, this does not limit the inclusion of an agency as a subcontractor in one bid and the participation of the agency as a main contractor in another bid in certain types of procurement, if permitted by the EESL’s Bidding Documents for goods, works or services under a project;**

Signature :-
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Serial No : 131B3FB

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In addition to, if the bidder submits more than one bid having same group of companies, affiliate companies. This will result in the disqualification of all bids in which the Bidder is involved.

(6) For Start-up firms as per Gazette Notifications dated: 17-Feb-2016, G.S.R. 180 (E) and MSMEs relaxation will be given in this tender as per Clause No. 2.4 of Section 2 of this tender.

- Bidder is allowed to participate in consortium with NSIC. In case of Consortium of NSIC, the lead members & consortium partners shall not separately participate as independent bidder or as members of any other consortium in this bidding process. All bids in contravention of this shall be rejected.
- In case party is participating in consortium as highlighted in S.no 1, the lead members & consortium partners shall not separately participate as independent bidder or as members of any other consortium in this bidding process. All bids in contravention of this shall be rejected.
- In case of participation as NSIC, it is clarified as consortium of maximum three members are allowed including NSIC as lead member. In one tender, only bid from one NSIC Consortium will be accepted.
- “Holding Company “and “Subsidiary “shall have the meaning ascribed to them as per Companies Act, 1956 or, in vogue.
- In case bidder has been found to be defaulting on the delivery/installation eriod (in LoA issued) as per assessment (supply, installation etc.) will be liable to be rejected.
- In case the Bidder does not meet the requirement of clause above on its own, it can quote on the basis of experience of its Subsidiary (ies) and/or Holding Company and/or Subsidiary (ies) of its Holding Company. In such a case the consolidated experience of Bidder and/or its Subsidiary (ies) and/or Holding Company and/or Subsidiary (ies) of its Holding Company shall be considered, as applicable.
- Net worth means the sum total of the paid-up share capital and free reserves. Free reserve means all reserves credited out of the profits and share premium account but does not include reserves credited out of the revaluation of the assets, write back of depreciation provision and amalgamation. Further any debit balance of Profit and Loss account and miscellaneous expenses to the extent not adjusted or written off, if any, shall be reduced from reserves and surplus.
- In case a bidder does not satisfy the ATO criteria, stipulated on its own, the holding company would be required to meet the stipulated turnover requirements at above, provided that the net worth of such holding company as on the last day of the preceding financial year is at least equal to or more than the paid-up share capital of the holding company. In such an event, the bidder would be required to furnish along with its bid, a Letter of Undertaking from the holding company, supported by Board Resolution, as per the format enclosed in the bid documents (attachment-9 section-6 Forms & Procedures, pledging unconditional and irrevocable financial support for the execution of the Contract by the bidder in case of award. However, Bidder & Holding company, both in this case still has to meet the profitability criteria as highlighted at clause 4 above.
- Other income shall not be considered for arriving at annual turnover.
- The supporting documents in support of above Qualification Requirement should be submitted along with tender document, otherwise Techno-commercial offer submitted by the bidder is liable to be considered as non-responsive.
- All the required documents must be properly annexed and submitted as mentioned above with necessary details in brief.

Signature :-
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Serial No : 131B3FB

**NIT/BID Document no.:- EESL/06/SCM/2020-21/Smart
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PRICE BID FORMAT

Price Bid is to be filled Online Only. This format is for illustration purpose only

NIT/Bid Document No.: EESL/06/2020-21/SCM/Smart-Meter/Pan India/2021044

Dated: 15-02-2021

Name of work: Procurement of 23,50,000 Nos. Smart Meters for {Designing, Engineering, Manufacturing, Testing, Inspection, Packing, Supply, Transportation & Insurance (till delivery at site), delivery to project site (locations shall be intimated later), unloading, handling and storage of single-phase, three-phase whole current and LT-CT operated three-phase smart meters, along with meter box } on Pan India Basis

Table-A						
Sr. No	Item Name	Proposed Quantity	Unit of Measurement	Base price per unit exclusive of GST (IGST/ CGST/ SGST/ UGST) FOR Destinations basis (in Rs.)	Total price exclusive of GST (IGST/ CGST/ SGST/ UGST) FOR Destination basis (in Rs.)	Total price exclusive of GST (IGST/ CGST/ SGST/ UGST) FOR Destination Basis (in Rs.)
					In Figures	In Words
	1	2	3	4	5=2*4	6
A	Single Phase Whole Current Smart Meters (including communications module) as per IS 16444 Part 1 with accuracy class 1 and current rating of 10-60A	16,45,000	(Nos.)			
B	Meter Box for Single Whole Phase Smart Meters (Inclusive of All Necessary Accessories)	16,45,000	(Nos.)			
C	Three Phase Whole Current Smart Meters (including communications module) as per IS 16444 Part 1 with accuracy class 1 and current rating of 10-60A	6,81,500	(Nos.)			
D	Meter Box for Three Phase whole current Smart Meters (Inclusive of All Necessary Accessories)	6,81,500	(Nos.)			
E	LT-CT Operated Three Phase Smart Meters (including communications module) as per IS 16444 Part 2 with accuracy class 0.5S and current rating of -/5A	23,500	(Nos.)			
F	Meter Box for LT-CT operated Three Phase Smart Meters (Inclusive of All Necessary Accessories)	23,500	(Nos.)			
Grand Total (A+B+C+D+E+F)						



Other terms and conditions

1. The Bidder shall indicate in the Price Bid, the unit prices in Rs. (INR) and total Bid prices of the Goods in the prescribed format only. Bidders shall quote for the complete requirement of Goods specified under the Contract on a single responsibility basis, failing which such Bids will not be taken into account for evaluation and will not be considered forward.
2. The bidder should compulsorily quote for all heads in the price-bid format for which the bidder should do separate analysis/ reasonable estimation of all heads before quoting the rates in the financial bid. Any contravention may lead to rejection of offer submitted.
3. Any other item as required for commissioning the system for reliable and efficient operation to be provided within the quoted price.
4. The above prices are exclusive only of GST. Successful bidder mandatorily registered itself under GST act.
5. The bidder shall submit PAN and GST number in support of claim of GST.
6. Bidder's to quote for all items in each bid otherwise their bid will be rejected.
7. If there is a discrepancy between words and figures, the amount written in words will prevail.
8. Prices will remain firm till the execution of the contract.
9. Please provide HSN/SAC code related to items/services.
10. Further, the bidder(s) must make sure that any compliances, to be ensured by EESL are communicated to EESL by the bidder(s) and if required, EESL may take assistance from the bidder(s) to execute such compliance(s) and the bidder(s) shall be reimbursed the statutory fee only, for performing compliance(s) on behalf of EESL applicable on EESL.
11. EESL have the rights to accept or reject any bid or part without assigning any reason.
12. Maximum quantity is mentioned here for illustration purpose for determination of L-1 only. Bidder(s) shall mention the appropriate quantity as per its capacity. (Attachment 11 of Section-6, Forms& Procedure)
13. Minimum quantity to be quoted against each line item mentioned in price bid table is 50% of the maximum quantity against respective line item.
14. **Note: No Deficient Documents/Clarification shall be called. Bidder shall ensure that their bid is complete in all respect and all the documents as asked in the tender document are submitted under respective envelope. It shall be sole responsibility to the bidder to carefully examine the tender document and submit all the documents asked in the tender.**
15. For MSME bidders, following NIC code(s) defining the bidder to be registered as MSE for the item tendered shall be acceptable in the Udyog Aadhar Memorandum (UAM) submitted by the bidders to claim exemptions applicable to MSEs.

NIC 5 Digit Code	Description
26513	Manufacture of consumption meters for electricity, water or gas, flow meters and counting meter

Bidders submitting UAM Certificates not containing above mentioned NIC code shall not be eligible for exemptions applicable to MSEs.

I/We have read all the terms and conditions of the RFP/IFB/NIT and the Annexure(s) thereto and agree to accept and abide by the same in toto. The above quotation has been prepared after taking into account all the terms and conditions of the RfP/IFB/NIT.

Dated:

(SEAL)

Signature of Tenderer or

Their Authorized Representative:

Name & Address of Tenderer:

Phone No:

Fax no.:

Mail-I

Signature :-
Subject : CN=NIKHIL BHANDARI, ST=DELHI, OID.2.5.4.17=110003, OU=SUPPLY CHAIN MANAGEMENT, O=ENERGY EFFICIENCY SERVICES LIMITED, C=IN
User ID : nikhil.bhandari
Serial No : 13183FB

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Functional Requirements of Advanced Metering Infrastructure (AMI)

In India

CENTRAL ELECTRICITY AUTHORITY



August, 2016

1 . Functional Requirements for Advanced Metering Infrastructure (AMI)

These functional requirements define the minimum functionalities and performance for AMI system proposed to be developed in India. The main objective of AMI is to enable two way communication between smart energy meter and Head End System(HES) to enable remote reading, monitoring & control of electrical energy meters (consumer, feeder, DT meters etc.) to serve as repository of record for all raw, validated and edited data. The sanitized data may be subscribed by other DISCOM/Utility function for higher order analysis and billing and collection engine etc.

2. Basic Functions of AMI

The AMI system shall help DISCOM/Utility to manage their resource and business process efficiently. AMI system shall support the following minimum functionalities:

- a) Remote Meter data reading at configurable intervals(push/pull)
- b) Time of day (TOD)/TOU metering
- c) Pre paid functionality
- d) Net Metering/Billing
- e) Alarm/Event detection, notification and reporting
- f) Remote Load Limiter and connection/ disconnection at defined/on demand conditions
- g) Remote firmware upgrade
- h) Integration with other existing systems like IVRS, Billing & collection software, GIS mapping, consumer indexing, new connections & disconnection, analysis software, Outage Management System etc.
- i) Import of legacy data from existing modules/ MDAS of RAPDRP where ever possible. The extent and modalities of integration with the existing system including RAPDRP has to be worked out by the bidder.



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- j) Security features to prevent unauthorized access to the AMI including Smart meter & meter data etc. and to ensure authentication of all AMI elements by third party.

This is only an indicative but not exhaustive list. The system should be capable to support the other functionalities as per the requirement of utilities.

The System should accurately maintain system time synchronization across all devices to ensure accuracy of data. The system should support the interfacing with the future Smart Grid functionalities like outage management system, distribution automation including self-healing system, distribution transformer monitoring units, Electric vehicle, distributed energy resources etc. The communication network shall preferably be able to support multiple applications. The Bidder shall submit an approach paper describing overall architecture and operational philosophy of the proposed AMI solution and methodology for achieving different functionalities, specified in this document and also highlight additional features, if any.

3. General AMI System Requirement

Smart Meter (Single phase whole current, Three phase whole current, CT & PT operated three phase meters and CT operated three phase meters) for consumers/ system shall be provided based on Radio Frequency (RF) mesh in license free frequency band/ Power Line Carrier Communication (PLCC) or GPRS/3G/4G communication technology or combination of these technologies as per the site requirement and to ensure the performance level given in this document. The smart meter data using RF mesh/PLCC shall be collected by Data Concentrator Units(DCUs)/Access point and transported to HES through WAN while the data from smart meters using GPRS/3G/4G technology shall be transported directly to HES through WAN. The AMI Implementing Agency (AIA) shall be responsible for proper data exchange among Smart meter, DCU, MDM, HES and other operational/requisite software as part of fully functional AMI system.

AIA shall adhere with the appropriate security algorithm for encryption and decryption. For smooth functioning of the entire system, it is essential that the details of such algorithm including the mechanism of security key generation be kept in a secured escrow account which shall be used by the DISCOM/Utility only in case of termination of the contract for reasons whatsoever.

AIA may design appropriate architecture for providing end to end metering solution. AIA is free to decide upon the best solution out of all the available options. However, the entire responsibility of fully functional AMI system shall rest with one agency i.e. AIA in order to meet the performance levels as given in this document. The communication provider may adopt Radio Frequency (RF) mesh in license free frequency band/ Power Line Carrier Communication (PLCC) or GPRS/3G/4G communication technology or RF based canopy system or a combination of these technologies as per the site requirement adopting best available technology in the proposed area of implementation.

The following core components of AMI system shall be provided:

- a) Smart Meters
- b) Communication infrastructure
- c) Head End System(HES)
- d) Meter Data Management System(MDM)



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e) Web application with updated on-line data of consumers etc.

f) Mobile app: AMI Implementing Agency (AIA) shall provide a mobile app through which consumer shall be able to log in through android/iOS/Window based mobile app to see information related to his/her energy consumption. App shall also provide platform for implementation of peak load management functionality by providing existing tariff & incentives rates, participation options etc. This mobile app shall be part of complete system and therefore no additional cost shall be payable for upgradation / maintenance separately.

4. Smart Meters (Single phase & Three phase)

☐ Single Phase & Three Phase whole current smart meters shall comply with the enclosed Technical Specifications. Three Phase CT operated meter shall comply IS 14697 till the relevant IS for CT operated smart meters is available. The supplier / manufacturer would furnish valid BIS certification before supply of meters.

☐ The Smart meter installation shall be done by the AMI Implementing Agency (AIA) as per the rules and regulations and practices of DISCOM/Utility.

After meter installation, customer identification no., meter ID, its hardware & software configuration, name plate details, make, type i.e. 1 Phase or 3 Phase, etc.(as per requirement of DISCOM/Utility) shall be updated in DCU/HES/MDM. The information would also be updated on the portal/app for providing information to consumers.

5. Communication infrastructure

The communication infrastructure should either be based on RF mesh network / PLC or cellular network or a combination of these. The communication network shall be based on suitable standards from ITU/IEC/IEEE/CEN/ CENELEC/ ETSI for NAN and WAN network. Communication network shall provide reliable medium for two-way communication between various nodes (smart meter) & HES. RF based network should use license free frequency band available in India. The engagement of network service provider would be in the scope of AMI Implementing Agency to meet the performance level as given in the document.

5.1. General Requirement

The AMI Implementing Agency (AIA) shall design a reliable, interference free & robust communication network keeping in view the site conditions. It shall be flexible in terms of providing communication in variable terrain & urban density.

The AIA shall design the network architecture keeping in view the existing and planned infrastructure of the DISCOM/Utility. During designing, suitable consideration shall be kept for future expansion as per requirement of DISCOM/Utility. Before designing the communication network, the AMI Implementing Agency (AIA) shall do the site survey and would provide the most efficient communication infrastructure.

The entire infrastructure & associated civil works required for installation & commissioning of equipment/devices like DCUs, repeaters, routers & access points etc. shall be in the scope of AMI



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Implementing Agency (AIA). The operational testing of all the network elements has to be demonstrated by the bidder to the satisfaction of the DISCOM/Utility.

The network solution offered by the bidder should have disaster recovery mechanism in place. The redundancy mechanism of HES and MDM and their disaster recovery plan shall also be described by the Bidder.

The quality of installation of the various equipment & power supply wiring to all field equipment shall be as per standards/ regulations/prevaling practices of the DISCOM/Utility. The supply of electricity needed for operation and maintenance of entire AMI system shall be the provided by the DISCOM/Utility free of cost.

A suitable network management system (NMS) shall be provided to monitor the performance of the communication network round the clock. The NMS shall provide viewing of all the networking elements deployed at site and enable configuration & parameterization of the networking devices and the nodes.

5.2 Network Security

The Network shall have adequate cyber security measures not limited to the measures as described below. The network security would be extended to all the interfaces also.

- ☐ **Secure Access Controls:** The system shall include mechanisms for defining and controlling user access to the operating system environment and applications. Best practices from enterprise security including password strength, password aging, password history, reuse prevention etc. must be followed for access control.
- ☐ **Authorization Controls:** A least-privilege concept such that users are only allowed to use or access functions for which they have been given authorization shall be available.
- ☐ **Logging:** Logs must be maintained for all attempts to log on (both successful and unsuccessful), any privilege change requests (both successful and unsuccessful), user actions affecting security (such as password changes), attempts to perform actions not authorized by the authorization controls, all configuration changes etc. Additionally, the access to such logs must be controlled in accordance to the least-privilege concept mentioned above, so that entries may not be deleted, accidentally or maliciously.
- ☐ **Hardening:** All unnecessary packages must be removed and/or disabled from the system. Additionally, all unused operating system services and unused networking ports must be disabled or blocked. Only secure maintenance access shall be permitted and all known insecure protocols shall be disabled.
- ☐ **Malicious Software Prevention:** Implementation of anti-virus software and other malicious software prevention tools shall be supported for all applications, servers, data bases etc.
- ☐ **Network Security:** The network architecture of the HES must be secure with support for firewalls and encryption. The system shall also allow host-based firewalls to be configured, as an additional layer of security if the network firewall were to fail.

5.3. Communication Network Elements (DCU based or Router Based):

5.3.1. Data Concentrator Unit (DCU) based Communication Network

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The Data Concentrator Unit is a gateway for communication of data between the Smart Meters and the HES. The Data Concentrator Unit receives information from the Smart Meter on a scheduled / need basis and stores the data, which can be accessed by HES for onward transfer to MDM.

The DCU provides the central link between Smart Meters and HES, enabling continuous/periodic meter read and control. DCU shall exchange data from smart meters on RF / PLC communication and with HES on WAN.

If communication system is DCU based RF network, then following requirement shall be met.

5.3.1.1 Hardware & Power Supply of DCU

- Enclosure/box of DCU shall be minimum IP55 or better compliant. A suitable mounting arrangement required for DCU installation shall also be provided.
- A suitable and optimum power supply shall be provided keeping in view that even in case of outage in one or two phases, DCU can be powered. DCU should be capable of withstanding surges & voltage spikes of 6KV as per IEC 61000-4-5 standards. Power supply shall be terminated on suitable sized MCB to facilitate isolation during on-site maintenance.
- DCU shall have battery with backup for 1 hour for normal meter reading, to push tamper event, carry out on demand reading and the network health status / connectivity continuity & check. DCU should have the suitable feature to send power outage and restoration message to the HES. The battery shall have a guaranteed life of 10 years.
- DCU shall have built in Real Time Clock (RTC) with separate battery backup. The battery shall have a guaranteed life of 10 years. It shall have self- diagnostic feature for RTC, memory, battery, communication module, etc. Alternatively, Software driven RTC may also be used as per agreement between supplier and DISCOM/Utility.

5.3.1.2 Configuration, Functionality & Interface of DCU

DCU shall have following configuration functionalities:

- It shall be able to configure the communication with underlying nodes/meters.
- It shall pull data from the field devices and push the data at configured intervals to the HES. It should also support the HES in pulling data from the field devices/meters. The data acquisition (Push/Pull) frequency shall be programmable. DCU shall be capable to prioritize control commands.
- DCU shall ensure a secure communication to HES and shall have internal memory for storing interval data for at least 5 days.
- DCU shall support on demand read and ping of individual/group of meters.
- It shall support IPv4 / IPv6 network addressing.
- ☐ DCU shall push events like tamper, power off etc. to HES immediately on occurrence/receipt from field devices/meters.
- ☐ The equipment shall be weatherproof, dustproof and constructed for outdoor installation on poles (minimum rating: IP-55). A suitable mounting provision shall be made for the equipment.



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- ☐ Enclosure: Provision for security sealing shall be provided and in case the gasket of the cover is used for protection against moisture, dust and insects, the gasket shall be made of weather and aging resistant material.
- ☐ The list of standards followed in all the devices/equipment used in communication network shall be furnished

5.3.1.3 DCU Communication

- The communication architecture shall be any, as defined under IS 16444.
- ☐ The DCU shall ensure the appropriate backhaul for secure transfer of data to HES. In case of GPRS/3G/4G backhaul, it shall support SIM card from any service provider. It shall have Wide Area Network (WAN) connectivity to the HES through suitable means.
- DCU shall be able to communicate with meters either on RF mesh (license free band) or PLC.
- DCU shall periodically monitor meter reads/downstream commands and shall retry and reconnect in case of failed events/reads.
- It shall push events like tamper, power off etc. to HES immediately on occurrence/receipt from field devices/meters. DCU shall be able to acquire and send data to HES for full capacity (as per designed for no. of meters/field devices) to ensure the performance level. Full capacity of DCU is required to be indicated in the offer.
- ☐ After Power Interruption, on restoration of power supply, DCU shall establish communication with underlying devices as well as upstream application automatically.
- DCU shall be able to communicate with the nearest meters depending on topographical features. For further communication among the meters, distance of the other meters with the DCU shall not be a constraint as communication of the nearest meters shall be established with other meters through appropriate mesh formation / other formation.
- Remote Firmware Upgrade: The DCU shall support remote firmware upgrades as well as remote configuration from the control center. Configuration of programmable parameters of smart meters shall be done through HES.
- ☐ All meters falling under one DCU shall be commissioned and checked for proper communication in presence of DISCOM/Utility in-charge.
- ☐ DCU shall keep the records of minimum of the following events:
 - No of packet failures
 - Retry attempts
 - Missed periodic readings
 - Failure to connect
 - Tamper events

5.3.2 Router based RF Mesh Network

If communication system is router based RF mesh network, then following requirement shall be met. In this type of communication network, different nodes (smart meters) shall interconnect with each



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other using RF mesh network and they shall communicate with nearby routers to transfer the data to access points. In such communication network, if any routers/repeaters/access points fail, then nodes connected on that device shall automatically reconfigure the mesh with available nearby nodes.

5.3.2.1 General Requirement of Router based RF Mesh Network:

The general requirements for the Router based RF network are specified below:

- i) The communication network shall have dynamic & self-healing capability. If one of the communication element like router or access point fails then nodes connecting to that element shall switch to best available element for communication of data to HES.
- ii) It shall support IPv4 / IPv6 network addressing.
- iii) Each node shall keep a track of best available nearby nodes.
- iv) The communication network equipment shall use licence free frequency spectrum as defined by Government of India.
- v) All the communication network equipment shall be certified by WPC, Government of India for operation in licence free frequency band.
- vi) Suitable network management system (NMS) shall be available to monitor the performance of the communication network round the clock. The NMS shall provide viewing of all the networking elements deployed at site and enable configuration, parameterization of the networking devices and the nodes.
- vii) It shall support remote firmware upgrading
- viii) It shall be secure enough to avoid all cyber threats like DDoS, spoofing, malwares etc.
- ix) The communication network shall ensure secure communication of data to HES.
- x) The equipment shall be weatherproof, dustproof and constructed for outdoor installation on poles (minimum rating: IP-55). A suitable mounting provision shall be made for the equipment.
- xi) Enclosure: Provision for security sealing shall be provided and in case the gasket of the cover is used for protection against moisture, dust and insects, the gasket shall be made of weather and aging resistant material.
- xii) The list of standards followed in all the devices/equipment used in communication network shall be furnished.
- xiii) Routers / Access Points shall have suitable power supply arrangements. Provision of battery backup for at least 1 hour shall be there to continue operation in case of power supply failure. The life expectancy of battery shall be 5 years or more.

5.3.2.2 Configuration, Functionality & Interface

Access points shall have following configuration functionalities:

- ☐ It shall be able to configure the communication with underlying nodes/end points.
- ☐ It shall support on demand read and ping of individual/group of meters.
- ☐ It shall push events like tamper, power off etc. to HES immediately on occurrence/receipt from field devices/meters.
- ☐ It shall have Wide Area Network (WAN) connectivity to the HES through suitable means.



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- ☐ It shall communicate with routers/nodes/end points on RF mesh (license free band).
- ☐ It shall periodically monitor meter reads/downstream commands and shall retry and reconnect in case of failed events/reads.
- ☐ After power Interruption, on restoration of power supply, it shall establish communication with underlying devices as well as upstream application (HES) automatically.
- ☐ Access point shall facilitate recording of
 - No of packet failures
 - Retry attempts
 - Missed periodic reading
 - Failure to connect
 - Tamper events
- ☐ It shall be capable to handle interval data of suitable nos. of any type of smart meter (1ph/3ph). Access point shall be able to acquire and send data to HES for full capacity (No. of meters/field devices it is designed for) within a suitable time period to achieve the performance level. Full capacity of access point is required to be indicated in the offer.
- ☐ Access point shall support remote firmware upgrades as well as remote configuration from the control center.

5.3.3 Testing of the DCU /Access Point

DCU/Access Point shall be tested for the following:

- ☐ Radio interference measurement (CIS PR 22)
- ☐ Surge test (IEC 610004-5)
- ☐ Fast transient burst test (IEC 61000-4-4)
- ☐ Test of immunity to electrostatic discharges (IEC 61000-4-2)
- ☐ Test of immunity to electromagnetic HF field (IEC 61000-4-3)
- ☐ Resistance to heat and fire

The bidder shall provide IP-55 compliance test certificate for DUC/Access Point.

6. Head End System (HES)

The main objective of HES is to acquire meter data automatically avoiding any human intervention and monitor parameters acquired from meters.

The AMI Implementing Agency (AIA) shall provide the HES suitable to support the collection and storage of data as per performance level for a defined no. of smart meters with facility of future expansion as per the requirement of the DISCOM/Utility.

(NOTE: The no of smart meters/future expansion may be provided by DISCOM/Utility as per their requirement)

HES would perform all the requisite functions as per the defined functionalities of AMI and it is the responsibility of the AMI Implementing Agency (AIA)/ System Integrator to supply the requisite



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software and hardware to achieve the defined functionalities of AMI. HES shall ensure data integrity checks, for example, checksum, time check, pulse, overflow, etc. on all metered data.

HES shall be developed on open platform based on distributed architecture for scalability without degradation of the performance using additional hardware. HES shall support storage of raw meter data, alarms and alerts for minimum 3 days. Adequate data base and security features for storage of data at HES need to be ensured.

The suggested functions of HES (not exhaustive) may be :

- Acquisition of meter data on demand & at user selectable periodicity
- Two way communication with meter/DCU
- Signals for connect & disconnect of switches present in end points like meter
- Audit trail and Event & Alarm Logging
- Encryption of data for secure communication
- Maintain time sync with DCU / meter
- Store raw data for defined duration
- Handling of Control signals / event messages on priority
- ☐ Setting of Smart meter configurable parameters
- ☐ Communication device status and history
- ☐ Network information in case more than one technology is deployed in field between the two devices
- ☐ Critical and non-critical reporting functionality. The suggestive critical events may be alarms and event log for meter events like tamper/power failures etc., if data is not received from DCU/Meter, if relay does not operate for connect / disconnect or there is communication link failure with DCU/Meter or network failure while non critical events may be retry attempts on communication failure, periodic reading missing and failure to connect etc.

6.1 Configuration

HES shall facilitate programming of following meter parameters:

- Load profile capture period
- Demand integration period
- Setting of parameters for time of day (TOD/TOU) billing
- ☐ Prepaid function
- ☐ Net metering
- Billing date
- Clock setting/time synchronization
- Load curtailment limit
- Event setting for connect/disconnect



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- Number of auto reconnection attempt
- Time interval between auto reconnection attempt
- Lock out period for relay
- Remote firmware upgrade
- Password setting
- Push schedule
- Setting threshold limits for monitored parameters
- Provision for adding more programming features in future (The AIA may suggest more parameters as per the requirement)

6.2. Integration

HES shall preferably interface with MDM on standard interfaces and the data exchange models and interfaces shall comply with CIM / XML / IEC 61968 or any other open standard. The solution shall be Service Oriented Architecture (SOA) enabled.

7. Meter Data Management System (MDM)

The Meter Data Management System shall support storage, archiving, retrieval & analysis of meter data and various other MIS along with validation & verification algorithms. It shall act as a central data repository. MDM shall have capability to import raw or validated data in defined formats and export the processed and validated data to various other systems sources and services in the agreed format. It shall provide validated data for upstream systems such as billing, consumer Information system, customer care, analytics, reporting, Network planning & analysis, load analysis/forecasting, Peak Load Management, Outage management etc.

MDM should also support the future requirement of DISCOM/Utility and should support the integration of other smart grid functionalities like Distribution Transformer Health Monitoring system, self-healing system etc. as and when implemented by the DISCOM/Utility.

The vendor shall specify and deliver an initial system that supports the collection and storage of data for meeting the performance level for the **defined no of consumers/ smart meters (The exact Number have to be defined by the DISCOM/Utility as per no of consumers of city/town/village)** with facility of future expansion.

The MDM shall have the ability to selectively choose which data to be maintained and which to be purged or archived as per requirement of DISCOM/Utility (user selectable).

7.1. Functional Requirements

7.1.1 Asset Management

- The MDM shall maintain information and relationships between the current installed meter location (apartment, shop, industry/ address etc.), Consumer information (Name etc.), Consumer account no, Meter ID, Type of Meter (type of consumer, 1 phase/ 3phase, with or without relay,



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etc.), Meter configuration (Demand integration period, Load profile capture period etc.), GIS supplied information (longitude, latitude , connection with feeder/ transformer/ pole etc.) etc.

- The software should support tracking the status of meters and communication equipment from the date when they are installed in the field. The history of in-service asset location is maintained throughout the device life with start and end dates associated with each in-service location reference.
- Ability to report and log any damage / deterioration in the meter attributable to consumer / DISCOM/Utility.

7.1.2 AMI Installation Support

- The MDM shall also support device lifecycle management from device registration, installation, provisioning, operations and maintenance to decommissioning etc. The MDM shall generate exceptions for meter or modules not delivering the correct meter data after installation.
- The MDM shall provide a reconciliation report that identifies the meters that have been installed but not communicating for a designated (configurable) period. MDM shall generate reports on the number of meters installed in comparison to the number of meters successfully communicating.

7.1.3 Meter Data

- The MDM shall accept input, process, store, and analyze Meter data from HES and meter data collected through hand held meter reading instruments and manual meter reads. In case of manual reads, provision should be there to insert associated notes like assessed energy, etc.
 - ☐ The MDM should accept input, process, store, and analyze non-billing meter data such voltage and power quality data (like under/over voltage etc) as they are available from AMI Head End Systems. The MDM should also support schedule and on-demand meter reads and pinging of meter energized states by authorized users and by other DISCOM/Utility systems.
- The MDM shall provide storage of all collected Meter Data, events and alarm. It shall have capacity of storing 5 years data or more via archiving.
- Correctly track & resolve energy usage across meter changes with no loss of individual meter data.
- Provide complete history and audit trail for all data collected from meters including commands sent to meters and other devices for 30 days (configurable period).
- Execute on-demand read processes.
- Handle special metering configurations like net metering/multiple meters at same premises.
- The MDM shall have the ability to manage at a minimum 15 minute interval data.
- Data Integrity- AMI Implementing Agency (AIA) shall ensure data integrity checks on all metered data received from data collection systems.

7.1.4 Data Validation, Estimation, and Editing (VEE)

- ☐ The validation and estimation of metered data shall be based on standard estimation methods. The MDM should also support and maintain following data-



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- a. **Registered Read Data** including register reads, daily billing cycle, as well as derived billing determinants like TOU
 - b. **Interval Data** channels with variable intervals and variable units of measure
 - c. **Calculated Data** that is derived or computed such as billing determinants and aggregated loads.
 - d. **Event data** storage of all collected event and alarm data from meters, network equipment, and MDMS itself
- MDM shall flag, alarm and trigger an estimating process including but not limited to when the following anomalies occur in the cumulative (“CUM”) register reads
 - o CUM Decrements within a billing cycle (except net-metering)
 - o CUM reads increments more than configurable threshold
 - o Future or old read dates
 - o Number of digits exceeds number of meter dials
 - MDM shall detect, flag, alarm and trigger an estimating process including but not limited to when the following anomalies occur in Time of Use (TOU) register reads
 - o Register Decrements (except net-metering)
 - o Resets (to zero) (except net-metering)
 - o CUM reads increments more than configurable threshold
 - o Future or old read dates
 - o Erratic compared to CUM read (sum of TOU reads minus CUM read)
 - MDM shall detect, flag, alarm and trigger an estimating process including but not limited to when the following anomalies occur in Demand register reads
 - o Do not reset on cycle
 - o Do not reset coincident with customer move-out or move-in
 - o Reset off cycle inappropriately
 - o Too high
 - All data shall be transferred to billing system after meter data validation and estimation including transformer / feeder station wise energy audit.
 - MDM shall estimate usage for non-metered service points such as street lights, farm lights, traffic signals, etc.
 - The MDM shall maintain both the original received raw data in a non- manipulated state, in addition to VEE data.
 - Notwithstanding the latency of data collection via the AMI system, once the MDM receives meter read data, the VEE process occurs in real-time and the post-VEE data is then immediately available to user or external systems.
 - The MDM shall be able to automatically flag data changes from manual edits, VEE (Validating, Editing and Estimating) rules and data source corrections and electronically generate audit trail with timestamps and user-ids.



7.1.5 Billing Determinants Calculations

The MDM-

- Shall allow configuring multiple TOU/TOD options (e.g. the number and duration of TOU rate periods) by customer type, tariffs and day type (weekend, weekdays, and holidays) and by season.
- Shall support the processing of interval data into billing determinants to include the following at a minimum:
 - o Total Consumption
 - o Consumption in different time blocks for ToU billing
 - o Maximum Demand (in kW and kVA)
 - o Number of tamper counts
 - o Average power factor
- Shall process interval data and frame it into the appropriate TOU periods for consumption and demand; for example, roll up 15/30 minute data intervals into hourly data.
- Shall have the ability to properly account for special metering situations such as check metering, sub metering, prepaid metering and net metering when calculating billing determinants and sending them to billing and other systems.
- Shall have the ability to properly account for special situations including, but not limited to, curtailment requests, demand response scenarios when calculating billing determinants and sending them to billing software.

7.1.6 Exception Management

- Ability to capture and log data exceptions, problems and failures and to generate management reports, provide trend analysis, automate generation of service requests and track corrective actions.
- Ability to group, prioritize, filter and send system generated alarms and events to predetermined email addresses, cellular text messages to phone numbers/SMS/customer care etc.
- Exception Generation - MDM shall generate exceptions based on configurable business rules including but not limited to the following:
 - Meter tamper alerts
 - Communication module health alerts for Meter/DCU
 - If the consumption is less/more than pre-defined average consumption
 - Negative Consumption (not for net-metering)
 - Power outage indications received from the Smart meter

7.1.7 Service Orders

- ☐ The MDM shall generate service orders based on configurable rules for various events and alarms such as stop meter, tampers, problem in communication networks, AMI host server, etc.



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- MDM shall send service orders via SMS, email, etc. with the email addresses / phone numbers being configurable. MDM shall receive feedback on action taken on the service order and track the status of service orders.

7.1.8 Customer Service Support

- The solution shall provide customers with access to current and historical consumption and interval data, outage flags, voltage and power quality indications. The data shall be displayed in graphical and tabular form depending on user choice. The Customer may also access data through customer portal. The solution shall integrate via a user friendly graphical interface.
- MDM shall support email/SMS notification of configured alarms & events to selected users.
- The MDM shall support the web portal or shall have the ability to interface with the 3rd party portal/ DISCOM/Utility portal to provide the consumer near real time online views of both usage and cost and helping consumers to understand electricity usage and cost information, alerts and notifications and energy savings tips with different levels of detail. The portal should support the view for past electricity usage, last week's, yesterday's, current days or other period etc. as per selection. The portal should provide user friendly access to consumer for their data via colorful graphs and charts and can download the data into a spreadsheet.
- Shall support mobile app through which consumer shall be able to log in through android/iOS/Window based mobile app to see information related to his energy consumption. App shall also provide platform for implementation of peak load management functionality by providing existing tariff & incentives rates, participation options etc.

7.1.9 Analysis

The MDM shall have analysis capability based on configurable business rules including but not limited to the following:

- Display consumption/load profiles by configurable period (15/30 min, hour, day, month, year etc.) day type (weekday, weekend, holiday, festival wise etc.) and by tariff, customer type, or any user specified collection of meters.
- Generate peak & off-peak load patterns by aggregating all loads of DT/Feeder/consumer group.
- Perform DT/feeder wise energy audit.
- Perform load analysis for different groups and categories of consumers.
- Ability to provide the data to load forecasting, load research or demand response applications and perform error management like: Missed reads and intermittent meter reads before taking into forecasting, load research or demand response
- Ability to configure the system to effectively visualize consumption trends, identify unusual patterns, and visualize load analysis to understand which assets are being over utilized.
- Analyzing data to identify new patterns of usage, Setting fraud alert / transformer overload alerts / demand – supply gap alert etc.



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- Ability to receive and store outage and restoration event data from smart meters and outage systems and to log all such events for analysis.

7.1.10 Reporting

The solution shall include a list of the standard reports that are provided with the MDM including but not limited to following:

- ☐ Daily data collection report
- ☐ Usage exceptions
- VEE validation failures
- Missing interval Read date and times (on hourly, daily, weekly & monthly basis)
- Physical meter events (install, remove, connect, disconnect) & meter reset report
- Meter flags
- Meter inventory
- defective meters
- AMI performance measurements
- Threshold Exception

The solution shall support users modifying standard reports to better meet specific reporting requirements.

- The MDM shall enable the DISCOM/Utility to deliver reports in standard digital format such as PDF, Excel, etc.
- Ability for GUI (Graphical User Interface) to set up or change report delivery to configurable email addresses, network file directories, ftp sites or printer systems without modifying source program code and without any proprietary language skills.
- All queries shall be generated through user driven drop down menu in GUI. The Bidder shall provide example queries to support internal report generation needs.
- Ability to provide daily & weekly interface exception reports between MDM and other subsystems e.g. billing, outage, etc.
- In case more than one technology of AMI (example PLC and RF between Smart Meter & DCU) deployed in the field The MDM shall generate report on the performance and availability of data being delivered per AMI technology.

7.1.11 Revenue Protection Support

- Ability to analyze meter tampering flags, power outages, usage trends and usage profiles to identify potential energy diversion situations, and produce daily reports, monthly reports and service order requests for investigation.



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- The business rules for revenue protection alerts shall be configurable via a user-friendly interface.
- The MDM shall filter out revenue protection alerts that may be caused by field activities if the field activity information is provided to the MDM.
- The MDM shall support the analytics/investigation (i.e. view current and historical usage patterns) to valid suspected revenue protection issues.

7.1.12 Demand Control/Demand Response Support

Bidder shall describe how its MDM supports Smart Grid Demand Response programs involving Demand Response (DR) systems as part of PLM. The solution shall support the following analysis:

- Totaling the actual consumption during the DR event.
- Totaling the actual consumption of different groups that participated in the DR event.
- Comparing the actual to baseline consumption for the groups in above.
- The MDM shall support the tracking, monitoring and managing of Smart Meter and events, and monitors customer response to facilitate payment of customer incentives.

7.1.13 OMS/ other smart grid functionality support

MDM shall support Smart Grid OMS system as per the requirement of the DISCOM/Utility. MDM shall support the interfacing with OMS software for providing AMI meter data needed for fault location identification and other requisite services like updating the data after attending the fault etc.

MDM should also support the interfacing of other smart grid functionalities like Distribution Transformer Health Monitoring system, self-healing system, electric vehicle etc. as and when implemented by the DISCOM/Utility.

7.1.14. Additional Features

➤ Net-Metering

☐ MDM shall flag, alarm and trigger an estimating process including but not limited to when the following anomalies occur:

- CUM decrements of forward energy within a billing cycle
- Register decrements for Time of Use (ToU) of forward energy
- Power generated(exported) by any net-metering consumer more than the installed capacity of solar PV rooftop system
- Energy exported(exported) in any given day by any net-metering consumer more than the programmable threshold value

➤ Prepaid functionality

The prepaid functionality can either be availed at smart meter level or through MDM. In case of MDM, following shall apply



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- ☐ The MDM should support pre-payment metering and capability to interface with pre-payment application.
- ☐ The prepayment should support the system that payment and connection parameters are stored centrally and the details are being updated to consumer portal/ app.
- ☐ The system should periodically monitor the energy consumption of prepaid consumer and decrease the available credit based on consumption.
- ☐ The system should send connect/disconnect command on the basis of available credit as per notified rules & regulations.
- ☐ The system should send low-credit notifications to the consumer when their balance approaches a threshold.

7.2 User Interface

The AMI Implementing Agency (AIA) shall provide user interface for the following:

DISCOM/Utility:

User interface for DISCOM/Utility shall have ability for at least the following functionality:

- ☐ Compare total energy costs on one rate schedule vs. one or many alternative rates.
- ☐ Enable the user to see how different options within a rate affect costs.
- ☐ Enable the user to see how adjusting load or consumption levels or shifting them to different time periods influences costs.
- ☐ Compare multiple facilities against each other based on costs, average spend, cost per area and cost by weather.
- ☐ Display meter data at a user defined configurable cycle through a GUI that allows authorized users to view energy usage patterns and the data behind them for selected customers.
- ☐ Allow authorized users to view metered data, initiate and view reports, modify configurations, and initiate and update service requests via a GUI.
- ☐ Display via a GUI the energy usage profile for a single meter or group of meters. The load profile shall illustrate energy consumption and peak demand in user defined intervals for a user-specified time period.
- ☐ Display via a GUI the energy usage profile for a single meter or group of meters according to Time of Use (ToU) tariff.
- ☐ Access to a minimum of 5 years of historical energy usage and meter reads through the GUI.
- ☐ GUI to clearly and visually distinguish between metered, estimated, allocated and substituted data.
- ☐ GUI to provide role-based access based on user identity and user role. Shall have following types of users:
 - Administrator
 - Operator
 - Field staff

Viewer/Guest

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- Configure the look, feel, and functionality of the MDM in accordance with business needs, business processes, and business conventions. (e.g. GUI, content, look and feel of screens, validation rules, exception handling, etc.).
- Ability for DISCOM/Utility through user interface to set up alarm and event notifications that can be directed to a combination of configurable email addresses, cellular text messages or phone numbers.
- User interface for DISCOM/Utility to update the credit amount of prepaid consumers to MDM. Such type of user interface before login shall require password & login i.d. for authentication. User interface after getting information like consumer i.d., mobile number & recharge amount etc. shall update the same to MDM. The details of payment information shall also update to consumer through SMS, email etc.

Consumer:

User interface for all authorized consumers shall have ability for at least the following functionality:

- View metered data, initiate and view reports
- View data according to Time of Use(ToU) tariff
- Can make request for connection/disconnection
- User can update mobile number/email
- Can initiate service requests for maximum demand updating, meter checking etc.
- In case on net-metering consumers, user can view data for both import & export
- In case of prepaid consumers, consumers can view recharge history & present balance.
- Prepaid consumers shall be provided facility to recharge their account by logging on user interface. User interface shall require consumer id., mobile number & password for secure login. This user interface shall be integrated with the present online payment gateway of DISCOM/Utility.

7.3 Integration with other Systems

MDM shall preferably interface with other systems on standard interfaces and the data exchange models and interfaces shall comply with CIM / XML / IEC 61968/IS15959/ Indian Companion Specification/ any other open standard. MDM solution shall be Service Oriented Architecture (SOA) enabled.

MDM integration with other systems shall include but not limited to the following:

- HES for data exchange from other AMI solutions
- DISCOM/Utility Administration
- Existing other Data Collection Systems
- IVR system, CRM, Consumer Portal
- Billing and collection system
- GIS Systems integration with CIS and with MDM system

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- ☐ Support of interface with HHU or manual reading system etc.

AMI Implementing Agency(AIA) should provide suitable number of HHUs to read and update the data in MDM in case of any communication failure between meter and HES/MDM.

8. Performance Levels

- (a) These performance levels shall apply to the complete AMI system.
- (b) AMI system include the communications links provided by Network Provider /third parties such as telecommunications companies and AMI Implementing Agency (AIA) has to ensure the desired performance level.
- (c) The performance levels are average performance levels over the period of a year and exclude force majeure events.

The following are the required performance levels -

➤ **Performance levels for collection of daily meter readings (as per IS 16444/15959 part 2)**

The following are the performance levels required for the daily collection of the previous day's interval energy data and total accumulated energy:

- (1) All interval data from 95% of meters within 8 hours after midnight; and
- (2) All interval data from 99.9% of meters within 24 hours after midnight.

➤ **Performance levels for remote reads of individual meters if data is not received on daily basis**

The performance level of an individual read applies to the collection of seven days of interval energy data and the current total accumulated energy from a particular AMI meter whose data is not being received on daily basis. The performance level required shall be:

- (1) Action performed at 90% of meters within 1 Hour;
- (2) Action performed at 99% of meters within 2 hours; and
- (3) Action performed at 99.9% of meters within 6 hours.

➤ **Performance level for remote load control commands for selected consumers,**

The performance level required for individual meters shall be:

- (1) Action performed at 95% of meters within 5 minutes;
- (2) Action performed at 99% of meters within 10 Minutes

➤ **Performance level for remote connect/disconnect for selected consumers,**

The performance level required for selected individual meters shall be:

- (1) Action performed at 90% of meters within 10 minutes;



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- (2) Action performed at 99% of meters within 1 hour; and
- (3) Action performed 99.9% of meters within 2 hours.

➤ **Performance levels for Meter loss of supply and outage detection**

Alarms to be received within 5 minutes for 90% of meters.

➤ **Performance levels for remotely altering settings in meter/ firmware upgrade**

The performance level required for individual meters shall be:

- (1) Action performed at 99% of meters within 24 hours; and
- (2) Action performed at 99.9% of meters within 36 hours.

➤ **Performance levels to remotely read events logs**

Performance level required for reading the full event log that pertains to an individual meter shall be:

- (1) Action performed at 90% of meters within 30 minutes;
- (2) Action performed at 99% of meters within 1 hour; and
- (3) Action performed at 99.9% of meters within 6 hours.

To read the event logs pertaining to all meters:

- (1) The data pertaining to 99.5% of meters within 1 day;

➤ **Performance levels for updating of data on consumer portal/ app**

The performance level of updating of individual consumer data on portal/ app after receiving the data in MDM shall be:

- (1) Action performed for 90% of consumers within 1 hour after receiving the data in MDM;
- (2) Action performed at 99.5% of meters within 6 hours after receiving the data in MDM.

The performance level for generation of bills would be as per requirement of the DISCOM/Utility. The performance levels regarding meter discovery time line after installation, on demand reading of meter data for operational purposes, outage restoration enquiry response time etc. would also be declared by the bidder.

Additionally, the Disaster Management timelines in terms of Recovery Time Objective (RTO) and Recovery Point Objective (RPO) of HES have to be defined by the bidder.

9. Performance Requirement for User Interface

The user interface performance testing shall be done as per following criteria-

S.No.	User Interface Requirements	Response Time
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1	Any real time display and application display on workstation console along with data values shall appear on screen.	Within 2 sec
2	Manual data entry of the new value appears on screen.	Within 2 sec
3	Display Update rate	2 sec for 4 displays together
4	Response time for display of Alarm and event after receipt in system	Within 1 sec of receipt in system



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5	Requests for printing of displays (to be acknowledged with an indication of request is being processed).	Within 2 sec
6	Requests for generation of reports (to be acknowledged with an indication of request is being processed).	Within 2 sec

10. Technical Obsolescence

The systems including communication technologies, which are at a risk of technical obsolescence over the next few years and over the operating life of the system should be identified and reported. This may also include end- of-sale and end-of-support policies governing the proposed technologies. The compatibility between the various elements of the system need to be considered and mitigation options, not be limited to periodic update from OEM/System supplier, shall be indicated in detail.



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Technical Specification of Single phase whole current Smart Meter



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CLASS 1.0 WITH BI-DIRECTIONAL COMMUNICATION FACILITY SUITABLE FOR ADVANCED METERING INFRASTRUCTURE (AMI)

TECHNICAL SPECIFICATIONS FOR WHOLE CURRENT A.C. SINGLE PHASE TWO WIRE SMART ENERGY METER OF ACCURACY CLASS 1.0 WITH BI- DIRECTIONAL COMMUNICATION FACILITY SUITABLE FOR ADVANCED METERING INFRASTRUCTURE (AMI)

1. SCOPE

The specification covers the design, manufacturing, testing, supply and delivery of AC whole current 1 phase 2 wires Smart Energy Meter with bidirectional communication facility. The meter shall be suitable for Advanced Metering Infrastructure (AMI). The meter shall communicate with DCU/Access Point/ HES on any one of the communication technologies mentioned in IS16444, as per the requirement of the DISCOM/Utility.

2. BASIC FEATURES

The Smart Meter would have the following minimum basic features-

- Measurement of electrical energy parameters
- Bidirectional Communication
- Integrated Load limiting switch
- Tamper event detection, recording and reporting
- Power event alarms such as loss of supply, low/ high voltage
- Remote firmware upgrade
- Net metering features
- On demand reading

3. GENERAL STANDARDS APPLICABLE FOR METERS

Unless otherwise specified elsewhere in this specification, the performance and testing of the meters shall conform to the following standards with latest amendments thereof:

S. No.	Standard No.	Title
1	IS 13779 with latest amendments	AC Static Watt-hour Meter class 1& 2
2	IS 16444 with latest amendments	A.C. Static Direct Connected Watt Hour Smart Meter Class 1 and 2- Specification



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3	IS 15884 with latest amendments	Alternating Current Direct Connected Static Prepayment Meters for Active Energy (Class 1 and 2)- Specification
4	IS 15959 Part 1 & Part 2 with latest amendments	Data Exchange for Electricity Meter Reading, Tariff and Load Control- Companion Standards

4. COMMUNICATION

Meter shall have ability to communicate with DCU/Access Point/HES on any one of the technologies mentioned in IS16444 in a secure manner, as per the site conditions and as per design requirement of AMI Implementing agency. In case of GPRS/3G/4G based meter, the meter shall accommodate SIM card of any service provider. In case of Plug in type communication module, the meter shall log communication module removal /non responsive event with snapshot.

4.1 Remote Load control facility would be as per IS 16444.

5. OTHER SPECIFICATIONS

Particulars	Specification
Applicable Standards	The meters shall comply with IS 16444 for all requirements. Those parameters which are not covered in IS 16444 have been specifically mentioned in this specification.
Reference Voltage	As per relevant IS
Current Rating	5-30 A/ 10-60 A (as per the requirement of the DISCOM/utility)
Starting Current	As per IS 16444
Accuracy	Class 1.0 as per IS 16444
Limits of error	As per IS 16444
Operating Temperature range	As per IS 16444
Humidity	As per IS 16444
Frequency	As per IS 16444
Influence Quantities	As per IS 16444
Power Consumption of meter	As per IS 16444
Current and Voltage Circuit	As per IS 16444
Running at No Load	As per IS 16444
Test output device	As per IS 16444



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Meter Display	As per IS 16444
Name Plate & marking Meter Display	As per IS 16444
Parameters to be measured	As per IS 16444 / As per IS 15959 Part-2
Maximum Demand resetting	As per IS 15959 Part 2
Time of Use registers	As per IS 15959 part 2
Power Quality Information	As per IS 15959 part 2
LED/LCD Indicators	As per IS 16444
Load Survey/Interval Data	As per IS 15959 part 2
Tamper/ Event Recording	As per IS 15959 part 2
Measuring Elements	As per IS 16444
Alarm	As per IS 16444/ 15959 Part 2
Load Control	As per IS 16444
Connect/Disconnect and status of load switch	As per IS 16444
Programmability	As per IS 16444
Communication	As per IS 16444.
Communication Protocol	As per IS 16444
Remote Firmware upgrade	As per IS 15959 part 2
Real Time Clock(RTC)	As per IS 16444/ IS 15884 The clock day/date setting and synchronization shall only be possible through password/Key code command from one of the following: • From remote server through suitable communication network. • Hand Held Unit (HHU) or Meter testing work bench and this shall need password enabling for meter; (The methodology for the synchronization would be as per requirement of utility)
Data Retention	As per CEA regulations



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Battery Backup	Meter shall be supplied with separate battery backup for RTC.
Guarantee	Manufacturer Shall undertake a guarantee to replace meter up to a period of 60 months from the date of supply. The meter which are found defective/inoperative within the guarantee period, these defective/inoperative meters shall be replaced within one month of receipt of report for such defective/inoperative meters
First Breath(power on) and Last gasp (power off) condition detection and communication to HES	As per IS 16444

5.1 DATA DISPLAY FACILITY (AUTO/MANUAL)

Data Display shall be in three modes-

1. Auto Scroll
2. Scroll with Push Button
3. High Resolution (Shall display energy values with resolution of 2 digits before decimal and 3 digits after decimal in push button mode)

The display order shall be:

- ☐ Auto Scroll
 - Cumulative Active Energy kWh along with legend.
 - Current calendar month MD in kW with legend.
 - Instantaneous voltage
 - Instantaneous current

These parameters should be displayed on the LCD/LED continuously for a period of 15 seconds on Auto scroll. In case of power failure, the meter should display above parameters with push button.

- ☐ Scroll with Push-button
 - o Internal diagnostics
 - o Cumulative kWh
 - o Date
 - o Real Time
 - o Voltage in (V)
 - o Current (I)
 - o Power (kW)



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- o Current month MD in kW
- o Last month cumulative kWh
- o Last month MD in kW
- o Last month MD occurrence Date
- o Last month MD occurrence Time
- o Meter Serial Number

The meter's display should return to default display mode (continues auto scroll) if push button is not operated for more than 10 seconds. (The order of display may be revised as per requirement of the DISCOM/Utility)

6. **ANTI TAMPER FEATURES**

The meter shall continue recording energy under any tamper condition and would log the event and send alarm at Head End System after detection of the defined theft features as per IS 15959 Part 2.

This test is mandatory. The Meter shall be immune under external magnetic influences as per CBIP 325. Meter shall be tested for high voltage discharge (Spark) up to 35KV as per CBIP 325

7. **TESTS**

7.1 **Type Tests & Test Certificates**

Smart meter shall be type tested for all the type tests as per IS: 16444 (latest version) in a third party independent lab. The number of sampling for testing of meters and criteria for conformity would be as per IS 16444.

Necessary copies of test certificates shall be submitted as per agreement with the DISCOM/Utility.

7.2 **Routine & Acceptance Tests**

The Factory Acceptance and Routine tests shall be carried out as per IS 16444. Apart from above test, meter shall be also be tested for all functional requirement through communication as part of acceptance test

8. **GENERAL & CONSTRUCTIONAL REQUIREMENTS**

8.1 Meter Shall be BIS marked as per IS 16444.

8.2 General & construction requirement shall be as per IS 16444/IS 13779

8.3 In Home Display (IHD) shall be optional and the specifications of the same would be as per agreement between the bidder and the DISCOM/Utility.

9. **METER BASE & COVER-** Meter base & cover shall be as per IS 16444/ IS 13779. The meter Base & cover shall be break to open design. The material for meter base and cover shall be made of high grade polycarbonate.



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10. TERMINAL BLOCK & COVER - As per IS 16444/IS 13779

11. DESIGN

Voltage circuit, sealing arrangement, terminal block, terminal cover and nameplate etc. shall be in accordance with IS-16444 (latest version).

The meter shall be compact and reliable in design, easy to transport and immune to vibration and shock involved in transportation and handling.

12. CIRCUITRY - as per IS 16444

The supplier should submit the details of source/agencies from whom purchase of various components of meters used by them to the DISCOM/Utility/purchaser.

13. NAME PLATE AND MARKING

The meter should bear a name plate clearly visible, effectively secured against removal and indelibly/distinctly marked in accordance with relevant IS. In addition, in the middle of the name plate the words “Name of the DISCOM/Utility”, purchase order no. & year/month of manufacturing shall either be punched or marked indelibly. The rating plate information shall be as per relevant IS.

14. CONNECTION DIAGRAM: As per IS 16444

15. FIXING ARRANGEMENTS:

The meter shall be mounted type. The Meter should have three fixing holes, one at top and two at the bottom. The Top hole should be such that the holding screw is not accessible to the consumer after fixing the meters. The lower screws should be provided under sealable terminal cover. The requisite fixing screws shall be supplied with each meter.

16. SEALING ARRANGEMENT:

Arrangements shall be provided for proper sealing of the meter cover so that access to the working parts shall not be possible without breaking the seal. The sealing arrangement and number of seals for meter and meter box shall be provided as per relevant IS/requirement of DISCOM/Utility

17. METER BOX: The Meter Box would be provided as per requirement of the DISCOM/Utility/ purchaser.

18. PACKING

The meters shall be suitably packed for vertical/horizontal support to withstand handling during transportation. The meter shall be packed appropriately to ensure safe transportation, handling, identification and storage. All packing materials shall be as per environment law in force. The primary packing shall ensure protection against humidity, dust, grease and safeguard the meter’s performance until its installation. The secondary packing shall provide protection during transportation. The packing case shall indicate



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