Request For Empanelment (RFE)
Of
"Firms for participation in RDSS AMISP tenders for providing Advance Metering Infrastructure (AMI) prepaid Solution after successful demonstration"

REC Ltd.
(RDSS Division at CO)

Key Dates / Details

Date of Release of RFE	**12th March 2022**
Date & Time of RFE Pre-Submission Meeting	**17th March 2022**
Last date for receipt of written queries from potential Applicants	**21st March 2022**
REC Ltd. response to queries received from Applicants	**Within 05 days from date of receipt of Application**
Information to eligible Applicants for demonstration	**Within 10 days after receipt of application form in all respect**
AMI prepaid solution Demonstration start date	**Within 07 days of issue of information to eligible bidders**
Deadline for submission for 1st phase of Applications	**30th April 2022**
Empanelment Fee	Actuals based on bills raised by Testing agency
Application Validity period	180 days from deadline of submission of applications
Address for Correspondence	**Raman Garg, Chief Manager (Technical), RDSS-PMD Division,** REC Limited, I-4, Sector-29, IFFCO Chowk, Gurgaon, Haryana **testbedempanelment@gmail.com**

Regd. Office:
REC Limited, I-4, Sector-29, IFFCO Chowk, Gurgaon, Haryana,122001
Tele. 011-24362584, Fax. 011-24360644, Gram: RECTRIC
CIN:- L40101DL1969GOI005095
Website: www.recindia.com Email: recpcm@recl.in

SUMMARY

PART I – EMPANELMENT PROCEDURES AND REQUIREMENTS

Section 1: Request for Empanelment Notice

This Section includes Request for Empanelment **(RFE)**

Section 2: Eligibility Requirements

This Section contains information regarding specific eligibility requirements applicable for prospective applicants to be considered for further evaluation of their applications.

Section 3:Instructions to Applicants (ITA) and Application Data Sheet (ADS)

This Section consists of two parts: "Instructions to Applicants" and "Application Data Sheet (ADS)". "Application Data Sheet" contains information specific to Applicant's Empanelment that corresponds to and/or supplements and/or modifies "Instructions to Applicants". This Section provides information to help prospective applicants prepare their applicants. Information is also provided on the e-application process, submission, opening, and evaluation of applications and on the award of certification.

Section 4 : Applications Forms

This Section includes the forms for Eligibility Requirements and Qualifying Requirement of the applicant, that are to be completed by the applicant and submitted in accordance with the requirements of Section 2/ Section 3.

Section 5 : Fraud and Corruption

This section includes the Fraud and Corruption provisions which apply to this application process.

PART 2 – AMI PREPAID SOLUTION DEMONSTRATION REQUIREMENTS

Section 6 : AMI PREPAID SOLUTION DEMONSTRATION Requirements

This Section includes the AMI Prepaid Solution functionalites to be demonstrated by the prospective applicants for Empanelment

PART 3 – CONDITIONS OF EMPANELMENT AND EMPANELMENT FORMS

Section 7 : Conditions of Empanelment

This Section consists of General Conditions of Empanelment (GCE) .

Section 8 - Empanelment Forms

This Section contains the Empanelment Certificate .

Table of Contents

PART 1

EMPANELMENT PROCEDURES AND REQUIREMENTS

SECTION 1 - Request for Empanelment Notice

REC Ltd .

OPEN EMPANELMENT

Request for Empanelment (RFE)

Empanelment title: "Empanelment of Firms for participation in RDSS AMISP tenders for providing Advance Metering Infrastructure (AMI) prepaid Solution after successful demonstration"

Issued on: *12th March 2022*

1. REC Ltd *[RDSS Division at CO]* (also referred to as REC) invites Applications for "**Empanelment of Firms for participation in RDSS AMISP tenders for providing Advance Metering Infrastructure (AMI) prepaid Solution after successful demonstration".** Applicants are advised to note the clauses on Eligibility and Qualification Requirements in Section 2, to be eligible and qualify for being considered for shortlisting for empanelment.

2. Application will be through hard copy submission. The applicant also need to submit one soft copy of application with all attachement on email testbedempanelment@gmail.com simultaneously.

3. The RFE document is available online for downloading **free of cost** on http://www.recindia.com, from 12th March 2022. The applicant would be responsible for ensuring that any addenda/ corrigendum/ amendment etc. available on the website/ portal is also downloaded and incorporated.

4. Under the application process, the applicant shall be required to disclose and make requisite submissions in the prescribed format attached with this RFE in Section – 4 "Empanelment Forms". Incase of an incomplete and/or ambiguous application, REC may ask for clarification from the Applicants, and Applicants have to provide the clarification with justification for being considered for Empanelment process.

5. Application must be submitted in hard copy as specified in **Section 3**. Any application or modifications to application received in any other way will not be considered, unless otherwise specified in Section 3. REC shall not be liable for any information not submitted/furnished by the applicant. It is the applicant's responsibility to verify from and regularly visit the website for the latest information related to this RFE.

6. Other details can be seen in the RFE document.

Section 2 - Eligibility & Qualification Requirements

Any entity who can bring an end-to-end AMI prepaid solution can apply to the Empaneling Entity for demonstration of its solution. The Applicant which would participate in the demonstration test shall come up with all the equipment/ software (Smart Meter, HES, MDM, Billing System, Communication infrastructure etc.) required for demonstrating its AMI prepaid solution. The Testing Agency / Pre-Qualification Committee has no role in inviting any Meter manufacturer, HES and MDM service provider separately, for the demonstration test. It is the complete responsibility of the Applicant to reach out to respective Smart Meters manufacturers / HES provider/ MDM provider/ System Integrator, and any other software /applications service providers whose services are required for successfully carrying out the demonstration test. Accordingly, the Applicant may apply on its own or bring along other partners, as it deems fit.

The Applicant shall be responsible for bearing the testing fees to be payable to CPRI in case of availing test bed facility in CPRI or charges associated with demonstration in live scenarios.

A. Eligibility Requirements: For Empanelmment, the Applicant must satisfy the below-mentioned eligibility requirements/ criteria:

1. The Applicant shall have a registered office (under the Companies Act 1956/ 2013 with Registrar of Companies) in India at the time of submission of the application for the Empanelment certification. In case the Applicant is a foreign entity, then it should have at least one branch office in India and should submit a certificate of registration/ details of its registered office in its country of origin.

2. The Applicant shall be ineligible to apply for Empanelment in the event it is banned/ debarred/ blacklisted by REC Ltd. or any of its subsidiary/ PFC Ltd. or any of its subsidiary/ Government of India/ Ministry of Power/ any Regulatory Authority/any State Government/ Central or State PSU, as on the date of submission of the application.

3. The Applicant must ensure compliance to ‘Restrictions under Rule 144 (xi) of GFR 2017: Restrictions on application from a bidder of a country which shares a land border with India’. Failing this, the Applicant they shall not be eligible. The same has been reproduced below for reference:

   Restrictions under Rule 144 (xi) of GFR 2017: Restrictions on application from a applicant of a country which shares a land border with India

   I. Any applicant from a country which shares a land border with India will be eligible to apply only if the applicant is registered with the Competent Authority.*
   II. "Applicant" means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of applicants stated hereinbefore, including any agency branch or office controlled by such person, participating in a Emapnelement process.

III. "Applicant from a country which shares a land border with India" for the purpose of this Order/ Rule means: -
a. An entity incorporated, established, or registered in such a country; or
b. A subsidiary of an entity incorporated, established, or registered in such a country; or
c. An entity substantially controlled through entities incorporated, established, or registered in such a country; or
d. An entity whose beneficial owner is situated in such a country; or
e. An Indian (or other) agent of such an entity; or
f. A natural person who is a citizen of such a country; or
g. A consortium or joint venture where any member of the consortium or joint venture falls under any of the above

IV. The beneficial owner for the purpose of (iii) above will be as under:
1. In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has a controlling ownership interest or who exercises control through other means. Explanation—
a. "Controlling ownership interest" means ownership of or entitlement to more than twenty-five percent of shares or capital or profits of the company;
b. "Control" shall include the right to appoint majority of the directors or to control the management or policy decisions including by virtue of their shareholding or management rights or shareholders agreements or voting agreements;
2. In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership;
3. In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals;
4. Where no natural person is identified under (1) or (2) or (3) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;
5. In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.

V. An Agent is a person employed to do any act for another, or to represent another in dealings with third person.

VI. The successful applicant shall not be allowed to sub-contract works to any contractor from a country which shares a land border with India unless such contractor is registered with the Competent Authority.

**The Competent Authority refers to Annex-1 of the DOE's order issued vide OM F. No 6/18/2019-PPD dated 23.07.2020, which is currently the Registration Committee constituted by Department for Promotion of Industry and Internal Trade (DPIIT).*

The Applicants need to submit the proof / certificate as mentioned in Section:4 "Application Forms" Form:2- Compliance Sheet for Empanelment Application

B. Qualification Requirements: For Empanelment, the Applicant must meet the below-mentioned qualification requirements/ criteria

1. Requirements to be fulfilled by all Smart Meter manufacturers proposed for the demonstration:
   a. All the smart meter makes shall have all the valid test certificate (issued within the last 5 years) and BIS certificate, compliant to IS 16444 Part-1 & Part -2 whichever is applicable.
   b. Meter manufacturer / supplier should have a valid ISO 9001:2015 certification
   c. Meter manufacturer / supplier should have in-house NABL or ISO/ IEC -17025 accredited Laboratory
2. Requirements to be fulfilled by the Head End System (HES) proposed for the demonstration:
   a. Proposed HES should have been integrated with at least 2 different MDMS solutions.
3. Requirements to be fulfilled by the Meter Data Management System (MDMS) proposed for the demonstration:
   a. Proposed MDMS should have been integrated with at least 2 different HES solutions.
   b. Proposed MDMS should have been integrated with at least 2 different Billing/ CIS solutions.
   c. MDMS solution provider should have a valid CMMI Level-3 certification

The Applicants need to arrange the proof / certificate for additional eligibility requirement from component manufacturer/ service providers as mentioned in Section:4 "Application Forms" Form:2- Compliance Sheet for Empanelment Application.

Section 3 - Instructions to Applicants and Application Data Sheet

Table of Contents

Section I - Instructions to Applicants

A. General

1. **Introduction and Definitions**

1.1 In connection with the Request for Empanelment (RFE) Notice (reference number indicated in **Application Data Sheet**), Empaneling Entity **(**named in the **Application Data Sheet)** issues this RFE Document for **"Empanelment of Firms for participation in RDSS AMISP tenders for providing Advance Metering Infrastructure (AMI) prepaid Solution after successful demonstration"** as specified in **Section 6 (AMI Prepaid Solution Demonstration Requirements).** Throughout this RFE Document:

(a) **"Affiliate(s)"** means an individual or an entity that directly or indirectly controls, is controlled by, or is under common control with the Applicant.

(b) **"Applicable Law"** means the laws and any other instruments having the force of law in India, as may be issued and in force from time to time.

(c) **"Empaneling Entity'** means the entity as briefly described in **Application Data Sheet,** that has issued the Request for Empanelment for **"Empanelment of Firms for participation in RDSS AMISP tenders for providing Advance Metering Infrastructure (AMI) prepaid Solution after successful demonstration"**as specified in **Section 6**, **AMI Prepaid Solution Demonstration Requirements**,

(d) **"Application"** means the application submitted by the applicant who participates in the Empanelment process in response to Request for Empanelment (RFE) Notice .

(e) **"Application Data Sheet (ADS)"** means an integral part of the **Instructions to Applicants (ITA) Section 3**, that includes the overview and methodology of the empanelment process.

(f) **"Applicant"** means a legally-established professional firm or an entity that may submit its Application to Empaneling Entity in response to the

RFE Notice issued by REC, to demonstrate its AMI prepaid solution.

(g) **"Empanelment"** means a certification given to the Applicant who meets the Eligibility & Qualification Requirements, after successful demonstration of AMI Prepaid Solution functionalities before a Testing Agency.

(h) **"Day"** means a calendar day, unless otherwise specified as **"Business Day".** A Business Day is any day that is an official working day of Empaneling Entity. It excludes Empaneling Entity's official public holidays.

(i) **"Services"** means the services to be provided/ delivered / supplied by the Applicant after Empanelment.

(j) **"Government"** means the government of India, State Government or Local Government as applicable.

(k) **"in writing"** means communicated in written form (e.g. by mail, e-mail,).

(l) **"ITA"** (this **Section 3** of the RFE Document) means the Instructions to Applicants that, along with other Sections, provides the Applicants with all information needed to prepare and submit their Applications.

(m) **"RFE"** means the Request for Empanelment issued by Empaneling Entity for the **"Empanelment of Firms for participation in RDSS AMISP tenders for providing Advanced Metering Infrastructure (AMI) prepaid Solution after successful demonstration"** amongst the applications sumitted by applicants(s) who apply against and in response to the Request for Empanelment Notice through hard copy submission.

(n) **"Advanced Metering Infrastructure Service Providers (AMISP)"** means Any Sole applicant/lead applicant of a consortium who would be interested in participating in the the demonstration test. The sole applicant/ lead applicant of consortium is responsible for reaching out to various equipment/software manufacturers and come out with a combination of equipment/software for

demonstrating the functionality as mentioned in **Section 6** of this document.

AMI prepaid solution: "AMI prepaid solution" means integrated smart meter and associated HES with MDM and Prototype Billing System for an end-to-end solution and, Smart meter and associated HES integrated with MDM system of utility.

(o) **Application Submission deadline:** means last date and time for submission of application by Applicants complete in all respect as per requirement of this RFE.

(p) **Consortium:** shall mean the Consortium of entities applying for demonstration test after executing Consortium Agreement.

(q) **Demonstration Test:** means demonstration of AMI prepaid solution in standard test setup or live demonstration of a working AMI prepaid solution in any Power distribution utility of India.

(r) **Certification:** means certification of applicant for successful demonstration of AMI prepaid solution functionalities.

(s) **Certification Charges:** shall mean the non-refundable fee submitted by the applicant to the testing agency for participating in the demonstration test.

(t) **Empaneling Committee:** Committee which certifies the AMI solution after successful AMI prepaid solution demonstration. The committee would also lay out the procedures for demonstration test.

(u) **Testing Agency:** The agency which will supervise the demonstration test.

1.3 **Singular and Plural**: Where the context so requires, words imparting the singular only also include the plural and vice versa.

2. Fraud and Corruption

2.1 REC requires compliance with the Anti-Corruption Guidelines/ Laws in force of the relevant Government/ its instrumentalities/ REC, including those set forth in **Section 5**.

3. Eligibility & Qualification and Additional Requirements and Method of Empanelment

(a) Eligibility & Qualification Requirements

3.1 The Eligibility & Qualification requirements for the Applications who choose to submit Applications against the RFE, and associated Services, are given in **Section 2.** Applications, if any, from Applicants and/or offering Services not complying with the same shall be outrightly rejected and shall not be considered for evaluation

(b) Additional Requirements

3.2 An Applicant shall not be under suspension by Empaneling Entity or by any other PSUs, Central Government and or State Government.

3.3 An Applicant shall provide such documentary evidence in support of eligibility and other additional requirements or on any other matter or issue related to or in connection with its Application to the satisfaction of Empaneling Entity, , failing which its Application is liable to be rejected.

(c) Method of Empanelment

3.4 In addition to the requirements mentioned above, Methodology as specified in the **Annexure II** of **Application Data Sheet**, **Methodology of Demonstration,** shall be applicable for Certification /Empanelement from those Applicants who submit their Applications in response to the Request for Empanelment. Empaneling Entity shall follow the Empanelment process as specified in the **ADS**.

4. Conflict of Interest

4.1 A Applicant shall not have a conflict of interest. Any Applicant found to have a conflict of interest shall be disqualified. A Applicant may be considered to have a conflict of interest for the purpose of this Empanelment process, if the Applicant:

(a) directly or indirectly controls, is controlled by or is under common control with another Applicant; or

(b) receives or has received any direct or indirect subsidy from another Applicant; or

(c) has the same legal representative as another Applicant; or

(d) has a relationship with another Applicant, directly or through common third parties, that puts it in a position to influence the Application of another

Applicant, or influence the decisions of Empaneling Entity regarding this Empanelment process; or

(e) any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the works that are the subject of the Application; or (incomplete…..)

B. Contents of RFE Document

5 Sections of RFE Document

5.1 The RFE document (also referred to as the RFE document) consist of Parts 1, 2, and 3, which include all the sections indicated below, and should be read in conjunction with any Addenda/ Corrigenda/ Amendments issued in accordance with **ITA 7**.

PART 1 Empanelment Procedures and Requirements

- Section 1 - Request for Empanelment Notice
- Section 2 - Eligibility & Qualification
- Section 3 - Instructions to Applicants and Application Data Sheet
- Section 4 - Application forms
- Section 5- Fraud and Corruption

PART 2 AMI Prepaid Solution Demonstration Requirements

- Section 6 - AMI Prepaid Solution Demonstration Requirement

PART 3 Conditions of Empanelment

- Section 7 – General Conditions of Empanelment
- Section 8 – Empanelment Forms

5.2 The Applicant is expected to examine all instructions, forms, terms & conditions, and specifications in the RFE document and to furnish with its Application, all information or documentation as is required by the RFE document.

6 Empanelment process Management and

Clarification of the RFE Document

a) Application

6.1 Hard Copy submission shall be used to manage the Empanelment process. Only the Applications which are submitted and received in hard copy in conformity with the procedures and requirements specified in this document shall be considered. Apart from hard copy, a soft copy of the application along with all requisite attachments shall also be shared via email.

b) Clarifications to RFE Documents

6.2 An Applicant requiring any clarification of the RFE document may notify Empaneling Entity either through written mail or e-mail;. Clarifications requested through any other mode shall not be considered by Empaneling Entity. The Empaneling Entity will respond to any request for clarification, provided that such request is received prior to the deadline for submission of Applications**.** Description of clarification sought, and the response of Empaneling Entity shall be uploaded in REC website for information of all Applicants without identifying the source of request for clarification. Should the clarification result in changes to the essential elements of the RFE document, The Empaneling Entity shall amend the RFE document following the procedure under **ITA 7** and **ITA 20.2**.

7 Addenda/ Corrigendum/Amendment of RFE Document

7.1 At any time prior to the deadline for submission of Applications, Empaneling Entity may amend the RFE document by issuing addenda/ corrigendum/ amendment. The addendum/ corrigendum/ amendment will appear on the e-application system and through email notification automatically sent to those applicants who have started working on the application.

7.2 Any addendum/ corrigendum/ amendment issued shall be part of the RFE document and shall be deemed to have been communicated to all the applicants.

7.3 To give prospective Applicants reasonable time in which to take an addendum/ corrigendum/ amendment into account in preparing their Applications, Empaneling Entity may, at its discretion, extend the

deadline for the submission of Applications, pursuant to **ITA 17.2**.

C. Preparation of Applications

8 Cost of Application

8.1 The Applicant shall bear all costs associated with the preparation and submission of its Application, and Empaneling Entity shall not be responsible or liable for those costs, regardless of the conduct or outcome of the Empanelment process.

9 Language of Application

9.1 The Application, as well as all correspondence and documents relating to the Application exchanged by the Applicant and Empaneling Entity, shall be written in English**.** Supporting documents and printed literature that are part of the Application may be in another language provided they are accompanied by an accurate translation of the relevant passages into English**,** in which case, for purposes of interpretation of the Application, such translation shall govern.

10 Documents comprising Application

10.1 The **Application** shall contain the following:

10.1.1 **Letter of Application -:** prepared in accordance with **ITA 11**;

10.1.2 **Authorization**: Document authorizing the signatory of the Application to commit the Applicant, in accordance with **ITA 16.3**, prepared using the applicant's own format;

10.1.3 **Applicant's Eligibility & Qualifications**: Documentary evidence in accordance with **ITA 13.1 and ITA 13.2** establishing the Applicant's compliance to the Elligibility & Qualification Requirements specified in **Section:2**, along with duly filled in form for compliance of Elligibility & Qualification Requirements, furnished in **Section 4 -** Application forms;**Conformity**: Undertaking on Compliance of terms & conditions of the RFE documents including other related requirements, prepared using the relevant form furnished in **Section 4 -** Application forms

11 Process of Application Submission

11.1 The Letter of Application shall be prepared using the relevant forms furnished in **Section 4 - Application forms**. The forms must be completed without any alterations to the text, except as provided under **ITA 13.3** for which the applicant can use its own format. All blank spaces shall be filled in with the information requested.

11.2 Entire Application as per **ITA 10** including the Letters of Application shall be submitted in hard copy.

11.3 **Submission of Original Documents:** The Applicants are also required to submit the hard copy of the documents at REC's address, so as to reach the office before the last date of submission for 1st phase of the Application, either by registered/speed post/courier or by hand, failing which the Applications are liable to be declared non-responsive. Applicants shall also submit the one scanned copy of their application alongwith all the supporting documents through email.

11.4 Incase of any variation in the documents received in hardcopy and through email then the document which is submitted in hardcopy shall prevail.

12 Documents Establishing the Conformity of the Goods and Related Services

12.1 To establish the conformity of the Services to the RFE document, the Applicant shall furnish as part of its Application an Undertaking on Compliance of terms & conditions of the RFE documents including Functionalities to be demonstrated, conformance of Services to the technical specifications and standards specified in **Section 6.**

13 Documents Establishing the Eligibility and Qualifications of the Applicant and Eligibility of Services

13.1 To establish Applicant's eligibility and eligibility of Services in accordance with **ITA 3.1** and **Section 2**, Eligibility & Qualification Requirements, Applicants shall complete the Letter of Application included in **Section 4** - Application forms.

13.2 The documentary evidence of the Applicant's and/or associated service providers eligibility and qualifications, to be furnished as per **Section 4** - Application forms, for the Applicant to be considered for Empanelment process, shall establish to Empaneling Entity's satisfaction that the Applicant

and/or associated service providers meets each of the Eligibility & Qualification Requirements specified in **ITA 3.2**

14 Period of Validity of Application/RFEs

14.1 Application shall remain valid until the date **specified in this document** or any extended date if amended by Empaneling Entity in accordance with **ITA 7**. A RFE/Application that is not valid until the date specified in this document, or any extended date if amended by Empaneling Entity in accordance with **ITA 7**, shall be rejected by Empaneling Entity as nonresponsive.

14.2 In exceptional circumstances, prior to the expiry of the Application/RFE validity, Empaneling Entity may request Applicants to extend the period of validity of their Application/RFEs. The request and the responses shall be made in writing.

15 Format and Signing of Application

15.1 The Applicant shall prepare the Application, in accordance with **ITA 10** and **ITA 15.**

15.2 Applicants shall mark as "CONFIDENTIAL" information in their Applications which is confidential to their business. This may include proprietary information, trade secrets, or commercial or financially sensitive information.

15.3 The Application shall be signed by a person or persons duly authorized to sign on behalf of the Applicant. This authorization shall be in the form of the document as specified in this document and shall be submitted/ uploaded along with the Application as per **ITA 11**.

16 Withdrawal, Substitution, and Modification of Applications

16.1 Applicants may modify their Applications before the deadline for submission of Applications. For application modification and consequential re-submission, the applicant is not required to withdraw his application submitted earlier. The last modified application submitted in hard copy by the applicant within the application submission time shall be considered as the final Application. For this purpose, modification/withdrawal by other means will not be accepted. An applicant may withdraw his application

by giving justification for withdrawal of application, before the deadline for submission of applications, however, if the application is withdrawn, re-submission of the application is allowed only upto the deadline for submission of applications as specified in **ITA 17**.

16.2 Applications requested to be withdrawn in accordance with **ITA 19.1** shall not be opened.

D. Evaluation of Applications - General Provisions

17 Confidentiality

17.1 Information relating to the evaluation of Applications and shortlisting of applicants under the Empanelment process, shall not be disclosed to Applicants, or any other persons not officially concerned with the Empanelment process.

17.2 Any effort by a Applicant to influence Empaneling Entity in the evaluation decisions may result in the rejection of its Application.

17.3 Notwithstanding **ITA 21.1**, from the time of Application opening to the time of notification to shortlisted applicants to participate in Empanelment process, if any Applicant wishes to contact Empaneling Entity on any matter related to the Empanelment process, it should do so in writing.

18 Clarification of Applications

18.1 To assist in the examination, evaluation, comparison of the Applications, and qualification of the Applicants, Empaneling Entity may, at its discretion, ask any Applicant for a clarification of its Application and/or seek information related to historical data/ documents pertaining to credentials of the Applicants and the Applications, that Empaneling Entity may require. Any clarification submitted by a Applicant in respect to its Application and that is not in response to a request by Empaneling Entity shall not be considered. Empaneling Entity's request for clarification and the response shall be in writing.

18.2 If a Applicant does not provide clarifications of its Application or data/ documents sought, by the date and time set in Empaneling Entity's request for clarification/ data/ document, its Application may be rejected.

19 Deviations, Reservations, and Omissions

19.1 During the evaluation of Applications, the following definitions apply:

(a) "Deviation" is a departure from the requirements specified in the RFE document;

(b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the RFE document; and

(c) "Omission" is the failure to submit part or all of the information or documentation required in the RFE document.

20 Nonconformities, Errors and Omissions

20.1 Provided that a Application is substantially responsive, Empaneling Entity may waive any nonconformities in the Application, which do not constitute a material deviation reservation or omission.

20.2 Provided that a application is substantially responsive, Empaneling Entity may request that the Applicant submit the necessary information or documentation, within a reasonable period of time, to rectify non-material non-conformities or omissions in the Application related to documentation requirements. Failure of the Applicant to comply with the request may result in the rejection of its Application.

E. Evaluation of Applications

21 Evaluation of application

21.1 REC shall, interalia, determine to its satisfaction:

(a) whether the Applicants comply with the Eligibility & Qualification Requirements, have offered eligible Services in their Applications, as specified in **ITA 3.1** and **Section 2**;

(b) The determination shall not take into consideration the qualifications of other firms such as the Applicant's subsidiaries, parent entities, affiliates, subcontractors (other than specialized subcontractors if permitted in the RFE document), or any other firm different from the Applicant that submitted the Application except if provided in the specified Qualification Requirement itself.

(c) whether the Applicants comply with other additional requirements specified in **ITA 3.2 to 3.5**;

(d) whether the Applications submitted by the Applicants complying with the requirements specified in (a), (b) and (c) above have been determined to be substantially responsive to the RFE document including the requirements specified in **Section 6**, as per **ITA 25**.

25.2 At this stage, an Application shall be rejected if the determination on any one of the aspects listed in (a), (b), (c) or (d) above is not in the affirmative. All other applications meeting the said requirements and the requirements as mentioned in this document shall be considered for further Empanelment process.

Evaluation Process, Criteria and sub-criteria for eavlaution

The details of the evaluation process and the criteria and sub-criteria for evaluation of the Applications shall be as specified in ITA 25.1.

F. Empaneling Entity's Rights to accept or reject the application/applications

26 Empaneling Entity's Right to Accept Any Application,

26.1 Empaneling Entity's reserves the right to accept or reject any Application, and to annul the Empanelment process and reject all Applications at any time prior to notification of shortlisting for

	and to Reject Any or All Applications	Empanelment process, without thereby incurring any liability to Applicants. Incase of annulment, The Empaneling Entity shall return the Empanelment fee submitted by the Applicants.

G. Notification of Shortlisting & Empanelment

27	**Shortlisting Criteria**	27.1 Empaneling Entity shall shortlist the applicant to participate in Empanelment process based on meeting the Eligibility and Qualification requirement set forth in **Section – 2 and the requirements specified in Section -6**
28	**Notification for demonstration**	28.1 Empaneling Entity shall notify the shortlisted applicants, in writing, that its Application has been accepted and the applicant is hereby invited to show the demonstration of its AMI solution as notified by Empaneling Entity.
29	**Issuance of Empanelment Certificate**	29.1 Empaneling Entity on the recommendations of Empaneling Commitee shall issue a certificate to the Applicants who successfully demonstrates its AMI prepaid solution as per the procedures mentioned in **Section: 3 ADS** and and **Section: 6 – AMI Prepaid Metering Solution Functionalities Demonstration Requirements** in writing that it has been empanelled to participate in AMISP tenders under the RDSS.

Application Data Sheet (ADS)

A. Background

Rollout of 25 crore Pre-paid smart metering is planned across the country under the Revamped Distribution Sector Scheme by March 2025. Since the task is onerous, it is imperative that all efforts are made to ensure a smooth rollout of Smart Meters. In a series of initiatives to ease out the rollout, AMI Standard RFE Document has been finalized and program for skilling the Discom personnel have already been rolled out. Based on the information available and feedback gathered from different stakeholders, Discoms are facing various problems in the existing smart metering projects which are as below:

1. Some Meters installed don't communicate.
2. Excessive time is taken in integration of the AMI with DISCOM's legacy billing software.
3. Inability of HES to interoperability with multiple meter makes.
4. Delay in operationalizing of prepaid functionality.
5. Connection and disconnections done manually, rather than automatic.

To address the above challenges in implementation of Smart Metering projects, it was contemplated that a Pre-Qualification demonstration test of Applicants prior to participating in AMISP projects is required. A practical test bed methodology has been defined for AMI solution providers so that the AMI solution providers could demonstrate their proposed solution in a controlled test environment (Pre-Qualification demonstration test) before implementing their solution on actual site. This will enable the Discoms to invite only those players for implementing AMI projects who had successfully demonstrated their protype AMI prepaid solution in front of a testing agency.

It is therefore envisaged that AMI service providers capable of implementing the End-to-End AMI prepaid solution can demonstrate integration of Smart Meter and associated HES to MDM and Utility billing system. The potential AMI prepaid solution service providers (Applicant) whose Applications are substantially responsive to the RFE document and who fullfill the eligibility and qualification requirements and successfully demonstrate end-to-end AMI prepaid solution as per Section 6 (AMI Prepaid Solution Demonstration Requirements) would be awarded:

1. Certificate for successfully demonstrating an end – to – end AMI prepaid solution in standard test set up of CPRI

2. Certificate for successfully demonstrating a working/ live end – to end AMI prepaid solution in any Power distribution utility of India

B. Structure of Demonstration Test

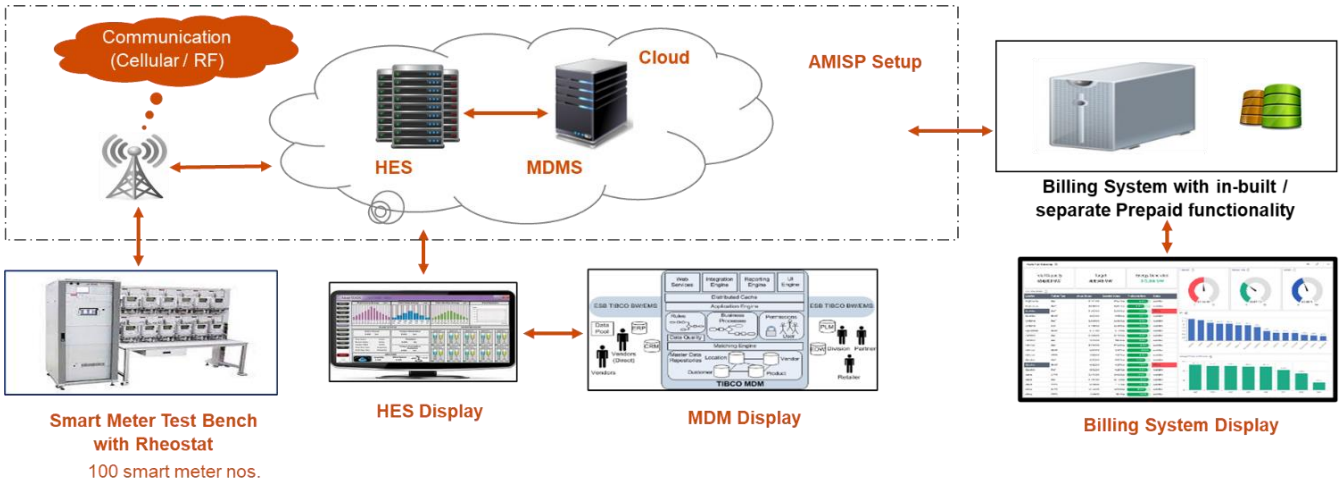


Figure: Schematic Diagram for Standard AMI prepaid solution demonstration

1. **Smart Meters:** The Applicant to demonstrate on smart meters from the following types of Smart meters with Plug and Play type communication module (NIC Card) fulfilling the technical specification requirement mentioned in Section-6.

S. No.	Type of Meter
1.	Whole Current A.C. Single Phase Smart Energy Meter
2.	Whole Current A.C. Three Phase Smart Energy Meter (Optional)
3.	Data Concentrator Unit (DCU) with SIM card to send Meter Data to HES as per the defined intervals (Applicable for RF type of Communication only)

For Applicants bringing in their smart meters for the demonstration test, the smart meters would be installed on the smart meter test bench. Smart meter test bench would have all necessary wiring/connection and rheostat (variable load from 1 kW to 25 kW) to mimic the consumer load.

2. **Communication Technology:** Any one of the following communication technologies can be used for the demonstration test:
   i. Cellular technology
   ii. Radio Frequency (RF)

   The AMI service provider shall bring the smart meter with pre-installed SIM or RF system.

3. **HES and its Display:** AMI service Provider shall bring separate laptop for HES that would be connected with test lab HES display to show the HES functions. HES shall export all meter data to MDM and pass control commands from MDM. HES to comply all technical specification as per Section-6.
4. **MDM and its Display:** AMI service Provider shall bring separate laptop for MDM that would be connected with test lab MDM display to show the MDM functions. MDM to comply all technical specification as per Section-6.

5. **Prototype Billing System & its Display**: A prototype billing system for testing basic features of AMI prepaid solution illustrated in Section-6 (Functionalities to be tested) shall be brought by the applicant. The applicant is required to generate a bill in a standardize XML format that would be provided to interested AMI service providers. However, if a applicant wants to show integration with any Power Utility's billing system, it would do so by giving its information during the Application submission stage.

The detailed empanelment requirements are given below.

C. Empaneling Committee

i) The Empaneling Committee has been constituted to provide guidance, oversee the entire demonstration and testing process, and provide recommendations on the Applicant's AMI prepaid solution.

ii) This shall comprise of members from:

1. Rural Electrification Corporation Limited (REC)
2. Power Finance Corporation (PFC)
3. Central Electricity Authority (CEA)
4. National Smart Grid Mission (NSGM)
5. Central Power Research Institute (CPRI)

iii) Key roles and responsibilities of Empaneling Committee would include:

a) The Empaneling committee would recommend Empaneling Entity (REC) to issue a certificate for the AMI prepaid solution demonstrated by Applicant based on the report submitted by the Testing Agency;

b) Provide guidance in laying out procedures for conducting the demonstration test

c) Responsible for periodic monitoring and making any other recommendations thereof.

In addition to the above, the Empaneling Committee may also nominate and create working sub-groups, as needed, to provide support on day-to-day activities for carrying out the Empanelment process.

D. Testing Agency

Central Power Research Institute (CPRI) would be in-charge of testing and for conducting the demonstration test of AMI prepaid solution. It would provide space for carrying out the demonstration in its labs – two location options would be available either at Noida or in Bangalore, as per the Applicant's preference. CPRI would submit its recommendation report to the Empaneling Commitee for issuing certificate of successful demonstration of AMI prepaid solution.

E. Sailient Features of the Empanelment Process

1. The Applicant which would participate in the demonstration test shall come up with all the equipment/ software (Smart Meter, HES, MDM, Billing System, Communication infrastructure etc.) required for demonstrating its AMI prepaid solution. The Testing Agency / Pre-Qualification Committee has no role in inviting any Meter manufacturer, HES and MDM service provider separately, for the demonstration test. It is the complete responsibility of the Applicant to reach out to respective Smart Meters manufacturers / HES provider/ MDM provider/ System Integrator, and any other software /applications service providers whose services are required for successfully carrying out the demonstration test. Accordingly, the Applicant may apply on its own or bring along other partners, as it deems fit.

2. The Empanelment certification would be issued for successfully demonstrating an end–to–end prepaid AMI solution viz. integration of Smart Meter with HES and MDM with Billing System (End-to-End AMI Solution).

3. Empanelment Certificate would be issued to the Applicant and will capture the details of the various components of the solution demonstrated successfully. *(However, the Applicant need not undergo recertification in case of change in any component/ solution provider of its AMI prepaid solution, provided the new component/ solution provider has also been empanelled).*

4. While submitting the Empanelment application, the details (name of the OEM/ solution provider, product name etc.) of the following components/ solution providers which are part of the AMI prepaid solution need to be captured:
    - Smart Meter (Two different manufacturers)
    - Head End System (HES)
    - Meter Data Management System (MDMS)
    - System Integrator
    - RF Communication Provider (if applicable)

5. In order to be considered eligible for participating in the AMI tenders issued subsequently under RDSS, each component/ solution provider (e.g. Smart Meter OEM, HES, MDM solution providers etc.) should have been successfully empanelled with at least one Applicant.
6. Only those component/ solution providers would be allowed to take part in AMISP tenders under the RDSS as a consortium member which are empanelled with atleast one Applicant (e.g. let’s assume company Z is the Applicant and it uses the smart meter of Company X for the demonstration process. In case Company Z is successfully empaneled, then Company X would also be empaneled under the respective component category. Company X would also be eligible to participate in any AMISP tender as a Smart Meter manufacturer, with any other empaneled AMISP bidder.).

7. Firms would be empanelled for the component/ solution which they demonstrate successfully. (For e.g if Company P manufactures Smart Meters but has successfully empaneled its AMI solution as an Applicant with Smart Meters from Company Q, then Company P would be empaneled for the entire solution only. This would not allow it to provide its smart meter in any AMISP tender, unless it gets its Smart Meters also empaneled with at least one Applicant).
8. For the purpose of demonstration, the Applicant would have two options:
    - **Option-I:** Demonstrate its working AMI prepaid solution implemented in any power distribution utility in India
    - **Option-II:** Come with all the required equipment /software for demonstrating its AMI prepaid solution in the Test Lab, at a date and place notified by the Empaneling Commitee / Empaneling Entity
9. In case of Live projects (applicant wants to demonstrate its working AMI prepaid solution in any Power distribution utility in India): Applicant should inform Empaneling Entity in writing the place where applicant wants to demonstrate its solution. After receipt of written information, Empaneling Entity would suggest a suitable date to applicant for demonstration of its AMI prepaid solution. The working sub-committee would either in person or nominate their representative to witness the demonstration of solution.
10. For a Live AMI solution demonstration (already implemented in a power utility), Empanelment certificate would only be issued after demonstration of all the functionalities successfully as specified in **Section-6** of RFE **(Functionalities to be demonstrated)**.
11. For demonstration of successful operation of prepaid solution and integration with Billing System/ CIS, the Applicant can utilize any of the following two options:
    a. Use any already integrated utility billing/ CIS system with in-built / separate prepaid functionality
    b. Use any prototype billing system/ CIS system with in-built / separate prepaid functionality; the requirements for such a prototype would be as per the functionalities given in the RFE
12. For demonstrating interoperability between smart meters and HES, the Applicant should successfully demonstrate integration and associated functionalities as per the RFE, with smart meters of at least 2 (two) different makes.
13. Demonstration test should be conducted on at least 100 smart meters.
14. In case of Live projects (projects already implemented in utilities) where only one make of smart meter is integrated in the field, the Applicant shall also ensure that any one other make of smart meters is also installed and integrated for demonstration and meeting the Empanelment requirements.
15. For successful demonstration and for availing the Empanelment certificate, the Applicant would have to demonstrate the performance of its solution as per the functionalities and service levels

defined in the **Section-6** of RFE **(AMI Prepaid Solution Demonstration Requirements)**, for a period of a minimum of 5 (five) days or as notified by the RFE Committee/ REC.

16. **Validity of the Empanelment certification:** The Empanelment certificate would be valid for an initial period of 24 months from the date of issuance of the certificate, subject to the satisfactory performance of the Applicant. Post the expiry of the certificate, the Empaneling Commitee/ Empaneling Entity's reserves the right to extend/ renew the certification for a period of another 24 months or invite the Applicant for a re-demonstration.
17. **De-empanelment:** In case the performance of the Applicant is found to be unsatisfactory during any AMI contract execution as per the conditions below, the Applicant would be de-empanelled:
    a. In case the Utility terminates the contract with the Applicant due to its Event of Default;
    b. In case a 'SLA Default Notice'* as defined in the AMISP SBD, is issued to the Applicant.
18. Empanelment is a pre-requisite to participate in any AMISP tenders issued under the RDSS.
19. Obtaining the empanelment certificate of successful demonstration is a Pre-Qualification (PQ) requirement but not a sufficient condition to be qualified for AMI tenders under RDSS. The certified Applicant shall also have to separately meet the terms and conditions of respective AMI tenders.

*SLA Default Notice means notice to be issued by the Utility in the event AMISP fails meet any of the criteria specified in the SLA for cumulatively 3 (three) months in past 6 (six) months so as to entitling levy of maximum penalty for such criteria

F. Empanelment Requirements

Applicants are required to fulfil the following requirements for successful empanelment:

1. The Applicant must provide documentary proof of meeting the eligibility requirements of this RFE. The documents to be submitted by the Applicant are given below:

No.	Requirement	Documents to be submitted
Requirements to be met by the Applicant		
a)	Completed Empanelment Application form in the format provided	Form-1 Letter of Application in Section-4
b)	Power of attorney of Application signatory in the format provided	Attachment-1 to Letter of Application in Section-4
c)	Undertaking on compliance of RFE Terms and Conditions and other requirements in the format provided	Attachment-2 to Letter of Application in Section-4
d)	Certificate of Compliance with GFR guidelines specified in Section-2 of the RFE	Certificate on the Applicant's letterhead
e)	Proof of registered office (under the Companies Act 1956/ 2013 with Registrar of Companies) in India at the time of submission of the application. OR Proof of having at least one branch office in India and registration/ details of its registered office in its country of origin for a foreign entity.	Copy of Company's registration under the Companies Act 1956/ 2013 with Registrar of Companies (Applicant registered in India) OR Copy of Company's registration in its country of origin (Applicant registered outside of India) and details of its operational branch office in India at the time of submission, on the Company's letterhead
f)	Applicant should not have been banned/ debarred/ blacklisted by REC Ltd. or any of its subsidiary/ PFC Ltd. or any of its subsidiary/ Government of India/ Ministry of Power/ any Regulatory Authority/any State Government/ Central or State PSU, as on the date of submission of the application	Undertaking on the Applicant's letterhead
Additional Requirements to be met by Component/ Solution Providers		
IA. Smart Meter Make/ Manufacturer - 1		
g)	Valid Test Certificates and Type test Certificate, BIS Certificate of the Smart Meter	Copy of valid Test Certificates
h)	Certificate by the Smart Meter Manufacturer for compliance of IS-16444 Part -I	Certificate issued on the Smart Meter Manufacturer's letterhead
i)	Certificate for complying to the Technical specification as mentioned in Section-6 Clause D Technical Specifications	Certificate issued on the Smart Meter Manufacturer's letterhead
j)	Valid ISO 9001-2015 certification of the Smart Meter Manufacturer	Copy of valid Certificate

No.	Requirement	Documents to be submitted
k)	Availability of in-house NABL or ISO/ IEC -17025 accredited Laboratory with the Smart Meter Manufacturer	Certificate issued on the Smart Meter Manufacturer's letterhead
IB. Smart Meter Make/ Manufacturer - 2		
l)	Valid Test Certificates and Type test Certificate, BIS Certificate of the Smart Meter	Copy of valid Test Certificates
m)	Certificate by the Smart Meter Manufacturer for compliance of IS-16444 Part -I	Certificate issued on the Smart Meter Manufacturer's letterhead
n)	Certificate for complying to the Technical specification as mentioned in Section-6 Clause D Technical Specifications	Certificate issued on the Smart Meter Manufacturer's letterhead
o)	Valid ISO 9001-2015 certification of the Smart Meter Manufacturer	Copy of valid Certificate
p)	Availability of in-house NABL or ISO/ IEC -17025 accredited Laboratory with the Smart Meter Manufacturer	Certificate issued on the Smart Meter Manufacturer's letterhead
II. Head End System (HES) solution		
q)	The proposed HES solution should have been successfully integrated with at least 2 (two) nos. of Meter Data Management Systems (MDMS) of different makes / solution providers	Certificate / report issued by Client / MDMS OEM / solution provider
r)	Certificate for complying to the Technical specification as mentioned in Section-6 Clause D Technical Specifications	Certificate issued on the HES solution provider's letterhead
III. Meter Data Management System (MDMS) solution		
s)	The proposed MDM solution should have been successfully integrated with at least 2 (two) nos. of different HES solutions	Client certificate and other documentation for implementation performance/ operation
t)	The proposed MDM solution should have been successfully integrated with at least 2 (two) nos. of different utility billing system (CIS)	Client certificate and other documentation for implementation performance/ operation
u)	CMMi (Capability Maturity Model Integration) Level 3 as the requirement may be Certification (Software Development & Customization) certification	Copy of valid certificate
v)	Certificate for complying to the Technical specification as mentioned in Section-6 Clause D Technical Specifications	Certificate issued on the MDM solution provider's letterhead

2. Post the submission of the Application and required documentary proof, the Applicant would be invited for demonstration of its AMI solution, if found eligible to apply for the empanelment process. For the purpose of demonstration, the Applicant can choose from two options:

    a. **Option-I:** Demonstrate its working/ Live AMI prepaid solution implemented in any power distribution utility in India.

i. In such a case, the Applicant should include in its Application form the details of the project and the location where the Applicant wishes to demonstrate its solution. The Empaneling Entity would subsequently indicate a suitable date to the Applicant for demonstration of the particular solution. All the arrangements including setup and coordination with Discom shall have to be done by the Applicant.

b. **Option-II:** Demonstrate its AMI prepaid solution in the Test Lab at a date and place notified by the Empaneling Commitee / Empaneling Entity.

i. For this purpose, the Applicant must come with all the equipment /software required for carrying out the demonstration successfully (Smart Meter, HES, MDM, Billing System, Communication infrastructure etc.).

ii. For demonstration of successful operation of prepaid solution and integration with Billing System/ CIS, the Applicant can either use any already integrated utility billing/ CIS system with in-built / separate prepaid functionality or use any prototype billing system/ CIS system with in-built/ separate prepaid functionality; the requirements for such a prototype would be as per the functionalities given in Section-6, Sr. no. C3.

3. For demonstrating interoperability between smart meters and HES, the Applicant should successfully demonstrate integration and associated functionalities as per the RFE, with smart meters of at least 2 (two) different makes. In case of Live projects (projects already implemented in utilities) where only one make of smart meter is integrated in the field, the Applicant shall also ensure that any one other make of smart meters is also installed and integrated for demonstration and meeting the Empanelment requirements.

4. The demonstration test should be conducted on a total of at least 100 smart meters.

5. For successful demonstration and for availing the Empanelment certificate, the Applicant shall have to demonstrate the performance of its solution as per the functionalities and service levels defined in Section-6 (AMI Prepaid Solution Demonstration Requirements), for a period of a minimum of 5 (five) days or as notified by the Empaneling Commitee/ Empaneling Entity.

6. After the successful demonstration of the AMI prepaid solution by an Applicant and subsequent evaluation and subsequent recommendation by the Testing Agency, the Empaneling Entity would issue an Empanelment certificate for participating in subsequent AMISP RfPs issued under the RDSS. This would be issued in the following manner:

a. An Empanelment certificate would be issued to the Applicant for participating in AMISP RfPs under RDSS as a lead bidder.

b. The certificate will also capture the details of the various components of the solution demonstrated successfully. Accordingly, the various component/ solution providers would also be empaneled under the respective category viz. Smart Meter, HES, MDMS etc.

7. In order to be considered eligible for participating in the AMI tenders issued subsequently under RDSS, each component/ solution provider (e.g. Smart Meter OEM, HES, MDM solution providers etc.) should also have been successfully empaneled with at least one Applicant.

8. Only those component/ solution providers would be allowed to take part in AMISP tenders under the RDSS as a consortium member which are empaneled with at least one Applicant (For e.g., let's assume company Z is the Applicant and it uses the smart meter of Company X for the demonstration process. In case Company Z is successfully empaneled, then Company X would also be empaneled under the respective component category. Company X would be eligible to participate in any AMISP tender as a Smart Meter manufacturer, with any empaneled AMISP bidder.).

9. Firms would be empaneled for the component/ solution which they demonstrate successfully. (For e.g. if Company P manufactures Smart Meters but has successfully empaneled its AMI solution as an Applicant with Smart Meters from Company Q, then Company P would only be empaneled for the entire solution. However, this would not allow it to provide its smart meter in any AMISP tender, unless it gets its Smart Meters also empaneled with at least one Applicant).

Section 4 - Application forms

Table of Application forms

Form 1- Letter of Application

The Application must prepare the Letter of Application on stationery with its letterhead clearly showing the Applicant complete name and business address.

Note: All italicized text in black font is to help Applicants in preparing this form and Applicants shall delete it from the final document.

Date of this Application submission: [*insert date (as day, month and year) of application submission*]
Title of RFE: **"Empanelment of Firms for participation in RDSS AMISP tenders for providing Advance Metering Infrastructure (AMI) prepaid Solution after successful demonstration"**

To: ***REC Limited***

We, the undersigned applicant, hereby submit our application for
"Empanelment of Firms for participation in RDSS AMISP tenders for providing Advance Metering Infrastructure (AMI) prepaid Solution after successful demonstration"
as per details given in below table:

S.No.	Information Required	Details
1.	Name of the Organisation	
2.	Year of Establishment (Or year of establishment of branch office incase of foreign entity)	
3.	Office/ Branch office Address, with Names and E-mail Ids & Contact Nos. of at least 2 Contact Person(s)	
4.	PAN Number (attach attested# copy)	
5.	**Details of the component/ solution providers**	
5.1	Applicant	
5.2	Smart Meter OEM -1 alongwith details of meters	
5.3	Smart Meter OEM -2 alongwith details of meters	
5.4	Head End System Service Provider alongwith details of HES	
5.5	Meter Data Management System Service Provider alongwith details of MDM	
5.6	System Integrator	
5.7	RF communication solution provider (if any)	
6.	Any other Documentary Evidence in support of the application may be enclosed with the application. If such evidence is not enclosed, and is deemed necessary REC reserves the right to ask for such evidence at any stage	

In submitting our Application we make the following declarations:

(a) **No reservations:** We have examined and have no reservations to the RFE Document **(ITA5)**, including addenda issued in accordance with Instructions to Applicants **(ITA 7);**

(b) **Eligibility**: We meet the eligibility requirements specified in **Section 2** and have no conflict of interest in accordance with **ITA 4**;

(c) **Application-Securing Declaration**: We have not been suspended nor declared ineligible by REC based on execution of a Bid Securing Declaration by REC in accordance with **ITA 3.3**;

(d) **Conformity:** We offer to demonstrate the Services as per the scope mentioned in **Section 6** AMI Prepaid Solution Demonstration Requirements in conformity with the RFE Document and in accordance with the SLAs specified in the **ITA 1.3/ Section 6**;

(e) **Suspension and Debarment**: We, along with any of our subcontractors, suppliers, consultants, manufacturers, or service providers for any part of the contract, are not subject to, and not controlled by any entity or individual that is subject to, a temporary suspension or a debarment/ blacklist as specified in **Section 2** and, further, we are not ineligible under the laws in India or official regulations as specified therein;

(f) **Binding Contract**: We understand that this Application, together with your written acceptance thereof included in your Letter of Empanelment/ Award of certification, shall not constitute formation of a binding contract between us for any AMI solution works,

(g) **Not Bound to Accept**: We understand that you are not bound to accept the Application that you may receive;

(h) **Fraud and Corruption**: We hereby certify that we have taken steps to ensure that no person acting for us, or on our behalf, engages in any type of Fraud and Corruption; and

(i) If awarded the certificate/Issued Letter for Empanelment, the person named below shall act as Applicant's Representative:

_____

Enclosures:

1. **Attachment 1. Power of Attorney of Applicant Signatory**
2. **Attachment 2. Undertaking on Compliance of terms & conditions of RFE documents including eligibility & qualification criteria, methodology of Empanelment and Functionalities to be demonstrated.**

We remain,

Yours sincerely,

_____

Signature (of Applicants's authorized signatory) {In full and initials}:

*(enclose Power of Attorney of the Applicant Signatory as **Attachment 2**)*

Date signed [*insert date of signing*] **day of** [*insert month*], [*insert year*]

Name of the Applicant: [*insert complete name of Applicant*]

Name of the person duly authorized to sign the Application on behalf of the Applicant: [*insert complete name of person duly authorized to sign the Application*]

Title of the person signing the Application: [*insert complete title of the person signing the Application*]

Attachment 1 to Letter of Application

POWER OF ATTORNEY OF PROPSAL/APPLICATION SIGNATORY

(No specified Format. Applicant/ Service Provider may use their own format)

Attachment 2 to Letter of Application

UNDERTAKING ON COMPLIANCE OF RFE TERMS & CONDITIONS AND OTHER REQUIREMENTS

(To be submitted on ₹100 Stamp paper issued in Delhi-NCR or the State where Consultant's office is located, duly signed by the authorized signatory)

I/We hereby undertake that I/We have examined/ perused, studied and understood the Request For Empanelment (RFE) document in respect of RFE no. _____dated _____and any corrigendum/ addendum/ clarification etc. thereto completely and have submitted my/our Tender/Proposal/ Application in pursuance to the said RFE document.

I/We hereby undertake that I/We understand that the Scope of Work and other related requirement under and in pursuance of this RFE are indicative only and not exhaustive in any manner. I/We understand that the Functionalities to be demonstrated may undergo changes as per emerging requirements of REC as specified in the RFE document.

I/We hereby undertake that we shall comply with the Functionalities to be demonstrated and other related requirements and the terms and conditions specified in the RFE document completely and we have no deviations and/or submissions and/or clarifications, whatsoever of any manner and/or sort and/or kind in this regard.

I/We hereby undertake to provide any further clarifications, details, documents etc. as may be required without changing the substance of our Application.

I/We hereby undertake to demonstrate the Services as per the Functionalities to be demonstrated and undertake to be the single point of contact for Empaneling Entity for the Empanelment process and related requirements as per the terms and conditions and as specified in this RFE document.

I/We hereby undertake that I/We do understand that my/our Application should be as per the RFE document and should be accordingly submitted to the REC. In case of a failure to comply and/or variation, Empaneling Entity has the sole discretion not to consider or disqualify my/our Proposal/ Application for the aforementioned RFE and I/We shall be not have any claim of any sort/kind/form on the same.

I/We hereby attach the duly signed and stamped RFE document as an unconditional acceptance and compliance of RFE specifications and terms & conditions as part of the Proposal without any deviations and/or submissions and/or clarifications of any manner and/or sort and/or kind in this regard.

I/We understand that mentioning of any pre-requisites, presumptions, assumptions, hiding/ twisting/ deletion/ reduction/ manipulation/ disguising of Scope of Works and/or application features and/or infrastructure and/or project deliverables etc. in any form and/or by any means and/or under any head shall not be constituted as a part of the Application/ Proposal and in case of award of the Empanelment Certificate the same shall not be claimed by me/us while subsequently providing of Services/ execution of work. The decision of Empaneling Entity on such issues shall be

binding on me/us and the same shall not be arbitrated upon by me/us.

I/We hereby undertake that we abide by all the terms and conditions mentioned in the RFE document along with amendment/corrigendum/ clarification, if any

I/We hereby declare that our company/ organization has not been black listed, debarred, banned or disqualified by any Government or any Government agencies including PSUs during a period of last five years.

I/We understand that at any stage if it is found that any statement or document submitted by us is false/forged/invalid, Empaneling Entity has discretion to terminate the Certification and take any legal / penal actions against us as it deems fit.

I/We hereby affirm that the Goods and/or Services offered by us against this RFE are in compliance to the latest Government of India Guidelines for Make in India, Domestically manufactured products, Atmanirbhar Bharat and circulars DIPP Office Memorandum No. P-45021/2/2017-PP (BE-II) date:16th Sept. 2020, & MeitY Circular No.1(10)/2017-CLES dated 06.12.2019 as issued and amended from time to time and will remain complied to the same during the duration and execution of this assignment.

I/We also hereby affirm the following:

a) I/ we are not insolvent, in receivership, bankrupt or being wound up, not have our affairs administered by a court or a judicial officer, not have our business activities suspended and am/ are not the subject of legal proceedings for any of the foregoing reasons;

b) I/ we have not, and our directors and officers have not, been convicted of any criminal offence related to our/ their respective professional conduct or the making of false statements or misrepresentations as to our/ their qualifications to enter into a application contract within a period of two years preceding the commencement of this application process, or have not been otherwise disqualified pursuant to debarment proceedings;

c) I/ we do not have a Conflict of Interest in the application in question as specified in the RFE document.

d) I/ we comply with the code of integrity and other requirements as specified in the RFE document.

Signed on ……..(*Insert the Date*)

_____

Signature (of Applicant's authorized representative) {In full and initials}:

Full name: {insert full name of authorized representative}
Title: {insert title/position of authorized representative}
Name of Applicant (Firm/ Company's name)
Capacity: {insert the person's capacity to sign for the Applicant}
Address: {insert the authorized representative's address}
Phone/fax: {insert the authorized representative's phone and fax number, if applicable}

Email: {insert the authorized representative's email address}_____

Form 2 - Compliance Sheet for Empanelment Application

(The Empanelment Application should comprise of the following basic requirements. The documents mentioned in this compliance sheet along with this form, needs to be a part of the Empanelment application)

No.	Requirement	Documents to be submitted	Provided	Remarks
Requirements to be met by the Applicant				
a)	Completed Empanelment Application form in the format provided	Form-1 Letter of Application in Section-4	Yes/No	
b)	Power of attorney of Application signatory in the format provided	Attachment-1 to Letter of Application in Section-4	Yes/No	
c)	Undertaking on compliance of RFE Terms and Conditions and other requirements in the format provided	Attachment-2 to Letter of Application in Section-4	Yes/No	
d)	Certificate of Compliance with GFR guidelines specified in Section-2 of the RFE	Certificate on the Applicant's letterhead	Yes/No	
e)	Proof of registered office (under the Companies Act 1956/ 2013 with Registrar of Companies) in India at the time of submission of the application. OR Proof of having at least one branch office in India and registration/ details of its registered office in its country of origin for a foreign entity.	Copy of Company's registration under the Companies Act 1956/ 2013 with Registrar of Companies (Applicant registered in India) OR Copy of Company's registration in its country of origin (Applicant registered outside of India) and details of its operational branch office in India at the time of submission, on the Company's letterhead	Yes/No	
f)	Applicant should not have been banned/ debarred/ blacklisted by REC Ltd. or any of its subsidiary/ PFC Ltd. or any of its subsidiary/ Government of India/ Ministry of Power/ any Regulatory Authority/any State Government/ Central or State PSU, as on the date of submission of the application	Undertaking on the Applicant's letterhead	Yes/No	
Additional Requirements to be met by Component/ Solution Providers				
IA. Smart Meter Make/ Manufacturer - 1				
g)	Valid Test Certificates and Type test Certificate, BIS Certificate of the Smart Meter	Copy of valid Test Certificates	Yes/No	

No.	Requirement	Documents to be submitted	Provided	Remarks
h)	Certificate by the Smart Meter Manufacturer for compliance of IS-16444 Part -I	Certificate issued on the Smart Meter Manufacturer's letterhead	Yes/No	
i)	Certificate for complying to the Technical specification as mentioned in Section-6 Clause D Technical Specifications	Certificate issued on the Smart Meter Manufacturer's letterhead	Yes/No	
j)	Valid ISO 9001-2015 certification of the Smart Meter Manufacturer	Copy of valid Certificate	Yes/No	
k)	Availability of in-house NABL or ISO/ IEC -17025 accredited Laboratory with the Smart Meter Manufacturer	Certificate issued on the Smart Meter Manufacturer's letterhead	Yes/No	
IB. Smart Meter Make/ Manufacturer - 2				
l)	Valid Test Certificates and Type test Certificate, BIS Certificate of the Smart Meter	Copy of valid Test Certificates	Yes/No	
m)	Certificate by the Smart Meter Manufacturer for compliance of IS-16444 Part -I	Certificate issued on the Smart Meter Manufacturer's letterhead	Yes/No	
n)	Certificate for complying to the Technical specification as mentioned in Section-6 Clause D Technical Specifications	Certificate issued on the Smart Meter Manufacturer's letterhead	Yes/No	
o)	Valid ISO 9001-2015 certification of the Smart Meter Manufacturer	Copy of valid Certificate	Yes/No	
p)	Availability of in-house NABL or ISO/ IEC -17025 accredited Laboratory with the Smart Meter Manufacturer	Certificate issued on the Smart Meter Manufacturer's letterhead	Yes/No	
II. Head End System (HES) solution				
q)	The proposed HES solution should have been successfully integrated with at least 2 (two) nos. of Meter Data Management Systems (MDMS) of different makes / solution providers	Certificate / report issued by Client / MDMS OEM / solution provider	Yes/No	
r)	Certificate for complying to the Technical specification as mentioned in Section-6 Clause D Technical Specifications	Certificate issued on the HES solution provider's letterhead	Yes/No	
III. Meter Data Management System (MDMS) solution				
s)	The proposed MDM solution should have been successfully integrated with at least 2 (two) nos. of different HES solutions	Client certificate and other documentation for implementation performance/ operation	Yes/No	

No.	Requirement	Documents to be submitted	Provided	Remarks
t)	The proposed MDM solution should have been successfully integrated with at least 2 (two) nos. of different utility billing system (CIS)	Client certificate and other documentation for implementation performance/ operation	Yes/No	
u)	CMMi (Capability Maturity Model Integration) Level 3 as the requirement may be Certification (Software Development & Customization) certification	Copy of valid certificate	Yes/No	
v)	Certificate for complying to the Technical specification as mentioned in Section-6 Clause D Technical Specifications	Certificate issued on the MDM solution provider's letterhead	Yes/No	

Section 5 - Fraud and Corruption

1. Purpose

Government's/ REC's Anti-Corruption Laws/ Guidelines apply with respect to **"Empanelment of Firms for participation in RDSS AMISP tenders for providing Advance Metering Infrastructure (AMI) prepaid Solution after successful demonstration"**

2. Requirements

2.1 REC requires that applicants/proposers, consultants, contractors and suppliers; any sub-contractors, sub-consultants, service providers or suppliers; any agents (whether declared or not); and any of their personnel, observe the highest standard of ethics during the Empanelment process, and refrain from Fraud and Corruption.

2.2 To this end, REC:

I. Defines, for the purposes of this provision, the terms set forth below as follows:

i. "corrupt practice" is the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;

ii. "fraudulent practice" is any act or omission, including misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain financial or other benefit or to avoid an obligation;

iii. "collusive practice" is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;

iv. "coercive practice" is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;

v. "obstructive practice" is:

(a) deliberately destroying, falsifying, altering, or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede investigation into allegations of a corrupt, fraudulent, coercive, or collusive practice; and/or threatening, harassing, or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or

II. Rejects an application for Empanelment if the REC determines that the firm or individual applied for Empanelment, any of its personnel, or its agents, or its sub-consultants, sub-contractors, service providers, suppliers and/ or their employees, has, directly or indirectly, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in taking part in the empanelment process in question;

III. In addition to the legal remedies set out in the relevant Legal Agreement, may take other appropriate actions;

IV. Pursuant to the Anti- Corruption Laws/ Guidelines and in accordance with due process, REC, may sanction a firm or individual, either indefinitely or for a stated period of time, including by publicly declaring such firm or individual ineligible (i) to be empanelled or otherwise benefit from Empanelment by REC or its subsidiaries/ affiliates, financially or in any other manner.

PART 2 – AMI Prepaid Solution Demonstration Requirements

Section 6 – AMI Prepaid Solution Demonstration Requirements

Table of Contents

A. Functionalities and Service Levels required to be Demonstrated for Certification

A.1. The applicants are required to demonstrate the basic functionalities of an AMI system as mentioned in the below Table:

No.	Functionalities to be Tested	Source	Destination
1.	**Collection of Daily Meter Profile**		
1.1	At scheduled frequency HES should send request to Smart Meter over communication Channel to send Daily Meter data	HES	Meter
1.2	Meter should send the data to HES. Provision for retrial should be there if Meter data is not collected within time. Consumption details including non-critical events will be in 15 min/30 min block data, and data could be incremental to what was sent by meter in preceding instance	Meter	HES
1.3	HES should decrypt and validate the data collected and pushed to MDM	HES	MDM
1.4	MDM should send the required parameter to Prepaid system for daily charge calculation	MDM	Prepaid Engine
2	**Monthly Billing profile collection**		
2.1	Command from Billing system triggered and send to MDM / HES for collection of Monthly billing Data	Billing system	MDM / HES
2.2	At scheduled frequency HES should send request to Smart Meter to collect Monthly Billing Profile data (as per attached structure)	HES	Meter
2.3	Meter should send the data to HES. Provision for retrial should be there if Meter data is not collected within time.	Meter	HES
2.4	HES should decrypt and validate the data collected and pushed to MDM	HES	MDM
2.5	MDM should send the required parameter to Billing system for Monthly Bill calculation	MDM	Prepaid Engine
3.	**Remote Meter disconnection**		
3.1	Meter disconnect operation command after wallet balance calculation	Prepaid Engine	MDM
3.2	Disconnection alert sent to consumer	Billing system	MDM
3.3	Meter disconnect operation command	MDM	HES
3.4	Consumer meter disconnection	HES	Meter
3.5	Disconnection Status Update	Meter	HES
3.6	Disconnection Status Update	HES	MDM
4	**Remote Meter Reconnection**		
4.1	Meter reconnect operation command after wallet recharge	Prepaid Engine	MDM
4.2	Meter reconnect operation command	MDM	HES

No.	Functionalities to be Tested	Source	Destination
4.3	Consumer meter reconnection	HES	Meter
4.4	Reconnection Status Update	Meter	HES
4.5	Reconnection Status Update	HES	MDM
5	**Detection of Meter tempering**		
5.1	High priority events captured by Meter sent to HES as and when occurred	**Meter**	**HES**
5.2	High priority events reach MDM for further action.	HES	MDM
5.3	Share with WFM, if or when available, to Notify utility personnel for site inspection	MDM	WFM
5.4	On analysis and detection of valid tamper event or malfunction, connection is disconnected.	MDM	HES
5.5	HES sends disconnect command to meter	HES	Meter
5.6	Tamper event shared with CIS/CRM. Billing determinants are updated for tamper invoicing	MDM	CIS/CRM
5.7	Meter re-connection order once tamper issue is resolved	MDM	HES
5.8	HES sends re-connect command to meter	HES	Meter
6.	**Remote firmware upgrades/ meter configuration changes**		
6.1	Remote firmware upgrade	MDM → HES	Meter
6.2	Configuration Commands: Change tariff parameters, Synchronize clock, Registers reset (status, max, tampering)	MDM → HES	Meter
6.3	Status update of Firmware / Configuration	Meter	HES → MDM

A.2. The applicants are required to demonstrate the Service levels of an AMI system as mentioned in the below Table:

No.	Data Types	Performance level
1	**Collection of daily Meter Profile data**	
a).	Periodic collection of the interval load profile data for the last completed 1 hour time block in the day	• From 99% of meters within 5 minutes
b).	Previous days' interval energy and total accumulated energy	• From 99% of meters within 30 minutes after midnight
2	**Scheduled billing profile data for the bill period**	
a).	Collection of billing profile data for the bill period – Billing period to be decided during test period (as per IS 15959 Part-2)	• From 99% of meters within 30 minutes after midnight

No.	Data Types	Performance level
3	**For remote connect/ disconnect with acknowledgement/ response for selected meters**	
a).	Remote reconnect – Individual meter	• Action performed within 3 minutes
b).	Remote disconnect – Individual meter	
4.	**Prepaid recharge**	
a).	Payment success to consumer acknowledgement	• Within 5 minutes
b).	Payment success to meter update	• From 90% of meters within 30 minutes • From 99% of meters within 1 (one) hour
5.	**Detection of Meter Tempering**	
a).	Receiving of alert for an individual meter	• Alert to be received within 3 minutes
6.	**Remote firmware upgrade with acknowledgement/ response for selected meters**	
a).	For installed AMI meters	• Action performed at 99% of meters within 1 (One) hour

A.3 The basic functionality required in prototype billing system/ CIS system for demonstration of AMI solution:

a) Meter Installation – Initial Master Data Creation*
b) Periodic Meter Reading –
    i. Smart Metering Daily Cyclic Meter Reading
    ii. Billing data Collection
c) Connect Disconnect –
    i. Credit tracking & Disconnection
    ii. Smart Meter Remote Connect & Disconnect
d) Meter Tampering event recording (No role for the Prototype billing system)
e) Remote Smart Meter configuration (No role for the Prototype billing system)

* Initial Master Data for creating Consumer Master Table structure

No.	Information	Description
1	General Information	Division Code
2		Sub-Division Code
3		Substation Name
4		Zone Number
5		Feeder Name
6		DTR Name
7		Feeder Pillar No.

No.	Information	Description
8	Consumer Information	Consumer ID/Number
9		First Name
10		Last Name
11		Address
12		City/Zip Code
13		Mobile_Number
14		Email ID
15		Subscribed voltage
16		Subscribed Tariff
17		Billing cycle
18		Flag of Non-Technical Losses event
19		Contract starting date
20		Contract ending date
21		Producer premise
22	Existing Meter Information	Existing Meter Number
23		Last Meter Reading
24		Existing Meter Type
25		Line LT CT Ratio
26		Existing Meter MF
27		Existing Meter Seal Status
28		Existing Meter Photo
29		Existing Consumer Load
30		Meter Location
31		Change of Meter Location Envisaged
32		Meter Box Dimensions
33		Number of Meters at Single Location
34		Meter Legal Status
35		Whether Clubbing of Meters are Required
36		Date of Connection
37		Remarks

B. Technical Specification:

The Technical specification of components used in demonstration test shall meet the technical specification as below:

1. Technical Specifications for Whole Current A.C. Single Phase Smart Energy Meter

Scope

These specifications cover the design, manufacturing, testing, supply and delivery of AC whole current, single phase, 2 wires Smart Energy Meter with bidirectional communication facility & remote connect/disconnect

switch. The meter shall communicate with Head End System (HES) on any one of the communication technologies mentioned in IS16444 Part 1, as per the requirement of the utility.

Basic Features

The Smart Meter would have the following minimum basic features-

- Measurement of electrical energy parameters
- Bidirectional Communication
- Integrated Load limiting /connect/disconnect switch
- Tamper event detection, recording and reporting
- Power event alarms as per IS 16444 Part 1
- Remote firmware upgrade
- Pre-paid features at MDM end (as per IS 15959 Part 2)
- TOD features
- Net Metering(kWh) features (optional as per requirement of utility)
- On demand reading

General standards applicable for meters

S. No.	Standard No.	Title
1	IS 13779 with latest amendments	AC Static Watt-hour Meter class 1& 2
2	IS 15884 with latest amendments	Alternating Current Direct Connected Static Prepayment Meters for Active Energy (Class 1 and 2)- Specification
3	IS 16444 Part 1 with latest amendments	A.C. Static Direct Connected Watt Hour Smart Meter 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

Communication

Meter shall have the ability to communicate with Head End System (HES) on any one of the communication technologies mentioned in IS16444 Part 1 (RF/PLCC /Cellular) in a secure manner. The selection of communication technology should be as per the site conditions and as per design consideration of AMI Implementing agency to meet the performance as per agreed Service Level Agreements (SLAs). In case of Cellular based meter, the meter shall accommodate SIM card/ e-SIM of any service provider. The meter shall log the removal of the plug-in type communication module removal /nonresponsive event with snapshot.

Remote connect/disconnect/load limiting: Remote Connect/disconnect/Load control facilities would be as per IS 16444 part 1.

Other Specifications

Features	Minimum Requirement of Features
Applicable Standards	The meters shall comply with IS 16444 Part 1 for all requirements.
Reference Voltage	As per relevant IS (240 V)
Current Rating	5-30 A 10-60 A
Category	UC1
Starting Current	As per IS 16444 Part 1
Accuracy	Class 1.0 as per IS 16444 Part 1
Limits of error	As per IS 16444 Part 1
Operating Temperature range	As per IS 13779
Humidity	As per IS 13779
Frequency	As per IS 16444 Part 1
Influence Quantities	As per IS 16444 Part 1
Power Consumption of meter	As per IS 16444 Part 1
Current and Voltage Circuit	As per IS 16444 Part 1
Running at No Load	As per IS 16444 Part 1
Test output device	As per IS 16444 Part 1
Meter Display	As per IS 16444 Part 1
Name Plate & marking Meter Display	As per IS 16444 Part 1
Parameters to be measured	As per IS 16444 Part 1 / 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 Part 1
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 part 1
Alarm	As per IS 16444 Part 1/ 15959 Part 2
Load Control	As per IS 16444 Part 1
Connect/Disconnect switch	UC1 (As per IS 16444 part 1)
Status of load switch	As per IS 16444 Part 1
Programmability	As per IS 16444 Part 1
Communication	As per IS 16444. Part 1
Data Exchange Protocol	As per IS 16444 Part 1
Remote Firmware upgrade	As per IS 15959 Part 2
Real Time Clock (RTC)	As per IS 16444 Part 1/ IS 15959 Part1 & Part 2
Data Retention	As per IS 16444 Part 1
Battery Backup	Meter shall be supplied with separate battery backup for RTC.
First Breath (power on) and Last gasp (power off) condition detection and communication to HES	As per IS 16444 Part 1

Features	Minimum Requirement of Features
Plug-in Communication Module	The Smart Meters shall have a dedicated sealable slot for accommodating plug-in type bi -directional communication module which shall integrate the respective communication technology (RF/PLCC/ Cellular) with the Smart Meters, leading to easy adaptability for network interfaces (WAN/NAN). The Plug-In module shall be field swappable/ replaceable.

Data display facility (auto/manual)

As per IS 16444. However minimum requirement should include the following:

Data Display shall be in two modes-

1. Auto Scroll
2. Scroll with Push Button

The display parameters shall be:

- Auto Scroll
  - Display Check
  - Date and Time
  - Last Recharge Amount
  - Last Recharge Time
  - Current Balance Amount
  - Current Balance days left
  - Cumulative Active Energy kWh with legend.
  - Current calendar month MD in kW with legend.
  - Instantaneous voltage
  - Instantaneous Phase current
  - Instantaneous Load kW
  - Instantaneous average Power Factor

  These parameters should be displayed on the Meter Display continuously for a period of 10 seconds on Auto scroll.
- Scroll with Push-button

  All Parameters mentioned under Auto-Scroll mode should be displayed. Additionally, the following Parameters shall also be displayed:

- Internal diagnostics (display check)
- Meter Serial No.
- Last month cumulative kWh with legends
- Last month MD in kW with legends
- Current month Average Power Factor
- Last month Average Power Factor

Further, the Meter should display high resolution energy values with resolution of 2 digits before decimal and 3 digits after decimal in push button mode

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 utility). Meter display should go into the sleep mode during Power-On condition in case the push button is not operated for more than 10 minutes.

Anti-tamper features

The meter shall continue working under tamper conditions as defined in IS 15959 Part 2 and would log the event and send alarm at Head End System after detection of the defined tamper features as per IS 15959 Part 2.

Type Tests

Smart Meter shall be type tested for all the tests as per relevant parts of IS 16444 (latest versions) and certified by Indian Standard wise list of BIS recognized labs as available at https://bis.gov.in/index.php/laboratorys/list-of-bis-recognized-lab/. The number of sampling for testing of meters and criteria for conformity would be as per IS 16444 (as amended up to date).

Routine & Acceptance Tests

The Factory Acceptance and Routine tests shall be carried out as per IS 16444 Part 1.

General & Constructional requirements

Meter shall be BIS marked as per IS 16444 Part 1. General & construction requirement shall be as per IS 16444/IS 13779

Meter base & cover - Meter base & cover shall be as per IS 16444 Part1 / 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.

The meter Base & cover shall be ultrasonically welded / Chemically welded or other suitable bonding technology and it will not be possible to remove the cover from the base without evidence of damage

Terminal block & cover - As per IS 16444 Part 1/IS 13779

Design

Voltage circuit, sealing arrangement, terminal block, terminal cover, and nameplate etc. shall be in accordance with IS-16444 Part 1(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.

Name plate and marking

The name plate on the meter should be clearly visible, effectively secured against removal and indelibly/distinctly marked in accordance with relevant IS. In addition, "Name of the Utility", purchase order no. & year/month of manufacturing shall be provided on the name plate. The rating plate information shall be as per relevant IS.

Connection diagram: As per IS 16444 Part 1

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.

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 shall be as per relevant IS/ requirement of utility.

Meter box:

The Meter Box if required by utility/purchaser, would be provided as per requirement of the utility/ purchaser and the material of the Meter Box should be such that it does not hamper communications.

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 "Fragile in nature" and direction of placement of box. The packing shall indicate marking details like Manufacturer's name, S.No. of meters, quantity etc.

Transportation

- The meter shall be compact in design. The meter block unit shall be capable of withstanding stresses likely to occur in actual service and rough handling during transportation.
- The meter shall be convenient to transport and immune to shock and vibration during transportation and handling.
- The meter should not be exposed to undue shock and mishandling during transportation.
- The stacking of box inside transport media should be such as to avoid their free movement.
- The packing should also be protected from rain and dust by transport media.
- The AMISP shall be responsible for any damage during transit due to inadequate or improper packing.

Testing and Manufacturing Facilities at Manufacturer's Place

The manufacturer shall have facilities of conducting Acceptance Testing as per IS 16444 Part 1.

Inspection

- The meters shall be sealed as per the mutual agreement of the supplier and the purchaser
- The utility/ purchaser may inspect the meter randomly as per sampling plan for acceptance test as per IS 16444 Part 1. The meters shall be tested for acceptance test as per IS 16444 Part 1.

2. Technical Specifications for Whole Current A.C. Three Phase Smart Energy Meter

Scope

The specification covers the design, manufacturing, testing, supply, and delivery of AC whole current 3 phase 4 wires Smart Energy Meter with bidirectional communication facility suitable for Advanced Metering Infrastructure (AMI) with connect/disconnect switch. The meter shall communicate with Head End System (HES) on any one of the communication technologies mentioned in IS16444 Part 1, as per the requirement of the utility / authorized system integrator.

Basic Features

The Smart Meter would have the following minimum basic features-

- Measurement of electrical energy parameters
- Bidirectional Communication
- Integrated Load limiting switch /relay
- Tamper event detection, recording and reporting
- Power event alarms as per IS 16444 Part 1
- Remote firmware upgrade
- Pre-Paid features at MDM end (as per 15959 part 2)
- TOD feature
- Net Metering(kWh) features (optional as per requirement of utility)
- On demand reading

General standards applicable for meters

No.	Standard No.	Title
1	IS 13779 with latest amendments	AC Static Watt-hour Meter class 1& 2
2	IS 15884 with latest amendments	Alternating Current Direct Connected Static Prepayment Meters for Active Energy (Class 1 and 2)- Specification
3	IS 16444 Part 1 with latest amendments	A.C. Static Direct Connected Watt Hour Smart Meter 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

Communication

Meter shall have the ability to communicate with Head End System (HES) on any one of the communication technologies mentioned in IS16444 Part 1 (RF/PLC/ Cellular) in a secure manner. The selection of

communication technology should be as per the site conditions and as per design requirement of AMI Implementing agency to meet the performance as per agreed Service Level Agreements (SLAs). In case of Cellular based meter, the meter shall accommodate SIM card/ e-SIM of any service provider. The meter shall log the removal of the plug-in type communication module removal /nonresponsive event with snapshot.

Remote connect/disconnect/load limiting: Remote Connect/disconnect/Load control facilities would be as per IS 16444 part 1.

Other Specifications

Features	Minimum requirement of features
Applicable Standards	The meters shall comply with IS 16444 Part 1 for all requirements.
Reference Voltage	As per relevant IS
Current Rating	10-60 A / 20-100 A
Category	UC1
Starting Current	As per IS 16444 Part 1
Accuracy	Class 1.0 as per IS 16444 Part 1
Limits of error	As per IS 16444 Part 1
Operating Temperature range	As per IS 13779
Humidity	As per IS 13779
Frequency	As per IS 16444 Part 1
Influence Quantities	As per IS 16444 Part 1
Power Consumption of meter	As per IS 16444 Part 1
Current and Voltage Circuit	As per IS 16444 Part 1
Running at No Load	As per IS 16444 Part 1
Test output device	As per IS 16444 Part 1
Meter Display	As per IS 16444 Part 1
Name Plate & marking Meter Display	As per IS 16444 Part 1
Parameters to be measured	As per IS 16444 Part 1 / 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 Part 1
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 Part 1
Alarm	As per IS 16444 Part 1 / As per IS 15959 Part-2
Load Control	As per IS 16444 Part 1
Connect/Disconnect switch	UC1 as per IS 16444 Part 1
Status of Load switch	As per IS 16444 Part 1
Programmability	As per IS 16444 Part 1
Communication	As per IS 16444 Part 1
Communication Protocol	As per IS 16444 Part 1
Remote Firmware upgrade	As per IS 15959 Part-2

Features	Minimum requirement of features
Real Time Clock (RTC)	As per IS 16444 Part 1 / IS 15959 Part 1 & Part 2
Data Retention	As per IS 16444 Part 1
Battery Backup	Meter shall be supplied with adequate separate battery backup for RTC.
First Breath (Power on) and Last gasp (Power off) condition detection and communication to HES	As per IS 16444 Part 1
Plug-in Communication Module	The Smart Meters shall have a dedicated sealable slot for accommodating plug-in type bi -directional communication module which shall integrate the respective communication technology (RF/PLC/ Cellular) with the Smart Meters, leading to easy adaptability for network interfaces (WAN/NAN).The Plug-In module shall be field swappable/ replaceable.

Data display facility (auto/manual)

As per IS 16444. However minimum requirement should include the following:

Data Display shall be in two modes-

1. Auto Scroll
2. Scroll with Push Button

The display parameters shall be:

- Auto Scroll
    - Display Check
    - Date and Time
    - Last Recharge Amount
    - Last Recharge Time
    - Current Balance Amount
    - Current Balance days left
    - Cumulative Active Energy kWh with legend.
    - Cumulative Apparent Energy kVAh with legend.
    - Current month MD in kW with legend.
    - Current month average Power Factor
    - Instantaneous voltage VRN
    - Instantaneous voltage VYN
    - Instantaneous voltage VBN

- Instantaneous current IR
- Instantaneous current IY
- Instantaneous current IB
- Instantaneous current IN
- Instantaneous Load kW and kVA
- Instantaneous average Power Factor

These parameters should be displayed on the LCD/LED continuously for a period of 10 seconds on Auto scroll.

- Scroll with Push-button

All Parameters mentioned under Auto-Scroll mode should be displayed. Additionally, the following Parameters shall also be displayed:

- Internal diagnostics (display check)
- Meter Serial No
- Cumulative Energy in kVArh Lag/ Lead with legend
- Cumulative Active Energy kWh ToD wise with legends.
- Cumulative Apparent Energy kVAh ToD wise with legends.
- Current month MD in kVAh with legends
- Last month cumulative kWh with legends
- Last month cumulative kVAh with legends
- Last month MD in kW with legends
- Last month Average Power Factor

Further, the Meter should display High Resolution energy values with resolution of 3 digits before decimal and 2 digits after decimal in push button mode.

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 as per the requirement of utility). Meter display should go in to sleep mode during Power-On condition in case the push button is not operated for more than 10 minutes.

Anti-tamper features

The meter shall continue working under tamper conditions as defined in IS 15959 Part 2 and would log the event and send alarm at Head End System after detection of the defined tamper features as per IS 15959 Part 2.

Type Tests

Smart Meter shall be type tested for tests as per relevant parts of IS 16444 (latest versions) and certified by Indian Standard wise list of BIS recognized labs as available at https://bis.gov.in/index.php/laboratorys/list-

of-bis-recognized-lab/. The number of sampling for testing of meters and criteria for conformity would be as per IS 16444(as amended up to date).

Routine & Acceptance Tests

The Factory Acceptance and Routine tests shall be carried out as per IS 16444 Part 1.

General & Constructional requirements

Meter shall be BIS marked as per IS 16444 Part 1. General & construction requirement shall be as per IS 16444/IS 13779

Meter base & cover - Meter base & cover shall be as per IS 16444 Part1 / 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.

The meter Base & cover shall be ultrasonically welded / Chemically welded or other suitable bonding technology and it will not be possible to remove the cover from the base without evidence of damage

Terminal block & cover - As per IS 16444 Part 1/IS 13779

Design

Voltage circuit, sealing arrangement, terminal block, terminal cover and nameplate etc. shall be in accordance with IS-16444 Part 1 (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

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, "Name of the Utility", purchase order no. & year/month of manufacturing shall be provided on the meter name plate. The rating plate information shall be as per relevant IS.

Connection diagram: As per IS 16444 Part 1

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.

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 shall be as per relevant IS/ requirement of utility.

Meter box:

The Meter Box if required, would be provided as per requirement of the utility/ purchaser and the material of the Meter Box should be such that it does not hamper communications.

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 "Fragile in nature" and direction of placement of box.
- The packing shall indicate marking details like Manufacturer's name, meters #s, quantity, etc.

Transportation

- The meter shall be compact in design. The meter block unit shall be capable of withstanding stresses likely to occur in actual service and rough handling during transportation.
- The meter shall be convenient to transport and immune to shock and vibration during transportation and handling.
- The meter should not be exposed to undue shock and mishandling during transportation.
- The stacking of box inside transport media should be such as to avoid their free movement.
- The packing should also be protected from rain and dust by transport media.
- The AMISP shall be responsible for any damage during transit due to inadequate or improper packing.

Testing and Manufacturing Facilities at Manufacturer's Place

The manufacturer shall have facilities of conducting Acceptance Testing as per IS 16444 Part 1.

Inspection

- The meters shall be sealed as per the mutual agreement of the supplier and the purchaser
- The Utility/ purchaser may inspect the meter randomly as per sampling plan for acceptance test as per IS 16444 Part 1. The meters shall be tested for acceptance test as per IS 16444 Part 1

3. Technical Specification for Head End System

HES should conform to IEC 61968-9 as well as support CIM 2.0 / MultiSpeak v3.0 standards.

The AMISP shall provide a HES which is 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. HES would perform all the requisite functions as per the defined functionalities of AMI and it is the responsibility of the AMISP to supply the requisite 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. The HES shall follow the integration protocol established by IS 15959 (DLMS-COSEM) and make use of ACSE and xDLMS services to communicate with southbound field devices (DCUs and Smart Meters) irrespective of the physical communication layer.

HES shall be developed on open platform based on distributed architecture for scalability without degradation of the performance using additional hardware. The HES shall be cloud enabled and support deployment with high availability clustering and automatic load balancing that ensure hardware as well as application failover. 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:

a) On power up after installation, Smart Meter shall register itself automatically into the HES along with its metering profile. The HES shall store meter profile status by meter type, hardware & software versions, device IDs, logged in / logged out details etc.

b) Upon deployment and establishment of communication, it shall be possible for field level end device nodes (NAN/WAN) like Router/Gateway, Access Point, DCU to have self-discovery and registration.

c) Acquisition of meter data on demand & at user selectable periodicity. On demand meter read may be for single meter (unicast) or for a group of meters (multicast).

d) Two-way communication with meter/ DCU

e) Signals for connect & disconnect of switches present in end points such as meters. This facility shall be provided for both single meter (unicast) as well as for a group of meters (multicast).

f) Audit trail and Event & Alarm Logging

g) Ability to redirect messages including configuration commands from the MDM in order to reach the desired meter

h) Maintain time sync with DCU / meter

i) Store raw data for defined duration (minimum 3 days). HES shall hold the data before it is transferred to the MDM

j) Handling of Control signals / event messages on priority

k) Manage time distribution to ensure that nodes / meters always have an accurate RTC using NTP servers. The time distribution mechanism shall take into account the network latencies.

l) Setting of Smart Meter configurable parameters

m) Critical and non-critical event reporting functionality

n) Device management functionality to get periodic updates from devices on health check, hardware & firmware version, location mapping etc.

o) The data collection and computation for the purpose of SLA penalties (as mentioned in the following table) should be automated and visualized in Utility Interface **Configuration**

HES shall facilitate configuration of following minimum AMI parameters:

a) Load profile capture period
b) Demand integration period
c) Setting of parameters for TOU billing
d) Prepaid / post-paid configuration
e) Net metering
f) Billing date / month-to-date for prepaid meters
g) Clock setting/time synchronizations
h) Load curtailment limit
i) Event setting for connect/disconnect
j) Number of auto reconnection attempt
k) Time interval between auto reconnection attempt
l) Lock out period for endpoint (meter) relay
m) Remote firmware update: It shall be possible to update the firmware of the meters in both Unicast (one to one) and in Multicast fashion (Group of meters). It shall be also possible to have remote firmware upgrade for an individual and a group of nodes (NAN/WAN, Routers/Gateways/Access Point, DCU.
n) Password setting
o) Push schedule
p) Setting threshold limits for monitored parameters

The AMISP may suggest more parameters as per the requirement.

i. Communication

The following communication functions with network devices shall be supported:

a) HES shall communicate with DCUs/access points using WAN technology
b) HES shall encrypt data for secure communication
c) HES shall be able to accept data according to IS 15959 part-2 /part 3 and latest amendments
d) HES shall automatically retry for missed data; the number of retry attempts shall be configurable
e) To receive confirmation on successful execution of a command
f) HES shall ensure data integrity checks, for example, checksum, time check, pulse, overflow, etc. on all metered data

ii. Monitoring and Reporting Capability

HES shall have critical and non-critical reporting functionality. The critical & non-critical information generated from this reporting functionality shall be made available to MDM at user configurable periodicity.

iii. Critical Reporting

HES shall have alarms and keep record of following events:

a) Event log for node's (meter) events such as tamper/power failures etc.

b) Data not received from nodes/end points

c) Relay does not operate for connect / disconnect

d) Communication link failure with nodes/end points

e) Network Failure

f) Power Failure

iv. Non-Critical Reporting

HES shall report and keep record of following communication failure events:

a) Retry attempts

b) Missed periodic reading

c) Failure to connect

HES shall support reporting of communication failure history of nodes/routers/access points etc. and give an exception report for nodes/routers/access points not communicating for last 0 – 24 hours (the reporting period shall be on user configurable period). HES shall have feature to send email/SMS notification of configured alarms & events to its users.

4. Technical Specification of Meter Data Management System

The Meter Data Management system (MDM) shall support storage, archiving, retrieval & analysis of meter data and various other MIS along with validation & verification algorithms. The MDM shall be a scalable and COTS product. It shall act as a central data repository with interactive dashboard. 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, analytics, reporting, etc.

MDM should support the future requirement of utility by way integration with other smart grid functionalities as and when implemented by Utility.

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 Utility (user selectable)]

i. Asset Management

a) 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, etc.), Meter configuration (Demand integration period, Load profile capture

period etc.), GIS supplied information (longitude, latitude, connection with feeder/ transformer/ pole etc.) etc.

b) 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.

c) Ability to report and log any damage / deterioration in the meter attributable to consumer /utility.

ii. AMI Installation Support

a) 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.

b) 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.

iii. Meter Data

a) The MDM shall accept input, process, store, and analyse Meter data from HES and meter data collected through handheld meter reading instruments and manual meter reads. In case of manual reads, provision should be there to insert associated notes such as assessed energy, etc. It would responsibility of AMISP for manual meter reading in case of any communication failure, etc. with seven (7) days of such failure.

b) The MDM should accept input, process, store, and analyse non-billing meter data such voltage and power quality data (such as under/over voltage, out of band frequency, etc.) as they are available from HES. The MDM should also support schedule and on-demand meter reads and pinging of meter energized states by authorized users and by other utility systems.

c) The MDM shall provide storage and retrieval of all collected Meter Data, events and alarm. It shall have capacity of storing [X] years data (as required by the utility based on regulatory provisions) via archiving

d) The archiving of data should be done at a frequency of [x] and all data older than [x] days/hours should be archived. AMISP's solution should describe the process of archiving and restoration from the archive.

e) Correctly track & resolve energy usage across meter changes with no loss of individual meter data.

f) 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).

g) Execute on-demand read processes.

h) Handle special metering configurations such as net metering/pre-paid metering/multiple meters at same premises.

i) The MDM shall have the ability to manage at a minimum 5-minute interval data.

j) The AMISP shall ensure data integrity checks on all metered data received from data collection systems.

iv. Data Validation, Estimation, and Editing (VEE)

a) The validation and estimation of metered data shall be based on standard estimation methods (such as max/avg. of past three days, max/avg. of past X number of similar weekdays, max/avg. of similar blocks of past X numbers of similar weekdays, etc.). The MDM should also support and maintain following data-

i. Registered Read Data including register reads, daily billing cycle, as well as derived billing determinants such as TOU

ii. Interval Data channels with variable intervals and variable units of measure

iii. Calculated Data that is derived or computed such as billing determinants and aggregated loads.

iv. Event data storage of all collected event and alarm data from meters, network equipment, and MDM itself

b) 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

i. CUM decrements within a billing cycle (except net-metering)

ii. CUM reads increments more than configurable threshold

iii. Future or old read dates

iv. Number of digits exceeds number of meter dials

c) 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

i. Register decrements (except net-metering)

ii. Resets (to zero) (except net-metering)

iii. CUM reads increments more than configurable threshold

iv. Future or old read dates

v. Erratic compared to CUM read (sum of TOU reads minus CUM read)

d) MDM shall detect, flag, alarm and trigger an estimating process including but not limited to when the following anomalies occur in Demand register reads

i. Do not reset on cycle

ii. Do not reset coincident with consumer move-out or move-in

iii. Reset off cycle inappropriately

iv. Too high

e) All data shall be transferred to billing system after meter data validation and estimation including transformer / feeder station wise energy audit.

f) MDM shall estimate usage for non-metered service points such as streetlights, farm lights, traffic signals, etc.

g) The MDM shall maintain both the original received raw data in a non- manipulated state, in addition to VEE data.

h) 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.

i) 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.

v. Billing Determinants Calculations

The MDM-

a) Shall allow configuring multiple TOU options (e.g., the number and duration of TOU rate periods) by consumer type, tariffs and day type (weekend, weekdays, and holidays) and by season.

b) Shall support the processing of interval data into billing determinants to include the following at a minimum:

i. Total Consumption

ii. Consumption in different time blocks for ToU billing

iii. Maximum Demand (in kW and kVA)

iv. Number of tamper counts

v. Average power factor

vi. Net-Metering data

c) 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.

d) 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.

e) Shall have the ability to properly account for special situations including, but not limited to, curtailment requests, demand response scenarios (based on use cases provided in Annexure H) when calculating billing determinants and sending them to billing software.

f) Shall have the ability to facilitate implementation of automatic compensation payments by Utility to consumers for sustained outages when requested. Compensation calculations would require cross checking with billing and consumer balance information to ensure that disconnection is not construed as a no supply event.

vi. Prepaid Functionality

The MDM with the help of the corresponding HES, should be able to switch the Smart Meter between prepaid and post-paid modes by a simple change in configuration of the Smart Meter firmware remotely. The following prepaid functionality shall apply

a) MDM shall use consumer attributes from Consumer Care System (CCS) and/or Utility Billing system to,

   i. enrol and setup new prepaid/ post-paid consumers

   ii. migrate existing post-paid consumers to prepaid mode and vice versa

b) An appropriate pre-payment application engine shall support the pre-payment metering capability through the delivered system.

c) The prepayment system shall ensure that payment and connection parameters are stored centrally, and the details are updated to CIS-CRM/MDM through consumer portal/ app. Information required by consumer's Mobile App and web portal are shared in near real time.

d) Prepaid consumers shall be provided facility to recharge their account by logging on to the consumer portal/app.

   i. The user interface shall be integrated with the present online payment gateway of the utility. Additional payment gateways shall be implemented if required

   ii. The payment gateways shall facilitate payments through on-line banking, credit cards and payment wallets

e) A prepaid mobile application functionality shall be provided as a recharge option for android OS and iOS. The consumer portal/ app, shall enable consumers to recharge as well as view recharge history, existing balance, daily usage etc.

f) In addition to billing determinants, the MDM shall share, consumer recharge and credit updates with the utility Billing system. Any re-conciliation shall be carried out in the Billing System and the same shall be shared with the MDM for use by the prepayment application.

g) The system shall periodically monitor the energy consumption of prepaid consumer and decrease the available credit based on consumption. For this purpose, the MDM shall fetch billing data (kWh/kVAh consumption and MD) at configured intervals from the prepaid meter. The raw billing data shall be subjected to standard VEE rules before being used to update recharge balance with the help of applicable tariff slabs. The credit balance is updated into meter at re-charge time.

h) The prepayment application shall use determinants such as minimum fixed charges, TOU tariffs, slab rates, duties & surcharge while calculating consumer credit/balance. Fixed charge shall be deducted on daily basis irrespective of the consumption, even after disconnection of supply and adjusted in the next transaction.

i) The prepayment application should be able to automatically apply different TOU tariffs for future date lines, while calculating consumer credits.

j) The system should send connect/disconnect command based on available credit as per notified rules & regulations.

k) The system should send low-credit notifications to the consumer when their balance approaches a pre-configured threshold. Alerts shall initiate on every recharge, low credit and load connection/disconnection. The alerts shall be posted on the consumer web Portal/ App in real time and sent through SMS and email. Consumer should also be alerted through other mechanisms such as one-time alarm / beep from the meter, LED blinking, message, etc.

l) It shall be possible to configure an "emergency" credit limit in INR as well as day terms. This emergency credit shall be used as reserved amount that is consumed when consumer credit is exhausted. The credit amount shall be adjusted in next recharge transaction.

m) It shall be possible to configure certain prepaid consumers where auto-disconnections shall not happen due to negative credit.

n) The pre-payment function MDM shall also have a facility to configure arrear recovery mechanism to recover arrears from a consumer. Some of the indicative mechanism to recover the same can be recovery of [X]% from every recharge amount while the rest goes as charging amount till all the arrears are recovered. Alternately the arrears may be settled in next [X] instalments as decided by utility such that not more than 50% of any instalment shall be adjusted towards arrear.

vii. Net Metering

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

a) CUM decrements of forward energy within a billing cycle

b) Register decrements for Time of Use (ToU) of forward energy

c) Power generated(exported) by any net-metering consumer more than the installed capacity of solar PV rooftop system

d) Energy exported in any given day by any net-metering consumer more than the programmable threshold value

Like billing for post-paid meters, the billing for net-meters shall take place in the utility Billing server.

viii. Exception Management

a) 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.

b) Ability to group, prioritize, filter and send system generated alarms and events to predetermined email addresses, cellular text messages to phone numbers/SMS/consumer care etc. Alternatively, these alarms/alerts may be routed to utility's WFMS.

c) Exception Generation - MDM shall generate exceptions based on configurable business rules including but not limited to the following:

i. Meter tamper alerts

ii. Communication module health alerts for meter/DCU

iii. If the consumption is less/more than pre-defined average consumption

iv. Negative Consumption (not for net-metering)

v. Power outage indications received from the Smart Meter

ix. Service Order

a) The MDM shall generate service orders based on configurable rules for various events and alarms such as stop meter, tampers, problem in communication networks, etc.

b) 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 until resolution.

c) Service order tickets could be generated by MDM but processed and closed under jurisdiction of the HES-NMS combine. If the utility already has a separate Workforce Management System (WFM), then the service order tickets can be routed from the MDM and the NMS to the WFM for completion of the tasks and reporting.

x. Revenue Protection Support

a) Ability to analyse 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.

b) The business rules for revenue protection alerts shall be configurable via a user-friendly interface.

c) 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 validate suspected revenue protection issues.

5. General requirement for common pluggable communication module for Smart Meters

A) In reference to the Smart Meter communication, it is envisaged that plug and play type communication modules shall be deployed in the smart meter, for any given communication technology. These modules shall be field-deployable, with corresponding communication interface modules being used in the DCU/Gateway or BTS of wide area network. The General requirements for common pluggable module for smart meters envisage a universal interface and a particular size irrespective of the choice of communication technology that defines the dimensions of the communication slot as well as physical placement and location of connectors. The same shall be adopted in all smart meters mandatorily for deployment w.e.f. 1 Jan 2023 or one year after BIS certification, whichever is later, and BIS certification taken accordingly as per IS 16444 for the same. The Network Interface Card (NIC) / Communication Module should be integrated with at least 2 (two) makes of meters in India to enable the respective meters to seamlessly integrate with proposed HES and/or MDM thus enabling interoperability of the system. In future, it would be AMISP's responsibility to integrate new meter in consultation with Utility or facilitate integration of other application as per the approach paper submitted under the Project Implementation Plan.

1. Communication Infrastructure

The communication infrastructure should either be based on RF / RF mesh network / PLCC /cellular network or a combination of these. Communication network shall provide reliable medium for two-way communication between various nodes (Smart Meter, Gateway/Router/Access Point/ DCU (wherever applicable)) & HES. RF based network should use licensed / unlicensed frequency band as permitted by WPC. The engagement of network service provider would be in the scope of AMISP to meet the performance level as given in the document.

Meter data shall be routed / collected by field devices like Gateway/Router/Access Point, Data Concentrator Units (DCUs) wherever applicable given the communication technology used and transported to HES through WAN backhaul connectivity.

1.1 General Requirements

The AMISP shall design / hire reliable, free & robust communication network. It shall be effective for providing communication in terrain, topology & the consumer density of the project site.
During designing, suitable consideration shall be kept for future expansion. Before designing the communication network, the AMISP shall do the site survey and would provide the most efficient communication infrastructure.

The entire communication infrastructure (RF Network) shall have provision to support **WI SUN** technology which is interoperable with equipment from other vendors intended for use in the same applications. The communication network shall be developed as per IEEE 802.15.4g which defines PHY and MAC layer specifications. The network shall also comply the IPv6 protocol suite, including 6LoWPAN, address management, routing using RPL, unicast and multicast forwarding. Well defined standards for Frequency hopping, network discovery/join and protocol dispatch.

The communication network shall consists of a set of protocols aimed at secure end-to-end communication for smart metering, providing an identical message protocol for all communication interfaces among the different components of a modern AMI architecture.

The entire infrastructure & associated civil works required for installation & commissioning of equipment/devices such as DCUs, repeaters, routers & access points etc. shall be in the scope of AMISP. The network Solution deployed by the AMISP should have disaster recovery mechanism in place. The redundancy mechanism of HES and MDM and their disaster recovery plan shall also be highlighted by the AMISP. AMISP shall satisfy itself through the operational testing of network as a whole and its element for reliability before starting operations and billing.
The quality of installation of the various equipment & power supply wiring to all field equipment shall be as per standards/ regulations/prevailing practices of the utility. The reasonable supply of electricity needed for operation and maintenance of entire AMI system shall be the provided by the utility free of cost.
A suitable NMS shall be built 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. In case of public network such as cellular, the web-based portal (for example Open Network platform) should be provided to have the network view at location of installed devices. The portal shall have connectivity & subscription management.
A suitable digital platform (cloud-based application) and mobile apps could be provided to support field installation and capture field related activities and to manage the field operation & maintenance activity during the contract period. This platform shall manage project life cycle.

1.2 Network Management System

The proposed NMS shall facilitate following activities:

a) Security Management to protect systems and network from unauthorized access, manage user access, authorizing rights and privileges.
b) Viewing of all network elements deployed in the field and administer configuration changes of the network devices and nodes through toolkits to automate the following tasks:
    i. Capture running configuration, capture start-up configuration, upload configuration

ii. Compare configuration
iii. Real-time or scheduled capture of device configurations
iv. Store historical device configurations captured and enable comparison of current device configuration against a previously captured configuration

c) Security patch management of all applications shall be encrypted and signed.
d) Performance Management to monitor network performance as specified.
e) Fault Management to recognize, isolate, log and identify fault on network and connected nodes, devices.

The network management software shall be based on the latest secured version of SNMP v3. The NMS shall have a simple browser-based user interface to provide all the pertinent information about the system. The NMS shall not impact the availability and performance of AMI applications and shall load not more than 1% of network bandwidth and shall have secure communication.

The Network Management Software shall have following functionality:

a) It shall maintain performance & error statistics, and present this information via displays, periodic reports and on-demand reports.
b) Apart from real-time monitoring of critical network devices, the above information shall be collected and stored at user configurable periodicities i.e., 5 minutes to 60 minutes. The NMS shall be capable of storing the above data for a period of one (1) year at an interval of 5 minutes.
c) It shall maintain a graphical display for connectivity and status of peripheral devices. The monitored devices shall be configured to send SNMP notifications, and the graphical element representing the device shall change to a different colour depending on the severity of the notification received.
d) It shall issue alarms when error conditions occur.
e) The period over which the statistics are gathered shall be adjustable by the user and the accumulated statistics shall be reset at the start of each period.
f) The statistics shall be available for printout and display after each period and on demand during the period.
g) In case more than one technology of AMI (example PLCC and RF between Smart Meter & DCU) deployed in the field. It shall maintain statistics on the performance and availability of node being delivered per AMI technology.

1.3 NMS Requirements Specific to HES

The Network Management System (NMS) function within the HES shall manage communication network and its associated devices and monitor the performance of network. This module shall provide real time information about the IP network and its associated NAN/WAN modules in the field device/s.

a) NMS shall be able to collect parameters viz. terminal status, device status, next hop information, RF / PLC signal strength, Hardware/software version numbers, communication logs/events etc. For cellular WAN network, it shall be able to constantly monitor the meter WAN module for its connectivity and signal strength and quality
b) NMS function shall be able to perform ping & trace-route to an individual and a group of Nodes (NAN / WAN), Routers /Gateways / Access Point, DCU.
c) NMS function shall routinely check the logged in status of the end node / field device and its availability in the network for data exchange. In case of failure to get the ‘alive’ message from the end node/field device, it shall mark and notify the node as logged out. It shall be also possible to restart of a node (NAN/WAN) as well as trigger a hardware reset of the node.

d) NMS function should be able to collect and store monitoring profiles from End Points (NAN/WAN modules) and network devices for performance evaluation and troubleshooting purposes. Historical logs of monitored profiles shall be available analysis through standard reporting tool.
e) If GIS is enabled, then topology, location (lat/long) and status of all network nodes shall be visible on GIS map.

1.4 Network Protection & Security

The AMI 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 applications environment. 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 with the least-privilege concept mentioned above, so that entries may not be deleted, accidentally or maliciously.
The overall cyber security policy and implementation shall account for:

a) Prevent unauthorized users from reading or writing data or files, executing programs or performing operations without appropriate privileges.
b) Document all user sign on procedure
c) Record all network traffic for detecting unauthorized activity, unusual activity and attempts to defeat system security (AMISP to propose and document what constitutes normal activity/traffic)
d) A user authentication scheme consisting of at least a user identification and password shall be required for the user to request a connection to any network node.
e) GUI to provide role-based access based on user identity and user role. Shall have following types of users:
    i. Administrator
    ii. Operator
    iii. Field staff
    iv. Viewer/Guest

1.6 Communication Network Elements

Following sections provide detail on both DCU based communication network and router-based RF mesh network. The AMISP shall select relevant parts as applicable for designing and establishing communication infrastructure. The network shall be horizontally and vertically scalable to accommodate future meter installations. The network elements may be comprised of the following.

a) Data Concentrator Unit (DCU) based Communication Network (to be kept as redundant item if required, otherwise the entire section is to be deleted)
b) 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 passes it on to HES / MDM.

c) 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 / PLCC communication and with HES on WAN.

1.7 Hardware & Power Supply of DCU

a) Enclosure/box of DCU shall be IP65 or better compliant. A suitable mounting arrangement required for DCU installation shall also be provided.
b) 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 6 kV. Power supply shall be terminated on suitable sized Miniature Circuit Breaker (MCB) to facilitate isolation during on-site maintenance.
c) DCU shall have battery with backup for 1(one) 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.
d) DCU shall have built-in Real Time Clock (RTC) with separate battery backup. It shall have self-diagnostic feature for RTC, memory, battery, communication module, etc.

2.6 Configuration, Functionality & Interface of DCU

DCU shall have following configuration functionalities / tools:
a) Configuring the communication with underlying nodes/meters.
b) Communication of 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 configurable. DCU shall be capable to prioritize control commands.
c) DCU shall ensure a secure communication to HES and shall have internal memory for storing interval data for at least 5(five) days. This storage shall be in non-volatile memory as opposed to battery backed memory.
d) DCU shall support on demand read and ping of individual/group of meters.
e) It shall support IPv6 network addressing.
f) DCU shall push events such as tamper, power off etc. to HES immediately on occurrence/receipt from field devices/meters.
g) The equipment shall be weatherproof, dustproof and constructed for outdoor installation on poles (minimum rating: IP65). A suitable mounting provision shall be made for the equipment.
h) 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.
i) The list of standards followed in all the devices/equipment used in communication network shall be furnished

1.10 DCU Communication

a) The DCU shall ensure the appropriate backhaul for secure transfer of data to HES either via cellular or Fiber Optic communication. In case of cellular backhaul, it shall support SIM card / e-SIM with dynamic/static IP as the architecture demands from any service provider. It shall have Wide Area Network (WAN) connectivity to the HES through suitable means. Best available link shall be used to connect to HES.

b) DCU shall be able to communicate with meters through a secured, standard communication protocol between meter and DCU.
c) DCU shall periodically monitor meter reads/downstream commands and shall retry and reconnect in case of failed events/reads.
d) It shall push events such as 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.
e) On restoration of power supply, DCU shall establish communication with underlying devices as well as upstream application automatically.
f) DCU shall be able to communicate with the nearest meters.
g) Remote firmware upgrade: The DCU shall support remote firmware upgrades as well as remote configuration from the Network Operation cum Monitoring Centre (NOMC)
h) DCU shall facilitate recording of minimum of the following events at HES (for 7 days):
    i. No of packet failures
    ii. Retry attempts
    iii. Missed periodic readings
    iv. Failure to connect
    v. Tamper events

1.10 Gateway/ Router/ Access Point based RF Mesh Network

In this type of communication network, different network nodes including end points (Smart Meters) shall interconnect with each other using RF mesh network and they shall communicate with nearby gateways/ routers to transfer the data to access points. If any gateways/ routers/ repeaters/ access points fail, then nodes connected on that device shall automatically reconfigure the mesh with available nearby nodes.

1.11 General Requirement of RF Mesh Network:

a) The communication network shall have dynamic & self-healing capability. If one of the communication elements such as gateways/ routers/ access points fails, then nodes connecting to that element shall switch to best available element for communication of data to HES.
b) It shall support IPv6 network addressing.
c) Each node shall keep a track of best available nearby nodes or access points.
d) The communication network equipment shall use Unlicensed or Licensed frequency band as permitted by WPC/Statutory Bodies as applicable.
e) All the communication network equipment shall be as per WPC guidelines, Government of India for operation in licensed / license free frequency band.
f) Suitable 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.
g) It shall support remote firmware upgrading
h) It shall be secure enough to avoid all cyber threats
i) The communication network shall ensure secure communication of data to HES.
j) The equipment shall be weatherproof, dustproof and constructed for outdoor installation on poles (minimum rating: IP65). A suitable mounting provision shall be made for the equipment.
k) The list of standards followed in all the devices/equipment used in communication network shall be furnished.

l) k)l) Gateway/ Router/ Access Point shall have battery with backup for 1(one) hour for normal meter reading, to push tamper event, carry out on demand reading and the network health status/ connectivity continuity & check etc. during battery operations also. It should have the suitable feature to send power outage and restoration message to the HES even during battery back-up.

1.12 Configuration, Functionality & Interface

Access points shall have following configuration functionalities:

a) It shall be able to configure the communication with underlying nodes/end points.
b) It shall support on demand read and ping of individual/group of meters.
c) It shall push events such as tamper, power off etc. to HES immediately on occurrence/receipt from field devices/meters.
d) It shall have Wide Area Network (WAN) connectivity to the HES through suitable means.
e) It shall communicate with gateways/ routers/ nodes/ end points/ access points on RF mesh network (Unlicensed or Licensed frequency band as permitted by WPC/Statutory Bodies in country of deployment as applicable).
f) It shall periodically monitor meter reads/downstream commands and shall retry and reconnect in case of failed events/reads.
g) After power Interruption, on restoration of power supply, it shall establish communication with underlying devices as well as upstream application (HES) automatically.
h) Access point shall facilitate recording of minimum of the following events at HES (for seven (7) days):
    i. No of lost packets
    ii. Retry attempts
    iii. Missed periodic reading
    iv. Failure to connect
    v. Tamper events
i) It shall be capable to handle interval data of suitable nos. of any type of Smart Meter. 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.
j) Gateway / Router / Access point shall support remote firmware upgrades as well as remote configuration from the Network Operation cum Monitoring Centre.
k) The Gateway / Router / Access Points shall have provision to maintain the time and date information and shall always be in Time synchronization to the HES server via NTP to sub second accuracy. The Gateway / Router / Access Points, shall support time distribution to each Mesh Node

B. Considering that the new Smart Meters may use different types of communication technologies (RF/PLCC/Cellular, etc.), thus in order to enable different communication modules to be used in the same meter, it is necessary to use a universal interface and a particular size irrespective of the choice of communication technology that defines the dimensions of the communication slot as well as physical placement and location of connectors. The following example recommendations will go a long way in assuring interoperability whilst still complying with the provisions of IS 16444 and IS 15959 standards:

Part I

1. **Recommended Module Placement location**

In order to improve the Radio Performances of any of the wireless technologies encompassing but not limited to Cellular, RF and / or RF mesh, it is recommended to place the communication module anywhere on the accessible part of the meter. This will also enable an easy approach to improve antennae performances.

2. Meter shall have the means of tamper detection to record the event(s) of the removal of the communication module set from the meter, irrespective of whether the meter is in power on (has supply) or powered off (no supply) condition.
3. The Module shall be hot swappable and shall fit snugly inside the meter box, so that the same IP class of the meter is maintained.
4. A transparent cover may be used for the purpose,
    a. To have a sealing arrangement with the meter body as well as
    b. For easy viewing of LED indicators and antenna assembly without having to open the cover.

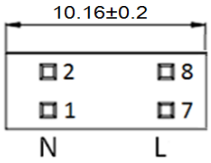
Part II

AC power interface:

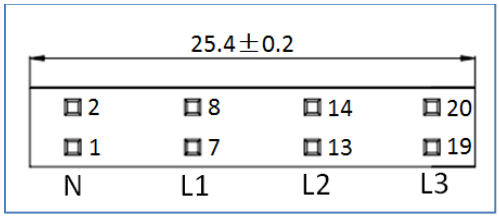
In the event of PLC communication being chosen as the only or one of the choices, the following arrangement of connector and pinouts need to be provisioned on the communication module.

Female connector

1. Front View:

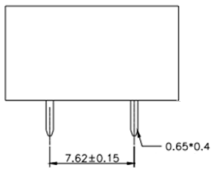


Single phase meter

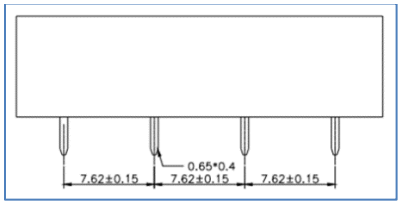


Poly phase meter

2、Top View:

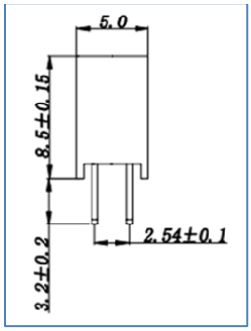


Single phase meter



Poly phase meter

3、Side View:



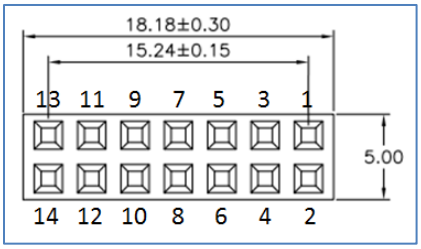
Pin to Pin distance should be: 7.62mm (Standard Pin connector)

Communication interface:

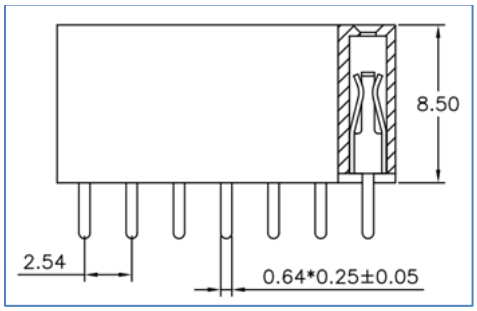
The meter shall have a slot of an appropriate size to allow for the pluggable communication module (such as but not limited to NAN /WAN, dual mode RF, Dual Technology, cellular etc.) to be fit in to the meter. The meter shall provide a 14-pins Female socket connector (2*7pin, 2.54mm). The socket shall be selected and positioned to ensure that the male pins on the communication module can connect reliably and easily connect with the female contactors on the meter.

Female connector

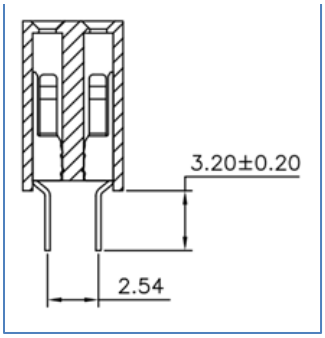
1. Front View：



2. Top View:



3. Side View:



PIN Outs may be provided as per below details

Pin No	Name	Input/output	Description
1	Reserved	/	/
2	Reserved	/	/
3	Power EN	Output	Control the module's power supply
4	Reserved	/	/
5	Reserved	/	/
6	Meter TXD	Output	To Module UART port RXD, Min.38400
7	Meter RXD	Input	From Module UART port TXD, Min.38400
8	Reserved	/	/
9	RTS	Input	Input digital signal from module
10	RST	Output	Reset signal for module
11	CTS	Output	Output digital signal to module
12	+Vdc	Power	As per IS16444
13	GND	Common	Ground Reference Potential
14	GND	Common	Ground Reference Potential

PART 3 – Conditions of Empanelment

Section 7 - Conditions of Empanelment

General Conditions of Empanelment

1. General Provisions

Relationship

1. Nothing mentioned herein shall be construed as relationship of master and servant or of principal and agent as between the "Empaneling Entity" and the "applicant". No partnership shall be constituted between Empaneling Entity and the applicant by virtue of this Empanelment nor shall either party have powers to make, vary or release agreement obligations on behalf of the other party or represent that by virtue of this or any other Empanelment a partnership has been constituted, or that it has any such power. The applicants shall be fully responsible for the services performed by them or on their behalf.

2. Neither party shall use the other parties name or any service or proprietary name, mark or logo of the other party for promotional purpose without first having obtained the other party's prior written approval.

No Obligation

Empanelment for providing AMI solution does not guarantee that any or all applicants shall be awarded any project / assignment as a result of this Empanelment. This Empanelment is merely a pre – qualification criteria to participate in the AMI bids floated by the States under RDSS scheme.

Period of Empanelment

The empanelement would be valid for an initial period of 24 months from the date of issuance of the Emapanelment Certificate, subject to the satisfactory performance of the Applicant. Post the expiry of the certificate, the Empaneling Commitee/ Empanelling Entity reserves the right to extend/ renew the certification for a period of another 24 months or invite the Applicant for a re-demonstration.

2. De- empanelment/ Cancellation of Empanelment Certificate

2.1 Termination/ Withdrawal of Empanelment	In case the performance of the Empanelled Entity is found to be unsatisfactory during contract execution as per the conditions below, the Empanelled entity would be de-empanelled. 4. In case the Utility terminates the contract with the Empanelled entity due to its Event of Default, 5. In case a 'SLA Default Notice'[1]as defined in the AMISP SBD, is issued to the Empanelled entity.
2.2 Non disclosure Agreement:	The Empanelled Entity will treat as confidential all data and information about the Empaneling Entity /concerned department, obtained in the execution of its responsibilities, in strict confidence and will not reveal such information to any other party without the prior written approval of the Empaneling Entity/concerned department.
2.2.2 Intellectual Property Rights	The Applicant shall ensure that while it uses any software, hardware, processes or material in the course of performing the demonstration test, it does not infringe the Intellectual Property Rights of any person and the Applicants shall keep Empaneling Entity/concerned department indemnified against all costs, expenses and liabilities howsoever, arising out of any illegal or unauthorized use (piracy) or in connection with any claim or proceedings relating to any breach or violation of any permission/license terms or infringement of any Intellectual Property Rights by the Agency during the course of performance of the Services.

[1] SLA Default Notice means notice to be issued by the Utility in the event AMISP fails meet any of the criteria specified in the SLA for cumulatively 3 (three) months in past 6 (six) months so as to entitling levy of maximum penalty for such criteria

ATTACHMENT 1 to GCE

Fraud and Corruption

1. Purpose

1.1 Government's/ Empaneling Entity's Anti-Corruption Laws/ Guidelines apply with respect to application.

2. Requirements

2.1 Empaneling Entity requires that Applicants (applicants/proposers), consultants, contractors and suppliers; any sub-contractors, sub-consultants, service providers or suppliers; any agents (whether declared or not); and any of their personnel, observe the highest standard of ethics during the application process, selection and contract execution, and refrain from Fraud and Corruption.

2.2 To this end, Empaneling Entity:

I. Defines, for the purposes of this provision, the terms set forth below as follows:

i. "corrupt practice" is the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;

ii. "fraudulent practice" is any act or omission, including misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain financial or other benefit or to avoid an obligation;

iii. "collusive practice" is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;

iv. "coercive practice" is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;

v. "obstructive practice" is:

(b) deliberately destroying, falsifying, altering, or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede investigation into allegations of a corrupt, fraudulent, coercive, or collusive practice; and/or threatening, harassing, or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or

II. Rejects a proposal for award if the REC determines that the firm or individual recommended for award, any of its personnel, or its agents, or its sub-consultants, sub-contractors, service providers, suppliers and/ or their employees, has, directly or indirectly, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;

III. In addition to the legal remedies set out in the relevant Legal Agreement, may take other appropriate actions,;

IV. Pursuant to the Anti- Corruption Laws/ Guidelines and in accordance with due process, Empaneling Entity, may sanction a firm or individual, either indefinitely or for a stated period of time, including by publicly declaring such firm or individual ineligible (i) to be awarded or otherwise benefit from contract awarded by Empaneling Entity or its subsidiaries/ affiliates, financially or in any other manner; (ii) to be a nominated sub-contractor, consultant, manufacturer or supplier, or service provider of an otherwise eligible firm being awarded a contract Empaneling Entity or its subsidiaries/ affiliates; and (iii) to receive the proceeds of any loan made by the Empaneling Entity or otherwise to participate further in the preparation or implementation of any Empaneling Entity's-financed project.

Section 8 – Forms

Empanelment Certificate Format

Format of Certificate

Certificate No.

Date of Certification

Logo of Test Agency

Logo of MoP

Logo of REC

Certificate for Empanelment

This is to certify that [insert name] has successfully demonstrated following AMI prepaid solution:

Certification-1: For successfully demonstrating an end–to–end AMI prepaid solution in standard test set up.

and is eligible to participate in the smart metering projects under Revamp Distribution System Scheme.

An indicative table is given as below:

No.	Component of AMI prepaid solution	Type	Component/ Solution Provider Name	Model No./ Product details
1.	Smart Meter Manufacturers	Whole Current A.C. Single Phase Smart Energy Meter		
		Whole Current A.C. Three Phase Smart Energy Meter (Optional)		
2.	Communication System	Cellular		
		Radio Frequency		
3.	Head End System			
4.	Meter Data Management System			
5.	System Integrator			

This certificate shall be used merely as a Empanelment for participation in smart metering project under RDSS and is subject to the attached General Conditions of Empanelment.

Signature of Testing Agency

Signature of RFEmpaneling Commitee