BSES Yamuna Power Limited

Volume - I

Tender Notification for

SUPPLY & INSTALLATION OF GPRS or CDMA MODEM

NIT NO: CMC/BY/19-20/RB/VKS/01

Due Date for Submission: 23.04.2019, 2:30 PM.

BSES YAMUNA POWER LTD (BYPL)

SECTION – I: REQUEST FOR QUOTATION

1.00 Event Information

1.1 BSES Yamuna Power Ltd (hereinafter referred to as **"BYPL"**) invites sealed tenders in 2 envelopes for supply of GPRS/CDMA MODEM from reputed manufacturers. The bidder must qualify the technical requirements as specified in clause 2.0 stated below. All envelopes shall be duly superscribed as — **"BID FOR GPRS or CDMA MODEM "NIT NO CMC/BY/19-20/RB/VKS/01 DUE ON 23.04.2019, 2:30 PM"**

Sl. No	Item Description	Technical Specification	Estimated Cost	EMD Cost	Delivery location
1	**Supply of GPRS or CDMA MODEM**	As per "Section V"	₹ 80 Lakh	₹ 1.60 Lakh	BYPL's Offices/ Stores

1.2 The schedule of specifications with detail terms & conditions can be obtained from address given below against submission of non-refundable demand draft of **₹ 1180/-**drawn in favour of BSES Yamuna Power Ltd, payable at Delhi. The tender papers will be issued on all working days upto **23.04.2019, 02:30 PM** The tender documents & detail terms and conditions can also be downloaded from the website **"www.bsesdelhi.com"**.
In case tender papers are downloaded from the above website, then the bidder has to enclose a demand draft covering the cost of bid documents.

1.3 Offers will be received upto **23.04.2019**, **2:30 PM** at the address given in clause 3.01. Part A of the Bid shall be opened on **23.04.2019, 3:00 PM** Part B of the Bid will be opened in case of Techno-Commercially qualified Bidders and the date of opening of same shall be intimated in due course. It is the sole responsibility of the bidder to ensure that the bid documents reach this office on or before the due date.

Head of Department Contracts
& Materials Deptt. BSES
Yamuna Power Ltd 3rd Floor, A Block
Shaktikiran Building, Karkardooma
Delhi 110032

1.4 BYPL reserves the right to accept/reject any or all Tenders without assigning any reason thereof and alter the quantity of materials mentioned in the Tender documents by (±) 30% at the time of placing purchase orders.

1.5 Tender will be summarily rejected if:

(i) **Earnest Money Deposit (EMD)** of value ₹ 1,60,000/- is not deposited in shape of Pay Order/FDR /BG drawn in favour of BSES Yamuna Power Ltd, payable at Delhi.
(ii) The offer does not contain "FOR NEW DELHI" prices indicating break-up towards all taxes & duties.
(iii) Complete Technical details are not enclosed.
(iv) Tender is received after due date and time**.**
(v) Page serial nos not mentioned on each submitted documents.

2.0 Qualification Criteria:-

The prospective bidder must qualify all of the following requirements and shall be eligible to

participate in the bidding who meets following requirements and management has a right to disqualify those bidders who do not meet these requirements.

a. The bidder must be a manufacturer of Modem
b. The bidder should have capacity to deliver the required Modem in one supply.
c. Bidder must have executed the item under single order with total order value not less than 15 laces.
d. The bidders must process valid ISO 9001:2000 certification & BIS certificate.
d. The bidder should have qualified technical and QA personnel at various stages of manufacture & testing.
e. The bidder should have supplied at least 3000 nos. Modem (GPRS or CDMA) to any major utilities/SEB's in last 3 years out of which at least 1000 no's should be in successful operation in last 2 years. Performance certificate shall be furnished in support of same.
f. Bidder should have average Annual Sales Turnover of ₹ 2 Cr in last year.
g. Firms who are debarred/blacklisted in other utilities in India will not be considered
h. In case of new bidder (not enlisted in BSES), factory inspection & evaluation shall be carried out to ascertain bidders manufacturing capabilities & quality procedures BYPL reserves the right to assess the capabilities/ installed capacity.

3.0 Bidding and Award Process

Bidders are requested to submit their offer strictly in line with this tender document. **NO DEVIATION IS ACCEPTABLE**. BYPL shall response to the clarifications raised by various bidders and the same will be distributed to all participating bidders through website.

3.1 BID SUBMISSION

The bidders are required to submit the bids in 2(two) parts and submitted in 1 original + 1 duplicate to the following address

Head of Department
Contracts & Material Deptt.
BSES Yamuna Power Ltd 3rd
Floor, A Block
Shaktikiran Building, Karkardooma
Delhi 110032

PART A:: TECHNICAL **BID** comprising of following

- EMD of requisite amount
- Non-refundable separate demand draft for ₹ 1180/- In case the forms are downloaded from the website
- Documentary evidence in support of qualifying criteria
- Technical Literature if any.
- Any other relevant document
- Acceptance to Commercial Terms and Conditions viz Delivery schedule/period, Payment terms, BG, Power of Attorney etc.
- Acceptance to Technical Specifications if any

The technical bid shall also contain the tender Document with all pages signed & stamped with bidder's seal

PART B:: FINANCIAL **BID** comprising of Price strictly in the Format enclosed in SECTION V indicating Break up of basic price, taxes & duties, Freight etc

3.2 TIME SCHEDULE

The bidders should complete the following within the dates specified as under:

S.No	Steps	Comprising of	Due Date
1	**Queries, if any**	All Queries related to RFQ	On or before Pre-bid meeting
2	**PART A Technical and Commercial Bid**	EMD of requisite amount Non-refundable DD for ₹ 1180/- in case tender documents downloaded from website Documentary evidence in support of qualifying criteria Technical Literature Qualified manpower available Testing Facilities Original Tender documents duly stamped & signed on each page as stamped & signed on each page as token of acceptance to Commercial Terms and Conditions viz. Delivery schedule/period, Payment terms etc	23.04.2019 2:30 PM
3	**PART B Financial Bid**	Price strictly in the Format enclosed(Section V) indicating Break up regarding basic price, taxes & duties, Freight etc	23.04.2019 2:30 PM
4	**Sample (02 Nos)**	Submit 2 samples along with the bid and shall demonstrate the data retrieval in our system	23.04.2019 2:30 PM
5	**Performance Guarantee quality system report**	• As per RFQ	Only for successful Bidders.
6	**Opening of Technical bid**	• As per RFQ	23.04.2019, 3:00 PM

This is a two part bid process. Bidders are to submit the bids in 2(two) parts
Both these parts should be furnished in separate sealed covers super scribing NIT no. DUE DATE OF SUBMISSION, with particulars as **PART-A TECHNICAL BID & COMMERCIAL TERMS & CONDITIONS** and **Part-B FINANCIAL BID** and these sealed envelopes should again be placed in another sealed cover which shall be submitted before the due date & time specified.

Part – A:: Technical Bid should not contain any cost information whatsoever and shall be submitted within the due date.

PART B:: This envelope will be opened after techno-commercial evaluation and only of the qualified bidders. The date & time of same shall be intimated in due course to the qualified bidders

Notwithstanding anything stated above, the Purchaser reserves the right to assess bidder's capability to perform the contract, should the circumstances warrant such assessment in the overall interest of the purchaser. In this regard the decision of the purchaser is final.

Reverse Auction Clause: Purchaser reserves the right to use the online reverse auction as optional tool through SAP – SRM as an integral part of the entire tendering process. All the bidders who are techno-commercially qualified on the basis of tender requirements shall participate in reverse auction.
Notwithstanding anything stated above, the Purchaser reserves the right to assess bidder's capability to perform the contract, should the circumstances warrant such assessment in the overall interest of the purchaser. In this regard the decision of the purchaser is final.

BIDS RECEIVED AFTER DUE DATE AND TIME MAY BE LIABLE TO REJECTION

4.0 Award Decision

4.1 Purchaser intends to award the business on a lowest bid basis, so suppliers are encouraged to submit the bid competitively. The decision to place purchase order/LOI solely depends on purchaser on the cost competitiveness across multiple lots, quality, delivery and bidder's capacity, in addition to other factors that Purchaser may deem relevant.

4.2 The purchaser reserves all the rights to award the contract to one or more bidders so as to meet the delivery requirement or nullify the award decision without citing any reason.

4.3 In the event of your bid being selected by purchaser (and / or its affiliates) and you subsequent DEFAULT on your bid; you will be required to pay purchaser (and / or its affiliates) an amount equal to the difference in your bid and the next lowest bid on the quantity declared in NIT/RFQ.

4.4 In case any supplier is found unsatisfactory during the delivery process, the award may be cancelled and BYPL reserves the right to award other suppliers who are found fit.

4.5 QTY VARIATION: The purchaser reserves the rights to vary the quantity by (±) 30% of the tender quantity.

5.0 Market Integrity

We have a fair and competitive marketplace. The rules for bidders are outlined in the Terms & Conditions. Bidders must agree to these rules prior to participating. In addition to other remedies available, we reserves the right to exclude a bidder from participating in future markets due to the bidder's violation of any of the rules or obligations contained in the Terms & Condition. A bidder who violates the marketplace rules or engages in behavior that disrupts the fair execution of the marketplace restricts a bidder to length of time, depending upon the seriousness of the violation. Examples of violations include, but are not limited to:

- Failure to honor prices submitted to the marketplace.
- Breach of the terms of the published in Request For Quotation/NIT.

6.0 Supplier Confidentiality

All information contained in this RFQ is confidential and shall not be disclosed, published or advertised in any manner without written authorization from BYPL. This includes all bidding information submitted.

All RFQ documents remain the property of BYPL and all suppliers are required to return these documents to BYPL upon request.

Suppliers who do not honor these confidentiality provisions will be excluded from participating in future bidding events.

7.0 Contact Information

Technical clarification, if any, as regards this RFQ shall be sought in writing and sent by post/courier to following address. The same shall not be communicated through email/phone. Any corrigendum/addendum/modifications in the tender documents shall be uploaded in website

	Technical	**Commercial**
Contact Name	Ashwani Aggarwal	Rakesh Bansal
Address	3rd Floor, B Block, Shakti Kiran Building, Karkardooma, Delhi-32	3rd Floor, A Block, Shakti Kiran Building, Karkardooma, Delhi-32
Fax No.	011-39999636	011-39999230
Email Id	Ashwani.Aggarwal@relianceada.com	Rakesh.Bansal@relianceada.com

However, in case, any bidder has already submitted his bid, he may submit modified bid in view of the changes/modifications/corrigendum in the tender document within the stipulated due date of submission. The modified bid envelope shall be duly marked as "**MODIFIED/AMENDED BID**" along with a declaration that all old bids as "NULL AND VOID". Other formalities shall remain same.

SECTION – II: INSTRUCTION TO BIDDERS

A. GENERAL

1.0 BSES Yamuna Power Ltd, hereinafter referred to as "The Purchaser" are desirous of implementing the various Systems Improvement/Repair & Maintenance works at their respective licensed area in Delhi The Purchaser has now floated this tender for procurement of material notified earlier in this bid document.

2.0 **SCOPE OF WORK**

The scope shall include Design, Manufacture, Testing at works conforming to the Technical Specifications along with Packing, Forwarding, Transportation and Unloading and proper stacking at Purchaser's stores/site

3.0 **DISCLAIMER**

3.1 This Document includes statements, which reflect various assumptions, which may or may not be correct. Each Bidder/Bidding Consortium should conduct its own estimation and analysis and should check the accuracy, reliability and completeness of the information in this Document and obtain independent advice from appropriate sources in their own interest.

3.2 Neither Purchaser nor its employees will have any liability whatsoever to any Bidder or any other person under the law or contract, the principles of restitution or unjust enrichment or otherwise for any loss, expense or damage whatsoever which may arise from or be incurred or suffered in connection with anything contained in this Document, any matter deemed to form part of this Document, provision of Services and any other information supplied by or on behalf of Purchaser or its employees, or otherwise a rising in anyway from the selection process for the Supply.

3.3 Though adequate care has been taken while issuing the Bid document, the Bidder should satisfy itself that Documents are complete in all respects. Intimation of any discrepancy shall be given to this office immediately.

3.4 This Document and the information contained herein are Strictly Confidential and are for the use of only the person(s) to whom it is issued. It may not be copied or distributed by the recipient to third parties (other than in confidence to the recipient's professional advisors).

4.0 **COST OF BIDDING**

The Bidder shall bear all cost associated with the preparation and submission of its Bid and Purchaser will in no case be responsible or liable for those costs.

B. BIDDING DOCUMENTS

5.1 The Scope of Work, Bidding Procedures and Contract Terms are described in the Bidding Documents. In addition to the covering letter accompanying Bidding Documents, the Bidding Documents include:

4.04.1 The Scope of Work, Bidding Procedures and Contract Terms are described in the Bidding Documents are as follows:

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a.	Request for Quotation (RFQ)	- Section I
b.	Instructions to Bidders (ITB)	- Section – II
c.	Terms & Conditions of Contract (T&C)	- Section –III
d.	Quantity And Delivery Requirement	- Section -IV
e.	Technical Specifications (TS)	- Section –V

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f.	Bid Form -	Annexure -I
g.	Bank Guarantee Format -	Annexure -II
h.	Reverse Auction Event -	Annexure –III
i.	Price Schedule -	Annexure -IV
j.	Commercial terms and Conditions –	Annexure-V
k.	No Deviation Sheet-	Annexure-VI
l.	Qualification criteria -	Annexure-VII
m.	Manufacturer Authorization letter -	Annexure-VIII

5.2 The Bidder is expected to examine the Bidding Documents, including all Instructions, Forms, Terms and Specifications. Failure to furnish all information required by the Bidding Documents or submission of a Bid not substantially responsive to the Bidding Documents in every respect will may result in the rejection of the Bid.

6.0 AMENDMENT OF BIDDING DOCUMENTS

6.1 At any time prior to the deadline for submission of Bids, the Purchaser may for any reasons, whether at its own initiative or in response to a clarification requested by a prospective Bidder, modify the Bidding Documents by Amendment.

6.2 The Amendment shall be part of the Bidding Documents, pursuant to Clause 5.01, and it will be notified in web site **www.bsesdelhi.com** and the same will be binding on them.

6.3 In order to afford prospective Bidders reasonable time in which to take the Amendment into account in preparing their Bids, the Purchaser may, at its discretion, extend the deadline for the submission of Bids. The same shall be published as a corrigendum in website "www.bsesdelhi.com"

C. PREPARATION OF BIDS

7.0 LANGUAGE OF BID

The Bid prepared by the Bidder, and all correspondence and documents relating to the Bid

exchanged by the Bidder and the Purchaser, shall be written in the English Language. Any printed literature furnished by the Bidder may be written in another Language, provided that this literature is accompanied by an English translation, in which case, for purposes of interpretation of the Bid, the English translation shall govern.

8.0 **DOCUMENTS COMPRISING THE BID**

The Bid prepared and submitted by the Bidder shall comprise the following components:

(a) Bid Form, Price & other Schedules (STRICTLY AS PER FORMAT) and Technical Data Sheets completed in accordance with Technical Specification.

(b) All the Bids must be accompanied with the required EMD as mentioned in the Section-I against each tender.

(c) Tender documents duly stamped and signed on each page by authorized signatory.

9.0 **BID FORM**

9.01 The Bidder shall submit one "Original" and one "Copy' of the Bid Form and the appropriate Price Schedules and Technical Data Sheets duly filled in as per attached specification (Section VIII) enclosed with the Bidding Documents.

9.2 **EMD**

Pursuant to Clause 8.0(b) above, the bidder shall furnish, as part of its bid, a EMD amounting to as specified in the Section-I. The EMD is required to protect the Purchaser against the risk of Bidder's conduct which would warrant forfeiture.

The EMD shall be denominated in any of the following form**:**

(a) FDR/Pay Order drawn in favour of BSES Yamuna Power Ltd, payable at Delhi.
(b) Bank Guarantee valid for One Twenty (120) days after due date of submission drawn in favour of BSES Yamuna Power Ltd plus 30 days

The EMD may be forfeited in case of:

(a) The Bidder withdraws its bid during the period of specified bid validity

or

(b) the case of a successful Bidder, if the Bidder does not

(i) accept the Purchase Order, or

(ii) furnish the required performance security BG.

10.0 **BID PRICES**

10.1 Bidders shall quote for the entire Scope of Supply with a break-up of prices for individual items. The total Bid Price shall also cover all the Supplier's obligations mentioned in or reasonably to be inferred from the Bidding Documents in respect of Design, Supply, Transportation to site, all in accordance with the requirement of Bidding Documents The Bidder shall complete the appropriate Price Schedules included herein , stating the Unit Price

for each item & total Price.

10.2 The prices offered shall be inclusive of all costs as well as Duties, Taxes and Levies paid or payable during execution of the supply work, breakup of price constituents, should be there.

Prices quoted by the Bidder shall be **"Firm"** and not subject to any price adjustment during the performance of the Contract. **A Bid submitted with an adjustable price/ Price Variation Clause will be treated as non -responsive and rejected.**

11.0 **BID CURRENCIES**

Prices shall be quoted in Indian Rupees Only**.**

12.0 **PERIOD OF VALIDITY OF BIDS**

12.01 Bids shall remain valid for 120 days from the due date of submission of the Bid.

12.2 Notwithstanding Clause 12.01 above, the Purchaser may solicit the Bidder's consent to an extension of the Period of Bid Validity. The request and the responses thereto shall be made in writing and sent by post/courier

13.0 **ALTERNATIVE BIDS**

Bidders shall submit Bids, which comply with the Bidding Documents. Alternative Bids will not be considered. The attention of Bidders is drawn to the provisions regarding the rejection of Bids in the terms and conditions, which are not substantially responsive to the requirements of the Bidding Documents.

14.0 **FORMAT AND SIGNING OF BID**

14.1 The original Bid Form and accompanying documents (as specified in Clause 9.0), clearly marked "Original Bid" plus one copy must be received by the Purchaser at the date, time and place specified pursuant to Clauses 15.0 and 16.0. In the event of any discrepancy between the original and the copies, the original shall govern.

14.2 The original and copy of the Bid shall be typed or written in indelible ink and shall be signed by the Bidder or a person or persons duly authorized to sign on behalf of the Bidder. Such authorization shall be indicated by written Power-of-Attorney accompanying the Bid.

14.3 The Bid shall contain no interlineations, erasures or overwriting except as necessary to correct errors made by the Bidder, in which case such corrections shall be initialed by the person or persons signing the Bid.

D. SUBMISSION OF BIDS

15.0 **SEALING AND MARKING OF BIDS**

15.1 Bid submission: One original & one Copy (hard copies) of all the Bid Documents shall be sealed and submitted to the Purchaser before the closing time for submission of the bid.

15.2 The Technical Documents and the EMD shall be enclosed in a sealed envelope and the said envelope shall be superscribed with —"Technical Bid & EMD". The price bid shall be inside

another sealed envelope with superscribed "Financial Bid". Both these envelopes shall be sealed inside another big envelope. All the envelopes should bear the Name and Address of the Bidder and marking for the Original and Copy. The envelopes should be superscribed with —"Tender Notice No. & Due date of opening".

15.3 The Bidder has the option of sending the Bids in person. Bids submitted by Email/Telex/Telegram /Fax will be rejected. No request from any Bidder to the Purchaser to collect the proposals from Courier/Airlines/Cargo Agents etc shall be entertained by the Purchaser.

16.0 **DEADLINE FOR SUBMISSION OF BIDS**

16.1 The original Bid, together with the required copies, must be received by the Purchaser at the address on or before the due date of submission.

17.0 **ONE BID PER BIDDER**

Each Bidder shall submit only one Bid by itself. No Joint Venture is acceptable. A Bidder Who submits or participates in more than one Bid will cause all those Bids to be rejected.

18.0 **LATE BIDS**

Any Bid received by the Purchaser after the deadline for submission of Bids prescribed by the Purchaser, pursuant to Clause 16.0, will be declared "Late" and may be rejected

19.0 **MODIFICATIONS AND WITHDRAWAL OF BIDS**

19.1 The Bidder is not allowed to modify or withdraw its Bid after the Bid's submission subject to any corrigendum/addendum/modifications in the tender documents uploaded in website.

E. EVALUATION OF BID

20.0 **PROCESS TO BE CONFIDENTIAL**

Information relating to the examination, clarification, evaluation and comparison of Bids and recommendations for the award of a contract shall not be disclosed to Bidders or any other persons not officially concerned with such process. Any effort by a Bidder to influence the Purchaser's processing of Bids or award decisions may result in the rejection of the Bidder's Bid.

21.0 **CLARIFICATION OF BIDS**

To assist in the examination, evaluation and comparison of Bids, the Purchaser may, at its discretion, ask the Bidder for a clarification of its Bid. All responses to requests for clarification shall be in writing and no change in the price or substance of the Bid shall be sought, offered or permitted.

22.0 **PRELIMINARY EXAMINATION OF BIDS / RESPONSIVENESS**

22.1 Purchaser will examine the Bids to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed, and whether the Bids are generally in order. Purchaser may ask for submission of original documents in order to verify the

documents submitted in support of qualification criteria.

22.2 Arithmetical errors will be rectified on the following basis. If there is a discrepancy between the unit price and the total price per item that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price per item will be corrected. If there is a discrepancy between the Total Amount and the sum of the total price per item, the sum of the total price per item shall prevail and the Total Amount will be corrected.

22.3 Prior to the detailed evaluation, Purchaser will determine the substantial responsiveness of each Bid to the Bidding Documents including production capability and acceptable quality of the Goods offered. A substantially responsive Bid is one, which conforms to all the terms and conditions of the Bidding Documents without material deviation.

22.04 Bid determined as not substantially responsive will be rejected by the Purchaser and/or the Purchaser and may not subsequently be made responsive by the Bidder by correction of the non -conformity.

23.0 EVALUATION AND COMPARISON OF BIDS

23.01 The evaluation of Bids shall be done based on the delivered cost competitiveness basis.

23.2 The evaluation of the Bids shall be a stage-wise procedure. The following stages are identified for evaluation purposes: In the first stage, the Bids would be subjected to a responsiveness check. The Technical & qualifying Proposals and the Conditional ties of the Bidders would be evaluated.

Subsequently, the Financial Proposals along with Supplementary Financial Proposals, if any, of Bidders with Techno-commercially Acceptable Bids shall be considered for final evaluation.

23.3 The Purchaser's evaluation of a Bid will take into account, in addition to the Bid price, the following factors, in the manner and to the extent indicated in this Clause:

(a) Delivery Schedule

(b) Conformance to Qualifying Criteria

(c) Deviations from Bidding Documents

Bidders shall base their Bid price on the terms and conditions specified in the Bidding Documents.

The cost of all quantifiable deviations and omissions from the specification, terms and conditions specified in Bidding Documents shall be evaluated. **The Purchaser will make its own assessment of the cost of any deviation for the purpose of ensuring fair comparison of Bids.**

23.4 Any adjustments in price, which result from the above procedures, shall be added for the purposes of comparative evaluation only to arrive at an "Evaluated Bid Price". Bid Prices quoted by Bidders shall remain unaltered.

F. AWARD OF CONTRACT

24.0 **CONTACTING THE PURCHASER**

24.1 If any Bidder wishes to contact the Purchaser on any matter related to the Bid, from the time of Bid opening to the time of contract award, the same shall be done in writing only.

24.02 Any effort by a Bidder to influence the Purchaser‘s decisions in respect of Bid evaluation, Bid comparison or Contract Award, will result in the rejection of the Bidder‘s Bid.

25.0 **THE PURCHASER ’S RIGHT TO ACCEPT ANY BID AND TO REJECT ANY OR ALL BIDS**

The Purchaser reserves the right to accept or reject any Bid and to annul the Bidding process and reject all Bids at any time prior to award of Contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for the Purchaser‘s action.

26.0 **AWARD OF CONTRACT**

The Purchaser will award the Contract to the successful Bidder whose Bid has been Determined to be the lowest-evaluated responsive Bid, provided further that the Bidder has been determined to be qualified to satisfactorily perform the Contract. Purchaser reserves the right to award order to other bidders in the tender, provided it is required for timely execution of project & provided he agrees to come to the lowest rate. Purchaser reserves the right to distribute the entire tender quantity at its own discretion without citing any reasons thereof.

27.0 **THE PURCHASER ’S RIGHT TO VARY QUANTITIES**

The Purchaser reserves the right to vary the quantity i.e. increase or decrease the numbers/quantities without any change in terms and conditions during the execution of the Order.

28.0 **LETTER OF INTENT/ NOTIFICATION OF AWARD**

The letter of intent/ Notification of Award shall be issued to the successful Bidder whose bids have been considered responsive, techno-commercially acceptable and evaluated to be the lowest (L1). The successful Bidder shall be required to furnish a letter of acceptance within 7 days of issue of the letter of intent /Notification of Award by Purchaser.

29.0 **PERFORMANCE BANK GAURANTEE**

Within 15 days of the receipt of Notification of Award/ Letter of Intent from the Purchaser, the successful Bidder shall furnish the Performance Bank Guarantee for an amount of 10% (Ten percent) of the Contract Price. The Performance Bond shall be valid for a period of 60 months from the date of Commissioning or 66 months from the date of last dispatch whichever is earlier plus 3 months claim period. . Upon submission of the performance security, the EMD shall be released.

30.0 **CORRUPT OR FRADULENT PRACTICES**

30.1 The Purchaser requires that the Bidders observe the highest standard of ethics during the procurement and execution of the Project. In pursuance of this policy, the Purchaser:

(a) Defines, for the purposes of this provision, the terms set forth below as follows:
(i) "Corrupt practice" means behavior on the part of officials in the public or private sectors by which they improperly and unlawfully enrich themselves and/or those close to them ,or induce others to do so, by misusing the position in which they are placed, and it includes the offering, giving, receiving, or soliciting of anything of value to influence the action of any such official in the procurement process or in contract execution; and
(ii) "Fraudulent practice" means a misrepresentation of facts in order to influence a Procurement process or the execution of a contract to the detriment of the Purchaser, and includes collusive practice among Bidders (prior to or after Bid submission) designed to establish Bid prices at artificial non -competitive levels and to deprive the Purchaser of the benefits of free and open competition.

(b) Will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question ;

(c) Will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a contract if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a contract.

30.2 Furthermore, Bidders shall be aware of the provision stated in the Terms and Conditions of Contract.

SECTION – III: TERMS AND CONDITIONS

1.0 General Instructions

1.1 All the Bids shall be prepared and submitted in accordance with these instructions.

1.2 Bidder shall bear all costs associated with the preparation and delivery of its Bid, and the Purchaser will in no case shall be responsible or liable for these costs.

1.3 The Bid should be submitted by the Bidder in whose name the bid document has been issued and under no circumstances it shall be transferred/sold to the other party.

1.4 The Purchaser reserves the right to request for any additional information and also reserves the right to reject the proposal of any Bidder, if in the opinion of the Purchaser, the data in support of RFQ requirement is incomplete.

1.5 The Bidder is expected to examine all instructions, forms, terms & conditions and specifications in the Bid Documents. Failure to furnish all information required in the Bid Documents or submission of a Bid not substantially responsive to the Bid Documents in every respect may result in rejection of the Bid. However, the Purchaser's decision in regard to the responsiveness and rejection of bids shall be final and binding without any obligation, financial or otherwise, on the Purchaser.

2.0 Definition of Terms

2.1 "Purchaser" shall mean BSES Yamuna Power Limited, on whose behalf this bid enquiry is issued by its authorized representative / officers.

2.2 "Bidder" shall mean the firm who quotes against this bid enquiry issued by the Purchaser. "Supplier" or "Supplier" shall mean the successful Bidder and/or Bidders whose bid has

been accepted by the Purchaser and on whom the "Letter of Acceptance" is placed by the Purchaser and shall include his heirs, legal representatives, successors and permitted assigns wherever the context so admits.

2.3 "Supply" shall mean the Scope of Contract as described.

2.4 "Specification" shall mean collectively all the terms and stipulations contained in those portions of this bid document known as RFQ, Commercial Terms & Condition, Instructions to Bidders, Technical Specifications and the Amendments, Revisions, Deletions or Additions, as may be made by the Purchaser from time to time.

2.5 "Letter of Acceptance" shall mean the official notice issued by the Purchaser notifying the Supplier that his proposal has been accepted and it shall include amendments thereto, if any, issued by the Purchaser. The "Letter of Acceptance" issued by the Purchaser shall

be binding on the "Supplier" The date of Letter of Acceptance shall be taken as the effective date of the commencement of contract.

2.6 "Month" shall mean the calendar month and "Day" shall mean the calendar day.

2.7 "Codes and Standards" shall mean all the applicable codes and standards as indicated in the Specification.

2.8 "Offer Sheet" shall mean Bidder's firm offer submitted to BYPL in accordance with the specification.

2.9 "Contract" shall mean the "Letter of Acceptance/Purchase Order" issued by the Purchaser.

2.10 "Contract Price" shall mean the price referred to in the "Letter of Acceptance/Purchase Order".

2.11 "Contract Period" shall mean the period during which the "Contract" shall be executed as agreed between the Supplier and the Purchaser in the Contract inclusive of extended contract period for reason beyond the control of the Supplier and/or Purchaser due to force majeure.

2.12 "Acceptance" shall mean and deemed to include one or more of the following as will be stipulated in the specification:

a) The written acceptance of material by the inspector at suppliers works to ship the materials.
b) Acceptance of material at Purchaser site stores after its receipt and due inspection/ testing and release of material acceptance voucher.
c) Where the scope of the contract includes supply, acceptance shall mean issue of necessary equipment / material takeover receipt after installation & commissioning and final acceptance.

3.0 Contract Documents & Priority

3.1 Contract Documents: The terms and conditions of the contract shall consist solely of these RFQ conditions and the offer sheet.

4.0 Scope of Supply -General

4.1 The "Scope of Supply" shall be on the basis of Bidder's responsibility, completely covering the obligations, responsibility and supplies provided in this Bid enquiry whether implicit or explicit.

4.02 Bidder shall have to quote for the Bill of quantities as listed in Section – IV of this RFQ.

4.3 Quantity variation and additional requirement if any shall be communicated to successful bidder during project execution.

4.4 All relevant drawings, data and instruction manuals.

5.0 Quality Assurance and Inspection

5.1 Immediately on award of contract, the bidder shall prepare detailed quality assurance plan / test procedure identifying the various stages of manufacture, quality checks performed at each stage, raw material inspection and the Customer hold points. The document shall also furnish details of method of checking, inspection and acceptance standards / values and get the approval of Purchaser before proceeding with manufacturing. However, Purchaser shall have right to review the inspection reports, quality checks and results of suppliers in house inspection department which are not Customer hold points and the supplier shall comply with the remarks made by purchaser or his representative on such reviews with regards to further testing, rectification or
rejection, etc.

5.2 Witness and Hold points are critical steps in manufacturing, inspection and testing where the supplier is obliged to notify the Purchaser in advance so that it may be witnessed by the Purchaser. Final inspection is a mandatory hold point. The supplier to proceed with the work past a hold point only after clearance by purchaser or a witness waiver letter from BYPL.

5.3 The performance of waiver of QA activity by Purchaser at any stage of manufacturing does not relieve the supplier of any obligation to perform in accordance with and meet all
the requirements of the procurement documents and also all the codes & reference documents mentioned in the procurement document nor shall it preclude subsequent rejection by the purchaser.

5.4 On completion of manufacturing the items can only be dispatched after receipt of
dispatch instructions issued by the Purchaser.

5.5 All in-house testing and inspection shall be done without any extra cost. The in-house inspection shall be carried out in presence of BSES/BSES authorized third party inspection agency. Cost of Futile/abortive visit(s) shall be debited from the invoices

5.6 Purchaser reserves the right to send any material being supplied to any recognized laboratory for testing, wherever necessary and the cost of testing shall be borne by the Bidder. In case the material is found not in order with the technical requirement / specification, the charges along with any other penalty which may be levied is to be borne by the bidder. To avoid any complaint the supplier is advised to send his representative to the stores to see that the material sent for testing is being sealed in the presence of bidder's representative.

6.0 Packing, Packing List & Marking

6.01 **Packing:** Supplier shall pack or shall cause to be packed all Commodities in crates/boxes/drums/containers/cartons and otherwise in such a manner as shall be reasonably suitable for shipment by road or rail to BYPL, Delhi/New Delhi stores/site without

undue risk of damage in transit.

6.02 **Packing List:** The contents of each package shall be itemized on a detailed list showing the exact weight, extreme outside dimensions (length, width & weight) of each container/box/drum/carton, Item SAP Code, PO No & date. One copy of the packing list shall be enclosed in each package delivered.

7.1 **Price basis for supply of materials**

a) Bidder to quote their prices on Landed Cost Basis and separate price for each items. FIRM prices for supply to BYPL Delhi/New Delhi stores inclusive of packing, forwarding, loading at manufacturer's premises, payment of GST, Freight, any other local charges. **Octroi is presently not applicable in Delhi and however if applicable shall be reimbursed at actual.**

b) The above supply prices shall also include unloading at BYPL Delhi/New Delhi stores/site.

c) Transit insurance will be arranged by Purchaser; however bidder to furnish required details in advance for arranging the same by Purchaser

d) Purchaser shall issue Form 'C' wherever applicable and accordingly bidder to consider applicable taxes in the quoted price.

8.0 **Terms of payment and billing**

8.1 For Supply of Equipments:
100% payment shall be made within 45 days from the date of receipt of material at store/ site**.**

8.2 Bidder to submit the following documents against dispatch of each consignment:

i. Consignee copy of LR
ii. Supplier detailed invoice showing commodity description, quantity, unit price, total price and basis of delivery.
iii. Original certificate issued by BYPL confirming receipt of material at site and acceptance of the same.
iv. Dispatch clearance & inspection report issued by the inspection authority.
v. Packing List.
vi. Test Reports.
vii. Guarantee Certificate.

9.1 **Price Validity**

9.2 All bids submitted shall remain valid, firm and subject to unconditional acceptance by BYPL Delhi for 120 days from the due date of submission. For awarded suppliers, the prices shall remain valid and firm till contract completion.

10.0 **Performance Guarantee**

10.1 To be submitted within fifteen (15) days from the date of issuance of the Letter of Award/PO, supplier shall establish a performance bond in favor of BYPL in an amount not less than ten percent (10%) of the total price (ex-work) of the Contract (the "Performance Bond"). The Performance Bond shall be valid for a period of 60 months from the date of Commissioning or 66 months from the date of last dispatch whichever is earlier plus 3 months claim period.

10.2 Bank guarantee shall be drawn in favour of BSES Yamuna Power Ltd as applicable. The performance Bank guarantee shall be in the format as specified by BYPL.

11.0 Forfeiture

11.1 Each Performance Bond established under Clause 10.0 shall contain a statement that it shall be automatically and unconditionally forfeited without recourse and payable against the presentation by BYPL of this Performance Bond, to the relevant bank referred to above, together with a simple statement that supplier has failed to comply with any term or condition set forth in the Contract.

11.2 Each Performance BG established under will be automatically and unconditionally forfeited without recourse if BYPL in its sole discretion determines that supplier has failed to comply with any term or condition set forth in the contract.

12.0 Release

All Performance Bonds will be released without interest within seven (7) days from the last date up to which the Performance Bond has to be kept valid (as defined in Clause 10.0) except for the case set forth in Clause 21.0.

13.0 Warranty/Defects Liability Period

13.1 The bidder to guarantee the materials/items supplied against any defect of failure, which arise due to faulty materials, workmanship or design for the entire defects liability period. The Defect liability period shall be 60 months from the date of commissioning or 66 months from the date of delivery whichever is earlier. If during the defects liability period any materials/items are found to be defective, these shall be replaced or rectified by the bidder at his own cost within 30 days from the date of receipt of intimation.

14.0 Return, Replacement or Substitution.

BYPL shall give Supplier notice of any defective Commodity promptly after becoming aware thereof. BYPL may in its discretion elect to return defective Commodities to Supplier for replacement, free of charge to BYPL, or may reject such Commodities and purchase the same or similar Commodities from any third party. In the latter case BYPL shall furnish proof to Supplier of the cost of such substitute purchase. In either case, all costs of any replacement, substitution, shipping, labour and other related expenses incurred in connection with the return and replacement or for the substitute purchase of a Commodity hereunder should be for the account of Supplier. BYPL may set off such costs against any amounts payable by BYPL to Supplier. Supplier shall reimburse BYPL for the amount, if any, by which the price of a substitute Commodity exceeds the price for such Commodity as quoted in the Bid.

15.0 Effective Date of Commencement of Contract:

15.1 The date of the issuance of the Letter of Acceptance/Purchase Order shall be treated as the effective date of the commencement of Contract.

16.0 Time – The Essence of Contract

16.1 The time and the date of completion of the "Supply" as stipulated in the Letter Of Acceptance / Purchase order issued to the Supplier shall be deemed to be the essence of the "Contract". The Supply has to be completed not later than the aforesaid Schedule and date of completion of supply.

17.0 The Laws and Jurisdiction of Contract:

17.01 The laws applicable to this Contract shall be the Laws in force in India.

17.2 All disputes arising in connection with the present Contract shall be settled amicably by mutual consultation failing which shall be finally settled as per the rules of Arbitration and Conciliation Act, 1996 at the discretion of Purchaser. The venue of arbitration shall be at Delhi in India.

18.0 Events of Default

18.1 Events of Default. Each of the following events or occurrences shall constitute an event of default ("Event of Default") under the Contract:

(a) Supplier fails or refuses to pay any amounts due under the Contract;

(b) Supplier fails or refuses to deliver Commodities conforming to this RFQ/ specifications, or fails to deliver Commodities within the period specified in P.O. or any extension thereof

(c) Supplier becomes insolvent or unable to pay its debts when due, or commits any act of bankruptcy, such as filing any petition in any bankruptcy, winding-up or reorganization proceeding, or acknowledges in writing its insolvency or inability to pay its debts; or the Supplier's creditors file any petition relating to bankruptcy of Supplier;

(d) Supplier otherwise fails or refuses to perform or observe any term or condition of the Contract and such failure is not remediable or, if remediable, continues for a period of 30 days after receipt by the Supplier of notice of such failure from BYPL.

19.0 Consequences of Default.

(a) If an Event of Default shall occur and be continuing, BYPL may forthwith terminate the Contract by written notice.

(b) In the event of an Event of Default, BYPL may, without prejudice to any other right granted to it by law, or the Contract, take any or all of the following actions;

(i) present for payment to the relevant bank the Performance Bond;

(ii) Purchase the same or similar Commodities from any third party; and/or

(iii) Recover any losses and/or additional expenses BYPL may incur as a result of Supplier's default.

20.0 Penalty for Delay

20.1 If supply of items / equipments is delayed beyond the supply schedule as stipulated in purchase order then the Supplier shall be liable to pay to the Purchaser as penalty for delay, a sum of 1% (one percent) of the basic (ex-works) price for every week delay or part thereof for individual mile stone deliveries.

20.2 The total amount of penalty for delay under the contract will be subject to a maximum of ten percent (10%) of the basic (ex-works) price

20.3 The Purchaser may, without prejudice to any method of recovery, deduct the amount for such damages from any amount due or which may become due to the Supplier or from the Performance Bond or file a claim against the supplier.

21.0 Statutory variation in Taxes and Duties

The total order value shall be adjusted on account of any variations in Statutory Levies imposed by Competent Authorities by way of fresh notification(s) within the stipulated delivery period only. However, incase of reduction in taxes, and levies, the benefits of the same shall be passed on to BUYER .

22.0 Force Majeure

22.01 General

An "Event of Force Majeure" shall mean any event or circumstance not within the reasonable control directly or indirectly, of the Party affected, but only if and to the extent that:

(i) Such event or circumstance materially and adversely affects the ability of the affected Party to perform its obligations under this Contract, and the affected Party has taken all reasonable precautions, due care and reasonable alternative measures in order to prevent or avoid the effect of such event on the affected party's ability to perform its obligations under this Contract and to mitigate the consequences thereof.

(ii) For the avoidance of doubt, if such event or circumstance would not have materially and adversely affected the performance of the affected party had such affected party followed good industry practice, such event or circumstance shall not constitute force majeure.

(iii) Such event is not the direct or indirect result of the failure of such Party to perform any of its obligations under this Contract.

(iv) Such Party has given the other Party prompt notice describing such events, the effect thereof and the actions being taken in order to comply with above clause.

22.2 Specific Events of Force Majeure subject to the provisions of above clause, Events of Force Majeure shall include only the following to the extent that they or their consequences satisfy the above requirements:

(i) The following events and circumstances:

a) Effect of any natural element or other acts of God, including but not limited to storm, flood, earthquake, lightning, cyclone, landslides or other natural disasters.

b) Explosions or fires

(ii) War declared by the Government of India, provided that the ports at Mumbai are declared as a war zone.

(iii) Dangers of navigation, perils of the sea.

22.3 Notice of Events of Force Majeure If a force majeure event prevents a party from performing any obligations under the Contract in part or in full, that party shall:

i) Immediately notify the other party in writing of the force majeure events withins 7(seven) working days of the occurrence of the force majeure event

ii) Be entitled to suspend performance of the obligation under the Contract which is

affected by force majeure event for the duration of the force majeure event.

iii) Use all reasonable efforts to resume full performance of the obligation as soon as practicable

iv) Keep the other party informed of all such efforts to resume full performance of the obligation on a regular basis.

v) Provide prompt notice of the resumption of full performance or obligation to the other party.

22.4 Mitigation of Events of Force Majeure Each Party shall:

(i) Make all reasonable efforts to prevent and reduce to a minimum and mitigate the effect of any delay occasioned by an Event of Force Majeure including recourse to alternate methods of satisfying its obligations under the Contract;

(ii) Use its best efforts to ensure resumption of normal performance after the termination of any Event of Force Majeure and shall perform its obligations to the maximum extent practicable as agreed between the Parties; and

(iii) Keep the other Party informed at regular intervals of the circumstances concerning the event of Force Majeure, with best estimates as to its likely continuation and what measures or contingency planning it is taking to mitigate and or terminate the Event of Force Majeure.

22.05 Burden of Proof In the event that the Parties are unable in good faith to agree that a Force Majeure event has occurred to an affected party, the parties shall resolve their dispute in accordance with the provisions of this Agreement. The burden of proof as to whether or not a force majeure event has occurred shall be upon the party claiming that the force majeure event has occurred and that it is the affected party.

22.6 Termination for Certain Events of Force Majeure. If any obligation of any Party under the Contract is or is reasonably expected to be delayed or prevented by a Force Majeure event for a continuous period of more than 3 months, the Parties shall promptly discuss in good faith how to proceed with a view to reaching a solution on mutually agreed basis. If a solution on mutually agreed basis cannot be arrived at within a period of 30 days after the expiry of the period of three months, the Contract shall be terminated after the said period of 30 days and neither Party shall be liable to the other for any consequences arising on account of such termination.

22.7 Limitation of Force Majeure event. The Supplier shall not be relieved of any obligation under the Contract solely because cost of performance is increased, whether as a consequence of adverse economic consequences or otherwise.

22.08 Extension of Contract Period due to Force Majeure event The Contract period may be extended by mutual agreement of Parties by way of an adjustment on account of any period during which an obligation of either Party is suspended due to a Force Majeure event.

22.9 Effect of Events of Force Majeure. Except as otherwise provided herein or may further be agreed between the Parties, either Party shall be excused from performance and neither Party shall be construed to be in default in respect of any obligations hereunder, for so long as failure to perform such obligations shall be due to and event of Force Majeure."

23.0 Transfer and Sub-Letting

23.1 The Supplier shall not sublet, transfer, assign or otherwise part with the Contract or any

part thereof, either directly or indirectly, without prior written permission of the Purchaser.

24.0 Recoveries

24.1 Whenever under this contract any money is recoverable from and payable by the bidder, the purchaser shall be entitled to recover such sum by appropriating in part or in whole by detecting any sum due to which any time thereafter may become due from the supplier in this or any other contract. Should the sum be not sufficient to cover the full amount recoverable the bidder shall pay to the purchaser on demand the remaining balance.

25.0 Waiver

25.1 Failure to enforce any condition herein contained shall not operate as a waiver of the condition itself or any subsequent breach thereof.

26.0 Indemnification

26.1 Notwithstanding contrary to anything contained in this RFQ, Supplier shall at his costs and risks make good any loss or damage to the property of the Purchaser and/or the other Supplier engaged by the Purchaser and/or the employees of the Purchaser and/or employees of the other Supplier engaged by the Purchaser whatsoever arising out of the negligence of the Supplier while performing the obligations under this contract.

SECTION –IV: QUANTITY AND DELIVERY REQUIREMENT

Sl. No.	Item Description	Specification	Delivery Schedule Qty.	Destination
1	SUPPLY OF GPRS or CDMA MODEM	As per SECTION- V	Within 3 months on equal monthly basis from date of issue of order/LOI	New Delhi STORES

BSES Yamuna Power Limited

SECTION- V

TECHNICAL SPECIFICATION

Tender Notification for

SUPPLY OF GPRS or CDMA MODEM

NIT NO: CMC/BY/19-20/RB/VKS/01

Due Date for Submission: 23.04.2019, 2:30 PM.

BSES Yamuna Power Limited

Technical Specifications of

Communication Canopy, MDAS(HES) and MDMS

for

DT AMR Solution

1. Introduction

BSES YAMUNA POWER LTD. (BYPL) is a joint venture between Reliance Infrastructure Ltd. and Government NCT of Delhi (India). BYPL distributes electricity to 1.7 million consumers spread over an area of 200sqkm in Central and East Delhi. Present Peak demand of BYPL system is 1575 MW.

BYPL has an unparalleled AT&C loss reduction record of over 50% during the past 15 years i.e. from 63.1% in 2002 to 9.86% in FY19. BYPL has always been on the forefront of adoption of state of the art technologies for providing world class power supply to its consumers. In line with the same, BYPL has implemented several smart grid technologies to enhance network reliability, improve operational efficiency and ensure high customer satisfaction. Key technologies implemented by BYPL include

- Supervisory control and data acquisition (SCADA) system for Sub-transmission Network
- Intelligent outage management
- Distribution automation
- Intelligent group metering
- Substation health monitoring

BYPL has 3866 distribution transformers, with a total installed capacity of 2933 MVA, spread out across 14 divisions.
In line with the goal of making power distribution smarter every day, BYPL had DT AMR implemented in a phased manner, with 2110 GPRS enabled MODEMs being installed at site. This 1st phase of installation was in conjunction with consumer meter AMR (KCC), because of which true benefits of AMR enabled DT Meters could not be realised. BYPL has prepared a plan to separate the existing DT AMR assets from KCC AMR and install the MODEMs on remaining distribution transformers.

2. DT AMR Rollout Plan

BYPL plans to implement DT AMR project in phases as per the below table

Plan	Phase - 1	Phase -2
Timeline	FY18-19 (March-19)	FY19-20
Coverage	a. Firmware Update for existing MODEMs b. Setting up separate Database for DT AMR c. Deploying MDAS (HES)	a. Installing MODEMs on balance DTs b. Deploying MDMS
DT AMR Points	**2110**	**3866**

Please note that the above plan is indicative and subject to change as per BYPL requirements and regulatory approvals. Phase wise rollout overview is given below.

2.1 Phase -1 Overview

In this phase following goals will be met: -

- Setting up an SQL based, dedicated Database for DT AMR
- Creating & maintaining bare minimum required tables and data structures for Data collection
- Deploying MDAS (HES), technical specifications for which are mentioned ahead in this RFP
- Updating the firmware of existing MODEMs at site, to enable data transfer and storage in DT AMR Database.

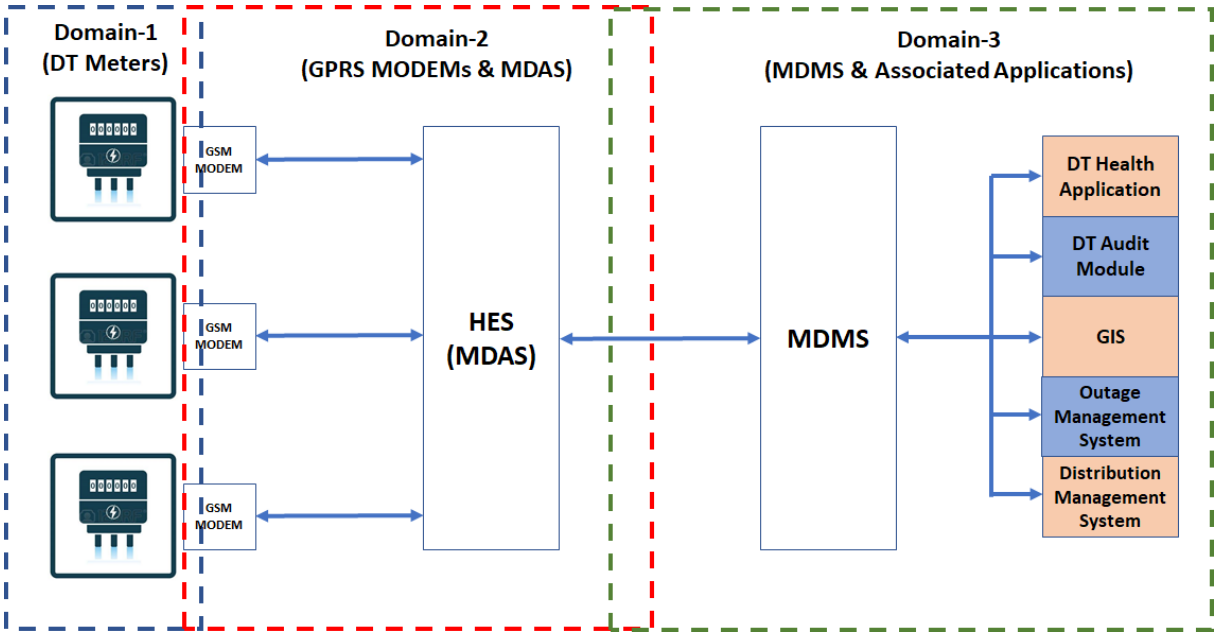
After completion of phase-1 deployment, detailed performance assessment of AMR system will be carried out to finalize the strategy for rollout of subsequent phases.

2.2 Phase 2 Overview

All the remaining DTs will be covered in this phase along with the deployment of MDMS.

2.3 Proposed DT AMR Architecture

Proposed AMR architecture is given below. Overlapping of domains indicates the integration requirements among the domains.



HES- Head End System

MDAS- Meter Data Acquisition System

MDMS- Meter Data Management System

3. RFP Objective

BYPL intends to procure GSM/GPRS Modems for installation on balance distribution transformers, along with MDAS and MDMS systems to leverage the full extent of AMR, through this RFP.

4. Technical Specifications for DT AMR Modems

4.1 Power Supply

i. No external supply shall be required, and modem shall be capable to operate on power drawn from meter input terminals.
ii. Shall have power supply as 3 phase AC but shall be capable to run on even with any of one phase is available. Power supply range of 95 to 540V AC, 50 Hz.
iii. Maximum power consumption should be 8 VA during data transfer.
iv. Withstand capacity against surges should be up to 6.0 kV.
v. Minimum length of power supply cable shall be 1.0 meters

4.2 GSM/GPRS Section

a) The modem will operate in Dual Band GSM 900/1800MHz.
b) The modem shall be compliant with ETSI GPRS Phase 2 Standard.
c) The modem shall be operated at:
d) Class4 (2W) @ 900 MHz
e) Class 1 (1W) @1800 MHz
f) Memory for storing data shall be of 256 KB.
g) The modem will support Short Messaging Service Features with DLMS Compliant meters. SMS shall be provided in case of configured device events of meter events on configured mobile numbers through interfacing software.
h) The modem shall support Point to Point transmission and Cell Broadcast features.
i) The modem shall support CSD Asynchronous non-transparent up to 9.6kbps.
j) Support serial binary and asynchronous data format for data transfer.
k) Have command buffer of minimum 40 characters. Can be removed.
l) Modem will have Non-Transparent data transmission at 1200\2400\4800\9600 bps selectable.
m) Modem will have inbound calling feature.
n) Modem shall be capable to transfer entire tri-vector meter data in less than 10 minutes after connection is made assuming that there is no line disturbance. Quite stringent requirement. Kindly relax this as practically this is not achievable every time. It mostly depends on data size and network.
o) GSM sensitivity shall be <-100dBm for band of 900 to 1800 MHZ.

4.3 SIM Card Section

Easily accessibility of SIM card holder from outside without opening the Modem enclosure. RUIM sim card holder. Is it different from normal SIM card holder?

The SIM Card connector shall be standard 3V receptacle. Provided with suitable sealing provision on the device cover.

4.4 Communication Interface

a. Suitably pre-configured for remote meter reading application.
b. Provided RS232 output on a 9-pin female connector for connection to electronic energy meter's optical/ serial communication port through suitable communication cable.
c. Modem shall be capable to operate between 900 to 1800MHZ transmissions.
d. Modem shall support both data and SMS transmission.

4.5 Data Features / Transmission

a. Modem shall use standard AT command set (GSM 07.05, GSM07.07) for setting of the modem.
b. CSD data transmission Data circuit asynchronous and non-transparent up to 14.4Kb/s. shall support USSD.

c. EDGE data transmission

I. EDGE (EGPRS) multi slot class 12 or multi slot class 10
II. Mobile station class B
III. Mounting and coding scheme MCS 1 to 9.

4.6 RF Section

a. A SMA interface on the modem to which a fixed Dual Band 5 dB gain Antenna can be connected.
b. The modem shall be supplied with co-axial cable and antenna along with mounting adopter and necessary hardware. Flexible co-axial cable shall have minimum length of 1.5M.
c. RF power shall be 600mW and 400mW (EIRP nom.) for 800 and 1900MHZ CDMA / GPRS.
d. Receiver sensitivity shall be greater than -104dBm.

4.7 Network Identification

For determining the health of the device multiple LED shall be provided on the modem which will depict power up, transmit data, receive data, signal/ carrier detect and signal strength.

4.8 EMI / EMC Specifications

The GPRS modem will meet the following EMI/EMC specifications:

Electrostatic Discharge : IEC61000-4-2 (Level-2)
Fast Transient Burst : IEC61000-4-4
Surges Immunity : IEC61000-4-5

Under Line to Earth and Line to Line Coupling

Conducted Emission : IEC61000-3-2/CISPR22
Radiated Emissions : CISPR 22 (class B)

Modem shall be immune to all external interference.

4.9 Mechanical Specifications

The Mechanical Specifications of the modem shall be as follows:

a. Size: The size of the modem shall be suitable so that it can be accommodated in enclosure of metering cubicle.
b. Mounting Arrangement: Suitable for mounting inside a sheet metal enclosure.
c. The GPRS modem will comply with IP55 rating.
d. Sealing Arrangement: The Top and Base Cover will have a suitable sealing arrangement so that the GPRS SIM Card cannot be tampered with.
e. The modem shall be housed in an enclosure made of virgin polycarbonate / engineering Plastic.

4.10 Environmental specifications

The modem will meet the following environmental specifications:

Temperature: -10 degrees to +60 degrees
Humidity: 95% RH (non – condensing)

The modem will be installed inside metering cubicle meter section in a totally enclosed enclosure. The design of modem shall be such that it can operate inside a enclosure without any ventilation.

4.11 Warranty

The GPRS Modem device shall be warranted for a period of 60 months from the date of commissioning, 66 months from the date of supply, whichever is earlier.

GUARANTEED TECHNICAL PARTICULARS (GTP) FOR GSM / GPRS MODEM

S. No.	Parameters/ Features	As being provided
1.	Operating GSM/GPRS Band	
2.	Applications supported	
3.	Power output	
4.	Power supply input	
5.	Ambient Temperature	
6.	Humidity	
7.	Interfaces	
8.	Data interface	
9.	Baud rate	
10.	Antenna	
11.	SIM Card holder	
12.	VA Burden	
13.	Enclosing Box	

14.	Mounting Arrangement	
15.	Typical Dimension	
16.	Service Indicating LED	
17.	Rating	
18.	Optical Port Connector Cable	
19.	Surge withstand/capacity	
20.	Sealing arrangement of Modem	

5 Head End system (HES)

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

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

- Acquisition of meter data on demand & at user selectable periodicity
- Two-way communication with DT AMR Modems
- Audit trail and Event & Alarm Logging
- Encryption of data for secure communication
- Maintain time sync with NTP
- Store raw data for defined duration
- Handling of Control signals / event messages on priority
- Setting of Smart meter configurable parameters, firmware upgrade via remote programming
- Communication device status and history
- Critical and non-critical reporting functionality. The suggestive critical events may be alarms and event log for meter events like tamper/power failures etc., if data is not received from Meter, if there is communication link failure with Meter or network failure while non-critical events may be retry attempts on communication failure, periodic reading missing and failure to connect etc.

5.13 The bidder will share the Specifications (Server / Storage), Make & Model and Costing of the Head end System to cater to the requirement of 5000 end points
BYPL will have the flexibility to go for the Hardware provision by the bidder or provide the Hardware with similar specifications as required for the solution.

5.14 Server hardware for HES should be vertically and horizontally scalable with rack mounting capability and should be of HP, IBM / Lenovo or DELL make only

5.15 Head End System should have facility of operations in fully redundant mode / in hot standby mode.

5.16 Any licenses required for HES servers like OS (Windows/Linux), DB (MS SQL/Oracle), Storage & Backup required for HES is in the scope of bidder and costing of the same needs to be shared with the utility.

5.17 Data from canopy network shall report to main Data Centre and Data Recovery Centre parallel.

5.18 HES server hardware with all required licenses should be planned for Data centre and Data Recovery Centre both.

5.19 In case of any disaster at main Data Centre full system should work from Data Recovery centre without hampering any operations with RPO of 15-30 mins and RTO of 6 hrs.

5.20 System shall provide daily, weekly and monthly performance reports, tracking equipment failures, communications failures and security breach.

5.21 System shall facilitate OTA (Over the Air) firmware upgrade of network terminals and application devices

5.22 System shall not be impacted by obsolescence

5.23 The HES shall provide the means to monitor the network's status from end-to-end and the status of each and every device (Dynamic status of links with colour-codes, throughput, available bandwidth etc.) in the network in real-time, and provide performance and activity statistics.

5.24 Integration

5.24.1 Integration of HES with any MDM & AMI System finalized by BYPL will be in the scope of Service provider/ Bidder.

5.24.2 System shall support integration web-services and APIs to exchange data with other systems like third party MDMs, SAP, GIS, OMS, Streetlight Management System, and SCADA etc.

5.24.3 As a part of project solution there will be data collected from various distribution sensors and field devices such as street light and meters. Solution should ensure that there is scalability and compatibility to integrate with advance application platforms so that various type of business dash board providing meaningful information to take proactive actions can be made available.

5.24.4 Proposed technology solution shall be able to integrate with various advance analytical tools and provide processing capabilities such as big data analytics without any extra cost to BYPL.

5.24.5 Solution should be capable to integrate with various mobile applications to provide proactive and real time operational alerts.

5.24.6 Solution should be capable to integrate with various power websites to capture real-time data.

5.24.7 HES should have the capability to integrate with SMS and Email Gateways existing at BYPL to send various alarms and Notifications

5.24.8 HES shall facilitate programming of following meter parameters like and not limiting to:

- Load profile capture period
- Demand integration period
- Setting of parameters for time of day (TOD/TOU) billing
- Net metering
- Billing date
- Clock setting/time synchronization
- Event setting for connect/disconnect
- Number of auto reconnection attempt
- Time interval between auto reconnection attempt
- Remote firmware upgrade
- Password setting
- Push schedule
- Setting threshold limits for monitored parameters
- Provision for adding more programming features in future

5.25 The HES shall have the following in-built systems / modules:

5.26 **Operational management module:** This shall enable two-way communications over the common communication gateway with the communication modules, connected with the Grid management/control devices at site with associated reporting. HES also shall serve as the control and monitoring hub for sending commands to end points individually/ in defined groups or across the entire network

5.27 **Firmware Upgrader:** This shall enable the utility to upgrade Firmware in the communication devices/meters over the air (OTA) in batch mode in bulk.

5.28 **Network Management (NMS):** The NMS shall support at least SNMPv2. The specifications, model and cost of Hardware (if required) for the Network Management System is expected from the bidder. BYPL will have the flexibility to go for the Hardware provision by the bidder or provide the Hardware with similar specifications

- This module shall be able to manage, monitor and control hybrid network, nodes and gateways by way of receiving parameters viz. terminal status, device status, next hop information, RF signal strength, Hardware / software version numbers, logs, events, bandwidth etc.
- NMS should be able to perform ping & trace-route to any node/gateway or group of nodes/gateways of hybrid network.
- This system shall have remote configuration and remote firmware upgrade feature where a node/gateway or group of nodes/gateways should be upgraded with its latest firmware. Updated firmware shall always be backward compatible to all its versions.

- This module shall support self-discovery and self-registration of nodes upon deployment.
- Hybrid topology and location of all terminals shall be visualized on map along with status indication. Location of gateways, location of nodes and network topology shall be depicted in layers so that status should be visualized during Zoom-in/Zoom-out,
- This module shall have management of security keys and certificates.
- NMS shall have set of KPIs regarding network performance. Bidder shall provide document mentioning set of KPIs
- This module shall have real time and historical information
- It should Support external interfaces
- The module should provide for Auto registration & self-healing
- It should provide for Dynamic network discovery
- Should provide for Backhaul flexibility & redundancy
- NMS should be capable to detect and report event of low signal, connectivity, reachability to server etc.
- NMS should also be capable to detect any interference in RF.

  Network management system, in the HES, shall be on open standard, interoperable and shall support third party network equipment.

5.29 **Outage Management System module (OMS):** The HES system shall have outage management module for easy identification of the end points without power, instantly, for quick restoration using the last gasp feature of the communication devices. The necessary battery backup facility shall be present in all communication devices to work satisfactorily under, even grid failure case. The alarm will be logged by the head end, displayed on the GUI, and optionally shall send SMS to the appropriate owners/users. It should also support alarms to be taken to BYPL OMS of any outage of electricity for logging call in BYPL OMS.

5.30 **Meter Provisioning.** The head-end system shall support self-discovery and self-registry functionality to detect and register meters within 60 minutes of meter connection and establishment of communication. The system shall allow inputs via manual data entry or data files for the necessary meter provisioning data

5.31 **Dashboard & Reports:** HES shall have dynamic dashboard feature and daily, weekly, monthly static reports to indicate following but not limited to:

- Total number of network terminals, number of live terminals, number of disconnected terminals,
- Terminal type categorization,
- Firmware version wise categorization
- Total number of filed device connected, data availability, data non-availability
- Device type and status wise categorization
- Real time and historical information

- Instant parameters
- Total number of devices down due to power outage
- Suspected malfunction devices

HES shall have analysis window where dynamic reports are extracted based on simple and complex logic by the system administrator or users.

5.32 Notifications Module

HES shall have notification feature where the alarm should be triggered and shall be delivered to the appropriate owners/users via SMS, Email for quick resolution.

5.33 Security Module

- HES shall manage security keys and certificates. System shall be able to report any security breach or unauthorized communication devices logged-in.
- HES shall have audit trail functionality for managing and storing all the records of activities performed by authorized/unauthorized users.

5.34 Application Profiles:

- HES shall be able to capture and store data from different devices. It shall have AMI profile for smart meters, DA profile, streetlight profile, sensor profile et cetera.
- In AMI profile, HES shall support automatic meter reading viz. register data, interval data and event logs on different frequencies. System should have capability to read data on-demand from individual or group of devices. Frequency of data collection should be finalized in consultation with BYPL.
- AMI profile shall support two way communication feature of smart meters i.e. events, alarms, etc. shall be delivered to HES upon it's occurrence in the end device.
- This AMI profiles shall support remote connect/disconnect, load control, time sync, tariff configuration, etc. to smart meters. These features shall be triggered to individual node, group of nodes and/or entire network from BYPL ERP system.
- AMI profile shall support in collection of missing data and reconcile
- AMI profile shall facilitate over the air firmware upgrades of smart meters individually and in groups.
- HES shall be able to identify devices without power in Communication Canopy network using last gasp feature of the communication device.
- AMI profile shall have support of different metering protocols defined in IS16444 and IS15959 with its latest amendments. Bidder shall acquire these documents from BIS (Bureau of India Standards)
- HES shall support other application profiles as motioned above for automatic & on-demand data collection, connect/disconnect, control, monitoring et cetera.
- DA profile of HES shall have support of different substation communication protocols mentioned in IEC 60870-5-104/101 and/or IEC 61850.

6 Meter Data Management System Specifications

7.1 Functionality Overview

Functionality	Overview
Meter Data Sources	The MDMS should be capable of receiving the meter data from 'Head end Systems' (HES) in BYPL with reading frequency defined by BYPL along with - Handheld Devices, Cellular (Mobile) , Fixed Network, PLC, RF mesh, etc. The MDMS shall utilize TCP/IP as the general communication protocol.
Device Management & Installation	The MDMS should maintain unique devices id for each meter and synch with device identifier from BYPL asset management system in SAP. Also support device provisioning as per SAP process. MDM should also allow define unmetered points in the network.
Meter Data & Management, Data Retention	The MDMS should maintain the time series meter data from all types of meters with BYPL like 1 Phase, 3 Phase, DT Meters, System Meters etc.. for Residential, Commercial, Industrial and system with different time intervals from 15 Mins to 60 Mins Perform programmatic data integrity checks including for example checksum, time check, etc. MDMS should facilitate to store 3 years data in live system and 7 years data in archived form. MDMS should be able to retrieve and use achieved data when required
Meter Reads & Communication	The MDMS application shall be able to perform scheduled reads as per the routes defined by BRPL & BYPL. MDMS should also be able to perform on-demand reads triggered from various business processes (and systems) or manually. The MDMS should maintain the time stamp and user id when perform on-demand read.
Real Time Support	The MDMS should be able to log and trigger alerts on receiving events from meters such as tamper, outages etc..
Bill Determinants and VEE	The MDMS should process and aggregate meter data for all types of Billing including- Cumulative Billing, Time-of-Use billing, Net Metering Billing etc. to calculate 'Billing determinants' to be used in SAP ISU for billing a customer The MDMS should provide a calculation engine that can perform validation, estimation, Edits & Exceptions (VEE) – both manual and automatically, enable event management and provide analytic and operational reporting on exceptions from VEE Aggregate meter data for a specified number of service points or channels for consolidated billing, summary billing, support the virtual metering, finding coincident peaks and DT level EA requirements.
Remote Disconnect/ Connect	The MDM should be able to remotely perform hard disconnects and re-connects of customers and enabled/disable load limiting.
Event Handling & Audit Trails	Maintain an audit trail of meter and billing data changes. Keep the original record intact in case of VEE
Administration User Interface	MDMS should provide a comprehensive user management facility along with roles and rights

Reports, Trends & Graphs	MDMS should have facility for calculations on the measured and derived values produce reports, graphs and trends on the results
Integration	MDMS should be integrated with different legacy systems with BYPL like- SAP, ISU, In house built OMS, ESRI (GIS), Distribution Planning Tools, DMS and Analytics etc..
Security	MDMS should comply with IT security standards and provide multi-level password protections and encryption
Other Supports	MDMS should support/ compliment initiatives of BYPL like- Net Metering, Revenue Protection, Network Planning, Demand Response, EV Charging etc..
Performance and Standards	MDMS should comply with performance standard expectations in terms of data acquisition, process and user interfaces response for meters volume of BYPL next 5 years.
Technical Requirements	The MDMS should meet all the technical requirements of BRPL & BYPL

MDMS Functionalities Details

7.2 Meter Data Read Sources

7.2.1 The MDM should be capable of receiving the meter data from multiple Head end Systems (HES) with BYPL with reading frequency ranging from 30 mins, 60 mins and daily – for different types of meters

7.2.2 The MDMS shall support special reads and associated analysis, such as momentary outage counters, sustained outage counters, voltage sags, voltage spikes, etc., that comes back to the MDMS

7.2.3 When on-demand reads are requested via the MDMS and the data is subsequently received from the applicable communication system, the data must be stored within the MDMS along with the user id of the person who requested and date-time stamp of the read (to support history requirements)

7.2.4 The MDMS shall utilize TCP/IP as the general communication protocol

7.3 Device Management and Installation

7.3.1 The MDMS should provide a view of the devices in the form of a network hierarchy and allow managing the view to add/ delete / modify with complete audit trail

7.3.2 The MDMS shall maintain information and relationships between the 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, etc.), Meter configuration (Demand integration period, Load

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

7.3.3 The MDMS 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.

7.3.4 Ability to report and log any damage / deterioration in the meter attributable to consumer /utility

7.3.5 The MDMS should 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.

7.3.6 The MDMS should provide a reconciliation report that identifies the meters that have been installed but not communicating for a designated (configurable) period. MDM shall generate reports on the number of meters installed in comparison to the number of meters successfully communicating

7.4 Meter Data & Management

7.4.1 The MDMS should facilitate as 'online meter data repository' to provide online meter data versioning for various meter data such as- registers, consumptions data, interval data, events and other meter data

7.4.2 The MDMS should allow maintain business entities relate to meters in synch with CIS data from SAP ISU

7.4.3 The MDMS should identify and maintain the source of the meter data i.e. HES or handheld etc..

7.4.4 The MDMS shall have the ability to track and maintain service point information (e.g. device changes, device sets, multiplier changes, , unit of measure, communication module info, network address and connectivity, load transfers etc.) by effective dates and time of the changes. This information may be obtained from various sources like CIS, GIS, OMS etc..

7.4.5 The MDMS shall store both general device information and communication module information, if applicable. (e.g., serial number, purchase date, manufacturer information, test data, size, location, etc.).

7.4.6 When applicable, the MDMS shall maintain the relationship between communication module information and the device (serial number, install/remove dates, association/disassociation dates, battery dates, all device characteristics etc.) where it is installed.

7.4.7 The MDMS shall track and maintain history of the relationship, both static and dynamic, between devices and transformers via interface of the information from other systems like GIS, OMS, DMS etc..

7.4.8 The MDMS shall have the ability to track device sets and changes by interfacing with CIS and/or the device tracking system like DMS , GIS (as appropriate).

7.4.9 The MDMS shall maintain a view of the device inventory (set and in inventory), device locations, operating jurisdiction, etc. The system of record for this data may be the device tracking system but all associated data must be available to MDMS.

7.4.10 The MDMS shall be able to handle updates on a daily basis of device and AMI network information during deployment and ongoing operations.

7.4.11 The MDMS shall maintain information related to the account/service point/meter/device relationship within the system, including historical lookup. For example, the MDMS shall make it possible to easily determine total usage for a particular service point over time through multiple device change-outs or customers.

7.4.12 The MDMS shall keep track of whether each device read stored is an actual read, an estimate, or a manually edited read. This status code must be available to other systems.

7.4.13 The MDMS shall provide a mechanism for updating missing or estimated reads with actual read data if it is available at a later point in time. Based on user defined parameters, the system must automatically send out updated data to applicable systems.

7.4.14 The MDMS shall have the ability to identify and store information associated with customer owned devices if any..

7.4.15 The MDMS shall have the ability to receive, process, and store device data from electric meter both time interval and cumulative or scalar data. The time series data could be 15 mins load survey and 15/30/60/monthly mins billing data.

7.4.16 The MDMS should have ability to receive, process and store the meter readings on half hourly, hourly, daily and monthly basis with all date-time stamp the data as it is received.

7.4.17 The MDMS shall date-time stamp the data for each interval represented. The interval time stamp shall be the time at the end of the interval

7.4.18 The MDMS shall have the ability to store interval reads with load survey and billing data.

7.4.19 The MDMS shall have the ability to extract reads for different intervals from different meters.

7.4.20 The MDMS shall store interval data in engineering units.

7.4.21 The MDMS shall maintain read schedules within the system. This shall include the ability to handle the coordination of a single schedule that includes multiple sources of data (e.g. handhelds, RF, PLC, etc.).

7.4.22 The MDMS shall maintain special read schedules, e.g. TOD for each jurisdictions, and shall process in peak/off-peak/normal and pass to billing system as billing variants

7.4.23 The MDMS shall have the ability to process electric meters register reads.

7.4.24 The MDMS shall recognize the receipt of interval (s) that already exist in the MDMS database.

7.4.25 The MDMS shall have the ability to automatically cycle the unmatched device data through the device recognition process.

7.4.26 The user shall have the ability to invoke the process to identify unmatched devices on an adhoc basis.

7.4.27 The MDMS shall have the ability to set a user-defined frequency (e.g. Daily) for the device recognition process

7.4.28 The MDMS shall handle multiple events in any given period, e.g. hourly, daily, monthly.

7.4.29 The MDMS shall have the ability to allow user configuration of key MDMS variables (such as rounding rules, number of decimal points retained) as well as Maintenance variables (escalate vs. pending events based on pre-defined priority thresholds) by jurisdiction.

7.4.30 The MDMS shall have the ability to store customer account information, such as customer ID, premise information, rate schedule, etc.

7.4.31 The MDMS shall provide user and system interfaces for the definition of channel configuration by meter class, group or type.

7.4.32 The MDMS shall provide user and system interfaces to define an override channel configuration for individual meters.

7.4.33 MDMS should facilitate to store 3 years data in live system and 7 years data in archived form. MDMS should be able to retrieve and use achieved data when required.

7.4.34 Perform programmatic data integrity checks including for example checksum, time check, etc.

7.4.35 The MDMS shall have the ability to install a check meter at a premise along with the actual meter and should provide the variance report.

7.4.36 The MDMS shall have the ability to process the event database based on the requirement of BRPL & BYPL

Meter Readings

The MDMS application shall be able to perform scheduled reads as per the routes defined by BRPL & BYPL. MDMS should also be able to perform on-demand reads triggered from various business processes (and systems) or manually. The MDMS should maintain the time stamp and user id when perform on-demand read.

7.5 General

7.5.1 The MDM should be capable of receiving the meter data from 'Head end Systems' HES in BYPL with reading frequency of half hour, hourly, daily and monthly for different meters based on category of consumers.

7.5.2 When on-demand reads are requested via the MDMS and the data is subsequently received from the applicable communication system, the data must be stored within the MDMS along with the user id of the person who requested and date-time stamp of the read (to support history requirements).

7.5.3 The MDMS shall utilize TCP/IP as the general communication protocol.

7.6 Input from meters

7.6.1 The MDMS shall support the collection of usage and home area network information (in future) from devices.

7.6.2 The MDMS shall be capable of collecting data from applicable electric meters/devices in the following aspects: 1) conforming to tariffs, 2) Multiple interval levels, and 3) Timing (how often to receive data).

7.6.3 The MDMS shall be capable of processing usage data in a variety of data types, including pulse, engineering units, etc.

7.6.4 The MDMS shall be capable of loading usage data from "hand-held" systems (details will be provided by BRPL & BYPL).

7.6.5 The MDMS shall have the ability to receive data through a data push or a data pull mode from the meters.

7.6.6 The MDMS shall have a flexible process engine for collection of reads. The process engine shall be have the ability to: 1) detect a push event whereby device reads have been asynchronously sent to the MDMS, 2) schedule a pull event in which device reads are requested by the MDMS, and 3) initiate a request-response event based on external requests from BYPL systems (e.g., an on-demand read or power status check).

7.6.7 The MDMS shall store all device event messages for review.

7.6.8 The MDMS shall have the ability to receive, store and process multiple events (connect / disconnect / load limiting) for an individual meter/device or a group of meter/devices based on need.

7.6.9 The MDMS shall have the ability to process electric meter/device register reads.

7.6.10 The MDMS shall have the ability to export electric validated usage to external clients.

7.6.11 The MDMS shall have the ability to export un-validated device reads to external clients.

7.6.12 The MDMS shall have the ability to process certain event messages in a real-time manner

7.6.13 The MDMS shall have the ability to receive event commands from associated systems (such as CIS) and issue a command to the device to complete the command according to a user configurable priority.

7.6.14 The MDMS shall have the ability to receive, store, process, and report on multiple events (connect / disconnect / demand response) scheduled for a single meter or group of meters.

7.6.15 The MDMS shall have the ability to schedule field orders for any device service and prioritize those orders by type, date, time and other factors. Users shall be able to configure the prioritization algorithm.

7.6.16 The MDMS shall have the ability to receive and respond to a command from the associated system to stop all, or a subset of orders (e.g. Field Service Offices). Users shall be able to configure the subset of orders to be stopped.

7.6.17 The MDMS shall be capable of measuring all registers (internal & external), without rounding or truncating, including all decimal points for storage.

7.6.18 The MDMS shall calculate engineering units using the device specific pulse multiplier.

7.6.19 The MDMS shall be able to recognize and indicate when a device is AMI capable.

7.6.20 The MDMS shall have the ability to capture the export & import parameters in case of bi-directional meters, and process them as per the requirementof BRPL & BYPL

7.7 On-Demand Meter Communication

7.7.1 The MDMS shall have the ability to issue commands to AMI device(s)/ Smart Meters on demand.

7.7.2 MDMS users shall have the ability to initiate any available command to the device from the MDMS (subject to security access controls).

7.7.3 The MDMS shall have the ability to automatically initiate commands (such as on-demands reads) to the AMI devices.

7.7.4 The MDMS shall have the ability to send messages (e.g. Demand Side Management event data) to HAN-enabled meters

7.7.5 The MDMS shall have the ability to receive acknowledgement messages from the HAN-enabled appliances

7.8 Communication Prioritization and Management

7.8.1 The MDMS shall have the ability to prioritize commands sent to devices. Prioritization shall be user-configurable.

7.8.2 The MDMS shall have the ability to delay commands, based on user configuration, in order to manage AMI communication network activity when necessary

7.8.3 The MDMS shall have the ability to set a specified time for a command to be executed.

7.8.4 The MDMS shall have the ability to set a specified delay prior to certain commands being sent to the device based on business requirements.

7.8.5 The MDMS shall allow commands to be sent to groups of devices.

7.8.6 The MDMS shall have the ability to send commands based on a pre-set schedule.

7.8.7 The MDMS shall allow the ability to override a command either for a specific device or the entire group by canceling the command.

7.8.8 The MDMS shall have the ability to balance scheduled device reads evenly across the daily device reading period.

7.8.9 The MDMS shall support the automatic re-balancing of the distribution of scheduled device reads across the device read period (potentially longer than 1 day).

7.8.10 The MDMS shall have the ability to manage and balance alternate (non-daily, e.g. hourly) device read schedules.

7.8.11 The MDMS shall have ability to spread batch commands according to a pre-determined time span

7.9 Message Grouping

7.9.1 The MDMS shall allow specified users to create a group of devices by individually selecting devices from the overall pool of devices.

7.9.2 The MDMS shall allow specified users to create a group of devices by importing device identifiers using common desktop tools such as Excel.

7.9.3 The MDMS batch commands may contain multiple, individual commands (i.e. a message to the customer as well as an updated hourly device schedule).

7.9.4 The MDMS shall allow groups to be created utilizing information / criteria from interfacing systems.

7.10 Logging and Events

7.10.1 The MDMS shall have the ability to store / maintain a record history of all commands sent to the devices.

7.10.2 The MDMS shall have the ability to verify completion of the command(s) sent to and received from the devices (e.g. verify successful disconnect).

7.10.3 The MDMS shall have the ability to link the command and output and shall able to provide on demand

7.11 AMI Communications

7.11.1 The MDMS shall have the ability to communicate with multiple AMI data collection systems (HES) and existing data collection systems of BRPL & BYPL.

7.11.2 The MDMS shall provide the capability to interact directly with AMI data collection systems/ HES to perform on-demand assessments of a device's status in the field.

7.11.3 The MDMS shall interface directly with communication systems to perform on-demand commands of devices in the field.

7.11.4 The MDMS shall update the AMI data collection system/ HES with device data when devices are converted to AMI.

7.11.5 The MDMS shall be able to receive and process connectivity status responses from the AMI data collection system/ HES.

7.11.6 The MDMS shall have the ability to supply customer, premise, service point, meter and/or device and connectivity information to AMI data collection systems to support meter and/or device communications. Ongoing operational changes would be reflected in this interface.

7.11.7 The MDMS shall have the ability to request and receive device reads from AMI data collection systems/ HES.

7.11.8 The MDMS shall have the ability to forward AMI network equipment installation data to AMI data collection systems/ HES.

7.11.9 The MDMS shall have the ability to forward a connect/disconnect command and data to AMI data collection systems/ HES.

7.11.10 The MDMS shall have the ability to receive results/status of connect/disconnect action commands and device read commands from AMI data collection systems/ HES.

7.11.11 The MDMS shall have the ability to receive asynchronous notifications from AMI data collection systems/ HES.

8 Meter Events

8.1 The MDMS should be able to log and trigger alerts on receiving events from meters such as tamper, outages etc..

8.2 The MDMS should support on demand meter reads and “pinging” of the meters on requests from other systems of BYPL like OMS, CRM etc..

8.3 The MDMS should be able to process outage notification event (last gasp) and outage restoration (first gasp) of the meters. Such events should be filtered against the known service orders (including declared outages from OMS) before passing it to OMS.

8.4 The MDMS should have ability to differentiate fictitious and momentary outages from meters before passing to OMS

8.5 The MDMS should be capture date and time stamps of all events- both from meter and MDMS

8.6 The MDMS should have ability to process the events such as demand thresholds, voltage high/low in the form of a trigger to other systems in BYPL or alerts to designated users in the form of workflow.

9 Billing – Bill Determinants, Validation, Estimation & Edition , Aggregation

9.1 Calculation Engine

9.1.1 The MDMS should provide a calculation engine that can perform validation, estimation and edits (VEE) – both manual and automatically, enable event management and provide analytic and operational reporting on exceptions from VEE

9.1.2 The MDMS shall have a configurable billing determinant calculation engine that supports both the definition of billing determinant rules and the application of rules to tariffs.

9.1.3 The MDMS billing determinant calculation engine shall include a robust mechanism to aggregate data in a flexible manner through an easy to understand user interface.

9.1.4 The MDMS shall have configurable billing determinant rules driven by effective date and/or bill cycle ID.

9.2 Calculation of Billing Determinants

9.2.1 The MDMS shall be able to process data into billing determinants from interval meter/device or consumption data (e.g. kWh, kW, kVar usage, kVarh, kVar, kVA,

power factor, load factor etc.) for all types of meters withBYPL in the required time period.

9.2.2 The MDMS billing determinate calculation engine shall perform billing data validation prior to calculating billing determinants.

9.2.3 The MDMS shall be able to calculate billing determinants for all types of tariffs in BRPL & BYPL.

9.2.4 The MDMS shall be able to calculate billing determinants for complex C&I tariffs as well as customers with bi-directional energy flow and metering (Net Metering Customers).

9.2.5 The MDMS shall be able to calculate billing determinants from monthly reads for both time interval meters and cumulative or scalar meter data.

9.2.6 The MDMS shall be able to calculate billing determinants from hourly/ half hourly/ 15 mins and daily reads for both time interval and cumulative or scalar meter data.

9.2.7 The MDMS shall be able to calculate billing determinants from special rate scheduled reads, e.g. TOD, CPP, RTP etc..with facility for settlements

9.2.8 The MDMS shall be able to calculate billing determinants for Net, subtractive, additive metering and aggregation for customers.

9.2.9 The MDMS shall use previously calculated billing determinants and estimated values, whenever required.

9.2.10 The MDMS shall be able to calculate billing determinants for readings based on tariff requirements (e.g. 15/30/60 minute, daily and monthly readings).

9.3 Special Circumstances

9.3.1 The MDMS shall be able to handle special contract calculations, for example, curtailable or interruptible. Special contracts should be configurable.

9.3.2 The MDMS should be capable of handling device changes occurring during the billing period while calculating bill determinants.

9.3.3 The MDMS shall factor changes to the billing interval length while calculating bill determinants.

9.3.4 The MDMS shall be able to handle multiple events in a given bill period (device change out, equipment cycles, tariff changes, etc.).

9.3.5 MDMS shall be able to receive data and transmit data to and from a third party or handheld devices.

9.4 Adjustments and Re-bills

9.4.1 The MDMS shall have the ability to track and store corrections and adjustments between billing determinants for end use customer billing.

9.4.2 The MDMS shall have the ability to process billing determinants for re-bills for multiple billing periods.

9.4.3 The MDMS shall have the ability to process the variants for re-bills for any account originally billed (e.g. totalized, aggregated accounts, etc.).

9.4.4 The MDMS shall have the ability to process mid-cycle / mid re-bill period changes (ex. Tariff change, device change, program events, etc.).

9.4.5 The MDMS shall have the ability to handle Bill Period changes, with or without change in interval level usage.

9.4.6 The MDMS should have the ability to re-calculate estimated intervals/reads upon receipt of actual data.

9.4.7 The MDMS shall be able to perform VEE processing daily as reads are provide to it from AMI and monthly. The MDMS should not enforce restrictions on when the VEE process is executed.

9.4.8 The MDMS shall have the ability to communicate with the billing system for re-bills extending before the AMI device installation.

9.5 VEE

9.5.1 The validation, editing, and estimation (VEE) engine within MDMS shall validate energy consumption according to BYPL data quality requirements and provide estimates for the inevitable missing and incorrect data that comes from meter data if required by BRPL & BYPL

9.5.2 The MDMS should have configurable VEE rules driven by effective date and/or bill cycle ID and tracking the changes.

9.5.3 The VEE Engine shall support parameter-based validation and estimation algorithms, user-defined validation and estimation algorithms, and editing of individual values and statuses in the MDMS' embedded user interface

9.5.4 With user-defined validation rules, the user should be able to specify both the validation logic and the value to apply the logic against.

9.5.5 The MDMS shall have the ability to estimate interval data and profile reads in conformance with configurable rules.

9.5.6 The MDMS shall have the ability to identify and report the algorithm that is used to calculate an estimate.

9.5.7 The MDMS shall have the ability to use historical usage data from legacy data systems obtained either via conversion or by system interface.

9.5.8 The MDM should provide various estimations like profile based estimation, linear interpolation , interval estimation , averages etc.. for the missing values

9.5.9 The MDMS shall have the ability to manually override automatic VEE intervals and profile reads (Manually overridden data should have an audit trail).

9.5.10 The MDMS shall have the ability to VEE (in any interval desired) daily and monthly information.

9.5.11 The MDMS shall have the ability to provide VEE data for any interval gaps.

9.5.12 The MDMS shall be able to distinguish between: 1) legitimate zero energy values when no energy is used, 2) zero values based on power outages, 3) missing data.

9.5.13 The MDMS shall have the ability to calculate billing determinants and communicate them to the billing systems for rebilling on-demand when requested by a user and by batching changes to be forwarded as part of a scheduled update. The batching mechanism shall be configurable by an administrator

9.6 Exceptions

9.6.1 The MDM should be able to carry out the data validations before processing such exceptions through opening actions or workflow

9.6.2 The common validations should include, not limited to -

- Communication link loss
- Meter replacement
- Main and Backup meter reading comparison
- Absence of voltage in one or more phases
- Comparison of parameters (CCEE code)
- Constants
- Fiscal page deviations
- No data
- Time drift
- Media replacement
- National holidays
- Meter re-programmed
- Interval data status

9.6.3 MDM should interpret the validations, events, alarms, flags etc.. From meter data and correlate and filter with other systems data such as OMS before opening actions in workflow.

9.6.4 The MDM should have facility to apply validations/exceptions automatically or on demand

9.6.5 The MDM should have flexibility to allow to apply specific rules or a set of rules to a specific customer or a class of customers

9.6.6 The MDM should handle all VEE events in a work flow type environment and notifications must be sent through email, SMS etc..

9.6.7 The MDMS will provide VEE and exception handling for all types of meters like-consumer meters, transformer meters, feeder meter and border meters in BRPL & BYPL

9.6.8 The MDMS should provide a proper work flow functionality for VEE and Exceptional Handling

10 Remote Disconnect/ Connect Meters

10.1 The MDMS shall have the ability to recognize if the installed device is capable of remote connect / disconnect regardless of a meter's configuration.

10.2 The MDMS shall be able to remotely issue generated connect / disconnect service commands for an effective date/time to the appropriate customer meter(s) or group of customers based on conditions like- default, fraud, tech failure, construction works, maneuvering, release of selective loads, inability to access, shutoff by customer request etc..

10.3 BYPL shall provide the details of customers with such capabilities at an appropriate time.

10.4 The MDM should be able to facilitate to handle BYPL need to handle temporary/provisional connections by getting activation command from CIS system.

10.5 Similarly the MDM should also handle the prepayment metering by receiving meter connect from prepaid vending system or CIS and issue a meter disconnect when the customer credit demand is reached

10.6 The MDMS shall be able to read and process response data associated with remotely issued CIS connect / disconnect events to customer meters.

10.7 The MDMS shall have the ability to receive and respond to a connect / disconnect command to facilitate to implement programs like DR, DSM, RTP, pEV, Selective load release, New Customer Activation, Urgent Interruption etc.. by MDM package or BYPL systems responsible.

10.8 The MDMS shall have the ability to receive and respond to a command from BYPL systems to cancel all, or a subset of (e.g. Field Service Offices) connects / disconnects orders.

10.9 The MDMS shall have the ability to schedule connect / disconnect orders by date, time and other factors. Users shall be able to configure the scheduling algorithm.

10.10 The MDMS shall check for cancellation requests prior to initiating the connect / disconnect command to the device.

11 Event processing

11.1 The MDMS shall have a processing engine that provides automated as well as manual handling of events (based on configuration rules) described in VEE section.

11.2 The MDMS processing engine shall be configurable to support business rules without IT programming (e.g. VEE failures, non-responding meters, meter and network alerts, etc.).

11.3 The MDMS shall support the ability to send subscription based meter events notifications to the relevant individual(s) (e.g. to work flow, email accounts, pagers, other systems, etc.). Subject to access controls, the system shall support event notification to any type of user (e.g. super users, administrators, operations support, PHI third party vendor, PHI

customers, etc.). The individuals and the means by which they are notified shall be administratively configurable.

11.4 The MDMS shall allow an administrator to set event thresholds to limit the sending of work flow or other notifications.

11.5 The MDMS shall allow an administrator to define rules for collecting notifications and sending them in batches.

12 Audit

12.1 The MDMS shall support auditing for all logical data entities.

12.2 The MDMS shall record that events have occurred, e.g. Demand Response events.

12.3 The MDMS shall maintain a record of all data that is modified. The record of modifications is referred to below as an audit log.

12.4 When data is modified, the MDMS shall include the following information in an audit log record: the user or system id making the change, a date-time stamp, reason code, whether the new value is actual, estimated, or edited as well as the new data value.

12.5 When data is modified, the MDMS shall maintain the previous data value and audit record attributes. For example, user or system id, date-time stamp, reason code, whether the data is actual or estimated, etc.

12.6 The list of valid reason codes must be maintained in a configurable table accessible by an authorized administrator.

12.7 The MDMS audit log shall provide a mechanism to easily search and review entries.

12.8 The MDMS shall not allow users to edit or update entries in the audit log.

12.9 The MDMS shall allow super-users to copy or archive an audit log.

12.10 The MDMS shall allow super-users to edit or update entries in the audit log.

12.11 The MDMS shall have the ability to self audit to ensure possible errors or regulatory / rule violations do not occur, or when violations have occurred to have the ability to notify users.

12.12 The system must provide a mechanism to easily see the history of a particular data item as well as any changes that are made to that item

13 Administration & User Interface

13.1 The MDMS shall have the ability to provide different levels of security that allow different groups to have different access levels (i.e. provisioning of level of responsibilities).

13.2 The MDMS user interface shall support viewing and updating of data subject to security provisions in order to limit the ability to make manual changes to data.

13.3 The MDMS user interface shall support viewing of reports.

13.4 The MDMS user interface shall support initiating, updating and closing of service commands.

13.5 The MDMS shall provide drop down menus for data entry to minimize user input error.

13.6 When a user edits data values, (e.g., read values, account information, etc.), the MDMS shall store and present the data including the value prior to edits along with the new value and a trail of the actions/values (e.g., billing constant change will show change from and to value).

13.7 System Configuration

13.7.1 The MDMS shall support the configuration of business and data processing to reflect new business rules without the need to modify source program code and without proprietary skills. The scope of this requirement is not limited to but must include VEE, handling of AFEs and events, and scheduling.

13.7.2 MDMS shall support modification and configuration of system messages, including messages to end users and events without the need to modify source program code and without proprietary skills.

13.8 User Help

13.8.1 The MDMS shall have an easily accessible, fully integrated on-line help function.

13.8.2 The MDMS shall have online context sensitive help functionality.

13.8.3 The MDMS help functionality shall include an index, general search and advanced search capabilities.

13.8.4 The MDMS help contents shall be customizable.

13.9 Web Interface

13.9.1 The MDMS shall provide a thin client, web-based interface.

13.9.2 The MDMS interface shall be customizable to BYPL standards, including content (images and text), format and functionality, and user help. Customization of the interface shall not require the use of additional software.

13.10 System Updates

13.10.1 The MDMS shall allow for the grouping of commands for execution in a batch process.

13.10.2 The MDMS shall allow administrators to define time-windows for execution of commands based on pre-defined customer classes or rate schedules.

13.10.3 The MDMS shall have the ability to call separate events based on customer classes or rate schedules.

14 Specific Reporting

14.1 The MDMS shall have robust reporting capabilities supporting the generation of vendor supplied (standard), user generated and 'query based' reports on a scheduled, event based, or manual basis across the users defined by BRPL & BYPL. The reports types

supported should be - configurable parameter reports, comparative reports, exception reports.

14.2 The MDMS shall have the ability to generate all reports in a format of BYPL choice, e.g. PDF, Excel, Word, etc.

14.3 The MDMS shall be capable of creating output files in standard file formats for processing by BYPL legacy billing systems.

14.4 The MDMS shall have the ability to generate reports about the data collection system, the AMI network, all AMI system end points and non-AMI end points.

14.5 Users of the MDMS shall have the ability to create reports via report writer (e.g. Crystal Reports) or SQL and will have the option to save these reports if so desired.

14.6 The MDMS shall have the capability to restrict report availability based on user security settings (e.g. reports that are only available to supervisors, administrators, etc.).

14.7 The MDMS shall support the option to distribute user generated reports.

14.8 The MDMS shall maintain an online catalog listing reports.

14.9 The MDMS shall allow BYPL to add user-defined or custom reports to the online catalog.

14.10 The MDMS shall display a full online catalog listing of all (user-defined and product) reports including detailed descriptions.

14.11 MDMS should genenrate reports not limited to:

- Operation and Planning, time data and 15 minutes, executed on a daily basis
- Operation and Planning, 15-minute data, executed on a weekly basis or on demand
- Follow-up of load of the free items
- Comparison of energy registered between the main meter and the back part - the system shows only the clients the variation of which is above a certain value
- Parameter report of the meter
- Analysis of the tax page
- Overload/saturation of TCs
- Meters lacking data, informing the period without data
- Checking, whether all programmed channels are effectively generating data; CCEE parameters
- Overload of transformers
- Interruption points (lack of voltage)
- Number of reading attempts per meter
- Performance of communication of the collection system
- Sending of data to third parties (export of mass memory) - time active energy data sent - to free clients
- Export from MDMS to Billing system
- Internal data report for follow-up - generators, co-generators

Any other reports those will be finalized during initial phase of the project

15 Integration with Other Systems

MDMS should support/ compliment initiatives of BYPL like- CIS Billing with SAP ISU, Work Management, Data Warehouse, Net Metering, Prepaid Billing, OMS, Mobile Apps, Website Customer Portal, Online Energy Accounting, Network Planning, Demand Response, EV Charging, Virtual Metering etc..

The enhancements required in the existing systems to support the MDMS implementation will be part of MDMS implementation

15.1 Customer Information System (CIS)

15.1.1 The MDMS shall have the capacity to prepare, initiate and send daily reads , interval data, and usage data to CIS

15.1.2 The MDMS shall be able to receive and process CIS issued 'on-demand' device commands.

15.1.3 The MDMS shall be able to send CIS the responses from the on-demand device commands.

15.1.4 The MDMS shall be able to communicate, in real time or in batch, with BRPL & BYPL's CIS billing system.

15.1.5 The MDMS shall be able to receive and respond to system commands for bill cycle routes from the CIS system

15.1.6 The MDMS shall be able to respond to, in real-time or in batch, and satisfy system commands for billed usage data from the CIS system.

15.1.7 The MDMS shall be able to request and process billable reads from the CIS environment.

15.1.8 The MDMS shall be able to provide the CIS application with the latest read for use in service order processing.

15.1.9 The MDMS shall be able to receive meter/device class and individual meter channel configurations from CIS or other systems.

15.2 Work Management

15.2.1 The MDMS shall have the ability to support the automatic allocation of work orders to a work force management system.

15.3 Customer Data Presentment

15.3.1 The MDMS shall be able to process service commands for customer data access.

15.3.2 The MDMS shall be able to send customer data in response to a service command.

15.3.3 The MDMS shall be able to receive and process CIS commands for customer usage data for cancel rebilling.

15.3.4 The MDMS shall be able to send customer usage data to CIS for cancel rebilling purposes.

15.3.5 The MDMS shall be able to provide data to internal data presentment applications (e.g. portal, dash boards etc) .

15.4 Data Warehouse

15.4.1 The MDMS shall have the ability to act as a data warehouse or interface with third-party data warehouse applications.

15.4.2 The MDMS shall have the ability to transfer data to a data warehouse for analytics, staging and downstream processing. The types of data to be transferred and transfer schedule shall be user-configurable.

15.5 Operations - Meters

15.5.1 The MDMS shall be able to create, update, complete, and cancel all device field orders.

15.5.2 The MDMS shall be able to receive and process all meter field orders response and status data (completed field order/mobile dispatch data).

15.5.3 The MDMS shall be able to receive CIS generated updates associated with newly installed AMI meters and will be capable of sending a connectivity validation message to those meters.

15.5.4 The MDMS shall be able to update the CIS environment with the AMI Meter installation validation response messages.

15.5.5 The MDMS shall be able to receive and process daily CIS customer, premise, service point, rate, tariff, and meter read information files.

15.5.6 The MDMS shall be able to receive and process full data synchronization files (customer, premise, service point, rate, tariff, meter read information) from the CIS system.

15.5.7 The MDMS shall allow access to generate reports for purposes of meter diagnostics such as query based on user-defined factors, e.g. cycle, zone, meter type, interval meter read data.

15.5.8 The MDMS shall be able to receive meter/device asset information from AMS system

15.6 Operations - Network

15.6.1 The MDMS shall be able to create, update, complete, and cancel all network field orders and send to Network Field Order Processing System (SAP in this case).

15.6.2 The MDMS shall be able to receive and process all network field orders response and status data (completed field order/mobile dispatch data).

15.6.3 The MDMS shall have the ability to receive event status and acknowledgement of event completion / failure.

15.6.4 The MDMS shall have the ability to receive commands (e.g. test, re-program, or other work order / information messages) and set appropriate flags or trigger alternate processing.

15.7 Geographical Information System

15.7.1 The MDMS shall be able to receive incremental updates for the electric distribution network sent by GIS on daily basis, especially network hierarchy.

15.7.2 The MDMS shall allow users the ability to customize routine and ad hoc reports for engineering purposes (e.g. highest demand each month over the last 12 months) to access through GIS.

15.7.3 The MDMS shall have the ability to track and automatically send pre-defined reports on a routine basis for quality control to GIS.

15.8 Data Synchronization

15.8.1 The MDMS shall be capable of accepting and processing initial load files containing account data from the CIS environment in order to facilitate a transitional system cross-over period.

15.8.2 The MDMS shall accommodate an Initial mapping of schemas routings, to be covered by a data synchronization process once system is in steady state (transitional interface).

15.8.3 The MDMS Installation Vendor shall be able to provide a comparison of manual and meter communication system reads for system certification purposes (transitional interface).

15.9 API

15.9.1 The MDMS will have a robust set of API's available for BYPL to utilize in interfacing with other applications.

15.9.2 The MDMS shall not impose interface restrictions for creation of data or updates. Creation or updating shall be possible via 1) bulk/batch interfaces (e.g. file import), 2) real-time/online interfaces (e.g. web services), and 3) through a user interface.

15.10 Outage Management

15.10.1 The MDMS should maintain the grid hierarchy structure from OMS / GIS and has data synchronizing facility atleast once in a day

15.10.2 The MDMS shall be able to create, update, complete, and cancel all outage notifications and send them to an Outage Management System with configurable filters.

15.10.3 The MDMS shall be able to receive and process (planned and unplanned) outage notifications and real-time circuit switching information sent by OMS and filter the outage notifications from meter data back to the OMS.

15.10.4 The MDMS shall have the ability to receive outage status from an OMS.

15.10.5 The MDMS shall have the ability to receive commands (e.g. ping) from OMS.

15.10.6 Distribution Management System (DMS)/ Energy Management System (EMS)

15.10.7 The MDMS shall be able to create, update, complete, and cancel all outage or energy quality notifications and send them to an DMS/EMS.

15.10.8 The MDMS shall have the ability to receive commands (e.g. ping) from DMS.

15.11 Distribution Planning

15.11.1 The MDMS shall have ability to provide various meter data inputs necessary for distribution planning like- feeder meter loadings, distribution transformer loadings, boundry meter data, customer profile data etc..

15.12 Prepaid Billing

15.12.1 Implement SAP Pre paid Metering Solution

15.12.2 The MDM should integrate with pre-payment metering and pre-payment application (either on SAP ISU or any third party

15.12.3 The prepayment should support the system that payment and connection parameters are stored centrally and the details are being updated to consumer portal/ app

15.12.4 The system should periodically monitor the energy consumption of prepaid consumer and decrease the available credit based on consumption

15.12.5 The system should send connect/disconnect command on the basis of available credit as per notified rules & regulations

15.12.6 The system should send low-credit notifications to the consumer when their balance approaches a threshold

15.13 Hand held devices

15.13.1 The MDMS shall have the ability to interface with existing handheld devices operational in BSES to capture meter reading, to meet any emergency need

16 Security

16.1 The MDMS shall align to cyber security guidelines from ISGF and CIP

16.2 The MDMS shall support end-Users and Administrator security, including:

- Individual, named accounts for each end-user and administrator
- Role-based security
- Administration privileges provided only through specific authorization
- Configurable, fine-grained access by service delivery point
- LDAP v3 compliant integration

- SSL secured communications

16.3 The MDMS shall support system integration security, including:

- Web-services/ SOAP protocol and JMS integration require username/password authentication
- Keystore used to manage certificates and access credentials
- Support for Mutual or 2-Way authentication
- SSL secured communications

16.4 The MDMS's underlying data shall support the following security mechanisms:

- Role-based security for database and application administration, application operations and execution, ad-hoc read-only privileges
- AES-256 bit encryption for persisting sensitive data at rest
- Keystore to manage certificates and access credentials
- SSL secured communications

17 Other Requirements

MDMS should support/ compliment initiatives of BYPL like- Demand Response, Revenue Protection, Net Metering, Network Planning, Distribution Transformer Monitoring etc..

17.1 Demand Response-

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

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

17.2 Revenue Protection

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

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

17.2.3 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.

17.2.4 The MDM shall support the analytics/investigation (i.e. view current and historical usage patterns) to valid suspected revenue protection issues.

17.3 Net Metering

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

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

17.4 Network Planning-

The MDMS should integrate with Distribution Planning tools with BYPL to provide all time series metering data for planning

17.5 Distribution Transformer Monitoring-

17.5.1 The MDMS should provide facility to set thresholds for DT electrical parameters and trigger alerts to the concerned personnel through workflow

17.5.2 The MDMS should also provide graphical reports to compare electrical parameters such as kWh, PF, Volt, Current etc.. of DT with the customers connected on the same DT.

17.5.3 Above results should also be available in the format such as Excel, PDF etc..

18 Performance Standards

18.1 MDMS User Interface Level performance

18.1.1 Any real time display and application display on workstation console along with data values to appear on screen - Within 2 Secs

18.1.2 Manual data entries of new values to appear on screen – Within 2 Secs

18.1.3 Display update rate – 2 Sec for 4 displays together

18.1.4 Response time for display of alarms and events after receipt in system – Within 1 sec of receipt

18.1.5 Request for printing of displays (to be acknowledged with an indication of quest being processed)- Within 2 Secs

18.1.6 Request for generation of reports (to be acknowledged with an indication of quest being processed)- Within 2 Secs

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

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

18.2.1 All interval data from 95% of meters within 8 hours after midnight; and

18.2.2 All interval data from 99.9% of meters within 24 hours after midnight.

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

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

18.3.1 Action performed at 90% of meters within 1 Hour;

18.3.2 Action performed at 99% of meters within 2 hours; and

18.3.3 Action performed at 99.9% of meters within 6 hours.

18.4 Performance level for remote load control commands for selected consumers,

The performance level required for individual meters shall be:

18.4.1 Action performed at 95% of meters within 5 minutes;

18.4.2 Action performed at 99% of meters within 10 Minutes

18.5 Performance level for remote connect/disconnect for selected consumers,

The performance level required for selected individual meters shall be:

18.5.1 Action performed at 90% of meters within 10 minutes;

18.5.2 Action performed at 99% of meters within 1 hour; and

18.5.3 Action performed 99.9% of meters within 2hours.

18.6 Performance levels for Meter loss of supply and outage detection Alarms to be received within 5 minutes for 90% of meters.

18.7 Performance levels for remotely altering settings in meter/ firmware upgrade

The performance level required for individual meters shall be:

18.7.1 Action performed at 99% of meters within 24 hours; and

18.7.2 Action performed at 99.9% of meters within 36 hours.

18.8 Performance levels to remotely read events logs

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

18.8.1 Action performed at 90% of meters within 30 minutes;

18.8.2 Action performed at 99% of meters within 1 hour; and

18.8.3 Action performed at 99.9% of meters within 6 hours.

To read the event logs pertaining to all meters:

18.8.4 The data pertaining to 99.5% of meters with in 1 day

18.9 Performance levels for updating of data on consumer portal/ app

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

18.9.1 Action performed for 90% of consumers within 1 hour after receiving the data in MDM

18.9.2 Action performed at 99.5% of meters within 6 hours after receiving the data in MDM

18.10 The performance levels regarding meter discovery time line after installation, on demand reading of meter data for operational purposes, outage restoration enquiry response time etc. would also be declared by the bidder.

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

19 Infrastructure Requirements

19.1 Current SAP Landscape Details:

19.1.1 Following table gives the overview of present SAP's landscape. Bidder will have the flexibility to utilize the existing hardware infrastructure available with regard to SAP platforms without any performance detoriation of the SAP operations

19.1.2 The System Supplier is requested to propose a system configuration that will support the technical and operation environments outlined below and meet the system size, performance, availability requirements.

Current Landscape to be added

19.2 System Environments

19.2.1 The proposed solution should be On-premises.

19.2.2 The configuration – including application, database and communication servers – shall support the following environments:

19.2.2.1 Development environment

19.2.2.2 Testing Environment

19.2.2.3 Production environment

19.2.2.4 Disaster Recovery environment (Only for Production system with similar capacity)

19.2.2.5 RPO and RTO of the DR system should not be more than 30 minutes for any system.

19.2.3 Bidder should provide all related IT- Infra requirement (Servers, Database license, Operating system License, Storage, etc.) in the format as defined below. The IT infra

requirement should be provided after considering existing IT infrastructure compatibility with BYPL as defined above. Bidder are requested to study existing BYPL infrastructure, with BYPL IT team before submission of the Bid document, if required. If any changes in existing IT infra is required for integration with proposed solution the bidder should separately specify the same to BYPL respectively. The suggested IT-Infra should be able to support the suggested systems for six years after the User Acceptance Test.

19.2.4 Database proposed should be latest enterprise version of Oracle database. Detailed system architecture to be provided by the bidders for system proposed.

19.2.5 The Proposed hardware infrastructure should be for BRPL & BYPL's primary and secondary datacenter considering DR replication. Within the completion of project i.e user acceptance, the final bidder will conduct one DR drill in which complete MDMS solution should work from back up datacenter with least impact to users

19.2.6 IT hardware for DR replication for development and test system is not required, DR server and configuration is required only for production environment.

19.2.7 The proposed Storage and SAN solution should be enterprise class

19.2.8 The proposed Storage and SAN solution should have redundancy feature

19.2.9 All relevant accessories required for the storage solution implementation shall be provided by the bidder

19.2.10 BYPL will have the option to go for the specified equipment on their own and bidder will have to ensure that all the performance parameters are met.

Table for Infrastructure Items

Name of the IT-Infra Component	Make and Model	Detailed Specification	Qty.

19.3 System Sizing and Scalability

19.3.1 System Sizing to be based on considering approx. 2 Million endpoints with a data storage of 3 years for maximum of 16 channels 15/30 Minute of interval data along with all other type of meter data.

19.3.2 Performance criteria to be followed as mentioned in the RFP

19.3.3 Users accounts should be easily added as system grows. There should be no upgrade involved and no pre-defined limits upto a maximum of 500 users with different roles.

20 Service Level Agreement (SLA)

All SLA's will be monitored on per node daily basis

20.1 System SLA

System Level SLA		SLA Values
Back-end Applications uptime	Applications like NMS, HES, MDM, Consumer Portal et cetera.	>99.9% of the time
Integration Services uptime	Web Services for integrating SAP, GIS, OMS, MDM, Consumer Portal et cetera	>99.9% of the time

20.2 Canopy Network

Network SLA Terms	Explanation	SLA Values
Network Uptime	Canopy network and nodes shall be up and running	99.9% of the time
Network terminals configuration	Maximum time for one transaction per 1000 nodes	<1 minute with 95% success
Network terminals firmware upgrade	Maximum time per 1000 nodes	<1 Hour with 95% Success

20.3 Device Data

SLA Terms	Explanation	SLA Values (per Node)	
		Parameters	Success (%)
Remote Device Control	Maximum time to control remote devices like disconnect/reconnect/limit the load or switch status.	<1minute	99.9%
Remote Device Configuration	Max time for one transaction	< 1 minute	95%
Critical Events push from remote devices to HES	ALL configured alarms should be pushed on occurrence.	<10 seconds	99.9%
On-Demand Data Read from HES	Maximum time for on-demand read response	<5 minutes	99%
Data Transfer from	Hourly Data	<10mins	99%

remote devices to HES for whole network	Daily Data	<30mins	99%
	Monthly Data	<24 Hours	99%

21 Detailed Technical Specifications

S.No.	Topic	Requirement
1	**Network element Design and Construction**	All Network elements must : i). Be of industrial grade construction ii). All network elements should be certified by competent authority for use in India iii). Mountable either internally at existing BYPL assets or externally as pole top devices /mobile towers iv). Have a lifespan of at least 7 years after phase wise Operational Acceptance test v). Offered Communication canopy solution should have necessary Disaster Recovery (DR) & security mechanisms in place and also shall guarantee performance of the entire system in quantifiable terms, for all conceivable parameters for entire life cycle.
2	**Radio Power Requirements**	All RF canopy elements are required to adhere to the Wireless Planning Commission, India (WPC) latest guidelines. (**WPC – Compliance)**
3	**Radio Spectrum**	The solution should utilize a license/ unlicensed radio spectrum (subject to WPC/ DOT Authority requirements). Bidder should procure license if operate in licensed band. (**WPC/ DOT – Compliance)**
4	**Communications Protocol**	All equipment shall be standards-based, shall use recognized protocol such as IPv6. Bidder should specify the standards used in each layer during bid protocols shall be shared.
5	**IP Protocol Compliance**	The solution should conform/ comply to both IP V4 and IP V6 network protocols with backward compatibility feature (Bidder solution should comply to IS16444 latest Indian standard and other applicable Indian standards for Smart meter)
6	**Smart Meter Integration**	Bidder to work with meter OEM for integration of NIC card in Smart meter. Bidder to ensure with meter OEM's that Communication module/ NIC will be plug-in type with standard PIN Configuration (as specified by BYPL) with proper sealing arrangement as specified in IS16444 of Smart meters. However BYPL reserve the right to review NIC integration mechanism after every 1 year. Further, Signal booster /external antenna if required should be hosted inside the meter box.
7	**RF canopy elements Connectivity and Range**	Each RF canopy elements should: • RF canopy should support multiple applications data and all end-points should be able to be connect to either the AMI Head End Software AND/OR to the respective control & monitoring system • Be capable of communicating with large numbers of end points simultaneously over the same network at the same time maintaining prioritization (quality of service) as required for operational applications • Have the capability to use an external antenna to extend communication range • Be capable of operating within an operating temperate range of -2°C to +70°C with humidity between 0% to 95%, non-condensing • Have the ability to support multiple communication protocols to provide flexibility to cover existing and future protocols as per different applications as mentioned in the scope. • The Communication Canopy Network shall support hybrid transport

		technology, i.e. it can be a mix of Cellular (2G & 3G & 4G), RF, MPLS, Fiber etc., as appropriate and shall support the required hybrid topology on the same module. • The dataflow between the Gateways / Concentrator and HES will be in the scope of the bidder and should be available in redundancy mode on Cellular (3G & 4G) or RF or MPLS, Fibre etc. •All equipment's should support time sync from NTP
8	**Hybrid communication Canopy Connectivity**	The hybrid communication canopy should be capable to integrate with multiple types of field devices including: • Smart Meter • HAN devices • SCADA devices • DA devices • DR devices • FPI • Street Light devices • Capacitor bank controllers • Sectionalizers, Reclosures • Voltage Regulator • Network protectors • Solar • DER devices • EV charging etc.
9	**Data Rate**	Communication canopy should support data rate requirements as per different applications as mentioned in the scope. Bidder to mention proposed data rate where ever it will not meet SLA.
10	**Latency**	Typical communication latency across the network component of the hybrid communication canopy should be as per scope and SLA. The bidder to share hop to hop latency and hop to HES latency
11	**Backhaul Communications**	The proposed Communication Canopy Network shall support hybrid transport technology, i.e. it can be a mix of Cellular (3G & LTE), RF, MPLS, Fiber etc., as appropriate and shall support the required hybrid topology on the same module. The dataflow between the Gateways / Concentrator and HES will be in the scope of the bidder and should be available in redundancy mode on Cellular (3G & LTE) or RF or MPLS, Fibre etc. Replication link between DC and DR is in scope of bidder and to be planned in redundancy.
12	**Product / solution life Cycle**	Bidder to quote only for latest versions of hardware / software and products. However for product /solution life cycle, bidder to describe: i). End-of-life policy for AMI modules, communication devices and system software ii). Any version of hardware or software declared obsolete, not available or no longer supported? If so, please describe how you accommodated customers on that version. What guarantees are you willing to provide regarding end-of-life iii). Bidder should provide necessary support on warranty for 5 years after the Operational Acceptance test of each phase
13	**Interface with other Systems**	Bidder will be responsible for interfacing of their supplied system with other components of BYPL technology architecture including NMS as specified in tender document using inter- operable /mutually agreed standards free of cost, for full scale deployment of Smart Grid.
14	**Interoperability & future up gradation**	All elements of hybrid communication canopy should be interoperable with elements of any other alliance member And in case if there is any version upgrade or change in standard for the applicable products , the solution provider should accommodate all such changes with no cost to BYPL

15	**Equipment specification and features**	The equipment shall be weatherproof, dustproof and constructed for outdoor installation on poles (minimum rating: IP65). The mounting provision shall be for either pole mounting or mounting brackets for flat surfaces. 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 of weather and aging resistant material made of neoprene or equivalent. The network elements should have option to provision of ac or dc with suitable identification of source. Operating Voltage: 24 to 60 V DC, autoranging positive or negative; (48VDC/230VAC for Gateway) with 50% tolerance. The single phase auxiliary power supply should operate in the range 95 V- 270 V. Power backup of network elements should be 8 hrs. Failure rate of network elements should not be more than 0.5%, under field Delhi field conditions. Phase reversal & phase natural interchange shall not affect the gateway/router functionality in any manner. NIC cards installed in 3P meters should be capable to report/detect outage in power in case of any phase missing.
16	**Data Traffic Management**	Proposed solution should support traffic prioritization, filtering, shaping etc. Data traffic/congestion measures are required so that communication canopy elements can efficiently handle the volumes of asynchronous or synchronous data that will potentially be routed through their hardware.
17	**Meshed/ Star (Point to Multipoint) Network**	If a meshed network is proposed, each mesh network device/endpoints must be able to connect to at least two peers/base stations for redundancy.
18	**Other network functionality**	• Automatic Node Discovery • Dynamic Re-routing • Self-Healing mechanism through re-routing and built-in network redundancy • Downloading configuration data to field devices/ meters • Supervision and optimization of the Communication Canopy communication network by computing performance statistics to achieve maximal channel capacity • Troubleshooting of devices from field, reading of data from end devices with portable tools, detection and reporting of trouble conditions such as link breaks and device failures • Support for IPv6 with backward compatibility to IPv4 is a must (as per IS 16444). • Each gateway device should have 10BASE-T/100BASE-TX Ethernet Port (3 nos.) to connect to any Circuit switched / packet switched network such as SDH / MPLS
19	**Long Range Radio (Point-to- Multipoint)**	Bidder shall provide details for the following: 1. Radio spectrum bands in which the equipment will operate, note if licensed or unlicensed spectrum? 2. Radio channel size and number of radio channels required? 3. Network management support systems and diagnostic tools? 4. Base Station and RF card Specifications 5. Max. Transmit Power requirements 6. Receive sensitivity (dBm) 7. Modulation Type 8. Radio Standards/Compliance? 9. Maximum number of end-points supported by each base station 10. Typical radio latency? 11. Communication protocol used for the backhaul connection (Ethernet, 3G, 4G & other)
20	**Privacy Standards**	It is required that the solution conforms to DOT privacy standards.
21	**Data Security and Encryption Protocols**	It is required that the solution adheres to BYPL IT security protocols and practice. • Certificate-based identities user names and passwords

		• Role based access control • Link-layer encryption • Group based key generation and management • Network layer encryption • 802.1x based access control for meters, routers, grid devices • Data encryption applied on all data following through the communication channel through Asymmetric encryption between NIC and HES • Sensitive information must be encrypted in the database • Preference is for user access to be managed in a central area using Role Base Security • Password policy to enforce password rules • Manage the length of active sessions, and retries • The use of Digital certificates • Audit logs to track user changes (Audit trails)
22	**Security Models**	Solution Provider is required to provide detailed security models for their solution.
23	**Over the Air Firmware Upgrades**	Over the air, firmware upgrades to all relevant end points should be possible across the Telecommunications Network via AMI Head End Software or respective monitoring & control system.
24	**Production and supply**	It is required that the bidder has demonstrated proof of ability to mass produce NIC/radio chips, including manufacturing capability, stock and capacity.
25	**Test Bench**	Bidder should provide a test bench for testing of the system at BYPL. All necessary H/W, S/W & network elements required for setting up test bench for testing of various parameters as defined in RFP will be in the scope of bidder. Test bench will be a part of network and maintenance of this test bench for next 5 years will be in scope of bidder.
26	**NIC card**	• NIC card should plug-in type with standard PIN configuration (as finalized by BYPL), field replaceable and should be universal for all the meters as far as physical dimensions are concerned. NIC cards/communication module should be source of generation of last gasp notification. • NIC cards for DA (RTU/FRTU) and other devices should be: 1. NIC must be panel mounted or separately mounted with proper IP class for outdoor. 2. Auxiliary supply must be 24 to 60 V DC, autoranging positive or negative; for FRTU and RTU Communication 3. Communication Connection with DA or other devices must be Ethernet TCP/IP and Serial RS232. 4. Protocol supported IEC104, 101 and IEC61850. 5. RTU/FRTU NIC must have separate debugging port for field diagnosis.

Specification of NIC for Smart Meters		
1	General	a. Communication module / NIC shall be plugin type. b. Communication module/ NIC shall be interoperable with different make of meters.
2	Type of Communication Module/ NIC	a. Communication Module/ NIC Type 1: RF based suitable for communication Network of BYPL designated RF canopy provider. b. b. Communication Module/ NIC Type 2: LTE 4G with 3G and 2G fall back as per Indian telecom standards. c. Communication Module/ NIC Type 3: Hybrid (RF and cellular) communication module (LTE 4G with 3G and 2G fall back as per Indian telecom Standards).
3	Meter Interface	Over UART/RS232 bidder to specify detailed Pin configurations

4	Input Power Supply	3.3V/ 5V, bidder need to specify.
5	Radio output	500 mW and shall be less than 1W
6	Power consumption	Average - 0.5 W, Peak - 3.0 W
7	Dimension	Dimension shall be agreed with meter vendor/ communication vendor.
8	Baud rate	100 kbps or more
9	Frequency Band	Following frequency bands shall be used as per requirement
9.1	RF Band	a. RF Free Band: Free band 865-867 MHz for sub-GHz cards (subject to WPC/DOT compliance) or as approved by DOT b. RF Licensed Band: Subject to WPC/ DOT Compliance. Bidder should procure license if operate in licensed band.
9.2	Cellular Frequencies	a. LTE 4G: 800/1800/2300 MHz b. UMTS: 850/800, 900, 1900 and 2100 MHz c. GSM/GPRS/EDGE/ 3G/4G/LTE: 900/1800 MHz
10	Operating conditions	a. Operating Temperature: -10 Deg C ~ +60 Deg C b. Storage Temperature: -10 Deg C ~ +70 Deg C c. Humidity: up to 95% RH (Non-Condensing)
11	Last gasp	NIC shall have provision to send last gasp signal to HES in case of power failure/ outage using appropriate means e.g. super capacitor.
12	Protection	There shall be proper protection and isolation between smart meter and NIC Card.
		Circuit should have following protections:
		a. Short Circuit Protection
		b. Over Current Protection
		c. Over Voltage Protection
13	Type Tests	NIC shall be approved by DOT/ WPC. EMI/ EMC shall be tested with smart meter as per Indian Standards.

Specification of NIC for Distribution Automation		
1	General	Communication module / NIC along with IP 67 enclosure for outdoor use and should be DIN rail mountable
2	Type of Communication Module/ NIC	a. Communication Module/ NIC Type 1: RF based suitable for communication Network of BYPL designated RF canopy provider. b. Communication Module/ NIC Type 2: LTE 4G with 3G and 2G fall back as per Indian telecom Standards. c. Communication Module/ NIC Type 3: RF and cellular communication module (LTE 4G with 3G and 2G fall back as per Indian telecom Standards).
3	Distribution Automation Interface	RS232- 01 no Ethernet Port- 01 no
4	Programming/ Debugging Port	RS232
5	Power Supply	95 V- 270 V AC, 50 Hz and 24 to 60 V DC, autoranging positive or negative;
6	Radio output	500 mW and shall be less than 1W
7	Power consumption	Average - 0.5 W, Peak - 3.0 W
8	Dimension	Dimension shall be agreed with meter vendor/ communication vendor.
9	Baud rate	100 kbps or more
10	Frequency Band	Following frequency bands shall be used as per requirement
10.1	RF Band	a. RF Free Band: Free band 865-867 MHz for sub-GHz cards (subject to WPC/DOT compliance) or as approved by DOT b. RF Licensed Band: Subject to WPC/ DOT Compliance. Bidder should procure license if operate in licensed band.

10.2	Cellular Frequencies	a. LTE 4G: 800/1800/2300 MHz b. UMTS: 850/800, 900, 1900 and 2100 MHz c. GSM/GPRS/EDGE/ 3G/4G/LTE: 900/1800 MHz
11	Operating conditions	a. Operating Temperature: -10 Deg C ~ +60 Deg C b. Storage Temperature: -10 Deg C ~ +70 Deg C c. Humidity: up to 95% RH (Non-Condensing)
12	Protection	There shall be proper protection and isolation between smart meter and NIC Card.
		Circuit should have following protections:
		a. Short Circuit Protection
		b. Over Current Protection
		c. Over Voltage Protection
13	Type Tests	NIC shall be approved by DOT/ WPC. EMI/ EMC shall be tested as per Indian Standards.

Volume - II

FORMATS

Tender Notification for

SUPPLY OF GPRS or CDMA MODEM

NIT NO: CMC/BY/19-20/RB/VKS/01

Due Date for Submission: 23.04.2019, 2:30 PM.

Annexure I

BID FORM

To

Head of Department
Contracts & Material Deptt.
BSES Yamuna Power Ltd
Shaktikiran Building, Karkardooma,
Delhi 110032

Sir,

1 We understand that BYPL is desirous of procuring…….. for it's licensed distribution network area in Delhi.

2 Having examined the Bidding Documents for the above named works, we the undersigned, offer to deliver the goods in full conformity with the Terms and Conditions and technical specifications for the sum of…….. (figures……) or such other sums as may be determined in accordance with the terms and conditions of the contract .The above Amounts are in accordance with the Price Schedules attached herewith and are made part of this bid.

3 If our Bid is accepted, we under take to deliver the entire goods as) as per delivery schedule mentioned in Section IV from the date of award of purchase order/letter of intent.

4 If our Bid is accepted, we will furnish a performance bank guarantee for an amount of 10% (Ten)percent of the total contract value for due performance of the Contract in accordance with the Terms and Conditions.

5 We agree to abide by this Bid for a period of 120 days from the due date of bid submission and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

6 We declare that we have studied the provision of Indian Laws for supply of equipments/materials and the prices have been quoted accordingly.

7 Unless and until Letter of Intent is issued, this Bid, together with your written acceptance there of, shall constitute a binding contract between us.

8 We understand that you are not bound to accept the lowest, or any bid you may receive.

9 There is provision for Resolution of Disputes under this Contract, in accordance with the Laws and Jurisdiction of Contract.

Dated this……. day of…….. 20….

Signature…….. In the capacity of
……..duly authorized to sign for and on behalf of
(IN BLOCK CAPITALS)……..

BID SUBMISSION FORM (Annexure-1)

Offer No.: …….. Date: …….

To,

Head Contract and Material

BSES YAMUNA POWER LIMITED

3rd Floor "A" Block, Shakti Kiran Building,

Karkardooma, Delhi-110032 (INDIA).

Dear Sir,

In response for Supply, Modem for BSES YAMUNA POWER LTD, Delhi-32. We hereby submit our offer herewith.

1. Bidder Name : ……
2. Website Address : ……
3. Email Address : ……....
4. Address for Communication : ……
   ……

   ……
5. Telephone Number : ……
6. Fax/Telefax Number : ……
7. Authorized Person - Name :……
   a. Designation:…….
   b. Mobile No. : ……...
   c. Email-ID : ……
8. Authorized Person for E-Auction -Name :……
   a. Designation:…….

b. Mobile No. : ……...

c. Email-ID : ……

9. PAN Number : ……

10. TIN Number : ……

11. Service Tax Regn. No. : ……

12. ECC Number : ……

13. Particulars of EMD

a. Amount : Rs. ……
b. Mode of Payment (BG) : ……
c. BG No. : ……
d. Date : ……
e. Name of the Bank : ……
f. Address of the Bank : ……
g. Validity of BG : ……

14. Particulars of Tender Fee

a. Amount : Rs. ……
b. DD No. : ……
c. Date : ……
d. Name of the Bank : ……
e. Address of the Bank : ……

15. Turnover of the Bidder in last 3 years (Please submit copy of Annual Report)

Year	Annual Report attached at Page No.	Turnover in Rs. (Crores)
2015-2016		

2016-2017		
2017-2018		
Average Turnover		

16. Details of similar work / order executed during last 2 years (Please submit copy of completion certificate from the client.

Description of the Work/ Order Executed	**Value of Work/Order Executed**	**Name of the Client**	**Start Date**	**Finish Date**	**Doc. Evidence at Page No.**

17. Following Documents are submitted to substantiate other eligibility criteria.

i) ……

ii) ……

iii) ……

DECLARATION

1) We have read and understood the terms & conditions of the above mentioned tender and comply with all Terms & Conditions of your Tender.(In case of any deviation the Bidder must attach a separate sheet clearly mentioning the Clause No. of the Tender and Deviation thereto)

2) We certify that the information mentioned above are true and correct to best of our Knowledge.

3) In case of receipt of order we confirm that payment shall be received through e-Banking / Electronics Transfer.

4) This offer contains ……. No. of pages including all Annexure and Enclosures.

Place:

Date:

Signature of Authorized Signatory

Name:

Designation:

Seal:

Annexure II

FORMAT FOR EMD BANK GUARANTEE

(To be issued in a Non Judicial Stamp Paper of Rs.50/-purchased in the name of the bank)

Whereas [*name of the Bidder*] (herein after called the "Bidder") has submitted its bid dated[*date of submission of bid*] for the supply of [*name and/or description of the goods*] (here after called the "Bid").

KNOW ALL PEOPLE by these presents that WE [name of bank] at [*Branch Name and address*],having our registered office at[*address of the registered office of the bank*](herein after called the "Bank"),are bound unto BSES Yamuna Power Ltd., with it's Corporate Office at Shaktikiran Building, Karkardooma, Delhi -110032,(herein after called —the "Purchaser")in the sum of Rs…… (Rupees…….. Only) for which payment well and truly to be made to the said Purchaser, the Bank binds itself, its successors, and assigns by these presents.

Sealed with the Common Seal of the said Bank this_____ day of_____ 20____.

TH E CONDITIONS of this obligation are:

1 If the Bidder withdraws its Bid during the period of bid validity specified by the Bidder on the Bid Form ; or

2. If the Bidder, having been notified of the acceptance of its Bid by the Purchaser during the period of bid validity:

(a) Fails or refuses to execute the Contract Form, if required; or

(b) Fails or refuses to furnish the performance security, In accordance with the Instructions to Bidders/ Terms and Conditions;

We undertake to pay to the Purchaser up to the above amount upon receipt of its first written demand, without the Purchaser having to substantiate its demand, provided that is its demand the purchaser will note that amount claimed by it is due to it, owing to the occurrence of one or both of the two condition(s), specifying the occurred condition or condition(s).

This guarantee will remain in force up to and including One twenty (120) days after the due date of submission bid, and any demand in respect thereof should reach the Bank not later than the above date.

(Stamp & signature of the bank)

Signature of the witness

Annexure -III

ACCEPTANCE FORM FOR PARTICIPATION IN REVERSE AUCTION EVENT

(To be signed and stamped by the bidder prior to participation in the auction event)

In a bid to make our entire procurement process more fair and transparent, BYPL intends to use the reverse auctions through SAP-SRM tool as an integral part of the entire tendering process. All the bidders who are found as techno commercial qualified based on the tender requirements shall be eligible to participate in the reverse auction event.

The following terms and conditions are deemed as accepted by the bidder on participation in the bid event:

1. BYPL shall provide the user id and password to the authorized representative of the bidder. (Authorization letter in lieu of the same be submitted along with the signed and stamped acceptance form)
2. BYPL will make every effort to make the bid process transparent. However, the award decision by BYPL would be final and binding on the supplier.
3. The bidder agrees to non-disclosure of trade information regarding the purchase, identity of BYPL, bid process, bid technology, bid documentation and bid details.
4. The bidder is advised to understand the auto bid process to safeguard themselves against any possibility of non-participation in the auction event.
5. In case of bidding through internet medium, bidders are further advised to ensure availability of the entire infrastructure as required at their end to participate in the auction event. Inability to bid due to telephone line glitch, internet response issues, software or hardware hangs, power failure or any other reason shall not be the responsibility of BYPL.
6. In case of intranet medium, BYPL shall provide the infrastructure to bidders, further, BYPL has sole discretion to extend or restart the auction event in case of any glitches in infrastructure observed which has restricted the bidders to submit the bids to ensure fair & transparent competitive bidding. In case of an auction event is restarted, the best bid as already available in the system shall become the start price for the new auction.
7. In case the bidder fails to participate in the auction event due any reason whatsoever, it shall be presumed that the bidder has no further discounts to offer and the initial bid as submitted by the bidder as a part of the tender shall be considered as the bidder's final no regret offer. Any offline price bids received from a bidder in lieu of non-participation in the auction event shall be out rightly rejected by BYPL.
8. The bidder shall be prepared with competitive price quotes on the day of the bidding event.
9. The prices as quoted by the bidder during the auction event shall be inclusive of all the applicable taxes, duties and levies and shall be FOR at BYPL site.
10. The prices submitted by a bidder during the auction event shall be binding on the bidder. No further communication will be there.
11. No requests for time extension of the auction event shall be considered by BYPL.
12. The original price bids of the bidders shall be reduced on pro-data basis against each line item based on the final all inclusive prices offered during conclusion of the auction event for arriving at contract amount.

Signature & seal of the Bidder

Annexure IV

PRICE FORMAT

S. no.	ITEM DESCRIPTION	Required QTY	UoM	UNIT EX-WORKS RATE	UNIT FREIGHT	GST %	GST AMOUNT	UNIT LANDED RATE	TOTAL LANDED COST
		A		B	C	D	E=(B+C)*D	F=E+B+C	F*A
1	SUPPLY OF GPRS MODEM	2000	Nos						
2	**OR** SUPPLY OF CDMA MODEM	2000	Nos						

NAME OF BIDDER

SIGNATURE OF BIDDER

Note:
1. Prices shall be Firm
2. The prices received without break up of ex-works, Freight, GST are liable for rejection
3. Pls indicate the exact percentage of taxes in figures and words
4. If there is a discrepancy between the unit price and the total price THE UNIT PRICE shall prevail

Annexure V

COMMERCIAL TERMS AND CONDITIONS

S. No.	Item Description	AS PER BYPL	BIDDER'S CONFIRMATION
1	Validity	120 days from the due date of submission	
2	Price basis	a) Firm, FOR Delhi store basis. Prices shall be inclusive of all taxes & duties, freight upto Delhi stores. b) Unloading at stores shall be in vendor's scope c) Transit insurance in BYPL scope	
3	Payment terms	100% payment within 45 days after receipt of material at stores	
4	Delivery schedule	As per Section-IV	
5	Defect Liability period	60 months after commissioning or 66 months from the last date of dispatch, whichever is earlier	
6	Penalty for delay	1% per week of delay of undelivered units or part thereof subject to maximum of 10% of total PO value(ex-work) of undelivered units	
7	Performance Bank Guarantee	10% of total PO value (ex-work) valid for 60 months after commissioning or 66 months from the last date of dispatch, whichever is earlier plus 3 months towards claim period	
8	Reverse Auction Event	In a bid to make our entire procurement process more fair and transparent, BYPL intends to use the reverse auctions through SAP-SRM tool as an integral part of the entire tendering process. All the bidders who are found as techno commercial qualified based on the tender requirements shall be eligible to participate in the reverse auction event.	

Annexure VI

NO DEVIATION SHEET

SL NO	SL NO OF TECHNICAL SPECIFICATION/ COMMERCIAL	DEVIATIONS,IF ANY

SIGNATURE & SEAL OF BIDDER

NAME OF BIDDER

Annexure VII

QUALIFICATION CRITERIA

S.no	Qualification Criteria	Description by bidder with qualifying the fulfillment	Documentary Evidence attached page no. detail
1	The bidder must be a manufacturer of modem.		
2	The bidder should have capacity to deliver the required Modem in one supply.		
3	Bidder must have executed the item under single order with total order value not less than 25 laces.		
4	The bidder should have qualified technical and QA personnel at various stages of manufacture & testing.		
5	The bidder should have supplied at least 3000 nos. Modem (GPRS or CDMA) to any major utilities/SEB's in last 3 years out of which at least 1000 no's should be in successful operation in last 2 years. Performance certificate shall be furnished in support of same.		
6	Bidder should have average Annual Sales Turnover of ₹ 2.00 Crores in last year.		
7	Firms who are debarred/blacklisted in other utilities in India will not be considered		
8	BYPL reserves the right to assess the capabilities /installed capacity.		

The manufacture should send the compliance of above mentioned parameters in technical offer and has to give an under about no objection to verify his manufacturing facility as a part of tender process.

Annexure – VIII

FORMAT FOR MANUFACTURER'S AUTHORISATION LETTER TO AGENT (on letter head)

Ref. No.

Date:

To,

HOD C&M

BSES YAMUNA POWER LTD.

Shakti Kiran Building, Karkardooma

Delhi-110032

Sub.: Authorization Letter.

Dear Sir,

We,_____, who are established and reputed manufacturers of_____, having factory at_____, hereby authorize M/s._____ (name & address of Indian distributor /agent) to bid, negotiate and conclude the order with you for the above goods manufactured by us.

We shall remain responsible for the tender / contract / agreement negotiated by the said M/s.

_____, jointly and severely.

We ensure that we would also support / facilitate the M/s _____on regular basis with technology / product updates for up-gradation / maintains / repairing / servicing of the supplied goods manufactured by us, during the warranty period.

In case duties of the Indian agent / distributor are changed or agent / distributor is changed it shall be obligatory on us to automatically transfer all the duties and obligations to the new Indian Agent failing which we will ipso-facto become liable for all acts of commission or omission on the part of new Indian Agent / distributor.

Yours faithfully,

Name & Signature]

for and on behalf of M/s. _____ [N*ame of manufacturer*]

Note: This letter of authorization should be on the letterhead of the manufacturing concern and should be signed by a person competent and having the power of attorney to bind the manufacturer. A copy of notarized power of attorney should also be furnished.

The bidders must furnish following information:

1. Details to support of Eligibility Criteria to be furnished along with the RFP:

Details of atleast two call center supply/ implementation done:

1	Name and address of customer
2	Name and address of contact person (with phone , fax & email)
3	Nature of services being provided
4	Brief description of network setup

Please attach copies of the PO

2. Bidders details:

1	Office address, telephone fax nos. dealing this RFP
2	Details of official dealing with BYPL for this RFP

3. Deviations from objectives:

The bidder must specify the deviations / infeasibility, if any, from the expectations in this tender document as given in the deviation sheet Annexure V. In case nothing is specified under this heading, it will be assumed that there are no deviations from the requirement described in this document.

4. Detailed technical solution- please attach with all details.

Yours faithfully

Place:

Date:

Signature of the bidder with seal

SELF DECLARATION FORM

Tender No: CMC/BY/19-20/RB/VKS/01

To,

The HOD

Contract & Material Dept

BSES Yamuna Power LTD

Karkardooma Delhi-110032

Subject: Declaration for Not blacklisted

Sir,

1. I / We, the undersigned do hereby declare that, I / We have never ever been blacklisted and / or there were no debarring actions against us for any default in supply of material/ Services or in the performance of the contract entrusted to us in any of the State Government, Central Government or any other public sector undertaking or a corporation or Electricity Utilities of India.
2. In the event of any such information pertaining to the aforesaid matter found at any given point of time either during the course of the contract or at the bidding stage, my bid/ contract shall be liable for truncation/ cancellation/ termination without any notice at the sole discretion of the purchaser.

Yours faithfully

Place:

Date:

Signature of the bidder with seal

(This from shall be duly signed by the bidder & submitted along with the original copy of the bid.)

VENDOR DATA FORM

1. Name of the company:_____

2. Address of the company:_____

_____

_____

3. During the time the tender enquiry is received and the tender is submitted by us to your office, we authorize following person/ persons whose signatures are attested below to deal with BYPL on our behalf for any clarifications:

S.No	Name & Designation	Contact Telephone & fax	E-mail Address	Specimen Signature
1				
2				
3				

Yours faithfully

Place:

Date:

Signature of the bidder with seal

CHECK LIST

S.N	Item Description	YES/NO
1	INDEX	YES/NO
2	COVERING LETTER	YES/NO
3	One copy BID FORM (UNPRICED) DULY SIGNED with technical bid	YES/NO
4	Bid form (priced) duty signed with price bid.	YES/NO
5	BILL OF MATERIAL (UNPRICED)	YES/NO
6	TECHNICAL BID	YES/NO
7	ACCEPTANCE TO COMMERCIAL TERMS AND CONDITIONS	YES/NO
8	FINANCIAL BID (IN SEALED ENVELOPE)	YES/NO
9	EMD IN PRESCRIBED FORMAT	YES/NO
10	DEMAND DRAFT OF ₹ 1180/- DRAWN IN FAVOUR OF BSES YAMUNA POWER LTD	YES/NO
11	POWER OF ATTORNEY/AUTHORISATION LETTER FOR SIGNING THE BID	YES/NO
12	Two Nos Samples	YES/NO