Tender Notification for

COMMUNICATION CANOPY NETWORK FOR SMART GRID APPLICATIONS & ADVANCED METERING INFRASTRUCTURE, FOR BRPL, NEW DELHI, INDIA

NIT NO CMC/BR/18-19/FK/PG/672

Due Date for Submission: 02.07.2018, 1600Hrs

BSES RAJDHANI POWER LTD (BRPL)

Corporate Identification Number: **U74899DL2001PLC111527**
Telephone Number: +91 11 3009 9999
Fax Number: +91 11 2641 9833
Website: www.bsesdelhi.com

BSES Rajdhani Power Limited

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Information to Bidder (ITB)

1. Event Information

BRPL invites sealed tenders in 2 envelopes for following scope of work-

Sl. No.	Description	Estimated Cost (Rs.)	Qty.	Delivery & Installation at
1	COMMUNICATION CANOPY NETWORK FOR SMART GRID APPLICATIONS & ADVANCED METERING INFRASTRUCTURE, FOR BRPL, NEW DELHI (INDIA).	60 Crore	As per BOQ Attached	Delhi, Sites

The bidder must qualify the requirements as specified in clause 2.0 stated below.

All envelopes shall be duly super scribed **"COMMUNICATION CANOPY NETWORK FOR SMART GRID APPLICATIONS & ADVANCED METERING INFRASTRUCTURE, NEW DELHI (INDIA)., BRPL - NIT NO CMC/BR/18-19/FK/PG/672**"

1.1. The schedule of specifications with detail terms & conditions can be obtained from address given below against submission of non-refundable demand draft of **Rs.1180/-** drawn in favour of BSES Rajdhani Power Ltd, payable at Delhi. The tender documents & detail terms and conditions can also be downloaded from the website **"www.bsesdelhi.com --> Tenders --> BSES Rajdhani Power Ltd --> Open Tenders"**.
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.

1.2. Bids will be received up to 02.07.2018, 1600 HRS at the address given at 3.01 below. Part A of the Bid shall be opened on 02.07.2018, 1630 HRS

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 last date.

1.3. BSES Rajdhani Power Ltd reserves the right to accept/reject any or all Tenders without assigning any reason thereof in the event of following

i. **Earnest Money Deposit (EMD)** of value Rs 60,00,000/- is not deposited in shape of Demand Draft/ Pay Order/ Banker's Cheque / Bank Guarantee drawn in favour of BSES Rajdhani Power Ltd, payable at Delhi.
ii. The offer does not contain prices indicating break-up towards all taxes & duties in prescribed format
iii. Complete Technical details are not enclosed.
iv. Tender is received after due date and time**.**
v. Technical offer contains any prices
vi. Prices are **not FIRM** and subject to Price Variation

2. Qualification Criteria

Bidder shall meet the qualifying criteria to be eligible to participate in the bid.

SN	Financial	Proof required
1	Bidder's average annual turnover from communication networking (in any utilities i.e. water, gas and electricity) should not be less than **Rs 200 Crores** for last three (3) financial years.	i. Annual CERTIFIED Balance sheet for the last completed three (3) financial years. ii. Incase bidder is 100% owned subsidiary of their parent organization, credential of the parent organization shall be considered as compliance to the QR requirements as mentioned in clause 2.1
2	Bidder's Net worth for last two (2) financial years shall be positive. Bidder to submit certified Balance Sheet statement.	i. Certified Balance sheet for the last two (2) financial years. ii. Incase bidder is 100% owned subsidiary of their parent organization, credential of the parent organization shall be considered as compliance to the QR requirements as mentioned in clause 2.2
SN	**Technical**	**Proof required**

3	Bidder should have license/Legal/ statutory clearances, as applicable, for the offered solution and components from WPC/ Govt. bodies for operation in India. The system should not interfere into other communication systems or be susceptible to interference from other communication systems.	Certificate from DoT/WPC or GoI
4	Bidder should have experience of successfully implementing **2 million AMI endpoints** on RF mesh (cumulatively in the last Seven years) in any of the utilities i.e. water, gas and electricity across two or more countries. The solution should be in continuous operation for two (2) years.	i. Client Credential & relevant supporting documents ii. Incase bidder is 100% owned subsidiary of their parent organization, credential of the parent organization shall be considered as compliance to the QR requirements as mentioned in clause 2.4
5	Bidder should have successfully implemented similar solution of at least **1 million AMI endpoints** on RF mesh in any one **electricity** utility in any country and should be operational on the date of bid submission.	i. Client Credential & relevant supporting documents ii. Incase bidder is 100% owned subsidiary of their parent organization, credential of the parent organization shall be considered as compliance to the QR requirements as mentioned in clause 2.5
6	Bidder should have successfully integrated AMI and DA applications using the similar solution as offered for two (2) or more electricity utilities across the world.	i. Client Credential & relevant supporting documents ii. Incase bidder is 100% owned subsidiary of their parent organization, credential of the parent organization shall be considered as compliance to the QR requirements as mentioned in clause 2.6

7	Bidder should have either executed or currently executing a project of similar nature in India (*This condition is only for the purpose of Technical evaluation).* However, the successful Canopy vendor is bound to integrate with any and or all Smart meter vendor(s), equipment(s) as procured by BRPL.	i. Contract/ Order Copy ii. Undertaking by bidder duly signed and stamped by competent authority on bidder's letterhead.
SN	**General**	**Proof Required**
8	Bidder should have ISO9001, ISO14001, ISO27001, OHSAS18001 and CMMi Level-3 certifications.	Copies of valid ISO9001, ISO14001, ISO27001, OHSAS18001, CMMi Level-3 certificates.
9	The bidder must have valid PAN No., GST registration nos., in addition to other statuary compliances. The bidder must submit the copy of registrations and submit an undertaking that the bidder shall comply all the statutory compliances as per the applicable laws/rules etc. before the start of the work.	Copies of Valid PAN, GST registration etc.
10	The bidder should not have been debarred/blacklisted in any utility in India or abroad.	Bidder should submit a Self undertaking signed by its Authorized Signatories that the Bidder or any of their sub contractor has not been blacklisted/barred by any Govt. Organization or Regulatory Agencies in India or abroad.

Notwithstanding anything stated above, BRPL reserves the right to assess bidder's capability to perform the contract, assess the capability and installed capacity of the Bidder for carrying out the supplies, should the circumstances warrant such assessment in the overall interest of the purchaser. In this regard the decision of the purchaser is final.

3. Bidding and Award Process

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

3.1. Bid Submission

The bidders are required to submit the bids in Two (2) parts to the following address:

Head of Department
Contracts & Material Deptt.
BSES Rajdhani Power Ltd
1st Floor, C - Block, BSES Bhawan,
Nehru Place, New Delhi - 110019

PART – A: TECHNICAL BID comprising of following (1 original + 1 copy)

i. EMD in prescribed format
ii. Non-refundable demand draft for Rs 1180/- in case the forms are downloaded from website
iii. Documentary evidence in support of qualifying criteria
iv. Technical Details / Filled in GTP/Type test report/network Design Documents etc
v. Qualified Manpower available & Organization Chart
vi. Testing Facilities
vii. Copies of Orders, Execution /Performance Certificate & Other supporting Documents to support the QC as per clause 2.0
viii. Original Tender documents duly stamped & signed on each page as token of acceptance
ix. Acceptance to Commercial Terms and Conditions viz Delivery schedule/period, Payment terms, PBG etc

PART – B: FINANCIAL BID comprising of (1 original only)

i. Price strictly in the Format enclosed indicating Break up of basic price, taxes & duties, transportation etc

3.2. Time Schedule

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

S. No.	Steps	Date
1	Date of sale of bid documents	01.06.2018, 1700 Hrs
2	Pre Bid Meeting	11.06.2018, 1100 Hrs

S. No.	Steps	Date
3	Last date of Queries, if any	25.06.2018, 1700 Hrs
4	Last date of receipt of bid documents	02.07.2018,1600 Hrs
5	Date & time of opening of tender – Part A	02.07.2018,1630 Hrs

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.

REVERSE AUCTION: Purchaser reserves the right to use REVERSE AUCTION through SAP-SRM as an optional tool as an integral part of the entire tendering process. All techno-commercially qualified bidders shall participate in this event.
Guideline for the Reverse Auction is **APPENDIX III**

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

4. Award Decision

4.1. Purchaser intends to award the business on a lowest bid basis, so bidders 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. 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.

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

5. 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. Supplier Confidentiality

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

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

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

7. Contact Information

Technical clarification, if any, as regards this RFQ shall be sought in writing and sent by post/courier/mail to following address.

	Technical	**Commercial**
Contact Person	Mr. Sheshadri Krishnapura (Head- CES)	Ms. Fauzia Khalid (Head – Material Procurement)
Address	BSES Rajdhani Power Ltd , 5th Floor, 20, Nehru Place, New Delhi 110019	BSES Rajdhani Power Ltd , 1st Floor, D Block, BSES Bhawan, Nehru Place, New Delhi 110019
Email	Sheshadri.krishnapura@relianceada.com	Fauzia.khalid@relianceada.com

8. Bid Form

The Bidder shall submit one "Original" and one "Copy" of the Un-priced Bid Form, Price Schedules & Technical Data Sheets duly filled in as per attached specification/BOM etc. enclosed.

9. EMD

The bidder shall furnish, as part of its bid, an EMD amounting as specified in the RFQ. 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:

i. Banker's Cheque /Demand Draft / Pay Order drawn in favour of BSES Rajdhani Power Ltd, payable at Delhi.
ii. Bank Guarantee valid for One hundred Eighty (180) days after due date of submission or amended due date of submission drawn in favour of BSES Rajdhani Power Ltd, BSES Bhawan, Nehru Place, New Delhi 110019

The EMD may be forfeited in case of:

i. The Bidder withdraws its bid during the period of specified bid validity

   OR

ii. The case of a successful Bidder, if the Bidder does not

   a. Accept the Purchase Order, or
   b. Furnish the required performance security BG.

10. Bid Prices

10.1. Bidders shall quote for the entire Scope of Supply/Work with a break-up of prices for individual items and Taxes & Duties. 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 with taxes, duties & freight upto destination.

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.

10.3. 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.**

10.4. The qty break-up shown else-where in Price Schedule is tentative. The bidder shall ascertain himself regarding material required for completeness of the entire work. Any item not indicated but is required to complete the job, shall be deemed to be included in the prices quoted.

11. Bid Currency

Prices shall be quoted in Indian Rupees Only.

12. Period of Validity of Bid

12.1 Bids shall remain valid for 180 days from the due date of submission of the Bid & subsequent corrigendum/amendment/extension of due date of submission.

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. Alternative Bid

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. Format and Signing of Bid

14.1 The original Bid Form and accompanying documents, clearly marked "Original Bid" and “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 copy, the original shall govern.

14.2 The original and copies 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.

15. Sealing and Marking of Bid

15.1 Bid submission: One original, Copy-1, (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 super scribed with —“Technical & EMD“. The price bid shall be inside another sealed envelope with super scribed “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, Copy-1, and the envelopes should be super scribed 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. Deadline for Submission of Bid

16.1 The original Bid, together with the required copies, must be received by the Purchaser at the address specified earlier.

16.2 The Purchaser may, at its discretion, extend the deadline for the submission of Bids by amending the Bidding Documents, in which case all rights and obligations of the Purchaser and Bidders previously subject to the deadline will thereafter be subject to the deadline as extended.

17. One Bid Per Bidder

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

18. Late Bid

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 and returned unopened to the Bidder.

19. Modification and Withdrawal of Bid

The Bidder is not allowed to modify or withdraw its Bid after the Bid's submission.

20. Purchaser's Right to Accept and 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.

21. 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.

22. 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. The date of LOI/LOA shall be treated as Start date of work.

23. Performance Bank Guarantee

Within 15 days of the receipt of Notification of Award/ Letter of Intent/PO from the Purchaser, the successful Bidder shall furnish the Performance Bank Guarantee towards faithful performance of Contract for an amount of **10%** (Ten percent) of the Contract Price. The Performance Bond shall be valid upto defect liability period (i.e. **7 Years** after final acceptance of work) plus 3 months claim period. Upon submission of the performance security, the EMD shall be released.

24. Specifications and Standards

As per Volume – 1: Technical

25. Completion Period

Bidder shall ensure successful completion of all activities including deployment of equipments, Integration and complete Operational Acceptance Test with debugging within 15 months from award of contract for Approx. 50,000 nos. of end points.

Bidder shall ensure completion of remaining 2.5 lacs end points within 21 months of completion and sign off of above 50,000 end points.

Total project completion/execution time shall be **36 months** for 3 Lacs end points.

Bidder has to ensure approval and sign off from BRPL after successful completion of work.

Volume – I: Technical

Section – I: Scope of Work

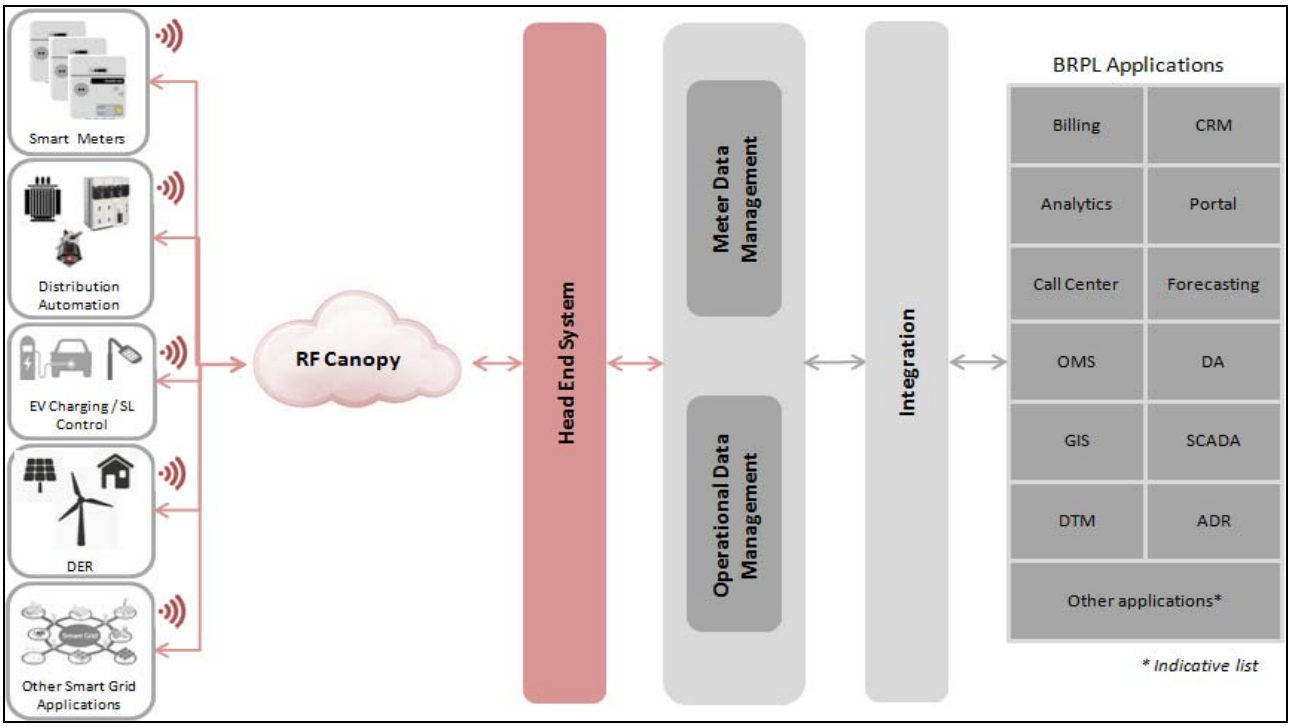
1. Introduction

BSES Rajdhani Power Ltd. (BRPL) is a joint venture company between Reliance Infrastructure Ltd. and Delhi Government. BRPL distributes electricity in the south and west region of Delhi serving more than 2.5 million customers spread over an area of 750 square kilometer with an annual addition of about 4% - 6% consumers. BRPL distribution network comprises of approx. 97 no. 66 kV /33 kV /11 kV grid sub stations, 9000 distribution transformers and about 2 lacs electricity poles, which is growing every year to meet the ever expanding consumer base.

In line with the National Tariff Policy 2016 and regulatory directive, conventional electronic meters are expected to be replaced with smart meters in a phased manner. Key benefits envisaged from the implementation of smart meters include improvement in operational efficiency, reduction in operating cost, revenue protection etc. Discom intends to implement a Smart Grid, starting with implementation of smart meters and communication canopy to create an Advanced Metering Infrastructure (AMI).

Communication canopy would span across the license area of BRPL providing communication connectivity to all field elements including **smart meters, DA devices, DER integration, EV charging points, sensors, streetlights points** etc.

The envisaged high level architecture diagram is given below:



List of Integration for the Field Devices and not limiting to:

- Consumer meters
- Network meters like DT meters, grid meters, interface meters etc.
- Substation / FSS automation
- DA devices
- APFC, switching capacitors
- Switchgears, FPI etc.
- Sensors with FRTU, air quality, temperature sensors etc.
- Streetlight meter/ streetlight points
- Electric vehicle
- Distributed generation
- Net meter for solar generation
- Storage devices

BRPL intends to select and deploy IPv6 based 6LoWPAN RF mesh network technology solution that shall meet all the utility requirements while providing scalability and certain level of future proofing. Any bidder making a proposal must demonstrate compliance to the applicable IS standards and Government of India directives.

BRPL plans towards implementation of smart metering in a phased manner. Discom has prepared a roadmap for implementation of smart meters as per govt. and regulatory directives. The performance of the AMI system including seamless integration with the existing system and Distributed Automation capability will be the deciding factor for mass scale implementation.

1.1 Rollout Plan

BRPL intends to implement smart metering programme in phases as per regulatory approval. Phase-1 of the programme which accounts for about 3,00,000 endpoints has been approved by DERC. Phase-1 includes consumers having average monthly consumption of more than 500 units. Phase-2 consists of around 10,00,000 endpoints for which approval is in process. This includes consumers with average monthly consumption between 200 – 500 units.

The indicative year-wise implementation plan subject to BRPL requirements and DERC approval is given below.

Year	**FY2018-19**	**FY2019-20**	**FY2020-21**	**FY2021-22**	**FY2022-23**	**FY2023-24**
DERC Mandate	**Phase – 1** (Avg consumption > 500 units pm)			**Phase – 2** (Avg consumption 200 - 500 units pm)		
Target Coverage	**Stage-1** - Subdivision (1/2) - All DTs - Key customers	**Stage-2** - All Key customers - High value 3Ph customers - High value 1Ph customers		- All 3Ph customers - High value 1Ph customers - New connections		
Smart Meters	50,000	1,00,000	1,50,000	3,00,000	3,50,000	3,50,000

<u>Phase – 1</u>: For ease of implementation Phase-1 has been divided into two stages.

Stage-1: During this stage BRPL is planning to deploy smart meters in one or two chosen sub-division (having total area of around 10 sq km and approx. 35,000 end points) on RF mesh for all types of consumer smart meters, DER integration, EV charging points, streetlight points etc. In addition to this BRPL intends to cover all DTs and DA points spread across the distribution area on dual technology i.e. RF and Cellular NIC. The exact quantities of the NICs will be decided during the execution.

All relevant use cases pertaining to utility applications will be implemented and analysed during this stage. After completion of Stage-1 deployment, detailed performance assessment of AMI system will be carried out to finalize the strategy for rollout of subsequent Stages.

Stage-2: All consumers having average consumption of more than 500 units per month will be covered under this stage. These consumers are spread across BRPL license area of ~750 sq km. Implementation of this phase shall commence after detailed performance assessment and successful sign off of Stage-1. This stage would include remaining key consumers and high value three and single phase consumers.

Phase – 2: This phase shall comprise of consumers having average consumption between 200 - 500 units per month subject to regulatory and other approvals. These consumers are spread over the BRPL license area of 750 sq km. Phase – 2 plan has been included for reference purpose only.

2. Scope of Work

The broad scope of work shall include supply and installation of network elements of proposed communication canopy, related hardware, NIC cards for agreed quantities of smart meters and DA points, configuration of Head end system (HES), licenses and integration with MDM. Any bidder making a proposal to BRPL must demonstrate compliance to the Indian Standards with latest amendments.

Communication Canopy Network

2.1 Bidder to design, supply, install, test, commission and maintain agreed SLA's of communication canopy network platform based on RF mesh technology that can support multiple Smart Grid applications like AMI, DA, Sub-station management, Street light management, ADR, Home automation etc. over the single communication platform.

2.2 Bidder to establish and maintain the complete backhaul communication network between the Gateways / Concentrators and HES and should be available in redundancy mode on Cellular (3G & 4G LTE with 2G backward compatibility) or RF or MPLS or Fibre etc.

2.3 Bidder to provide complete backhaul connectivity and SIM cards required during implementation phase. Bidder should manage and report the same.

2.4 Bidder to terminate backhaul at BRPL Data Centre and DR Centre.

2.5 Bidder to do site survey for identification of initial network designs (equipment locations etc.) and share comprehensive bill of materials with BRPL along with the bid.

2.6 Bidder to submit the canopy solution document covering canopy design criterions / parameters, bandwidth requirements, redundancy as a minimum confirming that 99.5% (calculated on daily basis) of the network terminals should be accessible from the HES at all times failing which penalties described later in this document will be applicable.

Network Interface Card (NIC)

2.7 Bidder to successfully design, supply and integrate plug-in type NIC for smart meters and DA devices as specified by BRPL.

2.7.1 Delivery of NIC cards in specified lots will be at works of meter manufacturer or as finalized by BRPL.

2.7.2 Bidder shall provide all necessary dimensions, design, samples and support required by the Meter manufacturer and DA suppliers for integration and proper installation of these cards.

2.8 NIC proposed by bidder should be plug and play type, with fixed pin configuration and dimension so that same NIC can be used in smart meters of various vendors finalized by BRPL.

2.9 Bidder to supply two type of NIC modules -

(i) RF technology

(ii) RF and Cellular technology both on same module that can be programmed remotely to be used in either RF or Cellular mode.

2.9.1 Supply of SIMs is in the scope of the bidder and should be configured with private APN based solution.

2.9.2 SIM's recurring cost for meters/devices and backhaul communication during warranty period is in the scope of the bidder.

Head End System

2.10 Bidder to supply the Head End System (HES) and network management software with requisite licenses and integrate with Meter Data Management (MDM) or AMI system as decided by BRPL.

2.11 Bidder to provide complete Hardware and Software specifications for Data Centre and Disaster Recovery Centre. DC and DR to support RPO of 15-30 mins and RTO of 6 hrs. BRPL reserves the right to arrange necessary IT hardware or ask the bidder to procure the same.

Services

2.12 Bidder to provide guarantee of entire solution (hardware and software) supplied for **7 years** post the successful completion and sign off.

2.13 Bidder to support for communication canopy (including all hardware and software) for 15 years including guarantee period.

2.14 Bidder to provide detailed Bill of Quantity of all items at the time of bid.

2.15 Bidder to provide perpetual licences for all software pertaining to communication nodes, canopy and HES. All required licences should be owned by BRPL.

2.16 Bidder shall create a test Lab in BRPL comprising of all the elements such as gateway, network terminals, software, and debugger etc. to facilitate testing during sample evaluation at no cost to BRPL.

2.17 Bidder shall be responsible to provide proper earthing in all non BRPL premise and power supply to field equipments (router/ RF/ collector/ access point/DCU etc.).

2.18 Bidder to provide tools to measure performance SLAs without any cost to BRPL.

2.19 Bidder shall be responsible to get meter data collected manually using hand held unit at predefined time intervals during the O&M support period, in case of communication network unavailability or failure without impact to billing.

2.20 Bidder to provide periodic trainings, conduct workshops to concerned BRPL officials including necessary documentation and manuals to ensure smooth operation of the system and applications.

3. Mandatory Requirements

Bidder shall meet the below mentioned requirements mandatorily.

3.1 Bidder to design RF covering to operate at maximum 50 % of designed capacity (peak data requirement with guaranteed performance) for full scale deployment and balance capacity shall cater to performance expectations during difficult & challenging times and also for meeting future applications.

3.2 Bidder to design the complete solution for minimum availability of 99.5% at any point of time.

3.3 Bidder to ensure expected Response time (end to end – for DI, DO, and analog measurement – two way communication) maximum acceptable latency of 350 milli seconds with an expected success rate of > 99% consistently.

3.4 Bidder shall ensure successful completion of all activities including deployment of equipments, and complete Operational Acceptance Test for Stage-1 with debugging within 15 months from award of contract for approx. 50,000 nos. of end points. Bidder shall ensure completion of remaining 2.5 lacs end points within 21 months of successfully completion of above 50,000 end points. Total project completion/execution time shall be 36 months for total of approx. 3 lac end points. Bidder has to ensure approval from BRPL for successful completion of each stage.

3.5 Bidder shall integrate their NIC with all smart meters/other devices in future (including successive phases) as finalized by BRPL. Bidder shall give an undertaking for the same citing there will be no financial impact on BRPL.

3.6 Bidder shall provide all relevant details including pin configuration and dimensions to share with all makes of smart meters so that same NIC can fit in any make of meter, as finalized by BRPL.

3.7 Bidder shall agree for integration of NIC with any other applications / electrical equipments (as mutually decided between BRPL and bidder) in communication canopy network for a period of next 7 years after the SAT at no cost to BRPL. All the technical support for integration will be ensured by BRPL through the identified vendors. NIC cards for DA and other devices should be panel mountable or separately mountable with proper IP class for outdoor usage. The desired timeline shall not exceed 6 months.

3.8 Bidder to share protocol/APIs with Test bench suppliers as finalized by BRPL for testing the smart meters, communication and related functionality.

3.9 Communication canopy should have option to integrate with the existing MPLS / Lease line / Fibre network etc. of BRPL.

3.10 Bidder to ensure relocation of gateway devices depending upon coverage requirement/site conditions, without any cost implication to BRPL.

3.11 Bidder to coordinate and submit weekly report with smart meter / SCADA/ DA vendors for day to day operations and BRPL to facilitate the same.

3.12 Nodes shall have functionality to detect power outage and send last gasp message to HES. The necessary power backup facility shall be available in all the communication devices.

3.13 Communication canopy based on wireless RF mesh technology shall operate in unlicensed frequency band as specified by WPC, DoT and comply with other Indian Government directives.

3.14 In case of any changes in Indian Govt. regulations on the frequency band availability, the bidder to ensure that in future the new canopy equipment offered will be made compatible to the new regulations without any cost implication to BRPL.

3.15 Bidder shall confirm that, the bandwidth made available by the DoT for this purpose, shall not in any way limit or hamper the performance of both the AMI & other applications running concurrently on the same communication canopy as well as supporting other Smart grid applications and mentioned use cases.

3.16 Bidder's solution for communication network should be reliable, scalable, not impacted by noise and shall have facility for auto registration and self-healing features.

3.17 Solution for Communication shall be designed in such a way that it can accept improvements based on the experience / performance / new expectations/ need from time to time.

3.18 Bidder must specify the degree of redundancy kept while designing the system for self-healing features to be effectively working and the performance parameters those that capture this commitment consistently. At any point of time, 99.5% of NIC cards provisioned in the network should be accessible from HES. Bidder should design the system accordingly.

3.19 Bidder shall confirm that HES has sufficient logic driven smoothening built in features, for example: reliably determining current status of a meter once an outage alert is received from the meter, as well as, ability to suppress or filter false positives from outage and restoration notifications. There should be provision for deploying more such user defined logics.

3.20 Bidder to submit it's after sale service support plan and escalation matrix in order to meet contractual obligations and performance guidelines. Bidder should have service office with complete development and testing facility in NCR, Delhi within 60 days of award of contract.

3.21 If in BRPL premise, permission and coordination shall be in BRPL scope however Capex / Opex cost if any for installation, maintenance of all network and solution components shall be in scope of bidder like tower, earthing etc.

3.22 Successful bidder after signing the contract shall ensure a test environment setup at BRPL for testing the entire system during life cycle of the project.

3.23 Successful bidder should ensure availability of sufficient number of technical persons on roll of the bidding company having relevant experience in India during various stages of the lifecycle of the project. CV of employees to be submitted along with the bid and BRPL to approve. BRPL reserves the right to interview the CV's as part of the bid evaluation process.

3.24 Bidder shall ensure up-gradation of the Firmware / software in the communication modules/devices and smart meters from remote over-the-air (OTA) from time to time to meet the increasing demand of the system in operation / overcoming system limitations / bugs. The bidder shall also ensure incorporation of new hardware (communication devices, meter, NIC etc.), if required, in future. The bidder therefore shall ensure that all such upgrades shall seamlessly fit into the existing devices/meters and end to end system in operation and shall be backward compatible to the earlier generation devices/ software / Firmware in operation to guard against obsolescence at no cost to BRPL.

3.25 Bidder shall spell out the time duration required and associated success rate in case of OTA firm-ware up-gradation on number of meters/communication devices simultaneously, well in advance, from the design stage and shall also ensure that all these Access points & Nodes to be used in the system shall have more than adequate memory capacity for the Firmware upgrades to happen smoothly, and securely, meeting the possible changing enhanced expectations of the next 15 years, as well as, avoiding overwriting operations during the Firmware upgrades, thus avoiding obsolescence of the hardware installed at site in quick time. SLA as agreed should be met.

3.26 Bidder to commit that the communication tunnel is transparent and shall be exclusively used for data transfer of BRPL and that capacity can be allocated such that it will not be used for any other purpose without consent from BRPL. Bidder shall submit corporate principal certificate for adherence of this clause.

3.27 Bidder shall guarantee for providing service & expansion support in the aforesaid area (at least for backward compatibility in terms of availability of new technologies) for 15 years.

3.28 As the proposed system will be integrated with different IT-OT system of BRPL (SCADA, Solar, SAP, OMS, and GIS etc.); to ensure interoperability with these systems, any upgrade required in the hardware/software (including 3rd party items) of proposed solution shall be the responsibility of bidder during the entire warranty and post warranty maintenance period.

3.29 The offered solution including (H/W, S/W, OS, licences & others) phase wise shall have warranty/guarantee of minimum of 7 years after sign off of corresponding phase.

3.30 Specifications of hardware shall be provided along with bid and Manufactures authorization for warranty & guarantee shall be in Name of BRPL respectively.

3.31 SLA shall be uniform and as agreed across licensed area of BRPL.

3.32 Bidder shall provide 3rd party (authorized by BRPL) security audit certification after go live.

3.33 Bidder shall replace or upgrade any third party equipment free of cost in case the support on said equipment is withdrawn by respective OEM during the warranty period i.e. declared as end of support by OEM.

3.34 Bidder to submit its experience / credentials for integrating its solutions with multiple applications used in power distribution utility nationally / internationally for solution scalability, ease of integration point of view. Bidder shall mandatorily facilitate such visits at the client site at their own cost for 4-6 BRPL resources.

3.35 Offered solution to comply with latest IS standards and amendments for applications as mentioned in this document in discussions with BRPL.

3.36 Bidder to supply NIC supporting dual technologies (RF and Cellular) on same module that can be programmed remotely to be used in either RF or Cellular mode.

3.37 Bidder has to quote a separate price for both type of NIC in BoQ. Both type of NICs shall be interchangeable in the meter to suit area wise implementation. BRPL reserves the right to adopt such solution at its own discretion.

3.38 BRPL reserves the right to review integration mechanism with Smart meters along with prices of NIC card /communication module ceiling price or other equipment after every 1 year, subject to market price or as per lowest quoted tender by bidder in the previous year.

3.39 Bidder should have a tripartite agreement if required with BRPL and its approved meter/equipment vendor(s) for design, integration and supply of NIC cards.

3.40 Replacement of faulty NIC cards under warranty in meters/field devices shall be in the scope of the bidder during operational management services contract.

3.41 In case the bidder is not able to meet the SLAs then the bidder shall agree to re-design the system to meet the agreed SLAs with no cost implication to BRPL.

3.42 Bidder shall be responsible and should adhere to all safety standards for manpower, equipments and use the right tools during various activities.

3.43 Bidder shall be responsible to advise Cyber threats and optimize security accordingly on periodic basis. In case of detection of any threat / cyber attack the isolation of such nodes/devices should be done in minimum possible time.

Section – II: Technical Specifications

Abbreviation

ACL	Access Control List
AES	Advanced Encryption Standard
AMI	Advanced Metering Infrastructure
AP	Access Point
APFC	Automatic Power Factor Controller
AT&C	Aggregate Technical and Commercial
BoQ	Bill of Quantities
BRPL	BSES Rajdhani Power Ltd.
CA	Charted Accountant
CRM	Customer Relationship Management
CIP	Critical Infrastructure Protection
CT	Current Transformer
DA	Distribution Automation
DB	Data Base
DC	Data Centre
DCU	Data Concentrator Unit
DDoS	Distributed Denial-of-Service
DER	Distributed Energy Resource
DERC	Delhi Electricity Regulatory Commission
DI / DO	Digital Input / Digital Output
DMS	Distribution Management System
DoT	Department of Telecom
DR	Demand Response / Disaster Recovery
DSM	Demand Side Management
DT	Distribution Transformer
EA	Energy Audit
ERP	Enterprise Resource Planning
ETA	Equipment Type Approval
EV	Electric Vehicle
EVDO	Evaluation Data Optimised (Only)
FAT	Factory Acceptance Test
FAN	Field Area Network
FPI	Fault Passage Indicator
FRTU	Field Remote Terminal Unit

GIS	Geographical Information System
HAN	Home Area Network
HES	Head End System
HMAC	Hash-based Message Authentication Code
HT	High Tension
H/W	Hardware
IT	Information Technology
IP	Internet Protocol
ISU	Industry Specific Utility
IS	Indian Standard
KPI	Key Performance Indicator
LAN	Local Area Network
LT	Low Tension
LTE	Long Term Evaluation
MAC	Medium Access Control
MAF	Manufacturer Authorization Form
MD-5	Message Digest Algorithm
MDAS	Meter Data Acquisition System
MDM	Meter Data Management
MoU	Memorandum of Understanding
MIS	Management Information System
MPLS	Multi-Protocol Label Switching
NAN	Neighbourhood Area Network
NCR	National Capital Region
NIC	Network Interface Card
NMS	Network Management System
NTP	National Tariff Policy
NW	Network
OAT	Operational Acceptance Test
OEM	Original Equipment Manufacturer
O&M	Operation and Maintenance
OS	Operating System
OT	Operational Technology
OTA	Over The Air
Ph	Phase
P&L	Profit & Loss
PKI	Public Key Infrastructure
PQ	Power Quality
QA	Quality Assurance

QoS	Quality of Service
RAM	Random Access Memory
RF	Radio Frequency
RFQ	Request for Proposal
RMU	Ring Main Unit
RPO	Recovery Point Objective
RTO	Recovery Time Objective
RTU	Remote Terminal Unit
SACFA	Standing Advisory Committee on Radio Frequency Allocation
SAT	Site Acceptance Test
SCADA	Supervisory Control and Data Acquisition
SHAI	Secure Hash Algorithm
SLA	Service Level Agreement
SNMPV2	Simple Network Management Protocol
SSL	Secure Sockets Layer
S/W	Software
T&D	Transmission and Distribution
ToD/ ToU	Time of Day/ Time of Utilisation
TLS	Transport Layer Security
UAT	User acceptance test
VAR	Volt Ampere Reactive
WAN	Wireless Area Network
WiFi	Wireless Fidelity
WPC	Wireless Planning & Coordination Wing

1. Communication Engineering

The scope of the RFQ includes communication canopy engineering study of the entire licensed area of BRPL by the bidder. A report to be submitted to BRPL along with the bid clearly specifying the quantity and type of the communication devices required for erecting the multi-application communication canopy over the entire area both for DA/ AMI & other applications, keeping in mind that the deployment shall be done phase wise, need based and in highly scattered nature. BRPL will provide any required support for preparing this.

Bidder to submit detailed document covering the approach and methodology of canopy designing as part of the bid covering following as a minimum. The main known issues that must be addressed in the Mesh Radio design service are:

i. Optimising Access points/data concentrator locations to suit both mesh radio communications requirements and Backhaul Communications availability;
ii. Equipment to comply with electrical safety and operational requirements;
iii. Mesh radio communication range may be limited by poor propagation due to equipment located in basements, internal switch rooms, metal enclosures and similar areas; and
iv. Sufficient density of meters/alternate solution to maintain the communication relaying.

1.1 Based on scope and area to be covered, the bidder shall submit overall initial network design architecture highlighting key location for placement of field equipment's.

1.2 Network design shall be approved by BRPL before start of project.

1.3 Bidder needs to provide details of their communication architecture and features including information about the storage and speed of communications across the network. They should indicate all the types of equipment (head ends, concentrators, repeaters etc.) and the functions that they perform on the network.

1.4 Bidder should also indicate the achievable bandwidth on the network and the number of meters that can be supported per access point/collectors from functional and storage limitation perspectives.

1.5 If the system utilises repeaters to extend the reach of communications, typical distances between repeaters must be indicated.

1.6 Bidder needs to detail the backhaul communications requirements for the access point/collectors devices. This should include full specification of any interface devices that are needed for connection. The Respondent should indicate any international standards with which their communication system complies.

1.7 Bidder to provide the following summary information:

i. Meters per collector/access points
ii. Collectors/access points per square kilometer

iii. Repeaters per collector/access points
iv. Level of redundancy or overlap included in the design
v. Link strength
vi. RF Heat map
vii. Maximum and minimum hops
viii. Designed reliability

1.8 Bidder must provide details of the following (Access Points, Concentrators, Repeaters and Enclosures etc):

i. Self contained concentrator units
ii. Mounting hardware
iii. Weather resistance
iv. Security and protection arrangements
v. Power supply needs
vi. Voltage tolerances
vii. Screw types and position
viii. Lightning protection
ix. Communications specifications
x. Battery information
xi. Size, weight and antennas
xii. Any other information

2. Communication Infrastructure Specification

It is intended to set up a RF communication canopy covering over any of the unlicensed frequencies in India (865-867 MHz/2.4 GHz /5.8 GHz etc.), spread across BRPL total licensed area for AMI and other operational applications. This communication covering shall be used for seamless flow of AMI and distribution automation data to and from Control Centers.

2.1 Bidder shall design a reliable, interference free & robust communication network keeping in view the site conditions. It shall be flexible in terms of providing communication in variable terrain & urban density.

2.2 The entire infrastructure & associated civil works required for installation & commissioning of equipment/devices like collectors, repeaters, routers & access points etc. shall be in the scope of bidder. The operational testing of all the network elements has to be demonstrated by the bidder to the satisfaction of the utility.

2.3 Communication network shall provide reliable medium for two-way communication between various nodes (smart meters and DA points) & HES.

2.4 Bidder to design Communication network for Phase-1 and Phase-2 in such a way that it can be scaled up to meet future requirements.

2.5 Last mile communication infrastructure thus created shall be scalable over the air for supporting more end-point deployments and other applications in future. The system shall remain fully operational for the next 15 years and shall consequently not be affected by obsolescence.

2.6 The complete backhaul communication network 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 LTE) or RF or MPLS, Fibre etc.

2.7 It is mandatory to design communication network to support multiple utility applications. The desired objective is to have a versatile system to support Smart Grid applications mentioned below in addition to applications mentioned above progressively in future, depending upon the drivers from time to time.

- Distribution Automation
- Substation Management
- Automatic Demand Response
- Streetlight Management
- DER & Renewable integration
- Electric Vehicle Charging
- HAN and Home Automation
- Integrated Security System (Video Surveillance) etc.

2.8 The communication network shall be reliable, scalable and shall have facility for auto registration and self-healing. It should be fault tolerant & "sleepy" in nature to optimize on resources.

2.9 Suitable Network Management System (NMS) shall be available to monitor the performance of the communication canopy round the clock from the IT Control Centre of BRPL. Details of NMS have been made available later in the RFQ.

2.10 Communication infrastructure should be secure enough to avoid all cyber-attacks like DDOS, Spoofing, Malware etc. and should provide secure communication channel through Public Key/ Asymmetric encryption.

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

3. Detailed Technical Specifications

3.1. Communication Canopy Network

The detailed technical specification of the communication canopy network is given below.

SN	Item	Details
3.1.1.	**Network Element Design and**	All Network element must: a) Be of industrial grade construction

SN	Item	Details
	Construction	b) All network elements should be certified by competent authority for use in India c) Mountable either internally at existing BRPL assets or externally as pole top devices /mobile towers d) Have a lifespan of at least 7 years after phase wise Operational Acceptance test e) 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.
3.1.2.	**Radio Power Requirements**	All RF canopy elements are required to adhere to the Wireless Planning Commission, India (WPC) latest guidelines. **(WPC – Compliance)**
3.1.3.	**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)**
3.1.4.	**Communications Protocol**	All equipment shall be standards-based, shall use recognized protocol such as IPv6. 6LoWPAN support for all IP traffic over radio Mesh networks Bidder should specify the standards used in each layer during bid
3.1.5.	**IP Protocol Compliance**	The solution should conform/ comply to both IPv6 and IPv4 network protocols with backward compatibility feature (Bidder solution should comply to IS 16444 latest standard and other applicable standard for Smart meter)
3.1.6.	**Smart Meter Integration**	a. Bidder to work with meter OEM for integration of NIC card in Smart meter. b. Bidder to ensure with meter OEM's that Communication module/ NIC will be plug-in type with a standard PIN with proper sealing arrangement as specified in IS 16444 of Smart meters. c. Bidder to ensure that same NIC can be used in all the integrated meters of different make. d. BRPL reserves the right to review NIC integration mechanism after every 1 year. Signal booster /external antenna if required should be hosted inside the meter box being used by BRPL as on date.
3.1.7.	**RF Canopy**	Each RF canopy elements should:

SN	Item	Details
	Elements Connectivity and Range	a. RF canopy should support multiple applications data and all end-points should be able to be connect to either the AMI Head End System AND/OR to the respective control & monitoring system b. 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 c. Have the capability to use an external antenna to extend communication range d. Be capable of operating within an operating temperate range of -2°C to +70°C with humidity between 0% to 95%, non-condensing e. 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. f. The data flow between the Gateways / Concentrator and HES will be in the scope of the bidder and should be available in redundancy mode on Cellular (3G & 4GLTE) or RF or MPLS, Fibre etc. g. All equipment's should support time sync from NTP
3.1.8.	**Communication Canopy Connectivity**	The 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.
3.1.9.	**Data Rate**	Communication canopy should support data rate of 100 kbps or

SN	Item	Details
		more or as per requirements of different applications as mentioned in the scope.
3.1.10.	**Latency**	Typical communication latency across the network component of the communication canopy should be as per scope and SLA. The bidder to share hop to hop latency and hop to HES latency
3.1.11.	**Backhaul Communications**	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 & 4GLTE) or RF or MPLS, Fibre etc. Replication link between DC and DR is in scope of bidder and to be planned in redundancy.
3.1.12.	**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: a. End-of-life policy for AMI modules, communication devices and system software b. 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. c. What guarantees are you willing to provide regarding end-of-life d. Bidder should provide necessary support on warranty for 7 years after the Operational Acceptance test of each phase
3.1.13.	**Interface with other Systems**	Bidder will be responsible for interfacing of their supplied system with other components of BRPL 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.
3.1.14.	**Interoperability & Future Up-gradation**	All elements of 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 BRPL.
3.1.15.	**Equipment Specification and Features**	a. The equipment shall be weatherproof, dustproof and constructed for outdoor installation on poles (minimum rating: IP65). b. The mounting provision shall be for either pole mounting or mounting brackets for flat surfaces.

SN	Item	Details
		c. 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. d. Operating Voltage: 24V DC; (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. e. Failure rate of network elements should not be more than 0.5%, under field Delhi field conditions. f. Phase reversal & phase natural interchange shall not affect the gateway/router functionality in any manner. g. NIC cards installed in 3P meters should be capable to report/detect outage in power in case of any phase missing.
3.1.16.	**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.
3.1.17.	**Mesh Network**	Each mesh network device/ endpoints must be able to connect to at least two peers/base stations for redundancy.
3.1.18.	**Failover**	Each meter should be able to access minimum of 2 routers address / endpoints dynamically.
3.1.19.	**Other Network Functionality**	a. Automatic Node Discovery b. Dynamic Re-routing c. Self-Healing mechanism through re-routing and built-in network redundancy d. Downloading configuration data to field devices/ meters e. Supervision and optimization of the Communication Canopy communication network by computing performance statistics to achieve maximal channel capacity f. 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 g. Support for IPv6 with backward compatibility to IPv4 is a must (as per IS 16444) h. Each gateway device should have 10BASE-T/100BASE-TX

SN	Item	Details
		Ethernet Port to connect to any Circuit switched / packet switched network such as SDH / MPLS
3.1.20.	**Privacy Standards**	It is required that the solution conforms to DOT privacy standards.
3.1.21.	**Data Security and Encryption Protocols**	It is required that the solution adheres to BRPL IT security protocols and practice. a. Certificate-based identities user names and passwords b. Role based access control c. Link-layer encryption d. Group based key generation and management e. Network layer encryption f. 802.1x based access control for meters, routers, grid devices g. Data encryption applied on all data following through the communication channel through Asymmetric encryption between NIC and HES h. Sensitive information must be encrypted in the database i. Preference is for user access to be managed in a central area using Role Base Security j. Password policy to enforce password rules k. Manage the length of active sessions, and retries l. The use of Digital certificates m. Audit logs to track user changes (Audit trails)
3.1.22.	**Security Models**	Solution Provider is required to provide detailed security models for their solution.
3.1.23.	**Over the Air Firmware Upgrades**	Over the air, firmware upgrades to all relevant end points should be possible across the communications network via AMI Head End System or respective monitoring & control system.
3.1.24.	**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.
3.1.25.	**Test Bench**	Bidder should provide a test bench for testing of the system at BRPL. All necessary H/W, S/W & network elements required for setting up test bench for testing of various parameters as defined in RFQ will be in the scope of bidder. Test bench will be a part of network and maintenance of this test bench for next 7 years will be in scope of bidder.
3.1.26.	**NIC Card**	a. NIC card should be plug-in type with fixed PIN configuration, field replaceable and should be universal for all the meters as far as physical dimensions are concerned and shall be

SN	Item	Details
		interchangeable with other meters as supported. NIC cards/communication module should be source of generation of last gasp notification. b. NIC cards for DA (RTU/FRTU) and other devices should be: i. NIC must be panel mounted or separately mounted with proper IP class for outdoor. ii. Auxiliary supply must be 24VDC for FRTU Communication and 48VDC for RTU. iii. Communication Connection with DA or other devices must be Ethernet TCP/IP and Serial RS232. iv. Protocol supported IEC104, 101 and IEC61850. c. RTU/FRTU NIC must have separate debugging port for field diagnosis.

3.2. Network Interface Card

The detailed technical specification of the NIC is given below.

SN	Item	Details

3.2.1	**General**	a. NIC shall be plugin type. b. NIC shall be interoperable with different make of meters. c. Self configuring and self healing d. Support smart metering, distribution automation, sensors etc. e. AES 128/256 encryption f. Communication module should have "watch dog" mechanism and also it has the ability to retrieve itself when it is hanged. g. It shall be possible to upgrade the firmware of the module remotely in a secured manner. h. Display indication for Signal quality. i. NIC shall support two way communications between smart meter & head-end system such as data exchange, configuration parameters exchange, alarms, operational commands, push services firmware upgrade of the meter as defined in IS16444 and IS15959 Part 2&3. j. Network interface card shall be based on RF mesh 6LoWPAN technology which shall be in compliant with IPv6. k. Network interface card shall have necessary hardware support to deliver first breath and last gasp as defined in IS16444 and IS15959 part 2 &3. l. Key Management and Security Feature should be as per IS 15959.
3.2.2	**Type of NIC**	a. Communication Module/ NIC Type 1: RF based b. Communication Module/ NIC Type 2: Dual technology (RF and cellular) communication module (3G / LTE 4G with 2G fall back as per Indian Telecom Standards)
3.2.3	**Meter Interface**	Over UART/RS232 (bidder to specify detailed Pin configurations)
3.2.4	**Input Power Supply**	3.3V/ 5V (bidder needs to specify)
3.2.5	**Radio output**	500 mW and shall be less than 1W
3.2.6	**Power consumption**	Average - 0.5 W Peak - 3.0 W
3.2.7	**Dimension**	Dimension shall be agreed with meter vendor/ communication vendor.
3.2.8	**Baud rate**	100 kbps or more
3.2.9	**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.

3.2.10	**Cellular Frequency**	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
3.2.11	**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)
3.2.12	**Last Gasp & First Breath**	NIC shall have provision to send last gasp & first breath signal to HES in case of power failure/ outage using appropriate means e.g. super capacitor.
3.2.13	**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
3.2.14	**Type Tests**	NIC shall be approved by DOT/ WPC. EMI/ EMC shall be tested with smart meter as per Indian Standards.

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4. Network Security

The Network shall have adequate cyber security measures not limited to the measures as described below. The network security would be extended to all the interfaces. The goal to be achieved is to protect all points of entry to the network, make reconnaissance difficult from the inside, limit points of vulnerability and thwart attempts to misuse or compromise the network and the data it transmits. Details of how technology addresses the below-mentioned criteria, which standards are being used and what methodologies are being followed to continuously identify potential vulnerabilities/ threats and to upgrade technology accordingly are to be shared in detail.

4.1. Security Approach - Security approach for each element in design should be explained in detail and meet following requirement:-

SN	Device	Security Requirement
i.	**Field Devices such as Smart Meter**	a. Communicates with neighbours, collectors and access points over wireless channel using integrity checks (keyed-HMAC) and optional encryption (AES 128 / 256) after negotiating a key b. Re-play protection for commands such as remote disconnects by storing RF Sequence number in the header of the packet over which a keyed-HMAC (integrity check) is done or to specify any other mechanism for imp command security c. Embedded networking stack must work on few kilobits of

		RAM and a few dozen kilobits of Flash memory so that device limited resource are not effected d. Firewall to manage egress/ingress traffic between HAN/LAN e. Logging of activities and transfer of logs audit & log management f. Key based certificates for authentication of high order commands g. Every device should have an individual key
ii.	**LAN**	a. Rogue device identification with use of key cryptography based certificates identifying the origin, role, manufacturing station, and network access policies associated with each device b. Data integrity to be maintained by use of keyed-HMAC & hashing by SHA1 c. Over the air security by RF protection using per channel scrambling and unique hopping sequence for every node d. Critical data like readings to be encrypted with AES 128/256. Use of IPSec & SSL/TLS for communications with Access points and WAN access points e. Critical commands such as remote disconnect to be signed using private key at the back-office f. Physical security to protect access points
iii.	**Concentrators**	a. Data to be protected using encryption b. Encrypted communication c. Device authentication between meters & access points d. Fraud monitoring – Data reconciliation between meters & feeder meter 128 or 256 bit AES encryption
iv.	**WAN**	a. Private backhaul network connected to Utility data centre b. Secure IP Anywhere MPLS Gateway if MPLS connectivity is to be used c. AAA services with EVDO protocol that authenticates for access requests d. Logging, Anti-spoofing features e. ACLs & MPLS border security to control traffic f. Authentication via MD-5 hash

4.2. **Data Integrity, Confidentiality and Privacy -** Ensure data integrity and confidentiality for data from smart meters and distribution automation devices when it traverses over any public or private network. Data & Communications Security mutual authentication, data encryption and digital signature that are standards based.

4.3. **Threat Detection and Mitigation -** Reduced system vulnerability to physical attack or cyber-attack. Logically separate different functional elements that should never be communicating with each other. Log collection and analysis which results in automated alerts and actions as per rules defined.

4.4. **Device and Platform Integrity -** Operating resiliency against security disruptions. Ensure that devices, endpoints and applications are not compromised easily and are resistant to cyber-attacks. Alerts are raised when device is tampered. Maintain audit trails for all sensitive events. Any device change in network should give alert and history should be maintained to track changes.

4.5. **Secure Access Controls -** The system shall include mechanisms for defining and controlling user access to the operating system environment and applications. Strong identity mechanisms for all grid elements like users, devices and applications. Monitoring and alerts for unauthorised access. Best practices from enterprise security including password strength, password aging, password history, reuse prevention etc. must be followed for access control.

4.6. **Authorization Controls -** A least-privilege concept such that users are only allowed to use or access functions for which they have been given authorization shall be available.

4.7. **Logging -** Logs must be maintained for all attempts to log on (both successful and unsuccessful), any privilege change requests (both successful and unsuccessful), user actions affecting security (such as password changes), attempts to perform actions not authorized by the authorization controls, all configuration changes etc. Additionally, the access to such logs must be controlled in accordance to the least-privilege concept mentioned above, so that entries may not be deleted, accidentally or maliciously.

4.8. **Hardening -** All unnecessary packages must be removed and/or disabled from the system. Additionally, all unused operating system services and unused networking ports must be disabled or blocked. Only secure maintenance access shall be permitted and all known insecure protocols shall be disabled.

4.9. **Network Security -** The network architecture of the HES must be secure with support for firewalls and encryption. The system shall also allow host-based firewalls to be configured, as an additional layer of security if the network firewall were to fail.

4.10. Standards based Public Key Infrastructure (PKI) for authentication and establishing a chain of trust in the network.

4.11. Key Generation & Storage to ensure that cryptographic material is securely generated and stored.

4.12. Key Exchange & Rotation to ensure unique, time-limited keys for each device pair.

4.13. Firmware Code Signing to prevent injection or use of altered firmware images on devices.

4.14. Critical Operations Rate Limiting to prevent accidental or intentional misuse.

4.15. Establishment of a framework for meeting regulatory compliance requirements.

4.16. Industry standard data security policy to be shared and mechanism to be set to ensure implementation and tracking.

4.17. CIP compliance preferable.

5. Distribution Automation

Operational automation includes Distribution Automation and other field applications as mentioned below; the functional features, BRPL expects the offered solution to support for DA, are listed below.

5.1 Communication over IEC 60870-5-104/101

5.2 Data rate at least 100 kbps

5.3 Response time (end to end – for DI, DO, and analog measurement – Two way communication) Maximum acceptable latency 350 milli seconds with 99.5% reliability.

5.4 Simultaneous data reporting to Master Control Centre and Backup Control Centre through separate Gateway IP addresses.

5.5 Distribution System Monitoring (RMU automation)

5.6 Fault Location, Isolation and Service Restoration

5.7 Optimal Feeder Reconfiguration and Transformer Load Balancing

5.8 Recloser/ Breaker/ Isolator Monitoring and Control

5.9 Additionally the solution must support communication of other substation applications like support for Substation Transformer Control over IEC 60870-5-104/101

5.10 The data points per FRTU (per DA Node) for DA data traffic are listed below.

5.11 The communication protocol used is IEC 60870-5-104.

The performance and latency requirements are also specified. This is provided here to familiarize the bidder with the kind of data rates expected from the RF Mesh network which will be the carrier for this data.

5.12 Spontaneous transmission of tele-metered data of ON/OFF/EARTH status of each Isolator or CB (3 or 4 legs)

5.13 Spontaneous transmission of flag operation of each FPI in the RMU (3 or 4 legs)

5.14 Remote operation of Motor Units from Control Room end to close or open Isolators/ CBs of each leg of RMU (3 or 4 legs) as & when required

5.15 Remote resetting of an operated FPI in the RMU from Control Room end

5.16 Feedback from any DO relay (a single contact after OR-ing of all relay outputs) from the FRTU side upon command execution

5.17 Periodic transmission of the battery Voltage and spontaneous transmission of AC Supply/charger fail

5.18 Periodic data for “Y” phase current from each leg of RMU (3 or 4 legs)

5.19 Spontaneous transmission of RMU Door Open status

5.20 The availability of network over Communication Canopy communication for DA shall be 99.5%, with a response time of maximum 5 seconds, between FRTU & DMS server, for DA monitoring and control. Availability factor calculation should be done on a daily basis to ensure successful operations from remote & corresponding data acquisitions. The bidder

must indicate calculation of latency in the technical proposal to ensure the response time as well as changes with the increase of no. of hops to make the network more resilient.

6. Head End System

6.1 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.

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

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

6.3 The bidder will share the Specifications (Server / Storage), Make & Model and Costing of the Head end System to cater to the requirements

- 3 lacs end points
- 10 lacs end points
- 20 lacs end points
- 30 lacs end points

BRPL 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.

6.4 System shall be capable to support different configurable QoS (Quality of Services) for different use cases. For example, operational activity such as connect/disconnect, controlling DA devices shall have higher priority than routine data transfer.

6.5 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

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

6.7 Any licenses required for HES servers like OS, DB, Storage & Backup required for HES is in the scope of bidder and costing of the same needs to be shared with the utility.

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

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

6.10 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.

6.11 Node shall have auto-discovery and auto-registration features so that RF nodes along with its connecting devices shall register themselves in head-end application upon its deployment and establishment of communication.

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

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

6.14 System shall not be impacted by obsolescence

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

6.16 Integration

i. Integration of HES with any Standard MDM / AMI System finalized by BRPL will be in the scope of Service provider/ Bidder.

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

iii. 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.

iv. 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 BRPL.

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

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

vii. HES should have the capability to integrate with SMS and Email gateways existing at BRPL to send various alarms and notifications.

viii. 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
- Prepaid function
- Net metering
- Billing date
- Clock setting/time synchronization
- Load curtailment limit
- Event setting for connect/disconnect
- Number of auto reconnection attempt
- Time interval between auto reconnection attempt
- Lock out period for relay
- Remote firmware upgrade
- Password setting
- Push schedule
- Setting threshold limits for monitored parameters
- Provision for adding more programming features in future

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

6.17 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.

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

6.19 Network Management System (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. BRPL will have the flexibility to go for the Hardware provision by the bidder or provide the Hardware with similar specifications

i. This module shall be able to manage, monitor and control 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.

ii. NMS should be able to perform ping & trace-route to any node/gateway or group of nodes/gateways of network.

iii. 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.
iv. This module shall support self-discovery and self-registration of nodes upon deployment.
v. Network 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,
vi. This module shall have management of security keys and certificates.
vii. NMS shall have set of KPIs regarding network performance. Bidder shall provide document mentioning set of KPIs
viii. This module shall have real time and historical information
ix. It should Support external interfaces
x. The module should provide for Auto registration & self-healing
xi. It should provide for Dynamic network discovery
xii. Should provide for Backhaul flexibility & redundancy
xiii. NMS should be capable to detect and report event of low signal, connectivity, reachability to server etc.
xiv. 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.

6.20 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 BRPL OMS of any outage of electricity for logging call in OMS.

6.21 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

6.22 Dashboard & Reports: HES shall have dynamic dashboard feature and daily, weekly, monthly static reports to indicate following:

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

vii. Instant parameters

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

6.23 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.

6.24 Security Module

i. HES shall manage security keys and certificates. System shall be able to report any security breach or unauthorized communication devices logged-in.

ii. HES shall have audit trail functionality for managing and storing all the records of activities performed by authorized/unauthorized users.

6.25 Application Profiles

i. 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.

ii. 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 BRPL.

iii. AMI profile shall support two way communication feature of smart meters i.e. events, alarms, et cetera shall be delivered to HES upon it's occurrence in the end device.

iv. 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 BRPL ERP system.

v. AMI profile shall support in collection of missing data and reconcile

vi. AMI profile shall facilitate over the air firmware upgrades of smart meters individually and in groups.

vii. HES shall be able to identify devices without power in Communication Canopy network using last gasp feature of the communication device.

viii. 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)

ix. HES shall support other application profiles as motioned above for automatic & on-demand data collection, connect/disconnect, control, monitoring et cetera.

x. DA profile of HES shall have support of different substation communication protocols mentioned in IEC 60870-5-104/101 and/or IEC 61850.

7. Service Level Agreement

All SLAs will be monitored on daily basis and are applicable to provisioned endpoints.

7.1 System SLA

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

7.2 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
Meter billing data	For monthly consumer bill generation	99.9% of the time
Communication troubleshooting and restoration of equipments	Rectification of communication issue	<48 hr with 99.9% success

7.3 Remote Device Connect/ Disconnect

SLA Terms	Explanation	SLA Values (Group of Nodes)		
		Quantity	Limit	Success (%)
Remote Device Control	Maximum time to control remote devices like disconnect/reconnect/limit the load or switch status.	Single device	< 1 min	99.9%
		90%	< 30 min	
		99.9%	< 6 hr	

7.4 Remote Device Firmware Upgrade

SLA Terms	Explanation	SLA Values (Group of Nodes)		
		Quantity	Limit	Success (%)
Remote Device Firmware upgrade	Maximum time for firmware upgrade of meter/device/NIC	Single device	< 30 min	99.9%
		90%	< 48 hr	
		99.9%	< 72 hr	

7.5 Reconfiguration of Endpoints

SLA Terms	Explanation	SLA Values (Group of Nodes)		
		Quantity	Limit	Success (%)

Reconfiguration of endpoints	Maximum time for reconfiguration of endpoints like RTC, Date reset etc.	Single device	< 10 min	99.9%
		90%	< 60 min	
		99.9%	< 4 hr	

7.6 Meter Supply Notification (Outage & Restoration)

SLA Terms	Explanation	SLA Values (Group of Nodes)		
		Quantity	Limit	Success (%)
Last Gasp / First breath notification	Meter Last gasp and first breath notification to HES	Single device	< 10 sec	99.9%
		90%	< 30 min	
		99.9%	< 60 min	

7.7 Critical Events Request

SLA Terms	Explanation	SLA Values (Group of Nodes)		
		Quantity	Limit	Success (%)
Critical Events push from remote devices to HES	ALL configured alarms should be pushed on occurrence	Single device	< 1 min	99.9%
		90%	< 30 min	
		99.9%	< 1 hr	

7.8 Remote Reading of Events Log

SLA Terms	Explanation	SLA Values (Group of Nodes)		
		Quantity	Limit	Success (%)
Remote reading of events log	Maximum time for reading of events log of device from HES	Single device	< 1 min	99.9%
		90%	< 24 hr	
		99.9%	< 48 hr	

7.9 On Demand Data Read

SLA Terms	Explanation	SLA Values (Group of Nodes)		
		Quantity	Limit	Success (%)
On-Demand Data Read from HES	Maximum time for on-demand instantaneous data read response	Single device	< 1 min	99.9%
		90%	< 30 min	
		99.9%	< 1 hr	

7.10 Scheduled Interval Data Transfer

SLA Terms	Explanation	SLA Values (Group of Nodes)		
		Quantity	Limit	Success (%)
Data Transfer from remote	Hourly Data	Single device	< 1 minute	99.9%
	Daily Data		< 5 min	

devices to HES	Monthly Data		< 10 min	
	Hourly Data	90%	< 1 hr	99.9%
	Daily Data		< 12 hr	
	Monthly Data		< 24 hr	
	Hourly Data	99.9%	< 6 hr	99.9%
	Daily Data		< 24 hr	
	Monthly Data		< 48 hr	

8. Penalty due to Non Compliance of SLA

Non compliance of SLAs in terms of both no. of days and percentage of data collection for provisioned meters attracts penalty. This penalty shall in terms of percentage of monthly payable O&M or AMC charges.

8.1 Penalty due to Non compliance of No. of Days

Non compliance days of SLA for daily schedule	Penalty Percentage
0 – 3	NIL
4 – 7	2%
8 – 15	4%
16 – 20	8%
> 21	10%

8.2 Penalty due to Non compliance of Percentage of Data Collected

Percentage (%) of Data collection for monthly data collection	Penalty Percentage
> 99.90 %	NIL
99.00 % – 99.89 %	2%
98.00 % – 98.99 %	4%
97.00 % – 97.99 %	6%
96.00 % – 96.99 %	8%
< 95.99 %	10%

8.3 Penalty of Rs 100/NIC/Day for non-communication for more than 7 days continuous.

8.4 One endpoint considered for a penalty in one parameter will not considered for penalty for other parameters.

9. Applicable Standards, Frequency and Statutory Approvals

9.1 The system and all individual equipment must comply with all relevant statutory requirements and regulations that are set by government authorities, such as the Wireless Planning & Coordination (WPC) Wing of the Ministry of Communications and Information Technology. Wireless technologies need to comply with the Indian statutory bodies that govern communication related aspects such as WPC which oversees licensing and management of all wireless spectrums in India. Equipment Type Approval (ETA) is to be obtained for communication modules as per Department of Telecom, Government of India requirements. Radio emission characteristics for the chosen band shall comply with latest NFAP and the GSR (General Statutory Rules) notifications from Department of Telecom, Government of India.

9.2 All documents demonstrating compliance, approval and usability must be submitted by the bidder along with the technical proposal. Failure to do so may result in bid disqualification. Any statutory clearances related to installation will be in BRPL scope but has to be facilitated by the bidder.

9.3 The Communication Canopy Communication Devices shall comply to the following standards: IEEE 802.15.4 – IEEE standard for Information Technology – Telecommunications and Information Exchange between Systems – Local and Metropolitan Area Networks – Specific Requirements Part 15.4: Wireless Medium Access Control (MAC) and Physical layer (PHY); IEEE 802.15.4g – IEEE Standard for Smart Utility Networks or any other equivalent standard /alliance

9.4 The communication network shall support multiple protocols including DLMS/COSEM, IEC 60870-5-104, DNP3 for transfer of data to HES and ensure secure communication to HES.

9.5 The bidder to submit relevant certification in order to validate the conformance and interoperability of their IEEE 802.15.4 and IEEE 802.15.4g or equivalent implementations.

9.6 If the proposed solution operate in licensed frequency band, bidder to attain the required license on behalf of BRPL for entire geo-graphical area of BRPL for 15 years. Cost of procuring license and license fee for next 15 years will be in the scope of bidder.

10. Execution Plan

Bidder's scope is as listed below:

10.1 Erection of RF nodes, repeaters, gateways at RMU sites / roof tops of BRPL establishments as per the RF Engineering Design. However for any strategic location where network elements are to be installed at other than BRPL establishment, the required accessories / permissions for commissioning of network element along with supply of all required accessories will be in bidder's scope.

10.2 Installation of poles /towers (with supply of poles, as per the approved design) etc. at potential locations for mounting of nodes will be part of bidder supply

10.3 Providing power supply to installed nodes, collectors and gateways at all locations through 230V AC supply or by use of battery banks (DC supply) including housing for the same where required. BRPL will help identify the nearest power supply source at BRPL premises. It will be responsibility of bidder to extend the supply to the required location using proper erection of poles/cables etc.

10.4 Obtaining statutory clearances from Govt. bodies (eg: SACFA, municipal authorities etc.) related to installation, as applicable

10.5 Formal agreements with mobile tower owners for use of their towers & power supply arrangements within the areas of RMU automation for installation of repeaters

10.6 Erection of repeaters, gateways roof tops of high rise buildings etc. other than BRPL premises, as per the RF engineering design and will be in scope of bidder

10.7 Arranging for permissions for installation of poles, masts or towers on roof tops of residential or commercial high-rise buildings as per requirement and will be in scope of bidder

10.8 Facilitate in obtaining statutory clearances from Govt. bodies (eg: SACFA, municipal authorities etc.) related to installation, as applicable at bidder's cost.

10.9 Inspection and testing of all equipment types and software supplied will be carried out by BRPL with assistance from the successful bidder. This shall be in the form of Factory Acceptance Test (FAT) (if BRPL needs it to be mandatory) and FAT shall be conducted in the factory premises of the successful bidder. Pre-FAT report must be submitted before the FAT can begin. Any critical issues arising from the FAT must be resolved and retested before site installation can begin. SAT will happen on site, once site installation and commissioning has reached a satisfactory level. All critical issues arising out of the SAT must be resolved and retested before BRPL accepts the system.

10.10 The bidder shall include in the offer their standard training plan so that there is a proper transfer of knowledge to BRPL personnel on the delivered system. All training shall be in English.

11. Project Management

Bidder shall adopt the best Project Management practices to ensure successful implementation of the project.

11.1 Project Management Team

BRPL and successful bidder will form a Project Management team for the project to ensure timely and successful completion. The bidder shall ensure and commit to provide the best of the teams for the project.

11.1.1 BRPL Project Management Team: BRPL will appoint a Project Manager (PM) to coordinate project implementation activities of BRPL. This Project Manager will coordinate with the Project Management team of the bidder.

11.1.2 Bidder Project Management Team: The Bidder shall assign a Project Manager (PM) with the authority to make commitments and decisions that are binding on the

bidder. The Project Manager of BRPL and successful bidder will be responsible for all the co-ordination and communication between BRPL and Bidder. It is imperative that the team follows the directions of Project Managers to ensure timely and successful completion of the Project.

The bidder shall submit the team size and skill sets of all the staff of the proposed Project Management team along with the proposal. The bidder shall give prior intimation and take approval from BRPL for any changes in the Project Management team. BRPL reserves the right to have any personnel of bidder project management team removed from the project for cause.

11.2 Project Management Scope

The successful bidder shall ensure that the Project is successfully completed in the timelines given by BRPL. The bidder shall submit an overall Project plan along with the bid keeping in mind the timelines.

11.2.1 The bidder shall prepare a Project tracker listing down all the activities in detail

11.2.2 The bidder shall be responsible for deployment of network equipments for canopy establishment across the distribution area of BRPL.

11.2.3 The bidder shall submit implementation guidelines for the RF Canopy network.

11.2.4 The bidder shall share the necessary drawings and arrangements for mounting of Gateways for approval by BRPL.

11.2.5 However, if the bidder finds another location (non BRPL property) suitable for installation of Gateways, all the relevant permissions, components, infra etc shall be in the scope of bidder.

11.2.6 Bidder will share its field execution team details. BRPL will issue a permission letter to the designated manpower of bidder for the deployment.

11.2.7 BRPL will appoint AMI Managers responsible for role out of the Network. Bidder execution team will coordinate with AMI manager for activities viz arrangement of keys for its substations, permission for installation at customer premises etc. The bidder may seek support of Project Manager in this regard and keep him informed of all the communications.

11.2.8 The bidder may follow the escalation matrix in case of any support required.

11.2.9 During Gateway installation at BRPL premises, the bidder shall ensure extension of power supply to the desired place from the nearest power supply source given by BRPL.

11.2.10 The Canopy network terminals shall support on site and remote diagnostics.

11.2.11 Any on site and remote trouble shooting required to make the network terminals live will be in the scope of bidder.

11.2.12 The bidder shall publish daily status if the installations carried out in the format published as annexure.

11.2.13 The bidder shall ensure sign off for each and every installation in the format published as annexure. The sign off has to be taken the very next day of installations / weekly.

11.2.14 Apart from the installation report, the bidder shall submit daily, weekly and monthly reports on the network status in the format published as annexure...

11.2.15 The bidder shall submit a project progress report / tracker on weekly basis (every Monday / Saturday). The report shall include all the activities completed, on-going and scheduled from the beginning till the completion of the project. Format shall be agreed on mutually. The report may list down all the issues, classify them as per severity and also give the timelines for its resolution.

11.2.16 The bidder shall provide all the construction equipment's, tools and tackles; testing kits and equipment's required for assembling, installing, testing and commissioning of the terminals and system.

11.2.17 The bidder shall ensure that its team adheres to all the local rules for safety and security and as advised by BRPL Project Manager and on site in-charge.

11.2.18 The bidder shall work as per the project schedule and shall not be relieved until the project is successfully completed and handed over.

11.2.19 BRPL may hold a Project progress review meetings at least weekly with the Project Management team of the successful bidder.

11.2.20 BRPL may hold a monthly review meeting with the Senior Management team of the successful bidder.

11.2.21 In case of any major deviation from the plan and / or any anomalies, BRPL may call for a meeting with the bidder team depending on the severity and impact. The bidder shall make themselves available for the meetings as and when required.

11.2.22 During these Project progress review meetings, the progress report and the written correspondence exchanged during the last meeting, along with the open action items will be reviewed.

12. Quality Assurance, Factory Acceptance Test and Site Acceptance Test

To ensure that the Bidder produces a well-engineered and contractually compliant equipment, a quality assurance program shall be followed -

12.1 Quality Assurance (QA)

The bidder must employ documented Quality Assurance (QA) techniques and practices throughout this project. The bidder should prepare implementation methodology covering:

- Schedule of Factory Acceptance Test, supply, installation, SAT (Site Acceptance Test), Trial runs, commissioning etc.
- Allocation of manpower for different activities
- Submission of Quality Assurance (QA) techniques indicating completion of various activities within targeted time frame.

This QA program shall be adhered to the preparation of all Contract deliverables, including documentation, hardware, firmware and software. The program shall aim at minimization of defects, early detection of actual or potential deficiencies, timely and effective corrective action, and a method to track all such deficiencies etc.

BRPL shall be allowed access to the Bidder's facilities during system design and testing and of any facility where hardware or software is being produced. The Bidder shall provide office and testing facilities, equipment, and documentation necessary to complete all inspections.

BRPL shall be allowed to inspect the Bidder's hardware and software quality assurance standards, procedures, and records. Documents identified in the approved software quality assurance plan will be inspected to verify that the Bidder has performed the required quality assurance activities.

12.2 Factory Acceptance Test (FAT)

12.2.1 Responsibilities

Both BRPL and the Bidder shall designate a test coordinator prior to the start of FAT. Bidder to submit FAT documents to BRPL for approval. Post approval each coordinator shall be responsible for ensuring that the tests are conducted in accordance with the requirements of this Contract. The coordinators shall each have the authority to make binding commitments for their employer such as approvals of test results and scheduling for variance corrections. Unless otherwise stated in this Specification, the Bidder shall be responsible for all factory tests. This responsibility shall include the conduct of the tests and all record keeping and document production. BRPL will support the factory testing by supplying staff to execute the test procedures under Bidder's supervision. Also unless otherwise stated in this Specification, BRPL shall be responsible for all site tests. This responsibility shall include the conduct of tests and all record keeping and document production. The Bidder shall support the site testing by supplying staff to monitor the tests. Bidder staff should be available on-site during these tests.

12.2.2 Test Documents

Test plans, procedures, and records shall be provided by the Bidder for all tests to ensure that each test is comprehensive and verifies the proper performance of the communication System elements under test. During the development of test plans and test procedures, emphasis shall be placed on testing each conditional logic statement, checking error conditions, and documenting the simulation techniques used. The test plans and test procedures shall be modular to allow individual test segments to be repeated as necessary.

All test plans and test procedures (standard, modified standard, and custom functions) shall be submitted to BRPL for approval.

12.2.3 Performance Test

The performance test shall verify that the standard performance requirements are met. Simulation shall be provided by the Bidder, where necessary, to create the conditions for the

specified performance scenarios. The simulations shall be tested first to verify that the desired activity is being simulated.

12.3 Installation and Functional Test on Site (SAT)

As part if the bid, bidder is required to submit its recommended FAT and SAT tests. The installation tests shall be conducted by the Bidder and as a minimum include:

- Functional testing of each equipment after installation on site
- Functional test of each interface provided
- Point-to-point Test
- Communication Integration Test after all interface and connected devices.
- Functional Testing of HES /NMS
- Test for transmitted power, Interference, dynamic path & equipment performance related test
- The bidder will conduct Network Availability Test of total System for 60 days. The desired availability should be as defined in document.
- Any other test felt necessary by BRPL.

Bidder need to finalize SAT document with BRPL engineer-in-charge during detailed engineering report.

13. Maintenance of the Network during Rollout

13.1 All network communications equipment shall support local (on-site) and remote (system head end) non-intrusive diagnostics capable of detecting any abnormal operating parameters including, but not limited to, network communications, memory failure, power supply degradation, microprocessor failures (e.g. Computer Operating Properly watch dog events), firmware/software problems, excessive device temperature, SNR degradation etc.

13.2 Sign Off for end Point will be considered as 1 month post installation.

13.3 It will be the responsibility of bidder to maintain SLA after 1 month of installation of any end point. However during this transition period, the bidder should ensure monthly billable read to ensure that communication of end point is well established using the offered solution.

13.4 Transition period will be considered as 3 days post installation of other network elements except smart meters. On expiry of transition period for network elements SLA will be applicable.

13.5 Rollout period will be considered from date of deployment of the network to deceleration of post go live.

14. Spare Parts, Tools and Test Equipment

14.1. Sufficient quantity of spare parts to be maintained by the bidder to meet the SLAs.

14.2. The Supplier shall submit a list of required on-site spare parts for field-replaceable and –repairable modules as part of the list of deliverable hardware. The required spare parts shall

include any special tools and test equipment that the Supplier and the OEM use and which are applicable for BRPL maintenance.

14.3. Bidder has to intimate the list of minimum spares required to maintain the desired availability of communication.

14.4. Bidder shall keep sufficient spare parts inventory to ensure compliance to the SLA parameters.

14.5. The management of spare parts inventory and of repair & return services for all supplied equipment will be responsibility of bidder. The ownership of the inventory shall belong to the Bidder.

14.6. Fault reports to be generated and to be submitted to BRPL on as & when basis.

14.7. Complete Inventory details are to be provided by Bidder during commencement of contract.

15. Role & Responsibility during Operation & Maintenance

Bidder will be responsible for providing O&M, warranty, Repair/ replacement of defective equipment' herewith:

15.1 Application Monitoring and Management: Bidder will ensure on site monitoring of the Server, database and storage for the NMS and HES System on 24x7. When an Incident triggers an alert, O&M team to track the incident, troubleshoot the problem, and escalate to subject matter experts or third party vendors as needed.

15.2 Reports: Bidder to customize system generated reports regarding the health of the NAN and performance of meter reads and event activities as per BRPL requirements and submits on daily basis/ weekly/monthly basis or as and when required.

15.3 Site/Field Visits: All site visits will be carried out by bidder staff.

15.4 Maintenance by Bidder: Third-Party Software Licenses and Updates. Bidder will maintain current licenses to all necessary Back Office third party software.

15.5 Software Support & Maintenance: All support related to software will be in bidder's scope. For any software /database related work, Maintenance window shall be provided to bidder, at a regularly scheduled time to be mutually agreed as per process of change management, and lasting 3 working hours unless otherwise agreed.

15.6 Hardware Maintenance: Bidder will work with third party vendors to diagnose any problems with third party hardware and agree on a resolution plan. If necessary, BRPL may provide some guidance, but is not responsible for managing or maintaining Customer's hardware infrastructure.

15.7 Capacity Management: As part of this analysis, the bidder will submit health & performance report on capacity utilization of WAN devices to determine whether additional Access Points or Relays are required or current Access Points and Relays must be relocated, all of which will be at bidder's expense.

15.8 Backups and Restoration of Data: Bidder will use and maintain a hardware and software backup solution each Business Day to conduct daily backups of application configuration files and Generated Data.

15.9 Disaster Recovery Test: Bidder will perform a test of its Disaster Recovery Plan annually to confirm failover capabilities (including availability) between Customer's data centres. The annual. Disaster Recovery Test will be conducted in a scheduled maintenance window as decided by BRPL.

15.10 Alignment of Disaster Recovery with Production. As System Changes are made to the production environment, Bidder will make identical changes to the disaster recovery environment.

15.11 Integrated Meters: Bidder will be responsible for monitoring and resolving meter communication related issues including but not limited to performing in-field troubleshooting of all post-installation problems with Integrated Meters communication.

16. Project Life Cycle

Life cycle of project shall be divided into following phases as defined below.

16.1 Bidder is required to complete installation of all network components along with 50,000 endpoints in first year as part of Phase 1, for Operational Acceptance and successful compliance of SLA for 3 months

16.2 Based on BRPL requirements the bidder shall perform operation and maintenance of complete system including field activities, after operational acceptance of first 50,000 endpoints. Bidder is required to manage RF network including all equipment's installations, hardware & software, networks services, commissioning, de-commissioning and redesigning RF network and other day today activities, at no additional cost to BRPL. BRPL may scale up the no of end points to 3,00,000 as part of Phase-1 in next two years. Network Management Services shall be provided by bidder in order that maximum uptime & performance levels of RF network installed are ensured. As such, Bidder is expected to provide services as per standards with performance levels meeting or exceeding those mentioned in Service Level Agreement (SLA) agreed.

16.3 Future phase is expected to have 1 million end points subject to the outcome of the first phase and regulatory approvals.

17. Defect Reporting

The bidder shall submit an appropriate problem/defect reporting procedure to meet the requirement of all severity levels to get the approval of the same from BRPL. The problems will be categorized as defined in table below.

Category	Definition	Timeline
Severity – 1: Urgent	Complete system failure, severe system instability, loss or failure of any major system component such as to cause a significant adverse impact directly on system availability, performance, operational capability or business.	Acknowledge within 1 hour, Temporary fix in 4 hours, Permanent Fix in 8 hours
Severity – 2: Serious	Degradation of services or critical functions such as to negatively impact system operation. Failure of any redundant system component such that the normal redundancy is lost.	Acknowledge within 4 hour, Temporary fix in 12 hours, Permanent Fix in 24 hours
Severity – 3: Minor	Any other sub system defect, failure, services or unexpected operation that has a workaround available to go to the next process.	Acknowledge within 8 hour, Temporary fix in 48 hours, Permanent Fix in 5 days

17.1 Severity Levels

The detail of the systems under different severity levels is as below:

i. Severity-1 : Urgent Support

This support is required when there is a complete system failure, severe system instability, the loss/ failure of any major sub-system / system or its components, which may significantly impact the system availability, performance, or operational capability at Control centre. Following outages/disruptions will be considered under Serverity-1:

- Loss of data due to any problem in software /hardware
- Loss of data due to any problem in communication network
- Outages of any application software
- Cyber Security issues.
- Outage of both Routers and LAN Switches.
- Loss of data exchange with other computer systems of utility

The failure of field devices shall be considered as Severity-1 level, however a maximum time of Organization and travelling time of 24 hrs shall be provided to rectify field defects. Upon receiving intimation, the representative of the contractor would immediately attend to the problem and restore all functionalities at the earliest.

ii. Severity-2: Priority Support

The support services not defined under Severity-1 are included under this category. Coverage under this severity would be outages that do not immediately cause on line data loss but subsequently

could result into Severity-1 category outage, loss of an important subsystem that may affect the day-to-day works and loss of archived data.

- Failure of Storage System, stoppage of data collections for archiving and outage of other applications not covered under Severity-1 are included in this category.
- Failure of any redundant system component affecting the critical redundancy like loss of any one Application Processor, Router.
- Non-availability of designated contractor's Man-power at control centre as well as required inventory of spares specified here.

iii. Severity-3: Standard Support

The support services included under this category are when the outage or loss of functionality is neither of an emergency nor priority functionalities as indicated in Severity level 1 or 2 above. Problems like database reworking, failure of any one workstation, printers etc. would be covered under this category.

17.2 General Technical Help

User initiated request for information, technical configuration assistance, "how to" guidance and any other information within agreed scope shall be provided by the bidder based on urgency of the matter as agreed with BRPL.

18. Delays

18.1. Vendor Delay

If at any time during the Term, the Bidder anticipates that he/she may not be able to meet deliverable as agreed with BRPL by its due date, the Bidder must notify BRPL in writing providing details, the due date and the anticipated cause and nature of the delay. The Bidder must also suggest steps that will be undertaken by the Bidder to assist BRPL to overcome the anticipated delay (and with BRPL's written approval undertake those steps). The Bidder must also provide the earliest date by when Bidder shall be able to deliver the Deliverables.

18.2. Extension

If there is a delay to any task, milestone or obligation under this agreement for which the Bidder is not entitled to an extension of time, BRPL may at its sole discretion grant an extension of time for that delay by giving written notice to the Bidder without any obligation to BRPL. If BRPL grants an extension of time the Bidder is not entitled to any compensation for the relevant delay.

18.3. Customer Delay

If the Bidder is prevented from delivering any Deliverables or Services by its due date solely by reason of BRPL Delay (such delay having been confirmed as a genuine Delay by BRPL in writing), BRPL shall extend the applicable Delivery Date and/or milestones for that Deliverable or Service. However, Bidder is not entitled to any compensation for the relevant delay.

19. Acceptance Process

19.1. Bidder must submit in writing that the Deliverable is ready for the Acceptance Process supported with the Documentary proof of the deliverable to BRPL. BRPL (unless and to the extent agreed otherwise) will undertake the Acceptance Tests in relation to the Deliverable in accordance with the relevant Test Plan to verify that the Deliverable meets the Acceptance Criteria.

19.2. By the end of the relevant Acceptance Period, BRPL must issue either of the following:

i. Acceptance letter;
ii. Conditional Acceptance letter;
iii. Notice of Late Submission;
iv. Rejection letter; or
v. Request for a reasonable extension of time to complete the Acceptance Tests.

19.3. If BRPL fails to comply within 10 Business Days of the end of the relevant Acceptance Period, the Bidder may escalate the issue.

19.4. If BRPL issues a Rejection letter, BRPL will give reasons of rejection of the Deliverable and give directions to amend the Deliverable and a date for resubmission of the amended Deliverable. Bidder must immediately commence amending the Deliverable to address the Reasons for Rejection and resubmit the amended Deliverable to the Acceptance Process by the date specified.

19.5. If BRPL issues a Conditional Acceptance, BRPL will stipulate the reason why an Acceptance letter cannot be granted, defects that must be rectified before Acceptance of the Deliverable; and the Delivery Date and Acceptance Period for re-submission of the Deliverable.

20. Change Management

20.1. Bidder shall be responsible to deliver the proposed products as agreed. Any change in technology processes – including its replacement, modification of the meter or accessories after BRPL has approved the deliverable shall be done only after written agreement with BRPL.

20.2. For obtaining this agreement the bidder shall present the company with the engineering drawings describing modifications, samples and proof that proposed change does not decrease the quality or performance of the deliverable. BRPL reserves the right to reject modifications and shall be binding on the bidder without any liability to BRPL.

20.3. Bidder shall be responsible to inform the buyer in writing about the serial numbers of the first modified deliverable and the shipment identification detail.

21. Training and Support

Bidder to describe:

21.1 Support policy during communication canopy commissioning, AMI implementation and ongoing support.
21.2 Implementation methodology and approach.
21.3 Experience on implementing this type of solution.
21.4 Capability (resources, tools, and environment) on implementing this type of solution.
21.5 Approach for knowledge transfer and training of BRPL.
21.6 Bidder to provide BRPL names and details of utilities where this technology has been deployed and can be demonstrated to BRPL users.
21.7 How the bidder provides user and administrator training for the Network Management System?
21.8 How does the bidder also offer regularly scheduled training at their own facilities?
21.9 How does the bidder provide training for the configuration, troubleshooting and maintenance of the RF canopy elements?
21.10 How does the bidder provide training for the meter technicians, radio technicians and field personnel on the installation, configuration, troubleshooting and maintenance of the AMI meters, AMI network equipment and AMI communications network?
21.11 How does the bidder maintain a knowledge base online that allows users to search for problem resolutions as well as provide system advice?
21.12 How does the bidder provide hosting and operations services for the AMI solution?
21.13 What are the levels and options available for support? Please describe these levels. Pricing for these levels should be included in the pricing section.
21.14 When new features are introduced via a system upgrade or revision, training should be provided on these features as part of the upgrade release and operation manual updates is provided? Please describe.
21.15 How emergency responses are services available independent of any maintenance contract so as to handle critical or catastrophic situations? Please describe.
21.16 Please provide any support metrics available to demonstrate support and resolution capabilities.
21.17 Bidder to provide all the technical training to BRPL users related to administration, Operational, Troubleshooting etc.

22. Documents to be Submitted

The bidder shall submit a comprehensive list of documents as applicable for the proposed system. The schedule for submission and approval of these documents shall be in line with the overall project implementation timeline. If any document is revised the bidder shall indicate each revision with a number date and description for approval.

i. Proposed Canopy Solution document for entire BRPL distribution area
ii. Detailed specifications and technical particulars for all the hardware and software
iii. Drawings / documents /manuals for installation of network terminals at site

iv. Solution document detailing server sizing and network components
v. System administration documentation detailing network communication management, software management, database management, software maintenance, system performance monitoring, report management, diagnostic and troubleshooting and any other modules not included here
vi. All necessary test certificates, procedures, plan where ever applicable
vii. All necessary licenses where ever applicable
viii. Un priced BOQ
ix. Response document to SLA
x. Safety measures and undertaking
xi. Document on security model in the proposed system
xii. Training documents

Volume – II: Commercial

Section – I: General Terms and Conditions

1. General

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. Definition of Terms

2.1 "Purchaser" shall mean BSES Rajdhani 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, Scope of Work, Commercial Terms & Condition, and 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 BRPL 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:

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

3. 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. Scope of Work

All the activities that are to be undertaken by the bidder to realize the contractual deliverables in completeness form Scope of Work. (Refer Volume – I, Technical for detailed Scope of Work and Specifications)

The bidder shall satisfy himself and undertake fully the technical/commercial requirements of items to be supplied as listed in the Schedule of Quantities/BOM together with the tests to be performed /test reports to be furnished before dispatch, arrangement of stage and final inspections during

manufacturing as per terms and conditions of contract, technical parameters & delivery terms and conditions including transit insurance to be met in order to fully meet BRPL requirements.

Completeness: Any supplies and services which might have not been specifically mentioned in the Contract but are necessary for the scope mentioned or completeness of the works at the highest possible level, including any royalties, licence fees & compensation to be paid, whether incurred by the bidders or by a third party for the work covered in the scope, regardless of when incurred, shall be supplied/provided by the bidder without any extra cost and within the time schedule for efficient , smooth and satisfactory operation and maintenance of the works at the highest possible level under Indian conditions (but according to international standards for facility of this type), unless expressly excluded from the scope of supplies and services in this Contract.

BRPL have the right, during the performance of the Contract, to change the scope and/or technical character of the Project and/or of the supplies and services stipulated in the Contract by submitting a request in writing to the Bidder. The Bidder shall, within fifteen days of receipt of such request from the BRPL, provide Purchaser with a reasonably detailed estimate of the cost of the change outlined in the request.

In the event, BRPL requests a change, the Contract price and time shall be adjusted upwards or downwards, as the case may be and shall be mutually agreed to. The Bidder shall not be entitled to any extension of time unless such changes adversely affect the time schedule.

The Bidder shall not proceed with the changes as requested till adjustment of contract price and time schedule where so applicable in terms of or otherwise directed by the BRPL.

5. 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. In case of standard items, BRPL shall forward the standard QAP which is to be followed by vendor during manufacturing.

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 BRPL.

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 BRPL/BRPL 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. Packing, Packing List & Marking

6.1 **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 BRPL, Delhi/New Delhi stores/site without undue risk of damage in transit.

6.2 **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. Safety Code

7.1 The Contractor shall ensure adequate safety precautions at site as required under the law of the land and shall be entirely responsible for the complete safety of their workman as well as other workers at site and premises. The contractor shall not deploy any worker below the age of 18 years.

7.2 The contractor shall observe the safety requirements as laid down in the contract and in case of sub-contract (only after written approval of company); it shall be the responsibility of

main contractor that all safety requirements are followed by the employees and staff of the sub-contractor.

7.3 The contractor employing two hundred employees or more, including contract workers, shall have a safety coordinator in order to ensure the implementation of safety requirements of the contract and a contractor with lesser number of employees, including contract workers, shall nominate one of his employees to act as safety coordinator who shall liaise with the safety officer on matters relating to safety and his name shall be displayed on the notice board at a prominent place at the work site.

7.4 The contractor shall be responsible for non-compliance of the safety measures, implications, injuries, fatalities and compensation arising out of such situations or incidents.

7.5 In case of any accident, the contractor shall immediately submit a statement of the same to the owner and the safety officer, containing the details of the accident, any injury or causalities, extent of properly damage and remedial action taken to prevent recurrence and in addition, the contractor shall submit a monthly statement of the accidents to the owner at the end of each month.

8. Statutory Obligations

The Contractor shall take all steps as may be necessary to comply with the various applicable laws/rules including the provisions of contract labour (Regulation & Abolition Act) 1970 as amended, minimum wages Act, 1984, Workman Compensation Act, ESI Act, PF Act, Bonus Act and all other applicable laws and rules framed there under including any statutory approval required from the Central/State Govt. Ministry of Labour. Broadly, the compliance shall be as detailed below, but not limited to:

i. Electrical license issued by Govt.of Delhi.
ii. PF Code No. and all employees to have PF A/c No. under PF every Act, 1952.
iii. All employees to have a temporary or permanent ESI Card as per ESI Act.
iv. ESI Registration No.
v. PAN No.
vi. Work Contract Tax Registration Number/ GSTN Registration.
vii. Labour License under Contract Labour Act (R & A) Act 1970

Engineer-in-charge responsible for execution of the job should obtain a copy of Labour License before start of the work by the contractor.

The Contractor must follow:

i. Third party Insurance Policy before start of work.
ii. To follow Minimum Wages Act prevailing in the state.
iii. Salary / Wages to be distributed in presence of representative of Company's representative not later than 7th of each month.

iv. To maintain Wage- cum - Attendance Register.
v. To maintain First Aid Box at Site.
vi. Latest P.F. and E.S.I. challans pertaining to the period in which work was undertaken along with a certificate mentioning that P.F. and E.S.I. applicable to all the employees has been deducted and deposited with the Authorities within the time limits specified under the respective Acts.
vii. Workman Compensation Policy. {If applicable}
viii. Labour license before start of work. {If applicable}

9. Workman Compensation

9.1 The Contactor shall take insurance policy under the Workman Compensation Act to cover such workers who are not covered under ESI and PF by the Contractor however engaged to undertake the jobs covered under this order and a copy of this insurance policy will be given to Company for reference and records. This insurance policy shall be kept valid at all times. In case there are no worker involve other than those who are covered under ESI and PF by the Contractor, the Contractor shall certify for the same.

9.2 Before commencing the execution of the work the CONTRACTOR shall take accidental insurance policy for the staff engaged by him for this work to insure against any loss of life which may occur during the contract for the work of the COMPANY. The policy shall have coverage of Rs. 10 Lacs (Table C- Death + Permanent Total Disability + Partial permanent Disability due to external accidents). The premium amount for such policy shall be in contractor scope. The policy document shall be submitted before commencement of the work by the contractor.

9.3 The contractor shall keep the company indemnified at all times, against all claims of compensation under the provision of Workmen Compensation Act 1923 and as amended from time to time or any compensation payable under any other law for the time being workman engaged by the contractor/sub-contractor/sub-agent in carrying out the job involved under this work order and against costs and expenses, if any, incurred by the company in connection therewith and without prejudice to make any recovery.

9.4 The company shall be entitled to deduct from any money due to or to become due to the Contractor, moneys paid or payable by way of compensation as aforesaid or cost or expenses in connection with any claims thereto and the Contractor shall abide by the decision of the Company as to the sum payable by the Contractor under the provisions of this clause.

10. Staff and Workman

It shall be responsibility of contractor-

10.1 To obtain Contract Labour License from the concerned authorities and maintain proper liaison with them. Necessary Forms for obtaining Labour License would be issued by the

company. However you will bear all expenses for obtaining Labour license and registration in PF Department for your scope of work. You will deposit PF of your staff/laborer each month and all related documents should be furnished to us.

10.2 To obtain workman insurance cover against deployment of workers etc.

10.3 To maintain, proper records relating to workmen employed, in the form of various Registers, namely,

i. Register of workmen.
ii. Register of muster roll.
iii. Register of overtime.
iv. Register of wages.
v. Any other register as per latest amendment Labour Act.

10.4 The records shall be in the prescribed formats only.

10.5 To disburse monthly wages to your workers/ supervisors in time and in the presence of Company representatives or as directed by the Labour authorities.

10.6 To maintain proper liaison with the Project authorities, local police and all other government and local bodies.

10.7 To pay your workmen at least not less than the minimum prescribed wages as per state/Central Labour laws as may be, applicable. The contractor shall, be responsible for compliance of all the provisions of minimum Wages Act, PF, ESIC Act workmen Compensation Act and Contract Labour Regulation & Abolition Act the rules made there under. In case of non- compliance of the statutory requirements. The company would take necessary action at the risk and cost of the Contractor.

10.8 To employ required number of skilled/semi-skilled and unskilled workmen as per site requirement to complete the entire project as per schedule. To provide safety shoes, safety helmets, safety belts, gloves etc. to your worker/staff as per requirement during erection work.

10.9 To employ necessary engineering and supervisory staff for completion of the Project in time. While day-to-day management of the site and supervision of the works shall be the responsibility of your Engineer - In charge, he will report to the Engineer in charge to assist him to discharge the overall responsibility of the execution of the project.

11. Third Party Insurance

Before commencing the execution of the work the contractor shall take third party insurance policy to insure against any damage or loss or injury which may occur to any property / public property or to any person or any employee or representative of any outside Agency/ the company engaged or not engaged for the work of the company, by or arising out of the execution of the work or temporary work or in carrying out of this Agreement. For third party insurance policies, the contractor shall be responsible for settlement of claims with the underwriters without any liability on the purchaser / owner and will arrange replacements / rectification expeditiously without a waiting settlement by insurance claim at contractors own cost.

12. Security

Adequate number of trained Security Guards shall be deployed both at the storage yard and stores as well as places of work to prevent theft and pilferage of material and accessories and various other materials. All security rules and safety rules enforced at site by company shall be strictly observed.

13. Environmental, Health & Safety Plan

Contractor will make ensure that the Environment, Health & Safety (EHS) requirements are clearly understood and faithfully implemented at all levels at site as per instruction of Company. Contractors must comply with these requirements:

ii. Comply with all of the elements of the EHS Plan and any regulations applicable to the work
iii. Comply with the procedures provided in the interests of Environment, Health and Safety
iv. Ensure that all of their employees designated to work are properly trained and competent
v. Ensure that all plant and equipment they bring on to site has been inspected and serviced in accordance with legal requirement and manufacturer's or suppliers' instructions
vi. Make arrangements to ensure that all employees designated to work on or visit the site present themselves for site induction prior to commencement of work
vii. Provide details of any hazardous substances to be brought onsite
viii. Ensure that a responsible person accompanies any of their visitors to site

All contractors' staff is accountable for the following:

i. Use the correct tools and equipment for the job and use safety equipment and protective clothing supplied, e.g. helmets, goggles, ear protection, etc. as instructed
ii. Keep tools in good condition
iii. Report to the Supervisor any unsafe or unhealthy condition or any defects in plant or equipment
iv. Develop a concern for safety for themselves and for others
v. Prohibit horseplay
vi. Not to operate any item of plant unless they have been specifically trained and are authorized to do so.

14. Test Certificate and Quality Assurance

The Contractor shall procure all equipment from genuine sources as approved by the Company and as per Company specifications. The Contractor shall submit all the test certificates and joint

inspection reports related to major equipment wherever applicable. The contractor shall ensure for the strict compliance to the specifications and Field Quality Procedures issued by company / Engineer in-charge.

15. Sub-Contracting / Sub-Letting

15.1 CONTRACTOR shall not assign or transfer the whole or any part of this Work Order or any other benefits accruing there from nor shall it subcontract / sublet the whole or any part of the Works without the prior written consent of COMPANY.

15.2 In the event the contractor assigns this work order, contractor's assignees shall be bound by the terms and conditions of this work order and shall , if deemed necessary by COMPANY at the time of such assignment, undertake in writing to be so bound by this Work Order.

15.3 Notwithstanding the subletting / subcontracting of any portion of the works, contractor shall remain wholly responsible for the carrying out, completion and satisfactory execution of Works in all respects in accordance with this Work Order, specification, approved drawings and data sheets.

16. Indemnity

16.1 Contractor shall indemnify and save harmless COMPANY against and from any and all liabilities, claims, damages, losses or expenses arising due to or resulting from:

i. any breach non-observance or non-performance by contractor or its employees or agents of any of the provisions of this Work Order.
ii. any act or omission of contractor or its employees or agents.
iii. any negligence or breach of duty on the part of contractor, its employees or agents including any wrongful use by it or them of any property or goods belonging to or by COMPANY.

16.2 Contractor shall at all times indemnify COMPANY against all liabilities to other persons, including the employees or agents of COMPANY or contractor for bodily injury, damage to property or other loss which may arise out of or in consequence of the execution or completion of Works and against all costs charges and expenses that may be occasioned to COMPANY by the claims of such person.

17. Events of Default

17.1 COMPANY may, without prejudice to any of its other rights or remedies under the Work Order or in law, terminate the whole or any part of this Work Order by giving written notice to the Contractor, if in the opinion of COMPANY, contractor has neglected to proceed with the works with due diligence or commits a breach of any of the provisions of this work order including but not limited to any of the following cases:

i. Failing to complete execution of work within the terms specified in this work order.
ii. Failing to complete works in accordance with the approved schedule of works.
iii. Failing to meet requirements of specifications, drawings, and designs as approved by COMPANY.
iv. Failing to comply with any reasonable instructions or orders issued by COMPANY in connection with the works.
v. Failing to comply with any of the terms or conditions of this work order.

17.2 In the event COMPANY terminates this work order, in whole or in part, on the occurrence of any event of default, COMPANY reserves the right to engage any other subcontractor or agency to complete the work or any part thereof, and in addition to any other right COMPANY may have under this work order or in law including without limitation the right to penalize for delay under clause 15.0 of this work order, the contractor shall be liable to COMPANY for any additional costs that may be incurred by COMPANY for the execution of the Work.

18. Risk & Cost

18.1 If the Contractor of fails to execute the work as per specification / as per the direction of Engineer's In-change within the scheduled period and even after the extended period, the contract shall got cancel and company reserves the right to get the work executed from any other source at the Risk & Cost of the Contractor. The Extra Expenditure so incurred shall be debited to the Contractor.

19. Price Basis

19.1 Bidder to quote their prices on Landed Cost Basis and separate price for each item.

19.2 FIRM prices for supply to BRPL Delhi/New Delhi stores inclusive of packing, forwarding, loading at manufacturer’s premises, payment of all taxes, GST, Freight, any other local charges etc.

19.3 The above supply prices shall also include unloading at BRPL Delhi/New Delhi stores/site.

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

20. Terms of Payment and Billing

Contract Part –A (Hardware)

Milestone Number	Milestone Description
MS-1 (Mobilization Advance)	**10%** of contract value for Part-A of Pricing schedule shall be released as mobilization advance subject to fulfillment of following pre-requisites: i) Submission of CPBG for 10% of Total contract value. ii) Submission of ABG of equivalent amount valid till 30 days after completion time iii) Acceptance of purchase order iv) Submission of detailed project schedule
MS-2 (Design Phase)	**5%** of contract value for Part-A of Pricing schedule shall be released subject to fulfillment of following pre-requisites: i) Network survey, planning & design document, including ii) Submission and approval of detailed engineering documents, iii) Canopy architecture and design assumptions, iv) Templates for different applications, v) Design Documentation for Hardware & Software System for Control centers, design reliability vi) List of Deliverables - All plan including Project Plan, Test Plan, UAT Plan, Manpower Plan etc.
MS-3 (Hardware Delivery and Installation)	**30%** of contract value for Part-A of Pricing schedule shall be released on pro rata basis, subject to fulfillment of following pre-requisites: i) Delivery & Installation of hardware required for control centre set-up , ii) Communication canopy set-up for completion of implementation.
MS-4 (Integration and Commissioning)	**20 %** of contract value for Part-A of Pricing schedule shall be released on pro rata basis subject to fulfillment of following pre-requisites: i) Software- Baseline system and application software installation, testing, commissioning & Software Test Plan Software Test Execution ii) Hardware- Complete field activity for canopy, installation, testing, commissioning and successful communication with software. iii) Integrate meters with different OEM's (minimum 50000 nos.) and for different applications and resolution of issues to BRPL satisfactions. Review and Signoff between successful bidder and BRPL.

MS-5 (Operational Acceptance Testing)	**25%** of contract value for Part-A shall be released on completion of communication points on Pro rata basis (Minimum 50,000 points) subjected to fulfillment of following conditions 1. Closure of all exceptions including Availability of Network diagnostic application, Applications. 2. Fulfillment of SLA for 3 consecutive months, 3. Approval of Operator's User's Manual, 4. Documentation & functional training, 5. Delivery of spares, maintenance & testing equipment, 6. Integrate all endpoints of phase.
MS-6 (10% Retention Amount)	**10%** Retention for Part-A shall be released after 1 year of successful post Go live of the communication end points established (Minimum 50,000 points)

Contract Part B (NIC Card)

Milestone Number	Milestone Description
MS-1 (Delivery of NIC Card & Successful Integration with meters/devices)	**90%** cost of NIC card on delivery and successful integration basis (Pro rata on Multiple of 10 K lot)
MS-2 (10% Retention Amount)	**10%** Retention for Part-B shall be released after 1 year of successful post Go live/Sign off of the communication end points established (Minimum 50,000 points)

Contract C (Software)

Milestone Number	Milestone Description
MS-1 (Mobilization Advance)	**10%** of contract value for Part-C of Pricing schedule shall be released as mobilization advance subject to fulfillment of following pre-requisites: i) Submission of CPBG for 10% of Total contract value. ii) Submission of ABG of equivalent amount valid till 30 days after completion time iii)Acceptance of purchase order iv) Submission of detailed project schedule
MS-2 (Design Phase)	**5%** of contract value for Part-C of Pricing schedule shall be released subject to fulfillment of following pre-requisites: i) Submission and approval of detailed engineering documents, ii) Architecture and design documents, iii) Flowchart for processes iv) Templates for different applications, modules v) System level design documents and reliability i) List of Deliverables - All plan including Project Plan, Test Plan, UAT Plan, Manpower Plan etc.
MS-3 (Software Configuration & Installation)	**10%** of contract value for Part-C of Pricing schedule shall be released subject to fulfillment of following pre-requisites: i) Configuration and Installation of Software, ii) Third party licenses, iii) Tools required for control centre set-up, iv) Communication canopy set-up. v) Test Data for operational acceptance test
MS-5 (Integration and Commissioning)	**20 %** of contract value for Part-C of Pricing schedule shall be released subject to fulfillment of following pre-requisites: i) Software- Baseline system and application software installation, testing, commissioning & Software Test Plan Software Test Execution ii) Hardware- Complete field activity for canopy, installation, testing, commissioning and successful communication with software. iii) Integrate meters with different OEM's (minimum 50000 nos.) and for different applications and resolution of issues to BRPL satisfactions. Review and Signoff between successful bidder and BRPL.

MS-6 (Operational Acceptance Testing)	**10%** of Part-C shall be released on completion of 50,000 points, i.e. i. Closure of all exceptions including Availability of Network diagnostic application, Applications. ii. Fulfillment of SLA for 3 consecutive months, iii. Approval of Operator's User's Manual, iv. Documentation & functional training, v. Delivery of spares, maintenance & testing equipment, vi. Integrate all endpoints of phase.
MS-7 (Integration with MDM, Analytics and Other Applications)	**20%** of Part-C shall be released after successful integration, testing, training, documentation and resolution of issues during integrations and successful sign off.
MS-8 (Roll Out) (2,50,000 end points)	**15%** payment of Part-C (Software) shall be released after successful configuration and integration of balance 2.5 lacs end points, other DA points etc. or 3 years, whichever is earlier.
MS-9 (10% Retention Amount)	**10%** Retention for Part-C shall be released after 1 year of successful post Go live of all 3 lacs end points.

Note: Milestone payments shall be made in full upon the successful completion of the milestone. In the event that only a minor portion of a milestone is not fully completed, invoicing for partial payment of the milestone will be entirely to BRPL discretion. Payment terms shall be within 45 days from receipt of invoice supported by BRPL certification of completion of milestone. Payments against part D shall be made on quarterly basis in arrears.

21. Price Validity

21.1 All bids submitted shall remain valid, firm and subject to unconditional acceptance by BRPL Delhi for 180 days from the due date of submission & subsequent corrigendum/amendment/extension of due date of submission. For awarded suppliers/contractors, the prices shall remain valid and firm till contract completion.

22. Performance Guarantee

22.1 Bank guarantee shall be drawn in favour of "BSES Rajdhani Power Ltd" as applicable. The performance Bank guarantee shall be in the format as specified by BRPL.

22.2 Contract performance bank guarantee of total **10%** of the contract price shall be submitted within 15 days of award of contract with the validity till defect liability period (i.e. 7 Years after final acceptance of work) plus 3 months claim period.

23. Forfeiture

23.1 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 BRPL 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.

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

24. Release

24.1 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.

25. Warranty/Defects Liability Period

25.1 Offered solution should be with onsite warranty and support for **7 years.**

25.2 The Bidder warrants that the Work, and all parts thereof, shall be of the kind and quality described in this Agreement, shall perform in the manner specified, and shall be fit for the purpose for which it is supplied.

25.3 The Supplier shall correct, without delay and at its own expense, any portion of the work that does not meet the warranty and that is discovered within the warranty period by correcting the defective portion of the Work, including any required correction in defective design, errors, omissions, or changes in documentation, or by providing a non-defective replacement on BRPL premises within 3 days of notification of the problem.

25.4 The costs of replacement shall be at the Supplier's expense and shall include all shipping costs, duties, fees, and taxes, both to and from the Supplier's facility, and the appropriate technical advice and direction for removal of the defect and installation of the corrected Work including On-Site Services as required.

25.5 In the event the System or any portion thereof, is down, the Supplier will begin the dispatch process of appropriate personnel as specified.

25.6 The Supplier’s liability hereunder shall be limited to adjusting, repairing, or replacing the defective article(s) and providing technical support and direction in the correction of the Work.

25.7 In case of replacement of the equipment on or after 6 year of the warranty period, a new warranty period shall apply; such new warranty period shall expire on the date 12 months from the date of such replacement, repair, or modification.

25.8 BRPL assistance to the Supplier in installing a correction shall not relieve the Supplier of his responsibilities such as documentation and warranty.

25.9 If the Supplier shall fail to correct any defect within a reasonable time, BRPL shall have the right to employ others to do so. The Supplier shall be liable for all costs and expenses thereby incurred by BRPL.

25.10 The Supplier shall furnish BRPL with a Deficiency incident report upon completion of each visit by such Staff and upon resolution of each inquiry. BRPL will maintain a log at BRPL facility as a place for these reports to reside. The report shall include, as a minimum, the following:

i. Date and time notified
ii. Date and time of arrival or inquiry response
iii. Time spent for resolution of Deficiencies
iv. Description of Deficiency
v. Description of Deficiency resolution

25.11 The Supplier shall provide to BRPL, within 15 Days of the end of each calendar quarter, a list and description of all potential or actual problems, bugs, errors and Deficiencies known by the Supplier to be in any customer's copy of the Software version used by BRPL, along with a schedule for resolution thereof. Deficiencies, problems, errors and bugs causing crashes or corruption of the data will be reported by Supplier to BRPL within one working-day of their becoming known to Bidder.

25.12 Nothing herein shall be deemed to restrict the obligations of the Supplier under the indemnity provision of the Agreement.

25.13 During the Warranty period, BRPL may make changes to databases, displays, and reports as necessary to meet BRPL operational needs. BRPL shall be under no obligation to inform the Supplier of such changes.

25.14 Any changes required to maintain uptime shall be in scope of vendor

25.15 After completion of warranty, BRPL reserves the right to award AMC contract on yearly basis. The scope of work will remain same as in warranty

25.16 The following Post warranty maintenance services shall be provided for all hardware & software's under this contract for the AMC contract but not limited to:

i. New features available with the upgrade & release or version of the upgraded software
ii. Bidder will be responsible to get Data from Meter to HES whenever not available
iii. Co-ordination with component supplier for Repair/ replacement of defective equipment's/software

iv. Replacement & Configuration of the replaced hardware/software, quarterly periodic routine checking as part of a preventive maintenance program which would include checking of functionality of hardware software and RF coverage without any cost to BRPL.

v. Database sizing & hardware up gradation to meet endpoints growth.

vi. Bidder shall provide on-call services to meet SLA..

25.17 The Bidder shall prepare and maintain, all maintenance records, minutes of meeting, equipment breakdown reports, daily/weekly/monthly fault logs, defects list, Preventive Maintenance reports, tools serviceability status report, monthly maintenance report.

The following warranty maintenance services as a minimum shall be provided for all software's under this contract:

25.18 A subscription to change notification services of the software suppliers. The service shall include transmission of service bulletins and notices of the availability of corrections, modifications, upgrades, revisions, patch and new releases.

25.19 The software up gradation due to new release as applicable.

25.20 Problems with the previous releases corrected by the upgrade

25.21 New features available with the upgrade.

25.22 Migration to new platform due to end of life of any third-party software, licenses etc.

25.23 As part of this service, the Supplier shall maintain and periodically publish a list of the current release of their standard products and the compatible releases of all software supplied by Subcontractors.

25.24 Subscriptions to the software upgrade services of the software suppliers. The service shall include the change notification service as described above, as well as a copy of the new software, appropriate licenses for the new software, installation instructions, and a reasonable amount of support for the installation of the upgrade.

25.25 A contract for upgrade to be performed by the software supplier. This contract shall include the software upgrade service described above, plus on-site installation service to be provided by the software supplier.

25.26 **Software Minimum Support Period**

25.26.1 The Supplier shall guarantee the availability of upgrades, technical support for all System software, and announcements of software and hardware releases applicable to the system under warranty period.

25.26.2 The minimum support period **Seven (7) years** after operational acceptance test.

25.26.3 The Supplier and the System software suppliers shall provide to BRPL a minimum of two year's advance notice of their intent to terminate such support and mitigation plan.

25.26.4 The SLAs, as defined in the document, shall be applicable during entire warranty period and all network elements supplied during warranty and post warranty period should be backward compatible.

26. Return, Replacement or Substitution

BRPL shall give Supplier notice of any defective Commodity promptly after becoming aware thereof. BRPL may in its discretion elect to return defective Commodities to Supplier for replacement, free of charge to BRPL, or may reject such Commodities and purchase the same or similar Commodities from any third party. In the latter case BRPL 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. BRPL may set off such costs against any amounts payable by BRPL to Supplier. Supplier shall reimburse BRPL for the amount, if any, by which the price of a substitute Commodity exceeds the price for such Commodity as quoted in the Bid.

27. Effective Date of Commencement of Contract

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

28. Time – The Essence of Contract

The time and the date of completion of the work 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.

29. Contract Commencement date

The date issue /award of contract shall be the effective date of contract or contract commencement date.

30. Contract Completion date

The date of expiry of Guarantee Period shall be deemed as the Contract Completion date.

31. Contract Period /Time

The period from Contract Commencement Date to Contract Completion Date shall be deemed as the Contract Period /Time.

32. Contract Execution Completion Date

The stipulated date for completing the execution of all items in the schedule of quantities (Supply, Service and or both as applicable) shall be deemed as the Contract Execution Completion Date.

33. Contract Execution Period/Time

The Period from Contract Commencement Date to Contract Execution Completion Date shall be the Contract Execution Period/Time. Timely Completion of Works/Timely Delivery of Materials is the essence of the contract. The period from effective date of contract to the date stipulated for completion of delivery of all items/completion of all the works/services, as per schedule of quantities of the contract is defined as contract execution completion time. The Delivery of Materials /The Completion of Works, as applicable, should be achieved in all respects as per schedules of quantities and all the terms and conditions of the contract, in the contract execution time.

Any revision/amendment in the originally stipulated contract execution time has to be approved by authorized representative of BRPL.

34. Laws and Jurisdiction of Contract

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

34.2 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

35. Events of Default

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

i. Supplier fails or refuses to pay any amounts due under the Contract;

ii. 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

iii. 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;

iv. 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 BRPL.

36. Consequences of Default

36.1 If an Event of Default shall occur and be continuing, BRPL may forthwith terminate the Contract by written notice.

36.2 In the event of an Event of Default, BRPL 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 ` 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 BRPL may incur as a result of Supplier's default.

37. Liquidated Damages

37.1 If supply of items / equipment is delayed beyond the supply schedule as stipulated in LOI/PO, then the Supplier shall be liable to pay the Purchaser for delay a sum of 0.5% (half percent) of the basic (ex-works) price for every week of delay or part thereof for individual mile stone deliveries.

37.2 The total amount for delay under the contract will be subject to a maximum of ten percent (10%) of the total contract value.

37.3 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.

38. Penalty due to Non Compliance of SLA

Non compliance of SLAs in terms of both no. of days and percentage of data collection for provisioned meters attracts penalty. This penalty shall in terms of percentage of monthly payable O&M or AMC charges.

38.1 Penalty due to Non compliance of No. of Days

Non compliance days of SLA for daily schedule	Penalty Percentage
0 – 3	NIL
4 – 7	2%
8 – 15	4%
16 – 20	8%
> 21	10%

38.2 Penalty due to Non compliance of Percentage of Data Collected

Percentage (%) of Data collection for	Penalty Percentage

monthly data collection	
> 99.90 %	NIL
99.00 % – 99.89 %	2%
98.00 % – 98.99 %	4%
97.00 % – 97.99 %	6%
96.00 % – 96.99 %	8%
< 95.99 %	10%

38.3 Penalty of Rs 100/NIC/Day for non-communication for more than 7 days continuous.

38.4 One endpoint considered for a penalty in one parameter will not considered for penalty for other parameters.

39. Statutory Variation in Taxes and Duties

The total order value shall remain **FIRM** within stipulated delivery period and shall not be adjusted on account of any price increase/variations in commodities & raw materials. However Statutory Taxes, duties and Levies imposed by Competent Authorities by way of fresh notification(s) within the stipulated delivery period shall be borne by BRPL on submission of necessary documents claiming such variation. The variation will be applicable only on such value wherever price breakup of same is submitted by vendor/available in PO/WO

40. Intellectual Property Rights

If, in the course of performance of its functions and duties as envisaged by the scope of the present GCC, the Bidder acquires or develops, any unique knowledge or information which would be covered, or, is likely to be covered within the definition of a trademark, copyright, patent, business secret, geographical indication or any other form of intellectual property right, it shall be obliged, under the terms of this present GCC, to share such knowledge or information with the BRPL. All rights, with respect to, or arising from such intellectual property, as afore mentioned, shall solely vest in BRPL.

Moreover, the Bidder undertakes not to breach any intellectual property right vesting in a third party/parties, whether by breach of statutory provision, passing off, or otherwise. In the event of any such breach, the Bidder shall be wholly liable to compensate, indemnify or make good any loss suffered by such third party/parties, or any compensation/damages arising from any legal proceeding/s, or otherwise. No liability of BRPL shall arise in this respect, and any costs, damages, expenses, compensation payable by BRPL in this regard to a third party/parties, arising from a legal proceeding/s or otherwise, shall be recoverable from the Bidder.

41. Force Majeure

41.1 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.

41.2 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.

41.3 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 within 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.

41.4 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.

41.5 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.

41.6 **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.

41.7 The Purchaser may terminate the contract after giving 7(seven) days notice if any of following occurs:

i. Contractor fails to complete execution of works within the approved schedule of works, terms and conditions

ii. In case the contractor commits any Act of Insolvency, or adjudged insolvent

iii. Has abandoned the contract

iv. Has failed to commence work or has suspended the progress of works

v. Has failed to proceed the works with due diligence and failed to make such due progress

41.8 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.

41.9 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.

41.10 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."

42. Transfer and Sub-Letting

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.

43. Recoveries

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.

44. Waiver

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

45. Indemnification

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.

46. Documentation

The Bidder's shall procure all equipment from BRPL approved sources as per attached specifications. The Bidder's shall submit 5 copies of Material/Type Test Certificates, O&M Manuals, and Approved & As-built drawings. The Bidder's shall ensure for the strict compliance to the specifications and Field Quality Procedures issued by BRPL Engineer in-charge.

47. Commissioning Spares

Commissioning Spares shall be deemed to be included in the quoted prices.

BSES Rajdhani Power Limited

Section – II: Price Format

1. Price Format

SN	Line Item	Qty	UoM	Unit Rate (Rs)	App. Taxes	Total All Inclusive Value (Rs)
A	**Hardware (Part A)**					
1	**Supply and installation of network components for implementation of Communication canopy in BRPL Licensed area including warranty for 7 years (Price break up of each network equipment shall be shared separately)**					
i)	Network Components for 50,000* end points	1	LOT			
ii)	Network Components for Another 2,50,000 *end points	1	LOT			
B	**NIC card (Part B)**					
2	**NIC card price with 7 years of warranty including integration with smart meter**					
i)	Per unit cost for RF only	2,75,000	Nos.			
ii)	Per unit cost for RF+Cellular	25,000	Nos.			
C	**Software (Part C)**					
3	**Software Licensing Fees including warranty for 7 years (Price break up of each software component shall be shared separately) (detail the pricing regime which could include initial price) Note: - DA, DR, solar and meters data points are considered. All licenses are perpetual and software shall be scalable to 3 million end points.**					
i)	Base software price & License fee for **3,00,000** end points	1	LOT			
4	**Third party software pricing (if any) including warranty for 7 years (Price break up of each software component shall be shared separately)**					
i)	Base software price & License fee for **3,00,000** end points	1	LOT			
D	**System Operation & Maintenance (Part D)**					
5	**Charges per year for 24x7 Network management services post Operational Acceptance Test (Appendix X)**					

i)	For 50,000 end points	1	Yearly Basis			
ii)	For 3,00,000 end points	1	Yearly Basis			
6	**AMC charges per year post completion of warranty period excluding Field Management Service**					
i)	For 50,000 end points	1	Yearly Basis			
ii)	For 3,00,000 end points	1	Yearly Basis			

NOTE:

- The quantities as mentioned above are for evaluation purposes only. The quantities during execution of project may vary and Payment shall be made as per actual basis.
- Stage -1 includes installation of 50,000 nos. of end points & Stage -2 includes 2, 50,000 nos. of end points.
- *Bidder needs to submit Unpriced BoQ along with the bid for list of network components for Part A. However, Successful Bidder shall submit price breakup of each item before award of the contract.
- All the quoted price for Part-A,B&C shall be inclusive of 7 year warranty period after successful handing over of the system
- BRPL reserves the right to procure IT hardware/server etc. on its own.
- The bidder shall quote prices strictly in the above format. Failing to do so, bids are liable to be rejected.
- The bidder must fill each and every column of the above format. Mentioning “extra/inclusive” in any of the column may lead for rejection of the price bid.
- No cutting/ overwriting in the prices is permissible.
- The prices shall be FOR BRPL Locations.
- Bidder shall bear charges on communication (For e.g. SIM etc.) of the implemented solution till warranty period for all executed end points wherever applicable.

2. Additional Price Format

To have indicative Cost of Ownership, Bidder needs to provide cost of following items

SN	Line Item	Qty	UoM	Unit Rate (Rs)	App. Taxes	Total All Inclusive Value (Rs)
1	**Backhaul charges for the canopy & NIC**					
i)	SIM charges per point	1				
2	**IT hardware-Main DC (including server, switches, storage etc.) & software at control centers (main control center) designed for 30,00,000 endpoints including warranty for 7 years. (Price break up and specifications of each hardware component shall be shared separately)**					
i)	IT Hardware Price for 3,00,000 end points	1	LOT			
ii)	IT Hardware Price for 30,00,000 end points	1	LOT			
3	**IT hardware-Backup (including server, switches, storage etc.) & software at control centers (back up control center) designed for 30,00,000 endpoints including warranty for 7 years. (Price break up of each hardware component shall be shared separately)**					
i)	IT Hardware Price for 3,00,000 end points	1	LOT			
ii)	IT Hardware Price for 30,00,000 end points	1	LOT			
4	**Diagnostic & Maintenance tools (Software & hardware for necessary operational activities)**					
i)	For 50,000 end points	1	LOT			
ii)	Another 2,50,000 end points	1	LOT			
iii)	Incremental of 100,000 end points	30	LOT			

Section – III: Vendor Code of Conduct

Purchaser is committed to conducting its business in an ethical, legal and socially responsible manner. To encourage compliance with all legal requirements and ethical business practices, Purchaser has established this Vendor Code of Conduct (the "Code") for Purchaser's Vendors. For the purposes of this document, "Vendor" means any company, corporation or other entity that sells, or seeks to sell goods or services, to Purchaser, including the Vendor's employees, agents and other representatives. Fundamental to adopting the Code is the understanding that a business, in all of its activities, must operate in full compliance with the laws, rules and regulations of the countries in which it operates. This Code encourages Vendors to go beyond legal compliance, drawing upon internationally recognized standards, in order to advance social and environmental responsibility.

1. Labour and Human Rights

Vendors must uphold the human rights of workers, and treat them with dignity and respect as understood by the international community.

i. Fair Treatment - Vendors must be committed to a workplace free of harassment. Vendors shall not threaten workers with or subject them to harsh or inhumane treatment, including sexual harassment, sexual abuse, corporal punishment, mental coercion, physical coercion, verbal abuse or unreasonable restrictions on entering or exiting company provided facilities.

ii. Antidiscrimination - Vendors shall not discriminate against any worker based on race, colour, age, gender, sexual orientation, ethnicity, disability, religion, political affiliation, union membership, national origin, or marital status in hiring and employment practices such as applications for employment, promotions, rewards, access to training, job assignments, wages, benefits, discipline, and termination. Vendors shall not require a pregnancy test or discriminate against pregnant workers except where required by applicable laws or regulations or prudent for workplace safety. In addition, Vendors shall not require workers or potential workers to undergo medical tests that could be used in a discriminatory way except where required by applicable law or regulation or prudent for workplace safety.

iii. Freely Chosen Employment - Forced, bonded or indentured labour or involuntary prison labour is not to be used. All work will be voluntary, and workers should be free to leave upon reasonable notice. Workers shall not be required to hand over government-issued identification, passports or work permits as a condition of employment.

iv. Prevention of Under Age Labour - Child labour is strictly prohibited. Vendors shall not employ children. The minimum age for employment or work shall be 15 years of age, the minimum age for employment in that country, or the age for completing compulsory education in that country, whichever is higher. This Code does not prohibit participation in legitimate workplace apprenticeship programs that are consistent with Article 6 of ILO Minimum Age Convention No. 138 or light work consistent with Article 7 of ILO Minimum Age Convention No. 138.

v. Juvenile Labour - Vendors may employ juveniles who are older than the applicable legal minimum age for employment but are younger than 18 years of age, provided they do not perform work likely to jeopardize their heath, safety, or morals, consistent with ILO Minimum Age Convention No. 138.

vi. Minimum Wages - Compensation paid to workers shall comply with all applicable wage laws, including those relating to minimum wages, overtime hours and legally mandated benefits. Any disciplinary wage deductions are to conform to local law. The basis on which workers are being paid is to be clearly conveyed to them in a timely manner.

vii. Working Hours - Studies of good manufacturing practices clearly link worker strain to reduced productivity, increased turnover and increased injury and illness. Work weeks are not to exceed the maximum set by local law. Further, a work week should not be more than 60 hours per week, including overtime, except in emergency or unusual situations. Workers should be allowed at least one day off per seven-day week.

viii. Freedom of Association - Open communication and direct engagement between workers and management are the most effective ways to resolve workplace and compensation issues. Vendors are to respect the rights of workers to associate freely and to communicate openly with management regarding working conditions without fear of reprisal, intimidation or harassment. Workers' rights to join labour unions, seek representation and or join worker's councils in accordance with local laws should be acknowledged.

2. Health and Safety

Vendors must recognize that in addition to minimizing the incidence of work-related injury and illness, a safe and healthy work environment enhances the quality of products and services, consistency of production and worker retention and morale. Vendors must also recognize that ongoing worker input and education is essential to identifying and solving health and safety issues in the workplace.

The health and safety standards are:

i. Occupational Injury and Illness - Procedures and systems are to be in place to prevent, manage, track and report occupational injury and illness, including provisions to: a) encourage worker reporting; b) classify and record injury and illness cases; c) provide

necessary medical treatment; d) investigate cases and implement corrective actions to eliminate their causes; and e) facilitate return of workers to work.

ii. Emergency Preparedness - Emergency situations and events are to be identified and assessed, and their impact minimized by implementing emergency plans and response procedures, including: emergency reporting, employee notification and evacuation procedures, worker training and drills, appropriate fire detection and suppression equipment, adequate exit facilities and recovery plans.

iii. Occupational Safety - Worker exposure to potential safety hazards (e.g., electrical and other energy sources, fire, vehicles, and fall hazards) are to be controlled through proper design, engineering and administrative controls, preventative maintenance and safe work procedures (including lockout/tagout), and ongoing safety training. Where hazards cannot be adequately controlled by these means, workers are to be provided with appropriate, well-maintained, personal protective equipment. Workers shall not be disciplined for raising safety concerns.

iv. Machine Safeguarding - Production and other machinery is to be evaluated for safety hazards. Physical guards, interlocks and barriers are to be provided and properly maintained where machinery presents an injury hazard to workers.

v. Industrial Hygiene - Worker exposure to chemical, biological and physical agents is to be identified, evaluated, and controlled. Engineering or administrative controls must be used to control overexposures. When hazards cannot be adequately controlled by such means, worker health is to be protected by appropriate personal protective equipment programs.

vi. Sanitation, Food, and Housing - Workers are to be provided with ready access to clean toilet facilities, potable water and sanitary food preparation, storage, and eating facilities. Worker dormitories provided by the Participant or a labour agent are to be maintained clean and safe, and provided with appropriate emergency egress, hot water for bathing and showering, and adequate heat and ventilation and reasonable personal space along with reasonable entry and exit privileges.

vii. Physically Demanding Work - Worker exposure to the hazards of physically demanding tasks, including manual material handling and heavy or repetitive lifting, prolonged standing and highly repetitive or forceful assembly tasks is to be identified, evaluated and controlled.

3. Environmental

Vendors should recognize that environmental responsibility is integral to producing world class products. In manufacturing operations, adverse effects on the environment and natural resources are to be minimized while safeguarding the health and safety of the public.

The environmental standards are:

i. Product Content Restrictions - Vendors are to adhere to applicable laws and regulations regarding prohibition or restriction of specific substances including labeling laws and

regulations for recycling and disposal. In addition, Vendors are to adhere to all environmental requirements specified by Purchaser.

ii. Chemical and Hazardous Materials -Chemical and other materials posing a hazard if released to the environment are to be identified and managed to ensure their safe handling, movement, storage, recycling or reuse and disposal.

iii. Air Emissions - Air emissions of volatile organic chemicals, aerosols, corrosives, particulates, ozone depleting chemicals and combustion by-products generated from operations are to be characterized, monitored, controlled and treated as required prior to discharge.

iv. Pollution Prevention and Resource Reduction -Waste of all types, including water and energy, are to be reduced or eliminated at the source or by practices such as modifying production, maintenance and facility processes, materials substitution, conservation, recycling and re-using materials.

v. Wastewater and Solid Waste - Wastewater and solid waste generated from operations, industrial processes and sanitation facilities are to be monitored, controlled and treated as required prior to discharge or disposal.

vi. Environmental Permits and Reporting - All required environmental permits (e.g. discharge monitoring) and registrations are to be obtained, maintained and kept current and their operational and reporting requirements are to be followed.

4. Ethics

Vendors must be committed to the highest standards of ethical conduct when dealing with workers, Vendors, and customers.

i. Corruption, Extortion, or Embezzlement - Corruption, extortion, and embezzlement, in any form, are strictly prohibited. Vendors shall not engage in corruption, extortion or embezzlement in any form and violations of this prohibition may result in immediate termination as an Vendor and in legal action.

ii. Disclosure of Information - Vendors must disclose information regarding its business activities, structure, financial situation, and performance in accordance with applicable laws and regulations and prevailing industry practices.

iii. No Improper Advantage - Vendors shall not offer or accept bribes or other means of obtaining undue or improper advantage.

iv. Fair Business, Advertising, and Competition - Vendors must uphold fair business standards in advertising, sales, and competition.

v. Business Integrity - The highest standards of integrity are to be expected in all business interactions. Participants shall prohibit any and all forms of corruption, extortion and embezzlement. Monitoring and enforcement procedures shall be implemented to ensure conformance.

vi. Community Engagement - Vendors are encouraged to engage the community to help foster social and economic development and to contribute to the sustainability of the communities in which they operate.

vii. Protection of Intellectual Property - Vendors must respect intellectual property rights; safeguard customer information; and transfer of technology and know-how must be done in a manner that protects intellectual property rights.

5. Management System

Vendors shall adopt or establish a management system whose scope is related to the content of this Code. The management system shall be designed to ensure (a) compliance with applicable laws, regulations and customer requirements related to the Vendors' operations and products; (b) conformance with this Code; and (c) identification and mitigation of operational risks related to this Code. It should also facilitate continual improvement.

The management system should contain the following elements:

i. Company Commitment - Corporate social and environmental responsibility statements affirming Vendor's commitment to compliance and continual improvement.

ii. Management Accountability and Responsibility - Clearly identified company representative[s] responsible for ensuring implementation and periodic review of the status of the management systems.

iii. Legal and Customer Requirements - Identification, monitoring and understanding of applicable laws, regulations and customer requirements.

iv. Risk Assessment and Risk Management - Process to identify the environmental, health and safety and labour practice risks associated with Vendor's operations. Determination of the relative significance for each risk and implementation of appropriate procedural and physical controls to ensure regulatory compliance to control the identified risks.

v. Performance Objectives with Implementation Plan and Measures - Areas to be included in a risk assessment for health and safety are warehouse and storage facilities, plant/facilities support equipment, laboratories and test areas, sanitation facilities (bathrooms), kitchen/cafeteria and worker housing /dormitories. Written standards, performance objectives, targets and implementation plans including a periodic assessment of Vendor's performance against those objectives.

vi. Training - Programs for training managers and workers to implement Vendor's policies, procedures and improvement objectives.

vii. Communication - Process for communicating clear and accurate information about Vendor's performance, practices and expectations to workers, Vendors and customers.

viii. Worker Feedback and Participation - Ongoing processes to assess employees' understanding of and obtain feedback on practices and conditions covered by this Code and to foster continuous improvement.

ix. Audits and Assessments - Periodic self-evaluations to ensure conformity to legal and regulatory requirements, the content of the Code and customer contractual requirements related to social and environmental responsibility.

x. Corrective Action Process - Process for timely correction of deficiencies identified by internal or external assessments, inspections, investigations and reviews.

xi. Documentation and Records - Creation of documents and records to ensure regulatory compliance and conformity to company requirements along with appropriate confidentiality to protect privacy.

The Code is modelled on and contains language from the Recognized standards such as International Labour Organization Standards (ILO), Universal Declaration of Human Rights (UDHR), United Nations Convention against Corruption, and the Ethical Trading Initiative (ETI) were used as references in preparing this Code and may be useful sources of additional information.

Annexure-A: Approach & Methodology

Approach and Methodology

Bidder to provide supporting documentations (OEM / product with version number/ customer reference) of questionnaire given below.

SN	Question
1.	Please describe RF communications canopy architecture for the proposed applications mentioned in the scope of RFQ, starting from the head end system and ending with the different endpoint. Please include standards used in this communication architecture.
2.	Please provide information on the RF and EMF emissions and the impact of the AMI technology on the public.
3.	Please provide communications deployment guidelines for the proposed system based on specific system restrictions, requirements, and limitations. Also provide guidelines for number and location of collector and/or repeater devices.
4.	Please describe the overall mesh recommended operating parameters including any limitations on the number of hops for network efficiency.
5.	If the system is deployed according to recommendations for collector locations, optimum hops, optimum poll rates, etc., what is the expected data throughput of the deployed network? Please demonstrate throughput claimed at field/FAT.
6.	Describe how the utility will ensure that the number and location of the network equipment is sufficient to meet the performance and coverage requirements and additional equipment will not be required to achieve the required level of performance.
7.	Describe what tools for troubleshooting, reports and capabilities are included as part of solution to support the management, testing, verification, configuration and troubleshooting of the communications infrastructure?
8.	Is there any current or pending litigation with respect to the proposed communication technology? This litigation could be with respect to ownership rights to the technology or with respect to alleged harmful effects of the technology. Please describe in detail any such litigations and the impact to BRPL. Bidder to provide a certificate stating that no litigation is pending.
9.	Describe the upgrade and maintenance process and capabilities for the communications network. How is firmware updated in the communication network equipment? Can components of the network equipment be upgraded in the field?
10.	**Please describe Interference Management:** The system shall not cause any harmful interference to other systems. The bidder shall resolve any impact with

SN	Question
	other parties as needed.
11.	**Radiation Exposure:** The AMI supplier shall ensure that their devices and installations are within the acceptable human exposure limits per international standards/WPC norms and as required for the utility service territory. Please describe

Annexure-B: HES

Head End System

Bidder to provide supporting documentations (OEM / product with version number/ customer reference) of questionnaire given below.

SN	Question
1.	Please provide architectural diagram of the proposed solution.
2.	Please provide high level data architecture and data model.
3.	Which operating system does the HES require? Please provide list all supported operating systems along with versions
4.	Which database does the HES use? Please provide list all databases and versions supported
5.	Does the bidder solution utilize any third party components as part of the HES / AMI solution? If yes, please list components. Bidder to provide documentary proof of support of third party components.
6.	Bidder solution should utilize cyber security standards, methods, tools, or practices to maintain system integrity? Bidder to submit list of same.
7.	Is the database open to direct access by other applications? Can the database and data model be easily extended? Please provide details.
8.	Does the proposed solution have role-based access controls (RBAC) for different applications? Are these access controls extended to the various software modules? What levels of access are available in the system? Please provide details.
9.	The proposed head end solution support the ability to ping any end point and network element. What information is retrieved during this ping? Please provide details.
10.	How does the proposed HES system support monitoring of distribution automation devices such as fault current indicators, Solar devices, switches, etc.? Please provide one reference where this capability is in use by a utility customer.
11.	For the monitoring and control of distribution devices, please describe how the proposed system interfaces with other systems like SCADA. What setup or configuration is required on the Head End System for each device? Please provide details.
12.	Describe integration readiness of the proposed system. Are all interfaces web-service enabled? Are all interfaces compatible with existing standards (e.g. IEC 61968-9, Multispeak)? Are there any batch interfaces? Is custom development of interfaces required?
13.	Does the head end system support the management of firmware versions across the entire deployment? Is the head end system negatively impacted by multiple firmware versions in the field? Does the head end system detect and resolve firmware mismatches or endpoints

SN	Question
	which require updates to firmware? Please describe the management capability.
14.	Does the head end system manage retries for interval data in the event that some intervals are missed? If so, please describe the missing data management capabilities of the solution. If not, please describe the expectations of other systems (e.g. MDM) to ensure that all available data has been collected.
15.	Please provide a complete list and description of the events or real time alerts supported by the system. Include those that are metering specific as well as any that are more generic in nature.
16.	Please provide a complete list and description of the interfaces and APIs available with the Head End System.
17.	Please provide a complete list and description of all reports and analytics provided as standard capabilities with the Head End System.
18.	How is system version managed and maintained? Please describe your minor and major patch and release cycles.
19.	How is system availability and SLA compliance monitored and managed? Please provide details. Please describe typical performance level of your solution in terms of processing throughputs and response times.
20.	Please describe disaster recovery and business continuity procedures of your solution.
21.	Please describe Clock Synchronization mechanism of all end points and network elements with Head-End
22.	List all HES features that can be customized as per user requirements?
23.	Process of HES database synchronization and replication. Please provide details. Also describe redundancy mechanism of HES, RTO & RPO of HES and disaster recovery mechanism.

Annexure-C: Interfaces

Interfaces

Bidder to provide supporting documentations (OEM / product with version number/ customer reference) of questionnaire given below.

SN	Question
1.	Has the Bidder implemented integration with the MDM System?
2.	Has the Bidder implemented integration with SAP –R3 /ISU/CRM?
3.	Is there any implementation through SAP-PI, list the systems integrated through SAP-PI?
4.	Is this integration real-time, batch, or a combination of real-time and batch?
5.	Does the integration support the delivery of different type of meter data and alerts to the MDMS?
6.	Does the integration support on-request register reads?
7.	Does the integration support the delivery of any interval data to the MDMS?
8.	Does the integration support the remote reconfiguration of the meters, including change of interval length, change of number of channels, change of tariff (including TOU calendars), and change of alerts without manual interaction or intervention??
9.	List two utilities currently in operation with your AMI solution which is using the integration to the any enterprise level MDM system.
10.	Does the integration support the management, message initiation, and control of Programmable Communicating Thermostats and In Home Devices that are linked through the meter?
11.	Does the integration support the provisioning of AMI meters? Include one reference (for each of the indicated MDM) where this automated provisioning process is in production.
12.	Does the integration support the receipt of event logs and alarms? Are all alarms and events supported in the integration?
13.	Please provide any additional information believed to be pertinent with respect to the Bidder's overall MDM integration capabilities and functionality.
14.	HES should have the capability to integrate with SCADA and OMS system for power outage notifications.

15.	HES should have the capability to integrate with SMS and Email Gateways existing at BRPL to send various alarms and notifications.

Annexure-D: Security

Security

Bidder to provide supporting documentations (OEM / product with version number/ customer reference) of questionnaire given below.

SN	Question
1.	Describe how devices are securely identified in proposed solution (authenticated).
2.	Describe how proposed solution determines whether or not a device is allowed to be part of the system, and how it determines what functions a device is allowed to perform (authorized).
3.	If proposed devices use "keys" – secure identifiers for device or user authentication – what type of keys are used, how are they deployed into the proposed system? (Process of Key management)
4.	Are keys per-device/ per-user, per-application, or shared by all authenticated/authorized elements of the system? (Key management), Are keys one-time (static) or can they be changed (ephemeral)? (Key management)
5.	If ephemeral, how are they changed? Additionally, provide performance data on how long it takes to change per-device/per-user, per-application, or system-wide keys.
6.	Is data in proposed solution kept private (protected from unauthorized interception) during transmission over the network? If so, describe how this is achieved. (Data/channel privacy)
7.	Is data in proposed solution kept private at rest on the device as well as the back-office? If so, describe how this is achieved. (Data/channel privacy)
8.	Is data integrity (correctness) maintained during communications transfer and/or storage in proposed solution? That is, is data protected from corruption due to bit errors during communication, storage or memory corruption while at rest, etc.? If so, describe how this is achieved. (Data integrity)
9.	Describe any protections in proposed solution against compromise of new devices before they are deployed in the system. (Data/channel privacy) Individual device compromise (mitigation).
10.	Describe any device – level protections in proposed solution against "hacking" – compromise of individual devices after they are deployed in the system. (Data/channel privacy) Individual device compromise (mitigation).
11.	Describe any network-level protections in proposed solution against virus attacks – mass transmission of unauthorized commands, injection of malicious code ("viruses"), etc. **(Virus attack mitigation)**
12.	Describe any protections present in proposed solution against malicious use of

	authorized devices (specifically, field tools), due either to theft of such devices or insider malicious use.
13.	Describe any protections present in proposed solution to mitigate malicious operation of back office software, specifically by authorized but malicious insider operators. **(Insider threat mitigation – field tools)**
14.	Provide evidence of independent, 3rd party penetration testing performed against proposed solution.
15.	Proposed system should comply with cyber security standards as defined in NCIIPC or equivalent. Bidder to provide documentary proof.
16.	Does the system comply with any and all other security requirements not specifically listed here? Please list any additional compliance capabilities.
17.	Please describe the security standards and practices in place to safeguard customer information from the time it enters the system via the RF canopy until it is delivered to the head end system.
18.	Explanation of the provisions securing communication with the end point via the endpoint's local communications portal(s)
19.	Please describe your security architecture for the RF layer of the communications network. Where appropriate, describe standards and encryptions used.
20.	Who are your partners in the design or testing of your security architecture? Please describe the testing and certification of your security architecture.
21.	What security standards ensure privacy over the air interface?
22.	Does the end point –head end authentications occur across a secure communications channel? Is the endpoint - head end authentication symmetrical with each end being authenticated to the other?

Appendix - I

COMMERCIAL TERMS AND CONDITIONS

SN	Item Description	AS PER BRPL	BIDDER'S CONFIRMATION
1	Validity	180 days from the due date of submission or amended due date of submission	
2	Price basis	a) **Firm**, FOR Delhi store basis. Prices shall be inclusive of all taxes & duties, freight up to Delhi stores. b) Unloading at stores - in vendor's scope c) Transit insurance in BRPL scope	
3	Payment terms	As per Section –I (General Terms and Conditions) Clause – 20	
4	Completion time	Within 36 Months from the date of LOI / Award of Contract for Complete Operational Acceptance for Phase 1.	
5	Defect Liability period	7 Years after final acceptance of work	
6	Liquidated damages	0.5% of basic price for every week delay subject to maximum of 10% of total PO value of undelivered units.	
7	Performance Bank Guarantee	10% (Ten percent) of the Contract Price valid up to Defect Liability Period plus 3 months towards claim period.	

Appendix - II

BID FORM

To

Head of Department
Contracts & Material Deptt.
BSES Rajdhani Power Ltd
New Delhi 110019

Sir,

1. We understand that BRPL is desirous of execution of ……(Name of work)

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 indicated in Price Bid 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 undertake 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 180 days from the due date of bid submission & subsequent corrigendum/amendment/extension of due date of submission. 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 thereof, 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).....

Appendix - III

ACCEPTANCE FORM FOR PARTICIPATION IN REVERSE AUCTION EVENT

(To be signed & stamped by the bidder along-with bid)

BSES Rajdhani Power Ltd (BRPL) intends to use reverse auction through SAP-SRM tool as an integral part of entire tendering process. All techno-commercially qualified bidders shall participate in the reverse auction.

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

1. In case of bidding through Internet medium, bidders are advised to ensure availability of all associated infrastructure as required to participate in the reverse auction event. Inability to bid due to telephone glitch, internet response issues, software & hardware hangs/failures, power failures or any other reason shall not be the responsibility of BRPL.
2. In case bidder fails to participate in the reverse auction event due to any reason whatsoever, it shall be presumed that the bidder has no further discounts to offer and the initial bid submitted by them as a part of tender shall be considered as bidder's Final No Regret offer. Any off-line price bids received from a bidder in lieu of non-participation in the reverse auction event shall be rejected by BRPL.
3. The bidder is advised to understand the auto bid process t safeguard themselves against any possibility of non-participation in the reverse auction event.
4. The bidder shall be prepared with competitive price quotes during the day of reverse auction event.
5. The prices quoted by bidder in reverse auction event shall be on FOR Landed cost BRPL Store/site basis inclusive of all relevant taxes, duties, levies, transportation charges etc.
6. The prices submitted by the bidder during reverse auction event shall be binding on the Bidder.
7. The bidder agrees to non-disclosure of trade information regarding bid details e.g. purchase, Identity, bid process/technology, bid documentation etc.
8. BRPL will make every effort to make the bid process transparent. However award decision of BRPL will be final and binding on the bidder.
9. The prices submitted during reverse auction event shall be binding on the bidder.
10. No request for Time extension of the reverse auction event shall be considered by BRPL.
11. BRPL shall provide the user id and password to the authorized representative of the bidder. Authorization letter in lieu of the same shall be submitted along with the signed and stamped acceptance form.

12. The original price bids of the bidders shall be reduced on pro-rata basis against each line item based on the final all inclusive prices offered during conclusion of the reverse auction event for arriving at contract amount.

BSES Rajdhani Power Limited

Appendix - IV

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 Rajdhani Power Ltd., with it's Corporate Office at BSES Bhawan Nehru Place, New Delhi -110019 ,(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____.

THE 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 Hundred Eighty (180) 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

BSES Rajdhani Power Limited

Appendix - V

LITIGATION HISTORY

Year	Name of client	Details of contract & date	Cause of Litigation/ arbitration and dispute	Disputed amount

BSES Rajdhani Power Limited

Appendix - VI

CURRENT CONTRACT COMMITMENTS/ WORK IN PROGRESS

Year	Name of client	Details of contract & date	Value of outstanding work	Estimated completion date

BSES Rajdhani Power Limited

Appendix - VII

FINANCIAL DATA

(Duly Certified by Chartered Accountant)

Parameter	**Actual in previous 3 financial years**				
	FY 17-18	FY 16-17	FY 15-16		
Total assets					
Current assets					
Total Liability					
Current Liability					
Profit before taxes					
Profit after taxes					
Sales Turnover					

Appendix - VIII

CHECK LIST/DOCUMENT TO BE SUBMITTED

Sl No	Description	Compliance
1	INDEX	YES/NO
2	COVERING LETTER	YES/NO
3	BID FORM (UNPRICED) DULY SIGNED	YES/NO
4	BILL OF QUANTITY (UNPRICED)	YES/NO
5	DOCUMENTS IN SUPPORT OF QUALIFICATION CRITERIA	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 RS 1180/- DRAWN IN FAVOUR OF BSES RAJDHANI POWER LTD	YES/NO
11	POWER OF ATTORNEY/AUTHORISATION LETTER FOR SIGNING THE BID	YES/NO
12	FINANCIAL DATA IN TABULAR FORMAT	YES/NO
13	LIST OF CURRENT COMMITMENTS/ WORK IN PROGRESS	YES/NO
14	BANK SOLVENCY CERTIFICATE	YES/NO
15	NO LITIGATION CERTIFICATE	YES/NO
16	COMMENTS AS PER ANNEXURE	YES/NO

Appendix - IX

The Contractor must submit the following to Engineer-In-Charge before commencement of work:

a) An Electrical license. (If applicable)

b) PF Code No. and all employees to have PF A/c No. under PF every Act, 1952.

c) All employees to have a temporary or permanent ESI Card as per ESI Act.

d) ESI Registration No.

e) PAN No.

f) Work Contract Tax/GSTN Registration Number.

g) Labor License under Contract Labor Act (R & A) Act 1970(All Engineer-in-charge responsible for execution of the job should obtain a copy of Labor License as per guidelines of HR department before start of the work by the contractor.)

The Contractor must follow:

a) Third party Insurance Policy before start of work.

b) To follow Minimum Wages Act prevailing in the state.

c) Salary/ Wages to be distributed in presence of Company's representative not later than 7th of each month.

d) To maintain Wage- cum - Attendance Register.

e) To maintain First Aid Box at Site.

f) Latest P.F. and E.S.I. challans pertaining to the period in which work was undertaken along with a certificate mentioning that P.F. and E.S.I. applicable to all the employees has been deducted and deposited with the Authorities within the time limits specified under the respective Acts.

g) Workman Compensation Policy. (If applicable)

h) Labor license before start of work. (If applicable)

Appendix – X

Responsibility for Network Management Services

The broad list of activities includes (but not limited to):

1. Network Maintenance Services – Bidder shall be responsible for ensuring all engineering standards and overall system design and its maintenance for the AMI solution from the meters/devices to the connection to the backhaul communications;

2. Network Management System – Bidder shall manage both hardware and software used to monitor and manage the AMI communications network and schedule.

3. Communications diagnosis & resolution– Bidder shall ensure communication for devices including but not limited to collectors, repeaters, concentrators, head end, base stations etc, which collect data from a number of meters before sending the information upstream to a meter data collection point. Replacement of NIC on field incase found faulty during warranty period.

4. System Development & Integration – Bidder shall be responsible for integrating new applications, meters, devices and other system level development and escalations from time to time within agreed time.

5. Bidder shall be responsible for coordination, issue resolution, and escalation with smart meter supplier, BRPL representatives, MDM supplier and other stakeholders as defined by BRPL.

6. Performance and Service Levels – Bidder shall be responsible for the entire performance and service levels agreed with BRPL.

7. Reports– Bidder shall provide BRPL with weekly, monthly and ad hoc reports detailing faulty devices, both outstanding and resolved issues and time taken for resolution etc.

8. Security– Bidder shall be responsible for the security and privacy of any BRPL data being transferred across their backhaul communications network.

9. Bidder shall be responsible to get meter data collected manually at predefined time intervals during the O&M support period, in case of communication network unavailability or failure without impact to billing.