

Terms of Reference (TOR)

Invitation of Bids for Engagement of Agency

For

**Carrying out One Time Survey of Metering System and
Regular Monthly Monitoring of Billing/MRI data for a
period of one year for all HT & LT Consumers above 25
kW of Uttarakhand Power Corporation Ltd.**



UTTARAKHAND ELECTRICITY REGULATORY COMMISSION

1st Floor of Institution of Engineers (India), Near ISBT, Majra, Dehradun (UK)

PH. 0135-2641119 FAX- 2641314 Website www.uerc.in E-mail-uerc@indiatimes.com

TERMS AND CONDITIONS

1. The Client

1.1. The name of the client is: **Uttarakhand Electricity Regulatory Commission (Commission or UERC)**

1.2. The **Uttarakhand Electricity Regulatory Commission** is a body corporate set up by the Government of Uttarakhand under the Electricity Act, 2003. Some of the responsibilities assigned to the Commission are :-

- a. To determine tariff for electricity including wholesale, bulk or retail and for the use of transmission facilities in the State of Uttarakhand.
- b. To issue and regulate the licensees for transmission, bulk supply, distribution or supply of electricity in the State of Uttarakhand.
- c. To regulate power purchase and procurement process of the licensees and transmission utilities including the price at which the power shall be procured from generating companies/stations etc. in the State of Uttarakhand.
- d. To promote competition efficiency and economy in the activities of the electricity industry in the State of Uttarakhand.
- e. To regulate the operation of power system in the State of Uttarakhand.
- f. To specify Standards of Performance of a licensee or a class of licensees.

2. The Assignment

2.1. The name, objectives and description of the assignment is in following two parts:

- (i) To carry out One Time Survey of Metering System of HT and LT Consumers above 25 kW of UPCL. Number of consumers upto 75 kW (LT) and above 75 kW (LT & HT) shall be approximately 2600 & 1850 respectively.
- (ii) Regular monthly monitoring of Billing/MRI data of all consumers above 25 kW for a period of one year.

The above assignment is to be carried out in two phases (a) for about 2600 LT consumers of above 25 to 75 kW and (b) for about 1850 above 75 kW consumers (about 275 LT & 1575 HT). The agency shall be required to fill up Form 9 separately for these two phases. The Commission, however,

reserves the right to award the assignment either in parts or in phases simultaneously or separately to any one or more than one bidder qualifying for that part/phase or the whole assignment.

2.2. The scope of work for the assignment (i) shall include:

2.2.1. Physical Verification of Meter Installation:

This includes the following activities to be done by the agency at the consumer premises and the details need to be filled up in the survey Proforma sheet as given in **Annexure 1 & 2**. The salient observations to be recorded are:

- (a) Electrical Hierarchy of the consumer; details of transformer, feeder and substation.
- b) Consumer Number, Name and Address
- c) Condition of Meter Box, Meter Terminal cover and seals
- d) Type of Meter Box – like plastic, wooden or proper meter box
- e) Meter Particulars like Meter No., Make, Type, CT Ratio, Meter Constant, Year of Manufacture and Class of accuracy
- f) Identification of Meter Type – Static or Electromechanical
- g) CT Particulars like CT Ratio, CT Make and CT Class.
- h) Calculations of MF and to cross check the same with the last month's bill of the consumer.
- i) Status of Meter condition including display, display button, MD reset button, CT/PT Terminations

2.2.2. Wiring Verification:

The phase sequence, phase association and CT polarity for the 'metering equipment' shall have to be verified in the field. The following are some of the fault conditions which can be encountered:

- a) Potential Missing - Red / Yellow / Blue
- b) Current Missing - Red / Yellow / Blue
- c) CT polarity reversed - Red / Yellow / Blue
- d) Phase Association Error – Interchanging of CTs
- e) Low or Zero current due to shunt/long connecting cables
- f) Low voltage due to cable/connection break, long/under-gauge cable for PT

The software used by the Agency should be comprehensive and should take into account all possible fault conditions, including combination of faults.

2.2.3. Downloading of Meter Data Through CMRI:

Agency shall download data from various makes of meters installed using a CMRI conforming to CBIP specification TR-111 of May 1997. Actual values of all parameters as displayed by the meter at the time of making observation and as measured by tong tester/multimeter shall be recorded in separate formats (proposed formats given at **Annexure 5 A & 5 B** respectively for each LT&HT consumers). The KVA calculated by tong tester reading should then be compared by the actual reading recorded by the meter. The Phasor diagram downloaded at the time of taking MRI should be analysed for abnormal conditions including the following:

- a) CT/PT reversal.
- b) Wrong phase association.
- c) Presence of shunt/breakage in connecting wires.
- d) Low power factor (lagging/leading).

If any abnormalities / non communicating meters are found during the course of meter data downloading, the same shall be intimated to the concerned authority of UPCL/UERC.

2.2.4. Voltage and Current measurement by Tong tester /Multimeter:

The Agency shall read the actual incoming phase voltages and currents using tong testers and multi-meters at a point beyond the meter terminal block, and compare the same with displayed voltage and current. By this test, one can find out the actual MF and any potential loose contacts in meter terminal block.

2.2.5. Checking correctness of CT ratio.

The agency shall ensure that over/under size CT are not installed at consumers installation, if such is the case, then the same should be promptly reported to UPCL/UERC authorities.

2.2.6. Checking correctness of MF for billing purposes

The agency shall ensure that correct CT and PT Multiplying Factors have been taken for arriving at the overall MF for the billing purposes.

2.2.7. Photograph of the Meter Installation:

Digital photographs to be taken of all the sub-systems of metering system, to view the exact status of the meter condition including physical appearance, Electrical Connections, Terminal cover etc.

2.2.8. Creation and Maintenance of Master Data Base:

The Agency shall create a consumer master data base with all the particulars, as given in Annexure 1. Supply, installation and support for CMRI analysis software with complete data base at UPCL and integration CMRI data of UPCL, complete interrogation

with UPCL billing software shall be the responsibility of the agency.

2.2.9. One Time Survey Reports:

On completion of One-Time survey, the Agency shall submit a detailed Analysis and Exception / Anomaly reports, as given in **Annexure 2 and 3.**

2.2.10. Exception / Anomaly Reports:

The agency shall carry out a detailed analysis of CMRI downloaded data using Instantaneous Load survey and Tamper event data, and submit a Analysis and Anomaly/exception reports, clearly indicating the defects in metering systems, which would include, but not limited to the following:-

- a) Severe and Nominal PT Unbalances
- b) Severe and Nominal CT unbalances including reversal of CTs
- c) Identify consumers with Very Low Load Utilization
- d) Identify meters with Load Survey Value Zero in all the Slots
- e) Tamper Event Not Restored or occurring intermittently
- f) Extreme variations in power factor and demand
- g) Meters with high incidences of No-load / No-power
- h) Faulty meters
- i) Electro-mechanical / non-communicating meters which cannot be billed as per TOD tariff schedule.
- j) Corrective action for the identified anomaly in consumer metering to be taken immediately by the agency. All requisite material needed for the correction should be provided promptly by UPCL.

2.3. The scope of work for the assignment (ii) shall include.

- a) Collection of raw CMRI/billing data from UPCL as per schedule.
- b) Validation of raw CMRI/billing data and intimation of any reading/data error to UERC/UPCL officials.
- c) Uploading of raw data to main server.
- d) Handling of consumers data in server & data backup management.
- e) Conversion of CMRI data into CDF and uploading of the CDF files to central CMRI database server at UPCL/UERC (billing, Tamper, Load survey & instantaneous).
- f) Uploading of billing file to billing server through intranet/internet to UPCL/UERC.

- g) Analysis of the current bill of the consumer with respect to the correctness of various parameters considered in preparation of the bill like MF, Rates applied, kWh/kVAh, low PF surcharge, Excess Load/Demand Penalty etc. as per applicable tariff and final bill amount including adjustments, if any. Submission of report on errors/exceptions found in the bills with advice for corrections required.
- h) Uploading of converted Load survey, Tamper & instantaneous data to CMRI server through intranet/internet of UPCL/UERC.
- i) Analysis of CMRI data at UPCL/UERC and submission of analysis report as per **Annexure-3 & 4**.
- j) Training to UPCL/UERC officials.
- k) Field verification of suspected consumers based on analysis report as per **Annexure -3 & 4** & joint report submission with UPCL as per UERC MOU/Bid document specification.
- l) The agency shall be paid additional charges for each such case of field verification at the rate equal to the rate quoted for Part I (One time survey) of this assignment. The payment for such cases shall be made only after UPCL has raised assessment bill and shall be subject to the condition that the agency has secured the physical evidences for unauthorised use, malpractice or theft including photographs, material used for pilferage etc. and handed over the same to UPCL at site.

3. Inputs / Assistance to be provided by UPCL.

UPCL shall provide the following assistance to the Agency:

- a) Feeder wise list of existing HT & LT-CT operated key consumers with details of installed CT-PT set with KNo., Ratio, Class, Meter Make, Type, Class of TVM, Previous readings and Multiplying factor.
- b) All the meters shall be programmed for recording billed energy and resetting MD at 0000 hours on the 1st day of the calendar month, if required.
- c) List of consumers directly fed through 400/ 220/ 132/ 66/ 33 KV sub-station and location of their meters including those at sending end.
- d) List of disconnected consumers, for which monthly readings are not applicable/ required.
- e) UPCL shall provide the CMRI and BCS software for different makes of electronic meters installed.

The assignment shall include the activities proposed to be undertaken by the Agency in the bid document and also assistance to the

Commission in the activities related to the assignment, which may not be expressly indicated in the scope of work.

4. Qualifications/Eligibility of Agency

The Agency shall meet the following minimum requirements:

- a) The Agency should have experience of HT Metering, Billing and data Evaluation.
- b) The Agency shall be an accredited ISO/[BEE]¹ certified company in relevant area.
- c) The agency should possess A Grade Electrical Contractors License from any State.
- d) The Agency should have completed survey and data analysis of similar nature as required in this assignment of any power utility over the last few years, copies of relevant work- orders shall be enclosed alongwith the bid document.
- e) The Agency should have a minimum turnover of Rs. 1 Crore in the last three financial years in the related activity. Turnover from other field related activities (not connected with meter reading / survey) and software development will not be considered for this requirement. Turnover certificate supporting the claim to form the part of the tender document.
- f) The Agency should have demonstrated revenue improvement to the utilities by carrying out various activities outlined above, and data in support of the claim should be submitted along with the tender document.
- g) Agencies who can commit full time manpower deployment exclusively for the assignment, as and when required, will be eligible for consideration.
- h) Bidders can either be a Agency or a consortium, with more than one Agency may constitute with another/others for submitting their proposals. Where the bid is submitted by a consortium, the written consent of each member of the consortium to participate in the bid on the basis of joint and several liability to the Commission for the performance of the services shall be provided along with the bid.
- i) No alternative to listed professional staff may be proposed.

5. Procedure for bidding

5.1. Collection and submission of bid documents

5.1.1. Collection of bid document

A set of bid-documents and terms and conditions of bid may be obtained, either by post or in person, or downloaded from UERC

¹ Inserted by Amendment dated 13.05.2010.

website: www.uerc.in by any interested eligible Agency free of cost. The set will be available at the Commission's office from 10:00 hrs. to 18:00 hrs. on any working day till [13.06.2010]¹

5.1.2. Contact Person

The address for collecting tender documents, submission of proposal and requesting clarifications is:

Pankaj Prakash, Secretary, Uttarakhand Electricity Regulatory Commission, The Institution of Engineers (I) Building, 1st Floor, Near ISBT, Majra, Dehradun- 248002.

Phone-09760695205, Fax-0135-2641314,

E-mail: uttaranchalerc@rediffmail.com

5.1.3. Submission of bids

- a) Proposals must be submitted not later than 15:00 hrs. on [14.06.2010]² and in case of a holiday the next working day. Separate Technical and Financial proposals are required for the assignment. One Separate sealed cover each shall be submitted for the Financial (3 Copies) and Technical Bids (3 Copies). The envelopes should mention name of assignment and nature of Bid (Technical/Financial) at the Top and the name of the submitting bidder at left hand corner of the envelope. The bids shall be in the enclosed formats (Form 1 to 9).
- b) The Technical bids shall not indicate any particulars of the Financial bids otherwise the bids shall be liable to be rejected. All Technical documents like literature, catalogues etc. shall be placed in the same sealed cover.
- c) The proposal shall clearly indicate the names and designations of the persons along with their CVs who shall be deployed by the Agency for successfully carrying out assignment.
- d) Each page of bid should be numbered and signed by the authorized signatory with the seal of the firm and the forwarding letter must indicate the details of the enclosures attached.
- e) Proposals and all connected documents and subsequent reports (in case of selection of Agency) should be submitted in ENGLISH only.
- f) Proposals must remain valid 60 days after the last date for submission.

5.2. The Bid Schedule

5.2.1. The Bid Schedule shall be as under:

¹ Substituted by Amendment dated 13.05.2010

² Substituted, *ibid.*

1.	Date from which Bid Document can be obtained	28.03.2010/14.04.2010
2.	Pre-Bid Conference	05.05.2010 at 15:00 hrs.
3.	Last Date of obtaining Bid Document	[13.06.2010] ¹ upto 18:00 hrs.
4.	Last Date of Receipt of Bid Proposals	[14.06.2010] ² upto 15:00 hrs.
5.	Opening of Technical Bids	[14.06.2010] ³ at 16:00 hrs.
6.	Opening of Financial Bids	To be informed individually to technically qualified bidders

5.2.2. The technical bids shall be opened at 16:00 hrs. on [14.06.2010]⁴ (next working day in case of a holiday) at the office of Secretary, UERC by the Evaluation Committee in the presence of bidders, who wish to participate.

6. Method of Selection of bidder

The method of selection is: QCBS (Quality & Cost Based System).

The evaluation of bids shall be done by an Evaluation Committee as may be constituted by the Commission.

Technical Evaluation

The Technical evaluation will be done on the basis of the following criteria with maximum marks of 100 for each criterion. The weights for each factor of the criteria shall be as follows: -

a.	The Agency relevant experience	0.30
b.	The quality of methodology	0.25
c.	Qualifications and competence of the key-staff for the assignment	0.40
d.	Extent of transfer of knowledge to Commission staff	0.05

The minimum qualifying total score, for the technical bid shall be 65. The financial bids of only those bidders shall be opened whose score is 65 or above in technical bids. After technical evaluation is completed the Commission shall inform those Agencies whose proposals did not meet the minimum qualifying mark or were considered non responsive to the terms of reference and the Financial proposals will be returned unopened after completing the selection process. Selected bidders, who have scored more

¹ Substituted by Amendment dated 13.05.2010.

² Substituted, *ibid.*

³ Substituted, *ibid.*

⁴ Substituted, *ibid.*

than qualifying score, shall be informed about the date of opening of financial bids and they may attend the opening of financial bids at the office of the Secretary, UERC.

Financial Evaluation

The financial proposals of the technically qualified Agencies will be opened by the Evaluation Committee in presence of those Agencies or their representatives whose bids are shortlisted for financial evaluation.

The proposal with lowest evaluated cost will be given a financial score of 100 and other proposals given financial scores that are inversely proportional to their prices.

Evaluation of financial bids will lead to selection of Agency after adding of scores in technical and financial proposals with respective weightages, which shall be 0.70 for technical bid and 0.30 for financial bid.

Engagement of Agency

The Commission will discuss the detailed work plan with the bidder with highest score. Any suggestions that the bidder has made to improve the TORs, staffing details, activities to be undertaken by the Agency, reporting etc., as also the inputs required from the Commission to ensure satisfactory implementation of the assignment will then be discussed with this bidder and finalized. These discussions will be on the strict understanding that the amount quoted in the Bid document will not be increased for any reason whatsoever.

Having selected Agency, amongst other things, on the basis of an evaluation of the proposed key professional staff, the Commission shall award a contract on the basis of the staff named in the proposal and, prior to the award of contract, will require assurances that this staff will be actually available. The Commission will not consider substitutions during the contract period except in cases of genuine hardship subject to the satisfaction of the Commission.

The successful bidder shall enter into a contract with the Commission in the prescribed format and shall commence the assignment as per schedule assigned by the Commission.

The successful bidder shall furnish a "Performance Bank Guarantee" equal to 10% of the value of contract, which shall be valid for 60 days after the completion of the assignment.

If the Agency, finally selected for award of contract on basis of above procedure, fails to enter into a contract within the time limit as may be prescribed by the Commission, the Commission will invite the Agency who has scored the second highest score on consideration of Financial and Technical bids for award of the contract.

7. Other conditions

The Commission may hold weekly review meetings fortnightly, or more frequently if so needed, with the Agency during which senior/key personnel of Agency shall be present.

The Agency shall not utilize or publish or disclose or part with any statistics, data/proceeding or information collected for the purpose of Commission, without the express written consent of the Commission. The Agency shall be duly bound to hand over the entire record of assignment to the Commission before the expiry of the contract.

The Commission reserves the right to award the assignments to one or more bidders on the basis of the selection criterion or reject any bid or to cancel the assignment(s) without assigning any reasons for the same. Failure to provide all information or conceal any information material to award of contract shall be at bidders own risk and may result into rejection of the proposal.

Pankaj Prakash
Secretary to the Commission

TECHNICAL PROPOSAL SUBMISSION FORM

Form 1

(To be placed alongwith Form 2-7 in the sealed cover containing technical bid)

To,

Uttarakhand Electricity Regulatory Commission
The Institution of Engineers (I) Building, 1st Floor, Near ISBT, Majra,
Dehradun-248002,
Uttarakhand.

Sir,

We, the undersigned, offer to provide the services for the following assignment in accordance with your advertisement dated:

- (i) To carry out One Time Survey of Metering System of HT and LT Consumers above 25 kW of UPCL.
- (ii) Regular monthly monitoring of billing/MRI data of consumers above 25 kW of UPCL for one year.

We are hereby submitting our proposal for the assignment, which includes the Technical Proposal and the Financial Proposal sealed under separate envelopes. Each page of the proposal has been signed by the Authorized Signatory.

If negotiations are proposed by the Commission at any stage we undertake to negotiate on the basis of the proposed staff. Our Proposal is binding upon us and subject to the modifications resulting from contract negotiations.

We understand that you are not bound to accept any Proposal you receive.

Yours sincerely,

Encl.: As above.

Authorized Signatory:

Name and Title of Signatory:

Name of the Firm:

Address:

FIRM'S REFERENCES

Relevant services carried out in the last five years
that best illustrate qualifications

(Using the format below, provide information on each reference/assignment for which your firm/entity, either individually as a corporate entity or as one of the major companies within an association, was legally contracted.)

1. Assignment Name:	
2. Name & address of the client:	
3. (i) Professional Staff including Senior Staff (Project Director/Coordinator, Team Leader) Provided by Your Firm/entity (attach profiles). (ii) No. of Staff-weeks; duration of assignment	
4. Start Date and Completion Date (Month/Year):	

5. Details of Associated Agencies, if any:	
6. No. of Months of Professional Staff Provided by Associated Agencies	
7. Approx. Value of Services (In Current Indian Rs.):	

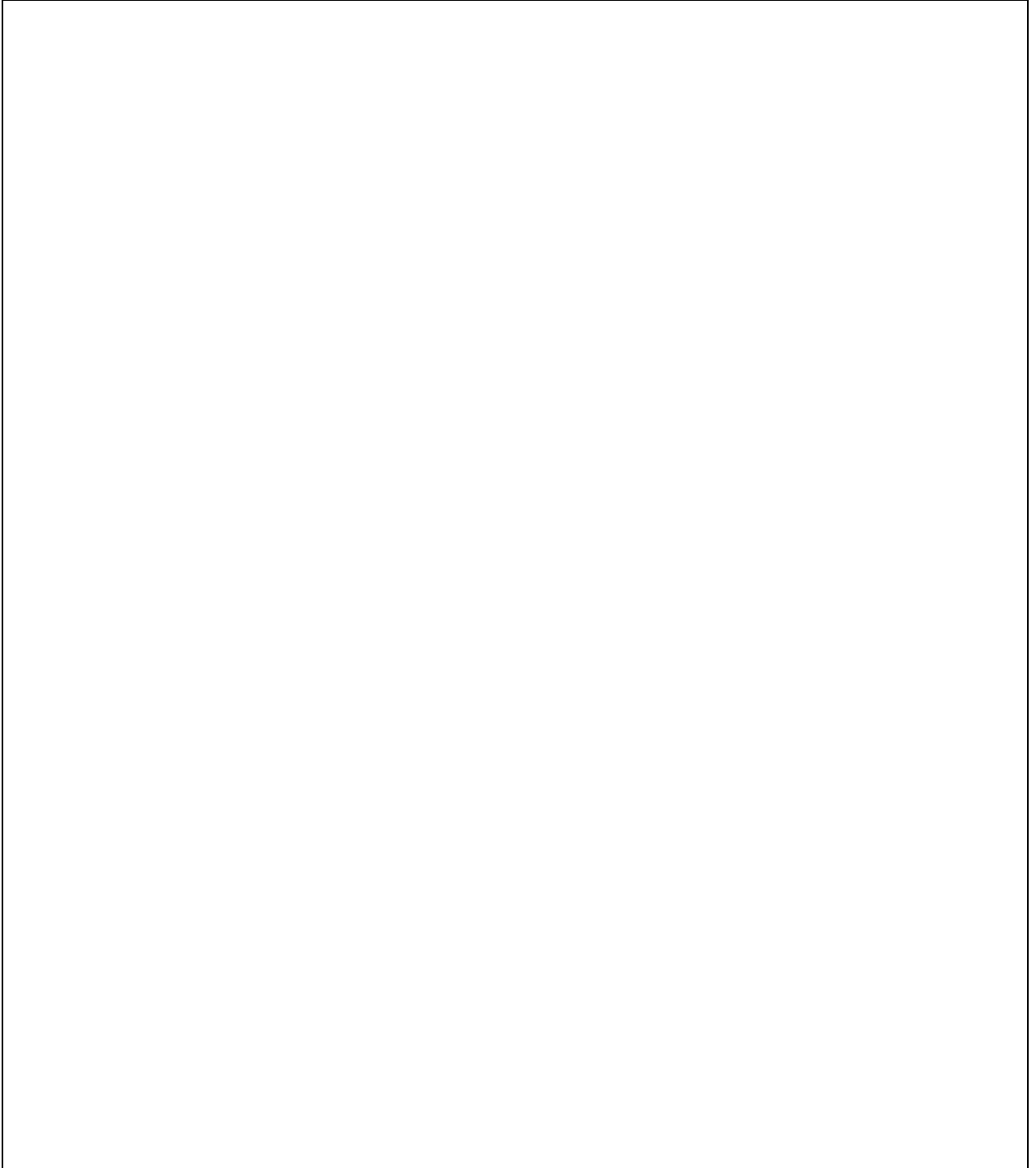
Format of Curriculum Vitae (CV) for proposed
Professional staff

1. Proposed Position	
2. Name of Firm	
3. Name of Staff and Nationality	
4. Profession	
5. Date Of Birth	
6. Years with Firm/ entity	
7. Membership in Professional Societies	
8. Details of task Assigned	

<p>9. Key Qualifications & experience</p> <p>(a) Degree/ diploma (with specialization if any)</p> <p>(b) Year of passing</p> <p>(c) Institute/College</p> <p>(d) Area of expertise</p> <p>(d) Details of Relevant experience</p>	
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Description of the methodology and
Work plan for performing the assignment

(Also mention any specific support required from the Commission/UPCL)



Activity (work) schedule

(May include flow-diagram and/or PERT Chart for details)

Assumed Zero Point: _____

Phase -1: Upto 75 kW, Phase 2: above 75 kW, Part-1: One time survey, Part-2: Monthly analysis after billing data is supplied

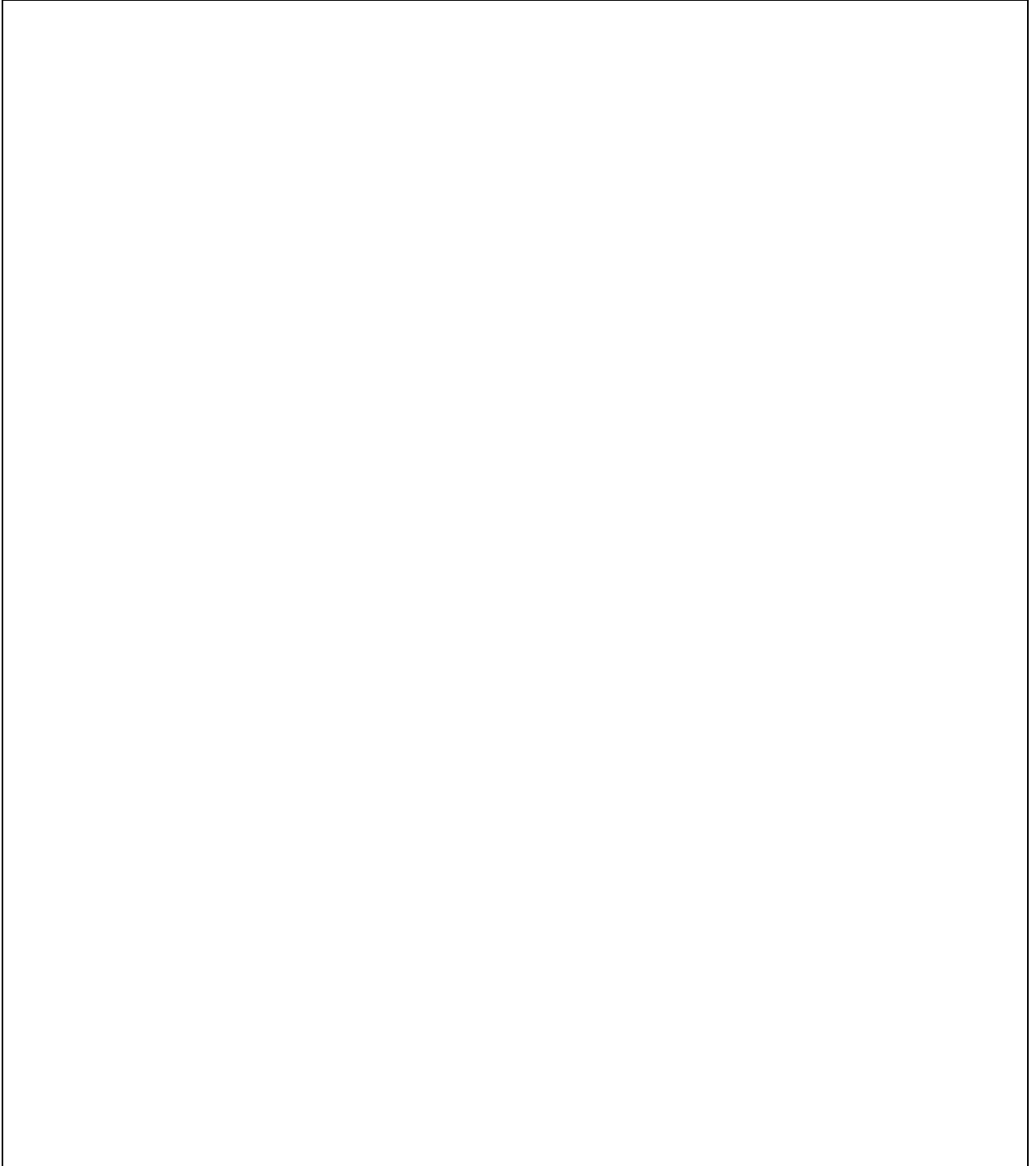
TASK	Completion Date with reference to assumed zero point
1. Phase 1 - Part -1	
2. Phase 2 - Part -1	
3. Phase 1 - Part -2	
4. Phase 2 - Part -2	
5.	
6.	
7.	
8.	
9.	

TEAM COMPOSITION AND TASK ASSIGNMENTS

Technical/Managerial Staff

Name	Position	Task	Availability schedule (in weeks of the assignment)					
			1	2	3	4	5
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								

Description of extent of transfer of knowledge and
documents/ workings to Commission staff

A large, empty rectangular box with a thin black border, intended for the bidder to provide a detailed description of the extent of knowledge and documents/workings to be transferred to Commission staff. The box occupies the central portion of the page.

FINANCIAL PROPOSAL SUBMISSION FORM

Form 8

(To be placed alongwith Form 9(1) &9(2) in the sealed cover containing financial bid)

To:

Uttarakhand Electricity Regulatory Commission
The Institute of Engineers (I) Building, 1st Floor, Near ISBT, Majra,
Dehradun-248002,
Uttarakhand.

Sir,

We, the undersigned, offer to provide the services for the following assignment in accordance with your advertisement dated.....

- (i) To carry out One Time Survey of Metering System of HT and LT Consumers above 25 kW of UPCL.
- (ii) Regular monthly monitor of billing/MRI data of consumers above 25 kW of UPCL for one year.

We are hereby submitting our Financial Proposals sealed under separate envelope for the above assignment. Our financial proposal as indicated in part "A" and part "B" of Form 9(1) and 9(2) is for the sum of [Amount in words and figures] for phase 1 of this assignment (Form 9(1)) and [Amount in words and figures] for phase 2 of this assignment (Form 9(2)). This amount is inclusive of our professional fee, profits and all taxes & levies which we have estimated at for phase 1 and for phase 2 [Amount in words and figures] for the assignment.

Our Financial Proposal shall be binding upon us subject to the modification resulting from Contract negotiations, made by the Commission at its discretion. Each page of the proposal has been signed by the Authorized Signatory:

We understand that you are not bound to accept any Proposal you receive.

Encl. Form 7

Yours sincerely,

Authorized Signatory:

Name and Title of Signatory:

Name of the Firm:

Address:

Financial proposal

Form 9(1)

Summary of costs

Note: 1. The cost to be indicated for carrying out One Time Survey of Metering System of LT Consumers above 25 kW and upto 75 kW of UPCL.

Part -A

Costs	Amount (Rs./ consumer)
One Time Survey of Metering System of LT Consumers above 25 kW and upto 75 kW of UPCL.	
Taxes Payable	
Total Amount of the Proposal (in figures and words)	

Note: 2. The cost to be indicated for carrying out Regular monthly monitoring of billing/MRI data of LT consumers above 25 kW and upto 75 kW of UPCL for a period of one year.

Part-B

Costs	Amount (Rs.)
(a) Monthly billing data/MRI analysis Rs. /consumer/month
(b) Annual cost per consumer	(a)*12= Rs.....
Taxes Payable	
Total Amount of the Proposal (in figures and words)	
Grand total (Part A +Part B) (in figures and words)	

* Please provide full details.

Authorized Signatory:

Name and Title of Signatory:

Name of the Firm:

Address:

Financial proposal

Form 9(2)

Summary of costs

Note: 1. The cost to be indicated for carrying out One Time Survey of Metering System of HT and LT Consumers above 75 kW of UPCL.

Part -A

Costs	Amount (Rs./ consumer)
One Time Survey of Metering System of HT and LT Consumers above 75 kW of UPCL.	
Taxes Payable	
Total Amount of the Proposal (in figures and words)	

Note: 2. The cost to be indicated for carrying out Regular monthly monitoring of billing/MRI data of consumers above 75 kW of UPCL for a period of one year.

Part-B

Costs	Amount (Rs.)
(c) Monthly billing data/MRI analysis Rs. /consumer/month
(d) Annual cost per consumer	(a)*12= Rs.....
Taxes Payable	
Total Amount of the Proposal (in figures and words)	
Grand total (Part A +Part B) (in figures and words)	

* Please provide full details.

Authorized Signatory:

Name and Title of Signatory:

Name of the Firm:

Address:

Consumer Data Profile

The following details are to be collected from the field

- a) K. No.
- b) Consumer Name; Address
- c) Circle Name
- d) Division; Sub Division; Substation Name
- e) Feeder; Transformer Name
- f) Meter No; Meter Make; Meter Class; Meter CT Ratio (A); Meter Constant
- g) Meter Type; Meter Year of Mfg;
- h) Working status: Meter; Display; Display Switch; MD Reset Switch
- i) Status of Termination of CT Wire, PT Wire and Seal
- j) CT Make; CT Ratio (A) ; CT Class
- k) MF in Billing; Calculated MF
- l) CD (KVA) ; instantaneous KVA displayed in meter.
- m) Cons Category; Industry Type
- n) No of Shifts; Time_Shift1; Time_Shift2; Time_Shift3; Weekly Off
- o) Contact person; Telephone No; Mobile Number; Fax Number; Website /
Email-Id
- p) Capacitor Bank Capacity (KVAR)
- q) Generator Capacity (KVA); Generator Meter Availability
- r) Industry Status
- s) Download Status; Photo Taken Status; Bill Collected Status

SURVEY PROFORMA FOR HT/LT CONSUMERS FOR UERC

In Time : Circle : Date :
Out Time: Division: Sub Division :

1. ELECTRICAL CONNECTIVITY

Name of the Substation :

Name of the Feeder :

Transformer Name :

2. Consumer Code Number :

3. Name of the Consumer :

4. Address :

5. Meter Readings

Parameters	Value
KWH	
KVAH	
KVARH(Lag)	
KVARH(Lead)	
KVA	
No. of Resets	
Cumulative MD	
Power Factor	

6. STATUS OF SEALS & METER BOX.

a) Meter Box : Available / Not Available

- b) Meter Box Seal : Available / Not Available
- c) Meter Body Seal : Available / Not Available
- d) Meter Terminal Cover: Available / Not Available
- e) Terminal Cover Seal : Available / Not Available
- f) Optical Port Seal : Available / Not Available
- g) MD Reset Seal : Available / Not Available

7. METER PARTICULARS

- a) Meter No : Make : Class:
- b) CT Ratio :
- c) Meter Constant :
- d) Type : Year of Mfg :

8. METER TYPE:

WHOLE CURRENT METER (WITHOUT CT) / CT OPERATED METER.

9. CT PARTICULARS

- a) CT Make :
- b) CT Ratio :
- c) CT Class :
- d) CT Type : Inbuilt CT Type / Old CT System Type

10. MF CALCULATION

- a) MF in Billing :
- b) MF calculated using CT, PT ratio of available and adopted :

11. A) EXTERNAL / OLD CT TYPE

CT IN	R:	Amp	Y:	Amp	B:	Amp
CT OUT	R:	Amp	Y:	Amp	B:	Amp
Incoming Cable	R:	Amp	Y:	Amp	B:	Amp
DISPLAY	L1:	Amp	L2:	Amp	L3:	Amp
CT Ratio	R:	Y:	B:			

11. B) INBUILT CT TYPE

Incoming Cable R: Amp Y: Amp B: Amp
 Meter Display R: Amp Y: Amp B: Amp

11. C) WHOLE CURRENT METER

IN R: Amp Y: Amp B: Amp
 OUT R: Amp Y: Amp B: Amp
 DISPLAY L1: Amp L2: Amp L3: Amp

12) VOLTAGE

Clamp Meter RY: Volt YB: Volt RB: Volt
 RN: Volt YN: Volt BN: Volt
 Display V1: Volt V2: Volt V3: Volt

13. INSTANTANEOUS VALUES RECORDED IN THE METER

- a) Instantaneous Demand (KVA) :
- b) Instantaneous Demand (KW) :
- c) Instantaneous Demand (KVAR) :
- d) Power Factor Rφ: Yφ: Bφ: Overall
:
- e) Instantaneous Currents L1: Amp L2: Amp L3: Amp
- f) Instantaneous Voltages V1: Volt V2: Volt V3: Volt
- g) Phase Angle

14. STATUS OF METER

- a) Meter Working: OK/NOT OK
- b) Display Switch: OK/NOT OK
- c) Termination of CT Wire: OK/NOT OK
- d) Display Working : OK/NOT OK
- e) MD Reset Switch : OK/NOT OK
- f) Termination of PT Wire: OK/NOT OK

DETAILS FROM CONSUMERS

- 15. Contract Demand : KVA
- 16. Connected Load : KW (AS ON THE BILL)

17. Category of the Consumer : Government / Private
18. Type of the Industry :
19. Number of the Shifts : General / 2 Shifts / 3 Shifts
Time : to / to /
to
20. Weekly OFF : Nil/Mon/Tue/Wed/Thu/Fri/Sat/Sun
21. Telephone Nos : Mobile No:
22. Fax No :
23. Website/Mail ID if any :
24. Contact Person :
25. Capacitor Bank Capacity : KVAR
26. Generator Capacity : KVA
27. Generator Meter Availability : YES / NO
28. Status of the Industry : Sick / Working
- 29. SURVEY PARTICULARS**
- a) Data Downloaded through CMRI : Yes / No
- b) Photos Taken : Yes / No
- c) Surveyed By :
- d) Name of the Utility Staff :
- e) CMRI Serial No :
- f) Bill Copy Collected : Yes / No / Photo

Signature of the Utility Signature of the Consumer Signature of the Surveyor

REMARKS:

Analysis Reports

- a) Usage index: Usage of load with respect to average and contracted demand
- b) Load Utilization: Actual usage of load in % slot wise with respect to contracted demand
- c) No load & Black out: Percentage wise no load and black out slot wise
- d) PF Status Report: Percentage of PF slot wise
- e) Date wise report: Day wise consumption of KWH, KVAH, KVA
- f) Instantaneous Parameter: Instantaneous values of Voltage, Current, KVA, KW.
- g) Status of RTC: It shows the RTC is correct or not, wiring verification
- h) Exceed contract demand: Cases of maximum demand exceeding the contract demand
- i) Tamper events report: Tamper occurred in that month and of the previous month
- j) Transaction events Report: Transaction events registered by meter
- k) List of consumers: Entire list of consumers for whom the activity is carried out
- l) MD exceeds CD: Consumers whose maximum demand exceeded contract demand
- m) Phasor diagram analysis for abnormal conditions including the following:
 - (1) CT/ PT reversal.
 - (2) Wrong phase association.
 - (3) Presence of shunt/breakage in connecting wires.
 - (4) Low power factor (lagging or leading)

Exception / Anomaly Reports

- a) PT Unbalance - Nominal: List of Consumers whose Phase Voltage difference between two phases is 30 and above.
- b) PT Unbalance - Severe: List of consumers where any one of the Phase Voltage is less than 170V.
- c) CT Unbalance - Severe: List of Consumers whose Line Current is less than 1A when the Other Phase Current is more than 10A.
- d) CT Reversal: List of Consumers whose CT Found Reversed when the PF is more than 0.5lag.
- e) Very Low Load Utilization: List of Consumers whose %of Slots <20% of CD is 50 and above.
- f) Load Survey Value is Zero in all the Slots: List of Consumers whose Every Slot value in Load Survey Data is Zero for the Availability Number of Days.
- g) All the Parameter Values are Zero in Inst. Parameter: List out the Consumers for whom all the Instantaneous Parameter Values are Zero even after the restoration of power.
- h) Tamper Event Not Restored: List of Consumers where Tamper Event occurred but not restored (all tamper events occurred during the last three days from the date of reading are not considered).
- i) Tamper Event Occurred Intermittently: List of Consumers where Tamper Event occurred intermittently in the previous month and the duration is more than 24 hrs.
- j) Power Factor less than 0.5 for more than 50% of total used slots: List of Consumers whose % of Slots <0.5 PF is 50 and above.
- k) Low Average Demand With Respect to Contract Demand: List of Consumers whose Average Demand is less than or Equal to 50% of Contract Demand.
- l) Maximum Demand Exceeded Contract Demand: List of Consumers whose Maximum Demand Exceeded Contract Demand.
- m) High No Load and Blackout Slots: List of Consumers whose sum of No load and Black out duration is 10% and above calculated for each slot.

- n) RTC Corrupted: List of Consumers whose RTC found Corrupted (RTC Drift is more than Month).
- o) Meter Faulty: List of Consumers whose Meter found Faulty (Even after Getting the Supply Voltage, Meter is not Energized).
- p) Meter Display Problem: List of Consumers having problem with Meter Display (Clarity is not Good).
- q) Electro Mechanical Meters: List of Consumers whose Meters are Electro-mechanical.
- r) Electronic Meters without Optical Port: List of Consumers whose Meters are Electronic, but it does not have Optical Port.
- s) Meters with one ToD slot: List of consumers with only one TOD slot.

LT CONSUMERS

Sl. No.	K. No.	Name of Consumer	Supply Voltage	Contracted Load (KVA)	MF	Parameter	Clip-on-meter results			Observed Meter reading				Observed Meter reading along with MF				%Variation	Remark					
							Phase 1	Phase 2	Phase 3	Phase 1	Phase 2	Phase 3	kVA	Phase 1	Phase 2	Phase 3	kVA							
1						Current										0.00	0.00	0.00	0.00	#DIV/0!				
						Voltage													0.00			0.00	0.00	0.00
						Calculated kVA													0.00			0.00	0.00	0.00
2						Current										0.00	0.00	0.00	0.00	#DIV/0!				
						Voltage													0.00			0.00	0.00	0.00
						Calculated kVA													0.00			0.00	0.00	0.00
3						Current										0.00	0.00	0.00	0.00	#DIV/0!				
						Voltage													0.00			0.00	0.00	0.00
						Calculated kVA													0.00			0.00	0.00	0.00
4						Current										0.00	0.00	0.00	0.00	#DIV/0!				
						Voltage													0.00			0.00	0.00	0.00
						Calculated kVA													0.00			0.00	0.00	0.00
5						Current										0.00	0.00	0.00	0.00	#DIV/0!				
						Voltage													0.00			0.00	0.00	0.00
						Calculated kVA													0.00			0.00	0.00	0.00
6						Current										0.00	0.00	0.00	0.00	#DIV/0!				
						Voltage													0.00			0.00	0.00	0.00
						Calculated kVA													0.00			0.00	0.00	0.00
7						Current										0.00	0.00	0.00	0.00	#DIV/0!				
						Voltage													0.00			0.00	0.00	0.00
						Calculated kVA													0.00			0.00	0.00	0.00
8						Current										0.00	0.00	0.00	0.00	#DIV/0!				
						Voltage													0.00			0.00	0.00	0.00
						Calculated kVA													0.00			0.00	0.00	0.00
9						Current										0.00	0.00	0.00	0.00	#DIV/0!				
						Voltage													0.00			0.00	0.00	0.00
						Calculated kVA													0.00			0.00	0.00	0.00
10						Current										0.00	0.00	0.00	0.00	#DIV/0!				
						Voltage													0.00			0.00	0.00	0.00
						Calculated kVA													0.00			0.00	0.00	0.00
11						Current										0.00	0.00	0.00	0.00	#DIV/0!				
						Voltage													0.00			0.00	0.00	0.00
						Calculated kVA													0.00			0.00	0.00	0.00

HT Consumers

Sl. No.	K. No.	Name of Consumer	Supply Voltage	Contracted Load (KVA)	MF	Parameter	Clip-on-meter results			Observed Meter reading			% Variation	Remark
							Phase 1	Phase 2	Phase 3	Ir & Vry	Ib & Vby	kVA		
1						Current							#DIV/0!	
						Voltage								
						Calculated kVA	0.00			0.00				
2						Current							#DIV/0!	
						Voltage								
						Calculated kVA	0.00			0.00				
3						Current							#DIV/0!	
						Voltage								
						Calculated kVA	0.00			0.00				
4						Current							#DIV/0!	
						Voltage								
						Calculated kVA	0.00			0.00				
5						Current							#DIV/0!	
						Voltage								
						Calculated kVA	0.00			0.00				
6						Current							#DIV/0!	
						Voltage								
						Calculated kVA	0.00			0.00				
7						Current							#DIV/0!	
						Voltage								
						Calculated kVA	0.00			0.00				
8						Current							#DIV/0!	
						Voltage								
						Calculated kVA	0.00			0.00				
9						Current							#DIV/0!	
						Voltage								
						Calculated kVA	0.00			0.00				
10						Current							#DIV/0!	
						Voltage								
						Calculated kVA	0.00			0.00				

Remarks: kVA for 3P3W meter =MF*√3/2* (Ir.Vry + Ib.Vby)
 √3/2=0.866