

# **CENTRAL UNIVERSITY OF RAJASTHAN**

NH-08 Ajmer-Jaipur Highway, Bandarsindri, Kishangarh, Ajmer-305817
Tel: 01463 – 238755; website <u>www.curaj.ac.in</u>

# Expression of Interest For Conducting Energy Audit at Central University of Rajasthan

#### Part I

## **Technical Bid**

Name of Bidder:	
Address:	
Telephone no:	
Email Address:	

NIT No. CURAJ/R/F.138/2022/1311 dtd 12.07.2022 Last Date and time of submission of bid/tender: July 26, 2022 up to 14:00 Hrs

Note: Part I and Part II are required to be submitted in different-different envelope and both these envelope must be kept another envelope.

Registrar Central University of Rajasthan

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## PART I / TECHNICAL BID

#### **Section-I: Commercial Conditions**

- Name of work: The Registrar, Central University of Rajasthan, NH-08 Ajmer-Jaipur Highway, Bandarsindri, Kishangarh, Dist.-Ajmer, Rajasthan invites sealed item rate tenders from bidders for the following works: Expression of Interest for Conducting Energy Audit at Central University of Rajasthan Campus.
- 2. NIT No.: CURAJ/R/F.138/2022/1311 dtd 12.07.2022
- 3. Estimated cost : Rs. 3,50,000/-
- 4. **EMD:** Rs. 7000/-
- 5. <u>Time for completion of work:</u> Six Weeks from tenth day after the date of letter advising acceptance of tender, that includes time for submission of draft & final report.
- 6. Date of start of tender: July 12, 2022
- 7. Last date and time of submission of tender (The tender received thereafter shall not be entertained in any circumstances). : July 26, 2022 till 14:00 Hrs
- 8. Date and time of opening of Part I (Technical Bid) of tender: July 26, 2022 at 15:00 Hrs
- 9. Date and time of opening of Part II (Financial Bid) of the tender: Date and time of opening of price bid will be informed separately to all the eligible bidders later.
- 10. Contact person for clarification: Sultan Singh, Executive Engineer Contact no.: 8130589977,

Email: <u>ee\_civil@curaj.ac.in</u>

Kartik Bhati (AE - Electrical) Contact no: 8384962296, Email: ae.elect@curaj.ac.in

#### 11. Eligibility Criteria:

a. The intending tenderer for Conducting Energy Audit should be Certified Energy Auditor by BEE
 or

In case of firm/agency should have expertise Engineers having Degree in Electrical Engineering as regular employee who are certified Energy Auditors by BEE (Bureau of Energy Efficiency). (Documentary evidence to substantiate above fact must be submitted along with Part-I) No Joint Venture agreement or deed will be acceptable or entertained whatsoever.

AND

b. Minimum 10 years of experience in the field of undertaking similar works viz. "Energy audit and/or Electrical Safety Audit work for large office buildings/companies(PSU's)/ educational institutes/ commercial estate"(from the date of issue of tender) [Any work order (Energy audit & Electrical safety Audit) issued from the date of issue the tender needs to be submitted]

AND

c. Agency/Firms must have annual minimum turnover of Rs. 10 lacs for the last three financial years.

#### AND

**d.** Experience of having successfully completed works during last seven years ending on previous day of last day of submission of tender (Energy Audit /Electrical Safety Audit for large office buildings/companies(PSU's)/ educational institutes/ commercial estate).

Three similar works each of value not less than 40% of the estimated cost put to tender (Rs. 1,40,000/-). OR

Two similar works each of value not less than 60% of the estimated cost put to tender

(Rs. 2,10,000/-). OR

One similar work of value not less than 80% of the estimated cost put to tender (Rs. 2,80,000/-).

All amounts rounded off to a nearest convenient figure.

#### **Note**

The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7% per annum, calculated from the date of completion to previous day of last date of submission of tenders.

For eligible private works of similar nature, form 16A and form 26AS (i.e. work done for private client) needs to be necessarily submitted by the bidder as a proof of actual amount of work done by the bidder and paid by the private client.

**AND** 

- e. Agency/individual must have valid GST No., PAN No.(copy of documents to be submitted)

  AND
- f. The track record of the contracting firm/individual should be clean and should not be blacklisted or not have any involvement in illegal activities or financial misappropriation / frauds etc by any Central/State Government/Public Undertaking/Institute on any account. A self-certificate on the Non-Judicial Stamp paper shall be attached.
- 12. Tendering Process: The tender documents shall be available on University website for free of cost. The bidder shall submit the bid in one sealed main envelope containing two separate sealed envelopes and these two envelops shall be super scribed as "Part—1(Technical Bid)" and" Part—II(Price Bid)" respectively.
- 13. Part I will be opened on the date and time mentioned above. In case the date of opening of Application/EOIs is declared as a holiday, the Application/EOIs will be opened on the next working day at the same time.

No deviation will be accepted in Part I of tender. If firm put deviation in the tender, their tender will be out rightly rejected. Part II of such tender will be returned. Part II will be opened for those bidders who qualified in Part I of the tender. Lowest quoted amount in the Part II will be declared L1 bidder/successful bidder and tender will be awarded to them. Incomplete tenders are liable for rejection. No terms and conditions or any other information/ enclosures shall be included in tender Part-II.

However, if the price quoted by a bidder, there is discrepancy between the unit price and the total price (which is obtained by multiplying the unit price by the quantity), the unit price shall prevail and the total price corrected accordingly, unless the Authority feels that the bidder has made a mistake in placing the decimal point in the unit price, in this case the total price as quoted shall prevail over the unit price and the unit price corrected accordingly.

- 14. If there is an error in a total price, which has been worked out through addition and / or subtraction of subtotals, the subtotals shall prevail and the total corrected.
- 15. The price quoted for the work shall be firm till completion of the work and shall include charges, labour, transport, insurance, GST as applicable and cost of transportation/accommodation etc. of the equipments and persons deputed.

Before tendering, the bidder shall inspect the site to fully acquaint himself about the conditions in regard to accessibility of site, nature and extent of ground working conditions of site and movement of labour etc. required for the satisfactory execution of the work contract. No claim whatsoever on such accounts shall be entertained by the University in any circumstances after award of tender.

- 16. This contract is a fixed lump sum contract respectively for Energy Audit for entire campus of Central University of Rajasthan and to be paid as per actual, at the rates contained in the schedule of rates and as provided in the said conditions.
- 17. The Employer reserve to itself the right of altering the items to be executed by adding to or omitting any items without prejudice to this contract. However, the auditors shall not be entitled to any payment for the works done exceeding the tender quantities unless specifically approved in writing by the Executive Engineer. The University also reserves itself the right to accept the lowest or any tender and reserves to

- itself the right to accept or reject any or all the tenders, either in whole or in part, without assigning any reasons for doing so.
- 18. The Central University of Rajasthan does not bind itself to accept the lowest or any tender and reserves to itself the right to accept or reject any or all the tenders, either in whole or in part, without assigning any reasons for doing so.
- 19. Payment terms: Payment will be made after satisfactory completion of work & submission of final reports. No advance payment will be made. Income tax and all other statutory tax deduction will be made as per Govt. of India norms.
- 20. <u>Validity of tender:</u> The tenders shall be valid for acceptance by the University for a period of 90 days from the date of opening of Part I of tender.
- 21. <u>Time Period:</u> The time for completion of the entire work is six weeks from tenth day after the date of letter advising acceptance of tender. The site survey, data collection/measurements and draft report shall be completed in 30 days and the final report shall be submitted within 12 days thereafter. The work is allowed to be carried out during office hours (10:00 AM to 5:30 PM).

#### 22. Extension of time: (before expiry of original date of completion)

If the successful bidder desires any extension of time for completion of work on grounds of their having been unavoidable hindrances in execution or any other ground, they shall apply in writing immediately after the occurrence of the hindrance. Such application shall contain complete details of hindrances, which hindered the contractors in the execution of the work and reference to record of entry in the Hindrance Register. The University will grant the extension of time, without prejudice to University's right to recover liquidated damages or compensation under relevant contract clause.

- 23. **EMD:** The bidder shall be required to submit the Earnest Money Deposit (EMD) for an amount of Rs. 7000/- (Rupees Seven Thousand only) by way of demand draft/Fixed Deposit Receipt drawn in favour of "Central University of Rajasthan". The EMD must be enclosed in the envelope containing the Part-I. The EMD of the successful bidder shall be become part of performance Guarantee and for unsuccessful bidder(s) it would be returned after award of the contract. Bid(s) received without EMD will be rejected.
  - Note: The firm who are registered with Medium Small and Micro Enterprise Management (MSME)/Small Scale Industries (SSI) are exempted to submit the EMD (copy of registration must be provided along with technical bid). No other relaxation will be allowed.
- 24. **Performance Guarantee:** The agency/individual whose bid/offer is accepted will be required to furnish performance guarantee of 3% (Three Percent) of the quoted amount within 10 days of issue of letter of award. This guarantee shall be in the form banker's cheque of any scheduled bank/Demand Draft of any scheduled bank/Pay order of any scheduled bank or Government Securities or Fixed Deposit Receipt or Guarantee Bonds of any Scheduled bank or the State Bank of India in accordance with the prescribed form. In case the contractor fails to deposit the said performance guarantee within the 10 days from date of issue of letter of acceptance, including the extended period if any, the Earnest Money deposited by the contractor shall be forfeited automatically without any notice to the contractor. It should be valid for completion period plus two months beyond that.
- 25. This EMD and/or Performance guarantee shall be forfeited if he/they fails to comply with any of the conditions of the contract. No interest shall be paid on the EMD and/or Performance guarantee.
- 26. **Penalty:** Half Percent of the work order value per week of delay subject to a maximum of 10% of work order value.
- 27. Safety and statutory measures: The bidder shall take all safety measure during the execution of the work. The University will not accept any liability for any mishap / accident caused while working. The bidder shall indemnify and keep indemnified the University against all losses and claims, damages or compensation for breach of any provision of the Payment of Wages Act,1936 Minimum Wages Act

1948, Contract Labour (Regulation and Abolition) Act, 1970, Payment of Bonus Act 1965 amended till date or any other labour law/statute in force in this regard. The tenderer is advised for insurance of workmen/person deployed after receipt of intimation from the University of the acceptance of his/ their tender. 28. On receipt of intimation from the University of the acceptance of his/ their tender, the successful tenderer shall be bound to sign the formal contract and within 10 days thereof, the successful tenderer shall sign an agreement in accordance with the draft agreement and the schedule of conditions but the written acceptance by the Central University of Rajasthan of a tender will constitute a binding contract between the CURAJ and the person so tendering, whether such formal Agreement is or is not subsequently executed. The cost of necessary stamp paper for execution of the agreement shall be borne by the successful tenderer. 29. During the course of evaluation of offer, if University requires any documentary evidence required for evaluation, the same shall be intimated and bidder is expected to submit within the reasonable time period. In case the documentary evidence could not be submitted within the stipulated time period, University may discard the proposal submitted by the bidder. 30. All relevant Environment, Health and Safety Precaution are to be taken by the bidder/ auditor while conducting the energy audit and electrical safety audit at premises of University. The bidder shall be responsible for any injuries to the work or workmen, to persons, animals or things and for all damages to structure and/or decorative part of property which may arise from the operations or negligence of himself/their employees. 31. **Termination for Default:** a. The University may without prejudice to any other remedy for breach of Contract, by Seven Days (07) days written notice of default sent to the Bidder and upon the Bidder's failure and neglect to propose and/or execute any corrective action to cure the default, terminate this Contract in whole or in part: If the Bidder fails to Complete the work within the time period(s) specified in the Contract; or If the Bidder fails to perform any other obligation(s) under the Contract. b. On termination of the Contract for default, the EMD of the Bidder will be forfeited. c. On termination of the Contract for default, action will be taken to blacklist the Bidder. 32. Jurisdiction: All disputes arising out of or in any way connected with this agreement shall be deemed to have arisen at Aimer/Jaipur and only Courts in Aimer/Jaipur shall have jurisdiction to determine the same. 33. Any clarifications sought after opening of the EOIs will not be entertained at any cost. Firm should visit the website till last date of submission for changes/ corrigendum if any. The University reserves right to cancel or postpone the Application/EOIs at any stage without assigning 34. any reason. Date: Signature of Firm (with seal)/ Individual Place: (By a person holding the Authority/Power of Attorney)

## Section-II: Details of Tenderer

#### I. Particulars of the Firm/ Individual

Sr. No.	PARTICULARS	TO BE FILLED BY THE TENDERER
1.	Composition of the firm (Whether partnership / proprietorship /Public Ltd.)/ Name of the individual	
2.	Names of the proprietor/ Directors of the firm	
3.	Whether Certified Energy Auditor by Bureau of Energy Efficiency	(Yes/No) certificate of accreditation is to be attached
4.	GST Number	
5.	PAN Number	
6.	Address of the Firm	
7.	Contact Number	
8.	E-mail ID	
9.	Whether the firm is MSME(micro and medium small enterprise)	(Yes/No) necessary certificate needs to be attached for EMD exemption)
10	Udhyam Registration number (applicable for MSE firms only)	
11	Operating Years	
12	Yearly turnover of the organization during last 3 years (year wise).	
13	Whether any Civil Suit / litigation arisen in contracts executed / being executed during the last 10 years. If yes, please furnish the name of the project, employer, Nature of work, Contract value, work order and brief details of litigation. Give name of court, place, and status of pending litigation. Attach a separate sheet if required.  Bank details Name of Bank: Account No.:	
	IFSC: Address of Bank:	

#### II. Particulars of the Clients

Following are our Clients for whom we have executed "eligible" works required as per the eligibility criteria (Please submit the documentary evidence in support of)

Sr. No.	DETAILS	CLIENT (1)	CLIENT (2)	CLIENT (3)
1.	Name of the Client/organisation/institute			
2.	Address			
	Name of the Contact Person			
	E-mail Id (as per Avaibility)			
3.	Brief details of work with connected load and sanctioned load details			
4.	Work order no. and date (Attach corresponding work order)			
5.	Cost of the "eligible" work as per work order / letter of award:			
6.	Whether the Establishment is with central air-conditioning system	(Yes/No)	(Yes/No)	(Yes/No)
7.	Date of commencement			
8.	Stipulated date of completion			
9.	Actual date of completion			
10.	Amount of compensation levied by the client for delayed completion, if any:			
11.	Gross value of the work completed and paid for :			

### III. Particulars of the Technical persons' and Similar experience

Sr. No.	PARTICULARS	PERSON (1)	PERSON (2)	PERSON (3)	PERSON (4)	PERSON (5)
1.	Name of the person					
2.	Age					
3.	Qualification					
4.	Nature of Experience					
5.	Nature of the works handled/executed					
6.	Name of the projects handled					
7.	Date from which employed in your organization					
8.	Years of experience					

**Note:** All the details must be filled in the tender documents only & no separate annexure will be accepted. Only Submit documents in support of details filled above.

#### Section-III: Scope of Work

Central University of Rajasthan is desirous of undertaking Energy Audit of the various buildings and 1. Electrical/Electromechanical installations provided inside the campus.

#### Objective:

2.

The objective of Energy Audit is -

- To have Energy Performance Assessment of equipment and utilities in the electrical sub-station, Electric power distribution, HVAC systems, Electric motors and drives, Fans and blowers, Water pumping systems, UPS systems, Lighting systems, Diesel generator sets, Solar Power Plant etc. and other associated installation & equipment of various buildings of the University including study of energy consumption pattern and management of power demand in the building.
- Based on the above observations, to identify opportunities for energy saving and to have recommendations for the same along with cost benefit analysis.

#### **Details of Premises of University:**

(The details given are indicative only and are not exhaustive. The contract will cover all existing and future premises of University within the campus.)

The Campus receives 33 KV power supply from AVVNL which is step down to 11KV at 33/11KV MRS and further distributed to 04 Nos 11/0.433KV ESS through U/G cable and O/H Lines connected in ring main system. Various buildings are feed electric supply through these four ESS. Additionally, diesel generator sets of 500KVA\*2, 380KVA\*1, 250KVA\*2 ratings are provided to cater essential applications during power outages.

#### **Equipment Details:**

Dudlalia a Lagadia a

The tentative details of building & list of equipment/ electric installations, but not limited to, for which audit is to be conducted are detailed below: Control Hairmaitre of Deinethan

1)	Building Location	Central University of Rajasthan Nh-08, Bandarsindri, Ajmer-Jaipur Highway, Tehsil – Kishangarh, District – Ajmer, 305817
0)		
2)	Sanctioned Load; Contract demand	1500 KVA 1875 KVA
3)	Power Supply	33KV Feeder from AVVNL
4)	Transformers	33KV MRS - 3150KVA*2 Nos
.,		11KV ESS 01 – 1000 KVA*2 Nos
		11KV ESS 19.1 - 2000 KVA*2 Nos
		11KV ESS 19.2 – 2000 KVA*2 Nos
		11KV ESS 20.7 - 1000 KVA*1 Nos
		STP - 100 KVA*1Nos
5)	DG Sets	Cummins - 500KVA at ESS 19.1
		Cummins - 500KVA at ESS 19.2
		Cummins - 380KVA at ESS 01
		Kirloskar - 250KVA at Auditorium
		Cummins - 250KVA at ESS 20.7
6)	Panels	HT Panel – 04 Nos, LT Panel – 04 Nos
		APFC Panel – 04 Nos
		VCB – 27 Nos (1250/800)
7)	Air Conditioning units	ACB – 70 Nos (3200/2000/1600/1250/1000/800/630A)  40HP (VRV Plant)
')	All Cortainorning units	11*4 TR (Ductable Plant)
		5.5*3 TR (Ductable Plant)
		Approx. 500 Nos Split AC (1/1.5/2.0 TR capacity) ,
		Approx. 50 Nos Tower AC (3/4/5.5 TR Capacity)
8)	UPS	1KVA – 14 Nos , 2KVA – 7 Nos , 3 KVA – 3 Nos
",		5 KVA – 5 Nos , 6 KVA – 2 Nos , 10 KVA – 2 Nos
		15 KVA – 5 Nos , 20 KVA – 5 Nos , 40 KVA – 2 Nos
 L		

3.

9)	Pumps	S.NO.	NAME OF THE PLANT	KW	NO. OF MOTORS	
		1	Pump House No. 1	7.5 HP	3 Nos	
				10 HP	2 Nos	
				12.5 HP	1 Nos	
		2	Pump House No. 2	15 HP	2 Nos	
				10 HP	1 Nos	
		3	Mega Mess Air Duct	20 HP	2 Nos	
				7.5 HP	2 Nos	
		4	STP	15 HP	6 Nos	
				12.5 HP	1 Nos	
		5	Mines	5 HP	1 Nos	
		6	Nursery	3 HP	1 Nos	1
		7	Pond	5 HP	1 Nos	1
		8	Bore well Gate No. 2	12.5 HP	1 Nos	]
		9	Bhairv Baba Well	12.5 HP	1 Nos	
		10	Fountain	2 HP	3 Nos	
				1 HP	1 Nos	
		11	Basement SP1 SP2	2 HP	4 Nos	]
10)	RO Plants	Reverse Reverse Forbes) Reverse Reverse	Osmosis Plant 300 LPH Osmosis Plant 50 LPH Osmosis Plant 15 LPH Osmosis Plant 25 LPH Osmosis Plant 12 LPH	– 10 Nos (È – 08 Nos (K – 08 Nos (E – 02 Nos (A	ureka Forbes ent/Eureka ureka Forbes qua Fresh)	,
11)	Lifts	14 Nos Johnson Make Lifts installed at Academic, Administration & Guest House building.				
12)	Fire Fighting System	Each building have firefighting system installed and fire extinguishers approx. 800 Nos are installed at different locations of various types.				
13)	Fire Alarm System	buildings	m System and PA syste s of University.			
14)	Special Equipment		ory Equipments as installoratories.	led at NMR,	XRD, CIF &	

## University Infrastructure/Buildings Details :

S.No.	Building/Location	Description
01	Administration Buildings	G+2, BUA= 6469 sq.m.
02	Academic Building 4A3	G+3, BUA= 10993 sq.m.
03	Academic Building 4A4	G+2, BUA= 7923 sq.m.
04	Academic Building 4A5	G+2, BUA= 7925 sq.m.
05	Academic Building 4A6	G+3, BUA= 10994 sq.m.
06	Guest House	BUA= 7836 sq.m.
07	VC Residence	Ground Floor, BUA= 623 sq.m.
08	Type B Quarters	24 Nos
09	Type C Quarters	12 Nos
10	Type D Quarters	32 Nos
11	KV Vidyalaya/CPWD Office	G+1, BUA= 2977 sq.m.
12	Girls Hostel B1	192 bedded

13	Girls Hostel B2	192 bedded
14	Girls Hostel B3	192 bedded
15	Girls Hostel B4	192 bedded
16	OBC Girls Hostel	200 bedded
17	Boys Hostel B5	256 bedded
18	Boys Hostel B6	256 bedded
19	Boys Hostel B7	256 bedded
20	Mega Mess	Ground Floor, BUA= 1663 sq.m.
21	ESS 01	Details mentioned above
22	ESS 19.1	Details mentioned above
23	ESS 19.2	Details mentioned above
24	ESS 20.7	Details mentioned above
25	Shopping Complex	10 Nos Shops
26	Bank of India	Ground Floor
27	Dispensary	G+1 Floor
28	Road Lights	Approx. 1000 Nos
29	STP	750 KLD Bio remedial based technology
30	Semi-Permanent Building 1	Ground Floor
31	Semi-Permanent Building 3	Ground Floor
32	Semi-Permanent Building 4	Ground Floor
33	Central Library & Auditorium	Ground Floor, SP Building 2
34	782 kWp Solar Rooftop Solar Power Plant installed in the campus.	
35	Main Receiving Substation 33/11kV	
36	Cricket Ground, Football Ground	and other sports facility

Any other equipment in existing electrical system not mentioned above but necessary to consider for complete the Energy Audit & Electrical Safety reports are also included.

#### Work at Site:

4.

- a. All the equipments/instruments, tool & tackles required for site measurements for carrying out the Energy Audit will have to be arranged by the firm without any extra payment.
- b. The firm should have the following minimum equipment/instruments for energy audit & electrical safety audit:
  - i. Three-phase Power analyser
  - ii. Earth resistance tester (rod-type/clamp-on)
  - iii. Leakage current tester
  - iv. Anemometers
  - v. Thermometers
  - vi. Pressure gauges
  - vii. Thermography camera
  - viii. CO<sub>2</sub> level sensor
  - ix. Humidity & temperature meter
  - x. Manometer
  - xi. Insulation tester
  - xii. Flow meter
- c. All testing instruments/meters shall be accompanied with valid calibration certificate.
- d. The site measurements should be recorded in the presence of University's personnel only.
- e. The work must be carried out in normal working hours without causing inconvenience to normal working of the University. Permission/advance notice is to be provided in case of long or deviated working hours.
- f. The firm/individual should deploy only BEE certified and experienced Auditors/Engineers having requisite license to carry out such works. Utmost care shall be exercised by the firm/individual in carrying out the work to ensure that no damage is caused to persons and properties.
- g. All reports shall be in printed/typed format. Handwritten copied or photocopies are not acceptable. Also the soft copy (editable and PDF) of these reports has to be submitted.

- h. The University will not be liable for any injury or damage to persons and any such happening will be entirely the responsibility of the firm/individual. Personnel should be well trained and should have adequate knowledge in electrical safety aspects and handling electrical equipments. The equipments supplied to personnel should meet the related IS Standards/ International Standards as per prevailing rules of Central/State Government.
- i. Any damage to University Property, equipment under testing and measurement during the Energy Audit will be charged to service provider.
- j. Statutory Requirements: Electrical Audit of the Building and Electrical Installations shall be carried out with reference to applicable Indian Standard, Indian Electricity Rules(IE), PD Manual (Para 4.11), and other relevant codes of Practice to identify potential electrical hazards to prevent or minimize accidents. The Audit should be carried out using calibrated instruments and personal protective equipment during field visits for inspection and data collection. During the Audit, the audit team should ensure that in addition to other provisions of the IE rules as per IE Act, the provisions contained in para 29 of the IE act specifically listed as under are complied with: Para 29:- Construction, installation, protection, operation and maintenance of electric Supply lines and apparatus-
  - (1) All electric supply lines and apparatus shall be of sufficient ratings for power, insulation and estimated fault current and of sufficient mechanical strength, for the duty which they may be required to perform under the environmental conditions of installation, and shall be constructed, installed, protected, worked and maintained in such a manner as to ensure safety of 2[human beings, animals and property]
  - (2) Save as otherwise provided in these rules, the relevant code of practice of the 3[Bureau of Indian Standards] 4[including National Electrical Code] if any may be followed to carry out the purposes of this rule and in the event of any inconsistency, the provision of these rules shall prevail.
  - (3) The material and apparatus used shall conform to the relevant specifications of the 3[Bureau of Indian Standards] where such specifications have already been laid down.
- k. Relevant Codes of Practices: Some of the relevant codes of practice are enumerated below:
  - a. Indian Electricity Rules, 1956 (as amended up to date)
  - b. IS: 5216 (Part-I) Recommendations on Safety Procedures and practices in Electrical Work.
  - c. IS: 5216 (Part-II) Recommendations on Safety Procedures and practices in Electrical Work.
  - d. IS: 1646-1961 Code of Practice for fire safety (General): Electrical works
  - e. IS: 4770: 1968 Specifications for Rubber gloves for Electrical Purpose
  - f. IS: 2309 Protection of Buildings and Allied Structures against Lighting
  - g. Gazette Notification dated 20th September 2010 issued by Central Electricity Authority regarding Regulations for measures relating to safety and Electric Supply.
  - h. National Building Code, 2005 (as amended up to date)
  - i. Any other local guidelines / bylaws as applicable

#### Scope of Work:

The Audit activities shall include the following:

- a. **Pre Audit:** Meeting with University's technical team, Visual inspection of the site & verification of various documents regarding energy consumption and electrical installation.
- b. **Audit:** Auditing and performance analysis to determine the condition of electrical installation as detailed below.
- c. Review of key documents and records.
- d. Submission of **Final report** to University as per discussions with the University with suggestions and recommendations for possible areas of energy conservation and cost analysis.

5.

#### The energy audit of the shall cover the following, but not limited to:

#### a. Building Energy Bills Analysis

Analysis of energy consumption pattern in the building with respect to peak demand, load pattern, power factor for the last 2-3 years. Examination of electricity tariff applicable, optimize use of state electricity board electricity and demand side management.

#### b. Electricity Supply and Distribution network-

#### i. Distribution Transformer

- i. Study and analysis of the utility pattern of transformers, checking no load losses of the transformers, including all day Efficiency of each transformer etc.
- ii. Load distribution pie chart for building (lighting loads, power loads and AC load): Identify loading pattern & losses of transformers on the load basis.
- iii. Energy consumption by services in the building
- iv. Determine voltage and current harmonics LT side of transformer and recommendation for reduce the harmonic in the system.
- v. Voltage profile of transmission and distribution system & determine line losses in the system.

#### ii. Distribution Panels

- 1. General inspection of the HT/LT distribution panel(s) for its maintenance and working including checking all the meters mounted on it.
- 2. Conduct thermography on electrical panels and condition assessment.
- 3. Study on Metering system and suggestion for improvement.
- 4. Detailed examination of the existing energy use of the facility with break up.
- 5. Study and examination of judicial use of electric energy, cost balance with break up.
- 6. Performance evaluation of installed capacitors to ensure deliverance of desired output, level of losses, management of system power factor and operation of capacitors.
- 7. Identification of energy conservation opportunity in electrical distribution network to enhance capacity and reduce distribution losses.
- 8. Study of reactive power consumption & capacitor bank health check-up.

#### iii. Power Factor study

- 1. Running power factor in the facility at main incomers and its distribution networks.
- 2. Identify ways to maintain power factor and yield better system performance.

#### iv. Phase voltage and current unbalance

- 1. Measurement of input current and voltage.
- 2. Variation in current & voltage waveform between phases.
- 3. Comparison of the unbalanced system with the prescribed limits.
- 4. Analyse and calculate the line losses in the distribution system as per available data obtained and datasheet so present.

#### v. Harmonics Study

- 1. Identify various levels of voltage & current harmonics.
- 2. Calculation for total harmonics distortion.
- 3. Suggestions/ recommendations to improve the level of harmonics in system.

#### c. Air Conditioning systems

#### i. Centralised Air Conditioning System

Performance evaluation of existing central air conditioning system(s) in all the areas, measurement and analysis of indoor temperatures and suggest optimising the energy utilisation.

#### ii. Chillers

- 1. Measuring all the operating parameters such as water flow (If the actual flow found to be in variation with the designed flow, the same needs to be adjusted to match designed flow before taking observations) inlet & out water temperatures, gas suctions & discharge pressure, Power Consumption etc. after stabilising the parameters.
- 2. Calculation of operating Input KW per TR (IKW / TR) of Chillers at minimum three different available load conditions for each chiller. Performance assessment of Chiller (KW/TR).
- 3. Comparison of actual parameters with the design values, and suggestion for corrective actions to be implemented.
- 4. Performance Assessment of Cooling Tower & pumps.
- 5. Determine energy conservation opportunities and recommendation for improvement of system.

6. Feasibility and cost benefit analysis with a view of energy saving opportunity.

#### iii. Motor load & Pumps Survey

- To find out efficiency and loading on motors based on the results obtained, measurement of power consumption and recommend means for energy saving opportunities for improvement of system.
- 2. Study the effect of rewinding, phase/current unbalancing, type of starters for big size motors, possible use of VFDs etc.
- 3. Measuring all the operating parameter such as water flow, suction & discharge head, power consumption etc.
- 4. Performance Evaluation of chilled water & Condenser water pumps and compare the same with the design or generally expected efficiency of such pumps.
- 5. Feasibility and cost benefit analysis with a view of energy saving opportunity.

#### iv. Package precision Air Conditioners | Split or window or tower air conditioners

- 1. Evaluation of operating Coefficient of Performance (COP) of Precision and package Air Conditioner/Spilt/ Window. Identification and suggestions for performance improvement and energy saving potential.
- 2. Calculation of actual tonnage and comparison of actual parameters with the design values and corrective actions.
- 3. Performance assessment of Air Conditioners Split/Window/Tower/Ductable etc.

#### d. Uninterrupted Power Supply (On-Line)

- 1. Measurement and analysis UPS loading, redundancy, operating efficiency, no load and on load losses, load pattern to suggest measures for energy cost reduction, Measurement, and analysis of Harmonics as per standards and total harmonic distortion calculations.
- 2. Numerical Values of operating load losses, no load losses, and operating efficiency of UPS

#### e. Lighting System

- 1. Examination of the performance of existing lighting system in all the areas, measurement of illumination levels and comparison with standards, etc
- 2. To look possibilities to reduce energy use by incorporating energy efficient lighting system.
- 3. Study of operating electrical parameters like voltage, current etc in the lighting circuits.

#### f. Diesel Generator Sets

- 1. Physical study ad condition of DG Set, General Inspection of DG set should include
  - i. Checking of ventilation arrangement for the DG set room.
  - ii. Checking of loading pattern of DG Sets.
  - iii. Checking adequacy of capacity of DG set w.r.t to actual requirement along with the type of load taken on DG and evaluating its necessity.
  - iv. Checking noise level of DG sets.
  - v. Checking of effectiveness of cooling system for DG
  - vi. Checking of per unit power generation w.r.t consumption.
  - vii. Specific fuel consumption (KWH/Ltr) of DG sets.
- 2. The DG sets are to be tested for operational performance and parameters including Voltage, Current, KW, KWh, KVA should be recorded during the audit.
- 3. Performance assessment of DG Set & optimization of specific fuel consumption. Study of diesel consumption w.r.t. energy generation of DG.
- 4. Load analysis of DG Sets
- 5. Determine Fuel conservation opportunity in economic analysis.
- 6. Determine and analysis of specific energy generation of DG sets.

#### g. Fire Hydrant Pumps and Domestic water Pumps

- 1. Performance analysis of all major motors needs to be studied for possible energy savings opportunities by the application of following items.
  - i. Possibility of on /off control
  - ii. Interlocking
  - iii. Downsizing motors etc.

#### h. Optimisation of Mechanical System losses in the system

- i. Monitoring the physical condition if the system
- ii. Measurement of the power consumption (kW)
- iii. Study of mechanical (Belt & pulley arrangement) system for speed control and optimization of power losses.
- iv. Specific recommendation on improvement of performance of the system
- v. Feasibility and cost benefit analysis with a view of energy saving opportunity

#### i. Motor load Survey

- i. Observation of physical condition of motor.
- ii. Study of motor size as per operating load for optimum efficiency
- iii. Identified motor with less than 50% loading, 50-75% loading, over 100% loading.
- iv. Identified motors with low voltage/ power factor/ voltage imbalance for needed improvement measures.
- v. Study of motor & determine the mechanical losses in the system.
- vi. Feasibility and cost benefit analysis with a view of energy saving opportunity.

#### j. Renewable Energy System

- i. Study of Solar System, if any in the University campus
- ii. Study of utilisation factor of above solar system, if any.
- iii. Performance assessment of solar PV system, solar water heater system, hot water generator, if any
- iv. Identify opportunity for system improvement.
- v. Study of feasibility and cost benefit analysis with a view of energy saving opportunity,

#### k. Energy Audit Report Observations with detailed Analysis

The report shall contain complete building information, inventory of all equipment. It should include the log sheet data collected/measured at site, analysis of data (Log sheet and actual measured), observations of operational performance of various equipment, findings, and recommendations for achieving energy and cost saving.

Date:	
	Signature of Firm (with seal)/ Individual
Place:	(By a person holding the Authority/Power of Attorney)

#### SECTION-IV FORM OF AGREEMENT

(To be executed on non-judicial stamp paper of Rs.500/-)

Agreement No:	Dated:
CENTRAL UNIVERSITY OF RAJASTHAN	EREST FOR CONDUCTING ENERGY AUDIT AT CAMPUS CENTRAL UNIVERSITY OF RAJASTHAN, HANGARH, DISTRICT- AJMER
Central University of Rajasthan, NH-8 B Rajasthan, Pin-305817, hereinafter called Un so demands or requires, includes their succ	day of (month), (year) between andarsindri, Tehsil-Kishangarh, District- Ajmer, iversity, (which expression shall, wherever the context cessors in office and assigns) on the one part and ad the Contractor (which expression shall wherever the eir successors and assigns) on the other part.
ENERGY AUDIT AT CENTRAL UNIVERSIT	ertain works should be executed viz. CONDUCTING Y OF RAJASTHAN and has by Letter of Acceptance accepted the quotation/offer submitted by the contractor letion of such works at a total contract price of
assigned to them in the conditions of condit	ons shall have the same meaning as are respectively ontract hereinafter referred to.  med to form and be read and construed as part of the  ontract.
<ol> <li>In consideration of the payment to be remembers mentioned, the contractor hereby cov</li> </ol>	nade by the University to the contractor as hereinafter enants with the University to execute, complete and espects within the provisions of the contract.

In WITNESS whereof the parties hereto have caused their respective common seals to be here into affixed (or have herewith set their respective hands and seals) the day and year first above written.

prescribed by the contract.

4. The University thereby covenants to pay to the contractor in consideration of the execution, completion and maintenance of the works at contract price at the time and in the manner

Signed, Sealed And Delivered By	Signed, Sealed And Delivered By
For and on behalf of	For and on behalf of
	Central University of Rajasthan
	Bandarsindri, Kishangarh
	Ajmer, Rajasthan
By:	Ву:
Name	
Name	
Designation	
In the presence of	In the presence of
WITNESS	WITNESS
WITNESS	WITNESS
1.	1.
2.	2.

# To be signed by the bidder and same signatory competent / authorised to sign the relevant contract on behalf of Central University of Rajasthan

#### **INTEGRITY AGREEMENT**

This Integrity Agreement is made at on thisday of20	
BETWEEN	
Central University of Rajasthan through Registrar, Central University of Rajasthan, bandersind	i, Dist-
Ajmer. (Hereinafter referred as the 'Principal/Owner', which expression shall unless repugnant	to the
meaning or context hereof include its successors and permitted assigns)	
AND	
(Name and Address of the Individual/firm/Compa	any)
Through (Details of duly authorized signated	ory)
Hereinafter referred to as the "Bidder/Contractor" and which expression shall unless repugnant	to the
meaning or context hereof include its successors and permitted assigns)	
Preamble	
WHEREAS the Principal / Owner has floated the Tender (Eol No	ational ntract". , rules,

AND WHEREAS to meet the purpose aforesaid both the parties have agreed to enter into this Integrity Agreement (hereinafter referred to as "Integrity Pact" or "Pact"), the terms and conditions of which shall also be read as integral part and parcel of the Tender/Bid documents and Contract between the parties.

NOW, THEREFORE, in consideration of mutual covenants contained in this Pact, the parties hereby agree as follows and this Pact witnesses as under:

#### **Article 1: Commitment of the Principal/Owner**

- 1) The Principal/Owner commits itself to take all measures necessary to prevent corruption and to observe the following principles:
  - (a) No employee of the Principal/Owner, personally or through any of his/her family members, will in connection with the Tender, or the execution of the Contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.
  - (b) The Principal/Owner will, during the Tender process, treat all Bidder(s) with equity and reason. The Principal/Owner will, in particular, before and during the Tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.
  - (c) The Principal/Owner shall endeavour to exclude from the Tender process any person, whose conduct in the past has been of biased nature.
- 2) If the Principal/Owner obtains information on the conduct of any of its employees which is a criminal offence under the Indian Penal code(IPC)/Prevention of Corruption Act, 1988 (PC Act) or is in violation of the principles herein mentioned or if there be a substantive suspicion in this regard, the Principal/Owner will inform the Chief Vigilance Officer and in addition can also initiate disciplinary actions as per its internal laid down policies and procedures.

#### Article 2: Commitment of the Bidder(s)/Contractor(s)

1) It is required that each Bidder/Contractor (including their respective officers, employees and agents) adhere to the highest ethical standards, and report to the Government / Department all

suspected acts of fraud or corruption or Coercion or Collusion of which it has knowledge or becomes aware, during the tendering process and throughout the Negotiation or award of a contract.

- 2) The Bidder(s)/Contractor(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the Tender process and during the Contract execution:
  - a) The Bidder(s)/Contractor(s) will not, directly or through any other person or firm, offer, promise or give to any of the Principal/Owner's employees involved in the Tender process or execution of the Contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the Tender process or during the execution of the Contract.
  - b) The Bidder(s)/Contractor(s) will not enter with other Bidder(s)into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or on-submission of bids or any other actions to restrict competitiveness or to cartelize in the bidding process.
  - c) The Bidder(s)/Contractor(s) will not commit any offence under the relevant IPC/PC Act. Further the Bidder(s)/Contract(s) will not use improperly, (for the purpose of competition or personal gain), or pass on to others, any information or documents provided by the Principal/Owner as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
  - d) The Bidder(s)/Contractor(s) of foreign origin shall disclose the names and addresses of agents/representatives in India, if any. Similarly Bidder(s)/Contractor(s) of Indian Nationality shall disclose names and addresses of foreign agents/representatives, if any. Either the Indian agent on behalf of the foreign principal or the foreign principal directly could bid in a tender but not both. Further, in cases where an agent participate in a tender on behalf of one manufacturer, he shall not be allowed to quote on behalf of another manufacturer along with the first manufacturer in a subsequent/parallel tender for the same item.
  - e) The Bidder(s)/Contractor(s) will, when presenting his bid, disclose any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the Contract.
- 3) The Bidder(s)/Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.
- 4) The Bidder(s)/Contractor(s) will not, directly or through any other person or firm indulge in fraudulent practice means a wilful misrepresentation or omission of facts or submission offake/forged documents in order to induce public official to act in reliance thereof, with the purpose of obtaining unjust advantage by or causing damage to justified interest of others and/or to influence the procurement process to the detriment of the Government interests.
- 5) The Bidder(s)/Contractor(s) will not, directly or through any other person or firm use Coercive Practices (means the act of obtaining something, compelling an action or influencing a decision through intimidation, threat or the use of force directly or indirectly, where potential or actual injury may befall upon a person, his/ her reputation or property to influence their participation in the tendering process).

#### **Article 3: Consequences of Breach**

Without prejudice to any rights that may be available to the Principal/Owner under law or the Contract or its established policies and laid down procedures, the Principal/Owner shall have the following rights in case of breach of this Integrity Pact by the Bidder(s)/Contractor(s) and the Bidder/ Contractor accepts and undertakes to respect and uphold the Principal/Owner's absolute right:

1) If the Bidder(s)/Contractor(s), either before award or during execution of Contract has committed a transgression through a violation of Article 2above or in any other form, such as to put his reliability or credibility in question, the Principal/Owner after giving 14 days' notice to the Contractor shall have powers to disqualify the Bidder(s)/Contractor(s) from the Tender process or terminate/determine the Contract, if already executed or exclude the Bidder/Contractor from future contract award processes. The imposition and duration of the exclusion will be determined by the severity of transgression and determined by the

- Principal/Owner. Such exclusion may be forever or for a limited period as decided by the Principal/Owner.
- 2) Forfeiture of EMD/Performance Guarantee/Security Deposit: If the Principal/Owner has disqualified the Bidder(s) from the Tender process prior to the award of the Contract or terminated/determined the Contract or has accrued the right to terminate/determine the Contract according to Article 3(1), the Principal/Owner apart from exercising any legal rights that may have accrued to the Principal/Owner, may in its considered opinion forfeit the entire amount of Earnest Money Deposit, Performance Guarantee and Security Deposit of the Bidder/Contractor.
- 3) Criminal Liability: If the Principal/Owner obtains knowledge of conduct of a Bidder or Contractor, or of an employee or a representative or an associate of a Bidder or Contractor which constitutes corruption within the meaning of IPC Act, or if the Principal/Owner has substantive suspicion in this regard, the Principal/Owner will inform the same to law enforcing agencies for further investigation.

#### **Article 4: Previous Transgression**

- 1) The Bidder declares that no previous transgressions occurred in the last 5 years with any other Company in any country confirming to the anticorruption approach or with Central Government or State Government or any other Central/State Public Sector Enterprises in India that could justify his exclusion from the Tender process.
- 2) If the Bidder makes incorrect statement on this subject, he can bed is qualified from the Tender process or action can be taken for banning of business dealings/ holiday listing of the Bidder/Contractors deemed fit by the Principal/ Owner.
- 3) If the Bidder/Contractor can prove that he has resorted / recouped the damage caused by him and has installed a suitable corruption prevention system, the Principal/Owner may, at its own discretion, revoke the exclusion prematurely.

#### Article 5: Equal Treatment of all Bidders/Contractors/SubContractors

- The Bidder(s)/Contractor(s) undertake(s) to demand from all subContractors a commitment in conformity with this Integrity Pact. The Bidder/Contractor shall be responsible for any violation(s) of the principles laid down in this agreement/Pact by any of its Sub-Contractors/sub-vendors.
- 2) The Principal/Owner will enter into Pacts on identical terms as this one with all Bidders and Contractors.
- 3) The Principal/Owner will disqualify Bidders, who do not submit, the duly signed Pact between the Principal/Owner and the bidder, along with the Tender or violate its provisions at any stage of the Tender process, from the Tender process.

#### **Article 6- Duration of the Pact**

This Pact begins when both the parties have legally signed it. It expires for the Contractor/Vendor 12 months after the completion of work under the contract or till the continuation of defect liability period, whichever is more and for all other bidders, till the Contract has been awarded.

If any claim is made/lodged during the time, the same shall be binding and continue to be valid despite the lapse of this Pacts as specified above, unless it is discharged/determined by the Competent Authority.

#### **Article 7- Other Provisions**

- 1) This Pact is subject to Indian Law, place of performance and jurisdiction is the Headquarters of the Division of the Principal/Owner, who has floated the Tender.
- 2) Changes and supplements need to be made in writing. Side agreements have not been made.
- 3) If the Contractor is a partnership or a consortium, this Pact must be signed by all the partners or by one or more partner holding power of attorney signed by all partners and consortium members. In case of a Company, the Pact must be signed by a representative duly authorized by board resolution.
- 4) Should one or several provisions of this Pact turn out to be invalid; the remainder of this Pact remains valid. In this case, the parties will strive to come to an agreement to their original intensions.

5) It is agreed term and condition that any dispute or difference arising between the parties with regard to the terms of this Integrity Agreement / Pact, any action taken by the Owner/Principal in accordance with this Integrity Agreement/ Pact or interpretation thereof shall not be subject to arbitration.

#### **Article 8- LEGAL AND PRIOR RIGHTS**

All rights and remedies of the parties hereto shall be in addition to all the other legal rights and remedies belonging to such parties under the Contract and/or law and the same shall be deemed to be cumulative and not alternative to such legal rights and remedies aforesaid. For the sake of brevity, both the Parties agree that this Integrity Pact will have precedence over the Tender/Contact documents with regard any of the provisions covered under this Integrity Pact.

IN WITNESS WHEREOF the parties have signed and executed this Integrity Pact at the place

	Ü
(For and on behalf of Principal/Owner)	(For and on behalf of Bidder/Contractor)
WITNESSES:	
1(signature, name and address)	2(signature, name and address)
Place: Dated :	

and date first above mentioned in the presence of following witnesses: