



मध्यप्रदेश भोज (मुक्त) विश्वविद्यालय

राजा भोज मार्ग (कोलार रोड) भोपाल-462016 (म.प्र.)

Madhya Pradesh Bhoj (Open) University

Raja Bhoj Marg (Kolar Road) Bhopal - 462016 India

क्र. 7827/ या.शा./मप्रभोमुवि/2022

भोपाल, दिनांक 23/12/22

प्रति,

मेसर्स ओम एनर्जी आडिटर्स एंड एड्वाइजर्स  
पर्णकुटी, ई-4/207, अरेरा कालोनी,  
भोपाल- 462016

विषय:-मध्यप्रदेश भोज (मुक्त) विश्वविद्यालय मे एनर्जी आडिट करने बावत।

संदर्भ:- आपका प्रस्ताव दिनांक 13.12.2022

उपरोक्त बिषयांतर्गत लेख है कि मध्यप्रदेश भोज (मुक्त) विश्वविद्यालय मे एनर्जी आडिट करने हेतु आपके द्वारा प्रस्तुत प्रस्ताव को विश्वविद्यालय ने स्वीकृत करते हुए आपकी फर्म का चयन किया है। नवीन एवं नवकरणीय ऊर्जा विभाग, मंत्रालय म. प्र. शासन के द्वारा जारी पत्र क्रमांक 633/2010/60 भोपाल, दिनांक 02.12.2010 के अनुसार एनर्जी आडिट हेतु निर्धारित शुल्क संस्था के एक वर्ष के कुल विद्युत देयक राशि का 1% राशि देय होगा। ऊर्जा विभाग के उक्तानुसार निर्धारण के आधार पर भोज विश्वविद्यालय के एक वर्ष (12 माह) के कुल देयको के योग का 1% राशि रुपये 26583 + 18% जी एस. टी. के आंकलन अनुसार आपको विश्वविद्यालय की एनर्जी आडिट करने हेतु आदेशित किया जाता है एवं यह भी लेख है कि एनर्जी आडिट की कुल फीस का 5% राशि म. प्र. ऊर्जा विकास निगम, भोपाल मे जमा कर देयक के साथ रसीद लगाकर प्रस्तुत करने पर भुगतान किया जावेगा।

आदेशानुसार

  
कुलसचिव

क्र. / या.शा./मप्रभोमुवि/2022

भोपाल, दिनांक

प्रतिलिपि:-

1. माननीय कुलपति जी के निज सचिव की ओर सूचनार्थ।
2. वित्त नियंत्रक, मध्यप्रदेश भोज (मुक्त) विश्वविद्यालय, भोपाल
3. सहायक संचालक, आवासीय संपरीक्षा, मप्रभोमुवि।

  
कुलसचिव

म.प्र. भोज (मुक्त) विश्वविद्यालय  
राजाभोज मार्ग (कोलार रोड)  
भोपाल

कुलसचिव

मध्य प्रदेश शासन  
नवीन एवं नवकरणीय ऊर्जा विभाग  
मंत्रालय

4743

14/12/2010

क्रमांक 433 / 2010 / 60

भोपाल दिनांक 22.12.2010

प्रति,

1. समस्त अपर मुख्य सचिव, प्रमुख सचिव/सचिव  
मध्य प्रदेश शासन  
..... विभाग, भोपाल।
2. समस्त विभागाध्यक्ष  
..... मध्यप्रदेश
3. अध्यक्ष/ प्रबंध संचालक  
समस्त निगम/ मण्डल  
..... मण्डल/ निगम  
..... कृषी विकास निगम लि
4. समस्त संभागायुक्त  
..... मध्यप्रदेश
5. समस्त कलेक्टर  
जिला ..... मध्य प्रदेश

विषय :- शासकीय/ अर्धशासकीय निगम/ मण्डल के कार्यालय एवं अन्य भवनों में अनिवार्य ऊर्जा ऑडिट एवं ऊर्जा संरक्षण उपाय करने हेतु निर्देश।

राज्य शासन की भंशा है कि समस्त शासकीय/अर्धशासकीय निगम/ मण्डल के कार्यालय एवं अन्य संस्थानों में वर्तमान में उपयोग की जा रही ऊर्जा के व्यय में प्रभावी कमी किये जाने हेतु ऊर्जा संरक्षण के क्षेत्र में ठोस एवं प्रभावी कार्यवाही की जाये।

2./ हाल में विद्युत आपूर्ति की दरों में हुई वृद्धि के कारण कार्यालयों एवं अन्य भवनों में खपत की जा रही ऊर्जा के देयकों में लगभग 10.66 प्रतिशत की वृद्धि संभावित है। विद्युत दरों में हुई वृद्धि के प्रभाव को निम्नप्रभावी किये जाने हेतु प्रत्येक कार्यालय एवं अन्य भवनों हेतु ऊर्जा खपत के देयक को न्यूनतम रूप से पूर्व वर्ष के ऊर्जा देयक के तुल्य रखे जाने का लक्ष्य निर्धारित किया जात है।

म.प्र. भोज(मुक्त)  
राजाभोज मार्ग (कोल्हार संक)  
भोपाल

/ 2 /

यह लक्ष्य ऊर्जा संरक्षण के विभिन्न उपायों को क्रियान्वित कर एवं ऊर्जा दक्ष लेम्प/फिक्सचर एवं अन्य उपकरणों के उपयोग से प्राप्त किये जा सकते हैं।

3/ राज्य शासन इस परिपत्र में उल्लेखित श्रेणी के उपभोक्ताओं द्वारा अपने कार्यालय अथवा अन्य भवनों में अनिवार्य ऊर्जा अंकेक्षण पूर्ण कराने तथा तदुपरान्त ऊर्जा संरक्षण हेतु अंकेक्षण उपरान्त प्रणाली में सुधार हेतु बनाई गई कार्य योजना के क्रियान्वयन हेतु यह निर्देश प्रसारित कर रहा है। प्रदेश के समस्त शासकीय/अर्धशासकीय/निगम/मण्डल आदि के कार्यालय एवं शासन से संबंध अन्य प्रतिष्ठान, चर्कशाप, प्रयोगशाला आदि जिनका वित्त वर्ष 2009-10 का वार्षिक ऊर्जा देयक रुपये पांच लाख से अधिक है, द्वारा ऊर्जा अंकेक्षण कराया जाना अनिवार्य है।

4/ इस संबंध में चरणवार निम्नानुसार कार्यवाई सम्पादित की जाना है :-

- 4.1 वर्ष 2009-10 में रुपये 5.0 लाख प्रतिवर्ष से अधिक ऊर्जा बिल वाले शासकीय/ अर्धशासकीय/निगम/मण्डल/स्वशायी उपभोक्ताओं द्वारा उनके कार्यालय का ऊर्जा अंकेक्षण कराया जायेगा।
- 4.2 इस हेतु ऊर्जा अंकेक्षकों (एनर्जी ऑडिटर) की पेनल तैयार कर पात्र कार्यालय/ भवनों को योग्य ऊर्जा अंकेक्षक उपलब्ध कराये जाने का उत्तरदायित्व मध्यप्रदेश ऊर्जा विकास निगम को सौंपा गया है।
- 4.3 समय-सीमा में कार्यवाही पूर्ण कराने एवं उसे एकरूपता से करने के लिए रुपये पांच लाख से पच्चीस लाख तक वार्षिक ऊर्जा देयक वाले समस्त उपर्युक्त उपभोक्ताओं के लिए ऊर्जा अंकेक्षण कराने हेतु 25 हजार एक मुश्त शुल्क निर्धारित किया गया है। 25 लाख से अधिक ऊर्जा वार्षिक देयक वाले उपभोक्ताओं हेतु ऊर्जा अंकेक्षण शुल्क 1% रखा गया है। इस व्यय को संबंधित कार्यालय/विभाग को अपने बजट सीमा के अंतर्गत वहन करना होगा। ऊर्जा अंकेक्षक द्वारा सुझाई गई कार्य योजनाओं का गुण दोष के आधार पर आंकलन कर विभाग कार्यालय प्रमुख द्वारा रियायती दरों पर बैंक से ऋण प्राप्त कर क्रियान्वित करने की कार्यवाही सक्षम स्वीकृति के उपरान्त की जा सकती है।

5/ ऊर्जा अंकेक्षण कराये जाने हेतु निम्नानुसार प्रक्रिया निर्धारित की जाती है :-

- 5.1 प्रदेश के सभी जिलों में पांच लाख से अधिक वार्षिक ऊर्जा व्यय वाले समस्त उपभोक्ताओं के कार्यालय/विभाग प्रमुख/कार्यालय/संस्थानों के प्रभारी इस आदेश के जारी होने के 15 दिनों के अन्दर मध्यप्रदेश ऊर्जा विकास निगम लि. को ऊर्जा अंकेक्षण कराने हेतु विभागीय/कार्यालय स्तर से ऑडिट फीस के व्यय की सहमति का उल्लेख करते हुए अनुरोध पत्र भेजेंगे।

*(Signature)*

कुलसूत्री  
राजामोहन (मुक्त)  
राजामोहन मार्ग (कोलार रोड)  
श्रीमाला

- 5.2 मध्यप्रदेश ऊर्जा विकास निगम उनके द्वारा पेनल बद्ध किये गये पात्र एनर्जी ऑडिटर्स में से योग्य ऊर्जा अंकेक्षण को अधिकृत करते हुए संबंधित कार्यालय प्रमुख को विस्तृत कार्यदेश जारी करने हेतु लिखेगा, जिसमें कार्य सम्पादित करने के नियमों एवं शर्तों का स्पष्ट उल्लेख रहेगा (समय-सीमा: पत्र प्राप्ति के एक सप्ताह के अन्दर)
- 5.3 संबंधित ऑडिटर फर्म को कार्यदेश प्राप्त होने से तीन माह के अन्दर एनर्जी ऑडिट पूर्ण करना होगा।
- 5.4 उक्त कार्यवाही पूर्ण होने पर एनर्जी ऑडिटर संबंधित कार्यालय प्रमुख को विस्तृत रिपोर्ट सौंपकर दो सप्ताह के अन्दर प्रस्तुतीकरण करेगा। ऊर्जा संरक्षण की सुझायी गई स्कीम संतोषजनक पाये जाने पर संबंधित कार्यालय प्रमुख एनर्जी ऑडिटर को तदाशय का प्रमाण-पत्र जारी करेगा एवं 95 प्रतिशत राशि का भुगतान कर शेष 05 प्रतिशत राशि ऊर्जा विकास निगम को अग्रेषित करेगा।

6/ ऊर्जा अंकेक्षण की कार्यवाही एवं उसका प्रमाणीकरण पूर्ण होने पर कार्यालय प्रमुख रिपोर्ट में सुझाये गये उपायों का क्रियान्वयन अपने स्तर से करेंगे। क्रियान्वयन हेतु योजना के अन्तर्गत दो प्रकार से कार्यवाही की जायेगी :-

- (1) अल्प व्यय से किये जाने वाले उपायों को एक माह में क्रियान्वयन किया जाये।
- (2) अधिक व्यय की सक्षम स्वीकृति विभागीय प्रक्रिया अनुसार प्राप्त की जाकर आगामी तीन माह में क्रियान्वयन किया जाये।

7/ राज्य शासन की मंशा है कि न सिर्फ ऊर्जा अंकेक्षण निर्धारित समय-सीमा में पूर्ण कराया जावे, अपितु अंकेक्षण में सुझाये गये उपायों पर कार्यालय प्रमुख की सहमति उपरांत समय-सीमा में क्रियान्वयन किया जावे। कार्यालय प्रमुख अंकेक्षण रिपोर्ट में सुझाए गए उपायों को क्रियान्वित करने की योजना को स्वीकृत करने के पूर्व यह सुनिश्चित करेंगे कि योजना की कुल लागत राशि होने वाली बचत से अधिकतम चार वर्षों में पुर्न प्राप्त कर ली जावेगी एवं यह राशि वार्षिक विद्युत देयक की 25% से अधिक नहीं होगी।

8/ सम्पूर्ण कार्य के अनुश्रवण हेतु ऊर्जा विकास निगम द्वारा एक वेब पोर्टल तैयार किया जायेगा जिसमें संबंधित कार्यालय प्रमुख द्वारा कार्य प्रगति की जानकारी वेब पोर्टल पर प्रविष्ट की जायेगी। इस संबंध में निर्देश पृथक से जारी किये जायेंगे।

9/ शासन के विभागीय अपर मुख्य सचिव/प्रमुख सचिव/सचिव द्वारा उनके विभाग के अंतर्गत आने वाले इस परिपत्र द्वारा निर्धारित ऊर्जा व्यय समय-सीमा

*(Signature)*  
 कुलसचिव  
 म.प्र. मोज (नृपत) विद्यापीठ  
 राजागोज मार्ग (कोलाह राव)  
 धोपाट

में आने वाले समस्त कार्यालय/वर्कशाप/प्रयोगशाला/निरीक्षण/भवन/होटल/गेस्ट हाऊस में अंकेक्षण व ऊर्जा संरक्षण के उपायों के कार्यान्वयन की प्रगति की नियमित समीक्षा करेंगे। प्रत्येक विभाग अपने अधीनस्थ कार्यालयों के विषय में राज्य शासन द्वारा ऊर्जा संरक्षण अधिनियम 2001 की धारा 18 के अन्तर्गत जारी अधिसूचना क्रमांक एफ1-01-2009/तैरह, दिनांक 17.02.2010 (छायाप्रति संलग्न) जो शासकीय/अर्धशासकीय भवनों में ऊर्जा के दक्षतापूर्ण उपयोग एवं संरक्षण करने के विषय में जारी किया गया है, के प्रावधानों को भी लागू करेगा (अधिसूचना की प्रति संलग्न है)

10/ उपर्युक्त निर्देशों का कड़ाई से एवं समय/सीमा में पालन करने का दायित्व कार्यालय प्रमुख का होगा। विभागीय स्तर पर विभागाध्यक्ष, निगम/मण्डलों में प्रबंध संचालक तथा शासन स्तर पर प्रमुख सचिव/सचिव इन निर्देशों की सतत समीक्षा करेंगे।

11/ नवीन एवं नवकरणीय ऊर्जा विभाग, मध्यप्रदेश शासन इन निर्देशों के परिपालन हेतु नोडल विभाग घोषित किया जाता है जो सर्वसंबंधित से जानकारी एकत्रित कर आवश्यकतानुसार कार्यवाही करेगा। परिपत्र के क्रियान्वयन हेतु आ रही व्यावहारिक कठिनाइयों के निराकरण हेतु नवीन एवं नवकरणीय ऊर्जा विभाग परिपत्र में अत्यावश्यक संशोधन विभाग स्तर पर कर सकेगा।

12/ यह परिपत्र सामान्य प्रशासन विभाग, वित्त विभाग एवं सार्वजनिक उपक्रम विभाग की सहमति से जारी किया जा रहा है।

संलग्न :- उपरोक्तानुसार

( आलोक श्रीवास्तव )

प्रमुख सचिव

मध्यप्रदेश शासन

नवीन एवं नवकरणीय ऊर्जा विभाग

*Document*

न.प्र. भोज (पुष्प) निष्पत्ति  
राज्यमन्त्रि मन्त्र (कोतार रोड)  
भोपाल

AMIT GUPTA  
BE, MBA, PGDBM (Energy)  
International Energy Advisor

Certified Energy Auditor, Chartered Engineer (Electrical)  
Independent Director, FIE, FIV

**OM Energy Auditors & Advisors**

Letter No. OEAA / BOU / Bhopal / 028

Date: 13 Dec, 2022

To,  
The Registrar  
Bhoj Open University  
Kolar Road, Chuna Bhatti  
Bhopal, MP

Sub: Proposal for conducting Energy Audit for all electrical installations under Bhoj Open University Kolar Road, Bhopal.

Ref.: Mobile Enquiry from Mr Rajesh Patel (9893304356) Dtd 13.12.22

Submitted Through: E mail rajmbc@gmail.com

Dear Sir / Madam,

With context to the reference cited above, we are hereby submitting our proposal for conducting Energy Auditing all electrical installations under Bhoj Open University, Kolar Road, Bhopal.

Recently, besides other Energy Audits, we have conducted similar Energy Audits for similar requirement for Government TB Hospital Bhopal and MLB College Bhopal. The Work Order for MLB College is attached herewith for your reference as Annex 1.

**Introduction:** I hereby take privilege to introduce 'M/s OM Energy Auditors & Advisors' Bhopal, as an Energy Auditing and Advisory firm, the brief profile of the firm is attached here as Annex 2. The firm is empanelled with MP Urja Vikas Nigam Ltd. Bhopal (Annex 3). A. The lead partner of the firm, that is undersigned is, Bureau of Energy Efficiency (BEE) Certified Energy Auditor (Annex 4) and was former Executive Engineer / Dy General Manager with MP Madhya Kshetra Vidyut Vitaran Co. Ltd (MP State Electricity Board), Bhopal (Annex 5).

**Prescribed Fee:** It is to mention here that M.P. Urja Vikas Nigam (MPUVN) is the Nodal agency, appointed by GoMP for facilitation and monitoring of Energy Audits in the state of MP. The fee for Energy Auditing as prescribed by MPUVN is 'fixed non-negotiable fee' equivalent to 1% of annual Electricity Bill. Over and above the prescribed fee, there shall be 18% GST payable to us. The Income Tax shall be deducted from your end and is inclusive in the above fee.

The latest communication from MP UVN in this regard is attached as Annex 6.

**Payment Terms:** We expect payment of fee, within 2 weeks of submission of Final Report.

**Duration and Deliverable:** One Month of issue of Work Order. Two hard copies and soft copy of Energy Audit Report shall be submitted.

**Completion Certificate:** A 'Completion Certificate' shall be required from your side, for our record and submission to Nodal Agency MPUVN, Bhopal.

Office: 'Pamkuli', E - 4 / 207, Arera Colony, Bhopal - 462016 (M.P.), India

Mob: +91-9425015715. E-Mail: amitgupta\_65@yahoo.co.in, Web Site: www.oeaa.in

'OM is Energy'

'Om Eliminates Ohm'

Advisory for Power Utilities, Power Distribution, Energy Audits, Fire Safety Audits, Valuation, Smart Grids, Renewable Energy, Electric Vehicle, Tariff & Regulatory, Infra Strengthening, IT & ERP

①

**AMIT GUPTA**  
BE, MBA, PGDBM (Energy)  
International Energy Advisor

**Certified Energy Auditor, Chartered Engineer (Electrical)**  
Independent Director, FIE, FIV

**OM Energy Auditors & Advisors**

**Support:** We shall be requiring an electrician from Bhoj Open University, who would accompany us during the entire field work for showing us the load points of premises and provide authorisation to inspect the premises. We shall be requiring electricity bills of last one year (Dec 2021 to Nov 2022), for analysis.

**IT & GST:** The PAN card, GST registration of the firm and cancelled cheque of firm's bank account are attached herewith as **Annex 7, 8 & 9.**

Requesting you to give us a chance to serve and we assure you of our best services and co-operation.

Thanking You,

**Encl.:**

1. Work Order for MLB College Bhopal
2. OEAA Profile
3. UVN Registration
4. Energy Audit Certificate from BEE
5. Experience Certificate from MP State Electricity Board
6. Prescribed Fee from MPUVN
7. PAN Card
8. GST Registration
9. Cancelled Cheque of firm's bank account

Sincerely Yours

  
**AMIT GUPTA**  
Partner

  
कुलसचिव  
म.प्र. भोज (यू.पी.) विश्वविद्यालय  
राजाभोज नगर (कोलार रोड)  
बोयाल

# मध्यप्रदेश ऊर्जा विकास निगम लि. मटेड

## (राज्य शासन का उपक्रम) (ISO 9001:2008 प्रमाणित)



1337-क.एफ/ऊविनि/2020/ईएमसी/03-30/28-11

दिनांक : 09/09/2022

1337-क.एफ/ऊविनि/2020/ईएमसी/03-30/28-11

आधीशक,  
राष्ट्रीय स्वस्थम रोग संस्थान (RIRD)  
गौरी चिकित्सालय महाविद्यालय,  
गोपाल (म.प्र.)

विषय : आपके परिसर में ऊर्जा अंकेक्षण बाबत।

उपरोक्त विषय में उल्लेख है कि प्रदेश शासन के आदेश के अनुसार किसी भी संस्थान के एनर्जी ऑडिट हेतु फीस संस्थान में (स्थापित विद्युत मीटर के हिसाब से) के एक वर्ष के ऊर्जा देयका की 1 प्रतिशत राशि होती है एवं वार्षिक ऊर्जा देयका यदि रु. 25 लाख से कम हो तो न्यूनतम ऊर्जा अंकेक्षण फीस रु. 25,000 + GST@18% होती है। (उदाहरण- यदि संस्था का कुल वार्षिक (बिजली) एनर्जी का बिल रु. 10 लाख/15 लाख या 20.00 लाख है गाने 25 लाख वार्षिक से कम है तो उस संस्था की एनर्जी ऑडिट फीस रु. 25,000/- + जी.एस.टी. होगी। जब संस्था का वार्षिक बिजली बिल रु. 25 लाख से अधिक हो तो उस संस्था की एनर्जी ऑडिट फीस कुल वार्षिक बिजली के बिल की 1 प्रतिशत राशि + जी.एस.टी. होगी।)

इस कार्य हेतु ऊर्जा निगम द्वारा मनोनित (Empanelled) अधिकृत एनर्जी ऑडिटर्स में से उपयुक्त ऑडिटर का चयन आपके द्वारा किया जा सकता है। इस बाबत हमारी वेबसाइट [www.mprenewable.nic.in](http://www.mprenewable.nic.in) के Energy Conservation Tab में Empanelment of Energy Auditors & Energy Managers ([http://mprenewable.nic.in/energy conservation/home/eeem\\_page](http://mprenewable.nic.in/energy%20conservation/home/eeem_page)) पर जाकर फीस एवं मनोनित अधिकृत ऑडिटर्स की जानकारी प्राप्त की जा सकती है। इस लिंक पर जारी किए जाने वाले फर्क ऑर्डर का प्रालप भी संलग्न है। इस स्थिति में कुल फीस की 5% + GST राशि शासन के निर्देशानुसार म.प्र. ऊर्जा विकास निगम लिमिटेड को देय होगी। अन्य जानकारी के लिए ऊर्जा विकास निगम से सम्बन्ध किया जा सकता है ([emc.mpuvn@gmail.com](mailto:emc.mpuvn@gmail.com))।

संलग्न- उपरोक्तानुसार।

(डॉ. सुरेन्द्र बाजपेई)  
नोडल अधिकारी

श्री प्रो. ए.  
9

म.प्र. नीज (ऊर्जा) विभाग  
राजामोहन नगर (म.प्र.)  
चौधरी



कार्यालय प्राचार्य, शासकीय महारानी लक्ष्मीबाई कन्या स्वातंत्र्योत्तर स्वरानी महाविद्यालय,  
धौलीटेकनिक, बीराडा, भोपाल मध्यप्रदेश पिन कोड-462002  
टेलीफोन नंबर 0735-2680717

Email: [hegmibgpgcbho@mp.gov.in](mailto:hegmibgpgcbho@mp.gov.in), Website: [www.mpcolleges.nic.in/mlbbpi](http://www.mpcolleges.nic.in/mlbbpi)

क्रमांक 2984 / म.ल.या/स्था/2022

भोपाल, दिनांक 05/04/22

प्रति,

ओम एनर्जी आडिटर्स एवं एडवाइजर्स भोपाल  
एण्ड कुटी ई-4/207 अरेरा कालोनी भोपाल  
पिन मा-462016

विषय:- महाविद्यालय की एनर्जी आडिट किये जाने बाबत।

—00—

शासकीय महारानी लक्ष्मीबाई कन्या महाविद्यालय भोपाल की एनर्जी ऑडिट किये जाने हेतु आपकी समस्या का चयन किया गया है। म.प्र. प्रदेश ऊर्जा विकास निगम के मन्त्रानुसार एनर्जी ऑडिट हेतु फीस रुपये 25000+जीएसटी 18% मान्य करके भुने आगरे महाविद्यालय के एनर्जी ऑडिट के लिए आदेशित किया जाता है।

5/4/22  
(डॉ. ममता चतौरिया)  
प्राचार्यावर्य  
राज. नर. कन्या स्वातंत्र्योत्तर (महाराणी)  
महाराणी, भोपाल (म.प्र.)

सुखसाधव  
प्र.प्र.म.प. (मु.प्र.) वि.प्र.म.प.प.  
राज.न.क.न. (म.प्र.)  
भोपाल

10



# Madhya Pradesh Urja Vikas Nigam Limited

(MP Govt. Undertaking)

Ref. No. F/UVN/2020/EMC/03-10/10076

Date : 07.01.2022

To,

✓ The Director,

M/s Om Energy Auditors and Advisors, Bhopal,

"Parnkuti" E-4/207 Arera Colony,

Bhopal, Pin - 462016

Sub: Renewal of your Empanelment as Energy auditor with MPUVN.

With reference to above matter, it is to inform you that we are renewing your empanelment as Energy Auditor with MPUVN till 31<sup>st</sup> December 2022 or till new empanelment process is completed.

You are requested to kindly submit the status of work done in M.P to MPUVN and acknowledge the same.

Thanking You,

(Bhuvnesh Kumar Patel)

Chief Engineer

Urja Bhawan, Link Road No. 2, Shivaji Nagar, Bhopal - 462016 (M.P.)  
E-mail~ empuvn@bml.in Web-www.mprenewable.nic.in  
Phone: 0755& 2553595, 2556246 Fax: 0755&2553122

REPORT ON ENERGY AUDIT FOR ELECTRICAL INSTALLATIONS OF

**Madhya Pradesh Bhoj (Open) University**

**Raja Bhoj Marg, Kolar Road, Bhopal (MP)**



Registrar MP Bhoj (Open) University Bhopal Work Order No.: 7827, Dtd. 23.12.2022

**AUDIT FIRM**  
**OM ENERGY AUDITORS & ADVISORS**  
**(Bhopal)**

**AMIT GUPTA**  
**BE (Electrical), MBA (Personnel Administration), PGDBM (Energy Management), FIE, FIV**  
**Certified Energy Auditor**  
**Chartered Engineer (Electrical), Approved Valuer (Electrical, Plant & Machinery)**

**19 January 2023**

Energy Audit Report of MP Bhoj (Open) University, Kolar Road, Bhopal, 462016

**सुलभमन्त्रि**  
म.प्र. भोज (मुक्त) विश्वविद्यालय  
राजाभोज मार्ग (कोलार रोड)  
भोपाल

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## WORK ORDER



मध्यप्रदेश भोज (मूक्त) विश्वविद्यालय  
राजा भोज मार्ग (भोजार रोड) भोपाल-462016 (M.P.)  
Madhya Pradesh Bhoj (Open) University  
Raja Bhoj Marg (Bhojar Road) Bhopal - 462016 India

क्र./2022 नं./ वा.भा./संप्रभौमुविनि/2022

भोपाल, दिनांक 23/12/22

प्रति,

मेसर्स आन एनर्जी ऑडिटर्स एंड कंसल्टिंग्स  
एनर्जिकुटी, ई-4/207, अरेरा कालोनी,  
भोपाल-462016

विषय:- मध्यप्रदेश भोज (मूक्त) विश्वविद्यालय में एनर्जी ऑडिट करने का कार्य।  
संदर्भ:- आपका पत्राचार दिनांक 13.12.2022

स्वीकृत विधायकता से यह है कि मध्यप्रदेश भोज (मूक्त) विश्वविद्यालय में एनर्जी ऑडिट करने हेतु आपके द्वारा प्रस्तुत प्रस्ताव को विश्वविद्यालय ने स्वीकृत करते हुए आपको कार्य का चयन किया है। नवीन एवं मध्यमवर्गीय ऊर्जा विभाग, मंत्रालय अ. प्र. शासन के द्वारा जारी एवं क्रमांक 633/2010/60 भोपाल, दिनांक 02.12.2010 के अनुसार एनर्जी ऑडिट हेतु निर्धारित शुल्क वारंट के एक वर्ष के कुल विपुल देयता राशि का 1% राशि देय होगी। ऊर्जा विभाग के उपानुसार निष्प्रेषण के आधार पर-सौदा विश्वविद्यालय के एक वर्ष (12 माह) के कुल देयता के योग का 1% राशि रुपये 25583 + 18% जी एस. टी. के आगमन अनुसार आपको विश्वविद्यालय की कार्यवाही ऑडिट करने हेतु आदेशित किया जाता है एवं यह भी स्पष्ट है कि एनर्जी ऑडिट की कुल फीस का 5% राशि म. प्र. ऊर्जा विकास निगम, भोपाल में जमा कर देयता के साथ रहकर समस्त प्रस्तुत कार्यों पर मुहताब किया जाएगा।

आदेशानुसार

कुलपति

क्र./ / वा.भा./संप्रभौमुविनि/2022

भोपाल, दिनांक

प्रतिनिधि:-

1. अग्रणीय कुलपति जी के निज सचिव की ओर संप्रभौमुविनि।
2. निज निबंधक, मध्यप्रदेश भोज (मूक्त) विश्वविद्यालय, भोपाल।
3. सहायक संचालक, अग्रणीय संप्रभौमुविनि।

कुलपति

दूरभाष : 401 0765-2460003 (भोपाल), फ़ैक्स : 4010-2460002  
ई-मेल : reg@bhojoffice.mphou@gmail.com व/वा reg@bhojoffice.mphou@gmail.com

Scanned with CamScanner

**CERTIFICATE BY ENERGY AUDITOR**

This is to certify that, for the execution of, Work Order No. 7827, Dtd. 23.12.2022, issued by Registrar, MP Bhoj (Open) University, Bhopal -

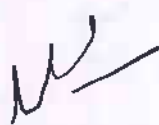
- o The data collection has been carried out diligently and truthfully; the data used in the report are provided wholly by the authorized officials of Bhoj (Open) University, Bhopal.
- o All measuring devices are in good working condition and have been calibrated or certified by approved agencies authorized and no tempering of such devices has occurred.
- o All reasonable professional skill, care and diligence had been taken in preparing the Energy Audit Report and the contents thereof are a true representation of the facts.

**Amit Gupta****Certified Energy Auditor****EA - 9472****Bhopal / Dtd 18.01.2023**

म.प्र. भोज (नुरुत) विश्वविद्यालय  
रजभाभोज नान (कांलार रोड)  
भोपाल

## COMPLETION CERTIFICATE

It is certified that the –

- Energy Audit of 'all electrical installations' of MP Bhoj (Open) University, Raja Bhoj Marg, Kolar Road Bhopal has been completed during 06 - 16 Jan 2023 against our Work Order No. 7827, Dtd. 23.12.2022.
- We acknowledge the facts given above and we are satisfied with the contents of the report.
- We have received two hard copies of the Energy Audit Report for further action.
- Name of the Energy Auditing firm: M/s OM Energy Auditors & Advisors, Bhopal
- Name of the Certified Energy Auditor (CEA): Mr. AMIT GUPTA
- Signature of CEA: 
- Registration Number of CEA: EA - 9472
- Name of the coordinating Executive: Er Rajesh Kumar, University Engineer, BOU, Bhopal

**Dr Anil Kumar Sharma**

**Bhopal / Dtd 19.01.2023**

Registrar

Madhya Pradesh Bhoj (Open) University

Kolar Road, Bhopal, MP

  
Dr. Anil Kumar Sharma  
Registrar  
Madhya Pradesh Bhoj (Open) University  
Kolar Road, Bhopal, MP

**ACKNOWLEDGEMENT**

We acknowledge with a sense of gratitude, the confidence reposed on us by **Prof. Dr Sanjay Tiwari, The Vice Chancellor**, Madhya Pradesh Bhoj (Open) University, Bhopal, MP, by awarding the work of conducting the Energy Audit of electrical installations of MP Bhoj (Open) University (BOU) premises at Raja Bhoj Marg, Kolar Road Bhopal.

As an Energy Audit firm and being Energy professionals, we appreciate the initiatives already taken by Bhoj (Open) University, Bhopal in the direction of Energy saving and Conservation.

We are thankful to the **Nodal Officer, MP Urja Vikas Nigam (MPUVN)**, Bhopal, who has advised **Registrar, Bhoj (Open) University** to get Energy Audit conducted through one of the MPUVN empaneled Energy Auditing firms and forwarded her the list of empaneled firms. We, OM Energy Auditors & Advisors, are empaneled Energy Auditing firm with MPUVN, Bhopal for last 10 years.

We are especially thankful to **Er Rajesh Kumar, University Engineer, BOU** for his continuous cooperation and hand holding during the Energy Audit work. He has made all arrangements for premises inspection and made available all the possible documents to us.

We are also thankful to **Sh Sanjiv Singh, Electrician, BOU**, who accompanied Energy Audit team and showed all locations and facilitate for onsite measurements of electrical parameters.

At last, we are thankful to all the officials of Bhoj (Open) University who directly or indirectly helped in completing this assignment.

**Rati Gupta****Partner****OM Energy Auditors & Advisors****Bhopal****Bhopal / Dtd 18.01.2023**  
म.प्र. भोज (वृत्त) विश्वविद्यालय  
राष्ट्रभोज मार्ग (कलार रोड)  
भोपाल

## EXECUTIVE SUMMARY

The fundamental goal of energy management is to produce goods and provide services with the least cost and least environmental effect.

The MP Bhoj Open University, Bhopal, is an institute of Distance Learning, has Graduation, Post-Graduation and Diploma Programs on following areas, with the duration of 6 months to 6 years.

The Work Order for conduct of Energy Audit of 'all electrical installations' of Madhya Pradesh Bhoj (Open) University, Bhopal, MP, was placed on to our firm M/s OM Energy Auditors & Advisors, Bhopal by The Registrar BOU Order No. 7827, Dtd. 23.12.2022, for Rs. 26,583/- + GST @ 18%.

Er Rajesh Patel, University Engineer and Engineering In/Charge, is designated as single point of contact for arranging data and inhouse staff for field inspection with the auditing team. The audit team visited the premises during 06 Jan to 16 Jan 2023 for data collection and field inspection and measurements.

The Electric Power to the BOU premises is catered by Madhya Pradesh Madhya Kshetra Vidyut Vitaran Co Ltd (MP MK VV CL) through one High Tension (HT) connection of 200 KVA Contract Demand, served on 11 KV. From Metering DP, 11 KV Feeder on pole is run in the campus, feeding to the two 11 / 0.4 KV, 315 KVA Transformers for the Distribution of Electric Power. The transformers are installed around 400 m apart catering to separate areas of the premises.

Transformer 1 caters to Administrative Building, EMPRC Block, Guest House, Registrar Bungalow, and Pump House.

Transformer 2 caters to Officers Residential Flats, VC Bungalow, Employees residential quarters Material Store and Street Lights.

As Back up supply, there are two DG Sets of 100 KVA and 82.5 KVA in the premises. The 82.5KVA DG set is not in operation and is lying unconnected.

There are Solar Panels of 100 Kw installed in the premises. These are 300 Panels of 320 W Pmax, installed by MP Urja Vikas Nigam Ltd under 'Grid Connected Roof Top Solar Project'.

### Total Estimated Connected Load of the premises:

The Total estimated connected electrical load of the premises is 1,182 KW. The Load Centre-wise details are as below:

| Total Estimated Connected Load of the premises |                 |
|------------------------------------------------|-----------------|
| Load Centre                                    | Total Load (Kw) |
| Administrative Building                        | 200             |
| EMPRC Block                                    | 10              |
| D Type Bungalows                               | 40              |
| E & F Type Flats                               | 528             |
| G & H Type Quarters                            | 315             |
| Guest House                                    | 53              |
| Material Store                                 | 5               |
| Miscellaneous Load                             | 31              |
| <b>TOTAL</b>                                   | <b>1,182</b>    |

The Electricity Bill details of last one year have been tabulated in a specific format for analysis. The period of consideration is from Dec 2021 to Nov 2022

| Month                  | Units Consumed (KWh) | Solar Units Export | Net Units Billed | Maximum Demand | Billing Demand | Load Factor | Power Factor | Current Electricity Bill | Electricity Rate |
|------------------------|----------------------|--------------------|------------------|----------------|----------------|-------------|--------------|--------------------------|------------------|
|                        | Total                | KwH                | KWh              | KVA            | KVA            | %           | %            | Rs                       | Rs / KWh         |
| Dec-21                 | 19,916               | 1,484              | 18,432           | 98.52          | 180            | 14          | 72.84        | 2,58,257                 | 14.01            |
| Jan-22                 | 26,267               | 839                | 25,428           | 91.56          | 180            | 17          | 97.87        | 2,18,381                 | 8.59             |
| Feb-22                 | 18,561               | 2,607              | 15,954           | 89.76          | 180            | 11          | 96.22        | 2,14,524                 | 13.45            |
| Mar-22                 | 12,576               | 4,859              | 7,717            | 51.72          | 180            | 6           | 95.37        | 2,09,334                 | 27.13            |
| Apr-22                 | 22,148               | 2,438              | 19,710           | 89.40          | 180            | 13          | 98.20        | 2,16,369                 | 10.98            |
| May-22                 | 26,525               | 1,133              | 25,392           | 95.52          | 180            | 17          | 98.86        | 2,60,457                 | 10.26            |
| Jun-22                 | 26,129               | 1,091              | 25,038           | 101.64         | 180            | 16          | 99.14        | 2,56,686                 | 10.25            |
| Jul-22                 | 19,353               | 1,283              | 18,070           | 75.24          | 180            | 12          | 96.72        | 2,09,096                 | 11.57            |
| Aug-22                 | 14,700               | 1,800              | 12,900           | 48.12          | 180            | 9           | 93.96        | 1,70,066                 | 13.18            |
| Sep-22                 | 14,669               | 2,748              | 11,921           | 46.20          | 180            | 8           | 94.49        | 2,11,702                 | 17.76            |
| Oct-22                 | 13,334               | 4,991              | 8,343            | 53.64          | 180            | 6           | 86.80        | 2,23,122                 | 26.74            |
| Nov-22                 | 12,302               | 4,713              | 7,589            | 61.32          | 180            | 5           | 82.03        | 2,24,215                 | 29.54            |
| <b>Total Annual</b>    | <b>2,26,480</b>      | <b>29,986</b>      | <b>1,96,494</b>  |                |                |             |              | <b>26,72,209</b>         |                  |
| <b>Monthly Average</b> | <b>18,873</b>        | <b>2,499</b>       | <b>16,375</b>    | <b>75.22</b>   | <b>180</b>     | <b>11</b>   | <b>92.71</b> | <b>2,22,684</b>          | <b>16.12</b>     |

#### Major observations:

- There is lot of dirt and dust over the solar panels, which is causing under-utilisation of Solar Plant.
- The Contract Demand of HT Connection of premises is 200 KVA, which is very high considering the requirement and electricity usage.
- The regular annual visit of Engineer from Electrical Inspectorate, GoMP is not made in last 3 years. There is no proper log maintained for Units generated by DG set and the diesel consumption thereof.
- The Electricity Duty on Units generated by DG sets are not paid to State Govt. This would attract penalty imposition by MP Electrical Inspectorate.

*(Signature)*  
 अमित गुप्ता  
 सहायक निदेशक (विद्युत विभाग)  
 राजस्थान राज्य (राजस्थान राज्य)  
 बhopal

- v. There is grass and vegetation in the substation / below transformer. The Main Panel Box of Transformer 2 has burnt out Cables. There is leakage of oil from both the Transformer tanks and the tanks have very low oil level.
- vi. The personal protective Equipment, safety mats, safety charts etc are not found in main electric panel room and DG Room.

#### **MAJOR RECOMMENDATION:**

- i. It is recommended that the Contract Demand of the connection (with MP MK VV CL) be reduced to 80 KVA only from 200 KVA. It would result in monthly saving of Rs 40,00/- in the monthly electricity bill.
- ii. It is recommended that the Solar Panels be cleaned every day by the maintenance agency. This would result in to the most optimal utilisation of Solar Plant. It would result in monthly saving of Rs 1,50,000/- in the monthly electricity bill.
- iii. There should be interconnection arrangement at LT level between the two Distribution Transformers, to increase the reliability of Power supply. In case of annual maintenance or repair works, the entire load may be transferred on one transformer. The capacity of each transformer (315 KVA) is sufficient to cater the full load of the premises.
- iv. All Substation / Transformer equipment (Lightning Arrestors, Switches, Silica Gel etc.) should be properly installed and maintained in healthy and operational condition. Transformer DP and Distribution Box should be maintained by an authorised person or agency. Top Up of Transformer oil and silica gel with due filtration of transformer oil is required.
- v. Proper Log of units generated by DG set should be maintained in a register /log book, to be maintained by the DG Operator / Electrician. A similar log of diesel consumption should also be maintained on month-to month basis.
- vi. Existing Tube Light fittings in the University official buildings should be replaced by LED Lights or CFLs of appropriate rating / wattage. Similarly, the 150-Watt Sodium Vapour Lamps should be replaced by 80 Watt LED. The wattage of LED is proposed more because the street light poles are 11 m long.
- vii. Solar Energy Audit should be conducted at definite periodicity.
- viii. Energy Audit study should be conducted once in three years by BEE Certified and MPUVN empanelled Energy Auditors

#### **ESTIMATED BUDGETARY PROVISION AND COST BENEFIT ANALYSIS:**

There are no major or Capital-intensive works proposed in the Report. There are some mid cost proposals of replacement of Tube Lights and Sodium Vapour Lamps, the funds for which may be easily met out from the savings proposed in the Report.

- o Total Investment (Mostly one Time) = Rs 11,65,000/-
- o Total Annual saving = Rs 23,20,000/-
- o Pay Back Period = 0.50 Years or 6 Months

| Estimated Budgetary Provision for the recommendations |                                                                                                                        |                              |                          |                           |                                |
|-------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|------------------------------|--------------------------|---------------------------|--------------------------------|
| S. No.                                                | Particular                                                                                                             | Qty                          | Estimated Unit Rate (Rs) | Amount (Rs)               | Periodicity                    |
| 1                                                     | Upkeep of Substation and its Equipment (Breather, Silica gel, Lightning arrestors, Earth Pit framing, gitti laying etc | 2                            | 30,000                   | 60,000                    | One Time and then on need base |
| 2                                                     | Transformer Oil filtration and top up                                                                                  | 2                            | 30,000                   | 60,000                    |                                |
| 3                                                     | Safety equipment at SS Panel, and LT Main Panels, Safety Charts, SLD etc                                               | LS                           |                          | 23,000                    | One Time                       |
| 4                                                     | Watering arrangement for SS Earthing                                                                                   |                              | Inhouse                  |                           | Fortnightly                    |
| 5                                                     | Separate earth pits for each building / block, and main Electric panels (where ever required)                          | 5                            | 15,000                   | 75,000                    | One Time                       |
| 6                                                     | Running of Earth wire at all the switch Boards and earth strip from earth pits                                         | LS                           |                          | 50,000                    | One Time                       |
| 7                                                     | Energy Efficiency and Electrical safety awareness Posters                                                              | 10                           | 500                      | 5,000                     | One Time                       |
| 8                                                     | Replacement of Tube Light elements by LED Lights                                                                       | 200                          | Refer to Annexure        | 90,000                    | One Time Pay Back 7 Months     |
| 9                                                     | Replacement of Sodium Vapour Lamps by 80 Watt LED                                                                      | 40                           | Refer to Annexure        | 52,000                    | One Time Pay Back 3 Months     |
| 10                                                    | Interconnection Provision between two Transformers                                                                     | LS                           | Refer to Annexure        | 6,50,000                  | One Time                       |
| 11                                                    | Miscellaneous                                                                                                          | LS                           |                          | 1,00,000                  | Annual                         |
| <b>Total Capital Expenditure</b>                      |                                                                                                                        |                              |                          | <b>11,65,000</b>          |                                |
| SAVINGS                                               |                                                                                                                        |                              |                          |                           |                                |
| S. No.                                                | Particular                                                                                                             | Qty                          | Estimated Unit Rate (Rs) | Annual Saving Amount (Rs) | Periodicity                    |
| 1                                                     | Reduction of Contract Demand From 200KVA to 80 KVA                                                                     |                              |                          | 4,85,000                  | One Time                       |
| 2                                                     | Up Keep of Solar Power Plant                                                                                           |                              |                          | 18,35,000                 |                                |
| <b>Total Annual Saving</b>                            |                                                                                                                        |                              |                          | <b>23,20,000</b>          |                                |
| <b>PAY BACK PERIOD</b>                                |                                                                                                                        | <b>11,65,000 / 23,20,000</b> |                          | <b>0.50</b>               | <b>6 Months</b>                |



The rates in the above table are estimated as per the present market rates. However, the exact budgetary provision to be made as per the actual market rate at the time of execution of works.

All the works should be executed by respective authorised agency like 'A' Class electrical Contractor, 'B' Class electrical contractor under the supervision of skilled Electrical Engineer and licensed electrician.

From Energy Audit point of view, there are no major concerns because there are no heavy electrical loads / machineries installed in the premises. The premises is operating on very low average annual Load Factor of 11%. The Billing Demand is just 75 KVA against Contract Demand of 200 KVA.

न.प्र. सोन (मुख्य विश्वविद्यालय  
राजकोट नगर, राजकोट)

## Chapter 1: Introduction

### 1.1 MADHYA PRADESH BHOJ (OPEN) UNIVERSITY, BHOPAL:

Madhya Pradesh Bhoj (Open) University, hereafter referred as BOU, is one of the prestigious Open University and Institution of Central India, at Raja Bhoj Marg, Kolar Road Bhopal, MP. It was established in the year 2008.

The National Policy of Education (NPE) 1986, emphasized that distance education is an important medium for the development and promotion of higher education. In this context, for the expansion and promotion of distance education the Central Advisory Board of Education (CABE), Government of India took an important decision that in the VIII year plan every state should establish a state open university following the distance education pattern. On this basis Madhya Pradesh Bhoj (Open) University (MPBOU) was established under an Act of State Assembly in 1991 with the following **objectives**: -

- To Extend and Expand Higher Education by reaching the un-reached through various flexible means suited to the open and distance education mode using emerging information and communication technology.
- To promote national integration and the integrated development of human personality for the well-being of the community.
- To determine/maintain standards and promote Distance Education.

The BOU, which is an institute of Distance Learning, has Graduation, Post-Graduation and Diploma Programs on following areas, with the duration of 6 months to 6 years, depending on the type of course:

- Management & Commerce
- Information Technology & Computer Science
- Basic Science
- Health Science
- Humanities & Social Sciences
- Need based Programs
- Education

It has its 'Not Secured' website 'mpbou.edu.in'

### 1.2 ENERGY AUDIT:

The fundamental goal of energy management is to produce goods and provide services with the least cost and least environmental effect.

As per the Energy Conservation Act, 2001, **Energy Audit** is defined as 'the verification, monitoring and analysis of use of energy including submission of technical report containing recommendations for improving energy efficiency with cost benefit analysis and an action plan to reduce energy consumption'.

An **Energy Audit** is a study of a plant or facility to determine how and where energy is used and to identify methods for energy savings.

**Energy Auditing** can help in understanding more about the ways in which energy is used in any organisation and help in identifying the areas where wastefulness of resources can occur and the scope for consequent improvement. Such an audit programme will help to keep focus on variations which occur in the energy costs, identify energy conservation technologies, retrofit for energy conservation equipment etc.

The basic philosophy of Energy Auditing is:

***"Do not Estimate, when you can Calculate  
Do not Calculate, when you can Measure"***

### 1.3 WORK ORDER:

3.1 The Work Order for conduct of Energy Audit of 'all electrical installations' of Madhya Pradesh Bhoj (Open) University, Bhopal, MP, was placed on to our firm M/s OM Energy Auditors & Advisors, Bhopal by The Registrar BOU Order No. 7827, Dtd. 23.12.2022, for Rs. 26,583/- + GST @ 18%.

3.2 The audit team visited the premises during 06 Jan to 16 Jan 2023 for data collection and field inspection and measurements. Interviews and discussions with the concerned officials of BOU were also made, to understand the Energy Systems and the initiatives taken in the past for Energy Efficiency and Conservation.

### 1.4 DETAILS OF ENERGY AUDITING FIRM AND TEAM:

'M/s OM Energy Auditors & Advisors' Bhopal is an Energy Auditing and Management Consultancy firm established in Feb 2012. The firm is empaneled in MP Urja Vikas Nigam, Bhopal, MP Consultancy Ltd., Bhopal, Petroleum Conservation & Research Association (PCRA), Mumbai and with various organisation.

**Sh. Amit Gupta** (BE, MBA, PGDBM), the team leader is a partner in this firm and is Bureau of Energy Efficiency (BEE) **Certified Energy Auditor**. He is also a Chartered Engineer (Electrical) and Approved Valuer for Electrical Plant & Machinery. He has worked as Executive Engineer, MP State Electricity Board (MP Madhya Kshetra Vidyut Vitaran Co. Ltd. Bhopal) and after serving there for 21 years, made early separation with the Board in the year 2012. He has international experience of more than 3 decades in Energy sector especially in Power Distribution and Energy Auditing.

His Mobile No. is 9425015715 and e-mail id is amitgupta\_65@yahoo.co.in

The names of the other professionals who took active part in this work are as below:

- i. **Mrs. Rati Gupta:** She is the other partner of the auditing firm. Academically she is Master of Philosophy (MPhil) in English Linguistics and Masters from Arts (MA) background. She contributed to overall management of assignment and report printing of the report.
- ii. **Mr. Divyam Sharan Gupta:** He is MBA-Tech (Computer Science & Operations) and is responsible for Data Analysis.
- iii. **Mr. Gagan Sharma:** He is a Civil Engineering and a Solar Energy Expert. He is responsible for all field measurements and supervising the Audit team on field.

- iv. **Mr. Abrar Khan:** He is pursuing graduation in Mechanical Engineering and is responsible for all field measurements
- v. **Mr. Anwar Khan:** He is very experienced electrician, with over 35 years of industrial and commercial experience. He contributed for Data Collection, load counting and for taking field measurements.

All the team members have adequate field experience and requisite academic qualifications.

#### 1.5 NAME OF CONTACT PERSON FROM CLIENT SIDE (BOU):

**Er Rajesh Kumar, University Engineer and Engineering In/Charge**, is designated as single point of contact for arranging data and inhouse staff for field inspection with the auditing team. His contact number is 9893304356.

Er Patel deputed Sh. Sanjiv Singh, Electrician BOU for coordinating with Audit Team on field and for facilitating all measurements of electrical parameters and load counting. The Cell of Sh Singh is 9098222811

All the institution staff have extended their full support in the best possible way for successful completion of this assignment.

#### 1.6 LIST OF ENERGY AUDITING INSTRUMENTS:

Following energy auditing equipment were used for this assignment:

| Sl. No. | Name of Instrument           | Rating / Capacity                                                                                               | Make                             |
|---------|------------------------------|-----------------------------------------------------------------------------------------------------------------|----------------------------------|
| 1       | Power Analyser               | 15 V to 750 V, 40 A to 1000 A, 0.6 to 750 KW / KVA / KVA, 0.3 to 1 pf, 0 to 90 Deg., Phase Angle, 1 to 9999 KWh | EN 61010-1                       |
| 2       | Digital Clamp-On Power Meter | 0 to 750 V, 0 to 1000 V DC, 0 to 1000 A, 200 KOhm                                                               | RE 266                           |
| 3       | Lux Meter LX-101             | 0 to 2 Lakh Lux                                                                                                 | Escorp / 204 TES 1332A 100402735 |
| 4       | Infrared Remote Thermometer  | -20 DC to 500 DC<br>Class II Laser                                                                              | Centre 350 Series                |
| 5       | Digital thermometer          |                                                                                                                 | Escorp / Matrix 900 xL 003460786 |

## Chapter 2: Premises, Power Supply and Electricity Bills

### 2.1 PREMISES:

The premises is spread up in the area of around 50 acres.

In the premises of BOU, besides university buildings, there are 2 Bungalows (D Type) each for Vice Chancellor and Registrar, One Guest House (with 9 rooms), 4 No. Residential Blocks (Each block having 5 No. E Type and 6 No. F Type quarters), and residential blocks for employees having 45 No. G & H type quarters.

The premises has administrative building, Electronic Media Production Research Centre (EMPRC Block) and a Material store building. In the administrative buildings are Class rooms, library and offices of VC, Registrar and other Departments.

There is a SBI ATM in the premises, fed through the same power supply of BOU. There is no sub meter installed for this ATM. Though as per Electricity Supply Act the Electric Power from grid cannot be sold to third party. However, as learnt from BOU authorities, University is not charging any Electricity charges from SBI. SBI is also not making any commercial transactions from this unit but the ATM is just for the facilities of university staff and students.

### 2.2 MAIN POWER SUPPLY:

The Electric Power to the BOU premises is catered by Madhya Pradesh Madhya Kshetra Vidyut Vitaran Co Ltd (MP MK VV CL) through one High Tension (HT) connection of 200 KVA Contract Demand, served on 11 KV. The name of the 11 KV Feeder is Yashoda Feeder. The premises comes under City Division West of City Circle Bhopal.

The Energy Meter is installed at the front garden of administrative building. The Energy Meter No. is XG437006 with Multiplying Factor (MF) of 3.0

From Metering DP, 11 KV Feeder on pole is run in the campus, feeding to the two 11 / 0.4 KV, 315 KVA Transformers for the Distribution of Electric Power. The transformers are installed around 400 m apart catering to separate areas of the premises.

Transformer 1 caters to Administrative Building, EMPRC Block, Guest House, Registrar Bungalow, and Pump House.

Transformer 2 caters to Officers Residential Flats, VC Bungalow, Employees residential quarters Material Store and Street Lights. There is an ATM of SBI, which is also fed through this transformer.

#### Rating of Distribution Transformers

Both the Transformers have similar rating and make.

- Make: Awadh Transformers Bhopal
- 315 KVA, 11/0.433 KV, 17 / 420 Amp
- ONAN Cooling
- 4.5% Impedance Voltage
- DY-11 Vector Group

Automatic LT Capacitor Banks of 150 KVAR are installed at the substation of both the Transformers.