



NATURE SCIENCE FOUNDATION
Coimbatore - 641 004, Tamil Nadu, India



APPLICATION FORM & CHECKLIST OF ENERGY AUDIT

Reference Number	NSF/AP/AAC/2.3	Date of Audit:
Name of the Organization & Address		
Name of the Lead Auditing Chairman		
Name of the Team Leader & Member		
Name of the Subject Experts		
Is it a new Audit (or) renewal process?	New audit (or) Renewal audit, tick (√) any one. If it is a Renewal audit, mention the date of last audit:	
Purpose	To ensure that the Organization is involving energy savings and minimizing the energy consumptions towards the roadmap of the National development economy by assessing the electric current usage through Energy audit. As per the Energy Conservation Act, 2001, Energy Audit is needed for the verification, monitoring, conservation and analysis of use of energy efficiency with cost benefit analysis and an action plan to reduce energy consumption. Carbon footprint in terms of carbon dioxide emission due to electricity usage in the campus will be calculated	
PROCEDURE		
Procedure	Description	Responsibility
Annual plan	Each year an internal plan for the Energy audit is prepared by Management and to ensure that the environmental management system is implemented in the campus.	Management Representative(s)
Walk-through Audit	Based on the checklists, the energy audit is carried out in the form of observations in the campus and report and recommendations are to be given to the concern Organization	Audit team
Follow-up of action	Corrective action has to be undertaken and implemented within the prescribed duration.	Energy audit Coordinator
Reporting and Recommendations	Submission of corrective action in the form of report in association with Energy club / Student Chapters of the Institute.	Audit team

I. Quantitative and Qualitative Measurements

S.No.	Requirements and checklists of the Energy audit	Conformity			Weightage
		Yes	No	NA	
Mandatory Parameters					
1.	Have internal Energy audit procedures been developed and implemented by the Organization?				4
2.	Have programmes for the achievement of energy efficiency and conservation objectives been established and implemented as on date in the campus?				4
3.	Has a Management Representative, Electrical Engineer, Staff in charge been assigned for energy savings measures on power consumptions?				4
4.	Have programmes for the achievement of prescribed financial outlay for current bills for each building in the campus towards power consumptions?				4
5.	Has the organization ensured that personnel performing environmental specific tasks have the required knowledge on energy audit (e.g. education, training programme, seminar, workshop, camp, etc.)?				4
6.	Are objectives and targets documented towards energy audit periodically and any Register is maintained?				4
7.	Fluorescent (tube) lights, Incandescent lamp and sodium vapour lights are replaced with CFL / LED lamps				4
8.	Number of Uninterruptible power supply (UPS) and Power generators for power back-up to alternative current supply facility in each building				4
9.	Number of solar panels, solar lights, solar water heaters installed towards renewable energy utilization				4
10.	Ultra-violet lights and any other harmful lights used with safety precautions				4
11.	Attempt in reducing the energy expense and carbon footprint				4
12.	Disposal facility for hazardous items / materials arise from electrical gadgets, equipment and installation				4
13.	Natural / Mechanical air ventilation at Indoor / Outdoor auditorium, stadium, seminar halls, class rooms, etc.				4
14.	Sign boards indicating Switch OFF / ON, Danger at Electrical equipment and Power transformers in the campus towards creating awareness among the stakeholders as well as energy savings methods				4
15.	Transformer, Generators and UPS are protected properly with fencing and kept awareness boards on 'Dangers' and 'Warnings'				4

Supplementary Parameters					
1.	Signing of MoU with Govt. and NGOs to ensure about the energy conservation and efficiency in the campus				5
2.	Promoting ECON awareness and practice among the stakeholders is conducted periodically through Association, Clubs, Forums and Chapters				5
3.	The details of public transport, battery operated / electric vehicles, biofuel use, exhaust fans, boiling water system, chillers and geysers on energy savings mode				5
Exemplary Parameters					
1.	Projects and Dissertation works on the energy conservation and efficiency carried out by students and staff members				6
2.	Steps taken to take care of daylighting, AC machines heat emission and ecofriendly Refrigerators, etc.				6
3.	Are all monitoring electrical equipment appropriately maintained and calibrated?				6
4.	Steps taken towards the procurement of 3-5 star rated equipment during replacement old ones				7
Total weightage					

III. Power supply and equipment, instruments and machineries utility (Data should be furnished by the Auditee)

S.No.	Major and Minor Equipment, Instruments and Machineries Utility on day-to-day basis	Rating / Capacity	Quantity (Nos)
1.	LED Tube Lights		
2.	Flourescent Lamps		
3.	Halogen Lamps		
4.	Sodium Vapour Lamp		
5.	CFL		
6.	LED Focusing Light		
7.	Tube Lights		
8.	Solar Water Heater		
9.	Solar Panel		
10.	UPS		
11.	LCD Projectors		
12.	Refrigerators		
13.	Varanda Light load		
14.	Varanda LED Light Load		
15.	Solar Street Lights		
16.	Lift		
17.	Water Doctors		
18.	RO Water Plant & Water Purification System		
19.	AC (Split, Window and Centralized AC)		

20.	Stabilizers		
21.	Inverters & Converters		
22.	Air Coolers		
23.	Celling Fans		
24.	Pedestal Fans		
25.	Table Fans		
26.	Portable Fans		
27.	Generators		
28.	Motor Pumps		
29.	Compressors		
30.	Vacuum Cleaner		
31.	Biogas Plant		
32.	Drip & Sprinklers Irrigation		
33.	Ventilators		
34.	Exhaust Fans		
35.	Insect Trap		
36.	Automatic Lights		
37.	Internet Connectivity		
38.	Podium containing Mike, Speakers, Amplifiers, Radio, Camera, Sensors, etc.		
39.	Computers, Laptops, iPad, Dot matrix Printers Laser Printers, Xerox Machines, Scanners, Server Fax machines, Inverter with UPS		

IV. Energy Consumption and Cost Profile (Data should be furnished by the Auditee)

S.No	Months	Cost in Rs.	Rating / Capacity
1.	January		
2.	February		
3.	March		
4.	April		
5.	May		
6.	June		
7.	July		
8.	August		
9.	September		
10.	October		
11.	November		
12.	December		

Measurement of Carbon footprint in the Campus

The level of Carbon dioxide will be measured in different places across the Organization campus using a portable CO2 Analyzer (Non dispersive infra-red meter). In addition, the atmospheric temperature, relative humidity and dew point will also be measured using the advanced automatic CO2 Analyzer. Carbon footprint will be calculated based on the stage of calculation as stated in the www.carbonfootprint.com, which is the sum of electricity usage per year and transportation per year.

Electricity usage per year (in metric tons/year)

The CO₂ emission from electricity

= (Electricity usage per year in kWh/1000) x 0.84, where 0.84 is the coefficient to convert kWh to metric tons

a. Total Carbon dioxide emission per year (in metric tons/year)

= total emission from electricity usage + transportation (bus, car, motorcycle, trucks)

Reference of Set values of CO₂ level

- 350-1000 ppm: Typical level found in occupied spaces with good air exchange along with pure air.
- 1000-2000 ppm: Moderate level associated with complaints of drowsiness and poor air quality.
- 2000-5000 ppm: Critical level associated with headaches, sleepiness, and stagnant, stale, stuffy air. Poor concentration, loss of attention, increased heart beat rate and slight nausea may occur.

Note: This Audit process and Certificates are valid for two years only from the date of Audit.

Grading System of Certification

S.No	Descriptions	Grade	Weightage
1.	If Mandatory parameters are not fulfilled	Unsatisfactory/ Inadequate	< 40
2.	If Mandatory parameters are fulfilled	Satisfactory	41 - 60
3.	If Mandatory along with Supplementary parameters are fulfilled	Good	61 - 75
4.	If Mandatory along with Supplementary and Exemplary parameters are fulfilled	Very Good	> 75

Reference:

1. Gnanamangai, B.M., Muruganath, G. and Rajalakshmi, S. 2021. *A Manual on Environmental Management Audits to Educational Institutions and Industrial Sectors*. Laser Park Publishing House, Coimbatore, Tamil Nadu, India. 366 p. [ISBN 978-81-952088-4-5].
2. Rajalakshmi, S., Amzad Basha, K. and Asif Jamal, G.A. 2023. *A Manual on Waste Management Audit*. Laser Park Publishing House, Coimbatore, Tamil Nadu, India. 163 p. [ISBN 978-93-92032-34-9].
3. National Building Code of India 2016. Bureau of Indian Standards. Volume I and II, Manak Bhavan, Bahadur Shah Zafar Marg, New Delhi, India.

<i>Prepared by</i> Programme Manager	<i>Checked By</i> Technical Manager	<i>Approved by</i> Quality Manager
---	--	---------------------------------------

Signature of the Director

Signature of the Lead Auditor

Signature of the Team Leader

Signature of the Team Member

Doc. No: NSF/AAC/2.3	Revision No: 01	Issue No: 01	Issue Date: 02.01.2023
----------------------	-----------------	--------------	------------------------