7

SUSTAINABLE DEVELOPMENT GOAL

7

Affordable and Clean Energy

7.2.5 - Does your university as a body undergo energy reviews to identify areas where energy wastage is highest?

Yes — the University conducts systematic energy performance reviews across **academic, administrative, residential, and research facilities** to identify areas of **highest energy wastage**. Led by the **Sustainability & Energy Management Unit** with support from **certified external energy auditors**, these assessments include **metering analysis, HVAC efficiency checks, lighting audits, load analysis**, and **IoT-based real-time monitoring**. Based on findings, buildings are categorized by **energy-risk level**, guiding actions such as **LED retrofitting, automation sensors, insulation upgrades, solar-feasibility evaluation**, and **consumption-awareness engagement**. Outcomes are documented in **annual energy-efficiency reports** and inform budget planning and **carbon-reduction measures** under our **institutional sustainability roadmap**, contributing to measurable energy optimization and alignment with **SDG 7 (Affordable & Clean Energy)** and **SDG 13 (Climate Action)**.

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(Deemed to be University U/S 3 of the UGC Act,1956)
AVADI, Chennai – 600 054. Tamil Nadu.
Phone: 044-26558080-84
E-mail: registrar@spiher.ac.in
Website: www.spiher.ac.in

Energy Review and Audit Policy

Policy Created on:	**01/07/2020**	**Approved by:**
Revision 1	**10/02/2024**	**REGISTRAR**

Registrar
St. Peter's Institute of Higher Education and Research
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Avadi, Chennai-600 054.

SDGs directly supported:

- SDG 7 Affordable and Clean Energy
- SDG 13 Climate Action

SDGs Indirectly supported SDGs

- SDG 9 Industry, Innovation and Infrastructure
- SDG 11 Sustainable Cities and Communities
- SDG 12 Responsible Consumption and Production
- SDG 4 Quality Education

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Energy Review and Audit Policy

Introduction

St. Peter's Institute of Higher Education and Research (SPIHER) Energy Review and Audit Policy reflects SPIHER's commitment to continuous improvement through data-driven analysis, technological integration, and enhanced monitoring mechanisms for identifying and reducing energy wastage.

Purpose

The purpose of this revision is to strengthen institutional energy management systems by integrating smart monitoring tools, predictive analytics, and automated reporting. It aims to identify areas of energy loss in real time, ensure accountability across departments, and implement effective measures to minimize wastage.

Scope

This policy applies to all buildings, laboratories, and facilities within the SPIHER campus. It covers both direct electricity usage and indirect consumption from HVAC systems, water distribution, ICT infrastructure, and laboratory equipment. The revised framework aligns with ECBC 2017 (amended 2023), ISO 50001:2018, and the National Energy Efficiency Mission standards.

Revised Policy Framework

- Annual Third-Party Energy Audits: Certified auditors will evaluate major systems to identify inefficiencies and benchmark performance.
- Energy Mapping: Creation of an Energy Intensity Map for all buildings to visualize high-consumption areas and prioritize action plans.
- Retrofitting and Optimization: Adoption of LED retrofits, inverter-based systems, and high-efficiency motors for improved energy performance.
- Reporting and Feedback: An Annual Energy Efficiency Review Report will be presented to the SPIHER Sustainability Committee for evaluation and policy updates.

Governance and Monitoring

The Estate Office and the Sustainability Committee will review performance data periodically, track progress through key indicators, and propose

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updates. The final outcomes will be published in SPIHER's Annual Sustainability Report and shared with all stakeholders.

Through this Energy Review and Audit Policy, SPIHER enhances its energy governance structure by integrating smart systems and advanced monitoring. The policy ensures that areas of highest energy wastage are swiftly identified and corrected, promoting responsible energy use, operational efficiency, and sustainability throughout the university campus.

10.02.2024 **REGISTRAR**

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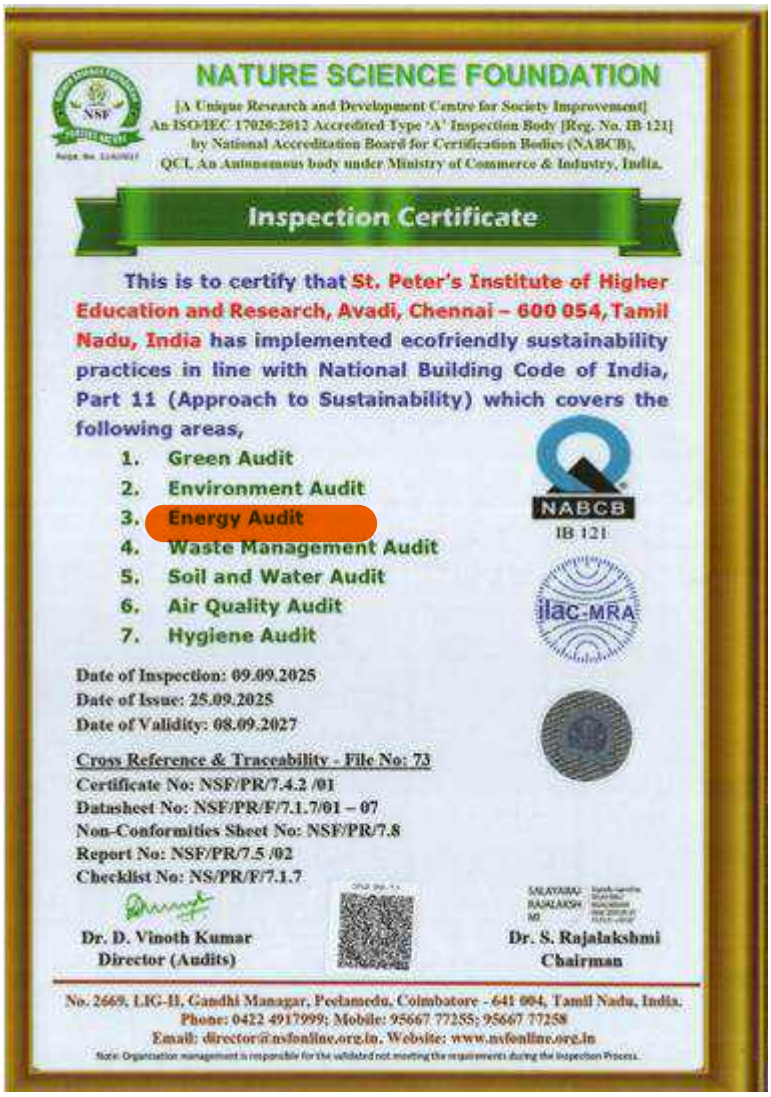
S.No	Particulars	Descriptions
1.	Policy Status	YES — SPIHER formally conducts structured energy reviews and audits.
2.	Audit Frequency	Conducted annually and supplemented with interim periodic assessments.
3.	Responsible Bodies	Sustainability & Energy Management Unit + External Certified Energy Auditors.
4.	Review Methodology	Smart-meter analytics, usage profiling, HVAC efficiency analysis, lighting load study, equipment benchmarking.
5.	High-Risk Area Identification	Energy-intensive zones classified by consumption peaks to determine wastage hotspots.
6.	Examples of Review Outcomes	LED conversion prioritization, motion-sensor installations, corridor lighting optimization, reduced idle-load equipment consumption.
7.	Reporting	Findings documented in internal energy-efficiency reports available to administrators.
8.	Actionable Follow-up Measures	Infrastructure upgrades, awareness campaigns, behavioral energy-saving interventions.
9.	Alignment With SDG Goals	Supports SDG 7 (Clean Energy) & SDG 13 (Climate Action).
10.	Outcome Objective	Continuous reduction in wasted energy and improved operational efficiency.



NATURE SCIENCE FOUNDATION

[A Unique Research and Development Centre for Society Improvement]
An ISO/IEC 17020:2012 Accredited Type 'A' Inspection Body [Reg. No. IB-121]
by National Accreditation Board for Certification Bodies (NABCB),
QCI, An Autonomous body under Ministry of Commerce & Industry, India.

Inspection Certificate

This is to certify that St. Peter's Institute of Higher Education and Research, Avadi, Chennai – 600 054, Tamil Nadu, India has implemented ecofriendly sustainability practices in line with National Building Code of India, Part 11 (Approach to Sustainability) which covers the following areas,

1. Green Audit
2. Environment Audit
3. Energy Audit
4. Waste Management Audit
5. Soil and Water Audit
6. Air Quality Audit
7. Hygiene Audit

NABCB
IB 121

ilac-MRA

Date of Inspection: 09.09.2025
Date of Issue: 25.09.2025
Date of Validity: 08.09.2027

Cross Reference & Traceability - File No: 73
Certificate No: NSF/PR/7.4.2 /01
Datasheet No: NSF/PR/F/7.1.7/01 – 07
Non-Conformities Sheet No: NSF/PR/7.8
Report No: NSF/PR/7.5 /02
Checklist No: NS/PR/F/7.1.7

Dr. D. Vinoth Kumar
Director (Audits)

Dr. S. Rajalakshmi
Chairman

No. 2669, LIG-II, Gandhi Managar, Peelamedu, Coimbatore - 641 004, Tamil Nadu, India.
Phone: 0422 4917999; Mobile: 95667 77255; 95667 77258
Email: director@nsfonline.org.in, Website: www.nsfonline.org.in
Note: Organization management is responsible for the validated not meeting the requirements during the Inspection Process.

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(DEEMED TO BE UNIVERSITY U/S 3 OF THE UGC ACT 1956)
Accredited by NAAC with A+ Grade, AICTE Approved and
ISO 9001:2015 Certified,
AVADI, Chennai – 600 054, Tamil Nadu.

TECHNICAL REPORT OF

ENERGY AUDIT

Submitted to

ST. PETER'S INSTITUTE OF HIGHER EDUCATION AND RESEARCH, CHENNAI - 600 054, TAMIL NADU, INDIA

Date of Audit: 10.03.2022

Submitted by

NATURE SCIENCE FOUNDATION

(A Unique Research and Development Centre for Society Improvement)

ISO QMS (9001:2015), EMS (14001:2015), OHSMS (45001:2018) & EnMS (50001:2018) Certified and MSME Registered Organization

2669, LIG-II, Gandhi Managar, Peelamedu
Coimbatore - 641 004, Tamil Nadu, India.
Phone: 0422 2510006, Mobile: 9566777255, 9566777258
Email: director@nsfonline.org.in, directornsf@gmail.com

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6. Types of Energy Audit

The Energy Audit types depends on the following factors:

- Industry/ Organization type and its function
- Intense and the extent to which final audit is required, and
- The magnitude of cost reduction

Thus Energy Audit can be classified into the following types.

1) Preliminary Energy Audit
2) Detailed Energy Audit
3) Potential and magnitude of Energy Audit
4) Comprehensive Energy Audit

6.1. Preliminary Energy Audit Methodology

Preliminary energy audit gives a quick access to:

- Estimating and establishing energy consumption in the organization
- Estimate the scope of audit
- Identify the areas of maximum energy consumption
- Identify the areas of improvement
- Setting benchmark
- Performing Preliminary energy audit uses existing data.

6.2. Detailed Energy Audit Methodology

The detailed Energy audit offers the most accurate estimation of energy savings and cost. A comprehensive audit provides a detailed energy implementation plans for a facility, as it evaluates all major energy consumption systems. It considers the effects of all projects, accounts for the energy use of all major equipment, and includes detailed energy cost saving calculations and project cost. Energy Balance is the key element in detailed energy audit. The estimated use is compared to utility bill charges. There are three phases in detailed energy audit

Phase I - Pre -Audit Phase
Phase II - Audit Phase
Phase III - Post Audit Phase

6.3. Potential and Magnitude of Energy Audit

A systematic and structured method is necessary for an efficient working of energy audit process. An initial site study is carried out for planning the procedures necessary for an audit.

Initial Site Study and Preparation for Detailed Auditing

An initial site study visit might take one or two days and gives the Energy Auditor an opportunity to meet the concerned person (Auditee), to familiarize with the site and to assess the procedures necessary to carry out the energy audit.

During the initial site visit the Energy Auditor carries out the following actions: -

- Discussing the aims of the energy audit with the audit study site's management.
- Discussing the economic factors associated with the recommendations of the audit.
- Analysing the major energy consumption data with the concerned person.

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- Obtaining the available audit site drawings – building layout, electricity distribution, steam distribution, compressed air distribution, etc.
- Conducting Walk-through audit around site.

The main aims of this visit are:

- Finalising the Audit team members
- Identifying and analysing the main energy consuming areas during the audit.
- Identifying existing instrumentation/ additional metering required.
- To decide if any meters will have to be installed prior to the audit eg. kWh, steam, oil or gas meters.
- Identifying the instruments required for carrying out the audit.
- Planning the time management
- Collecting the macro data on major energy consuming areas.
- Conducting awareness meetings/ programmes.

6.4. Comprehensive Energy Audit

A comprehensive audit can take from several weeks to several months depending on the nature and complexity of the site to complete the audit process. Detailed study is carried out to establish, and investigate, energy and material balances for specific departments. Possible checks of plant operations were carried out over extended periods of time, at nights and at weekends as well as during normal daytime working hours, to ensure that nothing is overlooked.

The audit report includes list of energy inputs and product outputs by major department or by major processing function and estimates the efficiency of each step of the Organization. The methods for improving the efficiency will be listed, and it also includes preliminary assessment of the cost of the improvements and expected payback on any capital investment needed. The audit report concludes with specific recommendations for detailed engineering studies and feasibility analysis. The comprehensive energy audit is useful in identifying the major energy consuming areas to be surveyed during the audit and to identify any existing instrumentation/ additional metering required. Proper care should be taken while identifying the instrumentation required for carrying out the audit and to plan the time management for collecting the macro data from energy consuming areas. The audit report is definitely useful for energy management.

The information to be collected during the detailed audit includes:

1. Energy consumption by type of energy, by department/area, by type of process equipment, by end-use
2. Energy cost and tariff data
3. The distribution and generation of site services (eg. Electricity, Compressed air, steam).
4. Sources of energy and its supply (e.g. electricity from the grid or self-generation)
5. Potential alternative for fuel substitution, process modifications, and the use of co-generation systems (combined heat and power generation).
6. Energy conservation and management awareness training programs within the Organization.

The audit team collects the following baseline data:

A light meter (lux meter) is used to measure the amount of light in a space/on a particular work surface. The light meter consists of a sensor that measures the light falling on it and provides the user with a measurable illuminance reading. Light meters are an especially useful tool for measuring light for safety or over-illumination. The light intensity is usually measured by taking initial reading. where the lightings are turned off (Baseline measurement) and the final reading is taken by turning on the lights in the particular space (illuminated level). Subtracting the baseline measurement from illuminated level gives the light intensity of the particular room/ space.

Table 7: Light intensity measured at various locations of St. Peter's Institute of Higher Education and Research, Chennai, Tamil Nadu.

S.No	Location	Light Intensity (Lux)
1.	Canteen	435-500
2.	Class room	300-350
3.	Chemistry Lab	300-340
4.	Physics Lab	300-340
5.	Librarian room	300- 340
6.	Parking area	450- 500

Reference set of values for LUX

Table: 8 Recommended level as per (ASHARE 62-2019) Iluminance (LUX)

Sl. No	Building	Type of Spaces	Illuminances (LUX)
1	Places of Assembly	Libraries	500
		Auditorium	100
3	Main Block	Computer room	500
4	Hotels	Lobbies	100
		Reception rooms	300
5	Office	Small office	300
		Conference	500
		Landscaped office	500
6	Restaurants	Cafeterias Area	300
		Kitchens	500
7	College	Classroom	300
		Corridors	100
		Faculty room	300

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