Energy Policy

2024

Shoolini University of Biotechnology and Management Sciences, Bajhol,

Solan, Himachal Pradesh, India-173229

shooliniuniversity.com/center-of-excellence-in-energy-science-and-technology

1. Preamble

Shoolini University is dedicated to advancing the United Nations Sustainable Development Goals (SDGs) through its comprehensive Energy Policy, which aims to create a sustainable, energy-efficient, and environmentally responsible green campus. This policy extends to all aspects of the University's operations, including building design and renovation, transportation, environmental management, water conservation, and other institutional activities that contribute to sustainability and responsible resource utilization.

2. Policy Objectives

- To enhance thermal comfort, energy efficiency, and water conservation while reducing energy use in all new Shoolini University buildings designed with solar passive and eco-friendly technologies.
- To install solar rooftop systems to promote renewable energy generation on campus
- To install LED bulbs and other energy-saving devices in the campus.
- To install solar water heating and solar cooking systems in all the residential and hostel areas of the University to save LPG and conventional fuels.
- To reduce CO_2 emissions through all possible measures and promote waste-to-energy initiatives for sustainable resource use.
- Encourage students and staff participation in energy-saving initiatives and ensure affordable, reliable, sustainable energy access for all.

3. Applicability

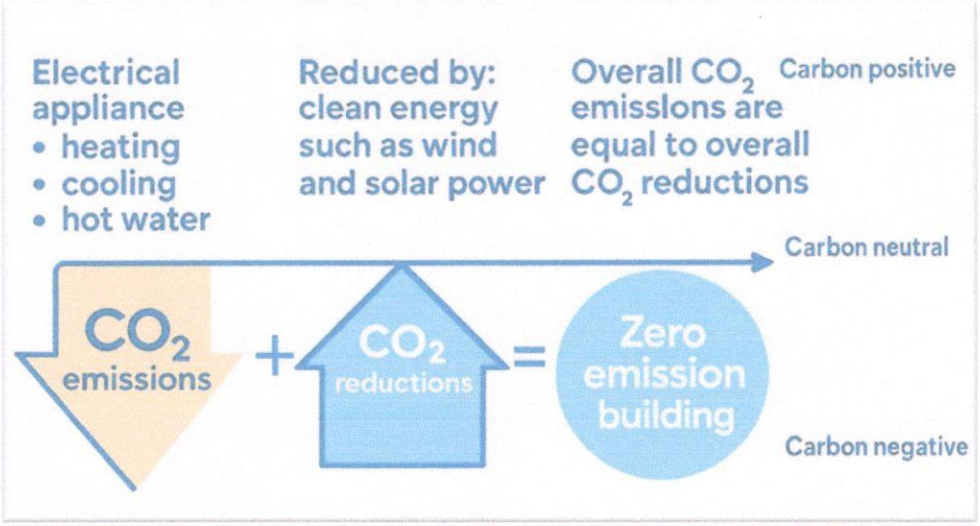
This policy applies to all departments, extensions, and surrounding villages of Shoolini University, involving students, faculty, and staff who are encouraged to actively participate in achieving the objectives of the energy policy.

4. Policy on Energy Efficient Passive Solar Buildings for Zero Carbon Emission

I. Introduction

Shoolini University is firmly committed to achieving Net Zero Emissions by 2028 through the implementation of energy-efficient and passive solar building designs that minimize energy consumption and carbon output. Guided by its Energy and Environment Policies, the university ensures that all new constructions and retrofitting projects integrate solar architecture, renewable energy systems, and sustainable materials to reduce dependence on fossil fuels. This

approach supports Shoolini's broader vision of developing a carbon-neutral, resilient, and sustainable campus, serving as a model for zero-carbon building practices in higher education.



II. Carbon neutrality in buildings

Zero-carbon buildings are those that generate no net annual greenhouse gas emissions from direct fuel combustion (such as natural gas) or electricity use associated with the operation of building-integrated systems and services.

- Building-incorporated services include all energy needs and systems within the structure, such as the thermal envelope, heating and cooling, water heating, built-in appliances, lighting, shared infrastructure, and renewable energy systems.
- Zero-carbon buildings must comply with defined standards for energy efficiency and on-site renewable energy generation.

Carbon-positive buildings go a step beyond zero-carbon by generating surplus energy on-site producing more power than they consume and exporting the excess back to the grid through net metering systems. These projects play a vital role in reducing overall carbon intensity and mitigating the negative impacts of traditional construction and lifestyle practices. Additionally, they help offset emissions in areas where achieving complete carbon neutrality is not feasible, thereby contributing to a more sustainable built environment and limit global warming.

III. Policy Statement, Strategy & Guidelines

a) Policy Statement

Shoolini University is committed to developing an environmentally responsible and energy-efficient campus. To achieve this, the University mandates that all new buildings be designed and constructed according to passive solar architecture principles and integrate energy-efficient building technologies as per the Solar House Action Plan and Policy of the Government of Himachal Pradesh. Additionally, the feasibility of retrofitting existing buildings with passive solar features and systems will be assessed to improve energy efficiency and reduce overall energy consumption. Necessary actions for implementation will be prioritized to ensure timely progress toward a low-carbon campus.

b) Coordination & Implementation Guidelines

i. The Centre of Excellence in Energy Science and Technology (CEEST) at Shoolini University will serve as the nodal agency to coordinate and oversee the Solar Building Action Plan for the University.

ii. A Technical Project Management Cell (TPMC) has been established within CEEST, led by the Director (Energy) as the Principal Coordinator. The TPMC includes experts in solar building design, renewable technology analysis, and construction management, along with the Director (Estate), architects, and civil/electrical engineering teams responsible for implementation and maintenance.

iii. A Computer-Aided Solar Passive Design Cell will be created, comprising an architect, structural and design engineers, an executive engineer, and a software programmer skilled in AutoCAD, seismic analysis, and building performance modeling. This cell will utilize solar radiation data, forecasting tools, and artificial intelligence techniques to optimize design efficiency and predict energy loads.

iv. All newly constructed buildings will function as live laboratories for energy education, research, and innovation, enabling hands-on learning and applied research for CEEST students and faculty.

v. CEEST will conduct training and orientation programmes for the University's technical, architectural, and engineering divisions to encourage the adoption of innovative and sustainable building technologies.

vi. Extending beyond the campus, CEEST will also promote passive solar design and sustainable housing practices in nearby villages as part of its community outreach and social responsibility initiatives. It will provide technical support to the Himachal Pradesh housing agencies to strengthen policy implementation and sustainable construction standards.

c) Strategy

To achieve zero carbon building standards, all carbon emissions must be offset through passive solar design, reduction in conventional energy consumption, and on-site renewable energy generation. This includes installing rooftop solar systems, waste-to-energy units, and adopting sustainable design principles.

Key strategies include:

- Integrating energy efficiency measures with renewable energy systems.
- Selecting building sites that maximize solar access, passive heating, and natural cooling.
- Incorporating passive design techniques to minimize overall energy demand.
- Implementing rainwater harvesting and water conservation systems, particularly for hot water use.
- Utilizing low-embodied-energy and sustainable materials that complement passive solar architecture.

d) Guidelines

Maximizing energy efficiency reduces the amount of renewable energy required to achieve carbon neutrality and enhances sustainability at multiple levels:

- Physical: Minimizes roof area required for solar PV or other renewable systems.
- Economic: Reduces system size and installation costs.
- Environmental: Decreases material usage and the environmental impact of system manufacturing.

5. Review

The Energy Policy will be reviewed from time to time and updated whenever required.

REGISTRAR