Shoolini University

7 AFFORDABLE AND CLEAN ENERGY

ENERGY WASTAGE IDENTIFICATION

2025







Shoolini University of Biotechnology and Management Sciences,
Solan, Himachal Pradesh, India - 173229

7.2.5 Energy wastage identification

Shoolini University undertakes energy assessments through certified energy auditors (representative of Quality Austria) **to identify potential energy wastage**, evaluate energy consumption patterns, and strengthen energy management across the campus. The University has adopted various energy-efficiency measures to reduce electricity consumption and minimise unnecessary energy use. These include automatic cut-off systems, LED lighting, heat pumps, and solar water heaters.

Existence of Energy Reviews

Shoolini University has established a systematic approach to energy management and continuous improvement. The University has been awarded **ISO 50001:2018 Energy Management System certification by Quality Austria** Certification GmbH, confirming its certified energy management framework. The certificate, bearing registration number EM-00274/0, was initially issued on 24 November 2022.



qualityaustria
Certification

CERTIFICATE

Quality Austria Certification GmbH awards this qualityaustria certificate to the following organisation:

Shoolini University of Biotechnology and Management Sciences
Kasauli Hills, Solan, H.P, India Pin - 173229

To provide education services for undergraduate, post graduate, doctoral programme in Sciences, Engineering, Pharmacy, Legal Sciences, Biotechnology, Management Sciences, Liberal Arts, Yoga and undergraduate and post graduate programmes in Agriculture

The validity of the qualityaustria certificate will be maintained by annual surveillance audits and one renewal audit after three years.

This qualityaustria certificate confirms the application and further development of an effective

ENERGY MANAGEMENT SYSTEM
complying with the requirements of standard
ISO 50001:2018

Registration No.: EM-00274/0
Date of initial issue: 24 November 2022
Valid until: 23 November 2028

Vienna, 20 November 2025

Quality Austria Certification GmbH,
AT-1010 Vienna, Zelinkagasse 10/3

Mag. Christoph Mondl
CEO

Mag. Dr. Werner Paar
CEO

Ing. Christoph Baumgartner, MSc, MBA
Authorised representative,
management Customer Service Center

The current validity of the certificate is documented exclusively on the Internet under http://www.qualityaustria.com/en/cert

INTERNET COPY

ISO 50001:2018 Energy Management System certification by Quality Austria

As part of the certification framework, the certificate specifies annual surveillance audits and a **renewal audit after three years**. In addition, the University conducted an energy audit in 2022. On 20th November 2025, a representative of Quality Austria visited the campus in connection with the University's Energy Management System certification. These assessments and certification arrangements support the University's efforts to review energy-management practices, identify opportunities for improving energy efficiency, and strengthen the continuous improvement of campus energy performance. They contribute to Shoolini University's commitment to responsible energy use and **SDG 7: Affordable and Clean Energy**.

Evidence:

Review-I

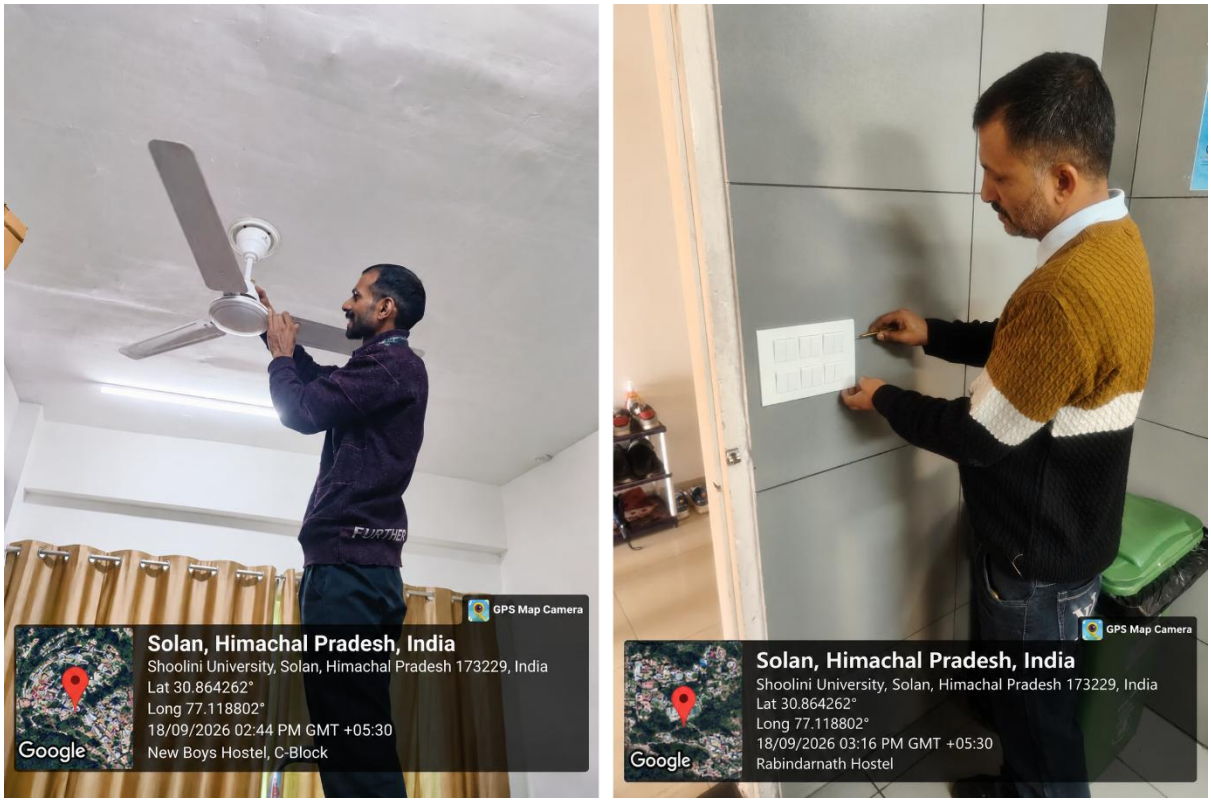
To identify potential energy wastage and improve overall energy management, Shoolini University conducted **Energy Review-I** under the guidance of **Col. (Dr.) N. S. Nagial, Director, Estate**. Based on the review findings, **conventional tube lights from Conference room** were replaced with **rechargeable LED lights** to promote energy conservation and improve illumination. These lights also provide backup lighting during power outages, helping maintain visibility and convenience for hostel residents. Approximately **95% of the University's lighting uses 20-W LED tube lights**, contributing to an estimated **55–60% energy savings**. This initiative supports the University's efforts to reduce unnecessary electricity consumption and strengthen energy efficiency across campus facilities.



Installing Rechargeable LED lights in A Block Conference Room

Review-II

To identify potential energy wastage and improve overall energy management, Good Host Space (GHS) Hostel conducted Energy Review-II under the guidance of Col. (Dr.) N. S. Nagial, Director, Estate. Based on the review findings, all the conventional electric fans were replaced with energy-efficient fans to support reduced electricity consumption. In addition, anti-suicide rods were installed for ceiling fans as a hostel safety measure. Faulty and non-functional electrical switchboards were also replaced with new ones to improve electrical safety, reliability, and operational efficiency. These measures contribute to improved energy management, safer hostel facilities, and the University's broader commitment to sustainable campus operations.



Replacement and maintenance of energy-efficient fans and electrical switchboards in hostel buildings

Conclusion

Shoolini University demonstrates its commitment to energy conservation and sustainable campus operations through systematic energy assessments, certified energy management practices, and targeted interventions to identify and minimise energy wastage. The University's ISO 50001:2018 Energy Management System certification by Quality Austria, together with periodic energy reviews and assessments, provides a structured framework for monitoring energy use and promoting continuous improvement. The implementation of Energy Review-I

and Energy Review-II has resulted in practical energy-efficiency and safety improvements across campus facilities. These initiatives include replacing conventional tube lights with rechargeable LED lights in the conference room, replacing conventional electric fans with energy-efficient alternatives, and upgrading faulty electrical switchboards. Through continued energy reviews, the adoption of energy-efficient technologies, and the maintenance of its energy management framework, Shoolini University seeks to strengthen responsible energy use and improve campus energy performance.

Emissions Report of Shoolini University

Shoolini University monitors its GHG emissions and electricity consumption according to GHG emissions protocol. The calculations are made for direct emissions of CO_2, CH_4 and N_2O emissions from the combustion of fuel in boilers, furnaces and other stationary combustion equipment (Scope-1 emissions) and indirect emissions through electricity consumption (Scope-2 emissions). The emission factors used are according to the IPCC Guidelines for National Greenhouse Gas Inventories as well as issued by Central Electricity Authority Guidelines.

(A) Scope-1 Emissions Calculation for the Year 2025 (Jan 2025-Dec 2025):

GREENHOUSE GAS PROTOCOL

Source ID	Sector	Fuel type (e.g., solid fossil)	Fuel	Total Fuel Consumption	Unit of Measurement (e.g., kg or kWh)	Total Anthropogenic GHG Emissions (metric tonnes CO_2e)
1	Institutional	Liquid fossil	Gas/Diesel oil	7,035	litres (l)	21.30
2	Institutional	Liquid fossil	Gas/Diesel oil	7,682	litres (l)	23.26
3	Institutional	Liquid fossil	Gas/Diesel oil	9,791	litres (l)	29.65
4	Institutional	Liquid fossil	Gas/Diesel oil	10,891	litres (l)	32.98
5	Institutional	Liquid fossil	Gas/Diesel oil	9,269	litres (l)	28.07
6	Institutional	Liquid fossil	Gas/Diesel oil	7,956	litres (l)	24.09
7	Institutional	Liquid fossil	Gas/Diesel oil	8,963	litres (l)	27.14
8	Institutional	Liquid fossil	Gas/Diesel oil	7,927	litres (l)	24.00
10	Institutional	Liquid fossil	Gas/Diesel oil	10,106	litres (l)	30.60
11	Institutional	Liquid fossil	Gas/Diesel oil	5,704	litres (l)	17.27
12	Institutional	Liquid fossil	Gas/Diesel oil	9,065	litres (l)	27.45
Total (mt CO2e)						**307.22**

Scope-1 Total Emissions for the Baseline Year 2021 = 36.62 mt CO_2e

(B) Scope-2 Emissions Calculation for the Year 2021 (Baseline) and 2025:

Year	Energy Consumption (kWh)	Energy Consumption (GJ)	Solar Generation (kWh)	Solar Fraction (%)	Total CO2 Offset (kg)	Total CO2 Emissions (kg)	Total CO2 Emissions after Offset (kg)
2021 (Baseline)	12,34,852	4,445	4,08,942	33%	3,33,288	10,06,404	6,73,116
2025	19,31,579	6,954	3,61,577	19%	2,56,720	13,71,421	11,14,701

(C) Summary:

Summary of Results			
Year	**Scope-1 Emissions (kg CO2e)**	**Scope-2 Emissions (kg CO2e)**	**Total Scope-1 and Scope-2 (kg CO2e)**
2021 (Baseline)	36,616	6,73,116	7,09,732
2025	3,07,220	11,14,701	14,21,921