SIKKIM MANIPAL UNIVERSITY (SMU)

ENERGY AUDIT REPORT

2025-2026

Prepared By :

EHS ALLIANCE

TABLE OF CONTENT

Contents

TABLE OF CONTENT 1

CERTIFICATE 2

ACKNOWLEDGEMENT 3

DISCLAIMER 4

ABBREVIATION 5

OVERVIEW OF THE UNIVERSITY 6

AUDIT PARTICIPANTS 10

EXECUTIVE SUMMARY 11

ENERGY AUDIT - ANALYSIS 12

1. ENERGY CONSUMPTION 12

1.1 SUMMARY OF MONTHLY ELECTRICITY CONSUMPTION AND TOTAL BILL AMOUNT 12

2. DIESEL CONSUMPTION 14

3. ANALYSIS OF DG SETS 15

4. AC SYSTEM 16

5. FANS ANALYSIS 17

6. ANALYSIS OF LIGHTING SYSTEM 19

6.1 BRIEF DESCRIPTION OF EXISTING SYSTEM 19

6.2 INVENTORY OF LIGHTING 19

6.3 LUX MEASUREMENT 21

7. OTHER POWER CONSUMPTION 23

7.1 INVENTORY OF IT INFRASTRUCTURE 23

7.2 WATER PUMP DETAILS 23

7.3 OTHER LOADS 24

8. CAPACITOR BANK 24

ANNEXURE I – ENERGY SAVING INITIATIVES 25

CERTIFICATE

EHS alliance

CERTIFICATE

PRESENTED TO

SIKKIM MANIPAL UNIVERSITY (SMU)

5th Mile Tadong Gangtok, East Sikkim -737102

That has been assessed by EHS Alliance for the comprehensive study of Energy Audit on institutional working framework to fulfill the requirement of

ENERGY AUDIT

ACADEMIC YEAR 2025-26

The energy-saving initiatives carried out by the institution have been verified in the report submitted and were found to be satisfactory.

The efforts taken by management and faculty towards all types of energy used in the institution and sustainability are highly appreciable and noteworthy.

EHS ALLIANCE LLP * GURUGRAM *

SIGNATURE

27.07.2026
DATE OF AUDIT

EHS ALLIANCE SERVICES, PLOT A-72, SURYA VIHAR, GURUGRAM, 122001
WWW.EHSALL.IN | BUSINESS@EHSALL.IN | EHSALLIANCE@GMAIL.COM

ACKNOWLEDGEMENT

EHS Alliance LLP would like to thank the management of Sikkim Manipal University for assigning this important work of Energy Audit. We appreciate the co-operation to the teams for completion of assessment.

First of all, we would like to thank **Dr. Gopalakrishna Prabhu - Vice Chancellor, Sikkim Manipal University** and **Prof. (Dr) K. S. Sherpa- Registrar, Sikkim Manipal University for** giving us an opportunity to evaluate the environmental performance of the campus.

We would also like to thank **Dr. Gopal Thapa - Director (Quality & Compliance) SMU** for his continuous support and guidance, without which the completion of the project would not have been possible. We are also thankful to other staff members who were actively involved while collecting the data and conducting field measurements.

We are also thankful to

Dr. Muralidhar V Pai – Pro-VC & Dean, (SMIMS)

Dr. Savitha G. Kini, Director, (SMIT)

Col V S Yadav (Retd) - Head General Services, (SMU)

DISCLAIMER

EHS Alliance LLP Energy Audit Team has prepared this Energy Audit Report for Sikkim Manipal University, Gangtok based on input data submitted by the representatives of university complemented with the best judgment capacity of the expert team.

While all reasonable care has been taken in its preparation, details contained in this report have been compiled in good faith based on information gathered.

It is further informed that the conclusions are arrived following best estimates and no representation, warranty or undertaking, express or implied is made and no responsibility is accepted by Audit Team in this report or for any direct or consequential loss arising from any use of the information, statements or forecasts in the report.

If you wish to distribute copies of this report external to your organization, then all pages must be included.

EHS Alliance, its staff and agents shall keep confidential all information relating to your organization and shall not disclose any such information to any third party, except that in the public domain or required by law or relevant accreditation bodies. EHS Alliance staff, agents and accreditation bodies have signed individual confidentiality undertakings and will only receive confidential information on a 'need to know' basis.



Vijay Singh
Lead Auditor EMS & Energy

Dr. Uday Pratap
Co-Auditor EMS & Energy

ABBREVIATION

A	**Amps**
AC	**Air Conditioner**
AC	**Alternating Current**
AMET	**Academy of Maritime Education and Training**
CFL	**Compact Fluorescent Lamp**
CIP	**Comprehensive Inspection Program**
DC	**Direct Current**
HSD	**High Speed Diesel**
Hz	**Hertz**
kg	**Kilogram**
kVA	**Kilo-Volt-Ampere**
kW	**kilo Watts**
kWh	**Kilowatt Hour**
kWp	**Kilowatt Peak**
LED	**Light Emitting Diode**
LPG	**Liquefied Petroleum Gas**
MMS	**Module Mounting Structure**
MPPT	**Maximum Power Point Tracker**
NAAC	**National Assessment and Accreditation Council**
SEC	**Specific Energy Consumption**
SPV	**Solar Photovoltaic**
STC	**Standard Test Condition**
TV	**Television**
V	**Volts**
W	**Watts**
W/m2	**Watt Per Square Meter**

OVERVIEW OF THE UNIVERSITY

The Sikkim Manipal University (SMU) was established in 1995. It is recognized by the University Grants Commission (UGC) and established under the Sikkim Manipal University of Health, Medical and Technological Sciences Act, 1995, enacted by the Government of Sikkim.

SMU is the first Public-Private Partnership (PPP) initiative in India in the fields of higher education and healthcare services, established with the objective of providing quality education and affordable healthcare services. The University has been instrumental in offering quality education to students from Sikkim, the North-Eastern Region, and other parts of India, while also providing advanced healthcare services at affordable costs through its teaching hospital.

Since its inception, SMU has achieved several significant milestones in academics, research, healthcare, innovation, and community engagement. Today, the University has evolved into a multidisciplinary institution and continues to expand its academic programmes, research initiatives, infrastructure, and national and international collaborations.

The University is supported by highly qualified, experienced, competent, and dedicated faculty members who are committed to ensuring that graduates are equipped with the knowledge, professional skills, ethical values, and practical competencies required to excel in their chosen professions and contribute effectively to society. SMU plays a significant role in contributing to the nation's skilled human resource pool through quality teaching, research, innovation, entrepreneurship, and community outreach. Transparency, merit-based admissions, academic excellence, student-centric learning, and state-of-the-art infrastructure have been the characteristic features of the University since its establishment.

All academic programmes offered by SMU are approved by the respective statutory and regulatory bodies wherever applicable, including the National Medical Commission (NMC), Indian Nursing Council (INC), All India Council for Technical Education (AICTE), University Grants Commission (UGC), and other relevant statutory bodies.

The engineering programmes like B.Tech Computer Science Engineering, B.Tech Civil Engineering and Master of Computer Applications (MCA) (subject to the applicable accreditation cycle and validity period) offered by the University at Sikkim Manipal Institute of Technology (SMIT) have been accredited by the National Board of Accreditation (NBA).

The University has also been accredited with an 'A+' Grade by the National Assessment and Accreditation Council (NAAC), reflecting its commitment to academic excellence, quality assurance, research, innovation, governance, and continuous institutional improvement.

Constituent units of Sikkim Manipal University

SMU operates through two of its main campuses:

Majhitar Campus: Located at Majhitar, Rangopo, Pakyong District, Sikkim.

This campus houses:

Sikkim Manipal Institute of Technology (SMIT)
School of Humanities, Social Sciences and Liberal Arts
Centre for Distance and Online Education (CDOE)

Tadong Campus: Located in Tadong, Gangtok District, Sikkim

This campus houses

Sikkim Manipal Institute of Medical Sciences (SMIMS)
Sikkim Manipal College of Nursing (SMCON),
Sikkim Manipal College of Allied & Healthcare Professions (SMCAHP)
Department of Hospital Administration
Department of Medical Biotechnology

Programmes offered by the university:

Majhitar Campus		
S. No	**Programme Name**	
1	**B. Tech.**	Civil Engineering
		Computer Science & Engineering
		Electronics & Communication Engineering
		Electronics Engineering (VLSI)Design & Technology)
		Electrical & Electronics Engineering
		Mechanical Engineering
2	**M. Tech.**	Computer Science & Engineering (M. Tech)
		Structural Engineering (M. Tech)
		Hydrology & Water Resources Engineering (M. Tech)
3	**B. Sc.**	Physics
		Chemistry
		Mathematics
		Applied Psychology
4	**BPES**	Physical Education and Sports
5	**M. Sc.**	Physics
		Chemistry
		Mathematics
		Applied Psychology
6	**BBA**	Bachelor of Business Administration
7	**MBA**	Master of Business Administration
8	**BCA**	Bachelor of Computer Applications
9	**MCA**	Master of Computer Applications
10	**B. A.**	English
		Political Science
		Sociology

11	**M. A.**	English)
		Political Science
		Sociology
12	**B. Com**	Bachelor of Commerce
13	**M. Com**	Master of Commerce
Tadong Campus		
14	**MBBS**	Bachelor of Medicine, Bachelor of Surgery (MBBS)
15	**MD/MS**	Doctor of Medicine (MD) Master of Surgery (MS)
16	**Nursing**	B. Sc Nursing
17		M. Sc Nursing
18	**Allied & Healthcare Professions**	Bachelor of Physiotherapy (BPT)
19		Masters of Physiotherapy (MPT)
20		Bachelors in Medical Radiology and Imaging Technology
		Bachelors in Anesthesia and Operation Theatre Technology
		Bachelors in Medical laboratory science (BMLS)
		Bachelors in Cardiovascular Technology
21	**B. Sc.**	Medical Biotechnology
22	**M. Sc.**	Medical Biotechnology
23	**BHA**	Bachelor of Hospital Administration
24	**MHA**	Master in Hospital Administration

MISSION | VISION | OBJECTIVES | CORE VALUES

Mission

Develop professionals of excellent calibre in the field of Health Sciences, Engineering, Management, Medical Biotechnology, Basic and Social Sciences, with a humane approach, capable of shouldering the responsibility of building the nation and be globally competent.

Vision

Global Leadership in Human Development, excellence in Education and Healthcare.

Objectives

- Support, promote and undertake the advancement of academics
- Upscale research, creation and dissemination of knowledge
- Enhance use of ICT and modern education technologies
- Optimum leverage of NEP 2020 and future opportunities
- Facilitate outreach and community services
- Empower people of Sikkim and contribute to human development in NorthEast
- Create social and environmental responsibilities among students and employees
- Ensure steady growth of the University

Core values

- ***Integrity and Honesty:*** We conduct ourselves ethically and legally in all situations upholding stakeholder trust.
- ***Committed to Teams, Accountable for Results and Passion to Win:*** We are passionate about winning and hold ourselves accountable to organisational goals. We believe in teamwork and foster a performance driven culture across the organisation.
- ***Achieving Social Impact:*** We fulfil our responsibility to society, continuously contributing to build a better world.
- ***Respect and Fairness:*** We trust every individual and treat them with dignity, respect and fairness. We practice open and honest communication at all times.
- ***Excellence through Quality, Innovation and Leadership:*** We are committed to delivering superior programs and academic services through continuous innovation and leadership at all levels.

AUDIT PARTICIPANTS

On behalf of the University

Name	
Dr. Gopalakrishna Prabhu	*Vice Chancellor, SMU*
Dr. Muralidhar V. Pai	*Pro-VC & Dean, (SMIMS)*
Prof. (Dr) KS Sherpa-	*Registrar, SMU*
Dr. Savitha G. Kini	*Director, (SMIT)*
Col V S Yadav (Retd)	*Head General Services, SMU*
Dr. Gopal Thapa	*Director (Quality & Compliance) SMU*
Col. Surajit Debnath	*HES, SMIT*
Col D B Chhetri (Retd)	*Head Administration, SMIT*
Mr. Sebom Mukherjee	*Dy. Manager (Housekeeping), SMIT*

On behalf of EHS Alliance Services

Name	Position	Qualifications
Mr. Vijay Singh	Lead Auditor	*M.Sc. M. Tech (Environment Science & Engineering), Energy Auditor, Post Diploma in Industrial Safety Management*
Dr. Uday Pratap	Co-Auditor	*Ph.D., EMS: Lead Auditor ISO14001:2015, QCI–WASH*

EXECUTIVE SUMMARY

The Energy Audit of Sikkim Manipal University was conducted by the EHS Alliance Team to evaluate the campus's existing energy-consumption pattern and identify opportunities for improving energy efficiency. The primary aim of the audit was to reduce energy consumption and associated costs while maintaining the comfort, health, safety, and productivity of students, faculty, staff, and other campus users.

The assessment involved a detailed review of area-wise energy consumption, major energy-consuming equipment, operational practices, maintenance procedures, and the efficiency of commonly used electrical appliances. Data were collected through physical inspection, on-site measurements using suitable instruments, review of available records, and discussions with the University's concerned staff members. Their cooperation and technical support contributed significantly to the successful completion of the audit.

The audit identified potential energy-saving opportunities through improved operational control, regular preventive maintenance, replacement of inefficient appliances with energy-efficient alternatives, and greater awareness among campus users. The report also recommends practical measures and responsible day-to-day practices that can help minimise avoidable energy consumption without affecting academic, administrative, residential, or other essential activities.

The findings and recommendations presented in this report provide a structured approach for optimising the use of available energy resources. Implementation of the suggested measures is expected to support energy and cost savings, improve equipment performance and reliability, reduce the University's environmental footprint, and strengthen its commitment to sustainable campus development. Regular monitoring, periodic review of energy performance, and active participation by the management, faculty, staff, and students will be essential for achieving sustained improvement.

The analysis is based on the conditions observed during the audit, information and records made available by the University, stakeholder interactions, and measurements undertaken during the site survey. Wherever complete data were unavailable, reasonable technical assumptions and approximations were applied. Accordingly, the findings should be interpreted with reference to the operating conditions prevailing during the audit period.

EHS Alliance is pleased to submit this Energy Audit Report to Sikkim Manipal University and sincerely acknowledges the support and cooperation extended by the University's management and staff throughout the audit process.

ENERGY AUDIT - ANALYSIS

1. ENERGY CONSUMPTION

To understand the Energy Consumption trends and to analyze the average monthly consumption we have collected electricity energy bills from April 2025 to Mar 2026.

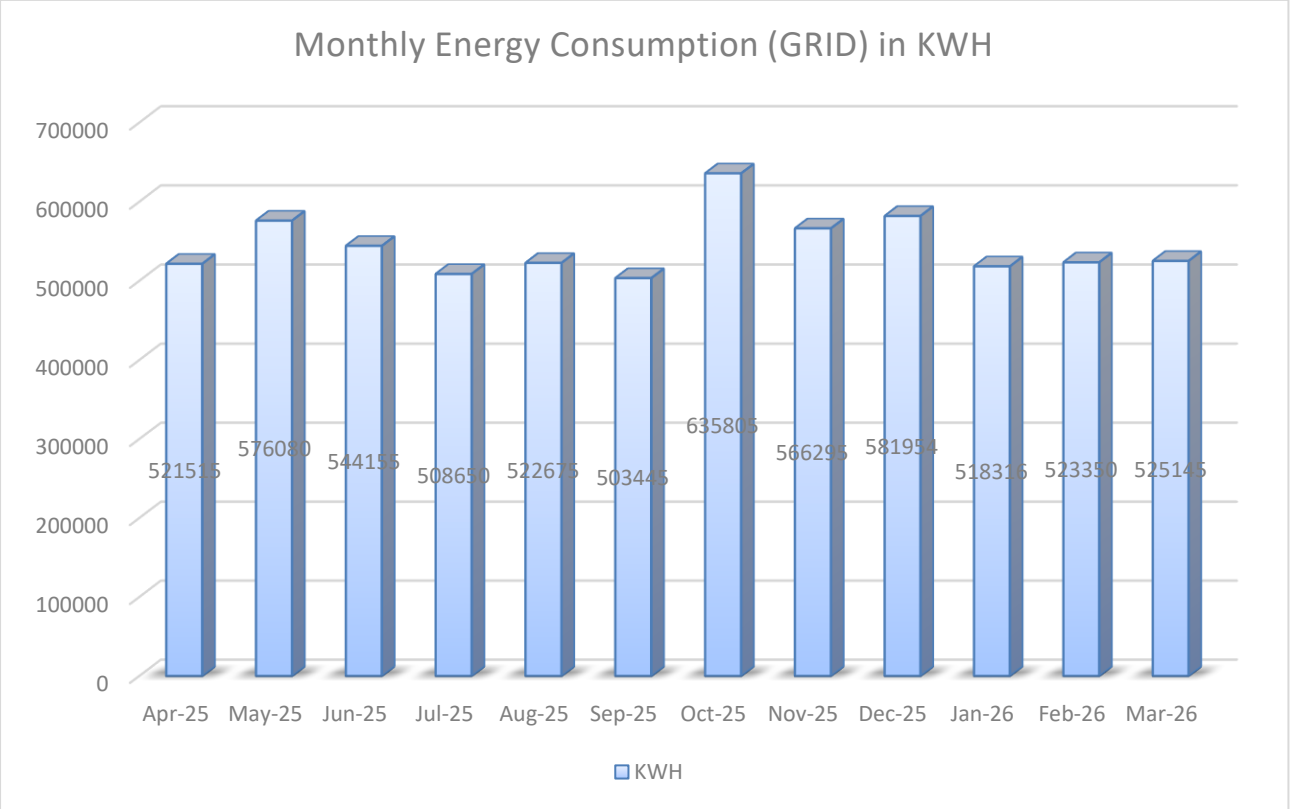
The details of **"Meter Connection"** at **"Sikkim Manipal University"** are as follows-

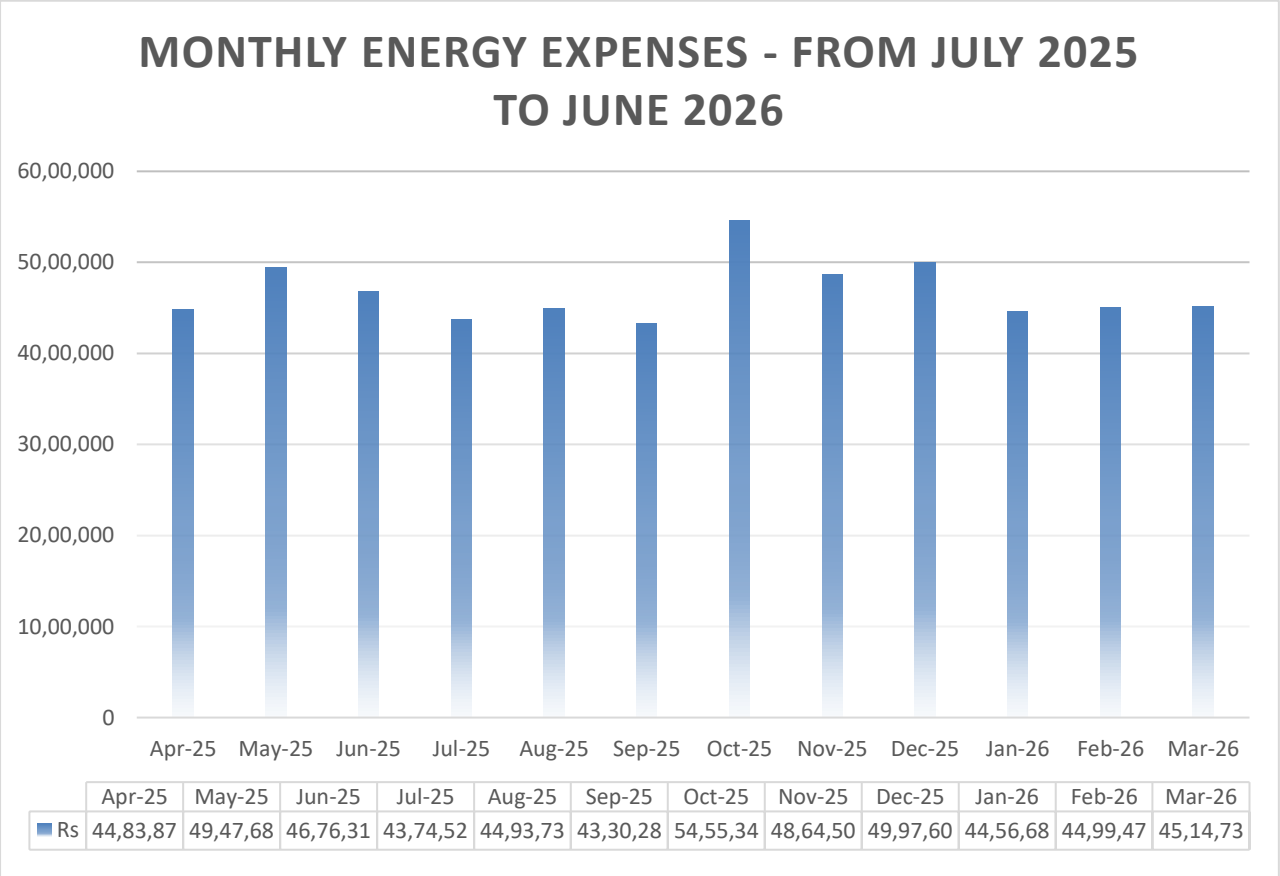
Name	-	Sikkim Manipal University
CA No.	-	121005A00DT30001
Name	-	Sikkim Manipal Institute of Technology
CA No.	-	000000038999

1.1 SUMMARY OF MONTHLY ELECTRICITY CONSUMPTION AND TOTAL BILL AMOUNT

To understand the Energy consumption trend and for developing the baseline parameter we have collected monthly energy bill for the 12 months i.e. from July 2025 to June 2026

Month	SMU	SMIT	Grid Power	Solar	Total	Rate INR	Amount in INR
Jul-25	275,080	246,435	521515	4,564	5,27,515	8.50	44,83,878
Aug-25	240,320	335,760	576080	4,905	5,82,080	8.50	49,47,680
Sep-25	228,000	316,155	544155	4,900	5,50,155	8.50	46,76,318
Oct-25	240,000	268,650	508650	5,500	5,14,650	8.50	43,74,525
Nov-25	300,000	222,675	522675	6,739	5,28,675	8.50	44,93,738
Dec-25	336,000	167,445	503445	6,050	5,09,445	8.50	43,30,283
Jan-26	408,000	227,805	635805	5,800	6,41,805	8.50	54,55,343
Feb-26	348,000	218,295	566295	4,860	5,72,295	8.50	48,64,508
Mar-26	320,000	261,954	581954	6,950	5,87,954	8.50	49,97,609
Apr-26	300,000	218,316	518316	6,930	5,24,316	8.50	44,56,686
May-26	288,000	235,350	523350	5,730	5,29,350	8.50	44,99,475
Jun-26	316,000	209,145	525145	5,602	5,31,145	8.50	45,14,733
SUM	**3,599,400**	**2,927,985**	**6,527,385**	**68,530**	**65,99,385**		**5,60,94,773**



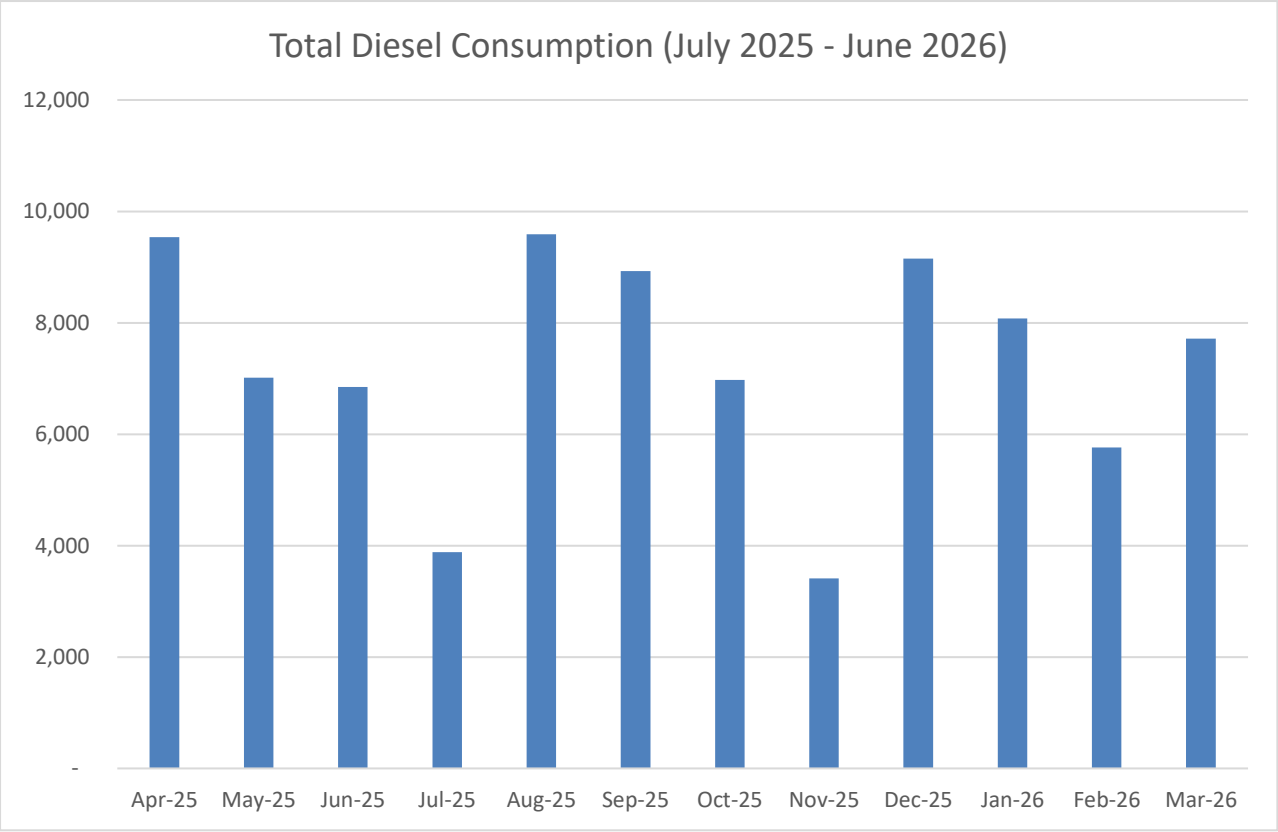


	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26
Rs	44,83,87	49,47,68	46,76,31	43,74,52	44,93,73	43,30,28	54,55,34	48,64,50	49,97,60	44,56,68	44,99,47	45,14,73

2. DIESEL CONSUMPTION

From July 2025 to June 2026, SMU has consumed 86,894 liters of fuel.

Month	Total Diesel Consumption
Jul-25	9,536
Aug-25	7,012
Sep-25	6,847
Oct-25	3,881
Nov-25	9,589
Dec-25	8,929
Jan-26	6,977
Feb-26	3,412
Mar-26	9,150
Apr-26	8,079
May-26	5,764
Jun-26	7,718
Total	**86,894**



3. ANALYSIS OF DG SETS

In the campus, there are nine Diesel Generator (DG) sets for its electrical power needs in case of Grid power failure. DG sets capacity is 4475 kVA.

DG Set Design Details										
Description	Unit	DG Station -1	DG Station -2	DG Station -3	DG Station -4	DG Station -5	DG Station -6	DG Station -7	DG Station -8	DG Station -9
Rated capacity	KVA	625	600	500	500	250	500	500	500	500
Hz	HZ	50	50	50	50	50	50	50	50	50
Sl No.		5AG01227	JHB00690	H5G00491	SKM00598	3T8652CW	FTJ00746	FTJ00752	SKM00486	SKM01052
Make		Caterpillar	Caterpillar	Caterpillar	Caterpillar	Caterpillar	Caterpillar	Caterpillar	Caterpillar	Caterpillar
Volts	Volts	415	415	415	415	415	415	415	415	415
PF		0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Phase		3	3	3	3	3	3	3	3	3
RPM		1500	1500	1500	1500	1500	1500	1500	1500	1500
Amps	Amps	870	835	696	696	348	688	688	688	688
Mfg.		2000	2011	2016	2019	2000	2013	2013	2019	2021

Observation: -

- **Acoustic Management**: Maintain the existing soundproof, silent diesel generator (DG) models to keep campus noise and vibration at minimal levels.
- **Emissions Compliance**: Initiate routine stack monitoring of the DG sets through an authorized, certified laboratory to verify air quality standards.

4. AC SYSTEM

Energy Efficiency Ratio (EER): The performance of smaller chillers and rooftop units is frequently measured in EER rather than kW/ton. EER is calculated by dividing a chiller's cooling capacity (in Btu/h) by its power input (in watts) at full-load conditions. The higher the EER, the More efficient the unit. The cooling effect produced is quantified as tons of refrigeration (TR). The above TR is also called as air-conditioning tonnage.

There are Split, AHU, Cassette, and Ductable ACs installed in Sikkim Manipal University in various areas of various capacity which detail is given below: -

Sl No.	Location/Identification	Type*	1 TR (Qty.)	1.5 TR(Qty.)	2 TR (Qty.)	3 TR (Qty.)	4 TR (Qty.)	5.5 TR (Qty.)	7.5 TR (Qty.)	8.5 TR (Qty.)	11 TR (Qty.)	4 TR COLD ROOM (Qty.)
1	Academic Building	S	8	17	73	5						
2	Academic Building	D						2	6	1	2	
3	Academic Building F-Block	A						13		12		
4	MSC Building	S			8							
5	Hostel-1	S		1								
6	Hostel-2	S		10								
7	Hostel-3	S		5								
9	Staff Housing New R	S		3								
13	Guest House	S		15								
14	Boys Mess	A						4	12			
16	Sport Complex	A						3	40			
22	MBBS College	C	11	9	8		9		1		2	2
27	CENTRAL REFERAL HOSPITAL	C	23	20	21	2	6	2	14			2
	TOTAL		42	80	110	7	15	24	73	13	4	4

Type* - Window – W, Split – S, Cassette – C, AHU - A, Duc table - D

OBSEVATION

- **Strategic Procurement:** Transition future purchases exclusively to BEE 5-Star rated, inverter-based split ACs to lower operational power consumption compared to non-star rated models.
- **Insulation Upgrades:** Remediate and repair the insulation on all AC refrigerant lines to stop thermal leaks and protect system efficiency.
- **Preventative Maintenance:** Establish a strict periodic servicing schedule across the university campus to address performance drops proactively.

5. FANS ANALYSIS

In the Sikkim Manipal University, there are 5270 Ceiling Fans (60W) are installed. Below is the location wise inventory.

Sl No.	Location/Identification	Ceiling Fan-60W	Pedestal Fan 65W	Bracket Fan 45W
1	Staff Housing -A	64		
2	Staff Housing -B	72		
3	Staff Housing -C	40		
4	Staff Housing -D	88		
5	Staff Housing -E	48		
6	MBBS College	316	8	43
7	SMCPT	3		1
8	PG HOSTEL	316	8	43
9	NURSING HOSTEL	19		1
10	MBBS HOSTEL	275		
11	BIOTECHNOLOGY			1
12	CENTRAL REFERAL HOSPITAL	408	2	201
13	ANIMAL HOUSE			2
14	Academic Building	900	10	10
15	Academic Building F-Block	700	10	3
16	MSC Building	30		
17	Hostel-1	492		
18	Hostel-2	490		
19	Hostel-3	135		
20	Hostel-4	260		
21	Staff Housing New R	144		
22	Staff Housing New L	60		
23	Staff Housing Old R	144		
24	Staff Housing Old L	60		
25	Guest House	34	2	
26	Boys Mess	80		
27	Girls Mess	40		
28	Sport Complex	52		
	TOTAL	**5270**	**40**	**305**

Total no of Ceiling Fans (70W)	=	0	Nos.
Total no of Ceiling Fans (60W)	=	5270	Nos.
Total wattage of 70W Ceiling Fans	=	0	Watt
Total wattage of 60W Ceiling Fans	=	3,16,200	Watt
Total wattage of BEE 5 Star rated Fans (30W)	=	1,58,100	Watt
Total saving in Wattage after replacement	=	1,58,100	Watt
Operating hours per day	=	8	Hours
Operating days per annum	=	180	Days
Energy charges per unit in Rs.	=	8.5	INR
Saving in Rs. /Annum	=	19,35,144	INR
Investment INR		1,05,40,000	INR
Payback period: - Months		5.45	Years

Observation and Suggestions: -

In SMU, most of the ceiling fans are of 60 W but BEE 5 Star Rated of 30W Ceiling Fans are present in the market. We are not recommending for replacing existing fans with BEE 5 Star rated 30W fans.

Note: - Energy savings will increase or decrease if the operating hours of the machine /equipment are increased or decreased and the payback period will also increase or decrease if the cost of investment (Cost of machine/equipment/accessories of the machine) will increase or decrease because cost of investment is taken on a tentative basis.

6. ANALYSIS OF LIGHTING SYSTEM

6.1 BRIEF DESCRIPTION OF EXISTING SYSTEM

For assessing the energy efficiency of the lighting system, an Inventory of the Lighting System has been noted/collected, with the aid of a lux meter, measurement and documentation of the lux levels at various locations at the working level has been done.

6.2 INVENTORY OF LIGHTING

Location/Identification	Lights Count
200W-LED High Mast	2
190W-LED High Mast	17
60W LED	14
60W LED Outdoor	24
10W LED	144
18W LED Tube Light	6666
25 W LED	21
45W-Park Light	20
12 W LED Round	440
36W LED	305
72W LED	1650
32W LED	864
39W LED	208
150W LED	303
18W LED Flood	303
36W LED Flood	116
17W LED	36
20W LED	91
100W-RGP Light	43
160W-RGP 4 Feet Light	603
20W LED-FOB Aly Side	346
36WX2 Normal Tube	851
36W Normal Tube	2300
28X2 CFL Tube	512
28W CFL Tube	1050
9W Bulb LED	2640
2X11W PL	10
11W PL	520
18W PL	520
75W Street light	35
90W LED Light	12
125W LED HIGHBAY LIGHT	6
150 W Sodium Vapar	0
250 W MH Lamp	18
400W MH Lamp	68

Table for lights – Investment return (ROI) show

Total no of Tube light (36W)	Nos.	851
Total no of Tube Lights (36W)	Nos.	2300
Total wattage of 36W Tube Lights	Watt	30636
Total wattage of 36W Tube Lights	Watt	82800
Total wattage of Led Tube Lights (20W)	Watt	63020
Total saving in Wattage after replacement	Watt	50416
Operating hours per day	Hours	8
Operating days per annum	Days	180
Energy charges per unit in Rs.	INR	8.5
Saving in Rs. /Annum	INR	617092
Investment INR	INR	472650
Payback period: -	YEARS	0.77
Strongly Recommended		



LT Panel at the campus

6.3 LUX MEASUREMENT

Type of Lamp/Luminaire	Typical Luminous Efficacy (lm/W)	Typical CRI	Typical Life (Hours)	Typical Application in Educational Institutions	Recommended Illuminance (Lux)*	Recommended for New Installations
Halogen Lamp	15–30	100	2,000–4,000	Auditoriums, stage lighting, display lighting	300–500	Limited Use
Fluorescent Tube (T8/T5)	70–105	70–85	15,000–24,000	Existing classrooms, laboratories, offices and corridors	200–500	Existing Installations Only
Compact Fluorescent Lamp (CFL)	50–70	80–85	8,000–12,000	Existing hostels, faculty rooms and corridors	150–300	Replacement with LED Recommended
Metal Halide Lamp	75–125	65–90	10,000–20,000	Sports halls, workshops and gymnasiums	300–500	Existing Installations Only
High Pressure Sodium Vapour (HPSV)	80–140	20–30	16,000–30,000	Roads, parking areas and boundary lighting	20–50	Replacement with LED Recommended
LED Tube/Batten	100–160	≥80	50,000–100,000	Classrooms, laboratories, offices, corridors and hostels	300–500	☑ Yes
LED Downlight	90–120	≥80	30,000–50,000	Faculty cabins, washrooms, reception areas and corridors	150–300	☑ Yes
LED High Bay Luminaire	140–180	≥70	50,000–100,000	Workshops, engineering laboratories, indoor sports halls	300–750	☑ Yes
LED Flood Light	110–150	≥70	50,000–75,000	Sports grounds, open areas and building façades	100–300	☑ Yes
LED Street Light	130–180	70–80	75,000–100,000	Campus roads, pathways, parking areas and landscape lighting	20–50	

Observation

- **LED Retrofitting**: Replace the remaining 2,300 fluorescent tube lights (36W) with modern LED alternatives to reduce energy consumption, extend equipment lifespan, and minimize heat emission.
- **Smart Automation**: Expand the installation of motion sensor-based lighting in high-traffic common areas—including libraries, washrooms, and corridors—to eliminate utility waste during vacant hours.

Table - Luminous Performance Characteristics of Commonly Used Luminaries

Type of Lamp	Lumens/Watt		Colour Rendering Index	Typical Application	Typical Life
	Range	Avg			
Incandescent	8-18	14	Excellent (100)	Homes, restaurants, general lighting emergency lighting	1000
Fluorescent lamps	46-60	50	Good w.r.t coating (67-77)	Offices, shops, hospitals, homes	5000
CFL -Compact fluorescent Lamps	40-70	60	Very Good (85)	Hotels, shops, homes, offices	8000-10000
High-pressure mercury (HPMV)	44-57	50	Fair (45)	General lighting in factories, garages, and car parking. floodlighting	5000
Halogen lamps	18-24	22	Excellent (100)	Display, flood lightening, stadium exhibition grounds, construction areas	2000 - 4000
High-pressure sodium (HPSV) SON	67-121	90	Fair (22)	General lighting in warehouses, factories, street lighting	6000 - 12000
Low-pressure sodium (LPSV) SOX	101-175	150	Poor (10)	Roadways, tunnels, canals, street lighting	6000 - 12000
Metal halide lamps	75-125	100	Good (70)	Industrial bays, spotlighting, floodlighting, retail stores	8000
LED Lamps	30-50	40	Good (70)	Reading lights, desk lamps, night lights, spotlights, security lights, signage lights, etc.	40000 - 100000

7. OTHER POWER CONSUMPTION

7.1 INVENTORY OF IT INFRASTRUCTURE

Location/ Identification	Desktop	Laptop	Printers	Scanners	Servers	LCD Projector	Smart TV	Managed & Unmanaged Switches	NAS
Count	1916	171	322	5	45	63	7	94	8

7.2 WATER PUMP DETAILS

Description	Rated Power of Motor	Motor Eff.	Discharge Head	Suction Head	Pump Type
Unit	KW	%	m	m	Submersible /Monoblock/ Centrifugal Etc.
Pump No.-1	15	60	70-75	90-110	Monoblock
Pump No.-2	15	55	70-75	90-110	Monoblock
Pump No.-3	7.5	58	70-75	50-60	Monoblock
Pump No.-4	7.5	61	70-75	50-60	Monoblock
Pump No.-5	7.5	42	70-75	50-60	Monoblock
Pump No.-6	7.5	39	70-75	50-60	Monoblock
Pump No.-7	7.5	56	70-75	50-60	Monoblock
Pump No.-8	7.5	52	70-75	50-60	Monoblock
Pump No.-9	7.5	56	50-60	48-53	Monoblock
Pump No.-10	7.5	46	50-60	48-53	Monoblock
Pump No.-11	7.5	58	50-60	48-53	Monoblock
Pump No.-12	7.5	56	50-60	48-53	Monoblock
Pump No.-13	3.7	55	55	48-53	Submersible
Pump No.-14	3.7	46	55	48-53	Submersible
Pump No.-15	3.7	42	55	48-53	Submersible
Pump No.-16	3.7	51	55	48-53	Submersible
Pump No.-17	3.7	42	55	48-53	Submersible

7.3 OTHER LOADS

Equipment (W)	Count
50W Exhaust Fan	69
60W Exhaust Fan	440
22W Exhaust Fan	158
35W Exhaust Fan	0
82W Exhaust Fan	8
160W Exhaust fan	23
Water Cooler-200W	45
180W-Desert Cooler	4
180W-Circulating Fan	28
180W-Circulating Fan	0
2KW Geyser	600
2.2 KW EX-System	4
2.2 KW EX-System	8
7.5 KW EX-System	4
1.5 KW EX-System	4
18KW STERLIZER	2

Observation

- **Regular Maintenance**: Schedule routine inspections for pumps, exhaust fans, and core IT equipment to prevent downtime.
- **Lifecycle Upgrades**: Replace computers, printers, and scanners every 3 to 5 years with modern laptops or desktops.
- **Climate Control**: Maintain ideal operating temperatures for all electronic appliances to ensure optimal performance.

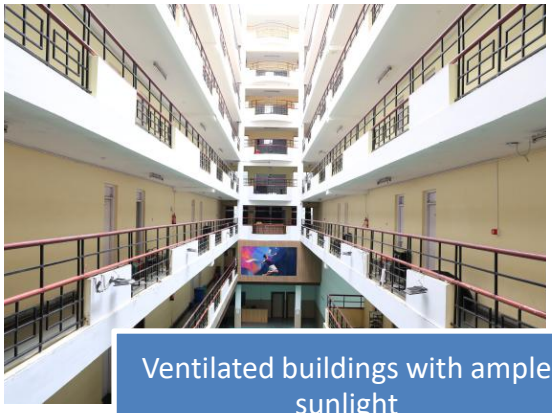
8. CAPACITOR BANK

Sl. No.	Campus	Location/ Identification	Capacity in KVAR
1	SMU	SUBSTATION	250
2	SMIT	Main LT Panel1 Room	100
3	SMIT	Main LT Panel2 Room	100
4	SMIT	Main LT Panel2 Room	200

ANNEXURE I – ENERGY SAVING INITIATIVES



Green Campus



Ventilated buildings with ample sunlight



Electric panel



BEE 5 star AC



HVAC for centralized AC



Solar Heater



Power saving mode in computer lab for energy conservation



DG set



Awareness message display



Energy conservation message display



Solar Panel installed



Sun Roof in Hostel Building

***** END OF THE REPORT ******