



GURUKULA KANGRI (DEEMED TO BE UNIVERSITY)

ENERGY AUDIT REPORT

2024-2025

Prepared By :
EHS ALLIANCE





TABLE OF CONTENT

Contents

TABLE OF CONTENT	1
CERTIFICATE.....	2
ACKNOWLEDGEMENT	3
DISCLAIMER	4
ABBREVIATION.....	5
OVERVIEW OF GURUKULA KANGRI (DEEMED TO BE UNIVERSITY)	6
AUDIT PARTICIPANTS.....	8
EXECUTIVE SUMMARY	9
ENERGY AUDIT - ANALYSIS	10
1. ENERGY CONSUMPTION	10
1.1 SUMMARY OF MONTHLY ELECTRICITY CONSUMPTION AND TOTAL BILL AMOUNT	10
2. DIESEL CONSUMPTION	14
3. ANALYSIS OF DG SETS	15
4. AC SYSTEM	16
5. FANS ANALYSIS.....	18
6. ANALYSIS OF LIGHTING SYSTEM	20
6.1 BRIEF DESCRIPTION OF EXISTING SYSTEM.....	20
6.2 INVENTORY OF LIGHTING	20
6.3 LUX MEASUREMENT.....	23
7. OTHER POWER CONSUMPTION.....	25
7.1 INVENTORY OF IT INFRASTRUCTURE.....	25
7.2 WATER PUMP DETAILS	27
7.3 OTHER LOADS.....	28
8. CAPACITOR BANK.....	29
ANNEXURE I – INITIATIVES CARRIED OUT BY GKV	29



CERTIFICATE



CERTIFICATE

PRESENTED TO

GURUKULA KANGRI (DEEMED TO BE UNIVERSITY)

P.O. Gurukula Kangri, Kankhal, Haridwar-249404

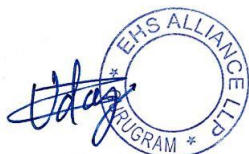
That has been assessed by EHS Alliance for the comprehensive study of Energy Audit on institutional working framework to fulfill the requirement of

ENERGY AUDIT

ACADEMIC YEAR 2024 - 25

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.



SIGNATURE

21.07.2026
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 would like to thank the management of Gurukula Kangri (Deemed to be 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 **Hon'ble Vice Chancellor, Registrar, Finance Officer of university** for giving us an opportunity to evaluate the environmental performance of the campus.

We would also like to thank **Prof. D. S. Malik – Dean, Green Audit Cell** 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

Er. Ranjit Kumar	Jr. Engineer – Civil & In-Charge, Estate
Er. Vijay Pratap Singh	Jr. Engineer, Electrical
Dr. Ajendra Kumar	Associate Professor
Dr. Harendra Kumar	Associate Professor
Dr. Gagan Matta	Convener, Green Audit Cell & Audit Coordinator



DISCLAIMER

EHS Alliance Energy Audit Team has prepared this Energy Audit Report for Gurukula Kangri (Deemed to be University) based on input data submitted by the representatives of GKV 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.

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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 GURUKULA KANGRI (DEEMED TO BE UNIVERSITY)

Gurukul Kangri (Deemed to be University) was founded on March 4, 1902 by Swami Shraddhanandaji with the sole aim to revive the ancient Indian Gurukula System of education, on the bank of Ganges in Haridwar and at a distance about 200 km. from Delhi. This institution was established with the objective of providing an indigenous alternative to Lord Macaulay's education policy by imparting education in the areas of Science, Engineering and Technology, Management, Vedic Literature, Indian Philosophy, Indian Culture, Sciences and Research. It is a deemed to be university funded by UGC/Govt. of India

Arya Samaj has been advocating women's education since the day it was founded. As part of its policies for the up-liftment of women in the country, Kanya Gurukula Campus, Dehradun was established in 1922 by Acharya Ramdevji as a second campus of women's education. To give real shape to the dreams of Swami Shraddhanandaji, Kanya Gurukula Campus, Hardwar was established in 1993.

MISSION

- *To create a synthesis of our Indian intellectual tradition with the best of modern education.*
- *Inculcating national spirit and respect for Indian culture among the students and society in order to contribute to the nation-building.*
- *Focusing on the personality of the students to be developed by value-based education.*
- *Enriching and empowering all the beneficiaries through the participative, positive, harmonious teaching-learning environment.*
- *Developing inter-linkages across teaching, research, and extension.*
- *Making students employable by imparting holistic education and developing skills.*

VISION

Reviving the ancient education of Brahmacharya (continence), of rejuvenating and resuscitating ancient Indian philosophy and literature, conducting researches into the Indian and western activities, of building up a Vedic Literature incorporating into itself all that is best and assailable in occidental thought, of producing good citizens possessed of a culture compound of the loftiest elements of the two civilizations.



Facilities in the campus

Amenities at GKV provide far more than academic and administrative facilities on campus. It is dedicated to provide students with an exceptional infrastructure for learning as well as facilities for simplifying the procurement of fundamental skills. To accomplish the goal, GKV offers the following:

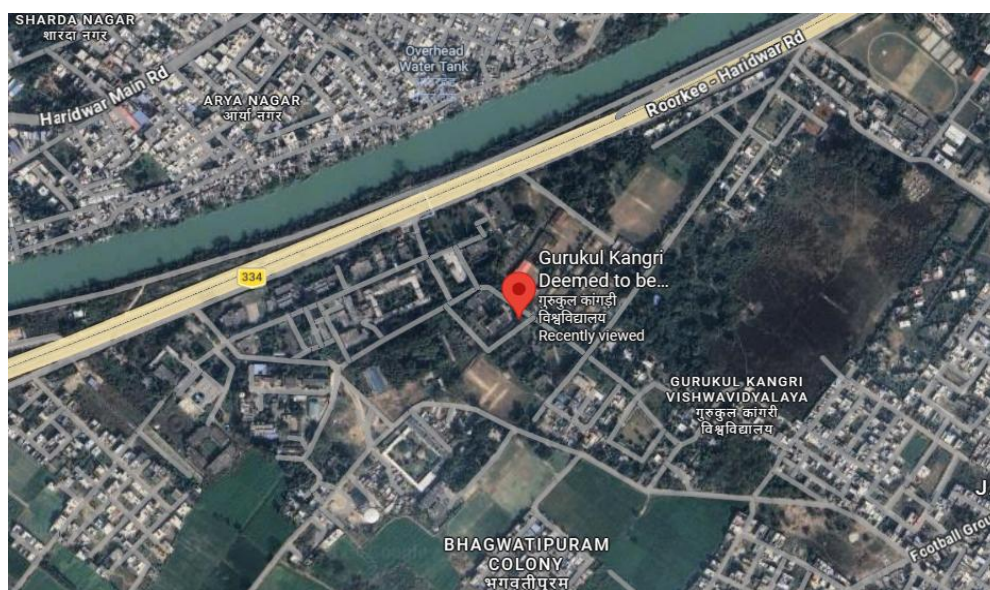
LIBRARY: The Central Library of Gurukula Kangri (Deemed to be University), Haridwar exists with the inception of the university in 1902. It was shifted to the present building in 1936 after the havoc of flood took place in Kangri village where the university was established by Swami Shardhanand ji.

The library has also subscribed to 367 e-books during 2019 for lifetime access. Further, 6500+ e-journals with bibliographic databases are available in the library through E-Shodhsindhu, an initiative of Inflibnet, Gandhinagar (Gujarat). Of them, remote access is available through EZ-proxy software for the registered users of the library. It is worth mentioning that 400 books and a few manuscripts have been digitized with the assistance of the C-DAC project of the Government of India. The original software is also provided by Inflibnet, Gandhinagar (Gujarat) for plagiarism checking of the Ph.D. theses.

Other facilities included are:

- **SMART CLASSROOMS:**
- **AUDITORIUM AND MINI AUDITORIUM:**
- **MINI-AUDITORIUM:**
- **SEMINAR HALL:**
- **HOSTEL:**
- **SPORTS FACILITY:**
- **FITNESS CENTRE:**
- **CAFETERIA:**

Geo Location
Geo Coordinates from Google maps:
29.920044, 78.122969



AUDIT PARTICIPANTS

On behalf of the Gurukula Kangri (Deemed to be university)

Name	Designation
Prof. D. S. Malik	Dean, Green Audit Cell
Er. Ranjit Kumar	Jr. Engineer, Civil & In-Charge, Estate
Er. Vijay Pratap Singh	Jr. Engineer, Electrical
Dr. Harendra Kumar	Associate Professor
Dr. Ajendra Kumar	Associate Professor
Dr. Gagan Matta	Convener, Green Audit Cell & Audit Coordinator

On behalf of EHS Alliance

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





EXECUTIVE SUMMARY

The purpose of this Energy Audit was to seek opportunities to improve the energy efficiency of the Gurukula Kangri (Deemed to be University). Reducing the energy consumption despite improving the human comfort, health and safety were of primary concern.

Beyond just identifying the energy consumption pattern, this audit sought to detect and categorize the most energy efficient appliances. Additionally, some daily practices relating common appliances have been shared which may help reducing the energy consumption. Data collection for energy audit of the campus was carried out by the EHS Alliance Team. The Energy Audit Report accounts for the energy consumption patterns of the institution on actual survey and detailed analysis during the audit.

The work comprehends the area wise consumption traced using suitable equipment. The analysis was carried out by our team with the support of the staff members from Gurukula Kangri (Deemed to be University). The report provides a list of possible actions to preserve and efficiently access the available source; resources and their saving potential was also identified. We look forward towards optimization that the authorities, students and staff members would follow the recommendations in the best possible way. The report is based on certain generalizations including the approximations wherever necessary. The views conveyed may not reveal the general opinion. They merely represent the opinion of the team guided by the interviews of clients. We are happy to submit this Energy audit report to the Gurukula Kangri (Deemed to be University).



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 July 2024 to June 2025.

The details of “**Meter Connection**” at “**Gurukula Kangri (Deemed to be University)**” are as follows-

Account Name	Account Number
REGISTRAR GURUKUL KANGARI	40109945848
REGISTRAR GURUKUL KANGRI VISHWAYIDYALAYA	41900128973
PRINCIPAL KANYA GURUKUL	40100071942
KUL SACHIV GKU (KANYA GURUKUL)	40116880166
KULSACHIV G.K.ENG.UNIVERSITY	40100490473

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 2024 to June 2025

Month	Grid Units	Amount	Solar Units	Export kWh	Total	Amount
Jul-24	71,904	10.00	50,051	-	121,955	719,040
Aug-24	82,506	10.00	42,123	-	124,629	825,060
Sep-24	98,984	10.00	54,839	-	153,823	989,840
Oct-24	66,726	10.00	46,034	-	112,760	667,260
Nov-24	40,515	10.00	33,159	-	73,674	405,150
Dec-24	50,517	10.00	34,516	-	85,033	505,170
Jan-25	45,116	10.00	38,306	-	83,422	451,160
Feb-25	37,710	10.00	27,137	-	64,847	377,100
Mar-25	31,252	10.00	48,734	-	79,986	312,520
Apr-25	64,930	10.00	73,162	-	138,092	649,300
May-25	72,840	10.00	64,803	-	137,643	728,400
Jun-25	49,633	10.00	52,887	-	102,520	496,330
SUM	712,633		565,751	-	1,278,384	7,126,330

The 530 kWp solar plant generated 565,751 kWh during 2024–25, meeting about 85% of the stated annual target. Although generation exceeded the target during April and May,



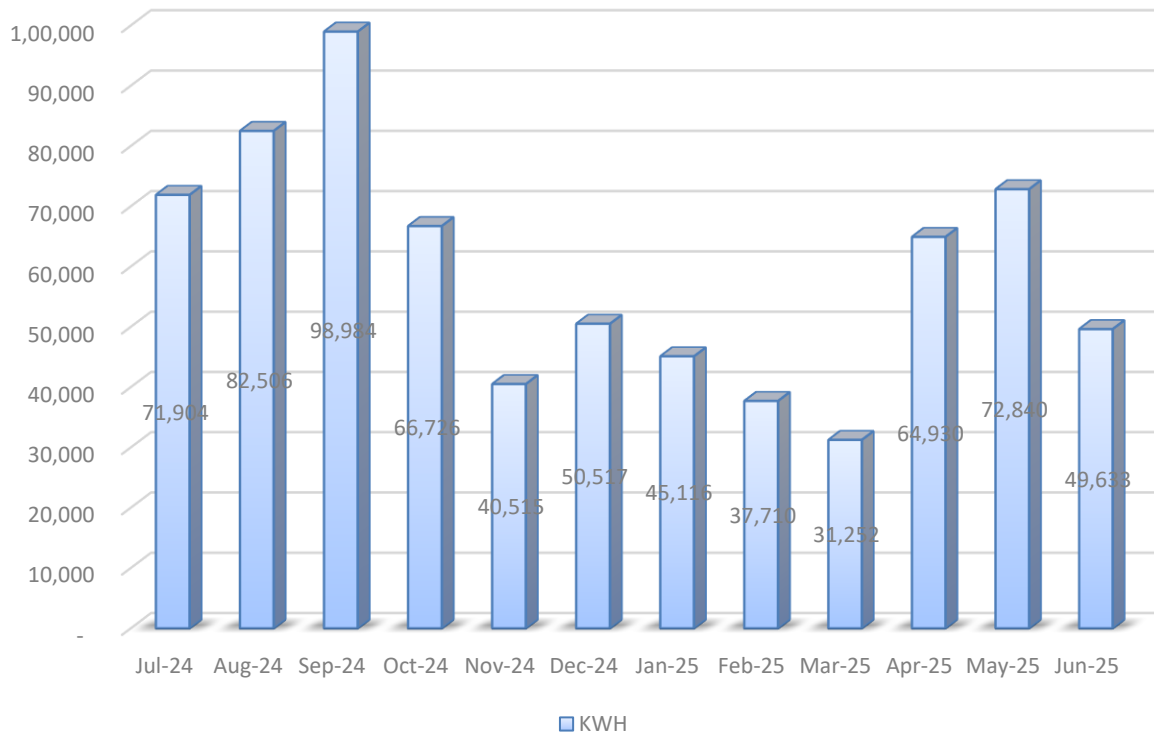
significant underperformance during November–February resulted in a net generation shortfall of approximately 102,049 kWh, an estimated financial impact of ₹10.20 lakh, and approximately 72.45 tCO₂e of additional grid-related emissions. A detailed technical investigation of winter performance, inverter availability, module cleaning, grid outages, shading, and irradiation-adjusted performance is recommended.

Solar Units Monthly Generation Details (530 kWp)

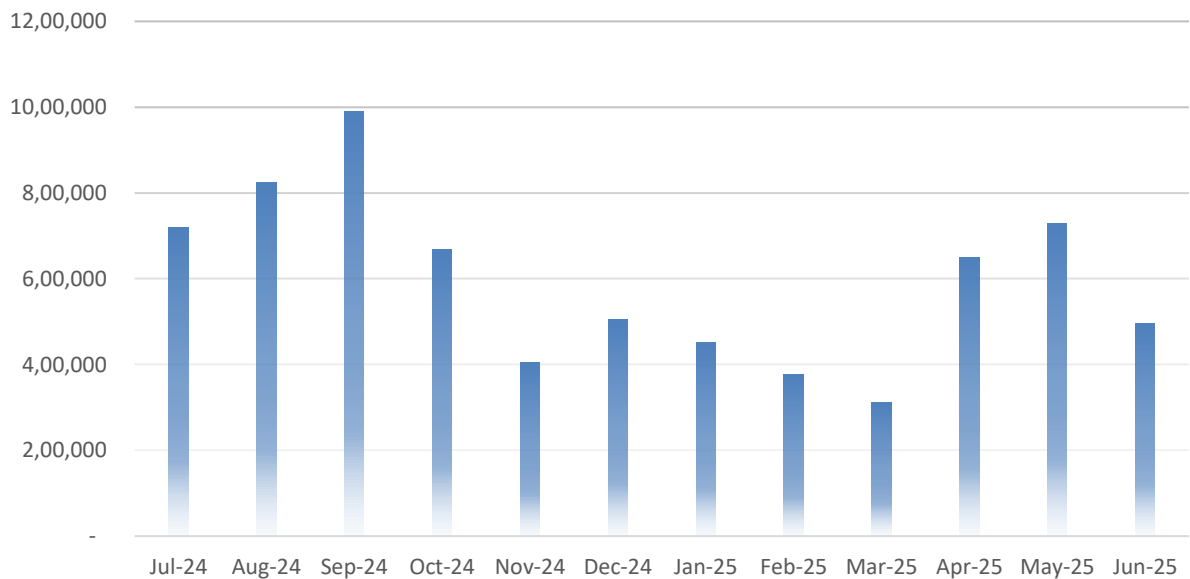
Month	Unit
Jul-24	50,051
Aug-24	42,123
Sep-24	54,839
Oct-24	46,034
Nov-24	33,160
Dec-24	34,516
Jan-25	38,306
Feb-25	27,137
Mar-25	48,734
Apr-25	73,162
May-25	64,803
Jun-25	52,887



Monthly Energy Consumption (GRID) in KWH



MONTHLY ENERGY CONSUMPTION - FROM JULY 2024 TO JUNE 2025



	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25
■ Rs	7,19,04	8,25,06	9,89,84	6,67,26	4,05,15	5,05,17	4,51,16	3,77,10	3,12,52	6,49,30	7,28,40	4,96,33



Suggestions for Maintenance and Performance Tracking: -

- Clean the solar modules regularly to remove dust, leaves, bird droppings, and other deposits that may reduce generation.
- Monitor daily and monthly generation and compare it with the expected output to identify any significant shortfall.
- Inspect inverters, cables, connections, earthing, and protection devices periodically, and address fault alarms promptly.
- Record plant downtime, inverter failures, grid outages, maintenance activities, and corrective actions in a maintenance register.
- Conduct periodic thermography and electrical testing to identify hotspots, loose connections, damaged modules, and other performance issues.
- Review the plant's generation efficiency and overall performance annually against installed capacity, historical data, and applicable solar irradiation.

Observations: -

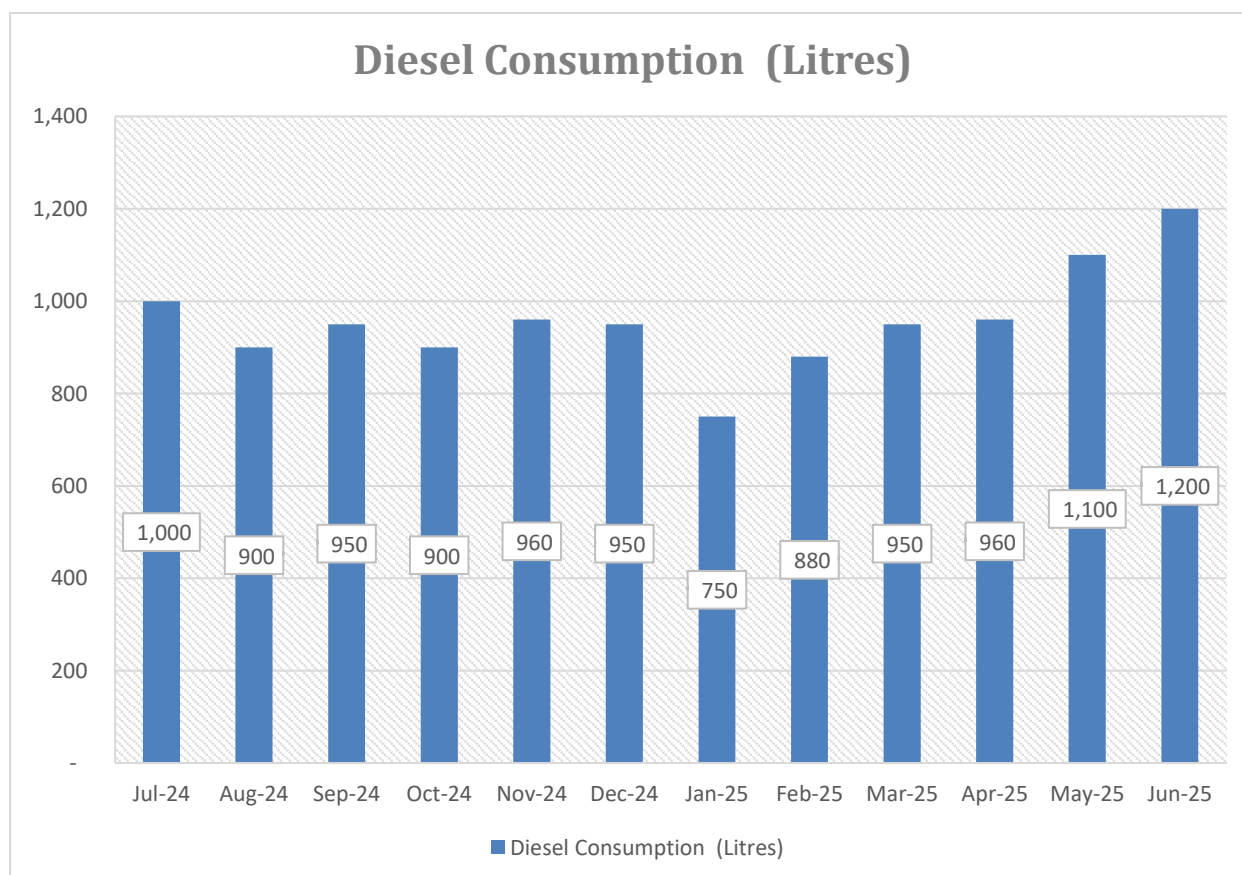
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2. DIESEL CONSUMPTION

From July 2024 to June 2025, Gurukula Kangri (Deemed to be University) has consumed 11500 litres of fuel.

Period	Diesel Consumption (Litres)
Jul-24	1,000
Aug-24	900
Sep-24	950
Oct-24	900
Nov-24	960
Dec-24	950
Jan-25	750
Feb-25	880
Mar-25	950
Apr-25	960
May-25	1,100
Jun-25	1,200
Total	11,500





3. ANALYSIS OF DG SETS

In the campus, there are ten Diesel Generator (DG) set for its electrical power needs in case of Grid power failure. DG sets capacity is 1250 kVA.

Description	Unit	DG Station - 1	DG Station - 2	DG Station - 3	DG Station - 4	DG Station - 5
Rated capacity	kVA	125	125	125	125	125
Hz		50	50	50	50	50
Sl No.		6H.3538/ 1000901	6H.3538/ 1002695	6H.3538/ 1002190	6H3538/ 1002705	6H.3538/ 1002743
Make		Kirloskar	Kirloskar	Kirloskar	Kirloskar	Kirloskar
Volts	Volts	440 L-L	440 L-L	440 L-L	440 L-L	440 L-L
PF		80%	80%	80%	80%	80%
Phase		3	3	3	3	3
RPM		1500	1500	1500	1500	1500
Amps	Amps	174	174	174	174	174
Mfg.		Mar-10	Sep-10	Jul-10	Sep-10	Sep-10

Description	Unit	DG Station - 6	DG Station - 7	DG Station - 8	DG Station - 9	DG Station - 10
Rated capacity	kVA	125	125	125	125	125
Hz		50	50	50	50	50
Sl No.		TBHM697496	TBHM696819	TBHM697492	4H.6001/ 1400168	6H.3538/ 1001519
Make		Ashok Leyland	Ashok Leyland	Ashok Leyland	Kirloskar	Kirloskar
Volts	Volts	440 L-L	440 L-L	440 L-L	440 L-L	440 L-L
PF		80%	80%	80%	80%	80%
Phase		3	3	3	3	3
RPM		1500	1500	1500	1500	1500
Amps	Amps	174	174	174	174	174
Mfg.		Jun-11	Jun-11	Jun-11	Jan-14	May-10

Observation and Suggestions: -

Soundproof silent generators are an efficient tool to keep both noise and vibration at low levels. For the power backup of the institution, the soundproof model is installed in the institution.

We recommend GKV to initiate stack monitoring of DG set through authorized lab.



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 364 Split and Window ACs installed in Gurukula Kangri (Deemed to be University) in various areas of various capacity which detail is given below:

S. No.	Name of Department	Count of ACs (Window/Split)
1	Sanskrit Department, Kanya Gurukul Parisar, Haridwar	2
2	Kanya Gurukul Campus, Haridwar	28
3	Hindi Department, Kanya Gurukul Parisar, Haridwar	2
4	Hindi Department, GK(DU), Haridwar	3
5	Department of Mechanical engineering	1
6	Registrar office + Establishment I and II + IT cell	9
7	Department of Mathematics and Statistics	17
8	Department of Philosophy	1
9	Kanya Gurukul Campus, Dehradun	26
10	Department of Physical Education and Sports (main building)	10
11	Gym, Badminton Hall. Squash courts and stores	4
12	Department of Microbiology, KGC	3
13	Department of Mathematics and Statistics, Kanya Gurukul Campus	2
14	Computer Centre, K.G.C. Haridwar	2
15	Ancient Indian History, Culture and Archaeology	13
16	Accounts Section	8
17	COE	2
18	Exam Section	3
19	Exam Section (Evaluation)	10
20	Department of Electrical engineering, FET	7
21	FMS, GK(DU), Haridwar	35
22	Botany and Microbiology	32
23	Department of Chemistry	22
24	Department of Physics	30
25	Department of Computer Science	35
26	Department of Yogic Science	6
27	Department of Philosophy	3
28	Department of Sanskrit	14
29	Department of Veda	2
30	Department of Psychology	4
31	Department of Zoology and Environmental Science	28
	TOTAL	364



Remarks: - GKV should purchase 5-Star rated inverter-based split AC's for all future purchases because the power consumption of inverter-based BEE 5-Star rated AC's is less than non-star rated AC's.

We also recommend Gurukula Kangri (Deemed to be University) to organize a periodic maintenance schedule and take corrective actions for insulating of AC's refrigerant lines to protect against energy losses.

- ✓ Clean air filters, cooling coils, condenser coils, drain trays and drain lines regularly to maintain airflow, indoor air quality and cooling efficiency.
- ✓ Check refrigerant pressure and leakage periodically. Refrigerant charging should be undertaken only after identifying and rectifying the leakage.
- ✓ Inspect electrical connections, contactors, capacitors, cables, earthing and protective devices for overheating, looseness or deterioration.
- ✓ Maintain thermostats at an energy-efficient setting, preferably around 24–26°C, depending on occupancy, weather and comfort requirements.
- ✓ Check doors, windows and conditioned spaces for air leakage. Damaged seals, gaps and missing insulation should be rectified.
- ✓ Inspect refrigerant-pipe and chilled-water-pipe insulation and replace damaged, compressed or missing insulation.
- ✓ Ensure outdoor units have adequate ventilation and are free from dust, vegetation, obstruction and direct heat accumulation.
- ✓ Check condensate drainage to prevent water leakage, dampness, microbial growth and damage to ceilings or walls.
- ✓ Maintain service records for each unit, including capacity, location, refrigerant type, maintenance date, breakdowns, repairs and energy consumption.
- ✓ Monitor operating hours and switch off units in unoccupied classrooms, laboratories, offices and common areas.
- ✓ Avoid simultaneous use of air-conditioning with open doors or windows.
- ✓ Review the condition and efficiency of old or frequently repaired units. Phase out inefficient equipment and replace it with appropriately sized, high-efficiency, BEE-star-rated systems.
- ✓ Avoid oversized or undersized units by conducting a proper cooling-load assessment before replacement or new installation.
- ✓ Provide periodic training to maintenance personnel and display simple energy-conservation instructions for users.
- ✓ Include AC performance in the institution's annual energy audit using indicators such as electricity consumption, operating hours, cooling capacity, maintenance cost and room temperature.
- ✓ Handle recovered refrigerants through trained technicians and authorised channels. Refrigerants should not be deliberately released into the atmosphere.



5. FANS ANALYSIS

In the Gurukula Kangri (Deemed to be University), there are 2489 Ceiling Fans are installed, the observations and suggestions are given below.

S. No.	Name of Department	60W Ceiling Fans
1	Sanskrit Department, Kanya Gurukul Parisar, Haridwar	7
2	Kanya Gurukul Campus, Haridwar	302
3	Hindi Department, Kanya Gurukul Parisar, Haridwar	12
4	Hindi Department, GK(DU), Haridwar	18
5	Department of Mechanical engineering	102
6	Registrar office + Establishment I and II + IT cell	35
7	Department of Mathematics and Statistics	36
8	Department of Philosophy	5
9	Kanya Gurukul Campus, Dehradun	236
10	Department of Physical Education and Sports (main building)	98
11	Gym, Badminton Hall. Squash courts and stores	46
12	Department of Microbiology, KGC	44
13	Department of Mathematics and Statistics, Kanya Gurukul Campus , Haridwar	28
14	Computer Centre, K.G.C. Haridwar	6
15	Ancient Indian History, Culture and Archaeology	75
16	Accounts Section	24
17	COE	6
18	Exam Section	24
19	Exam Section (Evaluation)	30
20	Department of Electrical engineering, FET	16
21	KGC Library, Haridwar	17
22	FMS, GK(DU), Haridwar	98
23	Botany and Microbiology	109
24	Department of Chemistry	
25	Department of Physics	183
26	Department of Computer Science	119
27	Department of Yogic Science	127
28	Department of Philosophy	7
29	Department of Sanskrit	43
30	Department of Jyotirvigyan and Vedic Karmkand	5
31	Department of Veda	7
32	Department of Psychology	17
33	Pt. Gurudutt Hostel	182
34	Pandit Lekhram and Swami Shradhanand Hostel	330
35	Department of Zoology and Environmental Science	95
	Total	2489



Fan Payback period calculations		
Total no of Ceiling Fans (70W)	-	Nos.
Total no of ceiling Fans (60W)	2,489	Nos.
Total wattage of ceiling Fans (60W)	1,49,340	Watt
Total wattage of BEE 5 Star rated Fans (30W)	74,670	Watt
Total saving in Wattage after replacement	74,670	Watt
Operating hours per day	8	Hours
Operating days per annum	180	Days
Energy charges per unit in Rs.	10	INR
Saving in Rs./annum	10,75,248	INR
Investment INR	49,78,000	INR
Payback period: -	4.63	YEARS

We Don't recommend to replace the existing 60W fans with 5-star BLDC fans

Observation and Suggestions: -

- ✓ Replace old and inefficient conventional ceiling fans with energy-efficient BLDC fans in a phased manner, prioritising classrooms, laboratories, hostels, libraries and offices with long operating hours.
- ✓ Select suitable BEE star-rated BLDC fans with appropriate air delivery, blade sweep and service value for each space.
- ✓ BLDC fans typically consume substantially less electricity than conventional induction-motor fans and can reduce fan-related energy costs.
- ✓ Conduct a room-wise inventory covering fan quantity, wattage, age, condition and daily operating hours before replacement.
- ✓ Begin with a pilot installation in selected high-use areas and verify actual energy savings, air delivery, noise levels and user satisfaction.
- ✓ Avoid replacement based solely on wattage; adequate air circulation and thermal comfort should remain key selection criteria.
- ✓ Use wall regulators or compatible controls where practical, as remote controls may be misplaced in classrooms and common areas.
- ✓ Consider occupancy sensors, timers or central controls in intermittently used rooms to prevent unnecessary operation.
- ✓ Procure models with reliable warranty coverage, accessible service support and assured availability of electronic components.
- ✓ Include installation quality, earthing, secure mounting, fan balancing and electrical safety checks in the replacement programme.
- ✓ Maintain records of baseline consumption, capital cost, annual savings, payback period and avoided carbon emissions.

Note:- The university should adopt a phased BLDC fan replacement programme based on operating hours and energy-saving potential. High-use areas should receive priority, supported by lifecycle-cost analysis and post-installation performance monitoring.



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

S. No.	Name of Department	36W Tube Light	20W LED Tube Light	12W LED Bulb
1	Sanskrit Department, Kanya Gurukul Parisar, Haridwar	8	0	
2	Kanya Gurukul Campus, Haridwar	354	76	
3	Hindi Department, Kanya Gurukul Parisar, Haridwar	17	2	
4	Hindi Department, GK(DU), Haridwar	20	-	
5	Department of Mechanical engineering	134	-	
6	Registrar office + Establishment I and II + IT cell	31	12	18
7	Department of Mathematics and Statistics	52	1	17
8	Department of Philosophy	3	-	3
9	Kanya Gurukul Campus, Dehradun	445	3	
10	Department of Physical Education and Sports (main building)	0	141	
11	Gym, Badminton Hall. Squash courts and stores	8	50	
12	Department of Microbiology, KGC	55	30	
13	Department of Mathematics and Statistics, Kanya Gurukul Campus, Haridwar	-	31	
14	Computer Centre, K.G.C. Haridwar	-	9	
15	Ancient Indian History, Culture and Archaeology	0	117	
16	Accounts Section	48	-	
17	COE			9
18	Exam Section	21	-	
19	Exam Section (Evaluation)	52	14	
20	Department of Electrical engineering, FET	222	-	
21	KGC Library, Haridwar	31	-	
22	FMS, GK(DU), Haridwar	202	2	
23	Botany and Microbiology	113	65	
24	Department of Chemistry	152	52	
25	Department of Physics	225	66	
26	Department of Computer Science	219	2	
27	Department of Yogic Science	93	92	
28	Department of Philosophy	17	-	
29	Department of Sanskrit	32	53	
30	Department of Jyotirvigyan and Vedic Karmkand	6		
31	Department of Veda	71	-	
32	Department of Psychology	39	15	
33	Pt. Gurudutt Hostel	17	350	



34	Pandit Lekhram and Swami Shradhanand Hostel	345		
35	Department of Zoology and Environmental Science	158	4	
	TOTAL	3190	1187	47

Recommendations for Energy-Efficient Lighting Systems: -

- ✓ Replace conventional fluorescent tubes, CFLs, halogen lamps and other inefficient fixtures with suitable high-efficiency LED lighting.
- ✓ Conduct a space-wise lux-level assessment to ensure adequate illumination in classrooms, laboratories, libraries, offices, corridors, staircases and outdoor areas.
- ✓ Avoid both under-lighting and over-lighting by selecting appropriate LED wattage, lumen output, beam angle and fixture spacing for each area.
- ✓ Install occupancy sensors in intermittently used spaces such as washrooms, meeting rooms, stores, corridors and staircases.
- ✓ Use daylight sensors or separate switching circuits near windows to maximise natural daylight and reduce unnecessary lighting operation.
- ✓ Divide large classrooms, laboratories, offices and halls into separate lighting zones so that only required fixtures are operated.
- ✓ Select BEE star-rated or energy-efficient LED products with high luminous efficacy, suitable power factor, low harmonic distortion and reliable warranty support.
- ✓ Clean lamps, diffusers and fixtures regularly, and replace damaged or discoloured covers that reduce light output.
- ✓ Install timers, photocells or astronomical timers for outdoor, façade, parking and security lighting to prevent unnecessary daytime operation.
- ✓ Maintain a lighting inventory and periodically monitor connected load, operating hours, lux levels, electricity savings and avoided carbon emissions after upgrades.



Additionally, we recommend increasing motion sensor-based lights in common areas such as libraries, washrooms, corridors, etc.

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
Compact fluorescent Lamps (CFL)	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



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

GKV has initiated an LED-based lighting solution, but still, there are 3190(36W) tube lights. LEDs save energy, the life span is much greater, and emit virtually no heat. We recommend replacing the tube lights with LEDs.

Recommendations for Lux Levels in Educational Buildings

- Maintain an average illumination level of approximately **300 lux in classrooms and lecture rooms** for comfortable reading and writing.
- Provide around **500 lux in laboratories, libraries, drawing rooms and other areas involving detailed visual tasks.**
- Maintain approximately **300–500 lux in faculty rooms and administrative offices**, depending on the nature of work.
- Ensure at least **100–150 lux in corridors, staircases and circulation areas**, with uniform lighting and no dark spots.
- Maintain around **100–200 lux in washrooms, common areas and indoor utility spaces.**
- Conduct periodic lux-level measurements at the working plane and replace inefficient lamps with suitable LED fixtures while controlling glare, flicker and excessive variation in illumination.



7. OTHER POWER CONSUMPTION

7.1 INVENTORY OF IT INFRASTRUCTURE

Name of Department	LCD Projectors	Photocopiers	Desktop Computer	Laptop	Printers	
Sanskrit Department, Kanya Gurukul Parisar, Haridwar	1	0	2		2	
Kanya Gurukul Campus, Haridwar	21	2	90			
Hindi Department, Kanya Gurukul Parisar, Haridwar	1	1	1			
Hindi Department, GK(DU), Haridwar	1	-	4			
Department of Mechanical engineering	2	-	4			
Registrar office + Establishment I and II + IT cell	-	3	15		12	
Department of Mathematics and Statistics	3	-	25		7	
Department of Philosophy	-	-	1		1	
Kanya Gurukul Campus, Dehradun	9	3	106		22	
Department of Physical Education and Sports (main building)	6	5	15	3	1	
Gym, Badminton Hall. Squash courts and stores						
Department of Microbiology, KGC	2	-	3		2	
Department of Mathematics and Statistics, Kanya Gurukul Campus, Haridwar	1	-		4	1	
Computer Centre, K.G.C. Haridwar	-	-	37	2	3	
Ancient Indian History, Culture and Archaeology	2	1	5			
Accounts Section	-	1	21			
COE	-	-	2		2	
Exam Section	-	1	5			
Exam Section (Evaluation)	-	1	9		7	
Department of Electrical engineering, FET	1	-	2			
KGC Library, Haridwar	-	1	2		1	
FMS, GK(DU), Haridwar	12	1	68		16	
Botany and Microbiology	8	-	11		16	
Department of Chemistry	4	1	31		18	
Department of Physics	5	-	37	7	12	
Department of Computer Science	7	1	113		15	

Department of Yogic Science	2		10		4	
Department of Philosophy	4	-	5		2	
Department of Sanskrit	3	1	5			
Department of Jyotirvigyan and Vedic Karmkand	-	-	-			
Department of Veda	1	1	2		1	
Department of Psychology	1	0	6		6	
Pt. Gurudutt Hostel	-		1		1	
Pandit Lekhram and Swami Shradhanand Hostel			2		2	
Department of Zoology and Environmental Science	3	11	16		1	
TOTAL	100	35	656	16	155	



**Solar Panels installed in different campuses of
Gurukula Kangri (Deemed to be University), Haridwar**



7.2 WATER PUMP DETAILS

Sr. No.	Unit	Rated Power of Motor	Motor Eff.	Discharge Head	Suction Head	Pump Type
		KW	%	m	m	Submersible/ Monobloc/ Centrifugal Etc.
1	Pump No.-1	0.746	80	15	15	Submersible
2	Pump No.-2	0.746	80	15	15	Submersible
3	Pump No.-3	7.46	80	15	15	Submersible
4	Pump No.-4	1.492	80	15	15	Submersible
5	Pump No.-5	7.46	80	15	15	Submersible
6	Pump No.-6	0.746	80	15	15	Submersible
7	Pump No.-7	9.325	80	15	15	Submersible
8	Pump No.-8	9.325	80	15	15	Submersible
9	Pump No.-9	3.73	80	15	15	Submersible
10	Pump No.-10	9.325	80	15	15	Submersible
11	Pump No.-11	3.73	80	15	15	Submersible
12	Pump No.-12	0.746	80	10	30	Monoblok
13	Pump No.-13	0.746	80	10	30	Monoblok
14	Pump No.-14	0.746	80	10	30	Monoblok
15	Pump No.-15	0.746	80	10	30	Monoblok



7.3 OTHER LOADS

S. No.	Name of Department	Water Purification	Water Cooler	Exhaust Fan 150W
1	Sanskrit Department, Kanya Gurukul Parisar, Haridwar	-	1	1
2	Kanya Gurukul Parisar, Haridwar	1	1	
3	Hindi Department, Kanya Gurukul Parisar, Haridwar	1	1	
4	Hindi Department, GK(DU), Haridwar	-	-	
5	Department of Mechanical engineering	1	1	
6	Registrar office + Establishment I and II + IT cell	1	-	
7	Department of Mathematics and Statistics	1	1	
8	Department of Philosophy	-	-	
9	Kanya Gurukul Campus, Dehradun	1	1	
10	Department of Physical Education and Sports (main building)	1	1	
11	Gym, Badminton Hall. Squash courts and stores	1	1	
12	Department of Microbiology, KGC	1	1	
13	Department of Mathematics and Statistics, Kanya Gurukul Campus	-	1	
14	Ancient Indian History, Culture and Archeology	1	1	
15	Accounts Section	1	-	
16	COE	-	--	
17	Exam Section	-	-	
18	Exam Section (Evaluation)	1	1	
19	Department of Electrical engineering	1	1	
20	KGC Library, Haridwar	1	-	
21	FMS, GK(DU), Haridwar	1	1	
22	Botany and Microbiology	1	1	
23	Department of Chemistry	1	1	110
24	Department of Physics	1	2	
25	Department of Computer Science	1	1	
26	Department of Yogic Science	1	2	10
27	Department of Philosophy	-	-	
28	Department of Sanskrit	1	1	
29	Department of Jyotirvigyan and Vedic Karmkand	1	1	
30	Department of Veda	1	-	
31	Department of Psychology	1		
32	Pt. Gurudutt Hostel	1	1	
33	Pandit Lekhram and Swami Shradhanand Hostel	1	1	
34	Department of Zoology and Environmental Science	1	1	
		27	26	121

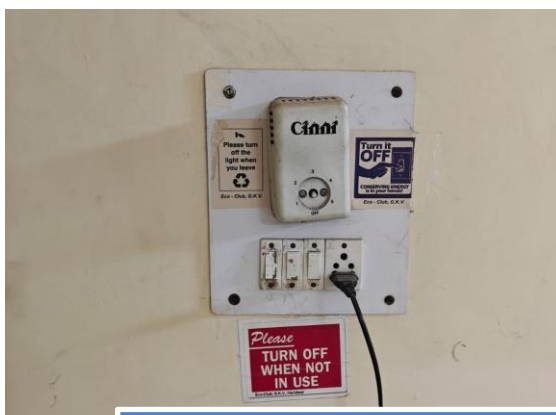
ANALYSIS

There should be a regular maintenance schedule of equipment like pumps, exhaust fans, and IT equipment. Electronics such as computers, printers, scanners, etc. more than 3 years or 5 years old (as per their life) should be replaced with new computers/laptops. Ideal temperature should be maintained for all electronic appliances.

8. CAPACITOR BANK

Not available because eth PF is good and acceptable.

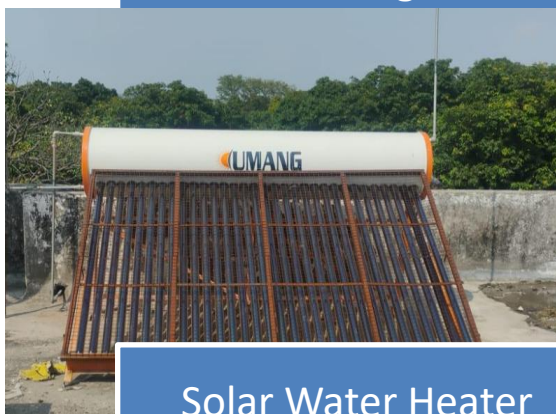
ANNEXURE I – INITIATIVES CARRIED OUT BY GKV



Energy Conservation Message



Energy Conservation Message Display



Solar Water Heater



Smasolar PV Installed

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