JANKI DEVI MEMORIAL COLLEGE

ENERGY AUDIT REPORT

2024-2025

Prepared by

EHS ALLIANCE

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CERTIFICATE

EHS alliance

CERTIFICATE

PRESENTED TO

JANKI DEVI MEMORIAL COLLEGE

Sir Ganga Ram Hospital Marg, New Delhi - 110060

That has been assessed by EHS Alliance Services 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

EHS ALLIANCE SERVICES GURGAON

22.05.2025
DATE OF AUDIT

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ACKNOWLEDGEMENT

EHS Alliance Services extends its sincere gratitude to the management of **Janki Devi Memorial College** for entrusting us with the important responsibility of conducting the **Energy Audit**. We deeply appreciate the cooperation and support extended by all involved, which greatly contributed to the successful completion of the assessment.

We would like to express our heartfelt thanks to **Professor Swati Pal**, Principal, JDMC, for providing us with the opportunity to assess and evaluate the environmental performance of the campus.

Our special appreciation goes to **Dr. Deepak Rawat**, Audit Coordinator and faculty member in the Department of Environmental Studies, JDMC, for his unwavering support, guidance, and coordination throughout the audit process. His efforts were instrumental in facilitating the timely and effective completion of this project.

We are also grateful to the following individuals for their active participation and assistance in data collection and field measurements:

- **Ms. Vandana Madan**, Convener, AVANI – The Environment Club, JDMC
- **Dr. Sana Rehman**, Department of Environmental Studies, JDMC
- **Dr. Kaushal Kishore**, Administrative Officer, JDMC
- **Mr. Surendra Kumar**, Administrative Officer, JDMC
- **Mr. Avinash**, Assistant – Administration, JDMC
- **Mr. Vijay Pratap**, Assistant – Administration, JDMC

Their valuable contributions and commitment were vital to the smooth execution of the audit.

DISCLAIMER

This Energy Audit Report has been prepared by the Energy Audit Team of **EHS Alliance Services** for **Janki Devi Memorial College**, based on the input data provided by representatives of the college, supplemented by the professional expertise and informed judgment of the audit team.

While every reasonable effort has been made to ensure the accuracy and reliability of the information presented herein, the contents of this report have been compiled in good faith using the data and observations collected during the audit process. The conclusions and recommendations are based on the best estimates available at the time of preparation.

It is expressly stated that no representation, warranty, or undertaking—whether express or implied—is made by EHS Alliance Services or its audit team regarding the completeness, accuracy, or fitness for any particular purpose of the information contained in this report. The team assumes no responsibility or liability for any direct, indirect, or consequential loss or damage arising from the use or reliance upon any part of this report.

Should this report be circulated externally, it must be shared in its entirety, with no pages omitted or altered.

All information provided by Janki Devi Memorial College and reviewed during the course of the audit shall remain confidential. EHS Alliance Services, along with its staff and appointed agents, is committed to maintaining strict confidentiality and shall not disclose any proprietary or sensitive information to any third party, except as required by applicable law or accreditation bodies. All personnel involved have signed individual confidentiality agreements and shall only access such information on a strict 'need-to-know' basis.

EHS ALLIANCE SERVICES GURGAON

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	**The 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 COLLEGE

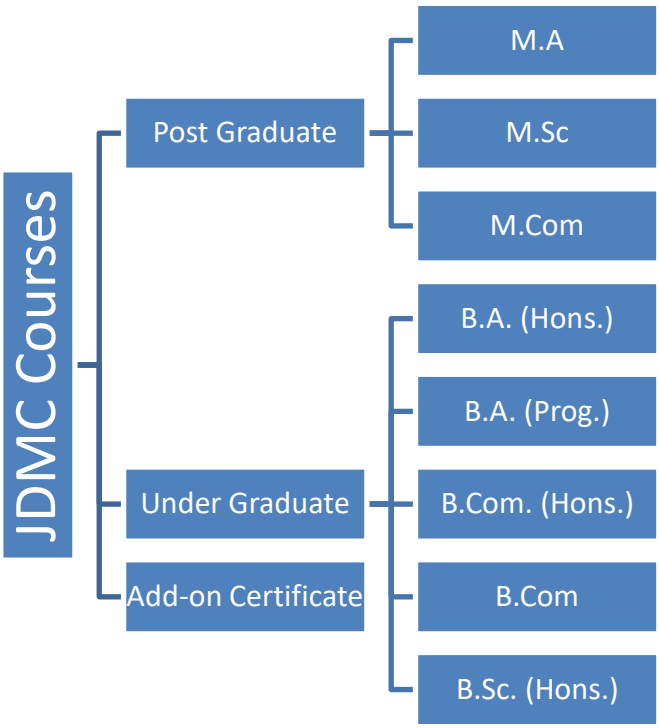
Janki Devi Memorial College, a premier women's college of University of Delhi was founded in 1959 by the famous Gandhian Shri Brij Krishan Chandiwala in memory of his mother Smt. Janki Devi. JDMC aims to provide quality education to young women and empower them to become economically self-reliant, have the confidence to face the vicissitudes of a challenging society, contribute meaningfully to the society at large and acquire the capability to think, lead and change the world.

Situated in New Delhi Ridge in idyllic surroundings with its lush green lawns and imposing building, the college offers twelve under-graduate courses in Liberal Arts, Social Sciences, Mathematics and Commerce and eight post graduate courses. JDMC is the Centre for Non-Collegiate Women's Education Board (NCWEB) as well as School of Open Learning (SOL), University of Delhi. The college runs several Add-on courses/Certificate courses for students to enhance their skills. JDMC has MOUs with national and international agencies to provide the much-needed real world exposure to its students. It has more than thirty Societies/Clubs/Cells to give its students sufficient platforms to excel in various domains. The college has an extremely dedicated, committed and motivated faculty and staff.

The college offers facilities and infrastructure to create a holistic atmosphere for the pursuit of academic and extracurricular activities. JDMC has recently completed its 60-year journey in pursuit of excellence. The college has provided a nurturing environment to students from all parts of India. It has the distinction of having a disabled-friendly infrastructure along with a strong assistance system in place for the students and faculty with visual disability.

The JDMC-IQAC works in its mandated direction of internalizing and institutionalizing the quality enhancement initiatives. These initiatives encompass various stakeholders, namely students (with the aim of their integrated development), teaching staff and non-teaching staff (enhancing their capabilities and empowering them) and students' parents and Alumnae (strengthening mutually beneficial relationships).

JDMC offers wide range of under graduate, post graduate and Add-on certificate courses.



MISSION & VISION

The college is committed to providing an educational journey for young women undergraduates which culminates in their ability to be self-reliant and to appreciate as well as negotiate with the complex socio-economic-political-cultural world that they inhabit. It is envisioned that the college will hone leadership qualities and a spirit of selfless service in its students through its academic programmes, the pedagogical methods employed by faculty members as well as through a vast spectrum of extra/co-curricular and outreach activities. The achievement and maintenance of excellence in all domains is embedded in the policies that frame the governance and the teaching- learning processes of the institution.

The Gandhian principles of simplicity, tolerance, dignity of labour, harmony and inclusivity, compassion and service to the marginalized sections of society as propounded by the founding father of the college, Shri Brij Krishan Chandiwala, are an integral part of the vision of the college. To that end, the college is dedicated to creating an educational atmosphere that includes students from diverse economic, social and ethnic backgrounds. It pledges to be empathetic to young women from deprived sections of society and provide them the same opportunities as those who are privileged. Furthermore, the college is devoted to the task of facilitating cultural understanding as also the implications of change in society, politics, economy and technology through opportunities to study literatures, languages, commerce, cultures and the arts in a modern and conducive educational environment. It is also committed to encourage research and provide job and service opportunities to its students on and off campus. The college recognizes that education can transform individuals and communities and aspires to furnish students with all the elements that can use their full potential. Thus the motto of the college, Vidya hi parmam jyoti or Knowledge is eternal light reflects in totality the vision of the college.

MISSION STATEMENT AND CORE VALUES

The egalitarian approach of the institution promotes the inclusion of all sections of the society. The institution is equally inclusive of all its constituencies, with their respective duties, responsibilities and achievements. The students and staff, belonging to diverse classes, castes, ethnic and religious groups cooperate in a democratic environment to take the college to newer heights of excellence. The institution besides providing education, also serves as a platform for cultural expression and excellence, constantly reminding students of the primary importance of cultural diversity, national integration and tolerance, along with the need to be in harmony with the environment

Janki Devi Memorial College is committed to the following core values:

- The foundational ideal is enshrined in the upanishadic motto of the college itself, ‘Vidyahi paramam Jyoti’- Knowledge is Eternal Light

- Gandhian philosophy of responsible citizenship and empowerment of women through education
- Imparting knowledge based on traditional values, yet with modern and global significance in an evolving academic world
- Education, in combination with technological skills, empowers the students both academically and economically, and proactively contributes to their brighter future.

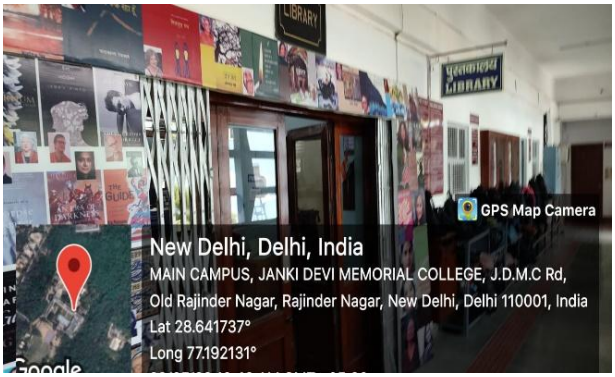
Therefore, the college creates a motivational environment to provide holistic education and personality development of the students, resulting in a synthesis of their career growth and ethical and responsible citizenship

Facilities in the campus

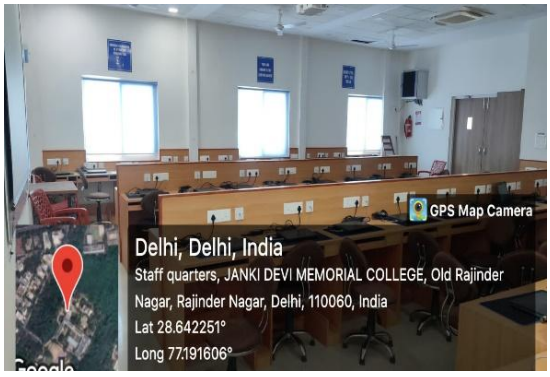
The college has an impressive building with lush green lawns, an eco-friendly campus with solar lighting and a rain-water harvesting system. The classrooms are clean, comfortable and well ventilated; the premises contain a common room and a medical room with a sanitary napkin vending machine, an open-air auditorium; a bank, a multi-cuisine and attractive cafeteria, computer laboratories; an audio-visual room; a photocopying center as well as a Mother Dairy booth.

LIBRARY: JDMC library is a repository of over 1 lakh books and over 100 journals, both academic and general. It is among the first fully automated libraries in Delhi University and provides photocopying and free internet access facilities.

WELL EQUIPPED LABS: JDMC has 4 computer labs, 2 Research Rooms, and an A/V room. With 200+ systems and ICT facilities, these rooms provide a state-of-the-art teaching/learning environment to the students and faculty.



Library



Computer Lab

CANTEEN: The college has a spacious cafeteria that offers a wide variety of snacks to students and staff at reasonable rates.

Canteen

Sports ground

Lush green campus

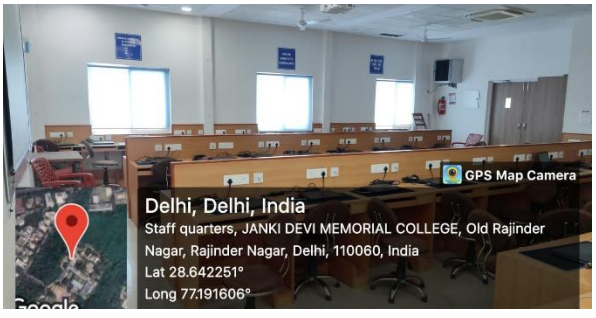
GARDEN: The college Gardens are a source of pride for JDMC. The gardens have won many awards in different categories in the university flower show.

SMART CLASSES: The college has 20 smart Classrooms which are ICT enabled with interactive smart boards to facilitate the teaching-learning process.

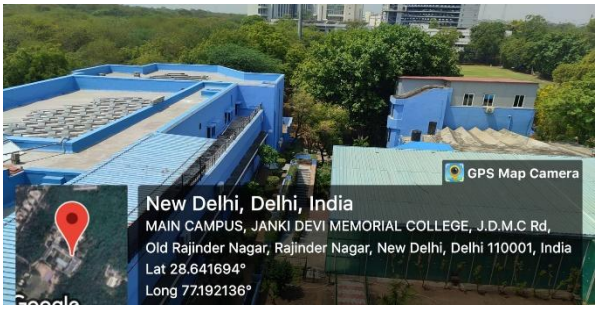
SEMINAR ROOM: The Seminar Room has a seating capacity of more than 200 with a state-of-the-art audio-visual system which is updated on a regular basis. The Seminar Room functions as a multi-purpose space used to hold conferences, seminars, workshops, meetings etc.

Seminar room

Smart classrooms



Computer Lab



Solar PV

Geo Coordinates from Google maps: 28.640232, 77.188914

AUDIT PARTICIPANTS

On behalf of the college

Name	Designation
Professor Swati Pal	*Principal, JDMC*
Ms Vandana Madan	*Convener, AVANI- The Environment Club, JDMC*
Dr Deepak Rawat	*Department of Environmental Studies, JDMC*
Dr Sana Rehman	*Department of Environmental Studies, JDMC*
Dr Kaushal Kishore	*Administrative Officer, JDMC*
Mr Surendra Kumar	*Administrative Officer, JDMC*
Mr Avinash	*Assistant cum Caretaker*
Mr. Vijay Pratap	*Assistant cum Caretaker*

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 primary objective of this **Energy Audit** was to identify opportunities to enhance the energy efficiency of **Janki Devi Memorial College**, with a focus on reducing energy consumption while maintaining optimal levels of human comfort, health, and safety.

In addition to mapping the institution's energy usage patterns, the audit aimed to evaluate and categorize energy-efficient appliances currently in use. Furthermore, practical recommendations regarding the daily operation of commonly used electrical equipment have been provided to assist in minimizing energy consumption.

The data for this audit was systematically collected by the **EHS Alliance Services Team**, through on-site surveys and direct analysis of the institution's infrastructure and operations. The report reflects actual energy consumption patterns across various zones within the campus, as determined using appropriate monitoring tools and equipment.

This assessment was conducted with the active cooperation and support of the college staff, and the findings offer a comprehensive overview of energy usage by area. Based on the analysis, a range of actionable measures has been recommended to support the conservation and optimized use of energy resources. The report also identifies potential areas for energy savings.

It is our sincere hope that the college administration, faculty, and students will implement these recommendations to ensure continued progress in sustainable and energy-conscious operations.

Please note that certain observations and conclusions in this report are based on estimations and generalizations where exact measurements were not feasible. These findings reflect the professional judgment of the audit team, informed by on-site interviews and field interactions with institutional representatives.

We are pleased to submit this Energy Audit Report to Janki Devi Memorial College and appreciate the opportunity to contribute to its sustainability initiatives.

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.

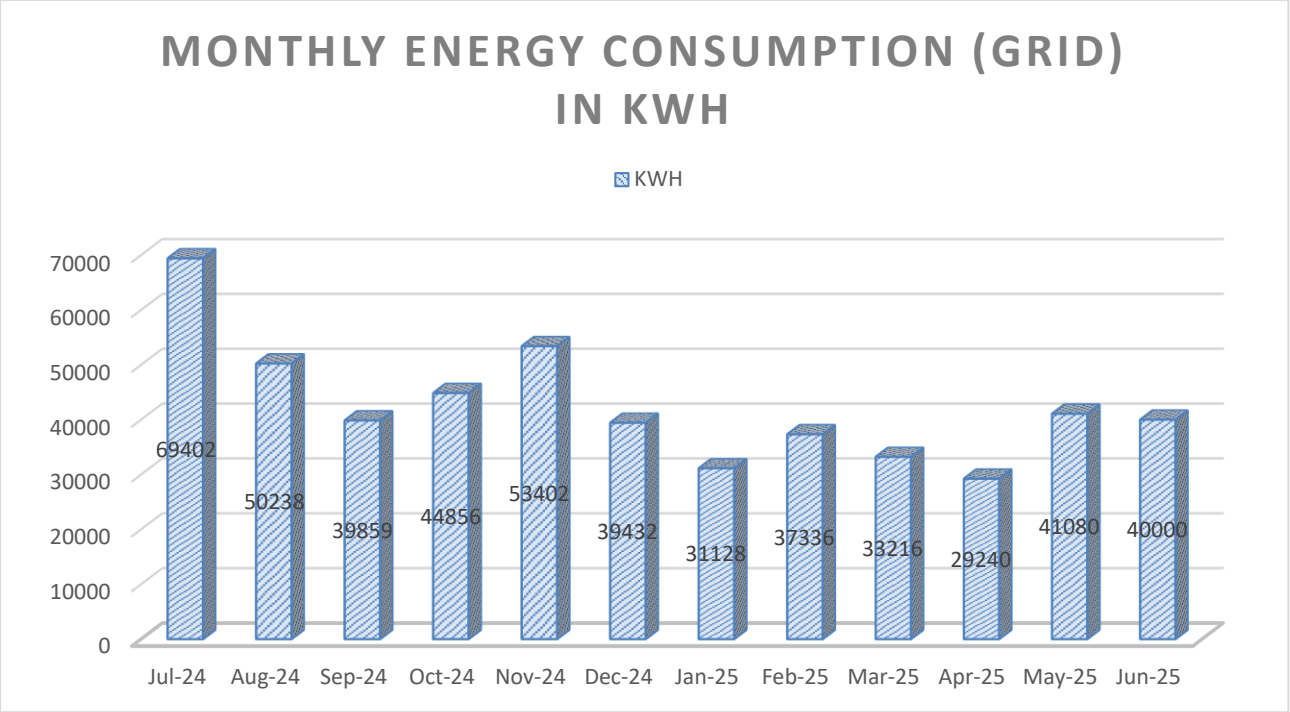
The details of **"Meter Connection"** at **"Janki Devi Memorial College"** are as follows-

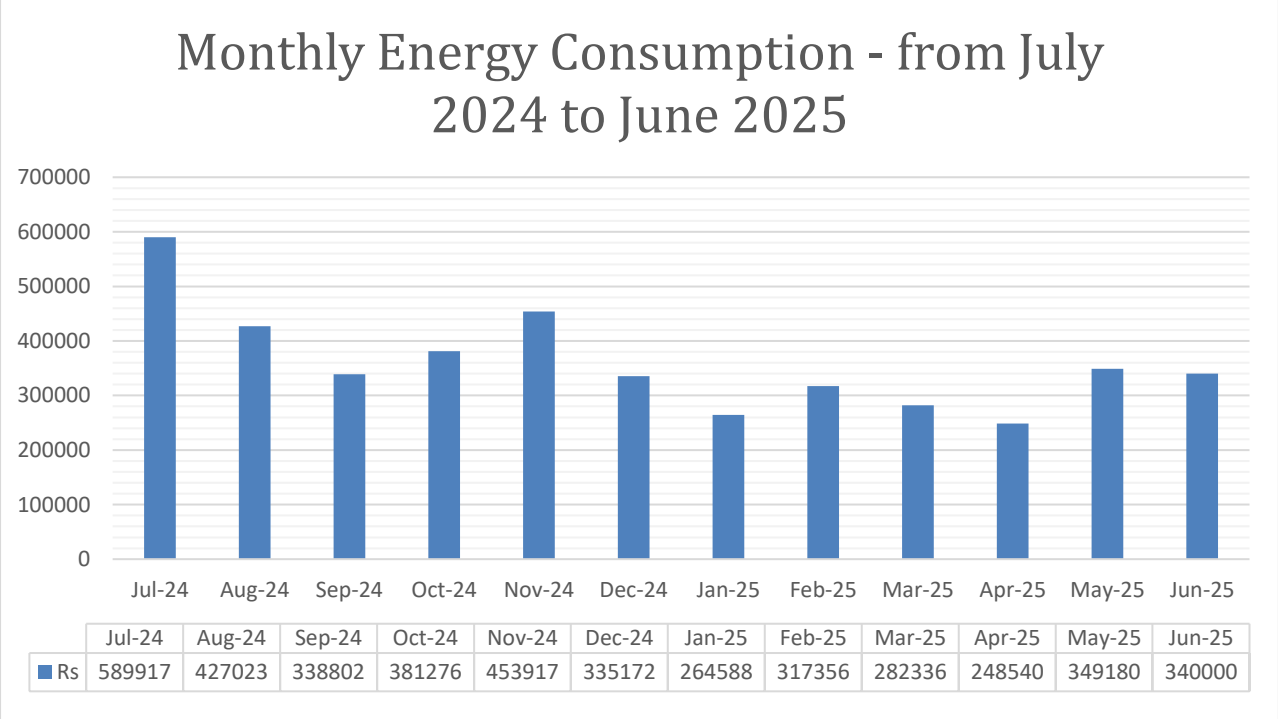
Name	-	The Principal
CA No.	-	100001930

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

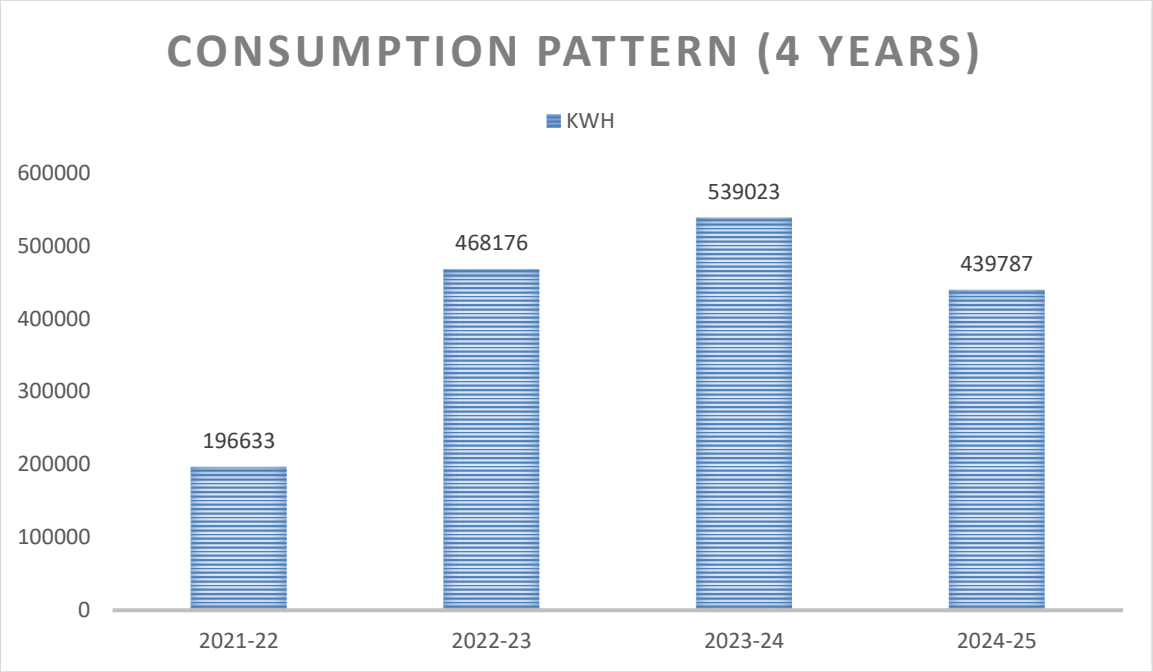
Month	Grid Units	Amount	Solar Units	Net metering Units	Amount
Jul-24	69402	10.00	5,891	69402	589917
Aug-24	50238	10.00	5,670	50238	427023
Sep-24	39859	10.00	4,964	39859	338802
Oct-24	44856	10.00	3,949	44856	381276
Nov-24	53402	10.00	4,585	53402	453917
Dec-24	39432	10.00	4,401	39432	335172
Jan-25	31128	10.00	3,523	31128	264588
Feb-25	37336	10.00	2,055	37336	317356
Mar-25	33216	10.00	2,647	33216	282336
Apr-25	29240	10.00	1,599	29240	248540
May-25	41080	10.00	5,007	41080	349180
Jun-25	40000	10.00	5,000	40000	340000
SUM	509189		49293	509189	4328107





	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	589917	427023	338802	381276	453917	335172	264588	317356	282336	248540	349180	340000

Analysis of electricity consumption for the last 4 years is shown below

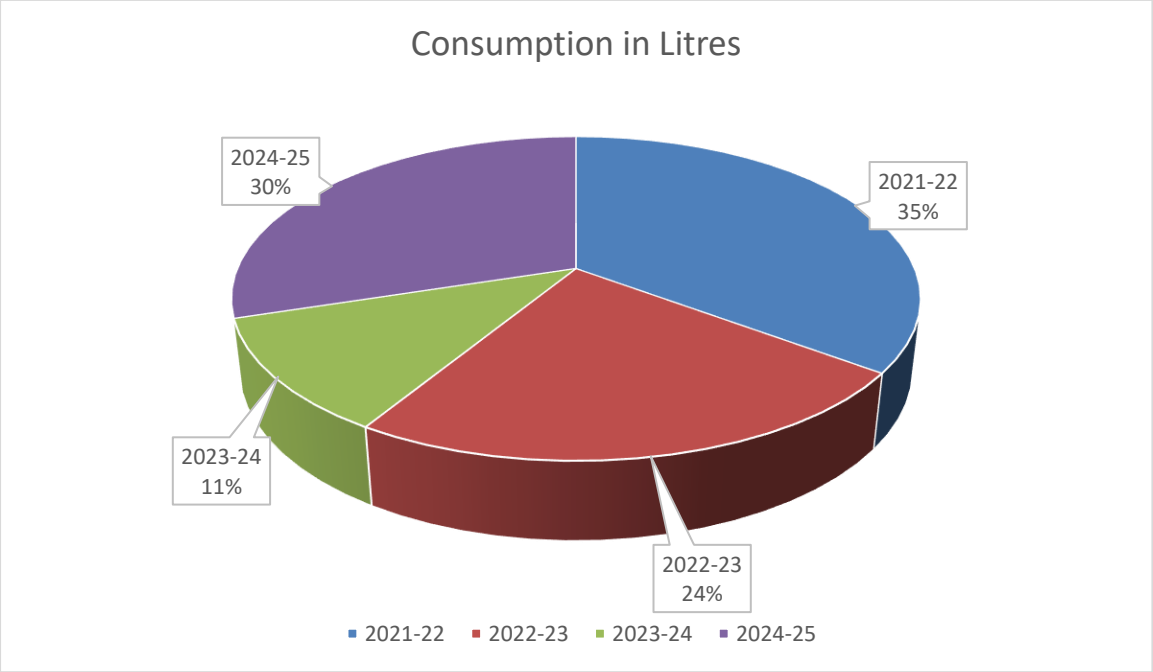


2. DIESEL CONSUMPTION

From July 2024 to June 2025, Janki Devi Memorial College has consumed 565 litres of fuel.

Month	Diesel (Liters)
Jul-23	0.00
Aug-23	0.00
Sep-23	25.00
Oct-23	330.00
Nov-23	50.00
Dec-23	0.00
Jan-24	0.00
Feb-24	45.00
Mar-24	20.00
Apr-24	25.00
May-24	45.00
Jun-24	25.00
Total	**565.00**

Four-year usage pattern is shown below



3. ANALYSIS OF DG SETS

In the campus, there are three Diesel Generator (DG) set for its electrical power needs in case of Grid power failure. DG sets capacity is 347.5 kVA.

DG Set Design Details				
Description	***Unit***	***DG at Station 1***	***DG at Station 2***	***DG at Station 3***
Rated capacity	kVA	125	160	62.5
Hz		50	50	50
Sl No.		6H.3516/0801590	1308061708370	1308031807948
Make		Kirloskar	Greaves	Greaves
Volts	Volts	415	415	415
PF		0.8	0.8	0.8
Phase		3	3	3
RPM		1500	1500	1500
Amps	Amps	173.9	223	87
Mfg.		2008	2017	2018

DG Set Operation details		
Operating hours during testing	Hours	0.5
% Loading	%	72.74
Energy Generation	kWh	34.57
Load	kVA	83.75
Fuel consumption during testing	Litre	6
Specific energy generation	kWh/litre	3.14

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.

As per the trial taken during the energy audit the percentage loading of DG set is 72.74% which is ok and specific energy consumption of DG Sets 3.14 kWh/Litre which is satisfactory because as per manufacturer recommendation, best practices for SEC in DG sets range from 3.0 to 3.5 kWh/Litre and above.

We recommend college 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 97 ACs installed in Janki Devi Memorial College in various areas of various type and capacity, details are given below: -

Sl No.	Location/Identification	AC Type	Count	TR in Tons	Room Temp. (°C)	AC-Tout (°C)	AC-Tin (°C)	Room-RH (%)	Area (m2)	Air velocity (m/s)	Enthalpy Hout	Enthalpy Hin	Heat Load in TR	KW supplied	(Eff.) Power per Ton (KW /TON)	EER
1	Library	s	4	1.5	24	11	20	52	0.03	2.2	22	38	0.37	0.66	1.79	1.97
2	Library	c	1	1.5	24	11	20	52	0.03	2.3	22	38	0.38	0.68	1.77	1.98
3	GCR	w	3	1.5	23	12	22	53	0.03	2.2	24	42	0.41	0.72	1.75	2
4	Seminar	c	7	1.5	23	12	20	53	0.03	2.6	25	38	0.35	0.67	1.9	1.85
5	Staff Room	c	6	1.5	24	11	20	52	0.03	2.3	22	38	0.38	0.63	1.65	2.14
6	Committee	s	2	1.5	24	12	20	53	0.03	2.3	24	39	0.36	0.64	1.79	1.96
7	Lab I	ca	3	1.5	23	12	22	53	0.03	2.3	24	42	0.43	0.71	1.63	2.15
8	Medical	s	1	1.5	23	12	22	52	0.03	2.3	24	43	0.46	0.76	1.67	2.11
9	Audi Control room	w	1	1.5	24	11	20	52	0.03	2.2	22	38	0.37	0.66	1.79	1.97
10	Bank	s	2	1.5	24	11	20	52	0.03	2.3	22	38	0.38	0.68	1.77	1.98
11	Union Room	w	1	1.5	23	12	22	53	0.03	2.2	24	42	0.41	0.72	1.75	2
12	Principal Anty Room	s	1	1.5	24	12	21	52	0.03	2.2	24	39	0.34	0.66	1.92	1.83
13	Lab II,IV	s	4	1.5	24	11	20	52	0.03	2.2	22	38	0.37	0.66	1.79	1.97
14	Lab III	w	2	1.5	24	11	20	52	0.03	2.3	22	38	0.38	0.68	1.77	1.98
15	Server room	s	2	2	24	11	20	52	0.03	2.2	22	38	0.37	0.66	1.79	1.97
16	Admin	s	2	1.5	24	11	20	52	0.03	2.3	22	38	0.38	0.68	1.77	1.98
17	AO	s	1	1.5	23	12	22	53	0.03	2.2	24	42	0.41	0.72	1.75	2
18	SO	s	1	1.5	23	12	20	53	0.03	2.6	25	38	0.35	0.67	1.9	1.85
19	AUDIO VIDEO ROOM	s	2	2	24	11	20	52	0.03	2.3	22	38	0.38	0.63	1.65	2.14
20	Music	s	1	1.5	24	12	20	53	0.03	2.3	24	39	0.36	0.64	1.79	1.96
21	Music	w	1	1.5	23	12	22	53	0.03	2.3	24	42	0.43	0.71	1.63	2.15
22	Porta MU	s	1	1.5	23	12	22	52	0.03	2.3	24	43	0.46	0.76	1.67	2.11
23	GCR	w	1	1.5	24	11	20	52	0.03	2.2	22	38	0.37	0.66	1.79	1.97
24	STA Room	s	1	1.5	24	11	20	52	0.03	2.3	22	38	0.38	0.68	1.77	1.98
25	PA	s	1	1.5	23	12	22	53	0.03	2.2	24	42	0.41	0.72	1.75	2
26	Principal Office	s	2	1.5	24	12	21	52	0.03	2.2	24	39	0.34	0.66	1.92	1.83
27	Account	s	2	1.5	24	11	20	52	0.03	2.3	22	38	0.38	0.63	1.65	2.14
28	Sports	s	1	1.5	23	12	20	53	0.03	2.6	25	38	0.35	0.67	1.9	1.85
29	Sports	w	1	1.5	24	11	20	52	0.03	2.3	22	38	0.38	0.63	1.65	2.14

30	PIO	w	1	1.5	24	12	21	52	0.03	2.2	24	39	0.34	0.66	1.92	1.83
31	Department	c	1	1.5	23	12	22	53	0.03	2.3	24	42	0.43	0.71	1.63	2.15
32	Research Room Lib-2	s	2	2	23	12	22	52	0.03	2.3	24	43	0.46	0.76	1.67	2.11
33	Research Room staff room	s	1	1.5	24	11	20	52	0.03	2.2	22	38	0.37	0.66	1.79	1.97
34	Hostel	s	9	1.5	24	11	20	52	0.03	2.3	22	38	0.38	0.68	1.77	1.98
35	All department	c	7	1.5	23	12	22	53	0.03	2.2	24	42	0.41	0.72	1.75	2
36	Hostel	w	18	1.5	23	12	20	53	0.03	2.6	25	38	0.35	0.67	1.9	1.85

Remarks:

The Energy Efficiency Ratio (EER) of the air conditioning units currently in use has been reviewed and is found to be satisfactory. However, for future procurement, it is strongly recommended that the college opts for BEE 5-Star rated inverter-based split air conditioners, as they consume significantly less energy compared to non-rated or lower-rated models.

Additionally, we recommend that Janki Devi Memorial College implement a regular maintenance schedule for all air conditioning units. This should include corrective measures, particularly the insulation of refrigerant lines, to minimize energy losses and enhance overall system efficiency.

5. FANS ANALYSIS

In the Janki Devi Memorial College, there are 343 Fans installed, out of which 178 fans are of 240W, 160 fans are 70W and 5 pedestal fans. The observations and suggestions are given below.

Fan Wattage	Fan Count
240-Watt Ceiling fans	178
70-Watt Ceiling fans	160
Pedestal fans	5
Total	**339**

Sl No.	Location/ Identification	Ceiling Fan-OLD 240W	Ceiling Fan-70W	Pedestal Fan 60W
1	1	4		
2	2	4		2
3	3	4	1	1
4	4	1	1	
5	5	2		
6	6	2		
7	7 AV	4		
8	8	4		
9	12	7		
10	13	7		2
11	13A	2	1	
12	14	7		
13	15 A/V	5	2	
14	16 A/V	7		
15	17	4	1	
16	18Tut		1	
17	19Tut		1	
18	20Tut		1	
19	21Tut		1	
20	22Tut	1		
21	23Tut	1		
22	24Tut	1		
23	25Tut	1		
24	26Tut	1		
25	27Tut	1		
26	28Tut	1		
27	29Tut	1		
28	30Tut	1		
29	31Tut		1	
30	32Tut		1	
31	33Tut	1		
32	34Tut	1		
33	35Tut	1		
34	36Tut	1	1	
35	60Tut		1	

36	38	1		
37	39A	2	1	
38	39	3		
39	40 A/V	6		
40	41A	3		
41	41	1	2	
42	42 A/V	5		
43	43	1	2	
44	43A	4	1	
45	Admin	5	9	
46	Account	3	2	
47	52		2	
48	53		2	
49	54		2	
50	55		4	
51	NCC Room		1	
52	57	2		
53	58	1		
54	59	1		
55	44	5		
56	45	5		
57	46	5		
58	47	4	1	
59	48	4	1	
60	49	3		
61	L1-20			
62	L2-20	2		
63	L3-20	2		
64	L4-20	2		
65	Computer Lab I		7	
66	Computer Lab II		9	
67	Computer Lab III - AV	1	8	
68	Sports Room	4	2	
69	Sports Changing		2	
70	61		2	
71	62		4	
72	63		4	
73	64		8	
74	65		8	
75	66 A/V		8	
76	67		8	
77	68 A		8	
78	69 A/V		15	
79	Library	18		
80	Principal	3		
81	Committee		3	
82	Staff Room		7	
83	Research room	5	9	
84	Porta cabin		4	
	TOTAL	**178**	**160**	**5**

Total no of Ceiling Fans (240W)	*178*	*Nos.*
Total no of ceiling Fans (70W)	*160*	*Nos.*
Total wattage of BEE 5 Star rated Fans (30W)	*10140*	*Watt*
Total saving in Wattage after replacement	*43780*	*Watt*
Operating hours per day	*6*	*Hours*
Operating days per annum	*200*	*Days*
Energy charges per unit in Rs.	*10*	*INR*
Saving in Rs./annum	*525360*	*INR*
Investment INR	*676000*	*INR*
Payback period: -	*1.29*	*YEARS*

Observation and Suggestions: -

The college currently utilizes ceiling fans with a power rating of approximately 240 watts. However, BEE 5-Star rated ceiling fans with a significantly lower power consumption of 30 watts are readily available in the market**. We strongly recommend replacing the existing fans with these energy-efficient 5-Star rated 30W models. This replacement offers substantial energy savings, and the estimated payback period is less than 1 years, making it a cost-effective upgrade.**

Note: The actual energy savings achieved may vary depending on the operating hours of the equipment. Similarly, the payback period is subject to change based on the actual cost of investment, which includes the cost of the fan and any associated accessories. The investment cost considered in this report is tentative, and variations in pricing may affect the final return on investment.

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 have been done.

6.2 INVENTORY OF LIGHTING

Light Wattage	Count
20 Watt LED	872
200 Watt LED	13
36-Watt Tube lights	24
Total	**909**

Total no of Tube light (36W)	Nos.	24
Total wattage of 36W Tube Lights	Watt	864
Total wattage of Led Tube Lights (20W)	Watt	480
Total saving in Wattage after replacement	Watt	384
Operating hours per day	Hours	8
Operating days per annum	Days	200
Energy charges per unit in Rs.	INR	10
Saving in Rs. /Annum	INR	6144
Investment INR	INR	3600
Payback period: - Years	YEARS	0.59

Observation & Suggestion: The college has adopted an LED-based lighting system, which is a significant step toward energy efficiency. LED lights are known for their low energy consumption, extended lifespan, and minimal heat emission, making them an ideal choice for sustainable campus lighting.

It is recommended that the remaining 36-watt conventional tube lights be replaced with LED alternatives. This transition has the potential to yield an additional energy savings of approximately 384 watts. The payback period for this investment is estimated to be less than one year, making it both an economically and environmentally beneficial decision.

Furthermore, we advise the college to expand the installation of motion sensor-based lighting systems in commonly used areas such as corridors, washrooms, and the library. This would further reduce unnecessary energy consumption by ensuring that lights are only activated when the space is in use.

6.3 LUX MEASUREMENT

Description	Lux	Remark
Class Rooms	120 to 235	Acceptable
Offices	130 to 240	Acceptable
Corridors	35 to 90	Acceptable
Washrooms	45 to 76	Acceptable
Outdoor	36 to 95	Acceptable
Computer Lab	150 to 289	Acceptable
Parking area	45 to 94	Acceptable
Canteen	69 to 185	Acceptable

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

7. OTHER POWER CONSUMPTION

7.1 INVENTORY OF IT INFRASTRUCTURE

Sl. NO.	Descriptions	Laptops	Desktop System	Total (laptop + Desktop)
1	CL1		60	60
2	CL2	39	23	62
3	CL3		50	50
4	CL4	55		55
5	Enabling Unit	7		7
6	Research Room		8	8
6	E resource centre	43		43
7	In Store	729		729
8	Library	74	9	83
9	Distributed to students	99		99
10	Distributed to Teaching & Non-Teaching	41		41
	TOTAL	1087	150	1237

7.2 WATER PUMP DETAILS

Sr. No.	Description	Unit	Pump No.-1	Pump No.-2	Pump No.-3
1	Rated Power of Motor	KW	3.5/5.0	0.75/1.0	5
2	Motor Eff.	%	60%	60%	70%
3	Discharge Head	m	6.1/0.6 LPH	2800-880 LPH	10-42 LPH
4	Suction Head	m	36/52	18-45	15-50
5	Pump Type	Submersible/ Monoblock/ Centrifugal Etc.	submersible	Submersible	Monoblock

7.3 OTHER LOADS

Sl No.	Location/Identification	60W Exhaust Fan	160W Exhaust Fan	Other 3phase	Single phase 230 W	180W-Circulating Fan	Solar panel 50.22 kilowatt capacity	Solar water heater
1	Composting Machine			415-440 Volts / 50 Hz				
2	Canteen		3					
3	Toilet/Library	16						
4	Drinking water cooler 8				7			

5	Fridge				8			
6	Water dispenser				1			
7	Auditorium					2		
8	Building Roof Area & Library Roof Area						162 Module /panel	
9	Hostel room area							4 tank 1000 ltr single phase 230w

ANALYSIS

It is recommended that the institution establish a regular maintenance schedule for all essential equipment, including pumps, exhaust fans, and IT infrastructure.

Electronic devices such as computers, printers, scanners, and similar equipment that have exceeded their typical operational lifespan (generally 3 to 5 years, depending on the device) should be replaced with newer, energy-efficient models, such as upgraded computers or laptops.

Additionally, maintaining the recommended ambient temperature for all electronic appliances is essential to ensure optimal performance, energy efficiency, and extended equipment lifespan.

8. CAPACITOR BANK

Sl. No.	Identification	Capacity in KVAR
1	Main Busbar Electrical Panel Parking	25 KVAR

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