

Raghuveer Mahavidyalaya, Thaloi, Bhikharipur Kala, Jaunpur (UP),

Energy Audit Report



2021-22 & 2022-23

Prepared by

Society for Academic facilitation and Extension (Regd.)

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Acknowledgement

We express our profound appreciation and gratitude to the distinguished members of the Managing Committee of Raghuvveer Mahavidyalaya, Thaloi, Bhikharipur Kala, Jaunpur (UP), for their invaluable contributions and steadfast support in the completion of the Green Audit report. The dedication and collaborative efforts of the following individuals have been pivotal to the successful realization of this project:

Managing Committee:

- | | |
|----------------------|----------|
| • ARCHANA SINGH | CHAIRMAN |
| • JAY PRAKASH TIWARI | MANAGER |
| • RAJEEV TIWARI | MEMBER |
| • SHESH DHAR TIWARI | MEMBER |
| • GYANDEV DUBEY | MEMBER |

College Officials:

- | | |
|---------------------------------|----------------------------|
| • Dr. Avadhesh Kumar Srivastava | (Principal) Chairperson |
| • Dr. Kripa Shankar Yadav | Co-Coordinator |
| • Dr. Nagendra Prasad Yadav | Co-Coordinator |
| • Dr. Mayank Tiwari | Member |
| • Dr. Sanju Shukla | Member |
| • Mr. Vikash Sharma | Member |
| • Dr. Sohan Lal Yadav | Member |
| • Mr. Ravi Kumar | Member |
| • Dr. Vinod Kumar Tripathi | Management Representative |
| • Dr. Sharda Prasad Singh | Employer Representative |
| • Dr. Manoj Kumar | Administrative (Registrar) |
| • Dr. Vinay Kumar Tripathi | Local Society represent |
| • Naseem Bano | Alumni Representative |
| • Durgesh Tiwari (M.A) | Student Representative |
| • Nikita Chaurasiya (B.Ed) | Student Representative |
| • Komal Mishra (B.A) | Student Representative |

We are grateful for the cooperation and assistance provided by the entire college community, whose commitment to sustainability and environmental stewardship has greatly contributed to the success of this audit.

Sincerely,

SAFE (Society for Academic Facilitation and Extension)



About the Institution

Raghuveer Mahavidyalaya: A Center of Excellence in Higher Education

Raghuveer Mahavidyalaya, located in the serene village of Thaloi, Bhikharipur Kala, Jaunpur, Uttar Pradesh (PIN 222143), stands as a distinguished institution committed to providing quality education. Affiliated with Veer Bahadur Singh Purvanchal University, Jaunpur, and recognized under sections 2(f) and 12(b) of the University Grants Commission (UGC), the college offers an array of undergraduate and postgraduate programs. These include Bachelor of Arts (BA), Bachelor of Education (BEd), and Master of Arts (MA), catering to a wide spectrum of academic pursuits.

Under the able leadership of Principal Dr. Avadesh Kumar Shrivastava (M.A., PhD), the college is dedicated to fostering academic excellence and holistic development. The institution is managed by Lalita Shikha Samiti, with Dr. Jay Prakash Tripathi serving as the Manager, ensuring the smooth functioning of the college. Raghuveer Mahavidyalaya is also a study center for Uttar Pradesh Rajarshi Tandon Open University, Prayagraj, further broadening its educational reach.

For inquiries, the college can be contacted via email at principal.raghuveer@gmail.com or through the contact numbers 8858621010 and 8840684377. The institution's commitment to academic integrity and community service is reflected in its well-established infrastructure and its robust affiliation with reputable educational bodies.

For more information, visit the college's official website: [www.raghuveermahavidyalaya.org.in](<http://www.raghuveermahavidyalaya.org.in>).

Statements of the Institution

- **Vision:** The college was established by the successful hands of Pandit Prithvipal Tripathi in a village named Thaloi on the Sujanganj-Machhli Shahar road in Jaunpur district, the land of Yamadagni. Before the establishment of this college, there was no any college to get higher education in the radius of 7 KM. Keeping this in view this college was established for the poor deprived backward students of this rural area to get higher education. The main objective of this college is educating rural students and connecting them to the main stream of society by providing them higher education. In view of this deficiency, Pandit Prithvi Pal Tripathi established this college and today by getting higher education from this college, the students have increased the pride of this area and this college. The society near by the college area getting new dimensions of development.
- **Mission:** The college aims to become a leading educational institution that would be recognized as a centre of excellence to impart quality education, create knowledge, integrate traditional and modern knowledge and impart inclusive education and build values, ethics and character. To create a student credit institution that inculcates experiential, innovative and lifelong learning skills. To solve societal problems. To promote and pursue all-inclusive research and development. To inculcate entrepreneurial attitude and values in the learners. To prepare the students of the college as good citizens of the nation through a socially balanced, globally informed, culture inspired and future oriented teaching paradigm. To prepare students to aspire to make



significant contributions to the development of the nation through socialist and secular strategies of education. The college will continue to foster talent and build on its rich reserves of fame and reputation.

- **Motto:** “*Asto Ma Sadgamaya Tamso Ma Jyotirgamaye*”

- **Objective:**

The college ensures openness, dedication and honesty in all its activities. The college regularly celebrates birth and death anniversaries of social reformers freedom fighters as well as national festivals as declared by the Government of India, Government of U.P. and Veer Bahadur Singh Purvanchal University, Jaunpur. The college actively engages programs and campaigns in partnership with faculty, staff and students to raise awareness on gender issues specifically the empowerment of women and environmentally conscious practices. To secure the well-being of female students, the college conducts anti-ragging sessions and campaigns such as Beti Bachao and Beti Padhao. The college has implemented rainwater harvesting. The college carries out green energy with solar pannel (LED lamps) to maintain a clean and green campus. Creation of awareness among students and faculty to use public transportation, bicycles and shared vehicles. The institute aims to enhance future academic excellence through the introduction and development of Ph.D. programs.

- **Aim of the College:**

The primary aim of Raghuveer Mahavidyalaya is to foster academic excellence and holistic development in its students by offering quality higher education in disciplines such as Arts and Education. The institution is committed to nurturing a dynamic learning environment that empowers students to realize their intellectual potential and develop critical thinking skills. With a focus on inclusive education, the Mahavidyalaya seeks to instill values of integrity, leadership, and social responsibility, preparing students to contribute meaningfully to society. Affiliated with Veer Bahadur Singh Purvanchal University and recognized by UGC, the institution strives to be a center of learning that aligns traditional academic rigor with modern educational practices.

The Natural Environs of Raghuveer Mahavidyalaya, Thaloi, Bhikharipur Kala, Jaunpur

Raghuveer Mahavidyalaya, Thaloi, Bhikharipur Kala, Jaunpur (UP), is located in a setting that gracefully balances the advantages of rural tranquility with the accessibility of contemporary amenities. Situated in one of Uttar Pradesh’s culturally significant regions, the campus stands as a peaceful enclave amidst the pastoral landscape of Jaunpur. The college is enveloped in verdant greenery, featuring meticulously maintained gardens and tree-lined pathways, providing an atmosphere conducive to both academic focus and personal reflection. These natural spaces not only enhance the aesthetic appeal but also offer a sanctuary for mental rejuvenation, fostering an environment of calm and concentration for both students and faculty.

The campus boasts several ancient trees, which serve as living monuments to the institution's rich history and enduring traditions. These towering trees provide both shade and a sense of continuity, creating outdoor spaces that are ideal for gatherings, academic discussions, and leisurely activities.



In addition to the tranquil campus atmosphere, Raghuveer Mahavidyalaya enjoys proximity to the natural beauty of the surrounding countryside, offering students the opportunity to engage with the local environment beyond the college grounds. The nearby rivers and open spaces further enrich the sense of serenity and connection to nature. The institution's dedication to environmental sustainability is evident through initiatives such as rainwater harvesting, waste recycling, and energy-efficient practices, all of which reflect its commitment to preserving the natural ecosystem.

In summary, Raghuveer Mahavidyalaya, Thaloi, Bhikharipur Kala, Jaunpur, embodies a thoughtful integration of rural serenity and environmental stewardship, creating a nurturing space that promotes both academic excellence and personal growth.

Assessment of the College

- **Affiliation:** The College has all its courses approved and affiliated to **Veer Bahadur Singh Purvanchal University, Jaunpur, UP, India, A State University- Government of Uttar Pradesh; Accredited A+ by NAAC**
- **AISHE:** The College has the AISHE Code [C-16019](#)
- **Recognition:** The College is recognized by University Grant Commission (UGC) under section 2(f) and 12 (b) of the UGC Act, 1956 vide by University Grants Commission, New Delhi

Institution overview

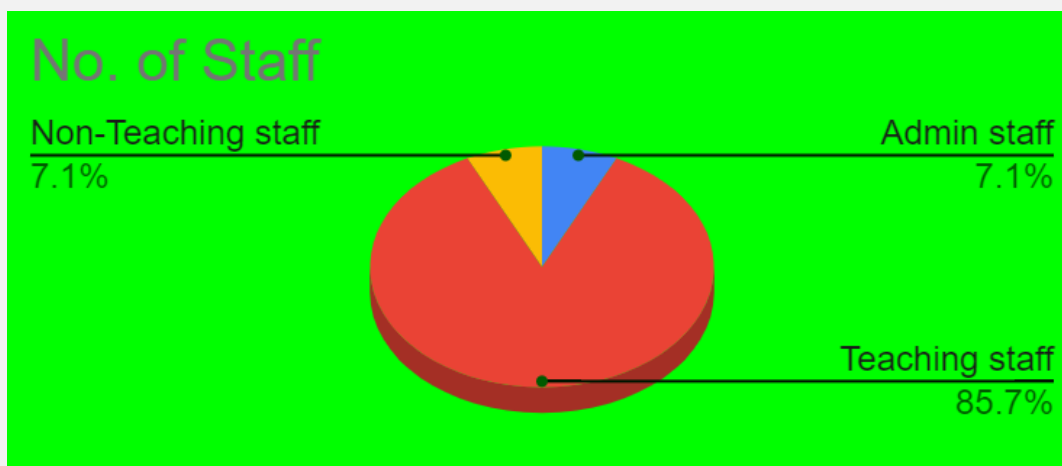
➤ **Populace analysis for Academic year 2022-23**

❖ **Staff data**

Type of Staff	No. of Staff
Admin staff	02
Teaching staff	24
Non-Teaching staff	02
Total Staff Members	28

Table 1: Staff data of the Institution for 2022-23





The staff data shows the premises had a total of **28** Staff Members.

➤ **Populace analysis for Academic year 2021-22**

❖ **Students' data**

The data provided by the College indicates that there was a **total of 522** students on the premises.

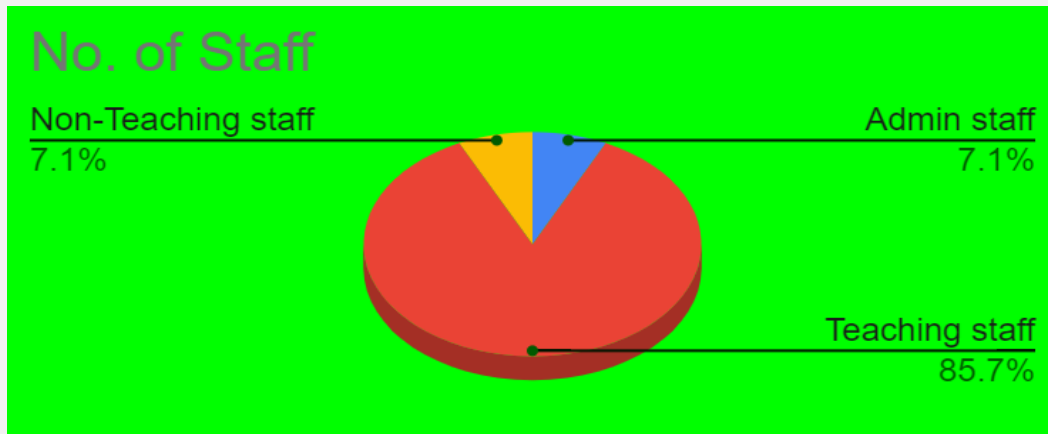
❖ **Staff data**

Type of Staff	No. of Staff
Admin staff	02
Teaching staff	24
Non-Teaching staff	02
Total Staff Members	28

Table 2: Staff data of the Institution for 2021-2022

The staff data shows the premises had a total of **28** Staff Members.





College Infrastructure

Establishment: The College was established in 2013. The building is a Reinforced Cement Concrete (RCC) framework building. Overall, the Infrastructure of the Building is excellent in terms of the Architecture Design and Green Building Design. The Premises covers quite a few of the requirements for a Green Habitat. The infrastructure of a college refers to the physical facilities and resources that support the educational and administrative functions of the institution. It encompasses various elements such as buildings, classrooms, libraries, laboratories, administrative offices, recreational areas, and other facilities.

Spatial Organisation: The overall ambiance of Raghuvveer Mahavidyalaya, Thaloi, Bhikharipur Kala, Jaunpur (UP), exudes warmth and approachability. The classrooms and other academic spaces are thoughtfully designed, benefiting from ample natural ventilation through large, clear-glass windows that facilitate a continuous flow of fresh air. Architecturally, the building stands out with a carefully curated color scheme that enhances its institutional character while harmonizing with the local vernacular architecture and the surrounding natural landscape, which is enriched by the presence of mature trees. This architectural synergy fosters a tranquil and conducive learning environment, where the built form seamlessly integrates with its serene backdrop. The floor-to-ceiling height exceeds 11 feet, contributing to the spatial openness. Although the premises are not equipped with lifts, essential amenities such as CCTV, fire extinguishers, a well-stocked library, and a first aid box ensure safety and functionality.

SAFE Study Audit

➤ About the SAFE Study Audit

It is a systematic study of the factors that make the institution a sustainable and healthy environment for its inhabitants.

➤ Analysis for the SAFE Study Audit

The procedure included detailed verification for the following:

Energy Audit

- Analysis of the Lights, Fans, AC, Equipment



- Renewable energy
- Scope for reducing the current energy bills if any
- Improvement in the thermal comfort of the premises

Green Audit

- Green initiatives
- Hygiene audit
- Water Audit - Analysis of the current water consumption of premises; Scope to include Rain water harvesting and Waste water treatment in premises
- Waste Audit - Current waste produced, its segregation and usage; Strategies to be adopted for waste management and awareness

Environmental Audit

- Analysis of the current landscape + hardscape of campus
- Analysis of the flora and fauna of campus
- Strategies adopted at present to enhance vegetation
- Measures that can be adopted for ecological improvement of the premises.

➤ **Strategy Adopted for SAFE Study Audit**

The strategy included data collection from the administrative department, actual inventory inspection, investigation of operation and maintenance procedures, analysis of the collected data, and preparation of the report.

Timeline of the Activities for Green Building Study Audit

- **05 September 2024** – Allotment and Initiation by the College
- **05 September 2024** – Induction meeting
- **12 September 2024** – Survey of the Student and staff submitted.
- **28 September 2024** - Site visit at the Institute
- **28 September 2024** – Submission of the report

Energy Audit

A comprehensive energy audit of Raghuveer Mahavidyalaya, Thaloi, Bhikharipur Kala, Jaunpur (UP) would provide the first requisite step toward fruitful energy savings and hence effectiveness in campus sustainability. The detailed assessment evaluates energy usage patterns of the college, points out areas of energy waste, and has practical suggestions about optimizing consumptions.

The audit starts by collecting data of electric, gas, and water consumptions over a set period. This includes checking lighting systems, HVAC units, laboratory equipment, and other



electrical appliances. Special focus is given to the insulation, windows, and structure of the building, as these conditions have a great bearing on heating and cooling requirements.

High-tech tools and techniques, such as infrared thermography and power quality analyzers, among others, are used by energy auditors to bring out efficiencies. The recommendation for several potential improvements-for example, installing LED lighting, upgrading to energy-efficient appliances, or enhancing insulation-the audit looks into renewable energy options and the installation of solar panels, to name a few, in order to decrease reliance on non-renewable energy sources.

Sources of Energy consumption

S. No	Name of the Department	Gas Cylinders	UPS	Inverter	Battery
1	Computer room	0	5	1	1
2	Office	0	0	1	1
3	Lab Home Science	2	0	0	0

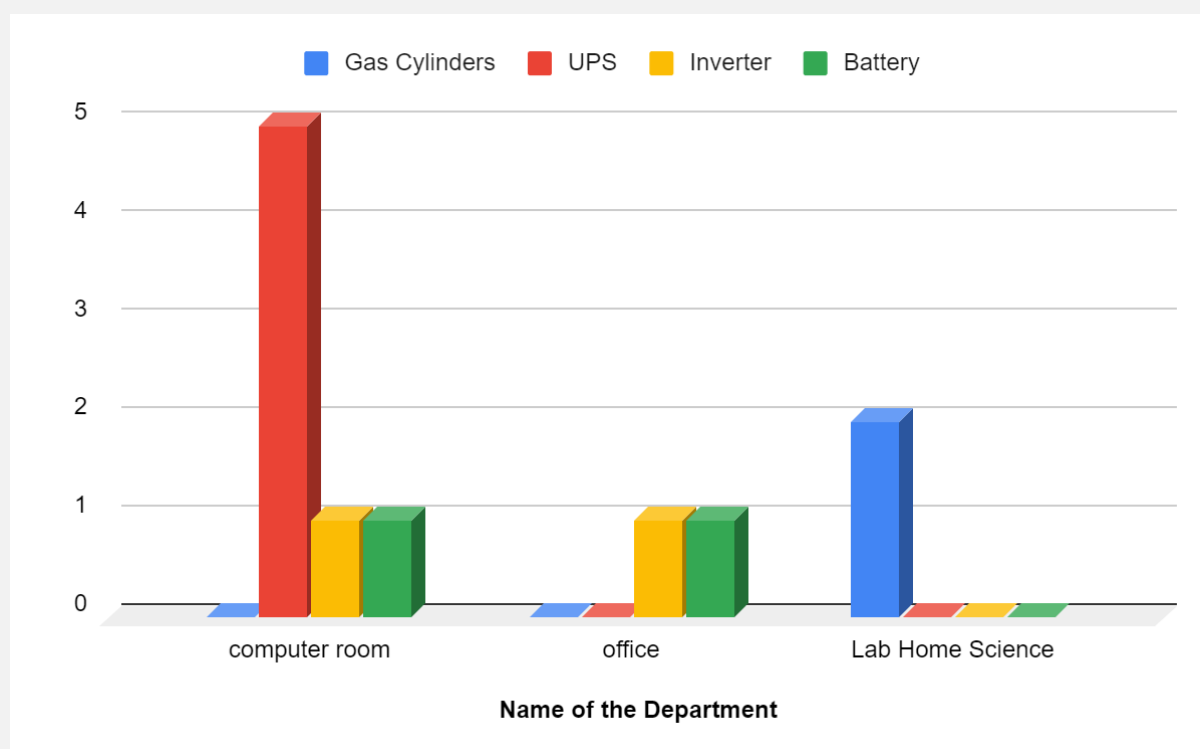
The premise uses following sources of energy consumption.

Primary sources

- ❖ **Electrical (Metered)** – Light, Fans, Equipment's, Pumps comprise these sources.
- ❖ **Renewable energy** – There are sources of renewable energy available.

Secondary sources

The sources are listed below (Department and location wise)



Investigation Analysis

The site investigation at Raghuveer Mahavidyalaya, Thaloi, Bhikharipur Kala, Jaunpur (UP), included observations and interviews with the maintenance staff and the Electrical Department in charge. The findings are summarized below:

- **Switch-off Procedures:** The maintenance staff and lab attendants consistently follow switch-off procedures, ensuring that all equipment is turned off when not in use.
- **Computer Operation:** On completion of using computers, they are turned off and kept in power-saving modes to ensure that there is minimal use of electrical energy.
- **Energy Awareness Initiatives:** Notice boards promoting energy conservation are prominently displayed in classrooms and labs to encourage both staff and students to adopt energy-saving habits.

These practices demonstrate the college's strong commitment to energy conservation and adherence to safety standards.

Actual Electrical Consumption as per Bills

The admin department had shared the bills for Meter which is connected to the building and is the main source of energy supply. The details of unit consumption meter wise stated there were around 13827 units consumed for Rs. 244,934/-

Electricity Consumption Year Wise According to Bills

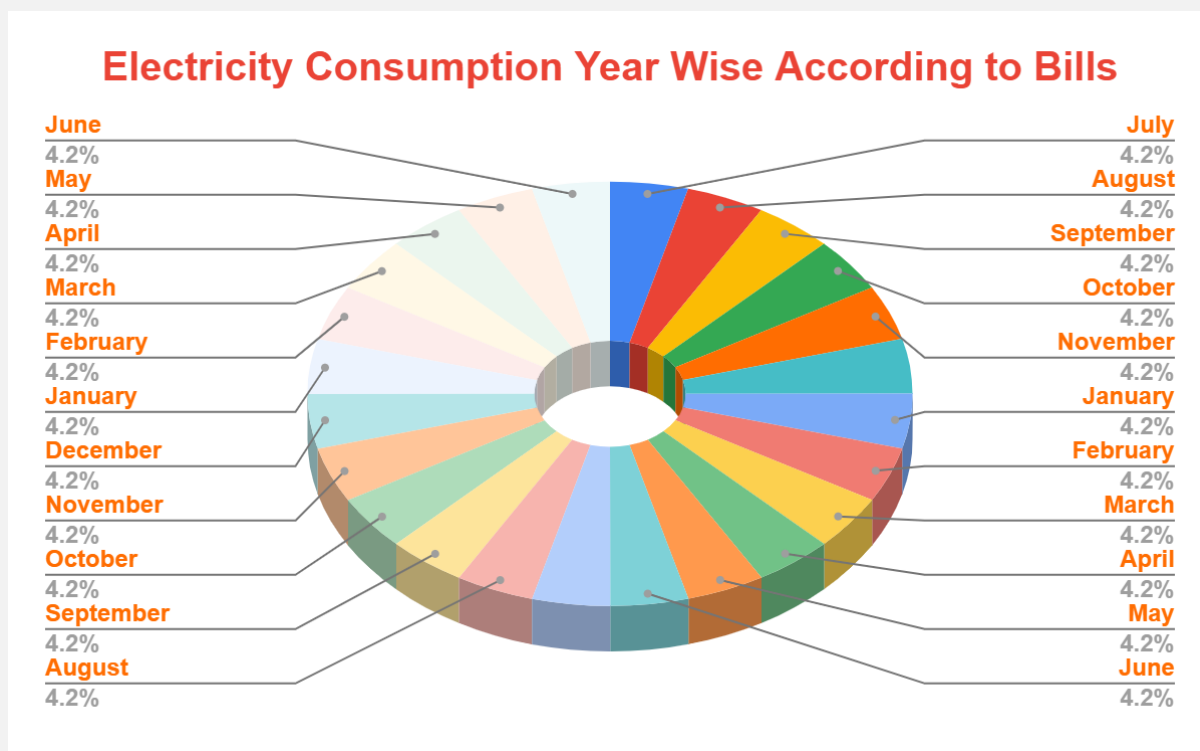
S.No.	Month	Year	Unit Consumed	Amount
1	July	2021	732	12345
2	August	2021	712	11867
3	September	2021	745	12643
4	October	2021	612	11564
5	November	2021	490	8567
6	December	2021	492	8573
7	January	2022	397	8569
8	February	2022	402	8612
9	March	2022	453	9002
10	April	2022	512	9431
11	May	2022	645	10203
12	June	2022	712	11213
13	July	2022	720	11345
14	August	2022	743	12623
15	September	2022	745	12643
16	October	2022	612	11564
17	November	2022	490	8567
18	December	2022	492	8573



19	January	2023	397	8569
20	February	2023	402	8612
21	March	2023	453	9002
22	April	2023	512	9431
23	May	2023	645	10203
24	June	2023	712	11213
		Total	13827	244,934

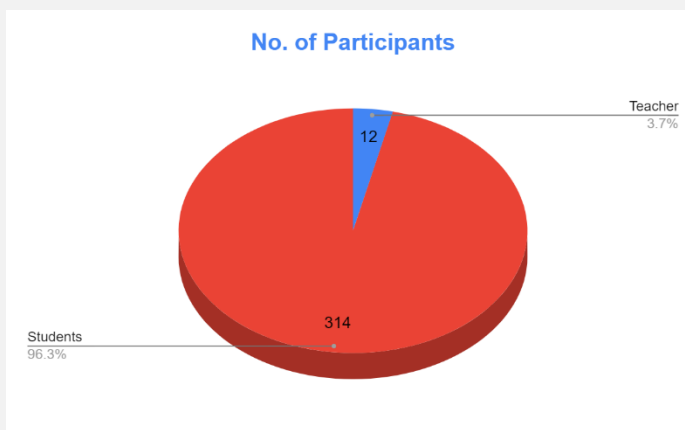
Details of the electrical consumption

The summary of the above study shows the average consumption varies for each month.



Survey Results

A total of **326 responses** were received out of which **96.3%** were students.



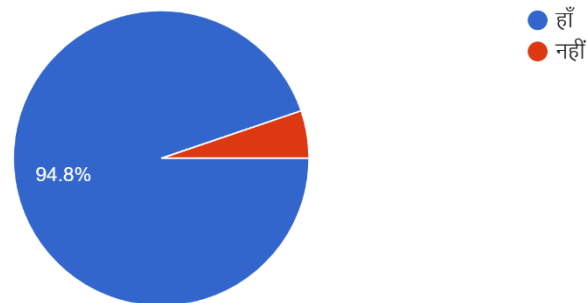
Review of the Energy management practices in the premises

Note: The Participants were asked to review the practice on a scale of 1-5 with scale components as follows:

- Scale 1 – Poor
- Scale 2 – Satisfactory
- Scale 3 – Good
- Scale 4 – Very good
- Scale 5 – Excellent

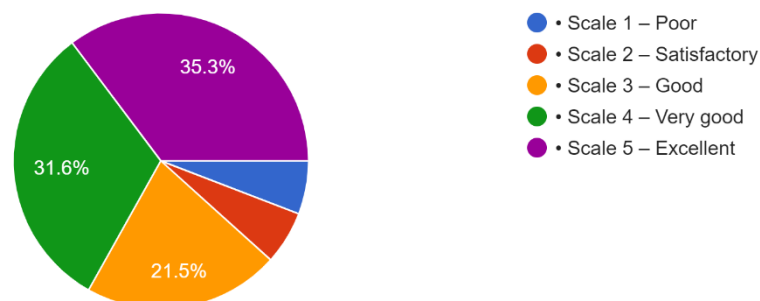
कॉलेज में ऊर्जा प्रबंधन प्रणाली है? Does the college have an energy management system?

326 responses



कॉलेज में ऊर्जा प्रबंधन प्रणाली है? The college has an energy management system?

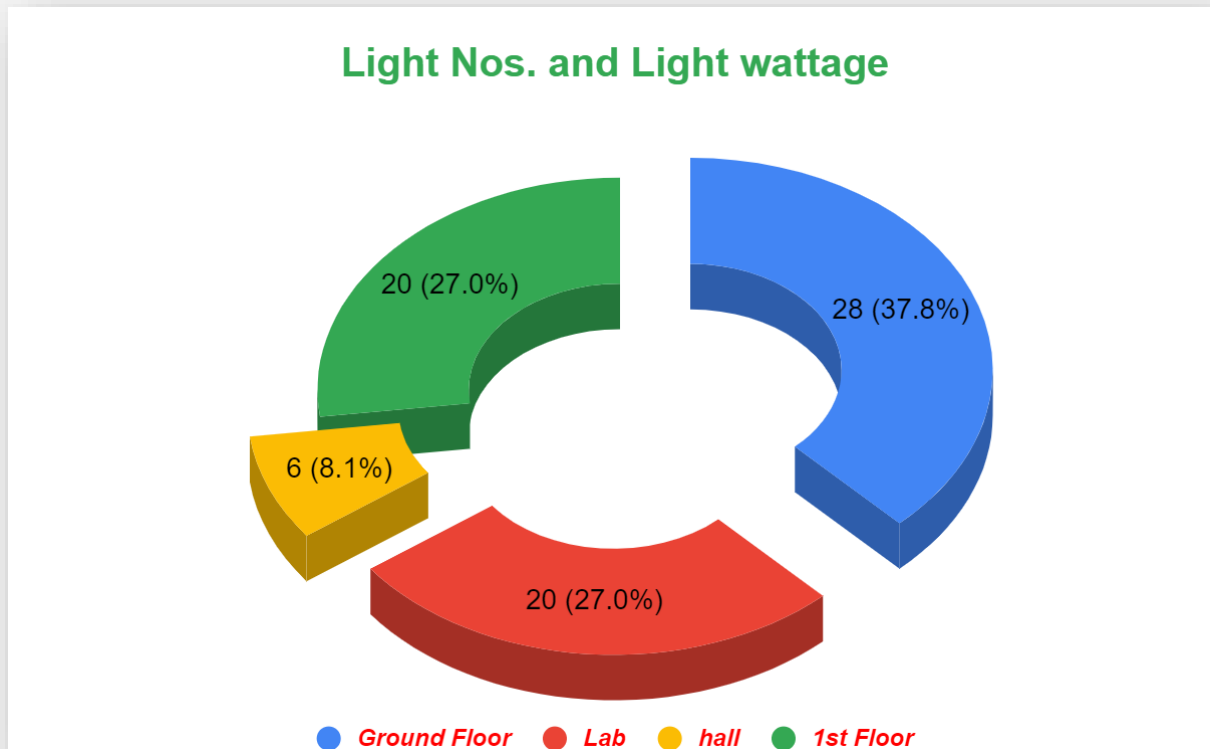
326 responses



The students, staff (almost 35 %) of the responses found the practices to be excellent (rating 5) and 31.6% of the responses found practices to be very good (rating 4) and 21% of the responses were Good (rating 3).

Block Wise Analysis of the Energy Consumption

The energy consumption of Lights is **242 KWh** of energy; the following graph shows the building wise consumption



1. Highest Light Density:

The ground floor has the highest number of lights (28) and the highest total light wattage (80 watts). This indicates that the ground floor is the most well-lit area, which may suggest it covers a larger space or requires more lighting due to its specific usage patterns.

2. Energy Efficiency:

The 1st floor has the highest average wattage per light, around 100 watts. This suggests that higher wattage bulbs are being used on the 1st floor compared to other areas, indicating potential opportunities for energy-saving improvements

Recommendations for Energy Conservation:

- **Appliance Upgrades:** Replace old air conditioners with energy-efficient models and encourage the use of power-saving modes for computers and projectors.



- **Power Backup:** Upgrade to a more efficient generator system or consider installing solar inverters to reduce dependency on non-renewable energy sources.
- **Renewable Energy:** Install solar panels on rooftops to harness solar power, which can potentially meet 20-30% of the institution's energy needs.
- **Energy Awareness Program:** Educate staff and students about energy-saving practices, such as turning off lights and devices when not in use.

Site investigation observations

- ❖ All lights are in working conditions
- ❖ Daily monitoring and check are done by the maintenance staff.
- ❖ There was no fuse defect observed.

Fans

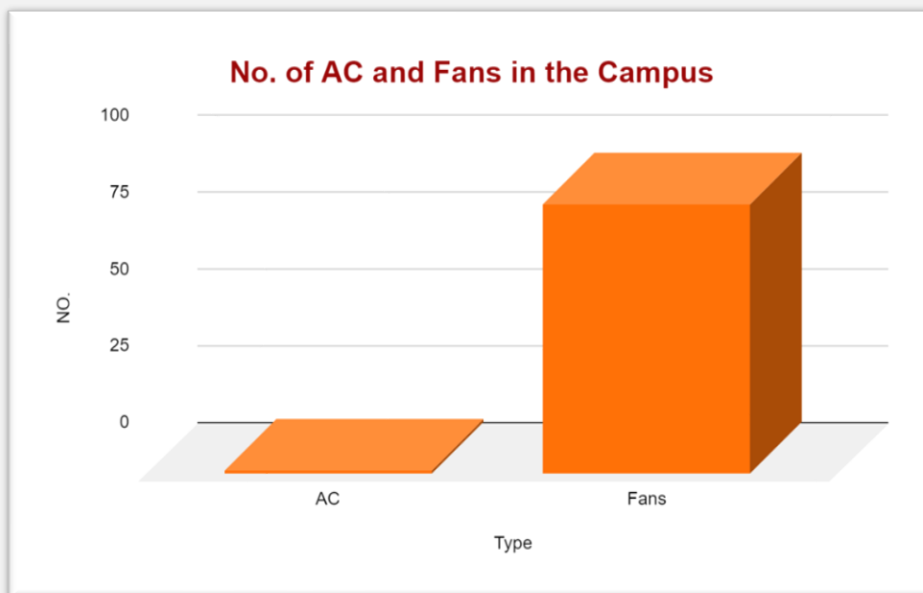
Types of fans based on the numbers

There are a total of **88 fans like Ceiling, Exhaust, Pedestal, Table and Wall mounted fan** in the premises.

Air conditioners

There is one air conditioner on the entire premises. Assuming the average power consumption of a standard air conditioner is approximately 1,000 to 1,500 watts per hour:

If the air conditioner is used continuously, it would consume between 1,000 and 1,500 watts per hour. Given the college's total power consumption of 13,300 watts, it is likely that the AC is not running at full capacity all the time or is used intermittently and efficiently managed.



Site

Investigation Observations



Daily Monitoring and Maintenance

The maintenance staff at Raghuv eer Mahavidyalaya, Thaloi, Bhikharipur Kala, Jaunpur (UP) conducts daily monitoring and checks with great skill. Their diligent efforts ensure that all outdoor units are thoroughly cleaned and maintained, with no issues related to dust accumulation.

Recommendations for a Sustainable Habitat

Energy-saving appliances are more valuable in terms of saving energy and in helping to sustain a greener environment. Education conveyed in educational institutions at the school and college levels is the most appropriate place. This can enhance student awareness from an early age and adopt eco-friendly methods and is a showcase for efficient operations. As such, some proposals that can be implemented at Raghuv eer Mahavidyalaya, Thaloi, Bhikharipur Kala, Jaunpur (UP) should considerably be able to reduce electricity consumption..

Section 1: Building Management Systems

Raghuv eer Mahavidyalaya, Thaloi, Bhikharipur Kala, Jaunpur (UP) has immense potential to become a 100% energy-efficient campus. In addition to upgrading the electromechanical systems, several measures can be introduced to enhance the building management systems. These initiatives can be applied to educational area of the college.

- **Set the BMS Time-of-Day Schedules:** Adjust the building management system (BMS) schedules to match the minimum occupancy periods of different areas. Implementing an optimum start-stop routine, including a night purge cycle and adjusting for session and holiday schedules, can greatly enhance efficiency.
- **Space Temperature Setback:** Utilize a temperature setback strategy to save on utility costs by reducing the frequency of heating or cooling system operations. This approach is a simple yet effective way to cut down energy usage.
- **Timer Control for Air Conditioners:** Install timer controls on air conditioning units to ensure they operate only when necessary.
- **Timer Control for Personal Heaters:** In residential areas, introduce push-button timer controls for personal heaters to prevent unnecessary usage.

By implementing these measures, Dayanand Girls PG College can move towards a more sustainable and energy-efficient future, setting an example for other institutions to follow

Energy Efficiency Improvement Recommendations



Section 2 - Electromechanical Systems - Electrical and Lighting

Sub-Section 1 - Lighting

Recommendation

Replacing all Non-LED, CFL, Halogen, and Mercury lights with energy-efficient LED lights can result in an average energy consumption reduction of 50%. This upgrade should be considered during any upcoming renovations to enhance overall energy efficiency.

Sub-Section 2 - Fans

Current Fan Systems

The ceiling fans in the college are in good working condition and are well-maintained. However, these fans typically consume at least 50W each when in use.

Recommendation

Replacing existing ceiling fans with energy-efficient models that consume only 14W can lead to an average reduction of 69% in energy consumption. While immediate replacement is ideal, the college may also consider replacing fans as they become damaged or non-functional.

Sub-Section 3 - Equipment

Current Computer Systems

Desktop computers, which consume approximately 250W, are widely used in the college. In contrast, laptops consume only 40W and have the added benefit of battery backup, lasting up to 4 hours.

Recommendation

- Switching from desktops to laptops can reduce energy consumption by up to 84%. However, this transition should consider the following factors:
- Senior staff may find desktops more convenient, and switching to laptops could disrupt their work habits and reduce productivity.
- Laptops are more prone to damage from drops, which could result in data loss.
- For students, laptops offer greater flexibility, but desktops may still be preferable in supervised common areas.
- Irregular use due to pandemic situations may affect device functionality.



On site visit photo



Ramesh

Dr. Ramesh Chandra
Chairman

Shaleen

Dr. Shaleen Kumar Singh
Coordinator

Deepak

Dr. Deepak Singh
Co-coordinator



SOCIETY FOR ACADEMIC FACILITATION & EXTENSION