



ATMIYA UNIVERSITY

(Established under the Gujarat Private University Act 11, 2018)

Yogidham Gurukul, Kalawad Road, Rajkot - 360005, Gujarat (INDIA)

Date: 13/06/24

To Whom So Ever May Concern

Maniben M.P. Shah Mahila Arts College, Kadi, Gujarat has Wheeling electricity to the Grid with following details for the year 2023-24.

Sr. No.	Month	Electricity Wheeling Units to Grid
1	April - 23	0
2	May - 23	270
3	June - 23	165
4	July - 23	202
5	Aug - 23	210
6	Sept -23	477
7	Oct - 23	1797
8	Nov - 23	845
9	Dec - 23	881
10	Jan - 24	835
11	Feb - 24	0
12	March - 24	629

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Bureau of Energy Efficiency, India

Energy Audit Cell,

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REPORT
On
ENERGY AUDIT



Maniben M.P. Shah Mahila Arts College,
Kadi- 384440
Gujarat, India

Date: 13/06/24

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1. Introduction

Energy audit is to reduce the amount of energy used in the organization without compromising the output. The audit team provides suggestions for better energy utilization. In general, energy auditing and management of energy consumption is to offer goods or services at the lowest possible energy cost and with the least amount of environmental effects.

2. Need for an Energy Audit

The need for energy audit arises from the importance of energy efficiency and sustainability in today's world. Energy audit serves several purposes and provides numerous benefits, including:

- a. Energy conservation opportunities: Identifying energy conservation opportunities by analyzing energy use and identifying areas where energy is being wasted or inefficiently used.
- b. Cost reduction: Energy cost represents a significant part of total cost for any organization. An energy audit helps to identify energy-saving measures that can lead to cost reductions by reducing energy waste, optimizing equipment performance, and improving operational efficiency.
- c. Environmental Sustainability: Energy consumption is closely linked to environmental impact, particularly in terms of greenhouse gas emissions and climate change. By conducting an energy audit, organizations can identify ways to reduce their carbon footprint and contribute to environmental sustainability goals.
- d. Compliance with Regulations and Standards: By proactively addressing compliance issues, organizations can avoid penalties and maintain a positive reputation.
- e. Energy Management and Planning: An energy audit provides valuable data and insights that enable organizations to develop comprehensive energy management plans.

3. Aim of energy audit

The aim of an energy audit is to identify the energy efficiency, conservation and savings opportunities at the premises of the audit sites in a systematic manner.

4. Systems studied during Energy Audit

- a. Lighting fixtures have been physically in various campuses verified and recorded.
- b. Reviewed implemented non-conventional energy installation and applications in the institute for use.
- c. Electricity bills served by UGVCL are analyzed for cost of power.

6. Observations & Recommendations for Improving Energy Efficiency and Energy Conservation

- a. The institute has installed LED lights for illumination at some locations. These lights are highly energy efficient. Therefore, the institute is promoting sustainability and reducing energy impact on environment.
- b. The institute is using fluorescent lighting fixtures for illumination at some locations. These lights must be replaced by **LED lights** earliest.
Approx. power consumption per year for a fluorescent light is $60 \times 8 \times 300 = 144 \text{ kWh}$.
Running cost per year for a fluorescent light is INR 669
If LED of 22 W are installed (provides same luminous efficacy as fluorescent light)
Running cost per year per LED light is $22 \times 8 \times 300 = \text{INR } 52.8 \times 4.65 = \text{INR } 245$
Cost saving of Electricity per lighting fixture = $669 - 245 = \text{Rs. } 424$
Cost of LED light = Rs. 500 approx.
Capital cost recovery time = $500/425 = 1.18$ years approx.
- c. The institute is using conventional fans (60 W). All these fans must be replaced by **Energy Efficient Fans** (28 W). Capital cost recovery time is 7 years approximately.
Approx. power consumption per year for a conventional fan is $60 \times 8 \times 300 = 144 \text{ kWh}$.
Running Cost per year per fan is $\text{INR } 144 \times 4.65 = \text{INR } 670$
If BLDC fans of 28 W are installed,
Running cost per year per fan is $28 \times 8 \times 300 = \text{INR } 67.2 \times 4.65 = \text{INR } 312$
Cost saving of Electricity per fan = $670 - 312 = \text{Rs. } 358$
Cost of installation BLDC fan = Rs. 2500 approx.
Capital cost recovery time = $2500/358 = 7$ years approx.
- d. Toilet blocks and corridors must be illuminated using **LED lights with motion sensor and/or daylight sensor**. This will benefit the institute with reduced energy consumption and cost of energy.
- e. **Energy conservation awareness programs** may be conducted in the campus for creating better usage of Electricity.
- f. **Power saving boards** must be displayed at multiple locations.
- g. The institute is using traditional **water pumps for lifting**. These water pumps must be replaced by energy efficient water pumps. Energy efficient

pumps save much power as compare to traditional pumps while providing the same pressure head.

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