

# **ENERGY AUDIT REPORT**

## **GOVT COLLEGE NEDUMANGAD**

### **INTRODUCTION**

Energy is identified as a key input for the economic development of any country. Balanced and efficient use of energy on priority basis is of paramount importance to ensure sustainable development as well as environmental preservation. As fossil fuels are fast running out and demand for energy increases every day, world nations are fighting fiercely to tight their hold on the energy reserves of the world. It is important for institutions of higher education to bring out a fundamental change in attitude in students and in general community about energy consumption, usage and environmental protection.

‘Energy audit is an inspection, survey and analysis of energy flows for energy conservation in a building’. It may include a process or system to reduce the amount of energy input into the system without negatively affecting output. Cape Hart, Turner and Kennedy in their work *A Guide to Energy Management*, defines energy management as the judicious and effective use energy to maximise profits and (minimise costs) enhance competitive positions.

### **OBJECTIVES OF THE STUDY**

- To minimise energy costs/wastage without affecting production and quality
- To minimise environmental effects of consumption
- To develop systematic approach to decision making on the areas of energy management
- Estimate the scope of saving energy
- Identify areas for more detailed study

### **METHODOLOGY**

As per the Energy Conservation Act ,2001, Energy Audit is defined as ‘the verification, monitoring and analysis of use of energy, including submission of technical report, containing recommendations for improving energy efficiency, with cost benefit analysis and an action plan to reduce energy consumption’. There are two types of audit 1.Primary Audit 2. Detailed Audit. Primary Audit examines existing consumption patterns and identifies areas

of improvement. This audit mainly pertains to primary audit as detailed audit is mainly meant for Large Industries.

### **DATA COLLECTION**

Data is collected for the audit using different audit groups for specific purposes. Data is collected through

- Visual inspection and observation
- Verification and Identification of energy consumption
- Detailed calculation/analysis of the data
- Validation

### **TIME FRAME FOR THE AUDIT**

Formation of Audit Groups-January 2019

Inspection and Data collection- January 2019

Data Analysis- February 2019

Drafting report –March 2019

Submission of Final report-March 2019

### **DIVISION OF WORK**

Two teams of five students each are formed in January. Team 1 is given the charge of Electrical equipments, and team 2 is given the charge of lighting. One faculty from the energy audit team is given the charge of these teams. Gathered data is analysed using the criteria a. Energy consumption by end use b. Rate of consumption time wise

**TABLE 1**

### **LIST OF ELECTRONIC EQUIPMENTS IN THE COLLEGE**

#### **(i) COMMERCE BLOCK**

Sl No:	Equipment	Number	Remarks
1	Fan	65	
2	Tube light	90	
3	Plug socket	79	
4	Speaker	10	
5	AC	01	

6	CPU	08	
7	UPS	08	
8	Battery	04	
9	Mike	04	
10	Camera	12	
11	Printer	04	
12	Projector	07	
13	Switch	287	
14	Purifier	03	
15	TV	03	
16	Desk top	7	
17	Lap top	02	

**(ii) MAIN BLOCK**

Sl No:	Equipment	Number	Remarks
1	Tube light	135	
2	LED	40	
3	Fan	111	
4	Printer	12	
5	Photo copier	02	
6	Speaker	18	
7	Computer	61	
8	Lap top	05	
9	Purifier	12	
10	Projector	09	
11	Printer	04	
12	Projector	07	
13	AC	7	
14	Camera	07	
15	TV	03	

**(iii) MATHS BLOCK**

Sl No:	Equipment	Number	Remarks
1	Tube light	42	
2	Fan	38	
3	Printer	04	
4	Speaker	07	
5	Computer	04	
6	Lap top	03	
7	Purifier	05	
8	Projector	01	
9	Printer	02	
10	Camera	02	
11	Socket	45	

**(iv) IQAC BLOCK**

Sl No:	Equipment	Number	Remarks
1	Tube light	25	
2	Fan	15	
3	Printer	02	
4	Speaker	02	
5	Computer	03	
6	Lap top	01	
7	Purifier	02	
8	Printer	02	
9	Camera	02	
10	Socket	28	
11	Tread mill	1	

**(V) EDUSAT BLOCK**

Sl No:	Equipment	Number	Remarks
1	Tube light	20	
2	Fan	10	
3	Printer	01	
4	AC	02	
5	Computer	01	
6	Lap top	02	
7	Purifier	01	
8	Printer	01	
9	Camera	02	
10	Socket	25	

**(vi) CANTEEN**

Sl No:	Equipment	Number	Remarks
1	Fridge	01	
2	Fan	08	
3	Freezer	01	
4	Grinder	01	
5	Tube light	10	
6	Socket	12	
7	Street light(LED)	10	

**Table 2**

**Energy Consumption Time wise on a normal working day**

Day	TIME	Consumption(KWH)
11.02.2019	10 am	24558
	11am	24575

	12pm	24595
	1 pm	24618
	2 pm	24634
	3 pm	24650
	4 pm	24660

### **MAJOR FINDINGS**

- Pumping water into the tanks takes more time and hence costs more electricity.
- There is steady rise in consumption during lab hours in department of physics and computer science.
- Incandescent lights are still used in certain parts of the building
- Old wiring in many parts causes leakage of energy
- Old water pipelines, motor cause increase in consumption
- Electric supply depends solely on KSEB
- Certain rooms have more lights and fans than required but certain rooms are under illuminated.

### **RECOMMENDATIONS**

1. Update circuits and equipments with modern technology
2. Make use of non-renewable energy sources like solar energy, and biogas
3. Replace incandescent and tubes with LED
4. Replace old electric equipments that consume more energy
5. Ensure required lights and fans in all class rooms
6. Give awareness to students about significance of energy saving.
7. Make sure that students and staff switch of lights and fans after use
8. Ensure that the new buildings constructed in the campus follow green building practices.
9. The sockets should be checked to ensure that only the good ones are used.
10. Install bio gas plant so that food waste can effectively treated and energy can be produced from bio -waste.
11. Configure all computers in power saving mode to minimize the use of electricity when they are idle

## CONCLUSION

The institution requires to form a permanent energy audit committee under the chairmanship of a senior faculty to periodically evaluate the energy consumption and leakage of energy. The scope of using solar energy in the campus is immense and the institution must make plans to tap that potential. Preparing a detailed electric wiring plan of the campus would help to identify unused points of power and in rewiring the buildings.

Signature



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