

# **Energy Audit Report**

of



**Nanasaheb Y. N. Chavan Arts, Science and Commerce College**

**Chalisgaon, Dist-Jalgaon**

**Submitted to**

**Principal,**

**Nanasaheb Y. N. Chavan Arts Science and Commerce College Chalisgaon**

**Dist: Jalgaon**

**By**

**Prof. N. T. Shimpi**

**Physics and Electronics Department,**

**Nanasaheb Y. N. Chavan Arts Science and Commerce College Chalisgaon**

**Dist: Jalgaon**

## Acknowledgment

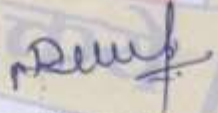
The Energy audit committee is grateful to the authority of R. S. S. P. Mandal Ltd. Chalisgaon Dist. Jalgaon Sanstha's especially, the Chairman Hon. Dr. M. B. Patil, the Secretary Hon. Shri. A. B. Nikam and all Respected Directors for their constant encouragement and support.

Special thanks are extended to Hon. Prin. Dr. S. R. Jadhav for his decision of conducting Energy Audit of Nanasaheb Y. N. Chavan Arts, Science and Commerce College, Chalisgaon. Thanks him for entrusting our potential for Energy audit. We express our warm thanks to the IQAC for suggesting and providing the help needed for Energy audit. We extend our gratitude towards Mr. S. S. Raut, Mr. V. B. More and other office staff for providing data needed, we are also indebted by the Head of departments for granting us permission to survey their respective departments and giving details so that the process of Energy audit became easier. We will be failing if we do not extend our gratitude to our students who are at the heart of every activity without whom anything is impossible.

We wish the college to progress by continuing the Energy sensitivity.

Date: 24/01/2019



  
Prof. N. T. Shimpi  
Physics and Electronics Department

## 1. Introduction:

We enjoy a very comfortable life by using electric energy, but we must also be aware that energy is a limited resource. Using energy wisely can even reduce your electricity bill. Using energy wisely and conserving energy efficiently are two major global issues. One of the most immediate benefits of saving electricity is the amount of money we will save each month on our utility bills. Another benefit of using less electricity is the positive impact you can have on the environment. Almost everything in a workplace setting today operates on electricity. This passage of electricity can cause great pain, burns, and even fatalities. To protect workers, you should properly educate them and ensure that your work environment is safe and free of electrical hazards. Hence Energy Audit is necessary. The Energy Audit survey of Nanasaheb Y. N. Chavan Arts, Science and Commerce College, Chalisgaon was completed with prior permission of honorable Principal Dr. S. R. Jadhav. The Energy Audit is completed by considering, how much tubes, fans, A.Cs, electronic instruments etc. in each classrooms and departments of our college.

## 2. Objectives:

- To analyze the energy flows in a building, and understand its energy dynamics.
- To reduce the amount of energy input into the building.
- To indicate how and where we can reduce energy consumption and save energy costs.
- To learn how to work as a group.
- To be able to teach and promote knowledge to the others.

### 3. Experimental and data collection:

All required data is collected with the help of non-teaching staff. In this survey building is divided in to three parts.

1. Part I – Ground floor
2. Part II- First floor
3. Part III- Third floor

In every room, how much fans, tubes, fans, computer, instruments, AC, were measured.

According to

Survey following data was collected.

A building ground floor								
Room	Tube Light	CFL	Fan	Computer	Printer	A.C.	Instruments	Watts
Library	17	03	14	07			Zerox-3	1500
Principal's office	02	02	02	01	00			
Administrative office	15	00	09	10	09	01	Water Filter -1	200
Computer Dept.	08	00	04	23	03	02	00	00
IT Dept.	05	00	03	18	02		LCD Projector-01	200
Multipurpose Hall	14	00	20	00	00	00	00	00
Ground	04	00	00	00	00	00	Flood lamp -02	200 x 2= 400
<b>Total</b>	65 x 40= 2600	05 x 20= 100	52 x 100 = 5200	59 x 200= 11800	14 x 200 =2800	3 x 5500 =16500		2300 + 39000



**A building First , second floor**

<b>Botany Dept.</b>	18	08	00	01	01	01	Mixer-1	300
							Hot Plates-02	1000 x 2= 2000
							Water bath 01	1500
							Incubator -02	325 x 2 =650
							Autoclave-02	300 x 2 =600
							Centrifugal pump-01	750 x 2 =1500
							Spectrometer -01	10 x 2 =20
							Calorimeter -01	60
							Fame photometer -01	60
							Oven -01	2000 x 5=10000
							Digester -01	60 x 2 =120
							Inoculation Chamber -01	325
<b>Zoology Dept.</b>	15	02	00	01	01	00	Hot Plates-01	1000
							Incubator -01	325
							Oven -01	2000
							Scanner -01	50
<b>Zoology Research Lab</b>	01	02	02	01	01	00	Hot Plates-01	1000
							Incubator -01	325
							Centrifugal pump-01	745
							Spectrometer -01	20
							Fame photometer -01	60
							Oven -01	2000
							Scanner -01	50
							Stirrer with hot Plate -01	1000
							Tissue embedding center 01	1200
							Slide staining Machine 01	1200
							Distillation Plant 01	1000
							BOD incubator 01	1300
							Tissue processor 01	1400

							Cooling plants 01	3500
							Bio-spectrometer -01	07
							Light Microscope -01	07
<b>Microbiology Dept.</b>	04	02	05	01	00	00	Water bath 01	1500
							Incubator 01	125
							Autoclave 02	300 x 2 =600
							Oven 01	2000
							Stirrer with hot plate 01	1000
							Laminator air flow -01	250
							Weighing machine -01	06
<b>Physics Dept.</b>	16	06	00	10	03	00	CRO -5	40 x 5=200
							Function generator -5	22 x 5=110
							Stirrer with hot plate -02	1000 x 2=2000
							Water bath -02	1500
<b>Electronics Dept.</b>	07	04	00	00	00	00	CRO -5	40 x 5=200
							Function generator -5	22 x 5=110
<b>Chemistry Dept.</b>	11	04	00	00	00	00	Water bath 01	1500
							Oven -01	2000
<b>Geography Dept.</b>	06	06	05	06	04	00	Scanner-02	50 x 2=100
							Slide Projector-01	150
							Tracing table(2 tube)-01	70 x 2=140
							Earth Globe-01	100
							Weather Station-01	500
<b>Statistics Dept.</b>	02	02	00	19	02	00	00	00
<b>Math Dept.</b>	01	01	00	01	01	00	00	00
<b>Psychology Dept.</b>	03	02	00	01	01		LCD Projectors - 02	2 x 200 =400
<b>Computer Dept.</b>	08	04	00	23	03	02	00	00
<b>IT Dept.</b>	05	03	00	18	02	00	LCD Projectors - 01	200
<b>Managemen</b>	07	03	00	15	02	00	00	00

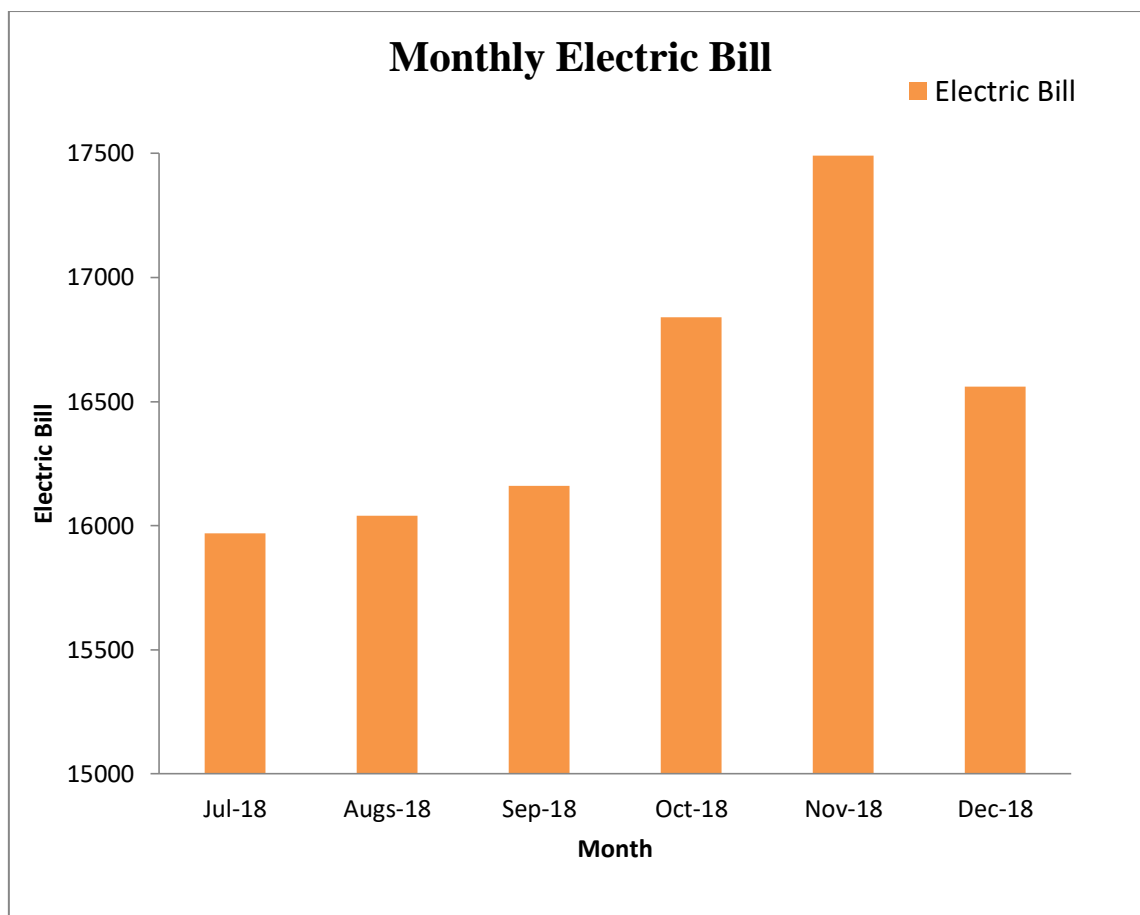


## The cost units utilized by college-

Month	Meter No 1	Bill	Meter No 2	Bill	Total	Bill
	77724002661		7604018131		Unit	
July -18	1511	14430	151	1540	1511	15970
August -18	1511	14550	151	1490	1511	16040
September -18	1511	14800	151	1360	1511	16160
October-18	1511	15490	151	1350	1511	16840
November-18	1511	16170	151	1320	1511	17490
December 18	1511	15200	151	1360	1511	16560

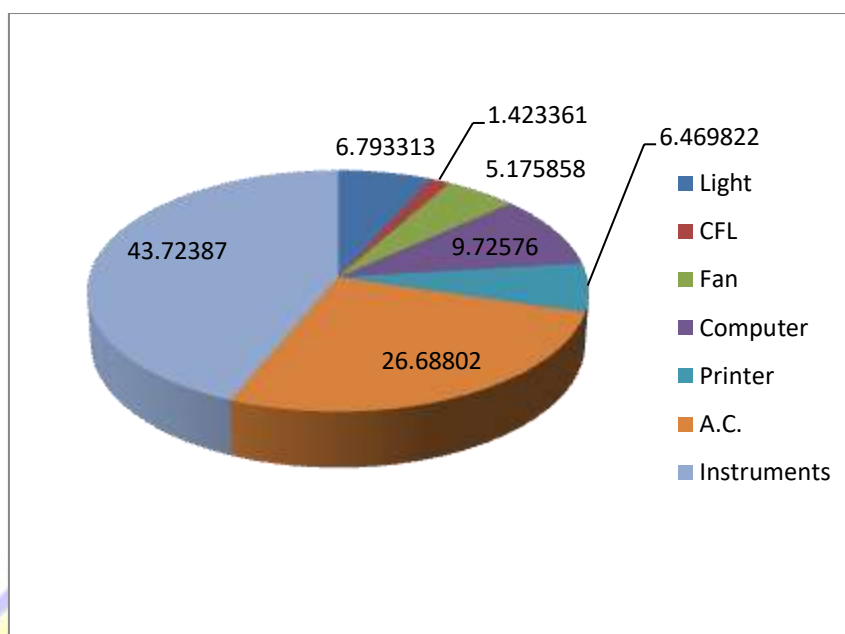






#### 4. Result and discussion:

Electrical audit is main concern about educational institutional. We collected data by considering tube light, fan computer printer, AC and instruments. In our college most of the electricity required for the instruments which is 43.72% out of total energy. A.C. utilized 22.68%, printer utilized 6.46%, and computer required 9.72%. Fans required 5.17% and tube light required 6.79%. The total required energy is 123651 watts. Figure 1 shows contribution of tube light, fan, computer, printer, AC and instruments in total use of energy.



**Figure 1. Contribution in Energy consumption due to different aids**

Variation of electrical bill is due to different programs, local environment, functions. In the month of April and May energy requirement is more, because exams are going on this period and summer session is going on so more electricity is required.

The college is now using 1.5 kW UPS and batteries for energy storage.

## 5. Suggestions:

- Turn off lights and equipment when not in use.
- Use available sunlight to illuminate your work spaces.
- Replace incandescent light bulbs with compact fluorescent lamps.
- Use LED bulbs for save more electricity.
- Energy Audit.
- Install occupancy sensors to automatically turn off lights.

- Control direct sunlight through windows with screens or film.
- Tune-up your HVAC units (clean and check refrigerant charge).
- Install programmable thermostats.
- Purchase ENERGY STAR office equipment.

## 6. Conclusion:

Data generated in energy audit are useful for to understand the energy distribution and utilization of college. The college needs maximum 123651 watts for electricity.

