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J. N. Thakare
Department of science,
K.B.P.Vidyalaya, Askheda,
Tal. Baglan, Dist. Nasik, India

Correspondence:
J. N. Thakare
Department of science,
K.B.P.Vidyalaya, Askheda,
Tal. Baglan, Dist. Nasik, India

Awareness Among the Villagers About Less Consumption of Electrical Energy for Sustainable Practice of Energy Conservation

J. N. Thakare

Abstract
Energy needs to be conserved not only to cut costs but also to preserve the resources for longer use. As of today, most of the energy is generated from coal power plants. These plants do generate energy simultaneously pollute the environment by emitting harmful gases in the atmosphere. Energy saving and energy audit can save money. The main purpose of an energy audit is to determine whether your home wastes energy. Energy audit is one of the most importance tools for energy conservation and for achieving energy efficiency. It provides the means to identify the area of leakage, wastage or inefficient use.

Keywords: Energy Conservation, Electrical Appliances, Renewable Energy, Electrical Bill

Introduction
Energy conservation is the act of reducing energy use to avoid waste, save money, and reduce environmental impact. An energy audit is an inspection survey and an analysis of energy flows for energy conservation in a building. It may include a process of system to reduce the amount of energy input into the system without negatively affect the output[1]. Nowadays electricity is used indiscriminately in the society and it causes huge energy expenditure and also causes financial loss. As a result we have to face problems like load shedding[2]. This is due to the bad habits of the people who do not need to keep the electrical appliances running for hours as well not using the energy saving appliances and lack of use of non-conventional source of energy. Energy problem has arisen all over India so it is necessary to survey every household in the village for proper use of non-conventional energy and best quality appliances as per the need[3].An energy audit is a detail report and analysis which shows energy saving areas within your home. The purpose of a home energy audit is to identify opportunities for reducing your energy usage[4]. A home energy audit can help you to reduce both energy costs and consumption.

Objectives:
1. ingrain the habit of saving energy and to make a habit of using non-conventional energy.
2. Get a reliable knowledge of energy consumption.
3. Optimize power supply.
4. Improve recruitment of electricity ad fuel.
5. Reducing emission per unit of production.
6. Analyze the possibilities of using renewable energy.
7. To reduce the energy loss and increases nonrenewable energy.

Methodology
Methods**:** Survey method, Students groups formed and the area assigned to the each group according to village map. Every Saturday and Sunday from February 2018 survey all such 63 houses (Household) with the help of 50 students with posters, three to four hours spend for each allotted lane of village.
After guiding the students about the electrical equipment survey, each group was given a

form with a questionnaire in a specific format to conduct the survey. Students went to every house in the village in groups and surveyed the electrical appliances and took their records.

After coming to the school, the students calculated the average number of units of energy required for a day in each house, an average one-month electricity bill of 63 houses was being drawn using the following formula.

Formula = (wattage x hours used per day) /1000 = daily watt x month (30 day)
1 unit = 5 Rs.rate
e.g., fan = 100 watt
100 x 6 / 1000 = 0.6 x 30 = 18 unit
18-unit x 5 Rs. = 90 Rs. / month

Pre-Survey (Feb.2018)

No..	Electric Equipment	(Watt)	Number of Equipment	Time (hrs.)	Daily (Watt) used	Unit of Month	Expenditure/month
1	T.V.	200	61	182	36.4	1092	5460
2	Radio	15	4	4	0.06	1.8	9.00
3	Mobile charger	5	131	100.5	0.50	15.075	75.40
4	Grinder	450	56	37	16.65	499.5	2497.5
5	CFL	12,18,23,28	62,47,9,18	214	3.85	115.60	577.8
6	L.E.D.	6 to 9	2	14	0.098	2.30	14.70
7	Bulb	40,60,100, 200	44,12,12,0	168	10.08	302.40	1512
8	Tube Light	40	36	109	4.36	130.8	654
9	Fan	60	95	162	9.72	291.6	1458
10	Table Fan	40	17	17	0.68	20.4	102
11	Charging Battery	80	19	24	1.92	57.6	288
12	Water pump	300	32	40	12	360	1800
13	Flour MILL	750	4	19	14.25	427.5	2137.5
14	Iron	1000	35	53	53	1590	7950
15	video	15	2	2	0.03	0.9	4.50
16	Washing Machine	300	1	2	0.6	18	90.0
17	Computer	250	9	19	4.75	142.5	712.5
18	A/C	1500	6	58	87	2610	13050
19	Water Heater	2000	13	35	70	2100	10500
20	Oven	1000	1	0.5	0.5	15	75
21	CD Player	85	4	5	0.425	12.75	63.75
22	Mercury	500	3	4	0.2	6	30
	Total					9810.95	49054.75

Total unit of the month = 9810.95/month
Total electricity bill per month = Rs. 49055 / month for 63 household (Forty-nine thousand fifty-five Rs. / month)

Looking at the total monthly electricity bills of 63 households, it was seen that a large amount of unnecessary electricity was being used. During this time, the students made electricity saving billboards and posters and marched through every lend in the village, Askheda (Nasik)

After two-month Students went to every same house in the village in groups and post surveyed the electrical appliances and took their records.

Students while surveying before awareness.

After coming to the school, the students calculated the average number of units of energy required for a day in each house. After the public awareness, an average one month electricity bill of same 63 houses was drawn using the following formula.

Formula = (wattage x hours used per day) /1000 = daily watt x month (30 day)

Post Survey (After 2 months)

No.	Electric Equipment	(Watt)	Number of Equipment	Time (hrs.)	Daily (Watt) used	Unit of Month	Expenditure/month
1	T.V.	200	61	150	30.0	900	4500
2	Radio	15	4	4	0.06	1.8	9.00
3	Mobile charger	5	131	100.5	0.50	15.075	75.38
4	Grinder	450	56	30	13.5	405.0	2025
5	CFL	12,18,23,28	62,47,9,18	250	4.5	135	675
6	L.E.D.	6 to 9	2	14	0.098	2.94	14.7
7	Bulb	40	12	36	1.44	43.2	216
8	Tube Light	40	20	60	2.4	72	360
9	Fan	60	95	162	9.72	291.6	1458
10	Table Fan	40	17	17	0.68	20.4	102
11	Charging Battery	80	19	24	1.92	57.6	288
12	Water pump	300	32	30	9	270	1350
13	Flour MILL	750	4	15	11.25	337.5	1687.5
14	Iron	1000	35	40	40	1200	6000
15	video	15	2	2	0.03	0.9	4.50
16	Washing Machine	300	1	1	0.3	9	45.0
17	Computer	250	9	15	3.75	112.5	562.5
18	A/C	1500	6	35	52.5	1575	7875
19	Water Heater	2000	8	15	30	900	4500
20	Oven	1000	1	0.5	0.5	15	75
21	CD Player	85	4	5	0.425	12.75	63.75
22	Mercury	500	3	4	0.2	6	30
	Total					6383.3	31916.50

Total unit of the month = 6383.3/month
Total electricity bill per month = 31917 Rs. /month for 63 household
(Rs. Thirty-one thousand nine hundred seventeen / month)

Two months later, a post- survey found that unnecessary household energy consumption was avoided in most households as well as the use of energy saving devices such as LED, CFL bulbs mostly less energy consumption appliances and solar water heaters with non-conventional energy resources, resulting in significant energy savings through electricity bills. There was also financial savings.

Students while surveying after awareness.

Result and Discussion

1. Number of incandescent light bulb and water heater are found to be decreased.
2. Most families use energy saving appliances like CFL bulb, LED bulb after the awareness done.
3. People became alert and aware about electric energy.
4. Improved energy security and reduction of the price risk for energy consumers.

Acknowledgement

I have been selected the topic after full consideration and pondering over the same and realizing its need in the present day. this has been selected with a view that it might be of same use to my other fellow friends who are working in this field.

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