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ENERGY SAVING TECHNIQUES IN AN APARTMENT

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Abstract—With the increasing cost of the necessary commodities in our daily life (rent, groceries, utilities, medicines, food etc.) you can be surprised that what you can do to cut back you're spending while living in your apartment. In this article we will know on how we can make our apartment energy efficient.

You may be wondered that why the term “energy efficient” is used here. The meaning of the term is if you use less energy less amount of bill (electric bill) you will have to spend. Here we will discuss some essential energy saving method for living an apartment.

Keywords— LED, refrigerator, inverter ac, sub-meter

I. INTRODUCTION

These methods are required for you to make some improvements while living an apartment. These techniques are discussed below:

1. Usage of ceiling fan

There is no doubt that a ceiling fan uses less energy (70-80Watts and 160 watts for high-speed pedestal fan) than a heating and cooling systems generally we use in our flat.

During summer turn on your ceiling fan to make your room cool and when the temp. of outside is dropping then reverse the blades of your ceiling fan because it will remove heat from your room to outside More you use ceiling fan in this way you will save more money compared to the use of air conditioner.

2. Usage of refrigerator

Pay much attention to the use of your refrigerator. Try to keep the coil of the back portion of the fridge clean all the time. Because dirty and dusty coil can not remove the heat properly and also consumes more energy rather than clean coil It is seen than near about 20% of the total consumed energy comes from the refrigerator.

Beside this you can set the temp between 24-27 degree Celsius because this the appropriate temp for cooling. If you set the temp. regulator below it then it will consume more electrical power.

3. Duration of usage of refrigerator

Consumption of electrical energy by the appliances also depend on the duration they are being used. At night,

generally from 12am to 7am (for 7 hours) you can give rest to the refrigerator. Don't worry, fruits vegetables and other things will not get damaged. Try this undoubtedly. You will get the result in your monthly bill.

4. Change your light bulbs

Switch from incandescent lamps and CFLs to LED (Light Emitting Diode) will reduce your monthly electric bills. The life span of LEDs is more and consumption of power is also reducing 60-70% The output (lumen) of LED is much more than CFLs and incandescent lamps.

5. Use power strip

Appliances can consume power (very low) during off condition. If you use power strip then you can omit this problem. Many appliances can be connected to one power strip and also can be disconnected when they are not in use.

6. Use low flow faucets

You can use low flow faucets in kitchen and bathroom. There will be a difference in water pressure obviously and you will notice the difference in the amount of monthly bill.

7. Wash at full loads

Always try to wash at full loads. This will reduce monthly bill.

8. Hand drapes

If you use insulated hand drapes in window, it will remove heat from the temp and help you to keep the room temp comfortable. So, then you don't need air conditioner. So, your monthly utility bill will be reduced.

9. Arrange the room properly

Arrange your room properly. Place your furniture accordingly to the design of your room. Don't place furniture near air vent, because this will block the ventilation system of the room. Air flow will be interrupted and room temp will be increased.

10. Some important cooking techniques

While cooking if you put a lid on pots where food is being cooked, then this lid will trap the heat and wastage of heat energy will be reduced significantly and as a result also the



heating energy coming from stove or gas required for cooking will be less. Food will be prepared quickly.

11. Proper thermostat setting

Do your thermostat setting properly. So that, when you are out of your home for any purpose or for job purpose then your thermostat will be in off condition and again when you are on your way back to home then thermostat will be in ON condition. So after returning home you will get a comfortable temp and at the same time your monthly utility bill will be reduced.

12. Low flow shower head

You can use low-flow shower head. It will decrease the water pressure slightly but wastage of water will be reduced.

13. Shade your air conditioner

Shade your air conditioner properly from direct heating through sun light. For this the outdoor unit will run properly (more efficiently) and your room will be cooled very quickly.

14. Use inverter ac

Replace your non-inverter ac with inverter ac. Because in inverter ac compressor speed can be adjusted according to the temp which is fixed in case of non-inverter ac. So, the monthly bill will be reduced significantly.

15. In every apartment there is a common meter where all the lights and heavy loads fitted and used for common purpose (roof, corridor, main and back entrance, stairs, motor for lifting water, lift etc.). If you take some important steps, you will see the results will be reflected in monthly electric bill.

These significant steps are mentioned below:

- a). In every common space like entrance, stair, roof you can fit more than one lamp (the no. of lamps will depend on the square foot of the space.). But always try to use the least no. of lamps what you can.
- b). When you are using one lamp, other lamps will be in stand by mode. These will give two advantages:
 - b1) If any lamp gets damaged suddenly then another can be used. Total area will not be converted into dark place.
 - b2) The monthly bill will be reduced significantly.
- c) You should use LED lamp. The wattage would be less than CFL and lumen will be higher. So, using one or two lamps the entire area will be lightened. Some other steps help to reduce monthly bill are:
 - A. As the wattage is less power consumption will be also less and this effect will be reflected in monthly bill.
 - B. Do not use all the lights in elevator. There are generally two nos. of light. One of them is used for emergency purposes. Use the fan of the elevator according your requirement. Switch off the fan before leaving the elevator.

- C. Use shade in the roof to protect the roof from extreme heat during summer. It will also make your room comfortable. So, the usage of air conditioner will be less and it will reflect on your monthly bill.
- D. Make a proper maintenance schedule for the elevator. Periodic maintenance is very essential for that. Because it will maintain a good health of the elevator as well as it will be energy efficient and repairing cost will be reduced also.
- E. In maximum apartments there is only one submersible water pump is used. The rating of the motor used for this should be 1 HP (for 5 storied building). Do not use greater than 1HP motor. It will be wastage of electrical energy.
- F. You should use another pump for this purpose as stand by. For this initial cost will be much (purchase and installation) but maintenance cost will be less. Sometime you can use the second motor. For that first motor will get rest.
- G. Now a days maximum apartments use water level sensors which is connected to the submersible pump. But it is recommended that do not use such type of sensors. As these sensors are automatic, so after the usage of little bit of water sensor automatically starts the pump.

It is shown that if there is sensor and it will run the motor almost near about 10 times a day (for 20 families residing in one apartment). But without sensor you will need to run the motor near about 4 times a day.

So, you can make a weakly based schedule for running the motor. This method will significantly lower your monthly electric bill.

Now we will discuss about the electric meter we use:

After entering an apartment, we apply for energy meter. But it takes some time to get. Till then we use some ordinary meter (also known as sub-meter in market).

These meters are connected to the common meter of the apartment. There are some problems for this type of connections. They are discussed below:

These types of meters are not accurate. They don't Give proper reading of energy consumptions. So, there is also an error in reading. So, then you have to pay more bills. Sometime there exists a phantom load (meter pulse is coming though no load is connected). For this reason reading is increasing and we have to pay this through electric bill. If this incident occurs then disconnect all the appliances from the supply.

Another problem of using this meter (sub-meter) is the electric bill we pay according to the slab of the consumed unit. In this case if many sub-meters are connected to the common meter for a long time, then the entire amount of consumed unit will be very much higher. So, the no. of slabs will increase. As we know that per unit charge of each slab is increased slowly, then as the total unit is increased, the amount of bill will



increase very much. So, always try to avoid the using of such type of meters.

II. CONCLUSION

So, we can see that if we follow some easy steps while living in our apartment, then we can make our apartment more energy-efficient and as a result our utility bill will be decreased also.

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