



Lesotho Electricity Authority

GUIDELINES ON EFFICIENT USE OF ELECTRICITY FOR RESIDENTIAL SECTOR

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1. Background

One of the duties of the Lesotho Electricity Authority (LEA) is to 'ensure the operation and development of a safe, **efficient** and economic electricity sector in Lesotho.' For the sector to be efficient, one of the key factors is using the electricity efficiently. The license issued to the Lesotho Electricity Company by LEA requires, in section 36 that LEC 'prepares a Code of Practice setting out the ways in which the Licensee will make available to Customers such guidance on the efficient use of electricity as will, in the opinion of the Licensee, enable them to make informed judgements on measures to improve the efficiency with which they use the electricity supplied to them.' The license condition continues to list some items that such a Code of Practice should include and they are extracted below:

- a) the preparation, and making available free of charge to any customer who requests it, of a statement, in a form approved by the Authority, setting out information and advice for the guidance of Customers in the efficient use of electricity supplied;
- b) the creation and maintenance within the Licensee's organisation of sources from which Customers may obtain further information about the efficient use of electricity supplied to them, including the maintenance of a telephone information service;
- c) the preparation, and making available free of charge to any Customer who requests it, of a statement or statements of sources (to the extent that the Licensee is aware of the same) outside the Licensee's organisation from which Customers may obtain additional information or assistance about measures to improve the efficiency with which they use the electricity supplied to them. Such statement or statements should include the basic information which is publicly available on financial assistance towards the costs of such measures available from Central or Local Government or through bodies in receipt of financial or financial support from Government in connection with measures to promote the efficiency of energy use.

The Licensee has, since the issuance of its license in December 2006, not prepared the Code of Practice referred to above. These guidelines by LEA are therefore aimed at guiding electricity customers and consumers on how to use electricity efficiently. Efficient use of electricity can go a long way in reducing the national electrical load and hence delay capital intensive generation and transmission projects. The guidelines are not meant to be a substitution for the Code of Practice to be prepared by the Licensee as the above prescribed requirements of the Code are meant to be met by the Licensee, not the regulator.

These guidelines are also a supplement to efforts undertaken by the Department of Energy in educating the public on energy efficiency in general.

2. Introduction

Energy is simply defined as the ability to do work. Thus it follows that energy is needed at home as well as in business. In industry, electrical energy is the lifeblood of manufacturing since it is used to convert raw materials into finished products. Electricity is also one of the most convenient, safe and form of energy for use in the home. But with climate change and declining economies taking centre stage globally in recent years, it is imperative that electricity is used efficiently both to cut usage costs and protect the environment.

The good news is that there are so many easy ways to save electrical energy. Making small changes in our homes, offices and lifestyles can make a big positive impact in our wallets, as well as our planet. These guidelines outline some measures that will help in the efficient use of electricity applicable particularly to the residential customers/consumers while measures applicable mainly to businesses/industry are given in separate guidelines. It is to be noted that some of the measures in these guidelines can be up scaled and applied to the industrial sector and by the same token some measures in the guidelines for industrial sector can be downscaled and applied to the residential sector.

3. Guidelines for Residences

This part of the guidelines looks at the measures that home users can implement to cut down their consumption of electricity and hence reduce their utility bills. The measures have been categorised in three categories as easy, pretty easy and really easy steps with the following meanings:

Really Easy – all that has to be done is change a habit or unplug something or do some other thing that is really easy.

Pretty Easy – a little bit of physical work needs to be done and it might be necessary to buy something.

Easy – Some physical work needs to be done and it might take a few hours at a cost to get the project done.

Further to the relative ease of implementing the steps, the steps have been categorised according to the relative amount of savings achievable by implementing each step. The savings categories are defined below.

Low or Category 1 Savings – savings of up to 10% of energy bill with zero spending

Medium or Category 2 Savings – savings of up to 30% for an outlay of less than M1, 000.00

High or Category 3 savings – Savings of up to 50% on a permanent basis resulting from investing in energy efficient equipment

3.1. Really Easy Steps plus Low Savings

3.1.1. Turn Down Your Geyser Thermostat

The geyser is the most energy hungry appliance at home. It is responsible for about 40% of electricity monthly costs.

Studies show that turning down the geyser thermostat by 10 degrees can result in 3-5% savings in energy costs.

The first really easy step to do is thus to look for the thermostat on the geyser and turn down the temperature from 70 degrees Celsius (the highest temperature setting) to 60 degrees Celsius.

The geyser should also be switched off before leaving for work or after bathing and switched on again at night before going to bed. This simple action will help decrease the load on the power grid and help reduce power outages.

Showering instead of taking a bath also uses less hot water and hence less electricity. When using small quantities of water, like for washing hands, the hot water should not be left to run unnecessarily. It should be a habit to use basin plugs when washing.

3.1.2 Turn Down Your Refrigerator

People should be aware or take note of the fact that the colder their refrigerator is, the more energy it takes to keep it that way.

Turning up the refrigerator's temperature is a very easy way to save energy, so keeping it as warm as safely possible can save substantial energy. There is a dial or knob in the refrigerator typically labelled from 0 to 7. Zero (0) means no cooling, the refrigerator is off. One (1) is warmest and seven (7) is coldest. Three (3) is generally the recommended refrigerator setting. Refrigerators should be set between 2 - 8 degrees Celsius, which would correspond with the settings around the middle of the setting knob, that is, between settings 2 to 4. As much as 25% of the refrigerators energy consumption can be saved by staying within this temperature range. The door of the refrigerator should also not be left open unnecessarily.

3.1.3 Turn Off Your Personal Computer (PC)

Many people think that when the screen saver is on their PC, it's saving energy. But, this is wrong. Screen savers protect the screen and they do little to make the computer use less energy. To save energy consumption by a PC when not in use it should be turned off and unplugged from the power socket outlet. Putting it on hibernate mode is as good as turning it off minus unplugging it.

3.1.3 Unplug Battery Chargers

Think of all the things you plug in at night: cell phone, laptop, digital camera, etc. All these need to be recharged on a regular basis. But these devices don't take long to charge and

most people leave them plugged in for hours, which means they keep drawing power even after their batteries are full.

According to studies, cell phones only use 5% of the power that is pulled out of the wall to charge their batteries. This means that 95% is wasted when a charger is left plugged in all night long.

So paying attention to unplugging electronic devices chargers once the battery is full is a really easy step.

3.1.5. Cook with Smaller Appliances

Cooking with smaller appliances can save a surprising amount of energy. For instance, cooking food in a microwave oven uses 50% less energy than cooking with a conventional oven. Toaster ovens require far less energy than conventional ovens to cook smaller portions because there's a much smaller space to keep heated. Toaster ovens use 75% less energy than conventional ovens.

In addition, when using the stove top, cooking with smaller pans and using pans that fit the stove top results in less energy to cook.

3.1.6. Wash Dishes and Clothes Smarter

Whether you have your washer full or half-full, the washer uses the same amount of water and energy. So it saves energy to keep dirty dishes or clothes until a full load for the washer can be met. It also saves to line dry the clothes instead of tumble drying them.

3.1.7. Iron Large Batches of Clothes

An iron consumes as much energy as ten 100 watt bulbs and it remains hot or warm even after being switched off. Ironing large batches of clothing at one time saves energy as the iron does not have to be reheated. Efficiency can be optimised by completing the ironing with the iron already switched off utilising the stored heat energy.

3.1.8. Boil the Needed Amount of Water in a Kettle

When water is boiled using a kettle, only the needed amount of water should be boiled. It is wasteful to fill the kettle when only a cup or two of water is needed.

3.1.9. Use Space Heaters Wisely

It saves electricity to dress for the weather. Pulling on a sweater and/or getting under a cosy blanket would spare one turning on his/her space heater. In summer air conditioners should be set between the 18 and 22 degrees Celsius. Temperatures lower than 18 degrees Celsius just waste energy.

3.2. Pretty Easy Steps plus Medium Savings

3.2.1. Switch Your Bulbs to Compact Fluorescent Lamps (CFLs)

CFLs are on everyone's lips these days, the reason being they save a lot of energy. They use between 75% and 80% less energy than their incandescent equivalents. They last eight to ten times longer than regular incandescent bulbs. Most manufacturers' qualified CFLs will pay for themselves in less than six months.

It is also important to know that, just like with incandescent bulbs, there are different CFLs for different settings and bulbs. For example the spiral shaped CFLs are not meant to hang upside down. If they are hang upside down they overheat and burnout far quicker than they should.

3.2.2 Use SmartStrips to Stop Vampire Loads

All the electronics equipment that suck power even when it is turned off is called phantom or vampire loads. Unplugging these devices when not in use has already been given above as a really easy step to save energy. Smart power strips can be used to automate this unplugging process. They all have two basic components: electrical outlets and circuitry that monitors and controls those outlets. For example, when a printer plugged into a basic smart strip goes into standby mode, its power consumption drops. The circuitry detects the change and cuts the power to that outlet. The rest of the outlets in use stay on. Many smart power strips also have one or two unmonitored, always-on outlets. These are the ones you'd use to plug in the devices that always need power, like your cordless phone base or alarm system.

3.2.3 Wrap Your Geyser and Water Pipes with Insulation

Insulate your water pipes and wrap your geyser in a geyser blanket. Be sure to fix any leaking hot water pipes and taps, they are tremendously wasteful, dripping litres of water a day and hence wasting a substantial amount of energy.

3.2.4 Buy an Electric Blanket

An electric blanket uses a lesser amount of electricity in comparison to a space heater and cost less as well. The efficiency of an electric blanket can be enhanced by turning it to a higher setting (preheat setting) about half an hour before getting into bed and then turning it off for the night.

3.3. Easy Steps plus High Savings

3.3.1. Install a Low-Flow Showerhead

A good portion of daily water usage goes to showering, and unless one takes a cold shower all of the shower water has to be heated.

Installing a low-flow showerhead can save a substantial amount of water and energy. Many regular showerheads put out about 8 litres of water per minute. A low-flow showerhead can reduce this by half. So that's a lot less water that needs to be heated.

3.3.2 Install a Programmable Thermostat

It has already been mentioned that a geyser is the most energy consuming appliance at home. A programmable thermostat can make a big difference in the energy consumption by a geyser because it tells the appliance exactly when it has to come on and go off. It is an easy step and well worth the amount of time and expenditure it will take to get it installed.

3.3.3 Install a Solar Water Heater (SWH)

A solar water heater can be installed to add volume of stored water to the already existing electric geysers or replace them altogether. A SWH uses the sun's energy to heat water and can retain heat for prolonged periods without sunlight. Although prices of SWHs are about double the prices of electric geysers, the resulting energy savings per month will cover the entire investment in less than five years.

Electrical energy efficiency can be optimised by fitting a geyser as close as possible to the points where hot water is being used.