

How you can help keep the lights on

South Africa is experiencing another chilly winter, and electricity use is at its peak. Demand is expected to reach 37 000MW this season - up from 36 000MW last year.

Demand spikes in the mornings from 7am until 10am, and in the evenings from 6pm until 9pm. The national electricity grid is under strain once again. If we're to limit the risk of power failures, we all have to help. And we can help. Eskom is encouraging simple yet effective ways in which ordinary people can contribute to national energy efficiency and cut down their own household energy expenses.

Exchanging old bulbs for new

A number of programmes have been launched to encourage consumers to use less electricity efficiently. Eskom has calculated that if all South African homes do nothing more than change their light bulbs to energy-efficient ones, the saving would be equivalent to half the output of a coal-fired power station.

In 2004 Eskom launched a campaign to install energy-efficient light bulbs in selected suburbs and townships of South Africa where electricity supplies have been under pressure. By early this year some 38-million bulbs had been installed in all provinces, saving 1 400MW of electricity. (See column at right for an explanation of electricity terms.)

Parts of that programme continue to run. Temporary bulb exchange points can be found in certain shopping malls, libraries and community centres, where householders can swap 20 old incandescent bulbs for 20 energy-saver bulbs. The hope is that if enough people get to experience energy-efficient bulbs in their own homes, they'll go out and buy more of them. Full details of the [exchange programme](#) can be found on the Eskom website.

How your light bulbs can save money

The most common energy-efficient light bulbs are called Compact Fluorescent Lamps or CFLs, which can be put into most existing light fittings. CFLs are close relatives of the fluorescent-tube lighting that has been common in many homes, offices and stores for decades.

Unfortunately, fluorescent tubes have given the technology a bad name and are widely disliked for their harsh, white light and annoying tendency to flicker and buzz. But CFL technology has advanced in recent years, and offers a quality of light almost identical to conventional bulbs, without the flickering or noise.

CFLs are now available in two colours: cool white (similar to fluorescent-tube lighting - mostly used outside the household in applications such as security lighting) and warm white (similar to incandescent lighting normally used in living areas). A conventional light bulb converts 80% of the electricity it receives into heat and only 20% into light, whereas a CFL bulb converts 20% into heat and 80% into light. A 14-watt CFL matches the light output of a 60-watt conventional globe, while a 20-watt CFL will match the output of a 100-watt globe.

The initial investment to buy CFLs is still between three to five times more expensive than conventional globes, but this investment can be recouped in only three months through the electricity savings achieved. Prices vary according to size and shape, but a typical bulb for household use will cost around R12. Judging the cost of a CFL by its retail price is a mistake, as it will last six to 10 times longer than a conventional globe.

Office and retail environments can benefit even more than homes by switching to CFLs. A typical suburban home has its lights on for only about five hours a day, which is why installing CFLs will only cut the monthly electricity bill by around 3%. But office and commercial environments tend to have much more lighting, and keep it on for much longer periods - 10 hours a day in a typical office, even in broad daylight, and up to 24 hours in some environments such as public foyers and corridors.

Free hot water, thanks to the sun

WHAT IS RENEWABLE ENERGY?

Certain energy sources are available only in limited quantities, which will one day be depleted. That one day could happen within your lifetime. Because these energy sources take millions of years to evolve, they cannot be replaced. Examples are coal and oil. Other sources, like hard woods, can be replaced, but only very slowly. A "renewable" energy source is one that is either freely available in abundance (such as sun, gravity or wind) or is easily and quickly replaced (such as plants or manure).

SO, WHAT'S A WATT?

What do those confusing electricity measurements actually mean? The standard electricity yardstick is the watt, which measures power, or the rate at which energy is consumed. If a thousand watts are used for an hour, that's one kilowatt-hour or 1kWh. If a 100-watt light bulb is used for 10 hours, that's also one kilowatt hour. A thousand kilowatts, or a million watts, makes for one megawatt or MW. So when Eskom talks about saving 1 000MW, that means reducing the power demand equivalent to 10-million light bulbs of 100-watts each.

ENERGY EFFICIENCY FOR THE RICH?

Eskom is offering rebates to households that install solar-water heaters to supplement or replace conventional geysers. This is Eskom's second campaign that has the potential to have a much larger impact on residential energy-efficiency efforts.

The geyser alone accounts for a third to half of electricity consumption in a typical household. A solar-water heater can reduce the water heating consumption by up to 70%. A 150-litre solar-water heater can save 4.5kWh of electricity per day, or 1.6 -tons of carbon dioxide per year.

Eskom's rebates vary, depending on the system installed. Payments are made direct to the consumer, within eight weeks of installation.

To ensure quality, only accredited suppliers and solar models which are SABS-approved have been registered with the programme. The system must be guaranteed for five years. Various types of systems are available to handle severe frost and "hard" water, both of which can take their toll on water heaters. Consumers therefore need to work closely together with suppliers to choose the correct system for their situation and climate. Eskom auditors may visit the home to ensure that the work was carried out correctly. Full details of the programme and ways in which to participate can be found on the [Eskom website](#).

The case for solar water heaters is simple: South Africa enjoys sunshine on more days of the year than most countries in the world, and it's free. The government has made a substantial commitment to rolling out solar-water heating in areas that are far from the national grid (see our [Newsletter Number 2 for more details](#).)

A 100-litre low-pressure solar-water heater costs as little as R3 500, although high-pressure systems capable of heating enough water to serve households with four people cost around R12 000, and more sophisticated systems for commercial use can cost R20 000. The City of Cape Town has calculated that a four-person home with an average monthly electricity bill of R500 could save R200 per month, or R2 400 per year, which is enough to pay off a typical solar water system in five years. After this, water-heating is free.

Because solar-water heating technology is relatively new to South Africa, and because the SABS stress-testing of new appliances is a slow process, the majority of systems currently available here are imported. Different kinds of solar heaters are available, but the most common is called the flat plate collector, which has the best price-to-performance ratio and offers the most flexible mounting options for the storage tank - on the roof, inside the roof or unattached.

The most visible part of a typical solar-water heater is a toughened glass cover inside a frame, usually mounted at an angle on the north-facing side of a roof. Beneath the glass is a plate painted with high-absorption black paint. Sandwiched between glass and plate is a system of tubes, also painted black, which run into a storage tank.

The tank is often mounted alongside the glass, where it is exposed to the sun. If the roof beams can't hold the weight, the tank can be mounted under the ceiling or in a cupboard, much like a geyser. The principle behind the heater is very simple: the black plate absorbs heat from the sun and heats water in the tubes. The hot water rises into the storage tank, and colder water is let in from below to replace it. Hot and cold water cycle endlessly throughout the day. Key to the system is the quality of insulation around the storage tank, because a good tank ought to be able to retain heat at 60 degrees Celsius for several hours after the sun has set.

Because a typical heater has few or no moving parts, maintenance is minimal, and a quality system can be expected to last at least 10 to 15 years. Many consumers take a cautious approach, installing dual systems in which an electric geyser backs up the solar heater, but Eskom discourages this practice, saying that it reduces the electricity savings benefits. A list of approved [solar-water heater suppliers](#) around the country, as well as [qualified solar water plumbers](#), is available on the Eskom website.

Eskom recommends coupling the installation of a solar water heater with the installation of energy- and water-saving shower heads and regulators in tap heads. Aerator nozzles cut the flow of water by up to 60%, and introduce air bubbles and air turbulence into the water stream. The air bubbles make the volume of water feel the same as in a conventional shower, and the turbulence breaks up the water into smaller droplets, making the skin feel wetter.

The result is that an energy- and water-saving shower feels like a normal shower, but uses substantially less water. The same system can be applied to bathroom taps, particularly those used to wash hands, which is why these taps are particularly useful in office blocks and public bathrooms.

Although energy- and water-saving shower heads are chiefly intended to save water, they also save on electricity, since the geyser needs to produce less hot water. Clearly, the savings only apply to showering and hand-washing - filling a bath or a pot of water still requires the same amount of water.

Here are some other electricity-saving tips:

- A geyser installed upright is more efficient than a geyser lying on its side. Heat rises to the top surface and a vertical geyser provides less area for the heat to escape.
- Take showers rather than baths, because showering uses less water.

Is energy efficiency for the wealthy only? After all, wealthy homes are responsible for three times the carbon emissions of poorer homes. And the poor use only half as much energy as middle- to high-income households. But energy efficiency also matters to the poor, because the impact on their budgets is much greater. Electricity costs devour a quarter of the monthly household incomes of poorer households, but less than 5% for the wealthy.

SAFE DISPOSAL OF CFLS

Mercury is an essential element in CFLs, and although there's a small amount of it sealed within the lamp, it's never emitted so it presents no hazard. Even if the lamp is broken, and the minuscule amount of mercury is exposed, it will not cause any personal harm. For the best ways to dispose of CFLs, see the [Eskom website](#).

- Have the shower at night - when there's the benefit of a full day's solar-heated water.
- If your hot water pipes are hot to the touch, it means they're losing that hard-earned heat to the air. Wrap the hot water pipes in an insulating material. Blankets, newspaper and heavy aluminium foil wrapped tightly around the pipes can help insulation. (Further information is available from the Thermal Insulation Association of Southern Africa (TIASA) on their [website](#))
- If you need boiling water to cook, preheat the water in a kettle. Boiling water in a kettle uses 50% less electricity than heating it in a pot on the stove.
- Cook with a gas hob, and heat the house with a gas heater.

Your subscription

You have been subscribed to this newsletter because you are a valued stakeholder in the policy sector. You may unsubscribe [HERE](#)

GCIS policy and legal disclaimer

This newsletter has been published by the Government Communications and Information Services of the South African government. The content of this newsletter has been selected to help stakeholders keep up to date with developments in the energy arena. The original content is owned by the sources acknowledged in our text. Links to third party material in our text do not constitute approval of those opinions by GCIS. Original material written for this newsletter does not relate to the policy decisions of government.



The National Energy Efficiency Campaign

save it!
www.savingenergy.co.za

powered by **Government Communication and Information System**

[unsubscribe](#) | [update profile](#)

This mailing system may only be used for sending permission based email.

If you did not give permission to receive emails from this sender, [please notify us](#).

This email was sent to tasneem@gcis.gov.za by energymatters@bigdevelopments.co.za | [Print / PDF version](#) | Read our [Privacy Policy](#).