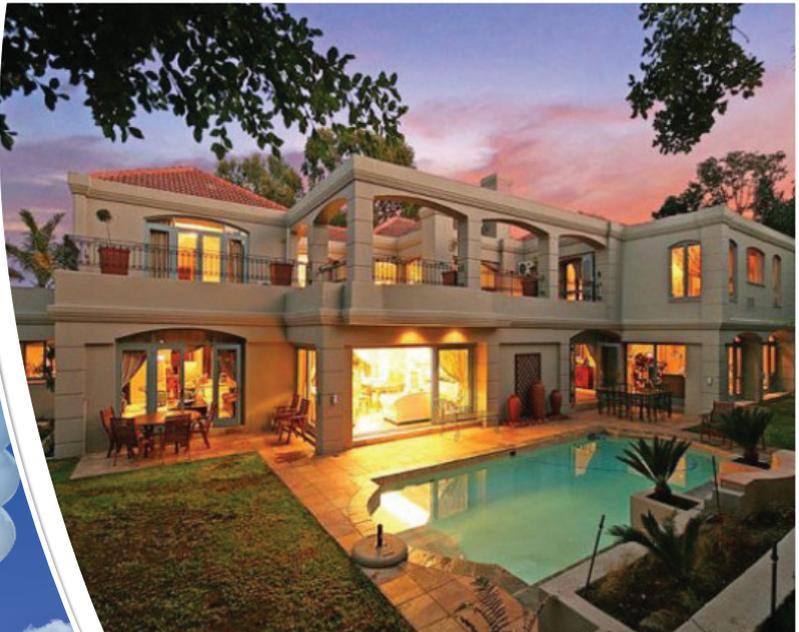




Introduction



HOMEFLEX



Introduction

The demand for electricity has grown tremendously over the past few years and an even greater growth rate is expected over the next five years. Most of this increase in demand has occurred during the peak periods. Peak periods are the times when the demand for electricity is high – usually when everyone is using a lot of electricity at the same time, i.e. from 7 am to 10 am and 6 pm to 8 pm.

Because of the way residential consumers use electricity throughout the day, the residential customer base contributes significantly to the electricity used during the peak periods.

The cost of electricity in South Africa has been among the cheapest in the world mainly because the country had enough generation capacity (from the existing power stations over the years). Due to the high demand for electricity and the expected growth, Eskom has begun building additional new power stations and buying energy from alternative sources (including renewables). All of this comes at a cost, which means that there will be increases in the price of electricity in order to cover the costs of the new generation plants.

If the price of electricity is to be kept low, then electricity must be used more efficiently – customers are encouraged to use more efficient appliances, avoid wasting energy and reduce the amount of energy used in the peak periods.

To give the customer an incentive to use electricity more wisely and to ensure that the customer receives the benefit directly, Eskom is introducing a residential time-of-use (TOU) tariff called Homeflex, which has a peak and an off-peak rate. This means that the price of electricity is lower during the off-peak times than during the peak times, and these rates will also differ between seasons.

Electricity charges for Eskom's residential customers have so far not differed according to the time of day or the season. The Homeflex tariff will give residential customers an opportunity to choose the time of day when they use their most energy-intensive household appliances and be an incentive to use alternative sources of energy. This opportunity will enable customers to save money on their monthly electricity bills.



In summary:

The Homeflex tariff has two energy charges, depending on the time of day that electricity is used – peak and off-peak times each have a different charge per kWh.

The energy rates also differ according to the season, i.e. winter and summer. The winter rates (peak and off-peak) are more expensive than the summer rates. This makes up a total of four energy rates.



Benefits of Homeflex

To the customer

The Homeflex tariff will enable customers to reduce their electricity bills and their usage. By using electricity more wisely during the different time periods in the day; they can see the savings directly (in their bills).

By using energy-efficient appliances during the expensive peak periods, or avoiding using electricity during peak periods, the customer will notice big savings in the cost of electricity as it will be high in these periods. Appliances that consume more electricity can be used in the cheaper periods. This means that customers have greater control over their electricity bills.

Customers will also have their meters read through an automated metering reading system, which will ensure near real-time accurate monthly bills because of accurate monthly readings and no estimates.

To Eskom

The demand for electricity is not evenly spread over a 24-hour day. The system providing electricity to customers has to have the capacity to meet the electricity demand during the two residential peaks (morning and evening) during the 24-hour day.

Different power stations are used as the demand for electricity changes during the day. The power stations, which come into operation at different times, have different operating costs. The cheaper power stations are called base-load stations and these come into operation first because they are cheapest to operate. As the demand for electricity increases, the mid-merit stations are brought on line, which are more expensive to operate and only then do the most expensive stations, called peaking power stations, come on line.

Eskom's networks are also built to cater for the peak demand. If electricity can be managed more efficiently, it will mean that the network can be used better without having to invest in additional capacity.



For South Africa in general

The Department of Energy has made regulations (Regulation 773) that customers using more than 1000 kWh per month should have a smart meter system in place and be on a time-of-use tariff.

The success of initiatives like the time-of-use tariffs for residential customers will ensure better usage of the country's resources and help to keep the price of electricity at manageable levels.

The time-of-use tariff could also assist with reducing the need to build additional power stations, which means that less coal will be burnt. This will benefit the environment and will also allow Eskom to plan better for the future.

Explanation of terms

Account is a grouping of premises/points of delivery according to the same voltage or location.

(Active) energy charge is a charge for each unit of energy consumed, typically charged for as c/kWh.

Advanced Metering Infrastructure (AMI) means a metering installation consisting of at least a meter bi-directional communication, a Customer Interface Unit and/or an Appliance Control Device.

Appliance means any appliance either agreed between Eskom and the Customer that can be interrupted, or chosen by Eskom in accordance with the conditions of supply.

Billing is the process of producing and delivering a bill (an account or invoice) for payment by a customer, calculated from the tariff schedule or as per agreement between the parties (e.g. Special Pricing Agreements) and, for the majority of customers, the consumption measured and recorded by the metering system.

Customer interface unit (CIU) means the part of the Metering Installation at a Customer's premises that is used for the purposes of displaying information in or on the Customer's premises and to which the Customer has access.

Environmental levy is a government levy that non-renewable generators are charged, based on the energy they produce.





Network charge is a charge to recover the network costs (including capital operations, maintenance and refurbishment) associated with the provision of network capacity required and reserved by the customer.

Notified Maximum Demand means the demand, expressed in kVA and notified in writing by a Customer and accepted by Eskom, that the Customer requires Eskom to be in a position to supply electricity during all time periods. It is normally the capacity that Eskom will reserve for a Customer in the short term, i.e. the following year.

Peak, standard and off-peak periods mean the time periods during which different charges for energy are applicable in time-of-use tariffs.

Public holiday means any day listed in the table in this annexure setting out the public holidays in the Republic of South Africa and/or any other day announced as a public holiday by the Government of the Republic of South Africa.

Service charge is a fixed charge payable per account to recover service-related costs. This is charged per account and is based on the sum of the monthly utilised capacity of all premises linked to an account.

Tariff is a combination of charging parameters applied to recover measured quantities such as consumption and capacity costs, as well as unmeasured quantities such as service costs. Note: the tariff rate, multiplied by the measured service quantities, recovers the cost of service.

Time-of-use tariff (TOU) means a tariff that has different energy rates for energy during peak, standard and/or off-peak time periods and seasons, in order to reflect the long-run marginal cost of supply at different times can be reflected more accurately.

Abbreviations:

AMI – Advanced Metering Infrastructure

c/kWh – cents per kilowatt-hour

IBT – Inclining block tariff

kVA – kilovolt-ampere

kWh – kilowatt-hour (units of electricity)

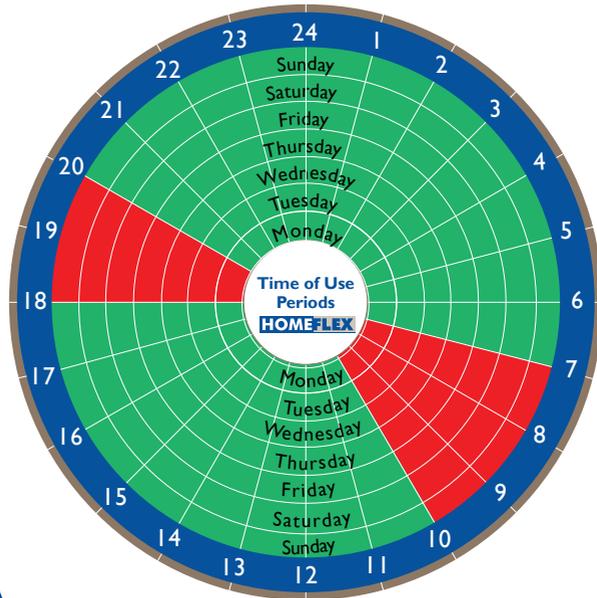
NMD – notified maximum demand

POD – point of delivery

TOU – time of use or time-of-use



Homeflex tariff



HOME FLEX

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I. Introduction to Homeflex

Homeflex is a new tariff that Eskom is introducing to the residential sector. It is a time-of-use (TOU) tariff suitable for medium to high electricity consumption residential suburban customers in urban areas.

TOU means that the energy charges of the tariff are charged differently depending on the time of the day when electricity is consumed. This type of pricing allows Eskom to give signals to residential customers so that they will know that it costs more to provide electricity at certain times of the day. This pricing is intended to encourage customers to change their behaviour for the better so that they can see some savings on their electricity bills.

Why does electricity cost more at certain times of the day?

Eskom has different types of power stations and they are selected in order of merit, namely base-load, mid-merit and peaking-power stations. The base-load power stations are the cheapest to run and peaking-power stations are the most expensive to run – they are only used during emergency and high electricity demand periods.

Most people have very similar lifestyles, for example they get up in the morning, and prepare supper, bath and watch television at the same time in the evening. This creates morning and evening peak demands for electricity. This customer behaviour forces Eskom to use the more expensive power stations to generate more electricity so that it can supply all the customers in the country. These energy-“constrained” periods are called the peak periods. The rest of the day when most people are at work is called the off-peak period when the demand for electricity is much lower.

So, depending on the type of power station used to supply the customers' demand at the time they need the electricity, there could be variations in cost: a peaking station will cost more to operate than a base-load station. These variations in cost should therefore be reflected in the tariff structure, which means that peak periods are more expensive and off-peak periods are cheaper.

The Homeflex tariff structure and how it will work

The Homeflex tariff was designed to have two different c/kWh energy charges based on the time of day when electricity is used, that is, peak and off-peak periods and the season i.e. winter and summer. The winter rates (peak and off-peak) are more expensive than the summer rates, and the peak rates are more expensive than the off-peak rates. This makes up a total of four energy rates.

With the introduction of the Homeflex tariff, Eskom is also introducing new smart-metering technology (called AMI – refer to section 9) that can measure electricity consumption on a time-of-use usage basis. This technology will enable Eskom to help customers to save on their bills by automatically controlling a high consumption appliance in the house, such as a geyser, during the peak periods of the day.

By adjusting the usage during the time of day and by controlling appliances, customers can consume less electricity during the peak periods and save on their overall monthly bills. The customer will have a choice to nominate a high-consumption appliance. For more information about nominating appliances and how they will be controlled, see section 12.

The aim of introducing a residential TOU tariff with smart metering technology is to give pricing signals and direct cost benefits to customers; to incentivise energy-efficient behaviour; and to manage electricity consumption automatically in times of system constraints.

The next sections describe the Homeflex tariff in great detail...

2. How does Homeflex work?

In order to maximise your benefits from the Homeflex tariff, there are two important factors to keep in mind.

For Homeflex, the year is divided into two different time periods. There is a high-demand period during winter (June, July and August) and a low-demand period during summer (September to May). During each season, the prices for the times of day differ, depending on the peak and off-peak periods.

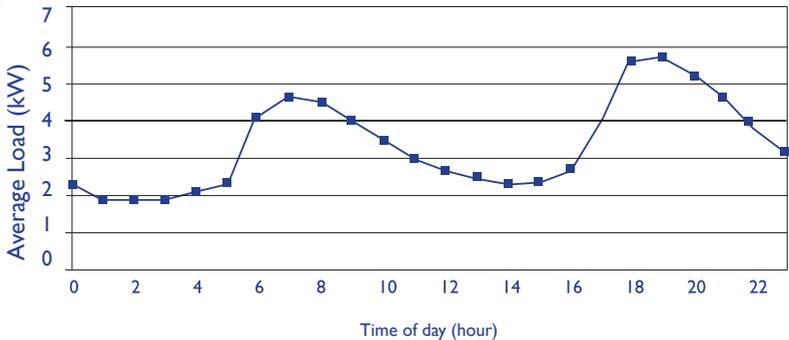
2011/12 Energy Charge	Summer September to May (Low Demand Season)	Winter June to August (High Demand Season)
Peak c/kWh	65.86	174.87
Off-Peak c/kWh	43.89	55.10

The customer should give the most attention to appliances that use the most electricity. In and around the home, pay particular attention to geysers, heaters, stoves, washing machines, tumble dryers, fridges, freezers and lighting.

3. Residential load profile

A load profile shows us when and how much electricity is used over a period of time.

The following graph shows a typical high-consumption residential customer's daily profile:



The load profile shows how the time-of-use periods of the tariff are designed and the charges that apply for the different times of the day.

You will note that there are two peak periods of usage during the day: one in the morning and the other in the evening. These peak periods coincide with the Homeflex peak periods. Customers who shift or reduce their usage from the peak periods can save on their bills.

Refer to the next section, (section 4), to understand what the time-of-use periods are for the Homeflex tariff...

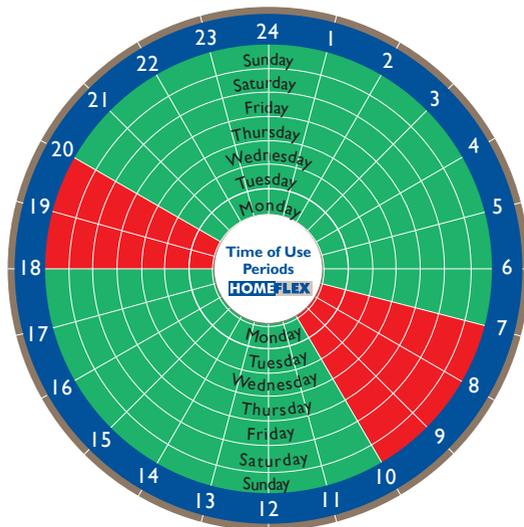
4. What are the Homeflex time-of-use periods?

The time-of-use periods are split into the peak and off-peak times of the day. The cost of electricity is high during the peak period when there is a high demand for electricity. During the off-peak periods, the rest of the day, the demand for electricity is lower. Refer to section 1 for more information.

There are five hours of peak periods in a day, during which Eskom would switch off the high-consumption nominated appliance in the home (see the nomination list in section 12).

- Peak periods are more expensive and the nominated appliance(s) will be switched off during these periods (five hours a day)
 - Morning (**7 am to 10 am**) and evening (**6 pm to 8 pm**)
- Off-peak periods are cheaper, so no appliances are switched off during this period
 - The rest of the day (in between the peak periods)
- These time-of-use periods apply for 365 days of a year, no matter whether it is winter, summer, a weekend or a public holiday.

The Homeflex defined time-of-use periods



5. What is the structure of the Homeflex tariff?

Homeflex rates are based on the time of day, the season and the size of the supply.

The Homeflex tariff has the following features:

- A seasonally and time-of-use differentiated c/kWh **active energy charge**
- A R/day **network access charge** based on the supply size
- A R/day **service charge**
- A c/kWh **environmental levy charge** applied to the total active energy supplied in the month

Homeflex consists of four subtariffs based on the supply size, but it must be noted that the energy rates and time-of-use periods will be the same, regardless of the supply size. The network charges differ according to the installed capacity (supply size) as this differentiates single-phase from three-phase customers.

Your current bill will give an indication of your installed capacity. Compare the notified maximum demand (NMD), measured in kVA, on your bill to the table below to get to the Homeflex subtariff that you are currently on:

Homeflex 1	dual-phase 32 kVA (80 A per phase) three-phase 25 kVA (40 A per phase)
Homeflex 2	dual-phase 64 kVA (150 A per phase) three-phase 50 kVA (80 A per phase)
Homeflex 3	dual-phase 100 kVA (225 A per phase) three-phase 100 kVA (150 A per phase)
Homeflex 4	single-phase 16 kVA (80 A per phase)

The Homeflex tariff rates for 2011/12 are as follows:

HOMEFLEX

	Service Charge (R/POD/day)		Network Charge (R/POD/day)		Peak Energy Charge (c/klWh)		Off Peak Energy Charge (c/klWh)		Environmental levy (c/klWh)		
	VAT excl.	VAT incl.	VAT excl.	VAT incl.	VAT excl.	VAT incl.	VAT excl.	VAT incl.	VAT excl.	VAT incl.	
Homeflex 1	High demand	R 2.96	R 3.37	R 3.68	R 4.20	174.87	199.35	55.10	62.81	2.00	2.28
	Low demand					65.86	75.08	43.89	50.03	2.00	2.28
Homeflex 2	High demand	R 2.96	R 3.37	R 7.95	R 9.06	174.87	199.35	55.10	62.81	2.00	2.28
	Low demand					65.86	75.08	43.89	50.03	2.00	2.28
Homeflex 3	High demand	R 2.96	R 3.37	R 16.00	R 18.24	174.87	199.35	55.10	62.81	2.00	2.28
	Low demand					65.86	75.08	43.89	50.03	2.00	2.28
Homeflex 4	High demand	R 2.96	R 3.37	R 1.88	R 2.14	174.87	199.35	55.10	62.81	2.00	2.28
	Low demand					65.86	75.08	43.89	50.03	2.00	2.28

Note: The above rates are applicable from 1 April 2011 to 31 March 2012.

The Homeflex tariff rates change on an annual basis. For the latest rates visit www.eskom.co.za/tariffs

6. How can I save on Homeflex?

How much you can save on the Homeflex tariff will depend on how you use electricity during the day.

If you make no changes to your daily usage pattern, then on an annual basis you should pay the same as you would have paid for Eskom's standard residential tariff.

It is important, however, to note the following:

- As the winter rates are more expensive than the standard tariff rates, your bill will be higher in winter.
- For this reason it makes sense to concentrate on using energy in the off-peak periods, to use alternative sources of energy for space heating, cooking and water heating, to use under-floor heating wisely and to look at making your home better insulated.
- In the summer months your bill should be lower than the standard tariff, but this does not mean that you should not manage your electricity usage.

See the Energy Efficiency section for tips on how to save electricity.

Example of the impact on the bill:

The following shows the impact on a monthly bill if customers reduce their peak usage by making some behavioural changes; i.e. using their high electricity consumption appliances in the house, such as the geyser, during the off-peak periods or by using energy-efficient appliances. See the Energy Efficient section for more information.

Scenario:

- A customer on **Homepower 4** tariff converts to the **Homeflex 4** tariff.
- The Homepower 4 tariff has the inclining block tariff (IBT) structure.
- Homeflex 4 is the time-of-use tariff for single-phase supplies (16 kVA supply size).
 - The customer uses 1000 kWh of electricity on average per month.
 - The assumption made is that the average residential customer with medium to high electricity consumption uses 20% of the electricity during the peak period and 80% (most) of the electricity during the off-peak period.

The impact on the customers in this scenario is as follows:

To explain the above comparison table:

Comparison between Inclining Block Tariff and Homeflex 4

	kWh	Inclining Block Tariff (IBT)	Homeflex 4	
		Rand	Rand	% Diff.
Low demand season monthly bill - (Summer)	1000	R 888.83	R 696.82	-22%
Average c/kWh		88.88	69.68	-22%
High demand season monthly bill - (Winter)	1000	R 888.83	R 1,200.12	35%
Average c/kWh		88.88	120.01	35%

Annual impact

	kWh	Inclining Block Tariff (IBT)	Homeflex 4	
		Rand	Rand	% Diff.
Annual totals	12000	R 10,665.96	R 9,837.86	-8%
Average c/kWh		88.88	81.98	-8%

- On the inclining block tariff (IBT) structure (i.e. Homepower), a customer using an average of 1 000 kWh per month pays the same rates throughout the year; regardless of the season or time of the day. For this reason, this tariff does not give a customer a pricing signal for the time when that customer uses electricity.
- On the Homeflex tariff structure, a customer using an average of 1 000 kWh per month pays different rates based on the time-of-day (i.e. peak or off-peak) usage and whether it is winter or summer. This is clear from the bill, and so the customer does get a pricing signal about when it is most expensive to use electricity and when it is cheaper.
- Because the Homeflex tariff is much more expensive in winter than in summer, customers must be mindful of the impact on their budgets (only during the winter months). The more energy you save in winter also means you save much more money on your bill.

Homeflex vs. IBT modelling tool:

Eskom has produced an Excel modelling tool that you the customer can use to model your individual impact and see how much you can save by reducing consumption and/or shifting energy use from peak to off-peak periods.

You can visit the Eskom website www.eskom.co.za/tariffs to compare the Homeflex tariff to the other tariffs.

There is a tutorial on how to use the modelling tool:

- Open the file, save it and enable the macros.
- Click on "start".
- Type in your average consumption (i.e kWh) per month and choose your tariff on the first page, then click "next".
- The results sheet will give you your winter, summer and annual impact results in percentages, average c/kWh and rand value.
- Note that the calculations are based on the 80/20 principle (that you use most of your electricity during off-peak i.e. 80%, and only 20% during peak periods).
- However, many factors affect your electricity usage and you can change the time-of-use ratios when using the model to suit your individual needs/usage patterns. You can click on "Change TOU ratios" and do a worst-case scenario by changing your ratios, e.g. 40% peak and 60% off-peak, and see what the results will be.
- This will give you an idea of how much you will save on your bill or what increases you can expect by converting to the Homeflex tariff.

Note: each customer will be affected differently. Your bill is based on your profile (the time of day you use electricity), your usage patterns and how big your supply is.

For the CD copy, click [here](#) to access the modelling tool and follow the tutorial instructions.

7. How to get the most out of the Homeflex Tariff?

Try to take advantage of the off-peak periods by scheduling laundry, washing and drying loads for these times. You can also take advantage of this cheapest period by doing your garden work requiring power tools and electric lawn mowers in off-peak times.

The early to mid-mornings as well as evenings always fall into the most expensive, peak period and, where possible, you should avoid using major appliances until the cheaper off-peak period is in effect.

During this time, you should plan to have only the essential appliances on, i.e. lights. Where possible, look at energy-efficient appliances and be innovative about how you use electricity. For example, avoid using electricity in peak time by having a braai instead of using the oven to cook. 😊 Refer to the Energy Efficiency Section for more hints and tips.

With a bit of effort from your side, you can –

- save money on your monthly bill,
- help to minimise the national electricity shortage,
- assist Eskom with its planning for future capacity,
- go green and save the environment, and
- be more energy-efficient.

Eskom will manage your nominated appliance during peak periods to help you save money and to help Eskom reduce the demand on the system during the peak periods. The following sections explain the advanced metering infrastructure (AMI) in more detail.

Remember that peak periods last only 5 hours in a day...



8. Rollout of the Advanced Metering Infrastructure (AMI)

Together with the rollout of the Homeflex tariff, Eskom will be investing in more sophisticated metering that can among other things, measure energy in the time-of-use periods and manage the nominated appliances through an appliance control device. The existing metering system cannot do this and will have to be replaced by a metering system called advanced metering infrastructure or AMI. The following sections deal with the AMI system.

Some background information on the technology to be used

What is advanced metering infrastructure (AMI)?

AMI is also commonly referred to as a smart metering system. It is a Metering Installation consisting of at least a meter with bi-directional communication capabilities, a Customer Interface Unit (CIU) and/or an Appliance Control Device or Devices (ACD).

AMI is a technical system consisting of the following:

Meter

A metering solution that is smarter than the normal mechanical analogue metering device and collects customer data automatically as well as communicating it automatically to the CIU and ACD.

Customer Interface Unit (CIU)

The CIU is a device which displays important customer electricity information such as customer electricity consumption, meter readings and tariff time periods in the comfort of your home. The CIU can be plugged into any convenient household power point.

Appliance Control Device (ACD)

The ACD is a switch which helps the customers actively to manage their demand for electricity by remotely/ automatically disconnecting the connected appliances using a command from the control centre, also known as the master station.

AMI communications infrastructure

This includes the following:

- The data concentrator (DC)
- GPRS
- Radio frequency
- Power-line carrier

These AMI components are explained in the following sections...



Advanced metering
infrastructure (AMI)



HOMEFLEX



9. How will my consumption be measured?

AMI is a metering solution that is smarter than a mechanical analogue (conventional) metering device.

The AMI meter collects customer data automatically in real time and communicates the data automatically to the customer interface unit (CIU) and Appliance Control Device (ACD).

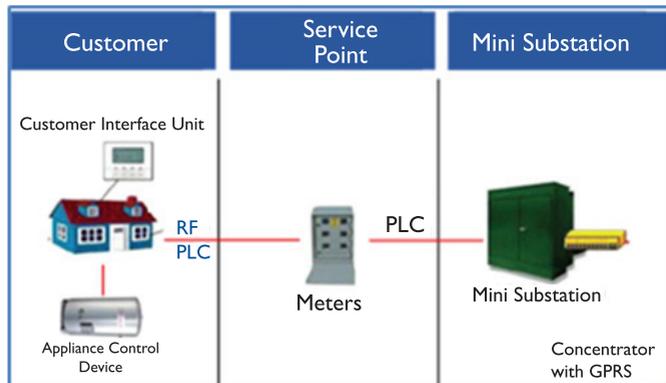
- The smart meter will be installed in the meter box/kiosks, replacing the existing meter. The meter will measure the peak and off-peak usage.
- The installation of the new meter may involve doing work on the customer's premises and therefore access may be required.
- A customer interface unit (CIU) will be offered for installation and can be plugged into any convenient household plug-in point.
- The CIU displays important customer information, such as electricity usage, meter readings and tariff time periods at any given time of the day in the comfort of the customer's home. This information empowers the customer to manage his/her electricity usage proactively.
- Each month, the consumption (usage) data from the meter will be automatically retrieved for billing purposes. This means that no manual meter readings will be done and therefore the number of estimated bills would be reduced to almost zero. After this installation, an estimated bill would only need to be done if there are problems with retrieving the data from the system.
- Homeflex bills will be produced and the consumption and cost will be indicated for the usage in the peak and off-peak periods as well as the total kWh usage.
- The appliance control device (ACD) will automatically manage the customer's nominated appliance/s that use a lot of electricity during the peak periods throughout the year.

Please note that the meter, CIU and ACD will belong to Eskom for the initial phase which means that Eskom will have the right to operate and maintain the devices.

10. Advanced Metering Infrastructure (AMI) solution

AMI is a metering installation consisting of a meter with bi-directional communication, a customer interface unit and/or an appliance control device or devices.

Inside the house	Outside the house	In the mini substation
Install the CIU and ACD. Communication between ACD/CIU to meter via Power-Line Carrier (PLC) or Radio Frequency (RF).	Install the meter. Communication to data concentrator via Power-Line Carrier (PLC).	Install the data concentrator (DC). Communication to Eskom via GPRS. Data is sent from DC to Eskom for billing purposes.



The data concentrator (DC) accumulates and stores all the data received from the meters and periodically transmits this data to Eskom's back-end systems (Billing, Contact Centre, etc.) at Eskom's premises. The DC is equipped with an on-board GSM modem and utilises GPRS to transmit data.

Two forms of communication could be used:

- Power-Line Communication (PLC) technology will transport customer data from the meter to the data concentrator and to the customer interface unit (CIU). The PLC technology uses the existing electricity distribution power cabling as a communications channel and should not interfere with other devices; or
- Radio Frequency (RF) could also be used to communicate with the CIU. This technology utilises an open frequency and should not interfere with other devices.

11. What is the Customer Interface Unit?

The customer interface unit (CIU) is a device that displays important customer information such as customer electricity consumption, meter readings and tariff time periods in the comfort of your home.

The CIU can be plugged into any convenient household power point and as the customer you have access to the CIU in the comfort of your own home.

The CIU displays information about the customer, such as:

- Real-time clock equals accurate data transmitted to Eskom's billing system.
- Total and TOU register the aggregate consumption readings.
- Tariff consumption reading displays at that time.
- Active tariff period is displayed.
- Appliance Control Device (ACD) switching status is displayed.

Eskom will own the CIU initially and therefore it will remain Eskom's property to operate and maintain.

Pictures of the CIU:

Your CIU may look a little different depending on the supplier in your area but all CIUs do have the same features.



Supplier: Unique Mbane SA



Supplier: Landis & Gyr

12. What is the Appliance Control Device?

The Appliance Control Device (ACD) is a switch which actively helps the customers to manage their load by remotely/ automatically disconnecting the connected loads by sending a command from the control centre/master station.

The command is sent to the nearby data concentrator (DC) which broadcasts the command to each ACD unit via Power-Line communication (PLC).

The switches will also disconnect automatically in line with the timetable of the TOU tariff periods sent periodically from the data concentrator.

Eskom will initially own the ACD and therefore it will remain Eskom's property to operate and maintain.

Pictures of the ACD:

Your ACD may look a little different depending on the supplier in your area but ACDs do have the same features.



Supplier: Unique Mbane SA



Supplier: Landis & Gyr

The high-consumption appliances that might be nominated to be switched off during the peak periods:

- Geyser
- Swimming pool pump
- Under-floor heating
- Air-conditioners



Appliances which are not listed will not be considered to be controlled by Eskom during the peak periods.

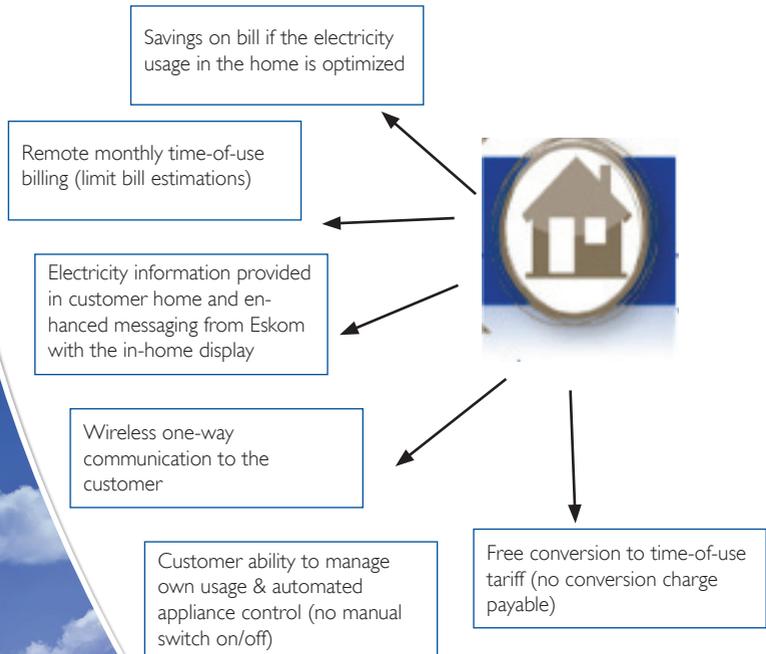
13. Pictures of AMI meters



Supplier: Unique Mbane SA Supplier: Landis & Gyr

More information about the AMI meter and system installed in your area will be provided, based on the supplier in your area.

14. Benefits of Homeflex



15. Managing your electricity demand

Each customer makes a demand on the Eskom system, based on how much electricity is being used at the same time.

For residential customers this demand is limited by a device called the circuit breaker. The circuit breaker size is linked to the maximum demand that you as a customer requested from Eskom and this value also appears in your contract with Eskom. This demand is shown on your bill and contract as the NMD (notified maximum demand). If you use too much electricity at a given point in time, the circuit breaker will trip.

You should note that the smart meter has an internal trip switch which is also linked to the contracted demand. This trip switch is sensitive to the demand and may trip faster than the circuit breaker can, because these smart meters manage the maximum demand more strictly owing to their advanced capabilities. This means that you will have to be more vigilant when using many appliances at the same time.

If your supply trips, here are a few simple tips:

- Reduce your usage by switching off some of the appliances in the house that are not necessary at that particular time.
- Avoid switching on many appliances at the same time.
- A quick solution is to switch off the geyser or the swimming pool pump.
- If you have a Unique Umbane SA (UMSA) meter and customer interface unit (CIU), press **#1#** on the CIU and you will be reconnected.
- If you have a Landis & Gyr (L&G) meter and customer interface unit (CIU), the supply will automatically be reconnected as long as you have reduced your usage.

Eskom will provide more information in brochures showing how each meter works...



Energy efficiency hints & tips



HOMEFLEX

What are energy efficiency and Demand Side Management?

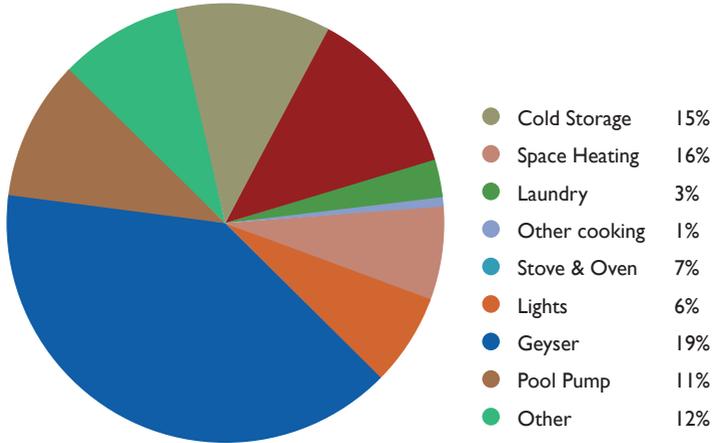
- Using energy in a sustainable manner
- Avoiding unnecessary waste of energy in our day-to-day activities, e.g. bathing and cooking
- Understanding that an uninterrupted supply of energy depends on all South Africans reducing their consumption of energy by 10%
- Using less energy during peak times when the demand for energy is at its highest level
- Seeing energy in a new way – as a valuable resource that has to be conserved

Why save energy?

- The current capacity is constrained
- The production of energy involves the burning of natural resources such as coal
- The more energy we use, the greater the amount of coal needing to be mined and burnt. This means that more power stations have to be built, using taxpayers' money
- Burning coal also emits carbon dioxide which is one of the biggest contributors to global warming and climate change
- Energy is no longer a cheap and ever-present commodity
- The residential sector consumes **17% of electricity (kWh)** and contributes up to **30% of peak demand (kW)**
- With the rising cost of living, saving energy is one way to reduce your living expenses

Where to save energy?

The figure below shows how residential consumers use their electricity in the home, i.e. the load that each appliance in the home uses.



Energy efficiency, it's the way that we use it!

All it takes is to start making small changes to the way we use electricity/energy.

How can I save energy?

Apply the golden rule: "If you're not using it, switch it off."

- Unnecessary energy is consumed by electrical appliances that are on when they are not being used for specific purposes. For example, keeping lights and heaters on in unoccupied rooms, or leaving the hi-fi, DVD player, computers and televisions on in stand-by mode – because they still consume up to 50% of the energy they would have consumed if in operation. Also, if possible, use dishwashers, tumble dryers and washing machines after 9 pm or at midday.

There are saving options that won't cost you anything, where all you need to do is use your current equipment/appliances in the house in a different manner, i.e.

- Instead of putting a heater on in your bedroom, use an electric blanket because it uses less energy. Turn it on high for a few minutes just before you get into bed and off once you're between the covers. But don't leave it on all night.
- Before using a heater, keep warm in front of the television by covering yourself with a blanket or by snuggling up with a hot water bottle. Or put on an extra jersey.
- Use your microwave to cook rather than your oven – it's quicker and lighter on energy.
- Block spaces underneath doors and around windows – keep that warm air in.
- Take a shower instead of a bath.

There are low-cost options where you can buy energy-efficient appliances, e.g.

- Change your shower heads to energy-saving shower heads as part of the employee exchange programme
- Swap incandescent light bulbs for Compact Fluorescent Lamps (CFL)

And you can invest in your property and increase its long-term value by making your entire home more "green" i.e. insulating the house.



Six essential energy-saving tips for your home

1. **Geyser:** switch it off from 6 am to 9 pm, reduce thermostat to 60 degrees and insulate the geyser and water pipes
2. **Shower:** rather shower as it uses less water than a bath; this means less work for your geyser. Use an efficient shower head
3. **Lighting:** replace incandescent bulbs with CFLs, switch off lights in unoccupied rooms
4. **Standby electricity:** switch appliances off at the main power button, unplug the cellphone charger
5. **Refrigerators:** close the fridge door quickly after use
6. **Temperature control:** keep room temperature 18 – 22 degrees Celsius, wear extra clothes, use blankets and hot water bottles to stay warm in the house in winter





Water heating



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Energy-saving hints when using hot water

- Insulate your geyser using water pipe insulation
- Hot water for laundry, cooking, dishwashing and bathing amounts to 30% to 50% of a household's electricity bill
- Save energy by using hot water sparingly, take a shower instead of a bath
- Your geyser starts working every time you use hot water
- Only open the hot water when you specifically need it
- Don't rinse dishes under a running hot water tap – very wasteful
- Boil a kettle for the quantity of hot water you need



Geyser – facts & fiction

Introduction

Since geysers, which are the heart of your home's hot water system, are most likely to consume the greatest amount of your electricity, you should always think about these devices in terms of energy efficiency. The geyser can be switched off during the peak periods while still providing enough hot water for the customer requirements at the time. The simple action of switching off the geyser has a significant impact on reducing the load on the total Eskom network, if each and every customer switches off their geyser.

Fact or fiction:

Switching a geyser on and off will not damage the thermostat.

This is a fact: the thermostat is built to switch on and off all the time. No damage will occur if the geyser is switched on and off by the user.

Fact or fiction:

Switching geysers on and off will result in cracks in the geysers.

This statement is fiction: the thermal shocks during normal operation are much greater than the slow cooling if the geyser is switched off and allowed to cool.

Fact or fiction:

When a geyser blanket is used the geyser should still be switched off.

This is a fact: the geyser blanket slows down the cooling of the water in the geyser when it is switched off, so that less electricity is needed to heat the water up again. Tests have shown that geyser blankets have the potential to save 20% of the 2,59 kWh of electricity required to reheat the water when the geyser has been off for 24 hours. Using a geyser blanket therefore adds significantly to the saving achieved by switching the geyser off. By installing a geyser blanket and pipe insulation, your annual savings on your electricity bill will increase between R180 to R250 for an average household of four.

A 150-litre geyser will lose 10 degrees Celsius over a 24-hour period.



Shower heads

- South African shower heads use 20 litres per minute
The US standard is 9,5 litres per minute
- Replacing 18 litres per minute with an 8 litre per minute shower head (6-minute showers for a family of four)
Saving R3000 utility services (water and electricity)
Saving 2 000 tons of carbon emissions
- Saving 2 MWh (200 kWh per month) of electricity
1 ton of coal
90 000 litres of water
- Only to be fitted on a balanced, high-pressure system

Use less hot water

Remember; while you use hot water, you can save a lot more because when you use hot water you are adding the charges to two bills at the same time – your water and your electricity bills.

- A bath uses more water than a shower and you can save on hot water consumption by taking more showers instead of baths.
- Low-flow shower heads (pictured) are better than standard shower heads since they can help you save hot water without reducing your comfort or quality of life. A low-flow shower head restricts the flow of water so that, even though the flow is lower, you can still enjoy a comfortable shower while using up to 75% less water.



Using alternatives sources of energy

Eskom currently offers two programmes, the solar water geyser programme and the heat pump programme, both of which will get the Eskom rebate and are aimed at reducing the geyser's electricity usage. For more information, visit <http://www.eskomidm.co.za/>

Make use of Eskom's solar water geyser and heat pump programmes. Let's look at the solar water heater more closely ...

Solar Water Heater (SWH)

- Water heating uses 30% to 50% of a household's electricity bill
- Installing SWH can reduce hot water heating costs by up to 70% (i.e. 200 kWh/month)
- Choose the best system for your household
- If the SWH is too small, it won't provide enough hot water
- If the SWH is too big, it may not be economical





Thermal efficiency



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Insulating the home

An even better way to save on your heating costs is to reduce the need to use air conditioners (i.e. heaters or coolers). To achieve this, your home should be thermally efficient. The thermal efficiency of the ceiling is an important factor. In many parts of the country, ceiling insulation increases the home's comfort and value, since as much as 50% of heat is lost through a non-insulated ceiling. Ceiling insulation varies from fibreglass insulation to a type of insulation prepared from a mixture of paper and other recycled materials.

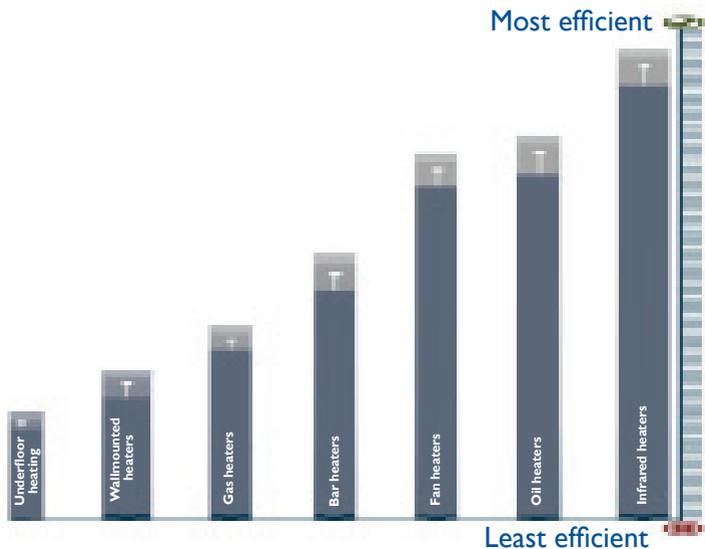
Thermal efficiency in the home

In the winter months, one of the main sources of energy consumption in the home is the heating required to keep rooms at comfortable temperatures. By using heating appliances wisely, taking into account when the peak periods occur during the high-demand period (June and August) for five hours a day (see the TOU wheel), you can reduce your space-heating costs significantly. Improving your home's thermal insulation can also save hundreds of rand a year in space heating costs and improve your home's comfort.

Domestic space heaters

Ways to heat a room:

- Under-floor heating: heats the floor before the temperature of the room increases, warm air rises to the ceiling
- Gas heaters: radiate heat immediately but gas bottles are expensive
- Infrared heaters: the most cost-effective option, heats up objects but not the air
- Thermostatically controlled heaters,
- Oil heaters: most effective in small spaces
- Fan heaters: provide heat immediately, can be directed where most needed
- Wall-mounted heaters: small and must be left on for long periods, heat also radiates into the wall



Keeping warm the smart way!

- An insulated room requires 51% less energy, so insulate the ceiling
- Only heat rooms that are occupied
- Keep windows and doors closed when heaters are in use
- Wear thermal underwear and put on an extra jersey/blanket
- Switch on your electric blanket to the highest setting shortly before you get into bed but switch it off after you get into bed
- Use extra blankets on your bed
- Use a hot water bottle
- Avoid using heaters during the day
- Install a closed-system fireplace which uses anthracite, coal or wood





Lighting



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Compact Fluorescent Lamps (CFLs) – energy saver

Energy-efficient lighting in the home

The amount of lighting used in the home increases in winter because the days are shorter and the nights are longer. As lighting contributes 6% to your electricity bill, any steps you take to use lighting efficiently will save money on your bill. This is particularly true during the morning and evening peak periods. Energy-efficient lighting in the home can be achieved by replacing the commonly used but inefficient incandescent light bulbs with compact fluorescent lamps (light bulbs). It can also be achieved by simple practices that avoid wastage. See below...

Facts about CFLs:

- Last six times longer than incandescent lamps
- Consume 80% less electricity than incandescent lamps
- Come in a variety of shapes and styles
 - 100 watt/60 watt
 - Screw-in or bayonet
 - Cool white or warm white
- Contain a small amount of mercury – essential component – dispose of used or broken CFLs as you would a battery or oil-based paint

Click [here](#) for more information on how to dispose of your CFLs safely.

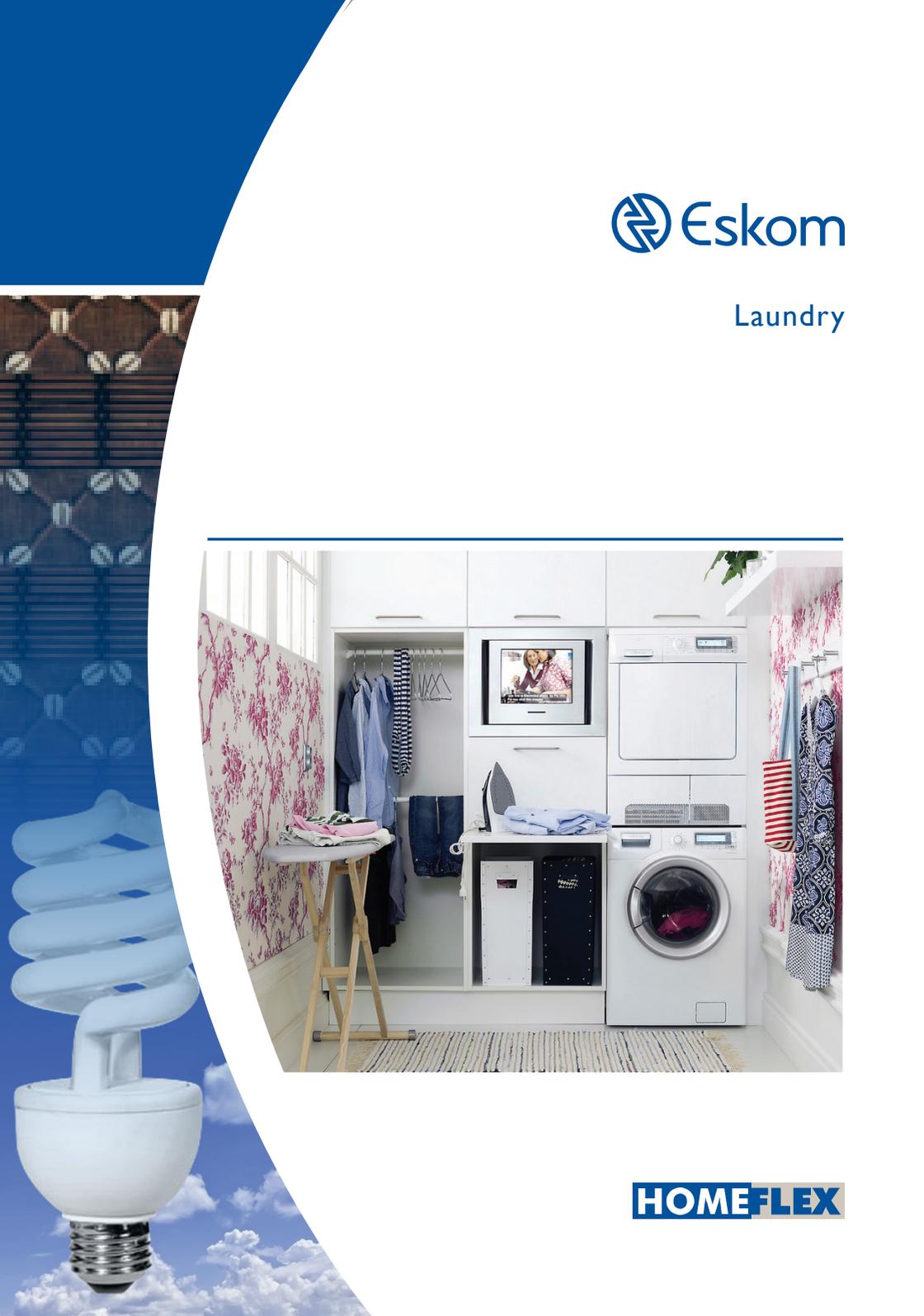




Laundry



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Managing laundry efficiently

By scheduling your laundry-related activities, you can further maximise your savings on the residential Time-of-Use Tariff.

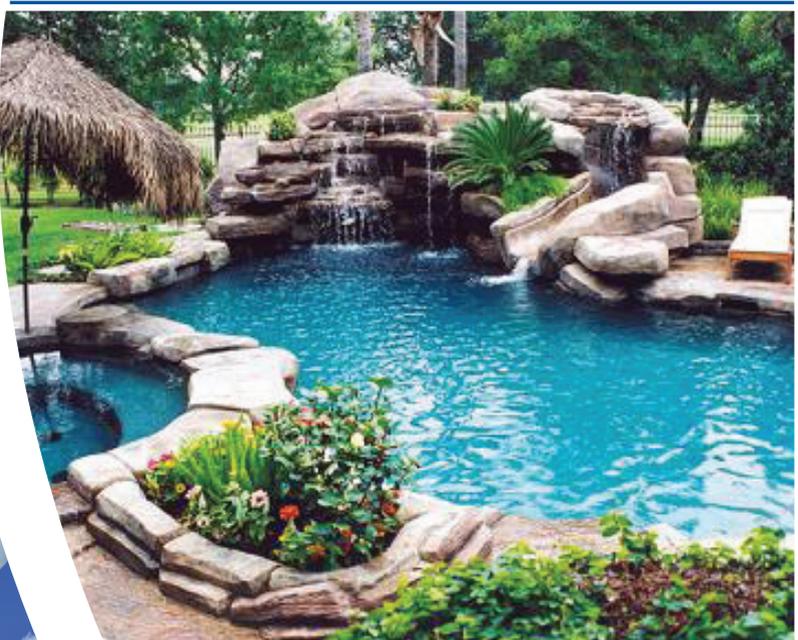
General laundry energy-saving hints

- Use the warm and cold water settings on your washing machine as much as possible so that you cut down on the electricity needed to heat up the water.
- A washing machine uses the same amount of electricity to wash a full load as it uses to wash a single item. For this reason, try to pile up the dirty clothes until there is enough for a full load.
- Use the correct temperature settings on your tumble dryer to minimise the amount of electricity needed.
- By removing clothes promptly from the dryer and folding them carefully, many items will require no ironing.
- Take advantage of sunny days and dry clothes outside.
- Iron low-temperature fabrics first to reduce the warm-up time on your iron.
- Iron large batches of clothing at one time to avoid having to heat up the iron many times – preferably during off-peak periods.
- Remember to switch your iron off as soon as you finish using it to avoid wasting energy.





Outside the house



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Energy efficiency outside the home & energy-saving hints

You can benefit in many ways from the residential Time-of-Use tariff outside your home. Let us look at the individual aspects outside the house.

- Swimming pools
 - Use 11% of a home's electricity consumption.
 - Reduce the running time of the pump from 10 to 6 hours per day for a month and save 40%. Reduce filter pump's operating time
 - Cover pool to keep pool cleaner
- Garden
 - Use solar-powered garden lights
 - Landscaping
 - Plan garden to control breezes and use trees to shade windows





Power alert



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Whilst enjoying the positive sports energy, we have another energy that's in short supply – electricity. **Keep SA powered up** – and impact less on our environment by **saving electricity**. Watch out for **Power Alert messages on TV** (SABC 1, 2, 3 and eTV), and **follow the easy steps**.



www
**power
alert**
co.za

A green band means the electricity supply is stable, but limited. Please continue to use electricity sparingly.



www
**power
alert**
co.za

A yellow card means the electricity supply is under strain. Please switch off your geyser, pool pump and non-essential appliances.



www
**power
alert**
co.za

A red card means the electricity supply is under severe strain. Switch off as much as you can – geysers, stoves, appliances and most lights.



**load
shedding**
www.poweralert.co.za

Black means power outages are already being experienced in certain areas. To avoid possible power failure in your area, switch off everything besides your TV and one room light.

For more information visit www.poweralert.co.za

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