



Department of Energy

Energy Efficiency, Behaviour & Buildings in South Africa

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Department of Energy, South Africa



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Outline

1. SA Energy Efficiency Strategic Approach
2. EEDSM options for South Africa
3. SA's Energy Efficiency Campaign
4. Energy Efficiency Awareness Opportunities
5. Government role on energy efficiency awareness
6. Pictures of promoting efficiency
7. Conclusion



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EEDSM Strategic Approach

Policy Level
National Energy Efficiency Strategy (NEES)
Energy Efficiency Regulatory Framework

Monitoring & Evaluation:

- Outcomes, Costs & Benefits

Programme Level
Funding & Subsidies
Energy Efficiency Tax Incentives

Measurement, Reporting & Verification (MRV)

- Energy and Monetary Savings

Project Level
Energy Savings- municipal Infrastructure & public facilities (traffic signals, street lights, buildings, water services plants)

NEES & EE Targets

- EEDSM Framework
- Funding (DoRA, etc)
- Technical Assistance

M&V of energy savings:
Guidelines

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Energy Efficiency & Demand Side Management Options

(Options - All Energies)

Energy Conservation

Reducing the Consumption of Energy without impacting on Production and/or Safety

Example:
Turning off lights in unoccupied areas or after hours

Energy Efficiency

Included here to show how "pure" EE fits with other options available

Example:
Replacing lights with more efficient alternatives

Energy Substitution

Renewables

Other, e.g. Fuel Switching

Adding renewables or "Green" generation capacity on the demand side of utility supply

Example:
Installation of Solar PV panels/SWHs to reduce electricity purchased from Utility

Switching energy consumption to a different energy source SEE NOTES on fuel switching

Example:
Changing from Electrode boilers to gas-fired boilers or vice versa

Co-generation / Self-Generation

Generating energy from waste which is fed into the demand side of the utility supply to lessen the use of the utility supply

Example:
Generating electricity from waste-water or from burning waste material

To reduce the energy intensity of the South African economy through improvements in energy efficiency, target of 12% by 2015 for all uses of energy is set



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SA's Energy Efficiency Campaign

- Energy Efficiency awareness campaign will form part of the National Energy Efficiency Strategy.
- The Energy Efficiency Campaign framework depicting EE awareness activities has been developed as part of the National Energy Efficiency Action Plan.
- Key activities include understanding the energy (electricity consumption) within sectors.

EE Campaign Framework

Assembling the EE Awareness Team

Identify and Select EE Awareness Opportunities

Establish EE Awareness Objective (s)

Develop and Implement Communication



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EE Awareness Opportunities in South Africa

- To identify energy efficiency opportunities in sectors and sub-sectors of the economy.
- EE Campaign focuses on the following:
 - Energy surveys to identify energy efficiency improvements within sectors;
 - Energy efficiency information systems, in the form of website; social networks, cell phones, radio, television, etc.
 - Print and electronic media energy efficiency messages including newsletter;
 - Case studies on best energy efficiency;
 - Engaging in face-to-face dialogues with all the key stakeholders;
 - Interaction with civil society through workshops, schools, learners week, etc;
 - Roundtable discussion, seminars, workshops, etc.



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Municipal Role on EE awareness

- Use of inclining block/time-of-use tariff system to allow the utility to price electricity at different rates during the day;
- This is to encourage consumption during off peak hours to reduce the cost to supply and lessen the pressure on the national grid.
- Use EE surveys to assess exist communication platforms
- Identify specific target audience utilising the EE Opinion Surveys
- Municipalities are able to design energy savings messages based on the current level of EE understating



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National/Provincial role on EE awareness

- Collaboration with Private Sector and Industry players to improve energy efficiency, namely energy efficiency leadership network with Business;
- Provision of financial resources to Eskom to establish 49m, and introduce various products for energy savings;
- Energy efficiency awareness lectures with academic institutions;
- Labelling of appliances attached to the classified devices;
- Promotion of Minimum Energy Performance Standards in collaboration the South African Bureau of Standards (SABS) and National Regulator for Compulsory Specifications (NRCS).
- Provision of direct support to industry through plant assessments and energy audits implemented by the National Cleaner Production Centre (NCPC) of South Africa.



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National/Provincial role on EE awareness cont....

- In a creative bid to reduce energy demand, the SA's utility launched a campaign to distribute 43.5 million energy-saving Compact Fluorescent Light (CFLs) bulbs (2004 – 2010), effectively using energy efficiency to lower power demand and so it could expand electricity access.
- The high adoption rate and new energy-saving behaviour by customers has helped end-users save 1,800 MW worth of electricity.
- "The electricity saved as a result of the marked reduction in consumption by lighting in homes and buildings across the country brings us closer to achieving our energy savings targets," said Mr Etzinger from Eskom, during the time of the rollout of CFLs.



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Process on Low and High Pressure (LP & HP) SWH Installation (1)

- The SWH programme was introduced in 2008 to encourage South Africans to switch to SWHs.
- Eskom has a **database of all the service providers** supplying and installing the LP & HP SWHs.
- Under the **rebate programme** the areas for installations are decided by the installer, and are not pre-determined by the DoE, Eskom or the Municipality.
- When you install your solar water heater you will receive a **rebate** from ESKOM (for a high pressure geyser).



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Residential Mass Roll-Out Implementation Process (1)

- Eskom launched the Residential mass roll out programme to stimulate bulk replacement of inefficient lighting, implementation of energy saving technologies and load control devices in the residential sector.
- Energy Services Companies (ESCOs) are appointed and listed in Eskom website for easy access by individual households.
- The Residential mass roll out programme is intended to operate until December 2015. However, these programme has been put on hold due to Eskom's financial constraints.
- The process that is being followed to approve an individual household interventions is as follows:
 - Appointed Eskom technical auditors contact an ESCO (and/ or consumers where applicable) and arrange a suitable time for on-site inspections after installation.



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Residential Mass Roll - Out Implementation Process (3)

- The RMR programme participation is subject to the following rules:
 - Technologies complies with the minimum specification as per Eskom Standard Product technology matrix. These include efficient shower heads, geyser blankets and timers, compact fluorescent lamps (CFLs), motion sensors (where possible), etc.
 - RMR technologies are for free issue to the consumer/household via an ESCO. The ESCO only claim for products as per rates published in the latest Eskom pricing matrix.
 - Preference is given to proposals that are composed of a mixed basket of technologies, as opposed to proposals composed of a single technology proposal.



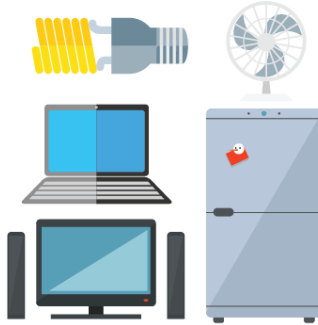
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TYPICAL ELECTRICITY USAGE PER APPLIANCE FOR AN HOUR

Switching off your geyser, air-con/heater, pool pump and other unnecessary appliances, especially during peak times can reduce demand. This can lower the risk of load shedding.

USING YOUR APPLIANCES EFFECTIVELY CAN LOWER THE RISK OF LOAD SHEDDING




0 - 0.5kWh



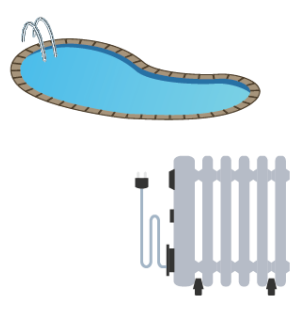
0.5kWh - 1.0kWh



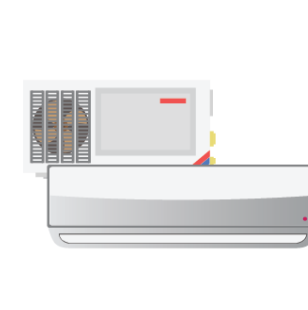
1.0kWh - 1.5kWh



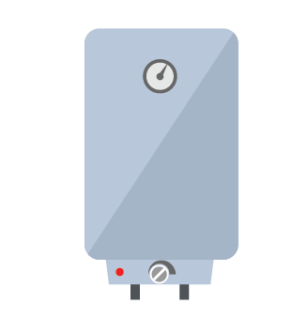
1.5kWh - 2.0kWh



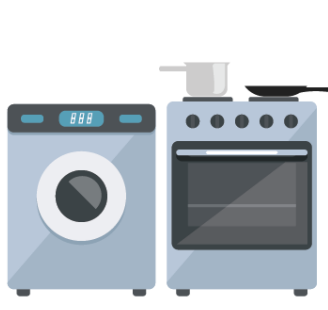
2.0kWh - 2.5kWh



2.5kWh - 3.0kWh



3.0kWh - 3.5kWh



3.5kWh - 4.0kWh

EIUG Energy Innovative Users Group of Southern Africa | BDO | Eskom

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THE LOAD SHEDDING PROCESS

03 LOAD SHEDDING

As a last resort and preventative measure, consumers are cut off on a rotational basis for 2-4 hours to protect the electricity grid from collapse. Depending on the stage, the National System Operator instructs the Regional Distribution Centers, 126 Municipalities and Key Industrial Customers to implement load shedding according to their schedules.

02 VOLUNTARY OR CONTRACTED EMERGENCY DEMAND REDUCTION

To help balance the demand and supply of electricity, Demand Response & Emergency Demand Reduction customers are called on to reduce their demand.

01 TIGHT SUPPLY

The demand for electricity is high, putting pressure on supply. Emergency resources have been depleted, or there is an unexpected event such as technical issues at power stations or on major power lines.

	TYPE	QUANTITY
STAGE 1	Scheduled; Notified	≤ 1000MW to be shed
STAGE 2	Scheduled; Notified	≤ 2000MW to be shed
STAGE 3	Scheduled; Notified	≤ 3000MW to be shed
STAGE 4	Scheduled; Notified	≤ 4000MW to be shed

04 BLACKOUT

If preventative measures, including load shedding, are insufficient – the national grid will collapse. This incident is referred to as a blackout. A blackout is unforeseen and therefore the System Operator will not be able to make an announcement in advance.

A national blackout will have massive implications and every effort is made to avoid this occurrence.

05 RECOVERY

Depending on the nature of the emergency it could take a few weeks for the grid to recover from a blackout.



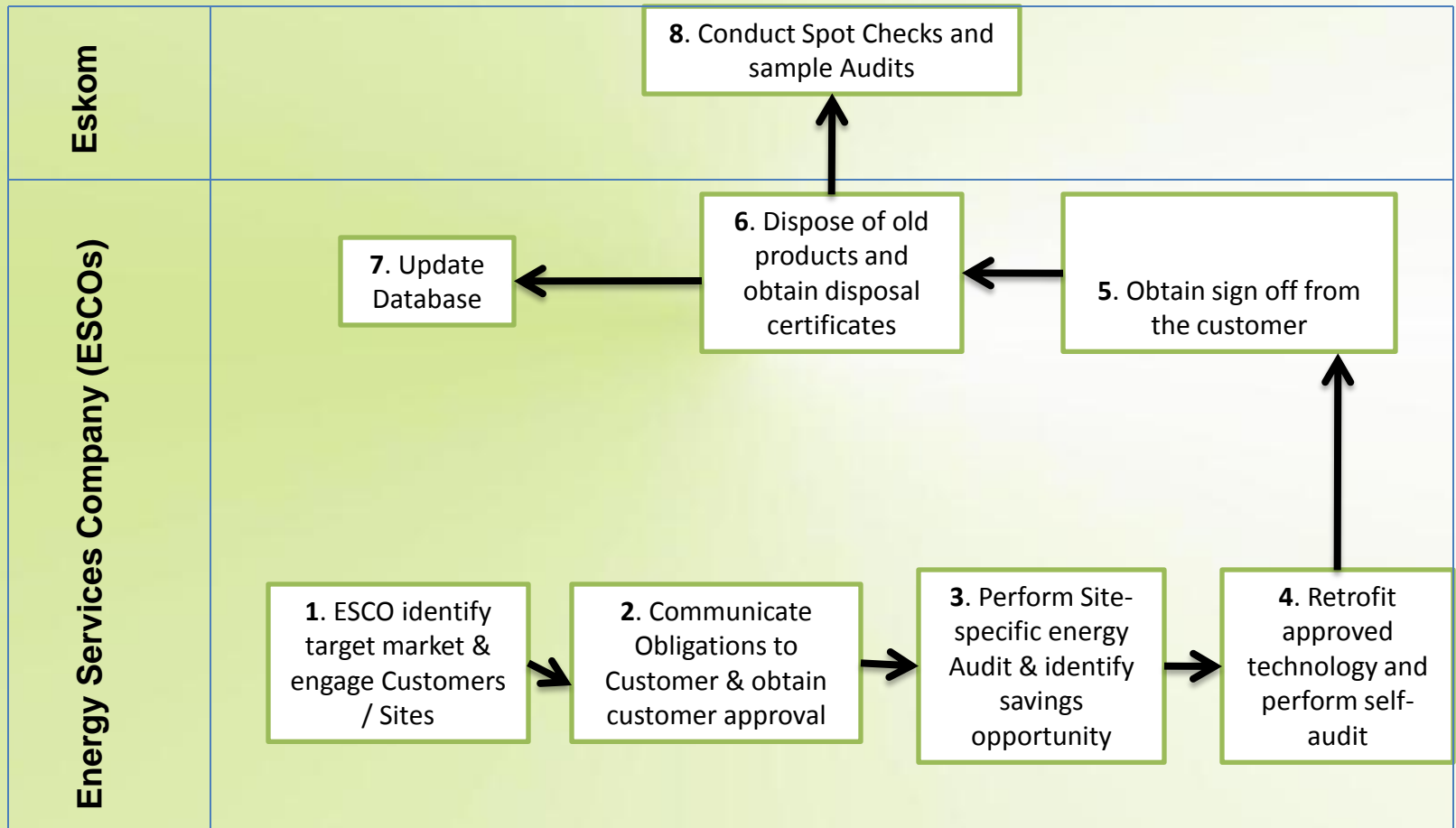
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Residential Mass Roll-Out Implementation Process (4)



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Conclusion

- Homeowners can reduce their water heating costs by reducing pressure on the national electricity grid, and reduce pressure on the environment associated with coal fired power stations.
- Residential sector consumes about 17,5% of the total electricity generated, with their demand at peak periods amounting to over 30%.
- Helping residence to manage their electricity requirements better will have a significant impact on the overall demand for energy, whilst on the other side will also achieve cost benefits for the consumer.
- Any South African citizen can install an SABS-approved SWHs, and this can reduce about 30-50% of your electricity bill.
- Energy from the sun is free! Reduce your monthly energy costs by installing a solar water heating system that uses clean, quiet and abundant energy from a renewable energy source.



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Thank you for your attention

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