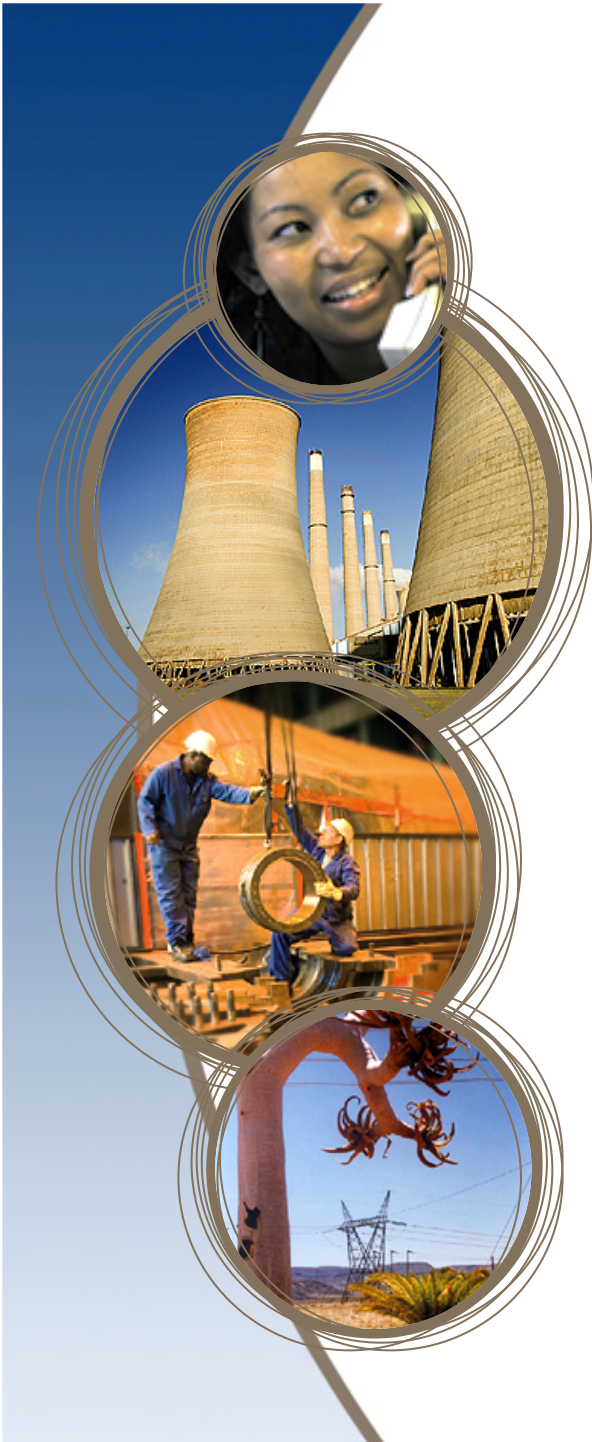
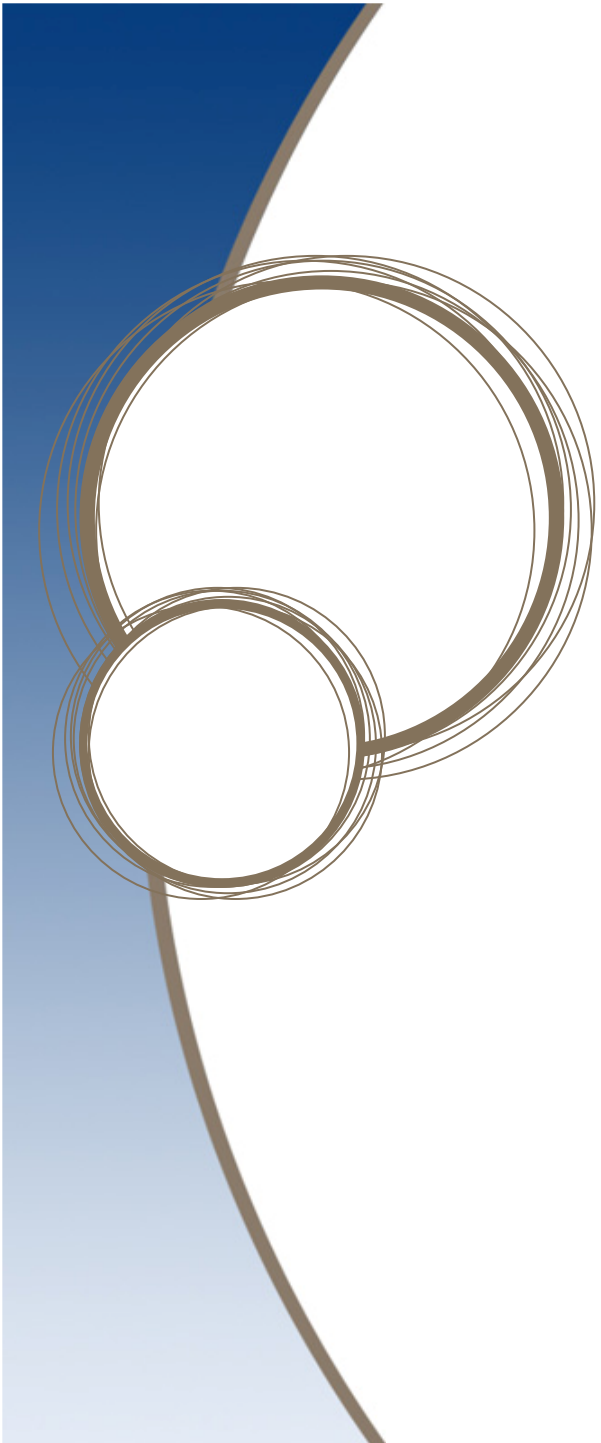




Eskom's Approach to Energy Efficiency and Demand Side Management

September 2012



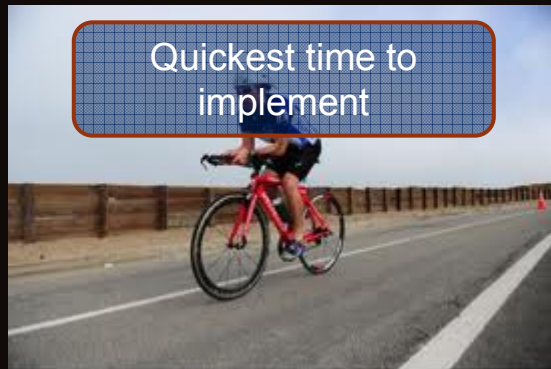


there is energy intelligent life out there
Global Developments

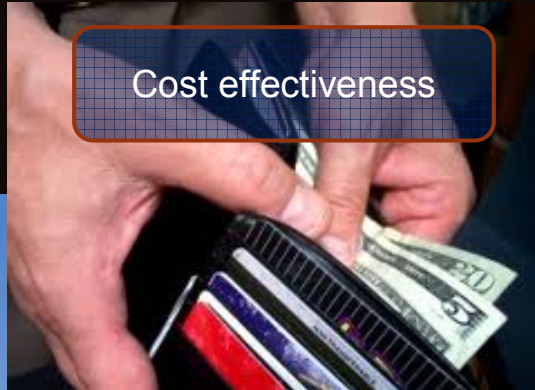
Reasons for Energy Efficiency



Positive environmental impact



Quickest time to implement



Cost effectiveness



Technology



Public awareness

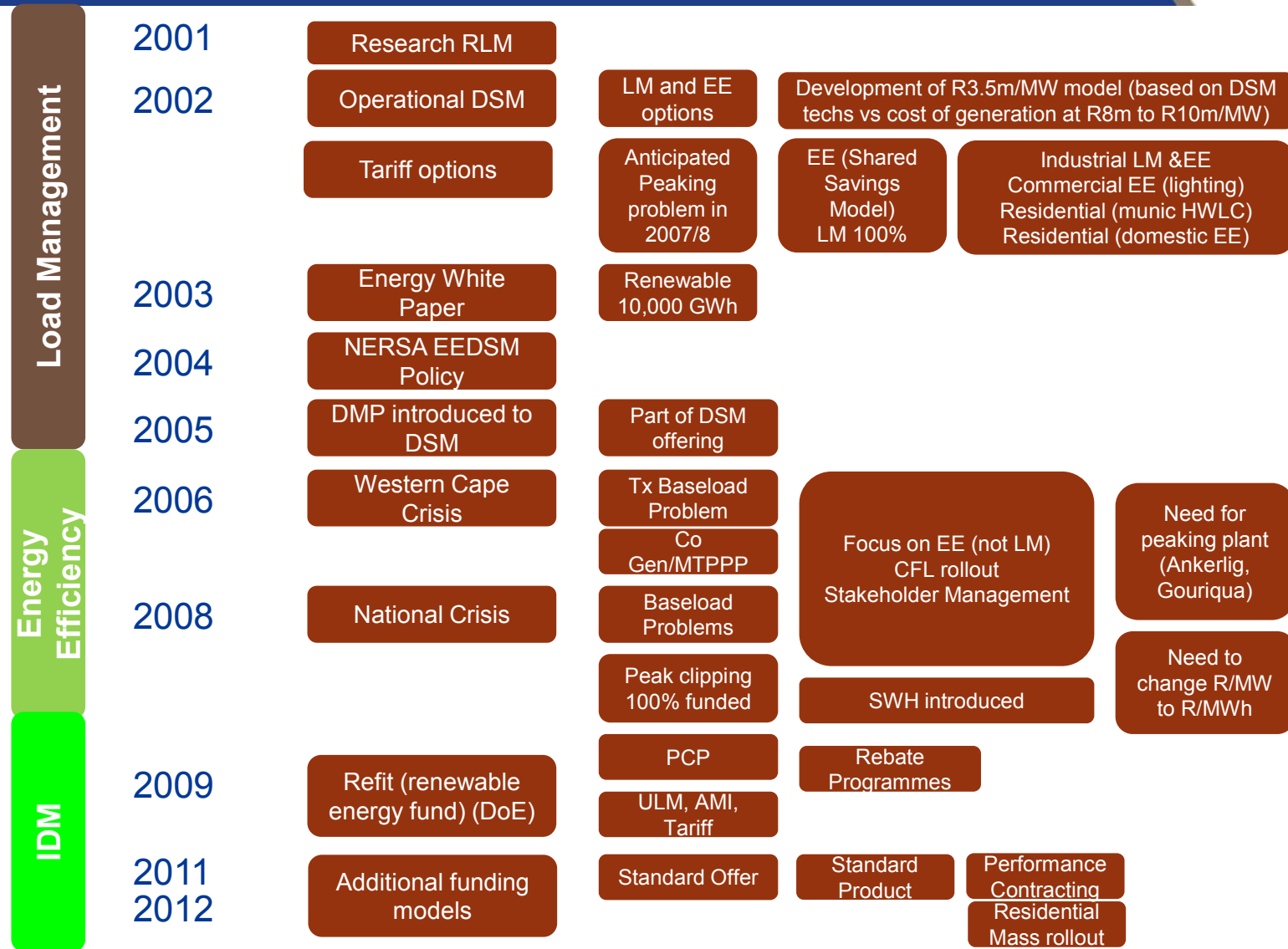


Least economic impact

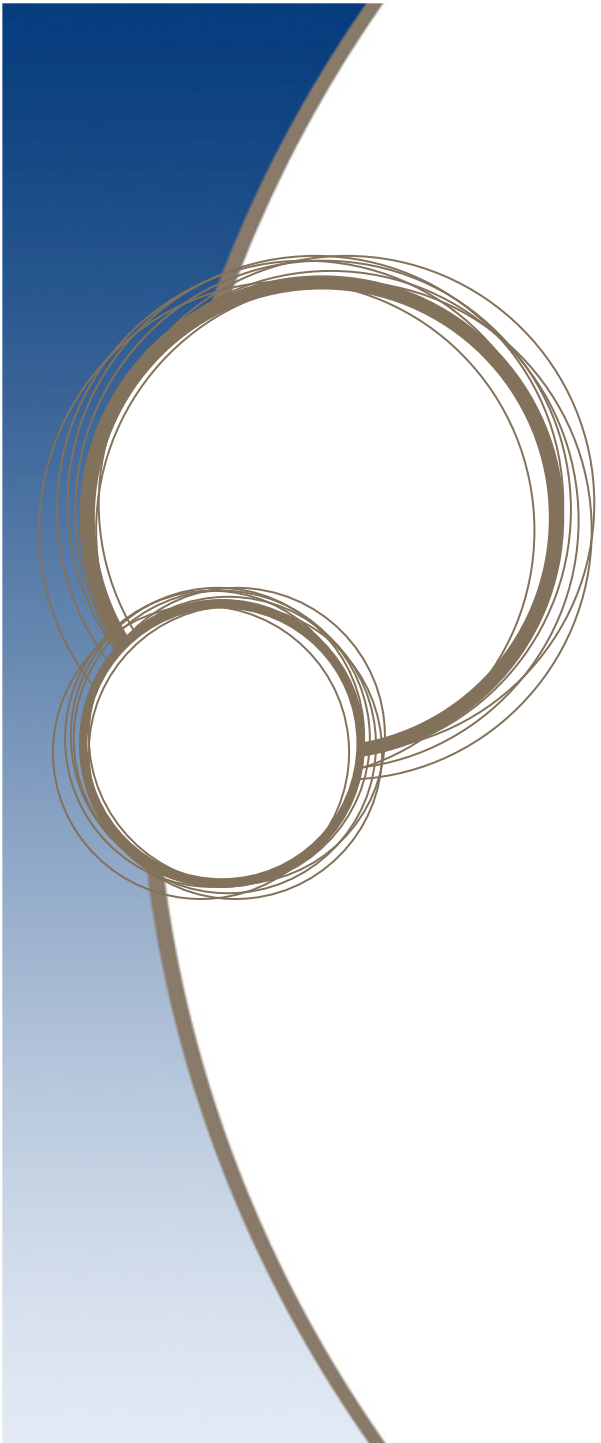


Economic Growth Job Creation

History



Eskom's DSM programme has evolved to a strong focus on energy efficiency



need for new capacity and energy
management

The State of the Electricity System

Introduction



South Africa's power system is constrained and will be for next few years

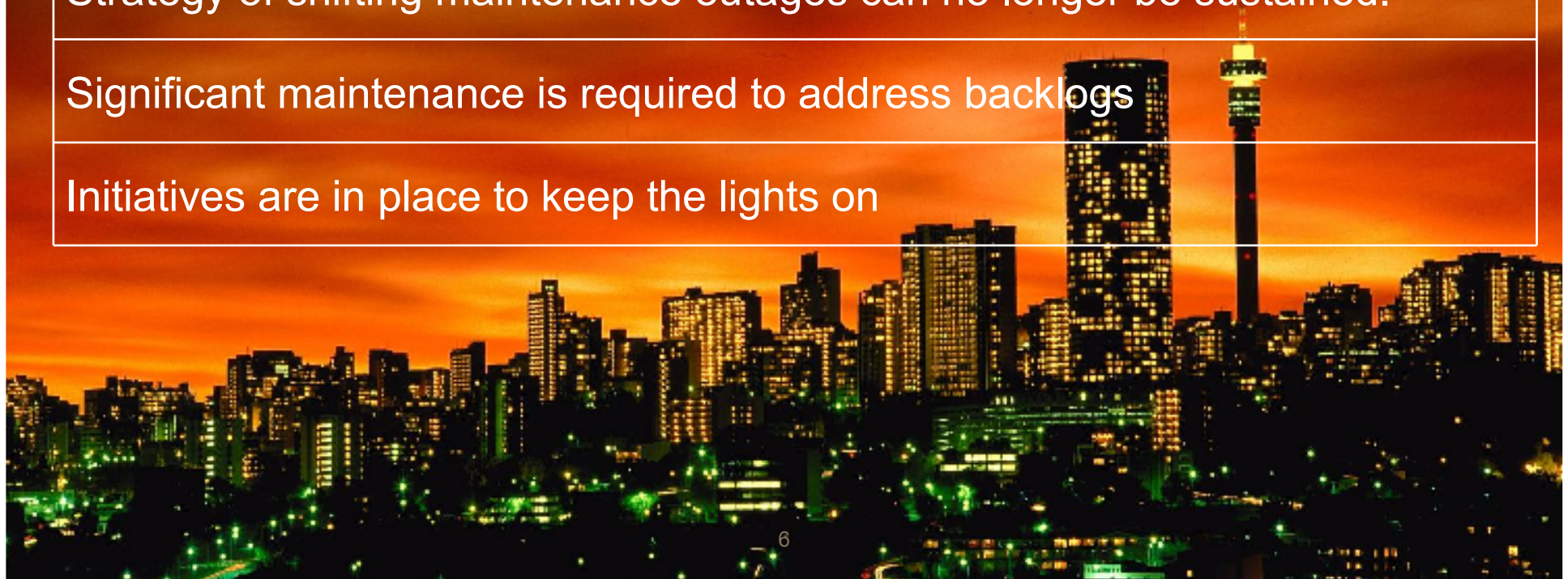
Eskom, together with stakeholders, have kept the lights on since 2008

Most power stations are in their mid-life and require increased maintenance

Strategy of shifting maintenance outages can no longer be sustained.

Significant maintenance is required to address backlogs

Initiatives are in place to keep the lights on

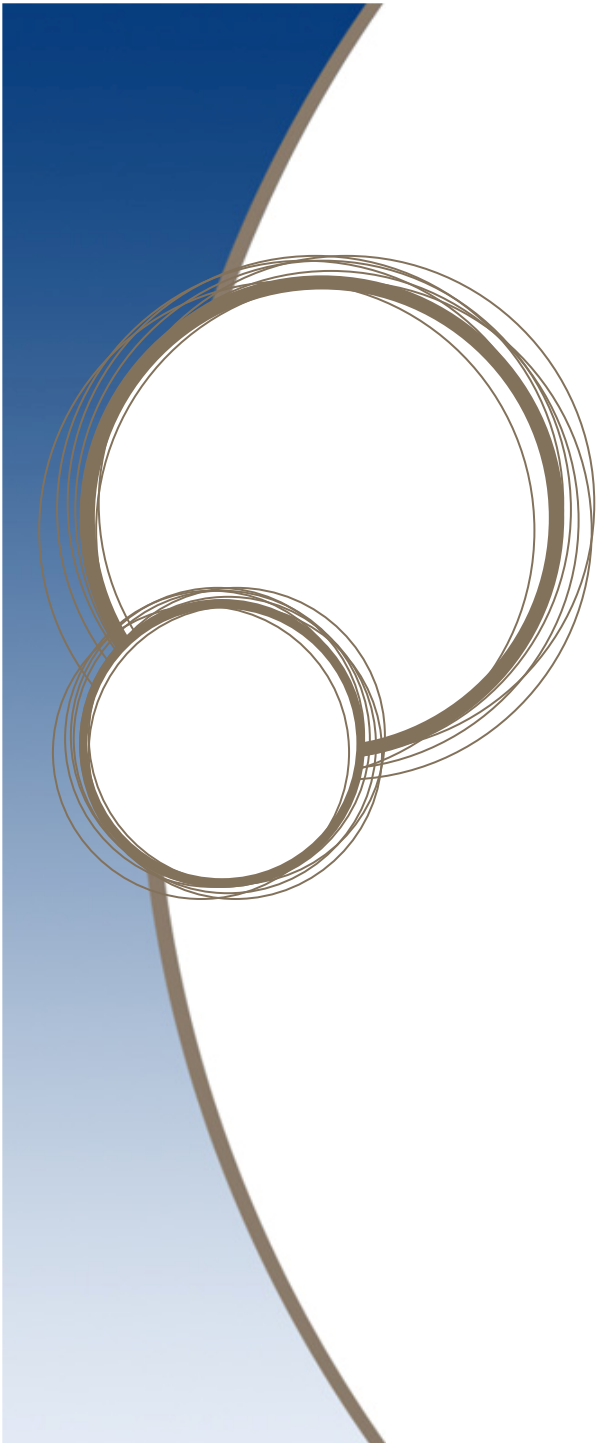


Ensuring stable system operation

Ideally, 3,000MW of committed capacity from supply and demand initiatives is needed immediately to keep the lights on and enable maintenance to continue. Reducing this target will require an adjustment to the maintenance programme.

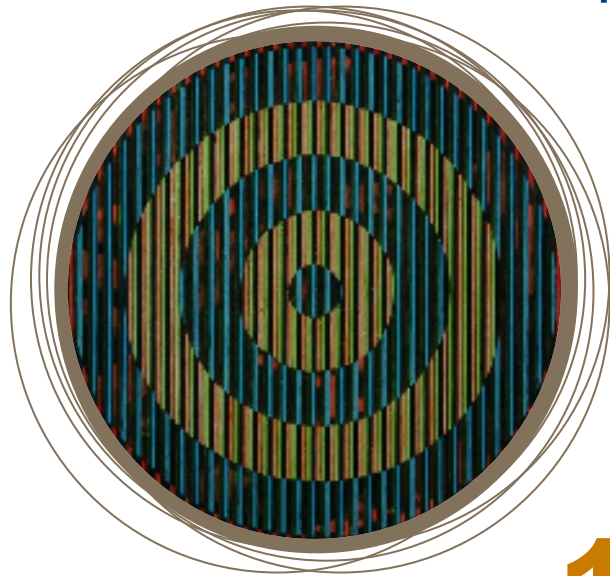
Between now and end-December 2013, the minimum targets set out in the table below need to be achieved to prevent an emergency.

	Immediate (MW)	By July 2012 (MW) and sustained to end December 2013
High load factor initiatives to bring certainty to maintenance planning	1000	2000
Pre-Emergency/ Contingency/Peaking initiatives	2000	1000



Historical Performance

NERSA MYPD2 allocation for EE and DSM



5.4

billion ZAR, over

3

years, to deliver

1 037

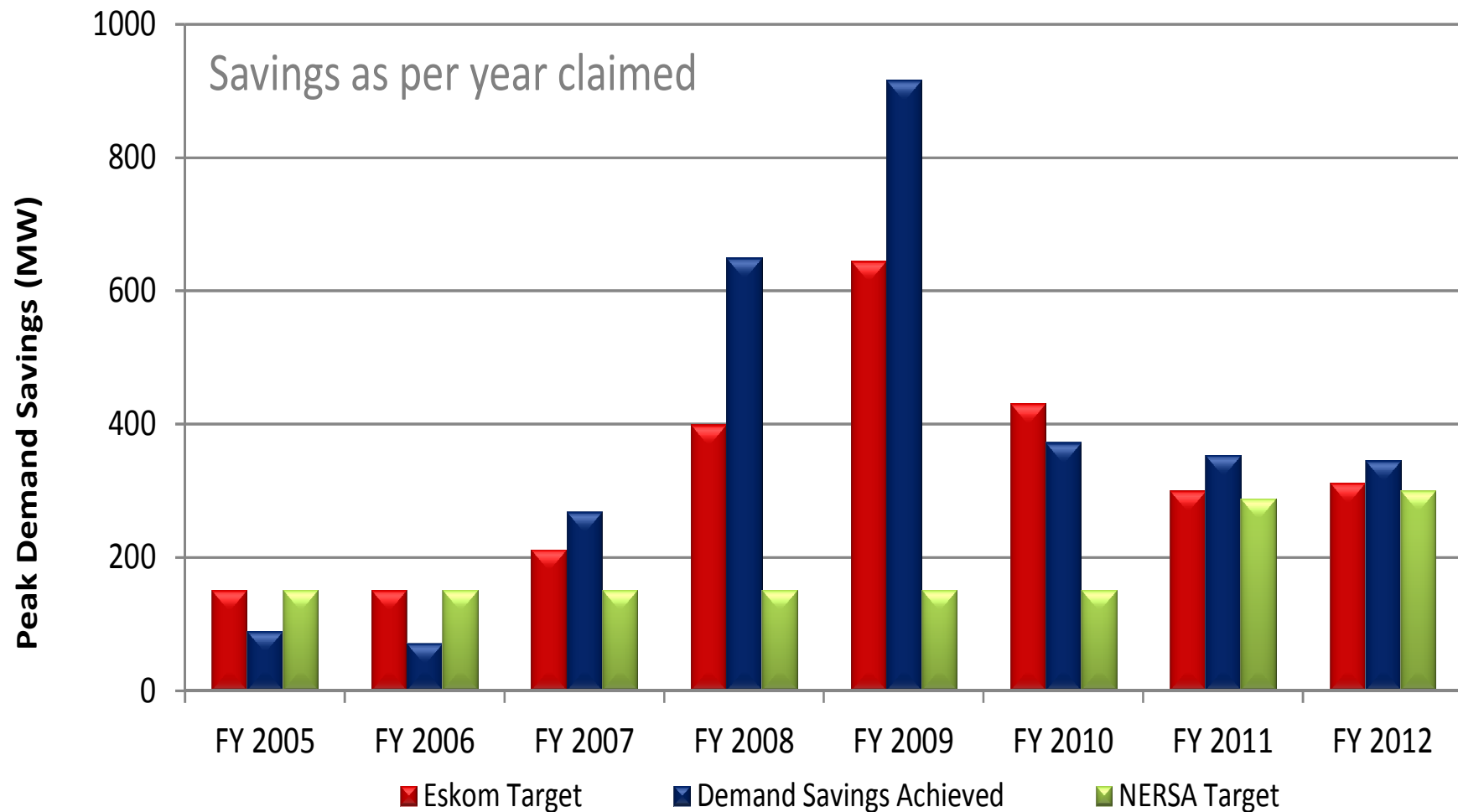
MW demand savings and

4 055

GWh energy savings.

Electricity consumer money is ploughed back into the economy via energy efficiency rebate programmes

Eskom annual achievements



* Includes DMP & Non Funded Projects

Eskom has consistently over-achieved on the NERSA targets

Demand Savings 3073 MW

1 power station generator is approximately 600MW therefore over 5 generators “freed up”



The IDM energy savings for 2011/12 could power a city for a year



1,422

Gigawatt hours

either of

Buffalo City

(1,305 GWh consumed during 2006)

Mangaung

(1,397 GWh consumed during 2006)

for ~1 year

or

Sol Plaatjie

(514 GWh consumed during 2006)

for 2½ years



Source: Annual electricity consumption/sales as reported in the State of Cities 2006, City Energy Support Unit, Sustainable Energy Africa, 2006

Achieving 343 MWs with various technologies



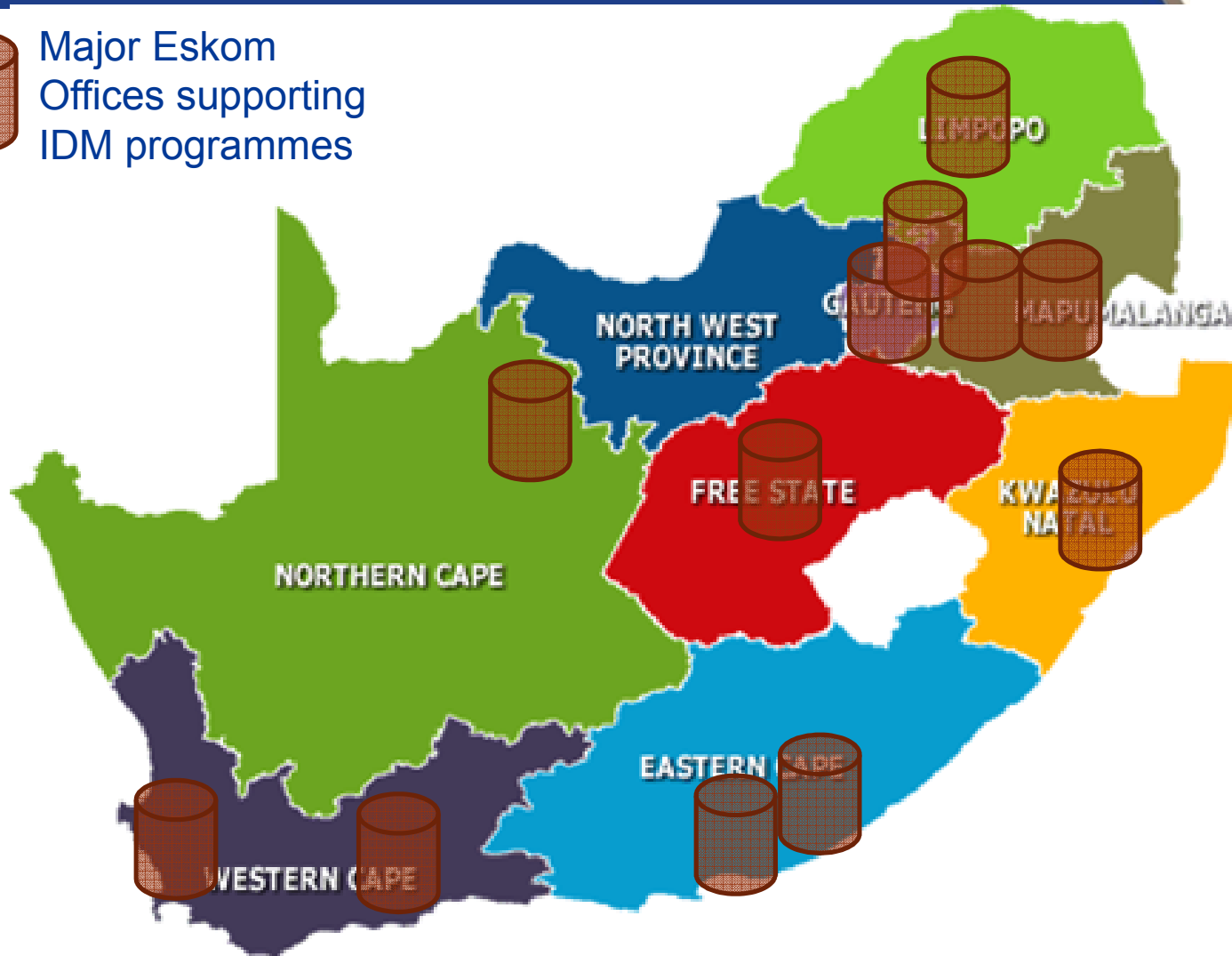
Number of units

	<p>LED downlights in commercial facilities based on data from current pilot</p>	<p>17 150 000</p>
<p>OR</p>		
	<p>Heat pumps for residential use based on empirical values used in planning</p>	<p>989 924</p>
<p>OR</p>		
	<p>Solar Water Heater with timer based on M&V data</p>	<p>High pressure systems 631 605 Low pressure systems 3 040 559</p>
<p>OR</p>		
	<p>Commercial efficiency upgrades average based on 110 completed projects</p>	<p>435</p>
<p>OR</p>		
	<p>Industrial efficiency improvement projects average based on 72 completed projects</p>	<p>246</p>

Eskom IDM Footprint



 Major Eskom Offices supporting IDM programmes



IDM programmes require large scale support and logistics needs

Eskom compares favourably with the rest of the world



54 million CFLs distributed across South Africa to date, representing one of the largest CFL roll outs in the world.



Recognised by the World Bank as one of the **most comprehensive utility energy efficiency and demand side management programmes**, certainly amongst the BRICS countries.



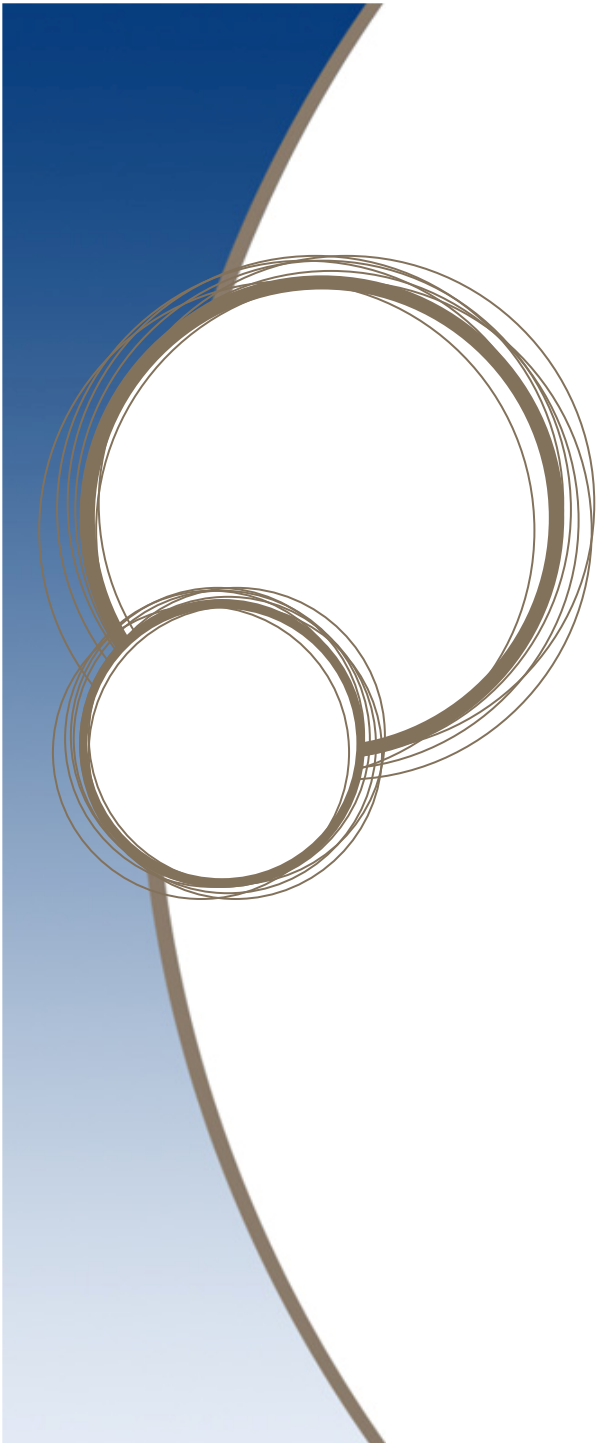
Amongst the **lowest cost programmes** in the world as measured by \$/MW demand reduction.



Eskom's innovative **Power Alert** tool has won prestigious international awards in both marketing and engineering fields.



Aligned with **best practices for energy efficiency implementation programmes** as developed by the EU Energy Efficiency Watch survey of the National Energy Efficiency Action Plans from 26 EU Member States.

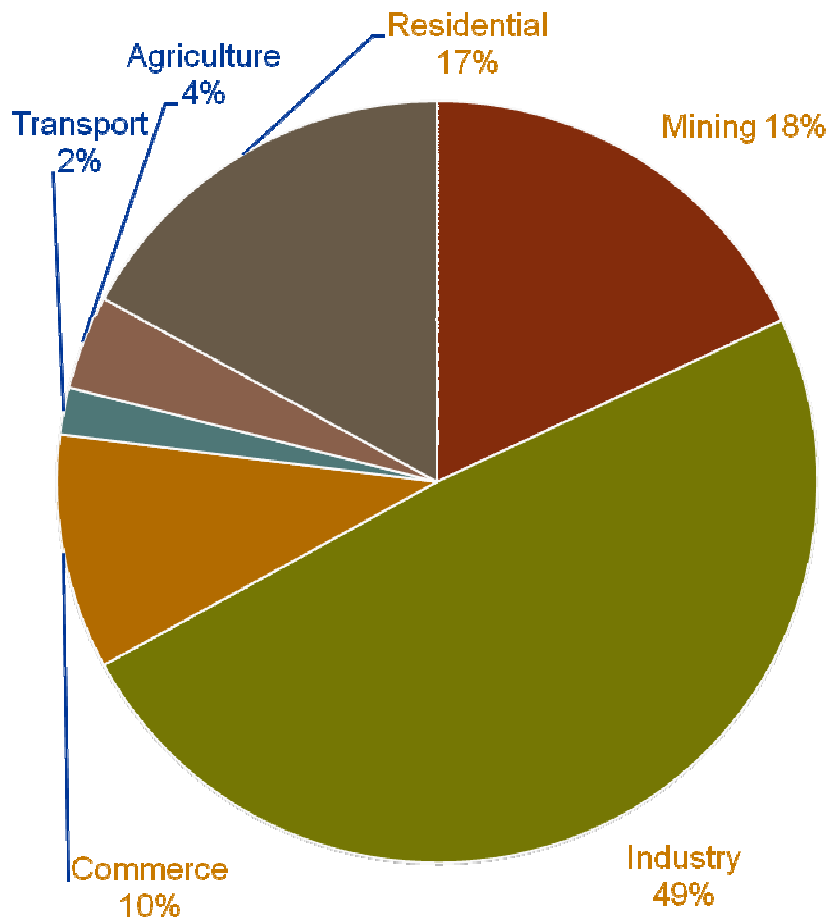


Market Focus

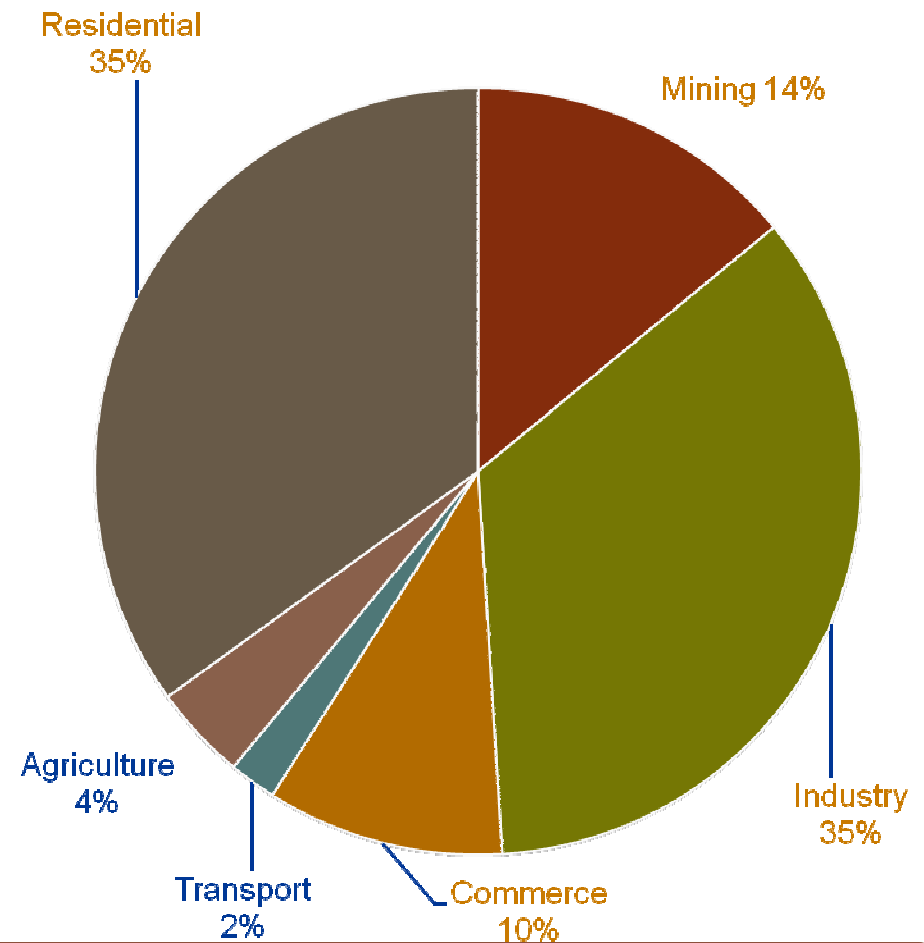
Electricity consumption per sector



Energy Consumption



Demand

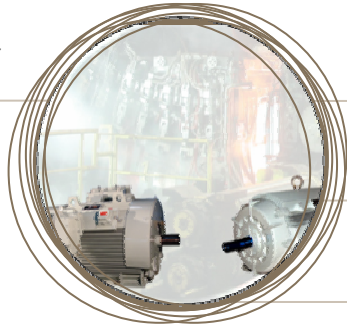


Eskom prioritises its focus on energy efficiency by targeting all economic sectors with multiple technologies

IDM activities previously focused primarily on three areas



Industrial and mining process optimisation & efficiency upgrades



164

projects

527

megawatts

1,440

gigawatthours/annum

Mass rollouts (mainly of CFLs)



48

projects

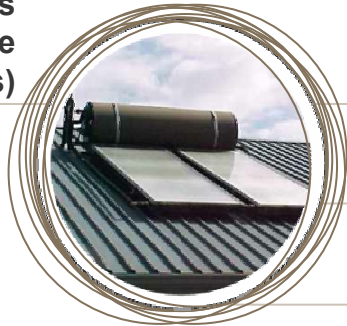
2,006

megawatts

6,667

gigawatthours/annum

Solar Water Heaters (high and low pressure systems)



38,731

high pressure systems

84,677

low pressure systems

30

megawatts

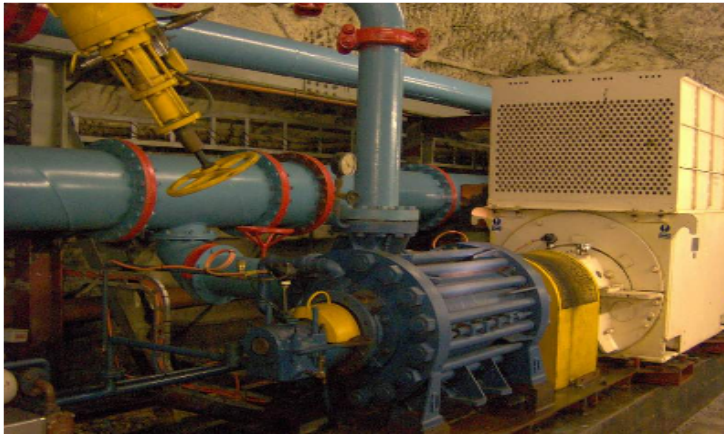
60

gigawatthours/annum

Industrial and Commercial Sectors Typical energy savings projects undertaken



Total Mining sector Savings = 287MW @ R613 million



Pumping Demand Savings = 143MW Eg. Union Mine



**Compressor Management
Demand Savings = 76MW
Eg. Cooke Mine**

**Fridge Plants
Demand Savings = 35MW
Eg. Harmony Mine**

**Winders & VSD & Other
Demand Savings = 34MW
Eg. Bambanani Mine**

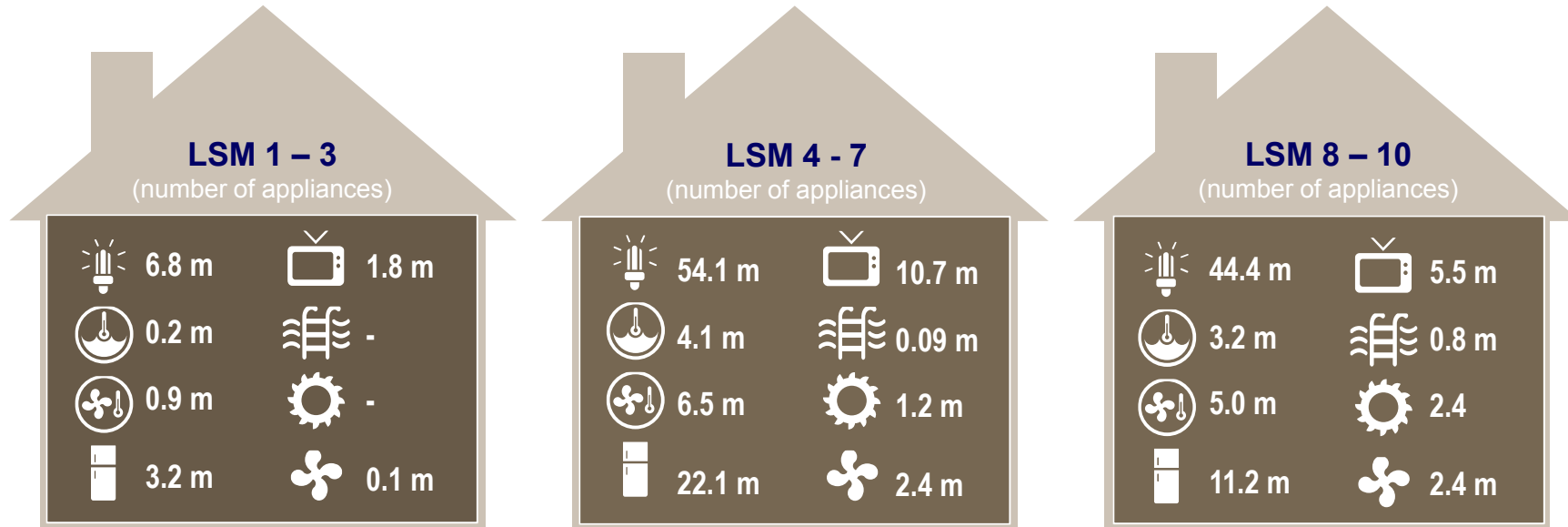
Residential Sector



Market segment 1
(~21% of households)

Market segment 2
(~58% of households)

Market segment 3
(~21% of households)



(Source: Frost and Sullivan Market Analysis for Residential market 2012)

Predominantly **lighting** opportunity and current (**free issue**) **SWH** programme
Limited demand management opportunity

Preferred approach:
Mass, door-to-door rollout of a limited, standard technology offer

Extensive **lighting** plus more **diverse range of technologies**.
Demand management opportunity via timers (or similar)

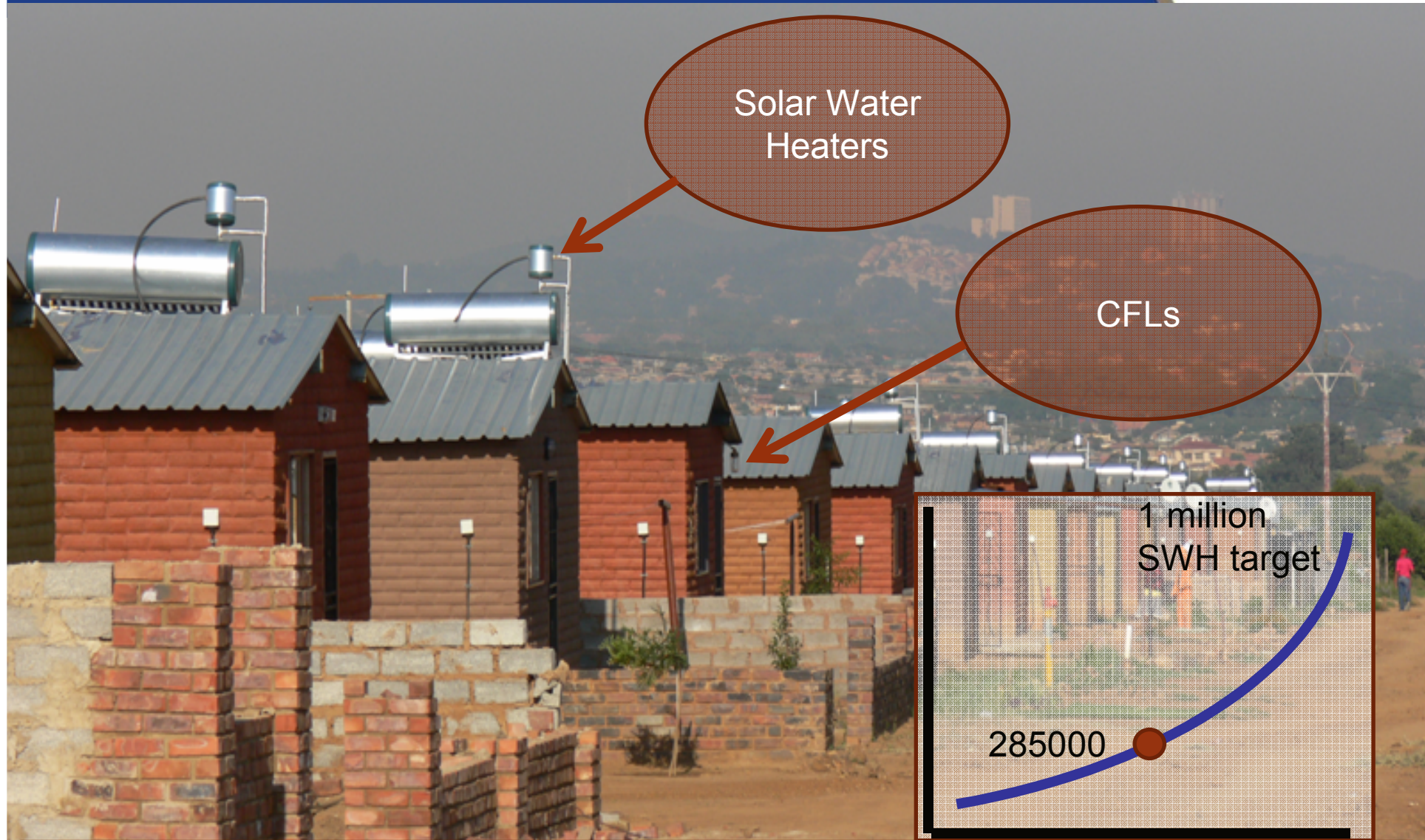
Preferred approach:
Installer type model with a standard package of technologies

Significant opportunity for energy and demand savings impact BUT a standard, free issue solution is less suitable

Preferred approach:
Retailer model offering discounted products (plus installation offer)

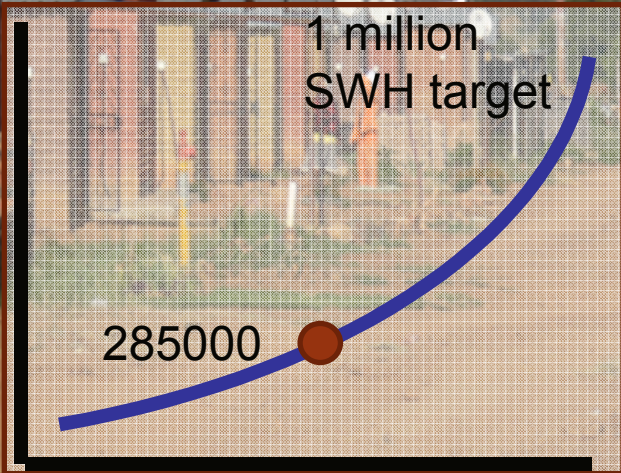
Eskom follows a structured approach to achieve savings in the residential sector

Residential Sector



Solar Water Heaters

CFLs

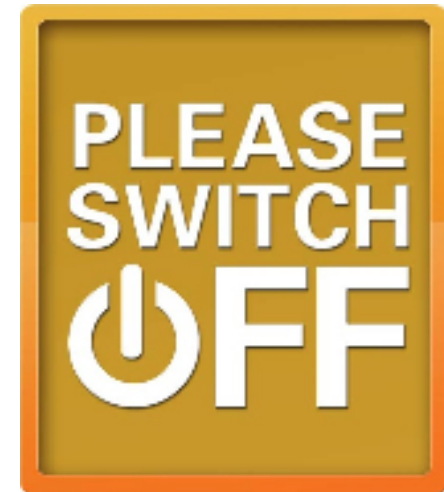


Eskom has installed over 285,000 Solar water heating systems and 52 million CFLs

Residential Sector Residential Mass Rollout (RMR) Programme



Eskom supports the retrofitting of old inefficient technologies



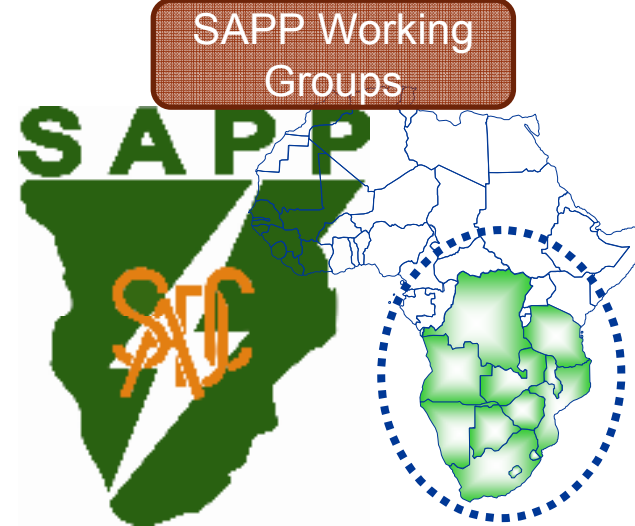
DSM involves public awareness and drive to instil cultural change to energy efficiency

Skills Development and Localization

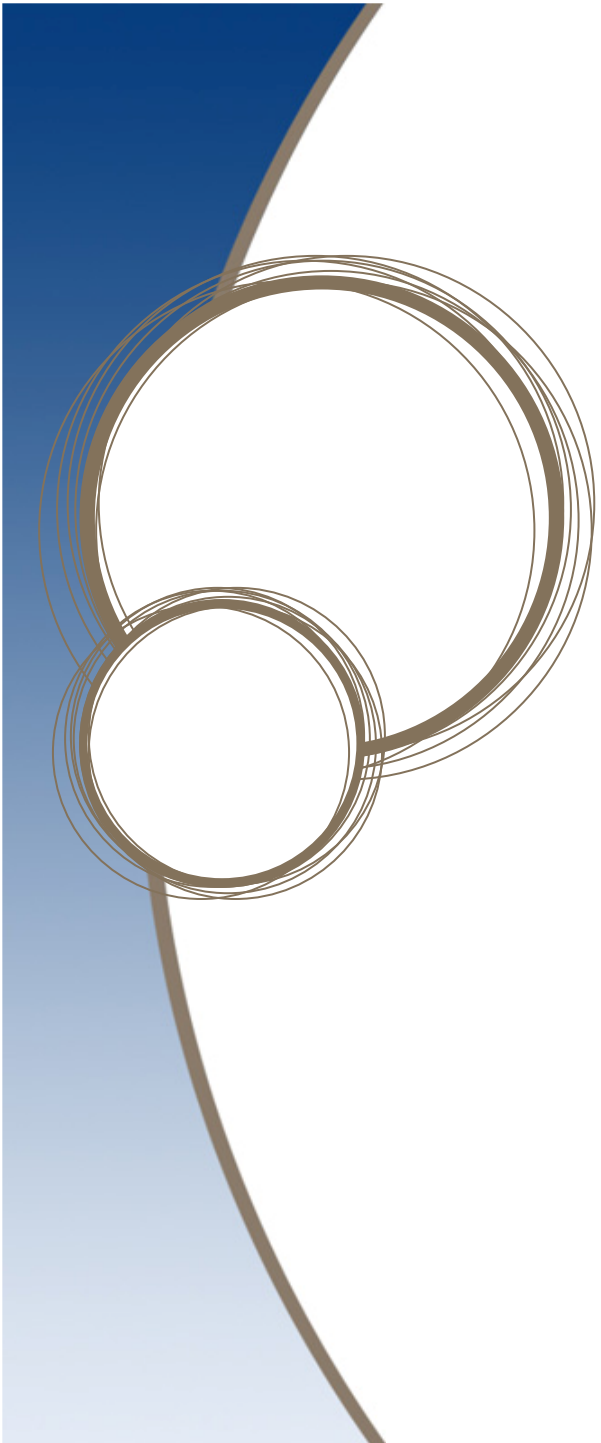


Eskom through its programmes supports skills development and localisation

Industry Development



Eskom supports industry development through training and industry workgroups

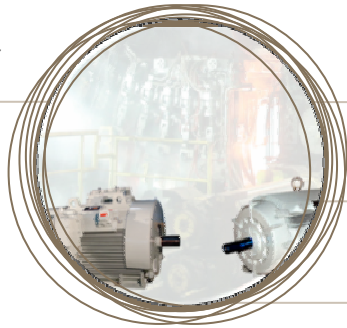


Funding Options and Technologies

IDM activities previously focused primarily on three areas



Industrial and mining process optimisation & efficiency upgrades



199

projects

596

megawatts

1,831

gigawatthours/annum

Mass rollouts (mainly of CFLs)



318

projects

2,128

megawatts

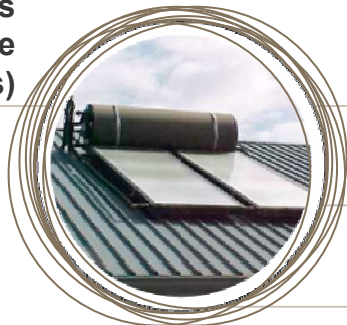
4,735

gigawatthours/annum`

52 m

CFLs rolled out 2004-2011

Solar Water Heaters (high and low pressure systems)



36,808

high pressure systems

151,028

low pressure systems

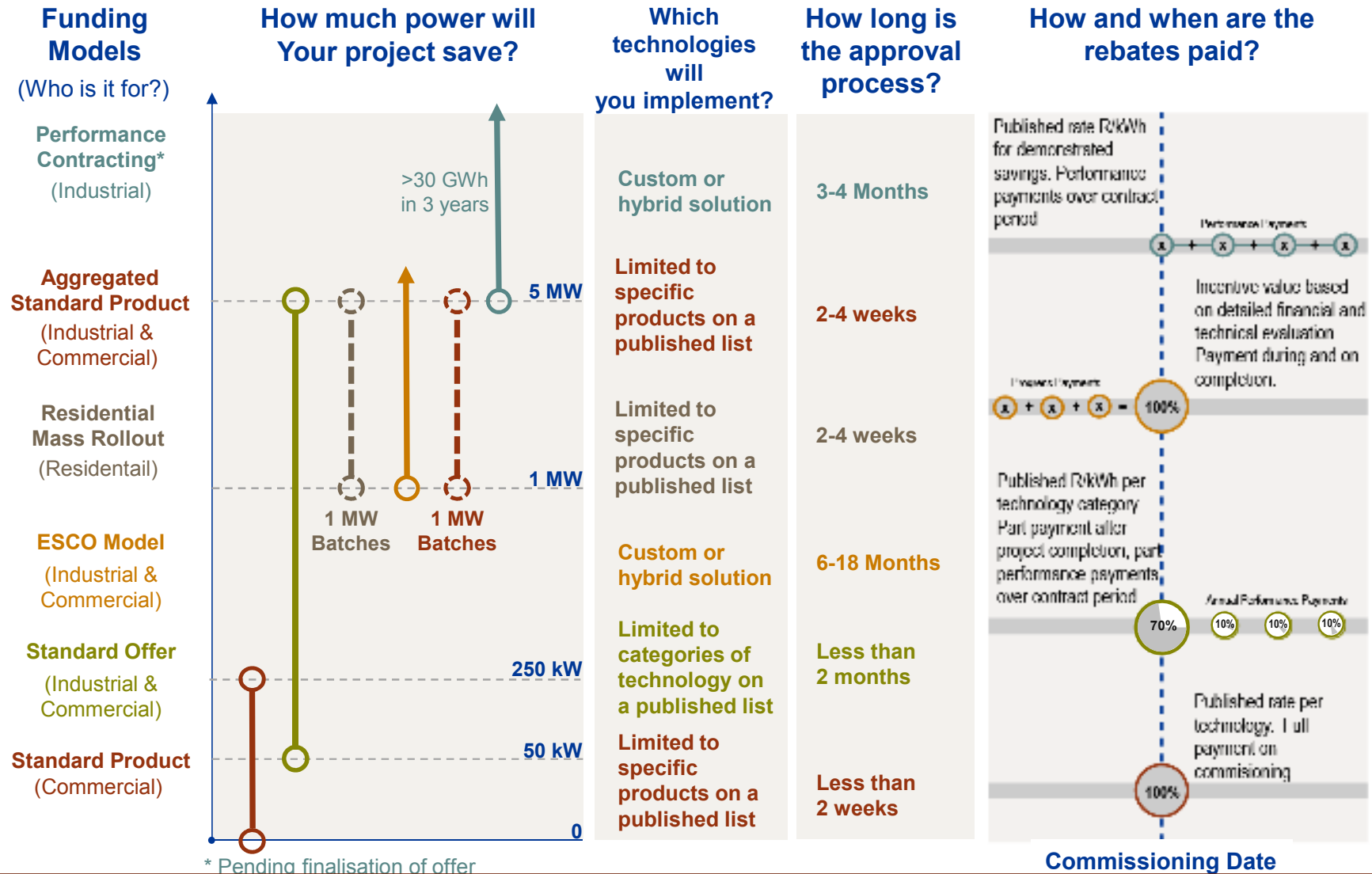
33

megawatts

219

gigawatthours/annum

How can Eskom help me implement an energy efficient solution?



Eskom has a suite of programmes spanning multiple economic sectors and technologies whilst taking unique customer requirements into consideration

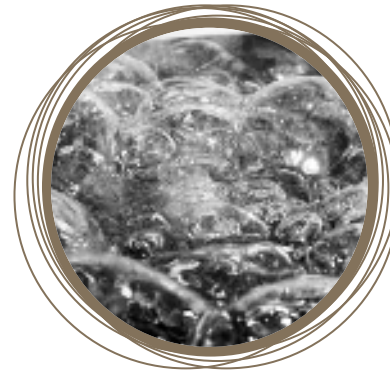
Eskom supports multiple technologies



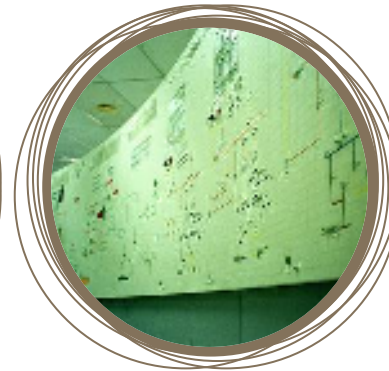
Energy efficient lighting systems



Building management systems



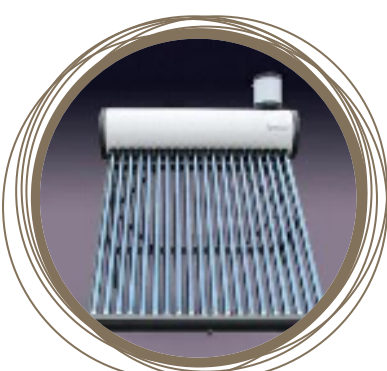
Electrical hot water systems



Process optimisation



Air conditioners



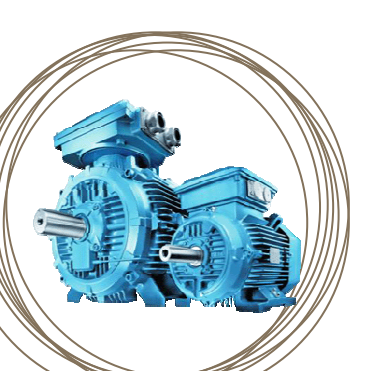
Solar water heaters



Heat pumps



Shower heads



Motors

Eskom has targeted a number of future focus areas



LSM 4 - 7
(number of appliances)

54.1 m	40.7 m
4.1 m	0.09 m
6.5 m	1.2 m
22.1 m	2.4 m

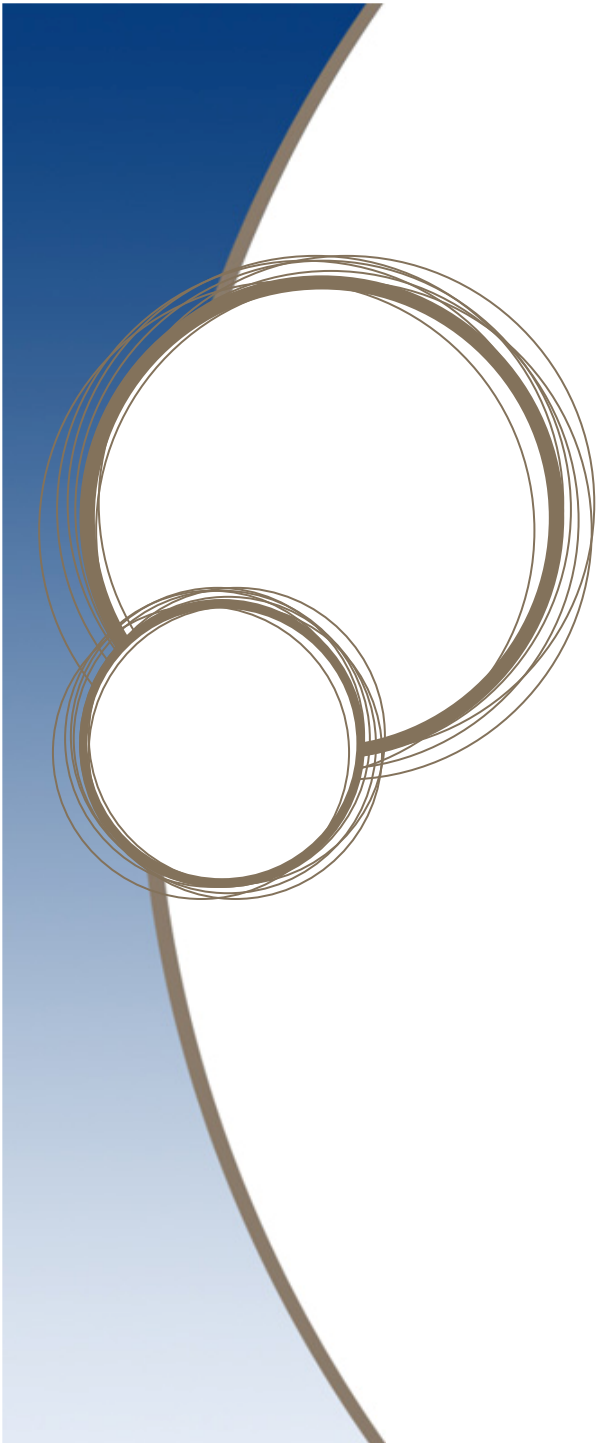
Residential House retrofits

LEDs

Waste Heat Recovery

Photovoltaic





In conclusion....

- Eskom sees **Energy Efficiency and Demand side management** as a **very strong vehicle** for Security of Supply
- **Continuity** of the current Eskom rebate programmes **is essential** to sustain the momentum of the current energy efficiency drive in the South Africa
- Eskom has applied to NERSA for additional funds to realise **2,557MW** of demand savings in the next 6 years
- **Any significant changes** to the current governance and funding of energy efficiency projects **will create undue risk** to the security of supply in the current constrained electricity system



• Thank You