

Energy Saving in Agriculture

Efficient Motors, Variable Speed Drives & other Technologies

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Demand Side Management Department



Overview of what will be covered

- Eskom System Status
- The Agriculture Sector Contribution to Demand
- Eskom's Demand Side Management Programs
- How Can You Save Energy
- Tools and Calculators

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ESKOM System Status

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Impact of global financial crisis on Eskom

1. Eskom's customers under strain – demand reduced to 2005 levels
2. Financing of capacity expansion severely impacted:
 - Revenue reduced due to lower sales
 - Difficulty raising capital on international markets
 - Credit rating of Eskom and South Africa under pressure
3. Diversification away from coal fired generation impacted – decision on new nuclear power station delayed
4. Positive impacts
 - Opportunity to avoid operation of very expensive Open Cycle Gas Turbines

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System Status

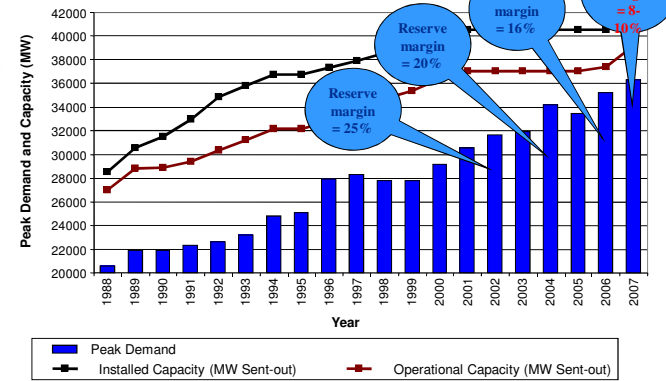
- No load shedding since April 2008
- Global economic situation leading to reduced demand for electricity - load reduction of about 2,000 MW
- Pressure on system has reduced but reserve margin still below 10% at times, International norm 15%
- Energy efficiency drive must continue otherwise a recovery of the economy will result in risk of load shedding
- Coal stockpile levels at an average of approx. 40 days

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Peak demand (MW)



Reserve margin aspiration = 15%

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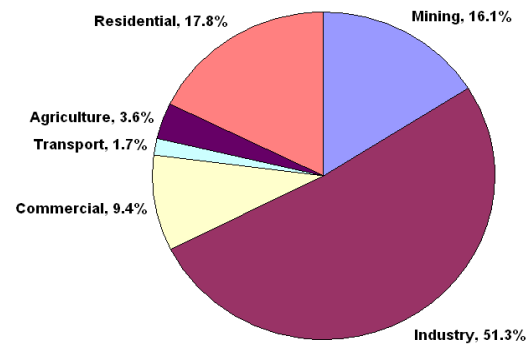


The Agriculture Sector Consumption

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Electric Energy Consumption

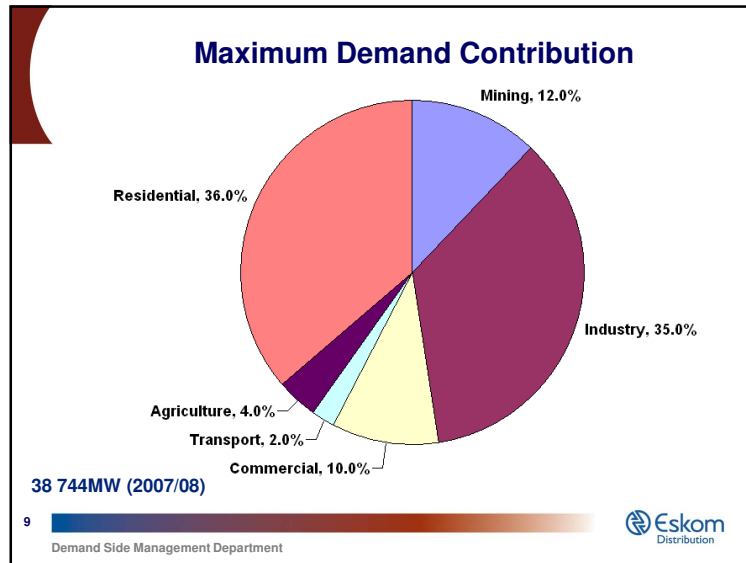


224 366GWh (2007/08)

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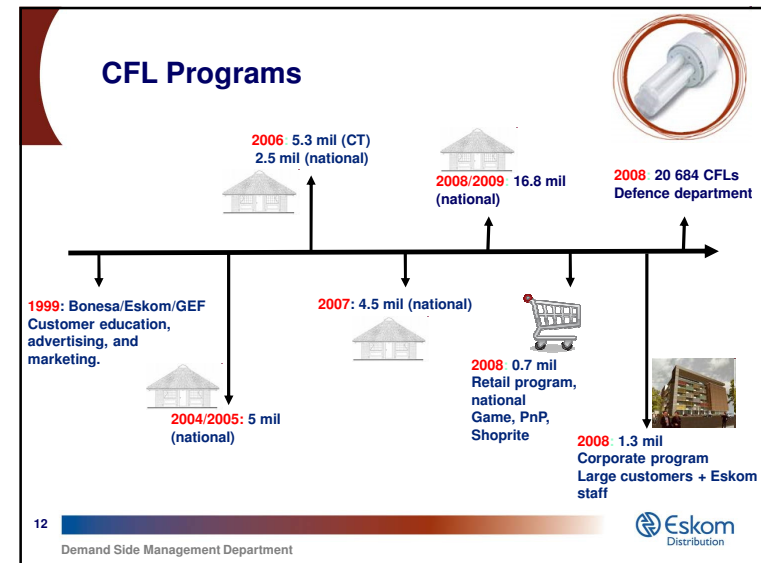
Demand Side Management (DSM) Programmes

Demand Side Management Department Eskom Distribution

Power Alert on TV

- Most successful method of reducing demand
- Quickest method
- Cheapest method
- Not taken too seriously until the power cuts occurred

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Eskom SWH Rebate Programme Residential

National programme aimed peak reduction and energy efficiency

- Rebate mechanism
 - Supplier registers their SWH system, company and installers
 - Rebate calculated on thermal efficiency
 - **Customers claim - Incentives range from about R 1500 to about R 5000. Generally bigger systems get higher rebates as they have the potential to displace more energy.**
 - Timer and installation requirements set for compliance

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DSM Energy Efficient Motor Program

- **Customer** purchases new **replacement** EFF1 motor from registered supplier at a price less rebate
- **Supplier** returns motor for scrapping
- **Eskom** pays the supplier back rebate
- Appointed **auditors** manage the collection and rebate process to ensure compliance
- **M&V** verify the savings

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DSM Energy Efficient Motor Program General Conditions

General Conditions

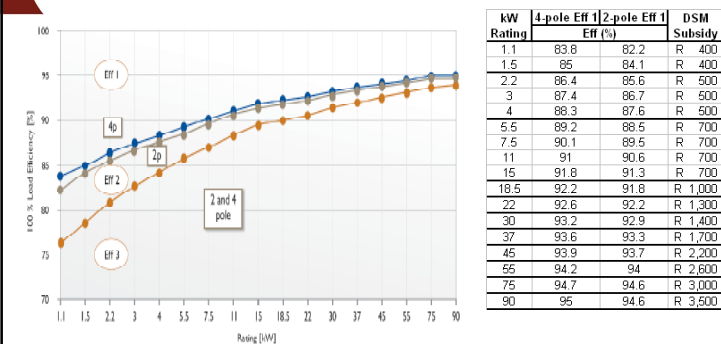
- For Totally enclosed fan cooled (TEFC), 3-phase, 2 and 4 pole general purpose induction motors
- kW range 1.1 – 90 kW
- Labelling: Eff 1
- Replacement program, old motor to be returned for scrapping
- EFF 1 motor to be installed within 3 months
- Motor supplier to carry the SABS mark

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Efficiency Definition and Subsidy Amounts

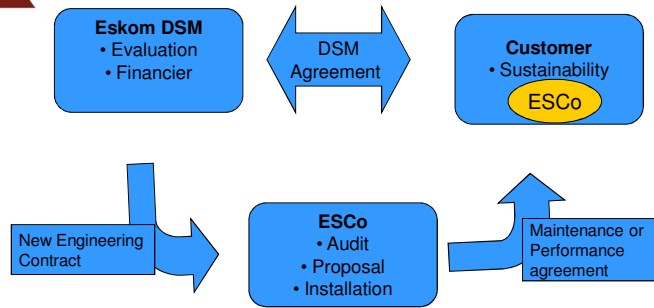


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Energy Service Company (ESCO) Programme



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Education and Information

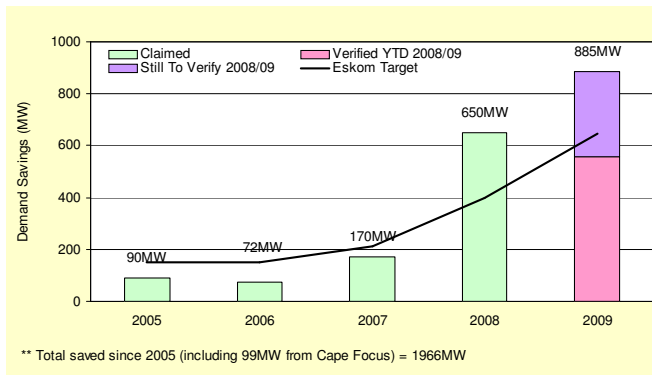
- Eskom has produced and distributed extensive information in the form of brochures to all sectors of the market educating them on energy saving
- Including the Energy Saving Tips for the Farmer brochure
- All of the information and more is available on Eskom's DSM website www.eskomdsm.co.za

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DSM Cumulative MW Savings Achieved = 1966MW



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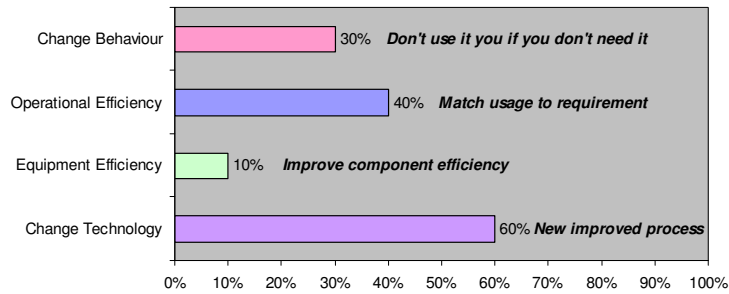


How can I SAVE?

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Ways To Save Energy



Source Data: LJ Grobler

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Where do I start?

- Match your usage to requirements, only irrigate when need and only as much as is required!
- Maintain your systems to ensure minimum leakage and losses
- Match your pipe size to water flow requirements and sprayer nozzle sizes, restricted flow means more energy use.
- Do not oversize you motor
- Make use of high efficiency components, i.e. motors, pumps
- Change your technology, use VSD's, computer controlled irrigation or other applicable technologies

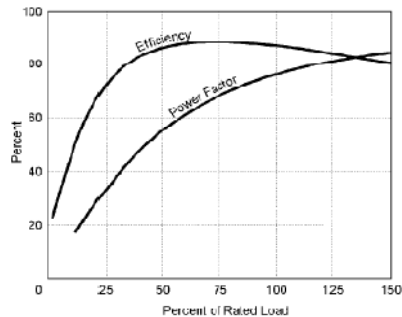
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Oversized Motors...

EFFICIENCY/POWER FACTOR vs LOAD
(Typical 3-Phase Induction Motor)

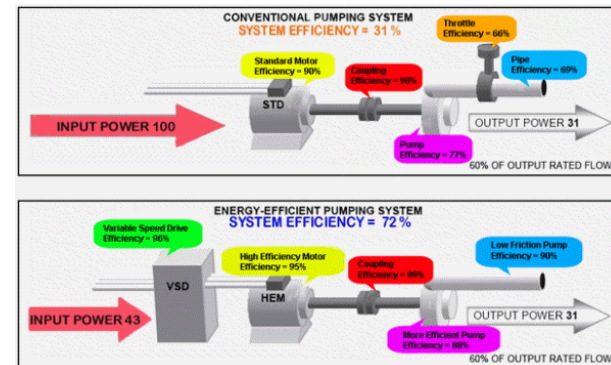


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Pumping Systems Energy Saving



Source: - Indusquip Marketing

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Motor Calculator Tools

On the Eskom DSM website

www.eskomdsm.co.za

LOOK UNDER ENERGY EFFICIENT MOTORS PROGRAM

[Indusquip marketing motor tool](#)

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Conclusion

Everyone is responsible for saving energy

Every bit saved counts ...We CAN make a difference.....
and TOGETHER we can rise to the challenge!

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