



Overview of Eskom and the South African Electricity Industry

Andrew Etzinger
Eskom

13 November 2008

South African Government

Minerals & Energy
Policy

Public Enterprises
Shareholder

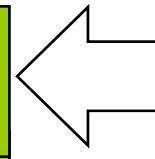
National Energy Regulator of
South Africa (NERSA)

Generation



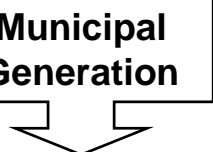
Transmission

Independent
Power
Producers,
imports and
cogeneration



Distribution

Municipal
Generation



Industrial

Mining

International

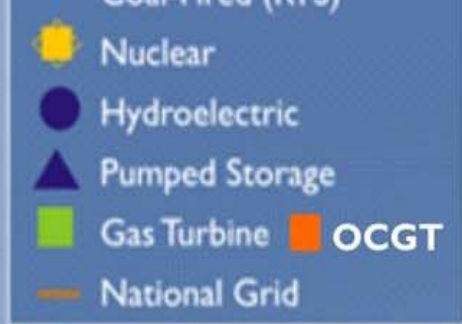
Other

Commercial





Residential

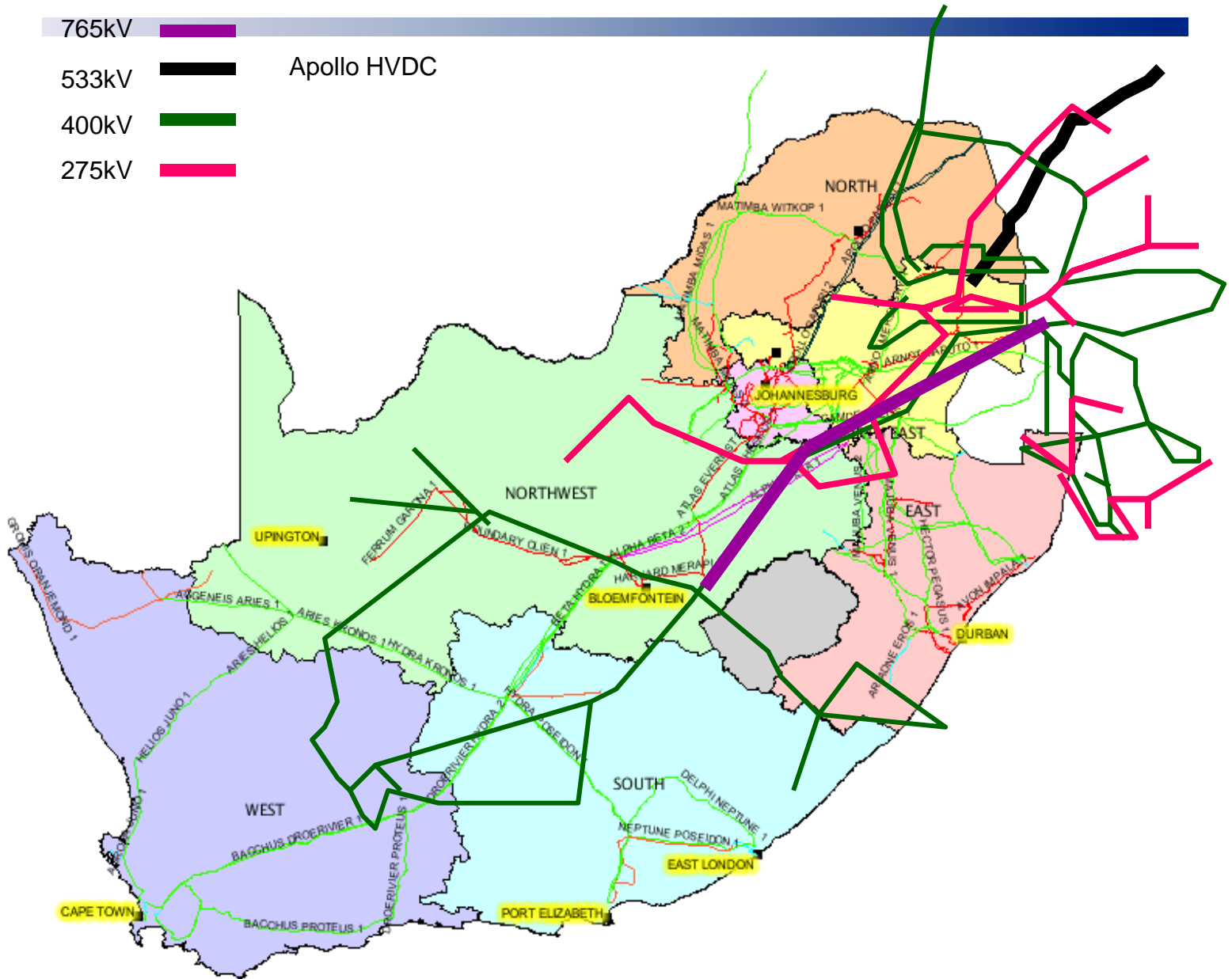
Redistributors
(Municipalities)

Customers



Existing Grid

- 765kV 
- 533kV  Apollo HVDC
- 400kV 
- 275kV 



Transmission and Distribution infrastructure

Power Lines

Transmission – 28,099km

Distribution – 44,680 km

Reticulation – 293 424 km

Cables – 9,921 km

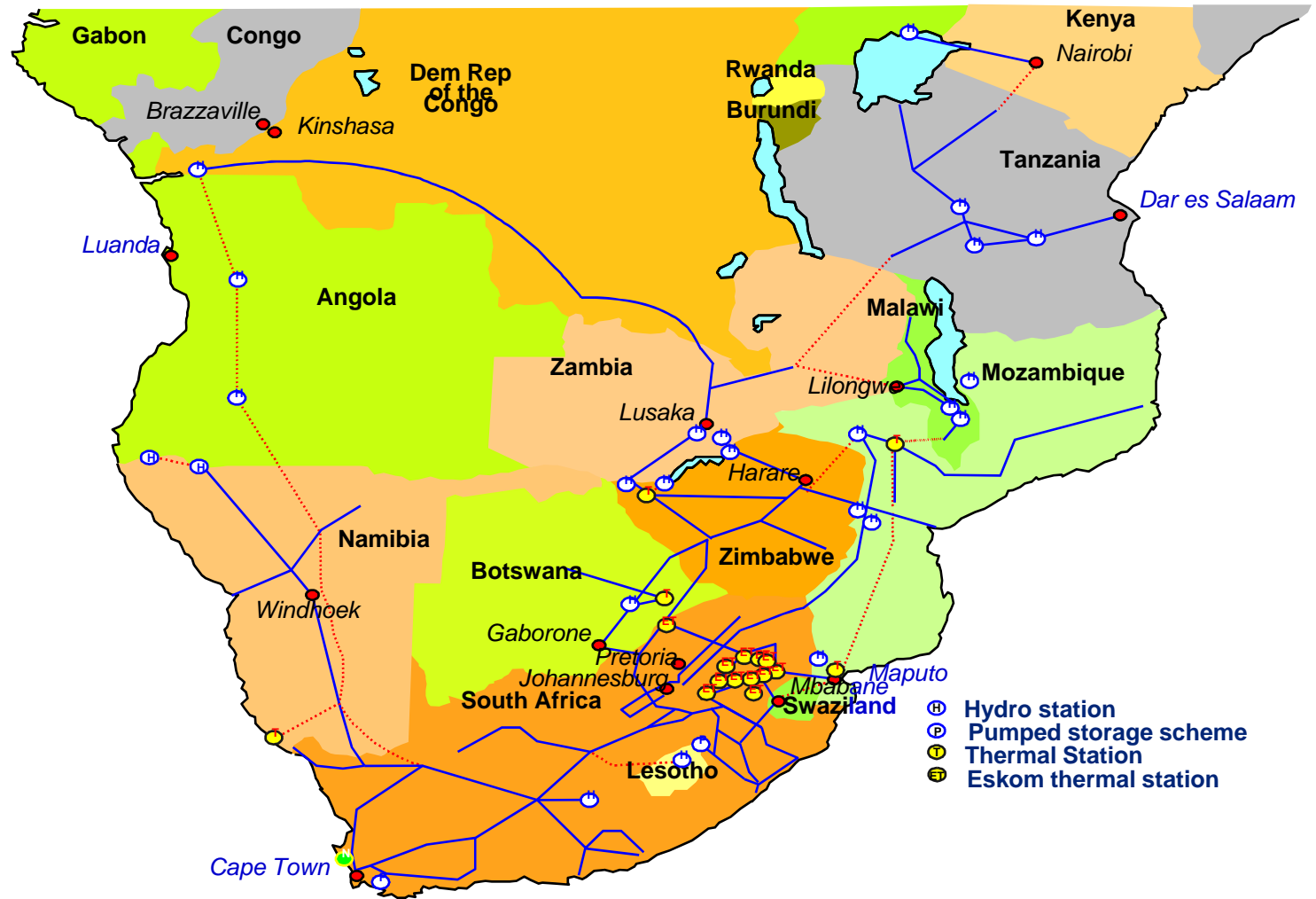
Transformer capacity – 215,696 MVA

Number of transformers – 324,435

(As of 31 March 2008)



Trade with Neighbouring Countries



HEADLINES

JANUARY TO APRIL 2008

2008/01/01 Times Page 1

Eskom warns of cold, dark winter

Load shedding inevitable unless electricity use cut back dramatically

DAVID STEVENS

With winter in the air, Eskom has issued a stark warning to consumers: unless electricity use is cut back dramatically, load shedding is inevitable.

The utility says that the winter months are the most difficult time for the power system, as demand rises sharply and the weather is unpredictable.

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2008/01/01 Times Page 1

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2008/01/01 Times Page 1

Pay up!

13,3%
+
14,2%
=
Agony

Double-whammy electricity price shock hits SA

2008/01/01 Times Page 1

Shocking electricity hike

DISCONTENT: But government welcomes latest increase

DAVID STEVENS

The government has welcomed a 13,3% increase in electricity prices, despite widespread discontent among consumers.

The utility says that the increase is necessary to cover the cost of rising fuel prices and to ensure the long-term sustainability of the power system.

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HEADLINES

MAY TO JULY 2008

2008/05/01 Page 1

Eskom power cuts on hold

Policy puts strain on the network

BY LIANDE PLAMBAK

Eskom has decided to hold off on power cuts, as the utility's policy puts a strain on the network.

The utility says that the policy is necessary to ensure the long-term sustainability of the power system.

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2008/05/01 City Press Page 2

Soccer won't feel power cuts

Eskom's 2010 project chief says electricity shedding won't affect the games

FRANS WILSON

Eskom's 2010 project chief says that electricity shedding will not affect the 2010 soccer games.

The utility says that it has a plan in place to ensure that the power system is able to handle the increased demand during the games.

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2008/05/01 Independent on Sunday Page 1

Eskom 'blew it'

Load shedding destroyed equipment: experts

STAFF REPORTERS

Experts say that Eskom's handling of load shedding has destroyed equipment and caused significant damage to the power system.

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2008/05/01 Times Page 1

Watts up as entire country catches cold

No load shedding promise revised

DAVID STEVENS

The government has revised its promise of no load shedding, as the entire country catches cold.

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2008/05/01 Business News Page 1

Eskom's light bulb plan tops its list of bright ideas

1 685MW will be saved, utility tells energy regulator

SARAFINA ENLIGHENING

Eskom's plan to replace incandescent light bulbs with energy-saving alternatives tops its list of bright ideas.

The utility says that the plan will save 1 685MW of power, which is equivalent to the output of a large power station.

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2008/05/01 Business News Page 1

We won't plunge SA into darkness this winter - Eskom

Power cuts avoided, utility says

DAVID STEVENS

Eskom says that it will not plunge South Africa into darkness this winter.

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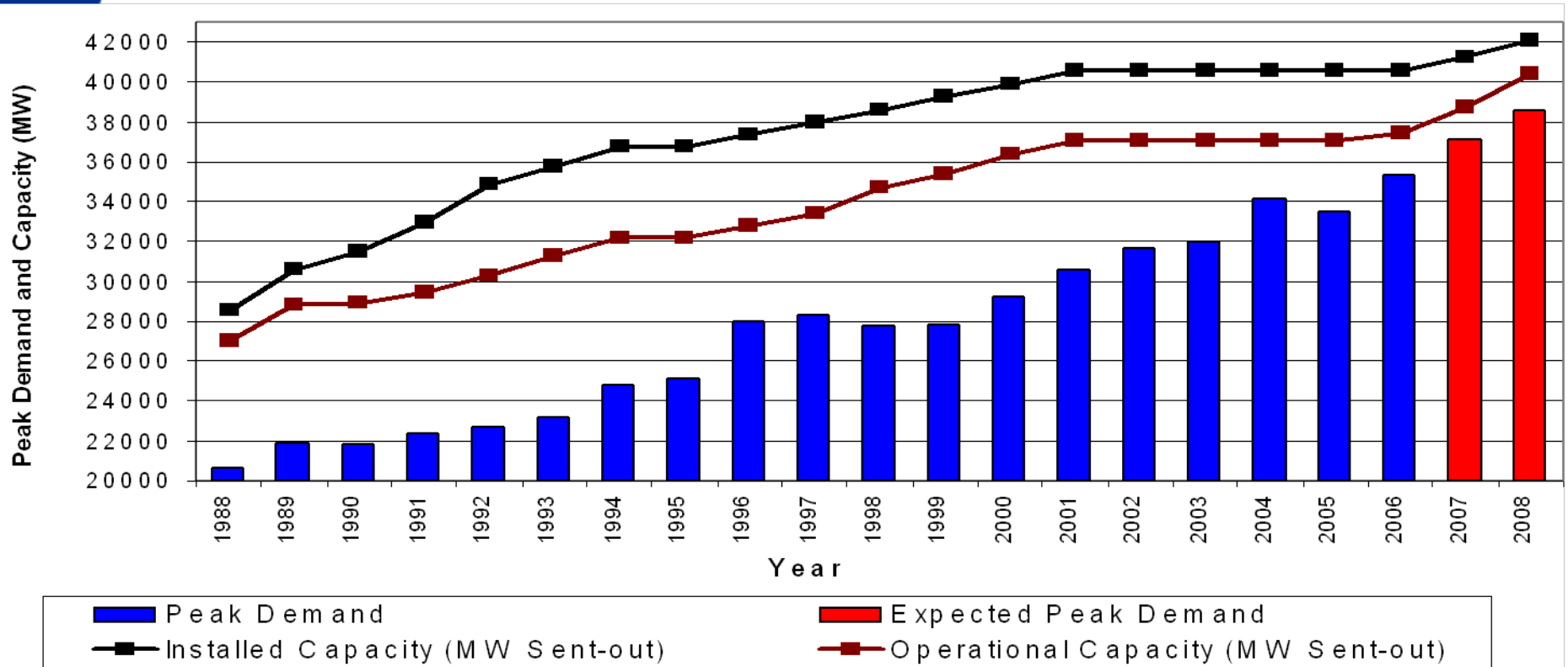
for a few more but an electrical catastrophe looms, leaving the city in darkness on 21 May.

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Historical demand overview



Current Situation

- Capacity shortfalls in October 2007 - January 2008 leading to highly disruptive supply loss
- Pre-emptive load shedding in April 2008
- New connections
 - Moratorium from November '07 to June '08
 - Restarted July '08
- Improved plant performance and coal availability since January

Capital Expenditure 2009~2013

Eskom has embarked on a capital expansion programme spending R343 billion to 2012.

- The long term programme will entail in excess of R 1.3 trillion.

	2008/9	2009/10	2010/11	2011/12	2012/13	Total
Generation	33,474	61,220	55,561	49,684	49,831	249,770
Transmission	5,054	10,509	12,183	9,636	6,077	43,459
Distribution	6,078	6,617	7,446	7,939	8,815	36,895
Corporate	1,390	3,263	4,994	2,886	211	12,744
Net regulated total	45,996	81,609	80,184	70,145	64,934	342,868

New Build Programme

- Return to Service:
 - Camden: 7 of 8 units in commercial operation
 - Grootvlei: 2 of 6 units in commercial operation by end May
 - Komati: 9 units, none in commercial operation as yet
- Coal Fired Plant: Medupi and Kusile under construction. Units coming on line over 5 year period 2012 – 2016
- Wind Power: 100 MW wind farm by 2010
- Pumped storage plant: Ingula on line by 2013
- Open Cycle Gas Turbines: Doubling of capacity at Ankerlig and Garikwa from 2009
- Nuclear programme: Commercial process underway for EPR design



Medupi coal fired power station in Lephale



Ingula pumped storage scheme near Ladysmith



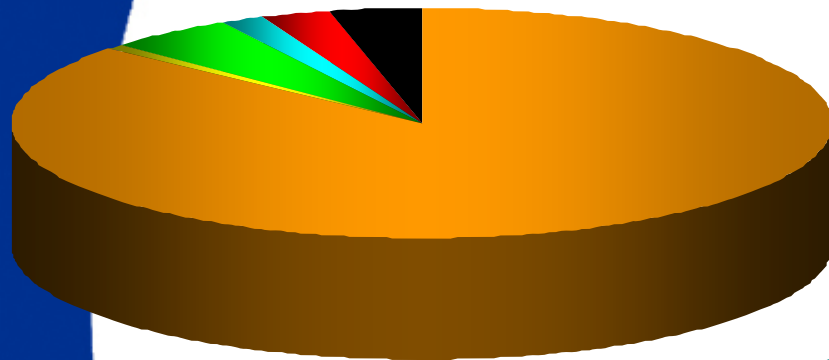
Return to Service of Grootvlei (Komati and Camden) in Mpumalanga



Gas 1 at Ankerlig (and Gourikwa) in the Western Cape

Diversification of primary energy mix

Existing



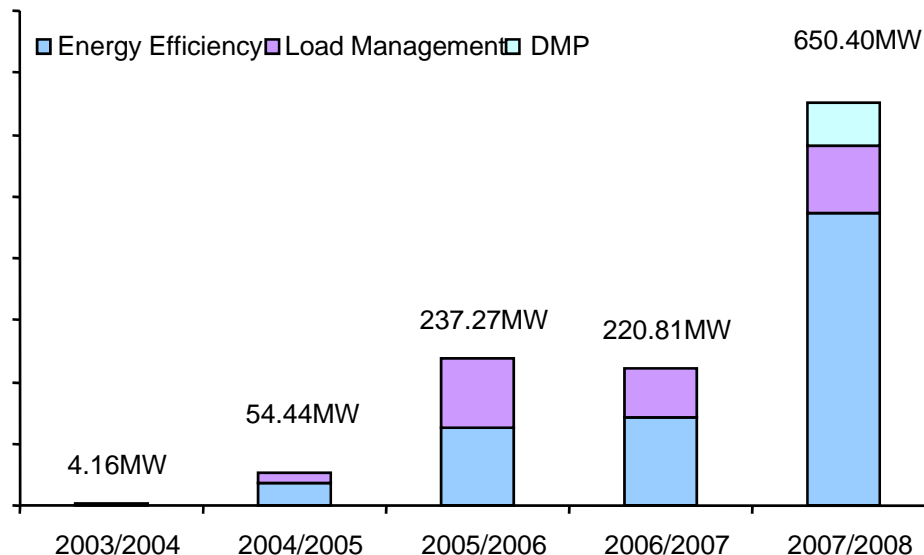
Mix by 2025



- Coal
- OCGT
- Nuclear
- Renewable Energy
- Imports
- Pumped Storage

Demand side management

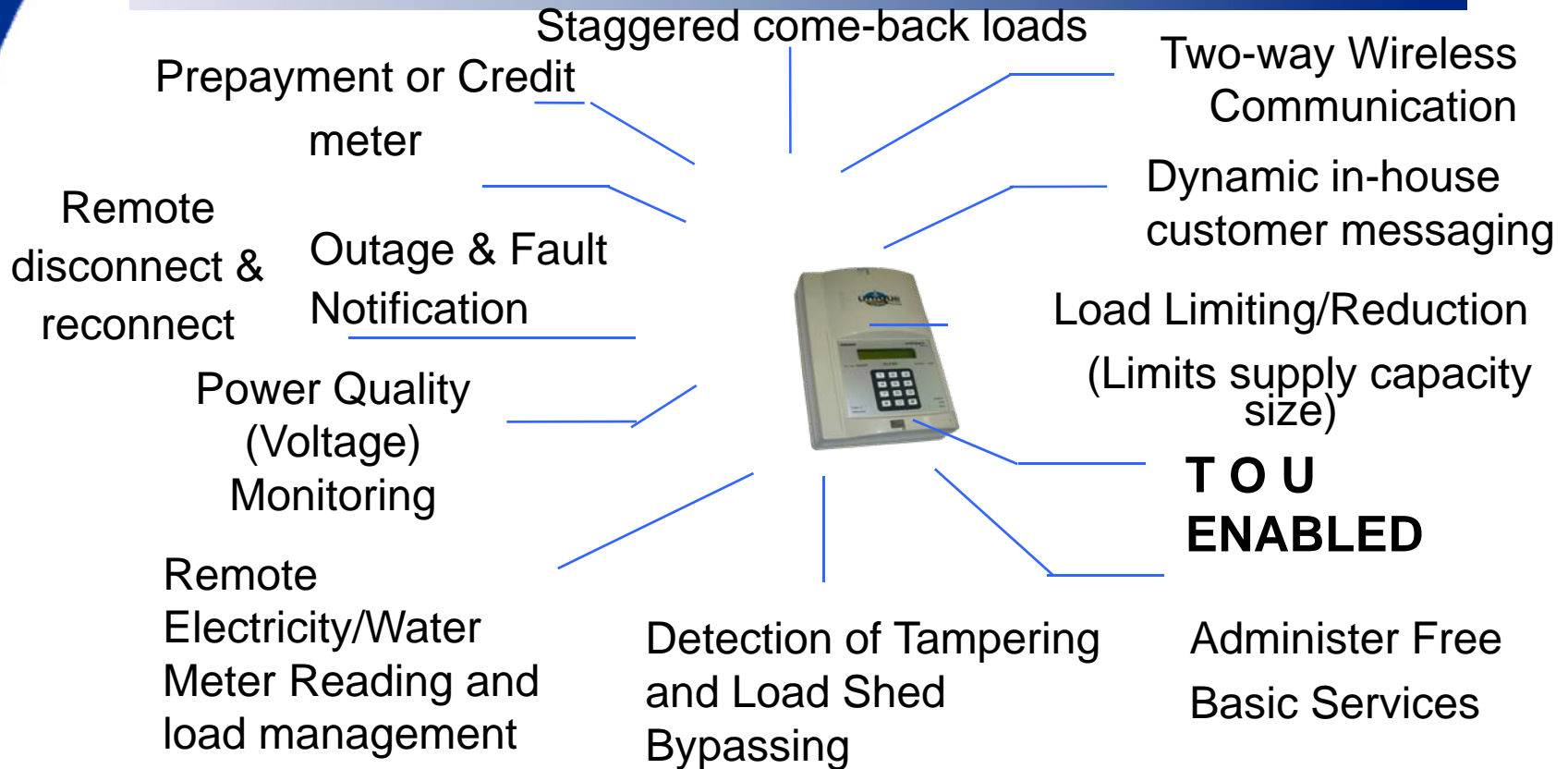
- Accelerated target of 3,000 MW between 2007 and 2012
- Focus on pure efficiency savings, not load shifting
- Sustainability is critical – legislation will help



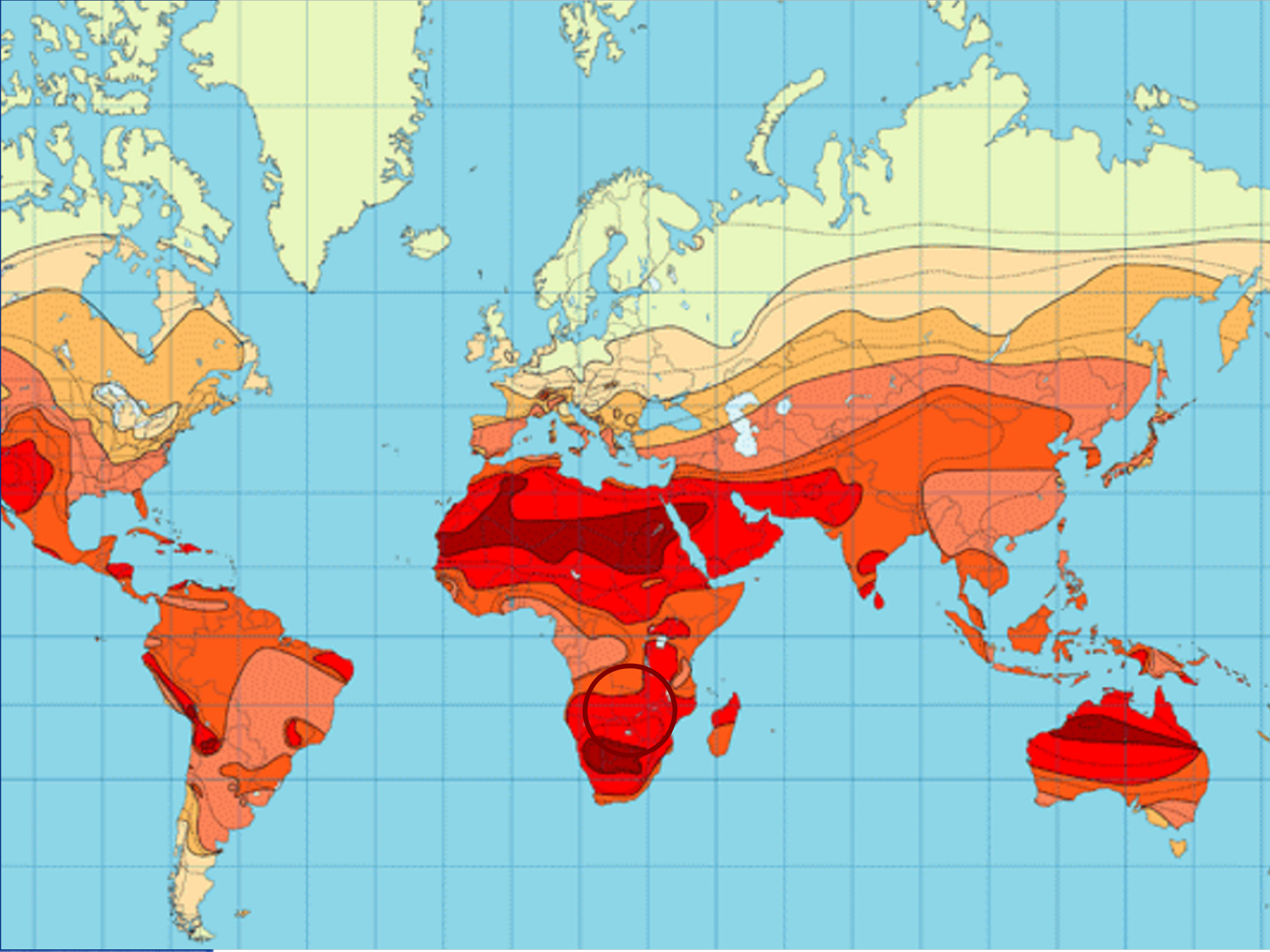
Efficient lighting roll-out

1. **Efficient Lighting (CFLs): Mass Roll Out (Low Income)**
 - A total of **15 million** CFLs low income areas.
2. **Efficient Lighting (CFLs): Retailer's Free Exchange Programme (Medium to High Income)**
 - Approximately **4 million CFLs** is to made available at Energy Savings Exchange Centres at large national retailer store across the country
3. **Efficient Lighting (CFLs): Eskom, Government, Commercial, Industrial, Corporate Employee and Buildings**
 - Intensified campaign to exchange approximately **2.1 million CFLs**
 - CFLs will be GEF - ELI, SABS and RoHS standards compliant (minimum 6000 hour lamp, 15 000 hour lamp preferred option, low mercury content)
 - All old lamps to be collected by Waste Management companies and will be crushed to prevent them being reused in the network
 - Disposal strategy for Hg being developed. Pilot in Western Cape

Load reduction: smart meter & TOU tariffs



- **Dynamic load curtail/reduce approx. 3000MW (non-essential appliance load) during system constraints via single wireless broadcast**
- **Time-of-use tariffs incentives efficient use of electricity**



THE POWER CONSERVATION PROGRAMME COMPRISES THREE KEY CATEGORIES

Power conservation programme

Energy Conservation Scheme (ECS)

- National scheme to achieve overall 10% energy reduction through a formalised demand management programme
- Mandatory for targeted participants (regulation required)
- Enable accelerated uptake of DSM and co-generation
- Estimated period for programme is 4-6 years, until acceptable energy balance is restored

Electricity Growth Management

- Electricity Growth Management framework and approach on how new connections and additional consumption should be managed
- Prerequisite for this is that savings will be captured through ECS

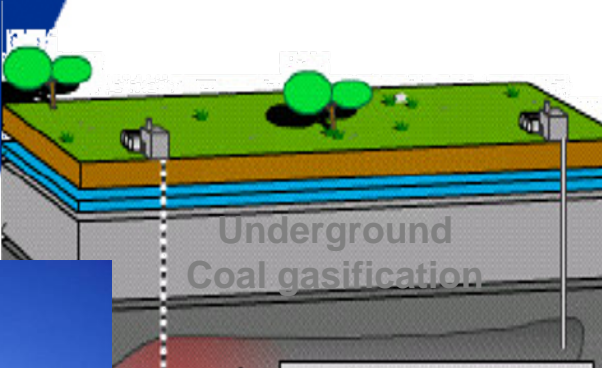
Pricing

- Pricing work-stream to determine the impact of price signals on electricity demand

Power Purchase Programmes

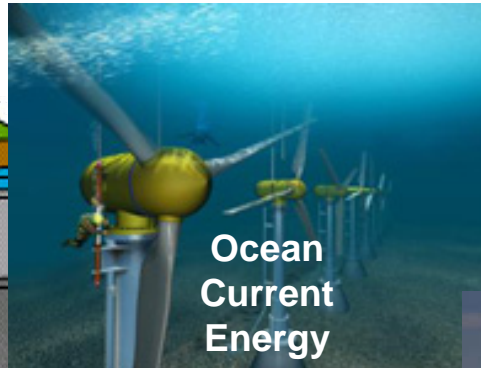
- Pilot National Cogeneration Programme
 - Up to 900MW cogeneration
 - Up to 25 years PPA
 - Early commissioning incentive
 -
- Medium Term Power Purchase Programme
 - Short to medium term power supply 5MW to 1000MW
 - Commercial operation by 2012 latest
 - Contracts to December 2018
- Multi site base load Independent power producer programme
 - At least 2 100 MW base load and dispatchable power 2012 to 2016.
 - Eskom sole off-taker under a PPA with a term of up to 40 years.
 - Minimum size per project is 400 MW.
 - 27 qualifying bidders

Technology opportunities under development

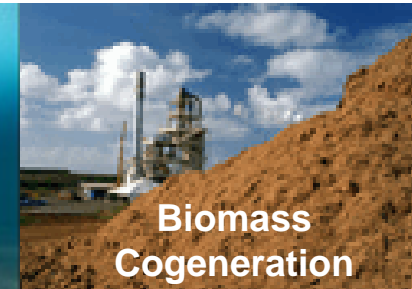


Underground Coal gasification

The coal is ignited, and combustion is maintained by injecting air or oxygen and/or steam through one of the boreholes



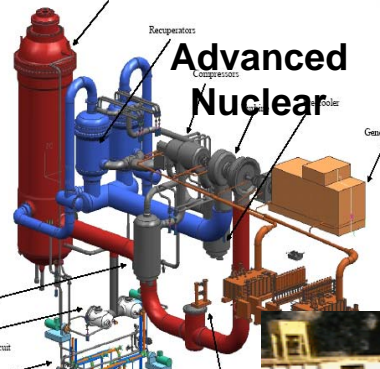
Ocean Current Energy



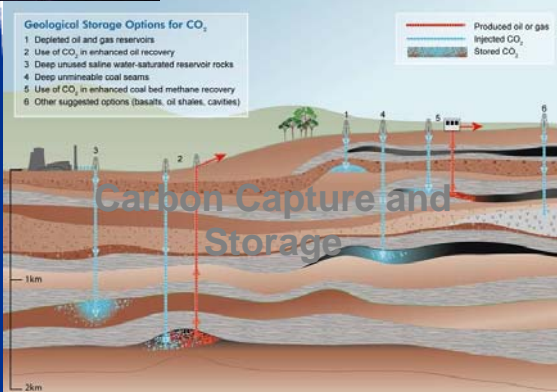
Biomass Cogeneration



Solar Thermal



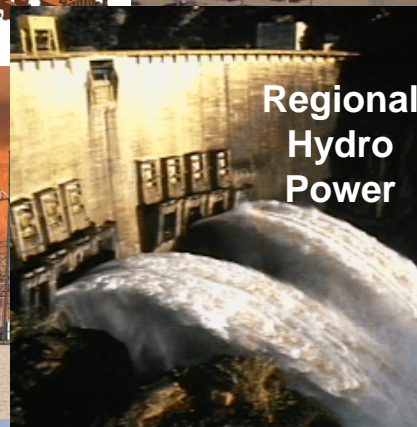
Advanced Nuclear



Carbon Capture and Storage



HVDC Transmission

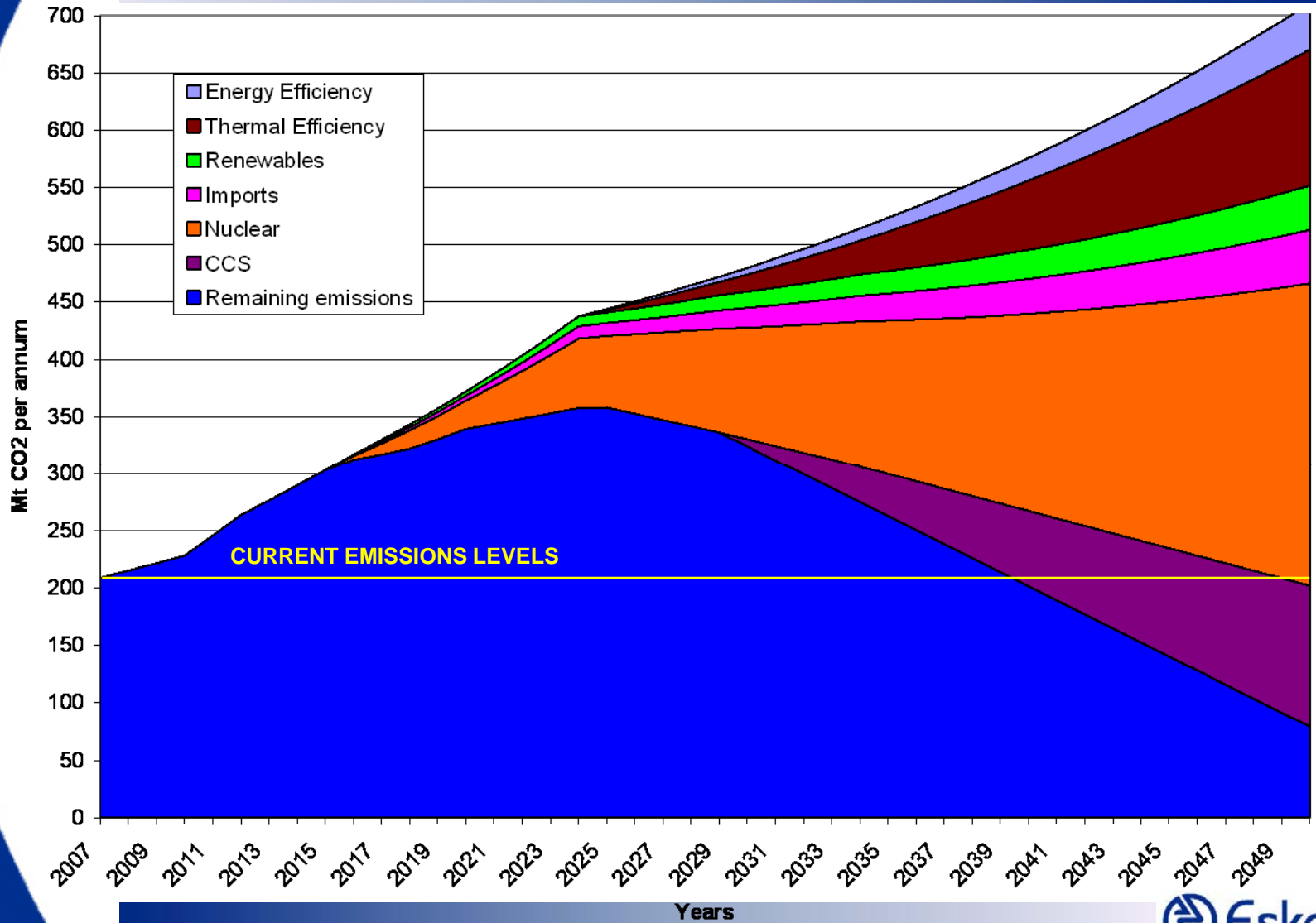


Regional Hydro Power



Advanced efficiency

CO₂ emissions into the future.....



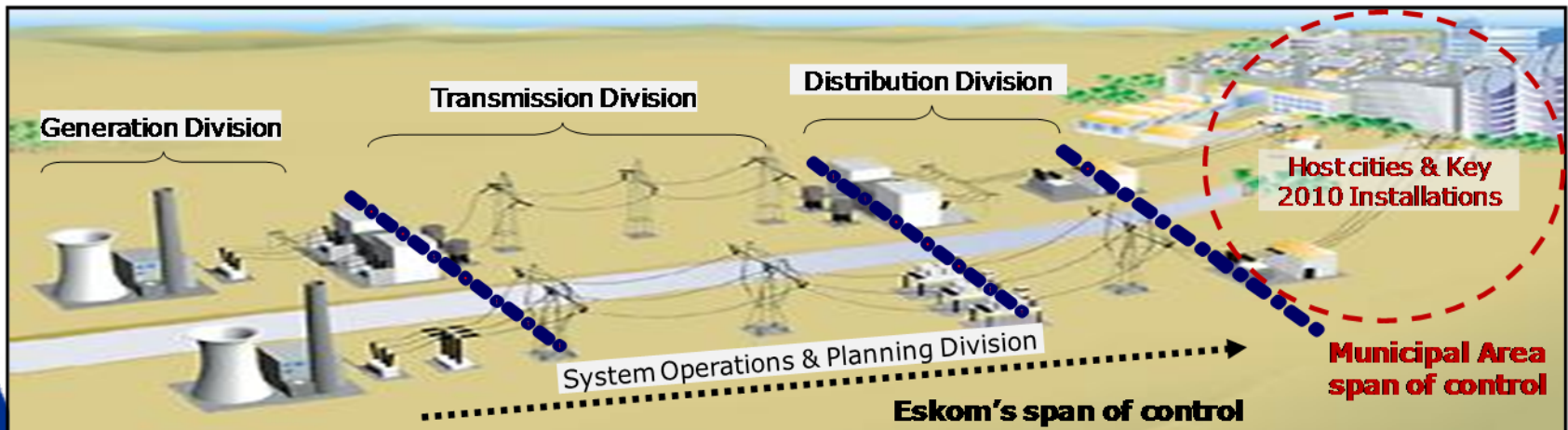
Eskom will support the 2010 FIFA World Cup™ by ensuring electricity security of supply and provision of related infrastructure

Introduction

- Eskom's primary responsibility is for the delivery of electricity to metros and municipalities who in turn have the responsibility for supplying the 2010 FIFA World Cup™ Host Cities
- In most cases, the Key Installations such as stadia and facilities, built for the World Cup are within the metro and municipalities area of supply
- The benefits of boosting the country's electricity infrastructure will be seen in all economic sectors such as tourism, hospitality, SMEs, etc.

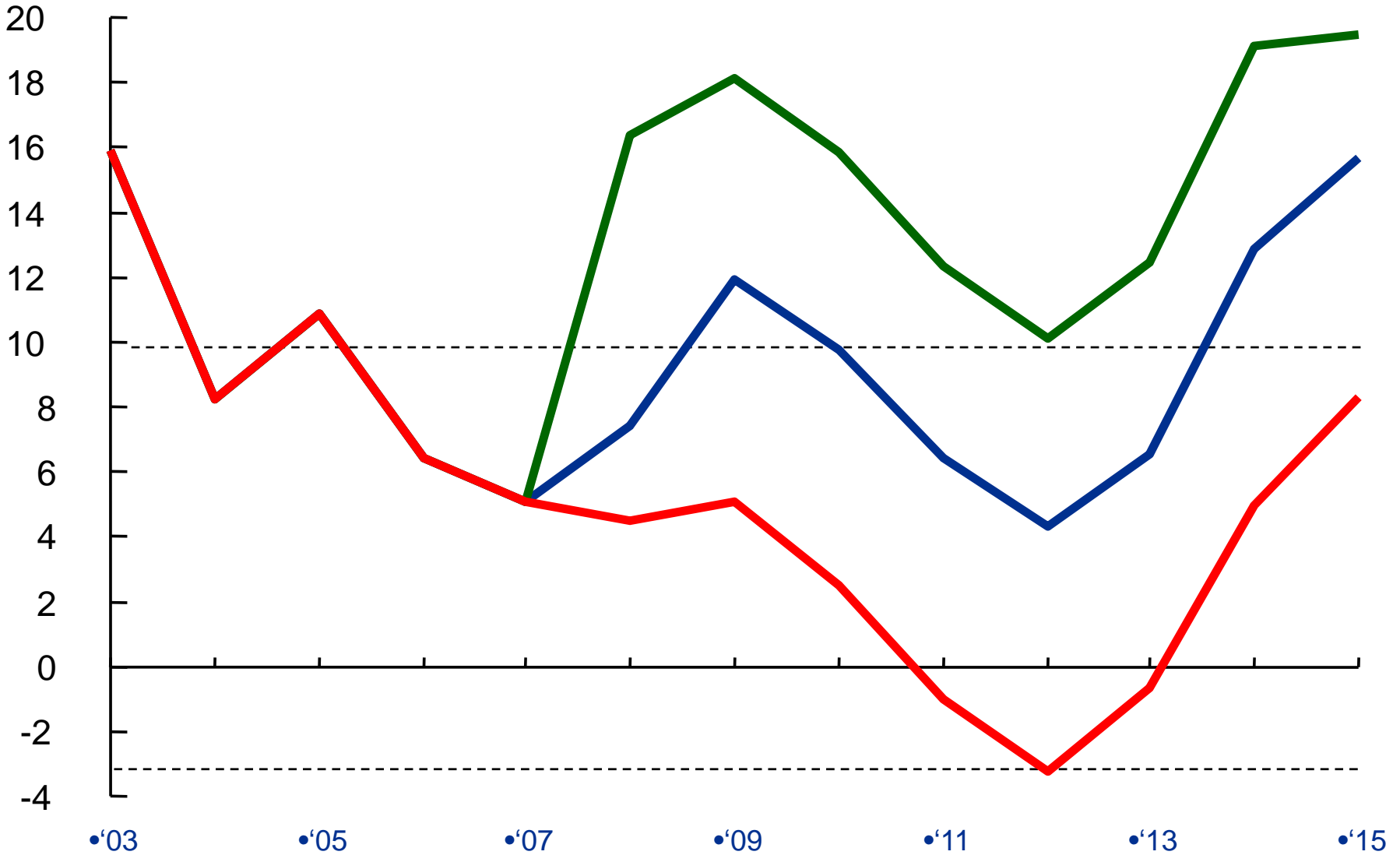
Eskom's Delivery Promise

*"Team Eskom 2010 is geared to **ensure a reliable electricity delivery, Eskom preparedness and mitigation of risks** to enable a successful 2010 FIFA World Cup™"*



Reserve Margin

•% net capacity reserve margin



Thank You

For More Information:

www.eskom.co.za