

PANEL DISCUSSION

The response to the impact of the SA electricity crisis on sustaining an effective service delivery by municipality electricity utilities to its end customers.

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Visiting Scholar & Professor of Practice - University of Johannesburg

Senior General Manager Electricity Supply Commission of SA : 1985 – 2010
(Transmission Group, Power Pool and System Operations Division, National Control)

Non-Executive Director, Eskom South Africa : 2014 to 2018

Chair of Eskom Emergency and Build Programme Recovery & Sustainability Board Committees

Electricity Crisis

The Poverty of Electrons

Poverty = Man Made

President Mandela, Trafalgar Square, UK, 2005

Poverty of Electrons is Self Made



SikonathiMantshantsh @SikonathiM · 7h

Evening Peak Feedback 19/09/2022,18:17

Total demand: 31 403 MW

Loadshedding: 6 770MW

Interruptible Load Supply: 447MW

Eskom OCGT's Utilised: 7

IPP OCGT Utilised: 2

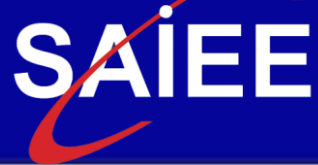
Renewable Gen: 1 490MW (Wind 1 372MW, CSP 118MW)

@Eskom_SA Available Generation Capacity: 25 586MW

@EskomSpokesper1

Installed G = 51 115 MW 2021 Annual Report

Surplus of Synchronous Generators



Eskom

Electricity Supply Commission of SA

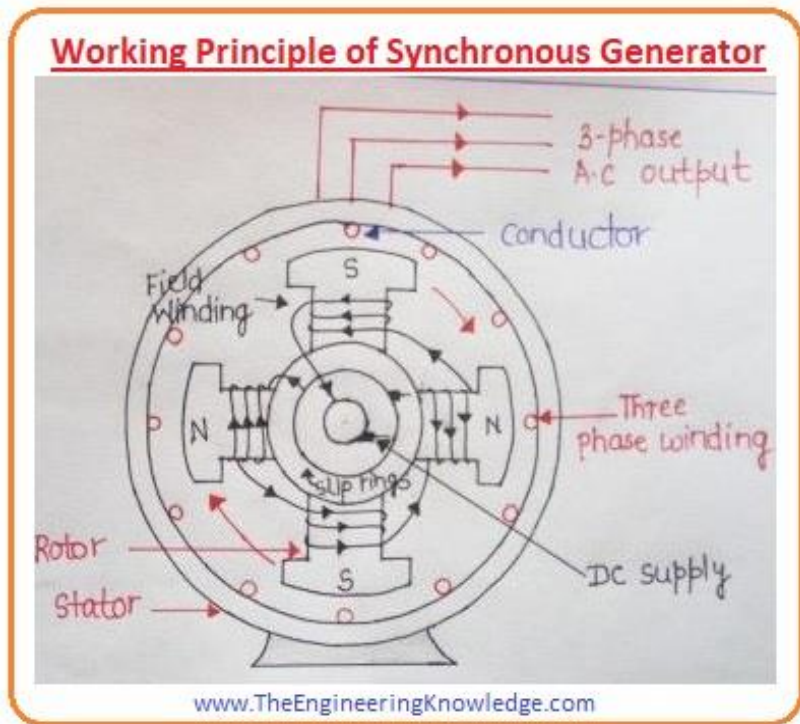
Mandate

**Manufacture, Transport and Distribute Bulk
Electricity**

Expectation

100% availability at worlds lowest cost

Electricity = Carrier of Energy



**Electricity is
manufactured in the
air gap between rotor
and stator**

Principle = Electromagnetic
Induction

“When the flux linking a
conductor changes, an EMF is
induced in the conductor”

Frequency = 50 Hz 0,02 seconds

Most complex system that is manufacturing, transporting, delivering and having the customers consume the energy in real time, with instantaneous process decision making in a dynamic environment; with continuous control room oversight.

Eskom Electricity **“thermal coal electricity”**

Nothing to Debate or Discuss

Assets = Power Stations

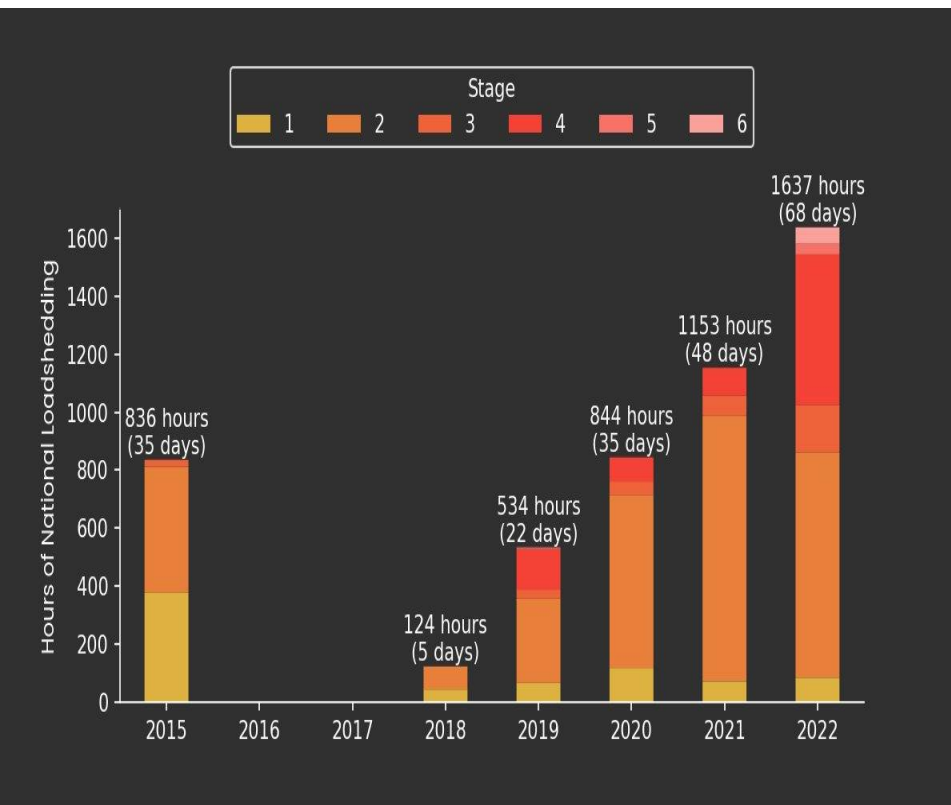
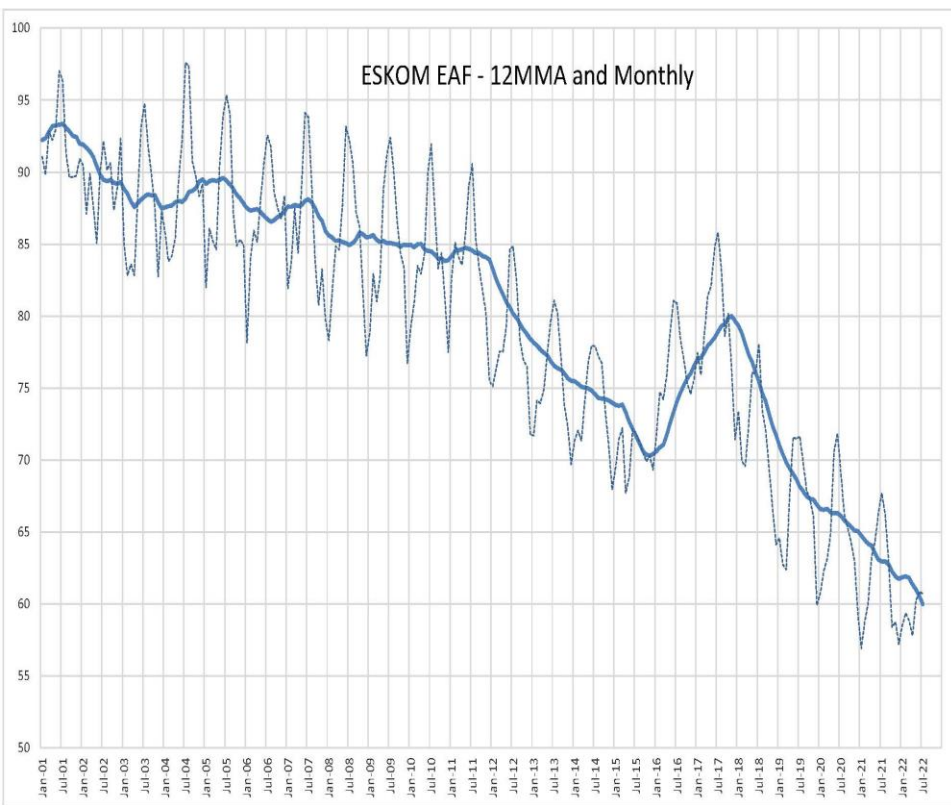
Materials = Coal & Water

Money = R200b Annual Revenues

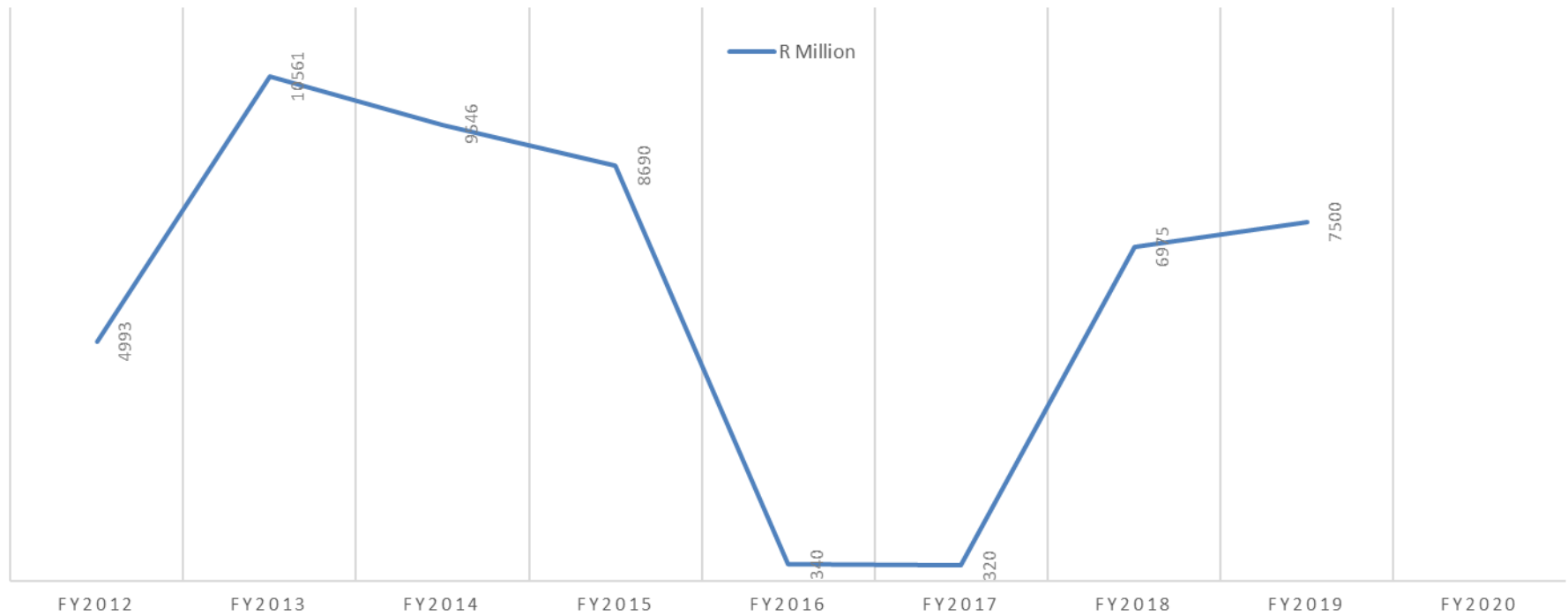
Manpower = 40 000 employees

Just Manufacture Bulk Electricity

**Repair, fix, maintain, refurbish and keep going for
another 2 to 3 decades**



OPEN CYCLE GAS TURBINES COSTS FOR EMERGENCY GENERATION



In Parallel

**Start Building New Clean Energy Power Stations to
Manufacture Bulk Electricity for the National Grid**

Maximize Energy Diversity for Enhanced Security of Supply

Drive National Electrification = 100%

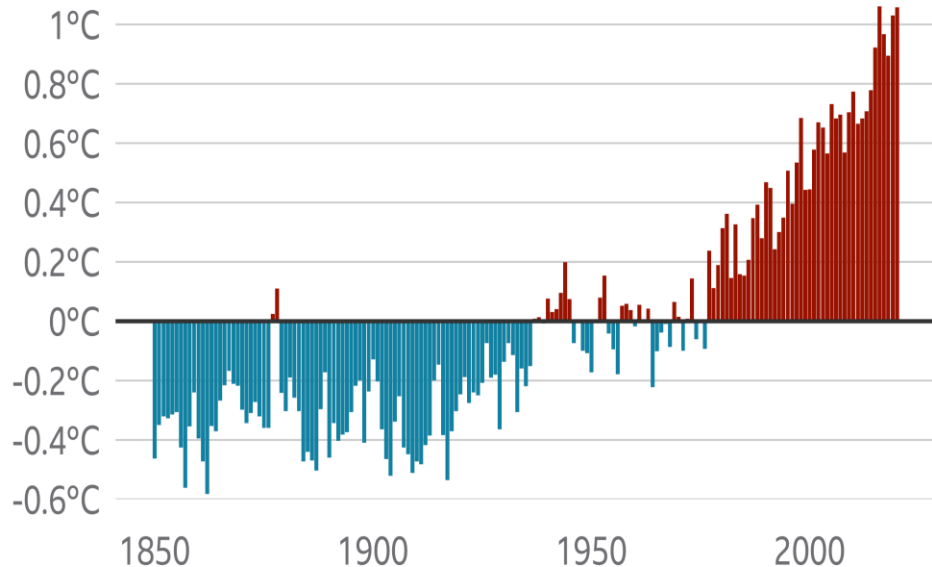
Promote Worlds Lowest Cost

Caution: Weather is Rapidly Changing

Not Negotiable : **Abandon all C Resources of Energy**

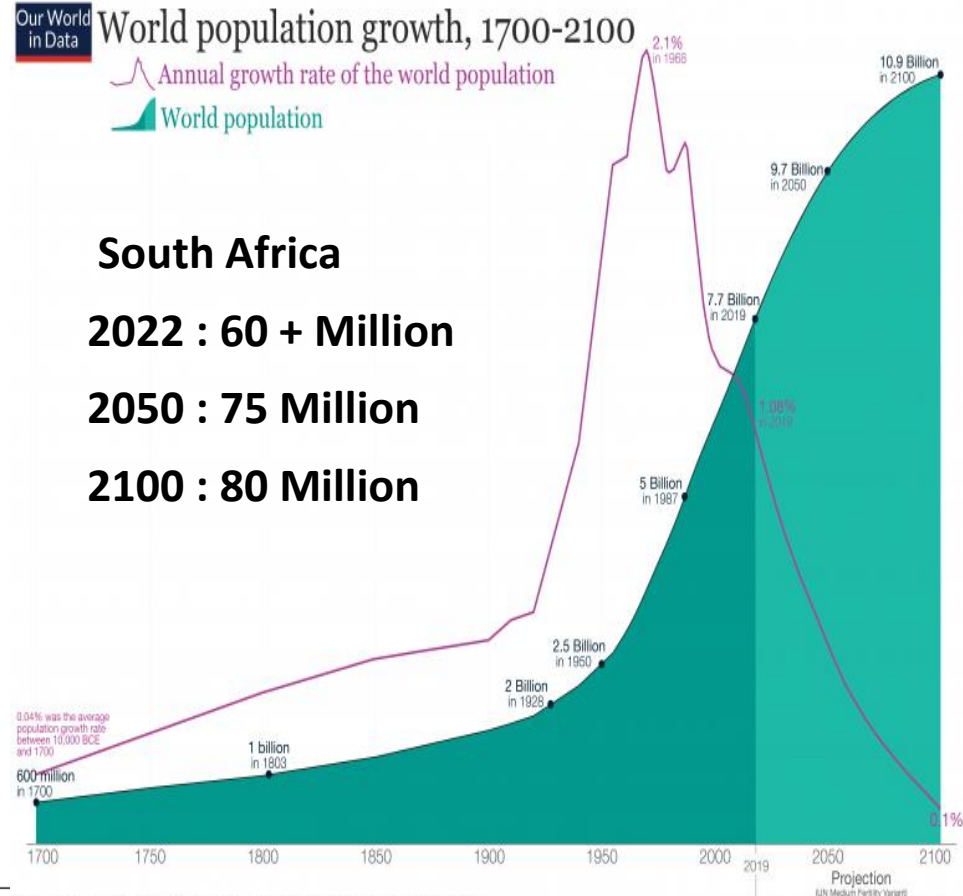
The world is getting warmer

Annual mean land and ocean temperature above or below average, 1850 to 2020



Note: Average calculated from 1951 to 1980 data

Source: University of California Berkeley



No Debate, Less Talk, Start Building

Build 50 000 MW to Replace Thermal Coal

Build 10 000's MW for a Growing and Post-Industrial Economy for South & Southern Africa

2050 – Minimum New 50 000 MW

2100 – Greater than 100 000 MW

Localize & Industrialize

Technologies, Plant and Equipment
Nuclear - Solar – Wind – Hydro – Hydrogen - BESS

Invest in People Development

Scientists, Technologists, Engineers, Technicians, Artisans

Exciting Future Ahead
Thank You