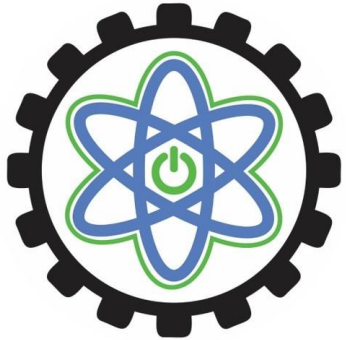




NATIONAL NUCLEAR REGULATOR

For the protection of persons, property and the environment against nuclear damage.

NNR Public Hearings – Thyspunt Site



South African Nuclear Build Platform

Let's make it happen...



25th & 26th August 2021

**Presented by: Des Muller
Co-Spokesperson for SANBP**

The South African Nuclear Build Platform

The South African Nuclear Build Platform was established to raise our local industry's support for a nuclear build programme and improve our public's awareness and acceptance of nuclear energy.

Our Goal

To be valued for our leadership in aligning the local industry to a nuclear build programme, and for raising awareness on the value proposition, safety and affordability of nuclear energy.

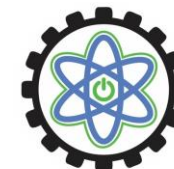
Our Product

A fully compliant and approved nuclear build procurement programme, in the hands of qualified nuclear vendors, who see opportunity in our local industry's capacity and state of readiness.

After Powering the Western Cape for 36 years, Koeberg's Spent Fuel can fit on Half a Tennis Court



Industry 4.0 Digital Transformation...
Bringing Youth back into Nuclear Engineering and Construction Jobs



South African Nuclear Build Platform

Let's make it happen...

Nuclear Energy's Value Proposition

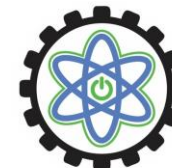
Energy Security: Nuclear energy's 90%+ capacity factor, is the highest contributor to energy security. 1GW nuclear power can effectively retire >1.5GW of coal power. Weather-dependent technologies can't, because they always depend on "free" fossil backup. Nuclear energy's flexibility also stabilizes renewables. 2030?....

Access to Affordable Energy: People are being misled that, because nuclear energy has a higher Capex, it's "unaffordable". However, its 90%+ Capacity Factor, low Opex and 80-year safe operating life, delivers high capacity electricity at a competitive LCOE for 18 years and almost a third of the grid tariff thereafter. Koeberg provides the cheapest electricity in South Africa and will continue so for the next 25 years. (R0.40)

Environmental Sustainability/Safety: Nuclear energy at 12g CO₂/kWh, can effectively offset retired coal power plants at 820g CO₂/kWh. Gas at 480g/kWh.... Waste management (low volumes) and decomm. costs are included in the tariff. The small footprint of NPPs and their safeguards make nuclear energy the safest technology by far. NPPs also provide clean, affordable desalination, process heat and hydrogen.

Sustainable Employment: Nuclear energy is an industry leader in providing high-paying sustainable careers during its 100-year planning, construction, operations & maintenance and decommissioning phases. It also attracts major foreign investment and technology transfers in our energy and industrial sectors. The 9600MW nuclear fleet build would have realised a R300Bn spend in our local industry over 15 years.

Nuclear Energy is a safe and affordable option for SA



South African
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Comparing the Affordability of Nuclear Energy

RMIPPP Electricity Costs: 11.32 TWh per year (70% CF)

- 1846 MWe producing 70% of the time (6132h per year), with a production of **11,32TWh**
- The average price announced is R1.70 per kWh part of a PPA with inflation escalation
- Cost for the country with an inflation rate of **3%** on a period of for 20 years: **516 billion ZAR**
- Cost for the country with an inflation rate of **6%** on a period of for 20 years: **706 billion ZAR**
- At the end of 20 years the equipment is removed. No Ownership. No Asset

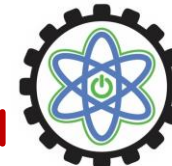
Nuclear Electricity Costs: 11.32 TWh per year (90% CF)

- Cost for the country with an inflation of **3%** on a period of for 20 years: **311 billion ZAR**
- Cost for the country with an inflation of **6%** on a period of for 20 years: **353 billion ZAR**
- At the end of 20 years, the state has an asset that is paid off with another 55 years operating life.
- The asset will then produce the lowest cost electricity (50c) and generate windfall profits for the state

Renewable Electricity Costs: (30% CF)

- The current average cost paid by Eskom to Renewable IPPs is R2.28 per kWh
- To manage RE intermittency, Eskom provides dispatchable fossil power to stabilize the Grid
- Who provides this when Eskom is unbundled? Cost to end user? >CO₂?

We are now paying a premium for delaying the nuclear build

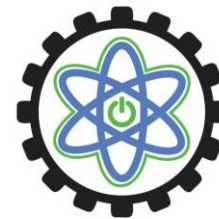


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Using
Weather-Dependent
Technologies alone
to Address
Climate Change....
isn't so Smart



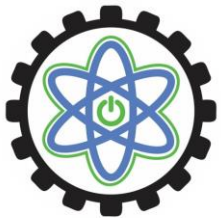
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Nuclear Energy Delivers Clean and Reliable Hybrid Energy Whenever and Wherever you Need it Most

Hybrid Energy: Electricity – Process Heat – Desalination - Hydrogen



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Siberia



Koeberg

Potential Nuclear Industry Opportunities for South Africa

Current

Potentially to 2030 and Beyond

Koeberg Life Extension Projects

Koeberg Spent Fuel Management & Central Interim Storage Facility



Large-Scale Gen III NPP New Build (Eskom) Construction/Investment



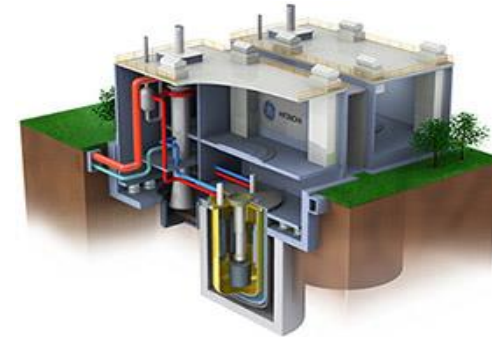
“Thyspunt Site”

Multi-Purpose Reactor New Build (Necsa)



“Pelindaba Site”

Small Modular Reactors New Build (Eskom/IPP)



**“Thyspunt Site”
“Retired Coal Plants”**

Industry Support Required:

Local Industry Support
Koeberg Orientation
Quality & Technology
Gap Analysis
Qualification/Readiness

Local Industry Support
Koeberg Orientation
Tender Support
Gap Analysis
Qualification/Readiness

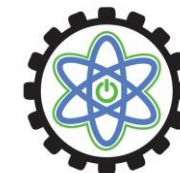
Industry Orientation
Opportunity Alignment
Qual/Tech Gap Analysis
Qualification/Training
Technology Transfer

Industry Orientation
Opportunity Alignment
Qual/Tech Gap Analysis
Local Industry Support
Qualification/Training

Industry/SMR Orientation
Opportunity Alignment
Qual/Tech Gap Analysis
Qualification/Training
Technology Transfer

Our Local Industry’s Capacity and Readiness is Key to Our Success!

The South African Government’s support is essential for localisation!



**South African
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Let’s make it happen...

Thyspunt - A Suitable Site for Nuclear Power

The Thyspunt site has been earmarked for South Africa's nuclear energy expansion programme since 1985. Eskom has decades of environmental, seismic, and marine data.

Many public consultation processes and EIAs found no fatal flaws for the development of a nuclear power plant on the site. Extensive local community development programs are key....

Baseload electricity from the Eastern Cape will secure regional energy supplies and reduce significant transmission losses...

Thyspunt is surrounded by highly skilled motor manufacturing industries who would benefit from reliable clean energy and positioned to be part of the nuclear manufacturing supply chain

Nuclear Energy at Thyspunt will stabilize renewable energy and balance the grid. Desalination and Green Hydrogen is a Plus!

Thyspunt = Safe Environment + Valuable Hybrid Energy



**South African
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Let's make it happen...

What are the Benefits for the Region?

Nuclear Energy delivers exactly what the Eastern Cape needs right now: *Energy Security, access to Affordable Energy, Economic Development (Jobs!!!), Low-Carbon Electricity and Safety.* – Koeberg KPMG report

The regional IDZs and major industries can realize their full potential and retain their global export markets with reliable, clean and affordable energy

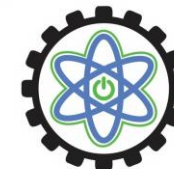
Why Nuclear Energy is Affordable:

- NPP offers include financing @3%. And you have an asset after 20yrs
- Planning, Construction, O&M and Decommissioning – over 100 years
- Over 350'000 job-years during the build. >2 million job-years for O&M
- First 18 years: Clean baseload at a competitive tariff. No fossil backup
- Once Capex is paid in 18 years, LCOE drops >60% for next 60 years
- Safety is the nuclear industry's priority under the NNR's management.

During the build, 25'000 highly paid skilled workers and 1000 expats, and their families will have a long-term positive impact on the local economy.

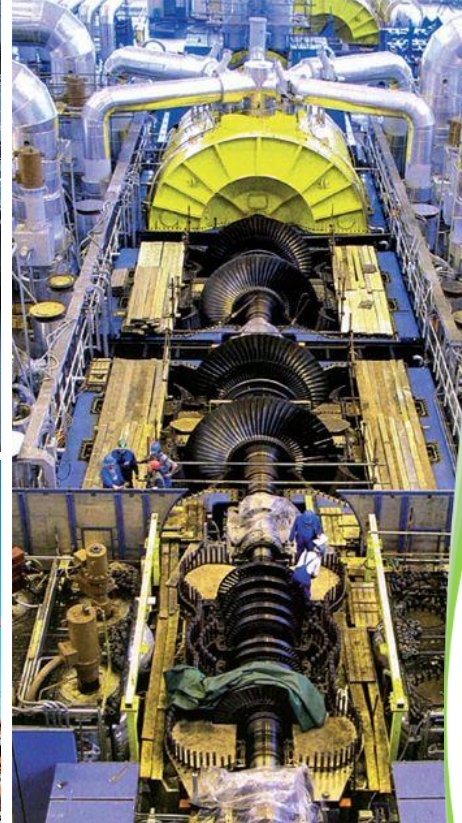
Well-represented industry and community development forums are already established in the Thyspunt region to support the nuclear build programme

Safe, Reliable & Affordable Electricity = Economic Growth

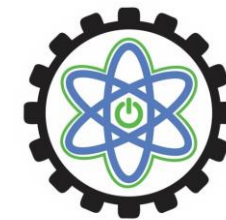


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Let's make it happen...



A Nuclear Build has the Best Capacity to Raise the Standards and Grow our Industry, while Creating Top Skilled Careers during Construction & O&M



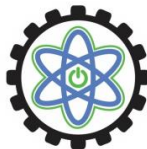
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An aerial photograph of Victoria Falls, showing the massive waterfall cascading into a deep gorge. The water is white and frothy as it falls. To the left, a paved road curves through a green, hilly landscape. To the right, a wide river flows, dotted with small, grassy islands. The sky is bright, and the overall scene is vibrant and scenic.

Let's Make Africa Happen!



South African
Nuclear Build Platform

Let's make it happen...

Email: memberships@sanuclearbuildplatform.co.za

www.sanuclearbuildplatform.co.za



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Let's make it happen...