

UPDATE ON NUCLEAR ENERGY AS AN OPTION FOR SOUTH AFRICA

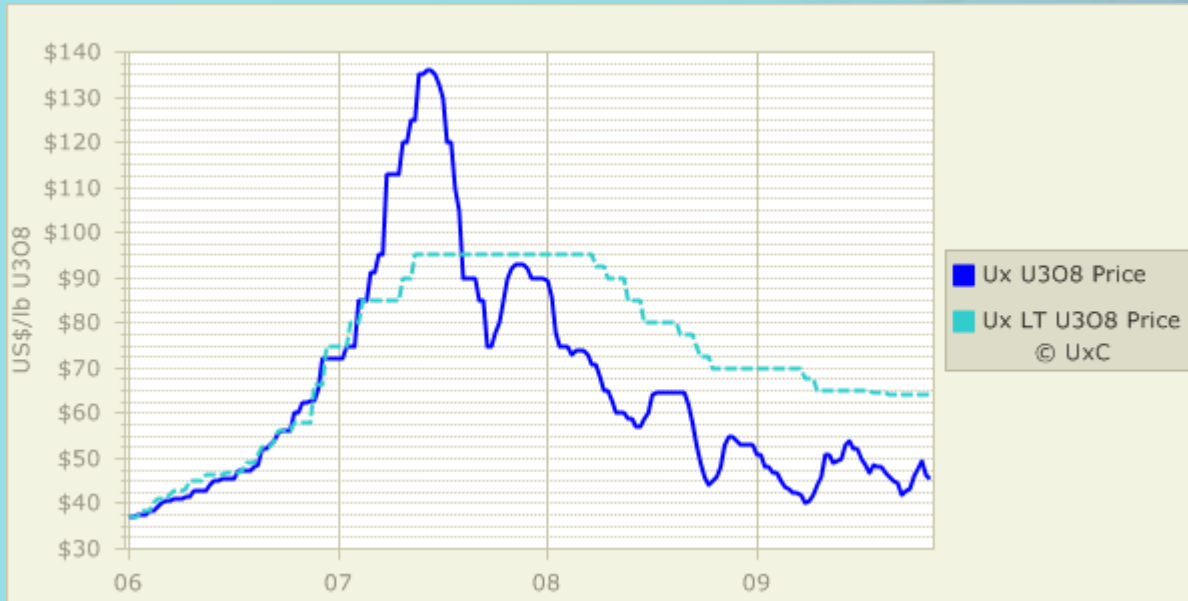
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SANEA, 19 January 2010

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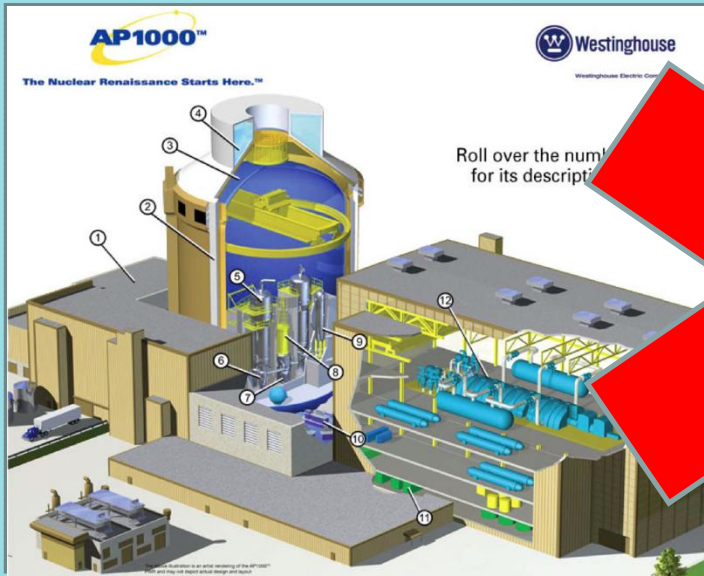
The past 18 months were not positive...



Declining uranium price ...Uranium-1 under care and maintenance...

The past 18 months

The past 18 months were not positive...



On 5 December 2008 Eskom announces its decision “not to proceed with the proposed investment in the Nuclear-1 project due to the magnitude of the investment”.

The past 18 months

The past 18 months were not positive...



PBMR re-inventing itself as a result of funding cuts and withdrawal of Eskom's letter of intent ...

With one exception...



Necsa's subsidiary NTP becomes world's top producer of radioisotopes!

The past 18 months

But the Fundamentals remain unchanged...

- Diversification from reliance on coal must lead to more nuclear because of absence of other baseload options. If we don't diversify, our carbon strategy will be to plead for special treatment as a developing world nation to avoid penalties.
- Geographic factors in Western Cape & Eastern Cape rule out local coal or hydro, and gas prices are very volatile. Transporting millions of tons of coal to these regions is impractical and prohibitively expensive.

But the Fundamentals remain unchanged...

- Costing over the 60 year life time of power stations in a world that is rejecting unsequestered carbon introduces large cost uncertainties into fossil fuel generation.
- Long term price trajectories means nuclear fuel cycle investment is attractive and may be needed to underpin security of supply.
- Comprehensive nuclear energy policy adopted by South African government in June 2008.

Recent policy developments

- Announcement of renewable energy feed-in tariffs (REFIT) in August 2009.
- Plans for demonstration of wind turbines (Sere project) and concentrated solar power.
- Ambitious figures for renewables in future energy mix mentioned in run-up to Copenhagen meeting in Dec. 2009; unsure how these will turn out in definitive policies.
- Recognition that coal and nuclear are the only base-load options for South Africa for decades to come.

Recent Policy Developments (cont.)

- Min. Peters at IAEA General Conference (Sept. 2009): “SA is committed to the use of nuclear energy as part of base-load energy generation and to building the associated industrial capacity to support this.” She also referred to Necsa performing feasibility studies on the fuel cycle and preparing for an experimental programme.
- Min. Peters at Nuclear Forum (Pretoria, Nov. 2009): Generating capacity of 40 000 MW to be added by 2030; aiming for 20 000 MW nuclear with first reactor by 2020. Target of 10 000 GWh renewables by 2013 and 1 million solar water heaters by 2014.

Recent Policy Developments (cont.)

- Industrial policy developments also expected to provide for diversification of energy mix (including nuclear), leveraging of government and large scale procurement (incl. fleet approach in certain sectors), localisation through IPP and CSDP.
- Renewed emphasis on skills development across the board, specifically including artisans, scientists and engineers. For nuclear: study on nuclear skills demand for 2010-2030 by DoE, SANHARP, ARECSA, etc.

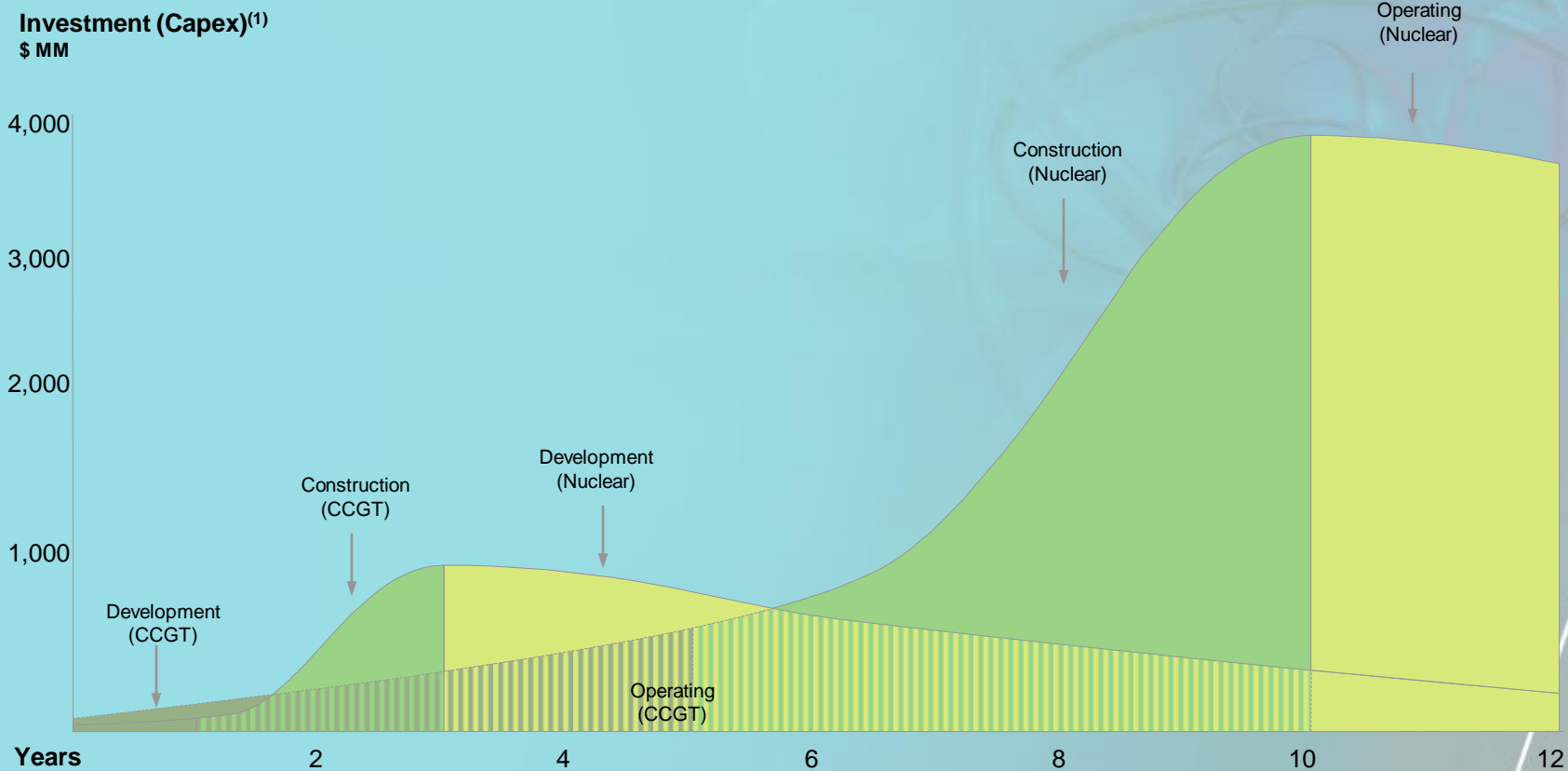
Recent Industry Developments

- Eskom nuclear new build
- PBMR
- Necsa initiatives
- SA Nuclear 2010

Eskom Nuclear New Build

- Eskom & DPE process to re-examine new build.
- DoE process to implement NEP.
- Eskom re-examining procurement, cost and financing models (incl. possibility of equity partners) for nuclear.
- Emphasize fleet approach to leverage cost-effectiveness.
- Targeting 10 000 – 15 000 MW nuclear capacity.
- Working closely with Necsa on fuel cycle and spent fuel issues.

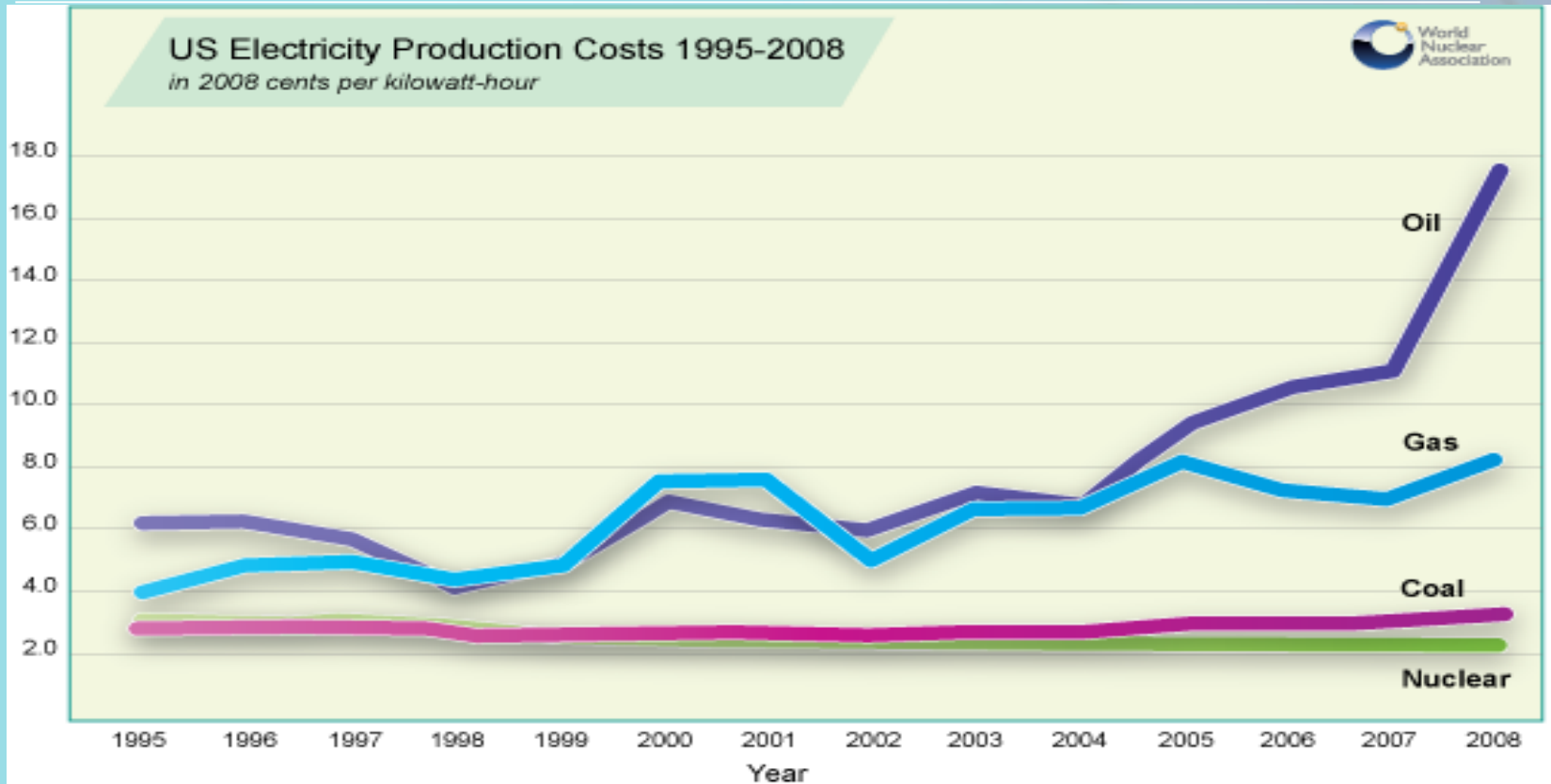
Financing Concerns



Assuming 1,000 MW plant

Recent Industry Developments

US Electricity Production Costs



Production Costs = Operations & Maintenance + Fuel. Production costs do not include indirect costs or capital.

Source: Verityx Velocity Suite, via NEI

Recent Industry Developments

Utilities Compared with Other Equities



Source FactSet

Recent Industry Developments

PBMR Status

- PBMR Board and government considering re-alignment of priorities, target dates and size of the programme.
- Emphasis on retention and leveraging of IP, expertise and progress to date.
- Importance of fuel development laboratories and engineering design as national competencies.
- Opportunities in US NGNP next phase and Euratom projects on nuclear process heat applications.

Necsa Initiatives

- Extensive feasibility studies on fuel cycle opportunities for South Africa, as mandated in NEP. Promise for competitive fuel cycle services in future depending on size of nuclear new build, international partnerships, financing.
- Preparations well advanced for laboratory and testing facilities for various components of front end of fuel cycle.
- R&D programmes on front end and back end expanded.
- National Nuclear Manufacturing Centre well established; progressing towards ASME III certification.
- Nuclear Skills Development Centre fully subscribed.

SA Nuclear 2010

Hosting major nuclear events:

1. *International Youth Nuclear Congress (IYNC), Cape Town, 12 – 18 July.*
2. *10th Congress of the World Federation of Nuclear Medicine and Biology, Cape Town, 18 – 23 September.*
3. *9th World Conference on Neutron Radiography, Kwa-Maritane, Pilanesberg, North-West Province, 03 - 08 October.*
4. *Generation IV International Forum Policy Group meeting, Pretoria, 05 - 07 October.*

Conclusions

- Slow but clear convergence of policy positions on growing role of nuclear in SA energy mix.
- Financial challenges for Eskom new build and development projects remain, but are being addressed.
- Nuclear Energy Policy vision of SA one day having a globally competitive position will depend on alignment of government incentives with the huge infrastructure investment.



Thank You!!!