

IRP2010 – Public Hearings

Paul Eardley-Taylor

Head of Energy, Utilities & Infrastructure Coverage - South Africa & Africa

Tel: +27 11 636 3229; E-Mail: paul.eardley-taylor@standardbank.co.za

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General Points (1)

- IRP 2010 (“**IRP**”) is welcomed and a material step forward in transparency

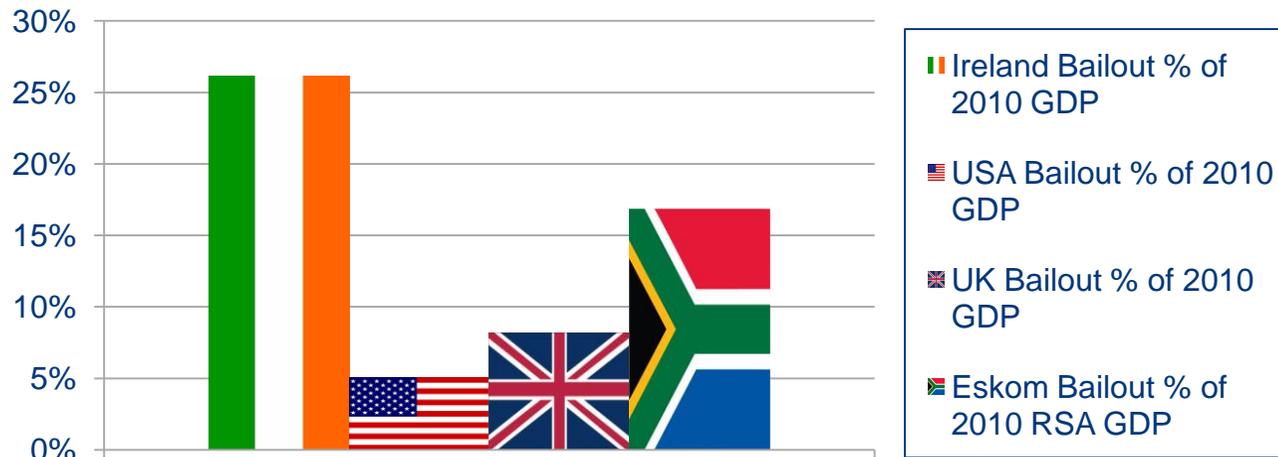
- Demand side assumptions
 - IRP is based on the assumption of 35% demand reduction off baseline by 2030 – realistic?
 - Reduction in electricity intensity of GDP assumption appears ambitious given national mineral beneficiation target, IPAP and deeper mining
 - Various DSM programmes in place - will they meet targets, especially over medium term, noting underlying SA economy, IPAP etc?

- Timing and Decision Points
 - The key timelines, risks and decision points have been correctly identified (IRP2010 p.21-24)
 - What are the consequences of further delays to IRP, REFIT etc.?
 - MTRM highlights that avoiding a crippling shortfall crisis will require “*extraordinary action, in the main by the government, Eskom, business and large metropolitan councils*”.
 - Some timelines are already behind schedule. e.g. IRP, REFIT, own-build rules, Nuclear and there is a legacy of limited success in tender processes – PNCP, MTPPP, Base Load

General Points (2)

■ Eskom

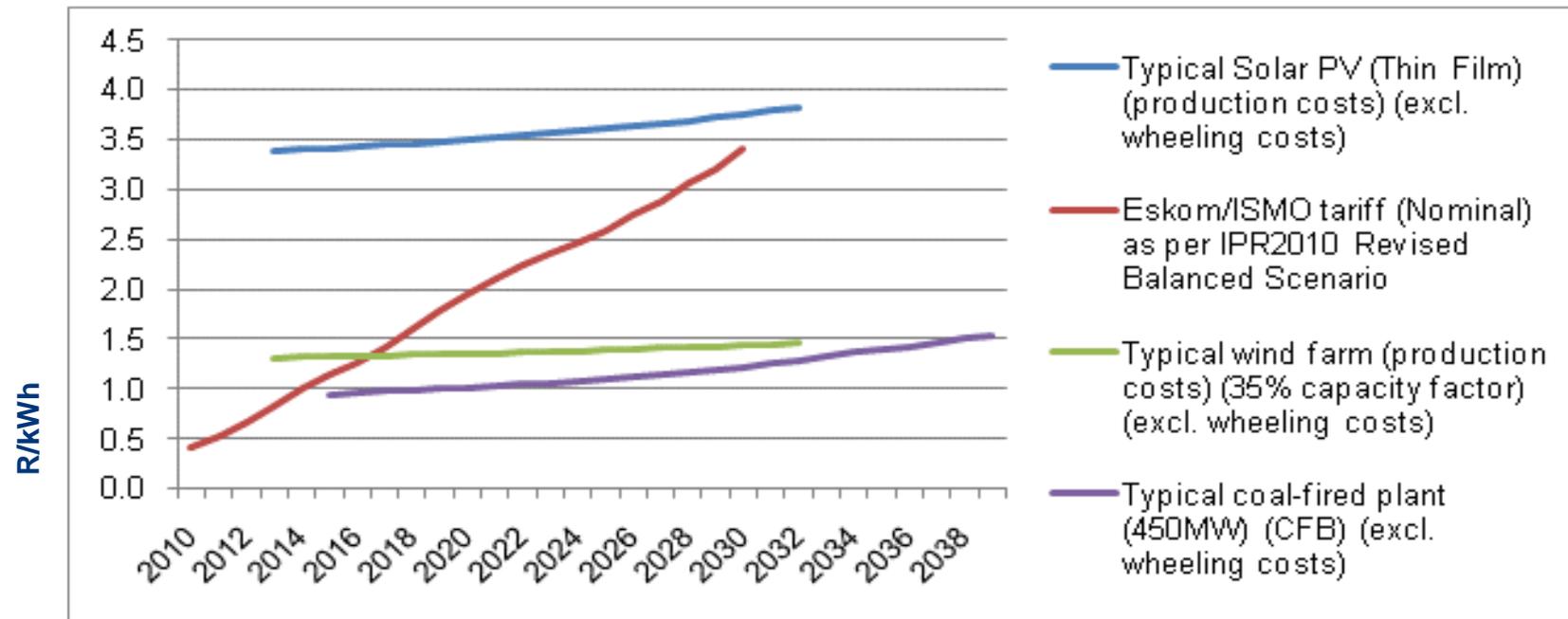
- IRP needs to take account of Eskom’s financial position and the scale of funding support already granted by National Treasury (**R430bn** - see table below). **Tariff implications**
- Per 1H 2010 interims, Eskom excludes interest during construction (viz Medupi: R99bn, Kusile R120bn) which is material for debt funded long-term construction projects. **Tariff implications**
- Eskom stated its required real pre-tax WACC is 10.3% (4th May), higher than the IRP assumed 8.17%. IPPs would also require higher WACC (10-14%), with the result that IRP tariffs should be higher if Eskom /IPPs are to recover their costs. **Tariff Implications**
- Despite universal consensus on the need for IPPs, PPA/ISMO etc yet to be finalised



- Note: The bailouts of financial institutions in the UK, USA and Ireland are reflected from 2008 – 2010, while the other statistic represents the bailout by the SA Government of Eskom.
- The Irish bailout is not reflective of a further 2010 potential bailout (Graph dated 22 November 2010)
- The bailouts represent 26.1%, 5%, 8.1% and 16.9% of the 2010 GDP's of Ireland, the USA, the UK and South Africa respectively

Tariff issues

- IRP presents tariffs in **real** terms. This is misleading as consumers pay **nominal** tariffs and SA is a higher inflation economy (i.e. 5-6% annual increases before **real** increases)
- Standard Bank present a **nominal** representation of the IRP base case tariffs, against production cost tariffs of other key technologies (Solar, Wind, Discard Coal)
- Significant risk factors will affect the steepness of the IRP tariff path (**the red line**):
 - Overnight v actual costs of Eskom build; cost of capital; EEDSM reductions
- Some technologies must use non-ZAR funding – e.g. Nuclear, maybe gas. Not addressed.



Supply-side assumptions (1)

■ Nuclear:

- We understand the 2023 nuclear COD date can be accelerated to 2020
- Need to accelerate the planning phase (tender basis, licensing, EIA, funding model)
- Need to clarify Eskom's nuclear role - no funding allocated
- IRP assumes 3G EPR technology cost assumptions for nuclear.
- **Other nuclear providers (KEPCO-Korea, CGNPC-China) may be able to provide 2G+ technology at lower EPC cost, in shorter period and bring lower funding costs**

■ Natural Gas:

- Importing LNG involves major capex (e.g. Regasification facilities) and exposes SA to currency and commodity price risks
- We believe West Coast indigenous natural gas resources can be more quickly exploited (CCGT power plant COD 2015 latest) and more cheaply to meet SA's IRP objectives
- **Indigenous gas offers lower cost, base load cleaner energy and transmission savings**

■ OCGT/Diesel:

- If IPPs are able to provide renewable energy / Own-Build / Cogen capacity, there may not be a requirement for such a large OCGT (Diesel) capacity expansion or usage

Supply-side assumptions (2)

■ REFIT

- Uncertainty of REFIT RFP timing. Will it now be delayed until after IRP finalised?
- Given MTRM warnings of medium-term shortfalls, RE could provide significant energy within a short lead time period, especially since many projects are already prepared for the RFP
- Uncertainty of REFIT tariffs and MW post-REFIT 1. A bid tariff auction process? (e.g. Brazil)
- Unclear whether IRP assumes REFIT tariffs or the production cost tariff from the EPRI Report, during the committed projects period and for the wind, solar and RE programmes thereafter

■ Renewables – Wind

- Broadly supportive of portfolio size over time but believe it could be accelerated

■ Renewables - Solar

- IRP appears to show a preference for CSP. We note that CSP is not yet proven and bankable across all technologies, especially storage systems
- Uncertainty whether any PV allocation before solar programme (2016), despite being included as a possibility under REFIT1. Clarity required to avoid PV developers exiting market.
- PV could help mitigate medium-term shortfall, much lower than Cost of Unserved Energy and probably also new OCGT

Supply-side assumptions (3)

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■ Own-build projects

- Confusion between own-build and Cogen – they are separate subjects
- IRP treatment of own-build is unclear – does it need approval or not?
- **Own-build is a key medium-term generation option:**
 - ▶ Can help meet supply shortfall at zero net cost to Eskom/ISMO
 - ▶ Use of discard coal allows power production lower than IRP price path
- IRP own-build allocation could be much higher and extend beyond 2015
- IRP doesn't clarify how own-build will be treated in context of any EEDSM (e.g. PCP). Critical uncertainty to planned own-build projects
- Need supporting regulatory and wheeling framework – an Eskom priority? **Easy Quick Win**

■ Cross-border issues

- We note that the import coal allocation has been relatively de-prioritised
- Mozambique hydro projects can balance affordability with emissions reduction
 - ▶ A consequence of IRP is that the North-South transmission project needs to be prioritised
 - ▶ Implications for the costs/practicality of import coal options from Mozambique

Conclusion - What's Donald's views on the Draft IRP2010

Known Knowns

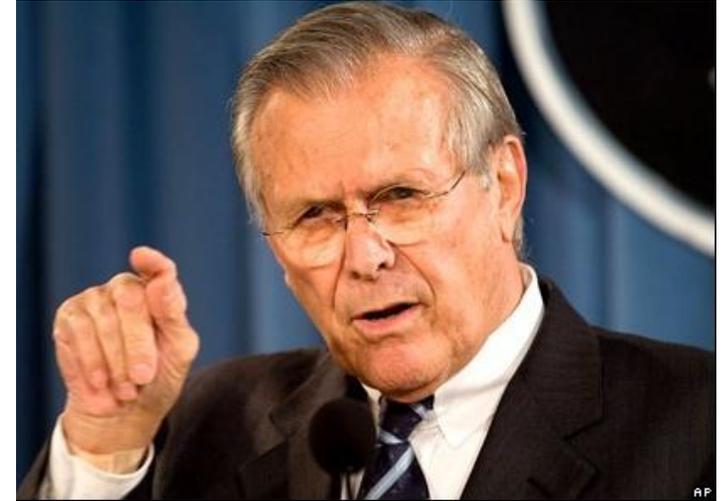
- Government's IRP policy objectives/constraints
- Commitment to Renewables and Nuclear
- Large real tariff increases are required

Known Unknowns

- Success of EEDSM programmes
- REFIT tariffs and MW post-REFIT 1
- Nuclear Tendering / funding process
- ISMO delays
- Indigenous Gas
- Wheeling

Unknown Unknowns

- Impact upon consumers of higher tariffs



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