IRP2 – Key assumptions

THOMAS RIBOUD
DIRECTOR, RES SOUTHERN AFRICA

7 June 2010

Demand (Energy & Maximum Demand) Forecast - Overview

Energy Intensity (Energy consumed / GDP) already takes into account efficacy of demand.

If both Energy Intensity and Efficacy of Demand are factored in, Efficacy of Demand will be double counted.

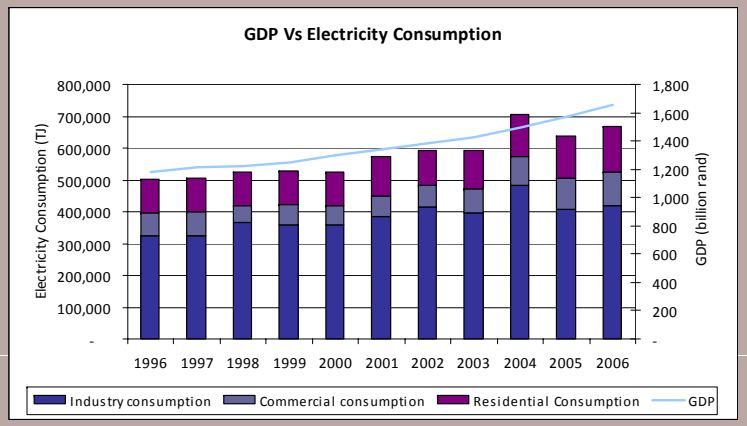
Suggestion:

- Only refer to Energy Intensity
- Sub categorize Efficacy of Demand in Energy Intensity calculation (as part of consumption forecast)

Electricity intensity

Electricity Intensity should be broken down into:

- Industrial
- Commercial
- Residential



Price elasticity of demand

Forecast of the price elasticity of demand is complex.

Model will already be complex and the price elasticity of demand will only have a marginal effect.

Suggestion:

Exclusion of price elasticity of demand

Demand Side Management

Possibility of double counting if DSM, DMP/DR are calculated separately.

Should be a component of electricity Intensity.

Simplification of the model

Cost of Unserved Electricity

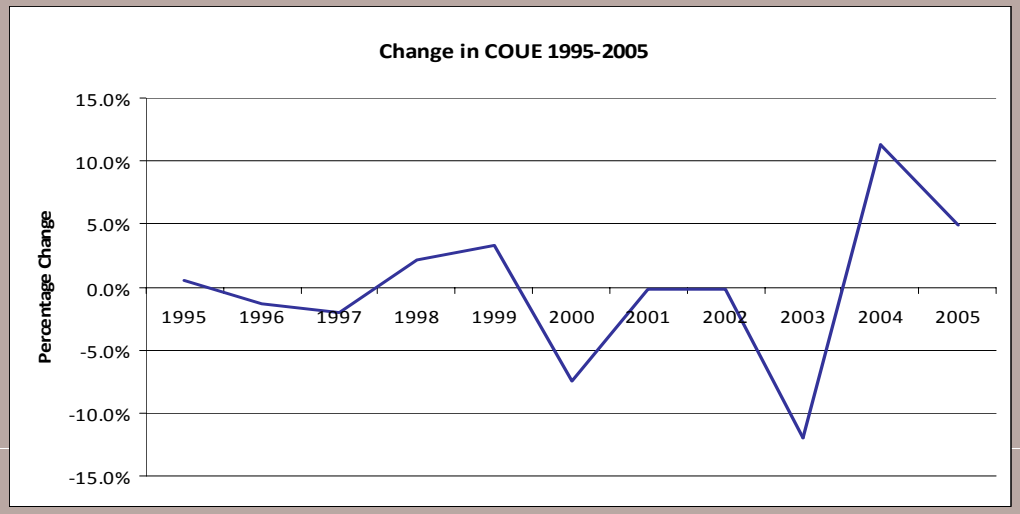
COUE changes with GDP growth and economic development.

COUE will increase with an increase of GDP.

Suggestion:

COUE estimate should not be fixed at R75/kWh

Graph below demonstrates change in COUE over time (where COUE = GDP ÷ electricity consumption):



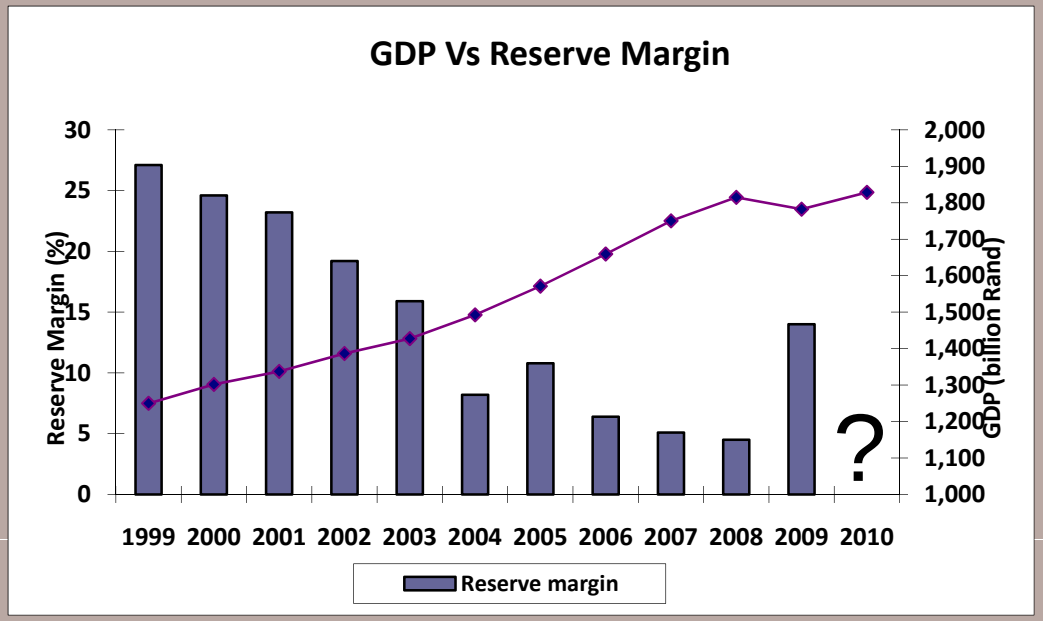
Reserve Margin

Assumption of current margin of 15% seems too high.

In it Annual Report 2009, ESKOM reported that the reserve margin had jumped to 14% due to "technical recovery of the ESKOM power supply and a drop in demand" due to the financial crisis.

If this is the case, and GDP returns to positive growth in 2010, what will the impact be on the reserve margin?

Current reserve margin should be taken into consideration but **targeted reserve margin should also be an assumption.**



Discount Rates

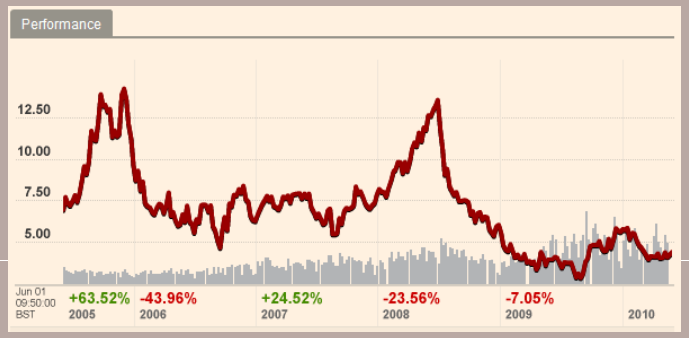
Discount rate should not be based solely on ESKOM's pre-tax WACC; it should be more inclusive.

Discount rates should differ according to technology type, and plant ownership structure, therefore reflecting different risk levels.

Example: Olkiluoto-3 (1.6GW), Finland. Agreed time: 4.5 years, now 7.5 years. Contracted price €3.2bn, now €4.7bn.

Therefore, the risk of construction and costs of nuclear should be priced as well as the volatility of primary resources prices:

Natural gas prices 2005-2010



Brent Crude Oil 2005-2010

Source: FT.com

Nuclear

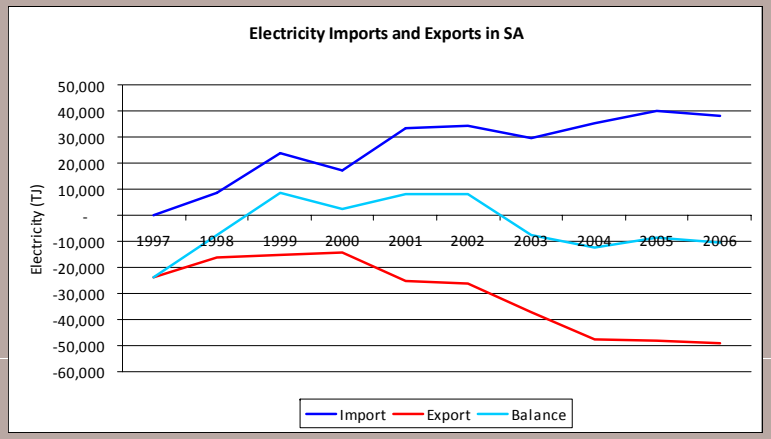
The Nuclear path should not be included as a base scenario. If the intention is to explore all options of the generation mix, nuclear should be treated as an input like coal and wind.

Timing constraints has to be factored in the nuclear model. Planning and construction will be lengthy.

A higher discount rate should apply because of the timing and costs risks.

Imports

Exports should be taken into account.



Generation life cycle cost

One of the most important assumptions. Cannot be one assumption and each component of the generation life cycle cost should be fully assessed.

Some costs which are currently treated as externalities should be factored into the general life cycle costs. Among others:
- price of carbon,
- plant location and grid losses,
- water usage etc…

Plant location

Given the current losses, plant location should be included in the model.

Funding and financing

Is this aspect supposed to cover only ESKOM's funding?

Funding by IPP's is irrelevant since it does not impact the cash of South Africa.

Cost of funding should be included in the generation life cycle.

Base scenario

The base scenario should take into account the countries targets:

- Renewable energy
- Decarbonisation of electricity
- Saving on water.

Timing constraints for development and building should be taken into account.

It is not understood how the Policy on Regional Development Scenario is developed if plant location is not taken into account.

It is not understood why there is a specific nuclear scenario. Nuclear is a part of the generation mix. As a separate scenario, it neither achieves a public objective nor looks at the impact of an externality.

Inflation

Inflation needs to be stripped out of the discount rate if it is to be consistent with the model. The model needs to be based entirely in real terms (with a fixed exchange rate) or entirely in nominal terms (with a variable exchange rate).


power for good