



Base Scenarios - IRP 2010 Input Parameter information sheet (Output)

This sheet is to be used as the primary stakeholder engagement tool. This document provides the information that will allow the stakeholders to make a meaningful contribution to the IRP Input parameters

Parameter	Base Scenarios
Purpose	<p>The Electricity Regulations on New Generation Capacity state that the process for developing the integrated resource plan shall include:</p> <ul style="list-style-type: none">• Adoption of the planning parameters & assumptions;• Determination of the electricity load forecast;• Modelling and scenario planning based on the planning assumptions;• Determination of the base plan derived from a least cost generation investment requirement;• Risk adjustment of the base plan, which shall be based on:<ul style="list-style-type: none">○ The most probable scenarios; and○ Government policy objectives for a diverse generation mix, including renewable and alternative energies, demand side management and energy efficiency.• Approval and gazetting of the integrated resource plan
Impact on the IRP	<p>For the purposes of the IRP Eskom is expected to continue with the current approved build programmes of Medupi - coal-fired power station (first unit commissioned in 2012), Kusile - coal-fired station (first unit commissioned in 2014), Ingula pumped-storage station (commissioned in 2013) and the finalisation of the return-to-service programme (RTS) of the previously moth-balled coal-fired power stations.</p> <p>In addition the Renewable Feed-in Tariff programme (REFIT), Medium Term</p>



Power Purchase Programme (MTPPP) and the open-cycle gas turbine (OCGT) independent power producer (IPP) are expected to provide additional capacity in the medium term, as provided for by NERSA in the MYPD.

From the demand side perspective the IRP will incorporate known demand side management programmes with expectations of the success of these.

The Base Plan is taken as the least cost plan considering only the direct costs of the options considered. It does not consider any externalities.

The additional scenarios for the risk-adjusted plans may consider externalities either as limits or explicitly modelled as additional costs for the affected technologies. The primary externality factor that will be considered is this IRP is carbon emissions.

The risk adjustment of the base plan shall be based on the most probable scenarios; Government policy objectives for a diverse generation mix, including renewable and alternative energies, demand side management and energy efficiency forecasts.

Some of the important policies (or strategies) that should be considered in scenarios for the risk adjusted plans are those that give direction to:

- Nuclear;
- Renewable Energy mix and size;
- Climate Change;
- Imports (Regional Development);
- Diversity of energy sources; and
- Energy Efficiency Policy/Strategy.

The following base scenarios are recommended to capture the key uncertainties regarding future generation expansion, which mostly centred on the policy direction of government.



Scenario 1: Least Cost Option (Also used as the Reference Scenario)

The reference scenario refers only to the direct costs of supply and demand-side options and excludes most externalities (especially emissions) and policy considerations.

Scenario 2: Emissions Cap

A CO₂ emission constraint is imposed based on the agreed emission policy (refer to the Climate Change Input Parameter data sheet), considering the emission limits for domestic fossil fuel generation and import generation from the region.

Scenario 3: Carbon Tax

The carbon tax scenario (*Carbon Tax – see separate fact sheet*) takes a different approach to meeting the target. Rather than imposing an emission constraint on the electricity supply, a carbon tax is introduced on the fossil fuel generators. This tax would increase the costs of fossil fuel generation and would expect to change the economics in favour of alternative forms of generation (refer to the Carbon Tax Input Parameter Data Sheet).

Scenario 4: Policy on Regional Development

This scenario will consider the implementation of a regional development policy, adding defined regional projects (emissions friendly and carbon intensive).

Scenario 5: Nuclear

The nuclear scenario will investigate the potential of a nuclear fleet strategy and how the costs for a nuclear fleet (as opposed to project-by-project costing) would alter the optimal generation mix (refer to the Nuclear Input Parameter Data Sheet).

Scenario 6: Policy adjusted scenario

The policy-adjusted scenario would integrate the various policy considerations identified above into the models.



	<p><u>Final recommended IRP</u></p> <p>The final policy-adjusted IRP is the IRP that best meets the criteria of cost, emissions, diversity and risk, and the policy requirements of the Department of Energy</p> <p>Since the planning process deals with degrees of uncertainty. The developed scenarios will also have sensitivity scenarios using different demand forecasts.</p>
<p>The assumptions included in establishing the parameter values in this sheet</p>	<p>N/A</p>
<p>Parameter Value</p>	<p>N/A</p>
<p>Range of Parameter Value</p>	<p>N/A</p>
<p>Preconditions necessary to make possible for this parameter to be included in the IRP</p>	<p>Preconditions necessary to make possible for this parameter to be included in the IRP are:</p> <ol style="list-style-type: none">1. Scenarios approved by DoE
<p>Parameter Owner</p>	<p>Department of Energy</p>