# Renewable Energy (RE) - IRP 2010 Input Parameter information sheet (Supply input)

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.

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| **Parameter** | Renewable Energy Proportion<br><br>This is the portion of total annual electricity consumption that is to be provided from renewable energy sources at a given future point in time.<br><br>It may be expressed as a fixed quantity – so many GWh per annum by year x, or by a percentage of the total annual electricity consumption by year x |
| **Purpose** | The utilization of renewable energy is driven by the need to conserve and reduce dependence fossil fuels, and to a greater degree, reduce carbon emissions in mitigation of climate change.<br><br>RE is seen as a more sustainable energy source than fossil fuels in the long term.<br><br>Realization of the reduction targets of the Long Term Mitigation Strategy (LTMS) will require efficiency improvements as well as utilization of renewable or nuclear energy sources. The parameter will ultimately determine what portion of carbon reduction is to come from renewable energy.<br><br>A greater portion of renewable energy in the generation mix has the effect of reducing the country's exposure to volatility in future fossil fuel prices.<br><br>It also has the effect of reducing the country's vulnerability to future Carbon penalties, likely to be imposed by the international community as climate change mitigation measures. |
| **Impact on the** | The ratio of dispatchable vs. non-dispatchable or 'intermittent' generation has an impact on the operating reserve requirement. This influences the generation mix as a |

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| **IRP** | greater proportion of fast-reacting generating sources such as pumped storage or gas-turbine plant are required to complement RE sources to overcome the intermittency problem. (The grid is sensitive to how much non-dispatchable generation it can carry).<br><br>The climate change and carbon tax parameters also influence the total amount of carbon-free energy sources that will be required in the future energy mix. The amount of renewable energy in the mix will also impact on the amount of nuclear energy required (or vice versa – however, non-toxic RE is seen as a better environmental choice.)<br><br>Renewable Energy is more capital intensive than fossil fuelled plant and therefore costs are sensitive to discount rates that are used. The Renewable Energy Feed In Tariff (REFIT) is designed to overcome this issue until the cost of traditional sources (and externalities) increase to equal RE technology costs. Life cycle costing favours RE choices, therefore the Generation Life Cycle cost parameter influences this parameter.<br><br>The treatment of the cost of externalities influences the extent to which a like-for-like comparison can be made between renewable and fossil-based generation.<br><br>A greater proportion of RE will directly affect the price cone in the short to medium term, affecting the present affordability of the IRP. However, the long-term benefit of a high proportion of RE utilization, simply because there are no fuel costs to consider, is a crucial factor to consider. |
| **Assumptions included in establishing the parameter values in this sheet** | Wind turbines and solar farms will require environmental assessments which it is assumed will not prevent or significantly delay the construction of wind turbine farms or solar farms. |
| **Parameter Value** | The original target stated in the Renewable Energy White paper of 2003 is as follows: |

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| | …the Government's medium-term (10 year) target is:<br>*10 000 GWh (0.8 Mtoe)renewable energy contribution to final energy consumption by 2013, to be produced mainly from biomass, wind, solar and small-scale hydro. The renewable energy is to be utilized for power generation and non-electric technologies such as solar water heating and bio-fuels. This is approximately 4% (1667 MW) of the projected electricity demand for 2013 (41539 MW)*<br>*This is equivalent to replacing two (2x660 MW) units of Eskom's combined coal fired power stations.*<br>This is in addition to the estimated existing (in 2000) renewable energy contribution of 115 278 GWh/annum (mainly from fuel wood and waste).<br><br>In April 2009, the DME convened a Renewable energy Summit, where it was resolved to revise the white paper and clarify the RE target as the SA environment had changed significantly – energy security issues, price increases, fuel price volatility, introduction of the REFIT, regulatory barriers and pressure towards mitigating climate change have become increasingly urgent. The following summit resolutions refer specifically to the RE target:<br>3.3. There must be clearly defined, ambitious and specific national targets in line with the LTMS, including a setting of a nominal target for a percentage of electricity generation in 2018 to be derived from renewable energy resources.<br>3.5 The policy, legal and regulatory frameworks should allow for differentiated but specific targets, parameters and tariffs for all renewable energy technology options (wind, hydro, solar PV, CSP, landfill gas, biomass and biofuels).<br>This work is under way, as per the terms of reference developed at the summit. |
| **Range of Parameter Value** | The parameter range may be quite large – anything from 5 to 30%, as there are many factors that can influence the final value:<br>• Government policy on climate change and the Carbon limits promised in the LTMS; |

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| | • The projections for Nuclear energy;<br>• The present affordability and availability of funds to support the REFIT; and<br>• Industrial policy relating to the job creation potential of RE. |
| **Preconditions necessary to make possible for this parameter to be included in the IRP** | Presently, funding for the REFIT is funded through Eskom tariffs. In the Eskom's MYPD2 application, Eskom outlined the revenues required to support REFIT Phase 1 and Phase 2, estimating an ultimate RE capacity of 2075 and 1340 MW respectively installed over a relatively short time (unspecified). The MYPD increases granted to Eskom however do not cover these REFIT requirements, presenting a constraint to the uptake of Renewable Energy.<br><br>The establishment of the REPA office and availability of REFIT funds are crucial to support renewable energy uptake. |
| **Parameter Owner** | DoE/DWEA |