31 March 2017

Department of Energy
Sunnyside, Pretoria
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Attention Messrs Ompi Aphane, Deputy Director General: Energy Policy and Jacob Mbele, Chief Director: Energy Policy

Per email: IRP.Queries@energy.gov.za, ompi.aphane@energy.gov.za, Jacob.Mbele@energy.gov.za

Dear Sirs

SOUTH AFRICAN RENEWABLE ENERGY COUNCIL (SAREC) RESPONSE TO THE INTEGRATED RESOURCE PLAN 2016 UPDATE

On 2 December 2016, The Department of Energy (“DOE” or the “Department”) published the “Integrated Resource Plan Update – Assumptions, Base Case Results and Observations (the IRP Update)”. The public was invited to provide input and comments on the IRP update until February 2017. Subsequently the DOE extended this period to end March 2017. The DOE also held nationwide public consultation workshops at which stakeholders were invited to make public representations on the IRP Update. Whilst member associations of SAREC are making detailed responses to the Department in their own right, the Council wishes to highlight a number of the common positions held by the renewable energy industry.

About SAREC

SAREC is an umbrella industry body representing the common interests of four of the major renewable energy industry associations in South Africa, those being:

- The South African Photovoltaic Industry Association (SAPVIA)
- The South African Solar Thermal Electricity Association (SASTELA)
- The South African Wind Energy Association (SAWEA)
- The Sustainable Energy Society of South Africa (SESSA)

As a body that represents over 250 members of the South Africa renewable energy sector, SAREC is a legitimate speaker on the treatment of renewable energy technologies within the IRP. Members of the SAREC Board are also representatives of other relevant stakeholder groups such as BUSA and the Ministerial Advisory Council on Energy (MACE), who have contributed towards other levels of stakeholder input in the IEP and IRP updates.

General comments

SAREC’s position on the IRP process is that it should be a purely techno-economic exercise that plays provides a rational input into the policy (and political) debate that must reach a consensus on South Africa’s long term energy path. The process under which the 2016 update of the IRP has been managed to-date has detracted from the valuable capacity of the IRP modeling tool to ascertain the optimal build and technology mix for the South African economy. This optimal mix could achieve electricity cost competitiveness and affordability.

SAREC notes that there was no apparent consideration of the extensive potential contributions to be made from embedded power generation to address energy access and to complement what is planned for at utility scale, particularly given how favourably declining price paths of distributed technologies compare with rising Eskom tariffs.
Specific SAREC inputs to the IRP2016

1. **The least cost, unconstrained scenario of the IRP should always be the default Base Case scenario.**
   This does not mean that it should be the final policy adjusted version, but is the one against which all artificial or policy-imposed constraints are measured. In the DOE’s proposed “**IRP Update base case result**” (shown in Table 12, page 27) constraints have been imposed on both solar PV and wind, with the explanation that “The table above shows the least cost plan with moderate GHG emissions constraint trajectory”. However, this scenario differs markedly from the least-cost unconstrained scenario of the IRP run by DOE for the MACE IRP Working Group1

2. **SAREC further recommends that any limitations imposed by the Department on annual build of renewables should be accompanied by rational explanations.** Wind and solar PV were the only technologies with annual build constraints in the IRP Update Base Case. These constraints were applied with no explanation. Subsequently attempts by various stakeholders to clarify the basis of these constraints in meetings with DOE officials and Eskom have failed to clarify the matter. We do note some suggestions around constraints to network expansion and system operations, which we comment on below.

   On the basis of constraints applied:

   a) **The need for renewable energy to wait for the grid in the Northern and Eastern Cape to be strengthened before being able to connect more wind and solar.**

   SAREC would refer the Department to its own and Eskom’s study2 of 2014 sponsored by GIZ which demonstrates that South Africa should build future solar PV plants closer to load centres at no additional economic cost to electricity customers through the avoidance of additional grid infrastructure investment and line losses.

   Some of the bidders in bid window 4.5 expedited, who were most likely to be impacted by the short comings of the Northern Cape Ring (NCR), proposed to build alternative connection solutions at their own costs that would strengthen the NCR and allow more renewables to be connected to the grid.

   b) **The Eskom’s System Operator potential inability to manage a grid with the 110 MW of wind and solar, as anticipated in the least-cost, unconstrained scenario.**

   We refer you to numerous independent studies that have demonstrated stable electricity grid operations with greater than 50% penetration of renewable energy. In addition, SAPVIA is part of the steering committee for the Eskom and DOE study “The Impact of Variable Generation on System Operations and Capacity Planning” due to be published in April 2017 which shows that the current Eskom System Operations will be able to manage > 30GW of solar PV generation by 2030.

   **SAREC is therefore of the view that DOE have failed to set out a credible argument for the use of annual build limits for wind and solar PV.** We further note that the renewable allocations set out in the least-cost, unconstrained IRP scenario have been easily exceeded in comparable jurisdictions such as China and India and we therefore see no reason why South Africa should be less ambitious.

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3. We note that CSP was completely excluded and there is no allocation for CSP in the Draft IRP 2016 generation mix up to 2050. This seems to have been based on modelling assumptions that are outdated, do not reflect the current market reality, and do not acknowledge the dispatchability and operational flexibility of CSP power stations. We recommend and refer the DOE to an independent consensus statement on the significant role CSP technology can play in a cost optimized South African power system that came out of a workshop convened by Stellenbosch University and the CSIR on 16 January 2017, in response to the exclusion of CSP in the Draft IRP 2016 base case.

Some key points from the consensus statement are:

a. CSP, with integrated thermal storage, provides locally resourced dispatchable and flexible electricity that complements other variable electricity generation allowing higher penetration of low/least cost electricity from wind farms and solar PV plants.

b. The price of CSP electricity is coming down globally and could reach 90c/kWh (6US$cents/kWh) by 2030. Similar cost reductions could be expected in SA with a sufficiently large allocation in the IRP.

c. The current cost assumptions for CSP in the IRP modelling is not aligned with the actual price in the RE IPP Bid Window 4 expedited round.

d. CSP must be modelled as a flexible electricity generator, as is the case of most other system-dispatch technologies (OCGT, CCGT, etc), to capture the full value it could provide to the SA power system.

4. SAREC recommends that rational methodologies be applied to the various generation technologies used in the IRP pricing assumptions. The five rounds (1: 2; 3; 3.5 and 4.5) of the Renewable Energy IPP Procurement Programme (REIPPP) have clearly established a price path for renewable IPPs that has greatly exceeded the learning curves assumed in IRP 2010 in the case of wind and solar PV. The use of non-market related tariffs and “hybrid” prices that cannot be independently derived only serves to undermine the credibility of what should be a scientific process.

5. SAREC accepts that a least-cost, unconstrained scenario should only be the starting point for a process that concludes with the final IRP plan setting out the optimal South African electricity price path with likely tariff outcomes. However, for stakeholders to engage in that debate in an informed fashion requires an understanding of the implied tariff path for various electricity policy scenarios. Such scenarios and their deviation from the least-cost, unconstrained scenario should be published by DoE, in order to facilitate informed debate.

The current process effectively imposes a policy-adjusted scenario on electricity stakeholders and customers, with no allowance for transparent engagement on long term tariff effects. This could be regarded as an attempt to stifle debate and result in undermined public confidence in the veracity of the IRP process.

6. SAREC believes that the IRP process should adhere to predictable timelines and should draw on the best possible independent modelling resources. For instance, the continued lack of explanation for adoption of the IRP2013 Update report is unacceptable; independent research institutions like the CSIR’s Energy Centre should be included in the modelling process.

7. Finally SAREC recommends that the IRP model should deal with the following factors:

a. Externalities such as decommissioning costs;

b. A review of the setting of price assumptions for various technologies in the IRP. It has become apparent that the use of EPRI for pricing is being consistently deviated from, particularly where for example, IPPs have the ability to set real market prices; and

c. The evidence-based risk of cost overruns and time delays, particularly on mega projects.

d. The potential for public investment savings on embedded generation vs investment in mega projects.
The REIPPPP in South Africa has contributed significantly to the country’s economy since the publication of IRP2010, leading to massive foreign direct investment, job creation and socio-economic dividends. This alone demonstrates the importance of getting the IRP right and creating market confidence. However, the past two years have seen significant delays to the REIPPPP which have dented confidence in South Africa as a serious destination for green energy investors, developers and equipment suppliers. Most importantly, local economic benefits that should have been realized in communities, have added to day to day human suffering.

In the course of 2016 over 120 GW of wind and solar was installed globally, a number which is set to grow exponentially as more and more countries decisively make the transition from carbon-based fuels to cleaner energy sources. This transition is already implicit in the IRP 2016 Update through the input assumption that 27.5 GW of coal-fired plant will be decommissioned by 2040.

SAREC believes that renewable energy can play a significant role in the re-industrialization of the country, transitioning away from the carbon-based minerals energy complex towards a more sustainable future.

We believe that a scheduled, consistent renewable energy programme, which includes all available renewable energy technologies combined with a gas-build programme provides an opportunity to drive and sustain a power system which re-skills mineworkers from 20th to 21st century jobs and economic opportunities.

Achieving this path requires a shared commitment from government and the industry – a commitment that extends beyond policy and planning, into practice.

We stand ready to take up the challenge.

Yours sincerely,

Brenda Martin
Chair: SAREC