SUBMISSIONS ON THE DRAFT INTEGRATED RESOURCE PLAN 2023

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Date:	**11th March 2024**
Submission Deadline:	**23rd March 2024[1]**
To:	**Director-General of the Department of Mineral Resources and Energy**
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Introduction

The Integrated Resource Plan (IRP) is a plan aimed at estimating South Africa's electricity demand. It considers how the demand for electricity will be met and the expense of such a demand. The Integrated Resource Plan in the South African context is not the Energy Plan - it is a National Electricity Plan. It is a subset of the Integrated Energy Plan. The IRP is also not a short or medium-term operational plan, but rather a plan that directs the expansion of the electricity supply over the given period.

Nevertheless, it was first promulgated in March 2011, and then reviewed again in 2019. The Department of Mineral Resources and Energy has now developed a review of the IRP. The Minister of Mineral Resources & Energy, Mr. Gwede Mantashe has under section 4 (1) of the Electricity Regulations on New Generation Capacity published the Integrated Resource Plan, 2023 for public comments in the government gazette.

Background

The most obvious elements of the draft IRP 2023 are that it reduces the amount of wind and solar energy that will be procured compared to the 2019 IRP. The 2023 plan suggests that only 8083 megawatts of new wind and solar capacity will come online from 2024 to 2030, while the IRP 2019 suggested 15 200MW of wind and solar would be installed during this period.

The draft IRP 2023 also sets out the installation of far more gas generation capacity than was envisioned in the 2019 plan. In addition, the new plan proposes delaying shutting down certain coal-fired power plants to avoid the economic impact of their premature decommissioning. The IRP 2019 sets out the decommissioning of Eskom's Camden, Hendrina, Grootvlei, Arnot, Kriel and Komati power stations by 2030. The draft IRP 2023 forecasts load-shedding to continue until 2027. This 2027 deadline is contrary to the National Energy Crisis Committee's deadline to end load-shedding by the end of 2024.

List of Comments on the Draft Integrated Resource Plan (IRP) 2023 for South Africa

1. **Scaling Back on Renewable Energy Ambitions:** The 2023 draft, like its predecessor, is not ambitious enough with renewable energy targets, especially as it is suggesting a scaling back in comparison to the 2019 IRP. It does not fully leverage South Africa's vast potential for solar and wind energy, which could help in reducing reliance on coal and meeting climate goals.

2. **Underestimation of Renewables' Potential:** Nevertheless, the 2023 draft also fails to fully account for the rapidly decreasing costs of renewable energy technologies and their potential to provide a reliable and cost-effective energy supply.

3. **Undermining Climate Goals:** The draft IRP 2023 does not fundamentally align with South Africa's climate mitigation ambitions, particularly by scaling back on renewable energy in comparison to the 2019 IRP (as per point 1 above) and by proposing a significant contribution from gas-fired power

[1] Thereafter, the draft plan will be scrutinised at Nedlac before it is finalised.

generation. This approach will lock the country into an unsustainable energy pathway, diverting funds from cleaner energy sources, and possibly making it more challenging to meet international climate commitments.

4. **Overestimation of Gas and Coal, and Continued Reliance on Fossil Fuels:** Like the 2019 IRP, this 2023 draft places too much of a reliance on gas and coal. This approach is contradictory to global trends and South Africa's commitments under international climate agreements. This is further exacerbated by the 2023 draft suggesting the delay in shutting down coal-fired power plants to retain dispatchable capacity, which will hinder South Africa's ability to meet its commitments under the Paris Agreement.

   Additionally, this promotes investment in controversial 'clean coal' technologies and considers Minimum Emissions Standards as a 'risk' that must be managed, despite the health impacts of air pollution from coal-fired power stations. The draft continues to prioritize gas and coal, undermining the sustainability of South Africa's energy pathway and its alignment with global climate commitments.

5. **Lack of Detailed Planning for Coal Phase-out:** Both the current 2023 draft and the 2019 IRP lacks detailed planning on how to phase out coal power in a socially responsible way that addresses the needs of communities dependent on coal mining and power generation for their livelihoods.

6. **Questionable Cost Assumptions and Modelling:** The draft IRP's cost assumptions and modelling scenarios, does not reflect real-world dynamics where renewable energy is increasingly becoming the cheapest form of energy. It places artificial constraints on models, leading to conclusions that support continued reliance on fossil fuels.

7. **Lack of Transparency and Technical Detail:** The draft 2023 IRP needs to provide proper technical detail around critical assumptions used in the models. It needs more robust and transparent processes in developing the IRP, including the qualifications of modellers and the quality control procedures applied. Both the 2019 and 2023 IRPs' lack of transparency in their modelling and assumptions, making it difficult for independent analysts to verify their conclusions.

8. **Systemic and Procedural Issues:** The IRP's development process is flawed because it focuses too much on short-term solutions over long-term sustainability. Also, it is near impossible to reasonably access the accuracy and viability of the feasibility of the transmission and infrastructure development projections, particularly regarding the rapid integration of renewables.

9. **Impact on South Africa's Economy and Health (Transition Costs) and Benefits:** The draft IRP's reliance on fossil fuels and its potential to increase greenhouse gas emissions and health impacts will negatively affect the long-term economic and social costs for South Africa. This will also compromise the competitiveness of South Africa's exports and thus fails to consider the broader impacts of a high emissions pathway on the economy and public health. Conversely, the 2023 Plan underestimates the economic benefits and job creation potential of a more aggressive shift towards renewable energy.

10. **The IRP 2023 and Impact on National Transmission Grid:** The draft Integrated Resource Plan (IRP) 2023 for South Africa does not adequately address the implications and considerations regarding the national transmission grid. The specific documents I have reviewed specifically in relation to the draft 2023 IRP, do not directly address shortcomings related to the national transmission grid in extensive detail. Nevertheless, here are several interrelated issues with the draft IRP's approach that will impact grid considerations:

    10.1. **Limited Emphasis on Grid Infrastructure:** The draft IRP 2023 plan's scaling-back of renewable energy, as listed above, does not fully consider the necessity for significant investments in grid infrastructure to accommodate a more substantial renewable penetration, manage variability, and ensure reliability.

    10.2. **Transmission Constraints:** The draft IRP 2023 does not adequately address the broader prevailing issue of transmission grid constraints. The rapid integration of renewables

requires not just generation capacity but also significant enhancements to the transmission grid to handle distributed energy resources, manage load balancing, and ensure energy can be transported from generation sites to consumption areas efficiently.

10.3. **Lack of Detailed Planning for Grid Expansion and Upgrades:** Related to the above points, there appears to be a gap in detailed planning for the necessary grid expansion and upgrades within the IRP. Effective integration of new power sources, particularly renewables which can be geographically dispersed, demands comprehensive planning for grid expansion, reinforcement, and the incorporation of smart grid technologies to enhance flexibility and reliability.

10.4. **Underestimation of Infrastructure Development Needs:** The draft IRP does not realistically estimate the pace and scale of infrastructure development needed, especially in transmission, and this is a significant shortcoming of the draft IRP 2023. As renewables are scaled up, the demand for new transmission lines and grid upgrades will and have increased substantially. Therefore, it is an implied criticism that the IRP does not fully account for the complexities and periods involved in expanding and modernizing the grid to support the future energy mix.

11. Comparative Analysis: Comparing it to Australia's 2024 Draft Integrated System Plan (ISP): The Australian 2024 draft ISP provides a comprehensive roadmap for the National Electricity Market in Australia. It draws on extensive stakeholder engagement on the methodology and inputs, assumptions and scenarios and power system expertise to develop a roadmap that optimises consumer benefits through a global transition period of great complexity and uncertainty. The Australian draft ISP 2024 and its optimal development path support Australia's complex and rapid energy transformation towards net zero emissions, enabling low-cost renewable energy and essential transmission to provide consumers with reliable, and secure and affordable power. Additionally, it serves the regulatory purpose of identifying actionable and future ISP projects, as well as the broader purposes of informing market participants, investors, policy decision makers and consumers.

Nevertheless, the Draft Integrated Resource Plan (IRP) 2023 of South Africa and the Draft Integrated Systems Plan (ISP) 2024 of Australia offer two distinct roadmaps for the energy future of their respective countries, each reflecting unique national priorities, energy resources, and policy environments.

South African Policy Approach

South Africa's IRP 2023, approved by the Cabinet, is a strategy to assess and guide the country's electricity demand and supply, intending to serve as a blueprint for the development of electricity infrastructure and overall costs. This plan acknowledges the changing dynamics in electricity demand projection, Eskom's energy availability factor, the shutdown plan for Eskom's coal-fired power plants, and the cost of new power-generation technologies. Despite these acknowledgments, the plan suggests a slower adoption of renewable energy in favour of maintaining a mix that includes fossil fuels, which has been a point of contention and discussion within the country.

Australian Policy Approach

In contrast, Australia's ISP 2024 outlines a more aggressive shift towards renewable energy, aiming to support the transition to a net-zero economy by 2050. The Australian Energy Market Operator (AEMO) has highlighted the fast-paced exit of coal-fired power from the grid and emphasized the significant role of renewable energy, which accounted for almost 40% of the total energy delivered through the National Electricity Market (NEM) in the first half of 2023. The plan calls for expedited construction of large-scale renewable projects and transmission lines, suggesting that rooftop solar would need to increase fourfold by 2050. The draft ISP 2024 underscores the urgency for investment to ensure safe, reliable, and affordable energy, mapping out an optimal development path of generation, storage, and transmission investments required as Australia transitions to a net-zero economy by 2050.

Comparatively, the Australian plan is a more ambitious and forward-looking strategy, particularly in its embrace of renewable energy and its alignment with global climate goals. Key factors, that I list, from the Australian ISP 2024 that stands out and that is lacking from South Africa's IRP 2023 include:

11.1. **Accelerated Renewable Adoption:** Australia's ISP 2024 emphasizes a rapid and extensive adoption of renewable energy sources, in line with global trends and climate commitments.

11.2. **Greater Emphasis on Public Engagement and Stakeholder Collaboration:** The draft ISP 2024 involved extensive collaboration with stakeholders, including industry, government, and community representatives, reflecting a broad consensus in its development.

11.3. **Actual Detail about Cost Savings and Economic Benefits:** The Australian plan outlines the economic benefits of following its roadmap, projecting $17 billion in savings for consumers by avoiding costs that would arise; if necessary, projects were delayed.

11.4. **Actual Detail on Investment in Infrastructure and Transmission Grid:** There is a clear focus on the urgent need for investment in energy infrastructure, including transmission lines and renewable energy projects, to ensure energy reliability and affordability. AEMO's ISP for 2022, places significant emphasis on the upgrading and expansion of the Australian National Transmission Grid. The plan recognizes:

11.4.1. The need for about 10,000km of new transmission to accommodate increased electrification and a substantial rise in both large-scale variable renewables and distributed solar.

11.4.2. This expansion is critical for balancing the intermittency of renewable energy sources and ensuring energy security as the economy continues to electrify.

11.4.3. The ISP 2022 identifies actionable and future network projects necessary to support this transition, with a scenario-weighted analysis showing these projects delivering $28 billion of benefits, about 2.2 times their cost.

11.4.4. In terms of financing and private sector investment in the Australian national transmission grid infrastructure, the ISP 2022 acknowledges the challenges related to supply chains, resource availability, gaining and retaining social license, and the financeability of projects. For example, the New South Wales (NSW) government has created a Transmission Acceleration Fund with Aus$1.2 billion of revolving funds to enable early works and accelerate the delivery of NSW projects, highlighting a model where government support plays a crucial role in facilitating infrastructure development.

11.4.5. Furthermore, the new Commonwealth Government's Aus$20bn Rewiring the Nation Fund is expected to facilitate the financeability of major transmission projects, improving community benefits and supporting social license.

11.4.6. These initiatives indicate a shift towards leveraging public funds and policy support to attract private sector investment.

11.4.7. <u>However, there is also mention of the Australian Energy Regulator's (AER) draft Rate of Return Instrument potentially reducing incentives for investment by changing the assessment of returns on equity, which highlights the importance of regulatory settings in encouraging private sector investment.</u>

11.4.8. Overall, the Australian ISP 2022 and draft ISP 2024 both underscore the urgent need for investment in transmission infrastructure and suggests that while there are challenges, strategic government funding and policy support are envisioned

to play key roles in attracting private sector investment, alongside adjustments to regulatory frameworks to ensure these essential projects are financeable and can be delivered timeously.

Therefore, the draft 2023 IRP in South Africa must include a more detailed set of recommendations aimed at improving regulatory frameworks for transmission investment and planning. These recommendations must:

i. Aim to support efficient investment and timely delivery of major transmission projects as ought to be outlined by Eskom Transmission Division and/or the newly formed National Transmission Company of South Africa (NTCSA).
ii. Primarily focus on areas like financeability, ensuring social license, and improving planning activities. This will allow the NTCSA to expediently explore various financing models with private sector funding for the build, maintenance, and expansion of the transmission grid infrastructure.
iii. <u>These models must include project finance, where specific projects are financed based on the projected cash flows rather than the balance sheet of the company</u>.
iv. Public-private partnerships (PPPs) must also be utilized, allowing private sector investment in public infrastructure projects.
v. Other methods include issuing corporate bonds to raise capital from investors, and direct investment from private equity firms or infrastructure funds that specialize in utility and energy investments.

While both plans aim to address their respective countries' energy challenges and transition towards a more sustainable energy future, Australia's ISP 2024 is distinguished by its ambitious renewable energy targets, broad stakeholder engagement, and detailed pathway to achieving a net-zero economy by 2050. These attributes contribute to its perception as a more comprehensive and forward-looking plan compared to South Africa's IRP 2023.

<u>Conclusion</u>

A more ambitious policy commitment is required to phase out coal and roll out renewable energy, as well as for improvements in the IRP's development process to ensure a more sustainable, transparent, and technically sound energy future for South Africa. The continuation of these issues from the 2019 to the 2023 draft highlights a consistent underestimation of the potential benefits of a rapid transition to renewable energy, as well as a tendency to favour fossil fuels despite their environmental and health impacts. I posit for a re-evaluation of South Africa's energy strategy to prioritize sustainability, economic viability, and alignment with global climate goals.

Additionally, there is urgent improvement needed in how the 2023 draft deals with the critical aspects of transmission and grid infrastructure necessary to support South Africa's energy transition effectively. Adequate attention to this crucial area is sorely missing in draft IRP 2023, which remains a critical area for ensuring the reliability, sustainability, and affordability of electricity supply in the face of changing generation patterns and the growing importance of renewable energy sources.