



ARTICLE

Energy transition

Acceleration of generation capacity in South Africa

As we move from 2020 into 2021, it has become clear that the Covid-19 pandemic and ongoing load-shedding continue to severely hinder the South African economy. In the meantime, energy transition is accelerating globally, spurring South Africa on to decarbonise its economy while supporting sustainable economic growth.

“This will require implementing the shift to a lower carbon economy in a way that maintains and creates employment, encourages investment and builds low carbon industries and supply chains within South Africa.”

Christo Roux, Senior Managing Director
FTI Consulting South Africa

2020 recorded the highest number of load-shedding hours since 2015, with the disruption continuing into 2021 as Koeberg Unit 1¹ (900MW of capacity) was taken offline ahead of scheduled maintenance in January and remained offline until 22 June. The impact of this unplanned disruption demonstrates the continued fragility of the electricity supply and demand balance in South Africa and the urgent need to bridge this gap. Some progress could be

seen on this front by the end of 2020 with the launch of the Risk Mitigation IPP Procurement Programme (RMI4P)² and Eskom being increasingly open to using Independent Power Producers (IPPs) to support its own generation units.

This momentum has continued in 2021 but not without challenges. In March we saw the opening of the Renewable Energy Independent Power Producers Procurement (REIPPP)³ Round 5 for 2,600MW of wind and solar power, with further rounds promised for later this year and in the first half of 2022. At the same time eight projects (1,846MW) were awarded preferred bidder status under the RMI4P with three further projects (150MW) also awarded preferred status under the programme on 1 June 2021. While the legal and contractual concerns surrounding the Karpowership projects (1,220MW in total) have been well publicised and may not progress, the remaining RMI4P projects will still add 776MW of dispatchable power to the grid by mid-2022. This is approximately equal to one unit of the Medupi or

1 Eskom press release

2 Department of Mineral Resources and Energy media statement

3 Department of Mineral Resources and Energy media statement

Kusile coal power stations and will significantly mitigate South Africa's electricity supply risk.

The biggest game changer so far this year was President Ramaphosa's announcement⁴ on 10 June that Schedule 2 of the Electricity Regulation Act will be amended, raising the exemption threshold for the National Energy Regulator of South Africa (NERSA) licensing requirement from 1MW to 100MW. This is a ten-fold increase on the 10MW previously mooted by the Department of Mineral Resources and Energy and double the 50MW threshold that was being lobbied for by the private sector.

The change in threshold essentially means that the requirement to obtain NERSA licences (previously one of the most time-consuming activities of setting up small power projects) will no longer be needed for embedded generation projects up to 100MW. Such projects may also be grid connected without requiring a NERSA licence. This creates opportunities for renewable energy projects to be located where they can be most efficient rather than being co-located on the same site as where the energy is consumed.

This does not mean that there can be a sudden free-for-all of any possible project being connected to the grid. To ensure orderly development of the system and continued grid stability, private generation projects wishing to use the grid will still require:

1. A grid connection permit from either Eskom or the relevant municipality,
2. A wheeling agreement with Eskom and the relevant municipalities for transfer across the grid,
3. A successful Environmental Impact Assessment and compliance with all other relevant legislation,
4. Registration approval by NERSA to ensure the above requirements are in place and the project has authorisation to operate,

Together with the gazetted amendments to the Electricity Regulations on New Generation Capacity in October 2020 to enable municipalities in good financial standing to procure their own power outside of Eskom, the Schedule 2 amendment has the potential to significantly open up the South African power generation sector to private investment and development. For example, we have already seen increasing interest in renewable energy Power Purchase Agreements (PPAs) with the 900MW announced

by Sasol⁵ and Air Liquide, Mediclinic's⁶ signing of a PPA for approximately 4,100 MWh per annum of solar power across six hospitals, and eThekwin⁷ municipality's issuing of a Request For Information (RFI) for 400MW of technology agnostic power generation.

The Minerals Council of South Africa⁸ has estimated that the private sector could develop up to 5,000MW of embedded generation capacity for commercial operations, mining, and heavy industry. Factors such as the speed with which many of these consumers wish to avoid load-shedding disruption, the increase in environmental, social, and governance (ESG) considerations and more stringent emissions targets contribute to an expectation that the future lies in renewables, with baseload power to balance their variability being provided by existing grid supply, additional readily dispatchable embedded generation (such as diesel generators) or energy storage solutions where it is sufficiently cost effective and technologically possible.

“If most of the generation added is renewable and variability is managed by existing grid supply rather than dispatchable embedded generation or storage, then the impact of this on Eskom's demand profile will need to be considered.”

Laura Menzies, Director
FTI Consulting South Africa

At the moment, ~39,000MW⁹ of South Africa's (primarily Eskom) generation capacity of a total ~52,000MW is baseload coal and nuclear plants, compared to just 6,000MW of hydro and gas/diesel power plants that can provide additional supply during peak demand periods. However, many of the mining and industrial users that would be likely to build their own embedded generation with renewables require a constant power supply to maintain operations. As a result, these users would need to draw on grid power at different times of the day or in different seasons to manage the variability of their renewables generation. This could potentially change Eskom's current demand profile from one which is fairly repeatable, predictable and based primarily on

⁴ Department of Mineral Resources and Energy media statement

⁵ Sasol press release

⁶ ESI Africa

⁷ eThekwin Municipality RFI

⁸ Minerals Council South Africa media statement

⁹ IRP 2019

consumer usage patterns to one which must also take into consideration weather patterns and other factors that impact renewable energy supply. This becomes a far more complex challenge for electricity planners and grid management. There are also potential implications for the most suitable long term generation fleet for Eskom and how private sector participation in generation is coordinated to best maintain grid stability and reliable supply across all users.

At the end of 2020, we proposed that South Africa's power sector needed to turn its focus from planning to implementation if new capacity was to be added by mid-2022. We have seen progress in this regard with the embedded generation threshold set to be raised to 100MW, preferred bidder awards under the RMI4P, opening of REIPPP Round 5, and the announcement of major private sector PPA tenders. While the precise details of the implementation of embedded generation projects up to 100MW are still to be announced (e.g. grid connection permitting and wheeling agreement processes), raising the license threshold to 100MW is undoubtedly one of the biggest disruptors in the South African power market in decades. The positive response shows that there is a real opportunity for the private sector to secure its own lower carbon power, mitigating generation capacity constraints while supporting South Africa's post-Covid-19 economic recovery through renewed activity and infrastructure investments.

The increased threshold may create the challenge of coordinating a faster than expected shift away from baseload generation towards more variable renewable generation, but the likely economic benefit of bridging South Africa's power generation gap and the environmental benefit of reducing power generation emissions makes it a challenge worth overcoming.

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