

Effective storage solutions essential to a successful Eskom turnaround

By [Seydou Kane](#)

21 Jan 2020

The [Integrated Resource Plan](#) (IRP) gazetted in October 2019 emphasises that South Africa will continue to pursue a diversified energy mix that reduces reliance on limited primary energy resources. While coal remains the primary resource, renewable energy with energy storage presents an opportunity to diversify the electricity mix, to distribute generation, and provide off-grid electricity.



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In turn, the plan also affirms that renewable technologies "present huge potential for the creation of new industries, job creation, and localisation across the value chain".

The complementary relationship between smart grid systems, and energy storage is also highlighted in the plan, which also notes that renewable energy is not always generated at times of peak demand, but that new energy storage solutions are vital to the South African economy.

The Department of Minerals and Energy notes that it is inundated with requests from companies, municipalities and private individuals for the necessary approvals for distributed (or embedded) generation licenses, and the IRP notes that increasing these approvals could address energy shortages in the medium term.

The minister of public enterprises also released the [Roadmap for Eskom 2019](#), which notes that demand patterns in South African are changing with the availability of more affordable self-generation, energy efficiency and storage technologies.

Shift

These developments all combine to indicate a shift beyond traditional energy generation, transmission and distribution models.

A renewed focus on renewables combined with a willingness to entertain self-generation projects less than 10MW (which could provide power for up to 10,000 homes) indicates that the energy sector is primed for innovative energy storage solutions.

South Africa is looking to increase its share of renewable from less than 10% currently to over 25% by 2030. As Eskom contributes 95% of the country's power, its ability to develop [viable renewable projects](#) is crucial.

In October 2018, the national utility announced [plans to develop](#) a 1440MWh (or 525-million KWh a year) battery energy storage system (BESS) spread across 90 sites. As South Africa consumes [an estimated 207-billion kWh a year](#), this storage system will be crucial in supporting and maximising renewable projects, as well as adding much-needed flexibility to the grid.

Challenges

Instead of having to closely match generation with seasonal demand, any excess power produced, whether from fossil fuels or renewable sources, will be stored for later use. Conversely, when generation capacity is low, whether due to equipment failure or maintenance, stored power can be used to fill the gap.

The most important challenges these technologies address include an ageing grid, transmission congestion and connecting renewable sources (wind and solar) to the grid.

As we move from an ageing unautomated grid to an efficient and completely modern digitised grid (which raises the need for cyber security), the network also needs to proactively focus on rapidly changing technology such as mass storage and renewables. Data and analytics hold the key to transforming businesses and lay the groundwork for the Smart Grid of tomorrow, leveraging system intelligence to drive efficiency, reliability and productivity.

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