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A MONTHLY REVIEW OF ENERGY-RELATED NEWS

SOUTH AFRICA ENERGY ROUNDUP

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ESKOM GENERATION AND SALES

Eskom plant performance improves

An improvement in plant performance has enabled State-run power utility Eskom to avoid load-shedding for more than a month since the declaration of an extended period of rotational power cuts in March. However, COO Jan Oberholzer has reiterated that the risk of load-shedding will remain for the coming six to 12 months, during which Eskom will implement a nine-point recovery plan to improve the energy availability factor of its underperforming coal fleet. As part of a winter plan outlined jointly with the Department of Public Enterprises on April 3, Eskom said it intended to avoid load-shedding during the high-demand winter months, and that should cuts be required, they would be limited to Stage 1, or between 1 000 MW and 2 000 MW. From March 14 to 23, a total of 595 GWh of load was shed by the utility over a period of ten consecutive days, with the supply deficit arising primarily as a result of a high level of unplanned breakdowns across its coal fleet. The shortfall was exacerbated, however, when a cyclone destroyed transmission infrastructure carrying power from Mozambique to South Africa, and after Eskom ran short of diesel and water reserves to power its open-cycle gas turbines (OCGTs) and its pumped-hydro schemes respectively. During the height of load-shedding in March, unplanned breakdowns climbed to more than 12 000 MW. Oberholzer attributed the recent improvement in plant performance partly to daily planned maintenance of more than 7 000 MW over the Easter weekend, during which unplanned plant failures fell to as low as 5 260 MW. Adequate diesel-tank levels at the OCGTs have also been restored, along with dam levels at the pumped-storage schemes. One of the two power lines from Mozambique has been recovered, allowing Cahora Bassa to contribute 900 MW to the South African grid. On April 14, Kusile Unit 3 was synchronised to the grid and the unit at the coal power station project had already achieved 400 MW during capability and acceptance testing, which would continue for the next few months.

New Kusile unit powers up

Unit 3 of the new Kusile power station, in Mpumalanga, has been synchronised to the national grid, marking a key milestone towards the full commercialisation of the unit. The unit is expected to be commercially operational six months after the first synchronisation. The first Kusile unit went live in August 2017. Kusile will have six units, each producing 800 MW.

ESKOM FINANCES AND CORPORATE

Cosatu wants facts before talks on Eskom job cuts

The Congress of South African Trade Unions (Cosatu) is prepared to discuss reducing workers at the power utility if it is given proof of overstaffing and that job cuts will save Eskom Holdings. Until now, proposals to turn around the debt-ridden, loss-making utility have been met with fierce opposition from labour unions. "We are asking them to please table the evidence and research that indicates that Eskom has too many workers", Cosatu general-secretary Bheki Ntshalintshali has said in an interview with news agency Bloomberg. Neither Eskom, nor government has provided information on which specific jobs are not required, he says, adding that Cosatu may be prepared to discuss how workers could be moved. The World Bank estimates that the power utility has 66% too many employees, while Eskom has said of its 48 600 employees it has 16 000 more workers than it needs.

Eskom bailout brought forward

Government has had to bring forward the bailout of State power firm Eskom, after it rushed R5-billion to the struggling utility in April to avert a default. Government promised Eskom a R23-billion-a-year bailout over the next three years in February, but it expected to start giving the cash-strapped utility the first tranche of funds only between August and October this year. However, by the end of March, Eskom was experiencing difficulties raising funding, according to a Finance Ministry report to Parliament, prompting Finance Minister Tito Mboweni to authorise the cash transfer on April 2.

Goldman says Eskom crisis leaves no time for unbundling plan

The plan to split State-owned power utility Eskom into generation, distribution and transmission divisions will take longer than government has to revive the business, according to Goldman Sachs Group. President Cyril Ramaphosa has announced a R69-billion bailout for Eskom over the next three years and a plan to split the business into three. That will take too long, according to Goldman CEO for sub-Saharan Africa Colin Coleman, who, in 2017, called Eskom the biggest risk to the economy. "We have a crisis that cannot wait three or four years of market restructuring," he said in a report by FTI Consulting titled 'The Future of South Africa'. "As we've seen from overseas markets, you need real transactional capabilities to unbundle even less complicated structures than Eskom successfully." Goldman, in 2015, informally advised South Africa's National Treasury on the sale of State assets to raise money for Eskom when its debt, which has increased to more than R419-billion, was about only half that amount, a person with knowledge of the matter said at the time. "My bias is for a vertically integrated entity," Coleman said of Eskom. "Nothing replaces good management, independent of the market structure, in a crisis."

NUCLEAR

Eskom's nuclear plant undergoes revamp to extend life span

Electricity group Eskom is overhauling Africa's sole nuclear plant – the 1 860 MW Koeberg facility – with the aim of extending its life span by at least 20 years. Koeberg “has been well-maintained over its 35-year history and, hence, only a relatively small number of large components require replacement”, Eskom has said to news agency Bloomberg. Koeberg's first unit was completed in 1984 and the second a year later. The plant would have been decommissioned in 2024, assuming it operated for 40 years. Eskom, which started planning the overhaul in 2010, has committed the necessary funds and is implementing it in several stages. Water storage tanks used for refueling one of Koeberg's units have already been installed, a new reactor vessel cover is being manufactured and the plant's steam generators are scheduled to be replaced in 2021, it says. The utility did not specify how much it is spending.

RENEWABLE ENERGY

CSIR highlights positive contribution of renewables during 2019 load-shedding periods

South Africa's fleet of utility-scale variable renewable-energy (VRE) plants contributed to limiting the extent of load-shedding instituted by power utility Eskom during the first quarter of 2019 by 46%, new analysis by the Council for Scientific and Industrial Research (CSIR) shows. The report adds that, had the instantaneous contributions from the VRE fleet of up to 2.3 GW during those periods when rotational cuts were made been absent, Eskom would have been forced to raise the level of load-shedding instituted from Stage 4 to Stage 5, or even Stage 6. At Stage 1, Eskom cuts a minimum of 1 000 MW, which rises by 1 000 MW for every subsequent stage declared. At Stage 4, between 4 000 MW and 5 000 MW is shed. A total of 769 GWh of power was shed during the first quarter, with 595 GWh cut in March alone, when the utility resorted to ten days of consecutive load-shedding. At points, Eskom declared Stage 4 load-shedding. Compiled by the CSIR Energy Centre's Jarrad Wright and Joanne Calitz, the analysis shows that the utility-scale VRE fleet contributed 2 975 GWh, or 5.3%, to the power system during the first quarter. Monthly contributions ranged from 4.9% to 6%, weekly contributions from 4.1% to 7% and daily contributions from 2.9% to 7.7%. South Africa's VRE fleet comprised 1 479 MW of solar photovoltaic capacity, 2 078 MW of onshore wind and 500 MW of concentrated solar power plants. During load-shedding periods, the utility-scale VRE fleet contributed 357 GWh of the total 2 975 GWh from VRE during the first quarter of 2019. In other words, load-shedding

could have risen from 769 GWh to 1 126 GWh, a 46% increase, had it not been for the contribution of the VRE fleet.

NUM calls for reskilling of Eskom workers to equip them for clean-energy jobs

The National Union of Mineworkers (NUM) has called for greater attention to be given to the reskilling of State-owned power utility Eskom workers “so that they can be absorbed” into clean-energy technology work opportunities. In a statement released following a meeting of its national executive committee in Gauteng on April 30, the NUM continued to express misgivings over independent power producers (IPPs), as well as the proposed unbundling of Eskom into three separate businesses of generation, transmission and distribution. The NUM reported, however, that it had resolved to seek expert advice on IPPs and to assess alternatives. It also urged government to extend its focus beyond the introduction of new power generating technologies and to pay greater attention to the reskilling of current Eskom workers “so they can be absorbed into the envisaged clean-energy technology, if indeed it is going to create more jobs as they claim”.

Positive response to Nedbank's pioneering renewable-energy bond

Financial services group Nedbank has reported an “overwhelmingly positive” market response to its pioneering listing of a renewable-energy bond on the Green Bond Segment of the JSE. Nedbank is the first South African bank to list such an instrument on the bourse's platform, which was itself launched in October 2017. The proceeds will be used to provide financial support to solar and wind projects. The bank received bids worth R5.5-billion, more than three times above the amount of R1.7-billion in bonds placed to fund renewables projects.

Sanedi urges businesses to apply for Sunref loans

The South African National Energy Development Institute (Sanedi) has urged businesses to consider loans from Sunref, an international lending programme, to finance renewable-energy and efficiency projects. Developed by the French Development Agency, Sunref relies on two pillars: a credit line to partner bank the Industrial Development Corporation (IDC) and a technical assistance facility funded by Seco, the State secretariat for economic affairs in Switzerland. The credit line with the IDC is worth about \$60-million and meant to fund projects that fit its mandate to promote energy efficiency and renewable energy in South Africa. Projects which will be considered for funding include solar rooftop photovoltaic ones, as well as those in biogas and biomass energy and any industrial projects that improve their processes to reduce carbon emissions. The Sunref credit line with the IDC is a debt fund offered at a concessionary rate. The green loans can be combined with equity support from the IDC.

Small-scale embedded generation held back by policy uncertainty

Lingering policy uncertainty and regulatory delays are continuing to impede the development of hundreds of small-scale embedded generation (SSEG) projects, which are considered to be the quickest and cheapest way for South Africa to address its current electricity supply deficit. The South African Independent Power Producer Association estimates that between 2 500 MW to 3 500 MW of capacity is being constrained as a result of the problem and that 30 MW to 50 MW could be added monthly once coherent processes are instituted. The prevailing policy framework and regulatory processes remain deeply problematic and are affecting small plants below a capacity threshold of 1 MW, as well as larger SSEG projects. In fact, the South African Photovoltaic Industry Association has identified more than 280 MW from projects under 1 MW and about 600 MW from projects between 1 MW and 10 MW that are currently built, but not operating, as a result of regulatory gridlock. Although sub-1 MW plants have been exempted from the theoretical burden of licensing, they are currently tied up in red tape arising from a November 2017 Licensing Exemption and Registration Notice published in terms of the Electricity Regulation Act (ERA). Issued by the Department of Energy (DoE), with the National Energy Regulator of South Africa's (Nersa's) concurrence, the notice amended Schedule 2 of the ERA. The DoE and Nersa acknowledge the notice is "flawed" and the DoE sent an updated notice to Nersa for its concurrence in late 2018. The updated notice exempts projects below 100 kW from any form of registration and instead directs municipal distributors to keep a register of such facilities. Plants between 100 kW and 1 MW in size are required to register with Nersa and pay a R200 registration fee. However, Nersa has not yet published the new notice for public consultation and is still only considering registration applications under the flawed 2017 notice. As a result of a lag between the publication of the notice and the release of application forms and the finalisation of the R200 registration fee late last year, only a handful of plants have been formally registered by Nersa. Several other plants are lying idle, while hundreds of other potential projects remain on hold until a new notice is instituted and the registration process is clarified.

Windaba to extend gaze beyond South Africa to rest of continent

The ninth edition of the yearly Windaba conference will expand its focus from the role that wind energy can play in improving electricity security and development in South Africa to the generation technology's potential in the rest of sub-Saharan Africa. The 2019 gathering takes place in Cape Town from October 8 to 9 under the theme of 'Unleashing Renewable Power for African Economic Development'. Besides focusing on the employment and manufacturing opportunities associated with the growth of the industry in South Africa under the Renewable Energy Independent Power Producer Procurement

Programme (REIPPPP), the conference has been designed to share the lessons learned from South Africa's world-renowned competitive-bidding process with the broader continent. South African Wind Energy Association chairperson Mercia Grimbeek says the REIPPPP continues to be one of the most exciting wind energy opportunities globally.

OTHER

Tender launched for LED streetlights

The Deutsche Gesellschaft für Internationale Zusammenarbeit, in rolling out its Energy Efficiency Street Lighting Retrofit Project, has called for companies to submit bids for the supply of 36 light-emitting-diode (LED) floodlight luminaires with telemanagement systems. In cooperation with the Department of Energy, these floodlights will be retrofitted on six high masts in the Katlehong region, in Ekurhuleni. The project, which is funded through a co-funding grant agreement from the Swiss State Secretariat for Economic Affairs, supports streetlighting LED retrofits in South African municipalities to generate best practice models and build capacities in promoting energy efficiency in the public streetlighting sector in South Africa.

Plan required for uptake of 4IR in power sector

The power generation and transmission sector has been slow in the uptake of the Fourth Industrial Revolution (4IR), says global engineering company Aurecon Group energy unit manager Sibuyi Mvana. She notes that this is mainly owing to differing views on the impact of 4IR and the limited understanding of the value of available technologies. It has become even more critical that people understand exactly what 4IR is in the current technological climate and how it will impact on their working environments. The uptake of technological advances, such as battery storage, drones and virtual reality, has significantly improved the level of accuracy of project designs, reduced project costs and led to a lot more collaboration and involvement from clients. "From a 4IR perspective, as South Africa, we lack a proper plan and framework to prioritise key areas within 4IR. Doing so will help us properly scope the education and skills required for us to participate in this sector."

Sanedi's reflective roof coatings pilot moves to scale

The South African National Energy Development Institute's (Sanedi's) Cool Surfaces Project has progressed from collaboration to a completed, scaled-up project in Groblershoop, in the Northern Cape. Reflective roof coatings have reduced the indoor daytime temperatures at a low-cost housing project, in Groblershoop, from above 34 °C to a more comfortable 25 °C, says Sanedi Energy Efficiency, Cool Surfaces and Communications project manager Denise Lundall. The Cool Surfaces Project began as a collaboration between the South African and US departments of energy. The project is the response to South Africa's

need for a quality energy-passive, low-cost, low-maintenance cooling technology that is fire retardant and waterproof.

Zambia sets sights on yet more solar as another 34 MW is connected to grid

The 34 MW Ngonye solar photovoltaic (PV) plant, in Zambia, has been connected to the country's grid and has started operations. Once fully up and running, the facility is expected to produce about 70 GWh/y of electricity and help the Southern African country diversify its power mix away from its current reliance on hydroelectricity. The Zambian government has launched a series of initiatives to promote the development of renewables and has set a goal of installing up to 600 MW of solar PV capacity in the next two to three years. Located near the capital city of Lusaka, the power station has been built by Enel Green Power (EGP), which was awarded the right to develop, finance, construct,

own and operate the plant in June 2016. The development, which is EGP's first in Zambia, is supported by a 25-year power purchase agreement signed with Zambia's State-owned utility, Zesco. The Ngonye project is the second to be developed in Zambia as part of the World Bank Group's Scaling Solar programme, which offers a "best-in-class" framework for the procurement of solar projects from independent power producers (IPPs).

The first plant commissioned under the scheme was the 54 MW Bangweulu solar PV station, developed in north-eastern Zambia by French renewable-energy company Neoen. In parallel, the Zambian government launched another tender for an additional 100 MW of solar PV under the GET FiT solar framework. In April, solar PV projects with a combined capacity of 120 MW were awarded to six IPPs, at a competitive weighted average of \$0.044/kWh. The tariffs associated with the Ngonye and Bangweulu projects were below \$0.08/kWh.

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