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ENERGY ALERT

BREAKING NEWS

IN THIS **ISSUE**

CDH
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THE DRAFT INTEGRATED RESOURCE PLAN 2018: THE ROADMAP FOR FUTURE GENERATION CAPACITY

The integrated resource plan (IRP) is an electricity capacity plan which aims to provide an indication of the country's electricity demand, how this demand will be supplied and what it will cost.

The long overdue draft Integrated Resource Plan 2018 (IRP Update) was released on 27 August 2018 for public comment by the Minister of Energy, Jeff Radebe. Comments to the IRP Update are to be submitted by interested persons by no later than 26 October 2018.

The IRP Update "least-cost plan" up to 2030 contains only a capacity allocation for solar photovoltaic (PV), onshore wind, embedded generation and gas and notably excludes nuclear, solar CSP and any new coal generation capacity.

Why is the IRP important?

The integrated resource plan (IRP) is an electricity capacity plan which aims to provide an indication of the country's electricity demand, how this demand will be supplied and what it will cost. On 6 May 2011, the Department of Energy (DoE) released the Integrated Resource Plan 2010-2030 (IRP 2010) in respect of South Africa's forecast energy demand for the 20-year period from 2010 to 2030. The IRP 2010 was intended to be a 'living plan' that would be periodically revised by the DoE. The IRP 2010 stated that at the very least the IRP should be revised by the DoE every two years but this was never done.

In terms of the Electricity Regulation Act, No 4 of 2006 (ERA), the National Energy Regulator of South Africa (NERSA) is required to issue rules designed to implement the IRP. It is notable that NERSA has not issued any such rules since the IRP was first published. Instead, the DoE has to date implemented the IRP 2010 by issuing Ministerial Determinations in line with s34 of the ERA in order to give effect the procurement of new generation capacity.

What is the difference between the IRP and an IEP?

The National Energy Regulator Act, No 34 of 2008 places an obligation on the Minister of Energy to develop, and on an annual basis, review and publish the Integrated Energy Plan (IEP) in the Government Gazette. The IEP is meant to serve as the guide for energy infrastructure investments, take into account all viable energy supply options and guide the selection of the appropriate technology to meet energy demand. There has been no IEP published since the enactment of the National Energy Regulator Act, and the IRP Update gives no indication as to when such IEP will be published.

What assumptions have changed since the IRP 2010?

A number of assumptions utilised in the IRP 2010 have since changed which necessitated the review. The IRP Update states that the key input assumptions that have changed since the IRP 2010 was promulgated include, amongst others:

1. electricity demand projection that did not increase as previously envisaged;
2. existing Eskom plant performance that is significantly below the assumed 86% availability factor;
3. additional capacity committed to and commissioned; and
4. technology costs that have declined significantly relative to the assumed values in the IRP 2010.

"Least-cost plan" up to 2030

The IRP Update "least-cost plan" up to 2030 contains only a capacity allocation for solar photovoltaic (PV), onshore wind, embedded generation and gas and notably excludes nuclear, solar CSP and any new coal generation capacity.

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The projected unit cost of electricity by 2030 was also found to be similar except for market-linked gas prices.

Interestingly, the IRP Update results of the demand-growth scenario analysis reveals that the installed capacity and energy mix for the period up to 2030 between the different scenarios tested during the IRP Update process do not differ materially, notwithstanding the reduction in demand for this period. This is due mainly to the decommissioning of approximately 12 GW of Eskom coal plants in this period.

The findings of the scenario analysis are also that the committed Renewable Energy Independent Power Producers Programme (RE IPP Programme), including the recent 27 signed projects, and the Eskom capacity rollout ending in 2022 with the last unit of Kusile, will provide more than sufficient capacity to cover the projected demand and decommissioning of plants up to approximately 2025.

The projected unit cost of electricity by 2030 was also found to be similar except for market-linked gas prices.

SNAPSHOT OF THE UPDATED ENERGY MIX

	Coal	Nuclear	Hydro	Storage (Pumped Storage)	PV	Wind	CSP	Gas/Diesel	Other (CoGen, Biomass, Landfill)	Embedded Generation
2018	39,126	1,860	2,196	2,912	1,474	1,980	300	3,830	499	Unknown
2019	2,155					244	300			200
2020	1,433				114	300				200
2021	1,433				300	818				200
2022	711				400					200
2023	500									200
2024	500									200
2025					670	200				200
2026					1,000	1,500		2,250		200
2027					1,000	1,600		1,200		200
2028					1,000	1,600		1,800		200
2029					1,000	1,600		2,850		200
2030			2,500		1,000	1,600				200
TOTAL INSTALLED	33,847	1,860	4,696	2,912	7,958	11,442	600	11,930	499	2,600
Installed Capacity Mix (%)	44.6	2.5	6.2	3.8	10.5	15.1	0.9	15.7	0.7	

	Installed Capacity
	Committed/Already Contracted Capacity
	New Addional Capacity (IRP Update)
	Embedded Generation Capacity (Generation for own use allocation)

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Up to the end of 2030, the new capacity demand is primarily driven by the decommissioning of the existing coal-fired plants and the IRP Update contains a detailed decommissioning plan.

The following new additional capacity by 2030 is included:

- 1,000 MW of coal,
- 2,500 MW of hydro,
- 5,670 MW of solar PV,
- 8,100 MW of wind, and
- 8,100 MW of gas/diesel.

Coal

Up to the end of 2030, the new capacity demand is primarily driven by the decommissioning of the existing coal-fired plants and the IRP Update contains a detailed decommissioning plan.

For the period post-2030, the decommissioning of coal plants (total 28 GW by 2040 and 35 GW by 2050), together with emission constraints imposed, imply that coal will contribute less than 30% of the energy supplied by 2040 and less than 20% by 2050.

Under the Eskom build programme, the coal capacity already commissioned is 2 172 MW from Medupi (out of the 4 800 MW planned) and 800 MW from Kusile (out of the 4 800 MW planned).

The IRP Update includes 1 000 MW of coal to power in 2023-2024 based on the already procured and announced two projects under the Coal Baseload IPP Programme.

Renewable Energy

The IRP 2010 contained capacity allocations for electricity generated from renewable technologies, and it is in line with these allocations that the Minister of Energy has made Ministerial Determinations for renewable energy, which included the technologies of solar PV, wind, solar CSP, landfill gas, biomass, biogas and shall hydro.

To date, four bidding rounds have been completed for renewable energy projects under the RE IPP Programme, and on 1 June 2018 the Minister of Energy announced that a new Bid Window 5 for the RE IPP Programme will be launched in November 2018 and is estimated to procure a capacity of 1 800MW.

The publication of the IRP Update, however, casts doubt on the scale and pace of any further bid windows under the RE IPP Programme, specifically as no provision is made for the commissioning of additional wind capacity during 2022 to 2024, or for solar PV in 2023 and 2024.

The study undertaken to compile the IRP Update states that it considered comments from stakeholders such as the CSIR on least cost scenarios, adjusted learning rates for PV and wind technology to reflect the steep decline in prices and took into account the transmission infrastructure costs incurred through solar PV and wind energy generation.

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With gas projected to comprise 15.7% of the installed capacity mix by 2030, it is clear from the IRP Update that it is envisaged that gas will be a significant part of the energy mix in the future.

The IRP Update reaches the following important conclusions with regard to renewable energy after an analysis of the potential scenarios:

- Ministerial Determinations for capacity beyond Bid Window 4 issued under the IRP 2010 must be reviewed and revised in line with the projected system requirements;
- the least-cost electricity path to 2050 is the scenario without a renewable energy annual build limit; and
- unless in the case of policy intervention, all technologies included in the IRP 2010 where prices have not declined cease to be deployed.

The IRP Update concludes by outlining the following recommended plan for renewable energy:

- a detailed analysis of the appropriate level of penetration of renewable energy in the South African national grid needs to be undertaken to better understand the technical risks and mitigations required to ensure security of supply is maintained during the transition to a low-carbon future;
- a least-cost plan with the retention of annual build limits (1 000 MW for solar PV and 1 600 MW for wind) for the period up to 2030 which will provide for a smooth roll out of renewable energy and help sustain the industry;
- renewable energy technologies identified and endorsed for localisation and promotion will be enabled through Ministerial Determinations. Technologies reflected in the IRP Update are a proxy for technologies that provide similar technical characteristics at similar or less cost to the system; and
- the timing of new capacity indicated in the IRP Update can be adjusted depending what occurs with projected electricity demand or Eskom's existing plant performance.

Gas

With gas projected to comprise 15.7% of the installed capacity mix by 2030, it is clear from the IRP Update that it is envisaged that gas will be a significant part of the energy mix in the future.

There is currently 3830 MW of installed capacity generated from gas while a further 8100 MW of new additional capacity is projected to be procured and generated from gas which will eventually contribute to a total of 11 930 MW by 2030. Gas is included in the plan from 2026.

The projected unit cost of electricity by 2030 was found to be similar for all scenarios analysed except for the scenario in which a market-linked increase in gas prices was assumed instead of an inflation-based increase. The analysis revealed that the risk associated with increasing gas volumes to support generation from renewable energy is real unless gas becomes available locally. It was therefore recommended that the impact of the importation of gas and the exposure of electricity prices to currency fluctuations must be assessed prior to any commitment.

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New additional capacity arising from nuclear capacity has not been included inthe period up to 2030.

The IRP Update further recommends that a detailed analysis of the gas supply options should be undertaken in order to better understand the technical and financial risks and required mitigations for an electricity generation mix that is dominated by gas and renewable energy post-2030.

Embedded Generation

The IRP Update allocates 200MW per annum for embedded generation-for-own-use of between 1MW to 10MW, starting in 2018. The activities that constitute embedded generation for own use are set out in Appendix E to the IRP Update and relate to the operation of a generation facility with an installed capacity between 1MW and 10MW, whether connected to the national grid or not, that is operated solely to supply electricity to a single customer or related customer (which includes different legal entities within the same group of companies). The allocation is not technology specific. In order to undertake the activities listed, an IPP will have to apply for and hold a generation licence administered by NERSA.

It is surprising that there is no MW allocation made available for embedded generation for-own-use below 1MW.

Hydro

The IRP Update includes 2500MW of hydro power in 2030 to facilitate the RSA-DRC treaty on the Inga Hydro Power Project, in line with South Africa's commitments contained in the National Development Plan to partner with regional neighbours. The project is stated to have the potential to energise and unlock regional industrialisation.

The main risks associated with import hydro options, as noted in the IRP Update, relate to delays in the construction of both the necessary grid extension and the power plants themselves. There is also a cost risk in that the assumptions used in the IRP Update are based on a 'desktop study' and do not reflect any commitment on the part of potential developers.

Nuclear

New additional capacity arising from nuclear capacity has not been included in the period up to 2030.

It is also expected that the 1800 MW of nuclear power generation from the Eskom Koeberg plant will reach end of life between 2045 and 2047.

The road ahead...

It would appear that despite the IRP Update study period being extended to the year 2050, the IRP Update only provides a firm plan for the period up to 2030. The IRP Update specifically recommends that the post-2030 path not be confirmed and that detailed studies be undertaken to inform the future update of the IRP.

The IRP Update acknowledges that the significant change in the energy mix post-2030 is highly impacted by the assumptions used and that a slight change concerning the assumptions can alter the path chosen. It is therefore critical that the IRP Update, when finalised, is approached as it was intended to be, as a living document that is regularly reviewed and updated.

The IRP Update states that the review and outcome implies that the pace and scale of new capacity developments needed

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The IRP Update unlocks momentum for energy generation and holds promise for the road ahead.

up to 2030 must be curtailed compared with that in the IRP 2010. Effectively this means that the following IPP programmes will likely not continue: the Coal Baseload IPP programme (beyond the current two projects being procured), the Co-Generation IPP Programme and the Small Renewable Energy IPP Programme.

Importantly the IRP Update states that the Ministerial Determinations for capacity beyond Bid Window 4 issued under the IRP 2010 must be reviewed and revised. Ministerial Determinations are issued in terms of s34 of the ERA and require consultation with NERSA. Decisions of NERSA are regulated by the National Energy Regulator Act and require a public participation process. This will certainly impact the timing of the anticipated Bid Window 5 under the RE IPP Programme.

The introduction of a MW allocation for embedded generation in the IRP Update is a welcome development as it will facilitate the process of applying for and obtaining a generation licence and presumably stimulate market growth. It is, however, unclear at this stage as to how NERSA intends to deal with the current backlog of generation licence applications that have been made over the past year(s) and whether this will be dealt with on a 'first come first serve' basis or another method of adjudication.

The IRP Update unlocks momentum for energy generation and holds promise for the road ahead.

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EMBEDDED GENERATION MW ALLOCATION - A WELCOME INTRODUCTION, BUT WHAT ABOUT SMALL SCALE EMBEDDED GENERATION (UNDER 1MW)?

The allocation is not technology specific but rather determined by the installed capacity of the generation facility and the nature of the operation.

By introducing a predetermined MW allocation in the IRP Update, an IPP will no longer have to obtain a Ministerial exemption prior to applying to NERSA for a generation licence.

The draft Integrated Resource Plan 2018 (IRP Update) was released on 27 August 2018 for public comment by the Minister of Energy, Jeff Radebe with comments from stakeholders due 60 days after publication.

The draft IRP Update allocates 200MW per annum for embedded generation-for-own-use of between 1MW to 10MW, starting in 2018. The activities that constitute embedded generation for own use are set out in Appendix E to the draft IRP Update and relate to the operation of a generation facility with an installed capacity between 1MW and 10MW, whether connected to the national grid or not, that is operated solely to supply electricity to a single customer or related customer (which includes different legal entities within the same group of companies). The allocation is not technology specific but rather determined by the installed capacity of the generation facility and the nature of the operation.

Facilitating Market Growth

The introduction of a MW allocation in the draft IRP Update for embedded generation facilities with an installed capacity between one and 10MWs is a welcome development aimed at stimulating the growth of the embedded generation market in South Africa.

Under the current legislative framework, in order to undertake the activities listed as embedded generation in Appendix E to the IRP Update, an applicant has to apply for and hold a generation licence administered by National Energy Regulator of South Africa (NERSA). Given that there is currently no MW allocation for generation capacity of this nature in the Integrated Resource Plan 2010-2030 (IRP 2010), an applicant has to first obtain an exemption from the Minister of Energy from the obligation to comply with the IRP2010 in terms of s10(2)(g) of the Electricity Regulation Act, No 4 of 2006 (Act) before an application for a generation licence can be considered by the NERSA.

In 2017, the Minister of Energy placed a moratorium on granting and processing any such ministerial exemptions until such time as the updated IRP is finalised and clear rules indicating system balancing are developed by the NERSA. This has significantly hindered the growth of the embedded generation market in South Africa as Independent Power Producers (IPP's) have been unable to secure generation licences outside of the government procured Renewable Energy IPP Procurement Programme.

By introducing a predetermined MW allocation in the IRP Update, an IPP will no longer have to obtain a Ministerial exemption prior to applying to NERSA for a generation licence provided that there are still MWs available under the capacity allocation for a particular year.

It is however unclear at this stage as to how NERSA intends to deal with the current backlog of generation licence applications that have been made over the past year(s) and whether this will be dealt with on a 'first come first serve' basis or another method of adjudication.

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EMBEDDED GENERATION MW ALLOCATION - A WELCOME INTRODUCTION, BUT WHAT ABOUT SMALL SCALE EMBEDDED GENERATION (UNDER 1MW)?

CONTINUED

Surprisingly there is no MW allocation in the draft updated IRP for small scale embedded generation for-own-use up 1MW.

Unintended restrictions for embedded generation facilities with multiple offtakers?

The definition of embedded generation contained in Annexure E to the draft IRP Update restricts the MW allocation to generation facilities that are operated to sell electricity to a 'single customer or a related customer (which includes different legal entities within the same group of companies)'. On the current drafting, if an IPP wishes to supply electricity generated to multiple offtakers, the IPP would not be able to take advantage of the MW allocation made available to 'embedded generation' in the IRP Update and would have to apply for a ministerial exemption, or obtain a ministerial determination in terms of s34 of the Act, prior to applying for a generation licence.

Given that the inclusion of a MW allocation in the IRP is intended to facilitate the process of applying for a generation licence in respect of generation facilities with an installed capacity between one to 10MW, we would have expected the MW allocation to include embedded generation where the electricity generated is supplied to multiple offtakers and not only a single offtaker. Is this an unintended consequence of the current drafting or a deliberate restriction?

No allocation for Small Scale Embedded Generation

Surprisingly there is no MW allocation in the draft updated IRP for small scale embedded generation for-own-use up 1MW.

In terms of Schedule 2 to the Act, a person is exempt from having to hold a generation licence when operating or owning a small scale embedded generation facility with an installed capacity of less than 1MW which is operated to serve either single or multiple loads, provided that the facility only supplies electricity to a single consumer or related consumers (which includes different legal entities within the same group of companies).

However, various exemptions contained Schedule to the Act are linked to the IRP as one of the conditions to the exemption is that "the Minister of Energy has not published a notice in the Government Gazette at the time that the connection use of system agreement or the approval of the relevant licensed distributor is obtained stating that the amount of MWs allocated in the IRP for embedded generation of this nature has been reached". It was therefore contemplated that any update to the IRP 2010 would contain a MW allocation for small scale embedded generation of under 1MW. The omission of a MW allocation in this regard contradicts the current application of Schedule 2 to the Act. It is unclear if the failure by the Department of Energy to include a MW allocation in the draft IRP Update is intentional or an oversight but further clarification should be sought particularly since a number of generation facilities falling within this capacity have been developed pursuant to Schedule 2 of the Act.

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EMBEDDED GENERATION MW ALLOCATION - A WELCOME INTRODUCTION, BUT WHAT ABOUT SMALL SCALE EMBEDDED GENERATION (UNDER 1MW)?

CONTINUED

It is also noted that the draft IRP Update currently overlaps with the exemption contained in s2.5 of Schedule 2 to the Act.

Contradictions and Overlaps

It is also noted that the draft IRP Update currently overlaps with the exemption contained in s2.5 of Schedule 2 to the Act. In terms of s2.5 of Schedule 2 to the Act, a person is exempt from having to obtain a generation licence where the electricity is produced from a co-product, by-product, waste product or residual product of an underlying facility that is operated solely to supply electricity to (a) the owner of the facility; or (b) supplies a customer that is related to the generator or the owner (as defined in the Companies Act) related customers by wheeling electricity through the national grid; or (c) a customer on the same property on which the generation facility is located. There is no restriction on the installed capacity of such generation facility.

The description of an embedded generation facility under Appendix E to the draft IRP Update encompasses the embedded generation facility described in s2.5 of Schedule 2 to the Act and consequently there is an overlap between what activity is exempted under s2.5 and what is described in Appendix E to the draft IRP Update as requiring a generation licence. Whilst the provisions of the Act will take precedence over the IRP from a legal perspective, the Department of Energy should clarify the position in the final IRP to avoid any unintended contradiction and market confusion.

Where to from here...

Whilst the introduction of a MW allocation for embedded generation for-own-use between 1MW and 10MW is a step in the right direction towards driving the private sector generation market, the success of this will largely be driven by the implementation of this capacity allocation by the NERSA. It also remains to be seen whether or not the annual capacity allocation is considered to be too restrictive to meet the increasing market demand for small and large scale embedded generation.

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BBBEE STATUS: LEVEL TWO CONTRIBUTOR
Cliffe Dekker Hofmeyr is very pleased to have achieved a Level 2 BBBEE verification under the new BBBEE Codes of Good Practice. Our BBBEE verification is one of several components of our transformation strategy and we continue to seek ways of improving it in a meaningful manner.

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