

Projects & Energy

ALERT | 6 March 2024



In this issue

SOUTH AFRICA

A snapshot of South Africa's draft Integrated Resource Plan 2023



For more insight into our expertise and services

**PROJECTS & ENERGY
ALERT**

A snapshot of South Africa's draft Integrated Resource Plan 2023



Following its release on 4 January 2024, and aiming to garner further public input, the Minister of Mineral Resources and Energy recently announced the extension of the commenting period for the draft Integrated Resource Plan 2023 (Draft IRP) to 23 March 2024.

The purpose of the Integrated Resource Plan (IRP) generally is to provide a roadmap for meeting South Africa's forecasted electricity demand, which integrates financial considerations with the country's climate change commitments to ensure a sustainable and economically viable energy supply solution.

Presently, the IRP that was formally gazetted in October 2019 (IRP2019) remains applicable. However, since its publication, the energy sector has been inundated with developments and challenges that have rendered the assumptions underpinning the IRP2019 moot, thus mandating its (long-overdue) review.

IRP2023 Horizons

The Draft IRP considers the country's planned electricity pathway across two successive timeline trajectories, namely Horizon 1 and Horizon 2.

Horizon 1 (2023 to 2030)

Horizon 1 sets out the short-term action framework, with interventions planned up until 2030 that are aimed at addressing the current energy generation shortfall by reducing unserved energy (i.e. measure of demand that cannot be reliably met due to supply-side shortages – or rather, load-shedding).



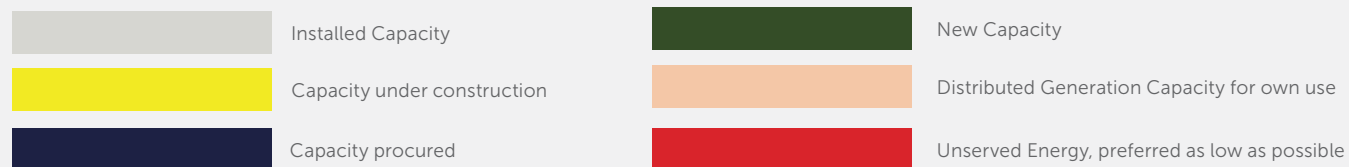
PROJECTS & ENERGY
ALERT

A snapshot of South Africa's draft Integrated Resource Plan 2023

CONTINUED

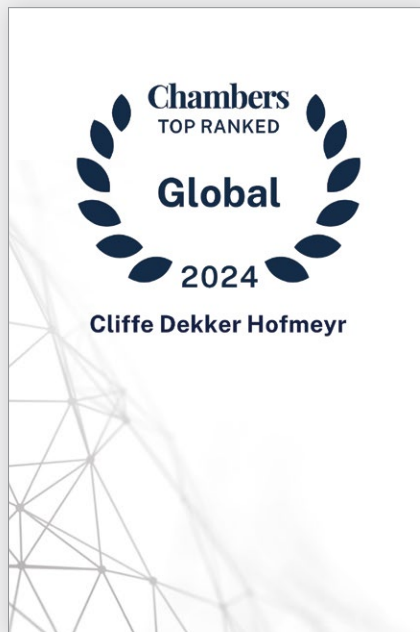
Having assessed five energy pathway scenarios, each comprising of different variations of private and public electricity generation interventions, the following plan has been put forward as the preferred proposed course of action with the lowest levels of unserved energy:

	Coal	Gas - IPP Programme	Gas - Eskom	Dispatchable Capacity	Nuclear	Hydro	Pumped Storage	CSP	Solar PV	Wind	Hybrid - IPP Programme	Distributed Generation	BESS - IPP Programme	BESS - Eskom	Unserved Energy (TWh)
Current Base (MW)	38 800	1005	2825	-	1860	1600	2732	500	2287	3443	-	5000	-	20	
2024	720							100			150	900		199	13.06
2025	720	1220							2115	644	476	900	513	141	7.63
2026										140		900			7.66
2027		1000								684		900	2000	615	4.55
2028		1000	3000						500			900	615		0.22
2029									500	1500		900			0.25
2030		1000		1376					500	1500		900			0.27
Additional New Capacity (MW)	1440	4220	3000	1376				100	3615	4468	626	6300	3743	360	



A snapshot of South Africa's draft Integrated Resource Plan 2023

CONTINUED



According to the Draft IRP, this plan is premised on certain key observations and interventions, including:

- Improvement of the energy availability factor (EAF) of Eskom's coal fleet.
- Deployment of gas-to-power solutions as a means to add dispatchable generation. This will be essential to address the unserved energy risk, as reliance on non-dispatchable supply initiatives (i.e. wind and solar PV, excluding storage options) is not sufficient.
- Extension of the life of certain coal-fired power plants that were due to be decommissioned, as well as completion of the extension of Koeberg Nuclear Power Station's design life.
- Implementation of the grid initiatives per the Transmission Development Plan 2023–2032 (TDP) to unlock grid capacity to allow more new generation capacity to connect in grid-constrained areas.

What is evident from the plan is that, in a best-case scenario (i.e. assuming an improvement of Eskom's EAF), load-shedding is set to continue until at least 2027. As stated in the Draft IRP, *"while ongoing additional generation capacity initiatives are expected to alleviate unserved energy, they do not fully address the underlying system adequacy"*.

Horizon 2 (2032 to 2050)

As with Horizon 1, various energy mix pathways were considered for Horizon 2, comparing combinations of gas, wind, solar PV, nuclear, battery storage and cleaner coal technologies. Taking into account security of supply, overall system costs and the need to minimise load-shedding, of the five scenarios assessed for Horizon 2, the Draft IRP concludes that:

- Renewables and clean energy technologies cannot in isolation sustain security of supply. A combination of dispatchable technologies – including nuclear, clean coal and gas – that support carbon reduction commitments, is required.
- A significant new build programme is required to meet demand for the 2032–2050 period, which is dependent on successful implementation of the TDP.



A snapshot of South Africa's draft Integrated Resource Plan 2023

CONTINUED

Looking purely at unserved energy, the diagram below serves to illustrate these findings, where the reference pathway includes a new build programme comprised mainly of solar PV, wind and gas.

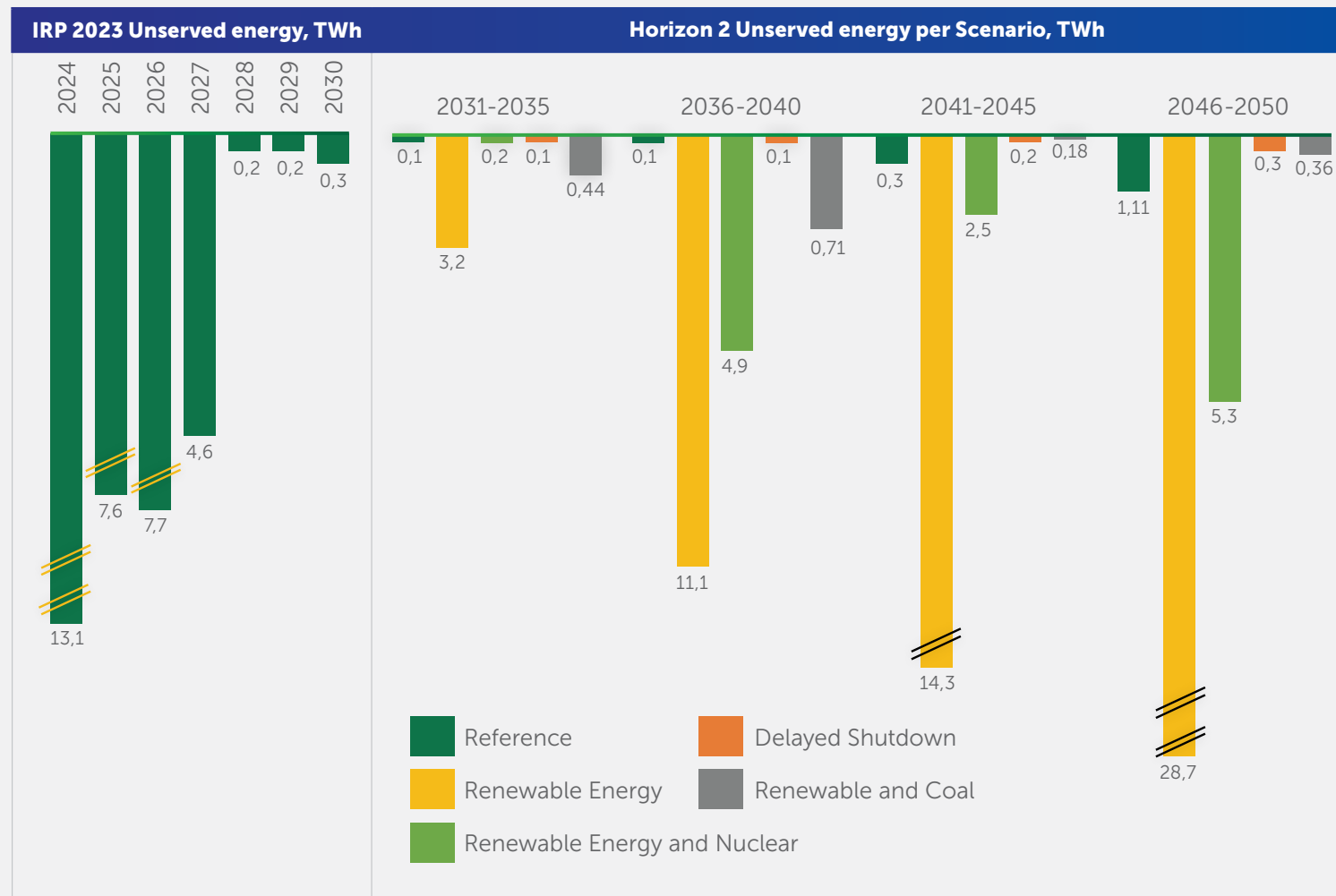


Figure 20: Unserved Energy as an indicator of security of supply

A snapshot of South Africa's draft Integrated Resource Plan 2023

CONTINUED

Importantly, this needs to be considered and understood against decarbonisation trajectories and overall system costs as set out in the Draft IRP. That being said, it nevertheless serves to illustrate the importance of securing a sustainable, diversified energy mix that is capable of providing stability, adequacy of supply and sustainability.

General comments

Lack of transparency: Lack of transparency has drawn significant criticism from stakeholders, as the economic assumptions that underpin the modelling done for the Draft IRP have not been made publicly available. While the sources of data and the underlying assumptions were addressed during the virtual public engagement workshop held by the Department of Mineral Resources and Energy (DMRE) on 31 January 2024, concerns remain that the Draft IRP lacks sufficient information to allow for proper public scrutiny.

Exclusion of green hydrogen: The Draft IRP does not explicitly mention green hydrogen as part of the potential baseload options that can also contribute to the transition towards cleaner energy. This does not align to with other national policy instruments, including the Green Hydrogen Commercialisation Strategy. It is essential for our policymakers to explore advancements made by market leaders in this field, including fuel cell technology, which converts hydrogen directly into electricity. Recent developments in gas turbines and combined cycle power plants also evidence the ability to integrate hydrogen as a sustainable fuel source for baseload and peak power generation.

Fewer renewables for Horizon 1: Compared to the IRP2019, it is evident that renewables comprise a much smaller component of the total energy mix leading up to 2030. Excluding private sector initiatives, the total installed capacity for solar PV has been reduced from 8,288 MW to 3,615 MW, with wind down from 17,742 MW to 4,468 MW. However, it is important to remember that the IRP2019 has proven to be premised on certain unfounded assumptions, including underestimation of the trade-offs inherent in prioritising decarbonisation over energy security. Furthermore, the IRP2019 is understood to have over-estimated South Africa's capacity to integrate large-scale renewable energy sources, particularly given existing grid limitations.

Decarbonisation challenges for Horizon 1: The prioritisation of coal and gas under Horizon 1 to improve the EAF and reduce unserved energy brings into question the country's ability to meet its decarbonisation commitments under the Paris Agreement. The Draft IRP expressly recognises the difficulty of the coal fleet meeting the Minimum Emission Standards by April 2025 as an emerging risk. Stakeholders, however, need to bear in mind that studies have shown that over-reliance on non-dispatchable energy resources like wind and solar PV could destabilise the grid. To ensure security of supply in the short term, reliance on non-renewable energy resources thus seems inevitable.

**PROJECTS & ENERGY
ALERT**

A snapshot of South Africa's draft Integrated Resource Plan 2023

CONTINUED



EAF improvement for Horizon 1: While the Generation Recovery Plan is core to the President's Energy Action Plan (and now also the Draft IRP), there are naturally doubts as to whether this is achievable. The IRP2019 was premised on a 75% EAF, which proved to be wholly unrealistic, as the EAF in 2023 averaged at around 54%.

Grid development dependency for Horizon 2: The dependence of Horizon 2 on implementation of the TDP is a noteworthy risk, as it remains unclear how the Government intends to fund the necessary grid upgrades and expansion, which is estimated to require around R390 billion. While various options are being explored, including involvement of the private sector and establishment of an independent procurement office for transmission infrastructure, the lack of clear solutions and timeframes is concerning. The current TDP is also based on the IRP2019 and will have to be revised once the Draft IRP is finalised and promulgated.

Conclusion

Despite the myriad of concerns surrounding the Draft IRP, it is important to remember that the intention of the document is to invite comments and scrutiny, so as to ensure that its final version, once promulgated, speaks to what is achievable and, as far as possible, acceptable. The public is therefore encouraged to submit their comments during the extended commenting period. Moreover, based on its own modelling exercise and recent engagements with the DMRE, the Energy Council of South Africa has hinted at significant revisions that may follow, noting that *"it will be unacceptable to have a national policy guideline that still has significant load-shedding in 2030"*.

Jackwell Feris, Alecia Pienaar and Priscilla Brandt



OUR TEAM

For more information about our Projects & Energy sector and services in South Africa and Kenya, please contact:



Andrew van Niekerk
Head: Projects & Infrastructure
Director: Corporate & Commercial
T +27 (0)21 481 6491
E andrew.vanniekerk@cdhlegal.com



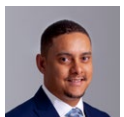
Sammy Ndolo
Managing Partner | Kenya
T +254 731 086 649
+254 204 409 918
+254 710 560 114
E sammy.ndolo@cdhlegal.com



Mashudu Mphafudi
Practice Head & Director:
Finance & Banking
T +27 (0)11 562 1093
E mashudu.mphafudi@cdhlegal.com



David Thompson
Deputy Practice Head & Director:
Corporate & Commercial
T +27 (0)21 481 6335
E david.thompson@cdhlegal.com



Jackwell Feris
Sector Head:
Industrials, Manufacturing & Trade
Director: Dispute Resolution
T +27 (0)11 562 1825
E jackwell.feris@cdhlegal.com



Megan Rodgers
Sector Head: Oil & Gas
Director: Corporate & Commercial
T +27 (0)21 481 6429
E megan.rodgers@cdhlegal.com



Timothy Baker
Director:
Dispute Resolution
T +27 (0)21 481 6308
E timothy.baker@cdhlegal.com



Tessa Brewis
Director:
Corporate & Commercial
T +27 (0)21 481 6324
E tessa.brewis@cdhlegal.com



Jerome Brink
Director:
Tax & Exchange Control
T +27 (0)11 562 1484
E jerome.brink@cdhlegal.com



Johan de Lange
Deputy Practice Head:
Finance & Banking
Director: Projects & Infrastructure
T +27 (0)21 481 6468
E johan.delange@cdhlegal.com



Peter Hesselting
Director:
Corporate & Commercial
T +27 (0)21 405 6009
E peter.hesselting@cdhlegal.com



Anita Moolman
Director:
Corporate & Commercial
T +27 (0)11 562 1376
E anita.moolman@cdhlegal.com



Clarice Wambua
Consultant | Kenya
T +254 731 086 649
+254 204 409 918
+254 710 560 114
E clarice.wambua@cdhlegal.com



Deon Wilken
Director:
Finance & Banking
T +27 (0)11 562 1096
E deon.wilken@cdhlegal.com



Lauriene Maingi
Associate | Kenya
T +254 731 086 649
+254 204 409 918
+254 710 560 114
E lauriene.maingi@cdhlegal.com



Alecia Pienaar
Counsel:
Environmental Law
M +27 (0)82 863 6279
E alecia.pienaar@cdhlegal.com

BBBEE STATUS: LEVEL ONE CONTRIBUTOR

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.

PLEASE NOTE

This information is published for general information purposes and is not intended to constitute legal advice. Specialist legal advice should always be sought in relation to any particular situation. Cliffe Dekker Hofmeyr will accept no responsibility for any actions taken or not taken on the basis of this publication.

JOHANNESBURG

1 Protea Place, Sandton, Johannesburg, 2196. Private Bag X40, Benmore, 2010, South Africa.

Dx 154 Randburg and Dx 42 Johannesburg.

T +27 (0)11 562 1000 F +27 (0)11 562 1111 E jhb@cdhlegal.com

CAPE TOWN

11 Buitengracht Street, Cape Town, 8001. PO Box 695, Cape Town, 8000, South Africa. Dx 5 Cape Town.

T +27 (0)21 481 6300 F +27 (0)21 481 6388 E ctn@cdhlegal.com

NAIROBI

Merchant Square, 3rd floor, Block D, Riverside Drive, Nairobi, Kenya. P.O. Box 22602-00505, Nairobi, Kenya.

T +254 731 086 649 | +254 204 409 918 | +254 710 560 114

E cdhkenya@cdhlegal.com

STELLENBOSCH

14 Louw Street, Stellenbosch Central, Stellenbosch, 7600.

T +27 (0)21 481 6400 E cdh Stellenbosch@cdhlegal.com

©2024 13218/MAR