NATIONAL ENERGY REGULATOR OF SOUTH AFRICA

CONSULTATION PAPER

CONCURRENCE WITH THE MINISTERIAL DETERMINATION ON THE PROCUREMENT OF NEW GENERATION CAPACITY FROM RENEWABLES (WIND & PV), STORAGE, GAS, AND COAL TECHNOLOGIES

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EXECUTIVE SUMMARY

The National Energy Regulator (NERSA) is a regulatory authority established as a juristic person in Terms of Section 3 of the National Energy Regulator Act, 2004 (Act No. 40 of 2004). NERSA's mandate includes regulation of the Electricity Supply Industry.

In accordance with section 34 of the Electricity Regulation Act, 2006 (Act No. 4 of 2006) ('the Act'), the Minister of Mineral Resources and Energy ("the Minister") may, in consultation with the Energy Regulator: -

a) determine that the new generation capacity is needed to ensure the continued uninterrupted supply of electricity;
b) determine the types of energy sources from which electricity must be generated, and the percentages of electricity that must be generated from such sources;
c) determine that the electricity thus produced may only be sold to the persons or in a manner set out in such notice;
d) determine that electricity thus produced must be purchased by the persons set out in such notice;
e) require that new generation capacity must-
    i. be established through a tendering procedure which is fair, equitable, transparent, competitive and cost-effective;
    ii. Provide for private sector participation.

The Minister is considering closing the supply gap in the short and medium term that includes capacity procurement of: -

1) 6 800 megawatts (MW) should be procured to be generated from renewable energy sources (Photovoltaic (PV) and Wind), which represents the capacity allocated under the headings "PV" and "Wind, for the years 2022 to 2024, as was gazetted on the Integrated Resource Plan for Electricity 2019 – 2030 (published as GN 1360 of 18 October 2019 in Government Gazette No. 42784 ("IRP 2019");

2) 513MW should be procured to be generated from storage, which represents the capacity allocated under the heading “Storage”, for the year 2022, in Table 5 of the IRP 2019;
3) 3 000MW should be procured to be generated from gas, which represents the capacity allocated under the heading “Gas and Diesel”, for the years 2024 to 2027, in Table 5 of the IRP 2019; and
4) 1 500MW should be generated from coal, which represents the capacity allocated under the heading “Coal”, for the years 2023 to 2027, in Table 5 of the IRP 2019.

It is based on the above reasoning that the Energy Regulator require Public Participation for the procurement of this capacity and as a result of the supply constraints, which enables it to appropriately apply its regulatory views and decision making prior to concurrence with the ministerial determination.

In satisfying the concurrence process in accordance with Section 34 of the Act, The Energy Regulator is requesting the stakeholders to comment on the new generation capacity of 6 800 megawatts (MW) should be procured to be generated from renewable energy sources (Photovoltaic (PV) and Wind), 513MW should be procured from storage, 3 000MW to be procured from gas and 1 500MW to be procured from coal as set out in this consultation paper. The comments should be addressed to: **Mr Dennis Seemela at the National Energy Regulator, Kulawula House, 526 Madiba Street, Arcadia, Pretoria, 0083; or emailed to: irp-procurement.newcap@nersa.org.za; or posted to P.O Box 40343, Arcadia, Pretoria, 0007, South Africa.**

The deadline for the submission of comments is 7 May 2020.

Kindly provide the name, address, telephone number, fax number and email address of the person or organization submitting the comments. Submissions made after the deadline will not be considered.

The date of a Public Hearing will be announced after the closing date for the submission of written comment. NERSA will then collate all comments received including oral presentations, which will be taken into consideration when the decision to concur with the Ministerial determination is made.

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1. DEFINITIONS, ABBREVIATIONS AND ACRONYMS

DEFINITIONS

In this consultation paper, any word or expression to which a meaning has been assign, shall have a meaning so assigned and, unless the context otherwise indicates-

'buyer' means, in relation to a new generation capacity project, any organ of state designated by the Minister in terms of section 34(1)(c) and (d) of the Act. In this regard the buyer is Eskom.

'Base Load Generation' means the generating facilities within a utility system which are operated to the greatest extent possible to maximise system mechanical and thermal efficiency and minimise system operating cost. Typical example is the coal power station.

'Eskom' means Eskom Holdings Limited contemplated in section 3(1) of the Eskom Conversion Act, 2001(Act No.13 of 2001.

'Government' means the Government of the Republic.

'Independent Power Producer (IPP)' means any person in which the Government or any organ of state does not hold a controlling ownership interest (whether directly or indirectly), which undertakes or intends to undertake the development of new generation pursuant to a determination made by the Minister in terms of section 34(1) of the Act.

'Minister' means the Minister of Mineral Resources and Energy.

'new generation capacity' means a project for the development of new generation capacity pursuant to a determination made by the Minister in terms of section 34 of the Act.
'organ of state' bears the meaning ascribed to it in section 239 of the Constitution.

'power purchase agreement' or **"PPA"** means an agreement concluded between a generator and the buyer for the sale and purchase of new electricity generation capacity or electricity derived therefrom, or both.

'Photovoltaic (PV)' means the the direct conversion of light into electricity. In order for this conversion to occur a photovoltaic device (or cell consisting of two semiconductor layers (in its simplest form) is used. The two layers are doped oppositely so as to create a net voltage across the terminals of the cell. The electric field within the vicinity of the interface of the two layers is responsible for "pushing" charges and thereby creating electricity when the device is connected to a load under the presence of light.

'procurer' means the person designated by the Minister in terms of section 34 as being responsible for the preparation, management and implementation of the activities related to procurement of new generation capacity under an IPP procurement programme including the negotiation of the applicable power purchase agreements, which person may or may not be a buyer.

'Storage' means a complete electric storage system that can be connected to the Grid. It comprises of two major subcomponents: storage and the power conversion electronics. It mediates between variable sources and variable loads.

'the Act' means the Electricity Regulation Act, 2006 (Act No.4 of 2006).

'Wind energy' means the natural occurring energy of the wind either directly as in windmills or to generate electricity.

ABBREVIATIONS AND ACRONYMS

DMRE	Department of Mineral Resources and Energy
IPP	Independent Power Producer
IRP	Integrated Resource Plan
MW	Megawatts
NERSA	National Energy Regulator

2. BACKGROUND

Certain provisions of the Electricity Regulation Act require participation of NERSA in Policy implementation and as a result of the supply constraints and to comply with the declarations and protocols that the Republic of South Africa has signed under the tutelage of the United Nation. The implementation of policy in terms of Section 34 of the Act requires NERSA to appropriately apply its regulatory reviews and to make decision making prior to the conclusion of the determination process by the Minister. It is incumbent on NERSA when making its decision to ensure that it complies with applicable laws including National Energy Regulator Act, 2004 (Act No 40 of 2004) (NERA) and any appropriate procedure to clothe the process with legal certainty.

On 21 February 2020, NERSA received a draft determination from the Minister in terms of section 34 of the Act. The draft determination is aimed at addressing the energy gap in the country and also to implement the IRP 2019 decision by procuring:

1) 6 800 MW should be procured to be generated from renewable energy sources (Photovoltaic (PV) and Wind), which represents the capacity allocated under the headings “PV” and “Wind, for the years 2022 to 2024, in Table 5 of the IRP 2019;
2) 513MW should be procured to be generated from storage, which represents the capacity allocated under the heading “Storage”, for the year 2022, in Table 5 of the IRP 2019;
3) 3 000MW should be procured to be generated from gas, which represents the capacity allocated under the heading “Gas and Diesel”, for the years 2024 to 2027, in Table 5 of the IRP 2019; and
4) 1 500MW should be generated from coal, which represents the capacity allocated under the heading “Coal”, for the years 2023 to 2027, in Table 5 of the IRP 2019.

The following capacity limits were adopted as practical options to close the gap in the short and medium by coming up with these interventions to be deployed to minimise the risk of load shedding and/or extensive usage of diesel peaking plants.

NERSA has not yet formulated any opinions on the issues that are raised in this consultation paper but is only raising them such that stakeholders can give their opinion and inputs on these issues.

The Consultation Paper consist of the following main sections:

1) 6 800MW should be procured to be generated from renewable energy sources (PV and Wind),
2) 513MW should be procured to be generated from storage,
3) 3 000MW should be procured to be generated from gas;
4) 1 500MW should be generated from coal;
5) Procurement Process under the IPP procurement programme
6) Public consultation concurrence process with indicative Timelines.

3. NEW GENERATION CAPACITY FROM RENEWABLE ENERYGY (PV & WIND), STORAGE, GAS AND COAL TECHNOLOGIES

While the purpose of the IRP is to balance supply and demand on a least-cost basis, implementation lead times for various generation technologies limit the options available for deployment immediately and in the short-term.

In the short-term supply and demand side interventions will have to be deployed to minimise the risk of load shedding and/or extensive use of diesel peaking plants. The short-term gap in this regard is estimated to be in the ranges of 2 000MW to 3 000MW.

Also, due to the expected decommissioning of approximately 24 100MW of coal power plants in the period beyond 2030 to 2050, attention must be given to the path adopted

to give effect to the mix and the preparation work necessary to execute the retirement and replacement of these plants. Figure 1 is a snapshot of the IRP 2019 results.

Figure 1: The IRP 2019 to 2030 results

	Coal	Coal (Decommissioning)	Nuclear	Hydro	Storage	PV	Wind	CSP	Gas & Diesel	Other (Distributed Generation, CoGen, Biomass, Landfill)
Current Base	37 149		1 860	2 100	2 912	1 474	1 980	300	3 830	499
2019	2 155	-2373					244	300		Allocation to the extent of the short term capacity and energy gap.
2020	1 433	-557				114	300			
2021	1 433	-1403				300	818			
2022	711	-844			513	400 1000	1600			
2023	750	-555				1000	1600			500
2024			1860				1600		1000	500
2025						1000	1600			500
2026		-1219					1600			500
2027	750	-847					1 600		2000	500
2028		-475				1000	1 600			500
2029		-1694			1575	1000	1 600			500
2030		-1050		2 500		1 000	1 600			500
TOTAL INSTALLED CAPACITY by 2030 (MW)	33364		1860	4600	5000	8288	17742	600	6380	
% Total Installed Capacity (% of MW)	43		2.36	5.84	6.35	10.52	22.53	0.76	8.1	
% Annual Energy Contribution (% of MWh)	58.8		4.5	8.4	1.2*	6.3	17.8	0.6	1.3	

Installed Capacity
Committed / Already Contracted Capacity
Capacity Decommissioned
New Additional Capacity
Extension of Koeberg Plant Design Life
Includes Distributed Generation Capacity for own use

- 2030 Coal Installed Capacity is less capacity decommissioned between years 2020 and 2030
- Koeberg power station rated / installed capacity will revert to 1926 MW (original design capacity) following design life extension work.
- Other / Distributed generation includes all generation facilities in circumstances in which the facility is operated solely to supply electricity to an end-use customer within the same property with the facility
- Short term capacity gap is estimated at 2000 MW

Figure 1 shows the interventions that will contribute towards energy security.

3.1 6 800MW to be procured to be generated from renewable energy sources (PV and Wind)

Table 1 shows the new additional capacity per technology from 2022 to 2024 from Wind and PV. This information is extracted from Figure 1.

Table 1: New generation capacity from Wind and PV

year	Wind (MW)	PV (MW)
2022	1600	1000
2023	1600	1000
2024	1600	
Total	**4800**	**2000**

Table 1 indicates that 4 800MW should be generated from Wind and 2 000MW should be generated from PV, for the years 2022 to 2024.

Therefore, Stakeholders are requested to provide inputs on the following aspects amongst others: -

i. Is the determined capacity needed and sufficient to ensure uninterrupted supply of electricity in the short and medium-term?
ii. Are the types of technologies determined in line with the best practices relevant at the time and ensures the mandate of security of supply as well as the objective of ensuring the use of diverse energy sources and energy efficiency?
iii. Should storage be included to these sources of technology to cater for peak periods? If so what should be the storage capacity?
iv. Should this type of technology of energy sources be dispatchable?
v. Do you think the time allowed for this build allocation will assist in closing the energy gap?

vi. Provide what you consider to be the risks and challenges associated with this new capacity?
vii. What should be the minimum and maximum plant size that should be allowed to be connected into the Grid per IPP?
viii. Provide your comments on the socio-economic impact of the Wind and PV plants (i.e. in terms of the number of jobs each technology can develop)?
ix. Provide your thoughts on the cost that will be associated with the new allocated generation capacity in line with a mandate to ensure long term sustainability of electricity supply industry as well as affordability?

3.2 513MW should be procured to be generated from storage

Figure 1 shows the allocation of 513MW to be generated from storage as part of the generation mix. Energy storage is a complementary relationship between non-dispatchable renewable energy technologies. Storage technologies include battery storage, compressed-air energy storage, fly wheel energy storage, and hydrogen fuel cells, amongst others.

Therefore, Stakeholders are requested to provide inputs on the following aspects among others: -

i. Will the introduction of storage technologies help in ensuring uninterrupted supply of electricity?
ii. Is this type of technology determined in line with the best practices relevant at the time and ensures the mandate of security of supply as well as the objective of ensuring the use of diverse energy sources and energy efficiency?
iii. Must storage only be limited to battery storage as other storage technologies are not yet matured?
iv. Do you think the time allowed for this build allocation will assist in closing the energy gap?
v. Provide what you consider to be the risks associated with this new capacity?

vi. What should be the minimum and maximum plant size that should be allowed to be connected into the Grid per IPP?

vii. Provide your opinion on the socio-economic impact of the battery storage plants (i.e. how many jobs do they create)?

viii. Provide your thoughts on the cost that will be associated with the new allocated generation capacity in line with a mandate to ensure long term sustainability of electricity supply industry as well as affordability?

3.3 3 000MW should be procured to be generated from gas

Figure 1 shows the allocation of 1 000MW by 2024 and 2 000MW by 2027 that are to be procured from Diesel and Gas technologies. However, according to the proposal from the concurrence of the Ministerial determination, only gas should be procured.

This is caused by a high cost associated with diesel and it also creates logistical challenges to run diesel-fired peaking plants at load factors averaging about 30% during load shedding periods. Running these plants at higher than contracted load factor creates logistical challenges as there is insufficient infrastructure to support the volumes of diesel required under these circumstances. This arrangement also worsens the already delicate Eskom financial solution. In addition, electricity users will suffer high tariff increases.

It is based on the above reasoning that Stakeholders are requested to provide inputs on the following aspects among others: -

i. Will the introduction of gas technology help in ensuring uninterrupted supply of electricity?

ii. Is this type of technology determined in line with the best practices relevant at the time and ensures the mandate of security of supply as well as the

objective of ensuring the use of diverse energy sources and energy efficiency?

iii. What should be the allowable plant size for a gas plant per IPP?
iv. Must the existing diesel-fired peaking plants be converted to natural gas?
v. Should this type of technology of energy source be dispatchable?
vi. Do you think the time allowed for this build allocation will assist in closing the energy gap?
vii. Shouldn't the procurement process of gas power plant be based on turnkey solution (i.e. the preferred bidder design, buy the required material, install and commission the plant before getting paid in order to avoid cost overruns)?
viii. Provide what you consider to be the risks associated with this new capacity?
ix. Provide your comments on the socio-economic aspects of procuring energy from a range of energy source technologies (i.e. in terms of the number of jobs each technology can develop)?
x. Provide your thoughts on the cost that will be associated with the new allocated generation capacity in line with a mandate to ensure long term sustainability of electricity supply industry as well as affordability?

3.4 1 500MW should be generated from coal

Figure 1 shows the allocation of 750MW new additional capacity that should be generated by 2023 from coal and the same capacity that should be generated by 2027 also from coal.

Figure 1 also indicates that a lot of coal power stations will be decommissioned from year 2020 till year 2030 with a total capacity of 11 017MW being decommissioned by 2030. This shows that the energy mix is radically changing over the IRP 2019 horizon. However, South Africa should not sterilise the development of its coal resources for purposes of power generation, instead the planning framework for energy must support coal projects as they provide a base load.

It is based on the above reasoning that Stakeholders are requested to provide inputs on the following aspects among others: -

i. Will the introduction of coal plants help in ensuring uninterrupted supply of electricity?
ii. Is this type of technology determined in line with the best practices relevant at the time and ensures the mandate of security of supply as well as the objective of ensuring the use of diverse energy sources and energy efficiency?
iii. What should be the allowable coal plant size per IPP?
iv. Shouldn't the procurement process of coal power stations be based on turnkey solution (i.e. the preferred bidder design, buy the required material, install and commission the plant before getting paid in order to avoid cost overruns)?
v. Should this type of technology as energy source be dispatchable?
vi. Do you think the time allowed for this build allocation will assist in closing the energy gap?
vii. Provide what you consider to be the risks or challenges associated with this new capacity?
viii. Provide your opinion on the socio-economic aspects of procuring energy from a range of energy source technologies (i.e. in terms of the number of jobs each technology can develop)?
ix. Provide your thoughts on the cost that will be associated with the new allocated generation capacity in line with a mandate to ensure long term sustainability of electricity supply industry as well as affordability?

4. PROCUREMENT PROCESS UNDER THE IPP PROCUREMENT PROGRAMME

The electricity produced from new generation capacity shall be procured through one or more tendering procedures which are fair, equitable, transparent, competitive and cost-effective and shall constitute Independent Power Producer (IPP) procurement programmes as contemplated in the Regulations.

The procurer shall in the appropriate procurement documentation specify any qualification and evaluation criteria applicable to this IPP programme.

The buyer shall not itself conduct a procurement process under this determination.

The procurement programmes shall target connection to the Grid for the new generation capacity as soon as reasonably possible in line with the timetable set out in Figure 1. Deviations from the timetable set out in Figure 1 will be permitted to the extent necessary taking into account all relevant factors including prevailing energy security risks, the time required for efficient procurement and the required construction timelines for such new generation capacity facility.

The designated buyer is Eskom Holding SOC Limited and the procurer is the Department of Mineral Resources and Energy (DMRE).

The role of the procurer will be to conduct the procurement programmes, including preparing any requests for proposals and/or related and associated documentation, negotiating the power purchase agreements, facilitating the conclusion of the other projects agreements, and facilitating the satisfaction of any conditions precedent to financial close which are within its control.

In lieu of the above, Stakeholders are requested to provide inputs on the following aspects among others: -

i. Provide your thoughts on Eskom as a chosen buyer of the new generation capacity?
ii. Must it only be Eskom who is the Buyer of this electricity or any other Licensed Electricity Distributors (i.e. Municipalities or Private Distributor) be allowed to buy?
iii. Do you think the trader should also be allowed to buy this new capacity?
iv. Do you think it is fair for Eskom to be restricted as the buyer instead of also allowing them to participate in the bidding process?
v. Provide your thoughts on IPPs as the chosen builders of the new generation capacity?
vi. Provide your thoughts on the method of procurement chosen for the procurement of new generation capacity?
vii. Provide what you consider to be the risks associated with the overall capacity in this determination?
viii. Provide your opinion on the security of supply impact in general as well as in light of the additional capacity?
ix. Must the NERSA concur with this ministerial determination as per the prescripts of section 34 of the Act?

5. CONCURRENCE PROCESS TO THE MINISTERIAL DETERMINATIONS WITH INDICATIVE TIMELINES

NERSA has processes and procedures in place to deal with requests for concurrence in terms of section 34 of the Act that also satisfies the provisions of the National Energy Regulator Act and Promotion of Administrative Justice Act, 2000.

This consultative process will also include public hearings where Stakeholders will be required make oral presentations on the issues raised in this Consultation Paper.

However, at this stage, Stakeholders and members of the public are requested to, in writing, submit written comments on the issues raised in this Consultation Paper. Written comments can be forwarded to irp-procurement.newcap@nersa.org.za; hand-delivered to Kulawula House, 526 Madiba Street, Arcadia, Pretoria, 0083; or posted to P.O Box 40343, Arcadia, 0007, Pretoria, South Africa.

The closing date for the submission is 7 May 2020.

The date of a Public Hearing will be announced after the closing date for the submission of comments.

For more information and queries on the above, please contact Mr Dennis Seemela on the below details:

Tel: 012 401 4600

Fax: 012 401 4700

6. INDICATIVE TIMELINES FOR THE CONCURRENCE PROCESS

The new capacity required is meant to close the energy gap in the short and medium term as per IRP. The Energy Regulator will follow a normal concurrence process that include public participation as stipulated in Table 2.

Table 2: Indicative timelines of the concurrence process

Activities	**No of days**
Development of consultation	5
Preparation of ELS submission	5
ELS Approval of Consultation Paper	20
Publishing the Consultation Paper	30
Analysing comments written comments	5
Public Hearings	5
Analysing comments including oral submissions	5
Preparation of ELS submission and RFD	5
ELS Approval of Concurrence Submission	20
Preparation of ER submission and RFD	5
ER Approval Concurrence Submission	15
Total	**120** (Approximately 6 Months)

ELS – Electricity Subcommittee
RFD – Decision and Reasons for Decision
ER – Energy Regulator ('NERSA Board')
Day – Working day