

Your ref:

Our ref: AP/SAFCEI ELA-JHB/NERSA s34 Consultation

Mr Dennis Seemela
The National Energy Regulator of South Africa
Kulawula House
526 Madiba Street
Arcadia
Pretoria
0083

By Email: irp-procurement.newcap@nersa.org.za
vuyiswa.magubane@nersa.org.za

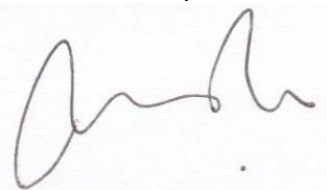
2 March 2021

Dear Mr Seemela

Re: SAFCEI & ELA-JHB RESPONSES TO QUESTIONS IN NERSA PUBLIC HEARING ON NERSA'S CONCURRENCE WITH THE MINISTERIAL DETERMINATION ON THE PROCUREMENT OF 2 500MW GENERATION CAPACITY FROM NUCLEAR

Please find attached hereto SAFCEI and ELA-JHB's joint responses to the questions raised by the NERSA Commissioners at the public hearing on 23 February 2021.

Yours sincerely



Adrian Leonard Pole

SAFCEI and ELA-JHB

Answers to Question raised by NERSA Commissioners

Francesca de Gasparis, Makoma Lekalakala & Steve Thomas

Q1

In the South Africa energy mix must the South Africa government never consider nuclear at all in order to achieve its policy objectives? Delays and cost overruns – should we take this into considerations and go ahead anyway?

A

Francesca de Gasparis (SAFCEI) & Makoma Lekalakala (ELA-JHB)

SAFCEI and ELA-JHB acknowledge that the South Africa government can consider the merits of various technologies in order to meet its (sometimes competing) policy objectives, but submit that technologies with inherent uncertainties (such as the affordability of a nuclear new build programme), which are unable to compete with least-cost options (for example due to significant costs associated with a new nuclear build programme that will inevitably impact on electricity prices), or which pose significant environmental risk (such as the lack of final disposal solutions for high level radioactive waste generated by nuclear power plants) should not be approved.

Nuclear is already part of South Africa's energy mix, with consideration also being given to extend the operational life of the Koeberg Nuclear Power Station.

SAFCEI and ELA-JHB are of the view that any determination to procure new nuclear electricity generation capacity should be approached in a risk averse and cautious manner given the inherent uncertainties (such as changes in electricity demand, high capital cost of nuclear, nuclear technology uncertainties, and the rapid development of alternative least-cost renewable energy technologies), and to avoid locking-in to a most-cost technology that is likely to have a significant impact on future electricity prices (undermining the constitutional and legal duty of safeguarding and meeting the interests and needs of current and future generations of electricity consumers by providing affordable electricity).

SAFCEI and ELA-JHB submit further that the affordability of a new nuclear programme should have been demonstrated (having regard to credible, up-to-date information) prior to the Minister making his determination in terms of s34 of the Electricity Regulation Act (ERA), and this information should have been provided to NERSA for its consideration on concurrence. This information should in turn have been provided to the public to enable informed (including taking expert advice on such information provided). Making a decision to procure a 2500MW new nuclear programme in the absence of affordability having been demonstrated amounts to 'jumping the gun'. There is nothing to prevent a robust assessment of the anticipated costs of a new nuclear build programme based on credible, up-to-date information prior to commencing a procurement programme. Doing so would be a reasonable and rational preparatory step prior to making a s34 determination. However, it is very difficult to stop a procurement process once it has commenced, and arguments raised that affordability can only be determined by 'testing the market' through a procurement

process are misguided. Also, seeking to determine the affordability of nuclear through a procurement process would necessarily exclude public comment and scrutiny. Suggesting that a final decision can be left to the procurement process could, depending on the specific circumstances, amount to an unlawful fettering of the Minister and NERSA's powers under s34 of the ERA. Furthermore, arguing that a s34 determination will promote confidence in nuclear vendors to invest resources in developing detailed proposals, while at the same time arguing that any nuclear procurement can be halted should it turn out not to be affordable, is contradictory. SAFCEI and ELA-JHB also submit that committing significant state resources to a new nuclear programme procurement process without having first determined affordability is unjustifiable (and could lead to foreseeable wasteful and fruitless expenditure).

A diverse energy mix does not mean that every kind of electricity generation technology should be included in the mix.

Delays and cost overruns are relevant considerations that the Minister should have taken into account, and which NERSA should take into account, in the s34 determination decision-making process. It is submitted that 'going ahead anyway' without a proper, evidence-based consideration of the nature and extent of the potential negative consequences of delays and cost overruns, and in the absence of adequate safeguards being in place to avoid these risks from materialising, would not meet the requirements of rational decision-making. NERSA's decision on concurrence cannot simply be a 'tick box' exercise.

NERSA is reminded that the objects of the Electricity Regulation Act of 2006 include (among other things) to:

- achieve the efficient, effective, sustainable and orderly development and operation of electricity supply infrastructure in South Africa ;
- ensure that the interests and needs of present and future electricity customers and end users are safeguarded and met, having regard to the governance, efficiency, effectiveness and long-term sustainability of the electricity supply industry within the broader context of economic energy regulation in the Republic;
- facilitate universal access to electricity; and
- facilitate a fair balance between the interests of customers and end users, licensees, investors in the electricity supply industry and the public.

In light of the above objects, including the object to achieve sustainable development of electricity supply infrastructure in South Africa, it is submitted that NERSA is also required to have regard to the environmental management principles set out in s2 of the national Environmental Management Act of 1998 (NEMA). These principles apply throughout the Republic to the actions of all organs of state that may significantly affect the environment, apply alongside all other appropriate and relevant considerations (including the State's responsibility to respect, promote and fulfil the social and economic rights in Chapter 2 of the Constitution and in particular the basic needs of categories of persons disadvantaged by

unfair discrimination),¹ and serve as guidelines by reference to which any organ of state must exercise any function when taking a decision in terms of any statutory provision concerning protection of the environment.² The principles also provide that development must be socially, environmentally and economically sustainable,³ and that sustainable development requires the consideration of all relevant factors including (among other things) that waste must be avoided, or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner, and that a risk-averse and cautious approach be applied, taking into account the limits of current knowledge about the consequences of decisions and actions.⁴ The principles also require that environmental management must be integrated, and must take into account the effects of decisions on all aspects of the environment by pursuing the best practicable environmental option (BPEO), which is defined in NEMA as the option that provides the most benefit or causes the least damage to the environment as a whole, at a cost acceptable to society, in the long term as well as in the short term. It is submitted that NERSA is required to take the NEMA environmental management principles into account when considering its decision on concurrence with the Minister's s34 determination, and that (among other things) a transparent cost-benefit analysis should be (but has not been) conducted to ascertain whether nuclear new generation capacity is the BPEO to achieve the sustainable development of South Africa's electricity supply infrastructure.

Prof. Steve Thomas

There is wide agreement that the planet faces a 'climate emergency' and relying on options that are slow to implement and which stand a significant risk of being fruitless are hard to justify. Technology, particularly renewable technologies, storage technologies and energy efficiency options, is moving rapidly and options that were barely heard of a decade ago, like off-shore wind, are now competitive and proven. South Africa has made a number of attempts to launch nuclear programmes in the past two decades, all leading to nothing and South Africa is far from being alone in pursuing nuclear programmes to no effect. Every nuclear project using current designs has suffered serious delays and a realistic assessment of these technologies is they have failed. New nuclear technologies take decades to be developed and proven. So while, intuitively, it seems unwise to discount any option in an emergency, there are the opportunity costs to consider. Nuclear technology is a voracious consumer of human and financial resources and pursuing nuclear will mean fewer resources for much less risky options. So until there are nuclear designs that are technically proven, and economically competitive, no resources should be risked on the nuclear option.

Q2

If not nuclear then what for baseload in an affordable manner?

A

Francesca de Gasparis & Makoma Lekalakala

See Prof Steve Thomas' response below.

¹ Section 2(1)(a).

² Section 2(1)(c).

³ Section 2(3).

⁴ Section 2(4)(a)(iv) and (vi).

Prof. Steve Thomas

This, and the question of how to cope with intermittency of renewables, are recurring and important questions. The need for base-load capacity is based on a *non sequitur*. Clearly there is a level of demand that we never go below, the base-load. However, there is no reason for this base-load to be met by a specific set of base-load power plants. What is important is that there is adequate capacity when it is needed. In the past, with fossil fuel technology which can be switched on and off as required, this was easier to achieve. However, both nuclear and renewables such as solar and wind are inflexible. Nuclear power must operate at full power whenever available from an economic and a technological perspective while renewables are constrained by weather conditions. So both need to be complemented by flexible sources to fill the gaps when demand is higher than nuclear capacity or when renewable output is restricted. A combination of nuclear and renewables may be even worse from this perspective. There have been major recent advances in battery technology and some renewables (biomass and hydro) are 'dispatchable'. There is also demand side management, a much under-utilised resource, under which consumers, especially large consumers, are given a financial incentive to reduce their demand at times when supply is tight.

Q3

Policy of 1998 recognises the natural resources of SA (coal, uranium, etc). Must South Africa now ignore those natural resources due to challenges of the build programme and cost?

A

Francesca de Gasparis & Makoma Lekalakala

The White Paper on Energy Policy (1998) is over 22 years old, 'was written so as to clarify government policy regarding the supply and consumption of energy for the next decade',⁵ and in any event no decision-maker should fetter its discretion by rigid adherence to policy, especially in a context where renewable natural resources (such as solar and wind) are available and pose less economic and environmental risk as a source of energy for electricity generation.

Furthermore, focussing only on one aspect of the White Paper is misleading, and ignores other important policy statements included in the White Paper. The Ministerial foreword to the White Paper indicates that government is committed to the promotion of access to affordable and sustainable energy services, that energy should be available to all citizens at an affordable cost. The White Paper goes on to state (among other things) that '[w]hether new nuclear capacity will be an option in the future will depend on the environmental and economic merits of the various alternative energy sources', and that 'the complete nuclear fuel cycle, in particular the issues of spent nuclear fuel, nuclear fuel procurement and radioactive waste management will be investigated by the [DMRE]'.⁶ The White Paper also recognises that energy policy under apartheid was governed primarily by the desire for greater energy security, which in turn led to very large investment in the nuclear sector, that the 'cost to the economy has been significant and the opportunity for investment in more productive social infrastructure has been forfeited', and that '[c]learly, security of supply will

⁵ Ministerial foreword, at p3.

⁶ At p12.

have to be achieved through other measures'.⁷ The White Paper also states that '[w]hether new nuclear capacity will be an option... will depend largely on the environmental and economic merits of other energy sources relative to nuclear and its political and public acceptability, construction lead-times and load characteristics'.⁸ Regarding the future role of nuclear power in South Africa, the White Paper cautions that while it would not be prudent to exclude nuclear power as a supply option, 'decisions on the role of nuclear power, as with any other supply option, need to be taken within the context of an integrated resource planning process'.⁹ As pointed out in SAFCEI and ELA-JHB's written comment on NERSA's concurrence, the IRP2019 does not make a decision that new nuclear generation capacity from nuclear sources is needed, and properly interpreted decision 8 of the IRP2019 provides policy approval for commencing preparations for a nuclear new build programme to the extent of 2 500 MW at a pace and scale the country can afford.

It is also pointed out that the White Paper indicates regarding the Koeberg nuclear power station that '[i]ts fuel is largely sourced on the international nuclear fuel market, in a combination of long-term contracts and spot market deals'.¹⁰ A 2500 MW new nuclear programme does not necessarily mean that South Africa's uranium resources will be used. In addition, a new nuclear programme has no relevance to the use of other natural resources such as coal.

Prof. Steve Thomas

The fact that South Africa has these resources does not justify use of them if they do not provide economic or environmentally acceptable power. These resources are globally traded commodities and can be sold on the world market to the benefit of South Africa if not used in South Africa

Q4

Should guarantees only be granted for other technologies and not nuclear

A

Francesca de Gasparis & Makoma Lekalakala

Guarantees provided by the South African state should only be provided when merited, having regard to the level of risk to which South Africa will be exposed, and at a cost acceptable to society. Relevant factors would include (among other things) the amount being guaranteed, a comparison of the amount being guaranteed against how much new electricity generation capacity would be facilitated by giving the guarantee, the likelihood of the risk being realised (and South Africa being called upon to pay in terms of the guarantee), and the benefits accruing from the guarantee.

No up-to-date information has been provided by the Minister or NERSA on the costs of a 2500 MW nuclear new build programme (the Ingerop study referred to in the IRP2019 dates back to 2013, and is outdated and reliant on data of questionable quality), the amount that would be guaranteed, the circumstances under which any guarantee could be called upon, or

⁷ At p27.

⁸ At p58.

⁹ At p60.

¹⁰ At p59.

the terms of any such guarantees. SAFCEI and ELA-JHB also do not readily have access to any renewable guarantees as a reference point. As a consequence, it is impossible to comment meaningfully on the merits of either nuclear or renewable technology technologies. However, as the least-cost electricity generation option (as confirmed by the IRP2019) that is also privately financed, renewable technology guarantees are likely to be distinguishable from nuclear technology guarantees where State Owned Entities will have to raise the finance for the most-cost electricity generation option.

SAFCEI and ELA-JHB submit that a comparative analysis of guarantees required for nuclear and renewable technologies should have been undertaken as part of the preparatory steps for a new nuclear build programme (and prior to a s34 determination being made), and made available to the public for comment in this consultation process.

Prof. Steve Thomas

Guarantees can be a useful policy tool but must be used sparingly and with a clear justification, for example, to gain experience with a new or emerging technology. Nuclear power has more than 60 years of commercial experience and, if, after all that time, it still requires guarantees, essentially subsidies, for it to be deployed, this suggests the technology should not be pursued.

Q5

Inadequate information – if we get the information then is that then ok?

A

Francesca de Gasparis & Makoma Lekalakala

In section B of its 5 February 2021 written comment on NERSA's proposed concurrence with the Ministerial s34 nuclear procurement determination, SAFCEI and ELA-JHB submitted that inadequate information had been made available to the public to enable meaningful participation in the public consultation process.

The Minister of Mineral Resources and Energy ('the Minister') did not afford the public any opportunity to make representations prior to making his determination decision, and whatever information this decision was based on was also not made available to the public. It is not known what information served before the Minister in making his determination decision, or whether this information was provided to NERSA to inform its decision-making, nor is it known what the Minister's reasons for his determination decision were, or whether these reasons were provided to NERSA. Furnishing such information in the public participation process relating to NERSA's decision on concurrence would not make an unfair procedure fair, especially given that the Minister has already made his determination decision.

Insofar as NERSA's decision on concurrence is concerned, it was submitted by SAFCEI and ELA-JHB that not only was it necessary for a fair process that the public were provided with the information that served before the Minister, and the reasons therefore, but it would render the process irrational if the Minister, in seeking NERSA's concurrence in his determination, failed to first provide such information and reasons to NERSA to allow it to properly consider whether to concur. Furthermore, s34 of the ERA empowers the Minister to make

determinations 'in consultation with' NERSA, and simply asking NERSA to concur with the determination without saying why would fall short of the required consultation.

It was submitted further that in order for the NERSA public participation process to be fair and rational:

- a. the information that served before, and informed, the Minister's decision and the reasons therefore, be provided to I&APs (including SAFCEI and ELA-JHB) in order to allow them to properly understand the basis for and reasons why the Minister has made the determination;
- b. I&APs (including SAFCEI and ELA-JHB) are thereafter given an opportunity to make representations to NERSA in respect of that information and reasons; and
- c. to the extent that the Minister has not provided the information and reasons to NERSA, that the Minister provide those to NERSA so that NERSA can consider whether to concur based on consideration of the Minister's reasons for taking the decision and the information that informed the Minister's decision.

Such information, which should have been but has not been provided, could have at least included:

- a. any 'road map' developed by the Minister as envisaged by the IRP2019,
- b. the responses received to the DMRE's June 2020 RFI;
- c. any documentation considering available technologies;
- d. any documentation considering the proposed funding models; and
- e. any affordability assessment (including any financial risk assessment) undertaken.

It is also submitted that such information should have included a cost-benefit analysis to ascertain whether nuclear technology is the BPEO.

In order to address these deficiencies from a NERSA rationality and procedural fairness perspective, NERSA would thus have to first obtain the information that served before the Minister (as well as his reasons for the determination), and make such information and reasons (as well as any other relevant information serving before NERSA with regard to its concurrence decision) available to the public for comment.

Prof. Steve Thomas

The implication of the question is that the information exists or will exist, we just need to find it. The reality is that the information does not exist. For example, we have tender prices for nuclear plants but these have proved a hopelessly inadequate predictor of actual costs and invariably a large underestimate. Even using these underestimates, nuclear is not an economic choice according to the IRP. Again, if after 60 years of commercial history, nuclear costs are not predictable and reproducible, the implies the technology should not be pursued.

Reservation of rights

SAFCEI and ELA-JHB record that the public was only afforded a week's notice to prepare for the oral hearing, and to provide written responses to oral questions raised by various officials

during the hearing. SAFCEI and ELA-JHB reserve the right to supplement these responses further should it be required.