



South African Institute of Electrical Engineers



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**SAIEE RESPONSE TO NERSA ON THE  
ESKOM APPLICATION FOR TARIFF  
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## CONTENTS

- The SAIIEE
- Participation by the SAIIEE
- The Good...
- The Bad...
- The Ugly...
- Some of the unintended consequences...
- Concerns
- Some ideas
- Recommendations
- Conclusion



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# THE SA INSTITUTE OF ELECTRICAL ENGINEERS

- ESTABLISHED A HUNDRED YEARS AGO IN 1909
- A LEARNED SOCIETY OF ELECTRICAL ENGINEERING PRACTITIONERS: ENGINEERS, CERTIFICATED ENGINEERS, TECHNOLOGISTS AND TECHNICIANS
- 5500 MEMBERS MANY OF WHOM ARE REGISTERED AS ENGINEERING PROFESSIONALS WITH ECSA
- SIX ACTIVE CENTRES AND TWO INTEREST GROUPS
- MEMBERS INCLUDE ORDINARY HOUSE HOLD CONSUMERS OF ELECTRICITY, ACADEMICS, ENGINEERING CONSULTANTS: IN-HOUSE AND IN PRIVATE PRACTICE, ENGINEERS IN INDUSTRY, COMMERCE, GOVERNMENT RESPONSIBLE TO GENERATE, DISTRIBUTE AND APPLY ELECTRICAL POWER IN INDUSTRY TO PROVIDE IN THE NEEDS OF THE CITIZENS OF THE COUNTRY AND TO CREATE WEALTH FOR ALL

## PARTICIPATION BY THE SAIEE IN THE RESPONSE TO ESKOM APPLICATION

- SAIEE Members participated in responses thought their employers such as Sappi and through interest groups such as EIUG and BUSA
- The SAIEE submitted to NERSA a response base on the comments received from its members
- The SAIEE avoided to duplicate technical details which have already submitted by its members through other channels
- This presentation is based on the SAIEE response which was submitted on 2009-12-14.

- **The Good...**
- Consumers have become more aware of the cost and impact of electricity usage, driving positive changes in energy consumption behaviour.
  - Turning off unused appliances.
  - Installation of geyser blankets and hot water pipe insulation.
  - Use of solar heating for water and solar power for domestic use.
  - More use of LP Gas for cooking.
  - Use of other methods of lighting such as oil and candles etc.

- **The Good... (continue 1)**
- **Architects and engineers** have given focus to more energy efficient building designs which will improve our energy efficiency in the future.
- **High energy users** in Industry who may have had the advantage of effectively subsidised electricity in the past will need carry a more equitable share of the costs in the future.
- **Industry (outside Eskom)** that generates surplus energy and electricity during the normal production process can contribute to the grid supply, when suitable long term commercial structures have been mutually agreed.

- **The Good... (continue 2)**
- The crisis has stimulated further **research** and development in non-traditional methods of energy supply such as industrial waste opportunities, bio-fuel, wind, solar and wave generation.
- **Smart-grid evolution** will enable us to identify, quantify and eliminate inefficiencies in the electricity supply chain and reduce technical losses.
- It should be noted here that the some of the impacts such as listed above while reducing demand also reduce the revenue potential for Eskom and therefore the source of funding for capital expansion.

- **The Bad...**
- The proposed price increase will have a significant financial impact on an disposable income of consumers, especially the poor both, directly for electricity costs and indirectly, as the knock-on effect pushes up cost inflation and further impacts the cost of living.
- Higher electricity costs will put pressure on inflation across the whole economy and reduce the growth potential of the country and make it difficult to recover from the global recession. Further economically driven problems could occur such as civil unrest and increased crime.

- **The Bad...(continued 1)**
- Some industries may find it very difficult to be competitive and may close down resulting in job losses.
  - *It can be argued that such industries should not be competitive on the back of non market related electricity costs and if the price of electricity is normalised and the industry cannot improve its efficiencies then its natural demise is inevitable in a global environment.*
- Rushed Eskom capital expansion may result in less optimal energy generation, transmission and distribution choices negatively affecting efforts to address climate change and pollution.

- **The Bad...(continued 2)**
- Further foreign direct investment in industry development in South Africa will be put at risk if the electrical supply capacity is not available, quality of supply is not reliable and prices are not economically viable.

- **The Ugly...**
- The rush to install stand-alone generators both domestically or industrially increases the risk of damage to plant and safety of people if installation standards are not followed or maintained.
- The increased use of LP gas in the home increases the risk of associated safety issues unless correct safety procedures and maintenance is followed.
- Higher prices will drive energy theft and the concomitant risk to human life is also increased.

- **Some of the unintended consequences...**
- The Eskom contribution to the consumer price of electricity is not the only contributing factor and the intermediaries, particularly the municipalities, add layers of inefficiency to the delivery of the service along with multiples of price overheads that are passed on to the overburdened paying consumer effectively implying consumer cross-subsidies of other municipal inefficiencies. Multiple mark-ups of Eskom rates by Municipalities should not be allowed.

- **Some of unintended consequences.....(cont)**
- The increased price is not linked to an increase in supply quality. Thus consumer discontent will probably grow.
- Higher prices will increase the level of payment default and bad debt.



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- **Concerns**

- There has been a steady decline in the quality of electrical infrastructure maintenance, particularly in the area of distribution and municipal supply. The SAIEE has growing concerns on the impact the increased capital expansion pressure will have on further reducing the expenditure and effort required on infrastructure maintenance.

- **Concerns....(continued 1)**
- Coal transportation can be done more effectively by rail or conveyor instead of road.
  - For example, why is coal transported by road for more than 120km to Camden power station when coal can be bought from the Usutu colliery only 3km from Camden?

- **Concerns...(continued 2)**
- Eskom's cost structure and operational efficiencies are questioned in respect of:
  - Contracts for maintenance work – are these efficient and resulting in the best value to Eskom?
  - Contribution of non-technical losses, in particular deliberate non-payment (to Eskom) of many 'illegal' electrical connections across the country.
  - Billing efficiency in debt collection from government departments, State Owned Enterprises and municipalities.

- **Concerns.....(continued 3)**

- Why are the employment costs increasing so much, especially when the staff costs on the new build are capitalised. How productive is the present staff - is it possible to cut the number of meetings, and employ staff in other areas?
- No consideration is given to turn-key projects. This would cut the number of staff required, eliminate financial risks to a certain extent, and cut other costs - e.g. the rental of additional buildings to house the "new-build" staff.

- **Concerns.....(continued 4)**
- What about the under recovery/default/non-payment for energy supplied to neighbouring countries?
- What will happen to the profit Eskom makes from the inflated prices once the loans are paid back for this capital expansion programme?
- What incentive is there to Eskom to stick to frugal habits if they get this flood of funds?
- The growing extent of theft of electricity & infrastructure.
- The growing amounts of outstanding payments for services rendered which gets written off

- **Some ideas**
- Daylight saving and splitting South Africa into two time zones (East and West) will spread the peak energy demand across a broader timeframe, thus easing pressure on the reserve margin and buy us time to explore more efficient solutions to the capacity challenge.
- There is still much that can be done to increase the education and awareness of more effective energy usage at home and at work, by adapting our lifestyles to consume less and waste less.

- **Some ideas....(continued 1)**
- A more coordinated effort must be put into research and development of renewable energy sources, such as concentrated solar energy and solar water heaters in particular.
- Many modern day appliances such as cell-phones and computers use low voltage DC. Why do we not supply low voltage DC instead of adding all the inefficiencies of AC to DC conversion in the system?

- **Some ideas....(continued 2)**
- Let's start with our buildings. We need to move toward net zero buildings, building with enough intelligence to save power, buildings with an envelope designed for the climate. So, look around you - are your lights on while the sun is shining outside?
- Electricity prices must be market related and respect market forces. Eskom should not charge less than cost for electricity to the aluminium smelters and intensive users, there is no reason why other consumers of electricity should be taxed in the form of a cross-subsidy to support these industries.

- **Some ideas....(continued 3)**
- Energy Efficiency often requires non-electrical solutions. For example - good insulation, electrical engineers need to think bigger than simply conductive materials for solutions.
- Use of the National Lottery or Government Bonds to finance the Eskom expansion requirements should be considered, or a separate and focused lottery, similar to the one in Australia established to fund the Sydney Opera House? A separate lottery would mean a greater percentage of income flowing to the electricity fund rather than being lost to the operator.



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- **Some ideas....(continued 4)**
- The Regulator must publish on a regular basis, at least twice a year, comparative prices of the different categories of electricity supply prices world wide. This will eliminate speculation both by Eskom and consultants

- **Recommendations**

- Eskom must curtail the loss of electricity and revenue due to theft or corruption. NERSA should set up monitors and set KPI's for the measurement and tracking of non-technical losses. The SAIEE recommends that NERSA appoint an external audit committee to monitor expenditure and billing efficiency in ESKOM and the Municipalities in order to restore public trust. The audit committee needs to make its findings and recommendations public.

- **Recommendations... (continued 1)**
- A higher level of accountability for funding and expenditure (capital and operating) must be enforced with regular report backs to a public forum. No bonuses should be awarded to Eskom management or executives for the duration of this accelerated capital expansion, or at least any bonus should be reflective of KPI achievement against externally audited objectives only after the three year plan has been successfully executed.

- **Recommendations...(continued 2)**
- There should be corresponding increases in service levels from the utilities to the end consumer. NERSA needs to monitor this and hold both Eskom and the municipal supply commissions accountable for quality of supply commensurate with their market related pricing.
- NERSA must monitor the consumer price of electricity (bulk, industrial and residential) and ensure that unreasonable profits are not carried through from the Eskom wholesale pricing to the retail pricing of electricity.

- **Recommendations.....(continued 3)**
- Electricity prices must be market related and respect market forces. Eskom must not charge less than cost for electricity to the aluminium smelters and intensive users, to avoid market distortions .
- Eskom must continue to look for other models of funding so as not to burden the consumer once more in three years time with more increases, as the expansion program prices escalate.

- **Recommendations.... (continued 4)**
- There needs to be strong alignment between Government initiatives (DoE, DPE) and Eskom's capital expansion plans. This is imperative to ensure efficiency, sustainability of delivery and meeting of the public and industry expectations. Government needs to take ownership of this and provide leadership and direction.
- Research and Development in the area of smart grids, demand side management, nuclear and renewable energy must be incentivised and given the appropriate levels of investment so that they can reach critical mass and become significant contributors.

- **Recommendations....(continued 5)**
- Competitive Supplier Development Programmes must be available to all industry participants and not restricted to Eskom build projects. There must be public scrutiny and oversight in the application and disbursement of such funds
- Skills retention and skills development should be focused on to ensure sustainability of the capital expansion program and improve the quality of service.
- Local industry development of energy saving measures or alternative energy sources such as solar should be aggressively pursued and incentivised.

- **Recommendations....(continued 6)**
- A proper independent producer pricing regime with long term tariffs must be finalized and handled by an independent body – Eskom cannot be expected to handle all this in one organization without conflicts of interest.
- Solar water heating subsidies are too low
- Make electricity exempt from VAT as it is already a form of tax subsidising the free or below cost of electricity to industry and neighbouring countries.

- **Conclusion**

- It is clear that the resolution of the challenges we face in electrical capacity in South Africa will take political foresight, maturity and the tenacity to follow through along with engineering innovation and a good dose of capital investment savvy in a stable environment.
- The SAIEE acknowledges that the wholesale price of electricity in South Africa has been unrealistically low in the past and supports the need to address the capacity of the electricity supply, transmission and distribution capability to responsibly meet the growth needs in the country.

- **Conclusion.....(continued 1)**
- The SAIEE questions the business sense of the radical increase in the price of electricity as a funding source for capital expansion when clearly this will drive consumer behaviour to use less electricity and while the DSM effort may result in an improved safety margin it will also result in lower revenue for Eskom and therefore challenging the funding source for capital expansion.
- While the impact of the proposed price increase on consumers will be great, the impact of not addressing the electricity capacity needs will be worse for the economy and ultimately for our people.
- Due to the significant contribution of free basic electricity<sup>32</sup> to the economy and the impact of this cost on inflation

- **Conclusion.....(continued 2)**
- While the wholesale price of electricity may be low by international standards extreme care must be taken that by increasing the Eskom price, the retail price to the consumer and industry is not inordinately increased through municipalities using the opportunity to increase revenues and compounding this with increased VAT charges further burdening the consumer.
- It is regrettable that the decisions and actions (or lack of actions) of the past have left the current consumers and industry with the burden of an inordinate 'step-change' increase in electricity tariffs to fund the capital expansion program.

- **Conclusion.....(continued 3)**
- The SAIIE questions the business sense of the radical increase in the price of electricity as a funding source for capital expansion when clearly this will drive consumer behaviour to use less electricity and while the DSM effort may result in an improved safety margin it will also result in lower revenue for Eskom and therefore challenging the funding source for capital expansion.

- **Conclusion.....(continued 4)**
- While the impact of the proposed price increase on consumers will be great, the impact of not addressing the electricity capacity needs will be worse for the economy and ultimately for our people. It is believed that the increased cost of electricity will further drive both behaviour change in consumer usage and energy usage decisions along with an increased research effort towards more renewable energy alternatives. This will ultimately be more efficient for both consumer and supplier.



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- **Conclusion.....(continued 5)**
- Due to the significant contribution of free basic electricity to the economy and the impact of this cost on inflation plus the cost structure and operational efficiencies of Eskom, need to be subjected to careful debate and scrutiny to ensure that fair payment for electricity is collected from ALL users in proportion to their consumption and that the most effective procurement procedures are used to ensure that quality infrastructure maintenance is sustained at a fair



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“VIS NULLA SINE SCIENTIA”

“THERE IS NO STRENGTH WITHOUT KNOWLEDGE”