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SUBMISSION TO NERSA

COMMENTS ON ESKOM'S APPLICATION FOR A PRICE INCREASE FOR 2008/9 FINANCIAL YEAR

29 APRIL 2008

BACKGROUND

Forensies.com is an independent association of forensic accountants that possesses of the expertise of an attorney, a financial accountant, a chartered accountant and an internal auditor who is also a Certified Fraud Examiner. Apart from the fact that we already were professional specialists in our own individual right, all four of us are part of the first group of postgraduate students who completed the newly instituted Masters degree in Forensic accounting during 2006/07 at the University of the North West (Potchefstroom-campus). This degree brings together the areas of accounting, law and criminology within the discipline of forensic accountancy.

In the area of litigation we have specific knowledge of labour disputes, disciplinary hearings, expert witnessing, debt administration and disputes between farmers and suppliers.

In the area of agriculture we have specific knowledge of estate planning and succession, farm management, machinery management, enterprise analysis, cash flow budgets, agricultural economic comparisons and the interpretation of financial statements.

In the area of corporate governance we have specific knowledge of fraud prevention, forensic investigations, litigation support, disciplinary hearings, risk assessment and setting up of an internal audit department.

In the area of external auditing we have specific knowledge of transport (Road freight), agriculture (Maize, SAFEX), insurance, business/project finance, manufacturing, mining/engineering, retirement planning, ecotourism and tourism, construction (Roads, buildings).

We became interested in Eskom when we did an article for our monthly newsletter and thought it would be appropriate to share our findings with NERSA as a concerned independent investigator into the matter.

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EXECUTIVE SUMMARY OF KEY FINDINGS AND STAKEHOLDER COMMENTS AS REQUESTED BY NERSA

I. KEY FINDINGS

Since Eskom's conversion to a company, no additional electricity generating capacity was added up until 2007. Despite clear warning signals the power generating reserve margin declined from 15.5% in 2001 to 7.8% in 2007 while the international norm is 15%. The lack of capacity expansion is now being replaced by an enforced reduction of 3 000 MW on demand. This drastic measure must restore the reserve margin to allow a recovery of coal stock, improvement of coal-handling systems and allowing opportunity for maintenance.

There was only 13 days of coal stock available in February 2008. This is a reduction of 20 days in stock from the calculated stock at the year-end of 2007. Eskom now needs to buy 40 million tons of coal over and above its running requirements of 125 million tons a year. Due to the critical low stockpile levels, to keep the fires burning the power stations literally had to scrape the bottom of the coal yards, which was saturated with rainwater, for coal. Therefore, what it had to use as fuel was a mixture of coal gravel, coal dust, maybe even soil, mixed with water. It could rather be defined as sludge and not coal.

In previous decades Eskom's power stations functioned on the so called principal of 90-7-3 meaning 90% of the capacity is available for generating electricity, 7% of capacity is out on planned maintenance and 3% of capacity is out on unplanned outages. Currently this ration is 80-7-13. The result is that generating capacity must be reduced to allow for essential maintenance as part of Eskom's recovery plan.

Eskom sells 33.7% of its electricity at a loss while another 54.7% is sold almost at cost to redistributors, industry and mines. This means that the redistributors, industry and the mines contribute 5.4% to Eskom's gross profit while residential, commerce and traction contribute 94.6% to the gross profit.

The inability of Eskom's available capacity to generate electricity according to the demand led to an estimated daily loss of 37.92 GWh during January 2008. For a six month summer period it could therefore loose R1.25 billion of revenue or R3.69 billion for a six-month winter period. Eskom could loose almost R5 billion of revenue during a year because it is unable to supply in the potential demand.

Eskom is not revealing much regarding its coal procurement, either in its annual reports, or in its submission to NERSA. It also makes use of indices in its submission to NERSA instead of actual prices. This makes it extremely difficult to calculate the merits of the required 60% increase. The essential information that is lacking is the actual portion of energy cost in the total generating cost; the actual tonnage of the different coal contracts; and the actual coal price, as delivered at the power stations, for each type of contract.

It will cost an estimated additional 4.26 cents/KW at an average price of R232/ton to restore the coal stock with a further 40 million tons above the normal purchases. If the average coal price at which Eskom is buying coal for normal requirements increases with R50/ton from what it was a year ago, the electricity tariff has to increase with another 2.8 cents/KW. When added to the 4

cents/KW to restore coal stock, the tariff has to increase with 6.8 cents/KW. This is an increase of 38% on the average selling price of 18 cents/KW of 2007.

Government can earn up to R19.43 billion from Eskom in direct taxes or by using it as a tax basis. In addition Government now wants to earn interest income from Eskom as well.

The accelerated application of affirmative action at Eskom caused a severe shortage in skills and expertise. The turnover in skilled labour has increased to 6.81% while the standard is considered to be 5.7% and the alarming norm is 5.6%. The turnover of engineers is 7.28% while that of artisans is 6.97%.

In 2006 the average total annual adjusted remuneration of all Chief Executive Officers of JSE listed companies was R3.35 million. In comparison to this average, the Eskom CEO received 105% more than his counterparts. Eskom employee's remuneration on average increased by 6.5 percentage points above inflation for each year since 2000. The increase in executive salaries for 2007 was 23%. It must be seen against an affirmative action drive of 63% over a period of time.

The current electricity crisis is the result of negligence and ignorance by Eskom's board of directors and Government as its shareholder. They lost sight of Eskom's primary goal, namely supplying electricity to the country. Instead they were striving for low electricity prices, meeting racial employment quotas, and encouraging BEE-procurement to achieve political goals. In the process, Eskom ignored or failed to manage at least four critical indicators:

- The reserve generating margin;
- The days of coal stock;
- The plant unit capability; and
- The skills turnover.

They simply put these matters under "Risks" and declare that it will be "extremely challenging" to manage during the following financial period.

II. STAKEHOLDER COMMENTS

The fundamental reason for the electricity crisis is that nobody took the responsibility to ensure electricity supply, according to the objective principles of supply and demand. Rather than to admit to its mistakes and take full responsibility for it, the country has to be satisfied with a collective apology from the state president.

Between Government and Eskom, there was a complete void of responsibility for ensuring future electricity supply. A substantial tariff increase is inevitable but cannot be approved without some commitments from Eskom, especially its board of directors and its shareholder. In essence it needs to return to its core duty of supplying electricity to South Africa and should be regulated in more then just its tariffs by an autonomous, independent, objective electricity planning department outside Eskom without political masters and a political agenda.

Eskom needs to restore its corporate governance along with its generating capacity. This is especially relevant to the primary characteristics of transparency, accountability and, responsibility. The users of electricity need Eskom and Eskom needs them to get through the crisis. They should, by word of its owners and management, acknowledge the mistakes they have made, take responsibility for it and apologise to the public. Only then will the users be ready to buy into the drastic measures that Eskom puts on the table as a solution to the crisis.

Stakeholder inputs as requested by NERSA:

1. **Given that Eskom states that there has been a significant increase on primary energy costs from the time of planning to now, please comment on coal price escalation and methods of restricting the price escalation. What contribution should primary energy suppliers, especially coalmines, offer in order to achieve efficiency in the supply chain?**

   The information in the Eskom application for a price increase is not sufficient for an outside party to evaluate the necessity or not of the proposed price increase. Eskom should disclose the price and quantity of coal available in terms of its existing long-term contracts as well as the proposed quantities of coal to be purchased at spot prices instead of demonstrating price trends by means of indices. Only if this “purchase mix” and prices are made available can Nersa expect constructive and meaningful comments in this regard. The actual portion of the cost of generating electricity made up by coal fuel should also be disclosed in detail before comment can be accurate.

   It is accepted that international coal prices have gone up significantly but not to the extent that a 60% price increase can be justified. One should also remember that Eskom uses low quality coal that is not comparable to export quality and higher prices.

   What is further regrettable from Eskom’s application is that there is no reference to how it will restructure its own expenditure to accommodate the loss of revenue from reducing its generating capacity or to partly curb the effect of the rising cost of electricity generation. It is only emphasising its own need for more revenue.

   The South African public is effectively being kept in the dark by the secrecy and non-disclosure of vital information necessary to give meaningful comment.

2. **The Eskom application includes demand side management (DSM) cost of R2.5bn that must be recovered from customers other than recovering this cost from the customers, what other funding options for DSM can be considered?**

   One should understand that although demand side management is a necessary remedial action in the current scenario, it does not make business sense for a company to incur expenses to decrease the demand for its own product. Eskom is effectively now going to make its electricity customers pay higher prices for not using its product and for installing alternative power sources like solar power and gas stoves. Eskom is currently undertaking a R147.8m media campaign to convince clients that they are responsible for saving electricity. This is nonsensical.

   Customers should be encouraged to use alternative power sources bay way of tax incentives on spending in this regard.

   The current Eskom monopoly situation should be changed in the long term by deregulating the power industry as far as possible.

3. **The 53% real increase required by ESKOM will result in a R12.7 billion profit after tax, please comment on the necessity and adequacy of the above profit after tax.**

   Eskom is essentially a service organisation and should not be profit driven. Profitability is applicable where investors in a company expect returns from their investment in an open market economy where the normal market forces are at play. These normal market forces will punish poor performance and poor decision-making and theoretically, if sufficient resources and alternative power producers were available, Eskom would today be a long way down the path of bankruptcy. Alternative budgetary control measures should be put in place to ensure financial efficiency and effectiveness in the place of profitability as a benchmark or control measure.

   Profitability should not be used as a benchmark in the Performance Agreement (Shareholders Compact) between Government and the board of directors and management of Eskom. We have now seen from the experience over the last number of years that management reported that they have achieved their targets in terms of their performance agreement and have subsequently qualified for huge bonuses. Still we ran out of electricity. Amongst other performance measures, profitability is clearly not the answer. This striving for profit at Eskom could even have contributed to the problems we have today regarding low coal stock and poorly maintained power plants. If the performance of a manager were substantially measured in terms of profitability, the inclination would be not to incur capital expenditure nor adequate maintenance expenditure due to the negative impact on the short-term profitability.

   Because Eskom is a service organisation upon which the whole of the South African economy depends, it should be exempt from income tax and dividend payment to Government. It does not make sense for Government to finance Eskom from taxpayer's money and then again earn returns on the taxpayer's money by way of taxes on profits and dividends payouts. Eskom makes a more than enough indirect contribution to the treasury by means of VAT and the newly announced levy on electricity usage.

4. Government has granted Eskom R60 billion loan to assist in the capital expansion program, in view of the current electricity emergency what other forms of assistance should Government provide or consider?

As sole shareholder, Government should rather put some equity in the form of share capital back into Eskom to fund capital expansion instead of granting an interest-bearing loan of R60 billion. This would mean that the amount should be available to Eskom free of interest and without repayment terms. In this way interest charges would not eventually have to be borne by the electricity user.

In addition, further funds over and above the R60 billion, should be made available from Government by way of interest free loans. This could be sourced from the current and future national budget by reallocating budget amounts for this purpose. The energy crises should not cause additional taxes or energy levies that would increase the living costs of ordinary citizens of South Africa.

Eskom should not be obliged to go to the capital market as its main source of funding. This ad additional interest charges that will eventually be borne by the customers.

5. What commitments should be required from Eskom during the consideration of the application and after the conclusion of the application?

5.1. A moratorium on the BEE requirements regarding the supply of coal should be implemented immediately. This should include the mining, transport and all activities related to the supply of coal. Long-term contractual relationships should be established with coal suppliers whether they are BEE compliant or not. We cannot afford the country and its entire people to suffer for the sake of BEE that will enrich a privileged few.

5.2. Employment equity, as a requirement for appointments and promotion, should be abolished immediately with an additional guarantee to skilled workers that they will not in future be disqualified by EE practices in terms of promotion and job security.

5.3. Government and the Eskom board should design new performance measurement criteria in terms of the Shareholders Compact and business objectives. These performance criteria should be such that it will ensure sufficient power generation and distribution for South Africa. This would include the appointment of skilled, qualified and experienced staff based on merit only, reliability and adequacy of power supply and supply of sufficient coal stock.

5.4. Performance bonuses should not be paid out for any periods where the country experiences power shortages or interruptions.

5.5. Eskom and Government should accept responsibility for the power crises and demonstrate this by dismissing unqualified under performing members of staff. This includes the Minister of Public Enterprises, Mr. Alec Irwin, and the chairman of the Eskom board, Mr. Valli Moosa. Where contractors are utilized on a permanent or semi-permanent basis, such people should be employed on a full time basis and people

not performing in their jobs should be dismissed. No duplication should be allowed in employment positions, especially where contactors have to supplement inefficient full time employees.

5.6. The serving directors should also be evaluated and reconsidered. It is clear that there is a lack of strategic vision that ought to be addressed.

5.7. Government and Eskom should be committed to increasing the power generation capacity of South Africa in the short term as well as the long term. This would necessarily mean that it would allow competitors to Eskom to enter the market and produce power and be allowed to sell power freely into the South African market.

6. Any other comments that the stakeholders might propose to the Energy Regulator.

6.1. Eskom's motivation for the tariff increase includes provision for two extraordinary items namely restoring coal stock and financing the Demand Side Management. It should clearly specify the portion for both these items separately as well as the portion that should have applied under normal circumstances. The extraordinary items is a temporally measure and should only be relevant for two years. Unless separated, it will form part of the basis for future increases. The compilation of the total increase must be made publicly to electricity users.

6.2. To avoid an excessive burden on residential and rural users, there must be an alignment of electricity prices so that redistributors, industrial and mining customers pay more for their electricity:

TABLE: SUGGESTED DIFFERENTIATED INCREASE IN TARIFFS

Category	Current Revenue R million	Current price c/KW	60% increase c/KW	Suggested increase %	Suggested increase c/KW	New price c/KW	New Revenue R million
Redistributors	14,670	16.88	27.0	65.9%	11.12	28.00	24,334
Residential	4,064	41.74	66.8	19.8%	8.26	50.00	4,868
Commercial	1,843	23.50	37.6	27.7%	6.50	30.00	2,353
Industrial	9,578	16.01	25.6	68.6%	10.99	27.00	16,152
Mining	5,479	16.90	27.0	59.8%	10.10	27.00	8,754
Rural	1,594	33.69	53.9	18.7%	6.31	40.00	1,893
Traction	646	21.05	33.7	61.5%	12.95	34.00	1,043
International	1,515	11.15	17.8	142.2%	15.85	27.00	3,669
Total	**39,389**	**18.06**	**28.9**	**60.0%**	**10.8**	**28.89**	**63,065**

Note: The suggested increase percentages includes the 14.3% increase already approved, the residential rate would for example only be increased by an additional 5.5% (19.8%-14.3%)

We are by no means supporting a 60% increase but used it as a mere example. In this way the indigent users will also be accommodated without specific reference. It must be remembered that electricity tariffs bears VAT as well. Business users can claim this tax back while residential users can't. A flat rate application of the increase has the result of another 14% tax over and above the increase for residential users.

1. INTRODUCTION

An electricity crisis has developed in South Africa over the past few years, first manifesting as a capacity problem and then developing into a deeper energy crisis. Large-scale outages only became common in the last few months due to generation performance deterioration and coal supply constraints. This culminated in substantial load shedding in January 2008 and raised the awareness of a pending energy crisis that was developing. Based on the current estimates the energy crisis is expected to last for 5-8 years, phasing out after the realisation of new base load stations.

President Thabo Mbeki has publicly apologised collectively for the power cuts that have plagued the country. To date, neither the political shareholders nor the board of directors or the executive management have taken responsibility for the crisis, by giving account of what really happened. Eskom approached the energy regulator (NERSA) instead for a further nominal increase of 46% above the already approved 14% in their tariffs for 2008/09, totaling 60%. It specified that the additional increase is necessary to make provision for the increase in the energy component of the cost of generating electricity and for accelerated cost relating to Demand Side Management.

According to Eskom's submission to NERSA, the generation capacity shortage that is currently being experienced has resulted in much higher usage of coal fired base load stations. This, Eskom claims, has resulted in them having to buy more coal on the spot market while the spot market prices have in turn been pushed up by global coal and commodity prices.

The above is not the real truth. Eskom has to accelerate their coal purchases over the next two years to restore the coal stock at the coal-fired power stations, which it has neglected to maintain since 2001. It also opted to enforce a reduction of 3 000 MW of capacity to restore the reserve capacity margin by means of downward pressure because since 2001 it also neglected to increase the reserve margin upwards by means of capacity expansion. It will use this enforced reserve to restore coal stock and to do essential maintenance, the latter also being one of its neglected managerial duties for several years.

Against the current electricity crisis, a tariff increase of this magnitude cannot be approved unconditionally. There has to be certain commitments from Eskom. Firstly then, the reasons for the electricity crisis have to be discussed in order to define the conditions under which the increase should be approved before the merits of the increase itself can be argued.

2. CAPACITY

Up until 2002, Eskom was a statutory body regulated by the Eskom Act of 1987. In 2002 Eskom was converted to a private company in terms of the Eskom Conversion Act of 2001. Government is the only shareholder. The Minister of Public Enterprises, currently Mr. Alec Erwin, is responsible for appointing the board of directors on behalf of Government. Previously the Electricity Board acted as the board of directors. Government, as the only shareholder, instructed Eskom to stop building new power plants. It favoured deregulation measures and hoped independent contractors would step in to help supply power.

Since Eskom's conversion to a company, no additional electricity generating capacity was added up until 2007 when 587 MW nominal capacity was installed in the form of Gas/liquid

fuel turbine stations and some mothballed capacity at existing power stations were brought back into production. The Gas/liquid fuel turbine stations were targeted as an interim option for the provision of peaking capacity in the short term. At the moment they are being utilised almost permanently as Open Cycle Gas Turbines at a cost of at least 1000 times higher than that of coal fired generators.

As Eskom reported in their latest available annual report (2007) it had, at the end of March 2007, a nominal capacity of 42 618WM while its net available maximum capacity was 37 761MW. During 2006/7 the normal demand for electricity during summer was about 30,000MW and about 35 000MW during winter. This corresponds with the historical trend of the peak demand for electricity, as shown in Table 1:

TABLE 1: PEAK DEMAND AND RESERVE CAPACITY OF ESKOM'S CAPACITY

	2001 MW	2002 MW	2003 MW	2005 *(15 months)* MW	2006 MW	2007 MW
Peak demand	30599	31621	31928	34195	33461	34807
Net maximum capacity	36208	36208	36208	36208	36398	37761
Reserve capacity	5609	4587	4280	2013	2937	2954
Reserve %	15.5%	12.7%	11.8%	5.6%	8.1%	7.8%

In 1998, the White Paper on the Energy Policy of South Africa, approved by Cabinet, warned that Eskom's surplus capacity would be fully used by 2007. Eskom was aware of this as it predicted as early as 2001 in their ISEP model (Integrated Strategic Electricity Planning) that by 2007/8 it would run out of capacity to provide for the country's growing demand. Despite clear warning signals the board of directors sat back and watched as the power generating reserve margin declined from 15.5% in 2001 to 7.8% in 2007 while the international norm is 15%. Even in 2006 when the ISEP model again forecasted an unavoidable shortage of power, the board declared very convincingly: *"Eskom is well positioned to meet rising demand, given its financial strength, technical skills, planning capacity and operating performance."*(Eskom Annual Report, 2006)

Red lights occasionally started to flicker for the converted company when unplanned outages occurred but in 2003, the former Energy Minister (Phumzile Mlambo-Ngcuka) then said there is no looming power crisis. She added that then-Eskom CEO, Thulani Gcabashe, assured her South Africa would never run out of power. In 2005, Public Enterprises Minister, Alec Erwin, assured South Africa that there is no national power crisis, despite numerous power cuts throughout that year.

President Thabo Mbeki earlier this year admitted that Eskom did inform Government about an impending electricity shortage years ago, but that it was told not to build more power stations. Mbeki acknowledges now that this was a mistake and is quoted as saying: *"When Eskom said to the government: 'We think we must invest more in terms of electricity generation'... We said not now, later. We were wrong. Eskom was right. We were wrong."* If this was indeed the words of Eskom: *"We <u>think</u> we must invest more …"* the board of directors had the responsibility to express itself much more convincingly about the looming shortfall than to utter just a thought.

Due to the board's ignorance, 4 724 MW of planned outages and 1 850 MW of unplanned outages, within an already alarmingly low reserve margin, started a chain of events on 8

October 2007 that resulted in load shedding being implemented throughout South Africa during October. Although the electricity grid stabilised somewhat during November and December, the whole system almost collapsed on the 24th of January 2008, as shown in Table 2:

TABLE 2: ESKOM'S AVAILABLE CAPACITY ON 24TH JANUARY 2008

24/01/2008	MW
Installed	39194
Peak	29492
Unplanned Outages	6221
Planned Outages	3183
Total Outages	9404
Capacity available	29790
Reserve	298
Reserve %	1.0%

The total outages on that particular day amounts to 24% of installed capacity. Of this 16% was unplanned while the historic target is 3%. The average portion of unplanned outages for January was 11%. Eskom ascribed the shortage in capacity to wet coal due to the excessive rain in Mpumalanga. The real reasons for the high level of unplanned outages was:

- Coal quality;
- Coal quantity;
- Equipment failure.

In January the coal load losses were unusually high (between 2 000 and 4 000MW). The plant performance deteriorated and the unplanned outages were higher than normal (between 2 000 and 3 000MW). This resulted in a continuous 4 000MW deficit in meeting supply and demand.

Eskom is addressing the crisis by aligning consumption and demand with the limited supply available until sufficient additional capacity ensures a balanced system. This means that the lack of capacity expansion is now being replaced by an enforced reduction of 3 000 MW on demand, 1 200 by key industrial customers and 1 800 MW by other customers. This drastic measure must restore the reserve margin to allow a recovery of coal stock, improvement of coal-handling systems and allowing opportunity for maintenance. The reserve margin will improve to about 15%, ensuring that the generating plant is reliably available at a predictable level.

3. COAL STOCK

Eskom has long-term coal supply contracts with mines at very low coal prices to ensure a continuous supply of coal to power stations. Short- and medium term coal supply contracts are entered into to meet production requirements above that which can be provided for by the long-term contracts. A deliberate policy began in 2000 to reduce the coal stock to better manage operating costs. This, combined with a newly implemented pro-BEE policy, which favoured small and new suppliers and incentivised management to use this system of procurement, meant that for a number of years Eskom has burned more coal than it bought.

3.1. Quantity

In 2001, Eskom disclosed that it has taken the opportunity of lower growth to reduce actively its coal stockpile levels to reduce working capital and related holding costs, while at the same time ensuring the security of supply and creating flexibility in the burn regime. Coal stock at that year-end was 14.8 million tons. Eskom did not disclose coal stock in their annual reports again after this declaration in 2001. The theoretical stock from 2001 onwards can however be calculated, as shown in Table 3:

TABLE 3: ESKOM'S COAL STOCK

		2001	2002	2003	2005 *(15 months)*	2006	2007	2008
Coal Purchased	Mt	89.10	92.80	104.90	137.80	111.70	117.40	NA
Coal Burnt	Mt	94.14	96.46	104.37	136.44	112.10	119.11	NA
Net stock movement	Mt	-5.04	-3.66	0.53	1.36	-0.40	-1.71	-
Stock on hand at year end	Mt	**14.76***	**11.10**	**11.63**	**12.99**	**12.59**	**10.88**	**-**
Stock as % of coal burnt		16%	12%	11%	10%	11%	9%	-
Days stock		**57**	**42**	**41**	**43**	**41**	**33**	**13****
GWh met kole opgewek		175223	181651	194046	251914	206606	215211	NA
GWh/Mt Kool		1,861	1,882	1,859	1,847	1,843	1,807	-

** Disclosed in the Annual Report of 2001*
*** Eskom's own admission*

According to the calculations, there should have been 10.88 million tons of coal in stock at the year-end of 2007, representing 33 days of stock. The annual report of 2008 is not yet available and Eskom ignored requests to provide the coal purchased and coal burnt figures for the year-end of 2008. In June last year however, Eskom told the media it had about 18 days' worth of coal in the stockpiles and that it was buying 24 million tons of coal out of its annual target of 120 million tons, on the spot market rather than through fixed contracts.

The stockpiles were run down even further and only 13 days of stock was available during February 2008. Eskom's own minimum target is 20 days but by this date only one power station complied with the target while the others were significantly below that. At one power station there was only 3 days of coal stock available.

There should have been 33 days of stock on 31st March 2007. There was 18 days of stock available in June 2007 and then there was only 13 days of stock available in February 2008. This is a reduction of 20 days in stock from the calculated stock at the year-end of 2007 to February 2008. At the burning rate of 2007, this is equal to 6.5 million tons of coal and may be the result of:

- The disclosed figures in the annual reports not being correct;
- Significantly less coal purchased compared to burnt coal;
- Eskom not receiving the actual coal it paid for;
- Coal disappearing unnoticed from stockpiles.

The bias towards small business also meant that road transport was favoured over rail and conveyor belt, meaning that many of the roads near the power stations are in poor condition. Furthermore, Eskom has no control over road deliveries once it leaves the mine.

No weighbridges exist at power stations meaning that delivered quantities cannot be reconciled with despatched quantities.

The cost saving decision to reduce stock in 2001, combined with the ever expanding BEE procurement policy, was transformed into a major risk in 2007: *"Coal procurement has continued to be problematic due to under-production at the tied collieries, availability of coal of the correct quality from short-term supplies and transportation of increased quantities of coal by road. This has led to a significant increase in the cost of coal compared to budget, and the previous year."* (Eskom Annual Report, 2007)

Eskom now needs to buy the 40 million tons of coal over and above its running requirements of 125 million tons a year. The additional coal would be added over the next two years to raise coal reserves at power stations to at least 20 days' supply. Eskom is ultimately looking to increase its coal stock to 35 days of supply, or 12 million tons. Local mines will probably not be able to meet this demand within their current contracts and Eskom may have to purchase export quality coal to meet the shortfall.

In between, Eskom's problems in procuring coal and the state of the roads were highlighted in several of its annual reports, starting in 2003. Both the Eskom board and its political shareholders ignored the warnings.

3.2. Quality

The declining quality of coal is emphasised in Table 3. In 2001, 1 861 GWh could be generated with 1 million tons of coal. It even increased to 1 882 GWh in 2002 but decreased suddenly from 1 843 GWh to 1 807 GWh in 2007. It can be expected that this figure will decrease substantially for 2008.

However, the problems that Eskom experienced with the quality of coal are the result of poor procurement management rather than the cause of lower generating capability. The decrease in stockpiles, increase in procurement from BEE mines and haulers, the move away from long-term contracts to enter the active coal spot market all contributed to a situation where the long term suppliers now prefer to take advantage of high export prices by exporting the coal and pay the associated penalties to Eskom.

When addressing a public hearing into Eskom's application for a tariff increase in November 2007, Eskom said it needed to improve the quality of the coal it burned at its power stations. In February 2008 it once again said some coal it used had an ash content of as high as 50 % and that it need to sweeten the quality of the coal it burned at its power stations. It was then added that Eskom would face "extremely challenging" logistical problems transporting the coal it would need over the next two years and it needed to look at the logistics issue and the coal procurement "very quickly".

Eskom increasingly has to source coal from short-term contracts, currently accounting for 20% of its usage, as long-term suppliers were increasingly attracted to the more lucrative export markets. It is expected that Eskom's coal supplies would come under increasing pressure, as India could progressively source more lower-grade coal for its new power stations from South African producers.

Then there is also the matter of wet coal. When the coal becomes too wet, the transportation of the coal poses problems for the power stations as it tends to block transfer chutes where coal is transferred from one conveyor to another. It also causes "hang-ups" in bunkers, hindering the free flow of coal. The primary result is that it has a major effect on generating capacity. The secondary effect is that it causes substantial wear on the generating plant.

Wet coal, as the cause of the problem, has to be defined. Although not ideal, normal wet coal does not threaten to halt the generating capacity of the power plants. In spite of abnormal high rainfall during October 2007 and January 2008, what the power stations had to deal with was not just normal wet coal. Due to the critically low stockpile levels, to keep the fires burning they literally had to scrape the bottom of the coal yards, which was then saturated with rainwater, for coal. Therefore, what it had to use as fuel was a mixture of coal gravel, coal dust, maybe even soil, mixed with water. It could rather be defined as sludge and not coal. This sludge led to the excessive blocking of chutes. It had to be cleaned out, reducing the flow of coal and ultimately, almost halting the generating capacity of the affected power stations.

4. PLANT PERFORMANCE

The reduction of 3 000 MW on demand is partly motivated to allow for the opportunity to do essential maintenance on plants. The maintenance will hopefully normalise total daily unplanned unavailability of generating capacity to less then 2 500 MW.

The plant unit capability factor (UCF) provides an indication of how well the plant is operated and maintained while the unplanned automatic grid separations (UAGS) is a measure of the reliability of service provided to the electrical grid. Both these terms are explained in Eskom's annual reports. The results of these two measurements is shown in Table 4:

TABLE 4: ESKOM'S PLANT PERFORMANCE

Year	UCF	UAGS
2001	92.5	1.50
2002	91.7	1.33
2003	87.5	1.78
2005	89.9	1.33
2006	88.7	1.55
2007	88.6	1.76
Target	**> 91**	**< 1.7**

In 2001 the UCF amounts to 92.5 and was well above the target of 91. At the same time the UAGS was 1.50 and was well below the target of 1.7. In 2007 both these measurements exceeded their acceptable targets, the UCF at 88.6 and the UAGS at 1.76. Eskom ascribed this decline in performance as follows:

- Pressure on maintenance costs during excess capacity;
- Increase in demand required more outage time and spares;

- Loss of critical skills resulting in a shortage of engineering and maintenance skills and knowledge;
- Maintenance and engineering systems have been neglected.

In previous decades Eskom's power stations functioned on the so called principal of 90-7-3 meaning 90% of the capacity is available for generating electricity, 7% of capacity out on planned maintenance and 3% of capacity out on unplanned outages. Currently this ration is 80-7-13.

Eskom's final conclusion in the Annual Report of 2007 regarding this matter is that the targets for plant performance and network reliability was not achieved due to a higher number of planned and unplanned outages. The decline in plant health is therefore listed as another of the major risks for 2007. Once again, both the Eskom board and the political shareholders ignored the gradual decline of plant performance over a period of six years. The result is that generating capacity must be reduced to allow for essential maintenance as part of Eskom's recovery plan.

5. REVENUE

Electricity prices in South Africa are reportedly the cheapest in the world. It is even 74% cheaper than next cheapest country. However, South Africa's generating cost is also among the cheapest in the world due to ample availability of coal. Eskom sold 218 120 GWh of electricity during 2006/07 at an average price of 18.06 cents per KWh, realising a revenue of R39 billion. During the same period is cost 16.09 cents to generate 1 KWh of electricity.

5.1. Customers

Eskom has different categories of customers buying different quantities of electricity at different prices. This is shown in Table 5:

TABLE 5: ESKOM'S REVENUE FROM CUSTOMERS, 2007

Category		Sold GWh	Sold % GWh	Revenue R million	Revenue R/KWh	Cost R/KWh	Gross R/KWh	Gross Markup	Gross R million	Gross Contribute
Redistributors	*	86908	39.8%	14670	0.1688	0.1609	0.0079	4.9%	687	16.0%
Residential	**	9736	4.5%	4064	0.4174	0.1609	0.2565	159.4%	2497	58.2%
Commercial	**	7842	3.6%	1843	0.2350	0.1609	0.0741	46.1%	581	13.5%
Industrial	*	59823	27.4%	9578	0.1601	0.1609	-0.0008	-0.5%	-48	-1.1%
Mining	*	32421	14.9%	5479	0.1690	0.1609	0.0081	5.0%	262	6.1%
Rural	**	4732	2.2%	1594	0.3369	0.1609	0.1760	109.4%	833	19.4%
Traction	**	3069	1.4%	646	0.2105	0.1609	0.0496	30.8%	152	3.5%
International	*	13589	6.2%	1515	0.1115	0.1609	-0.0494	-30.7%	-671	-15.6%
Subtotal	*	192741	88.4%	31242	0.1621	0.1609	0.0012	0.7%	230	5.4%
Subtotal	**	25379	11.6%	8147	0.3210	0.1609	0.1601	99.5%	4064	94.6%
Total		**218120**	**100.0%**	**39389**	**0.1806**	**0.1609**	**0.0197**	**12.2%**	**4293**	**100.0%**

Eskom sells the biggest portion (39.8%) of electricity to redistributors while industrial and mining combined buys 42.3% of the electricity. Only 6.2% were exported while residential and rural users buy 6.6% directly from Eskom.

Electricity is sold at a loss to industrial and international users while it is sold at less than a 5% gross profit to redistributors and mines. This means that Eskom sells 33.7% of its electricity at a loss while another 54.7% is sold almost at cost. Eskom's gross profit is R4.29 billion. The users that buy the 88.4 % electricity at less than 5% gross profit or at a loss, contribute R230 million to the gross profit while the remaining 11.6% of sold electricity contributes R4.06 billion to the gross profit. This means that the redistributors, industry and the mines contribute 5.4% to Eskom's gross profit while residential, commerce and traction contribute 94.6% to the gross profit.

On the face of it, it may seem that the international sales (at a loss) could be politically motivated. Although these sales are to some extend supported with imported electricity mainly from Cahora Bassa, the majority of these sales goes to South African based industrial or mining users in the neighbouring countries. This includes BHP Biliton's Mozal aluminium smelter in Mozambique, Anglo's Skorpion mine in Namibia and the Namdeb Diamond Mine of De Beers, also in Namibia.

The "cheap" electricity of South Africa is not applicable to the residential and commercial users, either buying directly from Eskom or through redistributors. It only applies to the big buyers. It must be borne in mind that 14% VAT is also added to the cost of electricity at the selling point. Residential users can't claim this back while most of the other users can. The irony is also that some of these big buyers, like Sasol, is capable of generating it's own electricity with waste gas but because it is much cheaper to use Eskom electricity, they are not considering this option. An increase in Sasol's tariffs may well be an incentive to do so and by the same time relieve the growing demand on Eskom's generating capacity.

5.2. Loss of revenue

The decrease in generating capacity Eskom inflicted on itself has the devastating side effect of a loss of revenue. It simply means that Eskom will sell less electricity. The effect is illustrated in Table 6, based on the real situation during January 2008:

TABLE 6: ESKOM'S LOSS OF REVENUE (JANUARY 2008)

Daily demand pattern (hours)	Capacity available per segment (MW)	Capacity demand per segment (MW)	Capacity lost per segment (MW)	Units lost per segment (GWh)
6	22392	22392	0	0
7	28233	31000	2767	19.37
2	27259	31000	3741	7.48
2	28233	31000	2767	5.53
2	28233	31000	2767	5.53
3	25312	25312	0	0
2	23365	23365	0	0
24				**37.92**

The inability of Eskom's available capacity to generate electricity according to the demand led to a daily loss of 37.92 GWh during January 2008, based on a normal demand

pattern of a summer's day. At a tariff of 18 cents per KW, Eskom lost R6.85 million of revenue per day or R212.28 million for the month. For a six month summer period it could therefore loose R1.25 billion of revenue. The same calculations for a daily winter demand pattern results in a possible daily revenue loss of R20.21 million or R3.69 billion for a six-month period. Eskom could loose almost R5 billion in revenue during a year because it is unable to supply in the potential demand.

Eskom's logic is that the requested increase applies to the energy component of costs. It will be very difficult to keep the loss of revenue separate from the rising energy cost in its tariff structure. It can therefore be assumed that part of the 60% increase will substitute the loss of revenue, unless generation cost as well as overhead expenditure is reduced proportionally according to the loss of revenue.

5.3. Energy component

Eskom is not revealing much regarding its coal procurement, either in its annual reports, or in its submission to NERSA. It also makes use of indices in its submission to NERSA instead of actual prices. This makes it extremely difficult to calculate the merits of the required 60% increase. The essential information that is lacking is:

- The actual portion of energy cost in the total generating cost;
- The actual tonnage of the different coal contracts;
- The actual coal price, as delivered at the power station, for each type of contract.

Calculations can only be speculative, based on certain assumptions. Eskom stated in the media that the additional coal would cost between R150 and R250/ton, as opposed to the average of R90/ton it pays under long-term contracts. It did not state if this include processing and transport cost.

Eskom neglected its coal stock and embarked on a recovery plan to restore coal stock. This means that it will purchase more than what it burns for at least two years. The generating cost will therefore have to be "loaded" with the increased coal price that has to be paid due to restoring of the depleted stock. This additional cost can be calculated as follows:

Additional coal to be purchased	40380000	Tons
Average delivered price/ton	232	Rand
Total cost for additional coal	9,368,160,000	Rand
Estimated annual electricity sold	220000	GWh
Additional cost per unit above normal cost	4.26	Cent/KW

According to this calculation it will cost an additional 4.26 cents/KW at an average price of R232/ton to restore the coal stock with a further 40 million tons above the normal purchases.

The effect of coal in the generating cost can be calculated against the following information disclosed in Eskom's annual report of 2007:

- 0.55 kg coal is used to generate 1 KW of electricity;
- 0.16 Rand total cost to generate 1 KW of electricity.

If it can be assumed that the average price of coal was R100/ton then the coal component in total cost is 6 cent/KW. If the average coal price increases with R50/ton then the coal cost will increase by 2.8 cents/KW. The effect of increments of R50/ton in the coal price can be illustrated as follows, if 0.55 kg is used to generate 1 KW of electricity at a cost of 16 cents/KW:

Coal price	Coal price	Coal cost	Total cost	Increase	Increase
R/ton	R/kg	R/KW	R/KW	R/KW	%
100	**0.10**	**0.06**	**0.16**	**0.000**	**0%**
150	0.15	0.08	0.19	0.028	17%
200	0.20	0.11	0.22	0.055	34%
250	0.25	0.14	0.24	0.083	52%
300	0.30	0.17	0.27	0.110	69%
350	0.35	0.19	0.30	0.138	86%
400	0.40	0.22	0.33	0.165	103%
450	0.45	0.25	0.35	0.193	120%
500	0.50	0.28	0.38	0.220	138%
550	0.55	0.30	0.41	0.248	155%
600	0.60	0.33	0.44	0.275	172%

If the average coal price at which Eskom is buying coal increased with R50/ton from what it was a year ago, the electricity tariff has to increase with 2.8 cents/KW. If this is added to the 4 cents/KW to restore coal stock, the tariff has to increase with 6.8 cents/KW. This is an increase of 38% on the average selling price of 18 cents/KW of 2007.

From the above it is evident that the coal price is a significant component in the cost of generation and therefore it is critical that the procurement thereof be properly managed and not adversely affected by political agendas.

5.4. Spreading the increase

As discussed under the heading “Customers” above, customers consuming a small percentage of electricity and who actually pay significantly more than generation cost for this electricity contributed a disproportionate amount to the gross profit of Eskom for 2007. The customers who consume 88.4% of the available electricity, on average pay just above cost price. Some customers pay less than cost price. These include large international corporations. Eskom once again suggests in its submission to NERSA that indigent users be subsidised by the other categories of users. This means that proportionally residential, commercial and rural users will contribute more to subsidise the indigent group than redistributors, industrial and mining users.

Redistributors include municipalities, who obviously make a significant profit (between 150% and 200%) on the electricity supplied to households and other municipal customers.

Eskom should rather increase the price of electricity to these redistributors to such an extent that the price is more in line with direct residential Eskom customers. Currently the municipality acting as "middleman" makes more or less 30c/kWh profit while Eskom only makes 0.08c/kWh profit on supplying that electricity. Table 7 illustrates the effect of bringing the different customer categories more in line with each other, while still favouring the bulk consumers, based on 2007 prices:

TABLE 7: SUGGESTED DIFFERENTIATED INCREASE IN TARIFFS

Category	Current Revenue R million	Current price c/KW	60% increase c/KW	Suggested increase %	Suggested increase c/KW	New price c/KW	New Revenue R million
Redistributors	14,670	16.88	27.0	65.9%	11.12	28.00	24,334
Residential	4,064	41.74	66.8	19.8%	8.26	50.00	4,868
Commercial	1,843	23.50	37.6	27.7%	6.50	30.00	2,353
Industrial	9,578	16.01	25.6	68.6%	10.99	27.00	16,152
Mining	5,479	16.90	27.0	59.8%	10.10	27.00	8,754
Rural	1,594	33.69	53.9	18.7%	6.31	40.00	1,893
Traction	646	21.05	33.7	61.5%	12.95	34.00	1,043
International	1,515	11.15	17.8	142.2%	15.85	27.00	3,669
Total	**39,389**	**18.06**	**28.9**	**60.0%**	**10.8**	**28.89**	**63,065**

According to Table 7, the 60% requested increase in revenue required by Eskom, whether justified or not, could easily be achieved by bringing the price of bulk electricity up to between 55% and 60% of the price charged to residential customers. In this way Eskom will achieve an effective 60% increase in revenue while the residential customers need only be burdened with a 20% increase, inclusive of the 14% already granted in 2007 but exclusive of VAT that they can't claim back.

In terms of this model, redistributors would still make a profit of 22c/kWh when they buy electricity from Eskom at 28c/kWh and sell it at 50c/kWh. The electricity price for the industrial and mining categories would respectively increase by 69% and 60% to bring the price to 27c/kWh. The price for International customers increases by 142% to bring the price up to 27c/kWh.

6. GOVERNMENT'S GOLDEN GOOSE

In his budget speech of 2008, the Minister of Finance, Mr. Trevor Manual, announced that as a first step towards appropriately targeted fiscal environmental measures, and in support of the required demand-side response to power supply shortages, a new levy will be introduced this year on the sale of electricity generated from non-renewable sources, at a rate of 2 cents per KW. This is just another form of tax but is however not the only source of income for Government from ESKOM. The possible direct and indirect earnings, based on 2007, are shown in Table 8:

TABLE 8: GOVERNMENT'S EARNINGS FROM ESKOM, 2007

Description	Amount
Sales (R million)	40068
Sales (GWh)	218120
Income tax (R million)	2504
Profit after tax (R million)*	6954
Levy of 2c/KW (R million)	4362
VAT 14% (R million)	5610
Total (R million)	**19430**

** Can be declared as a dividend to the government.*

Using the results of 2007, Eskom could have contributed a total of R19.43 billion to Government funds if a dividend was declared and if the 2 c/KW levy was already implemented. If a dividend is not declared, Government could still earn R12.47 billion in direct taxes or by using Eskom as a tax basis. It can also earn even more by means of interest on the loan to Eskom. As the owner, it should rather put some equity back into Eskom to fund capital expansion instead of granting an interest-bearing loan of R60 billion.

7. EMPLOYEMENT

At the end of March 2007, Eskom employed 32 674 people. Of this about 40% is considered to be skilled persons. Eskom regards engineers, technologists, technicians, artisans, project managers and accountants as skilled workers

7.1. Employment equity

With regards to affirmative action, Eskom describes itself as a leader in driving employment equity, which has enabled them to achieve a staff complement that reflects South African diversity. It achieved the following goals:

- In 1997, black staff held 32% of the management positions.
- Up to 2000, the target for affirmative action was 50%
- After 2000, new targets were set for each year.
- As from 2000 the target was exceeded for each year.
- In 2007 black staff occupied 63% of the management positions.

The end of the employment equity drive is however not in sight yet. In a supplement to the annual report of 2007, Eskom states: *"We will continue with the affirmative action drive …, not because it is required of us by statute, but because we believe that it is the right thing to do. It is also a business imperative."*

In order to speed up employment equity the internal policy of Eskom would have stipulated that no white males be appointed. It would further have prevented any promotion of white males. In a survey of its members employed by Eskom, the trade union, Solidarity, found the following:

- When new positions are filled, people with experience are ignored.

- Highly qualified employees leave the company because they feel they have no future at the company.
- There is a shortage of experienced staff.
- There is a shortage of tradesmen with adequate experience to perform the job.
- A further outflow of skills might follow. Nearly half of all white Eskom staff (2006) was considering leaving the services of Eskom and 75% don't see a future for themselves at Eskom.

Because sufficient numbers of engineers cannot be sourced from previously disadvantaged groupings to be appointed in management positions at Eskom, people with other qualifications are appointed in technical management positions. Accountants, rather than engineers, began taking important engineering decisions. Profit, against the criteria of the performance bonuses, became more important than ensuring reliable electricity supply for the future.

The accelerated application of affirmative action at Eskom caused a severe shortage in skills and expertise. The twelve-month moving average turnover in skilled labour has increased from 5.83% in December 2006 to 6.81% in December 2007. The standard is considered to be 5.7% while the alarming norm is 5.6%. The turnover of engineers is 7.28% while that of artisans is 6.97%.

Eskom admits in its annual report of 2007 under "Lowlights" that: *"Critical skills shortage in management is an area of concern which has been aggravated by the higher than anticipated skills turnover in the engineering field."* It maintains however: *"We will continue with the affirmative action drive …"* as yet another alarming target is being surpassed.

7.2. Accountability and remuneration

The Chief Executive Officer of Eskom earned a salary of R6.15 million during 2007, while the nine remaining executive management members received on average R2.63 million each. This ad up to a total of R29.86 million for the executive management for 2007. This excludes the deferred incentive bonuses at an estimated value of R7.79 million and R9.22 million. (Granted 1 April 2005 and 1 April 2006 respectively) These bonuses are supposed to be paid out in March 2008 and March 2009 respectively. This also excludes a similar bonus for 2007 that would have been granted on 1 April 2007, which will only be disclosed in the 2008 annual report.

The increase in executive salaries for 2007 was on average 23%. Four of the ten members of the executive had housing loans from Eskom of more than R3.1m as at the end of March 2007. These are repayable over a maximum period of thirty years at 10.5% (2006: 8.5%).

In June 2006 Solidarity performed a review of the remuneration packages of Chief Executive Officers of companies listed on the JSE. In 2006 the average total annual remuneration of all Chief Executive Officers of JSE listed companies was R4.57 million. The CEO of Eskom received 50% more than this average. Because the population contains certain large variances on the bottom of the scale as well as at the top of the scale, an

average was also calculated that excludes the top and bottom 5%. In comparison to this adjusted average, the Eskom CEO received 105% more than his counterparts.

The performance criteria for the payment of the "Award Performance Shares" includes financial and non-financial criteria as per an agreed weighting per performance areas that includes capacity, cost of electricity, people, environmental factors, customer service and quality of supply. The weighting is not disclosed in the annual report but if the payment of previous bonuses is anything to go by, the current crisis will have little effect on the payment of bonuses.

The first of these "Award performance Shares" bonuses to the amount of R7.79 million was due for payment on 31 March 2008. The actual purpose and reason for the existence of Eskom is the reliable supply of power to South Africa. In this it has failed. It seems that the performance measurement criteria might have been a significant factor in contributing to the creation of the current problem. The performance measurement process should reflect this failure and prevent the payment of any bonuses.

7.3. Expenditure

Eskom spent R8.5 billion on salaries, wages and other benefits for the financial year that ended at the end of March 2007. Trends in this expenditure are shown in Table 7:

TABLE 7: ESKOM'S SALARIES, WAGES AND OTHER BENEFITS

	2007	2006	2005	2003	2002	2001
Salaries, wages and other benefits	R8.5 bil	R7.3 bil	R6.75 bil	R6.2 bil	R5.4 bil	R4.5 bil
Employees	32674	31458	31475	31972	32357	33032
Remuneration/employee	R 260,329	R 230,911	R 214,443	R 194,889	R 165,992	R 136,837
Increase/worker	12.7%	7.7%	10.0%	17.4%	21.3%	4.0%
Increase in cost	17.1%	7.6%	8.3%	16.0%	18.8%	-3.8%
Consumer price index	5.2%	4.6%	3.4%	5.8%	9.2%	5.7%
Increase Above CPI/Worker	7.5%	3.1%	6.6%	11.6%	12.1%	-1.7%
Increase above CPI (Cost)	11.9%	3.0%	4.9%	10.2%	9.6%	-9.5%

The average remuneration per employee amounts to R260 329 for 2007. It was R136 837 in 2001. This represents an average annual increase of 12.2% while the consumer price index increased by an average of 5.7% per year. This means that the average Eskom employee's remuneration increase by 6.5 percentage points above inflation for each year since 2000. It must be seen against an affirmative action drive of 63% over a period of time. People that are gradually earning more than their predecessors are therefore replacing skills and expertise.

8. CONCLUSION

The current electricity crisis is the result of negligence and ignorance by Eskom's board of directors and Government as its shareholder. They lost sight of Eskom's primary goal, namely supplying electricity to the country. Instead they were striving for low electricity prices, meeting racial employment quotas, and encouraging BEE-procurement to achieve political goals.

In the process, Eskom ignored or failed to manage at least four critical indicators:

- The reserve generating margin;
- The days of coal stock;
- The plant unit capability; and
- The skills turnover.

The country is therefore not the victim of our own success as the responsible Minister of Public Enterprises, Mr. Alec Erwin, described the crisis but it is rather the victim of a lack of vision and poor management. To rectify the mistakes made, the generating capacity is being forced down and electricity tariffs must increase significantly.

Rather than to admit to its mistakes and take full responsibility for it, the country has to be satisfied with a collective apology from the state president. Between Government and Eskom, there was a complete void of responsibility for ensuring future electricity supply. A substantial tariff increase seems inevitable but cannot be approved without some commitments from Eskom. In essence it needs to return to its core duty of supplying electricity to South Africa.

Eskom needs to restore its corporate governance along with its generating capacity. This is especially relevant to the primary characteristics of transparency, accountability and, responsibility. The users of electricity need Eskom and Eskom needs them to get through the crisis. They should, by word of its owners and management, acknowledge the mistakes they have made, take responsibility for it and apologise to the public. Only then will the users be ready to buy into the drastic measures that Eskom puts on the table as a solution to the crisis.

9. SOURCES OF INFORMATION

Eskom's annual reports
Media reports
Interviews and correspondence with current and former Eskom employees
Forensies.com Newsletters
Solidarity documents
Other newsletters and articles