



Graduate School of Development Policy and Practice
Strategic Leadership for Africa's Public Sector

WHY THE LIGHTS WENT OUT: REFORM IN THE SOUTH AFRICAN ENERGY SECTOR

ACKNOWLEDGEMENTS

This case study was researched and written by a team at the Public Affairs Research Institute (PARI), lead by Tracy van der Heijden, for the University of Cape Town's Graduate School for Development Policy and Practice. Funding for the development of the case study was provided by the Employment Promotion Programme (funded by the Department for International Development).

PARI would like to thank Ian McRae, Allen Morgan, Steve Lennon, Alec Erwin and Portia Molefe who were interviewed for the purposes of developing this case study. We would also like to thank Brian Levy for his input.

PUBLIC AFFAIRS RESEARCH INSTITUTE (PARI)

DIMMED VISION

THE LIGHTS GO OUT

In 2008, South Africa's lights went out. Literally. Problems began in December 2005 when damage to the Koeberg nuclear power station resulted in power cuts in Western and Northern Cape. The situation deteriorated until, in October 2007, Eskom – South Africa's public power utility – began to turn off power to areas throughout the country. The national grid almost crashed. If this had happened, the entire country would have been without electricity for several days.

Electricity can't be stored – it is drawn directly from power stations via the national transmission grid. When demand exceeds supply, power stations begin to trip out, compounding loads on remaining stations. Should the overload continue, the entire system can collapse, resulting in a national blackout. In order to avoid this, system engineers 'shed some load' on the system by switching off parts of the national grid. This is normally done in rotation. In South Africa, the rolling blackouts of 2007 lasted for about two hours.

Towards the end of October 2007, a quarter of Eskom's generation capacity was out of commission. Cities were paralysed by traffic gridlocks. Food processing enterprises and supermarkets lost their stock. At least one person died on an operating table. On 25 January 2008 – a date known as Black Friday in the mining industry – gold and platinum mines were forced to stop all production for five days¹. Businesses, other organisations and households spent huge sums of money on auxiliary generators, and estimates of lost productivity ran into billions of rands.

South Africans struggled to come to terms with a strange new lexicon. Terms like 'rolling blackouts', 'power outages' and 'load shedding' became part of the national discourse. Reflecting popular sentiment, a protest website entitled Eskomsucks.co.za declared: 'Lets dispense with euphemistic Eskom-speak and stop talking about load-shedding. These are power cuts!'

Everyone agreed that something serious had happened. The general secretary of the African National Congress (ANC), Gwede Mantashe, called it a 'disaster on par with the AIDS epidemic'. In a rare public apology, President Thabo Mbeki stated that the government had erred by not listening to requests by Eskom to increase generation capacity.

South Africans were shocked and confused. Eskom was widely regarded as one of the leading power utilities in the world. Indeed, as recently as 2001, Eskom won the Financial Times Global Power Company of the Year Award for its technical excellence in plant production, maintenance and operation. Moreover, the government had adopted a new blueprint for restructuring South Africa's energy sector almost a decade previously. What had gone wrong?

BUILDING THE WORLD'S BEST POWER COMPANY²

South Africa was one of the first countries in the world to adopt electricity. In 1882 the first electric streetlights were installed in Kimberley, ahead of London. The electricity industry expanded quickly, spurred by investment in gold mining in the Transvaal.

1. Centre for Development and Enterprise, *South Africa's electricity crisis: How did we get here? And how do we put things right?*, Round Table no. 10, July 2008. Johannesburg: Centre for Development and Enterprise.

2. This section draws in parts from Anton Eberhard, *The Political Economy of Power Sector Reform in South Africa*, Working Paper #6 (Revised), April 2004. First presented to the Political Economy of Power Market Reform conference convened by PESD at Stanford University, 19–20 February 2003.

During the 1890s most of South Africa's major cities were connected to an electricity supply. In response to the growth in demand, a number of independent (privately-owned) power companies were established, with the first built in 1897. Into the early 20th century supply was split between public and private entities, and there was no consistent regulatory environment.

By the 1920s, government was starting to focus on the need for electricity capacity to support the expanding electric railways network, and rapid industrialisation. A lack of standardization in the industry also presented a threat to achieving these goals. Government appointed consultants to investigate electricity supply, and these reported back the desirability of a central authority. The mandate of this organisation would be to oversee and coordinate the development of the sector. The result was the Electricity Act of 1922, which included a provision for the establishment of the new and publicly owned Electricity Supply Commission - ESCOM. The new organisation's primary goal was to ensure a cheap and abundant supply of electricity, to support economic growth. In line with this goal, it was granted the authority to establish new electricity generation and distribution activities.

At the same time the Electricity Control Board (ECB) was established. The ECB was mandated to issue electricity generation licenses and to regulate the electricity prices charged by both ESCOM and private companies. Municipalities did not have to apply for licenses, but if they wanted to build new generating capacity, they had to seek the permission of the Provincial Administrators who, in turn, had to consult ESCOM. As a result of this new regulatory environment, ESCOM was the major entity building most of the new power stations, and its control over the market grew. It started to absorb private companies in the sector, taking over the Victoria Falls Power Company (then the largest private power producer) and Transvaal Power Company in 1948. South Africa was thus on the road to establishing a fully integrated and state-owned monopoly power utility,

underpinned by the country's vast low-grade coal reserves. By the early 1970s, the transmission grid was also controlled by the state.

After the oil crisis of the 1970s, the South African economy increased its dependence of electricity as a primary source of energy across all sectors. At the same time, the South African economy was expanding rapidly and there was a marked growth in the demand for electricity. As a result ESCOM found its generating capacity under considerable pressure - in 1975 reserve margins fell to 11% - and the organisation implemented an aggressive expansion plan to almost double supply. How was this new capacity funded? The Electricity Act was amended in 1971 to allow ESCOM (which did not pay tax) to retain a substantial portion of its earnings to build up a Capital Development Fund (CDF), subject to the approval of the State President. This CDF partly funded ESCOM's ambitious expansion plans in the 1980s, with the remainder funded by commercial debt and bonds, underwritten by government.

By the early 1980s it had become clear that ESCOM had greatly overestimated the increase in electricity demand: Global economic slowdown together with South Africa's increasing international isolation and internal crisis had put the brakes on the economic expansion of the 1970s. As a result, South Africa went from forecasts of impending power shortages to massive oversupply, all funded by the publicly owned ESCOM, via a rising electricity tariff. This overestimation of demand and consequent over-investment in generation plant was increasingly read as a negative consequence of the discretion ESCOM had been provided in the funding and supply of electricity.

Increasing unhappiness among all stakeholders led government to appoint a special commission of enquiry – the 1983 De Villiers Commission. The Commission was highly critical of almost all aspects of ESCOM's management and governance, and recommended a significant overhaul of oversight in order to increase

government control. This included the shutting down of the CDF: In future ESCOM would need government approval for any expansion plans, and would no longer have such wide discretion for funding new plant. The Commission also recommended that ESCOM be corporatized to increase efficiencies, abandon its no-profit principle and start to pay income tax. The newly-named Eskom would be managed by a management board, which in turn would report to an Electricity Council, made up of a range of stakeholder representatives, including electricity consumers. These changes were effected by the Electricity Amendment Act, 50 of 1985, and the Eskom Act, 40 of 1987.

A combination of the aggressive new build programme and the slowdown of the South African economy meant that excess capacity in the electricity sector continued to grow for several years, despite the cancellation of some new plant orders and the postponement of others: at one point the reserve margin reached 38% and excess capacity reached a peak of almost 9,000 MW in 1993. A number of actions were taken in response: older generation plants (approximately 5,000MW worth) were either decommissioned or mothballed.

Some construction was delayed and plans for the final station were cancelled in an attempt to limit the extent of surplus capacity. Eskom also attempted to increase demand to soak up some of the excess capacity. The "Electricity for All" campaign was started in Orange Farm in 1990. The excess generation capacity was the basis of the new government's electrification programme, which saw a massive increase in the number of households with access to electricity.

Eskom also began to actively sell low-cost electricity contracts to energy-intensive users, including the new export-oriented minerals-beneficiation investments in aluminum (such as the Hillside and Bayside smelters in Richard's Bay) and ferrochrome. It was at this time that Eskom entered into the now contested commodity-linked electricity pricing and supply agreements with

companies such as BHP Billiton and Anglo American's Skorpion Zinc. These special pricing deals were seen as leveraging South Africa's excess electricity into a competitive advantage that could attract capital investment, create jobs and improve the balance of payments.

In October 1994, the Cabinet approved recommendations for the establishment of the National Electricity Regulator (NER) and the Electricity Act was amended in November 1994 and again in 1995 when the NER was constituted legally as an independent institution. The main reason for the establishment of the NER was to "protect" consumers against possible predatory behaviour by the monopoly Eskom. In later years, the NER would become a critical player with regards to Eskom's efforts to increase tariffs to pay for new generation capacity.

A NEW VISION

In 1998, the government published a white paper on energy policy. Approved as government policy in December 1998, it constituted a comprehensive blueprint for transforming the energy sector.

The White Paper was located in a global environment of significant shifts in energy policies in the post-oil-crisis era. Energy sectors were increasingly moving to market-based pricing, and energy markets were being restructured to encourage greater competition. As a result, the role of the state in the energy sector was being redefined, with greater emphasis placed on commercialisation, corporatisation and privatisation. State involvement in the sector had not disappeared, but was being redefined.

Against this background, overall policy objectives for the South African energy sector were defined as increasing access to affordable energy; improving energy governance; stimulating economic development; managing energy-related environmental

impacts; and securing energy supply through diversity.

At that point, some 96% of electrical energy was generated by Eskom, and transported over its national transmission network to distributors countrywide. More than 400 distributors, mainly municipal electricity departments, supplied electricity to end-users. Eskom itself was the largest single distributor in terms of final energy sales.

The primary challenges identified in the sector included:

- About 40% of all homes in South Africa and tens of thousands of schools and clinics were without ready access to an electricity supply.
- With more than 400 distributors, the distribution sector was highly fragmented, resulting in low efficiencies, high costs, wide disparities in tariffs, and poor financial viability.
- The distribution industry continued to experience high levels of non-payment and electricity theft, resulting in increasing arrears and payment defaults.
- The electrification programmes of most municipal distributors were limited by difficulties in accessing affordable finance.
- Coal-based generation resulted in significant pollution emissions, with potential long-term effects on the environment.
- Although there was currently excess supply capacity, growth in electricity demand was projected to exceed generation capacity by about 2007.

In addition, a key policy imperative was to maintain the advantage of the low and stable electricity prices that South Africans had become accustomed to.

Government planned to give customers the right to choose their energy suppliers; to introduce competition into the industry, especially into the generation sector; to permit open and non-discriminatory access to the transmission system; and to encourage private-sector participation.

What was the origin of this new, dramatically different policy for the electricity sector? “These bold statements originated not from any commissioned studies, neither did they emerge from a formal consultative process with industry members. They were the result of the convictions of a small group of analysts and government officials that were observing international trends in power sector reform, and were beginning to be concerned with the potential problems of monopoly power³”.

The White Paper envisaged some significant, even dramatic, changes in the local electricity market:

- The entry of multiple players into the generation market would be encouraged.
- Independent Power Producers (IPPs) would be admitted to the electricity market.
- Eskom would be restructured into separate generation and transmission companies. Power stations would be separated into separate companies, which would assist the introduction of competition into electricity generation. This would also create the opportunity for private-sector and BEE investment in the generation sector.
- In order to move to a competitive market, open access to the transmission infrastructure would be provided.
- Government would facilitate the development of the Southern African Power Pool (the cooperation of national electricity companies in the Southern African Development Community), which would eventually greatly benefit the region.

Where to start?

This was an ambitious agenda: where should the process begin? The White Paper supported a strategic decision to start with the restructuring of distribution. It was understood that the greatest benefits for consumers would accrue from being able to choose among distributors. Once the distribution sector was reorganised, changes to transmission and generation could be made. Therefore, the first step in building a new electricity sector was identified as the

3. Eberhard, A. 2004. Working Paper WP-06, Programme on Energy and Sustainable Development, Stanford University.

rationalisation of the fragmented distribution industry, and the introduction of competition into distribution.

The model of power-sector reform laid out in the White Paper mirrored the standard or ideal model being followed internationally: vertical and horizontal unbundling in order to separate out the potentially competitive components of the industry (generation and retail supply) from the natural monopoly components (transmission and distribution); the introduction of competition through new private players; non-discriminatory and open-access to transmission; and independent regulation. It was adopted as government policy in December 1998.

As a result of this decision, both the Department of Minerals and Energy (DME) and the NER were focused on the considerable task of building a new distribution sector in the five years following the publication of the White Paper (1998 to 2003). The DME's 1997/1998 Annual Report stated that '(e)xtensive work has been done in the planning of the restructuring of the electricity distribution sector. Much still needs to be done regarding the transmission and generation components of Eskom. The latter two are considered to be functioning relatively effectively, and can be investigated at a later stage'.

Meeting growth in energy demand

Up until the date of the White Paper, Eskom had the sole responsibility for forecasting electricity demand, planning for new electricity generation (the Integrated Electricity Plans or IEPs) and implementing such plans. The White Paper had been drawn up with the input of all key stakeholders, including Eskom. It, thus, included the forecasts made in these IEPs. In 1997, Eskom had installed generation capacity of around 39,000MW. Maximum demand in the same year was about 28,330MW, and there was, thus, a significant reserve capacity.

Eskom's own plans indicated that this capacity

surplus would be fully utilised by 2007, and the White Paper did not dispute, but rather included, this assessment. The White Paper was clear:

Eskom's present generation capacity surplus will be fully utilised by about 2007. Timely steps will have to be taken to ensure that demand does not exceed available supply capacity and that appropriate strategies, including those with long lead times, are implemented in time. The next decision on supply-side investments will probably have to be taken by the end of 1999 to ensure that the electricity needs of the next decade are met.

However, these 'next decision[s]' would be taken very differently from those of the past. The White Paper reminded readers that consumers had had to carry the costs of Eskom's past poor investment decisions that had resulted in the current over supply. It was also clear that creating 'competitive pressures' in the generation sector were central to improving efficiencies.

Although the White Paper appeared to demonstrate an awareness that 'long lead times' were required for the implementation of new capacity, there was no detail as to exactly how long that time was.

Allen Morgan (Eskom CEO from 1996 to 2000) indicated his belief that many senior policymakers did not appreciate exactly how long those time requirements were. His assessment was that decisions on new build should have been taken by 2000. (Interview with Allen Morgan, February 2013).

Who would plan for the electricity sector?

The White Paper envisaged a new way of planning for the electricity sector, and indicated who would be responsible for that planning. A system of 'integrated planning' was proposed, which would consider the interests of all stakeholders on the demand and the

supply sides of the sector. This was in line with Objective 1 of the White Paper – ‘Increasing access to affordable energy services’. Integrated planning would address the skewed policy making of the past of ‘a dominant feature of the South African energy sector has been a tendency to promote policies which address issues predominantly from the supply side’ (White Paper 1998). It would also address the ‘excessive secrecy’ around energy planning that had characterised the apartheid period. (Eskom’s demand and generation planning processes were not made public. Eskom insisted that it was a confidential process, something that was heavily criticised in a 2006 report to the Department of Public Enterprises (DPE)).⁴

Government was clear that the ‘back-room decision making with minimal transparency’ (1998 White Paper) that characterised the South African energy sector had led to a situation where strategic direction was led by industry managers, rather than government officials. This was compounded, in their view, by the lack of involvement of other stakeholders (particularly consumers and black South Africans).

The White Paper envisaged a new governance environment for the electricity sector. The goal was to clarify the roles and responsibilities of the various institutions and organisations in the sector, and to improve accountability and transparency.

Another goal of the new planning model outlined in the White Paper was to prevent the costly mistakes of the past – massive over-investment in new generation capacity – by locating new investment decisions within a detailed integrated resource planning (IRP) process that would include all sector stakeholders. Decisions around new electricity supply investments (i.e. when they would be made and their magnitude) would be done within the ambit of the ‘compulsory use’ of IRP methodologies. This would ‘ensure that utilities

avoid or delay electricity supply investments, or delay decommissioning decisions, when it is economical to do so, by optimising the utilisation of existing capacity and increasing the efficiency of energy supply and consumption’ (White Paper 1998).

The White Paper stated that responsibility for integrated energy planning should lie with government, rather than any sector participant. Eskom no longer had the sole authority to do planning for electricity generation. The DME had the mandate for policy development in the energy sector, including the IRP process, and overseeing the restructuring of the electricity sector.

FROM VISION TO REALITY⁵

From 1999 onwards, all the major role players – notably the DME, the NER (which fell under the DME), the DPE and Eskom – began to take steps to implement the far-reaching new blueprint set out in the White Paper. The initial priority was restructuring distribution, but important changes were also made to Eskom’s corporate and operational structure. A start was made on restructuring the electricity supply sector.

In terms of restructuring distribution, the following plans were made: the distribution industry would be restructured into five state-owned regional electricity distributors (REDs). The sector should move to cost-reflective tariffs with separate, transparent funding for electrification and other municipal services. Different policies should be developed for different industrial sectors, with customers given a choice of supply. Government would progressively realise universal household access to electricity. Cost-reflective tariffs should be applied at distribution supply points. Government should assist electricity distributors to establish and implement sensitive, but firm, strategies to deal with non-payment and energy theft.

4. Wilson, D. and Adams, I. 2006. *Review of Security of Supply in South Africa: A Report to the Department of Public Enterprise*. Commissioned by the Department of Public Enterprises.

5. This section draws in parts from Anton Eberhard, *The Political Economy of Power Sector Reform in South Africa, Working Paper #6 (Revised)*, April 2004. First presented to the Political Economy of Power Market Reform conference convened by PESD at Stanford University, 19-20 February 2003.

Restructuring Distribution – the REDs

In May 1997 Cabinet approved in principle the consolidation of the electricity distribution industry (EDI) into a number of financially viable and independent REDs. This work would be the focus of DME's and the NER's EDI restructuring activities for the next decade. In June 1999, Cabinet agreed that there should be six REDs. A new publicly owned company – EDI Holdings – would be established to manage the rationalisation and consolidation process.

The central problem in establishing the REDs was drawing the boundaries. To be viable, each RED would require the right balance of below-cost (low-income residential) and above-cost (commercial and industrial) users.

Some stakeholders in local government (primarily the larger metropolitan municipalities) remained ambivalent about, or even hostile to, the proposal, and threatened to challenge the plan in the Constitutional Court. The ruling ANC was split on the issue – its leadership asserted the importance of a national solution to the problems of electricity distribution, but those involved in local government feared losing their influence. With so many divided loyalties, EDI reform did not have a political champion, which slowed down the process. By 2004, despite a lot of preparatory work by the NER, the REDS had still not been created.

The first and only RED was signed into operation in Cape Town in July 2005. Shortly thereafter, the constitutional legality of the REDs was questioned and the proposed structure was found to infringe on local government authority. Government proposed a constitutional amendment bill in 2009, but in September 2010, Cabinet resolved that the EDI process would be terminated, and an administrator appointed to oversee the closure of EDI Holdings.

Restructuring Eskom

Government's plan to restructure the electricity sector included significant changes for the generation of electricity (96% of which was undertaken by Eskom) and transmission (Eskom owned the transmission system). In 2000, the DPE published a policy framework for the accelerated restructuring of state-owned enterprises (SOEs), which concentrated on restructuring the four largest SOEs: Eskom, Telkom, Transnet and Denel. It stated that Eskom would be corporatised, with transmission, distribution and generation each forming a separate corporate entity. Different generating companies would be formed to promote internal competition prior to the introduction of private-sector participation in generation, in conjunction with new power requirements. Transmission would probably remain in the hands of the state, but was likely to take the form of a separate independent company.

According to former CEO, Allen Morgan, Eskom began to prepare for this new environment as they were required: EDI Holdings was established as a separate entity; independent business units were established, each with their own CEOs and boards; and Eskom's head office was scaled down as staff were moved across the country to the new business units.

In 2001 the Eskom Act and all its amendments were repealed by the Eskom Conversion Act, No. 13 of 2001. Eskom was converted into a public company (named Eskom Holdings Limited) wholly owned by the state, with DPE representing the shareholder. The two-tier management structure introduced in 1987 was replaced with a board of directors, appointed by the government. From then on Eskom would pay corporate taxes as well as dividends. A memorandum to the Act stated that it was aimed at aligning Eskom with global trends, making it more efficient and competitive, and ensuring it was managed in terms of the government's protocol on corporate governance in the public sector.

In line with the 1998 White Paper (which had effectively

removed the mandate for deciding on new generation capacity from Eskom and given it to the DME), Eskom closed down its new works department in 2001. It did not, however, close down its planning department, even though that function was also supposed to be taken over by the government in terms of the White Paper. According to a then senior manager in the planning unit, in about 2003 Eskom began to do detailed planning for new power stations, even though management was aware that it was not mandated to do so. This was done in the face of perceived policy delays (Interview with senior manager at Eskom, March 2013).

Organised labour strongly opposed the legislation as it argued that government had not followed the procedures agreed in the National Framework Agreement (NFA) whereby representatives of government and unions would negotiate the restructuring of individual SOEs. In submissions to the Public Enterprise Parliamentary Portfolio Committee in May and June 2001, the Congress of South African Trade Unions (Cosatu)⁶ opposed the bill on the grounds that it would pave the way for the privatisation of Eskom; taxation of Eskom would impinge on its developmental role; and taxation would result in upward pressure on electricity prices. Agreement was reached in principle that new clauses would be included in the Bill regarding the developmental role of Eskom and the protection of SOE employees. However, Cosatu did not win the argument about Eskom paying taxes and dividends, and the Bill containing those provisions was signed into law in 2002.

Restructuring electricity supply: what, who and how?

Although the main focus of the DME and the NER over the period 1998 to 2003 was the restructuring of the distribution sector, the reform of the ESI was not ignored. In April 2000, the World Bank sponsored a Ministerial Workshop on ESI reform, attended by a number of experts with detailed knowledge of reforms in other countries. At the end of the workshop senior

government officials, including representatives of Eskom and the NER, agreed to a draft policy paper on restructuring the ESI. The identified objectives of the process were to:

- Increase economic efficiency in investment decisions and operation so that costs and prices are as low as possible;
- Maximise financial and economic returns to government from the ESI;
- Increase the opportunity for black economic empowerment;
- Protect public benefits such as widened access to electricity for the poor,
- Increase energy efficiency through ongoing R&D; and
- Ensure environmental sustainability.

In August 2000 the DPE published 'A Policy Framework: An Accelerated Agenda towards the Restructuring of State Owned Enterprises', which identified, inter alia, the following goals:

- Eskom would be corporatised, with transmission, distribution and generation each forming a separate corporate entity.
- Different generating companies would be formed to promote internal competition prior to the introduction of private-sector participation in generation, in conjunction with new power requirements.
- Strategic equity partners will be introduced into different Eskom Enterprises business units.

The talk of 'strategic equity partners' was effectively introducing the idea of the privatisation of portions of Eskom's operations (although not the holding company itself). According to Alec Erwin (Minister of Public Enterprises from 2004 to 2008, and Minister of Trade and Industry prior to that) and Portia Molefe (Director General at DPE while Erwin was Minister), after Eskom's corporatisation the process of preparing some of Eskom's generation assets got underway. The idea was that a portion of these assets would be opened to BEE

6. Cosatu is South Africa's largest trade union federation. It is part of an alliance with the ANC and the South African Communist Party (known as the Tripartite Alliance).

companies as well as international investors.

Eskom responds to supply restructuring plans

The main supporters of the restructuring process were industrial electricity users who wished to contain future rises in electricity prices. Initially, Eskom also supported the White Paper process despite its historical reluctance to engage with policy processes in the public eye. Eskom supported competition in principle, but resisted any proposals that it should divest more than 30% of its generation stations. It suggested the introduction of a private strategic equity partner in the Eskom Holdings Company.

Eskom's leaders had become alarmed at the extent of the reform proposals, particularly a recommendation to reduce Eskom's share of the generation market to 35%, and began to lobby government at the highest levels, drawing on its reputation for delivering low prices, for supporting government's RDP goals and its vision of an African renaissance embodied in early versions of the New Partnership for African Development (NEPAD). Then Eskom CEO Thulani Gcabashe was reported to have said that he did not believe that the radical restructuring and partial sale of Eskom was a good idea. He was quoted in an April 2001 Business Day article as saying: 'Eskom has the lowest electricity price in the world, and an excellent technical performance when benchmarked against the rest of the world. We need clear objectives as to why we are going this route'.

In May 2001 Cabinet approved proposals for the reform of the ESI and the introduction of 'managed liberalisation', which including the following components:

- Limited private-sector participation in the existing electricity generating market;
- Inclusion of BEE, with a goal of 10% ownership by 2004; and
- Establishment of a separate state-owned transmission company.

Key elements of these proposals were as follows:

Structure of the generation industry: Eskom would retain no less than 70% of the existing electricity generation market. The rest would be privatised, with the initial aim of transferring 10% to black ownership.

Vertical unbundling: To ensure non-discriminatory and open access to the transmission lines, a separate state-owned transmission company would be established, independent of generation and retail businesses, with ring-fenced transmission system operation and market-operation functions. This company would initially be a subsidiary of Eskom Holdings, and would be established as a separate state-owned transmission company before any new investments were made in generation capacity.

Market structure: Over time, a multi-market model electricity market framework would ensure that transactions between electricity generators, traders and power purchasers could take place on a variety of platforms, including bilateral contracts, a power exchange and a balancing mechanism. The market design would facilitate both physical and financial hedging. A transparent and independent governance mechanism would be developed for the power exchange.

Regulation: A regulatory framework would be put in place that ensured the participation of IPPs and the diversification of primary energy sources.

Eskom attempted to delay the separation of transmission services from Eskom's other lines of business. On occasion, it argued that placing transmission into a subsidiary company within the Eskom group would yield 'sufficient' unbundling. It also presented alternative models for distribution that would preserve a more prominent role for the firm as a vertically integrated monopoly.

In 2001, Eskom began organising a series of meetings

with various public and private sector stakeholders to convey its views of and concerns about the ESI reform programme. Held at Farm Inn near Pretoria, the meetings became known as the 'Farm Inn Summits'. In an agreement which originated at the first Farm Inn Summit in October 2001, and which was signed on 15 March 2002, the DME, the DPE, the South African Local Government Association (SALGA), the NER and Eskom reached broad consensus on the next steps in ESI reform.

An ESI restructuring committee, chaired by the DPE, would be established. Eskom would ring-fence its generation stations into clusters or portfolios for internal competition. Eskom Transmission would ring-fence its operations into wires and system operations. Eskom Holdings would establish subsidiary companies for Eskom Generation and Eskom Transmission (although this was later contested by Eskom). The internal pool would be converted into an independent market operation company (power exchange).

The DPE subsequently established an ESI restructuring office, and detailed studies were undertaken by government-led, inter-departmental and stakeholder committees, with the support of consultants, on the clustering of Eskom generation plant and the creation of an electricity market. The market would include a voluntary power exchange with a day-ahead-market, a balancing mechanism, a market for ancillary services and a range of other electricity trading platforms, including bilateral contracts and financial hedging instruments.

At a follow-up Farm Inn Summit held in March 2004, representatives of the DME, the DPE, SALGA, the NER and Eskom plus additional government departments (National Treasury, the Department of Trade and Industry, the Department of Provincial and Local Government, the Competition Commission and EDI Holdings) confirmed the reform steps to the ESI, but agreed to significantly delayed target dates for these

reforms. For example, the target date for divesting a portion of Eskom's generation assets was shifted from 2003 to 2006/7.

In an interview, Dr Steve Lennon indicated that Eskom had used the occasions of the meetings at the Farm Inn to 'warn' government that decisions on new build had to be made soon to avoid problems (Interview with Dr Steve Lennon, March 2013), but there are no public documents to support this. Although there were general briefings to the parliamentary portfolio committees, and workshops were held with industry stakeholders on the proposed market design, few details of the Farm Inn agreement and the reform timetable were made public.

Cosatu remained opposed to any proposals to restructure the electricity industry. In 2002 it embarked on a national strike in protest against the possible privatisation of Eskom and other utilities, and the effects they felt this could have on the poor. The strike led to an acrimonious interchange between Cosatu and the government, with the latter insisting that it would not be deflected from its restructuring agenda.

In 2003 Government began to revise its plans to privatise part of Eskom's generation assets, although restructuring of the sector was still favoured. After its win in the 2004 elections, the ANC stated that it would not sell the core assets of Eskom. Alec Erwin (Minister of Public Enterprises at the time) announced that government had changed its focus from a competitive wholesale market to ensuring security of supply. It was at this time that the strategy to introduce new participants into the market was changed to specify that only 30% of new generation capacity would be supplied by IPPs.

INTRODUCING NEW PARTICIPANTS: TO IPP OR NOT TO IPP

The introduction of IPPs in significant numbers was a central feature of the model for ESI reform contained in

the 1998 White Paper. This was one of the cornerstones of the policy to increase competition and improve market efficiencies.

The existing IPP market

It is important to remember that there were already other power generators in South Africa at the time of the White Paper. Eskom generated 96% of South Africa's electricity, and the other 4% was generated by entities that were effectively IPPs. IPPs could approach the NER for a license to generate power. However, almost all of these were privately owned companies supplying electricity directly and exclusively to private-sector companies. One notable exception was the privately owned Kelvin coal-fired power station, which supplies electricity directly to the City of Joburg's City Power. During the period under review, several licenses were issued by the NER to new IPPs.

The most important issue for companies wanting to enter South Africa's generating market was not getting a license to operate, but getting a purchase agreement with Eskom. Eskom owned the transmission system and was the purchaser for the national grid. In turn, any pricing agreement with Eskom would be subject to the requirements that Eskom comply with the NER's pricing determination. The NER would not issue a license without detailed information and disclosure on the implications of an IPP's pricing model for the costs of electricity for users. In its 1999/2000 Annual Report, the NER was clear that it 'will not license additional generation capacity that is based on inflexible long-term power purchase agreements. This stance is based on the premise that customers should be protected against being deprived of the benefits of a future competitive electricity market'.

There was substantial potential for new entrants in Africa's biggest generation market. In May 2001 the Cabinet approved proposals whereby Eskom would

retain 70% of the **existing** electricity generation market, with 30% being marked for sale to private investors (including BEE partners). In addition, the clear statement that South Africa would need additional generating capacity by 2007 (and that new market entrants would be encouraged to supply this new capacity) created considerable interest, from both conventional (coal and nuclear) generators as well as renewable energy suppliers.

This extract from the 1999/2000 Annual Report of the NER provides a good indication of the level of interest from potential investors:

[During the year] the NER held numerous discussions with potential independent power producers regarding the current and likely future regulatory regime for the ESI in South Africa. It is apparent from the discussions that there is increasing pressure from potential investors who wish to participate in the power industry.

Despite this level of interest, there were some institutional issues that needed to be addressed before IPPs could begin to think about supplying Eskom (or even a negotiating a purchase agreement). The most important of these were around who was responsible for deciding exactly how much power would be sourced from IPPs, and who would be responsible for managing the procurement process. The 1998 White Paper was clear that the responsible entity was not Eskom. Instead, decisions around how much power would be purchased from IPPs (and the corresponding mix of energy sources) would be determined by the IRP process. The IRPs would set the guidelines for how much power would be needed by when, and the mix between renewables and other sources. The responsibility for managing the IRP process lay with the DME, which initially outsourced the responsibility for this to the NER.

The first National Integrated Resource Plan (NIRP) was conducted from 2001 to 2002 and published in March

2002. Two other Plans were developed subsequently; the NIRP2 in 2003/4 and the NIRP3 in 2007/8. Thereafter, the IRP reverted back to the DME, which published its first version of the IRP in 2010. (Eskom subsequently stated that the IRPs produced by the NER did not provide sufficient clarity for concluding detailed Power Purchase Agreements (PPAs)).

The responsibility for managing the procurement process clearly sat with the DME, which was responsible for policy in the sector. However, the reality was that the Energy Department of the DME was a relatively small and understaffed unit, with responsibility for the entire energy sector, not just electricity. The DME, thus, relied heavily on expertise provided by Eskom in terms of evaluating proposals up to 2009. Due to the potential for conflicts of interest and widespread criticism of this fact, Government moved to establishing an independent authority to perform the task.

Certainly, experience would show that successfully setting up a business as an IPP supplying Eskom was no easy task. By the time the 2007/2008 supply crisis hit, no IPP had signed an agreement with Eskom. Given the impact of the supply crisis on the overall economy, and the fact that it had been forecast a decade earlier, the failure to take advantage of the real interest in South Africa's generation sector by external investors seems surprising. An examination of two of the failed or delayed IPP processes is instructive.

One of the initial approaches to the South African government was from the proposed Mmamabula Energy Project in Botswana. The project was designed to ensure Botswana's energy self-sufficiency and was based on a coal-fired power station to be supplied by the Mmamabula coalfield. In order for the 1,320MW plant to be financially viable, it needed to sell a substantial part (as much as 75%) of its generation. South Africa seemed a logical option, and initial discussions with the South African government opened in the early 2000s. By 2005, an intergovernmental

memorandum of understanding on the development of the Mmamabula Coal-Fired Station was reported by the Department of Foreign Affairs to be under consideration. The President of Botswana felt sufficiently comfortable that the deal would go ahead to announce it to Parliament.

Canadian CIC-Energy (CIC) now managed the \$3billion project. They had made the investment on the understanding that South Africa was a guaranteed buyer. Without Eskom as purchaser the project was financially unviable. CIC proceeded to develop the plans for the plant on that understanding. In early 2009 it submitted formal bids to Eskom to start supplying power to the South African grid by 2013. However, in July 2009, CIC announced that it had received notification from Eskom that it could not, 'in the absence of clarity on its funding model', commit to the purchase of power from CIC. At the time, Eskom's spokesperson said that the price offered by Mmamabula was 'materially higher' than the price then sanctioned by the NER. It was reported at the same time that Eskom had suspended PPA discussions with other IPP bidders – estimated to be around 30 in number – until there was finality on cost-recovery rules. In 2010 Eskom announced that it would not be concluding a deal of any kind with Mmamabula since the new IRP did not leave enough room for additional (external) purchases of coal-based power.

In April 2010 the World Bank announced that it had granted Eskom a \$3.75bn loan, \$3bn of which would be used by Eskom to fund its build of Madupe – planned to be the world's biggest coal-fired plant. By April 2013, the 4,800MW Medupi was almost 80% complete, and work was well underway on the 4,800MW Kusile power station. Both projects have been fast tracked in an attempt to address the critical shortage of generation capacity.

The second IPP project was the 2,000MW peaker plant project. In 2003 Eskom indicated that there was an

immediate identified need for peaking (rather than baseload) capacity – around 2,000MW in total. Eskom (who had done most of the preparatory planning) had highlighted the need for a model that would have a short lead time to commercial operation, and had selected open cycle gas turbines (OCGT) powered by diesel as the preferred option. The plan was for four such units – two would be supplied by Eskom and two by IPPs. This would be South Africa's first big IPP tender to supply Eskom.

The IPP procurement process received cabinet approval in December 2003. In February 2004 the DME issued a request for proposals for legal and technical advisers to assist with the bidding process. The process would be managed by the DME, but Eskom was critically involved, most particularly in the assessment of submitted bids. The reason for this was Eskom's clear expertise in the area, compared to the lack of such expertise within the DME. (It should be noted that the Electricity Regulations on New Generation Capacity – which establish the rules and guidelines for an IPP bid programme – were only gazetted in May 2011. In the absence of these regulations the process followed was ad hoc.)

The bidding process for the OCGTs got off to a slow start. By 2005 five potential bidders had been shortlisted. At the same time, Eskom was proceeding with its own OCGT projects – the other 1,000MW of the planned 2000MW of power. By May 2005 the environmental impact assessment for the Eskom Atlantis OCGT had commenced.

Eventually, only two consortia submitted detailed bid proposals for adjudication – the AES consortium and Suez-Inkanyezi. In September 2007 a preferred bidder had been selected – the AES consortium – and the DME had begun negotiations on a contract. In November 2007 AES requested an extension to conclude its project agreements, which was approved by the DME. However, in March 2008 the process collapsed. The DME claimed that AES had failed to meet its commitments; the latter

claimed that the DME had changed the terms of the contract. At the heart of the dispute was contestation regarding who was to carry the risk of a fluctuating diesel price. Neither Eskom nor AES was prepared to carry the risk.

In the meantime Eskom had doubled its original order for OCGTs and implemented the full 2,000MW.

In May 2008 the DME started talks with Suez-Inkanyezi, the eventual bid winner. In 2011, license hearings were held for Suez-Inkanyezi's application, and the licenses issued in February 2012. Construction is expected to get underway in 2013.

LOOMING CRISIS

The slow progress in electricity market reform and the corresponding failure to get new capacity on stream fuelled increasing concerns about supply. In early 2004, the NER conducted a survey of electricity stakeholders on their perceptions of risks facing the industry. Most stakeholders asserted that the quality and reliability of supply were deteriorating, and rated the risk of electricity service failure as likely and serious. They expressed concern about the capacity of government to lead the reforms, and argued that policy uncertainty was having the effect of inhibiting investment in distribution systems as well as new generation capacity. In response, the NER convened what it described as 'an urgent ESI working group', which included Eskom.

In 2004 the Minister of Public Enterprises, Alec Erwin, told a joint sitting of the labour and public enterprises portfolio committee that 'urgent action' was needed to create new generation capacity. This would include sourcing energy from the region, notably Mozambique and the Inga Project in the Democratic Republic of Congo (DRC), and the introduction of new generation capacity by the private sector.

In August 2004, Thulani Gcabashe, then Eskom's CEO,

told the public enterprises parliamentary portfolio committee that available generation capacity was 'reaching its limit'.

The first supply problems manifested themselves in 2005 when veld fires damaged transmission lines in the Western Cape, followed by a breakdown at the Koeberg nuclear plant in the same province in December. The Western Cape and Northern Cape are only partially supplied by Koeberg, with the balance of the energy drawn from coal-fired power stations in Mpumalanga. When Koeberg tripped out, the transmission network was unable to meet full demand. As a result, rolling blackouts were introduced in both provinces.

In 2006, the NER was absorbed into the National Energy Regulator of South Africa (NERSA), established as a single regulator for the electricity, piped gas and petroleum pipeline industries. NERSA began to operate on 17 July 2006. Government also passed the Electricity Regulation Act, which established a national regulatory framework for the ESI; designated the NERSA as its custodian and enforcer; provided for the licensing and registration of generation, transmission, distribution, reticulation, trading, and the import and export of electricity; and regulated the reticulation of electricity by municipalities. Regulations under the Act only came into force in 2009.

In his overview in the 2006/2007 Annual Report, Advocate Nogxina (Director-General of the DME) noted that the energy sector had experienced a number of challenges in respect of both fuel and electricity supply, compelling it to conduct an assessment of the internal and external environments 'in order to establish the required strategic focus into the future'.

The Department's task was to ensure that measures were in place to secure energy sources that would 'power the economy of this country into the future'. As a result, a robust Integrated Energy Plan that assessed both short-term and long-term needs had to be

developed. Among other things, it would examine the adequacy of electricity power supply. The 2006/2007 Annual Report noted that significant progress had been made towards developing the plan at the time, which would be presented to cabinet early in the following year.

In his overview in the 2007/2008 DME Annual Report, Advocate Nogxina said the year had been marked by various challenges in both the energy and mining sectors, but had also seen a number of achievements.

On 'the security of energy supply', he said the need to secure the supply of energy would continue as the economy grew. The Annual Report noted that the Department had sought to address the security of energy supply challenge in a comprehensive and integrated manner through the revision of the National Energy Bill. The bill also focused on understanding demand and ensuring appropriate plans to meet the demand. It sought to provide a legal framework that would enable the Minister of Minerals and Energy to establish mechanisms to address energy research, the introduction of renewable energy, and general energy security concerns. 'It is through this Bill that we will ensure that sufficient stocks of primary energies are maintained for both electricity and liquid fuels.'

Advocate Nogxina also noted that the livelihoods of South Africans and the country's economy had been affected by the electricity challenges, which presented themselves over the past year. He said: 'One cannot help but be proud of how South Africans have risen to the electricity challenge and played their individual roles in ensuring that this challenge does not aggravate into a serious crisis.'

Although the country had not experienced load shedding or power cuts post January 2008, electricity supply was not yet secured. 'We will continue to work with other sectors of government and civil society to urge all South Africans to continue conserving energy

in order to improve Eskom's reserve margin and reduce demand by 3,000MW.' (DME Annual Report, 2007/2008).

The Department was facing serious human resource capacity constraints in most of its branches. This was highlighted in the Vulindlela Capacity Assessment report presented to Parliament in 2007. It noted that the main causes included a shortage of technical skills in the labour market and an inability to retain skilled personnel. An Integrated Human Resource Plan for the period 2007–2012 had been developed and approved in an effort to address these constraints. Some head office personnel would relocate to temporary accommodation in the next financial year.

In her foreword to the DME's 2007/2008 Annual Report, Minister Buyelwa Sonjica (Minister from 2006 to 2009) said that security of energy supply was one of the DME's key mandates. The energy crises in the petroleum and electricity sectors had highlighted the country's vulnerability to energy supply. She noted that the recent electricity crisis had arisen largely as a result of an imbalance between the supply and demand of electricity, which culminated in the 'erosion of the reserve margin of Eskom's generators (sic)'.

In line with cabinet decisions, the Department noted that it was leading the Power Conservation Programme and National Electricity Response Team in order to ameliorate the negative impacts of the crisis on the economic and social sectors. To date, 45 of the biggest businesses had signed an Energy Efficiency Accord. The DME embarked on a number of energy 'imbizos'⁷ countrywide with the intention to sensitise communities about the importance of saving energy and using energy sparingly.

Investment plan

In 2004, the Cabinet had approved a five-year investment plan in South Africa's electricity infrastructure, covering the generation, transmission and distribution sectors. Its costs amounted to R93 billion, of which Eskom would fund R84 billion and IPPs the rest.

In its Annual Report for 2005/2006, Eskom reported that its board had approved a R150 billion build programme for five years up to the 2011/2012 financial year, driven primarily by an increase in the electricity demand growth assumption from 2.3% to 4%. Generation projects would take up 70% of the budget and transmission projects another 14%. The remainder of the budget was intended to fund improvements to the distribution network, and efforts to diversify the Eskom energy mix. By 2009, the costs of the build programme had escalated to R395 billion.

No explanation of how this budget has escalated from R84 billion to R395 billion in the space of five years is on record. In 2007, a World Bank report on South Africa's electricity sector estimated that, if the economy were to grow consistently at 6% a year, it would need to invest about \$5 billion (about R42 billion) in new infrastructure between 2005 and 2010.

7. The South African government uses the Zulu term *imbizo* to refer to forums aimed at enhancing dialogue and interaction between government and relevant stakeholders.

ADDENDUM ONE: **EXTRACTS FROM THE WHITE PAPER ON THE ENERGY POLICY OF THE REPUBLIC OF SOUTH AFRICA, 1998¹**

[...] **Part 1: Context, Objectives and priorities for energy policy**[...]

5.1. The context for energy policy[...]

5.1.1 International context

[...] Energy security is now being achieved, not through self-sufficiency, but through greater diversification and flexibility of supply, including increased cross-border energy trade. One of the implications of this trend is that national, uneconomic energy industries are no longer being protected. Increasingly the energy sector is relying on cost-reflective or market-based pricing. As a consequence of these trends, the role of the state in the energy sector is being redefined and restructured. Greater emphasis is being placed on commercialisation, corporatisation and, in some cases, privatisation. Energy markets are generally being restructured to encourage greater competition, even in the grid-based electricity and natural gas industries traditionally regarded as natural monopolies, which has necessitated the development of increasingly sophisticated regulatory regimes. This does not mean that state involvement in the sector has disappeared; rather that it is changing and being redefined to maximise the achievement of national policy goals. [...]

5.1.2 National context

[...] Government has also prepared a protocol on the corporate governance of state entities, including those in the energy sector. This includes: formulation of dividend policies; performance objectives and appraisal norms; a revised policy regarding government guarantees; appropriate regulatory policies to ensure that pricing policies are fair and fully cover operating costs, while also promoting competition and protecting consumers against monopolistic practices; and a programme of asset restructuring with respect to the

ownership and governance of state entities. The latter process is being undertaken in terms of the Government policy on rationalisation of State-owned assets. [...]

5.2. Energy sector policy objectives[...]

5.2.3 Objective 3 - Stimulating economic development [...]

The energy sector provides crucial inputs for all forms of productive activity. One means of lowering inputs costs and improving the competitiveness of our economy is to improve the operation of energy markets.

Government will encourage competition within energy markets.

Nonetheless, government recognises the existence of, and potential for, market failures within the energy economy.

Where market failures are identified government will intervene through transparent, regulatory and other carefully defined and time delineated mechanisms, to ensure effective delivery of energy services to consumers.
[...]

Part 3: Supply Sectors [...]

7.1 Electricity [...]

7.1.1 Vision for the electricity supply industry

Electricity supply throughout the world is undergoing a revolution. This is being caused mainly, but not solely, by electricity utilities having to meet new pressures resulting from global markets and governments opening up their countries to foreign investors to help fund power sector expansion and development. As a result, utilities are having to see themselves as businesses, and act accordingly.

Therefore government believes that the operation of the industry will have to be constantly optimised to maximise the potential for adequate, reliable, and low cost electricity to serve the people and industries of South Africa. To ensure this result, as an initial goal the

1. Department of Minerals and Energy, *White Paper on the Energy Policy of the Republic of South Africa, December 1998*.

distribution sector of the electricity supply industry will have to be rationalised, by reducing the number of distributors to a much smaller number. As investigations have demonstrated, it is the distribution sector that is most urgently in need of reform. [...]

[...] To ensure the success of the electricity supply industry as a whole, various developments will have to be considered by government over time, namely:

- giving customers the right to choose their electricity supplier;
- introducing competition into the industry, especially the generation sector;
- permitting open, non-discriminatory access to the transmission system; and
- encouraging private sector participation in the industry. [...]

7.1.3 Restructuring the distribution sector

There are a number of issues facing South Africa's electricity distribution industry which limit its ability to achieve its primary objectives of meeting the aggressive electrification targets, of ensuring world class supply quality, and of continuing to provide low cost and equitably priced electricity to all consumers. [...]

These challenges will have to be addressed in any restructuring of the electricity distribution industry. The current structure and funding mechanisms in the distribution industry put it at significant risk. It is already not meeting the objective of providing low-cost and equitably priced electricity to all customers, the financial health is deteriorating rapidly, and the aggressive goals of the electrification programme may not be met in the areas that need it most. This is evidenced by an increasing number of municipalities who are unable to pay their bulk accounts to Eskom, high prices, poor quality of supply in many areas and problems with the delivery of electrification. [...]

7.1.5 Electricity pricing [...]

7.1.5.8 Non-utility generation

The entry of multiple players into the generation market

will be encouraged.

Initially this policy will be implemented by obliging the national transmission system to publish National Electricity Regulator approved tariffs for the purchase of co-generated and independently generated electricity on the basis of full avoided costs.

The purpose of this policy is to:

- improve energy and capital efficiencies in the national interest;
- encourage the development of renewable and environmentally sound electricity generation technologies; and
- encourage more players to enter the generation industry in order to develop a competitive power market.

This policy will enable the economic exploitation of the significant available potential for non-utility generation in South Africa. Research has indicated that a technical potential of as much as 6 000 MW of non-utility generation could be exploited. By including environmental costs into the pricing structure the further development of renewable and environmentally benign generation technologies such as hydro, wind, solar thermal, and waste incineration will also be encouraged.

This policy forms part of the integrated resource planning approach to electricity supply and its implementation should thus be overseen by the National Electricity Regulator who will be responsible for finalising the details of the methodology for calculating the full avoided costs of non-utility generation.

It is expected that this policy, in addition to encouraging the exploitation of further energy-efficient generation options and increasing competitive pressures on Eskom, will provide the National Electricity Regulator and government with experience that would be invaluable in the event that a more fundamental change towards a market-based electricity supply industry is introduced at

a later stage.

7.1.6 Electricity market structure

The rapid changes in the political and economic context of the electricity supply industry world-wide in recent years raise questions about the continued ability of South Africa's monopolistic electricity industry to meet customers' electricity service needs in future. Various initiatives to establish competitive electricity markets have been undertaken internationally in recent years but much remains to be learnt about the net benefits of this course of action, the circumstances under which competition will be beneficial and the problems that are being encountered. Some of the benefits that have been observed with the introduction of competition include:

- increased opportunities to exploit cheaper and environmentally benign generation options;
- the potential to increase the level of supply security, at a lower cost, through a regionally integrated and diversified supply base;
- the potential for efficiency improvements; and
- the potential for downward pressure on electricity prices.

Concerns are, however, being raised in some countries about the impact of competition on equity and environmental goals and the ability of a competitive market to ensure sustained investment and security of supply at low prices in the long term.

Tentative steps towards enabling competitive pressures in South Africa have already been taken with the establishment of the Southern African Power Pool (SAPP), Eskom's own initiative to establish an internal national power pool, and the open access conditions included in the transmission licence issued to Eskom by the National Electricity Regulator.

Government realises that competitive models and private sector participation hold the promise of benefits for electricity consumers and will therefore be closely

following developments in countries implementing these new arrangements.

Government will initiate a comprehensive study on future market structures for the South African electricity supply industry.

In the light of the above, it is clear that the introduction of Independent Power Producers (IPP) will be allowed in the South African electricity market. Any fundamental market restructuring is likely to be delayed for a number of years while the distribution sector restructuring and the bulk of the electrification programme is undertaken.

Mechanisms will be put in place to ensure that equity and environmental goals are achieved, and possibly even accelerated, throughout the market restructuring process and thereafter. In the meantime the initial exploratory steps will include the unbundling of Eskom's generation and transmission groups, the further development of the SAPP, increased non-utility generation, policy research into the desirability of competition for the South African situation, and the strengthening of the National Electricity Regulator's ability to regulate private players and a competitive market.

7.1.6.1 Restructuring of Eskom

Present restructuring initiatives in the distribution sector, and future plans for restructuring generation, indicate that it has become necessary for Eskom to be restructured as a preparatory step for competition in the electricity supply industry.

In the long term Eskom will have to be restructured into separate generation and transmission companies.

For future restructuring, government intends to separate the power stations into a number of companies. Such a step will assist the introduction of competition into electricity generation. This will also create the opportunity for private sector and Black

Economic Empowerment investment opportunities in the generation sector. [...]

The restructuring of Eskom will be done in terms of Government policy on the rationalisation of State-owned assets.[...]

ADDENDUM TWO: THE MYTH OF SOUTH AFRICA'S LOW COST ELECTRICITY¹

The myth of South Africa's low cost electricity
It is often noted that South Africa has low cost electricity. It is certainly true that electricity prices are low, and have been falling: in 2001 electricity was one third of the price of 1980 levels in real terms. Can we assume, however, that low priced electricity means that the cost of producing electricity is low? What impacts the price of electricity?

It is often conventionally assumed that the major driver of the cost of electricity production is the input cost of the raw materials used in generation – in South Africa's case electricity provision has largely been through coal power stations. There are, however, three big cost drivers in electricity provision:

1. The cost of capital (which is amortized over time).
2. Choice of feedstock or raw materials used in the production of electricity.
3. The operating efficiency with which electricity is produced.

Questions of the cost of capital and of fuel often overshadow investigations into operating efficiency. Eskom's labour productivity has grown steadily for the past decade at least, with a slight decrease in the last few years as more staff were recruited to manage planned expansion. Output and sales have grown at 5% a year. (Newbury and Eberhard, 2008).

The variable costs associated with producing electricity are largely driven by the cost of fuel. The variable costs of electricity, however, can be a fraction of the average total costs of provision: electricity is a very capital intensive industry, with capital costs the major cost driver.

Historically the cost (versus price) of electricity production has been low in South Africa.

There are a number of reasons for this:

- South Africa has exploited its large deposits of inexpensive, low grade coal.
- Eskom was exempt from taxation and dividends until 2001.
- Low prices also stem from the fact that 'consumers have largely amortised the debt which funded the large investment programme of the 1980s that has provided the generation capacity currently still being used' (Eberhard, 2003).
- Eskom experienced relatively low debt and financing costs in the 1970s and 1980s.

The picture of low cost-low price electricity has changed, however. Analysis by Newbury and Eberhard (2008) suggests that South Africa's electricity is now severely underpriced and particularly so in light of the new generation capacity required. In 2003 Eberhard noted that, "The average selling price to industrial customers is 1.2 US cents/kWh. In 2000, the average price to rural and residential customers was 2.8 US cents/kWh which does not cover the full cost of supply. The total annual internal cross-subsidy to these customer categories exceeds US\$ 100 million." A 2008 paper commissioned for the National Treasury and the Department of Public Enterprises (Newbury and Eberhard, 2008) notes that the cost of producing new power – the long-run marginal cost (LRMC)² – is considerably above the prices charged to these consumers (Newbury and Eberhard, 2008). They suggest that this has led to "excessive electricity consumption and exacerbate[d] the capacity shortages." (p4)

Pricing is partly shaped by the form of accounting used, which affects the way in which assets are valued over the long term. Newbury and Eberhard (2008) suggest that underpricing in South Africa, as in many other countries, is often based on "considerable undervaluation of assets under regulatory accounting". They note that "Eskom's balance sheet presents asset values at written-down historic cost and, as a result, appear to significantly undervalue all the min asset

classes.” (p4). They continue that, “a more realistic asset valuation would demonstrate that the current rate of return is far too low”. Rather than recording the assets at their historic cost, their value to the business can be calculated in comparison with the costs of building and running a new plant. Known as optimal deprival value calculations, “the worth of plant and equipment increased drastically using this calculation” – the rate of return using this calculation drops drastically from that calculated by Eskom. Using this calculation, 2006 estimates of Eskom’s rate of return on assets is 1.8% versus the average of about 10% calculated by Eskom using the former calculation.

What this implies is that pricing has been too low to take full account of the money needed to maintain and replace the assets. This situation may not have been taken into account historically by the regulator when making decisions about Eskom’s prices (see Steyn, 2003).

Newbury and Eberhard (2008) note that “if prices were to be raised to efficient levels (at least to long run marginal costs), and sufficiently high to be acceptable to new independent power producers then some of the demands on capacity would ease in the short term” (p5).

This situation of underpricing based on undervaluation of assets is not unique to South Africa. In the post-war period prices were kept high internationally to finance massive investment programmes. However, as this pressure reduced, state owned enterprises “were under

weak budgetary pressure to maintain real prices in the face of general inflation” with very low targets regarding required rates of return on investment. Newbury (2008) notes that, “Even in Britain the achieved real rate of return by the UK Central Electricity Generating Board over its entire post-war history until it was sold (and hence its assets valued by the market) only achieved a 2.7% real internal rate of return (Newbery and Green, 1996, p56). The evidence supports the theory that the state as owner seems reluctant to treat its capital assets as sources of income, and hence reluctant to require an appropriate rate of return.”

In summary: state-owned electricity companies charge a low return on their capital assets, often failing to adjust any required rate of return from nominal to real values, and falling considerably short of commercial rates of return (Newbury and Eberhard, 2008). This situation can be exacerbated in countries, such as South Africa, which experience long ‘investment holidays’ – i.e. where massive historical investment in new capacity leads to long periods where new capacity is not required.

1. Primarily developed from: Newbury, D. and Eberhard, A. South African Network Infrastructure Review: Electricity. Written 2007 and updated 2008. A paper written for the National Treasury and the Department of Public Enterprises; Newbury, D. Under-pricing electricity and the puzzle of regulatory accounting, EPRG Working Paper, EPRG 0815, Cambridge Working Paper in Economics, July 2008; Eberhard, A. The Political, Economic, Institutional and Legal Dimensions of Electricity Supply Industry Reform in South Africa, Working Paper No. 6, Program on Energy and Sustainable Development, February 2003. Stanford University.

2. The Long Run Marginal Cost (LRMC) is the minimum increase in total cost associated with an increase in one unit of output – when inputs are variable (i.e. in the long run).

ADDENDUM THREE:

TIMELINE FOR THE OPEN CYCLE GAS TURBINE IPP (ALSO KNOWN AS THE PEAKER PROJECT)

Date	Description
4 May 1983	Commission of Inquiry into the Supply of Electricity in the Republic of South Africa (De Villiers Commission of Inquiry).
19 October 1983	Report of De Villiers Commission of Inquiry handed to the State President.
20 November 1983	The Cabinet accepts all of the recommendations contained in the De Villiers Commission Report.
6 February 1988	President Pik Botha announces in Parliament that Eskom (and South African Transport Service, and Posts and Telecommunications parastals) would be privatised. Eskom requested to conduct some feasibility studies on its privatization.
August 1988	Draft reports on the possible privatization of Eskom are presented to Eskom's Electricity Council.
May 1990	Minister for Administration and Privatization, Dawie de Villiers announces that the government no longer intended to privatize Eskom.
1992-1993	The National Electrification Forum (NELF) is created to debate the future of electricity in South Africa. It comprises of government representatives, civil society, business, trade unions and Eskom, the ANC and Development Bank of Southern Africa. It is dissolved in 1995 with the advent of the NER.
1995	The National Electricity Regulator is established. It was formally established through the Electricity Act 41 of 1987 which converted the then Electricity Control Board into the the National Electricity Regulator (NER). The NER was broadly supposed to exercise oversight in the electricity supply and generation industry.
1995	The Electricity Working Group comprising of the NER, government, municipalities, and Eskom is formed by the NER in order to further explore and develop proposals for restructuring the electricity industry. Most of their proposals find their way into the 1998 Energy White Paper.
1997	First "Protocol on Corporate Governance in the Public Sector" is published.
1998	Eskom Amendment Bill is introduced in Parliament. It intends to transform Eskom from a statutory body to a public company wholly owned by the State, and remove Eskom's exemption from the payment of income tax, stamp duties, levies or fees.
December 1998	The Energy White Paper is published. It sets out a vision for the electricity industry which includes the possibility of unbundling, competition, customer choice, and private participation in the electricity industry.
1999	Eskom begins reconstructing itself in anticipation of a more competitive electricity supply industry.
End 1999	1998 Energy White Paper argues that by this time decisions on new supply side investments have to be made in order to meet forecasted supply crunch.
1 April 2000	The Public Finance Management Act comes into effect (No.1 of 1999 as amended by Act 29 of 1999).

ADDENDUM THREE: CONTINUED

2001	Eskom closes down its New Works department on the basis that new generation capacity would be provided by new market entrants.
2001	Ministry of Public Enterprises envisages that electricity generation will be apportioned in a 70:30 ratio with the former provided by Eskom and the rest by independent power producers.
1 July 2002	Eskom Conversion Act, 13 of 2001 comes into effect. Eskom fully corporatised. It is converted from a statutory body into a public company with the Department of Public Enterprises as sole shareholder.
September 2002	Revised Protocol on Corporate Governance in the Public Sector” is published by the Department of Public Enterprises.
2003	Department of Minerals and Energy (DME) sets as one of their objectives - under the restructuring of South Africa’s Electricity Supply Industry (ESI) –“ensuring new generation capacity for South Africa”. The performance indicator for this goal was to complete a successful tendering process to introduce South Africa’s first independent power producer (IPP).
2004-2005	Government stance shifts to revise conception of the 70:30 generation ratio (see 2001). 70% of new capacity would be provided by Eskom and 30% by the private sector.
2003/2004	DME secures funding from DFID for the preparation of a proposal to government on how to conduct the bidding process for new generation capacity.
2004	The government instructs Eskom to start adding own generating capacity since IPPs fail to come to market (Eskom Annual Report, 2007).
2004	The National Energy Regulator Act, 2004, converted the National Electricity Regulator (NER) into the the National Energy Regulator of South Africa (NERSA).
2004	Cabinet approved a five-year investment plan in South Africa’s electricity infrastructure amounting to R93 billion. The plan includes the generation, transmission and distribution of electricity, with Eskom funding R84 billion of the total and independent power producers accounting for the rest.
2004	Cabinet approval granted for open cycle gas turbine tendering.
February 2004	DME issues an RFP for legal and technical advisers to assist the Department with the bidding process.
8 December 2004	Call for expressions of interest for the Open Cycle Gas Turbine issued (DME Annual Report 2004/5).
2004/2005	Feasibility study on new generating capacity completed and handed to the National Treasury to approve pending alignment with Public Private Partnership Guidelines (DME Annual Report 2004/5).
2005	Eskom’s new build programme gets underway
May 2005	National Treasury asked to perform a due diligence analysis on the IPP prefeasibility study and procurement guidelines. Treasury asks Public-Private Infrastructure Advisory Facility (PPIAF) for assistance in this matter. (PPIAF Assistance in South Africa, October 2012).

ADDENDUM THREE: CONTINUED

August 2005	Electricity Regulation Bill is introduced in Parliament (B29 -2005). It proposes new governance modalities with respect to oversight of the electricity industry, issuing of licenses and registration for generation, distribution amongst other electricity sector aspects.
2006	Eskom receives a license to build the first new coal-fired plant (Medupi) in more than 20 years.
April 2006	Request for Proposals issued by the DME (Department of Mineral and Energy Annual Report, 2006/2007) .
2006/2007	DME reports that PetroSA, Igas, and CEF are producing plans - engineering, legal and commercial – to allow a final decision on 1600 MW independent power producer Open Cycle Gas Turbine plant at COEGA (Department of Mineral and Energy Annual Report, 2006/2007).
5 July 2006	Electricity Regulation Act, 2006 (No. 4 of 2006) is gazetted. It provides a new framework for regulating electricity sector including granting NERSA regulatory domain over the sector, spelling out electricity licensing and registration, generation, distribution and other related aspects.
September 2006	Bids from the April 2006 RFP expected (Department of Mineral and Energy Annual Report, 2006/2007).
2007	1998 Energy White Paper expects surplus capacity to have been fully utilised based on a 4.2% growth rate.
April 2007	Bid submission date for April 2006 RFP extended to this date (Department of Mineral and Energy Annual Report, 2006/2007).
August 2007	A Record of Decision on the two sites re the Environmental Impact Assessment is expected by this date.
14 August 2007	Official sod turning for Medupi.
September 2007	Negotiations on contracting arrangements between the Department of Minerals and Energy (DME) and AES Consortium (AES) as the preferred bidder commence.
November 2007	Extension granted to AES Consortium to conclude its project agreements.
1st Quarter 2008	Anticipated commissioning of power plants (Department of Mineral and Energy Annual Report, 2006/2007).
29 February 2008	Contracts awarded for Kusile Power Station
31 March 2008	Process collapses as DME pulls the plug on bid process. DME claimed that the winning company had failed to live up to their commitments while the company – AES Consortium– said that the terms of the contract had changed and were therefore unable to agree going forward.
2009	Department of Minerals and Energy splits into two separate departments.
5 August 2009	Regulations for New Generation Capacity issued by Department of Energy (No. R 721).

ADDENDUM THREE: CONTINUED

End of 2009	In original bid process that collapses in March 2008, power supposed to be online by end of 2009 according to the DME. Eskom Annual Report 2006 also agreed on this timeline. But in the same report, spoke of power being online by first quarter of 2009.
January 2010	First draft for comment of the Integrated Resources Plan is completed by the Department of Energy.
30 November 2010	Draft amendments to the above regulations on New Generating Capacity issued by the Department of Energy (No. R. 1130) These amendments except those dealing with cost recovery do not apply to the Peaker project.
2010/2011	A guarantee received by the Department of Energy from the Ministry of Finance on the purchase of land to host the Avon Power station in KwaZulu-Natal (Department of Energy, Annual Report, 2010/2011).
January 2011	Commercial close reached with the power producer – GDF Suez. (Department of Energy Annual Report, 2010/2011).
4 May 2011	New Electricity Regulations on New Generating Capacity Gazetted by Department of Energy (No. 34262). Cost recovery guidelines reintroduced. These regulations repeal those of 5 August 2009.
6 May 2011	The Integrated Resources Plan 2010-2030 is gazetted. As the country's electricity plan, all procurement processes need to adhere to it in terms of types of technologies chosen, sequencing of their introduction and so on. However, government does seem to have flexibility to amend the extent to which all procurement processes play out in practice – for example Gazettes issued subsequent to IRP 2010 allow procurement timeframes to shift.
June 2011	NERSA holds a public hearing on licensing applications for two power plants - Avon Peaking Power and Dedisa Peaking Power.
December 2011	Construction of the power plants expected to commence before this (Department of Energy Annual Report, 2010/2011).
2011/2012	Formal agreements with GDF Suez ie the Power Purchase Agreement, Implementation Agreement, and the Transmission Agreement not yet concluded. And Department of Energy awaiting financial guarantee from National Treasury. (Department of Energy Annual Report, 2011/2012).
15 February 2012	NERSA concurs with Ministerial determination. Licenses awarded for two power plants – Avon Peaking Power and Dedisa Peaking Power.
October 2012	By this time Avon Peaking Power and Dedisa Peaking Power give contracts for the construction of the power plants. But notice was yet to be given for formal go ahead ¹ .
2014	Power from both plants expected to feed into grid. It is expected that once formal authorisation is given, it will take 30.5 months and 24 months for Avon and Dedisa respectively to be ready. (GDF Suez – Generation License applications for Avon Peaking Power (PTY) LTD and Dedisa Peaking Power (PTY) LTD in respect of the Department of Energy's IPP Peaking Power Generation Project).

1. <http://www.globalpowergen-community.com/?Action=showCompany&id=105581>

ADDENDUM FOUR: THE GOVERNANCE ENVIRONMENT

The long delays in restructuring and the eventual power crisis placed the spotlight on governance in the energy sector.

The 1998 White Paper provided a trenchant analysis of past conditions in the sector. Under apartheid, it said, the sector had been characterised by excessive secrecy. This, combined with the sector's strategic nature, had led to a blurring of the roles and functions of the state's various energy organs. Public policy processes were replaced by 'back-room decision-making with minimal transparency'.

Inevitably, such policy processes came to be dominated by energy industry managers who, by virtue of their knowledge and insight into the workings of the sector, were better placed to determine the strategic direction of their industries than government officials. This trend led to an imbalance in power relations between central government officials and industry managers, aggravated by a lack of stakeholder involvement in policy decisions as well as representivity.

The secretive nature of the sector also inhibited government's ability to integrate policy formulation, and co-ordinate policy implementation among departments and tiers of government. As a result, governance within the energy sector suffered from low levels of accountability and transparency.

Against this background, the White Paper proposed an overhaul of the governance of the energy sector. The relative roles and functions of the various energy governance institutions would be clarified, the operation of these institutions will become more accountable and transparent, and their membership would become more representative, particularly in terms of participation by blacks and women. Stakeholders would be consulted on the formulation

and implementation of new energy policies, and co-ordination between government departments and the different spheres of government would be improved. Crucially, it said government capacity would be strengthened 'in order to better formulate and implement energy policies'. While this was not explicitly stated, it was clear that the government wanted to re-appropriate control over the sector, strengthen the role of the DME and NER, and reduce or eliminate Eskom's formal and de facto policy-making roles.

Implementation

Despite the apparent urgency of these reforms, the legal and institutional situation remained more or less unchanged until the introduction of the National Energy Regulation Act (Act No 40 of 2006), which provided NERSA with its new regulatory framework. Among other things, it gave the Minister of Energy the authority to enter into purchase agreements with IPPs, essentially on behalf of Eskom, would then be bound by the details of those agreements.

Clause 46(1) stated that the Minister may, in consultation with the Regulator:

- determine that new generation capacity was needed to ensure the continued uninterrupted supply of electricity;
- determine the types of energy sources from which electricity must be generated, and the percentages of electricity that must be generated from such sources
- Determine who should purchase the electricity thus produced; and
- Require that new generation capacity must be established through a tendering procedure which was fair, equitable, transparent, competitive and cost-effective.

Key role players

1. The Department of Minerals and Energy (DME)

In terms of the White Paper, the DME was meant to play a key role in the restructuring of the electricity sector, and was mandated to lead policy development in this

area. The three operations branches within the DME were the Promotion of Mine Safety and Health, Mineral Development, and Energy. The Energy branch covered not just electricity but all aspects of the energy sector, including liquid fuels.

For a long significant period after the adoption of the White Paper, the DME seemed to focus on mining and minerals rather than energy. The energy division was only upgraded to a full branch in the 1997/1998 financial year, which meant that, for the first time, it was headed by a Deputy Director-General. In the 1998 financial year - the year of the ambitious White Paper - the DME had 235 staff members, of whom only 48 were in the energy branch.

In the DME's budget for 1998/1999, R56,7 billion was allocated to Mine Safety, R51 billion to Mineral Development, R29 billion to Energy, and R33,7 billion to Administration. In the 1999/2000 financial year, its allocations increased modestly to R58,6 billion for mine health and safety, R54,8 billion for mineral development, R28,5 billion for energy (i.e. a small nominal decrease), and R35,6 billion for departmental administration.

In 2000/2001 its budget increased significantly, but energy still received the smallest share (about 8 per cent less than administration). According to the 2001/2002 annual report, the Energy branch had a total of 110 allocated posts (as against 331 for Mineral Development and 256 for Mine Safety), but only 66 were occupied; in other words, 40 per cent of the posts were vacant. By contrast, only 20 posts in the other two branches were vacant, amounting to a vacancy rate of 3,4 per cent. In 2009, the DME was divided into separate departments of Minerals and Energy.

2. NER and NERSA

The National Electricity Regulator (NER) was established in 1995 to 'protect the interests of consumers from a monopoly'. Its role was to exercise oversight over the electricity supply and generation industry.

Its functions included issuing licenses for generation, distribution and supply; determining electricity tariffs; settling disputes between and among consumers and anyone issuing licenses; advising the Minister (of Minerals and Energy Affairs) and carrying out investigations for the Minister.

In 2006, the NER, National Gas Regulator and Petroleum Pipelines Regulatory Authority were combined into a single national energy regulator, the National Energy Regulator of South African (NERSA). Established by the National Energy Regulator Act, 2004 (Act No. 40 of 2006), it came into force in April 2006.

Its purpose was to establish and enforce a national regulatory framework for the electricity supply industry; including issuing licences in respect of generation, transmission, distribution, reticulation, trading, the import and export of electricity.

NERSA has a fulltime member who is in charge of electricity. The Electricity Regulation Act describes the approach to and mechanics of oversight over the electricity industry, licensing and registration, reticulation, resolution of disputes and remedies, investigations, and other general provisions. A key mechanism for NERSA's oversight over Eskom is the Multi-Year Price Determination process whereby Eskom has to apply for the electricity tariffs it wishes to set over a three-year period. These have to be approved by NERSA through a consultative process. NERSA continues to play a vital role in licensing new IPPs and determining overall electricity prices.

3. ESKOM

Eskom has been and remains a major player in the electricity sector, and its governance and lines of accountability are therefore central to this story.

As a state-owned enterprise (SOE), Eskom is accountable to the Department of Public Enterprises. Eskom's Board is formally accountable to the Minister of Public

Enterprises. At an operational level, contact occurs between the DPE's Energy and Broadband Enterprises Division and Eskom's management committee, with other divisions in both institutions interacting with one another as and when required. According to the 2005/6 DPE Annual Report, three of five DPE programmes – Analysis and Risk Management, Legal, Governance and Secretariat, and Corporate Strategy and Structure – played some oversight role over Eskom in the year under review.

Another relevant instrument is the Shareholder Compact negotiated each year between Eskom and the DPE. It sets out key performance objectives, measures and indicators towards progress. Some of the key performance areas in the 2011 Report include 'provid[ing] adequate future electricity for South Africa, ensuring reliability of supply of electricity to all South Africans, ensuring business sustainability of Eskom, supporting the development objectives of South Africa'.

Eskom also engages with numerous other government departments. The National Treasury has significant power over Eskom, as it is the custodian of the Public Finance Management and Finance Act (PFMA), which governs much of the formal accountability relationships between minister and their departments of the state and Eskom.

Eskom also accounts to parliament via several portfolio committees, on which parties in parliament are proportionally represented. Portfolio committees review legislation, and exercise oversight over government departments. There is a portfolio committee for each ministry and related department. Although the committees oversee specific departments, they may call on any department or person to appear before them. They may also call any institution or person to account in respect of the public interest.

Portfolio committees which have involved themselves in oversight over Eskom include the committees on

Minerals and Energy, Energy, Public Enterprises, and Trade and Industry.

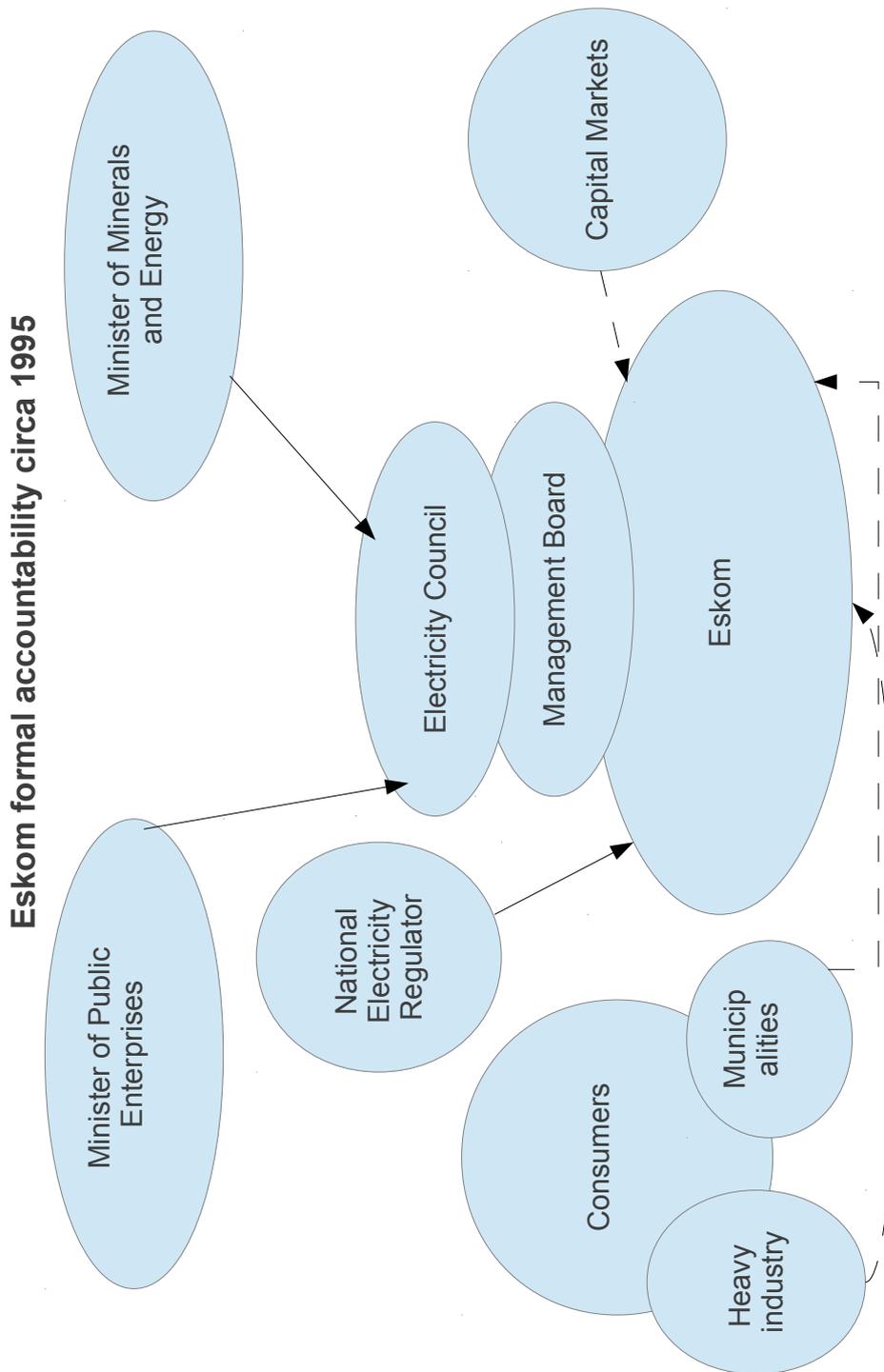
One of the challenges surrounding effective parliamentary oversight over Eskom is the complexity of energy and energy policy. Indeed, members of the public enterprises portfolio committee have often complained about what they regard as the excessive use of technical language in Eskom presentations. The committee even asked for an energy specialist to be assigned to it in order to help it assess developments in the industry, and another to make use of the framework developed by the DPE to evaluate Eskom's performance.

Despite these difficulties, the committee has admonished Eskom on numerous occasions for slow responses to its questions, and expressed scepticism about information supplied by the utility.

On 19 February 2008, following a meeting with Eskom and DPE representatives, members of the public enterprises portfolio committee complained that they were being 'lulled into a false sense of ease' over the electricity crisis¹.

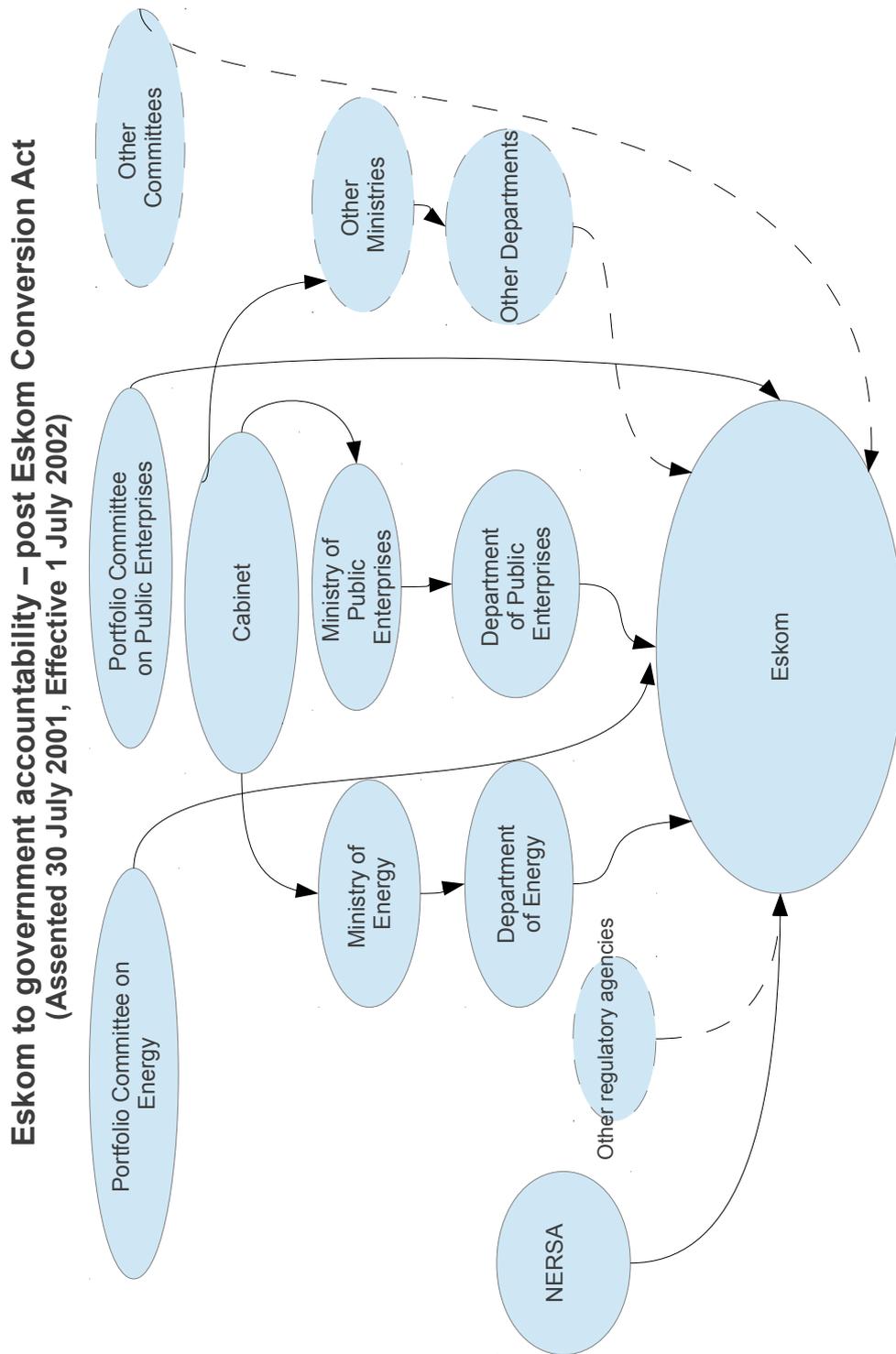
1. Power Outages: briefing by Minister and Eskom, Public Enterprises Portfolio Committee, 19 February 2008.

ADDENDUM FIVE:
ESKOM FORMAL ACCOUNTABILITY CIRCA 1995



ADDENDUM SIX:

ESKOM TO GOVERNMENT ACCOUNTABILITY - POST CONVERSION ACT



ADDENDUM SEVEN:
ESKOM INCOME STATEMENT 2005/2006¹

CONSOLIDATED FINANCIAL STATEMENTS CONTINUED

Income statements

For the period ended 31 March

	Note	Group		Company	
		12 months 2006 Rm	15 months 2005 Rm	12 months 2006 Rm	15 months 2005 Rm
CONTINUING OPERATIONS					
Revenue	23	36 607	43 207	35 558	41 387
Other net gains	24	4 236	4 144	5 279	4 790
Changes in inventories of finished goods and work in progress		813	280	459	393
Work performed by the entity and capitalised	25	9 650	9 485	9 572	9 164
Raw materials and consumables used		(15 705)	(15 600)	(14 189)	(14 588)
Employee benefit expense	26	(7 907)	(10 497)	(7 285)	(9 017)
Depreciation and amortisation expense	27	(4 903)	(5 532)	(4 626)	(5 261)
Net impairment loss reversed/(impairment loss)	28	96	(258)	898	(116)
Other expenses	29	(11 491)	(12 170)	(13 666)	(14 461)
Interest expense	30	(4 656)	(5 447)	(4 841)	(5 761)
Share of profit of associates and joint ventures		35	74	–	–
Profit before tax		6 775	7 686	7 159	6 530
Income tax expense	31	(2 154)	(2 313)	(2 095)	(2 033)
Profit for the period from continuing operations		4 621	5 373	5 064	4 497
DISCONTINUED OPERATIONS					
Profit for the period from discontinued operations	18	14	38	–	–
Profit for the period		4 635	5 411	5 064	4 497
Attributable to:					
Equity holder of the company		4 657	5 402	5 064	4 497
Minority interest		(22)	9	–	–
		4 635	5 411	5 064	4 497

1. Eskom Holdings Limited. 2006. Eskom Annual Report 2006. Johannesburg: Eskom Holdings Limited.

ADDENDUM EIGHT:

EXTRACTS FROM 'NATIONAL RESPONSE TO SOUTH AFRICA'S ELECTRICITY SHORTAGE', RELEASED BY THE DEPARTMENT OF MINERALS AND ENERGY, JANUARY 2008



Interventions to address electricity shortages

January 2008

National Response To South Africa's Electricity Shortage

Background

The recent past has seen unprecedented levels of load shedding nationally. Load shedding has been brought about by a shortage of generation supply capacity and is a last resort measure to prevent a collapse of the national electricity supply system. Load shedding is the last of a number of interventions taken to reduce demand in a system emergency situation. The risk of load shedding will remain high until at least 2013 if we do not take immediate actions to ameliorate the situation, especially during times of high levels of planned maintenance. Specific and immediate interventions are needed to minimise the risk of load shedding until the new peaking plant and baseload electricity generating capacity being built comes online.

South Africa Electricity Consumption

South Africa has seen significant levels of growth in electricity consumption and the level of demand. Figure 1 shows that 4.31% more energy was consumed in 2007 than in 2006.

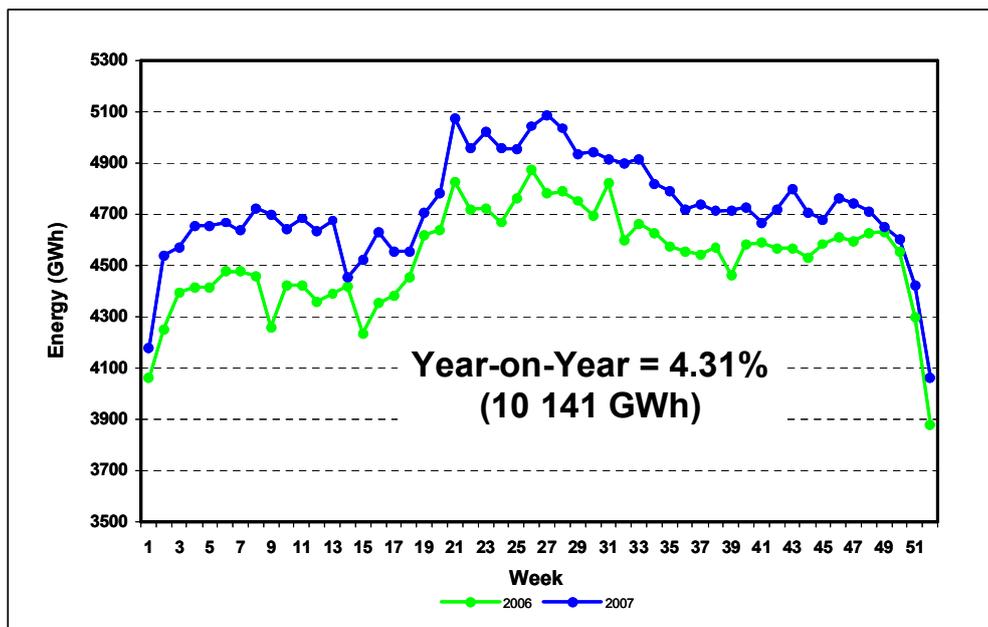


Figure 1: 2006 vs. 2007 Week-on-Week Net Energy Sent Out



Interventions to address electricity shortages

In addition to this growth in energy consumption, the growth in peak demand from 2006 to 2007 was 4.90% which is 1 706MW. What is important to note in Figure 2 is that for almost every week in 2007, the peak demand was higher than that of 2006 and significantly so.

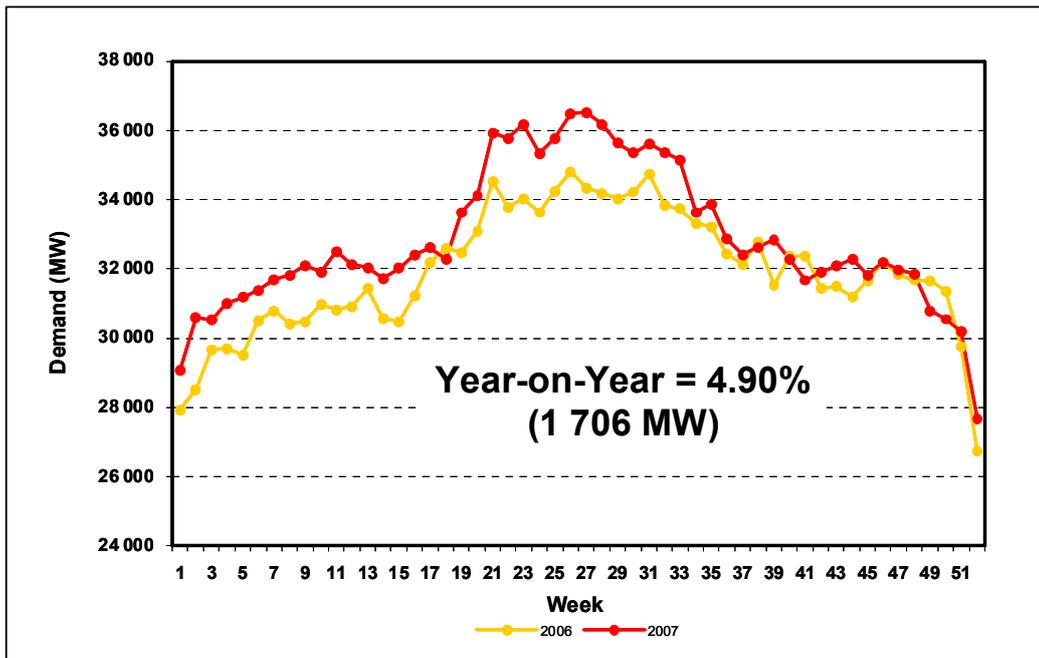


Figure 2: 2006 vs. 2007 Week-on-Week Net Peak Demand

Electricity Pricing

The price of electricity in South Africa is very low compared to other countries around the world. Many countries have also embarked upon large build programmes and the gap between South Africa and the rest of the world is widening. The main issues regarding pricing are:

- ‘Gap’ to next cheapest increased to 74% in 2007 from 30% in 2006
- Current pricing is half of the replacement value of power plant
- Increases above inflation will be needed to fund capacity expansion
- Prices will still remain competitive (we will still be among the lowest cost producers of electricity)



Interventions to address electricity shortages

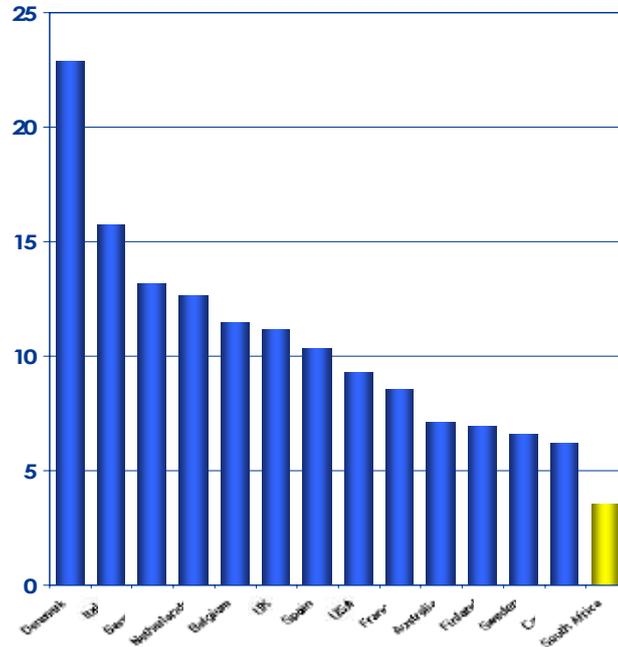


Figure 3.

Electricity prices will need to increase substantially to fund the new capacity being built; the current approved tariff by the Energy Regulator is 22.1c/kWh whereas the Long Term Average Cost is significantly higher. Electricity prices will need to move in the direction of the long term cost to be cost-reflective. This is also needed to ensure that electricity is used more efficiently and effectively in South Africa. In order not to adversely affect poor households, the tariff will have to be pro-poor and discourage wasteful consumption.

Reserve Margin

Peak demand is important to the reserve margin because there has to be enough generation plant available at any time to meet the level of electricity demanded at that time. Failure to do this will result in the national electricity supply system becoming unstable thus leading to supply interruption if left unchecked. If the entire national electricity supply system were to shut down, it would take days, possibly even weeks to restore.

The spare power plant available to provide supply at any time of the day is known as the reserve capacity and the spare plant available when the highest demand of the year is recorded is known as the reserve margin.



Interventions to address electricity shortages

South Africa has historically enjoyed a large reserve margin, but that has declined over the recent past as a result of robust economic growth and the associated demand for electricity. This decline is depicted in Figure 4.

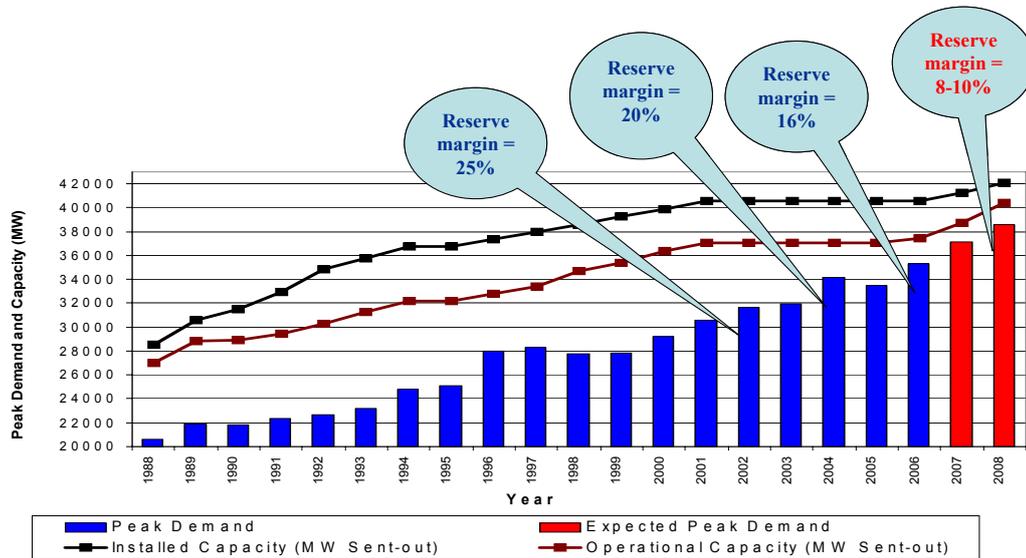


Figure 4.

The targeted reserve margin for South Africa is a minimum of 15%. This allows time for maintenance throughout the year as well as power plant to be operated at levels where equipment is not highly stressed.

The decline in the reserve margin has resulted in:

- Limited opportunities for maintenance, and
- Necessitated that Power Stations are run harder

The Current Situation

The time available for maintenance is limited and high levels of planned maintenance are now performed during the summer months to ensure that maximum generating capacity is available during the winter months when demand levels are traditionally much higher.

Planned maintenance reduces the amount of spare power plant available to provide the reserve margin as is currently the case. Due to the decline in the

ADDENDUM NINE: NEWS CLIPPINGS

ANC shuts out Eskom

Jan de Lange, Thursday 13 August 2009

-- The ANC has decided that an independent process that excludes Eskom should be created to handle the introduction of private power producers, the party's secretary-general, Gwede Mantashe, has announced.

At a discussion forum at Gibbs, the University of Pretoria's postgraduate business school in Johannesburg, Mantashe said that a discrete process should be created to speed up the finalising of the tender processes for the private power producers.

A year ago private power producers submitted tenders for the construction of private power stations, including baseload power stations.

None of these have yet been accepted by Eskom and the process has ground to a virtual halt.

Baseload power stations continuously generate power, as opposed to peak-usage power stations that are brought into service only at particular times.

"We have decided the process must be handled by a new body outside of Eskom. Eskom will still be the buyer of the electricity, but the new body will also deal with other electricity issues, such as the erection of baseload power stations by other producers. It will also possibly take the demand-management function over from Eskom," Mantashe said.

He declined to expand on the issue, since government departments would take the process further.

CIC Energy, which has well-advanced plans for a large 2 400 MW coal-fired power station in the Mmamabula

coalfield in Botswana, from which power is to be delivered to Eskom, has indefinitely deferred its project because of the delay in concluding an electricity contract with Eskom.

- Sake24.com, posted on miningmx.com

Eskom's "disaster" decision

Brendan Ryan, Tuesday 18 August 2009

ESKOM's decision last December not to go ahead with the country's next nuclear power station was a "disaster in my view" according to former Eskom CEO Ian McRae. McRae, who was CEO of Eskom from 1985 to 1994 and chief executive of the National Energy Regulator (NER) from 1995 to 1997, told Miningmx he believed a new nuclear plant was the best option for providing more power to the Western Cape.

He also rejected the reason given by Eskom and the Government for not awarding the nuclear contract last year which was that the country could not afford it.

"They should not have deferred that nuclear plant. Instead, they should have done their damndest to get the financing in place to make it happen.

"The adjudication of the tenders from Areva and Westinghouse also took into consideration the financial packages available as well as the technical aspects. "I believe Eskom could have got a reasonable financial package from the suppliers of the nuclear equipment if they had negotiated project finance deals with them. It was a brilliant opportunity and I don't think we tried hard enough."

McRae's comments are backed up by observations from energy industry sources who said Areva and

Westinghouse would have arranged most of the finance because they were so keen to get the business.

They point out the action of Eskom and the SA government in deferring the nuclear station makes little sense given that government still maintains its strategy is to source more power from nuclear stations.

McRae believes it is crucial that government delivers on this strategy given the global pressures that are building up on large producers of carbon dioxide emissions such as South Africa because of its overwhelming dependence on burning coal to generate electricity.

“The government says it wants to go nuclear but we are not seeing it. Instead, it looks like the nuclear plans have gone on the back burner,” he commented.

Turning to the subject of independent power producers (IPPs) McRae said this had been a critical factor in the creation of the country’s power crisis and the current situation reflected the lack of leadership in dealing with it.

He pointed out the SA government had announced its intention to source more power from IPPs in 1998, yet 11 years later Eskom was still not in a position to be able to sign a power purchase agreement (PPA) with an IPP.

As a result IPP projects controlled by companies like CIC Energy and Ipsa Plc are either stalled or in limbo as Eskom debates with government over how power purchases from IPPs should be funded.

“I am not anti-IPPs and I accept I may not know all the ins and outs but we simply have not got our act together here,” McRae commented.

In an interview in the August edition of electronic

newsletter EE-News, McRae said one of the main reasons given by the SA government for halting Eskom’s generation plan in 1998 was that it wanted to give IPPs greater access to SA’s electricity supply industry. He told EE-News, “That was not, in itself, the fault – the fault was in stopping Eskom from proceeding before they had an idea of what response they would have from IPPs, thus placing South African consumers at risk.

“The government failed to recognise that IPPs would not rush into South Africa to compete with Eskom’s large, low-cost, coal-fired stations.

“There was also a lack of understanding of the industry dynamics in that the output of IPPs under the current system is determined by the grid which is owned by Eskom.

“Some guarantee of output would have to be given to the IPPs and this was not clearly laid down. The government let users of electricity in South Africa down badly in making this decision.”

“The government has also failed to give answers to questions I raised way back when I was chief executive of the NER, namely ‘what kind of industry do we want for South Africa? A privatised industry; or a government-owned vertically integrated industry or something in between - a quasi privatised industry?

“As a result, the industry has failed to restructure.”
www.miningmx.com