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South Africa**

**December 2000**

## **COMPETITION AND REGULATION IN THE ELECTRICITY SUPPLY INDUSTRY IN SOUTH AFRICA**

### **1. INTRODUCTION**

#### **1.1 The structure and nature of the Electricity Supply Industry**

A thorough appreciation of the possibilities for competition and the necessity of regulation in the Electricity Supply Industry (ESI) is dependent on an adequate understanding of the basic structural elements of the industry and the manner in which the electricity market is being restructured internationally and locally.

The ESI consists of four main vertically connected operations: *generation* - where electricity is produced in power stations; *transmission* - where electricity is transported at high voltage over long distances; *distribution* - where electricity is taken at lower voltages over shorter distances to end-users; and *supply* - where an electricity service is sold to customers. It is also important to be aware of a further category of operations: *ancillary services* - which include system balancing, the provision of reactive power and voltage regulation. There are also operations such as power and financial trading and settlement, etc.

National and international transmission grids interconnect generators, distribution networks and customers. Inter-connected grids make it possible to meet varying electricity needs from a range of different generation sources. Customers' electricity needs vary according to different electricity uses during the course of a day and seasonally. The output from generators also varies according to fuel source, technology design and operational decisions. Electricity is generally expensive to store (although sometimes potential energy can be stored in the form of water in dams and pumped storage schemes). Thus electricity grids are highly dynamic and complex systems where demand and supply need to be managed. In such an integrated system it is possible to arrange power trading where system operators dispatch electricity on a merit order (according to price and availability) from power stations to meet customer demand.

In the past, economies of scale and scope led to these different operations mostly being undertaken by vertically integrated utilities - often state-owned and often enjoying a monopoly. With new technology, it is now accepted that competition is possible in generation, supply and ancillary services, while transmission and distribution are still generally regarded as natural monopolies (although, in some regions of the world, even transmission could be regarded as potentially competitive). In other words, different power stations, electricity retailers, and ancillary service providers can compete for the market and can be subject to prevailing competition rules and surveillance. Transmission and distribution (i.e. the wires business) on the other hand are generally subject to sector specific regulation to protect customers from monopolistic behaviour. As a consequence,

the electricity industry all over the world is going through a radical restructuring through vertical unbundling (separating generation, transmission, distribution, supply and ancillary services from each other) and horizontal unbundling (separating generators and separating suppliers), the introduction of competition, changes in ownership and the introduction of new regulatory regimes

## 1.2 Structural and regulatory changes in South Africa

South Africa's ESI has mostly followed the traditional industry structure of having a dominant vertically integrated, publicly-owned utility. Eskom is involved in all aspects of the industry: generation, transmission, distribution, sales and ancillary services. In addition, local authorities are also involved in the distribution and supply of electricity.

The ESI in South Africa used to be regulated by the Electricity Control Board whose operation was remarkably ineffectual through the exclusion of Eskom and local authority electricity distributors from its regulatory jurisdiction. The ECB was superseded by the National Electricity Regulator (NER) which was established through amendments to the Electricity Act in 1994 and 1995. The NER has jurisdiction over the entire industry and regulates market access through licensing all producers, transmitters, distributors and sellers of electricity (greater than 5 GWh per annum). All electricity tariffs have to be approved by the NER. It also regulates quality of supply and mediates disputes and customer complaints.

Section 4 of the Electricity Act of 1987 (amended in 1994) outlines the functions of the National Electricity Regulator.

1. *The board [i.e. the NER] may-*
  - a. *issue licences for the generation, provision and, within the area determined by it, distribution of electricity.*
  - b. *determine the prices at and condition on which electricity may be supplied by a licensee.*
  - c. *At the request of any licensee or its consumer settle disputes between licensees and their consumer or prospective consumers regarding-*
    - (i) *the right to supply*
    - (ii) *the quality of such supply and the provision of services in connection therewith*
    - (iii) *the conditions on and prices at which electricity is supplied*
    - (iv) *the installation and functioning of meters*
    - (v) *the suitability of the equipment of the licensee*
    - (vi) *delays in or refusal of supply by a licensee*
    - (vii) *any other matter in respect of which a licensee or its consumer requests the regulator to act as mediator;*
  - d. *collect information which it deems necessary from undertakers or consumers;*
  - e. *perform inspections of the equipment of licensees;*
  - f. *exercise the other powers assigned to it by this Act or the Eskom Act, 1987.*

2. *Any decision of the board on a dispute contemplated in subsection 1 c shall be binding on the parties to the dispute.*
3. *Deleted*
4. *The board may advise the Minister on any matter relating to the electricity supply industry and it may for this purpose carry out such investigations as it or the Minister deems necessary.*

The South African Electricity Supply Industry (ESI) now sits on the brink of far-reaching reforms. While South Africa's ESI currently enjoys relatively low prices, derives no support from the fiscus, and has funded an impressive electrification programme, there is a growing consciousness that new challenges, opportunities and threats to the ESI mean that South Africa has to reposition and restructure the electricity sector in order to further pursue efficiency and social gains. These changes will have a profound effect on competition and regulation.

This paper will explore these issues, first through a brief overview of international developments, then through describing in more detail the current industry, then outlining government's thinking concerning industry reform and finally through pointing out the implications for competition and regulatory oversight.

## **2. INTERNATIONAL OVERVIEW**

### **2.1 Drivers for ESI reform**

Changes in the electricity sectors of most countries in the world are being driven by:

- the desire to improve allocative and operational efficiencies;
- a desire to widen customer choice;
- technological change;
- financing needs and markets;
- environmental pressures; and
- a number of country specific needs.

Publicly owned infrastructure industries, such as electricity utilities, have historically played an important role in underpinning economic development - however, weak operational, financial and investment performance, and poor management accountability, have caused governments to embark on fundamental reform and restructuring exercises.

Many governments are now aiming to lower costs and prices through forcing improved efficiencies through commercialisation and exposure of the industry to greater competition and private ownership. Previously there have been few incentives for the publicly-owned utilities to improve efficiencies and even those that had been well-regarded (like the old Central Electricity Generating Board of England and Wales) have subsequently shown marked efficiency gains in a competitive market. A commercial and competitive environment exposes investors and managers' performance to market

scrutiny. Incentives to reduce operating costs are sharpened. Prices are driven to their lowest economic level. Investment decisions are exposed to their associated risk and innovation is stimulated. Customers are also beginning to demand the right to choose their electricity supplier - thus also forcing greater competition, lower prices and pressures on improved costs and efficiencies.

Traditional sources of cost reduction, for example economies of scale in power plant construction by large integrated utilities, have largely been exhausted. New technologies, specifically combined-cycle gas turbines (CCGTs), do not have the same economies of scale and allow new, smaller entrants to come into the market. Further, new information and communication technologies now enable more sophisticated system control that could include many different participants, as well as short-term electricity trading, in a way that was simply not possible in previous decades.

A further driver for ESI reform is changes in capital markets, sector finance and fiscal pressures. There is inadequate public finance from governments (and the multi-lateral lending agencies) for large infrastructure projects. Governments face growing pressures to reduce their fiscal borrowing requirements and to sell off public assets. At the same time globalisation of international capital markets has created new financing opportunities, often linked to the participation of private equity partners.

Concerns about global warming and climate change, as well as a general consensus on the need to move towards greater environmental sustainability, has meant a slowing of investments in the large nuclear and coal fired plants favoured by the old large utilities, and has placed greater emphasis on the introduction of gas and renewables and institutional reform to allow new investors to promote these options.

Finally, there are a number of country specific drivers for reform. For example, in Chile and the UK (the first two countries to undertake radical restructuring of their ESIs) there was a strong ideological commitment to privatisation. The UK government also wanted to undermine the power of coal mining trade unions, and institutional reform was bound to challenge the old coal contracts and lead to a reduced reliance on coal as new investments were made in gas CCGTs. In the US, the disparity in the electricity prices between the different states has been a major driving force. The introduction of competition has been seen by customer groups as a way of obtaining cheaper power. In some cases the reform process may be initiated by a crisis, or perceived crisis, such as the droughts in New Zealand and in Columbia in the early 1990s which affected hydro generation and caused both governments to consider whether there were different ways of organising their power sectors. In South Africa, there is the specific requirement to widen economic ownership and to promote black economic empowerment. ESI reform with targeted privatisation of electricity assets could make a major contribution to that objective.

## 2.2 Categories of reform

The effect of these drivers on ESI reform has been:

- *commercialisation* and *corporatisation* of public utilities;
- changes in the *structure* of the industry to increase *competition*;
- the creation of a set of *electricity market trading mechanisms*;
- increased *private* sector participation; and
- changes in *regulatory oversight*.

### *Commercialisation and corporatisation*

Often the first step in reform has been to transform publicly owned utilities into commercial corporations subject to performance contracts and the payment of taxes and dividends. The challenge has been to convert indebted, poorly performing utilities, reliant on government funding and subsidies, to public corporations which are able to raise capital on private markets, meet performance objectives and provide fiscal revenue streams. Governments could start treating them like any other commercial enterprise and the emphasis turns to maximising shareholder value. Corporatisation involves defining shareholding and share capital - often, in the beginning, still owned by the state. Commercialisation and corporatisation initiatives assist in creating a level playing field with private operators through a degree of convergence in the cost of capital and acceptable rates of return on assets. Restructuring and privatisation often follow.

### *Restructuring for competition*

If new entrants and technologies are to compete effectively then open, non-discriminatory access to the transmission and distribution system must be guaranteed, and no one generator or supplier should enjoy market power.

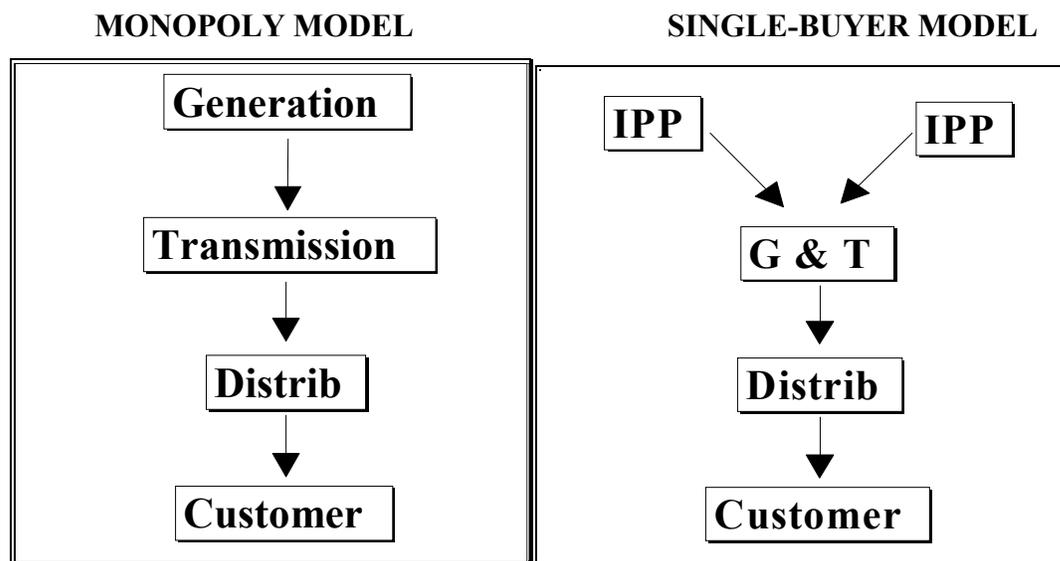
The simplest way of achieving these objectives is to restructure the industry and this has often been an early step in the reform process. The old vertically integrated monopoly industries have been vertically unbundled: i.e. generation (G) has been separated from transmission (T) and distribution (D), which are then operated as separate, independent entities. Secondly, there has been horizontal unbundling, where generation has been split into a number of competing companies (none big enough to exert market power) and/or the introduction of new generators has been permitted. Any generator may then send their electricity through the transmission and distribution system to customers. This is termed *wholesale competition*, which first emerged in the UK and South America and is now being followed by the majority of countries undergoing reform. This process has not always been successful, and care needs to be taken that one or a few generators do not regularly control the price setting area in the market.

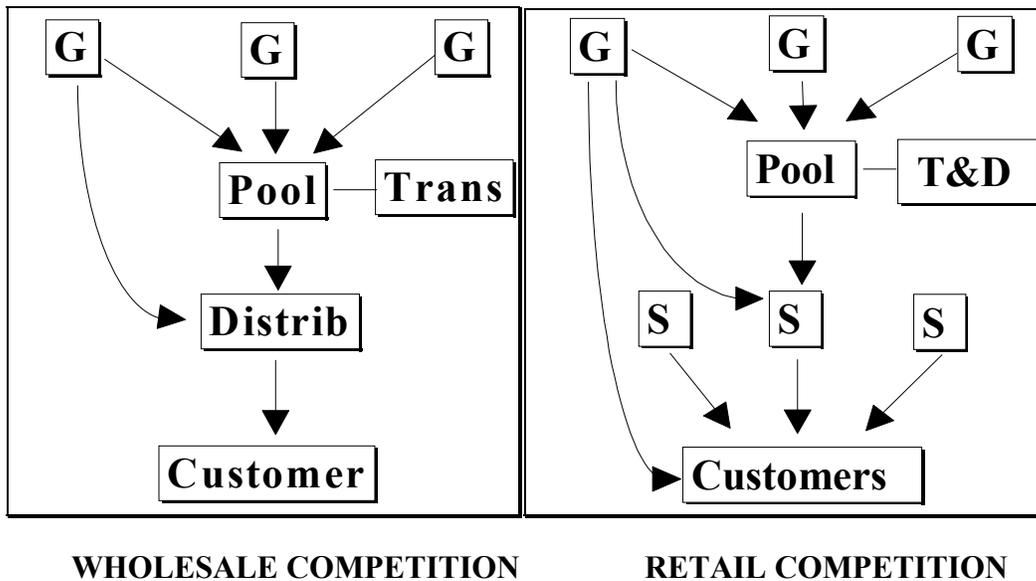
In some cases, for example California, generators have been permitted to retain ownership of their transmission wires and non-discriminatory access to transmission is then overseen by an independent systems operator (ISO). In practice this has often proven costly, expensive and difficult to regulate.

Governments have sometimes introduced competition in phases - by first allowing independent power producers (IPPs) and/or importers to enter the market. These IPPs often have to secure future electricity sales through a power purchase agreement (PPAs) with the dominant utility. Private finance houses mostly insist on these PPAs in order to secure a predictable debt-servicing income stream. This is known as the single-buyer model which emerged in many South East Asian and other developing countries. This model involves a number of compromises as full wholesale competition is denied (as the old utility has a dominant market position through controlling most of the generating capacity and the transmission system)- and there is a real danger that governments and utilities might be stranded with costly PPAs which are uncompetitive in the future - i.e. power purchase agreements might dictate a fixed price over a long period - but if full competition were to be introduced prices might fall.

There is growing consensus that it is preferable to introduce full wholesale competition from the beginning by separating generation from transmission (ie guaranteeing non-discriminatory access to transmission of electricity to customers) and through also breaking up generation into a number of competing companies - none large enough to exert market power.

At a mature stage in the reform process, supply (S) of electricity is often separated from the operation and ownership of the distribution wires and a number of suppliers compete to sell electricity to customers. Or put the other way around - customers can choose their suppliers. This is termed *retail competition*. Suppliers buy their electricity from the wholesale market and then pay the transmission and distribution companies a *regulated price* to transport their electricity to customers. Customers thus often see their electricity bill split into an energy component (the price of electricity bought from a generator) and a transport cost (the wires charges). Customers may also elect to purchase their electricity directly from generators. The UK, Norway, New Zealand, Australia and many other countries have moved to retail competition - first allowing large customer choice and then eventually extending competition to all electricity customers.





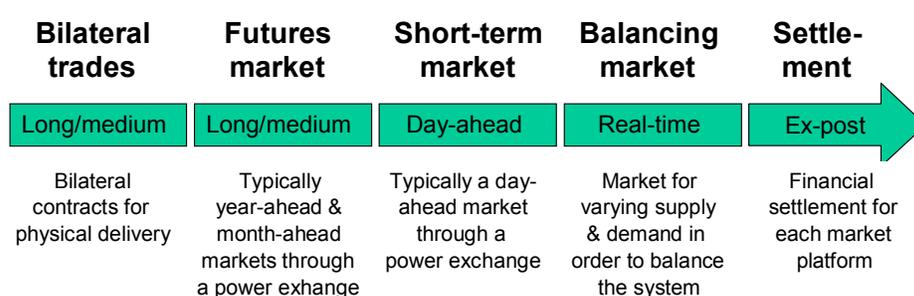
### *Electricity trading market*

A key element necessary for competition is the creation of an electricity market or set of trading mechanisms and instruments. There are two broad market models that describe the way in which sellers and buyers of electricity interact.

The *power pool model* has been widely implemented, initially in countries such as the UK and South America. In this model generators bid their power into a pool (ie a block of power at a particular price for a particular period - usually an hour or half hour a day ahead). The bids are stacked from the lowest to the highest and the pool operator prepares a day ahead commitment and dispatch schedule on the basis of a demand forecast and merit-order of power bids from the pool based on the lowest price bids. Power is dispatched to meet demand and hence surplus generators (i.e. those with the higher prices) are not dispatched. Purchasers buy their power from the pool at a price that is based on the bid of the last dispatched plant -i.e. the market clearing price, plus any capacity payments. Constraints are handled by the system operator, largely by adjusting the dispatch schedule and ancillary services (e.g. reactive power and voltage regulation) are procured by the system operator. System balancing is managed by the system operator based on separate price schedules for increases or decreases in generation output or consumption (balancing market). The costs of the system operation and balancing are added to the pool price as an uplift payment. All generators and purchasers are required to make their physical purchases or sales of electricity through the pool - although they may hedge their risks with contracts for differences. Demand-side participation tends to be weak in this model.

As more experience develops with competitive electricity markets - a *multiple electricity trading market model* is evolving: i.e. not all power is traded through a single pool. A market develops for long or medium-term bilateral contracts between generators and suppliers and/or customers. Market risk is hedged through trading in futures. A power pool is used as a day-ahead market (which usually becomes the reference price) and because electricity is generally not stored and supply and demand has to be matched on a real-time basis, a balancing market becomes critical. All market participants who are out of balance from their contracted positions will be exposed to the price in the balancing market. These various market platforms have clearly delineated rules and settlement procedures. Essential elements of this model are the freedom to choose your trading platform(s) and the fact that demand-side participation is stronger.

*Market platforms under the Multi-Market Model*



Source: Econ Report 43/2000

*Increased private sector participation*

The ESI can be restructured and competition introduced while keeping the bulk of the sector in public ownership and without privatizing. This is the case in Norway and was the initial phase in the reform process in New Zealand and the Netherlands. Other countries such as the UK, Chile and Argentina restructured and privatised at the same time.

The private sector can enter the ESI, either through investments in new independent power producers (IPPs) or through the privatisation of publicly owned ESI assets. Governments can privatise through inviting strategic equity partners, targeted equity sales, auctioning assets or an initial public offering (IPO).

Many argue that the full benefits of competition have only been realised when the competitive elements in the industry (viz. generation and supply) are fully privatised.

*Modernising the regulatory framework*

As public utilities have been commercialised and corporatised, and taken further from direct government management and control, it has been necessary to put in place a clear regulatory framework to protect consumers through tariff approval and to provide

incentives for utilities to improve efficiencies and drive costs down. And as the ESI has been restructured to introduce competition, it has become important to distinguish between those elements of the business which are competitive (and which could be overseen by existing competition authorities) and those elements which remain natural monopolies and where sectoral regulation is essential.

As mentioned previously, the generation and supply (retail) elements of the electricity business lend themselves to competition - while the transmission and distribution wires operations are natural monopolies. (There could also be competition for services -such as metering, market operation, settlements, etc - which can go out periodically on competitive tender - or where parallel trading mechanisms develop).

As electricity sectors have been reformed, the international tendency has been for sectoral electricity regulators to focus on transmission and distribution. There has been a movement away from the old "command and control" price setting which characterised government and cabinet price approvals - to either a cost of service (for example, rate of return) regulation, common in the USA, or a range of conduct or incentive based regulatory mechanisms such as price capping with an efficiency factor (RPI or inflation minus X in the UK), or revenue capping (eg Norway) or yard-stick or franchising regulation.

Electricity regulators have also generally been responsible for technical regulation, including quality of supply and safety issues.

In the past electricity regulators tended to licence not only transmission and distribution companies but also all electricity generators and retail suppliers. While there is a tendency now for the regulation and oversight of the generators and suppliers to come under the jurisdiction of the competition authorities - sectoral regulators still often monitor the electricity market for signs of market power and market abuse.

## **2.2 Overview of ESI reform in different countries**

As is evidenced in the table below, there has been a general trend in most countries towards wholesale and retail competition and also to greater private sector participation.

*State of electricity sector reform in various countries*

<b>Vertically Integrated Public Utilities</b>	<b>Single-buyer model</b>	<b>Wholesale competition</b>	<b>Wholesale and retail competition</b>
Most African countries, although some are now starting reform process	France Italy Namibia Some South-East Asian countries	Pennsylvania, New Jersey and Maryland New England New York State	<i>Mostly public ownership</i> Norway New South Wales  <i>Mostly private ownership</i> UK Germany Netherlands Most EC countries Hungary California Chile Argentina Bolivia Victoria, Australia New Zealand

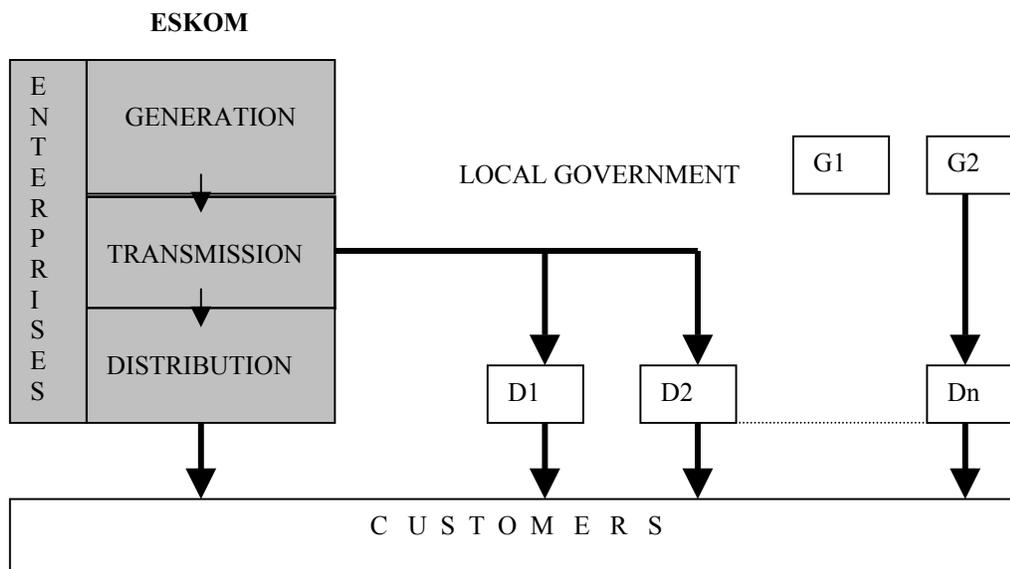
### 3. CURRENT ESI IN SOUTH AFRICA

The South African Electricity Industry is dominated by a state-owned and vertically integrated utility, Eskom, which ranks among the five largest in the world. It generates 95% of South Africa's electricity. It owns and controls all the high voltage transmission grid and it supplies directly about 40% of electricity to customers. The remainder of electricity distribution is undertaken by 368 municipal electricity departments. All these municipal distributors buy bulk electricity from Eskom, with some also generating small amounts for sale in their areas of jurisdiction. A few industries have private generation facilities for their own use, accounting for 2.9% of total electricity produced.

In South Africa, 92% of electricity is generated from coal; nuclear energy accounts for 6% and hydro and emergency gas turbines make up the remaining 2%. Total licensed generating capacity in 1999 was 43.1GW<sup>1</sup> of which Eskom owned 39.9GW. Eskom has 25 power stations: 13 large coal fired stations dominate – most of them situated on coal mines in the north-east of the country. Africa's only nuclear station (1840 MW) is at Koeberg, 30 kilometres north of Cape Town. There is 632MW of hydro capacity on the Orange River, located on two dams – and two large pumped storage schemes totalling 1400MW. Municipalities own 22 small power stations and back-up gas turbines, but

<sup>1</sup> GW = Gigawatts = 1 000 000 000 Watts. MW = 1 000 000 Watts.

these total only 5% of national generation capacity and generally run at low load factors. Private generators comprise the remaining 2% of capacity.



### Current structure of the SA ESI

*\*\* Eskom Enterprises is a division of Eskom which undertakes technical support activities on a contracted basis.*

*G1, G2.....different municipal generators. D1, D2.....different municipal distributors*

In terms of transmission, the national, integrated grid comprises 26 000 km of lines. Peak demand on the grid is about 28 000 MW.

On the demand side, in 1998, there were 5.8 million electricity customers. In terms of total electricity consumed, domestic consumers accounted for 19% manufacturing – 49%, mining – 19% and commercial transport and agricultural users the rest.

South Africa sells electricity to neighbouring countries (Swaziland, Botswana, Mozambique, Namibia and Zimbabwe) representing less than 2% of total sales. Contractually it is bound to take electricity from Mozambique's Cahora Bassa hydro-electric station on the Zambesi - so Eskom is actually a net importer of electricity for the present.

Thus in broad terms, the electricity supply industry is currently characterised by an oligopoly in generation, a monopoly in transmission and a highly fragmented distribution sector.

Eskom's revenue in 1999 totalled R21.5 billion and its net profit, after interest but before tax, was R2.17 billion. Eskom has 34 000 employees, down from over 60 000 in the 1980s.

At first glance the South African Electricity Supply Industry has performed well. Eskom supplies electricity at amongst the lowest prices in the world. Reliability and quality of supply are good. The national electricity utility is commercially run with no recourse to the national fiscus. It raises all its finance through debt, off its balance sheet, mostly through issuing bonds, which are well supported by local and international capital markets. The industry has accomplished an unprecedented national electrification programme, connecting about 2.5 million additional households over the past 6 years, thereby increasing the proportion of the population with access to electricity from about one third of the population to about two thirds.

While Eskom has performed reasonably well in the 1990's in practically all important respects, its monopoly position, organisational and financial framework and structure of corporate governance has remained unchanged since the apartheid years. Contrary to popular perceptions, this status quo was achieved at a cost to the state and the economy as a whole. Eskom's recent low prices and exemplary electrification performance has left the impression that it is highly efficient and that there is no need for reform. Unfortunately the reality is different – low prices do not necessarily mean low costs.

A close examination of the South African ESI will show that low prices and the ability to fund electrification have emanated from amongst other factors, very low coal prices, exemption from taxation and dividends, financing subsidies (including subsidised SA Reserve Bank forward cover) and by the fact that consumers have already largely amortised the loans required to fund the generation over-capacity. As a result of large over –investment in generation plant in the 1980's, South Africa has sat with over-capacity, which will only be fully utilised around 2007. Eskom has not had to invest significantly in new generation capacity for some years and one of the largest contributors to lower overall costs (and prices) has been a lower debt and financing cost. Eskom's debt to equity ratio has fallen from 2.93 in 1986 to 0.83 in 1998.

The municipal distribution sector is also experiencing problems. Many of smaller municipal distributors are poorly managed, have poor financial controls, cannot raise finance and have poor operational efficiencies.

There are thus good reasons to institute reforms which would bring improvements to operational and investment efficiencies in the ESI, to boost economic growth and to generate an economic return to the shareholder. This should be done, while still maintaining a social commitment to widening access to affordable electricity for the majority. South Africa will soon have to make investment decisions in new generation plant. Risk and the costs of bad investment decisions should not be passed to consumers (as was done in the case of one of Eskom's most recently built power stations, Majuba, which is also its most expensive to operate) but an institutional framework must be put in place which places the risk with the investor thus forcing greater efficiencies. This can only occur if the ESI is restructured, competition is introduced and the overall regulatory framework is modernised.

#### 4. ENERGY AND ELECTRICITY SECTOR POLICY DEVELOPMENTS

At an Electricity Supply Industry Reform Workshop held from 3-5 April 2000 in Midrand, the Minister of Minerals and Energy made explicit government's overall policy objectives for the sector. She restated electricity sector policy as outlined in the December 1998 White Paper on Energy Policy:

- Improving social equity by specifically addressing the energy requirements of the poor
- Enhancing the efficiency and competitiveness of the South African economy by providing low-cost and high quality electricity inputs to industrial, mining and other sectors
- Achieving environmental sustainability in both the short and the long-term usage of our natural resources.

The White Paper also emphasises objectives of improving energy sector governance and achieving energy security through diversity of supply. It is further stated that in order to ensure the successes 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

The White Paper also states that Government believes that Eskom will have to be restructured into separate generation and transmission companies and that Government intends separating power stations into a number of companies.

The Minister stated further that government's main objectives of reform are 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 and to
- Protect public benefits such as widened access to the poor, energy efficiency ongoing R&D and environmental sustainability.

There are a number of further important reasons why government is considering reform of the electricity sector:

- There is unanimity in the ESI that prices will rise in the future when investments have to be made in new generation capacity. Eskom's electricity prices are presently probably below sustainable economic values. Government must ensure that these price increases will be kept as low as possible. As indicated in the previous section, international experience has demonstrated that the introduction of competition in generation has resulted in lower electricity supply costs and prices: this has happened in the UK, Norway, Australia, New Zealand, Argentina and Chile, to name just a few countries – even in cases where the previous monopoly utility was considered

efficient.<sup>2</sup> Prices come down because investment decisions and operational practices become more efficient when investors, managers and employees have to operate in a competitive environment.

- Government wishes to optimise financial and economic returns to the state. To date the state has received little financial return from the vast publicly owned resources that are invested in Eskom, nor has it received any taxation income from Eskom. Government intends to conduct the restructuring so as to maximise the value of the industry and the financial returns it will receive, either in the form of annual cash flows or eventual lump sum proceeds from ownership reform and private sector participation. Contributions to social programmes such as electrification will become more transparent and privatisation revenue could significantly reduce state debt.
- South Africa needs to widen the participation of the majority of its people in the economy. Eskom is one of the largest and best performing of the state's assets. Eskom generation assets (estimated at R65-100 billion) provide extraordinary opportunities for promoting black economic empowerment through a discounted equity offering, with re-payment in dividends and earnings. In addition, an initial public offering (IPO) could enable broader public participation.
- Economic growth needs to be sustained through inward investment. South Africa has inadequate domestic savings and needs to attract international capital into fixed domestic investment. International experience indicates that there is a great deal of interest in investing in electricity generation assets, particularly where the rules of the market are clear.
- There is a strong argument that Eskom in its current form is not optimally positioned to contribute to the African Renaissance. Although it has some technical cooperation agreements in the continent, it has made very few investments. Experience has demonstrated that African governments are wary of a large South African monopoly utility coming into their markets. Eskom will be able to compete much more effectively in a global electricity market if it has already experienced competitive forces in the local market. The creation of an open, competitive market would also encourage investments in the region, particularly in hydro-electricity and natural gas fired plant, with significant impacts for economic growth and stability in the region.
- New technology, such as information and communication technologies, makes it possible to organise our electricity industry in ways, which simply were not possible, a decade ago. Generation (and the retail) of electricity are no longer regarded as a natural monopoly and the entry of new players can be accommodated in information technology dependent power pools and exchanges coupled with sophisticated control and metering systems. In other words, new technology makes effective competition possible.

Many of these drivers are not dissimilar to those experienced internationally – hence the imperative to take seriously the revolutionary changes which are sweeping the ESI around the globe and to learn the best lessons and practices from these experiences.

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<sup>2</sup> See the proceedings of the Ministerial ESI Reform Workshop, Midrand, South Africa, 3-5 April 2000.

## 5. INTRODUCTION OF COMPETITION IN THE SA ESI

Government has begun to reform the ESI. The first step has been to rationalise the distribution side of the ESI. Cabinet decided in 1997 that the distribution industry should be rationalised into the maximum number of financially viable Regional Electricity Distributors (REDs). Government has appointed an Electricity Distribution Industry Restructuring Committee (EDIRC) comprising relevant government departments, Eskom, representatives from local government and the National Electricity Regulator. A consortium, led by PriceWaterhouseCoopers is currently undertaking a detailed planning exercise. Six REDs have been proposed, despite objections from some of the stakeholders. The proposals are currently before government.<sup>3</sup> It is hoped that the REDs will be operational before 2004. Full retail competition is not being proposed at this stage - although large customers (over 100 GWh per annum) will be able to choose their suppliers. The REDs will have franchised customers (i.e. existing and future electricity consumers) within their geographic boundaries and will undertake both the distribution and selling of electricity.

The Eskom Amendment Act of 1999 clarified government's position as shareholder of Eskom and that the utility will be liable for paying taxes and dividends. The Eskom Corporatisation Bill is currently being prepared which converts Eskom from a state corporation to a company. In August 2000, the Ministry of Public Enterprises published "A Policy Framework: An Accelerated Agenda Towards the Restructuring of State Owned Enterprises", which states:

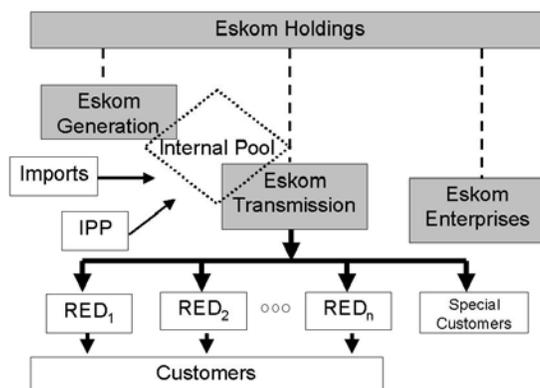
- Eskom will be corporatised, with transmission, distribution and generation each forming a separate corporate entity.
- A full evaluation of the different models of restructuring Eskom is currently being undertaken by the Department of Public Enterprises, based on a review of the electricity supply industry undertaken by the Department of Minerals and Energy.
- Different Generating companies will 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.

Three possible ESI models have been discussed by government.

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<sup>3</sup> In December 2000 Cabinet sent these proposals back for more comment and work. This follows seven years of intensive discussion between all relevant stakeholders - including the National Electrification Forum, The Electricity Working Group and the Electricity Restructuring Inter-Departmental Committee - all of which produced reports and proposals.

### Single-buyer Model [1] – Eskom controls Generation, Transmission and Enterprises



This first option could be considered the “as is” model. Eskom will be corporatised through the establishment of an Eskom holdings company and subsidiaries for Eskom Generation, Eskom Transmission and Eskom Enterprises (Eskom Distribution will be folded into a national EDI Holdings company and then into the REDs - if the EDIRC proposals are accepted).

Eskom's internal pool will continue, whereby individual generators "bid" a price and quantity of electricity to be produced for each hour for the day ahead - and then Eskom system control dispatches power stations in merit order according to the lowest prices until demand is met. The ring-fencing of the commercial operation of individual power stations can begin, and internal competitive conditions simulated.

Effectively this is a single-buyer model, as any new generator is forced to sell to Eskom. This is a useful first step for the reform of the ESI.

The major problem with this model is that Eskom will still enjoy dominant market power as most of generation and all of transmission (and the Pool) will still be owned and controlled by Eskom. There will be few real incentives for efficiency improvements and there is no guarantee that the most cost-effective investments will be made.

Government will struggle to attract new investment into the industry as investors will not be comfortable with the inherent conflict of interest of Eskom, as the owner of Transmission, potentially favouring its own Generation plant at the expense of newcomers. Open, non-discriminatory access to the system is not guaranteed and the opportunity will exist for Eskom to manipulate constraints on the system to its own advantage. The introduction of an Independent System Operator (ISO) will be expensive, complicated and not necessarily successful. Increasingly, international experience is questioning the effectiveness of ISO's. By far the simplest way to guarantee non-

discriminatory access to the transmission grid is to place the assets and operations in a separate independent company.

At a minimum, new Independent Power Producers (IPPs) will demand long-term Power Purchase Agreements (PPAs) which would result in consumers being tied to non-competitive prices for decades to come. Countries that have gone this route have since regretted signing long-term inflexible PPAs as they have later often had to cover the differential between the PPA and market price in a competitive market structure.

It will also be more difficult to realise the full economic value of state assets, or to obtain private equity participation, under this scenario, as investors will be wary of the uncertainties of possible restructuring in the future.

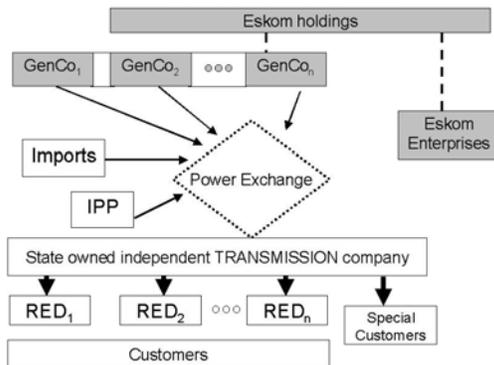
Consumers would be prejudiced if a monopoly were to be privatised now, as they would be victims of private monopoly rents and profits. It would also be prejudicial for black economic empowerment as new owners would be running a monopoly unused and unfit for global competition. In general, there is a growing consensus that it would be unwise to allow private equity participation without first introducing competition - a point which appears to be accepted by the Department of Public Enterprises.

Eskom have argued that it might need to retain ownership of Transmission assets. It wishes to build on its associate telecommunications in order to bid for a new fixed line telecommunications licence. However, various alternative arrangements are possible. For example - Eskom Enterprises might take over the assets in a subsidiary telecommunications company, and a new, independent transmission company could sign stringent Service Level Agreements for its own telecommunications needs. There are good international precedents for this.

Finally, the Single-Buyer Model is not the best environment to promote the African Renaissance. It will inhibit investment in the region, as new power stations in the region will not be confident of penetrating the South African electricity market. And Eskom, unused to local competition, could struggle to compete against international firms coming into Africa.

### **Open Access Model [2]** *Transmission becomes a separate company*

The difference between this model and the previous model is that Transmission is established as a separate state-owned company and non-discriminatory access to the grid is guaranteed. This model also involves the establishment of an external, transparent power exchange and set of trading arrangements. Eskom generation units are clustered into different portfolios or operating divisions, under the control of Eskom Holdings, but bid independently as portfolios into the pool. This is effectively a Generation Oligopoly model, as Eskom will still have market power as it controls most of Generation.



### **Open Access Model [2]**

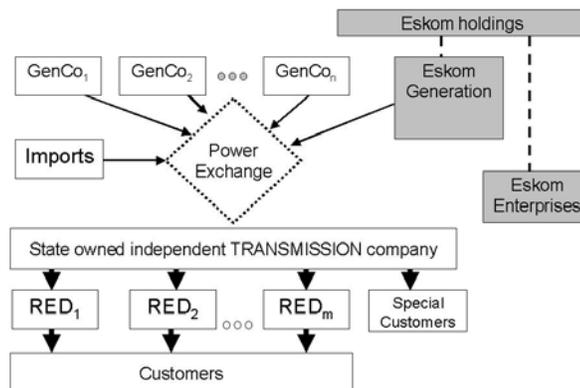
#### *Separate, independent Transmission*

An independent Transmission and Power Exchange with transparent market rules will give potential investors greater confidence as they will be able to see the price discovery mechanism which should begin to approximate the marginal cost of power production. This model does not require an independent system operator (ISO) and system operation and a balancing market can be combined cost effectively with the transmission company. However, there will still be concern that Eskom Holdings will be able to exert undue market power through its subsidiaries and will be able to manipulate prices. The Competition Commission may not be happy with the continuation of such a structure. Investments in large independent new generation plant are still unlikely in this scenario.

The problems associated with model 1 above, around optimising financial and economic returns to the state, promoting black economic empowerment, attracting foreign direct investment and supporting the African Renaissance, also apply to the model. On the other hand, this approach allows for some experimentation in order to create competitive generation portfolios.

### **Competitive Model [3] *Competition in generation introduced***

The final model accepts the logical conclusion that competition requires a dilution of Eskom's market power and significant entry of new players. Eskom would ultimately be left with a third, or less, of generation assets (as well as Eskom Enterprises) and the remainder of generation would be separated into as many competitive independent companies as is economically feasible. These could be privatised through black economic empowerment provisions, an IPO or private equity participation.



### **Competitive Model [3]** *Competition in generation introduced*

An electricity market is created through the participation of a number industry players in a variety of trading arrangements, including a short-term power exchange and balancing market, as well as longer term bilateral and futures contracts. This multi-market model represents a growing international consensus on the way forward in the electricity supply industry.

Finally all of government's policy goals are realised through this model. Competition results in improved efficiency and lower prices than otherwise would have been possible, and there is less market power to manipulate prices. Significant black economic empowerment is achieved as well as fiscal revenue for debt reduction. Significant inward investment is also a result. Financial and economic returns to the state are maximized. Eskom is forced to compete, and a management culture and practice is established which positions Eskom better to invest abroad and contribute to the African Renaissance. Southern African regional economic development would be significantly enhanced as project developers in the region would be confident of selling their power to the South African market.

In summary model 3 gives practical expression to government policy as laid out in the Energy Policy White Paper of 1998 (which was endorsed again by the Minister of Minerals and Energy in her Parliamentary Budget Speech of 11 May 2000). The Energy White Paper commits government to "introduce competition to the industry, especially the generation sector", "permit open, non discriminatory access to the transmission system", "encourage private sector participation in the industry", and states that "Eskom will have to be restructured into separate generation and transmission companies", and that "Government intends to separate power station into a number of companies".

### Comparing the models.

It is clear from the above analysis, and the table overpage, that government's social, economic and political objectives are best achieved in model 3.

<b>Policy objective</b>	<b>Single-buyer model</b>	<b>Open access model</b>	<b>Competitive model</b>
Electrification and rural development	Possible	Possible	Enhanced through equity proceeds to electrification fund
Price increases as low as possible	No Few efficiency incentives	No Few efficiency incentives	Yes Many efficiency incentives
Least cost next power investment	Not guaranteed	Not guaranteed	More likely
Optimise financial returns to state	No Investors are wary	No Investors are wary	Yes Investors are keen
Black economic empowerment	No Under-performing asset	No Under-performing asset	Yes Potential global competitive business
Attract foreign direct investment	No Investors are wary	No Investors are wary	Yes Investors are keen
Promote African Renaissance	Less likely	Less likely	More likely, region investments & competitive Eskom

Interestingly, it is also clear that these models are not alternatives – rather they are logical steps in a reform process. Government does not have to choose between these options. The first model is being put in place now. The next step is to take out Transmission and establish a power exchange.<sup>4</sup> This is a critical step to which government still has to publicly commit itself. The final step is to reduce Eskom's market power to create competition in generation through establishing a number of independent generation companies. There appears to be growing consensus between government and Eskom on this point. Government is likely to do this in stages. Eskom's generation assets could be clustered into competitive groups and the operation of the internal pool could be enhanced. The mothballed power station could be re-commissioned and established as separate companies with a significant black economic empowerment participation. In the next step it might sell off 30% of generation before later selling another 30%.

<sup>4</sup> At the time of writing (December 2000) - Eskom has only accepted that Transmission be established as a separate subsidiary company of Eskom

## 6. IMPLICATION FOR COMPETITION AND REGULATORY OVERSIGHT

### *Basic principles*

The objective of competition regulation and sector specific regulation is to address market failures such as abuse of market power, natural monopolies, externalities and information asymmetries - as well as to distribute outputs more equitably.

It is useful to delineate different categories of regulation (Lewis 2000):

- Competition regulation looks at the structure of markets, controls anti-competitive behavior and reviews mergers
- Economic regulation adopts and implements measures to control monopoly pricing and to ensure appropriate levels of consumer protection through regulatory mechanisms such as cost-of-service regulation (e.g. rate of return) or incentive regulation which could involve price or revenue caps, or yardstick or performance based franchising regulation
- Technical regulation sets and monitors standards so as to assure compatibility and to address safety and environmental protection and similar concerns
- Public interest regulation addresses distribution and equity imbalances

The introduction of competition should diminish the scope of regulation . A well functioning competitive market should provide better incentives and outcomes than a regulated market - although in practice a degree of oversight and monitoring is still necessary to ensure competitive behavior.

The previous analysis points to a general framework for arranging competition and regulatory oversight in the electricity industry. Firstly, some parts of the electricity business are not easily placed within a competitive environment; viz. the transmission and distribution wires sectors tend to remain natural monopolies and therefore need to be regulated to protect consumers against potential monopolistic abuse.

On the other hand, the generation and retail of electricity (and certain aspects of market and system operation) are potentially competitive and should be subject to the country's competition policy, legislation and oversight.

Thus, in principle, the ESI sector regulator, the NER, should oversee the transmission and distribution part of the business, and the Competition Commission should oversee the generation and retail of electricity. In practice, however, there will be considerable overlap of responsibilities - certainly during the transition to a competitive market - but also later when the NER can play a professional support role to the Competition Commission in electricity sector competition related matters.

*The respective jurisdictions and roles of the Competition Commission and the National Electricity Regulator*

With the agreement to scrap the exemption clause, Section 3 (1)(d) of the Competition Act (89/1998), the Competition Commission clearly has jurisdiction over competition matters within other regulated industries, including the ESI.

Section 21 (1) of the Competition Act provides that the Competition Commission is responsible to-

- (h) *negotiate agreements with any regulatory authority to co-ordinate and harmonise the exercise of jurisdiction over competition matters within the relevant industry or sector, and to ensure the consistent application of this Act.*
- (i) *Participate in the proceedings of any regulatory authority;*
- (j) *Advise, and receive advice from any regulatory authority;*
- (k) *Over time, review legislation and public regulations, and report to the Minister concerning any provision that permits uncompetitive behaviour.*

On the other hand, the Electricity Act of 1987 (amended in 1994) gives the NER statutory responsibility to regulate market access to electricity suppliers (through licencing) and to approve all electricity prices.

A formal agreement between the Competition Commission and the NER does not yet exist. A common understanding would need to be developed between the two regulatory bodies and government on the scope and pace of restructuring to achieve competition in the electricity industry and the respective roles in overseeing competition.

Accepting that the generation and sale of electricity are potentially competitive operations and that they are currently under monopolistic control - it would seem appropriate that the Competition Commission play a more pro-active role in requiring a move to competition. If generation is broken into competing entities, open-access is granted to transmission, and electricity trading mechanisms are instituted, and retail competition introduced, the Competition Commission would have a responsibility to ensure that a competitive electricity market would be maintained. Any instances of market power abuse or proposed mergers which undermined competition would need to be referred to the Competition Commission and Tribunal.

It would be practical for any agreement between the NER and the Competition Commission to assign a role to the NER to monitor issues of market power and then refer instances of market abuse to the Commission for action.<sup>5</sup> Given the complexity of the market and trading mechanisms the NER would be more professionally equipped to detect anti-competitive behavior.

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<sup>5</sup> In the UK the Competition Act of 1998 gives industry specific regulators such as the Office of Gas and Electricity Markets (Ofgem) powers to enforce general competition law in their sectors. Ofgem is bale to undertake investigation at is own initiative and to levy fines.

### *Role of the NER in monitoring and ensuring competition*

As previously suggested, the NER has the potential to play an important professional support role to the Competition Commission in monitoring and ensuring competition in the electricity industry. It has a further role in encouraging greater efficiency in operation of the market.

- The first, and perhaps, most important factor affecting competition - is to get the structure of the industry right. The NER has commissioned a number of market scenario and modeling studies which point to the optimum configuration of generation clusters, the importance of open access to the transmission grid (through an independent transmission company) and the institution of multiple electricity trading mechanisms. Agreement should be forged with the Competition Commission and government, Eskom and municipal distributors should be encouraged to institute the necessary restructuring.
- Entry to the competitive elements of the industry should largely be unrestrained (although licences are still required to ensure compliance with technical standards and environmental and local planning requirements).
- Price in the competitive elements of the industry should also be unregulated -except where market power and abuse is demonstrated.
- The NER also has an important governance role in ensuring that market codes and rules are constructed in a way which encourages efficiency. This would include:
  - *A grid code* with clear rules that determine standards for connection and system operational rules
  - *Market membership rules* for the day-ahead market, futures market, bilateral contracts, etc - including bid, clearing and settlement procedures.
  - *Balancing market agreement* with rules and procedures for information flow to the system operator and for real-time adjustments to balance supply and demand.
  - *Ancillary services agreements* for reactive power, voltage control and spinning and backup reserve capacity
  - *Metering codes* for the standards, format and timing of metered data to be provided for final settlement

The NER would not be involved in day-to-day governance of all these functions but would play an important initial role in helping to design an optimal set of market arrangements and would also have a periodic review responsibility. It is important for these markets to evolve flexibly and responsively - and so the overall governance arrangements should preferably involve all relevant stakeholders who can periodically provide their input to improve the systems.

- The NER would have a role (in conjunction with the Market Operator) in monitoring pool prices, the balancing market and bilateral contracts and referring anti-competitive behavior to the Competitions Commission. Electricity systems have a number of characteristics which make them vulnerable to gaming behaviour by generators:

- Electricity is not easily or economically stored and supply has to match demand. This means that only those units already running, or those that are flexible enough to run instantaneously (e.g. hydro or gas turbines), would be able to meet fluctuations in demand. These units are thus in a position to "capture" the balancing market at the expense of available, non-operating generating plant.
- Electricity demand is relatively inelastic: electricity is still a necessity - even when prices are high and generators can exploit this fact.
- Wholesale demand is relatively predictable: aggregate demand is often forecast by the market operator and this information is freely available to generators.
- Variable costs of generating plant do not vary continuously and thus generators can anticipate the supply curve shape by "tracking" - i.e. by varying bids in the early stages to discover the shape. The predictability of these issues raised above, combined with the knowledge of competitors bidding patterns and maintenance schedules, makes it possible for generators to bid strategically to game the system. One method would be to withhold capacity. This would have the effect of shifting the supply curve to the left and pushing prices up. This works best at the steep part of the supply curve - not where it is relatively flat.
- The pool is not one market - but several which vary temporally and geographically i.e. peak demand is very different from off-peak and regional demand, location of generation plant and transmission constraints can create load pockets which are effectively sub-markets. It is possible to game the market by using a plant that sets the price in one market to influence prices in another. This is called leveraging.
- Constraints caused by transmission and ancillary services call for some plant to run simply because of their location and technical characteristics. Over time, it becomes evident which plant are critical and generation owners could seek a premium by bidding above their marginal cost
- Finally if the generation market and pool is not carefully designed from the start then certain plant could become regular and predictable price setters - again with the potential to push prices up above marginal costs. Equally, a distributor may fail to act cost-efficiently in the wholesale market, motivated by an anti-competitive agreement with a generator, or because the regulatory environment does not force cost savings to be passed to consumers, or simply because of incompetence in electricity trading.

These are not arguments against introducing competition. Rather they are reminders that the sectoral regulator needs to monitor potential market power and abuse on a regular basis.

### *Economic regulation of transmission*

The natural monopoly components of the ESI provide the essential backbone of the system and it is important for the sector regulator (the NER) to ensure that the transmission entity provides electricity transport services at a least cost for customers while still maintaining its core functions which include:

- network operation and maintenance;
- minimisation of system losses;

- system dispatch and balancing in real time;
- management of ancillary services such as reactive power, voltage control, reserve and black start services;
- long term planning of generation and transmission requirements (eg Integrated Resource Planning); and
- investment in network expansion.

For the regulator to regulate the costs of transmission and distribution effectively, a thorough understanding is needed of existing assets, new investment requirements, system operation overheads, constraint costs, connection costs and costs of ancillary services.

International experience indicates that economic regulation should be incentive based - allowing investors to capture a portion of the benefits of efficiency gains, and passing some of these gains to customers.

In the transition to a competitive market, the NER is instituting a new Wholesale Electricity Pricing System which makes transparent the energy and transport components of the tariff.

#### *Regulation of distribution*

The government's restructuring proposals for the electricity distribution sector imply the rationalisation of Eskom's and local governments' distribution assets into six Regional Electricity Distribution Companies. Only large customers (above 100 GWh) will be able to choose their electricity supplier. Thus full retail competition is not envisaged in the short term. The costs of providing retail services (energy purchases, metering, billing, customer services, etc) for all other consumers can be bundled together with costs of the distribution network and will be subject to combined prices control by the NER.

The NER currently regulates retail tariffs through a kind of yardstick regulation: distributors are compared and prices are forced into a narrower band which is closer to the most efficient distributor. In the future, price cap or revenue cap incentive regulation, which incorporates a specified efficiency gain, is likely to be used. Determining what this efficiency gain should be could require benchmarking between distributors.

The NER is concerned not only with the *level* of prices but also the *structure* of available tariffs. Pricing policy determines the degree of cost-reflectivity in recovering income from the different customer groups at different periods of the day and season.

Unless there is retail competition, retailers will have little incentive to pass through their energy savings (from the wholesale/generation market) to consumers.

If full retail competition is introduced in the future then the NER will regulate only the natural monopoly (wires) part of distribution and competitive retail or selling services will be subject to Competition Commission oversight, with the NER playing a supportive monitoring function and referring any instances of market power or abuse to the

Competition Commission. There would need to be some restrictions on horizontal integration of retailers. They should be separate from the Transmission companies and preferably also from Distribution companies - and if not, there should be clear ring-fencing of distribution and retail operations. Government still needs to declare its policy over whether generation companies could own retailers or vice versa.

The implementation of retail competition will require significant investment in information technology. Competition for end-use customers typically requires half-hourly or hourly meters to be installed. The cost of this metering could be significant and could constitute a barrier to switching suppliers. The NER might wish to institute a load-profiling system (as in Norway) which could significantly reduce these costs.

The NER would continue to licence all transmission and distribution operators - as well as retail companies in the future.

#### *Technical regulation*

The NER would continue to fulfil its statutory mandate to regulate technical standards in the industry. It is responsible for ensuring compliance with the Quality of Supply Standard (NRS 048) and the Quality of Service Standard (NRS 047).

#### *Regulation of public benefits*

As reforms are introduced into power sectors around the world, the provision of some important 'public benefit' programmes is being threatened and new programmes are not being considered. Examples of such public benefits include energy efficiency and environmental protection programmes, public-interest research and development activities, programmes enabling greater access to energy by the urban and rural poor. Even though these programmes bring about substantial welfare improvements, they are often costly to implement, and generally require some degree of public sector involvement. Because benefits accrue to society as a whole, consumers generally do not consider investing in these goods themselves because they are also able to 'free ride' off others' investments in this same product and/or service.

Power sector reform adds new barriers inhibiting investment in these public benefits. Initiatives to *commercialise* state-owned utilities and introduce *competition*, for instance, tend to bring about even greater cost pressures. *Unbundling* activities remove utilities' ability to 'spread' the costs of public benefit programmes, while *privatisation* initiatives put pressure on enterprises to 'internalise' programme benefits, which is often not possible. New regulations to support these new contexts can also indirectly discourage the provision of various public benefits. The result is that some public benefits are being stranded by power sector reform initiatives.

Eskom has played a major role in financing electrification and South Africa has achieved a unique record in doubling the proportion of the population with access to electricity from one third to two-thirds in a period of 6 years. Eskom has also begun to invest in demand-side management and energy efficiency measures. Government has begun to consider ways of continuing the electrification programme through a more transparent funding system linked to a National Electrification Fund and resourced from tax and dividend income and grant sources, and supported by a National Electrification Planning System. No specific provisions have been made to continue programmes in energy efficiency, renewable energy and R&D once Eskom is restructured and it divests distribution assets and operations.

The NER could develop regulatory instruments, such as a public benefits charge, to ensure that investments are made in public benefits.

### *Security of supply*

In the past, Eskom has been the supplier of last resort and has ensured security of supply (although with some economic cost because of the huge over-investments in the 1980s and 1990s).

In a competitive market, security of supply in the short term is governed by the system operator who is responsible for balancing supply and demand on a real-time basis. In the long term, an efficient market should send the correct signals for investors to respond to new generation (or demand-side) opportunities. Further, the use of capacity payments, linked to loss-of-load probability, can act as an additional price signal to investors as reserve margins decrease.

In the transition to a fully competitive market, it is important that the system operator undertake Integrated Resource Planning (IRP) to produce an indicative generation and demand-side plan. Regular publication of these plans assists investors in understanding future needs of the market. The NER could play a role in ensuring that the current IRP capability in Eskom is transferred to the Transmission Group and becomes a public resource, rather than an exclusive strategic resource for Eskom Generation.

### *Combining gas and electricity regulation*

The essential structure and nature of the electricity and gas industries is not dissimilar. They are both network infrastructure industries with potentially competitive sources of supply, extensive transmission and distribution systems which tend to be natural monopolies, and retail which could be competitive. The regulatory principles for both industries are similar. In addition, gas is increasingly becoming an attractive and competitive source for electricity generation. Markets are currently being developed in South Africa for natural gas fields in Namibia and Mozambique. It makes sense, thus, for electricity and gas regulation to be undertaken by the same regulator. Many countries have gone this route - including the UK which has recently combined its gas and electricity regulators. The South African government is considering such an option.

### *Conclusion*

The South African electricity industry is on the brink of fundamental restructuring which is aimed at increasing competition in the sector. This paper has shown that there are profound implications for regulation and the respective roles of the Competition Commission and the National Electricity Regulator. Many of the issues are highly technical and it will be important that both these organisations play a lead role in advising government on the way forward.

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