3

Electricity

Introduction

Electricity is crucial for economic growth and social development

Around the world, technologically driven production processes and demand for decent living conditions have placed electricity provision at the centre of sustainable economic growth and social development. In South Africa, government is working to improve the quality of life of all citizens through the electrification programme and the provision of free basic electricity.

Electricity is also an important source of revenue for large municipalities that distribute electricity. The restructuring of the electricity distribution industry is one of the major reforms in the local government sphere.

This chapter:

- Describes the current institutional arrangements of the electricity sector
- Covers recent developments in the electricity supply industry
- Assesses the progress made with electrification and the provision of free basic electricity
- Provides an overview of proposed reforms to the regulatory environment
- It concludes by discussing the future of the electricity distribution sector in the context of the restructuring process.

Institutional arrangements

The energy sector has both economic and social functions

Electricity brings significant benefits to the quality of human life. With electricity come lighting, heating and cooking. Electricity also facilitates communication, transportation and production. The energy sector has economic and social functions. It powers productive activity and also provides basic energy for households.

Electricity provision consists of three phases: generation, transmission and distribution. Generation is the process of producing electricity.

Transmission is the transportation of electricity through high-voltage, long-distance networks. Distribution takes place over local networks that deliver electricity to consumers.

Eskom and municipalities take responsibility for distribution

Generation and transmission are part of the electricity supply industry. Distribution and reticulation are part of the electricity distribution industry. Eskom is South Africa's main electricity supplier, which distributes electricity with municipalities.

Developments in the electricity supply industry

South Africa's primary energy source is coal

According to the International Energy Association, the primary source of energy used in electricity generation internationally is coal (36 per cent), followed by oil (23 per cent), gas (21 per cent), hydroelectricity (2 per cent), nuclear energy (7 per cent) and renewables (11 per cent). South Africa's reliance on coal (92 per cent) is much higher than that of many other countries. The remainder of South Africa's electricity is generated by nuclear (5 per cent) and hydroelectric facilities (2 per cent). South Africa ranks among the world's cheapest producers and suppliers of both coal and electricity.

Industrial and commercial customers use most of the electricity generated

Table 3.1 shows that 190 789 322 MWh (megawatt hours) of electricity were sold to 7 272 809 customers in 2003. Although most customers are residential (94 per cent), they use less than 18 per cent of the electricity sold. Mining, agriculture, manufacturing and commercial customers use most of the electricity sold (82 per cent), but make up less than 6 per cent of the total customer base.

Table 3.1 Total electricity sales by category (Eskom and municipalities), 2003

Category	Average sales price (c/kWh)	Number of customers	% of total	MWh sales	% of total
Domestic	29,0	6 846 330	94,1%	34 074 593	17,9%
Agriculture	30,1	99 054	1,4%	5 142 918	2,7%
Mining	15,1	2 003	0,0%	33 639 741	17,6%
Manufacturing	16,2	43 952	0,6%	75 949 526	39,8%
Commercial	27,1	243 212	3,3%	21 071 177	11,0%
Transport	20,6	2 153	0,0%	5 565 011	2,9%
General	21,2	36 105	0,5%	15 346 356	8,0%
Total	**20,4**	**7 272 809**	**100,0%**	**190 789 322**	**100,0%**

Source: National Electricity Regulator statistics for South Africa, 2003

State-owned Eskom produces nearly all of South Africa's electricity

The electricity sector in South Africa is organised in a vertically integrated model. In 2001 electricity utility Eskom was converted to a wholly state-owned, limited company. It produces 96 per cent of the electricity generated in South Africa and owns and operates the national transmission grid, which transports electricity from the power stations to the main load centres.

In June 2004, the Minister of Public Enterprises emphasised the role of state-owned enterprises, including Eskom, in contributing to infrastructure development in South Africa. The focus of the restructuring of the electricity supply industry shifted from establishing a wholesale market for electricity to ensuring the security

of supply, and consequently infrastructure development. Based on this imperative, independent power producers (IPPs) will be introduced to provide up to 30 per cent of new generation capacity requirements. A significant level of black economic empowerment is stipulated for IPPs.

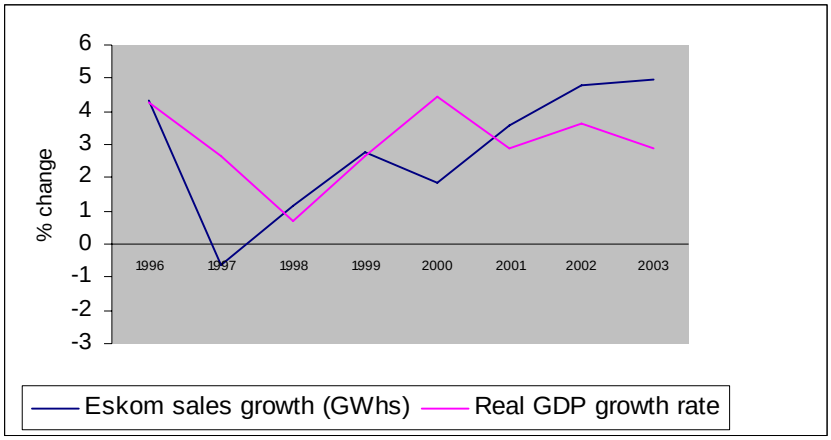
A mandate to invest R84 billion in electricity infrastructure

To initiate this revised approach, the Department of Minerals and Energy issued a tender for IPPs to provide approximately 1 000 MW (megawatts) of new generation capacity by the beginning of 2009. Alongside the IPPs, Eskom will continue to deliver on South Africa's energy needs in the generation, transmission and distribution sectors, with a mandate to invest about R84 billion in electricity infrastructure. Eskom will be the buyer of electricity from the IPPs in terms of a long-term power-purchase agreement. In the short- to medium-term, Eskom will continue to own and operate the national transmission system, investing in new capacity to relieve transmission constraints and to ensure delivery to the nation as a whole.

Electricity usage has been on the increase for the past decade

Electricity usage has been on the rise for the past 10 years. As a result of economic growth and government's electrification programme, Eskom shows an average year-on-year increase of 3 per cent in electricity sales and production. Economic growth and government's electrification programme have driven the increased sales. According to Eskom's 2005 annual report, electricity sales to all categories of customers grew by more than 20 per cent in the 15-month period to March 2005. Figure 3.1 shows that Eskom's sales growth has been on par with the real gross domestic product (GDP) growth rate. During periods of economic downturn, electricity consumption generally declines. By the same token, economic growth is largely dependent on the sustainable supply of electricity.

Figure 3.1 Eskom sales growth versus real GDP growth rate



Source: Eskom Annual Report, 2005

Electricity supply and demand need to be aligned, and Eskom has initiated a planning process to ensure long-term alignment with forecasts.

Electricity demand is peaking near available capacity limits

Figure 3.2 shows that on a typical summer day, Eskom experiences off-peak electricity demand of about 22 000 MW, rising to 25 000 MW in peak periods. In winter, off-peak demand averages 24 000 MW, increasing to 32 000 MW in peak hours. During the 15-month

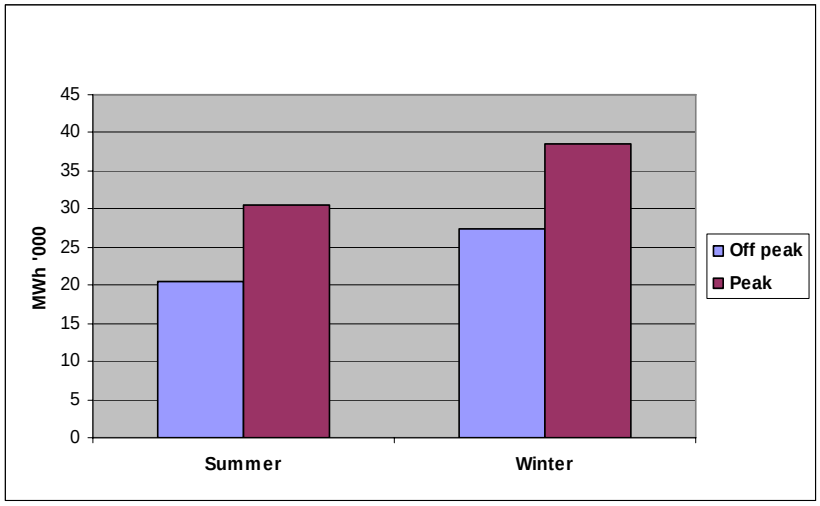
period from January 2004, peak demand of 34 195 MW was recorded against available generation capacity of 39 810 MW. This record was substantially higher than that recorded in 2003, when peak demand was only 31 928 MW.

There was also a substantial decrease in the generation reserve margin (the amount of extra or reserve electricity required to respond to unexpected events) from 16,9 per cent in 2003 to 8,5 per cent in 2004 - 6,5 percentage points below the local reserve margin target of 15 per cent. With the expected growth in demand for electricity, additional capacity will be needed from 2006 onwards.

Three mothballed power stations are being returned to service

To meet the challenge, Eskom intends to increase electricity supply by returning into service three mothballed power stations that will contribute an additional 3 451 MW between 2005 and 2011. In addition, electricity savings will be achieved through a demand-side management programme that aims to save 4 255 MW of generation capacity over a 25-year period.

Figure 3.2 Eskom peak and off-peak 2004/05



Source: Eskom annual report, 2005

From 1995-2005 R49 billion was invested in infrastructure

Over the 10-year period starting in 1995, Eskom invested more than R49 billion in electricity infrastructure, about half of which (R25 billion) went to distribution.

South Africa's excess generating capacity is running out ….

According to Eskom's projections, its generation capacity of 39 810MW (which includes the three stations returning to service) is expected to be overtaken by demand between 2007 and 2010.

Working on the basis of a projected annual economic growth rate of between 4 and 6 per cent, the programme for stepping up generation capacity will have to be accelerated to meet demand.

… and new capacity is needed urgently

Government's plan to introduce further generation capacity is expected to be realised in the next few years. The importance of expanding generation capacity is underlined by the recent series of power failures in the Western Cape. These power cuts resulted from

the system operating at close to full capacity, following technical problems associated with abnormal circumstances.

Alternative methods to complement the use of coal to meet growing electricity demand need to be further explored. Options include nuclear energy, gas, hydroelectricity and renewable energy sources.

Electrification and free basic electricity

Government aims to eliminate electrification backlog by 2012

Government's main poverty-alleviation priorities in the electricity sector have been the electrification of households in historically disadvantaged communities and the provision of free basic electricity. According to the Department of Minerals and Energy, 7,7 million households – 72 per cent of the total – were connected to the electricity grid by the end of 2005. Government aims to eliminate the backlog by 2012.

A sharp increase in the electrification of rural households

The increase in the percentage of households with electricity, from 50 per cent in 1995 to 72 per cent in 2005, is mainly due to growing electrification of rural households: from 21 per cent in 1995 to 54 per cent in 2003. In urban areas, the number of households with electricity rose from 76 per cent in 1995 to 79 per cent in 2003. The biggest electricity backlogs are in KwaZulu-Natal and the Eastern Cape – both of which have large service-delivery backlogs – and in highly urbanised Gauteng.

Table 3.2 shows the percentage of non-electrified households from 1995 to 2003 and the numbers of households not electrified in 2003, by province.

Table 3.2 Percentage of non-electrified households per province, 1995 to 2003

	1995			2003			2003		
	% not electrified			% not electrified			Households not electrified		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
Eastern Cape	94,0%	33,0%	72,0%	59,0%	0,0%	36,0%	549 465	2 302	551 767
Free State	67,0%	32,0%	47,0%	46,0%	11,0%	22,0%	105 643	58 316	163 959
Gauteng	46,0%	22,0%	23,0%	74,0%	33,0%	35,0%	110 255	820 691	930 946
KwaZulu-Natal	86,0%	21,0%	57,0%	56,0%	28,0%	40,0%	511 529	330 307	841 836
Limpopo	76,0%	29,0%	71,0%	35,0%	3,0%	31,0%	357 466	4 067	361 533
Mpumalanga	63,0%	41,0%	55,0%	29,0%	13,0%	23,0%	124 342	40 715	165 057
Northern Cape	53,0%	24,0%	34,0%	21,0%	4,0%	10,0%	16 071	5 037	21 108
North West	79,0%	30,0%	64,0%	42,0%	0,0%	25,0%	236 326	13	236 339
Western Cape	53,0%	12,0%	18,0%	35,0%	15,0%	17,0%	46 410	151 002	197 412
Total	**79,0%**	**24,0%**	**50,0%**	**46,0%**	**21,0%**	**31,0%**	**2 057 507**	**1 412 450**	**3 467 957**

Source: National Electricity Regulator supply statistics for South Africa, 2003

Note: Various agencies collect data on electrification with varying timelines. NER/NERSA's data only reflects trends until 2003 and data for later years will only be available in its subsequent annual reports

Table 3.3 shows that the provinces with the highest number of annual connections made by Eskom and municipalities in 2003 were KwaZulu-Natal (63 078), Eastern Cape (55 748) and Limpopo (49 881).

Table 3.3 Annual connections completed by municipalities and Eskom, 2003

	Farm worker's houses	Non-grid	Municipalities	Eskom	Total
Eastern Cape	287	5 563	16 933	32 965	55 748
Free State	317	-	4 079	5 920	10 316
Gauteng	80	-	21 400	10 647	32 127
KwaZulu-Natal	133	6 842	20 062	36 041	63 078
Limpopo	81	2 751	2 947	44 102	49 881
Mpumalanga	245	-	6 089	5 642	11 976
Northern Cape	514	-	3 586	2 769	6 869
North West	311	-	3 755	24 466	28 532
Western Cape	395	-	9 298	10 542	20 235
Total	**2 363**	**15 156**	**88 149**	**173 094**	**278 762**

Source: National Electricity Regulator statistics for South Africa, 2003

The Integrated National Electrification Programme provides capital subsidies to address backlogs

The Integrated National Electrification Programme was introduced in 2001 to provide capital subsidies to address electrification backlogs in permanently occupied residential dwellings. Under the programme, there are direct transfers to municipalities of R391,1 million for 2006/07, R406,6 million for 2007/08 and R457,6 million for 2008/09. Indirect transfers to Eskom include R977,2 million for 2006/07, R1 016,1 million for 2007/08 and R1 142,8 million for 2008/09.

The municipal infrastructure grant (MIG) established in 2004 simplifies and rationalises policy and funding mechanisms for municipal infrastructure. The Integrated National Electrification Programme will be fully incorporated into the MIG pending finalisation of electricity distribution industry restructuring.

Free basic electricity was introduced in 2003

The free basic electricity policy was introduced in 2003, providing 50 kWh (kilowatt hours) of free electricity to qualifying households. Progress with the rollout of this programme has varied.

The Department of Provincial and Local Government's Framework For A Municipal Indigent (pro-poor) Policy –September 2005

Specific issues relating to energy

"There is no currently accepted national policy associated with access to energy and the emphasis has been placed on electricity, as described in the Free Basic Electricity (Electricity Basic Services Support Tariff) policy. An amount of 50 kWh per household per month has been defined as the basic amount of electricity to be provided free to the indigent (municipalities use grants [including equitable share] and own resources [including cross-subsidies] to fund the costs associated with the provision of basic electricity). The policy states that this amount of electricity is suitable to meet basic needs such as 'lighting, media access and limited water heating and basic ironing (or basic cooking)'. There are concerns over the sufficiency of the amount of electricity, particularly for cooking which is clearly a basic need. Considerable attention has been given to improving the distribution of paraffin and bottled gas (LPG) as alternative fuels, which have greater efficiency for thermal requirements (heating and cooking) than electricity. But the current policy remains as stated in the Free Basic Electricity policy that the national emphasis will be focused on providing an amount of 50kWh of electricity free."

Although different approaches have been applied, the most common approach of municipalities is to provide a stated amount of free basic electricity to all households having access to infrastructure (a blanket approach), rather than targeting poor households. However, many municipalities will struggle to implement a targeted approach because

they do not have indigent registers in place. Statistics South Africa's non-financial census of municipalities for the year ended 30 June 2004 shows that 152 municipalities were implementing a free basic electricity policy.

For the year ended 30 June 2004, of the 240 billion kWh (kilowatt hours) units sold by municipalities, just over 4 billion kWh were distributed as basic electricity to about 4,7 million households/customer units. This represents an increase of 11,9 per cent between 30 June 2003 and 30 June 2004, when 4,2 million households/customer units received basic electricity.

As of June 2004, 3 million households received free basic electricity

Statistics South Africa's non-financial census of municipalities for the year ended 30 June 2004 also indicates that of the 4,7 million households that received basic electricity as of 30 June 2004, 3 million households (or 65 per cent) received basic electricity for free. The survey did not specify the number of poor households having access to free basic electricity.

As indicated in Table 3.4 below, Gauteng had the highest proportion of households receiving free basic electricity from municipalities (91 per cent), followed by the Western Cape (89 per cent) and Free State (84 per cent). These figures, however, reflect free basic electricity provided by municipalities, not by Eskom. Eskom is the major supplier of electricity in rural areas, which could result in the low percentages attributed in a province such as KwaZulu-Natal (6 per cent).

Reasons identified by municipalities for not implementing free basic electricity include infrastructure backlogs, lack of capacity (technical, management and generic skills) and resources.

Table 3.4 Households receiving free basic electricity from municipalities, 2003 to 2004

	Number of households receiving basic electricity 2004	Free basic electricity		Number of households receiving basic electricity 2003	Free basic electricity	
		Number of households 2004	Percentage		Number of households 2003	Percentage
Eastern Cape	513 979	250 041	49,0%	442 829	198 492	45,0%
Free State	403 114	337 928	84,0%	361 802	282 280	78,0%
Gauteng	1 238 414	1 123 346	91,0%	1 055 888	886 650	84,0%
KwaZulu-Natal	825 570	47 695	6,0%	782 225	22 075	3,0%
Limpopo	104 485	56 973	55,0%	91 043	42 153	46,0%
Mpumalanga	332 284	199 060	60,0%	307 263	166 085	54,0%
North West	152 382	73 735	48,0%	126 724	29 906	24,0%
Northern Cape	125 843	48 221	38,0%	103 727	46 221	45,0%
Western Cape	1 010 620	903 063	89,0%	956 148	517 689	54,0%
Total	**4 706 691**	**3 040 062**	**65,0%**	**4 227 649**	**2 191 551**	**52,0%**

Source: Non-financial census of municipalities for the year ended 30 June 2004, STATS SA

Although Integrated National Electrification Programme funds are still directed to municipalities and Eskom, the intention is that ultimately, all transfers for electrification and free basic electricity will be made only to municipalities, in acknowledgement of their constitutionally stipulated service authority obligations.

Eskom provides free basic electricity to 1 million households

Municipalities and service providers such as Eskom are required to put in place appropriate service delivery and funding agreements for the provision of such services. This process is regulated in terms of the Municipal Systems Act. Municipalities are required to make funds available to Eskom for the provision of free basic electricity within their municipal boundaries in line with each municipality's integrated development plan, indigence policy and affordability constraints. In terms of these agreements, Eskom provided free basic electricity to 1 million households as of 28 February 2006.

Regulatory environment

Act provides for establishment of a single regulator

The National Energy Regulator Act (2004) provides for the establishment of a single regulator to regulate the electricity, piped-gas and petroleum pipeline industries. The Electricity Act (1987) provided for the regulation of electricity generation, transmission and distribution. Increases to electricity tariffs have to be approved by the regulator. Although the need for a regulator is supported, the Electricity Act did not take sufficient account of some key issues, including the constitutional mandate of local government in respect of electricity reticulation services.

New legislation is being prepared to cover electricity and regulation

The Electricity Regulation Act has recently been enacted and replaces the Electricity Act. It provides a national electricity regulatory framework for the generation, transmission and distribution of electricity, excluding reticulation services. Additional provisions will be included as an amendment to the legislation in 2006 to deal with the regulation of electricity reticulation services.

The Constitution authorises local government to undertake electricity reticulation, but does not define reticulation. Municipalities are thus responsible for providing electricity reticulation services to their communities, including domestic customers and light industrial and commercial customers up to an appropriate usage level. Usage levels need to be properly defined. If an appropriate mix between domestic and industrial customers is not determined, it could severely limit the ability of municipalities to provide cost-effective services.

Reticulation to be regulated differently than other electricity services

Although it is important that the regulator regulates all components of the electricity industry (including municipalities) to ensure reliable and safe electricity provision, reticulation services will need to be regulated differently so as not to encroach on the constitutional mandate of local government. The National Energy Regulator of South Africa (NERSA), which replaced the National Electricity Regulator, has expressed a concern that if the "powers and executive authority of municipalities" are interpreted too broadly, the ability of the NERSA to appropriately regulate the electricity reticulation function will be limited.

Appropriate reticulation standards need to be introduced

Appropriate norms and standards for electricity reticulation need to be introduced by the Minister of Minerals and Energy (with the concurrence of the regulator) to ensure that municipalities invest appropriately in the maintenance and refurbishment of electricity

reticulation infrastructure. Some of the issues that need to be clarified in the legislation are:

- The intervention process in instances where municipalities default (intervention needs to be in line with processes prescribed in section 139 of the Constitution and other legislation, such as Chapter 13 of the Municipal Finance Management Act).
- The role of the regulator in the regulation of electricity reticulation tariffs and other regulatory issues to ensure reasonable prices.
- The regulation process needs to be relevant to current and future developments in the electricity distribution industry, such as the Regional Electricity Distributors (REDs).

NERSA's view on the state of electricity distribution

The NERSA is concerned with the large number and severity of power interruptions caused by the poor state of electricity distribution infrastructure. The main reasons for the deterioration of the infrastructure are the lack of funds for maintenance and refurbishment of networks, and the failure to employ sufficient technical staff.

The NERSA has embarked on a comprehensive programme to address these issues. The programme includes the assessment of network performance, the conducting of general licence compliance audits and independent audits of licensees' technical capacity. One initiative involved technical audits of the large distributors in 2005/06 to determine their readiness to distribute electricity in future. The programme was initiated with the audit of City Power (Johannesburg). The NERSA has now initiated the audit of a further 10 distributors: Ekurhuleni, City of Tshwane, City of Cape Town, eThekwini, Emfuleni, Mangaung, Msunduzi, Rustenburg, Nelson Mandela municipality and Eskom Southern Region.

The objectives of these audits are:

- To assess the condition of substations and the network
- To determine the effectiveness of the development and execution of the maintenance plan
- To determine the effectiveness of operation of the networks.

The City Power audit was conducted in February 2005 by an independent consultant. The findings of the audit report were subsequently discussed with City Power. City Power inherited a very neglected and old network. For many years the network has not been maintained properly. The findings indicated that although the maintenance effort has improved, a number of maintenance deficiencies are still prevalent. Furthermore it appears that funding for accelerated refurbishment is inadequate. Even if the maintenance and refurbishment plans are properly executed each year, it will still take a number of years to bring the network back to the required level of reliability.

NERSA has therefore decided that in the interest of sustainable electricity supply, a three-year plan of action with clear targets and timeframes be put in place to monitor City Power's progress in the implementation of refurbishment and maintenance plans.

NERSA intends to make the results of the study of the other 10 distributors available to the public this year. It will perform technical regulation to ensure stakeholders are well informed of the status of the industry, and make recommendations to government on corrective measures.

Poor revenue collection, poor debt management and poor investment contribute to losses

The NERSA's concerns are reinforced in the General Report of the Auditor-General on the audit outcomes of local government for the financial year ended 30 June 2004. The report points out that reticulation loss for electricity reported by 10 municipalities for the financial year 2003/04 was due to poor revenue collection, poor debt management and poor investment in maintaining networks.

A complicated set of factors determines end-use tariffs. The chain that makes up the final price includes:

- Eskom's costs for the generation and transmission of electricity
- Costs involved in distributing electricity to consumers and providing retail services
- Profits (or losses) in addition to the economic cost of the capital employed in the enterprise.

Costs and benefits of cross-subsidisation need to be weighed

The issue of cross-subsidies and pricing efficiency is important for the effective functioning of the system. While cross-subsidisation is needed to make the system more equitable, it has to be weighed against the extra costs imposed on the system as a result of inefficiencies resulting from incorrect price signals (customers perceiving electricity to be cheaper or more expensive than its actual price).

Eskom charges municipalities more than its distribution division

Eskom's prices for bulk electricity provided to municipalities are generally higher than the prices charged to Eskom Distribution. The Eskom retail tariff structure is designed to allow Eskom to subsidise low-income and rural electricity customers on a national basis. Municipalities are responsible for poverty alleviation programmes, including providing free electricity to poor households and affordable electricity to other users.

Wholesale prices payable by municipalities affect the tariffs payable by end-consumers. On average, Eskom Distribution buys bulk electricity at wholesale prices (12 cents per kWh in 2004) and municipalities pay a retail tariff, which varies between 15 cents and 19 cents per kWh. Table 3.5 shows a sampling of municipal electricity tariffs.

Table 3.5 Bulk electricity purchases and cost for 2004/05

Municipality	Bulk purchases (KWhs) (R'million)	Bulk cost (R million)	Unit cost (c/KWhs)	Total sales to all customers (KWhs)
Cape Town	9 514	9 675	0,15	2 440
Drakenstein	695	695	0,16	188
George	386	386	0,16	121
eThekwini	10 804	10 804	0,15	2 745
Greater Tzaneen	467	467	0,17	110
Nelson Mandela	3 704	3 704	0,15	981
Buffalo City	n/a	n/a	0,17	351
City of Johannesburg	11 560	11 560	0,17	2 892
Ekurhuleni	9 853	9 853	0,16	2 475
City of Tshwane	1 029	1 297	0,12	2 168

Source: EDI Holdings database, 2005

The NERSA has developed a wholesale electricity pricing system to level the playing field with respect to wholesale tariffs. The process is yet to be implemented, in part due to the fact that the system will reflect costs more closely, many industrial and other consumers could end up paying more (while others will pay less).

Section 42 of the MFMA states that if Eskom intends to increase the price of bulk electricity to a municipality, a prescribed process of consultation needs to be followed. The proposed amendment as well as supporting documentation needs to be tabled in Parliament. An amendment to the pricing structure tabled in Parliament on or before 15 March in any year does not take effect for the affected municipalities or entities before 1 July that year. Any amendment tabled after 15 March in any year does not take effect before 1 July of the following year.

Amendments to electricity bulk prices need to be tabled in Parliament

Restructuring electricity distribution

The current arrangements in the electricity distribution industry are the result of its historical development. Prior to 1994, municipalities distributed electricity in historically white areas, while Eskom covered historically black townships and some of the former so-called homelands.

Electricity distribution industry arrangements are result of historical legacy

There are 173 licensed electricity distributors in South Africa (171 local municipalities and 2 district municipalities). Eskom serves 48 per cent of customers in the country and municipalities serve 52 per cent. Municipalities dominate the supply of electricity to general consumers (95 per cent), manufacturing (93 per cent), commercial (82 per cent) and transport customers (76 per cent), while Eskom dominates the supply to agriculture (79 per cent) and mining (59 per cent). Although municipalities have more manufacturing customers, Eskom sells much more electricity to manufacturing customers, as indicated in Table 3.6.

Table 3.6 Electricity customers and sales for Eskom and municipalities, 2003

Category	Estimated number of customers				Estimated sales per category (MWh)			
	Eskom	Municipalities and other	Total	LG %	Eskom	Municipalities and other	Total	LG %
Domestic	3 376 276	3 470 054	6 846 330	92,1%	7 965 000	26 109 593	34 074 593	32,7%
Agriculture	78 433	20 621	99 054	0,5%	4 358 000	784 918	5 142 918	1,0%
Mining	1 180	823	2 003	0,0%	33 372 000	267 741	33 639 741	0,3%
Manufacturing	2 988	40 964	43 952	1,1%	53 715 000	22 234 526	75 949 526	27,9%
Commercial	43 880	199 332	243 212	5,3%	6 936 000	14 135 177	21 071 177	17,7%
Transport	511	1 642	2 153	0,0%	3 182 000	2 383 011	5 565 011	3,0%
General	1 771	34 334	36 105	0,9%	1 429 628	13 916 728	15 346 356	17,4%
Total	**3 505 039**	**3 767 770**	**7 272 809**	**100,0%**	**110 957 628**	**79 831 694**	**190 789 322**	**100,0%**

Source: National Electricity Regulator Supply Statistics for South Africa, 2003

The electricity distribution industry is not homogeneous. It is characterised by a small number of very large distributors and a large number of very small distributors. Table 3.7 shows that residential and prepaid users are the biggest consumer segments in the given sample of municipalities.

Electricity distribution industry is not homogeneous

Table 3.7 Electricity customers by category in selected municipalities, 2004/05

Municipality	Residential and prepaid	Commercial	Industrial	Mining	Agricultural	Total
City of Johannesburg	289 883	12 381	4 573	29	-	306 866
Nelson Mandela	209 029	10 326	308	-	-	219 663
Cape Town	535 718	43 356	1 543	-	-	580 617
Drakenstein	36 418	4 429	120	-	890	41 857
eThekwini	532 261	43 793	734	-	-	576 788
Ekurhuleni	290 230	16 470	4 013	1	3 620	314 334
George	33 215	1 224		-	-	34 439
Breede River Winelands	14 322	542	26	-	-	14 890
Saldanha Bay	17 013	846	94	-	-	17 953
Steve Tshwete	28 385	555	247	-	-	29 187

Source: National Treasury survey, 2005 and EDI Holdings database, 2005

The restructuring of the electricity distribution industry has been the subject of considerable debate in recent years. The challenge is to merge the distribution structures of Eskom and municipalities into the REDs without compromising the provision of electricity or adversely affecting municipal finances. The restructuring also needs to avoid introducing undue risks for Eskom, enabling it to maintain its current credit profile, which is needed to facilitate the required capital investment in additional generation capacity.

EDI Holdings – a company established to facilitate the restructuring process – estimates that the electricity distribution industry (municipalities and Eskom) has a total asset base of R46 billion, based on purchase cost, serving some 7,2 million customers.

In his State of the Nation address on 21 May 2004, President Thabo Mbeki committed government to establishing the first RED by June 2005, with the overall process to be finalised by January 2007. The first RED was established on 1 July 2005 in Cape Town. City of Cape Town's experience with the establishment of RED1

RED1 was formally established on 1 July 2005 by the City of Cape Town. RED1 is a municipal entity operating as the service provider to the whole municipal jurisdiction previously served by the City of Cape Town electricity undertaking and Eskom. The City of Cape Town is the parent entity, exercising the service authority role, as outlined in section 82 of the Municipal Systems Act. Two members of staff were appointed as RED1 staff members. Various other staff members have been seconded from the City of Cape Town electricity undertaking. Six directors were initially appointed to the board for RED1.

RED1 currently obtains funding from the City. This funding is in the form of a management fee for the oversight of the electricity distribution taking place within the full jurisdictional area of the City of Cape Town. The City will record all financial transactions under a separate company code within SAP. This will continue, as per the Operating and Transitional Plan for Transfer Agreement, until such time as RED1 has appointed the necessary CFO and related staffing structure, set up the necessary accounting policies, internal controls and put in place the necessary accounting system and the full transfer takes place. A co-operative agreement has also been put in place between Eskom and RED1.

REDs will address fragmented nature of industry

The REDs are intended to address the fragmented nature of the industry, which has led to various problems, including the fact that economies of scale, skills and specialisation cannot be captured by many of the smaller municipal distributors.

The six boundaries were drawn to provide for a balance of customers in terms of the type (domestic/industrial) and location (rural/urban/metro). Each of the six REDs was to be anchored around

one of the metropolitan municipalities, which would then be required to subsidise electricity provision in the surrounding poorer municipalities. However, limited progress was made with the establishment of the six REDs due to a number of obstacles, including the constitutional role of local government in regard to electricity reticulation and concerns of metropolitan and larger electricity distributing municipalities regarding the financial impact of the REDs on them.

Principles underpinning the restructuring process

Government has undertaken technical work to identify obstacles to the establishment of REDs and to accelerate the restructuring process. The technical work has been guided by the following principles:

- Restructuring must be in accordance with the Constitution, taking into account that the responsibility for electricity reticulation is a municipal function.
- The financial health of municipalities currently performing the electricity function must not be adversely affected.
- Aggregate personnel costs must not increase in a way that undermines the objective of one public service.
- There will be no additional funds or taxes to fund restructuring (fiscus and/or local government) without Government approval.

Due care will also be taken to ensure that the restructuring of the industry does not affect the operational and financial stability of Eskom, minimising any potential risk to the social development and capacity expansion objectives set by national government.

Technical feasibility assessment

Lack of comprehensive data is a serious problem

A high-level technical feasibility assessment of REDs' impact on larger, electricity-distributing municipalities was undertaken during the middle of 2005. One of the biggest implementation problems has been the inability to collect comprehensive and relevant data to provide a basis for making decisions. Most municipalities and Eskom do not ring-fence their activities in a way that allows for relevant data collection. In the case of municipalities, this is not generally done for the electricity sector, and in the case of Eskom, it is not done by municipal boundary.

The assessment focused on customer information, personnel implications and financial implications. The sections below provide further discussion of these issues.

Financial implications

Electricity accounted for R22,6 billion, or 30 per cent, of category A and B municipal income for 2004/05. Hence it is important that the restructuring process should be undertaken in a manner that leaves municipal finances stable in the period ahead.

Most the municipalities licensed to distribute electricity are small providers

Most of the municipalities licensed to distribute electricity are small providers that will undoubtedly benefit from economies of scale when incorporated into a RED. The problem can be narrowed to the 12 largest municipalities, which account for 82 per cent of all municipal electricity sales, with the six metros accounting for 65 per cent. Similar percentage shares apply to electricity budgets: the six metros' electricity operations account for 64 per cent, or R14,6 billion, of total municipal operating budgets for electricity (R22,6 billion) and the 12 largest electricity-distributing municipalities account for 75 per cent (R17 billion).

The size of electricity budgets for the 12 largest electricity-distributing municipalities for the 2004/05 financial year is indicated in Table 3.8 below.

Table 3.8 Size of electricity budgets of 12 largest electricity - distributing municipalities, 2004/05

Municipality R thousand	Overall operating budget	Electricity operating budget	Electricity operating budget as % of overall operating budget
Johannesburg	11 935 796	3 217 221	27,0%
eThekwini	8 556 855	2 921 000	34,0%
Ekurhuleni	7 279 307	2 762 922	38,0%
Tshwane	6 757 428	2 343 000	35,0%
Cape Town	11 325 505	2 302 728	20,0%
Nelson Mandela	3 133 567	1 018 500	33,0%
Total: Metros	**48 988 458**	**14 565 371**	**30,0%**
Emfuleni	1 358 680	460 591	34,0%
Msunduzi	1 191 682	444 472	37,0%
Mangaung	1 414 272	436 722	31,0%
Rustenburg	724 835	394 346	54,0%
Buffalo City	1 334 882	386 154	29,0%
uMhlathuze	629 035	302 812	48,0%
Total: 6 largest category B electricity-distributing municipalities	**6 653 386**	**2 425 097**	**36,0%**
Total: 12 largest electricity-distributing municipalities	**55 641 844**	**16 990 468**	**31,0%**
Remainder (225) of Category B municipalities	21 031 482	5 626 799	27,0%
Total: All Category A and B municipalities	**76 673 326**	**22 617 267**	**30,0%**

Source: National Treasury survey, 2005

Municipalities will retain surcharges on electricity reticulation

Municipalities will retain surcharges on electricity reticulation services after the establishment of REDs. National legislation may regulate how this may be done and the limits of such charges. It appears that certain municipalities levy excessive surcharges on electricity without appropriately investing in electricity infrastructure. The intended introduction of local government taxation legislation

during 2006 will address this issue. The NERSA is also strengthening its regulatory capacity in this regard.

Upward harmonisation of RED salaries to be avoided

The establishment of REDs could also affect municipal cash flows, credit ratings (as a result of removal of assets from balance sheets), the ability to borrow, and pension and medical aid liabilities.

The restructuring process should also avoid creating "stranded" resources for both Eskom and municipalities – resources used in electricity service delivery that may not be fully used after restructuring, such as building space and information technology systems. There may also be once-off transition costs associated with the establishment of a RED, such as the cost of undertaking the ring-fencing of electricity assets and staff.

Customer information

The Department of Minerals and Energy's 2001 blueprint on electricity distribution industry restructuring determines that REDs will be responsible for the provision of electricity to all distribution customers, with the exclusion of those using 100 GWh (gigawatt hours) or more per site per year.

In terms of the National Treasury survey, about 2,85 million customers – a quarter of all electricity customers in South Africa – fall within the six metropolitan areas.

Eskom plays more dominant role outside metro areas

As noted earlier, municipalities play a less dominant role in the provision of electricity outside the metropolitan areas. Therefore, RED restructuring would have a much greater impact on metropolitan and other large municipalities than on those with limited electricity reticulation responsibilities.

Personnel implications

About 31 000 staff are to be transferred to REDs

Approximately 31 000 staff are involved in the electricity distribution function to be transferred to REDs: 16 000 employed by municipalities and 15 000 by Eskom. While the majority of municipal staff are employed in metropolitan areas, the majority of Eskom staff are employed in rural areas, as indicated in Table 3.9 below.

Table 3.9 Comparison of staff numbers and average salaries between Eskom and municipalities, 2004/05

Municipality	Municipalities		Eskom	
	Staff employed	Average staff salary R	Staff employed	Average staff salary R
Cape Town	2 247	110 000	1 153	220 000
Ekurhuleni	1 286	117 000	454	220 000
eTthekwini	1 937	124 000	48	220 000
Nelson Mandela	n/a	n/a	1	220 000
Johannesburg	1 865	158 000	608	220 000
Tshwane	2 873	n/a	135	220 000
Total Metros	**10 208**	**n/a**	**2 399**	**220 000**
Other areas	**5 949**	**n/a**	**12 162**	**220 000**
Total for all areas	**16 157**	**n/a**	**14 561**	**220 000**

Source: National Treasury survey, 2005

Note: A uniform average salary is applied in respect of Eskom as it has a standardised salary structure for each job level in place throughout the country

Employment conditions between Eskom and municipalities vary significantly

Table 3.9 shows that salaries vary significantly between Eskom and municipalities, and also among municipalities themselves. The average salary for Eskom staff is R220 000 per annum, which is substantially higher than the average municipal salary in a metropolitan area, which ranges between R110 000 and R158 000 per annum. Although limited information is available in non-metro areas, staff numbers as well as staff remuneration are generally much lower in municipalities outside the metropolitan and larger urban areas.

The transfer of municipal and Eskom staff to REDs could have a substantial impact on the financial viability and future sustainability of the new structures, as personnel expenditure is one of the largest expenditure components. Employees from the 70-plus municipal pension funds, for example, will need to be merged into one pension fund. A similar process will be required for medical aid funds. A comprehensive strategy has not yet been developed to ensure that the salaries of these personnel will not be raised to that of the highest-paying municipality and/or Eskom within a RED.

Objectives of single public service to be taken into account

The merging of municipal and Eskom electricity distribution staff into REDs needs to take into account the objective of a single public service. The merger must be done in such a way that it does not sharply increase personnel costs. Based on the number of staff involved and disparities between salaries, it may be necessary to introduce applicable legislation to ensure that the upper levels of remuneration remain within acceptable norms.

Current developments

Discussions are underway on the next steps to be taken to give effect to the restructuring process. Government will shortly pronounce on the appropriate method to proceed with the REDs establishment process.

Funding the restructuring initiative

As part of the multi-year price determination strategy for Eskom's tariff for the period 2006/07 to 2008/09, the NERSA approved an amount of R1,2 billion to be made available over the next three years to fund the costs of restructuring electricity distribution borne by both Eskom and municipalities. This amount will be raised through Eskom's generation tariff. However, it will only be possible to assess the full financial implications of the restructuring with a longer-range costing.

R1,2 billion available over next three years to fund electricity distribution industry restructuring

Conclusion

The restructuring of the electricity distribution industry, under debate for more than a decade, is gaining momentum. The active participation of all stakeholders is required to ensure that the RED establishment process is accelerated. At the national level, outstanding policies and legislation on governance and financial issues need to be expedited.

Restructuring is gaining momentum but needs to be accelerated

If successfully implemented, the rationalisation of the electricity distribution industry should bring economies of scale, and greater transparency and competition in terms of pricing and service delivery.

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