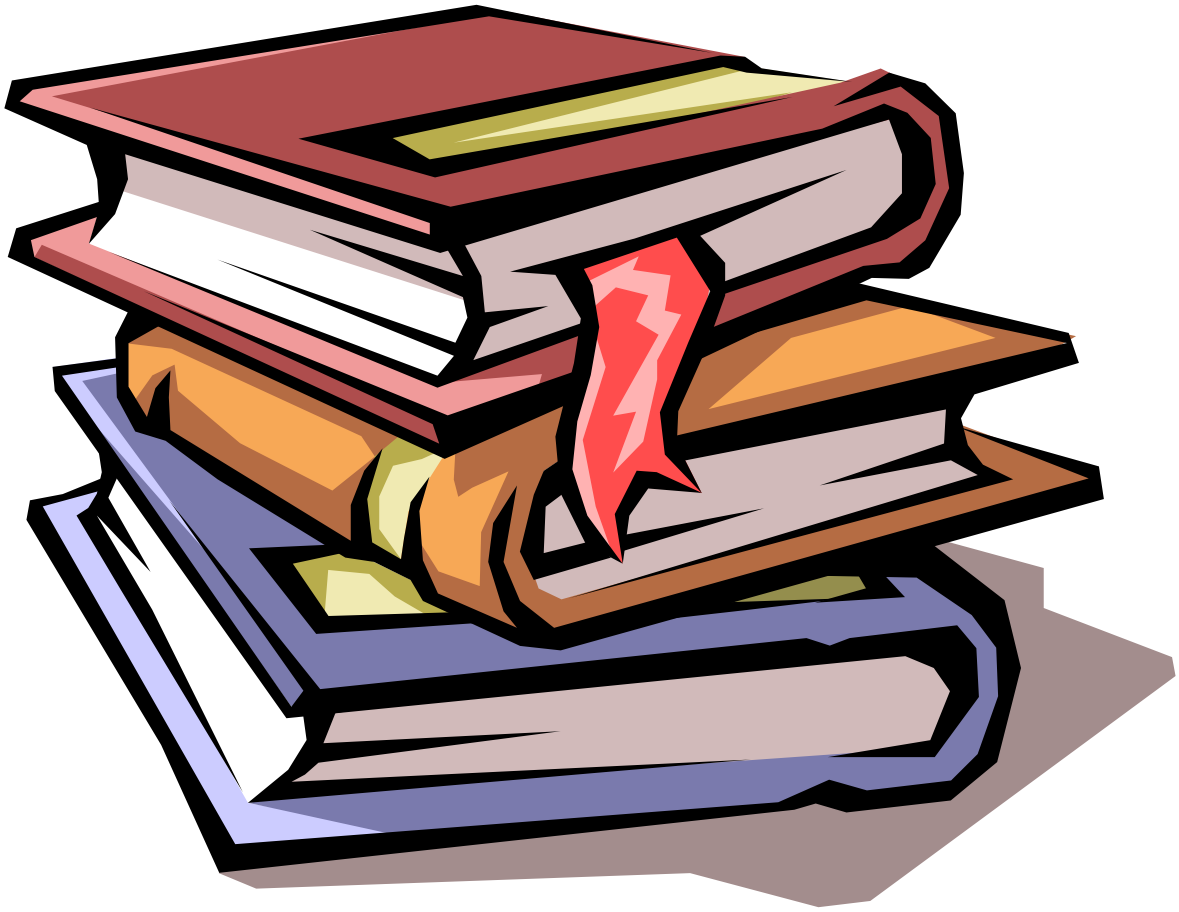
TARIFF HISTORY



COMPILED BY:

BM RAMOKGOPA

CONTENTS

1. INTRODUCTION

This report reviews the development of large power user (LPU) and small power user (SPU) tariffs as the electricity industry evolved into its present form. The history of the electricity industry influenced the development of these tariffs, and the report accordingly considers both. It examines the LPU and SPU tariff history in three periods: prior to the nationalisation of the Victoria Falls and Transvaal Power Company in 1948; leading up to the De Villiers Commission; and since then.

In 1948 the nationalisation of the Victoria Falls and Transvaal Power Company (VFTPC) ended private ownership in the electricity industry and marked the beginning of a new era. From 1948 onwards responsibility for the generation of electricity lay almost entirely with the Electricity Supply Commission (Escom). The distribution industry on the other hand did not mirror the centralisation of the generation industry, and in fact it became more decentralised. This led to the appointment of the De Villiers Commission in 1986, which resulted in the nationalisation of tariffs in South Africa. From 1986 onwards, various tariff options were developed to meet the requirements of the diverse industry to date.

2. PRE-DE VILLIERS COMMISSION

2.1 INDUSTRY STRUCTURE

The generating industry developed in a fragmented and decentralised fashion in response to the demand for electricity by communities, mines and industries. The ownership of generation and distribution rested with private and public sectors. The mines and industries generated their own electricity needs. As generating facilities rapidly expanded, centralisation of the generation industry progressed.

2.2 GOVERNANCE

In 1909 the Earl of Selborne, Governor-General of South Africa, established a Power Companies Commission to "enquire into the desirability of the establishment of large electric power companies in the Transvaal" -Report of the Power Companies Commission, 1909 (*Mountain,1994:64*). The commission recommended that:

"Since the supply of electric power leads to the establishment of a virtual monopoly in a commodity which has become practically a necessity of modern civilisation, it should, while being left as far as possible to private enterprise, at the same time be placed under government control and subjected to regulations which shall secure the equitable supply of power, the public safety and public interests generally."

The commission recommended that the electricity supply industry remain in private hands mainly because of the need to attract foreign investment in industry in South Africa and also because the need for state capital for growth meant that the government was simply

not in a position to finance the construction of a major power company -Report of the Power Companies Commission, 1909 (*Mountain.1994:64*).

With regard to tariff regulation, the commission recommended that "it would suffice if the State have the right of supervising prices, such right to be only sparingly exercised". The recommendation was that "no maximum price should be fixed, but prices charged should be subject to revision by the government on the application of any 10 customers, or any number of customers taking not less than 5% of the power companies' output". The commission allowed the electric power companies "to earn a dividend of 10 to 12 percent of the capital invested in remunerative plants". Finally, the Act 15 of 1910 prescribed that any undertaking applying for a licence was obliged to submit a schedule of standard prices which the applicant proposed to charge customers. Application was to be made to the Minister of Mines who was obliged to refer the application to the Power Undertakings Board for eventual hearing of the application. The Board was entitled to modify or approve the schedule of standard prices charged by the undertaking.

The Transvaal Power Act of 1910 enabled the VFTPC and the Rand Mines Power Supply Company to obtain licences to construct new power systems. By 1915 the VFTPC had already erected four power stations (Brakpan, Simmerpan, Rosherville and Vereeniging) with a total capacity of 160 MW. The considerable centralisation of the power supply led to the large-scale reduction of electricity tariffs so that by 1915 the price had reduced to 0.525 shilling per kWh. At the same time, the VFTPC was able to report increasing profitability.

The Transvaal Power Act of 1910 regulated all undertakings supplying power to others, except the municipalities who were separately regulated by the Provincial Administrator, as had been established by provincial ordinances in 1905. The Act also stipulated that municipalities did not have the sole right to supply electricity in their area of jurisdiction. Nevertheless, undertakings applying for a licence to supply within a municipality area of supply were subject to a veto from either the Governor or the Local Authority Council unless it was a supply to mines, railway or a government department. The Transvaal Power Act of 1910 ended the fragmented and uncontrolled development of the power supply industry but not of the distribution industry.

Railways drove the next phase in the history of power utilities in South Africa. Electric locomotives had at that stage achieved a significant efficiency advantage over steam locomotives. The railway needed to obtain a source of electricity to power its electric lines. The South African Railway (SAR) could purchase electric power either from the private industry set up specifically for the supply of SAR or from the municipalities. Financial limitations forced it to choose a state-owned power utility for its supply of electricity. This led to the government appointing Dr Charles Merz "to study the general question of the electric power" and to find a solution to the problem of the SAR Electric Power Supply in the Union of South Africa, 1920 (*Mountain.1994:65*)

At the time that Dr Merz began his study there were more than 58 electricity undertakings in the Union of South Africa. These included 40 municipalities and 18 private companies

of which the VFTPC and Rand Mines Power Supply Company were by far the largest. The conclusions and recommendation of the Merz Commission were that -Electric Power Supply in the Union of South Africa, 1920 (*Mountain.1994:66*):

1. An Act should be passed by Parliament providing for the regulation and unification of the supply of electricity and other forms of power throughout the Union.
2. Priority be given to the development of an electric power supply infrastructure to meet the needs of industry and transport.
3. An Act should be passed by Parliament to provide for the establishment of a small body of commissioners with a mandate to encourage new schemes for the development of electric supply, and generally to administer the Act in accordance with the principles documented in his report.

After the Merz Report had been submitted to the government in April 1920, a committee was appointed under the chairmanship of mining engineer Sir Robert Kotze to investigate the implications of Dr Merz's report *(A Symphony of Power.2000:70*). The Kotze committee drew up a draft Electricity Bill and presented to the Minister of Mines, FS Malan, on 4 March 1922, and the final Bill was presented to Parliament in July 1922. The Bill was taken to the Select Committee, which took written and oral evidence from various parties. The Kotze committee, the Select Committee and Dr Merz considered several alternative forms of organisation in the electricity supply industry. The most important were the following -Board of Trade and Industry Report, 1977 (*Mountain.1994:66*):

1. Private-enterprise supply companies without state control.
2. Private enterprises, but subject to publicly administered licensing restraints to *control prices* and to control the means of financing activities.
3. Supply by municipalities, railway or government department.
4. Supply by a state-owned corporation having its own equity capital but subject to restrictions over the level of profits.
5. Supply by a state-appointed board or commission, financed by loans and subject to price and other restrictions.

The Electricity Act of 1922 concluded the work done by Dr Merz, the Kotze committee and the Select Committee. It repealed the Transvaal Power Act of 1910 and was the first electricity Act to apply to the Union of South Africa as a whole. The first chapter of the Act provided for the establishment of a commission (to be known as the Electricity Supply Commission) consisting of no less than three and not more than five members.

On 6 March 1923 the birth of the Electricity Supply Commission (Escom) was announced with the following notice in the *Government Gazett*e:

'It is notified that His Royal Highness the Governor-General has been pleased, under the powers vested in him by Section One of the Electricity Act, 1922 (Act 42 of 1922), to establish the Electricity Supply Commission referred to in that section as from 1 March

1923 and appoint Dr Hendrik Johannes van der Bijl, MA, Ph.D., as Chairman and whole-time member, and James R Fulton and Robert Niven as part-time members of the Commission (*A Symphony of Power.2000:75*)'.

The Electricity Supply Commission was established as a body corporate in law and had responsibility inter alia for the establishment, acquisition, maintenance and working of undertakings for an efficient supply of electricity; the investigation of new or additional facilities to supply electricity within an area; and the co-ordination and co-operation of existing undertakings to stimulate the provision, whenever required, of a cheap and abundant supply of electricity [sections 3(a) and (b) of the Electricity Act of 1922]. As a result, all the undertakings, with the exception of municipalities, SAR and Harbour Administration, had to apply for a licence to a Control Board established for this purpose.

In deciding whether to issue a licence, the Electricity Supply Commission could undertake the supply itself or could permit private undertakings to supply electricity, the only significant proviso being that any action must be in the "public interest" [*section 6(4) of the Electricity Act of 1922*]. The Act stipulated that as far as practicable the Commission's operation should be carried out neither at a profit nor at a loss and as such it was subject to regulation.

With regard to electricity pricing, the 1922 Act stipulated that prices charged were to cover the cost of production (including distribution, maintenance and administration), amounts required for interest on money raised by way of loan, and a reserve fund for the replacement of obsolete plant and machinery. The Act provided for a schedule of standard prices as a condition of the licence granted by the Control Board. In addition, any surplus profit had to be shared between the licensee and its customers: the licensee was obliged, within six months of completion of each financial year of the undertaking, to distribute to the undertaking's customers, pro-rata to their payments, 25% of the surplus profit for that year [section 25(2)(a) and (b) of the Electricity Act of 1922]. This share was increased gradually from 25% to 50% and finally to 70% before 1948.

The Act also allowed the licensee to charge prices above or below those in their schedule of standard prices if [section 26(1) of the Electricity Act of 1922]:

(a) "the amount of electricity consumed" by a customer justified a discount/premium
(b) a customer with "uniform or regular demand" was entitled, at the supplier's discretion, to a discount
(c) supply could be discounted/surcharged for particular customers based on "the time when, or during which, the electricity is required"
(d) "the expenditure of the licensee in furnishing the supply" could be reason for a discount/surcharge
(e) any "special circumstances" not included above could be reason for discounts or surcharges.

Finally, the Electricity Act of 1922 also contained the provision that the Governor-General, after obtaining reports from the Commission and the Board, could expropriate or seize private undertakings.

The 1922 Electricity Act resulted in further centralisation of the electricity industry and greater government control and ownership. Private ownership was not rejected but it became subject to more control, and further expansion of private industry was limited.

The Electricity Supply Commission (Escom as it became known) took over Colenso Power Station from the SAR. This was followed by the construction of Congella Power Station near Durban and the Witbank, Klip, Vaal and Salt River stations.

In 1923 Escom opposed an application by VFTPC to construct a power station in the Witbank area to meet the increase in demand of the gold mines after the Rand revolt. The matter was settled by Prime Minister Smuts, who allowed the VFTPC to build and operate the power station, the financing of which was to come from Escom -Morgan, 1993 (*Mountain.1994:70*)

In the 1930s, with the discovery of new gold fields, the electricity industry headed into a sales boom. Between 1935 and 1936 sales increased by 51% and this was repeated again between 1936 and 1937 –Escom, 1973 (*Mountain.1994:70*). The increasing efficiency achieved through more advanced generation technologies meant that by 1940 the price of electricity was 0.1755d per unit -Escom, 1973 (*Mountain.1994:70*).

On 1 July 1948, Escom negotiated a take-over of VFTPC for 14.5 million pounds. This provided Escom with a well established power system able to meet the demands of the Rand undertaking. The year 1948 marked an end to any significant private ownership of the electricity industry and the beginning of public ownership and centralised control under Escom.

In each province, legislation based upon regulation was introduced by the Board of Trade Regulations to govern the provision of electricity for public purposes. The approval of the Administrator of each province had to be obtained for alterations or extensions to existing undertakings and for tariffs.

2.3 TARIFF PHILOSOPHY

2.3.1 Historical Development of Tariffs in SA

Kimberley Municipality commissioned its first large-scale electricity reticulation system in 1890. Johannesburg, Pretoria, Cape Town and Durban municipalities followed suite in 1891, 1892, 1895 and 1897 respectively.

At first in Kimberley electricity was used for little more than street lighting. The tariff during that period was simply derived from the simultaneous use of the known number of

bulbs and the known power rating of these bulbs. The simplicity of the tariff was due to the absolute certainty that electric lighting was required only during the hours of darkness. The tariff income recovered the cost arising from ownership and operation of the electricity plant.

The first commercial tariff of electricity was derived by Thomas A Edison in 1882, that is 8 years before electricity was introduced in South Africa at Kimberley. The development of this tariff was highly influenced by the development of the filament lamp about that time. The filament was regarded as a source of light far superior to any other available at the time, and early suppliers became known as "electric light companies". This flat-rate tariff persisted for many years. It is still to some extent used in South Africa today, especially for street lighting, where one may still find flat-rate tariffs based on the rating of street lamps.

The flat-rate tariff, when applied to lamps, represented a reasonable approximation of cost of supply since the lamps were expensive and their life was far more limited than it is today and also since lighting would be used mainly in the evening. Electricity during this time was used for only part of the day; outside of this, the generating facilities were idle. It was not long, however, before industrial and motive power was found to take up some of the unused capacity during daytime.

The fact that the same plant was used for different consumers at different times of each day presented a cost-allocation problem; that is the use of electricity became diverse. It became very difficult to devise a formula whereby customers' monthly payment for electricity was based solely on a detailed knowledge of their individual pattern of use. There was a great need to design a tariff which recovered from consumers the cost of supplying electricity, that is to design a simple set of prices that the utility would charge for the provision of power to diverse customers.

The origin of a new costing philosophy for designing a tariff for time-of-the-day customers can be traced to 1882 when an electrical engineer, Dr John Hopkinson, expressed the view that

"…the expenses of any undertaking could be divided into two classes, expenses which are quite independent of the extent to which the undertaking is used, and expenses which are absent unless an undertaking is used and which increase in proportion to its use" (*Mountain.1994:15*).

Hopkinson proposed the division into two sets of costs of supplying the customer with electricity:

1. The "running costs" which he regarded as those incurred in the actual operation of the plant.
2. The "standing costs" which he called the cost relating to the readiness to supply electrical energy. This readiness consists of the generation, transmission and

distribution infrastructure which has been established in order to supply the customer.

The cost to the customer for the first service is entirely dependent on the amount of energy (kWh) consumed (variable cost), while the cost to the customer for the second service is fixed in the short term in that it is not dependent on whether that particular consumer purchases energy (a fixed cost).

By definition, the variable cost is directly related to the number of kWh supplied. This energy-related component consists of the cost of fuel and water consumed by the generating stations in supplying the electrical energy used by the undertaking's consumers. Considering the simplified example of consumers using electricity for lighting only, the integrated time for which their light bulbs are switched on during the year will determine the energy-related cost incurred on their behalf.

The fixed cost is largely dependent on the cost of the necessary generation, transmission and distribution equipment. This plant-capacity-related component includes interest, redemption and other financing charges on the plant installed to satisfy the summated power demand of the consumers. These costs are in turn influenced by the kW capacity of the plant equipment and hence it is reasonable to specify the fixed costs per unit of electrical capacity (kW). Maximum capacity during Hopkinson's era was estimated by the number of installed lights and heaters. It was only in 1896 when Arthur Wright successfully used the ammeter at his Brighton utility that he was able to meter each customer's maximum demand and hence implement the "Hopkinson two-part tariff".

The Hopkinson two-part tariff remains the basis of the maximum demand tariff, which is still extensively applied today to large power users (LPUs). Hopkinson justified the apportionment of fixed costs with the argument that the supplier of electricity had to install enough plant capacity to meet the peak requirements of the consumers. However, economists have since pointed out that it is not in fact the peak demand of the consumer that is of prime importance but the demand of the consumer at the time of the demand peak on the facilities of the supplier.

Although demand-related tariffs increased in popularity, they were still used on what were predominantly lighting loads, which did not justify the additional complexity and costs since the probable period of the load could be fairly estimated and allocation of the fixed cost calculated accordingly. As the same tariff was applied to industrial loads when these become available, the supplier now obtained a double return on his fixed charge, since the industrial user's peak was entirely outside the then dominant domestic lighting peak and the supplier did not need to install a further plant to meet the additional load demand. This led to the establishment of different consumer classes, that is domestic and industrial consumers.

Gradually demand-related tariffs for domestic electricity consumers became less acceptable and with the increasing number of consumers there was a constant desire to

simplify the metering equipment and tariff structures. This in time led to new domestic electricity tariffs such as the one-part tariff and the two-block tariff.

The cost of metering created obstacles for the Hopkinson two-part tariff, and for that matter the two-part tariff became the three-part tariff when customer-related costs were introduced. The customer-related cost in South Africa was called the basic charge. This recovered the cost specific to the customer – generally regarded as comprising the cost of service connection, meters, meter-reading, billing and collection.

With the introduction of small power user tariffs, the three-part tariff in South Africa became known as tariff A, which is applied to large electricity users.

2.3.2 Small Power User Tariffs

The tariffs for small power users (SPUs) (B, C and D), which account for more than 90% of Eskom's total number of customers but less than 4% of the total revenue, have been shaped by political and economic developments. The SPU tariffs do not offer the same opportunities as LPU tariffs. Of importance in LPU tariffs is cost-reflective tariffing, while in SPU tariffs it is practical considerations such as metering and implementability since the revenue generated from small users is much smaller in proportion to the cost of metering and administration.

2.4 TARIFF STRUCTURES

2.4.1 Tariff A

Tariff A is one of Eskom's oldest tariffs, described in the Eskom tariff schedule as being for large customers with a high load factor of consumption. It is only applicable to customers with a load greater than 25 kW/kVA. This tariff comprises:

- basic charge per month (R)
- energy charge (c/kWh)
- demand charge (R/kVA or R/kW)
- percentage surcharge or discount

2.4.2 Tariff B: Small Power Users

The tariff definition varies across the different undertakings. In most cases it was initially applied to a customer whose maximum demand rarely exceeded 50 kVA and at no time exceeded 75 kVA made available at a nominal voltage of 380 volts between phases and 220 volts between phase and neutral, for use as motive power or for heating or for electro-chemical processes.

In the Rand and Orange Free State undertakings, tariff B was used for the mines and not for SPUs. Tariff D was at that time (1973–1974) the tariff equivalent to tariff B in the other undertakings. Tariff B comprised:

- basic charge per month (R)
- demand charge (R/kW in the Rand & OFS, R/ampere elsewhere)
- energy charge (c/kWh)
- percentage surcharge or discount

By the early 1970s, the Rand and OFS undertakings in particular were expressing dissatisfaction with the ampere demand tariff. The test engineers of the undertakings also found ampere demand meters inaccurate, unreliable and costly to test and calibrate. By the mid-1970s it had also become apparent from discussions with the agricultural sector that the ampere demand tariff had not fulfilled its purpose of reducing costs by improving the load factor.

By 1977 the demand charge had been dropped by all except the Northern Cape undertaking, where it was dropped in July 1981. The tariff structure then consisted of:

- basic charge per month (R)
- high energy charge (c/kWh) for first 500 kWh
- energy charge (c/kWh) for balance of consumption
- percentage surcharge or discount

2.4.3 Tariff C: Lighting and Domestic Users

Before 1974 the tariff for "lighting and domestic" customers had the same structure in all seven of Eskom's undertakings other than Rand and OFS. The structure afforded these customers the option of being charged on a "flat rate tariff " or a " room rate tariff", with provision for a kW demand charge in the event of the premises being used for business purposes.

During 1974 these versions of tariff C were done away with in the Rand, OFS and Eastern Transvaal undertakings and a revised version was introduced.

By July 1981 tariff C (urban domestic users) was applied in all undertakings "for a supply of electricity for domestic purposes for a private house or a block of flats, within a legally constituted township or within an area considered by the Licensee to be similar to a legally constituted township".

The tariff structure consisted of:

(a) Flat-rate tariff

- basic charge per month (R)
- unit charge (c/kWh)

- percentage surcharge or discount

(b) Room-rate tariff

- basic charge per month (R)
- charge per room per month (R)
- unit charge (c/kWh)
- percentage surcharge or discount

By September 1976 all but the Northern Cape undertaking had changed the tariff structure to:

- basic charge per month (R)
- high energy charge (c/kWh) for first 300 kWh
- energy charge (c/kWh) for balance of consumption
- percentage surcharge or discount

2.4.4 Tariff D: Rural Small Users

From 1973 to April 1974 the Rand and OFS undertakings applied a tariff D in any rural area for any supply of electricity. From April 1974 to January 1982 these rural supplies were charged on tariff B or sometimes tariff C as in the other undertakings. On tariff B, the demand charge consisted of two components, a charge of R3,00 per month payable whether any electricity was taken or not, and a rate of 10 cents for each completed ampere of the maximum demand consumed in a month in excess of 30 amperes.

The tariff D structure consisted of:

- basic charge per month (R)
- high energy charge (c/kWh) for first 800 kWh
- unit charge (c/kWh) for balance of consumption
- percentage surcharge or discount

As from January 1982 a new tariff D for rural small users was introduced in all undertakings for customers whose maximum demand at no time exceeded 100 kVA or kW made available at a nominal voltage of 380 volts between phases and 220 volts between phase and neutral or as otherwise agreed and whose point of supply was situated within an area defined as “agricultural land”.

The tariff structure was the same as that applied in the early 1970s in the Rand and OFS undertakings except that the high energy charge was applied to the first 800 kWh of consumption.

2.5 TARIFF ADJUSTMENT

The industry was faced with a history of frequent tariff (price) changes. This was influenced by a regulatory lag and constant price increase of coal used in conventional power stations. To guard against the effect such increases may have had on the balance between revenue and expenditure, most electric utilities had fuel price clauses in their supply contracts.

3. POST-DE VILLIERS COMMISSION

3.1 INDUSTRY STRUCTURE

The continuing high price increases motivated the De Villiers Commission to look at the supply of electricity in South Africa. The commission's mandate was to investigate the legislation pertaining to and the structure, cost effectiveness, pricing policy and functions of existing institutions involved in supply. Its recommendations were as follows:

- The principle of operating at neither profit nor loss should be discarded in favour of a sound asset and income structure complying with certain requirements.
- The industry should be integrated and production costs (excluding transmission and distribution costs) should be pooled.
- A permanent Board of Control, with a chairman appointed by the State President, should be responsible for the supervision of an independent Escom management board.
- The task of the management board should be to run Escom properly.

The recommended Board of Control made provision for a high degree of customer representation in the agriculture, mining, municipal and commercial sectors. For the first time customers were comprehensively represented in Escom.

3.2 GOVERNANCE

The Electricity Act of 1958 was replaced in its entirety by a new Electricity Act of 1987. Escom was renamed Eskom and it was exempted from applying for a licence from the Electricity Control Board, which henceforth had only limited jurisdiction over Eskom's activities. Eskom had jurisdiction over tariff levels while the Electricity Control Board had jurisdiction over tariff structure.

The price levels of the end-user tariffs are set by forecasting total kWh consumption and arriving at an average c/kWh price necessary to recover the forecast required revenue.

On 1 April 1995 a new regulatory authority, the National Electricity Regulator (NER), was established (in terms of the Electricity Act of 1987 as amended) as successor to the Electricity Control Board (*www.ner.org.za)*. The main objective of the NER was to control the electricity supply industry in terms of the Act. Its main regulatory areas were:

- pricing and tariffs

- licensing
- customer complaints and dispute resolution
- quality of service and supply

3.3 TARIFF PHILOSOPHY

As recommended by the De Villiers Commission, tariffs were nationalised in January 1986. This meant that tariffs were uniformly applied countrywide. Extension charges were removed and all costs were pooled and included as a single sum of capital expenditure in standard tariffs.

The "50/50" rule was altered in 1986 after an empirical derivation showed that at an Eskom level the rates of standard tariff A should be set in such a way that the energy rate was 40% and the demand rate was 60% of the tariff for a unity power and unity load factor customer.

Two new tariffs were introduced in January 1986 (tariff E) and July 1987 (tariff F) following the findings of the De Villiers Commission. Tariff E was based on A, but allowed for the maximum demand charge to be levied on the maximum demand measured during peak only. It benefited large power users whose demand pattern was such that peak demand could be moved to occur at Eskom's off-peak periods.

Tariff F is very similar to the standard tariff A except that it was designed specifically for rural variable supplies with a low load factor and high maximum demand, in particular irrigation farmers. Supply on this tariff is limited to customers with maximum demand greater than 25 kVA, but whose supply voltage is in the range 500 V to 22 kV.

Eskom's first time-of-use (TOU) tariffs were developed during 1989 and 1990. From 1978 to that time little progress had been made with these tariffs in spite of repeated efforts. They also met considerable resistance, but Eskom developed them for three reasons:

1 To contribute to the efficient allocation of national economic resources, not only among different sectors of the economy but also within the electricity supply industry.
2 To adequately reflect the cost of supplying electricity in meeting any type of demand pattern so that decisions affecting the use of electricity could be based on the true cost of providing it.
3 To provide customers with incentives to adopt consumption pattern that led to a more effective use of electricity and thus to reduced supply costs.

The first two time-of-use tariffs introduced were T1 and T2. Tariff T1 is for supplies of 1 megavolt-ampere (MVA) or larger with a maximum demand charge, and tariff T2 without maximum demand charge for supplies of 100 kilovolt-ampere up to 5 megavolt-ampere. The tariffs are suitable for customers who are able to manage their electricity consumption and maximum demand according to Eskom's specified time periods. The first time-of-use

customer, Henry Ford, was taken onto the system Friday 10 May 1991 (*Eskom Tariff History 1973-1991:12*).

A third TOU tariff was introduced in January 1994. This was driven by under-recovery of costs from rural customers who were on tariff T2, since no allowance had been made on tariff T2 for higher losses associated with rural networks and higher support costs in rural areas -Ligoff and Hager, 1993 (*Mountain, 1994:110*).

This tariff was available in two pricing options: Ruraflex 1 and Ruraflex 2, the difference being based on the size of installed capacity (Ruraflex 1 =< 50 kVA and Ruraflex 2 > 50 kVA).

On 1 September 1989 another SPU tariff (S1) was introduced for low-usage customers at low cost to both Eskom and the customer. This was driven by Eskom's vision of electricity for all at prices they could afford. It was intended to break even with tariff C at a consumption level of 355 kWh per month. Tariffs S2 and S3 were subsequently developed: with S1 Eskom financed the capital cost of the bulk supply, reticulation network and service connection; with S2 Eskom financed the capital cost of the service connection or any part of the reticulation up to R1000 per stand; and with S3 the customer financed all of the bulk supply, reticulation network and service connection costs - Barnard, 1992 (*Mountain, 1994:114*).

In 1994 there was a request from the electricity council (a policy formulation body) to investigate more appropriate names for the available tariffs which would reflect for customers what the tariff entailed and so aid customer choice. New tariff names would also assist the marketing of electricity as customer product or commodity. After internal lobbying and market research, the names were changed to Standardrate (tariff A/F), Nightsave (tariff E), Maxiflex (tariff T1), Miniflex (tariff T2), Ruraflex (no change), Businessrate (tariff B), Landrate (tariff D), Homepower (tariff C) and Homelight (tariff S). Maxiflex was changed to Megaflex in 1995 because Maxiflex was already a registered brand name of another company.

There was only one Standardrate tariff in 1995 and 1996 for rural and non-rural customers. In 1997 Standardrate was split for non-rural and rural customers with the same voltage distinction as tariff A and tariff F of yesteryears. The energy and demand rates were almost identical, but with the rural standard rates slightly higher. Connection fees were introduced in 1996 to recover the portion of the project cost of installation for new supplies.

From 1 January 2000, Standardrate and Nightsave were merged into a single tariff called Nightsave.

Although a domestic time-of-use tariff has been used by other international utilities, Eskom only started experimenting with its Homeflex tariff in 1993. The intention was to provide domestic customers with a choices of tariffs and also to extend the demand-side management programme. Homeflex is the longest piloted tariff in the history of Eskom.

3.4 TARIFF STRUCTURES

3.4.1 Nightsave (Tariff E)

Nightsave, for off-peak use by large power users, comprises:

- basic charge per month (R)
- energy charge (c/kWh)
- demand charge (R/kVA or R/kW) measured during peak hours
- percentage surcharge for transmission distance or discount for high voltage
- maximum charge (c/kWh)

3.4.2 Standardrate-rural (Tariff F)

Standardrate-rural caters for kVA and not kW demand. The qualifying voltage contrives to limit this tariff to large-power farming customers. This tariff comprises:

- basic charge per month (R)
- energy charge (c/kWh)
- demand charge (R/kVA)
- percentage surcharge for transmission distance or discount for high voltage

3.4.3 Megaflex (Tariff T1)

This tariff consists of:

- basic charge per month (R)
- energy charge (c/kWh) seasonally and time differentiated
- demand charge (R/kVA or R/kW) seasonally differentiated
- reactive energy charge (c/kvarh)
- percentage surcharge for transmission distance or discount for high voltage

3.4.4 Miniflex (Tariff T2)

This tariff consists of:

- basic charge per month (R)
- energy charge (c/kWh) seasonally and time differentiated
- reactive energy charge (c/kvarh)

- percentage surcharge for transmission distance or discount for high voltage

3.4.5 Ruraflex

This tariff consists of:

- basic charge per month (R)
- energy charge (c/kWh) seasonally and time differentiated
- reactive energy charge (c/kvarh)
- percentage surcharge for transmission distance or discount for high voltage

3.4.6 Homelight (Tariff S)

The Homelight tariff is applicable to single-phase supplies in areas designated by Eskom as urban or high-density. It has different energy rates based on the supply capacity (20 A, 60 A) required and provides for a subsidy to low-usage customers. It consists of:

- energy charge (c/kWh)

3.4.7 Homepower (Tariff C)

Homepower is for a supply of electricity for domestic purposes in areas designated as urban or high-density. It is applicable to medium to high-usage residential customers. It consists of:

- basic charge (R)
- energy charge (c/kWh)

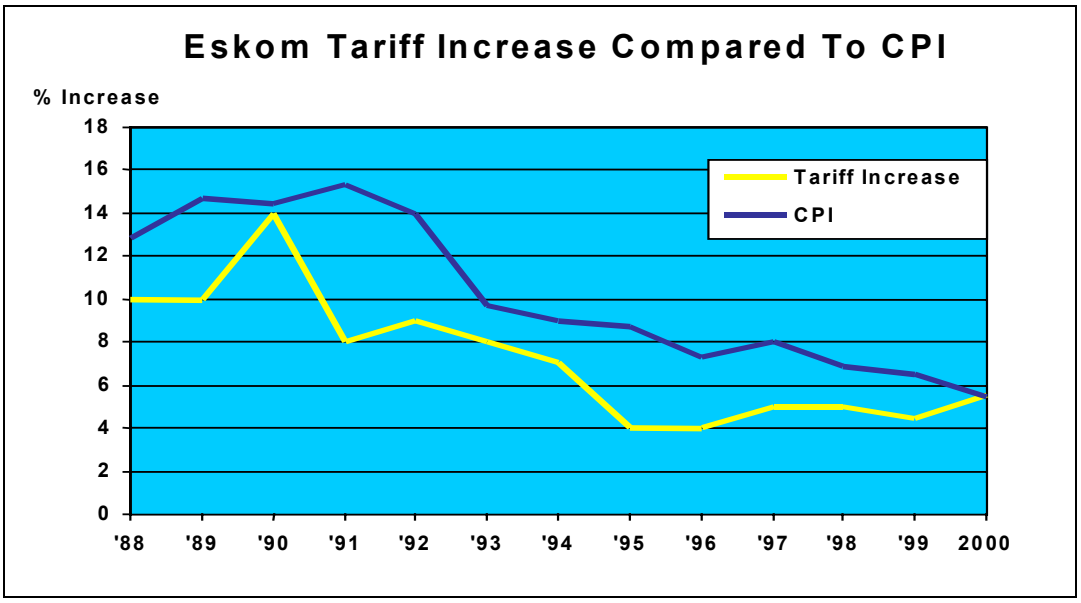
3.4.8 Homeflex (Being Piloted)

The domestic TOU tariff has the following structure for both single phase and three phase:

- three active energy rates (peak, standard, off peak)
- basic charge

3.5 AVERAGE PRICE LEVEL

Eskom's average tariff increases for the past 13 years have been below inflation, as indicated in the graph below.



3.6 PRESSURE TO CHANGE

3.6.1 Government Perspective

The electricity industry throughout the world is changing mainly but not solely because electricity utilities are coming under new pressures resulting from globalised markets and governments opening up their countries to foreign investors to help fund power sector expansion and development. South Africa is not exempt from these changes and will have to align itself with developments taking place in the rest of the world. The challenges of global competition have only recently begun to be addressed. The government believes that to ensure the success of the electricity supply industry as a whole in South Africa, it will be necessary over time to (*White Paper on the Energy Policy)*:

- give customers the right to choose their electricity supplier
- introduce competition in the industry
- permit open, non-discriminatory access to the transmission network systems
- encourage private sector participation in the industry

Government's electricity pricing policy is to achieve a balance between equity, economic growth and environmental goals. A course has to be steered between affordable electricity prices for households, low-cost electricity for industrial consumers, prices which provide efficient market signals by accurately reflecting the cost of supply, and a general price level that ensures the financial sustainability of electricity utilities (*White Paper on the Energy Policy)*.

3.6.2 Eskom Perspective

Eskom is under internal pressure to:

- gear up for competition
- retain an interest in the EDI
- retain focus on electrification
- generate funding for the business in the interests of
  - ✓ growth (capitalisation of Eskom enterprises)
  - ✓ socio-economic objectives (rural development and urban renewal)

3.7 STRUCTURAL CHANGES SINCE 1995

Many changes have been proposed and initiated in response to various externalities.

3.7.1 Time-of-Use Tariffs

Tariff Changes before 1997

- On 1 January 1991 when TOU tariffs were introduced the separate reactive energy charge was 1.62 and 0.81 c/kvarh respectively for Megaflex and Miniflex tariffs. The separate charge was identified as a result of the relatively weak demand charge component for Megaflex and lack of demand charge for Miniflex.

- The voltage discounts for the TOU tariffs were increased by 1.45% across the voltage range during 1996 after it was found that they did not correctly reflect the true cost of supplying power.

Voltage Levels	1996 Discounts	1996 Discounts
< 500V	0%	0%
≥ 500 V > 66 kV	1.86%	2.34%
≥ 66 kV < 132 kV	3.72%	4.69%
> 132 kV	5.58%	7.03%

Tariff Changes during 1997

- All TOU tariffs were initially introduced at a 4% premium over other large-customer tariffs in order to minimise the risk of revenue loss on non-mandatory tariffs. The intention was to manage the risk over time through a differential increase in tariffs. After the promulgation in 1996 the premium was reduced to 2%, effective from 1 January 1997.

- The voltage differentials for the TOU tariffs were not increased during 1997.

Voltage Levels	1996 Discounts	1997 Discounts
< 500V	0%	0%

≥ 500 V > 66 kV	2.34%	2.34%
≥ 66 kV < 132 kV	4.69%	4.69%
> 132 kV	7.03%	7.03%

Tariff Changes during 1998

- A monthly rental rebate was introduced with effect from 1 January 1998 on TOU tariffs in order to align them with non-TOU tariffs. The NER required all LPU tariffs to be treated the same. The rates applicable were R2.00 per kW for Megaflex and 1.81 cents per kWh for Miniflex and Ruraflex.

- The highest voltage discount was increased by 2.22% and other voltage levels where increased proportionally. A further increase was expected in 1999 on the basis that at the current voltage discounts the tariffs might still not reflect the true cost of supplying power at each voltage level.

Voltage Levels	1997 Discounts	1998 Discounts
< 500V	0%	0%
≥ 500 V > 66 kV	2.34%	2.90%
≥ 66 kV < 132 kV	4.69%	5.80%
> 132 kV	7.03%	9.25%

- The alignment of Megaflex and Standardrate at 100% load factor and power factor was completed on 1 January 1998 with the introduction of a minor rate change to the demand component of Standardrate.

Tariff Changes during 1999

- The highest voltage discount was increased by 1.5% and other voltage levels where increased proportionally.

Voltage Levels	1998 Discounts	1999 Discounts
< 500V	0%	0%
≥ 500 V > 66 kV	2.90%	3.30%
≥ 66 kV < 132 kV	5.80%	6.55%
> 132 kV	9.25%	10.75%

Tariff Changes during 2000

- The highest voltage discount was increased by 2% and other voltage levels where increased proportionally

Voltage Levels	1999 Discounts	2000 Discounts
< 500V	0%	0%
≥ 500 V > 66 kV	3.30%	5.33%
≥ 66 kV < 132 kV	6.55%	7.13%
> 132 kV	10.75%	12.75%

- From 1 January 2000 a maximum charge was introduced on the Megaflex tariff to make tariffs with a demand charge component consistent. The other reason was to protect customers with a poor power factor from paying extremely high average energy rates.

Tariff Changes during 2001

- From 1 January 2001, TOU time periods were aligned with those of the Wholesale Electricity Pricing System (WEPS) to give all TOU tariffs 9 months of low demand and 3 months of high demand. This was done to protect Eskom against trading risk and in the interests of cost reflectiveness.

3.7.2 Non-Time-of-Use Tariffs

Tariff Changes during 1997

- On 1 January 1997 new Standardrate and Nightsave tariffs were introduced for rural areas by increasing these tariffs by 2% per annum above the national price increase in rural areas for supplies taken at voltages up to 22 kV. This was done to counter under-recovery on rural supplies, Eskom's large-customer tariffs having been designed primarily for urban customers.

- The voltage differentials for Standardrate and Nightsave were increased by 4% on the demand charges, which were effective from 1 January 1997. The process of voltage differential increases would continue until the tariffs were deemed cost reflective.

- The kW demand charge for Standardrate and Nightsave would be increased by 8.5% phased in over a period of six years at 1.42% per annum effective from 1 January 1997. This would align the kW and kVA tariffs at a power factor of 0.85.

- The Homelight tariff for residential customers was differentiated by supply capacity. There was a need to differentiate supply because large subsidies were being funded by other customer within the tariffs itself. These subsidies were attributed to high capital costs of network infrastructure and generation. The 8A supply was piloted for a year and discontinued. From 1 January 1997,

  - ✓ Homelight 1 and 2 (20A) were increased by 1c/kWh above the annual price increase.

- ✓ Homelight 1 and 2 (60A) were increased by 2c/kWh above the annual price increase.

- The high energy rate of Landrate contributes to Eskom's fixed costs, and if less than 1000 kWh is used a month, these fixed costs are not recovered. To counter the problem, Landrate 1, 2 and 3 were adjusted by phasing out the high energy rate over 10 years while simultaneously increasing the basic charge by a commensurate amount. The high energy rate was reduced from 1000 kWh to 900 kWh starting from 1997. This tariff structure adjustment reduced the impact of revenue loss from seasonal low consumption.

- On 1 January 1997 Landrate 4 was introduced with a low basic charge and a high energy rate in order to retain subsidies for rural low-density, low-usage customers.

- The Homeflex tariff is being piloted. It is a residential TOU tariff used as a residential demand-side management tool to reduce system peak demand .

Tariff Changes during 1998

- On 1 January 1998 the four demand charges which were voltage-differentiated were replaced by a single demand charge, while at the same time voltage discounts similar to those in TOU tariffs were introduced. The new increases in voltage discounts will affect all large customer tariffs equally. The change was initiated by the need for simplicity and consistency between tariff types.

- The demand charge for Standardrate (Urban, kVA) was increased slightly to ensure proper alignment with Megaflex at an accuracy level of 0.01%. The process of alignment was completed by 1 January 1998.

- The Standardrate and Nightsave tariffs introduced for rural reticulations were further increased by 2% above the national average price increase.

- The kW demand charges for Standardrate and Nightsave were increased by 1.42% as part of the annual arrangement to align the kW and kVA tariffs at a power factor of 0.85.

- On 1 January 1998 the transmission surcharge was removed from the basic charge component of the Standardrate and Nightsave tariffs since the transmission distance of electricity has no bearing on basic charge costs.

- An excess demand charge was introduced for Standardrate and Nightsave from 1 April 1998 as a solution to the poor power factor problem.

- The following Homelight tariff adjustments continued the adjustment started in 1997 and were effective from 1 January 1998:

  - ✓ Homelight 1 and 2 (20A) were increased by 1c/kWh above the annual price increase, while the connection fee was increased from R65.00 to R75.00.
  - ✓ Homelight 1 and 2 (60A) were increased by 2c/kWh above the annual price increase, while the connection fee was increased from R400.00 to R600.00.

- Another Homelight differentiated supply (2.5A) was introduced in pilot at a connection fee of zero and a flat rate of R10.00 (subject to annual price increase). It was introduced to lower reticulation costs and, to a certain extent, the generation costs of electrification. The flat rate was later dropped in favour of a single energy rate tariff (at the same rate as Homelight 20A). This newly differentiated supply was implemented on 1 January 1998.

- To continue to reduce low-usage subsidies on Landrate, the Landrate 1, 2 and 3 tariffs were adjusted by reducing the high energy rate from 900 kWh to 800 kWh a month and increasing the basic charge by a commensurate amount.

Tariff Changes during 1999

- The kW demand charges for Standardrate and Nightsave were increased by 1.42% as part of the annual alignment of kW and kVA tariffs at a power factor of 0.85.
- As continuation of the process started on 1 January 1997, the Standardrate and Nightsave (rural reticulation) tariffs were increased by 2% above the national average price increase.

- The highest voltage discount was increased by 2.22% and other voltage levels where increased proportionally, as it was believed that the discounts should be increased further. The increases were phased in during 1999.

- The adjustment of Homelight tariffs continued in 1999:

  - ✓ Homelight 1 and 2 (20A) was increased by 1c/kWh above the annual price increase and the connection fee was increased from R65.79 to R87.72.
  - ✓ Homelight 1 and 2 (60A) was increased by 2c/kWh above the annual price increase and the connection fee was increased from R526.32 to R701.75.
  - ✓ Homelight 2.5A continued as a piloted tariff option with an energy charge equal to that of Homelight 1 (20A) and a connection fee of zero.

- On 1 January 1999 as part of structural adjustment the Landrate 1, 2 and 3 high-block rate was reduced from 800 kWh to 700 kWh a month and the basic charge was increased by a commensurate amount.

Tariff Changes during 2000

- On 1 January 2000, Standardrate and Nightsave tariffs were merged into a single tariff, Nightsave: the tariffs were thought to have the same structure, the only differences being that Nightsave had a higher basic charge and demand was not measured during off-peak.

- From 1 January 2000 the kW demand charge for Nightsave was increased by 1.21% to align the kW and kVA tariffs at a 0.85 power factor.

- The Homelight tariff adjustments for the year 2000 are as follows:

  - ✓ Homelight 1 and 2 (20A) were increased by 1c/kWh above the annual price increase and the connection fee was increased from R100 to R150.
  - ✓ Homelight 1 and 2 (60A) were increased by 2c/kWh above the annual price increase and the connection fee was increased from R800 to R1000.

- The high energy block-rate for Landrate 1, 2 and 3 tariffs was reduced from 700 kWh to 600 kWh a month and the basic charges were increased by a commensurate amount.

Tariff Changes during 2001

- The structural adjustment started in 1997 for Landrate 1, 2 and 3 continued in 2001 by reducing the high energy block from 600 kWh to 500 kWh a month and increasing the basic charge by a commensurate amount.

- The Homeflex tariff was still being applied as a pilot and not yet promulgated, but was adjusted to reflect the Wholesale Electricity Pricing System.

3.7.3 Non-Scheduled Tariffs

Non-scheduled/special agreement programmes were largely a function of excess capacity in Eskom's generation. Excess capacity means that additional supplies can be made available at low marginal cost. To provide these additional supplies, Eskom had developed flexible programmes in conjunction with some industrial customers to identify cost-effective programmes to deal with excess capacity. The special agreements programmes were as follows:

3.7.3.1 Real Time Pricing (RTP)

RTP exposes customers' consumption decisions to the short-term value of electricity. The short-term value of electricity is determined by the Eskom Power Pool. The price signal of electricity is being used to achieve the desired demand-

side management behaviour of RTP customers. This tariff was piloted from 1996 to 1997.

This was introduced as a two-part product, one-part following later. The one-part product is without a customer base load. It was introduced because some customers had variable load, which makes it virtually impossible to determine reasonable customer base load.

3.7.3.2 Surplus Energy Product

Surplus energy is defined as the availability of surplus generation capacity plus surplus coal. This product allows customers to purchase surplus energy in a way that will assist Eskom to dispose of the surplus energy incrementally on a marginal cost basis.

The duration of the product is a function of surplus electricity availability but will be short-term (months). The product was developed mainly for self-generating municipalities and industrial customers.

3.8 THE TARIFFS DETAILED YEAR BY YEAR

This section covers all the tariffs from inception until the year 2001. The tariff rates are tabulated year by year to give an overall history of each tariff.

TABLE 1 – MEGAFLEX: TIME-OF USE TARIFF

The connection fee (a contribution towards the cost of providing the supply) was introduced in 1993, two years after the Megaflex was introduced as tariff T1. The basic charge was introduced in 1992.

TABLE 2 – MINIFLEX: TIME-OF USE TARIFF

This tariff has the same structure as Megaflex, except that it has no demand charge. The table shows tariff figures from 1991when the tariff was introduced.

TABLE 3 – RURAFLEX: TIME-OF-USE TARIFF FOR RURAL CUSTOMERS

The tariff is divided into Ruraflex 1 and 2. The table shows tariff figures from 1994 when the tariff was first introduced.

TABLE 4 – NIGHTSAVE: LARGE POWER USERS

The tariff rates are shown from 1986 after the tariffs were nationalised. The tariff is grouped into three tables, 4a, 4b and 4c. Table 4a shows demand rates which

are voltage differentiated starting from 220V/380V. The transmission surcharge was seasonally differentiated until 1987 and not kilometre differentiated.

Table 4b shows demand rates voltage-differentiated from 500V. In 1995 the minimum charge was discontinued and maximum charge introduced. The connection fee in 1997.

Table 4c shows the discontinuation of the voltage-differentiated demand charge and introduction of the voltage discount.

TABLE 5 – STANDARDRATE: LARGE POWER USERS

The tariff is grouped into three tables 5a, 5b and 5c for the changes from 1986 to 1999 before the tariff was merged with Nightsave. The changes are the same as for Nightsave except that in Nightsave demand is charged only in peak period.

TABLE 6 – STANDARDRATE-RURAL

The tariff is grouped into two tables 6a, 6b. The demand charge was voltage-differentiated until the end of 1997. The name maximum overall was changed to maximum charge. During 1995 and 1996 customers in urban and rural areas were paying the same tariff rates; customer classes were distinguished in 1997.

APPENDIX: POLICIES, DIRECTIVES AND DOCUMENTATION

The following policies, directives and documents are available:

1 A Comparison Between Average Prices: Rural As Opposed To Industrial

An explanation of the different prices payable by Eskom's rural and industrial customers.

2 Analysis Of The Structure And Rates Of Eskom's Tariff D (Landrate)

Determining the cost of supplying a particular customer group is the basis of tariff design. Customers are grouped into customer categories according to usage patterns, cost of supply and geographical area. Most of Eskom's rural customers are on Landrate (low-usage domestic customers in relatively high-density areas such as small villages are supplied on Tariff S1 ie, Homelight). This document explains how tariff D was derived.

3 Billing At Times Of New Supplies, Terminations And Price Changes – ESK PBAAN1

Whenever Eskom's tariff rates are changed, new customers connected or existing customer accounts terminated, the customer's bill must be calculated in a certain way. This document explains Eskom's policy in this regard, stipulates the directives to be followed and contains an implementation guideline.

4 Commercial And Contractual Relationship With Customers In Terms Of Power Quality – ESK AOAAS9

Customer power-quality requirements have changed because new technologies have increased the economic impact of using poor-quality power. Eskom is striving to meet customer power-quality needs by implementing the least-cost option in broader economic terms. This policy describes how the contractual and commercial relationship with customers will be structured and is in support of the Eskom Policy for Major Customer Power Quality. Annexed to this document are the directives "The Supply Voltage to be Applied to All Eskom Customers" reference ESK PBAAE0 and "Maximum Voltage Distortion in Electrical Networks" reference ESK ASAAI8.

5 Conversion Surcharge – ESK ADAAV1

With the introduction of time-of-use experimental tariffs, Eskom decided to introduce a conversion surcharge for existing customers converting to these tariffs. This was to protect Eskom's revenue base in cases where large financial savings could be made by the customer without shifting any load by which Eskom's load profile could be improved. In this document it is explained how the conversion surcharge is calculated and phased out and how the conversion surcharge values are entered into the billing system. Conditions are also stipulated for when a conversion surcharge will not be levied or waived, either fully or partially.

6 Customer Built Power Supply Options – ESK PBAAN3

This document provides non-technical implementation guidelines in terms of Eskom's strategy of supporting customers who wish to build their own power supply in order to reduce their capital payments.

7 Decision-Making Relating To Eskom's Contractual Terms And Conditions For The Supply Of Electricity

This directive outlines the Electricity Council's delegation of authority for Eskom's setting of contractual terms and conditions for the supply of electricity.

8 Electricity Pricing Audit Guidelines – SCS AGAAL3

Eskom has various electricity-pricing directives and guidelines. Although internal auditors audit various tariff- and customer-related issues, this in certain cases would not be detailed enough to ensure the correct interpretation and implementation of directives or guidelines.

Audits on electricity pricing issues are currently being done by some regions on an ad-hoc basis as and when it is deemed necessary. The aim of this document is to ensure there is consistency in the interpretation and implementation of directives and that all audits within the regions are standardised and do not duplicate audits currently being performed by Eskom's internal auditors.

9 Electricity Pricing For Plant Commissioning – ESK ADAAZ0

Commissioning tests of new or refurbished plant entail costly demand charges for customers, who therefore frequently request Eskom to reduce their maximum demand charge while conducting commissioning tests. This directive provides principles and guidelines pertaining to the pricing of electricity during commissioning.

10 Electricity Pricing Guideline For The Treatment Of Outliers And Grant Funded Projects – SCS AGAAL2

Eskom's electrification programme is now largely aimed at rural electrification. Bad terrain and haphazardly arranged villages that are sparsely populated contribute to the high cost of supplying electricity to these areas.

This guideline sets out a standard approach for the treatment of customers who are prepared to make a contribution to their cost of supply in excess of the standard charges applicable to the tariff.

11 Electricity Pricing Primer

This document provides some useful information on the supply and demand of electricity and on factors influencing these. It has been derived from a variety of sources and would be useful to newcomers, including graduates in training and enthusiastic customer-services staff in Eskom.

12 Electricity Supply Contract Guideline – ESK ADAAX6

Electricity supply contracts form the basis of the relationship between Eskom and its customers and are being concluded almost daily. This directive provides policy and detailed directives for Eskom personnel.

13 Electrification Of Workers' Houses – ESK PBAAN2

This document sets out Eskom's strategy for the electrification of workers' houses in South Africa.

14 Eskom's Market Protection Strategy In Drought-Stricken Areas

Droughts make it difficult for farmers to continue buying electricity. To ensure that farmers do not discontinue taking supply and to encourage increased usage, special drought relief is offered. This document details policies and guidelines for Eskom's Market Protection Strategy in Drought-Stricken Areas.

15 Eskom's Retail Pricing Plan

Plans are presemted for structural changes to existing tariffs and the introduction of new tariff structures.

16 Eskom's Tariffs & Charges

This document sets out the charges applicable to Eskom's standard tariffs.

17 Eskom's Tariffs & Charges – Supplementary Pricing Information 2000

This internal document contains additional information such as national average costs, rebates, tariff codes, standard charges.

18 Eskom's Tariff History 1973 - 1991

A comprehensive history of Eskom's tariffs 1973 - 1991.

19 Explanation Of How Tariff Rates (Standardrate) Are Derived

In the run up to the Electricity Control Board's hearing on tariffs T1 & T2 (Megaflex and Miniflex), the shortcomings of tariff A and to a lesser extent tariff E (Nightsave - the then tariff F) were widely publicised. However, with the passage of time and the resignation and retirement of past pricing gurus, the basis for deriving the energy and demand rates in Tariff A had been lost and forgotten. This paper describes how the revised rate levels of R6.29 per kVA and 1.4461 c/kWh (1983 prices) were derived and is intended to complete the education of all enthusiastic and ambitious tariff practitioners and customer services staff in Eskom.

20 Granting Of Demand Charge Exemptions – ESK PBAAM6

Customers frequently request Eskom to waive their demand charges (or part thereof) for a variety of reasons, be it power interruptions, failure of load control equipment or operational requirements. Requests for demand charge exemptions have previously been handled in an ad hoc and inconsistent way. This policy is compiled with the aim of providing direction on how to handle demand charge exemption requests and ensure consistency in the approval of these requests with a view to striking a balance between fair decisions and Eskom's interest. A policy of this nature cannot take into consideration all possible scenarios, but it provides a framework within which sound judgements can be made.

21 Granting The Benefit Of Diversity – ESK ADAAT0

Eskom's tariffs are based on the customer's own maximum demand, unlike those tariffs which charge for maximum demand according to the customer's contribution to or coincidence with the system peak. Where a customer has more than one point of delivery, the sum of the individual maximum demands may be more than the sum of the customer's simultaneous maximum demand, that is the demand for the customer's system if it were regarded as a single point of delivery. This implies that there will be a difference in revenue to Eskom between the two methods of measuring the maximum demand, and the issue arises of how, when and to whom this benefit may be granted. The same policy must be applied to all customers and the criteria for eligibility must ensure that it is not prejudicial to grant diversity benefits to some customers and not others.

22 Large LV Supplies In Rural Areas – ESK ADAAX0

With the introduction of Ruraflex many requests are being received from customers for large LV supplies, in excess of 500 kVA, in rural areas. This presents various problems for both the customer and Eskom, such as:

- The customer does not have the necessary skills and does not want to take supply at a high voltage.
- Eskom's cheapest, most practical option is to install multiple supply transformers since it is very difficult to transport and install larger transformers in the difficult terrain often encountered.
- Excessive LV fault levels will be experienced if multiple transformers are operated in parallel on the LV side.

This directive sets out the supply methodology for meeting customers' and Eskom's requirements if one high voltage connection is to be avoided.

23 Monthly Rental Deferral Policy – ESK ADAAU2

Customers may experience plant stoppages due to damage caused by *force majeure* incidents. With a prolonged loss of production the customer may have no income for a number of months, which could result in cash flow problems. This document stipulates the relief in deferral of monthly rental that may be granted to such customers.

24 Moving Of Assets To Balance Supply And Demand – SCS ADABE0

Eskom's normal investment policy is to install the minimum capital equipment at each point of delivery (POD) required to meet the customer's load requirements. Over time it happens that the available capacity becomes out of balance with the customer's load

requirements at particular PODs. This document addresses Eskom's actions and pricing-related issues in rebalancing capacity with demand.

25 Negotiation Guidelines For Third Party Wheeling Agreements – SCS AGAAN6

This document sets out policy, implementation guidelines and pricing-related issues pertaining to the wheeling of energy through the networks of a third party.

26 NETRENT

NETRENT is a user friendly software package for determining the fair share of the reticulation network costs to be allocated to each customer in rural areas.

NETRENT aims to assist the person doing customer quotes and revision of existing monthly rentals, by making the whole process less error prone and more efficient.

The underlying basis of this program is the policy document "Recovery of Capital Costs in Rural Areas" - January 1994, and the revised rebate policy - September 1994.

27 Policy On Negotiated Pricing – ESK PBAAR3

This document deals with all non-tariff special pricing agreements for the sale of electrical energy by Eskom inside Eskom's areas of supply and also cross-border.

28 Policy On Power Quality And Customer Claims – ESK PBAAM3

Customers are presently claiming for damages allegedly caused by poor power quality. It is recognised that all customer claims must be treated fairly and consistently. Claims
paid to customers by Eskom have to be recovered from all Eskom's customers through tariff increases. A customer claim can therefore be seen as a claim by one customer against all Eskom's other customers with Eskom representing the customer base at large. It is therefore imperative that all claims be dealt with responsibly and consistently. This policy specifies under what conditions Eskom will settle claims for damages due to poor quality and sets out the process to be followed to ensure that claims are processed within two months.

29 Pricing For Rural Low-Density Points Of Supply With Very Low Usage – MRG ADAAT2

Large subsidies are involved in Eskom's low-density rural supplies particularly in areas where consumption levels are significantly lower than 1 000 kWh a month (this being the tariff design level). A modified Landrate tariff has been developed for low-usage supplies in low-density areas to limit Eskom's subsidies and investments in these lower-return, high-risk supplies. This directive gives the procedure to follow for pricing for rural low-density points of supply.

30 Pricing For Schools And Clinics – MRG ADAAT4

The electrification of schools and clinics involves more than just the construction of electrical networks. Tariffs and charges applicable to each supply point also have to be considered. This document sets out the policy and guidelines for these supplies in order to standardise Eskom's approach to the electrification of schools and clinics.

31 Pricing For The Mobile Transformer – ESK ADAAY0

The mobile transformer is a ground-mounted minitransformer intended for temporary service loads. It is aimed at parties requiring a supply for a short usage period (less than 3 years uninterrupted) and entities that move around and require a supply point at different locations. It is intended for "run of line" applications, that is where it can be tapped from existing Eskom lines without having to build additional lines.

This directive sets out all aspects regarding the pricing of such a supply. The prices will be based on the cost of supply with due consideration of the risks involved in providing the mobile transformer as supply point.

32 Pricing Of Distributed Generation – SCS ADABF6

Local distribution or reticulation networks may become overloaded by load growth over time. To maintain the quality of supply to customers, it would then be necessary to strengthen these networks. The cost of strengthening may be very high compared to the additional revenue to be derived from increased sales. Where the local network has a low load factor, the network strengthening can often not be economically justified.

An alternative Integrated Electricity Planning solution to the problem may be the use of small local generation to reduce the peak loading of the lines to within their design capacity. For lines with low load factors, the local generation would only be required to operate during the highest peak loading periods (typically daily and also seasonal). The peaks on the local networks will be determined by the requirements of the customers served and will not necessarily coincide with the Eskom system peak. The purpose of such generators is therefore clearly not to provide generating capacity but to relieve local constraints, which may even occur during system off-peak periods.

Distributed Generation as contemplated in this directive would therefore typically be relatively small plant – diesel generators, micro-hydro, microturbines and other suitable technologies.

33 Pricing Of Interruptible Supplies – ESK PBAAH0

This policy is issued in accordance with Eskom's Integrated Electricity Plan, which makes provision for the implementation of interruptible and curtailable load agreements as a demand-side management tool.

34 Pricing Of Self-Dispatched Non-Eskom Generation – ESK PBAAG1

This directive sets out the pricing methodology applicable to customers who operate their own self-dispatched generation and covers the following:

- the supply of electricity to NEGs
- the purchase of electricity from NEGs
- the provision of standby to NEGs on both a firm and an unfirm basis

35 35 Pricing Policy And Directive For Low-Consumption Rural Supplies – SCS PBAAT4

This document sets out Eskom's policy and directives for the provision of low-consumption electricity supplies to rural customers. It provides a standard approach for the treatment of low-consumption customers without developing a new national tariff.

36 Provision Of Customer Information To Energy Consultants – SCS ADABB1

With the introduction of time-of-use tariffs, Eskom customers appointed energy consultants to investigate their load profiles. The consultants obtained the relevant information free of charge from Eskom but charged the customers for advice.

Eskom interacts with customers in a relationship of trust and sharing of information. Any unauthorised sharing of this information with consultants can lead to a breach of trust and a serious breach of confidentiality. This directive sets out the protocol for providing customer information to energy consultants.

37 Quality Of Supplies – SCS PBAAS9

This directive describes the contractual and commercial relationship with distribution customers regarding quality of supply.

38 Quotations For Electricity Supplies – SCS PBAAT0

Customers applying for or negotiating about new electricity supplies or changes to the terms and conditions of existing supplies may require a written quotation for purposes of evaluating Eskom's terms and conditions of such new or modified supplies. This directive provides general policy and guidelines for preparing quotations. More sophisticated quotations will be done by a different process.

39 One-Part Real Time Pricing (Rtp) Of Electricity Supplies – SCS ADABG1

RTP, as a two-part product (an access charge plus a real time energy charge), has been in operation for some time. From practical experience gained and feedback from customers it is clear that the loads of some customers are too variable to allow the determination of a reasonable customer base load (CBL). It is believed that the one-part version of RTP (without a CBL and hence an access charge) will be more suitable for certain customers. This product will be available as a choice between the original 2-part product and this new 1-part product to all Eskom customers who meet the qualification criteria for RTP.

40 Two-Part Real Time Pricing (Rtp) Of Electricity Supplies – ESK ADAAV2

RTP has been used successfully by world utilities as a demand-side management tool enabling them to shift load out of peak periods while customers have been able to profit from increased production at times of low prices. Eskom has also clearly demonstrated that customers who embrace this product (a) use significantly more electricity during system-unconstrained periods and (b) shift significant amounts of load out of peak periods, as signalled by the real-time price. This directive sets out the methodology of real-time pricing of electricity supplies.

41 Recovery Of Capital Cost In Rural Areas

Owing to the absence of developers in rural areas, distributors finance rural networks and recover the cost from the customer through tariffs, capital charges and contributions. Rural networks are often shared by a number of customers and the cost of these networks must be shared between these customers. This document details the policies and guidelines for recovery of capital costs in rural areas.

42 Recovery Of Capital Cost, Excluding Rural Reticulation Areas – ESK ADAAY7

Capital charges are those levied outside of the tariff to recover capital costs not covered in the tariff. The purpose of capital charges is to ensure that all customers pay their fair share of the total network capital and more specifically the actual costs involved in making their supplies available.

Eskom's tariffs recover almost all costs but there is a need to apply capital charges to ensure that there are no losses on individual supplies and that all customers are treated fairly. The objectives of this directive are:

- to stipulate a standard method of calculating and applying capital charges
- to explain the logic and rationale of the calculation

43 Remedial Action Against The Non-Payment Of Electricity

It is Eskom's policy to detect and recover all revenues lost as a result of non-payment, theft, malicious damage to property and tampering with installations.

44 Remote Area Power Supplies (Raps) In Eskom

This forms part of the policy document on RAPS . It sets out Eskom's tariff policy and provides various recommendations and procedures. RAPS covers solar-, wind- and other stand-alone power systems.

45 Residential Tariffs Directive – ESK ADAAS3

With the electrification programme and the increasing number of residential customers in South Africa, it has become necessary for Eskom to review its policies on tariffs and charges to residential customers. Subsidies for residential electrification in South Africa are extremely high. Strategies need to be put in place that will enable Eskom to lower the cost to the minimum so as to meet customers' essential electricity instead of their desired electricity needs at a much higher cost.

This directive addresses all issues relating to residential supplies and refers to issues to be addressed in other documents. This directive is in line with the approach proposed by the National Electrification Forum for the national domestic tariff system and now being finalised by the National Electricity Regulator.

46 Residential Township Development Directive – MRG ADAAT3

This policy deals with the relationship between Eskom and developers in residential township developments. It further details the financial obligations of each party (Eskom and developer or other party) and other procedural matters.

47 Residential Township Development Implementation Guide

These guidelines are intended to assist staff in processing and implementing developer projects. They are not intended to override or replace existing localised procedures. However, as there is currently a drive for standardisation to achieve uniformity of approach nation-wide, the information contained in this paper should be viewed as a step in that direction.

48 Ruraflex Directive – ESK PBAAM0

Shortly after the introduction of the Megaflex and Miniflex time-of-use (TOU) tariffs in Eskom, it was realised that the cost of supplying electricity was higher in rural areas than in urban areas. In response to the large demand for a TOU-based tariff by rural customers, a new tariff called Ruraflex was introduced which addresses the higher costs and also many of the other specific needs of rural customers. This document sets out policy and guidelines for these supplies.

49 Tariff Choice For Multiple Point Of Delivery Customers – ESK ADAAW0

Eskom has a number of promulgated tariffs for its large customers. The implication is that a customer can choose from this basket of tariffs whatever tariff holds the biggest advantage for him. This directive stipulates Eskom's policy.

50 Tariffs And Prices Applicable To Eskom Supplies – ADAAW0

Eskom has many supply points throughout the country that are for own use. There have been inconsistencies in the tariffs and charges applied to these supplies – in some areas they have been standard but in others (mainly for historical reasons) non-standard. This directive sets out the tariffs and pricing applicable to Eskom points of supply.

51 The Application Of Public Lighting Services In Eskom – SCS PBAAR5

This document sets out Eskom's policy and guidelines for the provision of public lighting services including capital financing, installation of lighting networks, electricity supply and maintenance. Transitional Local Councils (TLCs), local communities and other bodies require Eskom to provide more comprehensive public lighting services in developing areas where Eskom is the supplier of electricity to end-users.

52 Updated Ruraflex Implementation Policy And Guidelines – ESK PBAAP3

This document sets out the implementation policy and guidelines for Ruraflex supplies and must be read in conjunction with Ruraflex directive ESK PBAAMO.

BIBLIOGRAPHY

Mountain B. April 1994. *Towards a pricing strategy for the South African electricity supply and Distribution industry, MSc Dissertation, University of Cape Town.*

SR Conradie and LJM Messerschmidt. A Symphony of Power. The Eskom Story. Originator Allen J Morgan (Chief Executive)

Ferrando LJ, Barnard HB and Mcdougall SD. Eskom Tariff History-1973 to 1991

www.dme.gov.za/publication/wp_ene/whitepaper1998.htm: *White Paper on the Energy Policy.*

www.ner.org.za/about_us.htm

TABLE 1- MEGAFLEX TARIFF: 1991 TO 2001

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	
	TARIFF T1	**TARIFF T1**	**TARIFF T1**	**TARIFF T1**	**MAXIFLEX**	**MEGAFLEX**	**MEGAFLEX**	**MEGAFLEX**	**MEGAFLEX**	**MEGAFLEX**	**ME**
Basic Charges (R)		38.52	41.60	44.51	46.28	47.91	50.31	53.05	63.2	58.49	
Demand Charge (R/kW)											
High Demand (June - Aug)	7.74	8.28	8.86	9.48	9.86	10.21	10.52	11.09	11.59	12.23	
Low Demand (Jan - May / Sep - Dec)	6.98	7.47	7.98	8.54	8.88	9.20	9.48	10.00	10.45	11.02	
Active Energy Charge (c/kWh)											
High Demand (June - Aug)											
Peak	19.27	20.62	16.01	17.13	17.82	18.44	18.99	20.02	20.92	22.07	
Standard	6.39	6.84	8.97	9.60	9.99	10.34	10.65	11.23	11.74	12.39	
Off-peak	4.54	4.86	5.15	5.51	5.73	5.93	6.11	6.44	6.73	7.10	
Low Demand (Jan - May / Sep - Dec)											
Peak	17.34	18.55	14.41	15.42	16.03	16.59	17.09	18.02	18.83	19.87	
Standard	5.76	6.16	8.07	8.63	8.97	9.28	9.56	10.08	10.53	11.11	
Off-peak	4.08	4.37	4.63	4.95	5.15	5.34	5.50	5.80	6.06	6.39	
Voltage Discount (%)											
< 500V	0	0	0	0	0	0	0	0	0	0	
> 500V and ≤ 66kV	1.86	1.86	1.86	1.86	1.86	2.34	2.34	2.90	3.3	5.33	
> 66kV and ≤ 132kV	3.72	3.72	3.72	3.72	3.72	4.69	4.69	5.80	6.55	7.13	
> 132kV	5.58	5.58	5.58	5.58	5.58	7.03	7.03	9.25	10.75	12.75	
Reactive Energy Charge (c/kvarh)	1.62	1.73	1.87	2.00	2.07	2.14	2.20	2.32	2.42	2.55	
Transmission Surcharge											
Distance from JHB	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	
≤ 300km	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
> 300km and ≤ 600km	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	
> 600km and ≤ 900km	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	
> 900km	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	

TABLE 2- MINIFLEX TARIFF: 1991 TO 2001

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	TARIFF T2	TARIFF T2	TARIFF T2	TARIFF T2	MINIFLEX	MINIFLEX	MINIFLEX	MINIFLEX	MINIFLEX	MINIFLEX	MINIFLE
Basic charge (R)		38.52	41.60	44.51	46.28	47.91	50.31	53.05	55.44	58.49	61.
Active Energy Charge (c/kWh)											
High Demand											
Peak	21.76	23.28	24.42	26.13	27.17	28.12	28.96	30.54	31.91	33.67	43.
Standard	8.64	9.25	8.97	9.60	9.99	10.34	10.65	11.23	11.74	12.39	13.
Off-peak	4.62	4.94	5.15	5.51	5.73	5.93	6.11	6.44	6.73	7.10	7.
Low Demand											
Peak	19.58	20.95	21.98	23.51	24.45	25.31	26.07	27.49	28.73	30.31	31.
Standard	7.78	8.33	8.07	8.63	8.97	9.28	9.56	10.08	10.53	11.11	11.
Off-peak	4.16	4.45	4.63	4.95	5.15	5.34	5.50	5.80	6.06	6.39	6.
Voltage Discount (%)											
< 500V	0	0	0	0	0	0	0	0	0	0	
> 500V and ≤ 66kV	1.86	1.86	1.86	1.86	1.86	2.34	2.34	2.90	3.3	5.33	5
> 66kV and ≤ 132kV	3.72	3.72	3.72	3.72	3.72	4.69	4.69	5.80	6.55	7.13	7
> 132kV	5.58	5.58	5.58	5.58	5.58	7.03	7.03	9.25	10.75	12.75	12
Reactive Energy Charge (c/kvarh)	0.81	0.87	94	1.00	1.04	1.07	1.10	1.16	1.38	1.28	1.
Transmission Surcharge											
Distance from JHB	%	%	%	%	%	%	%	%	%	%	%
≤ 300km	0	0	0	0	0	0	0	0	0	0	0
> 300km and ≤ 600km	1	1	1	1	1	1	1	1	1	1	1
> 600km and ≤ 900km	2	2	2	2	2	2	2	2	2	2	2
> 900km	3	3	3	3	3	3	3	3	3	3	3

TABLE 3- RURAFLEX TARIFF: 1994 TO 2001

	1994	1995	1996	1997	1998	1999	2000	2001
	Ruraflex	**Ruraflex**	**Ruraflex**	**Ruraflex**	**Ruraflex**	**Ruraflex**	**Ruraflex**	**Ruraflex**
Basic charge (R)								
Ruraflex 1	240.75	250.38	259.14	272.10	286.93	299.84	316.33	332.78
Ruraflex 2	267.50	278.20	287.93	302.33	318.81	333.16	351.48	369.76
Active Energy Charge (c/kWh)								
High Demand								
Peak	30.36	31.57	32.67	33.65	35.48	37.08	39.12	51.57
Standard	11.46	11.92	12.34	12.71	13.40	14.00	14.77	15.54
Off-peak	6.66	6.92	7.17	7.39	7.79	8.14	8.59	9.04
Low Demand								
Peak	27.24	28.33	29.32	30.20	31.85	33.28	35.11	36.94
Standard	10.28	10.69	11.07	11.40	12.02	12.56	13.25	13.94
Off-peak	5.98	6.21	6.43	6.62	6.98	7.29	7.69	8.09
Voltage Discount (%)								
< 500V	0	0	0	0	0	0	0	0
> 500V and ≤ 66kV	1.86	1.86	2.34	2.34	2.90	3.3	5.33	5.33
> 66kV and ≤ 132kV	3.72	3.72	4.69	4.69	0	0	0	0
> 132kV	5.58	5.58	7.03	7.03	0	0	0	0
Reactive Energy Charge (c/kvarh)	1.00	1.04	1.07	1.10	1.16	1.21	1.28	1.35
Transmission Surcharge								
Distance from JHB	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**
≤ 300km	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
> 300km and ≤ 600km	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
> 600km and ≤ 900km	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
> 900km	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**

TABLE 4a- NIGHTSAVE TARIFF: 1986 TO 1991

	1986		1987		1988	1989	1990	1991
	TARIFF E		TARIFF E		TARIFF E	TARIFF E	TARIFF E	TARIFF E
	January	July	January	July				
Basic charge (R)	121.00	133.10	149.05	149.05	163.96	180.36	205.61	222.06
Demand Rates (R/kVA)								
380 / 220V	12.29	13.51	15.13	15.13	16.64	18.30	20.86	22.53
> 380 and < 66 000V	11.80	12.98	14.53	14.53	15.98	17.58	20.04	21.64
≥ 66 000V and ≤ 132 000V	11.32	12.45	13.94	13.94	15.33	16.86	19.22	20.76
> 132 000V	10.84	11.92	13.34	13.34	14.67	16.14	18.40	19.87
Demand Rates (R/kW)								
380 / 220V	13.20	14.52	16.26	16.26	17.89	19.68	22.44	24.24
> 380 and < 66 000V	12.71	13.98	15.65	15.65	17.22	18.94	21.59	23.32
≥ 66 000V and ≤ 132 000V	12.22	13.44	15.05	15.05	16.56	18.22	20.77	22.43
> 132 000V	11.74	12.91	14.45	14.45	15.90	17.49	19.94	21.54
Energy Rate (c/kWh)	2.263	2.488	2.787	2.787	3.066	3.373	3.845	4.153
Minimum Rate (c/kWh)	3.300	3.993	4.471	4.471	4.918	5.410	6.167	6.660
Surcharge (%)	10.00	21.00	35.50	N/A				
Transmission Surcharge								
Distance from JHB						%	%	%
≤ 300km						0	0	0
> 300km and ≤ 600km						1	1	1
> 600km and ≤ 900km						2	2	2
> 900km						3	3	3

TABLE 4b- NIGHTSAVE TARIFF: 1992 TO 1997

	1992	1993	1994	1995	1996	1997	1997
	TARIFF E	TARIFF E	TARIFF E	NIGHTSAVE	NIGHTSAVE	NIGHTSAVE-URBAN	NIGHTSAVE-RURAL
Basic Charge (R)	242.05	261.41	279.71	290.90	302.54	317.67	317.67
Demand Rates (R/kVA)							
< 500V	24.56	26.52	28.38	29.51	30.70	32.85	33.46
> 500 and < 66 KV/22 kV	23.59	25.48	27.26	28.35	29.48	31.25	31.84
≥ 66 000V and ≤ 132 000V	22.63	24.44	26.15	27.20	28.28	29.41	
> 132 000V	21.66	23.39	25.03	26.03	27.07	27.88	
Demand Rates (R/kW)							
< 500V	26.42	28.53	30.53	31.75	33.02	35.80	36.46
> 500 and < 66 kV/22kV	25.42	27.45	29.37	30.55	31.77	34.13	34.76
≥ 66 000V and ≤ 132 000V	24.45	26.41	28.26	29.39	30.57	32.23	
> 132 000V	23.48	25.36	27.14	28.22	29.35	30.65	
Energy Rate (c/kWh)	4.527	4.890	5.23	5.44	5.66	5.94	6.06
Minimum Rate (c/kWh)	7.259	7.840	8.39	0	0	0	0
Maximum Charge (c/kWh)	0	0	0	25.14	26.15	27.46	27.98
Transmission Surcharge							
Distance from JHB	**%**	**%**	**%**	**%**	**%**	**%**	**%**
≤ 300km	**0**	**0**	**0**	**0**	**0**	**0**	**0**
> 300km and ≤ 600km	**1**	**1**	**1**	**1**	**1**	**1**	**1**
> 600km and ≤ 900km	**2**	**2**	**2**	**2**	**2**	**2**	**2**
> 900km	**3**	**3**	**3**	**3**	**3**	**3**	**3**

TABLE 4c- NIGHTSAVE - URBAN TARIFF: 1998 TO 2001

	1998	1999	2000	2001	1998	1999	2000	2001
	NIGHTSAVE-URBAN	NIGHTSAVE-URBAN	NIGHTSAVE-URBAN	NIGHTSAVE-URBAN	NIGHTSAVE-RURAL	NIGHTSAVE-RURAL	NIGHTSAVE-RURAL	NIGHTSAVE-RURAL
Basic Charge (R)	334.98	350.05	166.16	174.8	334.98	350.05	166.16	174.8
Demand Charge (R/kVA)								
30 min integrating periods	34.69	36.25	38.24	40.23	36.00	38.34	41.22	43.36
Demand Charge (R/kW)								
60 min integrating periods	38.31	40.58	43.39	46.17	39.77	42.92	46.75	49.75
Energy Charge (c/kWh)	6.26	6.54	6.90	7.26	6.51	6.93	7.45	7.84
Maximum Charge (c/kWh)	28.96	30.26	33.67	43.16	30.06	32.01	39.12	51.57
Voltage Discount (%)								
> 132kV	9.25	10.75	12.75	12.75				
≤ 132kV and ≥ 66kV	5.80	6.55	7.13	7.13				
< 66kV/22kV and ≥ 500kV	2.90	3.30	5.33	5.33	2.90	3.30	5.33	5.33
< 500V	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Transmission Surcharge								
Distance from JHB	%	%	%	%	%	%	%	%
≤ 300km	0	0	0	0	0	0	0	0
> 300km and ≤ 600km	1	1	1	1	1	1	1	1
> 600km and ≤ 900km	2	2	2	2	2	2	2	2
> 900km	3	3	3	3	3	3	3	3

TABLE 5a- STANDARDRATE(STD)-URBAN TARIFF: 1986 TO 1991								
	1986		**1987**		**1988**	**1989**	**1990**	**1991**
	TARIFF A		**TARIFF A**		**TARIFF A**	**TARIFF A**	**TARIFF A**	**TARIFF A**
	January	**July**	**January**	**July**				
Basic charge (R)	54.45	59.90	67.07	67.07	73.78	81.16	95.52	99.92
Demand Rates (R/kVA)								
380 / 220V	12.29	13.51	15.13	15.13	16.64	18.30	20.86	22.53
> 380 and < 66 000V	11.80	12.98	14.53	14.53	15.98	17.58	20.04	21.64
≥ 66 000V and ≤ 132 000V	11.32	12.45	13.94	13.94	15.33	16.86	19.22	20.76
> 132 000V	10.84	11.92	13.34	13.34	14.67	16.14	18.40	19.87
Demand Rates (R/kW)								
380 / 220V	13.20	14.52	16.26	16.26	17.89	19.68	22.44	24.24
> 380 and < 66 000V	12.71	13.98	15.65	15.65	17.22	18.94	21.59	23.32
≥ 66 000V and ≤ 132 000V	12.22	13.44	15.05	15.05	16.56	18.22	20.77	22.43
> 132 000V	11.74	12.91	14.46	14.46	15.90	17.49	19.94	21.54
Energy Rate (c/kWh)	2.263	2.489	2.787	2.787	3.066	3.373	3.845	4.153
Surcharge (%)	10.00	21.00	35.50	N/A				
Transmission Surcharge								
Distance from JHB						**%**	**%**	**%**
≤ 300km						**0**	**0**	**0**
> 300km and ≤ 600km						**1**	**1**	**1**
> 600km and ≤ 900km						**2**	**2**	**2**
> 900km						**3**	**3**	**3**

TABLE 5b- STANDARDRATE(STD)-URBAN TARIFF: 1992 TO 1997

	1992	1993	1994	1995	1996	1997
	TARIFFA	TARIFFA	TARIFFA	STD	STD	STD
Basic Charge (R)	108.91	117.62	125.85	130.88	136.12	142.93
Demand Rates (R/kVA)						
< 500V	24.56	26.52	28.38	29.51	30.70	32.85
> 500 and < 66 KV/22 kV	23.59	25.48	27.26	28.35	29.48	31.25
≥ 66 000V and ≤ 132 000V	22.63	24.44	26.15	27.20	28.28	29.41
> 132 000V	21.66	23.39	25.03	26.03	27.07	27.88
Demand Rates (R/kW)						
< 500V	26.42	28.53	30.53	31.75	33.02	35.80
> 500 and < 66 kV/22kV	25.42	27.45	29.37	30.55	31.77	34.13
≥ 66 000V and ≤ 132 000V	24.45	26.41	28.26	29.39	30.57	32.23
> 132 000V	23.48	25.36	27.14	28.22	29.35	30.65
Energy Rate (c/kWh)	4.527	4.890	5.23	5.44	5.66	5.94
Maximum Charge (c/kWh)				25.14	26.15	27.46
Transmission Surcharge						
Distance from JHB	%	%	%	%	%	%
≤ 300km	0	0	0	0	0	0
> 300km and ≤ 600km	1	1	1	1	1	1
> 600km and ≤ 900km	2	2	2	2	2	2
> 900km	3	3	3	3	3	3

TABLE 5c- STANDARDRATE(STD) - URBAN TARIFF: 1998 TO 1999

	1998	1999
	STD	STD
Basic Charge (R)	150.72	179.55
Demand Charge (R/kVA)		
30 min integrating periods	34.69	36.25
Demand Charge (R/kW)		
60 min integrating periods	38.31	40.58
Energy Charge (c/kWh)	6.26	6.54
Maximum Charge (c/kWh)	28.96	30.26
Voltage Discount (%)		
> 132kV	9.25	10.75
≤ 132kV and ≥ 66kV	5.80	6.55
< 66kV/22kV and ≥ 500kV	2.90	3.30
< 500V	0.00	0.00
Transmission Surcharge		
Distance from JHB	**%**	**%**
≤ 300km	**0**	**0**
> 300km and ≤ 600km	**1**	**1**
> 600km and ≤ 900km	**2**	**2**
> 900km	**3**	**3**

TABLE 6a- STANDARDRATE(STD) - RURAL TARIFF: 1987 TO 1994

	1987	1988	1989	1990	1991	1992	1993	1994
	TARIFF F	TARIFF F	TARIFF F	TARIFF F	TARIFF F	TARIFF F	TARIFF F	TARIFF F
Basic Charge (R)	67.07	73.78	81.16	95.52	99.92	108.91	117.62	5.23
Demand Rates (R/kVA)								
380 / 220V	15.13	16.64	18.30	20.86	22.53	24.56	26.52	28.38
11kV or 22kV	14.53	15.98	17.58	20.04	21.64	23.59	25.48	27.26
Energy Rate (c/kWh)	2.787	3.066	3.373	3.845	4.153	4.527	4.89	125.85
Maximum Overall (c/kWh)	12.88	14.17	15.59	17.773	19.195	20.923	22.60	24.18
Transmission Surcharge								
Distance from JHB			%	%	%	%	%	%
≤ 300km			**0**	**0**	**0**	**0**	**0**	**0**
> 300km and ≤ 600km			**1**	**1**	**1**	**1**	**1**	**1**
> 600km and ≤ 900km			**2**	**2**	**2**	**2**	**2**	**2**
> 900km			**3**	**3**	**3**	**3**	**3**	**3**

TABLE 6b- STANDARDRATE(STD)-RURAL TARIFF: 1997 TO 1999

	1997		1998	1999
	STDR	STDR	STDR	STDR
Basic Charge	142.93	**Basic Charge (R)**	150.72	157.50
Demand Charge (R/kVA)		**Demand Charge (R/kVA)**		
< 500V	33.46	**30 min integrating periods**	36.00	38.34
≥ 500V to ≤ 22kV	31.84			
Demand Charge (R/kW)		**Demand Charge (R/kW)**		
< 500V	36.46	**60 min integrating periods**	39.77	42.92
≥ 500V to ≤ 22kV	34.76			
Energy Charge (c/kWh)	6.06	**Energy Charge (c/kWh)**	6.51	6.93
Maximum Charge (c/kWh)	27.98	**Maximum Charge (c/kWh)**	30.06	32.01
		Voltage Discount (%)		
		≤ 22kV and ≥ 500V	2.90	3.30
		< 500V	0.00	0.00
Transmission Surcharge				
Distance from JHB	**%**		**%**	**%**
≤ 300km	**0**		**0**	**0**
> 300km and ≤ 600km	**1**		**1**	**1**
> 600km and ≤ 900km	**2**		**2**	**2**
> 900km	**3**		**3**	**3**