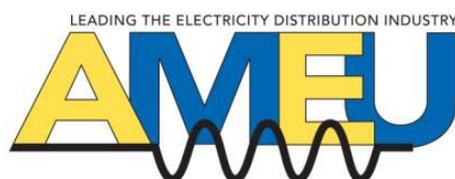


Strategic Direction for Eskom's Retail Tariffs – 2011 onwards



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1. Introduction

Electricity tariffs are regulated in South Africa via an independent body known as the National Electricity Regulator of South Africa (NERSA).

Tariffs are the means of recovering Eskom's revenue and subsequently the tariffs need to be structured adequately, both in the level of the tariff and in the combination of different charging parameters that will recover the revenue.

This paper sets out the broad direction for Eskom's retail tariff structures over the next few years to provide stakeholders with a view of Eskom proposed direction for tariff structures in the coming years.

The direction is aligned with Eskom's purpose "*To provide sustainable electricity solutions to grow the economy and improve the quality of life of the people in South Africa and in the region*"; and is driven by national imperatives, customer requirements, business needs and best practices. It is also aligned with the Department of Energy Electricity Pricing Policy (EPP).

2. Background

Eskom's tariffs range from the least sophisticated tariff for the low usage residential customer (such as Inclining Block Rate), which is a tariff where the costs are all bundled together, to the most sophisticated tariffs for the large industrial users and municipalities (Megaflex) where the costs are unbundled in the different components so that these components can be managed most efficiently

according to individual customer electricity requirements.

The Eskom tariffs send out a signal to use electricity efficiently. These charges are based on a long run marginal cost signal reflecting higher costs of generation during high demand periods resulting in more expensive rates during the winter and peak periods. It is recognised that a review of the charges in the time of use periods and seasons is required to address concerns raised by customer and also to reflect the current system demand.

Apart from the Time-of-Use tariffs for large customers, Eskom is currently on a pilot basis also rolling out a time-of-use tariff for residential customers together with the roll-out of smart meters - called Homeflex.

Eskom supports the intent of IBT to provide relief to the poor against increasing electricity tariffs, but there are unintended consequences that were not addressed when the tariff was introduced by NERSA in February 2010. Eskom will be developing a residential tariff strategy, in line with the Department of Energy's Electricity Pricing Policy positions in this regard, which caters for a selection of tariff options based on the customer's usage.

Depending on where a customer is situated along the supply chain, there can be a substantial difference in associated costs. The further down the supply chain you go, the more networks Eskom has to build to supply the customer. Eskom's tariffs are therefore not designed around economic customer classes, but around tariffs that are based on the cost to supply electricity to the point where the electricity is used.

Some stakeholders are under the impression that industrial customers are subsidised by residential customers by comparing the average prices paid by residential and industrial customers ignoring the cost to supply those customers. It costs significantly less to supply the average industrial customer than what it does to supply the average residential or rural customer. The large high voltage customers currently subsidise the low voltage low usage residential and rural customers. It is important that the level of subsidies are managed to ensure sustainability for the customers paying the cross-subsidies.

Municipalities purchase electricity from Eskom at the point where it is delivered - at the appropriate Eskom tariffs applicable to that specific point of delivery. The costs to supply the different municipalities vary substantially depending on their voltage, location and usage profile. Once municipalities have purchased the electricity from Eskom they have to add the costs of their own networks and the resources to operate maintain and administer their networks. Municipalities then design their own tariffs according to their own customer and cost base. In a few cases (small rural towns where they do not have the resources) Eskom supply the end-customers in the municipal area with electricity charging them the standard Eskom tariffs.

Any tariff restructuring will impact customers and the impact will depend on the customer category, the way that electricity is used, changes in subsidies and how the tariff is restructured. The challenge is that the MYPD process, where an average price increase is calculated, is not necessarily aligned with the % impact on individual customers or even different tariff classes for a number of reasons, such as tariff restructuring, subsidies due the protection of the poor and different dates for the price increase for municipal tariffs.

The ultimate impact on customers will depend on the average increase resulting from the MYPD 3 determination and any tariff restructuring approved by NERSA.

3. Strategic Direction for Eskom's Retail Tariffs

Tariffs are the means of recovering the utility's revenue and therefore need to be structured in order to recover this revenue adequately. One of the main drivers for Eskom's tariffs is the need for cost reflectivity, both as regards the level of the tariff and the structure.

The tariff structure is the chargeable components that make up the tariff and must reflect the nature of the costs. This improves efficiencies and results in a fairer recovery of costs.

There is, however, no standard formula that can be used to design and calculate tariffs and need to take into account government direction; customer and business needs such as:

- National policy and regulation;
- Current cost, price and impact on customers;
- Affordability;
- Implementation practicality;
- Simplicity for customers;
- International best practices applicable to South African circumstances

Even though it is not possible to satisfy all these factors equally, it is important to have a framework that guides the development of tariffs.

National needs are guided by national policy and the NERSA. This includes legislation, codes and guidelines on tariffs that form the foundation within which tariffs are designed:

- Government provides direction as contained in the White Paper on Energy Policy and Government's approved Electricity Pricing Policy (EPP).
- The NERSA provides guidance through guidelines and codes. The proposed direction is guided in particular by the Electricity Regulation Act, the South African Grid Code and the Distribution Code.

Taking cognisance of the guidelines provided, the objectives or drivers for change regarding tariffs at a high level are:

- Compliance with government policy and regulation;
- A price level that ensures financial sustainability for electric utilities; the price level to be determined by revenue requirement and tariff structure by the utility's structure of costs;
- Price signals that result in economically optimal investments in electricity through cost-based electricity tariffs;

- Tariffs that strike an appropriate balance between satisfying equity, economic growth and environmental goals;
- Tariff rates that accurately reflect the cost of supplying different customer categories and, where prudent, tariff structures that reflect the nature of costs
- Encouragement of energy prices that are as cost reflective as possible;
- Promotion of energy efficiency through time-of-use tariffs and demand side management programmes;
- A suite of tariffs that give customers a choice of the most affordable tariffs based on usage patterns and satisfy customer needs.
- Residential electricity tariffs that will ensure affordable prices for households and affordable energy services for disadvantaged households, small businesses, small farms and community services;
- Subsidies that are transparent to the public and that depend upon agreed criteria;
- Tariffs that are non-discriminatory
- Stability in tariffs in order to facilitate customer choices.

Taking in consideration all of these factors and drivers, the Eskom strategic objectives for its retail tariffs are:

- **Economic efficiency and sustainability:** tariffs will contain cost-reflective signals that promote economic efficiency and sustainability.
- **Revenue recovery:** tariff structures will not expose Eskom to unacceptable revenue risk and provide the means for adequate revenue recovery to ensure sustainability and reliability of supply.
- **Fairness and equity:** tariffs will be designed to be as non-discriminatory as possible by taking into account the needs of all customers on a fair and equitable basis whilst complying with law and policy.
- **Transparency:** tariffs will have explicit charges and be transparent in design, showing subsidies as practically as possible.

These strategic objectives translate into the following principles:

Economic efficiency and sustainability

- Tariff structures will reflect cost drivers, risk and the customer's ability to respond and understand.
- Standard retail tariffs will reflect the underlying network tariff:
- Where practical Eskom tariffs will contain both a load shifting (energy) and load reduction (capacity) signal.
- Energy losses will be recovered using unbundled Transmission and Distribution loss factors based on the voltage of the supply and the geographic location.

Revenue recovery

- Tariffs will recover adequate revenue to ensure reliability of supply and will not expose the business or customers to undue revenue risk.
- Eskom tariffs will be structured to ensure a fair and economic balance between fixed and variable charges so as to provide benefit to the business and the customer.
- Policies and rules will be updated from time to time, taking into account needs and risks of customers and the business.

Fairness and Equity

- Eskom will rationalise and remove inequities between similar tariff categories.
- The voltage level differentiation between the highest and the lowest voltage categories will be as cost-reflective as is practical.
- The potential for customers to be able to respond to a pricing signal will be taken into account when designing tariffs.

Transparency

- Tariff structures will enable explicit charges and subsidies will be made more transparent as practically as possible for customer visibility of their electricity price make up.

4. Proposed changes for Eskom's Retail Tariffs

Eskom proposes the following initiatives for tariff structures over the coming years:

- **1 July tariff increase for all customers**

The Public Finance Management Act (PFMA) determines that the Eskom Financial Year is from 1 April to 31 March of any year. Eskom's tariffs are based on the recovery of revenue for each financial year and for this reason, tariff increases have been aligned with the financial year.

However, Section 42 of the Municipal Finance Management Act (MFMA) requires Eskom to implement changes to its pricing structure for Municipalities only from 1 July of each year, which does not coincide with the Eskom financial year i.e. a 1 April tariff adjustment. The compliance to the MFMA requires Eskom to implement two different price increases and publish two sets of tariffs; one is for municipal bulk supplies and the other for those customers directly supplied by Eskom.

Given the timing difference between municipal and non-municipal supplies, the price increase implementation on municipal tariffs needs to take into account the later (1 July) increase; otherwise this will result in a revenue shortfall to Eskom. The different price increase takes into account the municipal tariff revenue for the period 1 April to 30 June, where the previous year's tariffs are applicable and the revenue from the new tariffs applicable from 1 July over the remaining 9 months (July to March).

The total revenue received over the Eskom financial year is the same as if the increase had been applied for the full financial year. However due to the timing this means a different increase is applicable. In years with high price increases, the increase applied to the municipal tariffs has been higher than that of other tariffs, giving an erroneous perception that municipal increases are higher.

This practice leads to a lot of additional work and creates a lot of confusion as few people understand the technicalities despite the continued communication about it.

The solution is to move to one common date when the price to all Eskom customers is adjusted. This could be done either to change the Eskom financial year or the Municipal financial year, but this will involve either the PMFA or the MFMA to be changed which is unpractical due to a very lengthy and difficult legislative process. The other option is to align the dates without

changing financial years. It is, however, accepted that it would not be possible to change the date of the municipal increase date due to the MFMA,

It is therefore proposed to consider a common date to all Eskom customers, i.e. 1 July of each year.

This will not resolve all complexity issues but will facilitate a better trust of the MYPD process.

It is to be however noted that municipal tariffs and non-municipal tariffs are unlikely to ever have the same average price increases due to the treatment of subsidies in the respective tariffs categories. If the subsidies are transparently shown, however, it can mean that the tariff rates can be aligned with the only difference being the electrification and rural subsidy charge.

- **Residential Tariff Strategy**

The majority of electricity consumers in the country are residential customers. It is therefore important that a national residential tariff strategy is developed that is consistent and aligned with the intent of the DOE Electricity Pricing Policy (EPP).

Affordability of electricity for the poor at a time of increasing prices is of great importance but the reduction of the impact for the poor can only be achieved in partnership with local authorities as an estimated 60% of the South African consumers are supplied by the local authorities. Eskom together with government has in the past implemented several solutions to address affordability for their residential customers while Nersa has implemented the Inclining Block Tariffs in 2010 to address the needs of the poor.

Eskom had a well-designed and thoroughly thought through set of residential tariffs in the past. NERSA removed this with the implementation of the IBT. Although Eskom acknowledges that a targeted IBT can be used to address affordability, the current structure has shortcomings and unintended consequences; and therefore there is need for a broader residential tariff strategy. Concerns raised included customer understanding and complexity of the tariff and the fact that IBT does not necessarily target the poor. There may be poor that are large consumers of energy – especially

large families or where there are multiple dwellings on one property and these customers are those seeing high increases.

This means that higher consumption poor and middle class are the most negatively affected by the structure of IBT i.e. typically township households.

The needs of resellers, schools and clinics and bulk supplies also need to be incorporated as well.

Eskom proposes in line with the DoE Electricity Pricing Policy (EPP) and the ERA (regulation 773) that the residential tariff strategy should encompass 2 different tariff structures; IBT and a time-of-use tariff with fixed charges based on capacity.

- TOU will be mandatory for customers consuming >1000 kWh/month in line with Regulation 773
- The implementation of a residential time-of-use tariff is, however, subject to the roll out of smart meters.

The residential tariff strategy must take cognisance of the following:

- the cost to supply residential customers in the tariff design,
- adequate segmentation of the residential customers that considers the needs and requirements of the different segments instead of the IBT for all,
- capacity related charges to mitigate the revenue risk caused by the removal of fixed charges,
- equity in the sense that more affluent customers do not unfairly benefit from the tariff structure,
- proposals to address residential bulk supplies (resellers) and multiple dwellings
- net metering: used to provide offset of self-generated electricity on a customer's bill where there is export onto the grid

- **Differentiated price increase to different rate components**

Eskom applies in terms of the MYPD a revenue application to NERSA and from this NERSA determines Eskom's allowed revenue.

From the allowed revenue an average price increase is calculated based on the % difference from the previous year's average price and the following year's new average price (c/kWh) based on the approved revenue and volumes.

NERSA communicates the annual average price increase and not the increase applied to the tariff rates. The increase applied to the tariff rates takes into account the MFMA, subsidies, the environmental levy and any tariff restructuring.

The increase determined, however, is equally applied to all tariff rates and does not differentiate between Generation (energy costs), Transmission (network costs) and Distribution (network and retail costs) separately.

Since 2009, when the last restructuring of tariffs was done, by applying an average rate to all tariff rates means that these tariff rates become out of sync with the actual costs associated with Generation, Transmission and Distribution.

Differential increases to energy; network and retail related rates can only be applied after the Generation, Transmission and Distribution Divisions revenue requirements have been determined. A new cost of supply study is done and new rates are calculated. These new rates will then have to be approved by NERSA. Eskom will be engaging further with NERSA on this issue.

The proposed change in industry structure further motivates for the implementation of differential price increases:

- The draft ISMO Bill gives notice of the establishment of a Single Buyer, as a separate state owned entity. Eskom (Generation) together with IPPs will sell their energy to the Single Buyer and Eskom (Customer Services) together with other wholesale customers as designated by NERSA, will buy energy at a blended price from the Single Buyer.
- There is also need to have cost reflective use-of-system charges to ensure that non-Eskom wholesale/wheeling customers will be charged cost reflectively for the use of the network and to ensure that they

continue to make their fair contribution to subsidies e.g. for wheeling.

Eskom therefore supports the application of differential increases and will investigate the possibilities of implementing and aligning it with the MYPD process - given the challenges as outlined.

All practical possibilities will be investigated to balance Eskom's business requirements and customers' needs taking into account the MYPD process.

In order to provide more price certainty, it is further proposed that this is done on a 3-yearly basis, as a tariff restructuring process from a prospective point of view.

- **Revision of the Eskom time-of use (TOU) structures**

TOU tariffs were introduced during the early nineties to reflect the increased production cost of electricity generation during daily peak hours and the high demand winter season. The aim was to more accurately signal the long run marginal cost of electricity and to promote load shifting from peak to off-peak periods / seasons.

The rapid increase in the price of electricity (past couple of years and expected for the next 3 years at least) has resulted in the peak winter price of electricity becoming very high and potentially out of line with the actual cost appropriate as a long run marginal cost signal.

The TOU specification in the tariffs (the definition of daily peak, standard and off-peak hours as well as the seasons) has been revised from time to time to reflect the changing system demand profile. It has been several years since the TOU specification was last adjusted. A recent study and response from customers suggest that there is scope for a further revision. The TOU review must therefore consider the wholesale energy cost as well.

Load shifting as a result of the TOU tariffs has been appropriate and should be preserved (i.e. there should not be any pricing incentives to shift load back into peak hours, but much further load shifting to off-peak periods is likely to be inappropriate).

Following a process of engagement with key stakeholders (internal and external) a strategy will be proposed for future development and positioning of TOU tariffs for retail customers.

- **Explicit and transparent treatment of subsidies**

The electrification and rural subsidy (ERS) was originally calculated on a cost reflective basis i.e. the difference between the cost to supply and the revenue received from the subsidised Homelight and rural tariffs Landrate, Landlight, Ruraflex and Nightsave Rural.

With the introduction of IBT rates to Homepower, this tariff is now also subsidised, but it is not shown explicitly.

The ERS also has not been cost reflective in that the subsidies have been recovered in both the overall average increase and in the ERS. This means that subsidies are now hidden in all the rates.

Together with the tariff restructuring Eskom proposes to make the subsidies more explicit and therefore transparent. It will also be investigated making them more fixed. This will allow, if Eskom is able to apply 1 July increase date for all tariffs, that municipal and non-municipal tariffs rates will have the same rates except for the ERS. The ERS will effectively become the balancing mechanism for subsidies and therefore could increase at a different rate to all other rate components.

- **Further unbundling**

Eskom proposes to do further unbundling of all tariffs to reflect network, retail and energy costs separately. In most tariffs, the energy charges recover other than energy related costs. For example, the Miniflex and Ruraflex's energy rates contain network costs.

The proposal is to separate these costs in the charges as far as possible to make these costs more transparent. The unbundling proposals comprise:

- Removal of the network related costs from energy charges.
- Removal of the reliability service charge from energy charges.
- Removal of retail costs recovered in the energy charges.

- **Reducing the low voltage subsidies for the urban tariffs**

The urban tariffs Miniflex, Megaflex, Nightsave Urban Large and Small have network charges that are unbundled.

Eskom currently has four voltage categories according to which network charges are differentiated. These charges within the voltage categories are not cost reflective, as the lower voltage supplies are subsidised by the higher voltage supplies.

Eskom proposes that the voltage subsidies should be further reduced (as was done in 2009), which would mean increases to charges of lower voltage customers and reduction to the higher voltage customers, thereby making the network charges more cost-reflective. This would not impact residential or rural tariffs, but would impact in addition to the tariffs mentioned, the Businessrate tariff.

- **Aligning the rural tariffs**

Currently the Ruraflex, Nightsave Rural and Landrate tariffs are not aligned. Ruraflex for example, is cheaper than Nightsave Rural and Landrate.

Eskom proposes to align the rural tariffs to ensure that there are no windfall benefits when converting from one tariff to another - without an equal benefit to Eskom.

- **Removal of the environmental levy charge as an explicit charge**

The environmental levy is a tax to non-renewable generators based on the energy they produce. This tax is paid by Eskom Generation and is included as a cost in Eskom's revenue requirement.

When the tax was introduced, Eskom made a decision at the time that the cost of the levy would be shown at the customer level as an explicit tariff charge to make government taxes transparent.

This charge does not increase at the same level as the tariff increase, but it is also not in line with the actual cost of the levy to Eskom. Electrical losses for instance are ignored and when the levy recently increased, the charge at the customer level was not increased as this would have had to be approved by NERSA. Eskom still recovers the difference between the charge and the cost of the levy, through the average price increase.

The fact that the levy charge does not increase, however, add significant complexity to the calculation and explanation of the price increase applied to the tariff rates. An increase to the tariff rates has to be determined that excludes the environmental levy costs and this means that the average increase applied to the tariff rates is not the same as the average price increase to the tariff category.

Eskom proposes to remove the environmental levy charge as a separate tariff rate and to recover this as all other energy related costs through the energy charge.

- **New tariff structure proposals**

- **Critical peak day pricing (CPDP)**

Eskom is currently investigating the possibility of introducing critical peak day pricing – this would be first piloted. Critical peak day pricing is a dynamic tariff, which is intended to make customers active participants in the Electricity Supply Industry.

This tariff would be used to manage severe system constraints and avoid load shedding and rely on day-ahead signals of a critical peak day where the price of electricity would be set at a very high rate. Customer's would either respond and reduce demand or be prepared to pay the high rates – thereby contributing to the high marginal cost incurred to operate the system at very high load levels.

The tariff would typically have the following structure:

- A limited number of days per year with extremely high energy prices and reduced energy prices on other days.
- The critical peak days (as determined by the System Operator) are typically determined day ahead and communicated to consumers on that tariff.
- Based on the notification and high energy prices, customers are expected to respond by reducing load

Eskom envisages that CPDP will be a compulsory tariff once it is rolled out.

- **Low Power Factor (LPF)**

In compliance with the Codes Eskom contractually requires customers to have a power factor of 0.9 (lagging) or higher (older contacts 0.85) and has explicit signals in the tariffs for a poor power factor. These signals are, however, included only in the time of-use tariffs and also only in the high demand season months. They also differ per tariff.

This means that customers are not adequately managing power factor in the low demand season periods and in tariffs where these signals are not provided.

Eskom proposes to remove the current reactive energy charges in the time of use tariffs and replace it with an aligned low power factor (LPF) charge in all the large power use tariffs (Megaflex, Miniflex, Nightsave Urban Large and Small, Ruraflex and Nightsave Rural. The structure of the LPF is one where the c/kvarh charge reduces as power factor improves (i.e. it will be an inclining block tariff on reactive energy).

This charge is proposed to be applicable in all time periods and seasons.

8. Conclusions

This paper provides an overview of the direction Eskom will follow with regard to tariff development in the medium term future and customers will be consulted moving forward.

The proposed changes are aligned with international developments and will send out the correct pricing signals for a viable electricity industry, providing a sound and justifiable foundation for electricity tariffs.

9. References

Department of Energy Electricity Pricing policy

Eskom Strategic Pricing Direction – 2005 onwards

10. Acknowledgements

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