

# Frequently Asked Questions: Eskom

## Meter Manufacturer Related Questions

### How do qualify to sell prepaid meters to Eskom?

Eskom installs a vast number of meters every year and has adopted this qualification criteria [http://www.prepayment.eskom.co.za/specifications/34-119\\_qualification\\_process.pdf](http://www.prepayment.eskom.co.za/specifications/34-119_qualification_process.pdf) to limit the risks inherent in such a large project. Please note that compliance to this criteria does not guarantee any orders from Eskom. It merely qualifies a potential supplier to participate on an equal basis in the tendering process whenever Eskom issues a new enquiry for prepayment meters. All the tenders will then be evaluated and some of these suppliers may receive subsequent contracts. Also note that this requirement is onerous to meet (typically two years or more to qualify) This procedure covers only STS based EDs and ECUs, as well as three phase meters and basic split meters.

Municipalities do not necessarily use the same criteria as Eskom but in practice often purchase meters that comply to the similar specifications as required by Eskom.

If manufacturers want to introduce any new technologies (like remote metering or "smart" metering) that are unproven in the Eskom environment, the process to evaluate new technologies <http://www.prepayment.eskom.co.za/specifications/DSG0001-strategy-fornew.pdf> would apply. This process is not as onerous for the meter to comply but the process is fairly long and no guarantees/commitments of any kind are made for such a process. For both the above scenarios, and if you believe you will comply with the requirements in the referenced documents; contact the Control Technologies representatives to arrange a meeting on the subject.

### How many prepaid meters are installed?

There are over 4 million prepaid meters installed in South Africa. Eskom has more than 3.2 million prepaid meters installed presently. Eskom is not the only regional domestic electricity supplier, many of the larger cities and towns have their own electricity departments who are also installing prepayment meters. During past years we were installing meters at a rate of between 1000 and 1500 meters per working day. The majority of these meters were going into new customers homes i.e. the previously non-electrified houses in South Africa.

### What is the installed unit cost?

Please ask the meter suppliers for meter costs, see the "Links" section for information.

A further cost reduction has been achieved by incorporating all the protection features inside the meter. This device is known as an ECU (electricity control unit) and we can connect the output from the ECU directly to plug sockets. This device is intended for users that require less than 20Amp of supply current and constitutes a large portion of the Eskom electrification market.

### Does your service area experience extreme heat?

South Africa does have areas where extreme heat is experienced. Some meters have been installed in semi-desert areas. Eskom requires that the meter operate in 55°C (131°F) at 75%RH.

## **How is reliability? (out of box failure rate, annual field failure, etc?)**

Our suppliers all have ISO 9000 certification.

All meters are shipped pre-calibrated and tested. As the devices have electronic measurement and control circuitry, transport damage is not a major issue. Some of our areas have 100% incoming meter inspection and others none. Generally where the supplier's internal quality assurance has proved to be effective we have stopped incoming meter testing. We do perform random testing of meters coming off the suppliers' production lines. The out of box failure rate is therefore very low.

In South Africa we have a major problem with lightning. Eskom has had to raise the initially specified surge withstand capability of the meters as well as install special surge arrestors within all our meters. The situation was compared to putting a microprocessor out in the field with a 3 kilometre lightning conductor! The initial lightning problems experienced in the early days are now a thing of the past and STS meters from all the approved manufacturers perform to a very high standard. We believe that in this respect the South African made meters do have a definite advantage over those sourced from elsewhere.

## **Why were prepayment meters installed?**

Prepayment was seen as a means of direct budgeting, bringing the time between payment (purchase) and use (consumption) to as short an interval as possible. This allows the customer to relate usage to the amount of money required. Finding some money for electricity at the required time of consumption could then be related by the customer to other expenditure such as food and household goods.

Our newly electrified customers are predominantly poor. Consumption is averaging less than 100kWh per household per month in poor areas. These customers do experience cash-flow problems, especially where the use-payment cycle of billed systems was averaging 90 days. Prepayment stops a customer from going into debt as it provides automatic credit control - as opposed to the billed system where the utility has to do this itself – manually.

The intent is to make an electricity supply affordable as well as remove the issue of deposit management. The tariff used is a single rate energy based tariff - allowing customers to easily relate usage and money as well as supporting the marketing of Eskom's product, electricity. The customer can compare the cost of the electricity token directly with another energy carrying item such as a bottle of paraffin.

With situations of political protest, social pressure, township unrest and crime, reading the meters of billed customers also became difficult. Prepayment removed this operational problem.

## **How was the prepayment decision made?**

With the status in 1987/88, i.e. that the operation of billed electricity systems in poor communities had become extremely difficult, Eskom took a bold decision to get local industry to develop "no-frills" prepayment metering systems which could resolve the issues of:

- Withholding of payment for electricity
- Difficult or very remote access to meters for meter reading
- Deposit management problems
- Customers that do not understand, trust or cannot always afford the fixed monthly portion of a conventional account
- Bad or non-existent postage systems in many rural areas
- No formal addresses for rural customers and;
- The need to charge large up-front connection fees Life-cycle costing studies are now showing that prepayment is proving a more cost effective option of system operation than billed systems, for Eskom.

### **What was/is the customer reaction?**

We have been researching customer attitudes towards prepayment since 1990.

For the newly electrified customers the access to electricity is the most important. As the consumer becomes more sophisticated in their use of electricity their focus turns toward product availability. It is here that the availability of the Point-of-Sale, where prepaid tokens are sold, and the inconvenience of having to go and purchase tokens become important issues. Eskom addresses this by making our Points-of-Sale as accessible as possible.

Prepayment meters are installed only after consultation with and agreement by the community to be electrified. Eskom is careful not to promote prepayment as a solution for theft or to punish customers.

Where retrofitting has been done it has been accepted by the customers.

### **How large is your service area?**

Eskom serves the whole of South Africa (surface area 1 221 037 square kilometres or 470 000 square miles) as the supplier of bulk electricity.

For the domestic market Eskom supplies customers directly in most areas falling outside the major cities and towns who have their own municipalities.

### **Does prepayment solve electricity theft problems?**

Prepayment does not solve electricity theft by default but it provides a supply authority with the means of managing theft. The best method of controlling theft is still proper management of the system. Eskom analyse the consumption and purchase patterns of customers and site visits are performed if anomalies are detected. Eskom also has a strict procedure to prosecute trespassers.

Prepayment provides the following functions to help manage losses.

Customers trust prepayment because:

- There are no fixed monthly charges or reconnection fees. (The customers do not understand why they have to pay this)
- There is a continuous display of the available credit which allows the customer to budget and it eliminates surprises like a large account at the end of the month.
- All the money paid is for the customer's electricity and not used to subsidise other services like refuse removal. The Vending system provides information on customer usage patterns which can be used to detect theft.

It is possible to determine how much electricity has been sold to a geographical area so that statistical meters can be used to correlate the consumption per area.

Systems are designed such that tamper is easily detectable but checks must be performed regularly and corrective actions instigated immediately.

### **If you had to do it all over again, would you still decide to go prepayment metering?**

Yes. Eskom has recently developed a new very low energy supply. As part of the development various systems were piloted and analysed, including billed, flat rate and a remote controlled flat rate. Prepayment still turned out to be the most cost effective system while still providing the customer with a value for money product.