

**COMMERCIAL LOSS OF ENERGY IN ELECTRICITY  
TRANSMISSION AND CONSUMPTION**

**BY**

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## *The Management of demand and the optimization of Energy losses .*

### *Introduction:*

The purpose of this paper is to determine the causes of commercial and technical energy loss during transmission and by way of fraud by consumers. The paper tries to bring out ways that these losses can be optimized.

### *How commercial loss is manifested.*

Energy loss of electricity signifies the total commercial and technical loss of energy during transmission. When electricity is generated, it is transmitted through high voltage and medium voltage transmission cables for over long distances to serve a wider network on low voltage distribution lines. During transmission, there is loss of energy.

Energy loss is also a consequence of the random illegal connection of electricity to homes as well as the manipulation of meter readings by unscrupulous subscribers with the intention to fraud. In Cameroon, it is estimated that about 25% of electricity connection is fraudulently or illegally done with great risk and financial consequences to the company.

There are also cases of unpaid bills by some government services. Such unpaid bills cause financial prejudices to the utility companies.

. Also stand by lights in radio sets, television sets computers and other appliances are a source of energy loss. Studies carried in Cameroon in 2002 , shows that stand by lights in electronic devices in offices during business hours is about 10 MW. If this is controlled, there will be energy gained.

The uncontrolled use of electricity in public buildings and street lighting is a phenomenon in the commercial loss in energy. In most countries and Cameroon in particular, street lights are kept on round the clock. This is also the case in public buildings where consumption is not controlled. The consequences as we know is that of energy loss.

## *Optimising Energy Losses*

Before putting in place renewable sources of energy to increase capacity so as to meet up with the growing energy needs of the population, it is important first of all to understand how to manage the existing demand and above all the demand profile. It is important to look for measures to reduce these losses on the network.

Taking the statistics from AES-SONEL for example, 93% of the efficiency rate of the network transmission in 2002, represents an average loss of 28MW because of network saturation of the transformers and the transmission lines. Energy losses are mostly experienced during peak hours which are in the evenings when most house holds are switching their appliances on .The reduction of these losses will have a direct impact on the production capacity.

AES-SONEL is planning to improve on the capacity by putting in place a better exploitation method. The impact of the losses on the network results in the reactive compensation of the loss. Condensers of high voltage and medium voltage caliber are used to reduce energy losses . AES-SONEL has installed high voltage and medium voltage condensers along major high voltage transformers . This will help to reduce peak hour losses from 28MW to 20MW.

Secondly, losses can be reduced by replacing incandescent bulbs with fluorescent bulbs . AES-SONEL has engaged a project on that in the whole of Cameroon. This will cost them some 1.2 billion frs CFA to replace in all the house holds in Cameroon some 30.000 bulbs. This will help reduce the cost of consumption of electricity per house hold.

The management program put in place by AES-SONEL for the application of the demand of electricity by means of a billing policy according to the hours or seasons for medium voltage and low voltage consumers is underway. As such mechanical meters shall be replaced with electronic meters. Over 50% of this project will cost some 350 million FCFA.

With an efficiency of less than 65% in 2002, the medium voltage and low voltage distribution network leaves a big possibility to ameliorate the losses. Most of these losses is attributed to commercial losses than technical losses.

Losses can also be maximized by putting in a structure for the management of transmission lines . Here the influx of electricity shall be closely monitored and shall enable the detection of areas that registers these losses. This will help to optimize losses.

Consumers can be encouraged to reduce their consumption during peak hours by the application of some incentives measures such as the introduction of tariff policies that discourage peak hour consumption. Tariffs during these period should be increased

### *Conclusion.*

The application of these regulatory options in the optimization of energy can greatly reduce the loss of energy in any given circumstances. It also help consumers to cut down their cost of consumption as well. In Cameroon, for example some energy rationing policies in the form of energy optimization projects as the ones mentioned above are being tested. It is therefore my recommendation that PURC and other Utility research centers should include in their future programmes a module on the ‘ commercial loss of energy and its optimization’. This will help participants (regulators ) to educate consumers in their home countries on the rational use of electricity.

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-Source of statistics: AES-SONEL Business Plan for 2003.

- \$1US = 578 francs CFA.

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