

# **ELECTRICITY SUPPLY AND DISTRIBUTION (TECHNICAL AND OPERATIONAL) RULES, 2005 (LI 1816).**

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IN exercise of the powers conferred on the Energy Commission by section 28 of the Energy Commission Act 1997, Act 541 these Rules are made this 5th day of August, 2005.

## SUPPLY AND METERING OF ELECTRICITY

### **Rule 1—Connection of supply**

(1) A public utility licensed under the Act to distribute and retail electricity to customers shall provide, install and maintain the necessary equipment required for the supply and sale of electricity to customers.

(2) The supply shall be connected through an appropriate service connection and protective device that accords with the applicable standards.

(3) A customer shall

(a) ensure that the customer's electrical installation is safe for the supply of electricity;

(b) provide safe and reasonable access to the customer's premises for the supplier to undertake work related to the supply of electricity; and

(c) keep vegetation at the customer's premises clear from the supplier's medium and low voltage distribution systems.

(4) Where a customer or an applicant for a new connection fails to comply with any of the provisions of subrule (3), the supplier may

(a) in the case of a customer already connected to the distribution system, disconnect electricity supply to the customer;

(b) in the case of an applicant for a new connection, refuse to connect the applicant to the distribution system.

(5) Notwithstanding subrule (4) the supplier shall reconnect supply to the customer in accordance with subrule (3) of rule 38 when the customer complies with subrule (3).

(6) A customer shall not

(a) use any electrical equipment or appliance that will interfere with, cause damage to or degrade the quality of electricity supply to other customers on the supplier's distribution system;

(b) increase the customer's contracted electricity demand without the consent of the supplier; or

(c) intentionally interfere or knowingly allow interference with the supplier's distribution system, meter or any equipment that is used for the supply of electricity to the customer.

(7) The supplier shall ensure that at all times its distribution network is free from vegetation and obstructions.

**Rule 2—Application for new service connection**

(1) An applicant in applying for electricity supply to the applicant's premises, shall

(a) ensure that the electrical installations at the premises are carried out by

(i) a qualified electrician duly certified by a licensed electricity distribution utility; or

(ii) a contractor who is a member of the Ghana Electrical Contractors Association or other similar body recognized by a licensed electricity distribution utility; and

(b) obtain from the electrician or contractor, a duly signed and dated Installation Completion Certificate (ICC) approved by the supplier.

(2) The applicant shall attach the ICC to the application form for a new connection and submit the application to the supplier.

(3) The supplier shall provide the application form for a new connection and the form shall

(a) be simple; and

(b) have terms and conditions which are clearly stated in plain English.

(4) The terms and conditions may include provisions that the applicant

(a) has no outstanding debt from a previous electricity bill at a different supply address other than a debt subject to a dispute;

(b) informs the supplier in writing of the estimated load and expected energy consumption at the applicant's premises;

(c) agrees to pay the requisite connection fee including continuance rights where necessary and an advance deposit for electricity consumption in accordance with the Public Utilities Regulatory Commission's approved electricity tariffs;

(d) permits reasonable access at reasonable times, and adequate protection for the supplier's agent during meter reading, fault rectification, disconnection and reconnection exercises and other lawful activities connected with the supply at the applicant's premises;

(e) provides an accurate contact address for the delivery of electricity bills;

(f) is not to connect supply which is not passed through a meter, tamper with a meter or any ancillary equipment associated with the supply;

(g) will not use or permit to be used the electricity supplied to the applicant's premises for a purpose other than that for which it was contracted; and

(h) will not connect or Permit to be connected from the applicant's premises to other premises, electricity supplied to that applicant's premises, without the prior consent of the supplier.

(5) On receipt of the applicant's application form, the supplier shall first provide the estimate and charges for the connection within

(a) five working days if the connection is to be made from an existing supply line; or

(b) two weeks if the connection requires a line extension.

(6) Where the applicant pays the required charges, the supplier shall provide supply within

(a) five working days if the connection is to be made from an existing supply line; or

(b) one month if the connection requires a line extension.

(7) Where with the approval of a supplier a customer finances the development of the supplier's distribution system, the customer shall subject to sub-rule (8), be entitled to a 60 percent refund of the investment from the supplier when the supplier subsequently connects other customers to the newly developed part of the distribution system.

(8) A supplier shall establish and submit in writing to the Public Utilities Regulatory Commission for approval, procedures for making the refund stipulated under sub-rule (7).

(9) The Public Utilities Regulatory Commission may direct the supplier to review its procedures and may approve acceptable proposed modification to the procedures.

### **Rule 3—Precaution against atmospheric electricity**

(1) A customer using electricity from any installation shall, if the supplier so requires, provide such means for obviating any damage to the installation by atmospheric electricity as the supplier may determine.

(2) A customer who installs a standby generating plant in any premises connected to the supplier's distribution system shall

(a) notify the supplier of the installation; and

(b) provide an appropriate change-over switching device which separates the supplier's system from that of the standby generating plant when the standby generating plant is in operation.

(3) The customer is liable for any damage arising from the customer's non-compliance with subrule (2) or from any defects in the customer's standby generating system.

**Rule 4—Precaution in execution of works**

All work in respect of the supply of electricity which affects

- (a) any street, railway, river, irrigation system, drainage or water supply system;
- (b) telegraphs, telephones or harbour works; or
- (c) any public or private work

shall, notwithstanding any other requirement, be carried out in the manner prescribed by these Rules and without danger to public or private safety.

**Rule 5—Illegal connections**

(1) An electricity supply to any premises made contrary to rule 2 is illegal.

(2) An illegal connection under subrule (1) shall be disconnected in accordance with the Public Utilities (Termination of Service) Regulations, 1999 (L.I. 1651)

(3) Where it is established that an illegal connection resulted in damage to the supplier's or a third party's equipment, the person who made the illegal connection shall be liable for the cost of repairs or replacement of the damaged equipment.

**Rule 6—Metering**

(1) A prospective customer must provide a suitable location at the premises for the installation of, and easy access to, the supplier's meter.

The supplier shall

- (a) provide, install and maintain a meter that will measure and record the amount of electricity supplied to the customer within specified accuracy limits of that meter's class;
- (b) affix the meter to the customer's premises or such other place, and position it in such a way as to allow for easy access;
- (c) ensure that the meter is robust and easy to read by the customer;
- (d) ensure that the accuracy of the meter is maintained throughout its usage and in accordance with the applicable metering code;
- (e) test and if necessary calibrate industrial customers' meters periodically;
- (f) carry out meter revision of its distribution system for meters that have been in service for twenty years or more;

(g) seal any meter installed at the customer's premises in the presence of the customer or the customer's representative, who shall ensure that the seal is firmly in place;

(h) where the meter becomes defective, replace the meter or provide an appropriate alternative to restore electricity supply to the customer;

(i) ensure that facilities for the purchase of units for prepayment meters are available at all of its customer service centres between the hours of 8.00 a.m. to 5.00 p.m. each working day; and

(j) provide weekend facilities for the purchase of units for prepayment meters in at least one customer service centre in each operational district.

(3) Notwithstanding subrule (2) paragraph (g), a supplier may break a seal on a meter during testing, maintenance or repair and shall upon completion, reseal the meter in the presence of the customer or the customer's representative.

(4) A customer shall not tamper with or break the seal on a meter.

(5) Where a tenant in a multi-family house or apartment applies for exclusive electricity supply to that tenant's part of the house, the supplier shall

(a) treat that tenant's application in accordance with rule 2 and

(b) connect the supply in accordance with subrules (5) and (6) of rule 2 where

(i) the tenant's apartment is rewired to isolate the tenant's circuit from that of the main house electrical installation, and

(ii) the landlord endorses the application submitted by the tenant.

(6) Where there is dispute between the landlord and the tenant regarding the tenant's application under subrule (5), the dispute shall be referred to the PURC for settlement.

#### **Rule 7—Life-line customer**

(1) A supplier may install a Load Cut-Out Limiter or energy dispenser in place of a meter on a customer's premises if the monthly electricity consumption of the customer is below the stipulated lifeline units.

(2) For the purpose of subrule (1), the supplier may provide a Load Cut-Out Limiter or energy dispenser that would not adversely affect or interrupt electricity supply to the customer.

#### **QUALITY OF SUPPLY OF ELECTRICITY**

#### **Rule 8—Supply voltage**

(1) Subject to rule 43, the supplier shall ensure that the voltage at the point of supply to a customer's premises or electrical installation is within the following voltage levels:

- (a) 230V;
- (b) 400V;
- (c) 11kV;
- (d) 33kV; or
- (e) 34.5kV.

(2) Any variations from the relevant standard voltage levels under subrule (1) shall be as provided in Schedule I to these Rules.

(3) The supplier shall minimize the frequent occurrence of voltage fluctuations which shall not exceed the limits in the steady state in Schedule I.

#### Rule 9—Supply frequency

(1) The nominal frequency of supply shall be 50 Hz and shall not go

- (a) beyond the Upper limit of 50-5+5%Hz; or
- (b) below the lower limit of 50-5%Hz.

(2) The supplier is not liable for any frequency variations outside the frequency specified in subrule (1).

#### Rule 10—Power factor

(1) A supplier shall advise an industrial customer on the appropriate steps to be taken to ensure that the customer's load power factor is within the relevant range set out in Schedule II.

(2) Pursuant to subrule (1), the customer shall within a period agreed upon with the supplier, install shunt compensators on the customer's electrical system to improve the power factor and minimize line losses.

(3) The supplier shall impose a power factor surcharge to be determined by the PURC, if the customer fails to install shunt compensators to improve the power factor to at least 0.9 lagging.

(4) Notwithstanding subrules (1) and (2) the supplier may install shunt compensators anywhere in the distribution system as may be necessary to minimise system line losses.

#### Rule 11—Harmonics control

(1) A supplier must ensure that the voltage harmonic distortions at the point of common coupling nearest to a customer's point of supply do not exceed the levels set out in Schedule III.

(2) Notwithstanding subrule (1), the supplier shall comply with the Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems, IEEE Standard 519 of 1992.



(3) A customer categorized as a bulk or industrial customer shall ensure that the voltage and current harmonic distortions in the customer's electrical system are within the limits stated in Schedules III and IV.

(4) Where it is apparent to the supplier that a customer's voltage and current harmonic distortions exceed the limits specified in Schedules III and IV, the supplier may disconnect electricity supply to the customer.

(5) The supplier must reconnect supply to the customer in accordance with subrule (3) of rule 38 after the customer has complied with the relevant limits.

#### **Rule 12—Negative sequence voltage**

(1) A supplier must ensure that the negative sequence voltage at the point of common coupling to a customer's three phase system is less than 1% and not more than 2% for a period of five minutes in every thirty minutes.

(2) In accordance with subrule (1), the supplier shall prevent the negative sequence voltage from fluctuating above 1% of an applicable voltage level, and when it does fluctuate above 1%, prevent it from exceeding 2% for a period of five minutes in every thirty minutes.

#### **Rule 13—Load balance**

(1) A supplier, in supplying electricity to customers, shall ensure that the connections are made to balance the loads on the three phases of the distribution network.

(2) A customer, shall ensure that the current in each phase of the customer's three phase system, does not deviate from the average of the three phase currents by more than

(a) 5% for a standard nominal voltage up to 1kV; or

(b) 2% for a standard nominal voltage above 1kV.

(3) Notwithstanding subrule (2), deviations of

(a) 10% for a standard nominal voltage up to 1kV, or

(b) 4% for standard nominal voltage above 1kV,

for periods of less than two minutes, are permissible.

#### **Rule 14—Voltage fluctuations**

(1) A supplier shall

(a) minimise voltage fluctuations on its distribution system, and

(b) not connect customers whose loads are likely to cause voltage fluctuations at the point of common coupling.

(2) A customer shall ensure that use of electricity by the customer does not adversely affect or interfere with

(a) the supplier's distribution system; and

(b) the quality of supply to other customers.

(3) Where voltage fluctuations are traced to a customer, the supplier shall advise the offering customer on the appropriate solution to the problem and may after giving notice in writing, disconnect the offending customer's connection at the point of common coupling.

(4) The supplier shall reconnect the customer who has been disconnected under this rule in accordance with subrule (3) of rule 38.

## **ELECTRICITY INTERRUPTIONS**

### **Rule 15—Interruption for planned maintenance**

(1) A supplier may disconnect or interrupt electricity supply to a locality or a customer for the purpose of carrying out planned maintenance, including repair and installation of new equipment.

(2) Except in a situation of emergency the supplier shall not exercise its power under subrule (1) unless the supplier informs the customer of the intended disconnection or interruption, and stipulates the approximate duration of the disconnection or interruption through

(a) public notice, or

(b) direct contact by telephone, electronic mail, satellite phone broadcast or any other appropriate information technology system.

(3) For the purpose of paragraph (a) of subrule (2), the public notice shall be given for a period of not less than three working days after which supply may be interrupted.

(4) Where the supplier interrupts supply, the supplier shall restore electricity supply after the stipulated period.

### **Rule 16—Emergency interruption of supply or disconnection**

(1) A supplier may in an emergency situation disconnect or interrupt supply to a customer without notice to the customer.

(2) The supplier shall take the appropriate measures to rectify the situation and immediately advise the customer.

**Rule 17—Load shedding**

(1) A supplier shall not shed load unless

- (a) demand is likely to exceed supply as a result of a forced outage of a generating unit;
- (b) it is necessary to preserve the security of the transmission and distribution system;
- (c) it is necessary to reinforce or rehabilitate the distribution systems; or
- (d) it is necessary for safety reasons.

(2) Where the supplier decides to shed load under subrule (1), the supplier shall immediately notify the Commission and the PURC of the intended load shedding either by

- (a) telephone, or
- (b) electronic mail,

followed by a notice in writing.

(3) The supplier, in addition to notifying the Commission and the PURC under subrule (2), shall by a notice carried in the newspapers and on radio or television inform the public of any intended load shedding and the duration of it.

**Rule 18—Safety of supply**

(1) A supplier shall ensure that its distribution system is safe and efficient for the supply of electricity to its customers and shall take the precautions necessary avoid exposing the customer or the public to exposed live electricity cables.

(2) Where a supplier becomes aware either by being informed by the public or otherwise, that its distribution system at a particular locality is faulty and may pose danger to the public, the supplier shall visit the locality and isolate the faulty part of the network within

- (a) 2 hours, where the location of the fault is within a 30 kilometer radius;
- (b) 4 hours, where the location of the fault is within a 60 kilometer radius; or
- (c) 5 hours where the location of the fault is within a radius 60 kilometers and above

from the district or regional office of the supplier where the information was received.

(3) The supplier shall place danger notices to warn the public of the danger.

(4) The supplier shall rectify the fault and restore supply within

- (a) 24 hours for LV minor faults;
- (b) 48 hours for LV major faults;
- (c) 48 hours for MV minor faults; and
- (d) 72 hours for MV major faults.

(5) A customer shall not use electricity in a manner that would make the supplier's distribution system unsafe.

**Rule 19—Notice of outbreak of fire**

The occupier of any premises shall, in the event of an outbreak of fire on the premises, immediately notify a fire station and the supplier.

**ELECTRICITY BILLING**

**Rule 20—Issue and delivery of bills**

(1) A supplier shall, where the supplier adopts a monthly or bi-annual meter reading, issue an electricity bill every month to customers except those on prepayment meters, indicating the electricity usage in the month and other charges.

(2) A supplier shall issue a quarterly bill at each quarter meter reading, where the supplier adopts a quarterly meter reading.

(3) A supplier who contravenes subrule (1), (2) and (10)(c) commits an offence and is liable on summary conviction to a fine not exceeding 500 penalty units.

(4) A supplier shall issue a bill in respect of a metered customer after the supplier has read and taken a record of the customer's meter recordings.

(5) A supplier must deliver a bill twelve times in a year, at the address of the customer by hand, electronic mail or any other appropriate and convenient means.

(6) A customer is entitled to settle an accumulated bill by an installment payment plan agreed between the supplier and the customer, if the supplier fails to deliver a bill to the customer for a period of three months.

(7) Where the supplier and the customer are unable to agree on a payment plan, the matter shall be referred to the Public Utilities Regulatory Commission for resolution.

(8) Where a supplier fails to bill a customer for a period of twelve months, the supplier cannot recover the cost of that service unless the delay in the billing occurred

(a) Without negligence on the part of the supplier, or

(b) due to the customer's actions.

(9) Where a supplier's right to claim the cost of service to a customer is not vitiated by failure on the part of the supplier to bill the customer for a period of twelve months, the supplier shall recover the accrued cost of service by

(a) giving the customer the option to pay the shortfall by an installment payment plan; and

(b) not charging interest on the amount.

(10) A supplier shall read the meter recordings in a consistent cycle, by adopting

(a) monthly meter reading taken on a specific day of the month;

(b) quarterly meter reading taken on a specific day of the month; or

(c) bi-annual meter reading, taken at the beginning and end of the year.

(11) Despite subrule (10), a supplier may vary the meter reading by a maximum of three days..

(12) Where a supplier adopts bi-annual meter readings under subrule (8)(c), the supplier shall

(a) issue a monthly estimated bill to the customer;

(b) reconcile the estimated consumption with the actual consumption at the end of the bi-annual year; and

(c) compute the final electricity charges at the end of the bi-annual year using the approved electricity tariff.

(13) In computing the final electricity charges, any difference between the estimated consumption and the actual consumption shall be spread over the next six months period or any longer period as the supplier considers appropriate.

(14) Where a supplier's reading of a customer's meter is irregular and inconsistent with the usual reading cycle and as a result, the customer's bill covers a period beyond the usual billing cycle, the supplier shall adjust the energy consumption and the tariffs on a pro-rata basis.

#### **Rule 21—Contents of a bill**

A supplier shall ensure that the contents of each bill in a billing cycle include

- (a) the name, address, locality and account number of the customer;
- (b) the meter number;
- (c) the dates of previous and current meter recordings or estimates;
- (d) the date of issue;
- (e) the previous and current meter recordings or estimates;
- (f) the actual or estimated electricity consumption with its appropriate units;
- (g) the approved tariff and the amount due;
- (h) the payment due date;
- (i) the date and amount of last payment, if any; and
- (j) the amount of arrears or any other charge with the details of the service provided, credit, refundable advance and the balance brought forward.

**Rule 22—Estimated bill**

(1) A supplier may use an estimated consumption for billing for up to six months, where

- (a) the meter is not functioning;
- (b) the meter is faulty and is registering incorrect consumption;
- (c) the supplier has no meter in stock;
- (d) an existing meter has been tampered with; or
- (e) access to the premises is denied for any reason including safety, bad weather, industrial action or locked premises

and shall inform the customer accordingly.

(2) If the problem or event in subrule (1) is remedied and the supplier is able to read the meter, the supplier shall as soon as is reasonable, reconcile the actual meter recording with the estimated electricity consumption.

(3) Where the estimated bill of a customer exceeds the customer's actual consumption by more than fifty percent, the supplier shall treat the customer in accordance with rule 28.

(4) An estimated bill shall be calculated as follows:

- (a) where service has been provided for a period of twelve months or more, the amount shall be based on the average units used by the customer over the previous twelve months;

(b) where service has been provided for less than twelve months, the amount shall be based on the average units used by the customer for the period the service was provided, or

(c) where the service is new, the amount shall be based on the estimated load and expected energy consumption provided by the customer to the supplier on the application form.

## **BILL PAYMENT**

### **Rule 23—Payment procedure**

(1) A supplier shall establish customer service outlets throughout its area of operation for

(a) payment of electricity bills; and

(b) enquiries, complaints and other services.

(2) A customer shall pay a bill by the due date to avoid disconnection of supply.

(3) Notwithstanding subrule (2), the supplier may offer different payment methods including installment payments under rule 25 to a customer who has serious financial difficulties.

(4) A supplier must develop payment schemes to facilitate collection of its revenue from the sale of electricity, such as

(a) the direct debit to the customer's bank account under an agreement between the customer and the supplier; or

(b) payment on account with interest in respect of large amounts as determining by the PURC.

### **Rule 24—Dishonoured payment**

(1) Where a customer pays an electricity bill by cheque or by direct debit from an account with a bank and the cheque is dishonoured by the bank, resulting in the supplier incurring a bank charge, the supplier shall recover the bank charge from the customer.

(2) Where a customer's cheque is dishonoured, the supplier may withdraw the customer's right to pay the bills by cheque.

### **Rule 25—Payment by installment**

(1) A supplier shall, subject to subrule (3), permit a customer to pay the customers' bill or arrears by installments, if the customer proves to the supplier financial difficulties and inability to pay the bill.

(2) The installments may be paid concurrently with the current monthly bill.

(3) The supplier may not permit a customer to pay by installment if in the previous twelve months the customer has had two installment payment plans cancelled by the supplier due to non-payment; and the customer shall remain disconnected until full payment of the arrears has been effected.

(4) In making an installment payment offer to a customer, the supplier shall

(a) take into consideration the customer's electricity usage and ability to pay, when calculating the amount of the installments and the duration of payment;

(b) put in place measures to monitor the customer's electricity usage while on the installment plan;

(c) provide fair and reasonable procedures to address any possible payment difficulties;

(d) make provision for the recalculation of the amount and duration of the installment payment where the difference between the customer's estimated energy consumption and actual electricity usage as read from the meter may significantly affect the customer's financial standing or well-being; and

(e) explain to the customer, how the amount and duration of installment payments were computed.

## **REVIEW OF ELECTRICITY BILL**

### **Rule 26—Disputed bill**

(1) A supplier shall review and reconcile a bill if a customer disputes the bill.

(2) The customer shall pay any undisputed portion of the bill.

(3) Where the entire bill is in dispute, the customer shall pay a reasonable amount agreed between the customer and the supplier in respect of the bill until the supplier reconciles the bill.

(4) Where it is established after review that the bill is accurate, the customer shall

(a) pay the amount accrued by the due date; or

(b) request an installment payment plan in accordance with rule 25.

### **Rule 27—Undercharging electricity consumption**

(1) Where a supplier undercharges a customer, the supplier shall first inform the customer of the undercharge and may afterwards take steps to recover the shortfall.

(2) Where the supplier decides to recover the shortfall under subrule (1), the supplier shall

(a) give the customer the option to pay the shortfall by an installment payment plan; and

(b) not charge interest on the amount.



(3) The duration of the installment payment plan under paragraph (a) of subrule (2) shall be equivalent to the period of the undercharge or a maximum period of twelve months whichever is less.

(4) Where the supplier establishes that a customer is illegally using electricity and the use results in undercharging the customer, the supplier without limiting subrule (2) of rule 5, is entitled to recover the shortfall and the related penalties as determined by the PURC.

#### **Rule 28—Overcharging of electricity consumption**

(1) A supplier shall not deliberately overcharge a customer.

(2) A supplier who contravenes subrule (1) commits an offence and is liable on summary conviction to a fine not exceeding 500 penalty units.

(3) Where a supplier overcharges a customer the supplier shall

(a) take immediate steps to correct the bill; and

(b) after correcting the bill, immediately credit the account of the customer with the full amount overcharged and inform the customer accordingly.

(4) A customer is entitled to interest on an overcharged amount at a rate determined by the PURC, if that customer has been overcharged continuously for three months or more.

#### **Rule 29—Vacation or disposal of premises**

(1) A customer who intends to vacate or dispose of the customer's premises shall

(a) inform the supplier in writing, at least ten working days prior to vacating or disposing of the premises, for the disconnection of the supply; and

(b) provide a forward address to which the last bill must be sent.

(2) Subject to subrule (3), a customer who fails to comply with paragraph (a) of subrule (1) is liable to pay for electricity supplied to that customer's premises.

(3) The notice to be given under paragraph (a) of subrule (1), shall be delivered personally to the supplier's premises.

(4) Where the customer gives notice of less than ten days, and the supplier is unable to disconnect the supply before the customer vacates or disposes of the premises, the customer is liable for payment for electricity supplied to the premises up to the date of disconnection.

(5) Where the supplier receives notice from the customer but fails to disconnect the supply within ten days of receiving the notice, the customer shall not be liable for payment of electricity supplied to the premises after the ten days.

**Rule 30—Advance deposit**

(1) A supplier may request a new customer to provide an advance deposit against electricity bills starting from the date of first supply.

(2) The amount of the deposit will be calculated using the estimated monthly consumption of electricity as agreed between the customer and the supplier.

(3) The supplier may in addition to the advance deposit, request a bank guarantee in respect of industrial or commercial customers.

(4) Where an industrial or commercial customer consistently pays its bills as required over a period of twelve months, any bank guarantee provided shall cease to apply at the expiration of the twelve month.

**Rule 31—Refundable advance**

(1) A supplier may request a new customer to provide a refundable advance against the actual bill and any arrears that may accrue in respect of the premises.

(2) The refundable advance shall be double the average estimated monthly bill.

(3) The supplier may offset the customer's refundable advance against any outstanding bill that is not in dispute.

(4) Where a supplier requests a customer to provide a refundable advance, the advance shall be subject to the payment of interest in accordance with section 28 of the Public Regulatory Commission Act, 1997 (Act 538).

**Rule 32—Disconnection of supply of electricity**

(1) Without prejudice to any provision of these Rules which provides for the disconnection of electricity, the supplier shall disconnect electricity supply to a customer only in accordance with the Public Utilities (Termination of Service) Regulations, 1999 (L.I. 1651).

(2) Where a customer's electricity supply is disconnected for failure to pay a bill, the supplier shall before reconnecting the customer request the customer to pay a refundable advance in accordance with rule 31.

**Rule 33—Complaints and Dispute resolution**

(1) A customer who is not satisfied with electricity supplied, may complain orally or in writing to the supplier.

(2) The supplier shall deal with the customer's complaint in accordance with its complaint procedures.

(3) Where the supplier fails to address the customer's complaint to the customer's satisfaction, the customer may lodge a complaint with the PURC in accordance with the Public Utilities (Complaints Procedure) Regulations, 1999 (L.I. 1665).

**Rule 34—Demand side management**

(1) A supplier shall monitor the demand profile on its distribution system and develop a Demand Side Management (DSM) program to control demand.

(2) A supplier shall reduce overburdening of the distribution network system and avoid making new connections to the network without first providing adequate capacity or reinforcement of the network.

(3) A supplier shall advise every customer on efficient use of electricity and provide the customer with information that will assist the customer to reduce electricity costs.

**Rule 35—Management of assets**

The supplier shall

(a) adopt good asset management practices in respect of its equipment and property to enable it provide efficient, safe, quality and reliable supply of electricity to customers.

(b) develop and implement programs for the maintenance, operation, repair, refurbishment, acquisition and disposal of any of its assets in order to

(i) attain its performance targets, and

(ii) minimize the risk associated with failure or reduced performance of assets that would hinder efficient delivery of service to customers.

**Rule 36—Tie-in agreement of embedded generators**

(1) Where a supplier intends to procure electricity supply from co-generation, wind power, solar power or mini hydro resources through a connection to its distribution system, the supplier shall

(a) enter into a tie-in agreement and a supply contract with embedded generator; and

(b) comply with all provisions in these Rules, which are applicable to embedded generators.

(2) The operation of the embedded generator shall comply with the rules and regulations governing interconnection of facilities, unit commitment and dispatching.

**Rule 37—Electricity tariff setting and review**

Where a supplier is due for or requests a tariff review, rules 38, 39 and 40 shall be used as a technical performance indicator by the PURC.

**Rule 38—Rectification of faults and restoration of electricity supply**

(1) A supplier shall rectify reported faults and restore electricity supply to a customer

(a) where minor faults occur, within

(i) 24 hours, in rural areas,

(ii) 12 hours, in district capitals,

(iii) 8 hours, in cities and industrial estates, or

(b) where major faults that would require capital intensive equipment replacement occurs, within

(i) 240 hours, in rural areas;

(ii) 120 hours, in district capitals; and

(iii) 80 hours, in cities and industrial estates;

after notification of the occurrence of a distribution network fault.

(2) The periods stated in this rule shall not apply to faults associated with natural disasters.

(3) Where a customer's electricity supply is disconnected for failure to comply with subrule (3) of rule 1 the supplier shall restore electricity supply within 48 hours after the customer has complied fully with the rule.

**Rule 39—Non-payment of electricity bill**

(1) A supplier shall restore electricity supply to a customer who has been disconnected for non-payment of electricity bill or undisputed arrears within

(a) 18 hours, in rural areas,

(b) 12 hours, in district capitals, and

(c) 6 hours, in cities and industrial estates.

after the customer has settled the bill or arrears.

(2) Without prejudice to subrules (5) and (6) of rule 2 and rule 38, the supplier shall in respect of restoration of electricity supply, achieve a minimum performance level of

(a) 70 percent where the distance between the supply address and the regional or district office of the supplier exceeds 30 kilometers; or

- (b) 60 percent where the distance between the supply address and the regional or district office of the supplier exceeds 60 kilometers.

(3) The minimum performance target levels stipulated in subrule (2) shall be increased annually by 5 percent up to a ceiling of 95 percent and the supplier shall indicate in a table, the set and achievable, targets of performance.

**Rule 40—Billing meters and performance replacement of meters**

(1) Where a supplier is required to replace a customer's defective meter, the supplier shall install the meter within 48 hours of the notification and not at the customer's expense.

(2) The supplier shall achieve a minimum performance level of 75 percent in a given year and report to the Commission, the targets achieved for each year.

(3) The minimum performance level stipulated in subrule (2) shall be increased annually by 5 percent and the supplier shall report to the Commission, the set and achievable targets of performance for each year.

**Rule 41—Offences and penalties**

(1) Where a supplier contravenes any obligation imposed under these Rules the PURC may in consultation with the Commission impose such pecuniary penalty on the supplier as may be considered appropriate.

(2) A customer who,

(a) intentionally interferes or knowingly allows interference with the supplier's distribution system, meter or equipment contrary to subrule (6) of rule 1;

(b) obtains electricity supply in an illegal manner under subrule (1) of rule 5; or

(c) tampers with or breaks a seal on a meter contrary to subrule (4) of rule 6

commits an offence and is liable on summary conviction to a fine not exceeding 500 penalty units and in default of payment, is liable to imprisonment for a term not exceeding 2 years.

(3) Where an offence under these Rules is committed by a customer or supplier which is a body corporate, a member of a partnership or other firm, every director or officer of that body corporate or any member of the partnership or other person concerned with the management of the customer or supplier shall be deemed to be also guilty of the offence and is on summary conviction, liable to payment of compensation for any damage resulting from the breach, unless the person proves to the satisfaction of the court that

(a) due diligence was exercised to secure compliance with the provisions of these Rules, and

(b) the offence was committed without the person's knowledge, consent or connivance.

#### Rule 42—Interpretation

In these Rules unless the context otherwise requires,

"Act" means the Energy Commission Act, 1997, (Act 541),

"advance deposit" means an amount that has been lodged with the supplier by a customer as security against default in the payment of electricity bill for the first three months of supply;

"approved electricity tariff" means tariff approved by PURC,

"billing cycle" means a regular recurrent time and date within which a supplier submits bills to a customer;

"certified electrician" means any person who has formal training and has obtained a tradesman's certificate in house wiring and repair of electrical appliances from a competent body or Ghana Association of Contractors;

"Commission" means the Energy Commission established under section 1 of the Act;

"commercial customer" means a person who is involved in commercial activities and contracts to purchase electricity from a supplier for commercial purposes;

"continuance rights" means the right of a customer who has financed the development of a network to obtain a refund of part of the investment from the supplier for subsequent connection of other customers to the developed network;

"customer" means a person that contracts to purchase electricity from a supplier,

"distribution system" means a system consisting of electric line, transformers, switchgear and other ancillary equipment interconnected for the supply of electricity;

"embedded generator" means a generator whose generating units are connected and synchronised to a distribution system;

"emergency" means an imminent occurrence of a situation that is out of the ordinary and that threatens to endanger a person, public safety or cause damage to property;

"IEEE" means Institute of Electrical and Electronic Engineers;

"kV" means Kilovolt;

"life line unit" means the maximum quantity of electricity in units as determined by PURC for low consumption by residential customers, for which a special concessionary tariff is applicable;

"live electricity" means an exposed electrical circuit which is capable of electrocuting any living object that comes into contact with it;

"load cut out limiter" means a device installed in a customer's premises to cut off supply if the power demand for consumption exceeds a pre-determined level of current or energy;

"load shedding" means partial or total disruption of supply to customers caused by the supplier as the supplier may deem necessary to ensure safety of personnel, equipment and system integrity;

"LV" means low voltages up to 1 kV or 1000 volts, and 600 volts between phases and a neutral;

"medium voltage customer" means a customer that receives electricity from a supplier at a supply voltage of 11kV or 33kV;

"multi-family house" includes a compound house;

"MV" means medium voltage;

"point of common coupling" means supply connections made to more than one customer from the same phase of a low voltage distribution system;

"point of common supply" means the first point of direct connection from an underground cable or overhead line to the premises of the customer;

"prepayment meter" means a device for measuring the energy consumption of a customer by which the customer pays in advance for the consumption;

"PURC" means the Public Utilities Regulatory Commission;

"reasonable amount" means

(a) where service has been provided for a period of twelve months or more, the average units used by the customer over the previous twelve months;

(b) where service has been provided for less than twelve months, the average units used by the customer for the period that the service was provided;

(c) where the service is new, sixty percent of the units used or estimated units used.

"refundable advance" means an amount that has been lodged with the supplier by a customer as security against default payments which amount if not fully utilized may be refunded to the customer;

"reinforcement" means the process of providing addition circuits to strengthen an existing electrical circuit of equipment;

"supplier" means an entity that has been licensed by the Energy Commission under the Act as an electricity distributor and retailer;

"supply address" means the address of the premises at which the supplier is required to make electricity available to the customer;

"tie-in" means an embedded generating unit which is connected to a distribution system and governed by terms and conditions related to unit commitment, dispatching and disconnection.

#### Rule 43—Transitional provisions

Notwithstanding subrules (1) and (2) of rule 8, a supplier must for the period of six years beginning with the date of coming into force of these Rules, achieve voltage levels of

(a) 195V as lower limit and 260V a upper limit within two years;

(b) 207V as lower limit and 253V a supper limit within five years.

#### Rule 44—Repeals

The Electricity Corporation of Ghana (Electricity and Power) Regulations 1988 (L.I. 1366) are hereby revoked.

### SCHEDULE

#### SCHEDULE I

(rule 8(3))

#### STANDARD NOMINAL VOLTAGE VARIATIONS

Voltage Level in kV		Voltage Range for Time Period	
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Steady State	Transient State		
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Less than 1 minute	Less than 10 seconds		
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<1.0	±10%	±15%	Phase to Earth+50%-100%
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Phase to Phase+20%-100%

11	±10%	±15%	Phase to Earth+80%-100%
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Phase to Phase+20%-100%

33	±10%	±15%	Phase to Earth+80%-100%
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Phase to Phase+20%-100%



34.5 ±10% ±15% Phase to Earth+80% 100%

Phase to Phase+20%-100%

## SCHEDULE II

(rule 10(1))

### POWER FACTOR LIMITS

Supply Voltage kV      Power Factor Range for Customer Maximum

Demand and Voltage

	Up to 100 kVA		Between 100 KVA-2MVA		Over 2 MVA	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
	Lagging	Leading	Lagging	Leading	Lagging	Leading
<1.0	0.95	0.95	—	—	—	—
11	0.95	0.95	0.95	0.95	0.96	0.96
33	0.95	0.95	0.95	0.95	0.96	0.96
34.5	0.95	0.95	0.95	0.95	0.96	0.96

## SCHEDULE III

(rule 11(1) and (3))

### VOLTAGE HARMONIC DISTORTION LIMITS

Voltage at point of common coupling      Total harmonic distortion

Odd Individual voltage harmonics

Even

<1kV 5% 4% 2%

<1Kv and < 34.5 kV 3% 2% 1%

#### SCHEDULE IV

(rule 11 (3))

#### VOLTAGE HARMONIC DISTORTION LIMITS

Maximum Harmonic Current Distortion

In Percent of k

Individual Harmonic Order "h" (Odd Harmonics)

Isc/L	<11	11<h<17	23< h<35	17< h< 35	35<h		
Distortion		Total Harmonics					
<20*	4.0%	2.0%	1.5%	0.6%	0.3%	5.0%	
20<50	7.0%	3.5%	2.5%	1.0%	0.5%	8.0%	
50<100	10.0%	4.5%	4.0%	1.5%	0.7%	12.0%	
100<1000		12.0%	5.5%	5.0%	2.0%	2.0%	15.0%
<100	15.0%	7.0%	6.0%	2.5%	1.4%	20.0%	

Note:

1. Even harmonics are limited to 25% of the odd harmonics listed above.
2. Current distortions that result in a DC offset, e.g., half-wave converters, are not allowed.
3. \*All power generation equipments are limited to these values of current distortion, regardless of actual Isc/IL.

4.  $I_{sc}$ =maximum short-circuit current at Point of Common Coupling.

5.  $I_L$ =maximum demand load current (fundamental frequency component) at Point of Common Coupling.

PROF. A. K. ADDAE

Ag. Chairman, Energy Commission

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